

CHAPTER

54

**NACELLES AND
PYLONS**



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1 thru 23	Aug 15/2009	205	Apr 01/2005	104	Apr 01/2005
24	BLANK	206	Apr 01/2005	105	Apr 01/2005
54-CONTENTS		54-00-01 REPAIR GENERAL		106	Apr 01/2005
1	Apr 01/2005	201	Apr 01/2005	54-10-01 REPAIR 1	
2	Aug 15/2006	202	BLANK	201	Apr 01/2005
3	Apr 15/2006	54-00-01 REPAIR 1		202	Apr 01/2005
4	Apr 15/2006	201	Apr 01/2005	54-10-01 REPAIR 2	
5	Apr 15/2006	202	Apr 01/2005	201	Apr 01/2005
6	Apr 15/2006	203	Apr 01/2005	202	Apr 01/2005
7	Apr 15/2006	204	Apr 15/2009	203	Apr 01/2005
8	Apr 15/2006	205	Apr 01/2005	204	BLANK
9	Apr 15/2006	206	Apr 01/2005	54-10-01 REPAIR 3	
10	Apr 15/2006	207	Apr 01/2005	201	Apr 01/2005
11	Apr 01/2005	208	Apr 01/2005	202	Apr 01/2005
12	Dec 15/2007	209	Apr 01/2005	203	Apr 01/2005
13	Dec 15/2007	210	Apr 01/2005	204	BLANK
14	Dec 15/2007	211	Apr 01/2005	54-10-01 REPAIR 4	
15	Dec 15/2007	212	Apr 01/2005	201	Apr 01/2005
16	Dec 15/2007	213	Apr 01/2005	202	BLANK
17	Dec 15/2007	214	Apr 01/2005	54-10-02 IDENTIFICATION 1	
18	Dec 15/2007	215	Apr 01/2005	1	Apr 01/2005
19	Apr 15/2009	216	Apr 01/2005	2	Apr 01/2005
20	Dec 15/2007	217	Apr 01/2005	54-10-02 ALLOWABLE DAMAGE 1	
21	Dec 15/2007	218	Apr 01/2005	101	Dec 15/2006
22	Dec 15/2007	54-00-01 REPAIR 2		102	Apr 01/2005
54-00-00 GENERAL		201	Apr 01/2005	103	Apr 01/2005
1	Apr 01/2005	202	Apr 01/2005	104	Apr 01/2005
2	Apr 01/2005	203	Apr 01/2005	105	Apr 01/2005
3	Apr 01/2005	204	BLANK	106	BLANK
4	Apr 01/2005	54-02-01 REPAIR 1		54-10-02 REPAIR 1	
5	Apr 01/2005	201	Apr 01/2005	201	Apr 01/2005
6	Aug 15/2006	202	BLANK	202	Apr 01/2005
7	Apr 01/2005	54-10-01 IDENTIFICATION 1		203	Apr 01/2005
8	BLANK	1	Apr 01/2005	204	Apr 01/2005
54-00-00 REPAIR GENERAL		2	Apr 01/2005	205	Apr 01/2005
201	Apr 01/2005	54-10-01 ALLOWABLE DAMAGE 1		206	BLANK
202	Apr 01/2005	101	Dec 15/2006	54-10-02 REPAIR 2	
203	Apr 01/2005	102	Apr 01/2005	201	Apr 01/2005
204	Aug 15/2006	103	Apr 01/2005		

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202	Apr 01/2005	2	Apr 01/2005	103	Apr 15/2006
203	Apr 01/2005	3	Apr 01/2005	104	Apr 15/2006
204	BLANK	4	Apr 01/2005	105	Apr 15/2006
54-10-02 REPAIR 3		54-11-02 ALLOWABLE DAMAGE 1		106	BLANK
201	Apr 01/2005	101	Dec 15/2006	54-12-01 REPAIR GENERAL	
202	Apr 01/2005	102	Apr 01/2005	201	Apr 15/2006
203	Apr 01/2005	103	Apr 01/2005	202	Aug 15/2006
204	Apr 01/2005	104	Apr 01/2005	54-12-01 REPAIR 1	
54-10-30 IDENTIFICATION 1		105	Apr 01/2005	201	Dec 15/2007
1	Apr 01/2005	106	BLANK	202	Aug 15/2006
2	BLANK	54-11-02 REPAIR 1		203	Aug 15/2006
54-11-01 IDENTIFICATION 1		201	Apr 01/2005	204	BLANK
1	Apr 01/2005	202	Apr 01/2005	54-12-01 REPAIR 2	
2	Apr 01/2005	203	Apr 01/2005	201	Apr 15/2006
54-11-01 ALLOWABLE DAMAGE 1		204	Apr 01/2005	202	Apr 15/2006
101	Dec 15/2006	205	Apr 01/2005	203	Apr 15/2006
102	Apr 01/2005	206	BLANK	204	BLANK
103	Apr 01/2005	54-11-02 REPAIR 2		54-12-01 REPAIR 3	
104	Apr 01/2005	201	Apr 01/2005	201	Apr 15/2006
105	Apr 01/2005	202	Apr 01/2005	202	Apr 15/2006
106	Apr 01/2005	203	Apr 01/2005	54-12-01 REPAIR 4	
54-11-01 REPAIR 1		204	BLANK	201	Apr 15/2006
201	Apr 01/2005	54-11-02 REPAIR 3		202	Apr 15/2006
202	Apr 01/2005	201	Apr 01/2005	54-12-01 REPAIR 5	
54-11-01 REPAIR 2		202	Apr 01/2005	201	Apr 15/2006
201	Apr 01/2005	203	Apr 01/2005	202	Apr 15/2006
202	Apr 01/2005	204	Apr 01/2005	203	Apr 15/2006
203	Apr 01/2005	54-11-30 IDENTIFICATION 1		204	Apr 15/2006
204	BLANK	1	Apr 01/2005	54-12-01 REPAIR 6	
54-11-01 REPAIR 3		2	BLANK	201	Apr 15/2006
201	Apr 01/2005	54-12-00 GENERAL		202	Apr 15/2006
202	Apr 01/2005	1	Apr 15/2006	54-12-01 REPAIR 7	
203	Apr 01/2005	2	BLANK	201	Apr 15/2006
204	BLANK	54-12-01 IDENTIFICATION 1		202	Apr 15/2006
54-11-01 REPAIR 4		1	Aug 15/2006	54-12-01 REPAIR 8	
201	Apr 01/2005	2	Aug 15/2006	201	Apr 15/2006
202	BLANK	54-12-01 ALLOWABLE DAMAGE 1		202	Dec 15/2007
54-11-02 IDENTIFICATION 1		101	Dec 15/2006		
1	Apr 01/2005	102	Apr 15/2006		

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54-12-01 REPAIR 9		54-12-01 REPAIR 15 (cont)		54-12-02 ALLOWABLE DAMAGE 1 (cont)	
201	Apr 15/2006	204	Apr 15/2005	103	Apr 15/2006
202	Apr 15/2006	205	Apr 15/2006	104	Apr 15/2006
203	Apr 15/2006	206	Apr 15/2006	54-12-02 REPAIR 1	
204	Apr 15/2006	54-12-01 REPAIR 16		201	Apr 15/2006
54-12-01 REPAIR 10		201	Apr 15/2006	202	Apr 15/2006
201	Apr 15/2006	202	Apr 15/2006	54-12-02 REPAIR 2	
202	Apr 15/2005	203	Apr 15/2006	201	Apr 15/2006
54-12-01 REPAIR 11		204	Apr 15/2006	202	Apr 15/2006
201	Apr 15/2006	205	Apr 15/2006	54-12-02 REPAIR 3	
202	Dec 15/2007	206	Apr 15/2006	201	Apr 15/2006
54-12-01 REPAIR 12		207	Apr 15/2006	202	Apr 15/2006
201	Apr 15/2006	208	Apr 15/2006	54-13-00 GENERAL	
202	Apr 15/2006	209	Apr 15/2006	1	Apr 01/2005
203	Dec 15/2007	210	Apr 15/2006	2	BLANK
204	Apr 15/2006	211	Apr 15/2006	54-13-01 IDENTIFICATION 1	
205	Apr 15/2006	212	Apr 15/2006	1	Apr 01/2005
206	Apr 15/2006	213	Apr 15/2006	2	Apr 01/2005
207	Apr 15/2006	214	BLANK	3	Apr 01/2005
208	BLANK	54-12-01 REPAIR 17		4	Apr 01/2005
54-12-01 REPAIR 13		201	Apr 15/2006	54-13-01 ALLOWABLE DAMAGE 1	
201	Apr 15/2006	202	Apr 15/2006	101	Dec 15/2006
202	Apr 15/2005	203	Apr 15/2006	102	Apr 01/2005
203	Dec 15/2007	204	Dec 15/2007	103	Apr 01/2005
204	Apr 15/2005	205	Apr 15/2005	104	Apr 01/2005
205	Apr 15/2005	206	Apr 15/2005	105	Apr 01/2005
206	Apr 15/2006	207	Apr 15/2005	106	Apr 01/2005
207	Dec 15/2007	208	Apr 15/2006	54-13-01 REPAIR 1	
208	Dec 15/2007	209	Apr 15/2006	201	Apr 01/2005
54-12-01 REPAIR 14		210	Apr 15/2006	202	Apr 01/2005
201	Apr 15/2006	211	Apr 15/2006	54-13-01 REPAIR 2	
202	Apr 15/2006	212	Apr 15/2006	201	Apr 01/2005
203	Apr 15/2006	54-12-02 IDENTIFICATION 1		202	Apr 15/2005
204	Apr 15/2006	1	Apr 15/2006	203	Apr 01/2005
205	Apr 15/2006	2	Apr 15/2006	204	BLANK
206	Apr 15/2006	3	Apr 15/2006	54-13-01 REPAIR 3	
54-12-01 REPAIR 15		4	BLANK	201	Apr 01/2005
201	Dec 15/2007	54-12-02 ALLOWABLE DAMAGE 1		202	Apr 01/2005
202	Apr 15/2005	101	Apr 15/2006	203	Apr 01/2005
203	Apr 15/2005	102	Apr 15/2006		

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54-13-01 REPAIR 3 (cont)		54-14-01 REPAIR GENERAL (cont)		54-15-01 IDENTIFICATION 2	
204	BLANK	202	BLANK	1	Apr 01/2005
54-13-01 REPAIR 4		54-14-01 REPAIR 1		2	Apr 01/2005
201	Apr 01/2005	201	Apr 15/2005	3	Apr 01/2005
202	BLANK	202	Apr 15/2005	4	Apr 01/2005
54-13-02 IDENTIFICATION 1		54-14-01 REPAIR 2		5	Apr 01/2005
1	Apr 01/2005	201	Apr 15/2005	6	Apr 01/2005
2	Apr 01/2005	202	Apr 15/2005	7	Apr 01/2005
54-13-02 ALLOWABLE DAMAGE 1		54-14-01 REPAIR 3		8	Apr 01/2005
101	Dec 15/2006	201	Apr 15/2005	54-15-01 ALLOWABLE DAMAGE 1	
102	Apr 01/2005	202	Apr 15/2005	101	Dec 15/2006
103	Apr 01/2005	54-14-02 IDENTIFICATION 1		102	Apr 15/2006
104	Apr 01/2005	1	Apr 01/2005	103	Apr 15/2006
105	Apr 01/2005	2	Apr 01/2005	104	Apr 15/2006
106	BLANK	3	Apr 01/2005	105	Apr 15/2006
54-13-02 REPAIR 1		4	BLANK	106	Apr 15/2006
201	Apr 01/2005	54-14-02 ALLOWABLE DAMAGE 1		107	Apr 01/2005
202	Apr 01/2005	101	Apr 01/2005	108	Apr 01/2005
203	Apr 01/2005	102	Apr 01/2005	109	Apr 01/2005
204	BLANK	103	Apr 01/2005	110	Apr 01/2005
54-13-02 REPAIR 2		104	Apr 01/2005	111	Apr 01/2005
201	Apr 15/2005	54-14-30 IDENTIFICATION 1		112	Apr 01/2005
202	Apr 01/2005	1	Apr 01/2005	113	Apr 01/2005
203	Apr 01/2005	2	BLANK	114	Apr 01/2005
204	Apr 01/2005	54-15-01 IDENTIFICATION 1		115	Apr 01/2005
54-13-30 IDENTIFICATION 1		1	Apr 01/2005	116	Apr 01/2005
1	Apr 01/2005	2	Apr 01/2005	117	Apr 01/2005
2	BLANK	3	Apr 01/2005	118	Apr 01/2005
54-14-01 IDENTIFICATION 1		4	Apr 01/2005	119	Apr 01/2005
1	Apr 01/2005	5	Apr 01/2005	120	Apr 01/2005
2	Apr 01/2005	6	Apr 01/2005	121	Apr 01/2005
3	Apr 01/2005	7	Apr 01/2005	122	Apr 01/2005
4	BLANK	8	Dec 15/2007	123	Apr 01/2005
54-14-01 ALLOWABLE DAMAGE 1		9	Apr 01/2005	124	BLANK
101	Apr 01/2005	10	Apr 01/2005	54-15-01 REPAIR GENERAL	
102	Apr 01/2005	11	Apr 01/2005	201	Apr 01/2005
103	Apr 01/2005	12	Apr 01/2005	202	Apr 01/2005
104	Apr 01/2005	13	Apr 01/2005	54-15-01 REPAIR 1	
54-14-01 REPAIR GENERAL		14	Apr 01/2005	201	Apr 01/2005
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203	Apr 01/2005	208	Dec 15/2007	203	Apr 01/2005
204	Apr 01/2005	209	Apr 01/2005	204	Apr 01/2005
205	Apr 01/2005	210	Apr 01/2005	54-15-01 REPAIR 10	
206	Apr 01/2005	211	Apr 01/2005	201	Apr 01/2005
54-15-01 REPAIR 2		212	Apr 01/2005	202	Apr 01/2005
201	Apr 01/2005	54-15-01 REPAIR 6		203	Dec 15/2007
202	Apr 01/2005	201	Apr 01/2005	204	Apr 01/2005
203	Apr 01/2005	202	Apr 01/2005	205	Apr 01/2005
204	Apr 01/2005	203	Apr 01/2005	206	Apr 01/2005
205	Apr 01/2005	204	Apr 01/2005	207	Apr 01/2005
206	Apr 01/2005	205	Apr 01/2005	208	Apr 01/2005
207	Apr 01/2005	206	Apr 01/2005	209	Apr 01/2005
208	BLANK	207	Apr 01/2005	210	Apr 01/2005
54-15-01 REPAIR 3		208	Apr 01/2005	54-15-01 REPAIR 11	
201	Apr 01/2005	209	Apr 01/2005	201	Apr 15/2006
202	Dec 15/2007	210	Apr 01/2005	202	Apr 15/2005
203	Apr 01/2005	211	Apr 01/2005	203	Dec 15/2007
204	Apr 01/2005	212	Apr 01/2005	204	Apr 15/2005
205	Apr 01/2005	213	Apr 01/2005	205	Apr 15/2005
206	Apr 01/2005	214	Apr 01/2005	206	Apr 15/2005
207	Apr 01/2005	54-15-01 REPAIR 7		207	Apr 15/2005
208	Apr 01/2005	201	Apr 01/2005	208	Apr 15/2005
54-15-01 REPAIR 4		202	Dec 15/2007	209	Apr 15/2005
201	Apr 01/2005	203	Apr 01/2005	210	Apr 15/2005
202	Apr 01/2005	204	Apr 01/2005	211	Apr 15/2005
203	Apr 01/2005	205	Apr 01/2005	212	Apr 15/2005
204	Apr 01/2005	206	Apr 01/2005	213	Apr 15/2005
205	Apr 01/2005	54-15-01 REPAIR 8		214	BLANK
206	Apr 01/2005	201	Apr 01/2005	54-15-01 REPAIR 12	
207	Apr 01/2005	202	Dec 15/2007	201	Apr 15/2006
208	BLANK	203	Dec 15/2007	202	Apr 15/2005
54-15-01 REPAIR 5		204	Apr 01/2005	203	Dec 15/2007
201	Apr 01/2005	205	Apr 01/2005	204	Apr 01/2005
202	Dec 15/2007	206	Apr 01/2005	205	Apr 01/2005
203	Apr 01/2005	207	Apr 01/2005	206	Apr 01/2005
204	Apr 01/2005	208	BLANK	207	Apr 01/2005
205	Apr 01/2005	54-15-01 REPAIR 9		208	Apr 01/2005
206	Apr 01/2005	201	Dec 15/2007	209	Apr 01/2005
207	Apr 01/2005	202	Dec 15/2007	210	Apr 01/2005

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211	Apr 01/2005	218	Apr 01/2005	209	Apr 01/2005
212	Apr 01/2005	54-15-01 REPAIR 15		210	Apr 01/2005
213	Apr 01/2005	201	Apr 01/2005	211	Apr 01/2005
214	BLANK	202	Dec 15/2007	212	Apr 01/2005
54-15-01 REPAIR 13		203	Apr 01/2005	213	Apr 01/2005
201	Apr 15/2006	204	Apr 01/2005	214	BLANK
202	Dec 15/2007	54-15-01 REPAIR 16		54-15-01 REPAIR 19	
203	Apr 01/2005	201	Dec 15/2007	201	Dec 15/2007
204	Dec 15/2007	202	Apr 01/2005	202	Apr 01/2005
205	Apr 01/2005	203	Apr 15/2006	203	Apr 01/2005
206	Apr 01/2005	204	Apr 01/2005	204	Apr 01/2005
207	Apr 01/2005	205	Apr 01/2005	205	Apr 01/2005
208	Apr 01/2005	206	Apr 01/2005	206	Apr 01/2005
209	Apr 01/2005	207	Apr 01/2005	207	Dec 15/2007
210	Apr 01/2005	208	Apr 01/2005	208	Apr 01/2005
211	Apr 01/2005	209	Apr 15/2006	54-15-02 IDENTIFICATION 1	
212	Apr 01/2005	210	BLANK	1	Apr 01/2005
213	Apr 01/2005	54-15-01 REPAIR 17		2	Apr 01/2005
214	Apr 01/2005	201	Dec 15/2007	3	Apr 01/2005
215	Apr 01/2005	202	Apr 01/2005	4	Dec 15/2007
216	BLANK	203	Apr 01/2005	5	Apr 01/2005
54-15-01 REPAIR 14		204	Apr 01/2005	6	BLANK
201	Aug 15/2006	205	Apr 01/2005	54-15-02 IDENTIFICATION 2	
202	Dec 15/2007	206	Apr 01/2005	1	Apr 15/2005
203	Aug 15/2006	207	Apr 01/2005	2	Apr 15/2005
204	Aug 15/2006	208	Apr 01/2005	3	Apr 15/2005
205	Aug 15/2006	209	Apr 01/2005	4	Apr 15/2005
206	Aug 15/2006	210	Apr 01/2005	5	Apr 15/2005
207	Dec 15/2007	211	Apr 01/2005	6	Apr 15/2005
208	Aug 15/2006	212	BLANK	7	Dec 15/2007
209	Dec 15/2007	54-15-01 REPAIR 18		8	BLANK
210	Aug 15/2006	201	Dec 15/2007	54-20-01 IDENTIFICATION 1	
211	Apr 01/2005	202	Apr 01/2005	1	Apr 01/2005
212	Apr 01/2005	203	Apr 01/2005	2	Apr 01/2005
213	Apr 01/2005	204	Apr 01/2005	54-20-01 ALLOWABLE DAMAGE 1	
214	Apr 01/2005	205	Apr 01/2005	101	Dec 15/2006
215	Apr 01/2005	206	Apr 01/2005	102	Apr 01/2005
216	Apr 01/2005	207	Apr 01/2005	103	Apr 01/2005
217	Apr 01/2005	208	Apr 01/2005	104	Apr 01/2005

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54-20-01 REPAIR GENERAL		54-21-01 REPAIR 2 (cont)		54-22-01 REPAIR 3 (cont)	
201	Dec 15/2007	202	BLANK	202	Apr 15/2006
202	Dec 15/2007	54-21-01 REPAIR 3		54-22-01 REPAIR 4	
203	Apr 01/2005	201	Apr 15/2005	201	Apr 15/2006
204	Apr 01/2005	202	Apr 01/2005	202	Dec 15/2007
205	Apr 01/2005	54-21-01 REPAIR 4		54-22-01 REPAIR 5	
206	Apr 01/2005	201	Apr 15/2005	201	Apr 15/2006
207	Apr 01/2005	202	BLANK	202	Apr 15/2006
208	Apr 01/2005	54-21-90 IDENTIFICATION 1		203	Dec 15/2007
209	Apr 01/2005	1	Apr 01/2005	204	Apr 15/2006
210	Apr 01/2005	2	BLANK	205	Apr 15/2006
54-20-90 IDENTIFICATION 1		54-21-90 ALLOWABLE DAMAGE 1		206	BLANK
1	Apr 01/2005	101	Apr 01/2005	54-22-01 REPAIR 6	
2	BLANK	102	Apr 01/2005	201	Apr 15/2006
54-20-90 ALLOWABLE DAMAGE 1		103	Apr 01/2005	202	Apr 15/2006
101	Apr 01/2005	104	BLANK	203	Apr 15/2006
102	Apr 01/2005	54-21-90 REPAIR 1		204	Apr 15/2006
103	Apr 01/2005	201	Apr 01/2005	205	Apr 15/2006
104	BLANK	202	BLANK	206	Apr 15/2006
54-20-90 REPAIR 1		54-22-00 GENERAL		207	Apr 15/2006
201	Apr 01/2005	1	Apr 15/2006	208	Apr 15/2006
202	BLANK	2	BLANK	54-22-01 REPAIR 7	
54-21-01 IDENTIFICATION 1		54-22-01 IDENTIFICATION 1		201	Apr 15/2006
1	Apr 01/2005	1	Apr 15/2006	202	Apr 15/2006
2	Apr 01/2005	2	Apr 15/2006	203	Apr 15/2006
54-21-01 ALLOWABLE DAMAGE 1		54-22-01 ALLOWABLE DAMAGE 1		204	Apr 15/2006
101	Dec 15/2006	101	Dec 15/2006	205	Apr 15/2006
102	Apr 01/2005	102	Apr 15/2006	206	BLANK
103	Apr 01/2005	103	Apr 15/2006	54-22-01 REPAIR 8	
104	Apr 01/2005	104	BLANK	201	Dec 15/2007
54-21-01 REPAIR GENERAL		54-22-01 REPAIR 1		202	Dec 15/2007
201	Apr 15/2005	201	Apr 15/2006	203	Dec 15/2007
202	Apr 15/2005	202	Dec 15/2007	204	Dec 15/2007
54-21-01 REPAIR 1		54-22-01 REPAIR 2		205	Dec 15/2007
201	Apr 15/2005	201	Aug 15/2006	206	Apr 15/2006
202	Apr 15/2005	202	Apr 15/2006	207	Apr 15/2006
203	Apr 15/2005	203	Apr 15/2006	208	Apr 15/2006
204	Apr 15/2005	204	Apr 15/2006	54-22-30 IDENTIFICATION 1	
54-21-01 REPAIR 2		54-22-01 REPAIR 3		1	Apr 15/2006
201	Apr 15/2005	201	Apr 15/2006	2	BLANK

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1	Apr 01/2005	7	Apr 01/2005	2	Apr 01/2005
2	BLANK	8	Apr 01/2005	3	Apr 01/2005
54-23-01 IDENTIFICATION 1		54-24-01 ALLOWABLE DAMAGE 1		4	Apr 01/2005
1	Apr 01/2005	101	Dec 15/2006	5	Apr 01/2005
2	Apr 01/2005	102	Apr 01/2005	6	Apr 01/2005
54-23-01 ALLOWABLE DAMAGE 1		103	Apr 01/2005	7	Apr 01/2005
101	Dec 15/2006	104	BLANK	8	Apr 01/2005
102	Apr 01/2005	54-24-01 REPAIR GENERAL		9	Apr 01/2005
103	Apr 01/2005	201	Apr 01/2005	10	Apr 01/2005
104	Apr 01/2005	202	BLANK	11	Apr 01/2005
54-23-01 REPAIR GENERAL		54-24-01 REPAIR 1		12	BLANK
201	Apr 01/2005	201	Apr 15/2005	54-25-01 IDENTIFICATION 2	
202	Apr 01/2005	202	Apr 15/2005	1	Apr 01/2005
203	Apr 01/2005	54-24-01 REPAIR 2		2	Apr 01/2005
204	Apr 01/2005	201	Apr 15/2005	3	Apr 01/2005
205	Apr 01/2005	202	Apr 15/2005	4	Apr 01/2005
206	Apr 01/2005	203	Apr 15/2005	5	Apr 01/2005
207	Apr 01/2005	204	Apr 15/2005	6	Apr 01/2005
208	Apr 01/2005	54-24-02 IDENTIFICATION 1		7	Apr 01/2005
209	Apr 01/2005	1	Apr 01/2005	8	Apr 01/2005
210	Apr 01/2005	2	Apr 01/2005	9	Apr 01/2005
54-23-90 IDENTIFICATION 1		3	Apr 01/2005	10	Apr 01/2005
1	Apr 01/2005	4	Apr 01/2005	11	Apr 01/2005
2	BLANK	5	Apr 01/2005	12	BLANK
54-23-90 ALLOWABLE DAMAGE 1		6	BLANK	54-25-01 ALLOWABLE DAMAGE 1	
101	Apr 01/2005	54-24-02 IDENTIFICATION 2		101	Apr 15/2006
102	Apr 01/2005	1	Apr 15/2005	102	Dec 15/2007
103	Apr 01/2005	2	Apr 15/2005	103	Dec 15/2007
104	BLANK	3	Apr 15/2005	104	Dec 15/2007
54-23-90 REPAIR 1		4	BLANK	105	Apr 01/2005
201	Apr 01/2005	54-24-02 ALLOWABLE DAMAGE 1		106	Apr 01/2005
202	BLANK	101	Apr 01/2005	107	Apr 01/2005
54-24-01 IDENTIFICATION 1		102	Apr 01/2005	108	Apr 01/2005
1	Apr 01/2005	103	Apr 01/2005	109	Apr 01/2005
2	Apr 01/2005	104	Apr 01/2005	110	Apr 01/2005
3	Apr 01/2005	105	Apr 01/2005	54-25-01 REPAIR GENERAL	
4	Apr 01/2005	106	BLANK	201	Dec 15/2006
5	Apr 01/2005	54-25-01 IDENTIFICATION 1		202	BLANK
6	Apr 01/2005	1	Apr 01/2005		

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54-25-01 REPAIR 1		54-25-01 REPAIR 3 (cont)		54-25-01 REPAIR 6	
201	Dec 15/2007	220	Apr 01/2005	201	Dec 15/2007
202	Dec 15/2007	221	Apr 01/2005	202	Dec 15/2007
203	Dec 15/2007	222	Apr 01/2005	203	Dec 15/2007
204	Dec 15/2007	223	Apr 01/2005	204	Dec 15/2007
205	Dec 15/2007	224	Apr 01/2005	205	Dec 15/2007
206	Apr 15/2005	225	Apr 01/2005	206	Dec 15/2007
207	Apr 15/2006	226	BLANK	207	Apr 01/2005
208	BLANK	54-25-01 REPAIR 4		208	Apr 15/2006
54-25-01 REPAIR 2		201	Apr 15/2006	209	Apr 15/2006
201	Dec 15/2007	202	Dec 15/2007	210	Apr 01/2005
202	Apr 15/2005	203	Apr 01/2005	54-25-01 REPAIR 7	
203	Apr 15/2005	204	Dec 15/2007	201	Dec 15/2007
204	Apr 15/2005	205	Apr 01/2005	202	Dec 15/2007
205	Apr 15/2005	206	Apr 01/2005	203	Apr 01/2005
206	Apr 15/2005	207	Apr 01/2005	204	Apr 01/2005
207	Apr 15/2005	208	Apr 15/2005	205	Apr 01/2005
208	Apr 01/2005	209	Apr 01/2005	206	Apr 01/2005
209	Apr 15/2006	210	Apr 01/2005	207	Apr 01/2005
210	Apr 01/2005	211	Apr 15/2006	208	Dec 15/2007
54-25-01 REPAIR 3		212	Apr 01/2005	209	Apr 01/2005
201	Apr 15/2006	213	Apr 01/2005	210	Apr 15/2006
202	Apr 01/2005	214	BLANK	211	Apr 01/2005
203	Apr 01/2005	54-25-01 REPAIR 5		212	Apr 01/2005
204	Apr 01/2005	201	Apr 15/2006	213	Apr 01/2005
205	Apr 01/2005	202	Dec 15/2007	214	BLANK
206	Apr 01/2005	203	Apr 15/2006	54-25-01 REPAIR 8	
207	Apr 01/2005	204	Apr 01/2005	201	Dec 15/2007
208	Apr 01/2005	205	Apr 01/2005	202	Apr 01/2005
209	Apr 01/2005	206	Apr 01/2005	203	Apr 15/2006
210	Apr 01/2005	207	Apr 01/2005	204	Dec 15/2007
211	Apr 01/2005	208	Apr 01/2005	54-30-01 IDENTIFICATION 1	
212	Apr 01/2005	209	Apr 01/2005	1	Apr 01/2005
213	Apr 01/2005	210	Apr 01/2005	2	Apr 01/2005
214	Apr 01/2005	211	Apr 01/2005	3	Apr 01/2005
215	Apr 01/2005	212	Apr 01/2005	4	Apr 01/2005
216	Apr 01/2005	213	Apr 15/2006	5	Apr 01/2005
217	Apr 01/2005	214	Apr 01/2005	6	BLANK
218	Apr 01/2005	215	Apr 01/2005	54-30-01 ALLOWABLE DAMAGE 1	
219	Apr 01/2005	216	Apr 01/2005	101	Apr 01/2005

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54-30-01 ALLOWABLE DAMAGE 1 (cont)		54-30-90 ALLOWABLE DAMAGE 1 (cont)		54-31-02 IDENTIFICATION 1 (cont)	
102	Apr 01/2005	104	BLANK	3	Apr 01/2005
103	Apr 01/2005	54-30-90 REPAIR 1		4	BLANK
104	Apr 01/2005	201	Apr 01/2005	54-31-02 ALLOWABLE DAMAGE 1	
105	Apr 01/2005	202	BLANK	101	Apr 01/2005
106	Apr 01/2005	54-31-01 IDENTIFICATION 1		102	Apr 01/2005
54-30-01 REPAIR 1		1	Apr 01/2005	103	Apr 01/2005
201	Apr 01/2005	2	Apr 01/2005	104	Apr 01/2005
202	BLANK	3	Apr 01/2005	105	Apr 01/2005
54-30-01 REPAIR 2		4	Apr 01/2005	106	Apr 01/2005
201	Apr 01/2005	5	Apr 01/2005	54-31-02 REPAIR 1	
202	Apr 01/2005	6	BLANK	201	Apr 01/2005
203	Apr 01/2005	54-31-01 ALLOWABLE DAMAGE 1		202	BLANK
204	Apr 01/2005	101	Apr 01/2005	54-31-02 REPAIR 2	
54-30-02 IDENTIFICATION 1		102	Apr 01/2005	201	Apr 01/2005
1	Apr 01/2005	103	Apr 01/2005	202	Apr 01/2005
2	Apr 01/2005	104	Apr 01/2005	54-31-90 ALLOWABLE DAMAGE 1	
3	Apr 01/2005	105	Apr 01/2005	101	Apr 01/2005
4	BLANK	106	Apr 01/2005	102	Apr 01/2005
54-30-02 ALLOWABLE DAMAGE 1		54-31-01 REPAIR 1		103	Apr 01/2005
101	Apr 01/2005	201	Apr 01/2005	104	BLANK
102	Apr 01/2005	202	BLANK	54-31-90 REPAIR 1	
103	Apr 01/2005	54-31-01 REPAIR 2		201	Apr 01/2005
104	Apr 01/2005	201	Apr 01/2005	202	BLANK
105	Apr 01/2005	202	Apr 01/2005	54-32-00 GENERAL	
106	Apr 01/2005	203	Apr 01/2005	1	Apr 15/2006
54-30-02 REPAIR 1		204	Apr 01/2005	2	BLANK
201	Apr 01/2005	54-31-01 REPAIR 3		54-32-01 REPAIR 1	
202	BLANK	201	Apr 01/2005	201	Apr 15/2006
54-30-02 REPAIR 2		202	Apr 01/2005	202	BLANK
201	Apr 01/2005	203	Apr 01/2005	54-33-00 GENERAL	
202	Apr 01/2005	204	Apr 01/2005	1	Apr 01/2005
54-30-90 IDENTIFICATION 1		205	Apr 01/2005	2	BLANK
1	Apr 01/2005	206	Apr 01/2005	54-33-01 IDENTIFICATION 1	
2	BLANK	207	Apr 01/2005	1	Apr 01/2005
54-30-90 ALLOWABLE DAMAGE 1		208	BLANK	2	Apr 01/2005
101	Apr 01/2005	54-31-02 IDENTIFICATION 1		3	Apr 01/2005
102	Apr 01/2005	1	Apr 01/2005	4	Apr 01/2005
103	Apr 01/2005	2	Apr 01/2005	5	Apr 01/2005
				6	BLANK

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54-33-01 ALLOWABLE DAMAGE 1		54-33-90 IDENTIFICATION 1 (cont)		54-34-01 REPAIR 2	
101	Apr 01/2005	2	BLANK	201	Apr 01/2005
102	Apr 01/2005	54-33-90 ALLOWABLE DAMAGE 1		202	Apr 01/2005
103	Apr 01/2005	101	Apr 01/2005	203	Apr 01/2005
104	Apr 01/2005	102	Apr 01/2005	204	Apr 01/2005
105	Apr 01/2005	103	Apr 01/2005	205	Apr 01/2005
106	Apr 01/2005	104	BLANK	206	Apr 01/2005
54-33-01 REPAIR 1		54-33-90 REPAIR 1		207	Apr 01/2005
201	Apr 01/2005	201	Apr 01/2005	208	Apr 01/2005
202	BLANK	202	BLANK	209	Apr 01/2005
54-33-01 REPAIR 2		54-34-01 IDENTIFICATION 1		210	Apr 01/2005
201	Apr 01/2005	1	Apr 01/2005	211	Apr 01/2005
202	Apr 01/2005	2	Apr 01/2005	212	BLANK
203	Apr 01/2005	3	Apr 01/2005	54-34-02 IDENTIFICATION 1	
204	Apr 01/2005	4	Apr 01/2005	1	Apr 01/2005
54-33-02 IDENTIFICATION 1		5	Apr 01/2005	2	Apr 01/2005
1	Apr 01/2005	6	Apr 01/2005	3	Apr 01/2005
2	Apr 01/2005	7	Apr 01/2005	4	Apr 01/2005
3	Apr 01/2005	8	Apr 01/2005	5	Apr 01/2005
4	BLANK	54-34-01 ALLOWABLE DAMAGE 1		6	Apr 01/2005
54-33-02 ALLOWABLE DAMAGE 1		101	Dec 15/2006	54-34-70 IDENTIFICATION 1	
101	Apr 01/2005	102	Apr 01/2005	1	Apr 01/2005
102	Apr 01/2005	103	Apr 01/2005	2	Apr 01/2005
103	Apr 01/2005	104	Apr 01/2005	3	Apr 01/2005
104	Apr 01/2005	105	Apr 01/2005	4	Apr 01/2005
105	Apr 01/2005	106	Apr 01/2005	5	Apr 01/2005
106	Apr 01/2005	107	Apr 01/2005	6	Apr 01/2005
54-33-02 REPAIR 1		108	Apr 01/2005	7	Apr 01/2005
201	Apr 01/2005	109	Apr 01/2005	8	Apr 01/2005
202	BLANK	110	BLANK	9	Apr 01/2005
54-33-02 REPAIR 2		54-34-01 REPAIR 1		10	Apr 01/2005
201	Apr 01/2005	201	Apr 01/2005	11	Apr 01/2005
202	Apr 01/2005	202	Apr 01/2005	12	BLANK
54-33-02 REPAIR 3		203	Apr 01/2005	54-34-70 ALLOWABLE DAMAGE 1	
201	Apr 01/2005	204	Apr 01/2005	101	Apr 01/2005
202	Apr 01/2005	205	Apr 01/2005	102	Apr 01/2005
203	Apr 01/2005	206	Apr 01/2005	103	Apr 01/2005
204	BLANK	207	Apr 01/2005	104	BLANK
54-33-90 IDENTIFICATION 1		208	Apr 01/2005	54-40-01 IDENTIFICATION 1	
1	Apr 01/2005			1	Apr 01/2005

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54-40-01 IDENTIFICATION 1 (cont)		54-40-30 ALLOWABLE DAMAGE 1 (cont)		54-41-02 ALLOWABLE DAMAGE 1	
2	BLANK	106	BLANK	101	Apr 01/2005
54-40-01 ALLOWABLE DAMAGE 1		54-40-30 REPAIR 1		102	Apr 01/2005
101	Apr 01/2005	201	Apr 01/2005	103	Apr 01/2005
102	Apr 15/2006	202	BLANK	104	BLANK
103	Apr 01/2005	54-40-90 IDENTIFICATION 1		54-41-02 REPAIR 1	
104	BLANK	1	Apr 01/2005	201	Apr 01/2005
54-40-01 REPAIR 1		2	BLANK	202	BLANK
201	Apr 01/2005	54-40-90 ALLOWABLE DAMAGE 1		54-41-02 REPAIR 2	
202	BLANK	101	Apr 01/2005	201	Apr 01/2005
54-40-01 REPAIR 2		102	Apr 01/2005	202	Apr 01/2005
201	Apr 01/2005	103	Apr 01/2005	54-41-30 IDENTIFICATION 1	
202	Apr 01/2005	104	BLANK	1	Apr 01/2005
203	Apr 01/2005	54-40-90 REPAIR 1		2	Apr 01/2005
204	BLANK	201	Apr 01/2005	3	Apr 01/2005
54-40-01 REPAIR 3		202	BLANK	4	BLANK
201	Apr 01/2005	54-41-01 IDENTIFICATION 1		54-41-30 ALLOWABLE DAMAGE 1	
202	Apr 01/2005	1	Apr 01/2005	101	Apr 01/2005
54-40-02 IDENTIFICATION 1		2	Apr 01/2005	102	Apr 01/2005
1	Apr 01/2005	54-41-01 ALLOWABLE DAMAGE 1		103	Apr 01/2005
2	BLANK	101	Dec 15/2006	104	Apr 01/2005
54-40-02 ALLOWABLE DAMAGE 1		102	Apr 01/2005	105	Apr 01/2005
101	Apr 01/2005	103	Apr 01/2005	106	Apr 01/2005
102	Apr 01/2005	104	BLANK	54-41-30 REPAIR GENERAL	
103	Apr 01/2005	54-41-01 REPAIR 1		201	Apr 01/2005
104	BLANK	201	Apr 01/2005	202	BLANK
54-40-02 REPAIR 1		202	BLANK	54-41-90 IDENTIFICATION 1	
201	Apr 01/2005	54-41-01 REPAIR 2		1	Apr 01/2005
202	Apr 01/2005	201	Apr 01/2005	2	BLANK
54-40-30 IDENTIFICATION 1		202	Apr 01/2005	54-41-90 ALLOWABLE DAMAGE 1	
1	Apr 01/2005	203	Apr 01/2005	101	Apr 01/2005
2	Apr 01/2005	204	Apr 01/2005	102	Apr 01/2005
3	Apr 01/2005	54-41-01 REPAIR 3		103	Apr 01/2005
4	BLANK	201	Apr 01/2005	104	BLANK
54-40-30 ALLOWABLE DAMAGE 1		202	Apr 01/2005	54-41-90 REPAIR 1	
101	Apr 01/2005	54-41-02 IDENTIFICATION 1		201	Apr 01/2005
102	Apr 01/2005	1	Apr 01/2005	202	BLANK
103	Apr 01/2005	2	BLANK	54-42-00 GENERAL	
104	Apr 01/2005			1	Dec 15/2007
105	Apr 01/2005			2	BLANK

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54-42-01 IDENTIFICATION 1		54-42-02 REPAIR 1		54-43-01 ALLOWABLE DAMAGE 1 (cont)	
1	Dec 15/2007	201	Dec 15/2007	104	BLANK
2	Apr 15/2006	202	Apr 15/2006	54-43-01 REPAIR 1	
3	Apr 15/2006	54-42-02 REPAIR 2		201	Apr 01/2005
4	BLANK	201	Dec 15/2007	202	BLANK
54-42-01 ALLOWABLE DAMAGE 1		202	Apr 15/2006	54-43-01 REPAIR 2	
101	Dec 15/2007	54-42-30 IDENTIFICATION 1		201	Apr 01/2005
102	Apr 15/2006	1	Apr 15/2006	202	Apr 01/2005
103	Apr 15/2006	2	Apr 15/2006	203	Apr 01/2005
104	Apr 15/2006	3	Apr 15/2006	204	Apr 01/2005
54-42-01 REPAIR GENERAL		4	Apr 15/2006	54-43-01 REPAIR 3	
201	Dec 15/2007	5	Apr 15/2006	201	Apr 01/2005
202	BLANK	6	BLANK	202	Apr 01/2005
54-42-01 REPAIR 1		54-42-30 ALLOWABLE DAMAGE 1		54-43-02 IDENTIFICATION 1	
201	Dec 15/2007	101	Apr 15/2006	1	Apr 01/2005
202	Apr 15/2006	102	Apr 15/2006	2	Apr 01/2005
54-42-01 REPAIR 2		103	Dec 15/2007	3	Apr 01/2005
201	Dec 15/2007	104	Dec 15/2007	4	BLANK
202	Apr 15/2006	105	Apr 15/2006	54-43-02 ALLOWABLE DAMAGE 1	
54-42-01 REPAIR 3		106	Apr 15/2006	101	Apr 01/2005
201	Dec 15/2007	107	Apr 15/2006	102	Apr 01/2005
202	Dec 15/2007	108	BLANK	103	Apr 01/2005
203	Dec 15/2007	54-42-30 REPAIR 1		104	BLANK
204	Dec 15/2007	201	Apr 15/2006	54-43-02 REPAIR 1	
205	Dec 15/2007	202	BLANK	201	Apr 01/2005
206	Dec 15/2007	54-42-30 REPAIR 2		202	Apr 01/2005
207	Dec 15/2007	201	Apr 15/2006	54-43-30 IDENTIFICATION 1	
208	BLANK	202	Apr 15/2006	1	Apr 01/2005
54-42-02 IDENTIFICATION 1		203	Apr 15/2006	2	Apr 01/2005
1	Dec 15/2007	204	Apr 15/2006	3	Apr 01/2005
2	Apr 15/2006	54-43-00 GENERAL		4	BLANK
54-42-02 ALLOWABLE DAMAGE 1		1	Apr 01/2005	54-43-30 ALLOWABLE DAMAGE 1	
101	Dec 15/2007	2	BLANK	101	Apr 01/2005
102	Apr 15/2006	54-43-01 IDENTIFICATION 1		102	Apr 01/2005
103	Apr 15/2006	1	Apr 01/2005	103	Apr 01/2005
104	BLANK	2	BLANK	104	Apr 01/2005
54-42-02 REPAIR GENERAL		54-43-01 ALLOWABLE DAMAGE 1		105	Apr 01/2005
201	Dec 15/2007	101	Apr 01/2005	106	BLANK
202	BLANK	102	Apr 01/2005		
		103	Apr 01/2005		

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54-43-30 REPAIR 1		54-44-01 REPAIR 3 (cont)		54-44-01 REPAIR 15 (cont)	
201	Apr 01/2005	203	Apr 15/2005	202	Apr 15/2005
202	BLANK	204	BLANK	54-44-01 REPAIR 16	
54-43-90 IDENTIFICATION 1		54-44-01 REPAIR 4		201	Apr 15/2005
1	Apr 01/2005	201	Apr 15/2005	202	Apr 15/2005
2	BLANK	202	BLANK	54-45-00 GENERAL	
54-43-90 ALLOWABLE DAMAGE 1		54-44-01 REPAIR 5		1	Dec 15/2007
101	Apr 01/2005	201	Apr 15/2005	2	BLANK
102	Apr 01/2005	202	Apr 15/2005	54-45-01 IDENTIFICATION 1	
103	Apr 01/2005	54-44-01 REPAIR 6		1	Dec 15/2007
104	BLANK	201	Apr 15/2005	2	Apr 01/2005
54-43-90 REPAIR 1		202	Apr 15/2005	3	Aug 15/2005
201	Apr 01/2005	54-44-01 REPAIR 7		4	Apr 01/2005
202	BLANK	201	Apr 15/2005	54-45-01 ALLOWABLE DAMAGE 1	
54-44-01 IDENTIFICATION 1		202	Apr 15/2005	101	Dec 15/2007
1	Apr 01/2005	54-44-01 REPAIR 8		102	Aug 15/2006
2	Apr 01/2005	201	Apr 15/2005	103	Aug 15/2006
3	Apr 01/2005	202	Apr 15/2005	104	Apr 01/2005
4	BLANK	54-44-01 REPAIR 9		105	Apr 01/2005
54-44-01 ALLOWABLE DAMAGE 1		201	Apr 15/2005	106	Apr 01/2005
101	Apr 01/2005	202	Apr 15/2005	107	Apr 01/2005
102	Apr 01/2005	54-44-01 REPAIR 10		108	Dec 15/2007
103	Apr 01/2005	201	Apr 15/2005	54-45-01 REPAIR GENERAL	
104	Apr 01/2005	202	Apr 15/2005	201	Dec 15/2007
105	Apr 01/2005	54-44-01 REPAIR 11		202	BLANK
106	Apr 01/2005	201	Apr 15/2005	54-45-01 REPAIR 1	
107	Apr 01/2005	202	BLANK	201	Dec 15/2007
108	BLANK	54-44-01 REPAIR 12		202	Apr 15/2006
54-44-01 REPAIR GENERAL		201	Dec 15/2008	203	Apr 01/2005
201	Apr 01/2005	202	Apr 15/2005	204	Apr 01/2005
202	Apr 01/2005	203	Apr 15/2005	205	Apr 01/2005
54-44-01 REPAIR 1		204	BLANK	206	Apr 01/2005
201	Apr 15/2005	54-44-01 REPAIR 13		207	Apr 01/2005
202	Apr 15/2005	201	Apr 15/2005	208	Apr 01/2005
54-44-01 REPAIR 2		202	Apr 15/2005	209	Apr 01/2005
201	Apr 15/2005	54-44-01 REPAIR 14		210	Apr 01/2005
202	Apr 15/2005	201	Apr 15/2005	211	Apr 01/2005
54-44-01 REPAIR 3		202	Apr 15/2005	212	Apr 01/2005
201	Apr 15/2005	54-44-01 REPAIR 15		54-45-01 REPAIR 2	
202	Apr 15/2005	201	Apr 15/2005	201	Dec 15/2007

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54-45-01 REPAIR 2 (cont)		54-45-01 REPAIR 6 (cont)		54-50-01 IDENTIFICATION 1 (cont)	
202	Dec 15/2007	205	Apr 01/2005	2	BLANK
203	Apr 15/2006	206	Apr 01/2005	54-50-01 ALLOWABLE DAMAGE 1	
204	Apr 15/2006	207	Apr 01/2005	101	Apr 01/2005
205	Apr 15/2006	208	BLANK	102	Apr 01/2005
206	Apr 01/2005	54-45-01 REPAIR 7		103	Apr 01/2005
207	Apr 01/2005	201	Dec 15/2007	104	BLANK
208	BLANK	202	Apr 01/2005	54-50-01 REPAIR 1	
54-45-01 REPAIR 3		203	Dec 15/2007	201	Apr 01/2005
201	Dec 15/2007	204	Dec 15/2007	202	Apr 01/2005
202	Dec 15/2007	205	Dec 15/2007	54-50-01 REPAIR 2	
203	Dec 15/2007	206	Dec 15/2007	201	Apr 15/2009
204	Dec 15/2007	207	Dec 15/2007	202	Apr 15/2009
205	Apr 01/2005	208	BLANK	203	Apr 15/2009
206	Apr 01/2005	54-45-01 REPAIR 8		204	BLANK
207	Apr 01/2005	201	Dec 15/2007	54-50-01 REPAIR 3	
208	Apr 01/2005	202	Dec 15/2007	201	Apr 15/2009
54-45-01 REPAIR 4		203	Dec 15/2007	202	Apr 01/2005
201	Dec 15/2007	204	Dec 15/2007	54-50-01 REPAIR 4	
202	Dec 15/2007	205	Dec 15/2007	201	Apr 15/2009
203	Dec 15/2007	206	Dec 15/2007	202	Apr 15/2009
204	Dec 15/2007	207	Dec 15/2007	54-50-01 REPAIR 5	
205	Dec 15/2007	208	BLANK	201	Apr 01/2005
206	Apr 15/2006	54-45-30 IDENTIFICATION 1		202	Apr 15/2009
207	Apr 01/2005	1	Apr 01/2005	203	Apr 01/2005
208	Apr 01/2005	2	Apr 01/2005	204	Apr 01/2005
54-45-01 REPAIR 5		3	Apr 01/2005	205	Apr 01/2005
201	Dec 15/2007	4	Apr 01/2005	206	BLANK
202	Dec 15/2007	54-45-30 ALLOWABLE DAMAGE 1		54-50-01 REPAIR 6	
203	Dec 15/2007	101	Dec 15/2006	201	Apr 01/2005
204	Dec 15/2007	102	Apr 01/2005	202	Apr 01/2005
205	Dec 15/2007	103	Dec 15/2007	203	Apr 01/2005
206	Apr 01/2005	104	Apr 01/2005	204	Apr 01/2005
207	Apr 01/2005	105	Apr 01/2005	205	Apr 01/2005
208	BLANK	106	Apr 01/2005	206	Apr 01/2005
54-45-01 REPAIR 6		54-45-30 REPAIR 1		54-50-01 REPAIR 7	
201	Dec 15/2007	201	Apr 01/2005	201	Apr 01/2005
202	Dec 15/2007	202	BLANK	202	Apr 01/2005
203	Dec 15/2007	54-50-01 IDENTIFICATION 1		203	Apr 01/2005
204	Apr 01/2005	1	Apr 01/2005	204	Apr 01/2005

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54-50-01 REPAIR 8		54-50-02 ALLOWABLE DAMAGE 2		54-50-70 REPAIR 1 (cont)	
201	Apr 01/2005	101	Apr 01/2005	204	BLANK
202	Apr 15/2009	102	BLANK	54-50-70 REPAIR 2	
203	Apr 01/2005	54-50-02 REPAIR 1		201	Apr 01/2005
204	Apr 01/2005	201	Apr 01/2005	202	Apr 01/2005
205	Apr 01/2005	202	Apr 01/2005	203	Apr 01/2005
206	Apr 01/2005	54-50-02 REPAIR 2		204	Apr 01/2005
54-50-01 REPAIR 9		201	Apr 01/2005	205	Apr 01/2005
201	Apr 01/2005	202	Apr 01/2005	206	Apr 01/2005
202	Apr 15/2009	203	Apr 01/2005	54-50-70 REPAIR 3	
203	Apr 01/2005	204	Apr 01/2005	201	Apr 01/2005
204	Apr 01/2005	205	Apr 01/2005	202	Apr 01/2005
205	Apr 01/2005	206	Apr 01/2005	203	Apr 01/2005
206	Apr 01/2005	207	Apr 01/2005	204	Apr 01/2005
54-50-01 REPAIR 10		208	BLANK	205	Apr 01/2005
201	Apr 01/2005	54-50-70 IDENTIFICATION 1		206	Apr 01/2005
202	Apr 01/2005	1	Apr 01/2005	54-50-70 REPAIR 4	
203	Apr 01/2005	2	Apr 01/2005	201	Apr 01/2005
204	Apr 01/2005	3	Apr 01/2005	202	Apr 01/2005
205	Apr 01/2005	4	Apr 01/2005	203	Apr 01/2005
206	Apr 01/2005	5	Apr 01/2005	204	Apr 01/2005
54-50-02 IDENTIFICATION 1		6	Apr 01/2005	205	Apr 01/2005
1	Apr 01/2005	7	Apr 01/2005	206	Apr 01/2005
2	Apr 01/2005	8	Apr 01/2005	207	Apr 01/2005
3	Apr 01/2005	54-50-70 ALLOWABLE DAMAGE 1		208	Apr 01/2005
4	Apr 01/2005	101	Dec 15/2006	209	Apr 01/2005
5	Apr 01/2005	102	Apr 01/2005	210	Apr 01/2005
6	Apr 01/2005	103	Apr 01/2005	211	Apr 01/2005
7	Apr 01/2005	104	Apr 01/2005	212	BLANK
8	Apr 01/2005	105	Apr 01/2005	54-50-71 IDENTIFICATION 1	
54-50-02 ALLOWABLE DAMAGE 1		106	Apr 01/2005	1	Apr 01/2005
101	Apr 01/2005	107	Apr 01/2005	2	Apr 01/2005
102	Apr 01/2005	108	BLANK	3	Apr 01/2005
103	Apr 01/2005	54-50-70 REPAIR GENERAL		4	BLANK
104	Apr 01/2005	201	Apr 01/2005	54-50-71 ALLOWABLE DAMAGE 1	
105	Apr 01/2005	202	BLANK	101	Apr 01/2005
106	Apr 01/2005	54-50-70 REPAIR 1		102	Apr 01/2005
107	Apr 01/2005	201	Apr 01/2005	103	Apr 01/2005
108	BLANK	202	Dec 15/2007	104	Apr 01/2005
		203	Apr 01/2005	105	Apr 01/2005

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106	BLANK	202	Apr 01/2005	201	Apr 01/2005
54-50-71 REPAIR GENERAL		203	Apr 15/2009	202	Apr 01/2005
201	Apr 01/2005	204	Apr 01/2005	203	Apr 01/2005
202	BLANK	205	Apr 01/2005	204	Apr 01/2005
54-50-71 REPAIR 1		206	Apr 01/2005	205	Apr 01/2005
201	Apr 01/2005	54-50-90 REPAIR 3		206	Apr 01/2005
202	Apr 01/2005	201	Apr 01/2005	54-51-02 IDENTIFICATION 1	
54-50-90 IDENTIFICATION 1		202	Apr 15/2009	1	Apr 01/2005
1	Apr 01/2005	203	Apr 01/2005	2	Apr 01/2005
2	Apr 01/2005	204	BLANK	3	Apr 01/2005
3	Apr 01/2005	54-50-90 REPAIR 4		4	Apr 01/2005
4	Apr 01/2005	201	Apr 01/2005	5	Apr 01/2005
54-50-90 IDENTIFICATION 2		202	Apr 15/2009	6	Apr 01/2005
1	Apr 01/2005	203	Apr 01/2005	54-51-02 ALLOWABLE DAMAGE 1	
2	Apr 01/2005	204	BLANK	101	Apr 01/2005
54-50-90 ALLOWABLE DAMAGE 1		54-51-01 IDENTIFICATION 1		102	Apr 01/2005
101	Dec 15/2006	1	Apr 01/2005	103	Apr 01/2005
102	Apr 01/2005	2	BLANK	104	Apr 01/2005
103	Apr 01/2005	54-51-01 ALLOWABLE DAMAGE 1		105	Apr 01/2005
104	Apr 01/2005	101	Apr 01/2005	106	Apr 01/2005
105	Apr 01/2005	102	Apr 01/2005	107	Apr 01/2005
106	Apr 01/2005	103	Apr 01/2005	108	Apr 01/2005
54-50-90 ALLOWABLE DAMAGE 2		104	BLANK	54-51-02 REPAIR 1	
101	Apr 01/2005	54-51-01 REPAIR 1		201	Apr 01/2005
102	Apr 01/2005	201	Apr 01/2005	202	Apr 01/2005
103	Apr 01/2005	202	Apr 01/2005	54-51-70 IDENTIFICATION 1	
104	Apr 01/2005	54-51-01 REPAIR 2		1	Apr 01/2005
105	Apr 01/2005	201	Apr 15/2009	2	Apr 01/2005
106	Apr 01/2005	202	Apr 01/2005	3	Apr 01/2005
107	Apr 01/2005	203	Apr 01/2005	4	Apr 01/2005
108	BLANK	204	BLANK	5	Apr 01/2005
54-50-90 REPAIR 1		54-51-01 REPAIR 3		6	Apr 01/2005
201	Apr 15/2006	201	Apr 15/2009	7	Apr 01/2005
202	Apr 01/2005	202	Apr 01/2005	8	Apr 01/2005
203	Apr 01/2005	54-51-01 REPAIR 4		54-51-70 ALLOWABLE DAMAGE 1	
204	Apr 01/2005	201	Apr 01/2005	101	Dec 15/2006
54-50-90 REPAIR 2		202	Apr 15/2009	102	Apr 01/2005
201	Apr 01/2005	203	Apr 01/2005	103	Apr 01/2005
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105	Apr 01/2005	201	Apr 01/2005	102	Apr 01/2005
106	Apr 01/2005	202	Apr 01/2005	103	Apr 01/2005
107	Apr 01/2005	203	Apr 01/2005	104	Apr 01/2005
108	BLANK	204	BLANK	105	Apr 01/2005
54-51-70 REPAIR GENERAL		54-51-71 IDENTIFICATION 1		106	Apr 01/2005
201	Apr 15/2006	1	Apr 01/2005	54-51-90 REPAIR 1	
202	BLANK	2	Apr 01/2005	201	Apr 01/2005
54-51-70 REPAIR 1		3	Apr 01/2005	202	Apr 01/2005
201	Apr 01/2005	4	BLANK	203	Apr 01/2005
202	Apr 01/2005	54-51-71 ALLOWABLE DAMAGE 1		204	Apr 01/2005
203	Apr 01/2005	101	Apr 01/2005	54-51-90 REPAIR 2	
204	BLANK	102	Apr 01/2005	201	Apr 01/2005
54-51-70 REPAIR 2		103	Apr 01/2005	202	Apr 01/2005
201	Apr 01/2005	104	Apr 01/2005	203	Apr 15/2009
202	Apr 01/2005	105	Apr 01/2005	204	Apr 01/2005
203	Apr 01/2005	106	BLANK	205	Apr 01/2005
204	Apr 01/2005	54-51-71 REPAIR GENERAL		206	Apr 01/2005
205	Apr 01/2005	201	Apr 01/2005	54-51-90 REPAIR 3	
206	Apr 01/2005	202	BLANK	201	Apr 01/2005
54-51-70 REPAIR 5		54-51-71 REPAIR 1		202	Apr 15/2009
201	Apr 01/2005	201	Apr 01/2005	203	Apr 01/2005
202	Apr 01/2005	202	Apr 01/2005	204	BLANK
203	Apr 01/2005	54-51-90 IDENTIFICATION 1		54-51-90 REPAIR 4	
204	BLANK	1	Apr 01/2005	201	Apr 01/2005
54-51-70 REPAIR 6		2	Apr 01/2005	202	Apr 15/2009
201	Apr 01/2005	3	Apr 01/2005	203	Apr 01/2005
202	Apr 01/2005	4	Apr 01/2005	204	BLANK
203	Apr 01/2005	54-51-90 IDENTIFICATION 2		54-52-01 IDENTIFICATION 1	
204	Apr 01/2005	1	Apr 01/2005	1	Apr 15/2006
205	Apr 01/2005	2	Apr 01/2005	2	BLANK
206	Apr 01/2005	54-51-90 ALLOWABLE DAMAGE 1		54-52-01 ALLOWABLE DAMAGE 1	
54-51-70 REPAIR 7		101	Dec 15/2006	101	Apr 15/2006
201	Apr 01/2005	102	Apr 01/2005	102	Apr 15/2006
202	Apr 01/2005	103	Apr 01/2005	103	Dec 15/2007
203	Apr 01/2005	104	Apr 01/2005	104	BLANK
204	Apr 01/2005	105	Apr 01/2005	54-52-01 REPAIR 1	
205	Apr 01/2005	106	Apr 01/2005	201	Apr 15/2006
206	Apr 01/2005	54-51-90 ALLOWABLE DAMAGE 2		202	Apr 15/2006
		101	Apr 01/2005		

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201	Apr 15/2009	2	Apr 15/2006	201	Apr 15/2006
202	Apr 15/2006	3	Dec 15/2007	202	Apr 15/2006
203	Apr 15/2006	4	Dec 15/2007	203	Apr 15/2006
204	BLANK	5	Aug 15/2006	204	BLANK
54-52-01 REPAIR 3		6	Aug 15/2006	54-52-70 REPAIR 5	
201	Apr 15/2009	7	Aug 15/2006	201	Apr 15/2006
202	Apr 15/2006	8	Aug 15/2006	202	Apr 15/2006
54-52-01 REPAIR 4		9	Aug 15/2006	203	Apr 15/2006
201	Dec 15/2007	10	BLANK	204	Apr 15/2006
202	Apr 15/2009	54-52-70 ALLOWABLE DAMAGE 1		205	Apr 15/2006
203	Apr 15/2006	101	Apr 15/2006	206	Apr 15/2006
204	Apr 15/2006	102	Apr 15/2006	54-52-71 IDENTIFICATION 1	
54-52-02 IDENTIFICATION 1		103	Apr 15/2006	1	Apr 15/2006
1	Apr 15/2006	104	Apr 15/2006	2	Apr 15/2006
2	Apr 15/2006	105	Dec 15/2007	3	Apr 15/2006
3	Dec 15/2007	106	Dec 15/2007	4	BLANK
4	Apr 15/2006	54-52-70 REPAIR GENERAL		54-52-71 ALLOWABLE DAMAGE 1	
5	Dec 15/2007	201	Apr 15/2006	101	Apr 15/2006
6	BLANK	202	BLANK	102	Apr 15/2006
54-52-02 ALLOWABLE DAMAGE 1		54-52-70 REPAIR 1		103	Apr 15/2006
101	Dec 15/2007	201	Dec 15/2007	104	Apr 15/2006
102	Apr 15/2006	202	Dec 15/2007	105	Apr 15/2006
103	Apr 15/2006	203	Apr 15/2006	106	BLANK
104	Apr 15/2006	204	Dec 15/2007	54-52-71 REPAIR GENERAL	
105	Apr 15/2006	54-52-70 REPAIR 2		201	Apr 15/2006
106	Apr 15/2006	201	Apr 15/2006	202	BLANK
107	Apr 15/2006	202	Dec 15/2007	54-52-71 REPAIR 1	
108	BLANK	203	Dec 15/2007	201	Apr 15/2006
54-52-02 REPAIR GENERAL		204	Apr 15/2006	202	Apr 15/2006
201	Apr 15/2006	205	Apr 15/2006	54-52-71 REPAIR 2	
202	BLANK	206	Apr 15/2006	201	Dec 15/2007
54-52-02 REPAIR 1		54-52-70 REPAIR 3		202	Apr 15/2006
201	Apr 15/2006	201	Apr 15/2006	203	Apr 15/2006
202	Apr 15/2006	202	Apr 15/2006	204	Apr 15/2006
54-52-02 REPAIR 2		203	Apr 15/2006	54-52-90 IDENTIFICATION 1	
201	Apr 15/2009	204	Apr 15/2006	1	Aug 15/2006
202	BLANK	205	Apr 15/2006	2	Apr 15/2006
54-52-70 IDENTIFICATION 1		206	Apr 15/2006	3	Apr 15/2006
1	Apr 15/2006			4	Apr 15/2006

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1	Aug 15/2006	201	Aug 15/2006	206	Apr 01/2005
2	Apr 15/2006	202	Apr 15/2009	54-53-01 REPAIR 7	
54-52-90 ALLOWABLE DAMAGE 1		203	Apr 15/2006	201	Dec 15/2007
101	Dec 15/2006	204	BLANK	202	Dec 15/2008
102	Dec 15/2007	54-53-01 IDENTIFICATION 1		203	Apr 01/2005
103	Apr 15/2006	1	Apr 01/2005	204	Apr 01/2005
104	Apr 15/2006	2	Apr 01/2005	54-53-01 REPAIR 8	
105	Apr 15/2006	54-53-01 ALLOWABLE DAMAGE 1		201	Dec 15/2007
106	Apr 15/2006	101	Dec 15/2006	202	Apr 15/2009
54-52-90 ALLOWABLE DAMAGE 2		102	Apr 01/2005	203	Apr 01/2005
101	Apr 15/2006	103	Apr 01/2005	204	Apr 01/2005
102	Apr 15/2006	104	BLANK	205	Apr 01/2005
103	Apr 15/2006	54-53-01 REPAIR 1		206	Apr 01/2005
104	Apr 15/2006	201	Apr 01/2005	54-53-01 REPAIR 9	
105	Apr 15/2006	202	Apr 01/2005	201	Dec 15/2007
106	Apr 15/2006	54-53-01 REPAIR 2		202	Apr 15/2009
107	Apr 15/2006	201	Apr 15/2009	203	Apr 01/2005
108	BLANK	202	Apr 01/2005	204	Apr 01/2005
54-52-90 REPAIR GENERAL		203	Apr 01/2005	205	Apr 01/2005
201	Apr 01/2005	204	BLANK	206	Apr 01/2005
202	BLANK	54-53-01 REPAIR 3		54-53-01 REPAIR 10	
54-52-90 REPAIR 1		201	Apr 15/2009	201	Apr 15/2006
201	Dec 15/2007	202	Apr 01/2005	202	Apr 01/2005
202	Apr 15/2006	54-53-01 REPAIR 4		203	Apr 01/2005
203	Apr 15/2006	201	Apr 15/2009	204	Apr 01/2005
204	Apr 15/2006	202	Apr 01/2005	205	Apr 01/2005
54-52-90 REPAIR 2		54-53-01 REPAIR 5		206	Apr 01/2005
201	Aug 15/2006	201	Dec 15/2007	54-53-02 IDENTIFICATION 1	
202	Apr 15/2009	202	Apr 15/2009	1	Apr 01/2005
203	Apr 15/2006	203	Apr 01/2005	2	Apr 01/2005
204	Apr 15/2006	204	Apr 01/2005	3	Apr 01/2005
205	Apr 15/2006	205	Apr 01/2005	4	Apr 01/2005
206	BLANK	206	BLANK	5	Apr 01/2005
54-52-90 REPAIR 3		54-53-01 REPAIR 6		6	Apr 01/2005
201	Apr 15/2009	201	Dec 15/2007	7	Apr 01/2005
202	Apr 15/2009	202	Apr 01/2005	8	BLANK
203	Apr 15/2009	203	Apr 01/2005	54-53-02 IDENTIFICATION 2	
204	Apr 15/2009	204	Apr 01/2005	1	Apr 01/2005
		205	Apr 01/2005	2	BLANK

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101	Apr 01/2005	105	Apr 01/2005	209	Apr 01/2005
102	Apr 01/2005	106	Apr 01/2005	210	Apr 01/2005
103	Apr 01/2005	54-53-70 REPAIR GENERAL		211	Apr 01/2005
104	Apr 01/2005	201	Apr 01/2005	212	BLANK
105	Apr 01/2005	202	BLANK	54-53-71 IDENTIFICATION 1	
106	Apr 01/2005	54-53-70 REPAIR 1		1	Apr 01/2005
107	Apr 01/2005	201	Apr 01/2005	2	Apr 01/2005
108	BLANK	202	Apr 01/2005	3	Apr 01/2005
54-53-02 ALLOWABLE DAMAGE 2		203	Apr 01/2005	4	BLANK
101	Apr 01/2005	204	BLANK	54-53-71 ALLOWABLE DAMAGE 1	
102	BLANK	54-53-70 REPAIR 2		101	Apr 01/2005
54-53-02 REPAIR 1		201	Apr 01/2005	102	Apr 01/2005
201	Apr 01/2005	202	Apr 01/2005	103	Apr 01/2005
202	Apr 01/2005	203	Apr 01/2005	104	Apr 01/2005
54-53-02 REPAIR 2		204	Apr 01/2005	54-53-71 REPAIR GENERAL	
201	Apr 01/2005	205	Apr 01/2005	201	Apr 01/2005
202	Dec 15/2005	206	Apr 01/2005	202	BLANK
203	Apr 01/2005	54-53-70 REPAIR 3		54-53-71 REPAIR 1	
204	Apr 01/2005	201	Dec 15/2007	201	Apr 01/2005
205	Apr 01/2005	202	Apr 01/2005	202	Apr 01/2005
206	Apr 01/2005	203	Apr 01/2005	54-53-90 IDENTIFICATION 1	
207	Apr 01/2005	204	Apr 01/2005	1	Apr 01/2005
208	BLANK	205	Apr 01/2005	2	Apr 01/2005
54-53-70 IDENTIFICATION 1		206	Apr 01/2005	3	Apr 01/2005
1	Dec 15/2006	54-53-70 REPAIR 4		4	Apr 01/2005
2	Dec 15/2006	201	Apr 01/2005	54-53-90 IDENTIFICATION 2	
3	Dec 15/2006	202	Apr 01/2005	1	Apr 01/2005
4	Dec 15/2006	203	Apr 01/2005	2	Apr 01/2005
5	Dec 15/2006	204	BLANK	54-53-90 ALLOWABLE DAMAGE 1	
6	Apr 15/2007	54-53-70 REPAIR 5		101	Dec 15/2006
7	Apr 15/2007	201	Apr 01/2005	102	Apr 01/2005
8	Apr 15/2007	202	Aug 15/2006	103	Apr 01/2005
9	Apr 15/2007	203	Apr 01/2005	104	Apr 01/2005
10	BLANK	204	Apr 01/2005	105	Apr 01/2005
54-53-70 ALLOWABLE DAMAGE 1		205	Dec 15/2006	106	Apr 01/2005
101	Apr 01/2005	206	Apr 01/2005	54-53-90 ALLOWABLE DAMAGE 2	
102	Apr 01/2005	207	Apr 01/2005	101	Apr 01/2005
103	Apr 01/2005	208	Apr 01/2005	102	Apr 01/2005
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104	Apr 01/2005	201	Apr 15/2009	11	Apr 01/2005
105	Apr 01/2005	202	Apr 01/2005	12	Apr 01/2005
106	Apr 01/2005	203	Apr 01/2005	54-54-70 ALLOWABLE DAMAGE 1	
107	Apr 01/2005	204	BLANK	101	Dec 15/2006
108	BLANK	54-54-02 IDENTIFICATION 1		102	Apr 01/2005
54-53-90 REPAIR 1		1	Apr 01/2005	103	Apr 01/2005
201	Apr 01/2005	2	Apr 01/2005	104	Apr 01/2005
202	Apr 01/2005	3	Apr 01/2005	105	Apr 01/2005
203	Apr 01/2005	4	Apr 01/2005	106	Apr 01/2005
204	Apr 01/2005	5	Apr 01/2005	107	Apr 01/2005
54-53-90 REPAIR 2		6	Apr 01/2005	108	BLANK
201	Apr 01/2005	7	Apr 01/2005	54-54-70 REPAIR 1	
202	Apr 01/2005	8	Apr 01/2005	201	Apr 01/2005
203	Apr 15/2009	9	Apr 01/2005	202	Apr 01/2005
204	Apr 01/2005	10	BLANK	54-54-71 IDENTIFICATION 1	
205	Apr 01/2005	54-54-02 ALLOWABLE DAMAGE 1		1	Apr 01/2005
206	Apr 01/2005	101	Apr 01/2005	2	Apr 01/2005
54-53-90 REPAIR 3		102	Apr 01/2005	3	Apr 01/2005
201	Apr 01/2005	103	Apr 01/2005	4	Apr 01/2005
202	Apr 15/2009	104	Apr 01/2005	5	Apr 01/2005
203	Apr 01/2005	105	Apr 01/2005	6	Apr 01/2005
204	BLANK	106	Apr 01/2005	7	Apr 01/2005
54-53-90 REPAIR 4		107	Apr 01/2005	8	Apr 01/2005
201	Apr 01/2005	108	Apr 01/2005	9	Apr 01/2005
202	Apr 15/2009	109	Apr 01/2005	10	Apr 01/2005
203	Apr 01/2005	110	Apr 01/2005	11	Apr 01/2005
204	BLANK	111	Apr 01/2005	12	Apr 01/2005
54-54-01 IDENTIFICATION 1		112	Apr 01/2005	13	Apr 01/2005
1	Apr 01/2005	54-54-70 IDENTIFICATION 1		14	BLANK
2	Apr 01/2005	1	Apr 01/2005	54-54-71 ALLOWABLE DAMAGE 1	
3	Apr 01/2005	2	Apr 01/2005	101	Apr 01/2005
4	BLANK	3	Apr 01/2005	102	Apr 01/2005
54-54-01 ALLOWABLE DAMAGE 1		4	Apr 01/2005	103	Apr 01/2005
101	Apr 01/2005	5	Apr 01/2005	104	Apr 01/2005
102	Apr 01/2005	6	Apr 01/2005	105	Apr 01/2005
103	Apr 01/2005	7	Apr 01/2005	106	Apr 01/2005
104	Apr 01/2005	8	Apr 01/2005	107	Apr 01/2005
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110	Apr 01/2005	202	Apr 15/2009		
54-54-90 IDENTIFICATION 1		203	Apr 01/2005		
1	Apr 01/2005	204	BLANK		
2	BLANK				
54-54-90 IDENTIFICATION 2					
1	Apr 01/2005				
2	Apr 01/2005				
54-54-90 ALLOWABLE DAMAGE 1					
101	Dec 15/2006				
102	Apr 01/2005				
103	Apr 01/2005				
104	Apr 01/2005				
54-54-90 ALLOWABLE DAMAGE 2					
101	Apr 01/2005				
102	Apr 01/2005				
103	Apr 01/2005				
104	Apr 01/2005				
105	Apr 01/2005				
106	Apr 01/2005				
107	Apr 01/2005				
108	BLANK				
54-54-90 REPAIR GENERAL					
201	Apr 01/2005				
202	BLANK				
54-54-90 REPAIR 1					
201	Apr 01/2005				
202	Apr 15/2009				
203	Apr 01/2005				
204	Apr 01/2005				
205	Apr 01/2005				
206	BLANK				
54-54-90 REPAIR 2					
201	Apr 01/2005				
202	Apr 15/2009				
203	Apr 01/2005				
204	BLANK				
54-54-90 REPAIR 3					
201	Apr 01/2005				

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<u>INLET COWL SKIN - JT9D-7R4 ENGINE</u>	54-10-01
IDENTIFICATION 1 - Inlet Cowl Skin - JT9D-7R4 Engine	
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REPAIR 1 - Inlet Cowl Structure - Aft Mounting Ring - JT9D-7R4 Engine	
REPAIR 2 - Thermal Anti-Icing D-Duct Skin - JT9D-7R4 Engine	
REPAIR 3 - Inlet Cowl Structure - Aft Bulkhead Web - JT9D-7R4 Engine	
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IDENTIFICATION 1 - Inlet Cowl Chine - JT9D-7R4 Engine	
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REPAIR 1 - Inlet Cowl Structure - Aft Mounting Ring - CF6-80A Engine	
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REPAIR 1 - Primary Exhaust Skin - PW4000 Engine	
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ALLOWABLE DAMAGE 1 - Core Cowl Attachment Fittings - PW4000 Engine	
REPAIR 1 - Core Cowl Attachment Fittings - PW4000 Engine	
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REPAIR GENERAL - Integrated Nozzle Assembly - RB211 Engines

REPAIR 1 - Integrated Nozzle Assembly Aft Duct - Nicks, Scratches, Dents and Gouges - RB211 Engines

REPAIR 2 - Integrated Nozzle Assembly Aft Duct - Cracks Less Than 2.0 Inches in Length - RB211 Engines

REPAIR 3 - Integrated Nozzle Assembly Aft Duct - Deep Dents and Partial Penetrations - RB211 Engines

REPAIR 4 - Integrated Nozzle Assembly Aft Duct - Small Dents Nicks and Small Penetrations - RB211 Engine

REPAIR 5 - Integrated Nozzle Assembly Aft Duct - Large Radius Dents in Inner Skins - RB211 Engines

REPAIR 6 - Integrated Nozzle Assembly Aft Duct - Large Radius Dents in Outer Skins - RB211 Engines

REPAIR 7 - Integrated Nozzle Assembly Aft Duct - Small Full Penetrations - RB211 Engines

REPAIR 8 - Integrated Nozzle Assembly Aft Duct - Full Penetration with Unequal Skin Damage - RB211 Engines

REPAIR 9 - Integrated Nozzle Assembly Forward Duct - Deep Gouges - RB211 Engines

REPAIR 10 - Integrated Nozzle Assembly Forward Duct - Cracks Less Than 2.0 Inches in Length - RB211 Engines

REPAIR 11 - Integrated Nozzle Assembly Forward Duct - Small Dents - RB211 Engines

REPAIR 12 - Integrated Nozzle Assembly Forward Duct - Damage Up to 5.0 Inches in Diameter - Deep Dents, Gouges, and Partial Penetrations - RB211 Engines

REPAIR 13 - Integrated Nozzle Assembly Forward Duct - Large Radius Dents in Inner Skins - RB211 Engines

REPAIR 14 - Integrated Nozzle Assembly Forward Duct - Large Radius Dents in Outer Skin - RB211 Engines

REPAIR 15 - Integrated Nozzle Assembly Forward Duct - Small Full Penetrations - RB211 Engines

REPAIR 16 - Integrated Nozzle Assembly Forward Duct - Full Penetration with Unequal Skin Damage - RB211 Engines

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<u>CORE COWL - CF6-80C2 ENGINE (WITH A SERIAL NUMBER 3004001 AND ON)</u>	54-45-01
IDENTIFICATION 1 - Core Cowl Skin - CF6-80C2 Engine	
ALLOWABLE DAMAGE 1 - Core Cowl Skin - CF6-80C2 Engine	
REPAIR GENERAL - Core Cowl Repair - CF6-80C2 Engine	
REPAIR 1 - Core Cowl Aluminum Skin - CF6-80C2 Engine	
REPAIR 2 - Titanium Fairing Flush Patch Repair - CF6-80C2 Engine	
REPAIR 3 - Aluminum Zee Frame Repair - CF6-80C2 Engine	
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ALLOWABLE DAMAGE 1 - Strut Skin - JT9D-7R4 Engine	
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REPAIR 2 - Strut Side Skin Panels - JT9D-7R4 Engine	
REPAIR 3 - Strut, Aft Upper Spar Web Repair - Adjacent to the Hydraulic Fitting Hole - JT9D-7R4 Engine	
REPAIR 4 - Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - JT9D-7R4 Engine	
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REPAIR 7 - Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - JT9D-7R4 Engine

REPAIR 8 - Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine

REPAIR 9 - Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine

REPAIR 10 - Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine

STRUT STRUCTURE - JT9D-7R4 ENGINE

54-50-02

IDENTIFICATION 1 - Strut Structure - JT9D-7R4 Engine

ALLOWABLE DAMAGE 1 - Strut Structure - JT9D-7R4 Engine

ALLOWABLE DAMAGE 2 - Attachment Linkage - JT9D-7R4 Engine

REPAIR 1 - Strut Structure - JT9D-7R4 Engine

REPAIR 2 - Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine

STRUT FAIRING SKIN - JT9D-7R4 ENGINE

54-50-70

IDENTIFICATION 1 - Strut Fairing Skin - JT9D-7R4 Engine

ALLOWABLE DAMAGE 1 - Strut Fairing Skin - JT9D-7R4 Engine

REPAIR GENERAL - Service Bulletin Repair Chart - JT9D-7R4 Engine

REPAIR 1 - Strut Fairing Skins - JT9D-7R4 Engine

REPAIR 2 - Aft Pylon Fairing - Trailing Edge - JT9D-7R4 Engine

REPAIR 3 - Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack - JT9D-7R4 Engine

REPAIR 4 - Aft Pylon Fairing Delamination - JT9D-7R4 Engine

STRUT FAIRING STRUCTURE - JT9D-7R4 ENGINE

54-50-71

IDENTIFICATION 1 - Strut Fairing Structure - JT9D-7R4 Engine

ALLOWABLE DAMAGE 1 - Strut Fairing Structure - JT9D-7R4 Engine

REPAIR GENERAL - Service Bulletin Repair Chart - JT9D-7R4 Engine

REPAIR 1 - Strut Fairing Structure - JT9D-7R4 Engine

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54-50-90

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IDENTIFICATION 2 - Attachment Linkage - JT9D-7R4 Engine

ALLOWABLE DAMAGE 1 - Strut Attachment Fittings - JT9D-7R4 Engine

ALLOWABLE DAMAGE 2 - Strut Attachment Links - JT9D-7R4 Engine

REPAIR 1 - Strut Attachment Fittings - JT9D-7R4 Engine

REPAIR 2 - Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine

REPAIR 3 - Midspar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine

REPAIR 4 - Lower Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine

STRUT SKIN - CF6-80A ENGINE

54-51-01

IDENTIFICATION 1 - Strut Skin - CF6-80A Engine

ALLOWABLE DAMAGE 1 - Strut Skin - CF6-80A Engine

REPAIR 1 - Strut Skin Repair - CF6-80A Engine

REPAIR 2 - Strut Side Skin Panel Repair - CF6-80A Engine

REPAIR 3 - Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - CF6-80A Engine

REPAIR 4 - Strut, Aft Upper Spar Web Repair - CF6-80A Engine

REPAIR 5 - Strut, Forward Upper Spar Web Repair - CF6-80A Engine

STRUT STRUCTURE - CF6-80A ENGINE

54-51-02

IDENTIFICATION 1 - Strut Structure - CF6-80A Engine

ALLOWABLE DAMAGE 1 - Strut Structure - CF6-80A Engine

REPAIR 1 - Strut Structure - CF6-80A Engine

STRUT FAIRING SKIN - CF6-80A ENGINE

54-51-70

IDENTIFICATION 1 - Strut Fairing Skin - CF6-80A Engine

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REPAIR GENERAL - Service Bulletin Repairs - CF6-80C2 Engine

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REPAIR 2 - Aft Pylon Fairing - Trailing Edge - CF6-80A Engine

REPAIR 5 - Interim Repair - Aft Pylon - Aft Strut Fairing Lower Pan Crack - CF6-80A Engine

REPAIR 6 - Strut Aft Fairing Trailing Edge Bulkhead Crack - CF6-80A Engine

REPAIR 7 - Inboard Skirt Beam Panel Tab Crack - CF6-80A Engine

REPAIR 8 - Strut Fairing Skin Panel Crack - CF6-80A Engine

STRUT FAIRING STRUCTURE - CF6-80A ENGINE

54-51-71

IDENTIFICATION 1 - Strut Fairing Structure - CF6-80A Engine

ALLOWABLE DAMAGE 1 - Strut Fairing Structure - CF6-80A Engine

REPAIR GENERAL - Service Bulletin Repairs - CF6-80A Engine

REPAIR 1 - Strut Fairing Structure - CF6-80A Engine

ATTACHMENT FITTINGS - STRUT - CF6-80A ENGINE

54-51-90

IDENTIFICATION 1 - Strut Attachment Fitting - CF6-80A Engine

IDENTIFICATION 2 - Strut Attachment Link - CF6-80A Engine

ALLOWABLE DAMAGE 1 - Strut Attachment Fittings - CF6-80A Engine

ALLOWABLE DAMAGE 2 - Strut Attachment Links - CF6-80A Engine

REPAIR 1 - Strut Attachment Fitting - CF6-80A Engine

REPAIR 2 - Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine

REPAIR 3 - Midspar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine

REPAIR 4 - Lower Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine

STRUT SKIN - CF6-80C2 ENGINE

54-52-01

IDENTIFICATION 1 - Strut Skin - CF6-80C2 Engine

ALLOWABLE DAMAGE 1 - Strut Skin - CF6-80C2 Engine

REPAIR 1 - Strut Skin - CF6-80C2 Engine

REPAIR 2 - Strut Side Skin Panel - CF6-80C2 Engine

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REPAIR 3 - Strut, Aft Upper Spar Web - Adjacent to the Thermal Anti-Ice Duct - CF6-80C2 Engine

REPAIR 4 - Strut, Aft Upper Spar Web - CF6-80C2 Engine

STRUT STRUCTURE - CF6-80C2 ENGINE

54-52-02

IDENTIFICATION 1 - Strut Structure - CF6-80C2 Engine

ALLOWABLE DAMAGE 1 - Strut Structure - CF6-80C2 Engine

REPAIR GENERAL - Service Bulletin Repair Chart - CF6-80C2 Engine

REPAIR 1 - Strut Structure - CF6-80C2 Fan Cowl Support Beam

REPAIR 2 - REMOVED - Nacelle Station 285 Clip and Frame Time-Limited - CF6-80C2 Engine

STRUT FAIRING SKIN - CF6-80C2 ENGINE

54-52-70

IDENTIFICATION 1 - Strut Fairing Skin - CF6-80C2 Engine

ALLOWABLE DAMAGE 1 - Strut Fairing Skin - CF6-80C2 Engine

REPAIR GENERAL - Service Bulletin Repair Chart - CF6-80C2 Engine

REPAIR 1 - Strut Fairing Skin - CF6-80C2 Engine

REPAIR 2 - Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine

REPAIR 3 - Strut Aft Fairing Trailing Edge Bulkhead Crack - CF6-80C2 Engine

REPAIR 4 - Strut Fairing Skin Panel - CF6-80C2 Engine

REPAIR 5 - Inboard Skirt Beam Panel Tab Crack - CF6-80C2 Engine

STRUT FAIRING STRUCTURE - CF6-80C2 ENGINE

54-52-71

IDENTIFICATION 1 - Strut Fairing Structure - CF6-80C2 Engine

ALLOWABLE DAMAGE 1 - Strut Fairing Structure - CF6-80C2 Engine

REPAIR GENERAL - Service Bulletin Repair Chart - CF6-80C2 Engine

REPAIR 1 - Strut Fairing Structure - CF6-80C2 Engine

REPAIR 2 - Forward Strut Fairing Frame at STA 148.50 - CF6-80C2 Engine

ATTACHMENT FITTINGS - STRUT - CF6-80C2 ENGINE

54-52-90

IDENTIFICATION 1 - Strut Attachment Fitting - CF6-80C2 Engine

IDENTIFICATION 2 - Strut Attachment Link - CF6-80C2 Engine

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ALLOWABLE DAMAGE 2 - Strut Attachment Links - CF6-80C2 Engine

REPAIR GENERAL - Service Bulletin Repairs

REPAIR 1 - Strut Attachment Fittings - CF6-80C2 Engine

REPAIR 2 - Forward Upper Spar Fitting, Lug Hole - CF6-80C2 Engine

REPAIR 3 - Midspar Fitting, Lug Hole - CF6-80C2 Engine

REPAIR 4 - Lower Spar Fitting, Lug Hole - CF6-80C2 Engine

STRUT SKIN - PW4000 ENGINE

54-53-01

IDENTIFICATION 1 - Strut Skin - PW4000 Engine

ALLOWABLE DAMAGE 1 - Strut Skin - PW4000 Engine

REPAIR 1 - Strut Skin - PW4000 Engine

REPAIR 2 - Strut Side Skin Panel - PW4000 Engine

REPAIR 3 - Strut, Aft Upper Spar Web Adjacent to the Hydraulic Fitting Hole - PW4000 Engine

REPAIR 4 - Strut, Aft Upper Spar Web Adjacent to the Thermal Anti-Ice Duct - PW4000 Engine

REPAIR 5 - Strut, Aft Upper Spar Web - PW4000 Engine

REPAIR 6 - Strut Side Skin Panel at Forward Torque Box Access Hole - PW4000 Engine

REPAIR 7 - Strut Side Skin Cutout at Aft Trapezoidal Access Door - PW4000 Engine

REPAIR 8 - Strut, Midspar Aft Web Crack at NAC. STA. 230 - PW4000 Engine

REPAIR 9 - Strut, Aft Upper Spar Web Corner Crack - PW4000 Engine

REPAIR 10 - Strut Forward Upper Spar Web Crack at NAC STA 156 Drain Holes - PW 4000 Engine

STRUT STRUCTURE - PW4000 ENGINE

54-53-02

IDENTIFICATION 1 - Strut Structure - PW4000 Engine

IDENTIFICATION 2 - Attachment Linkage - PW4000 Engine

ALLOWABLE DAMAGE 1 - Strut Structure - PW4000 Engine

ALLOWABLE DAMAGE 2 - Attachment Linkage - PW4000 Engine

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IDENTIFICATION 1 - Strut Fairing Skin Assembly - PW4000 Engine	
ALLOWABLE DAMAGE 1 - Strut Fairing Skin - PW4000 Engine	
REPAIR GENERAL - Service Bulletin Repair Chart	
REPAIR 1 - Strut Fairing Skin - PW4000 Engine	
REPAIR 2 - Aft Pylon Fairing - Trailing Edge - PW4000 Engine	
REPAIR 3 - Strut Aft Fairing Trailing Edge Bulkhead Crack - PW4000 Engine	
REPAIR 4 - Strut Fairing Skin Panel Crack - PW4000 Engine	
REPAIR 5 - Aft Pylon Fairing Delamination - PW4000 Engine	
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<u>STRUT ATTACHMENT FITTINGS - PW4000 ENGINE</u>	54-53-90
IDENTIFICATION 1 - Strut Attachment Fittings - PW4000 Engine	
IDENTIFICATION 2 - Attachment Linkage - PW4000 Engine	
ALLOWABLE DAMAGE 1 - Strut Attachment Fittings - PW4000 Engine	
ALLOWABLE DAMAGE 2 - Strut Attachment Links - PW4000 Engine	
REPAIR 1 - Strut Attachment Fittings - PW4000 Engine	
REPAIR 2 - Forward Upper Spar Fitting Lug Hole - PW4000 Engine	
REPAIR 3 - Midspar Fitting Lug Hole - PW4000 Engine	
REPAIR 4 - Lower Spar Fitting Lug Hole - PW4000 Engine	
<u>STRUT SKIN - RB211-524 ENGINES</u>	54-54-01
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ALLOWABLE DAMAGE 1 - Strut Structure - RB211-524 Engine	
<u>STRUT FAIRING SKIN - RB211-524 ENGINES</u>	54-54-70
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ALLOWABLE DAMAGE 1 - Strut Fairing Skin - RB211-524 Engine	
REPAIR 1 - Strut Fairing Skin - RB211-524 Engine	
<u>STRUT FAIRING STRUCTURE - RB211-524 ENGINES</u>	54-54-71
IDENTIFICATION 1 - Strut Fairing Structure - RB211-524 Engine	
ALLOWABLE DAMAGE 1 - Strut Fairing Structure - RB211-524 Engine	
<u>ATTACHMENT FITTINGS - STRUT - RB211-524 ENGINES</u>	54-54-90
IDENTIFICATION 1 - Strut Attachment Fittings - RB211-524 Engine	
IDENTIFICATION 2 - Attachment Linkage - RB211-524 Engine	
ALLOWABLE DAMAGE 1 - Strut Attachment Fittings - RB211-524 Engine	
ALLOWABLE DAMAGE 2 - Strut Attachment Links - RB211-524 Engine	
REPAIR GENERAL - Strut Attachment Fittings - RB211-524 Engines	
REPAIR 1 - Forward Upper Spar Fitting, Lug Hole - RB211-524 Engine	
REPAIR 2 - Aft Upper Spar Fitting, Lug Hole - RB211-524 Engine	
REPAIR 3 - Lower Spar Fitting, Lug Hole - RB211-524 Engine	

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GENERAL - NACELLES / PYLONS

1. General

- A. Chapter 54 contains information on allowable damage, identification and repairs to the structural components of the nacelles and pylons.
- B. Refer to Figure 1/GENERAL for the nacelle station diagrams.
- C. Refer to Figure 2/GENERAL for the Boeing and supplier nacelle reference diagram.
- D. Refer to Figure 3/GENERAL for the nacelle and pylon structure diagram.

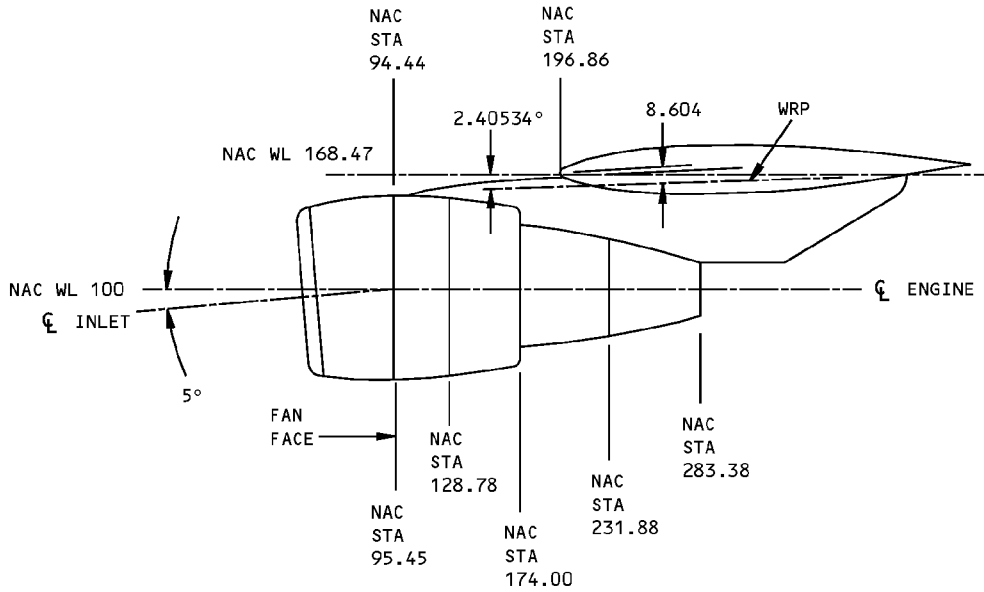
2. Special Instructions for Repair of Inlet Cowl

CAUTION: MAKE SURE YOU CLEAN AREAS ADJACENT TO THE REPAIR AREA WITH A VACUUM CLEANER AND SEAL CAVITIES TO PREVENT THE ENTRY OF DEBRIS DURING THE REPAIR PROCEDURE. AFTER THE REPAIR IS COMPLETED, CLEAN AND DO A CHECK FOR DEBRIS WITH X-RAY INSPECTION PROCEDURES AS GIVEN IN PART 2 OF THE NDT MANUAL. IF YOU DO NOT, FOREIGN OBJECT DAMAGE CAN BE THE RESULT.

- A. Loose debris, such as bolts, rivets, nuts and washers, remaining in the inlet cowl after repair could cause engine damage.
- B. Refer to Figure 1/GENERAL for acoustic panel repair limits.

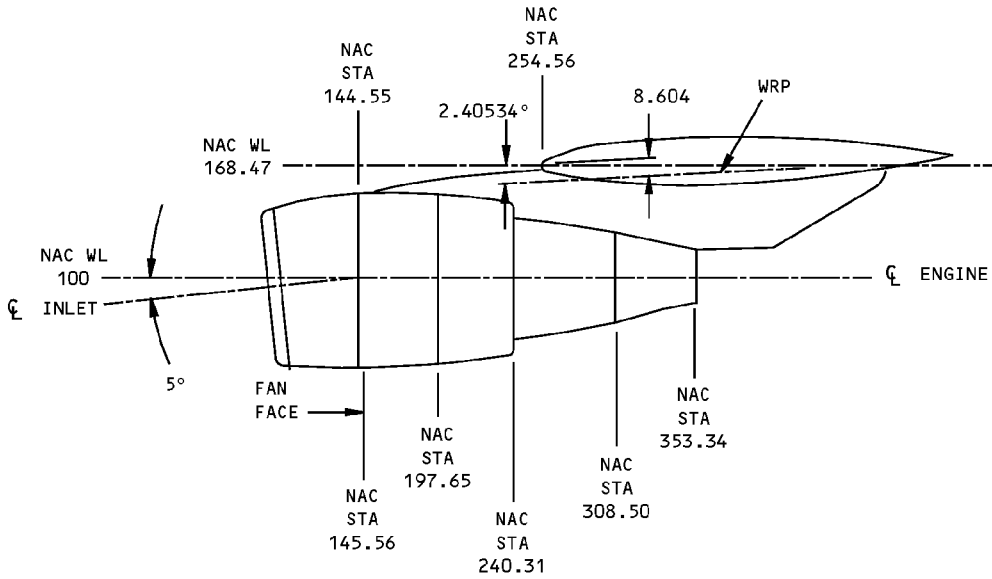
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REF DWG
310T3000



LEFT SIDE VIEW OF NACELLE FOR JT9D-7R4 ENGINE

REF DWG
310T1000



LEFT SIDE VIEW OF NACELLE FOR CF6-80A ENGINE

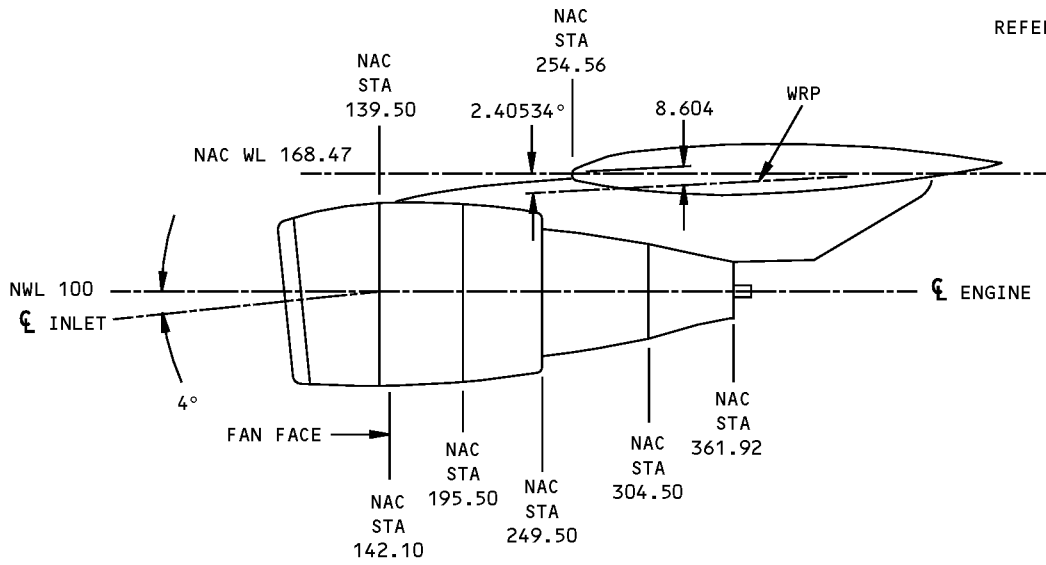
NOTES

- SEE 51-00-01 FOR DEFINITION OF REFERENCE PLANES AND LINES

**Nacelle Station Diagram
Figure 1 (Sheet 1 of 3)**

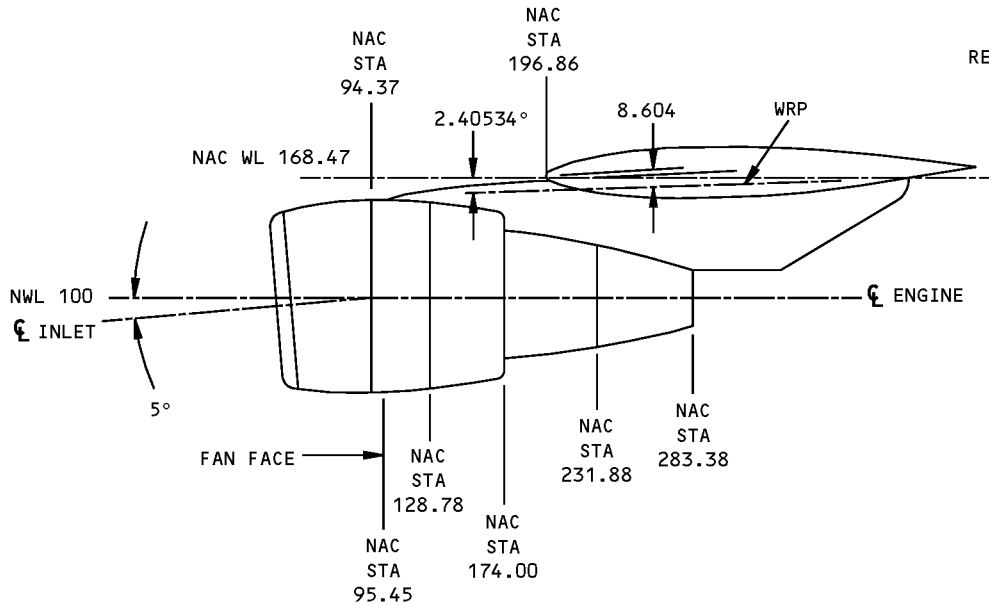
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REFERENCE DRAWING
310T2000



LEFT SIDE VIEW OF NACELLE FOR CF6-80C2 ENGINE

REFERENCE DRAWING
310T4000

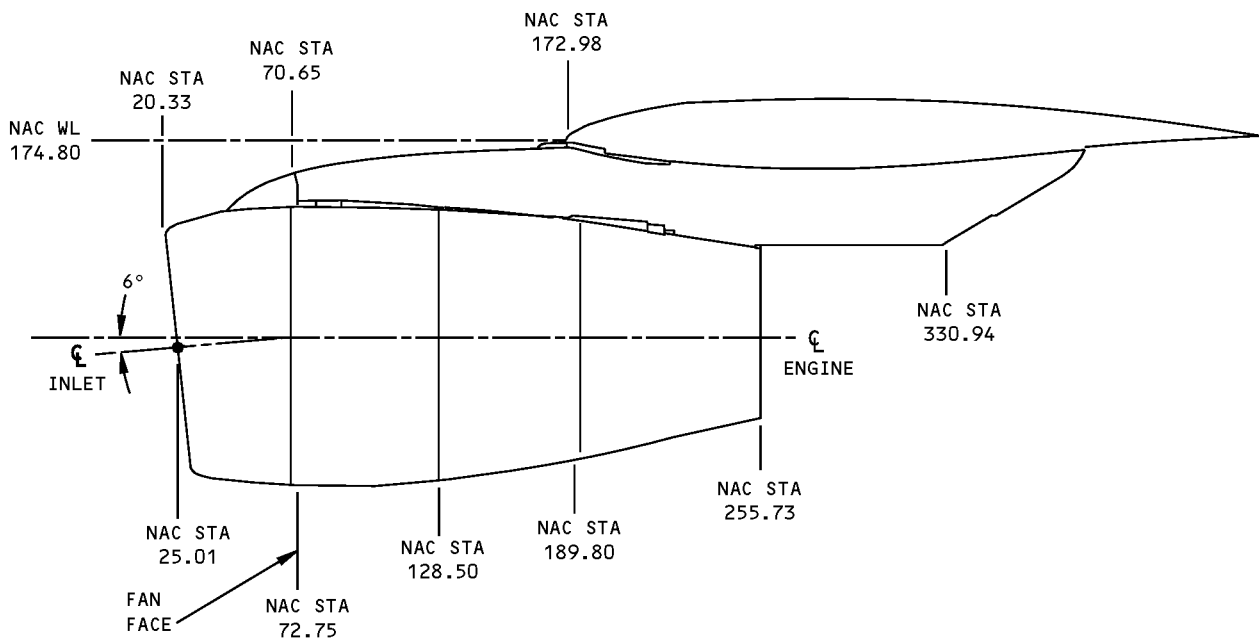


LEFT SIDE VIEW OF NACELLE FOR PW4000 ENGINE

**Nacelle Station Diagram
Figure 1 (Sheet 2 of 3)**

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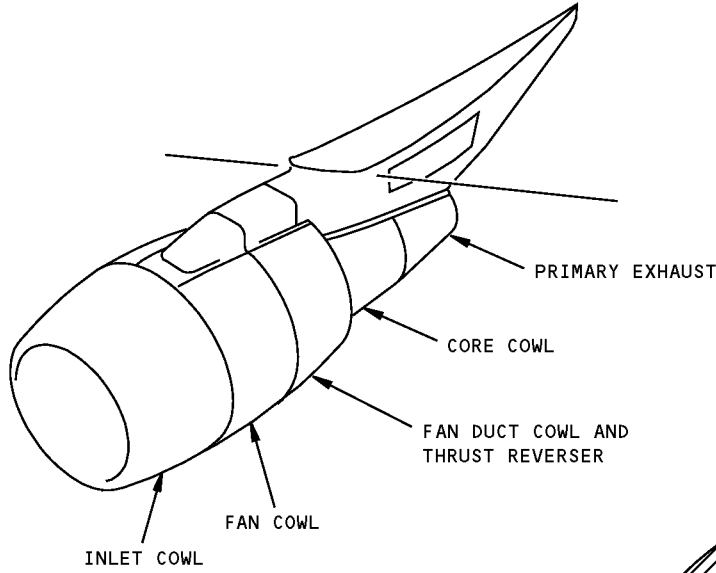
REF DWG
BOEING 310T500C
ROLLS ROYCE UL20495



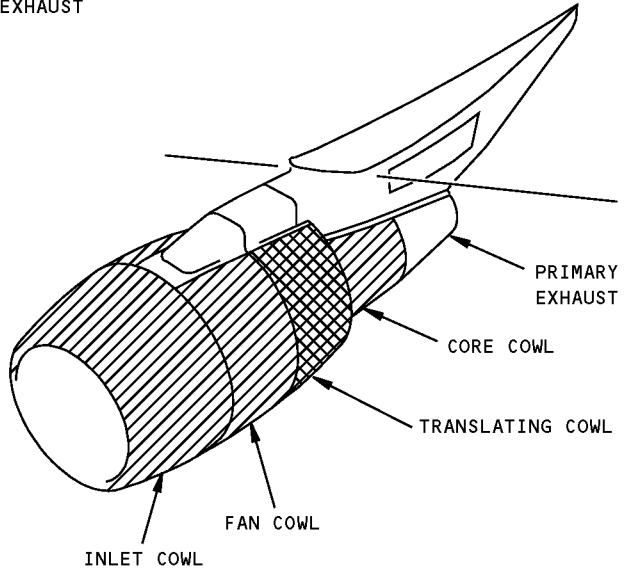
LEFT SIDE VIEW OF NACELLE FOR RB211-524H ENGINE

**Nacelle Station Diagram
Figure 1 (Sheet 3 of 3)**

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JT9D-7R4 ENGINE
CF6-80A ENGINE
PW4000 ENGINE

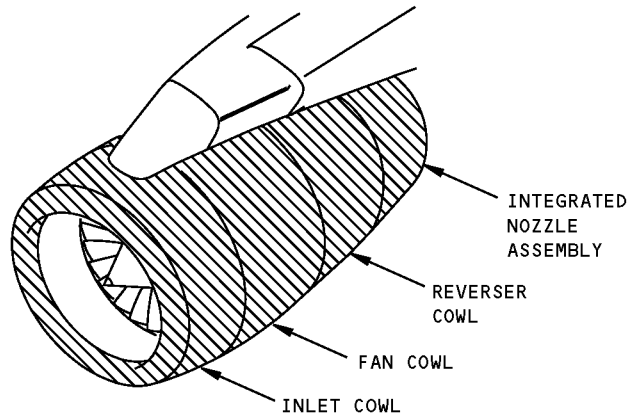


CF6-80C2 ENGINE

- PUBLISHED DATA SUPPLIED BY BOEING
- PUBLISHED DATA SUPPLIED BY ROHR INDUSTRIES
- PUBLISHED DATA SUPPLIED BY GENERAL ELECTRIC
- PUBLISHED DATA SUPPLIED BY ROLLS ROYCE

NOTES

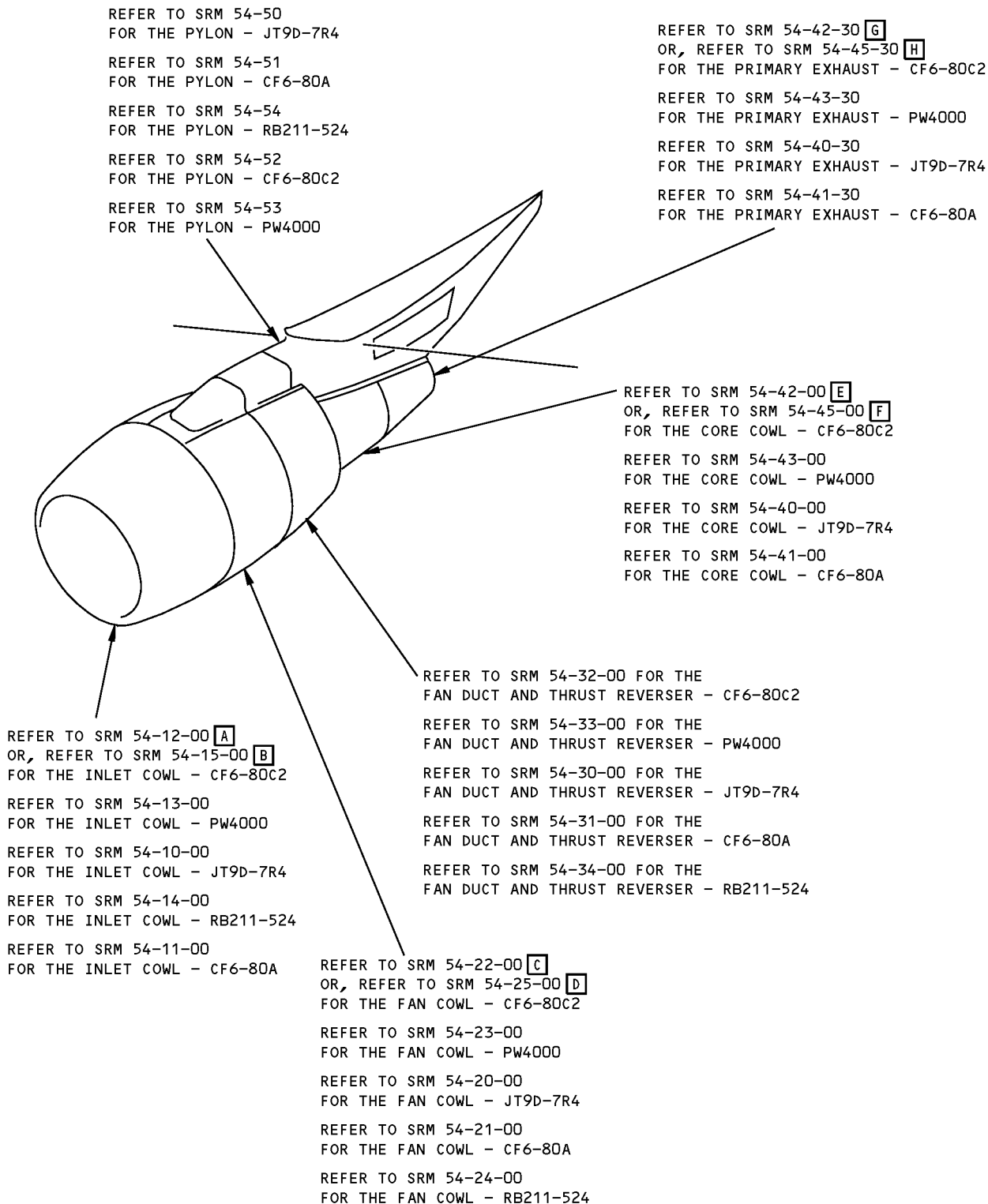
- PUBLISHED DATA SUPPLIED BY ROHR INDUSTRIES, GENERAL ELECTRIC, OR ROLLS ROYCE WILL HAVE A MASTHEAD WITH BOTH THE BOEING AND SUPPLIER LOGOS



RB211-524 ENGINE

**Boeing and Supplier Nacelle Reference Diagram
Figure 2**

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Nacelle and Pylon Structure Diagram
Figure 3 (Sheet 1 of 2)



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NOTES

- A** FOR INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001
- B** FOR INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON
- C** FOR FAN COWLS WITH A SERIAL NUMBER PRIOR TO 3373001
- D** FOR FAN COWLS WITH A SERIAL NUMBER 3373001 AND ON
- E** FOR CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001
- F** FOR CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON
- G** FOR FRAME STIFFENED OUTER SLEEVE ASSEMBLIES AND FOR HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET
- H** FOR HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.015 INCH OUTER FACE SHEET

Nacelle and Pylon Structure Diagram
Figure 3 (Sheet 2 of 2)

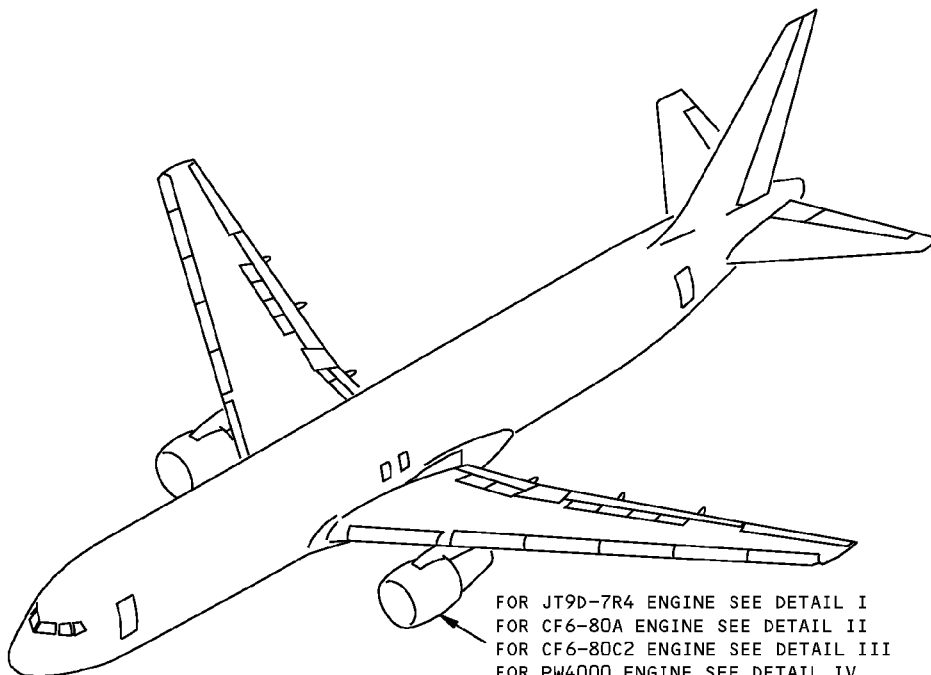
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GENERAL
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REPAIR GENERAL - ACOUSTIC PANEL REPAIR LIMITS



FOR JT9D-7R4 ENGINE SEE DETAIL I
 FOR CF6-80A ENGINE SEE DETAIL II
 FOR CF6-80C2 ENGINE SEE DETAIL III
 FOR PW4000 ENGINE SEE DETAIL IV
 FOR RB211-524 ENGINE SEE DETAIL V

NOTES

- A** THE TOTAL COMBINED PERFORATED BLOCKAGE AREA FROM REPAIRS FOR ALL LOCATIONS (A), (B), (C), (D), (E) SHALL NOT EXCEED 432 SQUARE INCHES PER NACELLE.
- B** WELD BEADS CAUSED BY ALL REPAIRS ARE A PART OF THE TOTAL NACELLE PERFORATED BLOCKAGE AREA. REPAIR WELD BEADS AT LOCATION (E) WILL BE OVER BOTH THE PERFORATED AND SOLID SKIN. THUS THE DECREASE IN PERFORATED SKIN AREA CAUSED BY A WELD BEAD REPAIR MUST BE CALCULATED AS FOLLOWS: DECREASE IN PERFORATED SKIN AREA CAUSED BY A WELD BEAD CRACK REPAIR = 0.10 X TOTAL CRACK LENGTH (INCHES) REFER TO CMM 78-11-06 AND 78-11-16 FOR WELD REPAIRS OF AREA (E).
- C** CUMULATIVE REPAIR BLOCKAGE OF LININGS (A) + (B) + (C) + (D) IS LIMITED TO 4.6 SQUARE FEET PER ENGINE.
- D** TOTAL CUMULATIVE LOSS OF EFFECTIVE NACELLE LINING TREATMENT AREA IS FURTHER LIMITED BY THE FOLLOWING RELATIONSHIP:

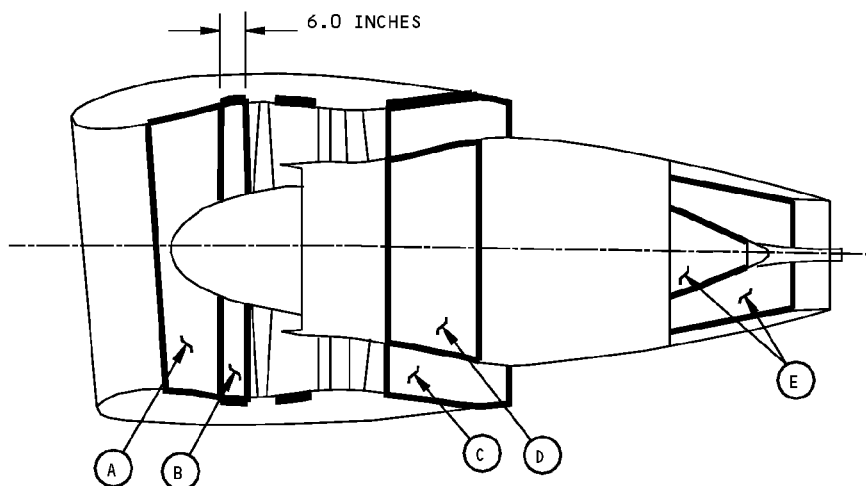
$$\frac{A}{2.7} + \frac{B}{2.7} + \frac{C}{3.2} + \frac{D}{3.2} + \frac{E}{3.2} + \frac{F}{3.2} + \frac{G}{12} < 1$$
- E** REPAIRS FOR THE FAN CASE ARE PROVIDED IN THE 767 MAINTENANCE MANUAL.
- F** REPAIRS TO THE TURBINE EXHAUST SLEEVE ARE PROVIDED IN CMM 78-11-06.

- G** THE TOTAL COMBINED PERFORATED BLOCKAGE AREA FROM REPAIRS FOR ALL LOCATIONS (A), (B), (C), (D), (F) SHALL NOT EXCEED 432 SQUARE INCHES PER NACELLE
- H** THE DECREASE OF WIRE MESH IN AREA (C) HAS ONLY A SMALL EFFECT ON ACOUSTIC PERFORMANCE. DO NOT INCLUDE THE DECREASE OF WIRE MESH IN AREA (C) WHEN YOU CALCULATE THE MAXIMUM ALLOWABLE LOSS OF EFFECTIVE ACOUSTIC TREATMENT AREA.
- I** THE DECREASE OF WIRE MESH IN AREA (D) DOES NOT HAVE AN EFFECT ON ACOUSTIC PERFORMANCE. WHEN YOU CALCULATE THE MAXIMUM ALLOWABLE LOSS OF EFFECTIVE ACOUSTIC TREATMENT AREA IN AREA (D) USE THIS FORMULA:
 A 4.0 SQUARE FOOT DECREASE OF WIRE MESH = A 1.0 SQUARE FOOT DECREASE OF ACTIVE ACOUSTIC TREATMENT AREA
- J** SOME RB211-524 ENGINES HAVE ACOUSTICALLY TREATED COMPRESSOR FAIRING PANELS AND THRUST REVERSER BLOCKER DOORS. ANY AMOUNT OF ACOUSTIC TREATMENT LOSS IS ALLOWED IN COMPRESSOR FAIRING PANELS AND THRUST REVERSER BLOCKER DOORS
- K** TOTAL CUMULATIVE LOSS OF EFFECTIVE NACELLE LINING TREATMENT AREA IS FURTHER LIMITED BY THE FOLLOWING RELATIONSHIP:

$$\frac{A}{2.3} + \frac{B + C + D + E + F + G}{3.3} \leq 1.0$$

**Acoustic Panel Repair Limits
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

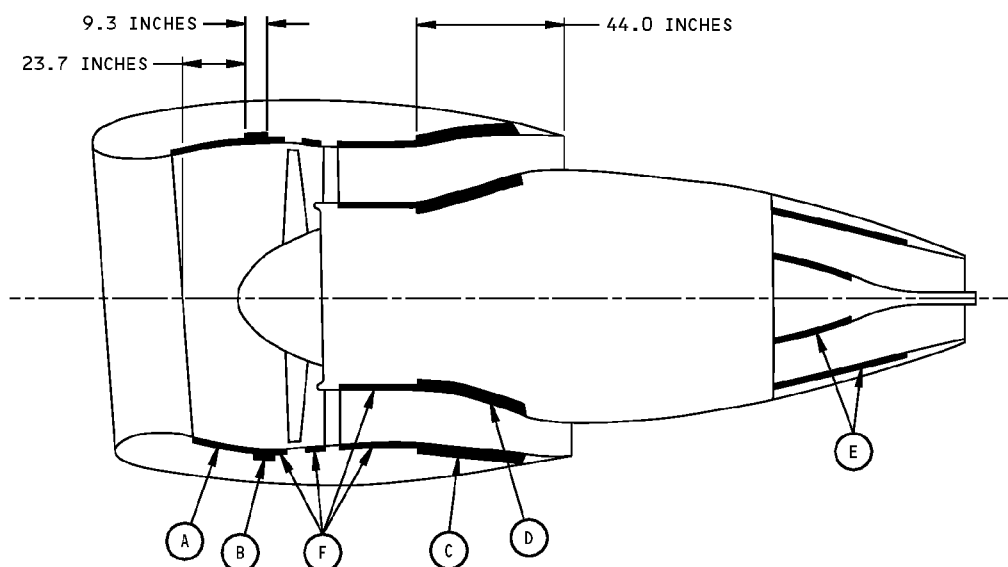


REPAIR AREA	DESCRIPTION	MAXIMUM ALLOWABLE LOSS OF PERFORATED SKIN AREA FROM ACCUMULATED REPAIRS (SQURE INCHES)
A	ACOUSTIC WAVE LINING (PERFORATED ALUMINUM FACE)	432 [A]
B	INLET BUZZ SAW LINING (PERFORATED ALUMINUM FACE)	432 [A]
C	FAN DUCT OUTER WALL - INCLUDES BLOCKER DOORS (PERFORATED ALUMINUM FACE)	432 [A]
D	FAN DUCT INNER WALL (PERFORATED ALUMINUM FACE)	432 [A]
E	PRIMARY EXHAUST (PH15-7M0-TRE3200 AND TRE3300 PANELS)	432 [A] [B]

JT9D-7R4 ENGINE
DETAIL I

**Acoustic Panel Repair Limits
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

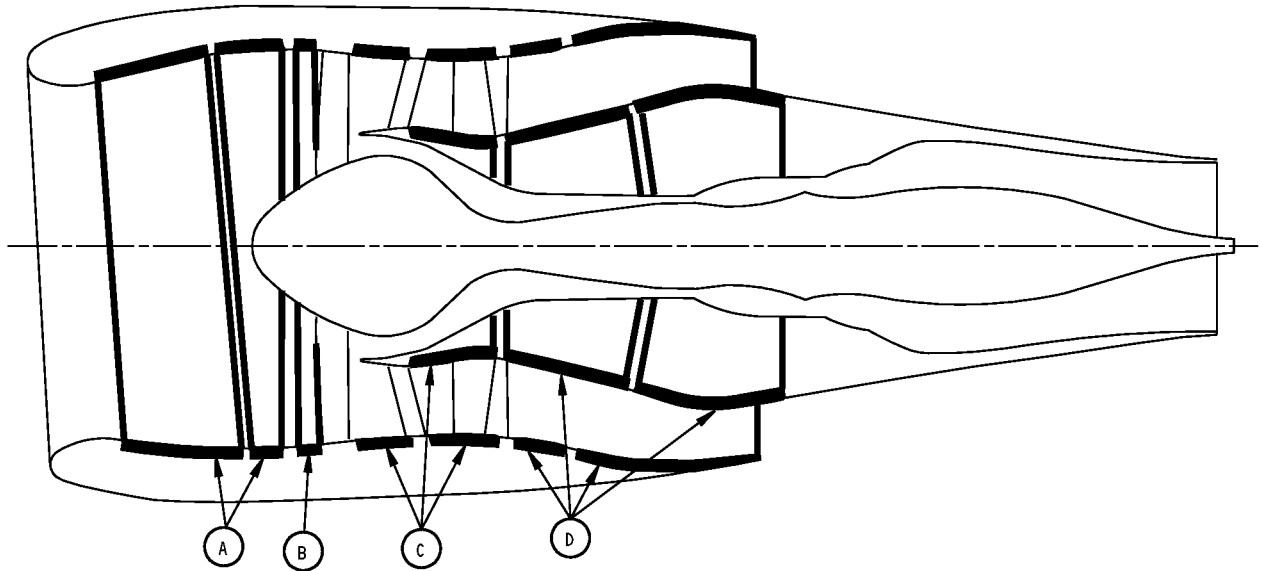


REPAIR AREA	DESCRIPTION	MAXIMUM ALLOWABLE LOSS OF PERFORATED SKIN AREA FROM ACCUMULATED REPAIRS (SQURE INCHES)
A	ACOUSTIC WAVE LINING (PERFORATED ALUMINUM FACE)	432 [G]
B	INLET BUZZ SAW LINING (PERFORATED ALUMINUM FACE)	432 [G]
C	FAN DUCT OUTER WALL - INCLUDES BLOCKER DOORS (PERFORATED ALUMINUM FACE)	432 [G]
D	FAN DUCT INNER WALL (PERFORATED ALUMINUM FACE)	432 [G]
E	PRIMARY EXHAUST (PH15-7M0-TRE3200 AND TRE3300 PANELS)	432 [A] [B]
F	FAN CASE ACOUSTIC PANELS	432 [G]

CF6-80A ENGINE
DETAIL II

**Acoustic Panel Repair Limits
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

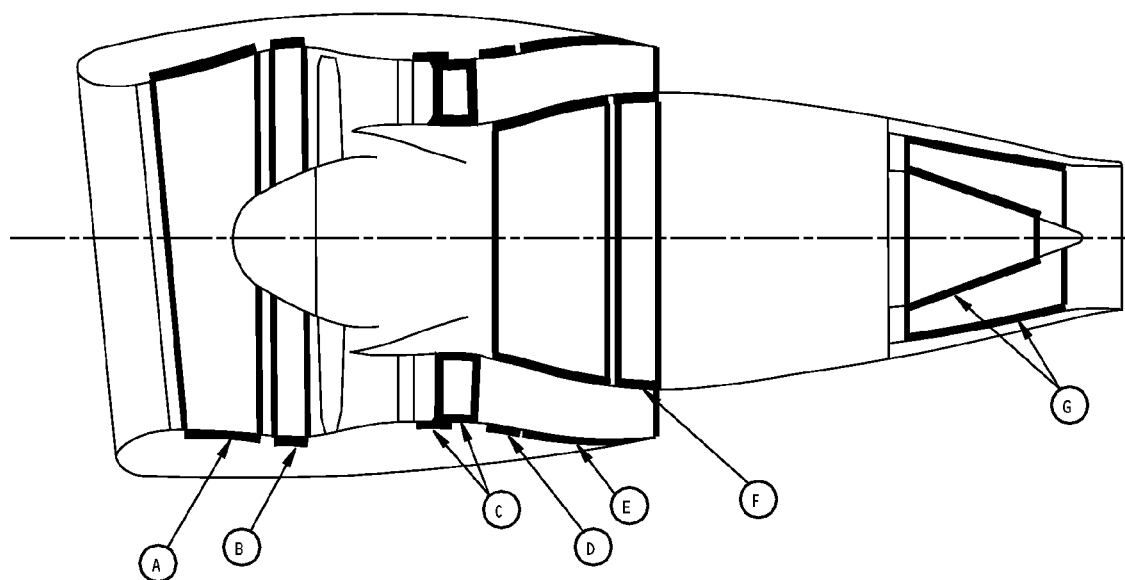


REPAIR AREA	DESCRIPTION	MAX. ALLOWABLE LOSS OF EFFECTIVE ACOUSTIC TREATMENT AREA (SQURE FEET)
A	NOSE COWL ACOUSTIC PANELS	4.6 [C]
B	FAN CONTAINMENT ACOUSTIC PANELS	3.0 [C]
C	FAN CASE ACOUSTIC PANELS	4.6 [C] [H]
D	FAN DUCT ACOUSTIC PANELS	4.6 [C] [I]

CF6-80C2 ENGINE
DETAIL III

**Acoustic Panel Repair Limits
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

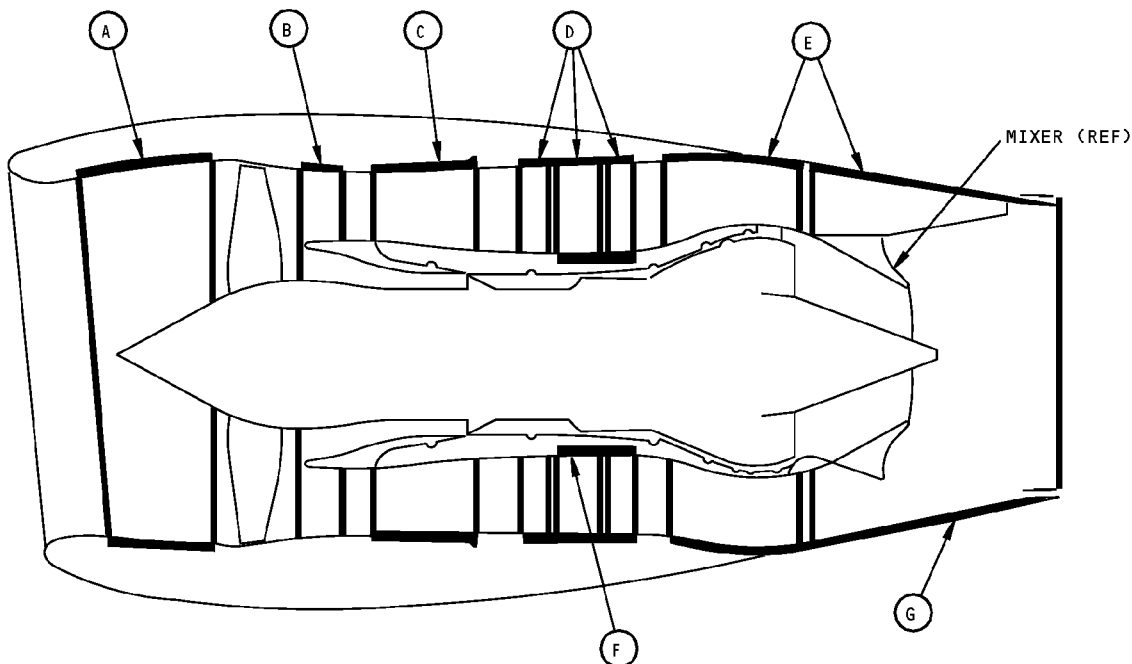


REPAIR AREA	DESCRIPTION	MAX ALLOWABLE LOSS OF EFFECTIVE ACOUSTIC TREATMENT AREA (SQ FT)
A	NOSE COWL FWD ACOUSTIC PANELS	2.7 D
B	NOSE COWL AFT ACOUSTIC PANELS	2.7 D
C	P&W ENGINE CASE AND STRUT ACOUSTIC PANELS	3.2 D E
D	BLOCKER DOORS	3.2 D
E	FAN THRUST REVERSER SLEEVE	3.2 D
F	FAN DUCT DIAPHRAGM AND BIFURCATION LINING	3.2 D
G	PRIMARY NOZZLE SLEEVE AND PLUG LINING	12 D F

PW4000 ENGINE
DETAIL IV

**Acoustic Panel Repair Limits
Figure 201 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



REPAIR AREA	DESCRIPTION	MAX ALLOWABLE LOSS OF EFFECTIVE ACOUSTIC TREATMENT AREA (SQ. FEET) ^J
A	INLET ACOUSTIC TREATMENT	2.3 ^K
B	ENGINE INTERSTAGE TREATMENT	3.3 ^K
C	ENGINE FAN CASE TREATMENT	3.3 ^K
D	THRUST REVERSER TREATMENT	3.3 ^K
E	INTEGRATED NOZZLE ASSEMBLY (FWD OF MIXER)	3.3 ^K
F	COMBUSTOR FAIRING TREATMENT	3.3 ^K
G	INTEGRATED NOZZLE ASSEMBLY (AFT OF MIXER)	3.3 ^K

RB211-524 ENGINE
DETAIL V

**Acoustic Panel Repair Limits
Figure 201 (Sheet 6 of 6)**

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART

SERVICE BULLETIN REPAIRS

The following Service Bulletins contain repairs which are available for use where specific damage has been encountered. Usually, the Service Bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
INLET COWL - ACOUSTICAL LINING SEGMENTS INLET COWL - INNER BARREL	2 THRU 135 ALL CF6-80C2 INLET COWLS PRIOR TO ROHR SERIAL NUMBER 1204	767-71-0022 ROHR S/B 71-021

**Service Bulletin Repair Chart
Figure 201**

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - TYPICAL REPAIRS FOR PERFORATED ALUMINUM ACOUSTIC PANELS - PW4000 ENGINE

APPLICABILITY
THESE REPAIRS APPLY ONLY TO ACOUSTIC PANELS ON JT9D-7R4, CF6-80A AND PW4000 ENGINES.

REPAIR INSTRUCTIONS

1. See Details I thru VIII for acoustic panel repairs.

NOTE: EACH ENGINE INSTALLATION IS COMPRISED OF INTERCHANGEABLE COMPONENTS. IT IS NECESSARY THAT RECORDS BE ACCURATELY LOGGED AND MAINTAINED. THE REPAIR DATA FROM THESE RECORDS SHOULD BE USED TO CALCULATE THE ACOUSTIC PANEL BLOCKAGE SHOWN IN 54-00-00, REPAIR GENERAL. THE TOTAL ACOUSTIC PANEL BLOCKAGE FOR THE ENGINE INSTALLATION MUST BE RECALCULATED WHEN COMPONENTS ARE CHANGED.

NOTES

- REFER TO THE FOLLOWING WHEN USING THESE REPAIRS:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30-03 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS
 - SRM 51-70-09 FOR STRUCTURAL BONDING

- [A]** MATERIAL SHALL BE HEATED AT A MAXIMUM RATE OF 5 TO 7°F PER MINUTE, THEN HELD AT THE CURE TEMPERATURE FOR THE INDICATED TIME
- [B]** TWO PART - ROOM TEMP CURE, POURABLE WITH ONE YEAR OF STORAGE TIME AT 40°-80°F (5°C-27°C).
- [C]** MIX PER MANUFACTURERS INSTRUCTIONS. VISCOSITY CAN BE INCREASED BY ADDING MILLED GLASS FIBERS UP TO 20% MAXIMUM BY WEIGHT

- [D]** MIX RATIO: 32 TO 34 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT
- [E]** ONE PART FROZEN - HEAT CURE, TROWELABLE PUTTY WITH 3 MONTHS OF STORAGE TIME AT 0°F (-18°C) OR BELOW. OPTIONAL TO TYPE 3 AND 7 IN AREAS WHERE HIGH VISCOSITY IS NEEDED TO PREVENT POTTING COMPOUND FROM FLOWING OUT OF THE HOLE.
- [F]** OPTIONAL TO BMS 5-109, TYPE 2, CLASS 2 IN REPAIRS WHERE LONGER WORK TIME IS REQUIRED.
- [G]** FASTENERS MUST BE INSTALLED WHILE ADHESIVE IS STILL WORKABLE
- [H]** FOR OPTIMUM PROPERTIES CURE 7 DAYS AT 65°F (19°C) OR 5 HOURS AT 125°F (52°C)

SYMBOLS

- + INITIAL FASTENER LOCATION
- ▲ REPAIR FASTENER IN INITIAL LOCATION
- REPAIR FASTENER IN NEW LOCATION. INSTALL BACB30VF3K BOLT WITH BACN10JC3 NUT AND AN96OPD10 WASHER

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 1 of 18)**



**767-300
STRUCTURAL REPAIR MANUAL**

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

ADHESIVE AND POTTING COMPOUND CURE TABLE				
ADHESIVE OR POTTING COMPOUND	COMPONENTS	PARTS BY WEIGHT	GEL TIME	CURING TIME [A]
BMS 5-28 TYPE 7 POTTING [B] CLASS 1 CLASS 2	CG1305 FR 7162 A/B EPOCAST 89537 A/B	[C]	60 MINUTES	2 HOURS AT 125°F [H]
BMS 5-28 TYPE 14 POTTING [E] CLASS 1 CLASS 2	EPOCAST 1614 EPOCAST 840	[C]	8 HOURS	90 MINUTES AT 260 ±10F
BMS 5-109 TYPE 2, CLASS 2 ADHESIVE	EA 9394 EA 934NA EA 9394S	[D]	30 MINUTES [G]	1 HOUR AT 200 ±10F 9 HOURS AT 160 ±10F 25 HOURS AT 120 ±10F 7 DAYS AT 77 ±10F
[F]	BR 95/AB	[D]	60 MINUTES [G]	70 MINUTES AT 200 ±10F (93 ±5C) 120 HOURS AT 77 ±10F (25 ±5C)

TABLE I

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 2 of 18)**

STRUCTURAL REPAIR MANUAL

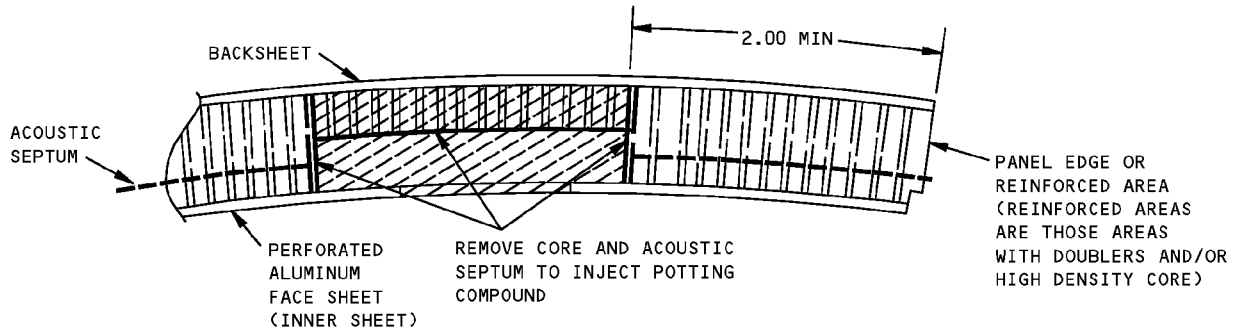
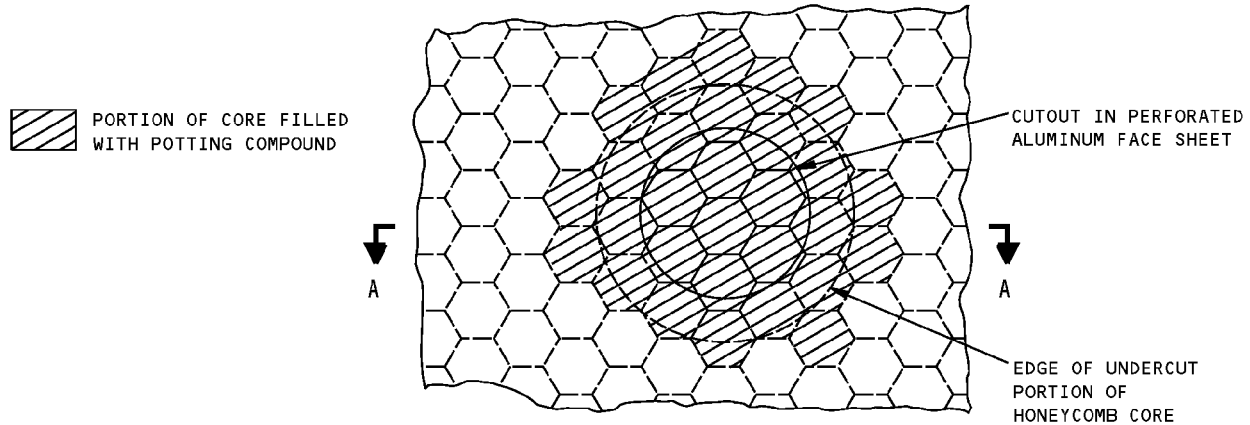
APPLICABILITY
THIS REPAIR IS FOR DAMAGE NOT EXCEEDING 3 INCHES IN DIAMETER. SEE DETAIL II FOR DAMAGE ADJACENT TO PANEL EDGE AND DETAIL III FOR LARGE DAMAGE.

REPAIR INSTRUCTIONS FOR DETAIL I

1. Cut out the damaged skin, leaving the core intact. Undercut the core and septum at perimeter of cutout as shown to allow for injection of resin into one further row of cells around cutout.

NOTE: REMOVAL OF DAMAGED CORE IS NOT REQUIRED WHEN USING A POTTED RESIN REPAIR, HOWEVER THE DAMAGED CORE MUST EITHER BE CLEANED OR CUT OUT.

2. Clean out all particles from exposed core.
3. Inject potting compound, BMS 5-28, type 7, into the boundary cells and core as shown. Fill to the level of the skin allowing for adhesive shrinkage during the cure cycle.
4. When potting compound has cured sufficiently, sand down the surplus resin flush with the surrounding skin.



SECTION A-A

**REPAIR OF LIMITED DAMAGE BY POTTING
DETAIL I**

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 3 of 18)**



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STRUCTURAL REPAIR MANUAL

APPLICABILITY
THIS REPAIR IS FOR CRACKS WITHIN 2 INCHES OF A PANEL EDGE AND/OR CORE DAMAGE NOT EXCEEDING 3 INCHES IN DIAMETER. SEE DETAILS I AND III FOR REPAIRS OUTSIDE OF THIS AREA. SEE REPAIR 2 FOR REPAIRS AT THE FAN BLADE CONTAINMENT BELT LOCATION ON PW4000 ENGINES.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.080 2024-T62
2	COUNTERSINK REPAIR WASHER	AS REQD	REFER TO SRM 51-40-08

REPAIR INSTRUCTIONS FOR DETAIL II

1. Drill a 0.25 inch diameter hole at each end of the crack.

NOTE: IF CORE IS ALSO DAMAGED AND NEEDS TO BE REPAIRED, REFER TO DETAIL I FOR POTTED RESIN REPAIR.
2. Drill out sufficient edge fasteners to permit installation of the part 1 doubler.
3. Locate the part 1 doubler on the panel and drill holes to match the existing edge fastener holes.
4. Drill additional repair fasteners holes in the part 1 doubler as shown.
5. Solvent clean the faying surfaces of the original panel and part 1 doubler as given in SRM 51-70-09.
6. Apply BMS 5-89 CIAP primer if PANTA method used. Apply De Soto 513-707 or 515-346 CIAP primer if HF/alodine method is used. See SRM 51-70-09.
7. Inject potting compound BMS 5-28 type 7 thru perforations and bolt holes on solid face, to ensure potting compound is on both sides of septum, in area of fastener holes before installation.
8. Apply adhesive, BMS 5-109 Type II, Class 2 to a thickness of 0.01 to the panel and part 1. Install fasteners and allow to cure as given in Table I.

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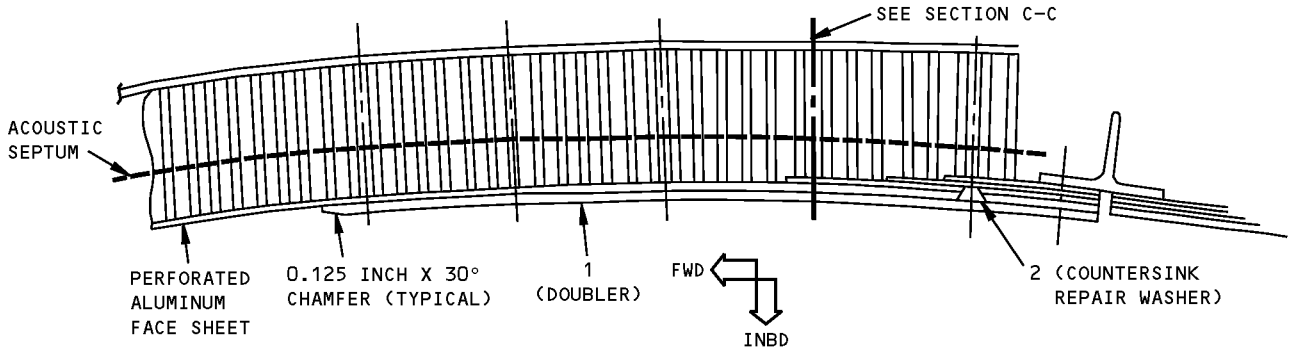
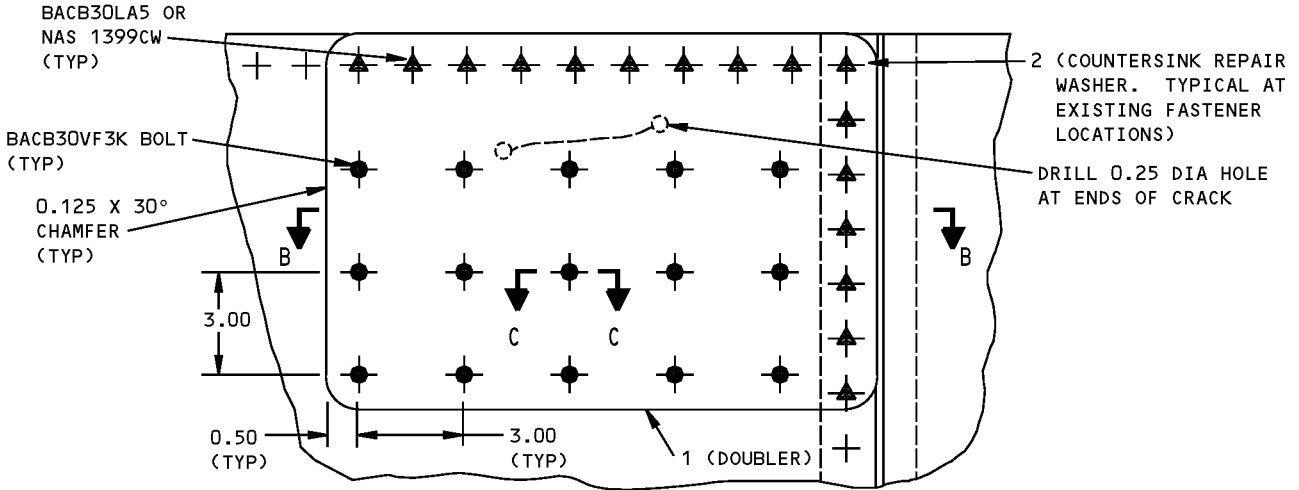
Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 4 of 18)

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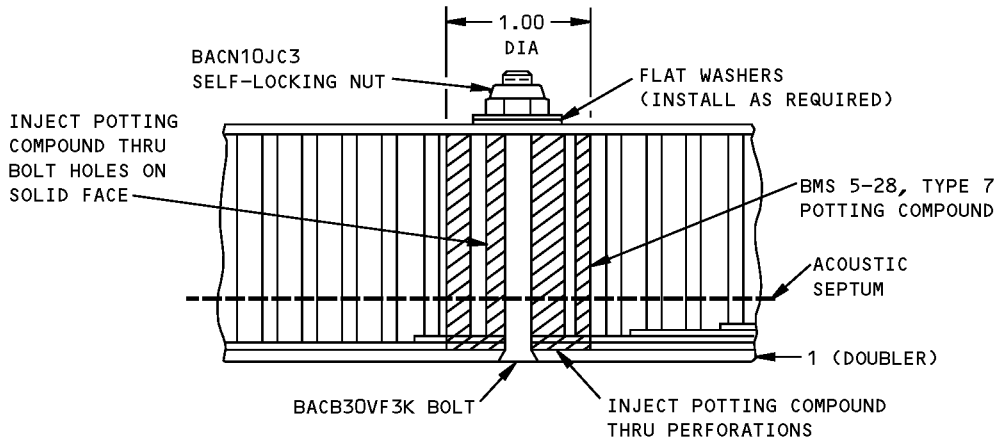
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STRUCTURAL REPAIR MANUAL



SECTION B-B



REPAIR FASTENER INSTALLATION

SECTION C-C

REPAIR OF LARGE CRACKS OR DAMAGE NEAR PANEL EDGE

DETAIL II

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 5 of 18)**



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STRUCTURAL REPAIR MANUAL

APPLICABILITY
THIS REPAIR IS FOR DAMAGE EXCEEDING 3 INCHES IN DIAMETER. SEE DETAIL I FOR SMALLER DAMAGE AND DETAIL II FOR DAMAGE ADJACENT TO A PANEL EDGE

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.080 2024-T62
2	CORE	1	SAME SIZE AND DENSITY AS ORIGINAL

REPAIR INSTRUCTIONS FOR DETAIL III

1. Cut away damaged portion of panel leaving non-perforated skin intact.
2. Make repair part.
3. Break sharp edges of original and repair part 0.015 to 0.030.
4. Remove all nicks, scratches, burrs and sharp corners from original and repair part.
5. Install the part 2 core with BMS 5-28 type 7 potting compound.
6. Locate the part 1 doubler on the panel and drill the fastener holes.
7. Clean and finish the faying surfaces of the panel and doubler using the PANTA or HF/alodine method. Refer to SRM 51-70-09.
8. Apply BMS 5-89 CIAP primer if PANTA method is used. Apply De Soto 513-707 or 515-346 CIAP primer if HF/alodine method is used. Refer to SRM 51-70-09.
9. Inject BMS 5-28 type 7 potting compound thru perforations and bolt holes on solid face, to ensure potting compound is on both sides of septum, in area of fastener holes before installation.
10. Apply adhesive, BMS 5-109 Type II, Class 2 to a thickness of 0.01 to the panel and to the part 1 doubler. Install fasteners and allow to cure as given in Table I.

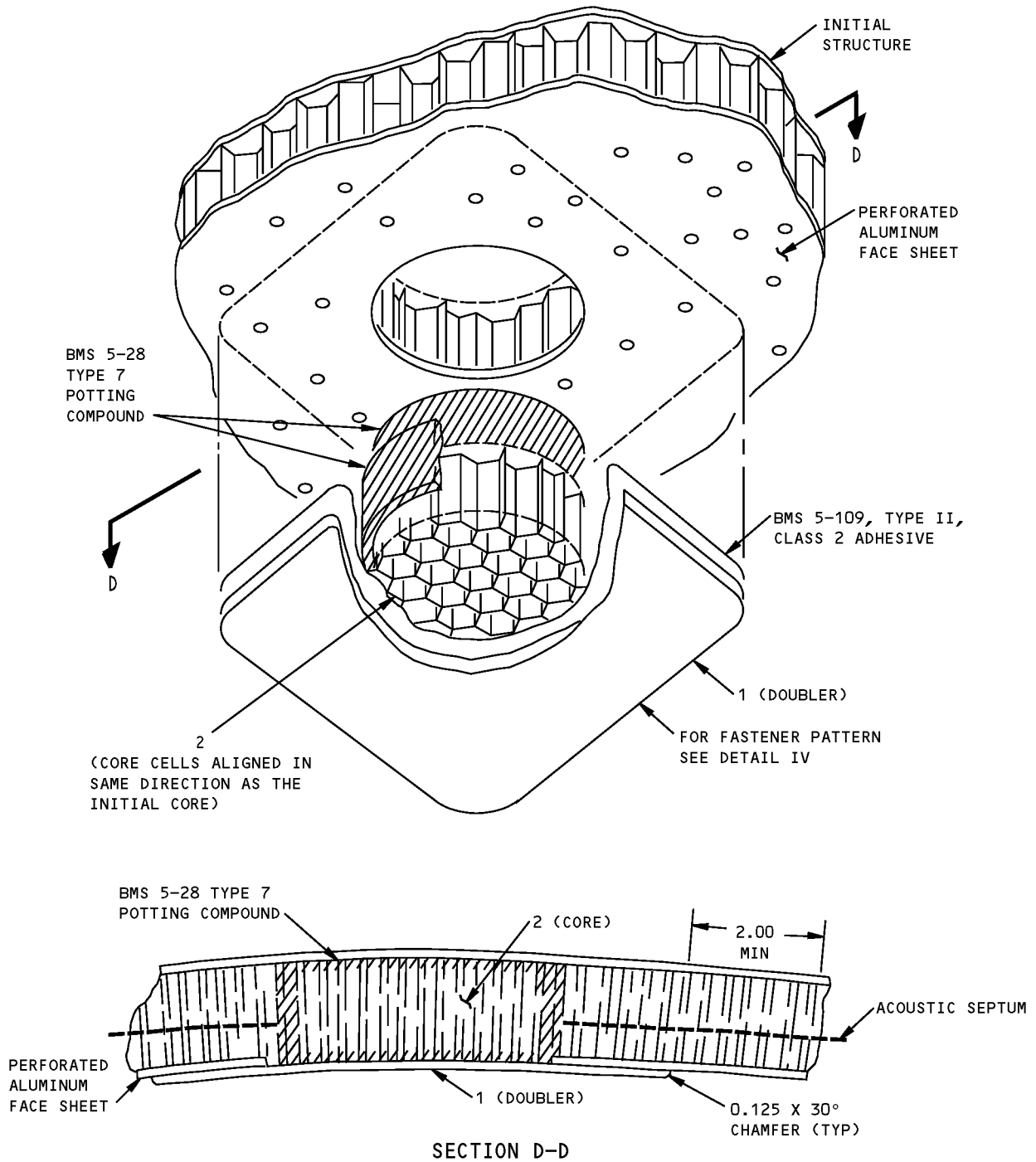
**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 6 of 18)**

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REPAIR 1
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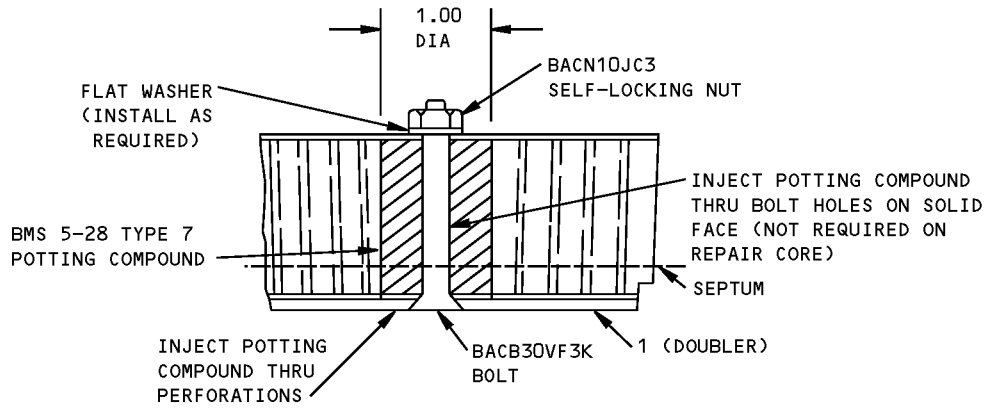
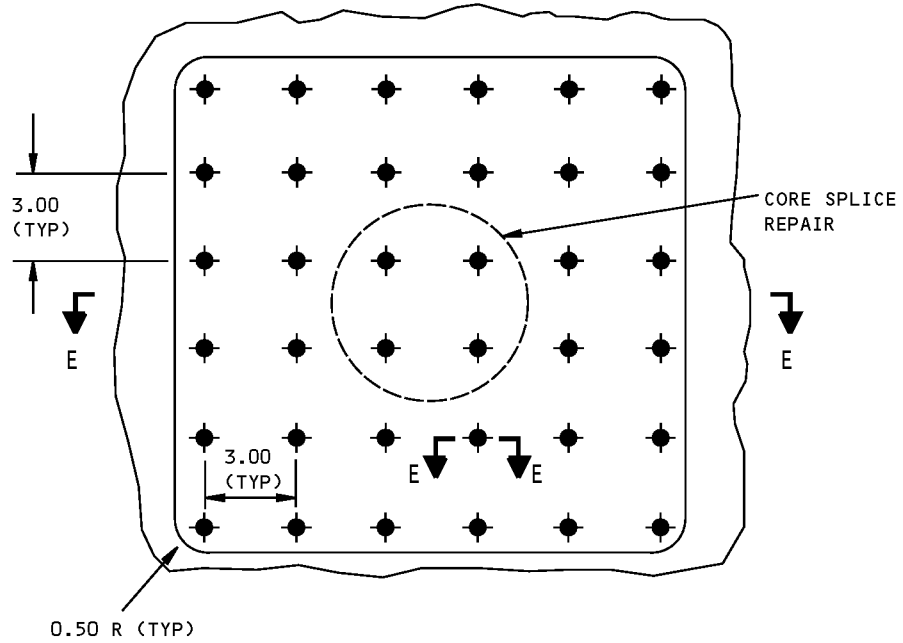
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF LARGE DAMAGE AREA IN PANEL
DETAIL III**

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 7 of 18)**

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STRUCTURAL REPAIR MANUAL**



**TYPICAL BOLT INSTALLATION
SECTION E-E**

DETAIL IV

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 8 of 18)**

STRUCTURAL REPAIR MANUAL

APPLICABILITY

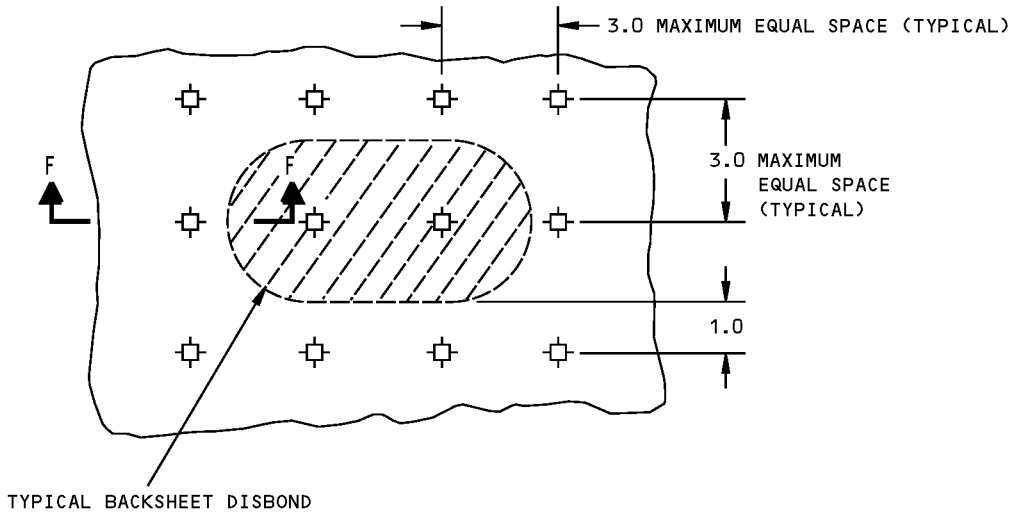
THIS REPAIR IS LIMITED TO INLET COWL ACOUSTIC PANELS ONLY. THIS REPAIR IS FOR BACKSHEET DISBOND LIMITED TO AN AREA OF 100 SQUARE INCHES PER PANEL. MAXIMUM DISBOND SHALL NOT EXCEED 30 INCHES IN THE CIRCUMFERENTIAL DIRECTION AND 10 INCHES IN THE FORE AND AFT DIRECTION. A CIRCUMFERENTIAL SEPARATION OF A MINIMUM OF 12 INCHES IS REQUIRED BETWEEN ADJACENT DISBONDS GREATER THAN 20 INCHES IN LENGTH. NO DISBOND ALONG PANEL EDGE ALLOWED. IN NO CASE SHALL THE NOISE SUPPRESSION CAPABILITIES OF THE ACOUSTICAL PANELS BE COMPROMISED.

REPAIR INSTRUCTIONS FOR DETAIL V

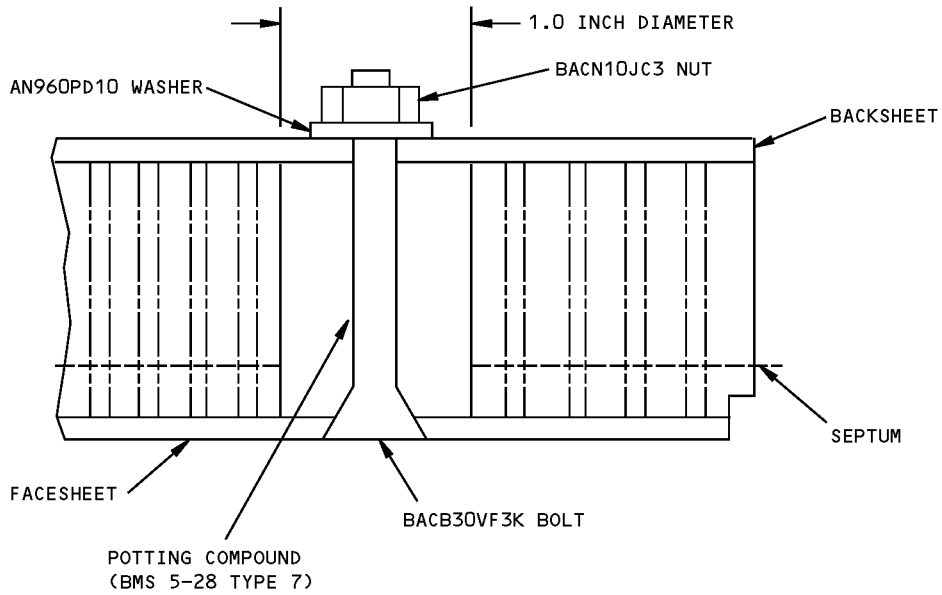
1. Drill 0.161 inch diameter pilot holes through disbonded area of acoustic panel as required being careful not to penetrate through panel facesheet.
2. Increase the diameter of the honeycomb core to a diameter of 1.0 inch with an allen wrench mounted in a drill. Cut to length the short end of an allen wrench and sharpen it into a flat blade. Insert the short end of the wrench into the hole of the long end into the chuck of the drill.
3. Inject BMS 5-28, Type 7 potting compound into fastener holes. When potting compound has cured sufficiently (See Table I), redrill fastener holes to a diameter of 0.161 at existing pilot locations.
4. Countersink fastener holes in facesheet of acoustic panel. See Detail V.
5. Secure disbonded area using BACB30VF3K bolt, BACN10JC3 nut and AN960PD10 washer.
6. Clean outer surface of reworked area and apply protective treatment as given in SRM 51-20-01.
7. Apply one coat of BMS 10-11 Type I over entire reworked area of backsheets.
8. Cap nuts and washers with BMS 5-26 sealant.

Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 9 of 18)

**767-300
STRUCTURAL REPAIR MANUAL**



PANEL SHOWN WITH OUTER SKIN PANEL LOWER HALF REMOVED



SECTION F-F

DETAIL V

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 10 of 18)**

STRUCTURAL REPAIR MANUAL

APPLICABILITY
THIS REPAIR IS FOR BACKSHEET DISBOND LIMITED TO AN AREA OF 200 SQUARE INCHES PER PANEL. MAXIMUM DISBOND SHALL NOT EXCEED 30 INCHES IN LENGTH IN THE CIRCUMFERENTIAL DIRECTION OR 10 INCHES IN LENGTH IN THE FORE AN AFT DIRECTION. FOR ADJACENT DISTANCES WITH LENGTH GREATER THAN 20 INCHES A MINIMUM SEPARATION OF 12 INCHES IS REQUIRED. IN NO CASE SHALL THE SUPPRESSION CAPABILITIES OF THE ACOUSTIC PANELS BE COMPROMISED.

REPAIR INSTRUCTIONS FOR DETAIL VI

1. Cut out the delaminated or damaged backsheet using a router template.

NOTE: Inspect the backsheet for cracks by dye penetrant inspection or other comparable method. If no cracks are present the original backsheet may be used in the repair.

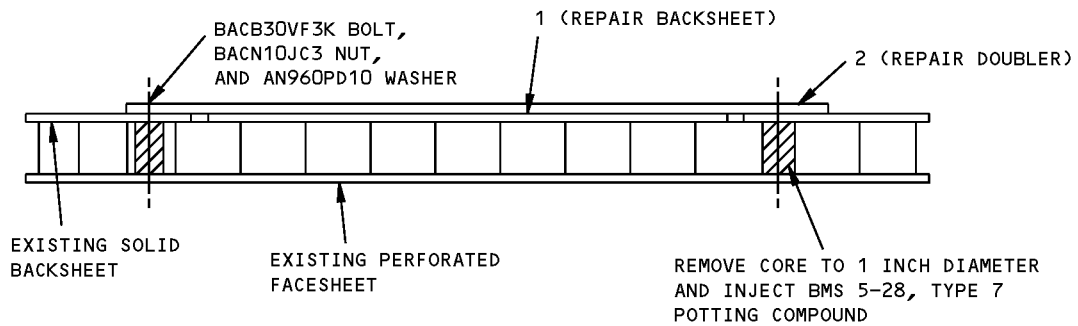
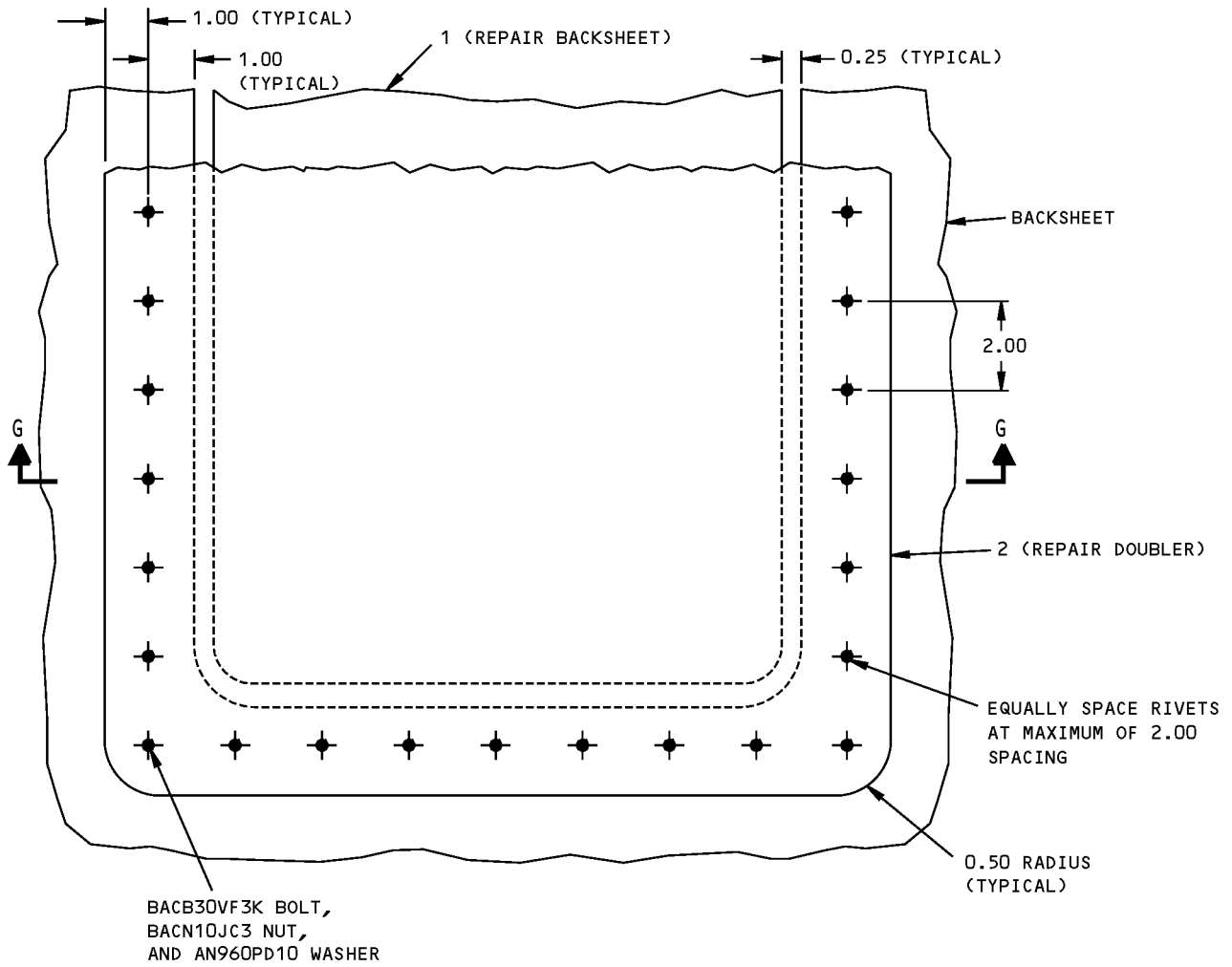
2. Make the repair doubler and if necessary a backsheet replacement.
3. Remove all nicks, scratches, burrs and sharp edges from original and repair parts.
4. Prefit the repair backsheet and doubler without adhesive. Apply a vacuum bag over the backsheet side (non perforated side) and check that a minimum vacuum value of 20 inches of mercury is obtained. After check remove vacuum bag.
5. Remove any moisture from the honeycomb core with oil free compressed air and an air dryer. Do not heat over 300°F (149°C). Clean the honeycomb edge, backsheet, repair backsheet and doubler with MEK solvent as given in SRM 51-70-09.
6. Clean and finish the faying surfaces of the repair parts and backsheet using the HF/Alodine method as given in SRM 51-70-09.
7. Apply Desoto 513-707 or 515-346 CIAP primer. Refer to SRM 51-70-09.
8. Apply BMS 5-109, Type II, Class 2 adhesive between repair doubler and repair backsheet faying surfaces. See Table I for cure instructions.

9. After repair backsheet and repair doubler have cured, apply BMS 5-109, Type II adhesive between repair backsheet/doubler and honeycomb panel. While adhesive is curing install BACB30VF3K bolt with BACN10JC3 nut and AN96OPD10 washer as shown in Detail VII. Refer to Table I for cure instructions.
10. Clean outer surface of reworked area and apply protective treatment as given in SRM 51-20-01.
11. Apply one coat of BMS 10-11 Type I primer over entire reworked area.
12. Cap seal repair fasteners with BMS 5-26 sealant.
13. Fillet seal edges of repair parts with BMS 5-26 sealant.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR BACK-SHEET	1	SAME GAGE AS ORIGINAL MATERIAL 2024-T62
2	REPAIR DOUBLER	1	0.025 CLAD 2024-T62 (2024-T3 OPTIONAL)

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 11 of 18)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION G-G

DETAIL VI

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 12 of 18)**

STRUCTURAL REPAIR MANUAL

APPLICABILITY

THIS REPAIR IS LIMITED TO THE ACOUSTIC PANEL OF THE INLET COWL. THE BACKSHEET OF THE ACOUSTIC PANEL MUST NOT BE DISBONDED FOR MORE THAN 200 INCHES PER PANEL. THIS REPAIR IS TO BE USED ON BACKSHEET DISBOND WITH ACCOMPANYING HONEYCOMB CORE DAMAGE NO GREATER THAN 30 INCHES IN LENGTH IN THE CIRCUMFERENTIAL DIRECTION OR 10 INCHES IN LENGTH IN THE FORE AND AFT DIRECTION. FOR ADJACENT DISBONDS WITH A LENGTH GREATER THAN 20 INCHES, A MINIMUM SEPARATION LESS THAN 12 INCHES IS REQUIRED. IN NO CASE SHALL THE NOISE SUPPRESSION CAPABILITIES OF THE ACOUSTICAL PANELS BE COMPROMISED.

REPAIR INSTRUCTIONS FOR DETAIL VII

1. Cut out the delaminated or damaged backsheet using a router template.
 - NOTE:** Inspect the backsheet for cracks by dye penetrant inspection or other comparable method. If no cracks are present the original backsheet may be used in the repair.)
2. Remove the damaged honeycomb core.
3. Make the repair doubler and if necessary a backsheet replacement.
4. Remove all nicks, scratches, burrs and sharp edges from original and repair parts.
5. If the repair is made at the lowest point of the panel, make a drain hole doubler.
6. Make the replacement core to fit in the removed core opening.
7. Prefit the repair backsheet and doubler without adhesive. Apply a vacuum bag over the backsheet side (non perforated side) and check that a minimum vacuum value of 20 inches of mercury is obtained. After check remove vacuum bag.
8. Remove any moisture from the honeycomb core with oil free compressed air and an air dryer (Do not heat over 300°F - 149°C). Clean the honeycomb edge and backsheet with MEK solvent. Apply a protective alodine coating to the repair parts and the cut edges of the original parts using the HF/Alodine method as given in SRM 51-70-09.
9. Prepare the bond side of the perforated face sheet by wiping with MEK solvent and then drying with a cheese cloth. Lightly sand surface to remove remaining core and adhesive fillet. (Complete removal of core material is not necessary).
10. Apply masking tape to airflow side of perforated face sheet to prevent flow of adhesive through facesheet holes.
11. Clean core surfaces with MEK and dry with cheese cloth. Place core on clean release film, with the surface to be bonded to the backsheet up, and apply BMS 5-109, Type II, Class 2 adhesive to that surface using a soft rubber roller to obtain even coverage. Within the potlife of the adhesive apply nylon peel ply Burlington Industries style 52006 or equivalent. Apply BMS 5-28 Type 7 to the edges of the core plug and the adjacent original core. Apply BMS 5-109 adhesive to the core side of the perforated sheet. Insert core plug (with peel ply showing). Remove any excess or apply additional BMS 5-28 Type 7 to fill gaps between repair core plug and original panel core.
12. Position a sheet of mylar over exposed core, then install a vacuum bag or apply 10 pounds per square inch weight while supporting the panel.
13. While maintaining pressure on repair core, remove masking tape from facesheet and remove any BMS 5-28 that flows through facesheet perforation. Use compressed air to blow any remaining BMS 5-28 out of perforated holes. Cure as given in Table I.
14. Remove vacuum bag or weight. Place the picture frame doubler in place and with pencil mark around outer edge of doubler. To protect panel from adhesive apply tape around outside of pencil line.
15. Clean and finish the faying surfaces of the original backface repair backsheet and repair doubler using the HF/alodine method as given in SRM 51-70-09.
16. Apply Desoto 513-707 or 515-346 CIAP primer. Refer to SRM 51-70-09.
17. Apply BMS 5-109, Type II, Class 2 adhesive between repair doubler and repair backsheet faying surfaces. See Table I for cure instructions.
18. After bond has cured remove mylar peel ply from honeycomb core and apply with a soft rubber roller BMS 5-109 Type II, Class 2 to exposed core. Apply BMS 5-109 adhesive on faying surface of pictureframe doubler and original backsheet. While adhesive is curing, position pictureframe repair doubler/backsheet in place and install BACB30VF3K bolt, BACN10JC3 nut and AN960PD10 washer as shown in Detail VIII. Refer to Table I for cure instructions.

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 13 of 18)**



767-300
STRUCTURAL REPAIR MANUAL

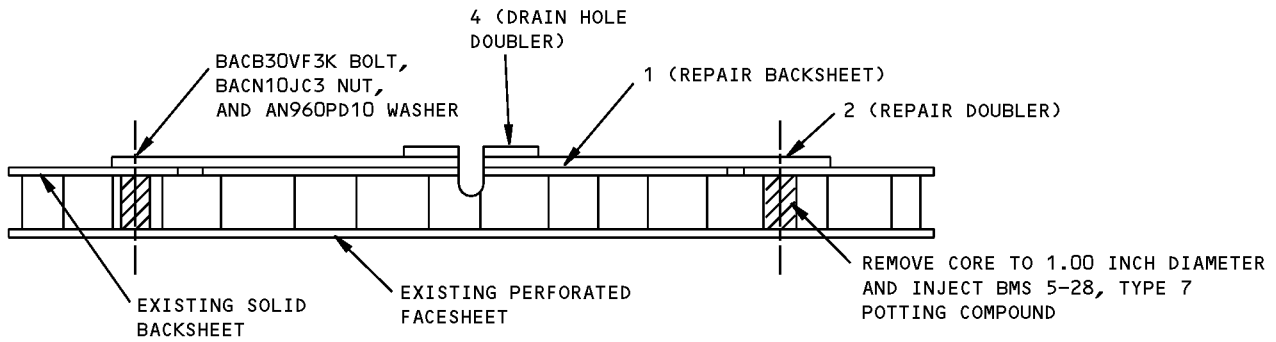
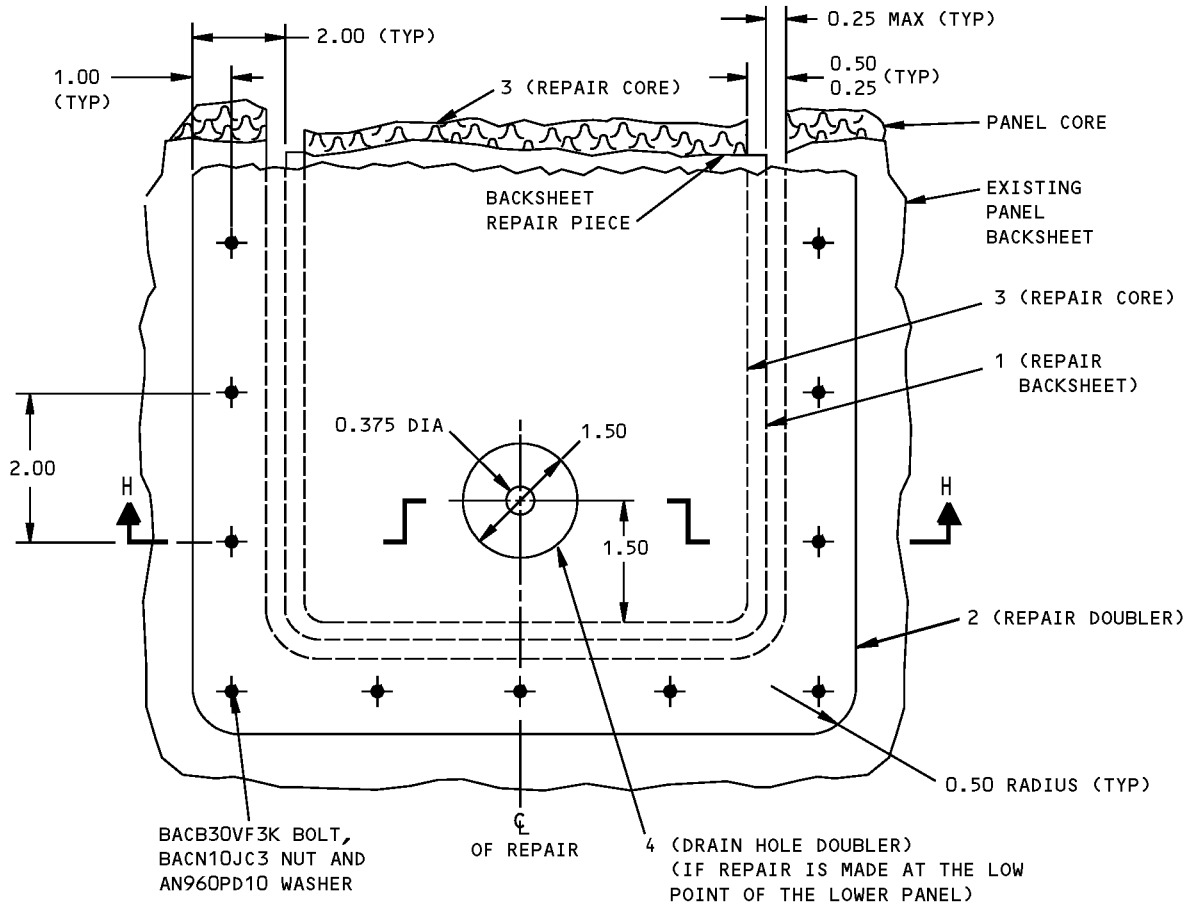
**REPAIR INSTRUCTIONS FOR DETAIL VII
(CONT)**

- 19. Clean outer surface of reworked area and apply protective treatment per 51-20-01.
- 20. Apply one coat of BMS 10-11 Type I primer over entire repair area.
- 21. Cap fasteners with BMS 5-26 sealant.
- 22. Fillet seal edges of repair parts.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR BACK-SHEET	1	SAME GAGE AS ORIGINAL MATERIAL 2024-T62
2	REPAIR DOUBLER	1	0.025 CLAD 2024-T62
3	REPAIR CORE	AS REQD	FLEX CORE PER BMS 4-6, TYPE 4.1-25, CLASS I
4	DRAINHOLE DOUBLER	1	0.025 CLAD 2024-T62

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 14 of 18)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION H-H

DETAIL VII

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 15 of 18)**

STRUCTURAL REPAIR MANUAL

APPLICABILITY
THIS REPAIR IS FOR THE DELAMINATION OF PERFORATED ALUMINUM ACOUSTIC FACESHEETS.

REPAIR INSTRUCTIONS FOR DETAIL VIII

1. Get access to the damaged area.
2. Remove the delaminated skin to a regular shape.
3. Remove the old adhesive from the delaminated surfaces.
4. Make the doubler. Refer to Table II and Section I-I.
5. Place the doubler in position and drill 0.16 inch (4 mm) diameter pilot holes. See Detail X.
6. Remove the honeycomb to 1.0 inch (25 mm) diameter around the fastener holes. See Section I-I.
7. Solvent clean, chemical conversion coat, and prime with DeSoto 513-707 OR 515-346 CIAP primer the top and bottom surfaces of the removed skin and the bottom surface of the doubler. Refer to SRM 51-70-09.
8. Solvent clean and alodine treat the cut edge of the skin that was not removed. Refer to SRM 51-70-09.
9. Fill the 1.0 inch (25 mm) diameter honeycomb holes with BMS 5-28, Type 7 potting compound. See Section I-I. Cure the potting compound at the same time as the adhesive in the next step.
10. Assemble and bond the parts as shown in Details IV and VII with BMS 5-141. Fill the space between the skins with BMS 5-141. See Detail VI.
11. Drill the fastener holes to the final size through the panel at each pilot hole location. Countersink as necessary.
12. Install fasteners. Do not use sealant.
13. Clean, then prime and paint the repair area with BMS 10-72, Type V.

NOTES

WHEN YOU USE THIS REPAIR, REFER TO:

- AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
- SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
- SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
- SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.040 CLAD 2024-T3

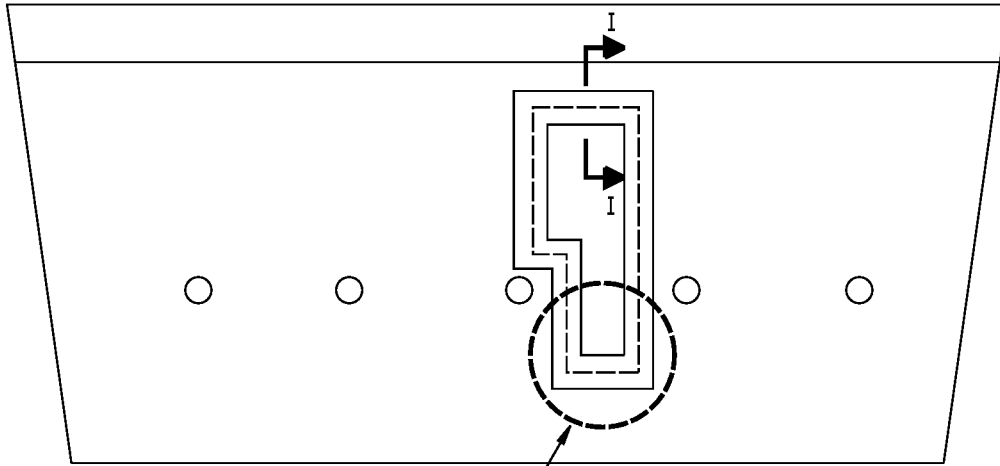
TABLE II

FASTENER SYMBOLS

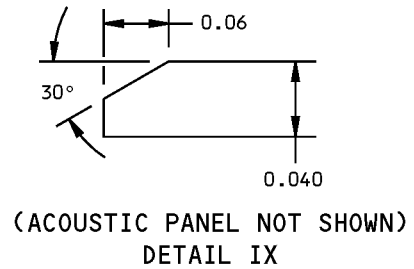
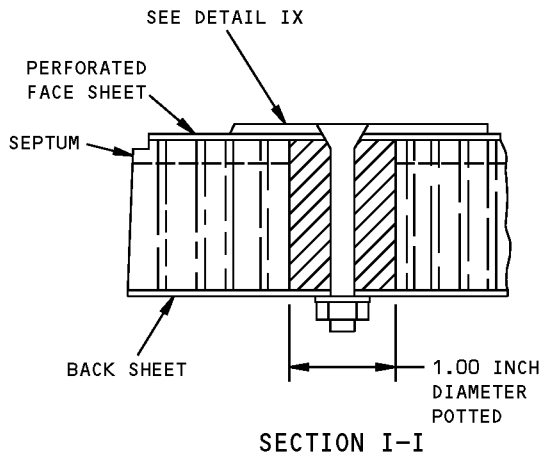
- + REPAIR FASTENER LOCATION. INSTALL A BACB30VF3K BOLT WITH A BACN10JC3 NUT AND AN960PD10 WASHER. WHERE A COUNTERSINK IS NECESSARY ON THE BACK SIDE, INSTALL AN ASPFFDT6 DOUBLE COUNTERSUNK SCREW. A COUNTERSINK WASHER IS OPTIONAL.

**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 16 of 18)**

**767-300
STRUCTURAL REPAIR MANUAL**

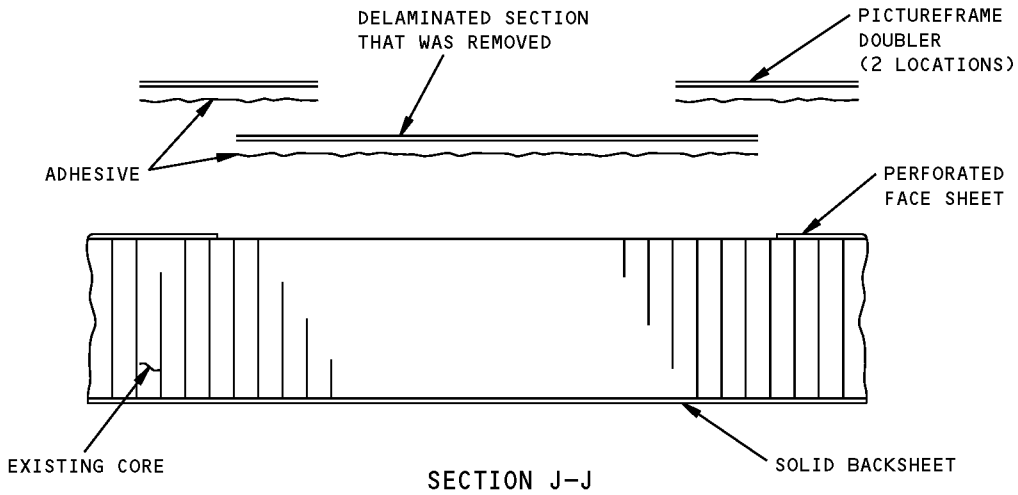
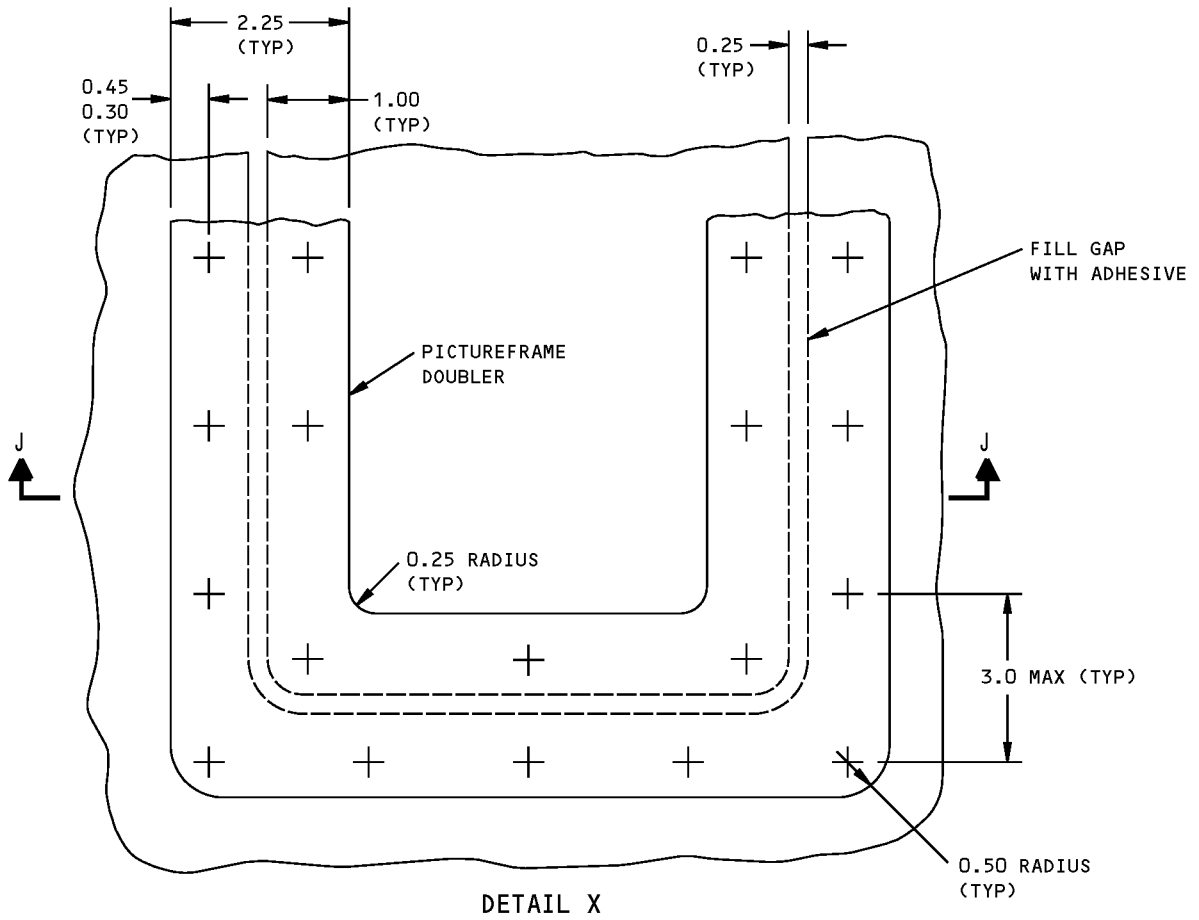


SEE DETAIL X
TYPICAL DAMAGE
DETAIL VIII



**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 17 of 18)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Typical Repairs for Perforated Aluminum Acoustic Panels - PW4000 Engine
Figure 201 (Sheet 18 of 18)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - TYPICAL REPAIRS FOR PERFORATED ALUMINUM ACOUSTIC PANELS AT THE FAN BLADE CONTAINMENT BELT AREA - PW4000 ENGINE

APPLICABILITY
<p>THIS REPAIR IS APPLICABLE TO:</p> <ul style="list-style-type: none"> - ACOUSTIC PANEL CRACKS WITHIN 2 INCHES OF THE PANEL EDGE AND/OR CORE DAMAGE NOT EXCEEDING 3 INCHES IN DIAMETER AT FAN BLADE CONTAINMENT BELT AREA.




NOTES

- WHEN YOU USE THIS REPAIR REFER:
 - AMM 71-11-02 FOR THE REMOVAL AND INSTALLATION OF THE INLET COWL.
 - CMM 71-11-51 FOR THE ASSEMBLY AND DISASSEMBLY OF THE FAN BLADE CONTAINMENT BELT
 - SOPM 20-41-02 FOR APPLICATIONS OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC MATERIALS
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR INSTALLATION OF COUNTERSINK REPAIR WASHER

1. Get access to the damaged area. Refer to AMM 71-11-02, CMM 71-11-51 and PW4000 engine maintenance manuals for the removal and reinstallation of the fan blade containment belt and of the inlet cowl panels.
2. Drill a 0.25 inch (6 mm) diameter hole at each end of the crack. See Detail I.

NOTE: IF THE CORE IS ALSO DAMAGED AND NEEDS TO BE REPAIRED, REFER TO FIGURE 201.
3. Drill out sufficient number of edge fasteners required to install Part 1.
4. Make the repair parts. See Table I.
5. Put the Part 1 and Part 2 doublers on the acoustic panel and drill holes to match existing edge fastener holes. Drill additional fastener holes as shown in Detail I. Ensure the fastener holes on Part 2 are countersunk for a double flush installation.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the acoustic panel.
8. Solvent clean the faying surfaces of the original panel and the Part 1 doubler. Refer to SRM 51-70-09.
9. Apply BMS 5-89 CIAP primer if PANTA method is used. Apply DeSoto 513-707 or 515-346 CIAP primer if HF/Alodine method is used. Refer to SRM 51-70-09.
10. Inject potting compound BMS 5-28 type 7 through the perforations on the face sheet and through the bolt holes on the solid face. Ensure that the potting compound is on both sides of the septum in the area of the fastener holes before installation.
11. Apply adhesive, BMS 5-109 type II class 2 to a thickness of 0.01 inch (2.5 mm) to the panel and parts 1 and 2. Install fasteners and allow to cure as given in Figure 201.

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION
-  REPAIR FASTENER IN EXISTING LOCATION
-  INITIAL FASTENER LOCATION. INSTALL A ASPFF-DT06-() DOUBLE COUNTERSINK FASTENER.

REPAIR MATERIAL			
PART NUMBER	PART	QUANTITY	MATERIAL
1	Doubler	1	0.080 2024-T62
2	Doubler	1	Make from 0.080 2024-T62 A
3	Countersink Repair Washer	As required	Refer to SRM 51-40-08

TABLE I

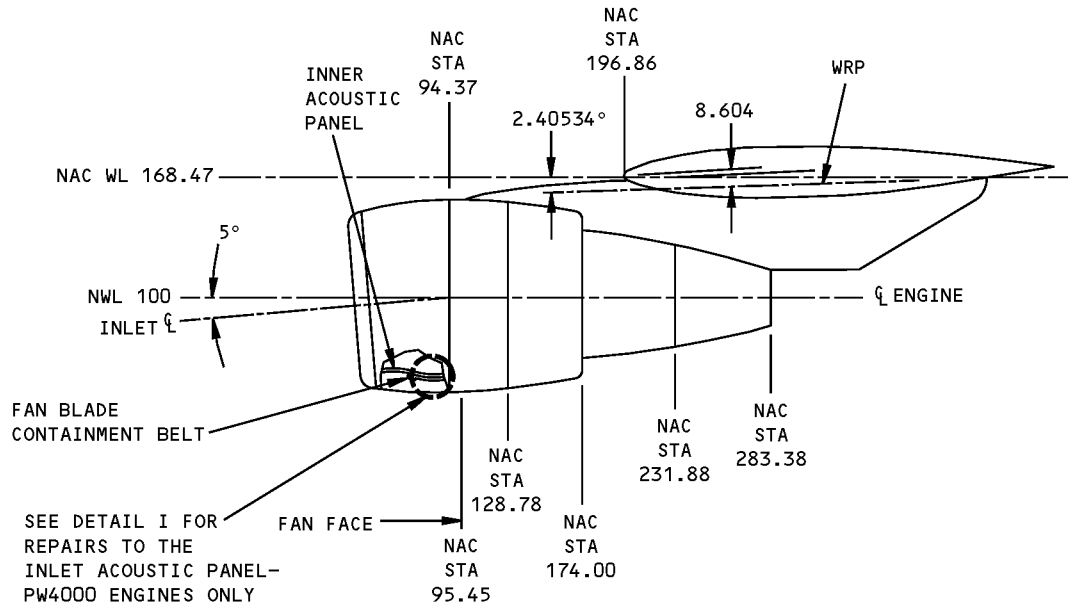
A MAKE FROM 0.080 INCH 2024-T62. COUNTERSINK 100 DEGREES TO MATCH FASTENER GEOMETRY.

Typical Repairs for Perforated Aluminum Acoustic Panels at the Fan Blade Containment Belt Area - PW4000 Engines

Figure 201 (Sheet 1 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

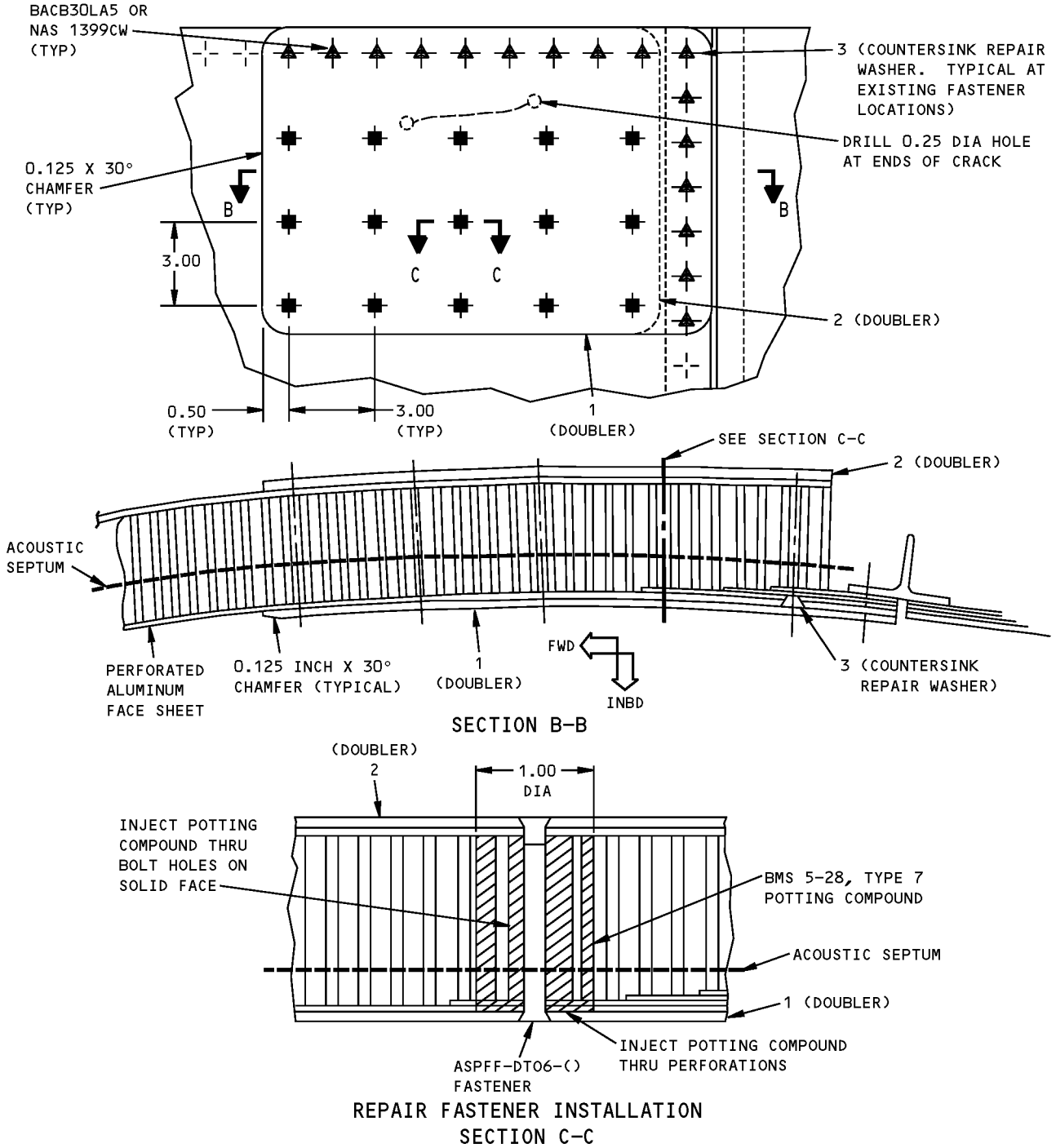
REFERENCE DRAWING
310T4000



LEFT SIDE VIEW OF NACELLE FOR PW4000 ENGINE

**Typical Repairs for Perforated Aluminum Acoustic Panels at the Fan Blade Containment Belt Area - PW4000 Engines
Figure 201 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL



REPAIR OF LARGE CRACKS OR DAMAGE
NEAR PANEL EDGE AT THE FAN BLADE CONTAINMENT BELT AREA
DETAIL I

Typical Repairs for Perforated Aluminum Acoustic Panels at the Fan Blade Containment Belt Area - PW4000 Engines
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 1 - TYPICAL REPAIRS FOR ACOUSTIC PANELS - RB211-524 ENGINE

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

ADHESIVE AND POTTING COMPOUND CURE TABLE				
ADHESIVE OR POTTING COMPOUND	COMPONENTS	PARTS BY WEIGHT	GEL TIME	CURING TIME [A]
BMS 5-28 TYPE 7 POTTING [B]	EPOCAST 8414 A/B CG1305 FR 7162 A/B	[C]	60 MINUTES	2 HOURS AT 125°F [H]
BMS 5-28 TYPE 14 POTTING [E]	PR-957 PRO SEAL 840	[C]	8 HOURS	90 MINUTES AT 260 ±10F
BMS 5-109 TYPE 2, CLASS 2 ADHESIVE	EA 934 EA 934NA	[D]	30 MINUTES [G]	1 HOUR AT 200 ±10F 9 HOURS AT 160 ±10F 25 HOURS AT 120 ±10F 7 DAYS AT 77 ±10F
[F]	BR 95/AB	[D]	60 MINUTES [G]	70 MINUTES AT 200 ±10F (93 ±5C) 120 HOURS AT 77 ±10F (25 ±5C)

NOTES

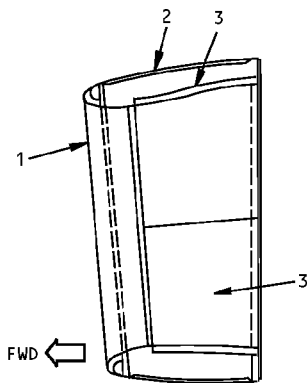
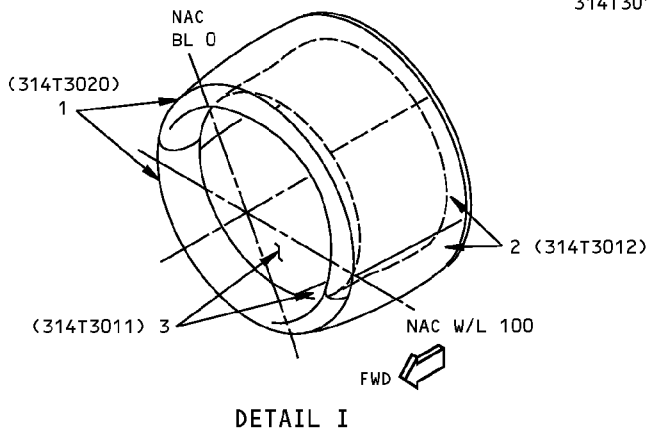
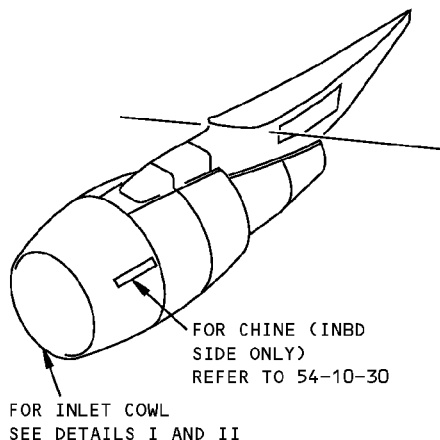
- [A] MATERIAL SHALL BE HEATED AT A MAXIMUM RATE OF 5 TO 7°F PER MINUTE, THEN HELD AT THE CURE TEMPERATURE FOR THE INDICATED TIME.
- [B] TWO PART - ROOM TEMP CURE, POURABLE WITH ONE YEAR OF STORAGE TIME AT 40°-80°F.
- [C] MIX PER MANUFACTURERS INSTRUCTIONS. VISCOSITY CAN BE INCREASED BY ADDING MILLED GLASS FIBERS UP TO 20% MAXIMUM BY WEIGHT.
- [D] MIX RATIO 32 TO 34 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT.
- [E] ONE PART FROZEN - HEAT CURE, TROWELABLE PUTTY WITH 3 MONTHS OF STORAGE TIME AT 0°F OR BELOW. OPTIONAL TO TYPE 3 AND 7 IN AREAS WHERE HIGH VISCOSITY IS NEEDED TO PREVENT POTTING COMPOUND FROM FLOWING OUT OF THE HOLE.
- [F] OPTIONAL TO BMS 5-109 TYPE 2, CLASS 2 IN REPAIRS WHERE LONGER WORK TIME IS REQUIRED.
- [G] FASTENERS MUST BE INSTALLED WHILE ADHESIVE IS STILL WORKABLE.
- [H] FOR OPTIMUM PROPERTIES CURE 7 DAYS AT 65°F (19°C) OR 5 HOURS AT 125°F (52°C).

Typical Repairs for Acoustic Panels - RB211-524 Engines
Figure 201

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL SKIN - JT9D-7R4 ENGINE

REF DWG
314T3010



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	L/E SKIN	0.090	2219-T62	
2	OUTER PANEL SKIN CORE		GRAPHITE/ARAMID EPOXY SANDWICH SEE DETAIL III NOMEX HONEYCOMB PER BMS 8-124, CLASS IV, TYPE 1, GRADE 4.0	
3	INNER PANEL BACKSHEET CORE EDGE CORE INNER SKIN	0.020 0.032	CLAD 2024-T62 FLEX CORE PER BMS 4-6, TYPE 4.1-25, CLASS I ALUMINUM HONEYCOMB CORE 22.1-1/8-60N 5052 PER MIL-C-7438E PERFORATED CLAD 2024-T62 PER BMS 7-209, TYPE 1B-32, GRADE 1A, CLASS 45-81	

LIST OF MATERIALS FOR DETAILS I AND II

**Inlet Cowl Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 2)**

IDENTIFICATION 1
Page 1
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54-10-01

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

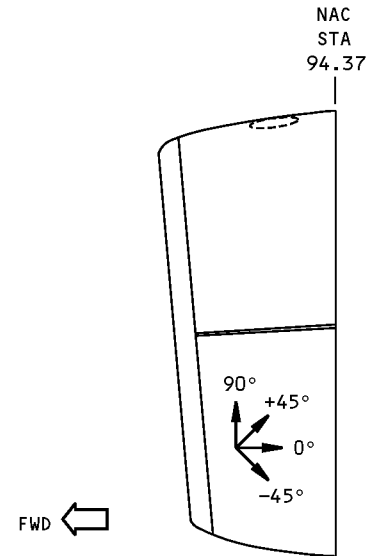
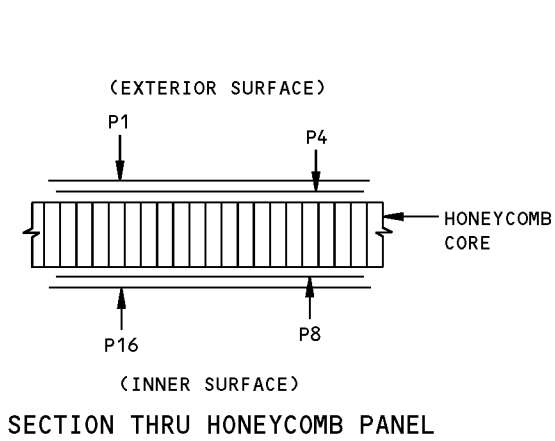


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^[A]
2	P1	[B]	0°
	P4	[C]	45°
	P8	[C]	45°
	P16	[B]	0°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

DETAIL III

NOTES

- [A] PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- [B] EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE
- [C] EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE

**Inlet Cowl Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 2)**

IDENTIFICATION 1
Page 2
Apr 01/2005

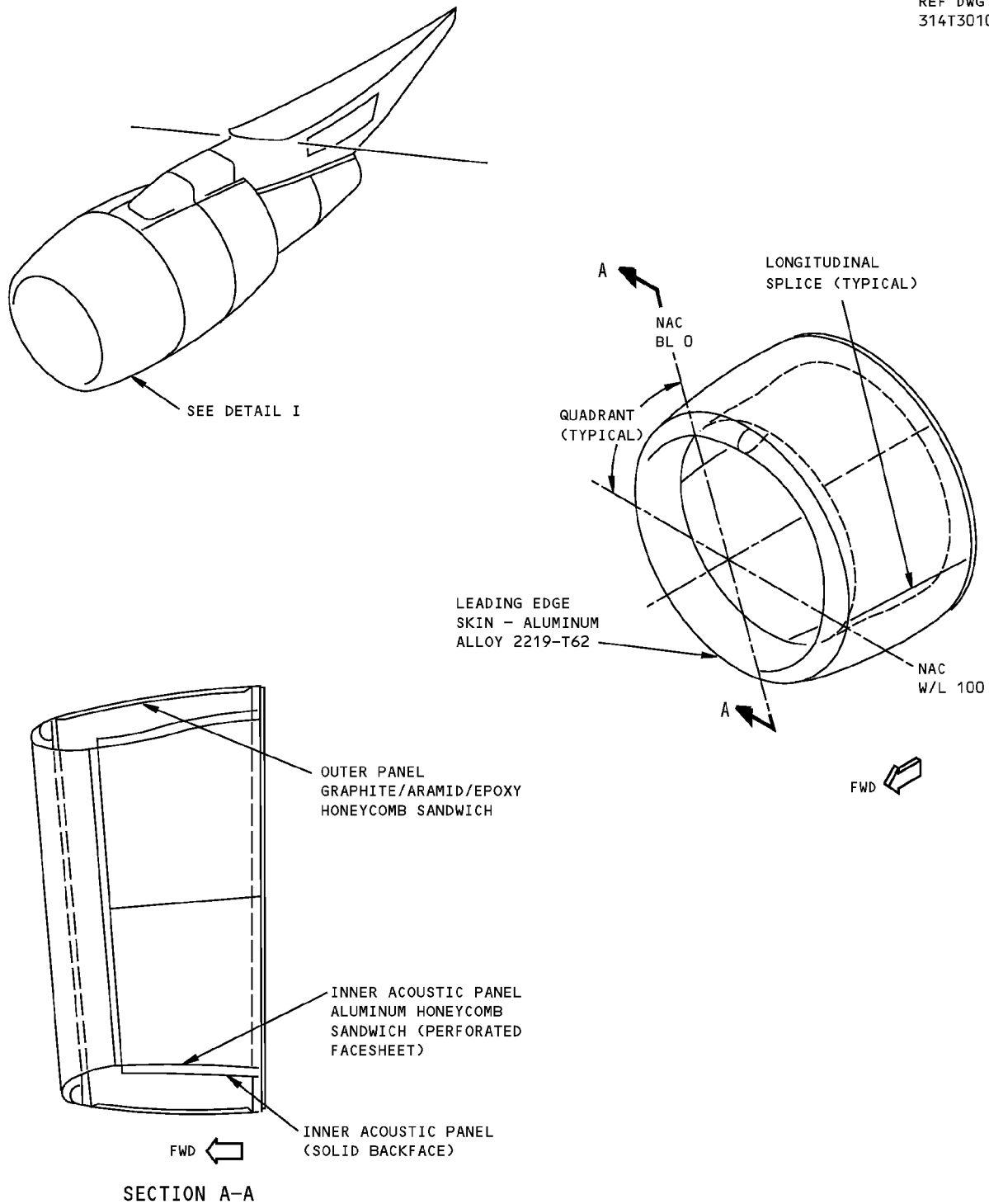
54-10-01

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL SKIN - JT9D-7R4 ENGINE

REF DWG
314T3010



**Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES, CORROSION, AND SCRATCHES	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
LEADING EDGE SKIN	A	B	J	C	—
OUTER PANEL	F	G	H	I	E
INNER PANEL—PERFORATED FACESHEET, SOLID BACK-FACE L	A	B	J	NOT ALLOWED	K

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFER TO 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- TYPICAL DAMAGE TO A PANEL EDGE BAND MAY CONSIST OF EDGE CRUSHING, CRACKS OR DELAMINATION. DAMAGE AROUND HOLES MAY CONSIST OF OVALIZATION, FASTENER PULLTHROUGH OR CRACKS OUT OF HOLE. DAMAGE MAY REDUCE THE EFFECTIVE CROSS SECTIONAL AREA OF AN EDGE BAND. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. IF FIBERS ARE DAMAGED, TREAT AS A CRACK

A CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED PER DETAILS II AND VI

B REMOVE DAMAGE PER DETAILS II, III, AND V

C CLEAN PUNCTURES UP TO 0.25 INCH (6 mm) DIA MAX. HOLES ALLOWED UP TO 0.25 INCH (6 mm) DIA, NOT CLOSER THAN 4D TO ANY ADJACENT HOLE. HOLE IS TO BE FILLED WITH A NAS 1399D BLIND RIVET FOR HOLE UP TO 0.16 INCH (4 mm) DIA AND NAS 1398D BLIND RIVET FOR HOLE 0.19 INCH (5 mm) TO 0.25 INCH (6 mm) DIA, INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. OTHER HOLES TO BE REPAIRED

D REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK

E 4.00 INCHES (100 mm) MAX. DIA ALLOWED IN HONEYCOMB AREA. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. REPAIR DELAMINATION IN HONEYCOMB AREA PER 51-70 NO LATER THAN THE NEXT "C" CHECK. **D**

F CRACKS IN FASTENER HOLES ALONG LONGITUDINAL SPLICE ALLOWED PER DETAIL VII **D** FOR DAMAGE OTHER THAN LONGITUDINAL SPLICE:

CLEAN UP EDGE CRACKS PER DETAILS II AND VI. NOT MORE THAN ONE FASTENER HOLE IN SIX MAY BE CRACKED OR DAMAGED. DAMAGE MUST NOT EXCEED 2% OF EDGE BAND LENGTH. 0.50 INCH (12.7 mm) MAX DIMENSION IN EDGE BAND AND 2.00 INCH (50 mm) MAX DIMENSION (D) IN HONEYCOMB AREA IS ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 4D (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE OR PANEL EDGE. **D**

G IF FIBERS ARE DAMAGED, TREAT AS A CRACK. IF FIBERS ARE NOT DAMAGED PROTECT PER NOTE **D**

**Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES (CONTINUED)

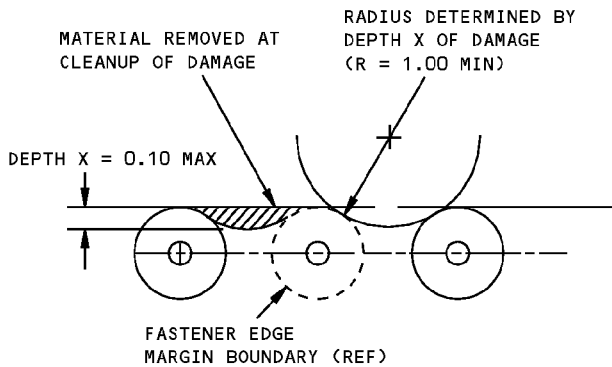
H DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 2.0 DIA MAX ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6 INCHES FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE

I 1.0 MAX DIA. IN HONEYCOMB AREA ONLY AND MIN OF 4D FROM NEAREST HOLE, MATERIAL EDGE OR OTHER DAMAGE (EDGE TO EDGE). DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **D**

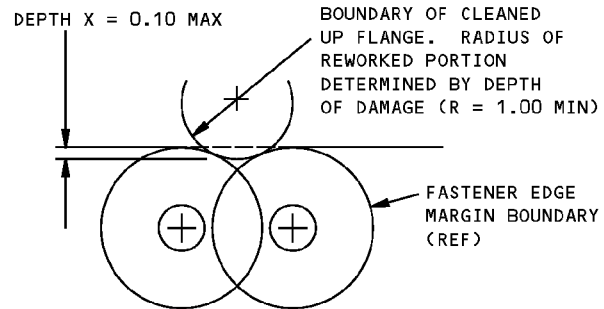
J TWO DENTS MAX ALLOWED PER QUADRANT (SEE DETAIL I), WITH NO LESS THAN 15.0 INCHES BETWEEN DENTS. SEE DETAIL IV

K SEE DETAIL VIII FOR DELAMINATION (DISBONDING) OF PERFORATED FACESHEET. SEE DETAIL IX FOR SOLID BACKFACE. DAMAGE NOT EXCEEDING THESE LIMITS ARE ALLOWED, PROVIDING THAT PANELS ARE INSPECTED EVERY 300 FLIGHT HOURS UNTIL PANEL IS REPAIRED OR REPLACED

L INNER PANEL CAN BE INSPECTED FOR DAMAGE ON BACKFACE BY REMOVING PRESSURE RELIEF DOORS OR BY REMOVING BACK PANEL. REFER TO 71-11 OF THE 767 MAINTENANCE MANUAL

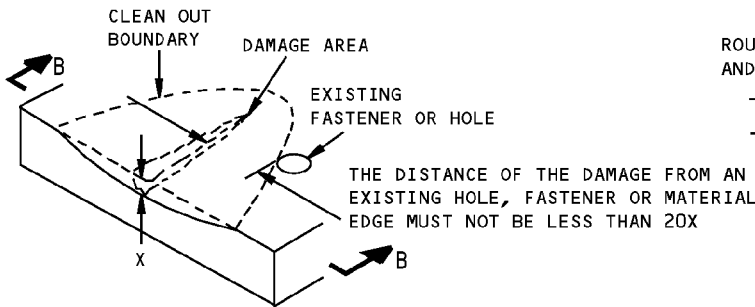


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

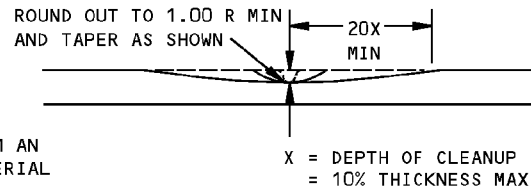


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III



SECTION B-B

**Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 6)**

STRUCTURAL REPAIR MANUAL

CAUTION: DO NOT FILL DENTS

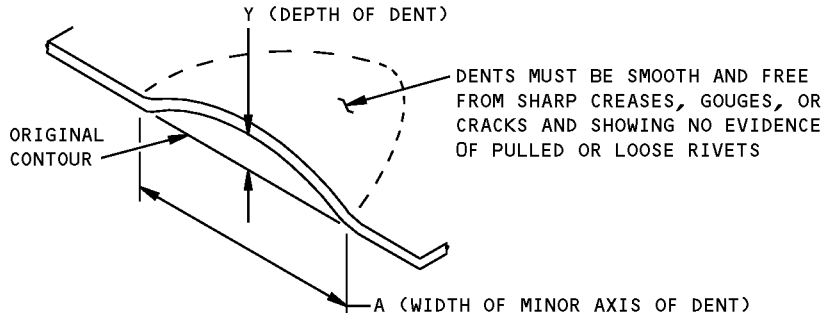
$\frac{A}{Y}$ MUST NOT BE LESS THAN 30

FOR LEADING EDGE SKIN:

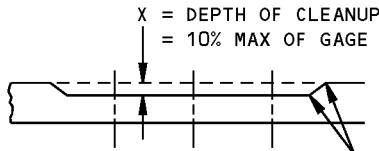
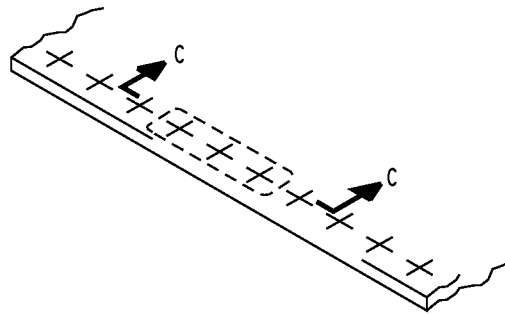
Y = 0.125 MAX
MAJOR AXIS = 4.0 MAX

FOR INNER PANEL, PERFORATED

INNER SKIN:
Y = 0.050 MAX
MAJOR AXIS = 3.0 MAX



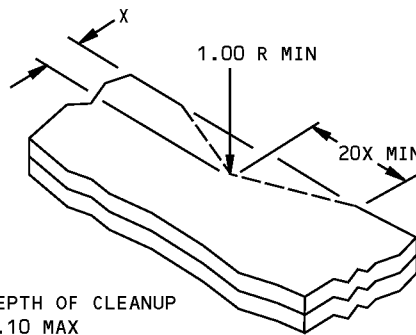
ALLOWABLE DAMAGE FOR DENT
DETAIL IV



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

CORROSION CLEANUP
DETAIL V

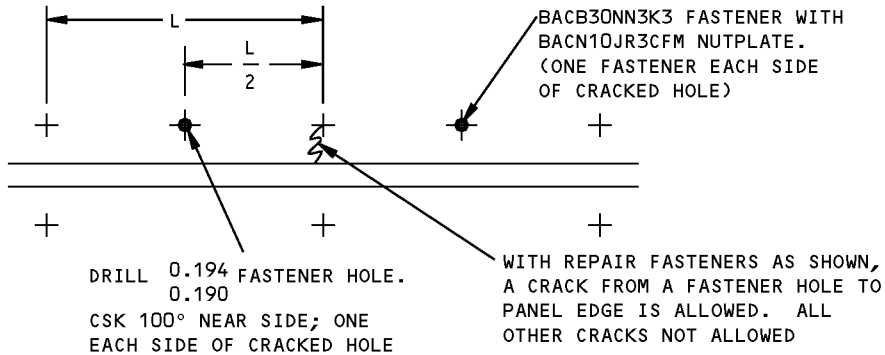


DETAIL VI

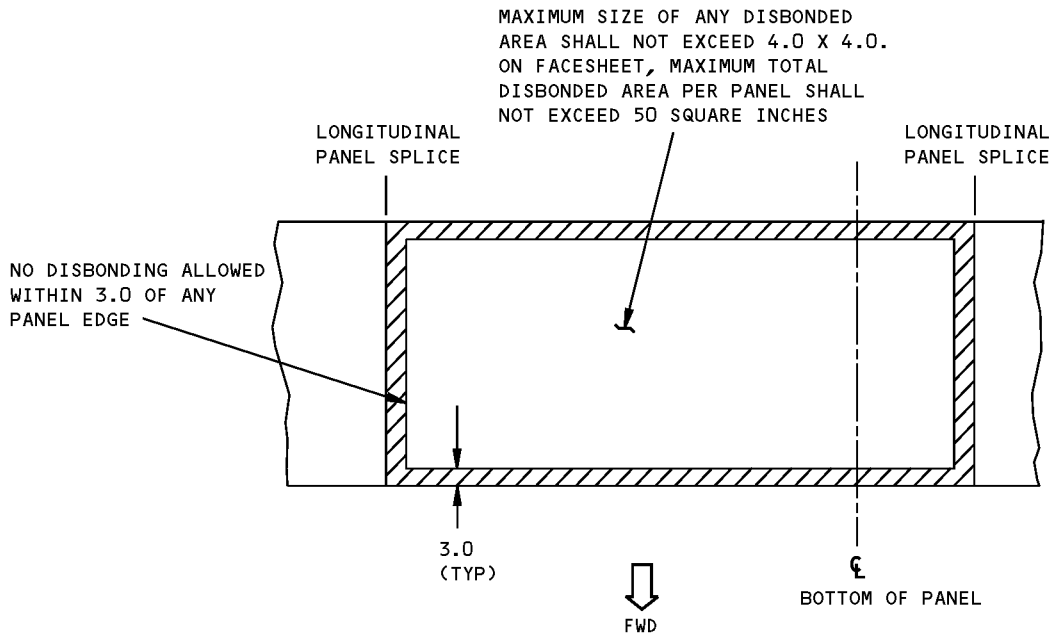
Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

L = EXISTING FASTENER SPACING



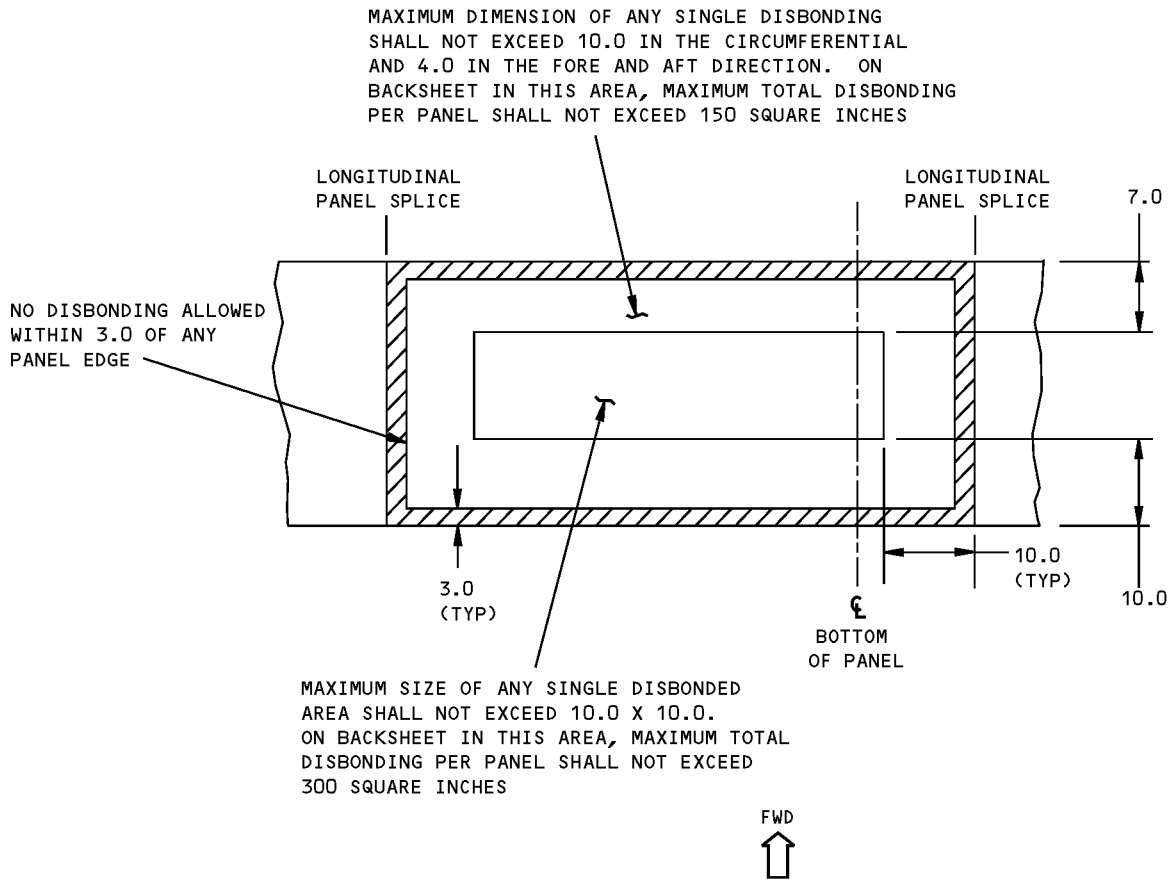
**ALLOWABLE CRACKS ALONG A LONGITUDINAL SPLICE
DETAIL VII**



**ALLOWABLE DISBOND LIMITS FOR INNER
ACOUSTIC PANEL, PERFORATED FACESHEET
DETAIL VIII**

**Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

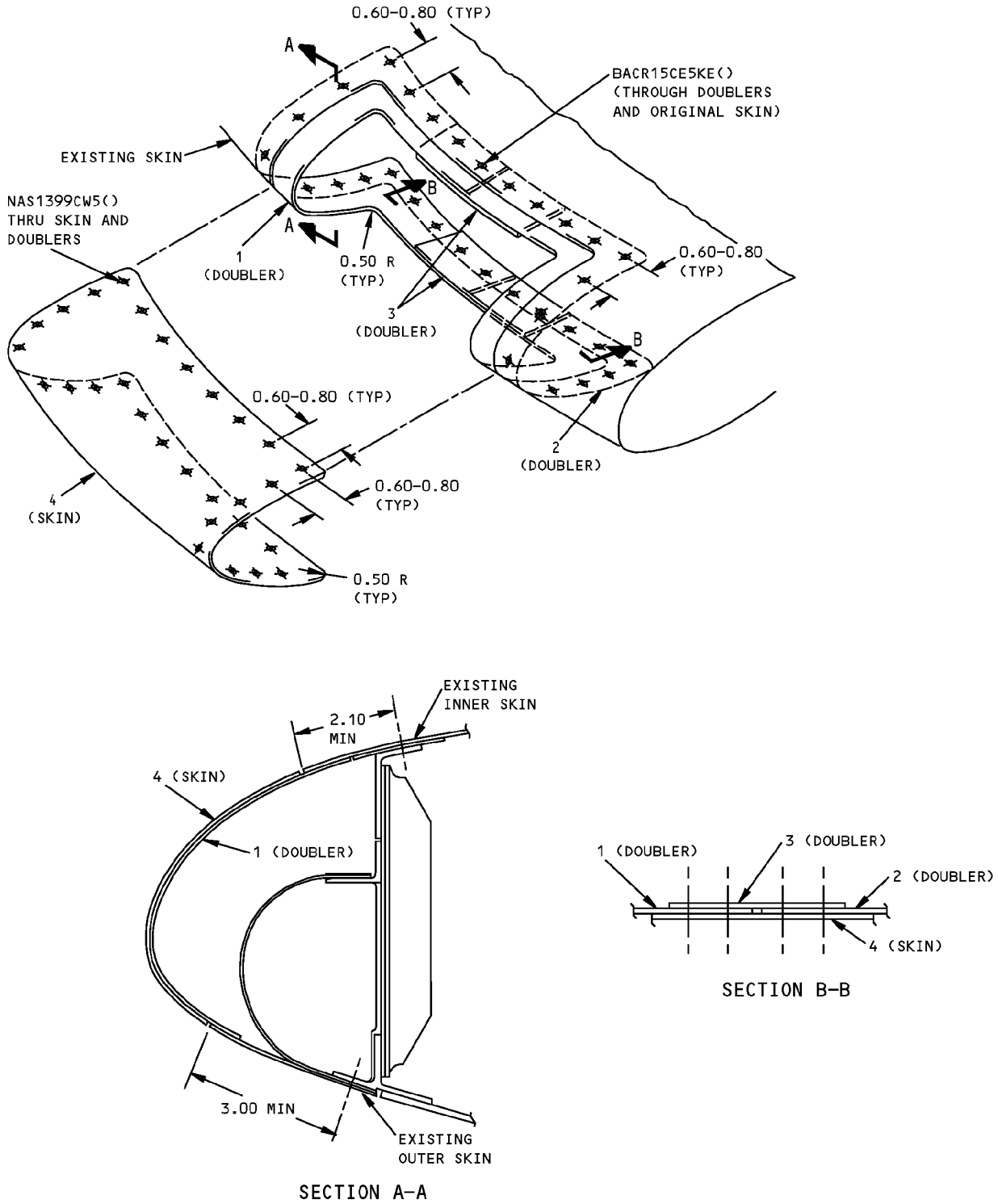


ALLOWABLE DISBOND LIMITS FOR SOLID BACKFACE
(SHOWN WITH OUTER PANEL REMOVED)
DETAIL IX

Allowable Damage - Inlet Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - INLET COWL LEADING EDGE - JT9D-7R4 ENGINE



**Inlet Cowl Leading Edge Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR INSTRUCTIONS

1. Cut out the damaged skin to a rectangular shape. The cut can not be closer than 3.00 inches to the outer row of fasteners or 2.10 inches to the inner row of fasteners.
2. Make the repair parts. Form doublers to required contour. The repair skin may be cut from scrap or spare nose cowl.
3. Assemble the repair parts and drill the fastener holes.
4. Disassemble the repair parts.
5. Remove all nicks, scratches, burrs, and corners from original and repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710 Type 51 (Desoto Hi-Temp) primer, except dry film thickness should be 0.002 inch to 0.003 inch, to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Attach doublers to the initial skin using BACR15CE5KE() rivets.
9. Attach skin to doublers using blind rivets NAS1399CW5A(). Install wet with BAC5710, Type 51 primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish as given in AMM 51-21.

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21 FOR FINISHES
 - AMM 51-31-01 FOR SEALS AND SEALING
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS GIVEN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SYMBOLS

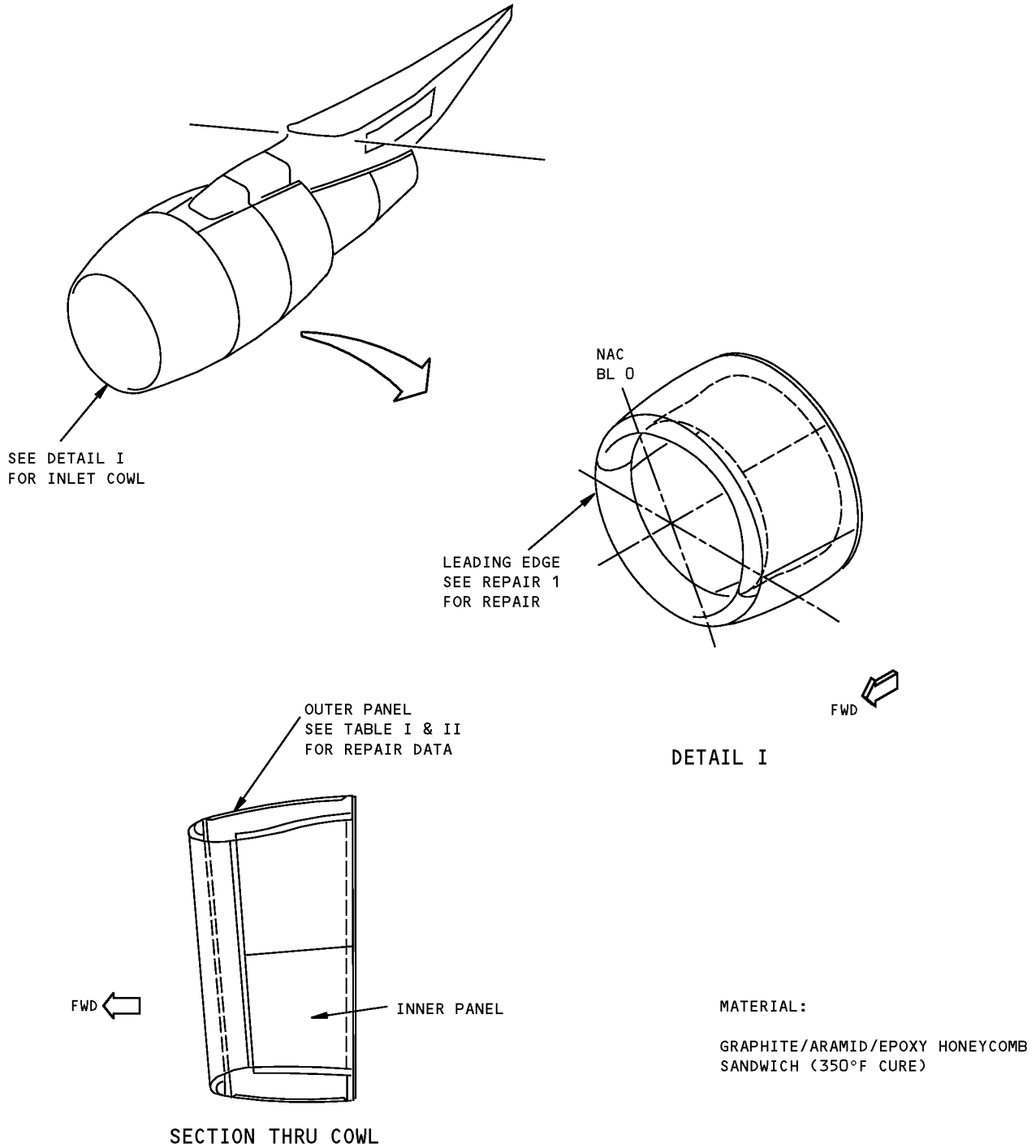
- ✦ REPAIR FASTENER LOCATION AS AN OPTION TO NAS1399CW()A() USE NAS1399MW()A().

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
2	DOUBLER	1	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
3	DOUBLER	2	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
4	SKIN	1	SAME GAGE AS ORIGINAL MATERIAL 2219-T62 OPTIONAL: 2024-T62

**Inlet Cowl Leading Edge Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - INLET COWL SKIN - JT9D-7R4 ENGINE



**Inlet Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS [G] [A]	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) [F]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [B]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. [D]	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION: FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR GRAPHITE/ARAMID HONEYCOMB PANEL
TABLE I

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- FINISH REPAIRED AREA AS GIVEN IN AMM 51-20.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.

[A] MINIMUM OF 3.5 INCHES (89 mm) FROM PANEL EDGE

[B] LIMITED TO REPAIR OF DAMAGE TO ONE FACE SHEET SKIN AND HONEYCOMB CORE

[C] INSPECT TIME LIMITED REPAIR AT EACH "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT, BUT NO LATER THAN NEXT "C" CHECK.

[D] ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER REPAIR.

[E] FOR ROOM TEMP CURE REFER TO SRM 51-70-03.

[F] FOR WET LAYUP REPAIRS USE 1.0 INCH (25 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) PER PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.

[G] INSPECT INTERIM REPAIR USING VISUAL AND "TAP" METHODS (SRM 51-70-03) EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT.

**Inlet Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C E	PERMANENT REPAIRS	
		WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) F	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.025 (0.6 mm) DEEP IN EDGE BAND LAMINATE - MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 (0.25 mm) DEEP IN EDGE BAND, LAMINATE - MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (12.7 mm) DIA MAX WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH (12.7 mm) DIA MAX WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (12.7 mm) DIA MAX HOLE THRU EDGE BAND, MIN 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03, PAR. 5.G.	POTTING ALLOWED FOR 0.25 INCH (0.6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR OTHER DAMAGE, REFER TO SRM 51-70-17, PAR. 4.L. 1.0 INCH (25 mm) OVERLAP REQUIRED PER PLY. USE 2 EXTRA PLIES.	POTTING ALLOWED FOR 0.25 INCH (0.6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL.
DELAMINATION	2 SQ INCHES (13 sq cm) (MAX 2.0 INCHES (50 mm) LENGTH) ALLOWED. MIN OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

FOR GRAPHITE/ARAMID EDGE BAND LAMINATE
TABLE II

Inlet Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL LEADING EDGE SKIN - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Drill out as necessary the fasteners in the region of the damaged or corroded skin.
2. Carefully cut away the damaged skin to a rectangular shape, inserting sheet metal guards at the corners. Radius all corners.

CAUTION: DO NOT GOUGE, SCRATCH, OR CUT THE REMAINING SKIN SURFACE.

3. Make the repair parts. Form doublers and skin to required contour.

NOTE: THE REPAIR SKIN MAY BE CUT FROM AN EXISTING DAMAGED NOSE COWL.

4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710 Type 51 (Desoto Hi-Temp) primer, except dry film thickness should be 0.002 to 0.003 INCH (0.05 TO 0.07 mm), to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Rivet doublers and taper fillers to existing skin using BACR15CE6KE() rivets.
9. Rivet skin to doublers and chords using blind rivets. Install wet with BAC5710, Type 51 primer. Attach skin to inside chord using blind bolts. Install wet with BAC5710, Type 51 primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish according to AMM 51-21.

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-40-00 FOR FASTENER REMOVAL, INSTALLATION HOLE SIZES, AND EDGE MARGINS.

A CHAMFER END TO FIT

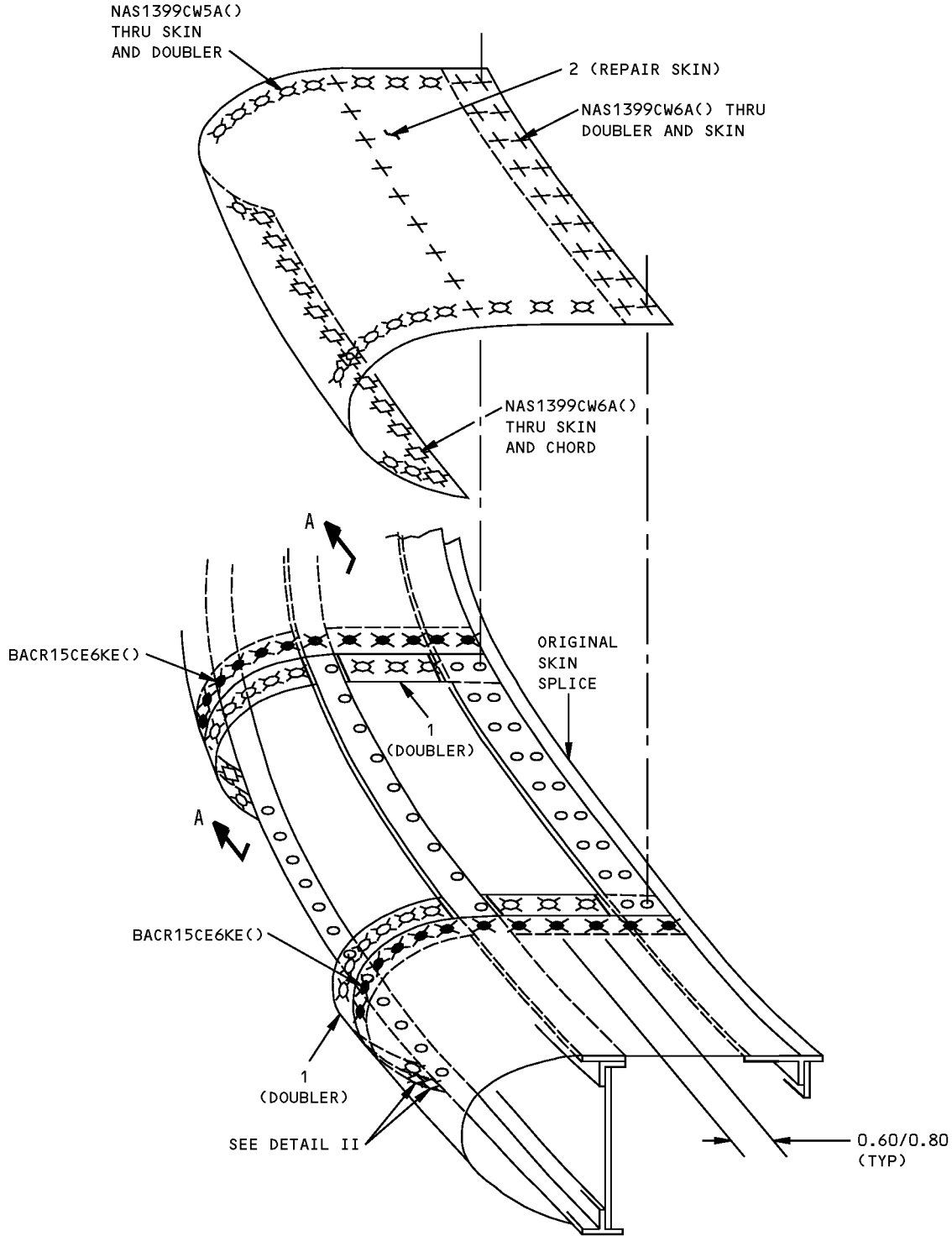
SYMBOLS

- ORIGINAL HOLES.
- + EXISTING FASTENER LOCATION
INSTALL NAS1399CW6A() REPAIR FASTENER.
- ⊕ NAS1399CW5 REPAIR FASTENER.
- ⊕ REPAIR FASTENER OR EXISTING FASTER LOCATION
INSTALL NAS1399CW6A() REPAIR FASTENER.
- ◆ BACR15CE6KE() REPAIR FASTENER.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	4	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
2	SKIN	1	SAME GAGE AS ORIGINAL MATERIAL 2219-T62 OPTIONAL: 2024-T62
3	TAPER FILLER	2	SIZE TO SUIT 2024-T62

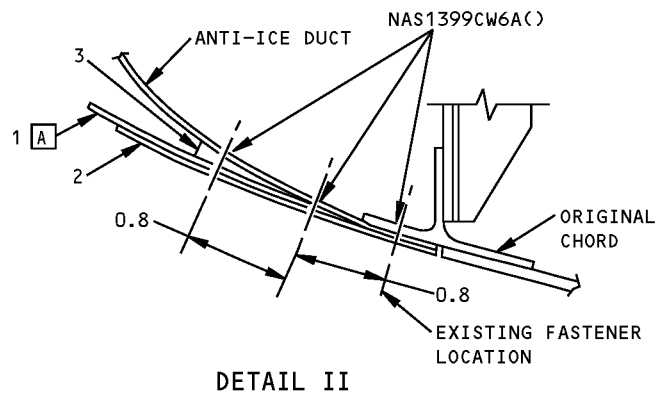
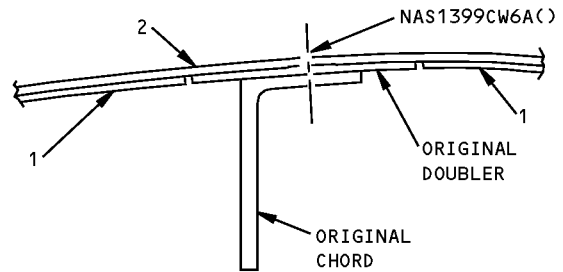
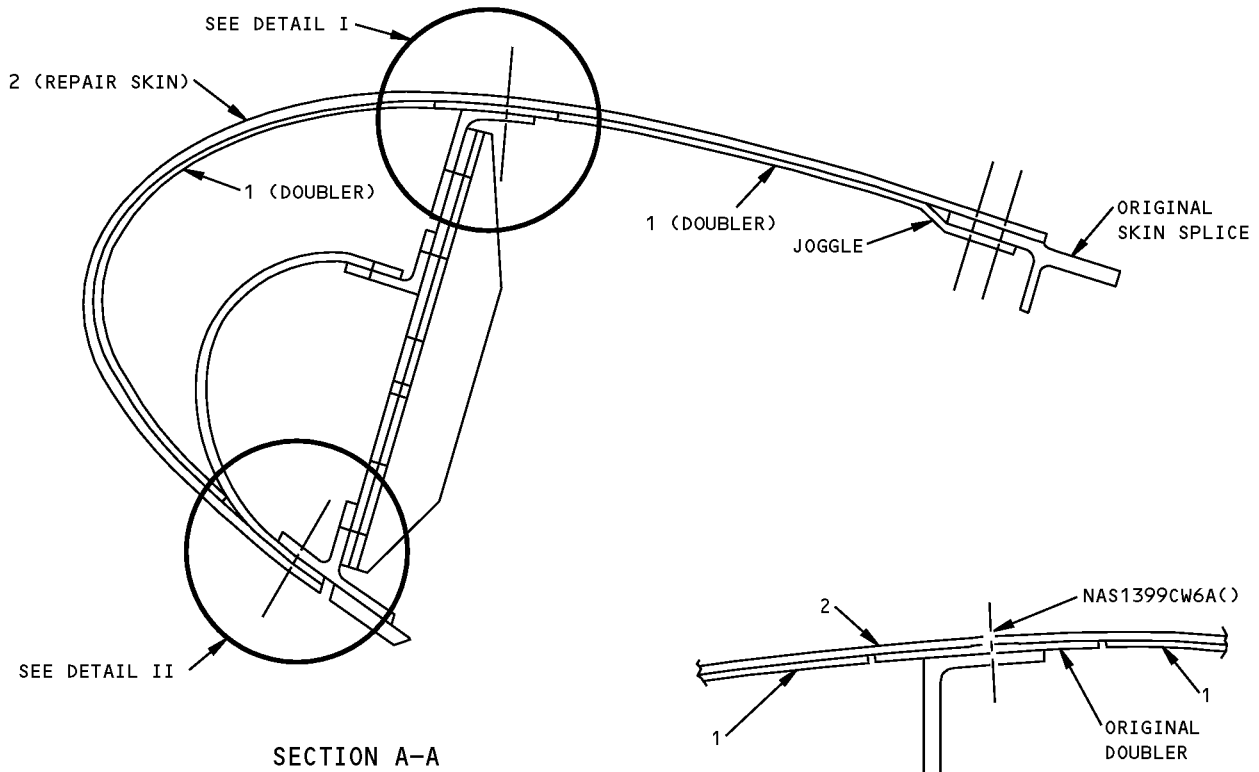
**Inlet Cowl Leading Edge Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Inlet Cowl Leading Edge Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

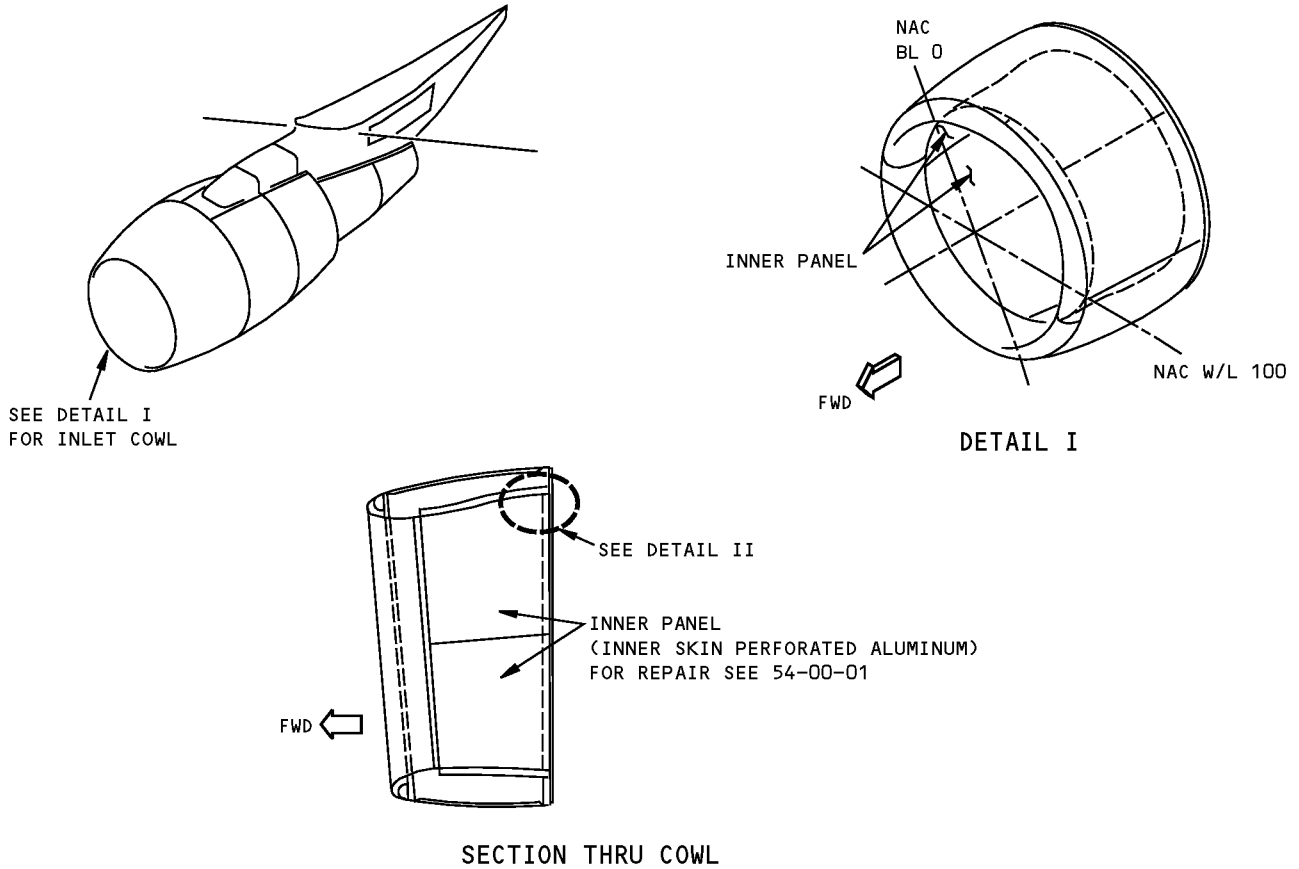
**767-300
STRUCTURAL REPAIR MANUAL**



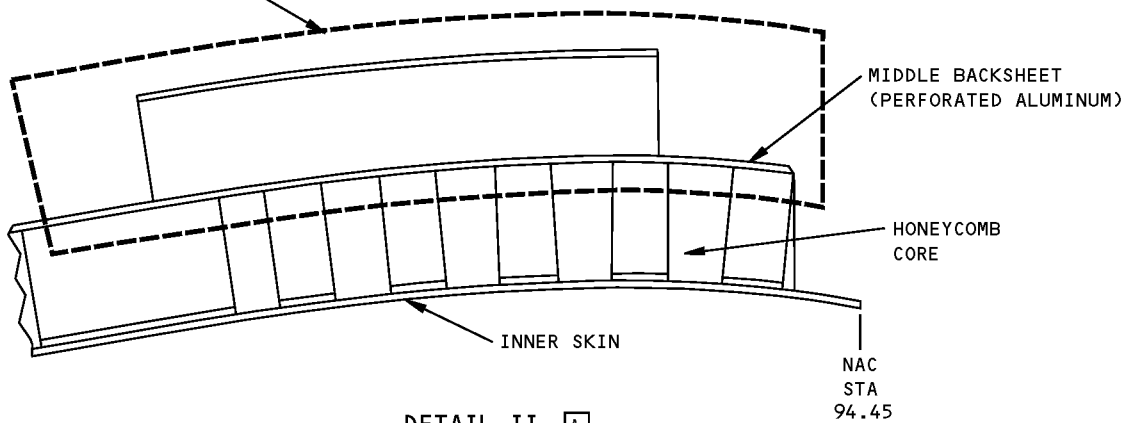
**Inlet Cowl Leading Edge Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 4 - INLET COWL ACOUSTIC PANEL - JT9D-7R4 ENGINE



STRUCTURAL DIFFERENCES SHOWN OCCUR IN THIS AREA FOR AIRPLANES IN [A] INCORPORATING OPTION



NOTES

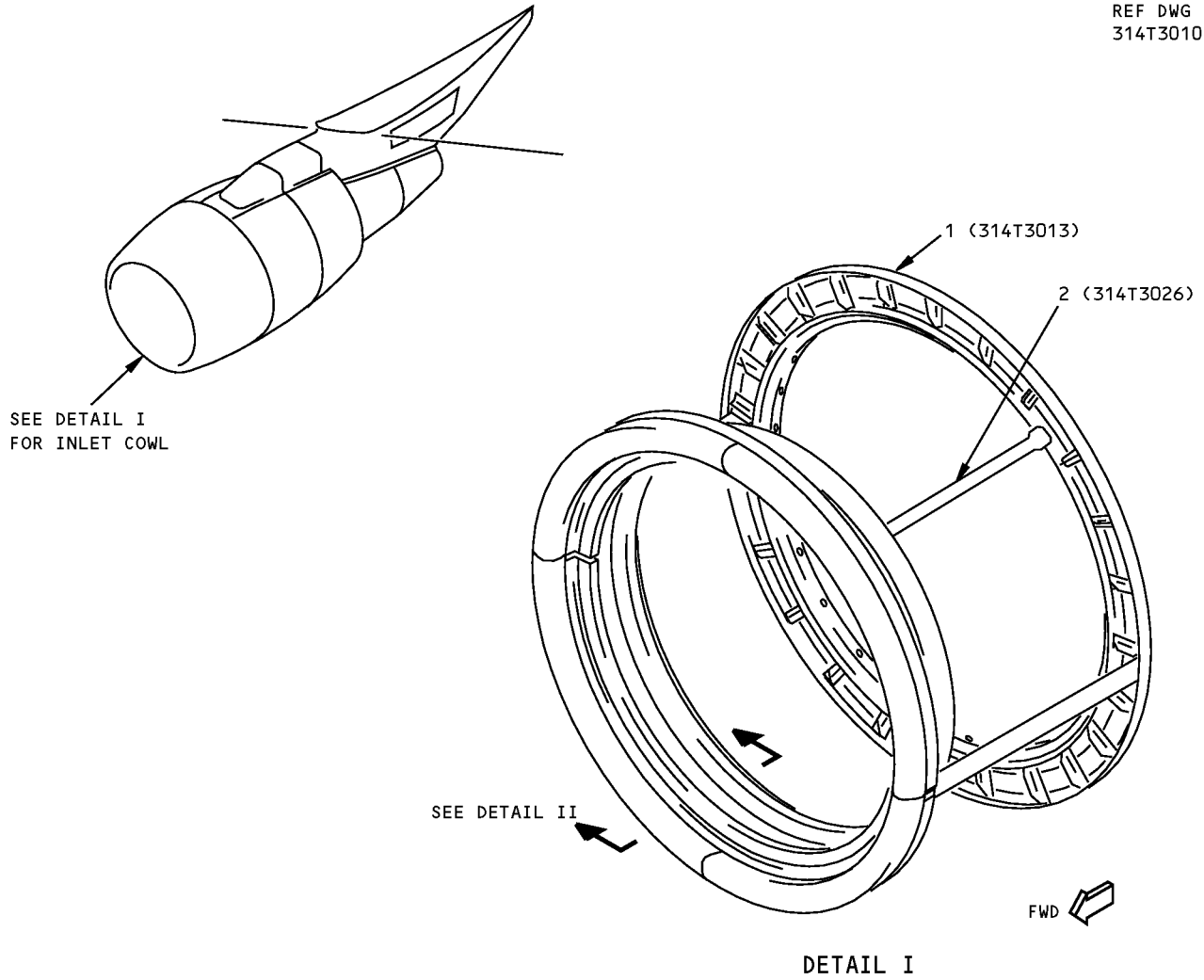
[A] OPTIONAL FOR CUM LINE NUMBERS:
1 THRU 3

**Inlet Cowl Acoustic Panel Repair - JT9D-7R4 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL STRUCTURE - JT9D-7R4 ENGINE

REF DWG
314T3010

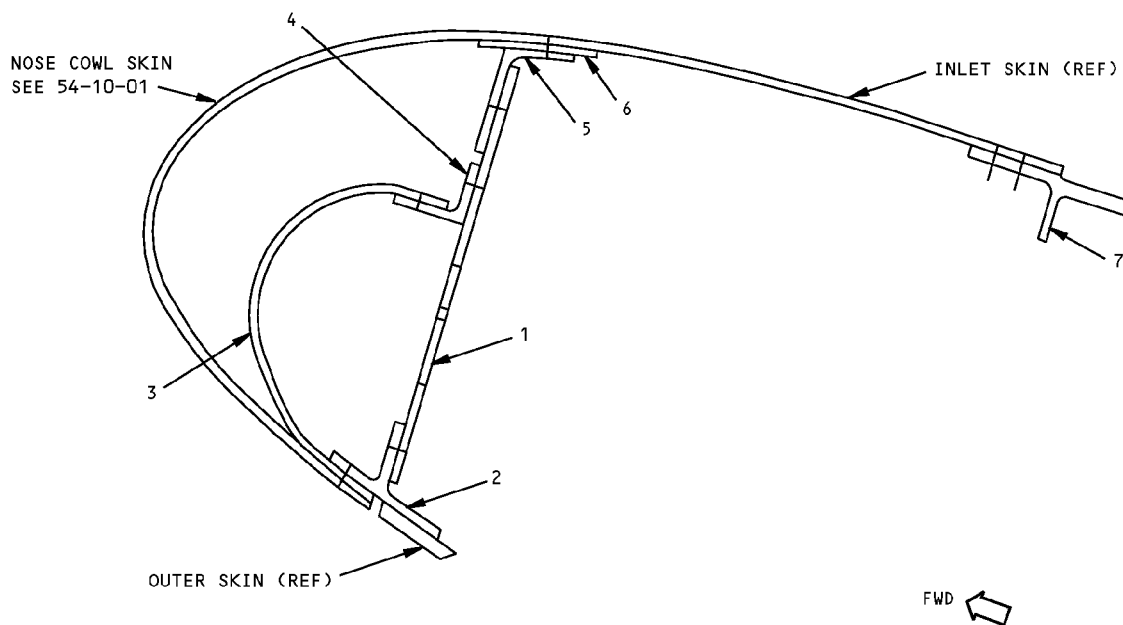


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	BULKHEAD ASSY UPR AND LWR CHORD WEB INNER RING	0.050	BAC1506-3111 2024-T42 CLAD 2024-T81 7075-T73 FORGING	
2	TEE		BAC1505-100569 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB	0.125	CLAD 2024-T81	
2	CHORD		BAC1506-3192 2219-T62	
3	D DUCT	0.045	2219-T62	
4	D DUCT ANGLE		BAC1503-100550 2219-T62	
5	CHORD		BAC1514-2311 2219-T62	
6	DOUBLER	0.050	CLAD 2219-T62	
7	RING		BAC1506-3212 2024-T62	

LIST OF MATERIALS FOR DETAIL II

**Inlet Cowl Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 2)**

IDENTIFICATION 1
Page 2
Apr 01/2005

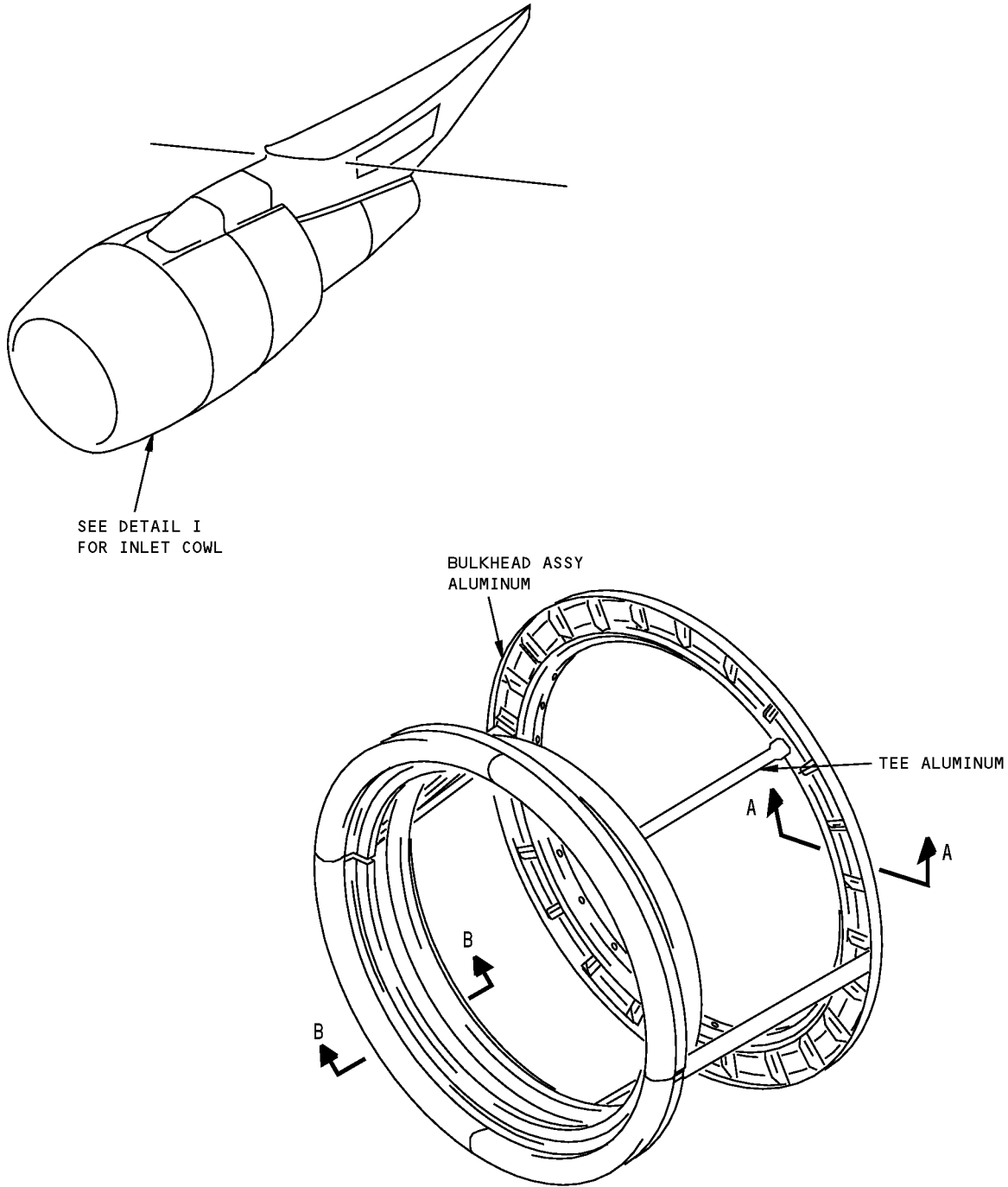
54-10-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL STRUCTURE - JT9D-7R4 ENGINE

REF DWG
314T3010



DETAIL I

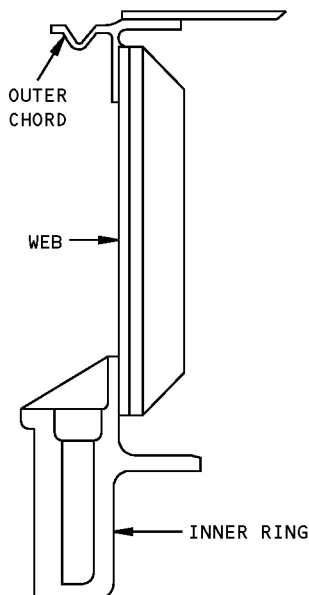
**Allowable Damage - Inlet Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 5)**

D634T210

ALLOWABLE DAMAGE 1
Page 101
54-10-02
Dec 15/2006

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T3013



BULKHEAD ASSEMBLY
SECTION A-A

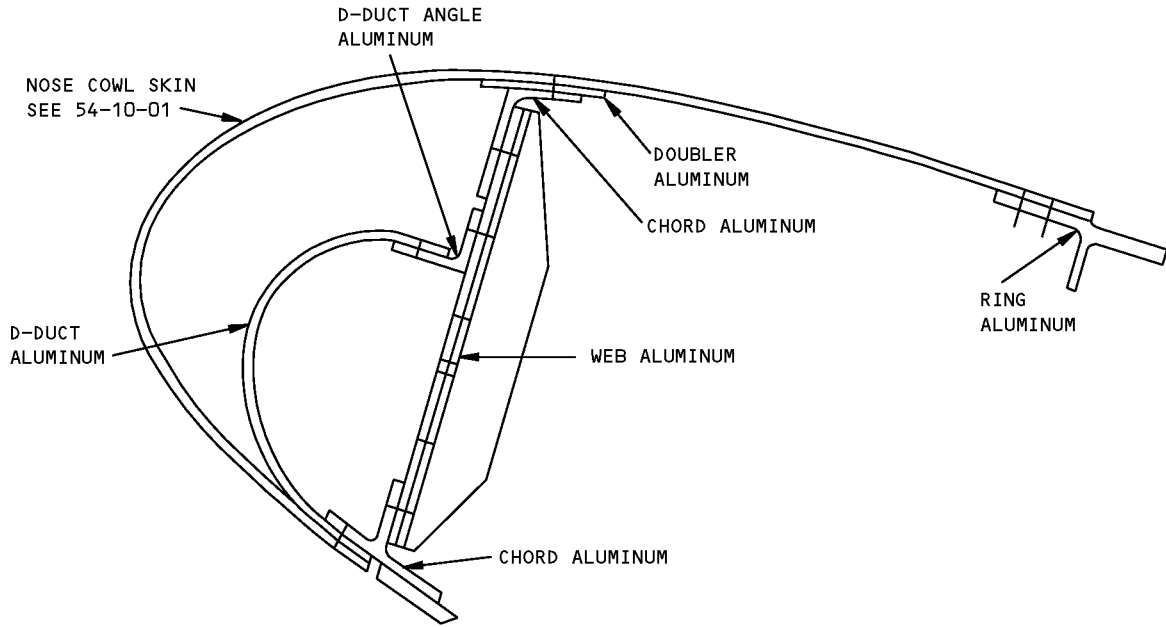
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
BULKHEAD ASSY				
OUTER CHORD	A	B	NOT ALLOWED	NOT ALLOWED
WEB	A	B	SEE DETAIL IV	E
INNER RINGS	C	D	NOT ALLOWED	NOT ALLOWED
TEE	A	B	NOT ALLOWED	E STEM ONLY

**Allowable Damage - Inlet Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 5)**

D634T210

ALLOWABLE DAMAGE 1
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54-10-02
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
WEB	A	B	SEE DETAIL IV	F
D-DUCT	A	B	NOT ALLOWED	NOT ALLOWED
D-DUCT ANGLE	A	B	NOT ALLOWED	NOT ALLOWED
CHORD	A	B	NOT ALLOWED	NOT ALLOWED
DOUBLER	A	B	NOT ALLOWED	NOT ALLOWED
RING	A	B	NOT ALLOWED	NOT ALLOWED

**Allowable Damage - Inlet Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 5)**

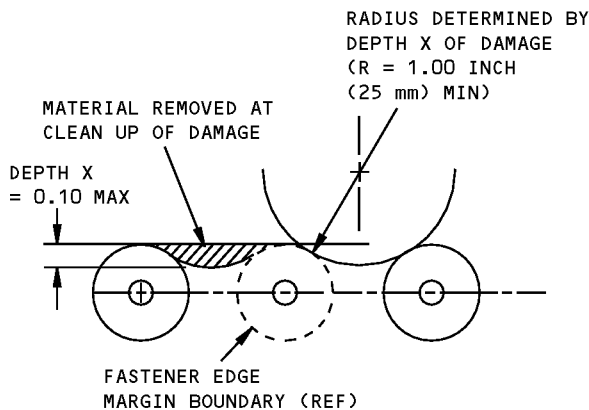
**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

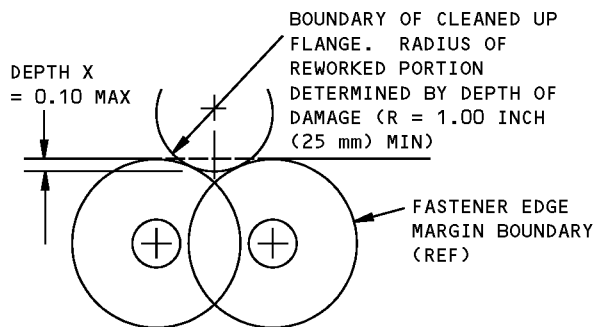
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
REFINISH REWORKED AREAS PER AMM 51-21.

- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III, AND V
- C** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI SHOT PEEN REWORKED AREA PER CMM 20-10-03. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. SEE SRM 51-20-06.

- D** REMOVE DAMAGE PER DETAILS II, III, AND V. SHOT PEEN REWORKED AREAS OF RING PER CMM 20-10-03. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. SEE SRM 51-20-06.
- E** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- F** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DE SOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

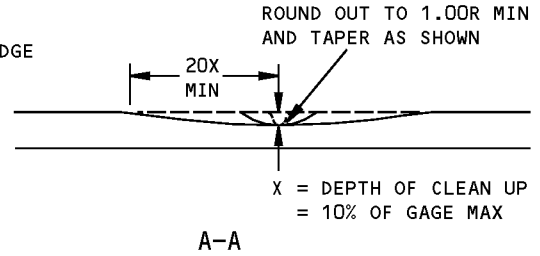
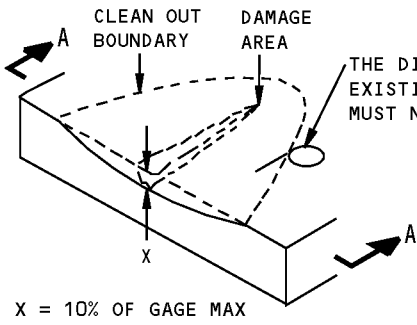


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

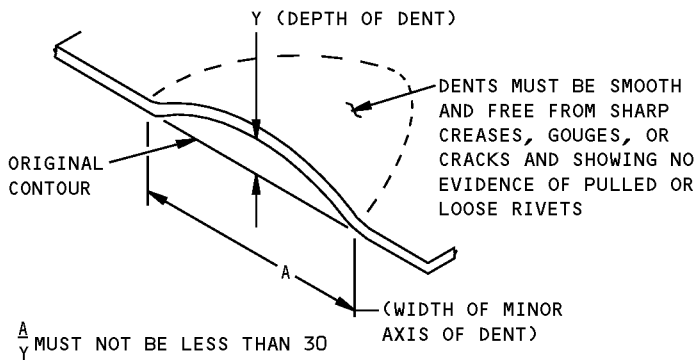
DETAIL II

**Allowable Damage - Inlet Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 5)**

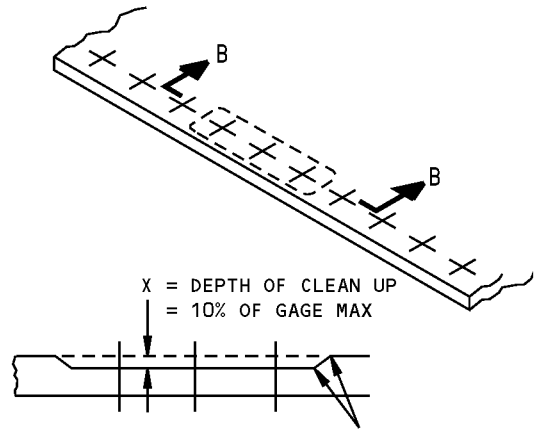
**767-300
STRUCTURAL REPAIR MANUAL**



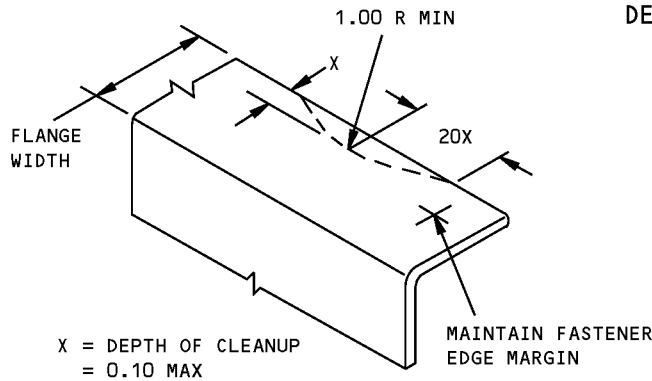
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**



**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



**B-B
CORROSION CLEANUP
DETAIL V**



**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VI**

**Allowable Damage - Inlet Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 5)**



767-300 STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL STRUCTURE - AFT MOUNTING RING - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Remove inlet cowl according to 71-11-01 of the 767 Maintenance Manual.
2. Remove existing structure where necessary from ring assembly.
3. Remove damage from ring segment. Make cut midway between fasteners common to acoustic panel. Surface roughness to be 125 micro-inches or better.

CAUTION: TO PRECLUDE SOME FATIGUE OF REPAIR PARTS, EDGES OF REPAIR PARTS MUST NOT BE LEFT IN A SHEARED OR BLANKED CONDITION.

4. Make repair parts with edges having a machine finish of 125 microinches or better.

NOTE: Repair parts may be blanked or sheared with 0.03 inch excess around periphery of part. Remove excess by routing, shaping or other machining methods.

5. Locate repair parts and drill fastener holes.
6. Remove repair parts and deburr holes.
7. Break sharp edges of repair parts 0.015 to 0.030 inch.
8. Remove all nicks, scratches, and corners from repair parts and existing structure.
9. Alodize all bare edges or surfaces of repair parts and existing parts according to 51-20-01.
10. Apply one coat of BMS 10-11, Type I primer to all surfaces of repair parts and existing structure in rework area.
11. Install repair parts with BMS 5-79, (BMS 5-95 optional). Sealant applied to all faying surfaces.
12. Install fasteners wet with BMS 5-79 sealant. (BMS 5-95 optional).
13. Remove loose debris from cavity of nose cowl.
14. Restore finishes.
15. Reinstall inlet cowl according to 71-11-01 of the 767 Maintenance Manual.

**Inlet Cowl Structure - Aft Mounting Ring Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 5)**

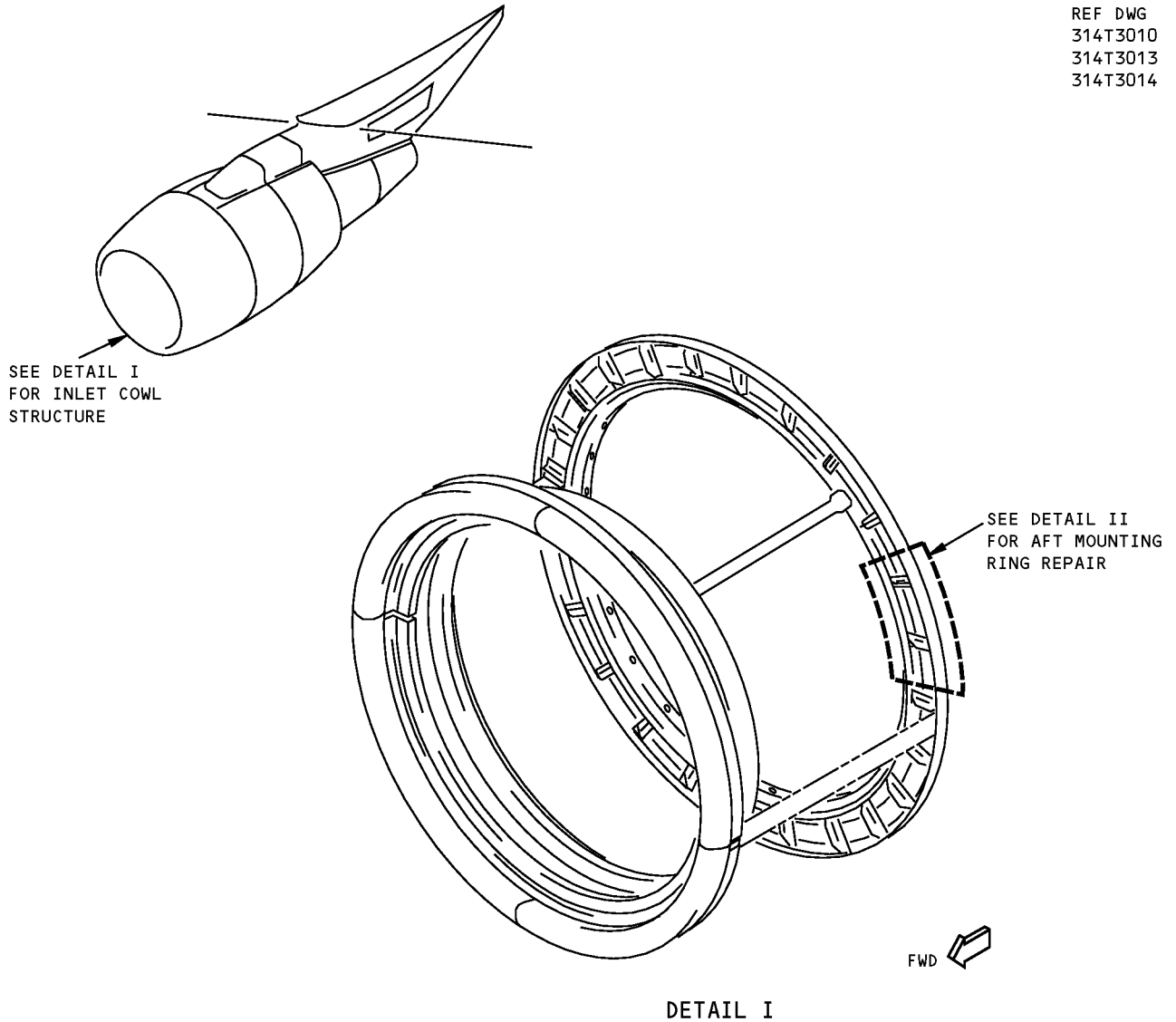
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54-10-02

REPAIR 1
Page 201
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T3010
314T3013
314T3014



NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL PARTS
 - 51-21-01 OF THE MAINTENANCE MANUAL FOR RESTORATION OF FINISHES

**Inlet Cowl Structure - Aft Mounting Ring Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

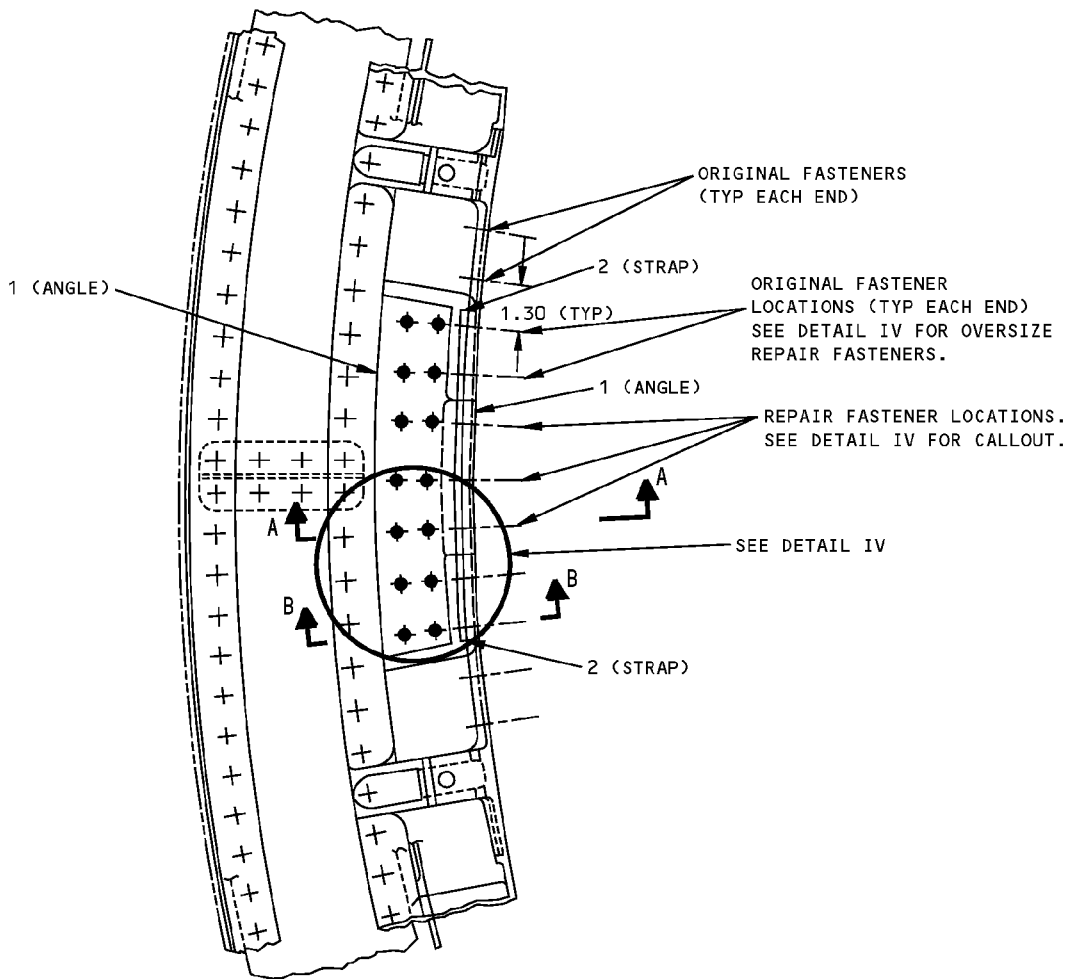
APPLICABILITY
THIS REPAIR LIMITED TO DAMAGE BETWEEN ENGINE FLANGE FASTENER LOCATIONS. A MAXIMUM OF 6 REPAIRS ARE ALLOWED PER RING.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	ANGLE	1	0.125 2024-0 HT TR T42
2	STRAP	1	0.200 2024-0 HT TR T42

SYMBOLS

+ ORIGINAL FASTENER LOCATIONS.

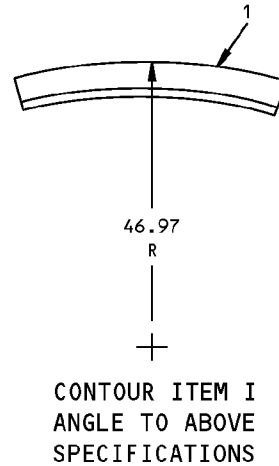
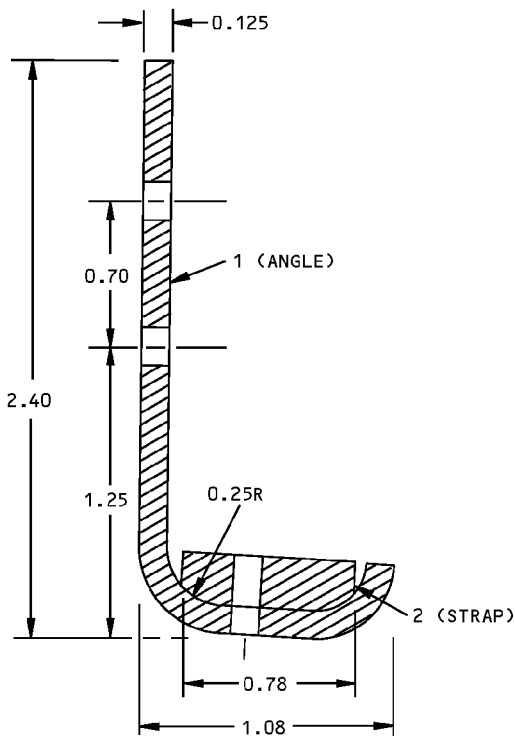
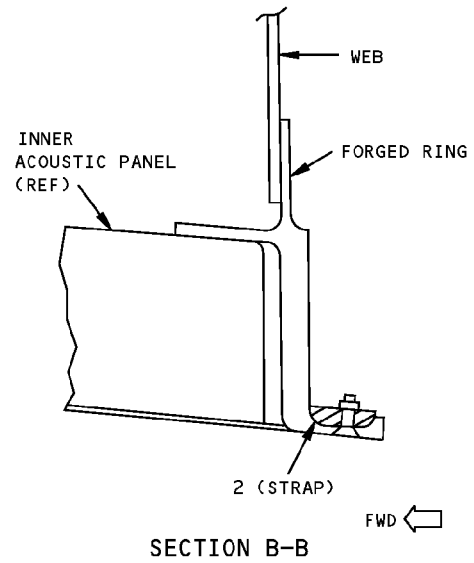
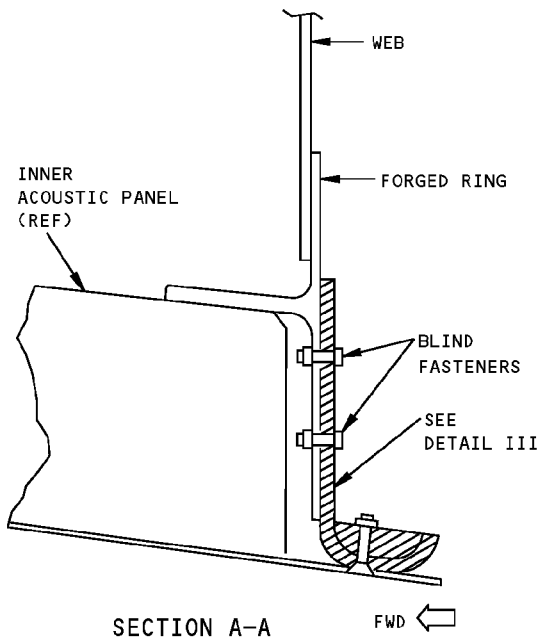
◆ REPAIR FASTENER LOCATIONS.
MS21141U06() BLIND PULL TYPE BOLT.



VIEW LOOKING FORWARD
DETAIL II

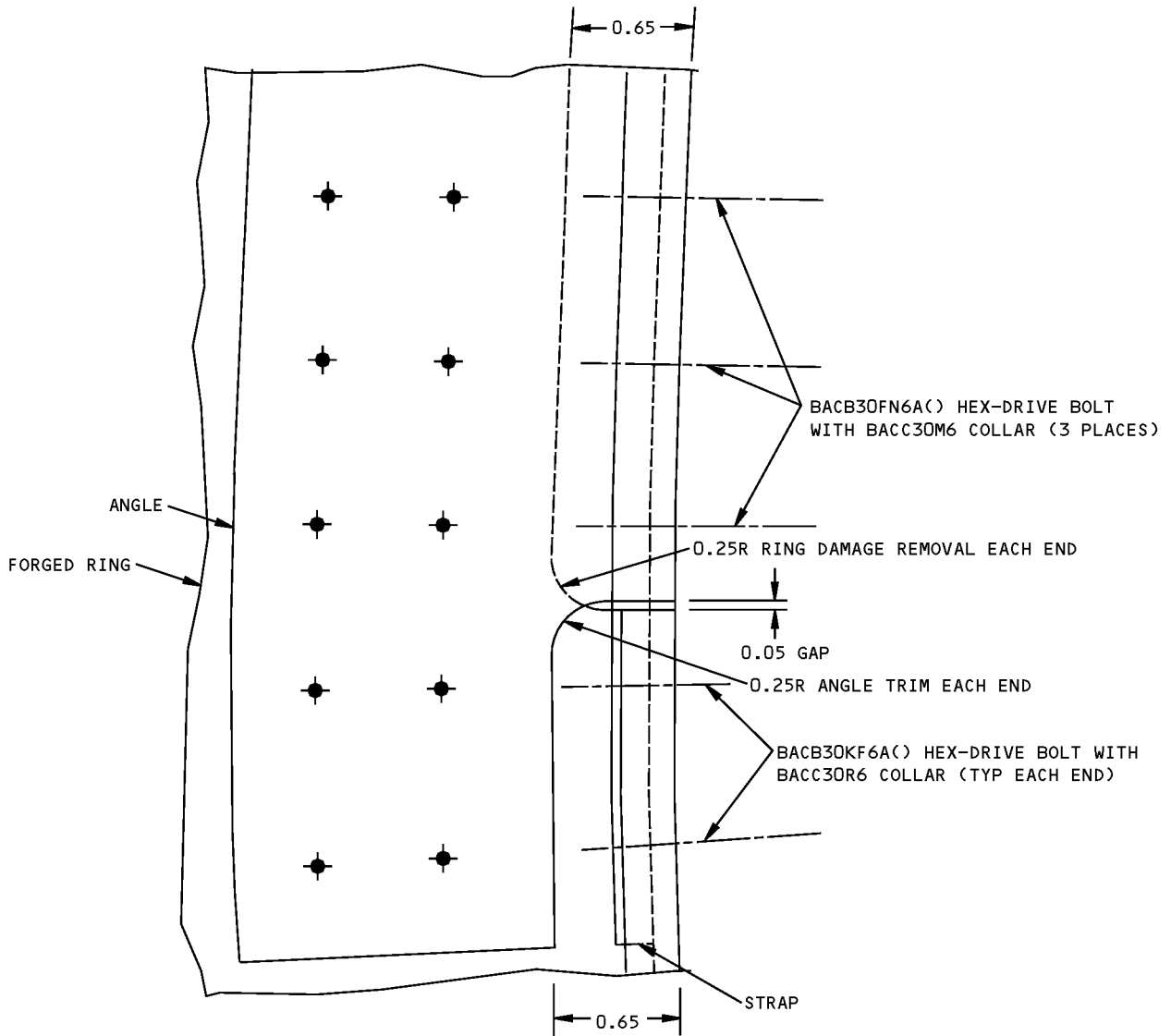
**Inlet Cowl Structure - Aft Mounting Ring Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Inlet Cowl Structure - Aft Mounting Ring Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



TYP AT EACH END
DETAIL IV

**Inlet Cowl Structure - Aft Mounting Ring Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - THERMAL ANTI-ICING D-DUCT SKIN - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Remove inlet cowl leading edge skin section and damaged D-duct section.
2. Stop drill cracks 0.25 inch (6 mm) diameter.
3. Make the repair parts. Form doublers, skin or shims to required contour. Make repair skin large enough to extend two rows of fasteners past the crack in all four directions. See Detail I. For cracks too near an edge of the D-duct to allow room for two rows of fasteners, refer to Detail II.
Note: The repair skin may be cut from an existing damaged D-duct.
4. Locate, drill and countersink fastener holes.
5. Remove all of the nicks, scratches, gouges and sharp edges from the initial skin and repair parts.
6. Alodine treat repair parts and raw edges of skin per AMM 51-20-01. Apply one coat of BAC 5710, Type 51 (Desoto Hi-Temp) primer to all surfaces of doublers, raw edges and interior surface of repair skin.
7. Rivet doublers and shims to existing D-duct skin using BACR15BB6AD rivets.
8. Rivet inner diameter edge of D-duct to angle with NAS1398CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
9. Attach cowl leading edge skin outer diameter edge and outer diameter edge of D-duct together to outer chord with Cleco fasteners. Fasten cowl leading edge skin inner diameter edge in its original location with Cleco fasteners.
10. Rivet cowl leading edge skin and outer diameter of D-duct into place with NAS1399CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
11. Fill gaps with aerodynamic smoother.
12. Restore finish per AMM 51-2.

NOTES

- FOR CRACK IN D-DUCT NEAR AN EXISTING D-DUCT SPLICE, REPLACE SPLICE WITH A WIDER SPLICE SO THAT AT LEAST TWO ROWS OF FASTENERS EXTEND BEYOND CRACK
- REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - AMM 51-40 FOR FASTENER REMOVAL, INSTALLATION, HOLE SIZES, AND EDGE MARGINS

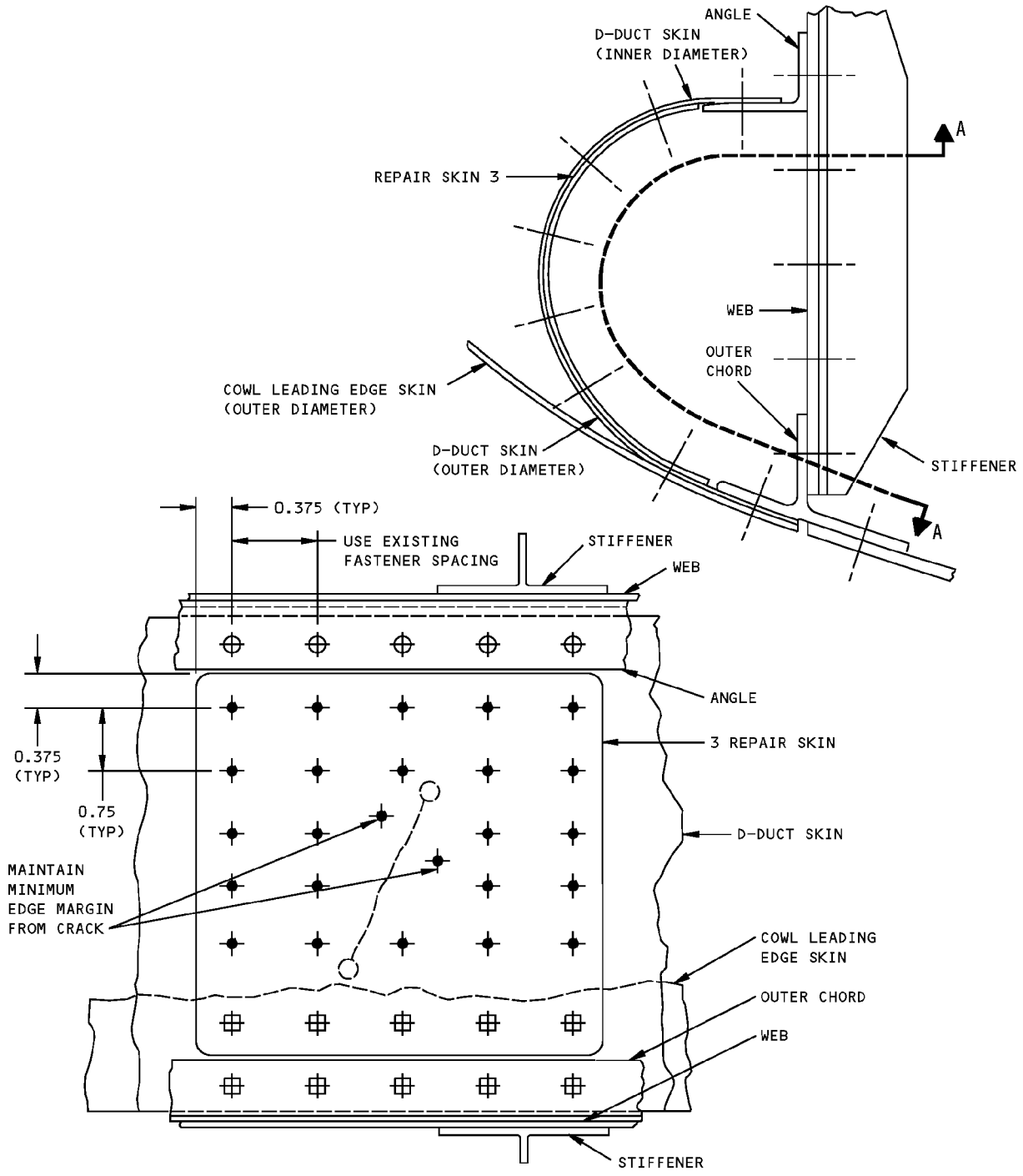
SYMBOLS

- ✦ REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15BB6AD
- ⊕ REPAIR FASTENER IN EXISTING LOCATION. INSTALL NAS1398CW6 PROTRUDING HEAD BLIND RIVET
- ⊞ REPAIR FASTENER IN EXISTING LOCATION. INSTALL NAS1399CW6 FLUSH HEAD BLIND RIVET

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	SHIM	1	0.05 2219-0 BARE SHEET HT TR T62 AFTER FORMING
2	REPAIR DOUBLER	AS REQD	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING
3	REPAIR SKIN	1	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING

**Thermal Anti-Icing D-Duct Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

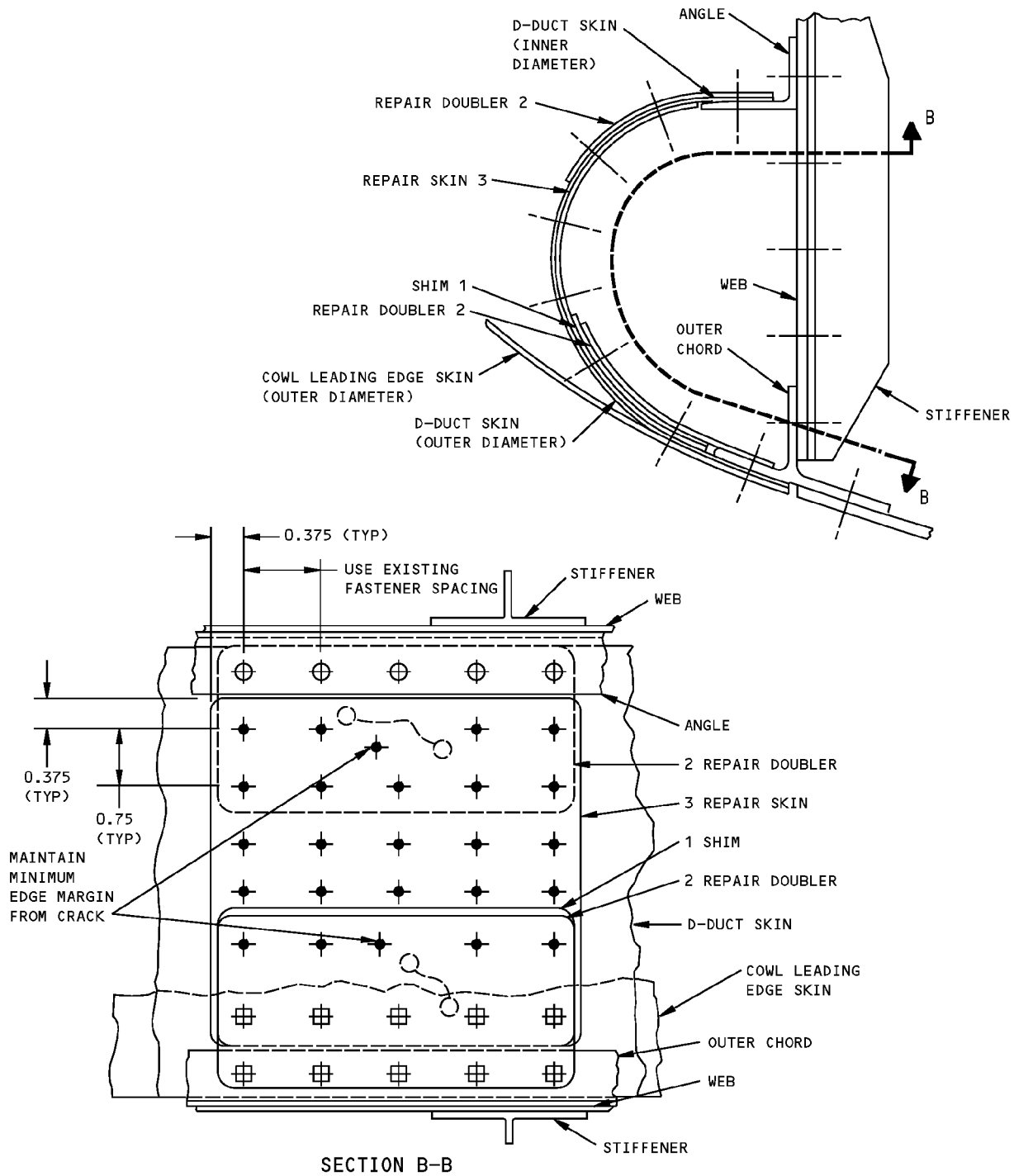


SECTION A-A

**REPAIR FOR CRACKS AT CENTER OF D-DUCT
DETAIL I**

**Thermal Anti-Icing D-Duct Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR FOR CRACKS NEAR EDGE OF D-DUCT
DETAIL II**

**Thermal Anti-Icing D-Duct Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 3 - INLET COWL STRUCTURE - AFT BULKHEAD WEB - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Remove the outer cowl skin.
2. Remove the thermal anti-icing duct (TAI) duct. Refer to AMM 71-11-09.
3. Remove the fasteners as shown in Detail III.
4. Cut and remove part of the web as shown in Detail II. Make sure no other parts are damaged when the web is cut.
5. Make the repair parts.
6. Assemble the repair parts and drill the fastener holes. Refer to Detail III for the distance between fasteners.
7. Remove the repair parts.
8. Remove all of the nicks, scratches, gouges, and sharp edges from the web and the repair parts.
9. Apply alodine to the repair parts and the bare edges of the web. Refer to SRM 51-20-01.
10. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare edges of the web. Refer to AMM 51-21-00.
11. Install the repair parts. Install the fasteners wet with BMS 10-11, Type I primer.

SYMBOLS

- + OTHER FASTENER LOCATION
- ⊠ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACB30NX6K4 HI-LOK.
- ⊛ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACR15ET7AD3 RIVET.
- ⊙ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL BACR15AD7AD3 RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15BB6AD3 RIVET.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPLACEMENT WEB	1	0.050 CLAD 2024-T81
2	SPLICE STRAP	1	0.063 CLAD 2024-T81

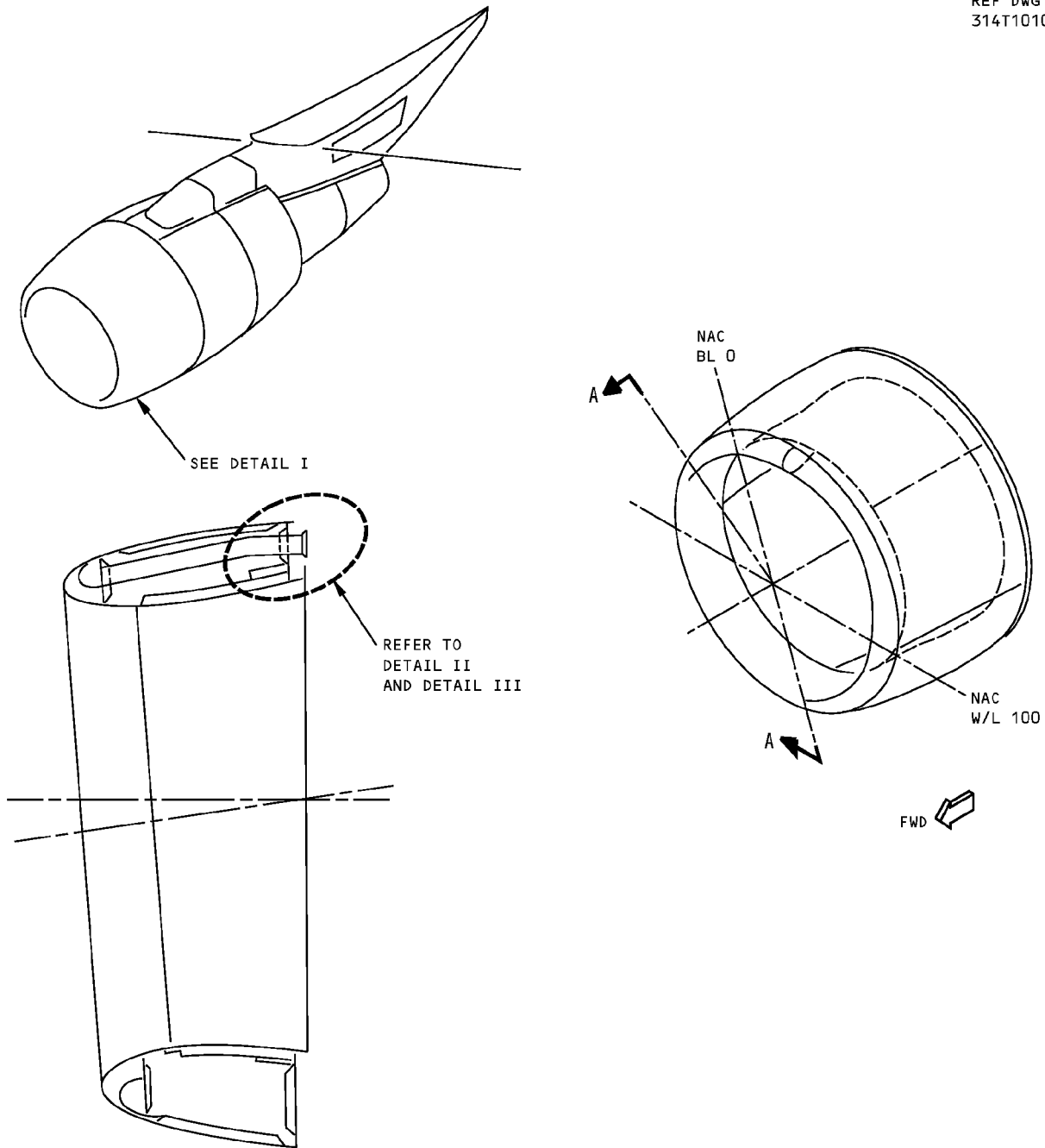
NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES.

**Inlet Cowl Structure - Aft Bulkhead Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1010

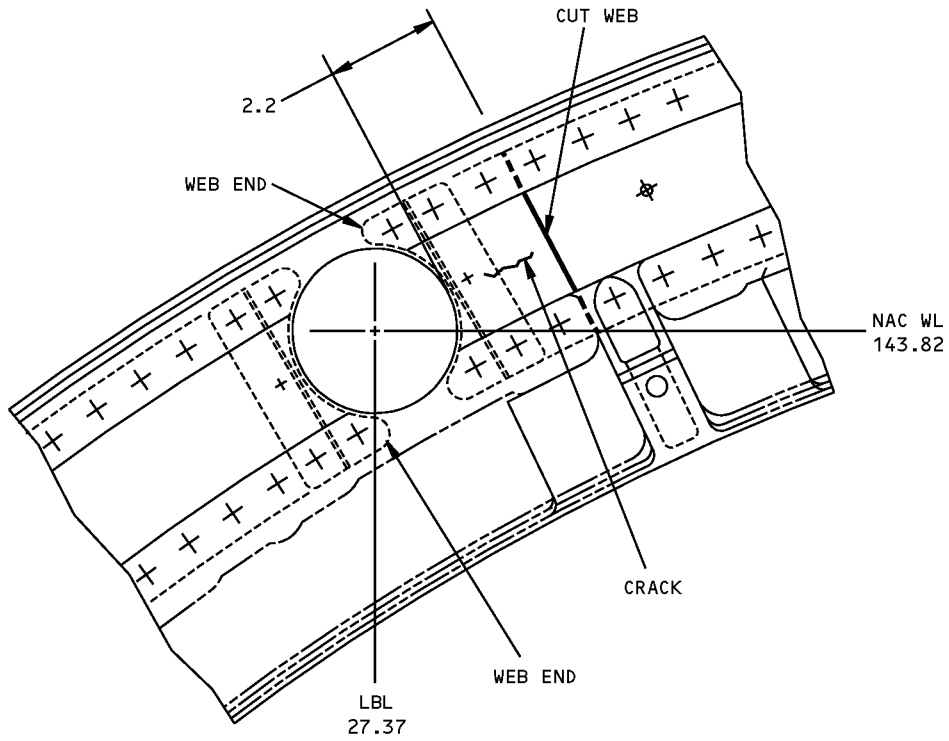


SECTION A-A

DETAIL I

**Inlet Cowl Structure - Aft Bulkhead Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 4)**

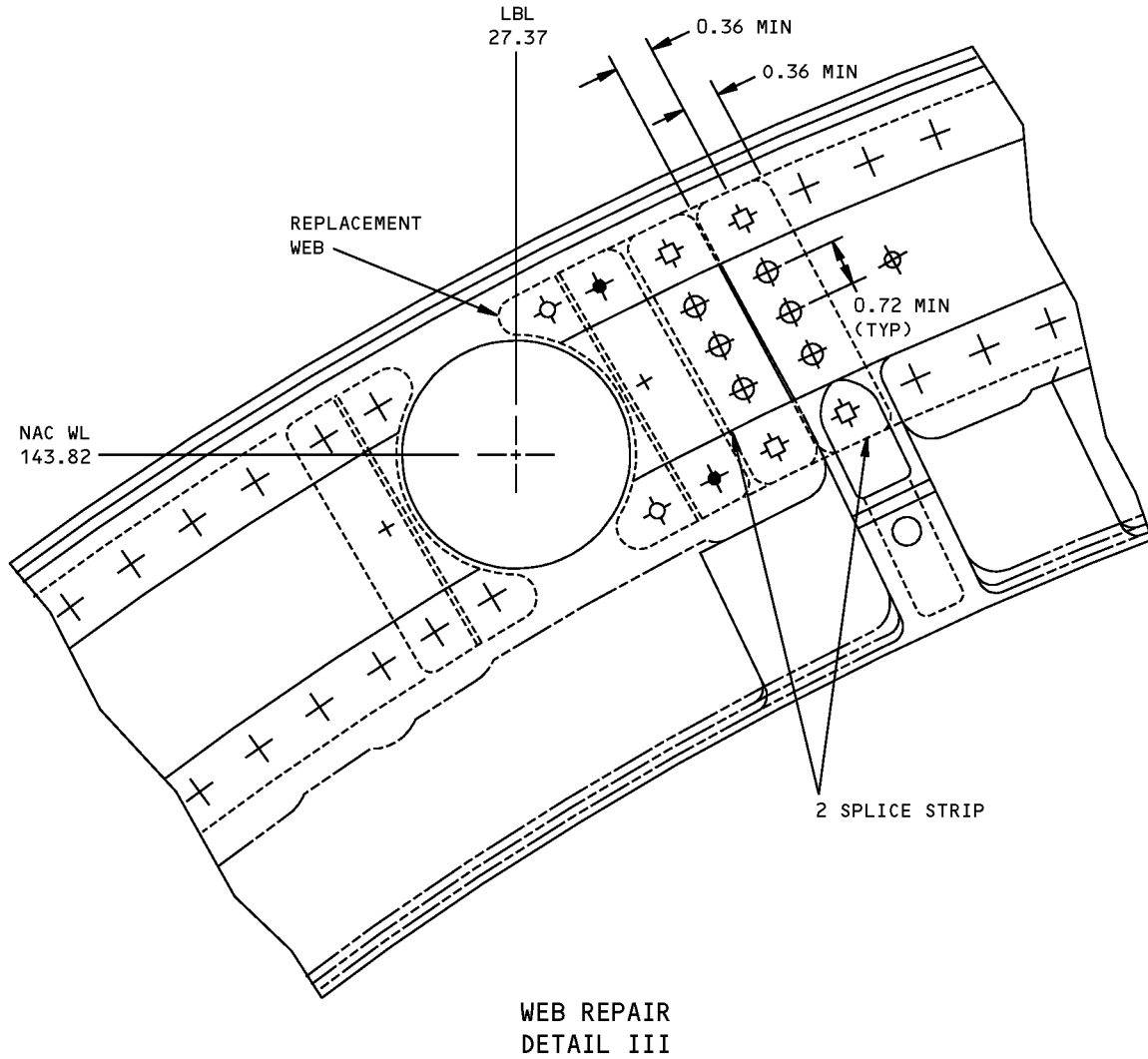
**767-300
STRUCTURAL REPAIR MANUAL**



**WEB CUT LOCATION
DETAIL II**

**Inlet Cowl Structure - Aft Bulkhead Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

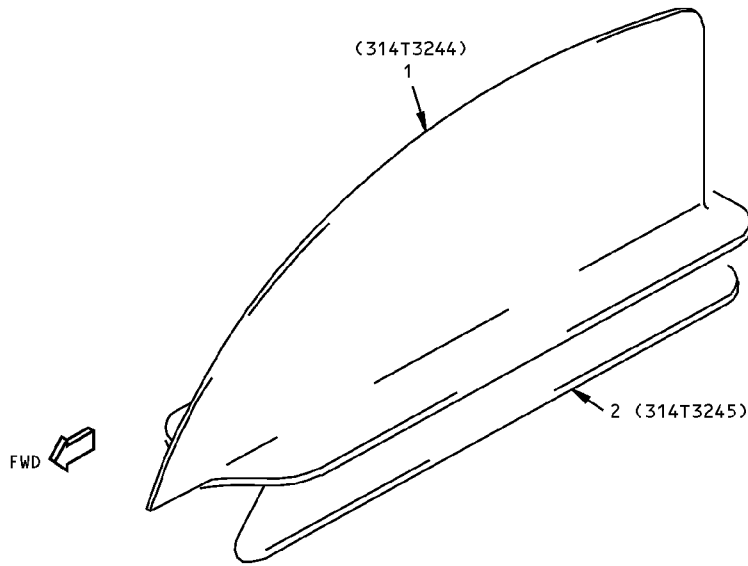
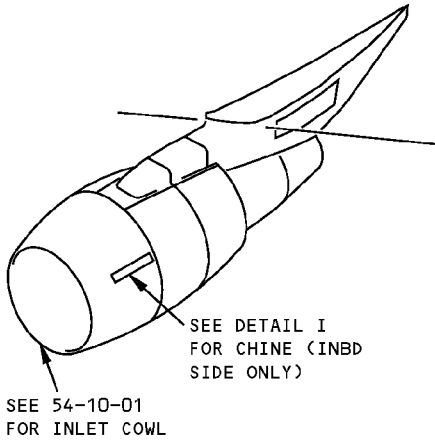


**Inlet Cowl Structure - Aft Bulkhead Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL CHINE - JT9D-7R4 ENGINE

REF DWG
314T3239



DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHINE		FORGING 7075-T73	
2	INSULATOR		FIBERGLASS LAMINATE (2 PLYES) BMS 8-79, TYPE 120	

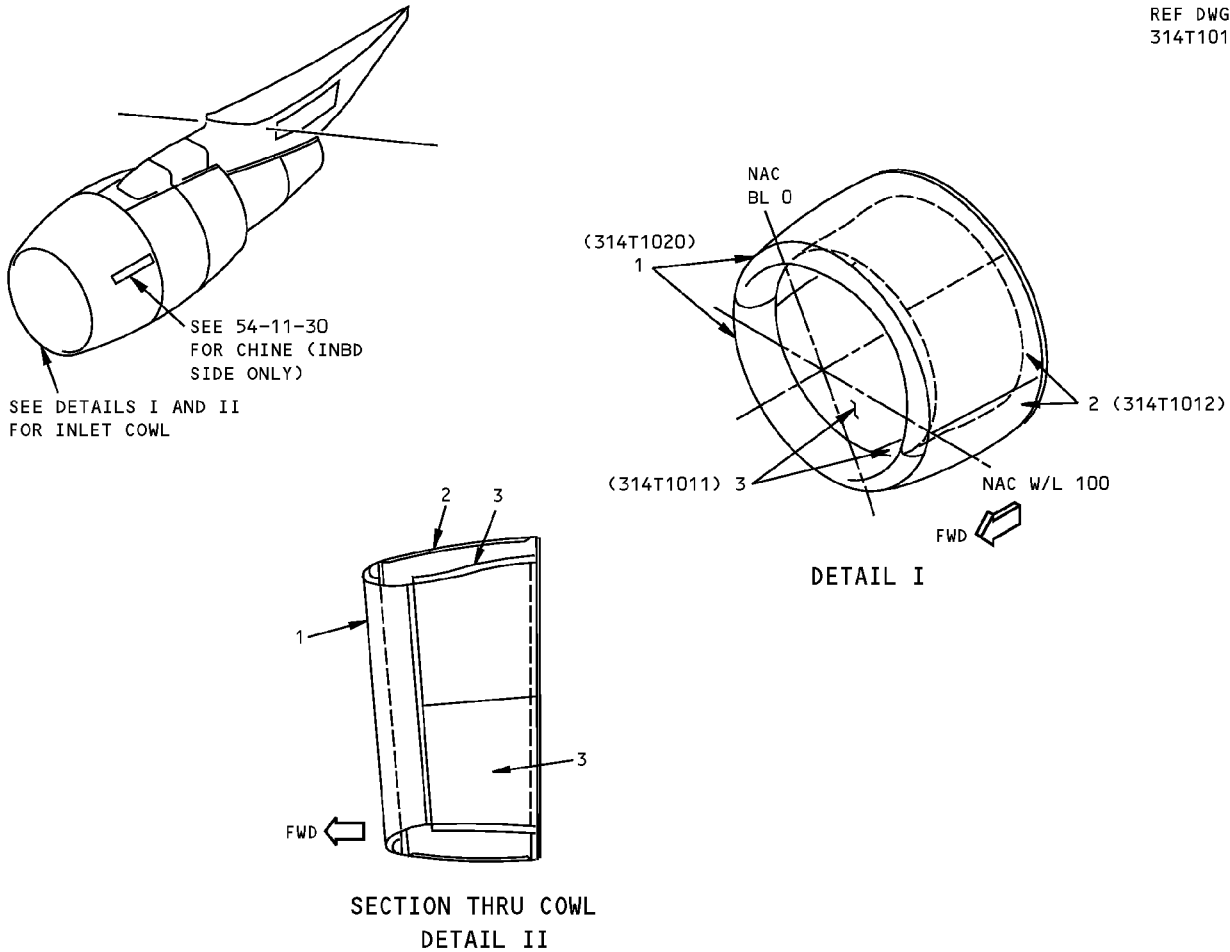
LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Chine Identification - JT9D-7R4 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL SKIN - CF6-80A ENGINE

REF DWG
314T1010



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	L/E SKIN	0.125	2219-T62 (CHEM-MILLED TO 0.068 MIN)	
2	OUTER PANEL SKIN CORE		EPOXY/GRAPHITE HONEYCOMB SANDWICH SEE DETAIL III NONMETALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE 1, GRADE 4.0	
3	INNER PANEL BACKSHEET	0.020	CLAD 2024-T62 FLEX CORE PER BMS 4-6, TYPE 4.1-25	
	EDGE CORE		ALUMINUM HONEYCOMB CORE 22.1-1/8-60N 5052 PER MIL-C-7438E	
	INNER SKIN	0.032	PERFORATED CLAD 2024-T62 SHEET PER BMS 7-209, TYPE 1B-32, GRADE 1A, CLASS 45-81	

LIST OF MATERIALS FOR DETAILS I AND II

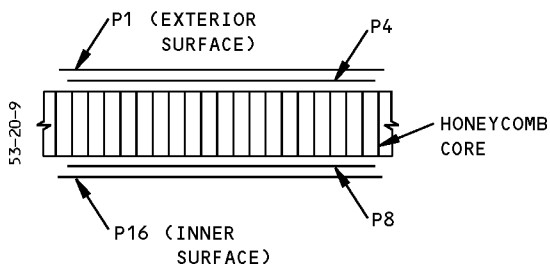
**Inlet Cowl Skin Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 2)**

IDENTIFICATION 1
Page 1
Apr 01/2005

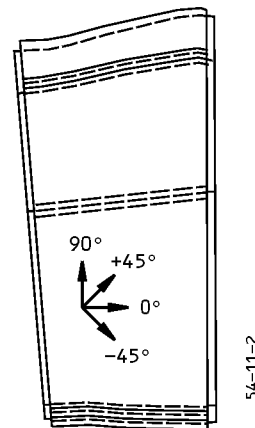
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**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL



FWD ←

DIAGRAM OF PLY ORIENTATION
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL [A]

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION [A]
2	P1	[B]	0°
	P4	[C]	45°
	P8	[C]	45°
	P16	[B]	0°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS.

DETAIL III

NOTES

- [A] PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- [B] EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE
- [C] EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE

**Inlet Cowl Skin Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 2)**

D634T210

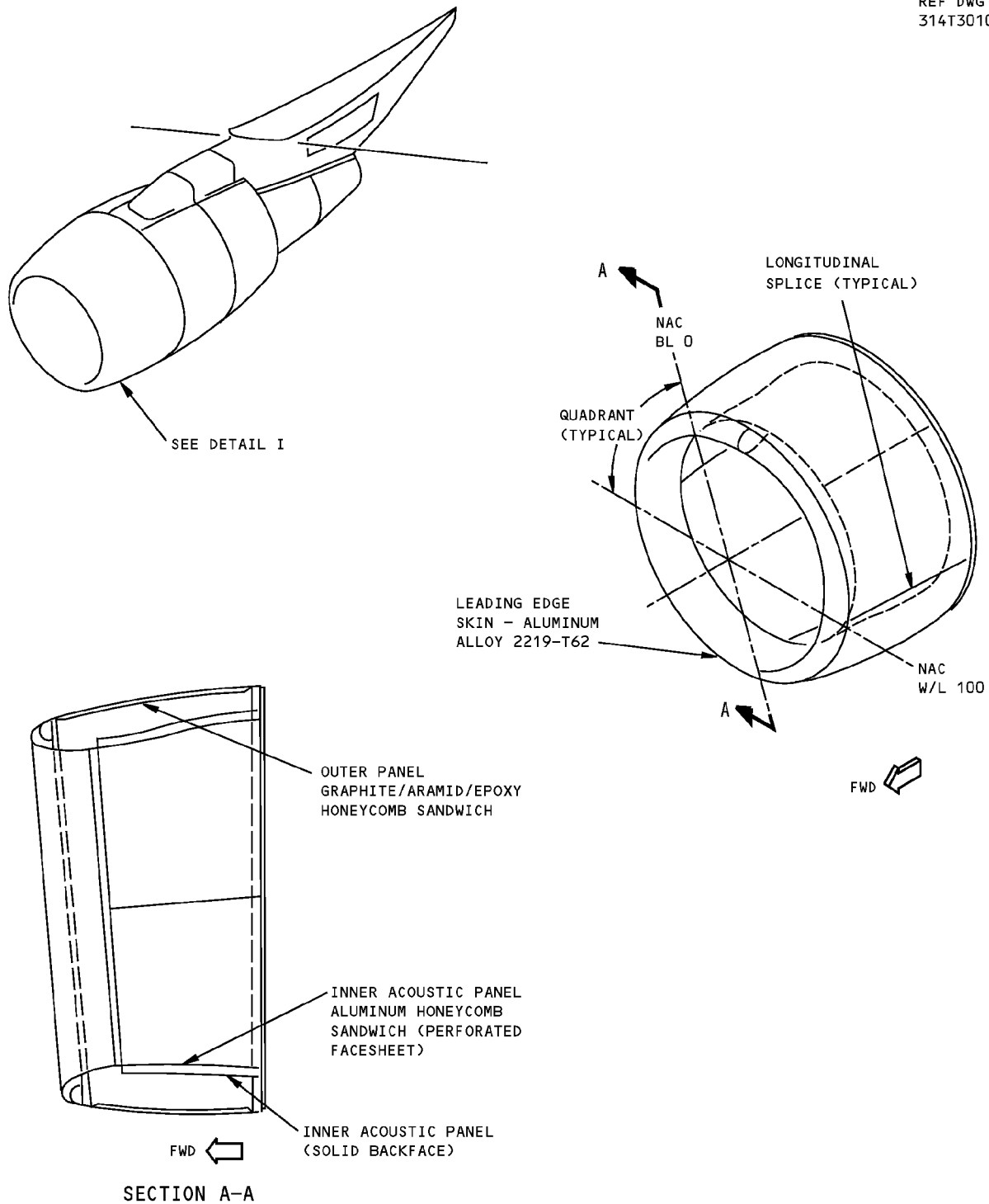
54-11-01

IDENTIFICATION 1
Page 2
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL SKIN - CF6-80A ENGINE

REF DWG
314T3010



DETAIL I
Inlet Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 6)

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES, CORROSION, AND SCRATCHES	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
LEADING EDGE SKIN	A	B	J	C	—
OUTER PANEL	F	G	H	I	E
INNER PANEL—PERFORATED FACESHEET, SOLID BACKFACE L	A	B	J	NOT PERMITTED	K

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
- REFINISH REWORKED AREAS AS SHOWN IN AMM 51-21
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- TYPICAL DAMAGE TO A PANEL EDGE BAND MAY CONSIST OF EDGE CRUSHING, CRACKS OR DELAMINATION. DAMAGE AROUND HOLES MAY CONSIST OF OVALIZATION, FASTENER PULL-THROUGH OR CRACKS OUT OF HOLE. DAMAGE MAY REDUCE THE EFFECTIVE CROSS SECTIONAL AREA OF AN EDGE BAND. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS PERMITTED. IF FIBERS ARE DAMAGED, TREAT AS A CRACK

- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI
- B** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND V
- C** CLEAN PUNCTURES UP TO 0.25 INCH (6 mm) DIA MAX. HOLES PERMITTED UP TO 0.25 INCH (6 mm) DIA, NOT CLOSER THAN 4D TO ANY ADJACENT HOLE. HOLE IS TO BE FILLED WITH A NAS 1399D BLIND RIVET FOR HOLE UP TO 0.16 INCH (4 mm) DIA AND NAS 1398D BLIND RIVET FOR HOLE 0.19 TO 0.25 INCH (4.8 TO 6.3 mm) DIA, INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. OTHER HOLES TO BE REPAIRED

- D** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK

- E** 4.00 INCHES (100 mm) MAXIMUM DIAMETER PERMITTED IN HONEYCOMB AREA. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS PERMITTED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. **D**

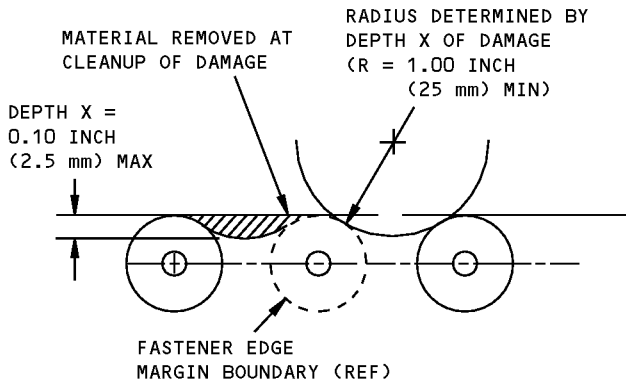
- F** CRACKS IN FASTENER HOLES ALONG LONGITUDINAL SPLICE ARE PERMITTED AS GIVEN IN DETAIL VII **D**. FOR DAMAGE OTHER THAN LONGITUDINAL SPLICE:
 CLEAN UP EDGE CRACKS AS GIVEN IN DETAILS II AND VI. NOT MORE THAN ONE FASTENER HOLE IN SIX MAY BE CRACKED OR DAMAGED. DAMAGE MUST NOT EXCEED 2% OF EDGE BAND LENGTH. 0.50 INCH (13 mm) MAX DIMENSION IN EDGE BAND AND 2.00 INCHES (50 mm) MAX DIMENSION (D) IN HONEYCOMB AREA IS ALLOWED FOR EACH SQUARE FOOT OF AREA AND A MINIMUM OF 4D (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE OR PANEL EDGE. **D**

**Inlet Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 6)**

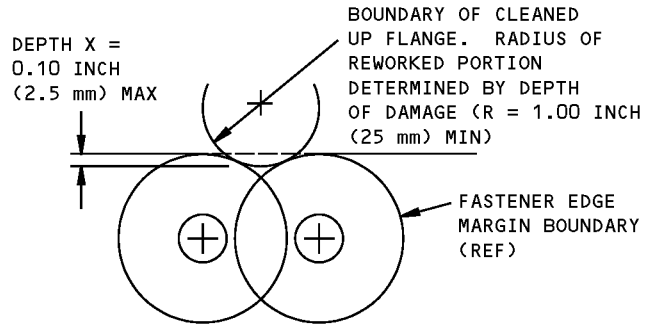
STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

- G** IF FIBERS ARE DAMAGED, TREAT AS A CRACK. IF FIBERS ARE NOT DAMAGED PROTECT AS GIVEN IN NOTE **D**
- H** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 2.0 INCHES (50 mm) DIA MAX ARE PERMITTED. ONE DENT FOR EACH SQUARE FOOT OF AREA PERMITTED WHICH MUST BE A MINIMUM OF 6 INCHES (150 mm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE
- I** 1.0 INCH (25 mm) MAXIMUM DIAMETER IN HONEYCOMB AREA ONLY AND MIN OF 4D FROM NEAREST HOLE, MATERIAL EDGE OR OTHER DAMAGE (EDGE TO EDGE). DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **D**
- J** TWO DENTS MAXIMUM PERMITTED FOR EACH QUADRANT (SEE DETAIL I), WITH NO LESS THAN 15.0 INCHES (38 cm) BETWEEN DENTS. SEE DETAIL IV
- K** SEE DETAIL VIII FOR DELAMINATION (DISBONDING) OF PERFORATED FACESHEET. SEE DETAIL IX FOR SOLID BACKFACE. DAMAGE NOT EXCEEDING THESE LIMITS ARE PERMITTED, PROVIDING THAT PANELS ARE INSPECTED EVERY 300 FLIGHT HOURS UNTIL PANEL IS REPAIRED OR REPLACED
- L** INNER PANEL CAN BE INSPECTED FOR DAMAGE ON BACKFACE BY REMOVING PRESSURE RELIEF DOORS OR BY REMOVING BACK PANEL. REFER TO AMM 71-11

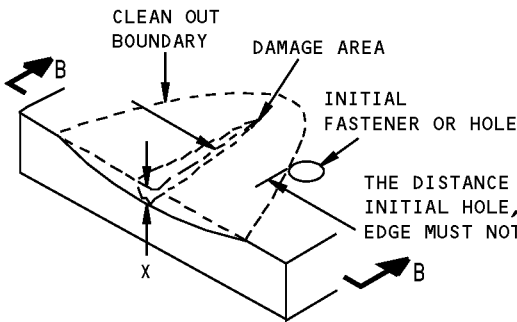


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



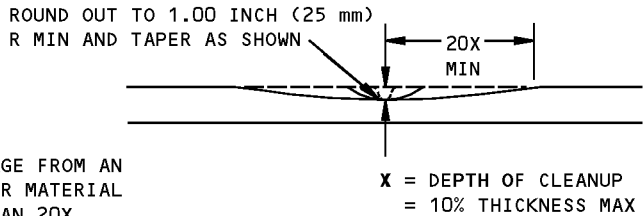
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

DETAIL III



SECTION B-B

Inlet Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 6)

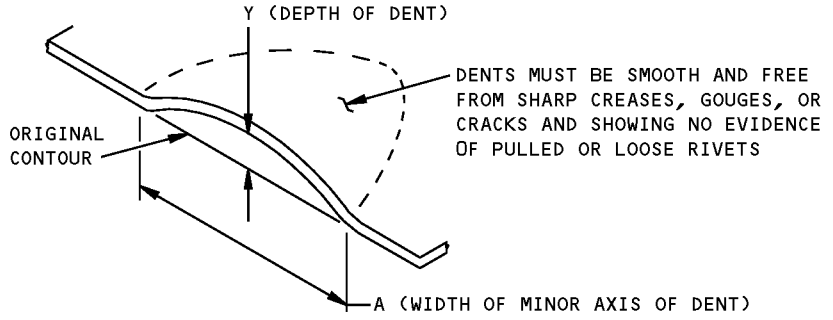
STRUCTURAL REPAIR MANUAL

CAUTION: DO NOT FILL DENTS

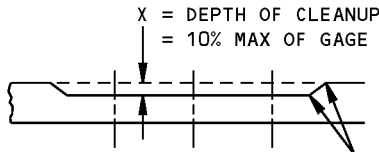
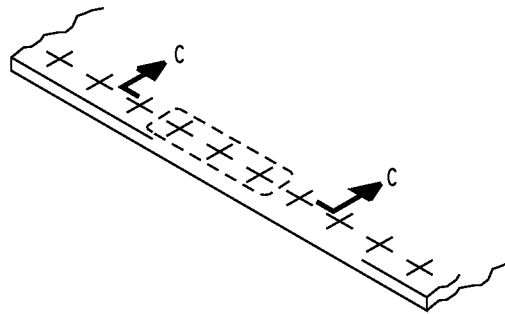
$\frac{A}{Y}$ MUST NOT BE LESS THAN 30

FOR LEADING EDGE SKIN:
 $Y = 0.125$ MAX
 MAJOR AXIS = 4.0 MAX

FOR INNER PANEL, PERFORATED
 INNER SKIN:
 $Y = 0.050$ MAX
 MAJOR AXIS = 3.0 MAX



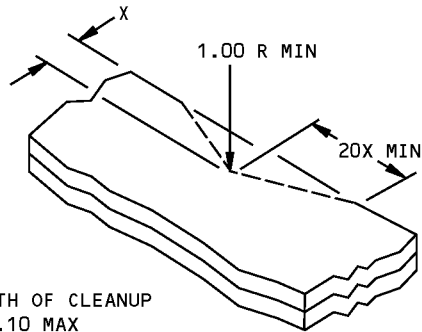
ALLOWABLE DAMAGE FOR DENT
 DETAIL IV



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
 CORROSION CLEANUP AROUND ANY THREE FASTENERS
 IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

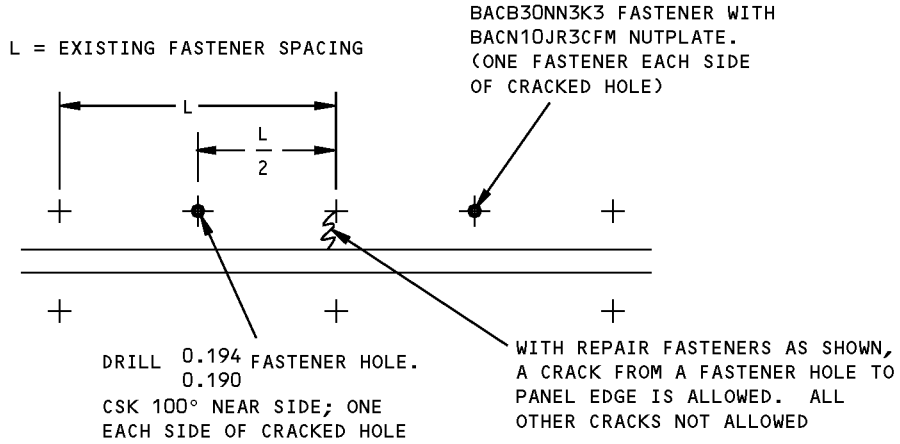
CORROSION CLEANUP
 DETAIL V



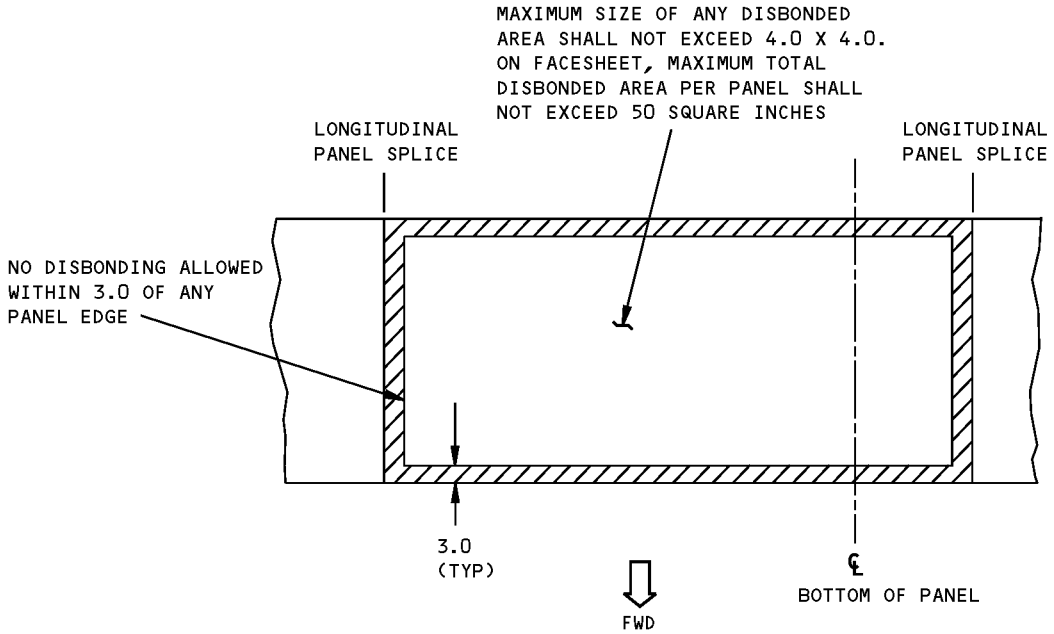
DETAIL VI

Inlet Cowl Skin Allowable Damage - CF6-80A Engine
 Figure 101 (Sheet 4 of 6)

STRUCTURAL REPAIR MANUAL



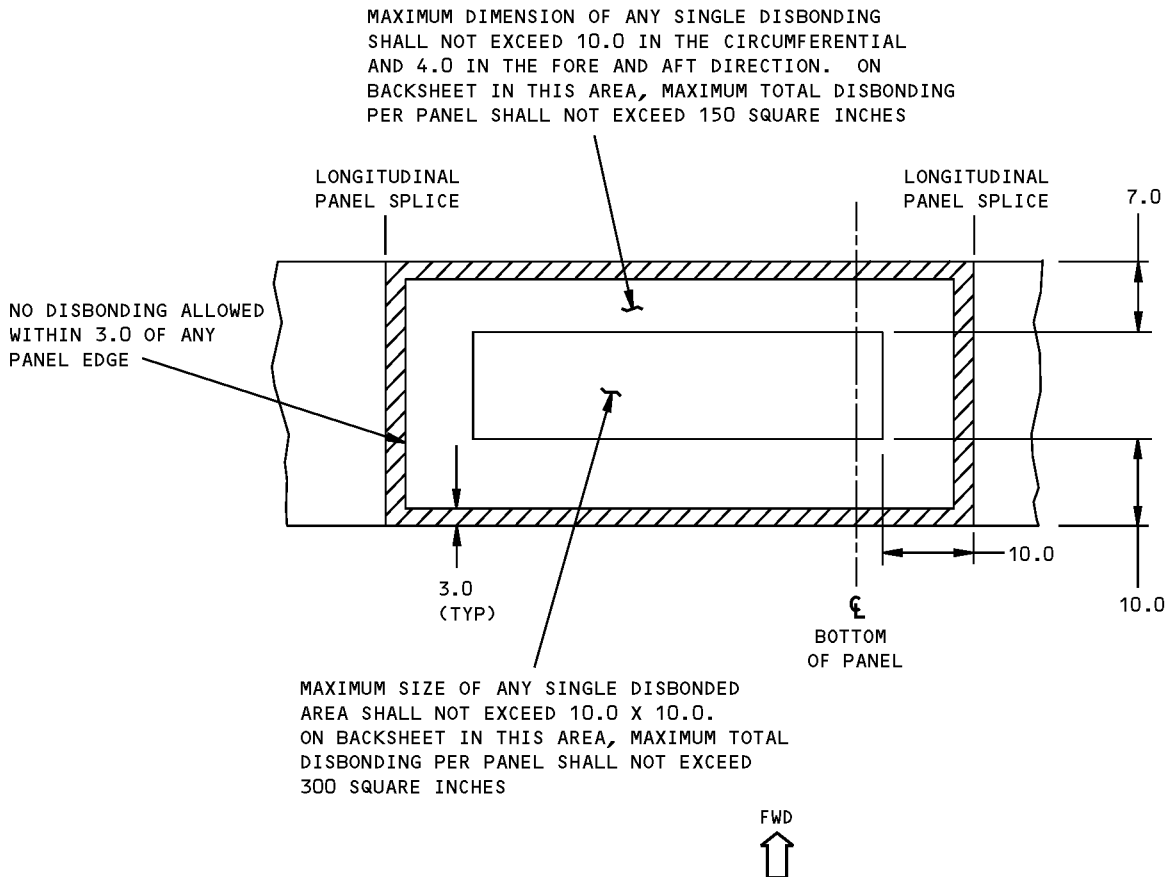
**ALLOWABLE CRACKS ALONG A LONGITUDINAL SPLICE
DETAIL VII**



**ALLOWABLE DISBOND LIMITS FOR INNER ACOUSTIC PANEL, PERFORATED FACESHEET
DETAIL VIII**

**Inlet Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

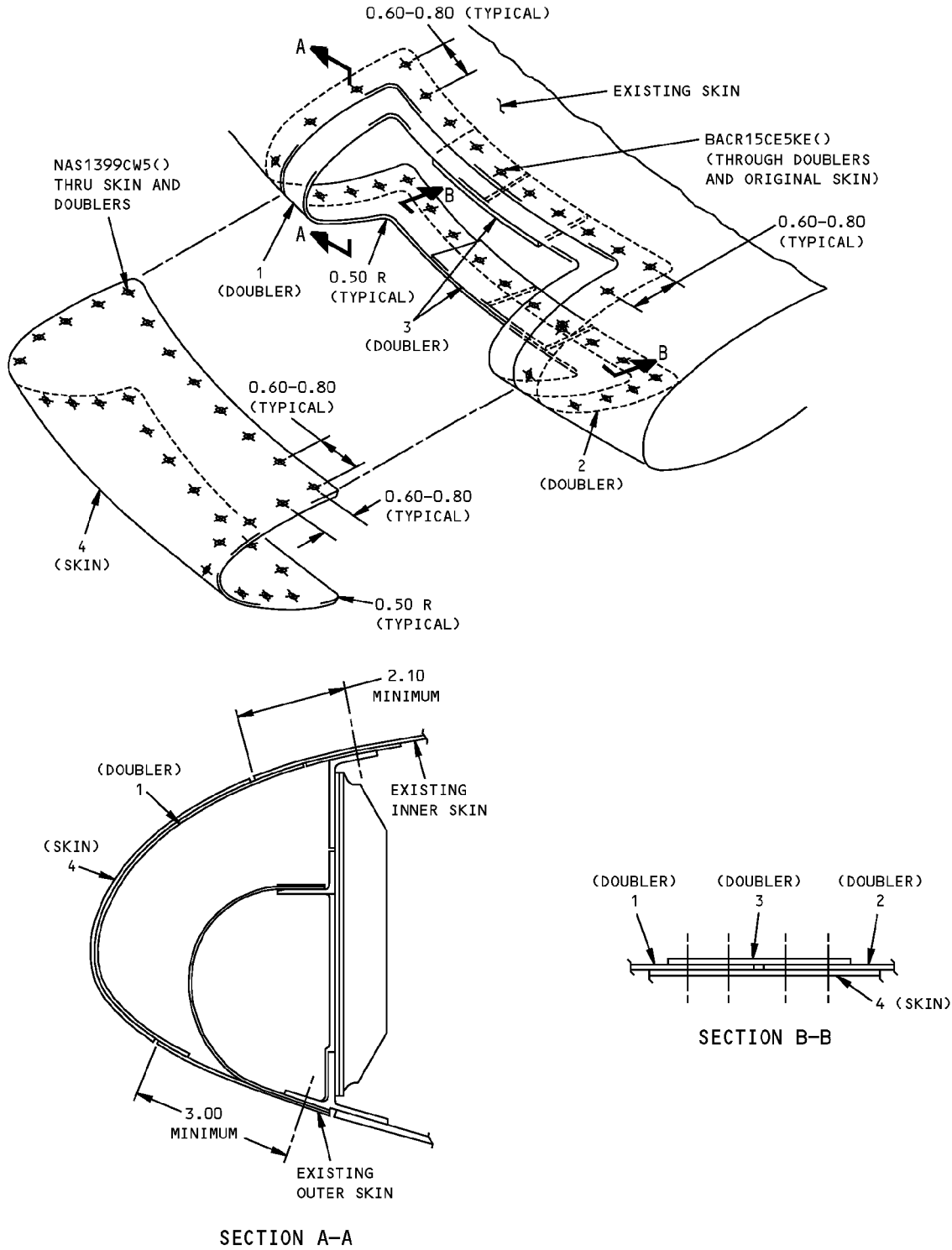


ALLOWABLE DISBOND LIMITS FOR SOLID BACKFACE
(SHOWN WITH OUTER PANEL REMOVED)
DETAIL IX

**Inlet Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - INLET COWL LEADING EDGE SKIN - CF6-80A ENGINE



**Inlet Cowl Leading Edge Skin Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR INSTRUCTIONS

1. Cut out the damaged skin to a rectangular shape. The cut can not be closer than 3.00 inches to the outer row of fasteners or 2.10 inches to the inner row of fasteners.
2. Make the repair parts. Form doublers to required contour. The repair skin may be cut from scrap or spare nose cowl.
3. Assemble the repair parts and drill the fastener holes.
4. Disassemble the repair parts.
5. Remove all nicks, scratches, burrs, and sharp corners from original and repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710, type 51 (Desoto Hi-Temp), primer, except dry film thickness should be 0.002 inch to 0.003 inch, to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Attach doublers to the initial skin using BACR15CE5KE() rivets.
9. Attach skin to doublers using blind rivets NAS1399CW5A(). Install wet with BAC5710, Type 51, primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish as given in AMM 51-21.

SYMBOLS

✦ REPAIR FASTENER LOCATION. AS AN OPTION TO NAS1399CW()A(), USE NAS1399MW()A().

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
2	DOUBLER	1	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
3	DOUBLER	2	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
4	SKIN	1	SAME GAGE AS INITIAL MATERIAL 2219-T62 OPTIONAL: CLAD 2024-T62

NOTES

- WHEN USING THIS REPAIR REFER TO:
 - AMM 51-21 FOR FINISHES
 - AMM 51-31-01 FOR SEALS AND SEALING
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS, WHERE THE REPAIR EXCEEDS THE LIMITS AS GIVEN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS.

**Inlet Cowl Leading Edge Skin Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL LEADING EDGE SKIN - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Drill out as necessary the fasteners in the region of the damaged or corroded skin.

CAUTION: DO NOT GOUGE, SCRATCH, OR CUT THE REMAINING SKIN SURFACE.

2. Carefully cut away the damaged skin to a rectangular shape, inserting sheet metal guards at the corners. Radius all corners.
3. Make the repair parts from doublers to required contour.

NOTE: THE REPAIR SKIN MAY BE CUT FROM AN INITIAL DAMAGED NOSE COWL.

4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710, Type 51 (Desoto Hi-Temp), primer, except dry film thickness should be 0.002 to 0.003 inch (0.05 to 0.076 mm), to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Rivet doublers and taper fillers to existing skin using BACR15CE6KE() rivets.
9. Rivet skin to doublers and chords using blind rivets. Install wet with BAC5710, Type 51, primer. Attach skin to inside chord using blind bolts. Install wet with BAC5710, Type 51, primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish as given in AMM 51-21.

NOTES

- WHEN USING THIS REPAIR, REFER TO:
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR IS MORE THAN THE LIMITS GIVEN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-40 FOR FASTENER REMOVAL, INSTALLATION, HOLE SIZES, AND EDGE MARGINS.

A CHAMFER END TO FIT

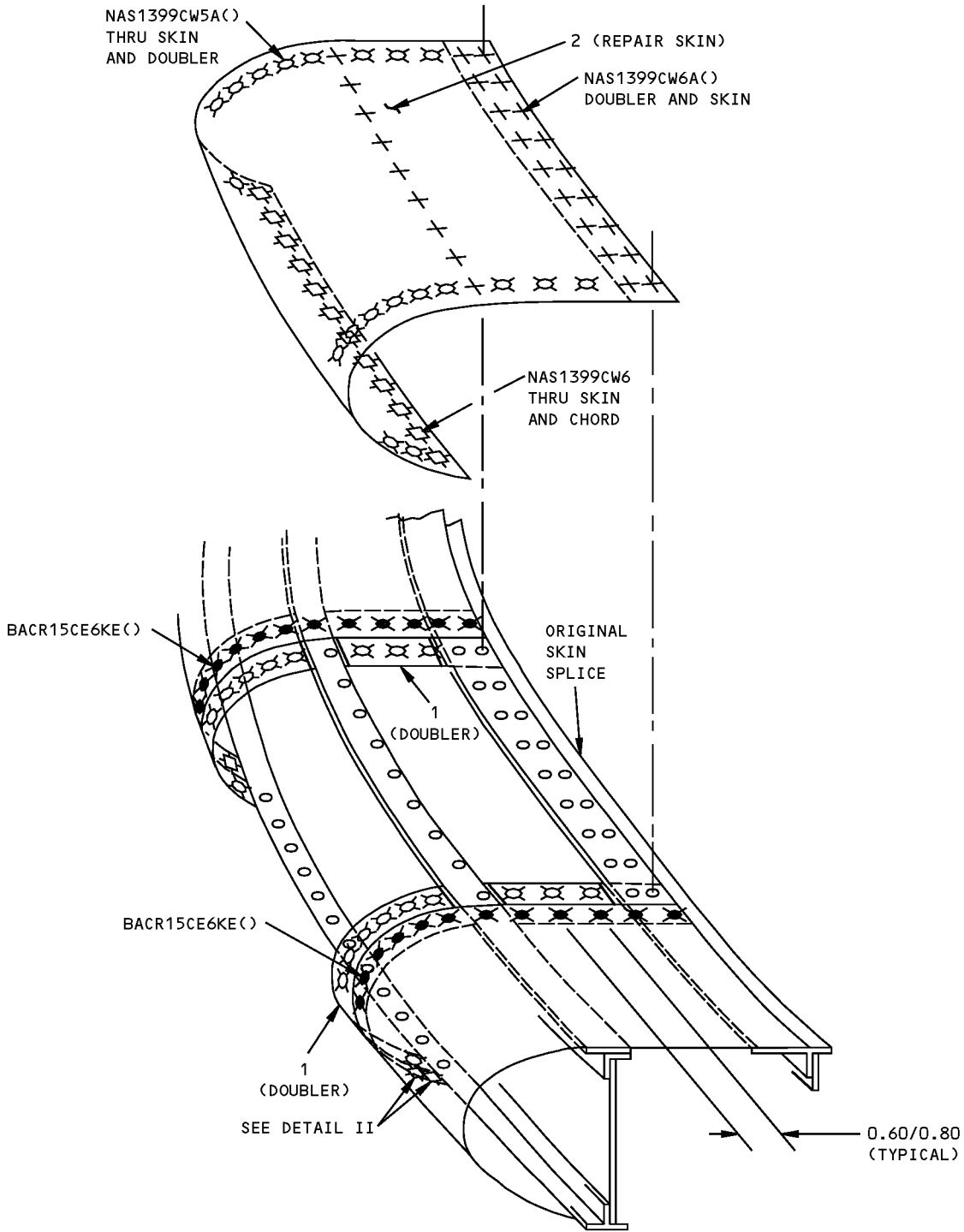
FASTENER SYMBOLS

- INITIAL HOLES.
- + INITIAL FASTENER LOCATION. INSTALL NAS1399CW6A() REPAIR FASTENER.
- ⊕ NAS1399CW5A() REPAIR FASTENER.
- ⊞ REPAIR FASTENER OR INITIAL FASTENER LOCATION. INSTALL NAS1399CW6A() REPAIR FASTENER.
- ◆ BACR15CE6KE() REPAIR FASTENER.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	4	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
2	SKIN	1	SAME GAGE AS INITIAL MATERIAL 2219-T62 OPTIONAL: 2024-T62
3	TAPER FILLER	2	SIZE TO SUIT 2024-T4

**Inlet Cowl Leading Edge Skin Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

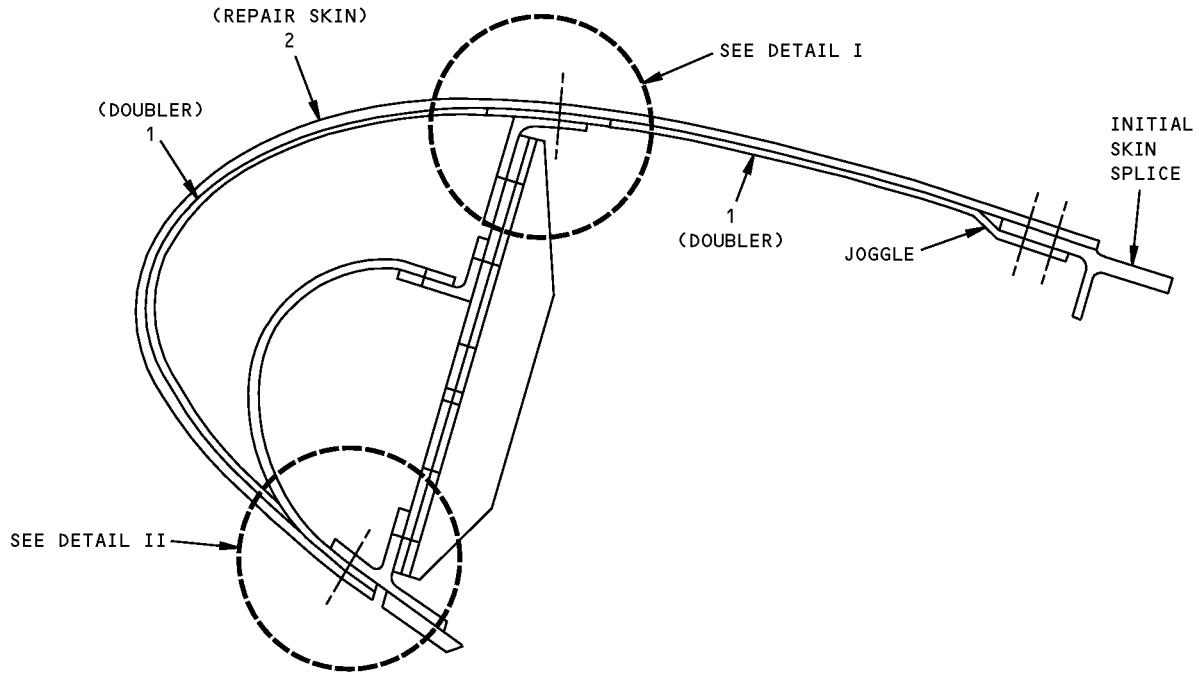
**767-300
STRUCTURAL REPAIR MANUAL**



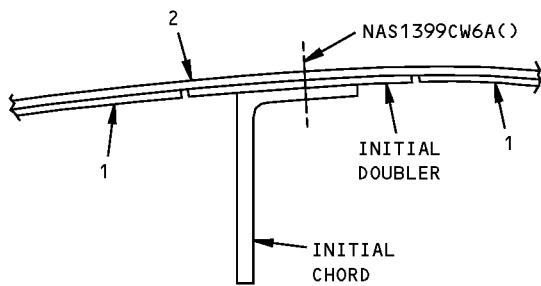
REPAIR FOR LEADING EDGE
FORWARD OF ATTACHMENT RING

**Inlet Cowl Leading Edge Skin Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

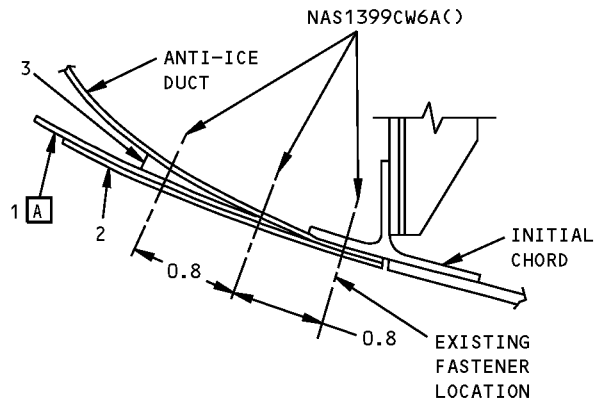
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



DETAIL I

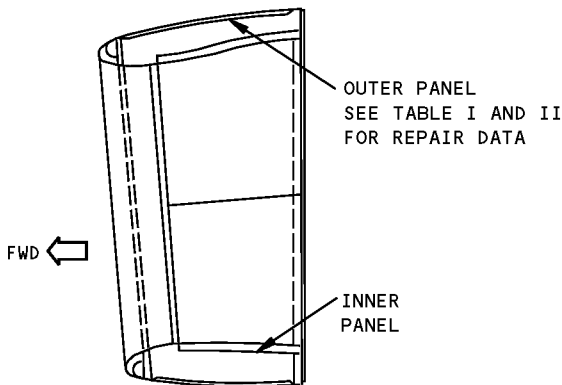
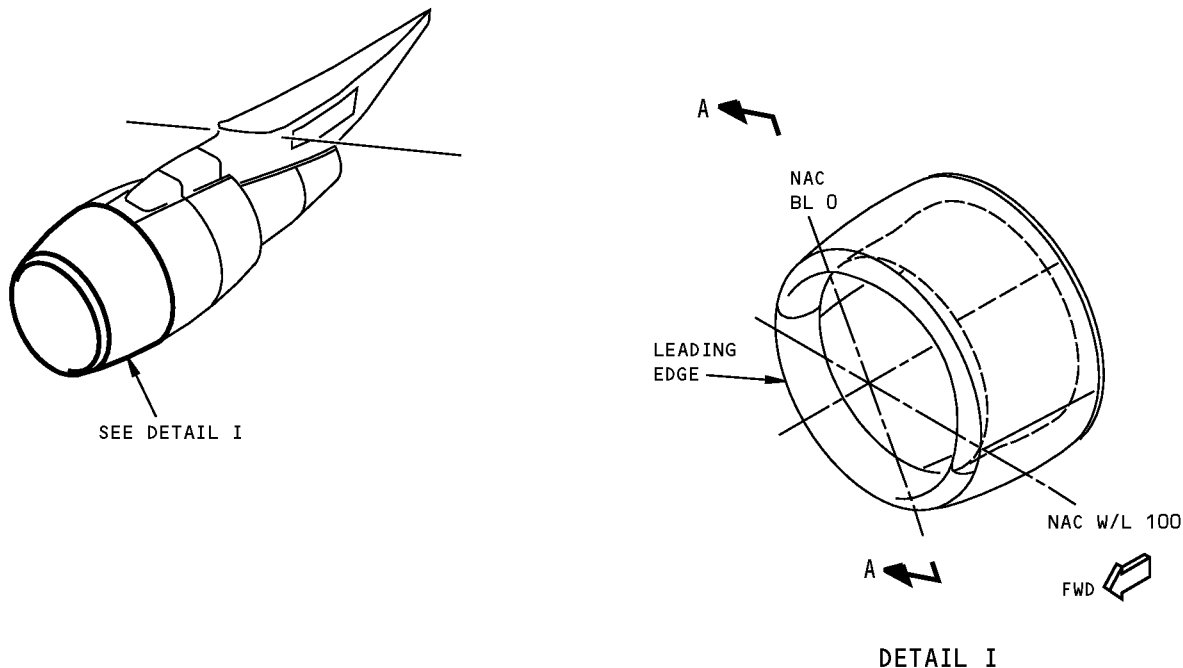


DETAIL II

**Inlet Cowl Leading Edge Skin Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 3 - INLET COWL SKIN - COMPOSITE PANELS - CF6-80A ENGINE



SECTION THRU COWL

NOTES

- A** MINIMUM OF 3.5 INCHES (88 mm) FROM PANEL EDGE
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SKIN AND HONEYCOMB CORE.
- C** INSPECT TIME LIMITED REPAIR AT EACH "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT AND NO LATER THAN NEXT "C" CHECK.
- D** ONE REPAIR IS PERMITTED FOR EACH SQUARE FOOT OF AREA AND A MINIMUM OF 6 INCHES (150 mm) FROM ANY OTHER REPAIR.
- E** FOR WET LAYUP REPAIRS USE 1.0 INCH (25 mm) FOR EACH PLY OVERLAP AND 230°F CURE REPAIR. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (13 mm) FOR EACH PLY OVERLAP AND 200°F CURE CYCLE MAY BE USED.
- F** INSPECT INTERIM REPAIR USING VISUAL AND "TAP" METHODS (SRM 51-70-03) EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT.

**Inlet Cowl Skin Repair - Composite Panels - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**



**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS [F] [A]	PERMANENT REPAIRS	
	WET LAYUP 150°F CURE (SRM 51-70-03)	WET LAYUP 200-230°F CURE (SRM 51-70-17) [E]	350°F CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAXIMUM DIA, NOT MORE THAN 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [B]	12.0 INCHES (300 mm) MAXIMUM DIA, NOT MORE THAN 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES FOR EACH REPAIRED FACESHEET. [D]	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND REPAIR WITH A PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR HONEYCOMB PANEL
TABLE I

**Inlet Cowl Skin Repair - Composite Panels - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

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54-11-01

REPAIR 3
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STRUCTURAL REPAIR MANUAL

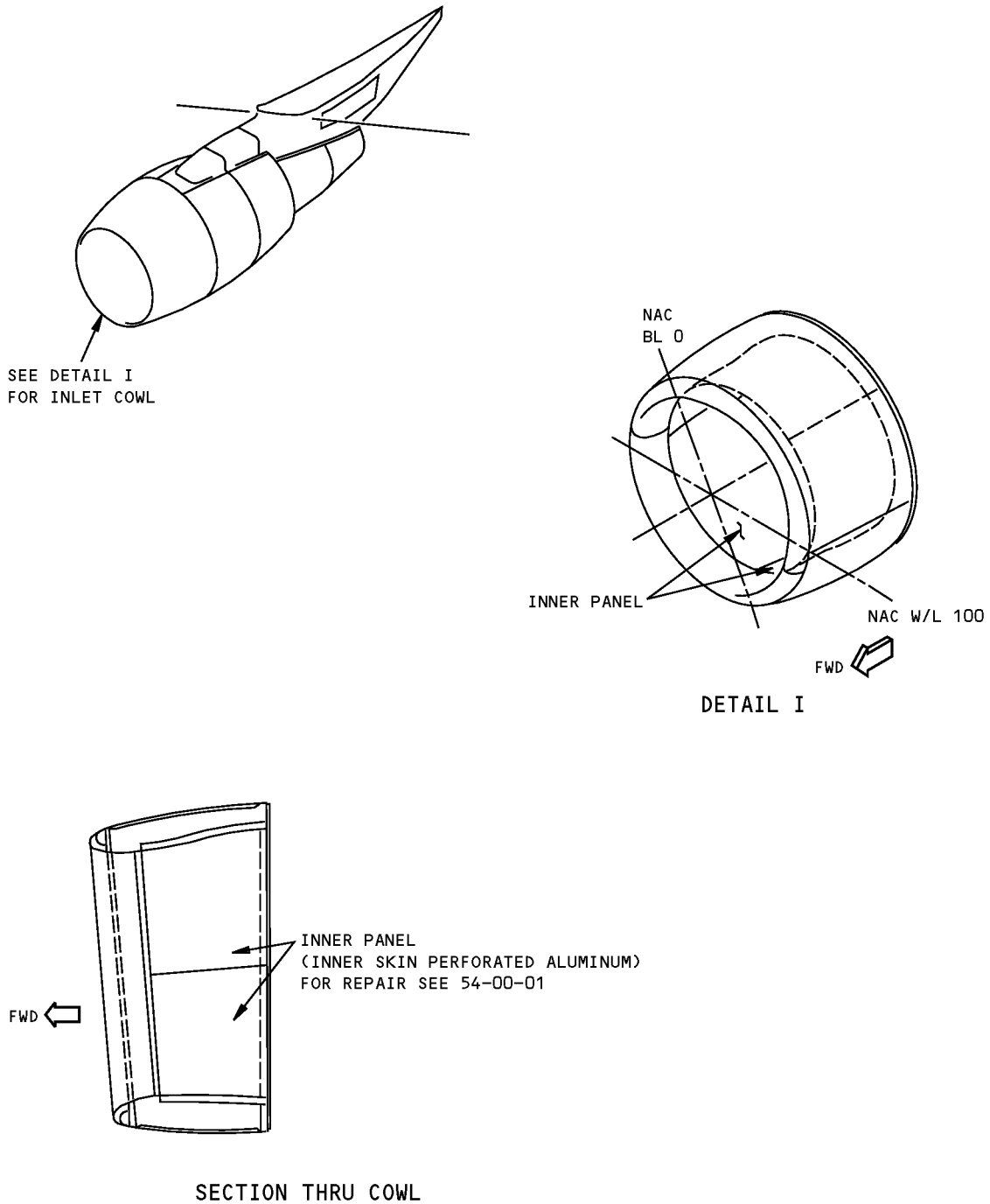
DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C	PERMANENT REPAIRS	
		WET LAYUP 200-230°F CURE (SRM 51-70-17) E	350°F CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED PROVIDED DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAXIMUM LENGTH X 0.025 DEEP IN EDGE BAND LAMINATE - MINIMUM OF 6 INCHES (150 mm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAXIMUM EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE IS PERMITTED TO FIBERS. IF FIBERS DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS DAMAGED, SEE ROOM TEMP CURE REPAIR SRM 51-70-03.	NO DAMAGE IS PERMITTED TO FIBERS. IF FIBERS DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS DAMAGED, SEE ROOM TEMP CURE REPAIR SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 INCH (0.25 mm) DEEP IN EDGE BAND LAMINATE - MINIMUM OF 6 INCHES (150 mm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (13 mm) DIA MAXIMUM WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH (13 mm) DIA MAXIMUM WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (13 mm) DIA MAXIMUM HOLE THRU EDGE BAND MINIMUM 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03, PAR. 5.G.	POTTING PERMITTED FOR 0.25 INCH (6 mm) MAXIMUM DIA HOLE, PROVIDING EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER OR 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR OTHER DAMAGE, REFER TO SRM 51-70-17, PAR. 4.L. 1.0 INCH (25 mm) OVERLAP REQUIRED PLY USE 2 EXTRA PLIES.	POTTING PERMITTED FOR 0.25 INCH (6 mm) MAXIMUM DIA HOLE, PROVIDING EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER OR 0.10 INCH (2.5 mm) FROM EDGE OF PANEL.
DELAMINATION	2 SQUARE INCHES (13 SQUARE cm) (MAXIMUM 2.0 INCHES (50 mm) LENGTH) ALLOWED. MINIMUM OF 6.0 INCHES (150 mm) OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

FOR GRAPHITE/ARAMID EDGE BAND LAMINATE
TABLE II

Inlet Cowl Skin Repair - Composite Panels - CF6-80A Engine
Figure 201 (Sheet 3 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 4 - INLET COWL ACOUSTIC PANEL - CF6-80A ENGINE

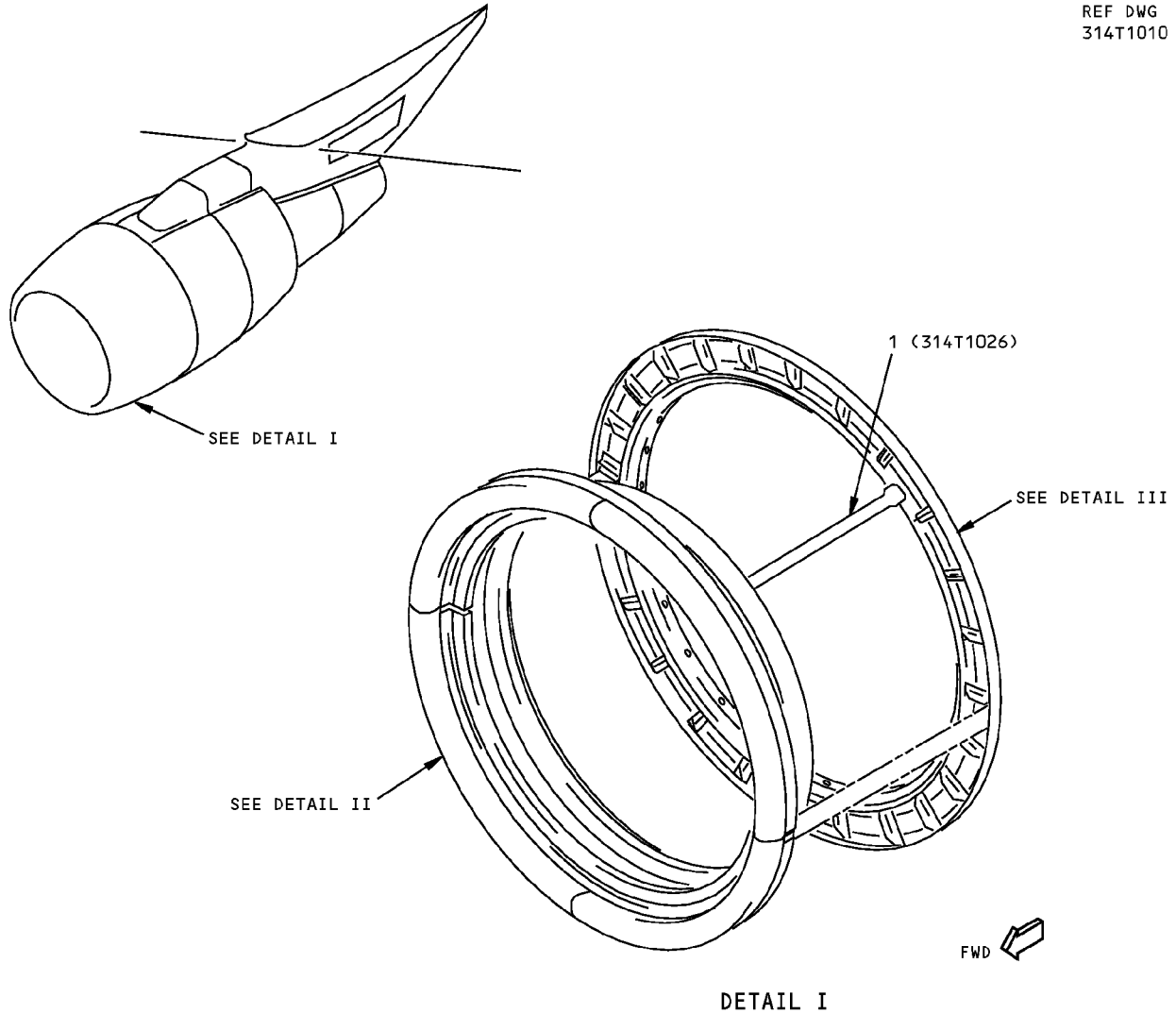


**Inlet Cowl Acoustic Panel Repair - CF6-80A Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL STRUCTURE - CF6-80A ENGINE

REF DWG
314T1010



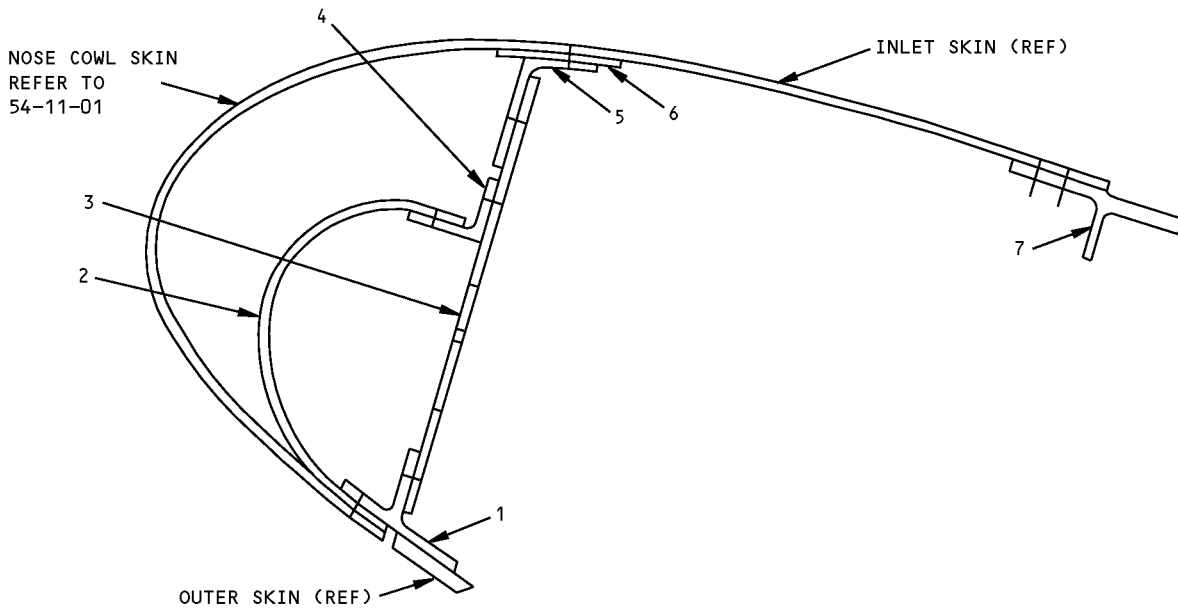
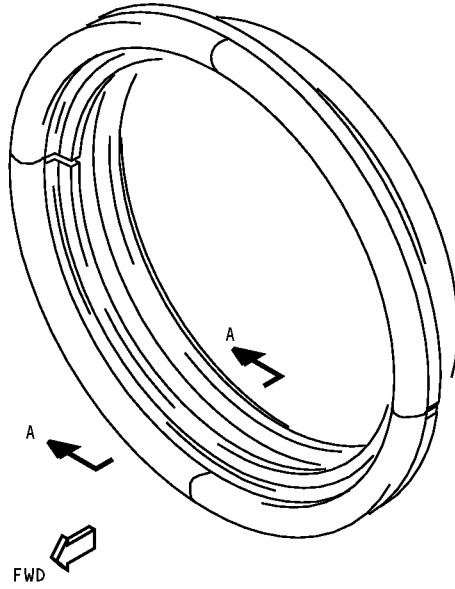
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	TEE		BAC1505-101238 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Structure Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1020



A-A

DETAIL II



**Inlet Cowl Structure Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 4)**

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IDENTIFICATION 1
Page 2
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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1506-3192 2024-T42	
2	D DUCT	0.125	2219-T62	
3	WEB	0.125	CLAD 2024-T81	
4	D DUCT ANGLE		BAC1503-100550 2024-T42	
5	CHORD		BAC1514-2630 2024-T42	
6	DOUBLER	0.050	CLAD 2024-T62	
7	RING		BAC1506-3212 2024-T42	

LIST OF MATERIALS FOR DETAIL II

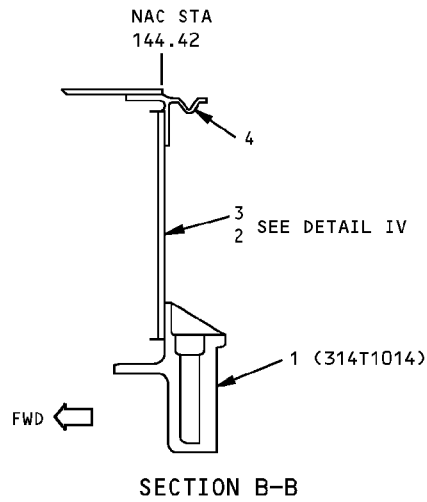
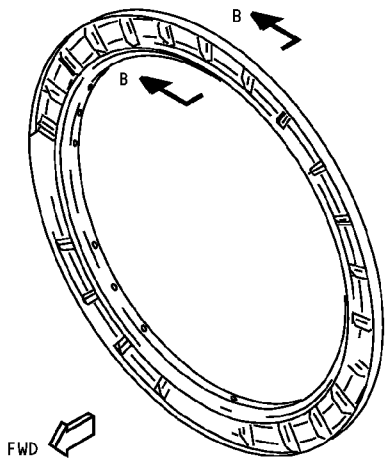
**Inlet Cowl Structure Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 4)**

IDENTIFICATION 1
Page 3
Apr 01/2005

54-11-02

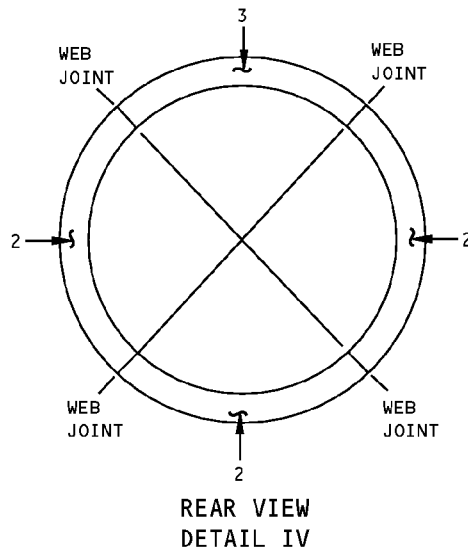
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



REF DWG
314T1013

DETAIL III



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	RING		FORGING 2024-T4	
2	WEB ASSY - BONDED	0.025 0.032	CLAD 2024-T81 PLUS CLAD 2024-T81	
3	WEB	0.050	CLAD 2024-T81	
4	CHORD		BAC1506-3111 2024-T42	

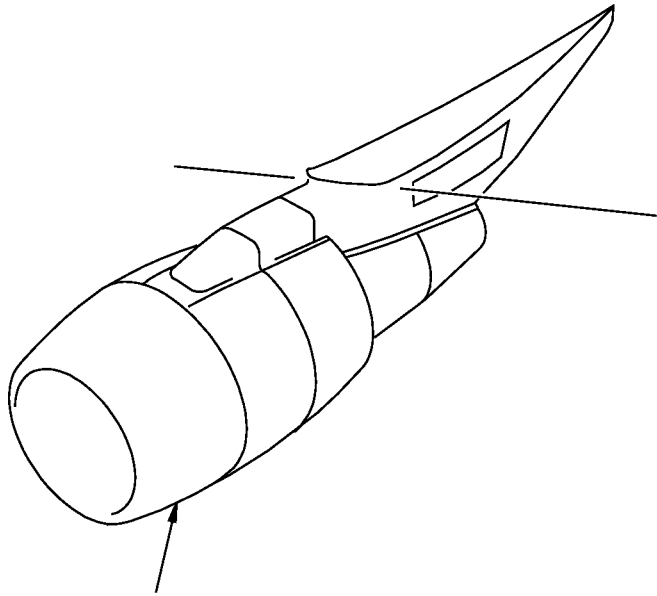
LIST OF MATERIALS FOR DETAIL III AND DETAIL IV

**Inlet Cowl Structure Identification - CF6-80A Engine
Figure 1 (Sheet 4 of 4)**

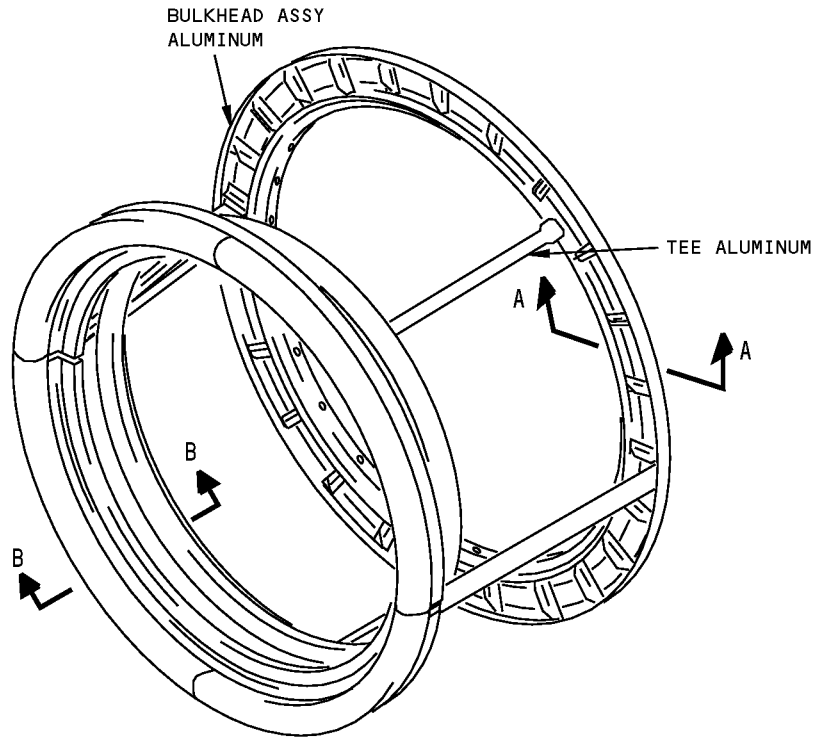
**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL STRUCTURE - CF6-80A ENGINE

REF DWG
314T1010



SEE DETAIL I
FOR INLET COWL



DETAIL I

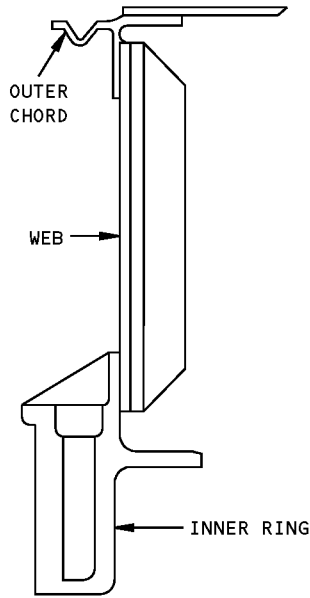
**Inlet Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 5)**

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ALLOWABLE DAMAGE 1
Page 101
54-11-02
Dec 15/2006

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1013



Bulkhead Assembly
Section A-A

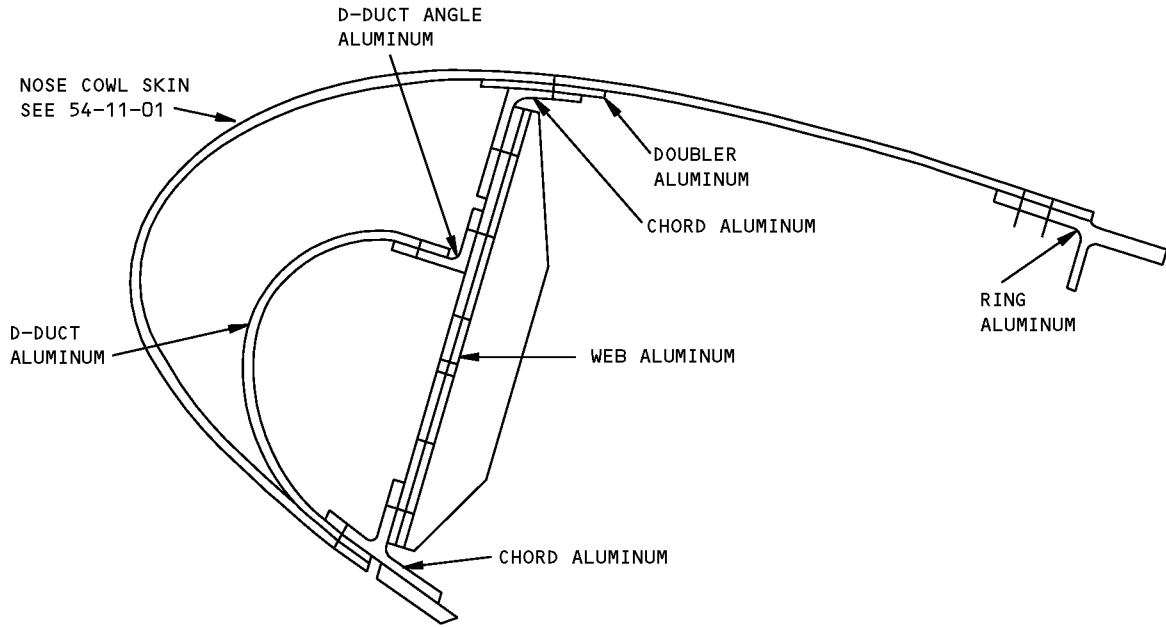
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
BULKHEAD ASSY				
OUTER CHORD	A	B	NOT ALLOWED	NOT ALLOWED
WEB	A	B	SEE DETAIL IV	E
INNER RING	C	D	NOT ALLOWED	NOT ALLOWED
TEE	A	B	NOT ALLOWED	E STEM ONLY

**Inlet Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 5)**

D634T210

ALLOWABLE DAMAGE 1
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**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B

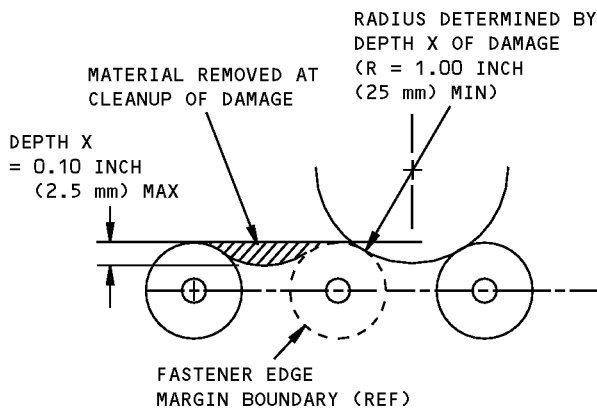
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
WEB	A	B	SEE DETAIL IV	F
D-DUCT	A	B	NOT ALLOWED	NOT ALLOWED
D-DUCT ANGLE	A	B	NOT ALLOWED	NOT ALLOWED
CHORD	A	B	NOT ALLOWED	NOT ALLOWED
DOUBLER	A	B	NOT ALLOWED	NOT ALLOWED
RING	A	B	NOT ALLOWED	NOT ALLOWED

**Inlet Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 5)**

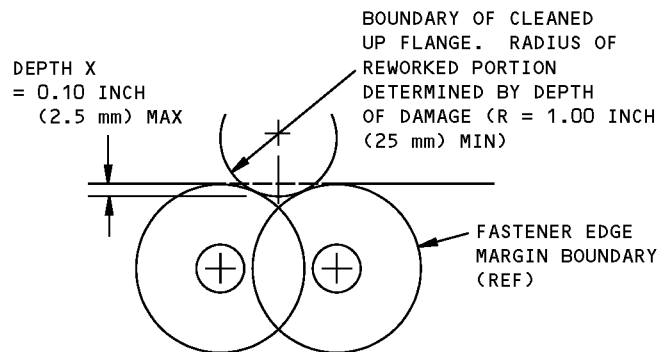
**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI.
- B** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND V.
- C** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI SHOT PEEN REWORKED AREA AS SHOWN IN CMM 20-10-03. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. REFER TO SRM 51-20-06.
- D** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND V. SHOT PEEN REWORKED AREAS OF RING AS GIVEN IN CMM 20-10-03. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. REFER TO SRM 51-20-06.
- E** CLEAN OUT DAMAGE UP TO 0.19 INCH (4.8 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- F** CLEAN OUT DAMAGE UP TO 0.19 INCH (4.8 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED



DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP

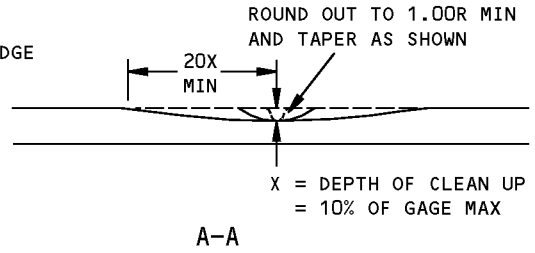
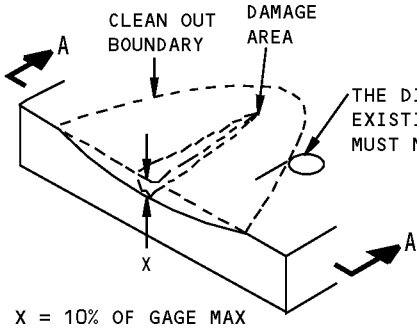


DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP

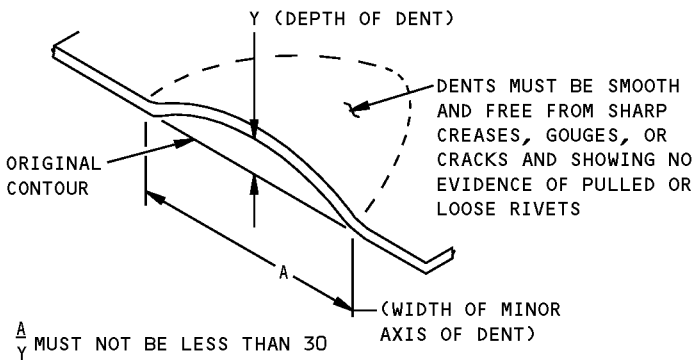
DETAIL II

**Inlet Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 4 of 5)**

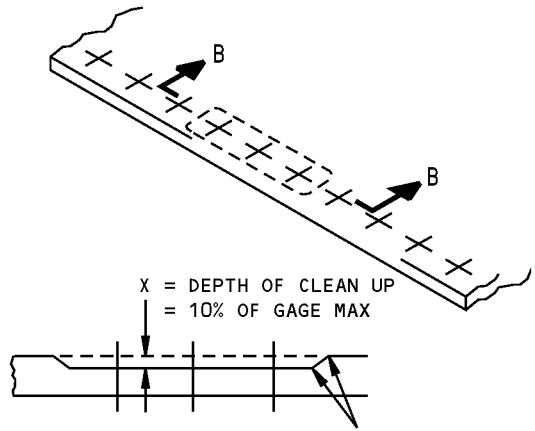
STRUCTURAL REPAIR MANUAL



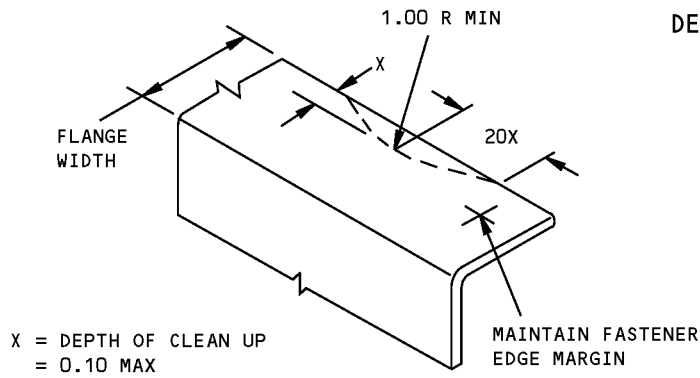
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**



**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



**B-B
CORROSION CLEANUP
DETAIL V**



**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VI**

**Inlet Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL**REPAIR 1 - INLET COWL STRUCTURE - AFT MOUNTING RING - CF6-80A ENGINE****REPAIR INSTRUCTIONS**

1. Remove nose cowl according to 71-11-01 of the 767 Maintenance Manual.
2. Remove inner acoustic panel and outer panel from nose cowl for access to damaged area.
3. Remove existing structure where necessary from ring assembly.
4. Remove damage from ring segment and taper each side of damage. Surface roughness to be 125 microinches or better.

CAUTION: TO PRECLUDE SOME FATIGUE OF REPAIR PARTS, EDGES OF REPAIR PARTS MUST NOT BE LEFT IN A SHEARED OR BLANKED CONDITION.

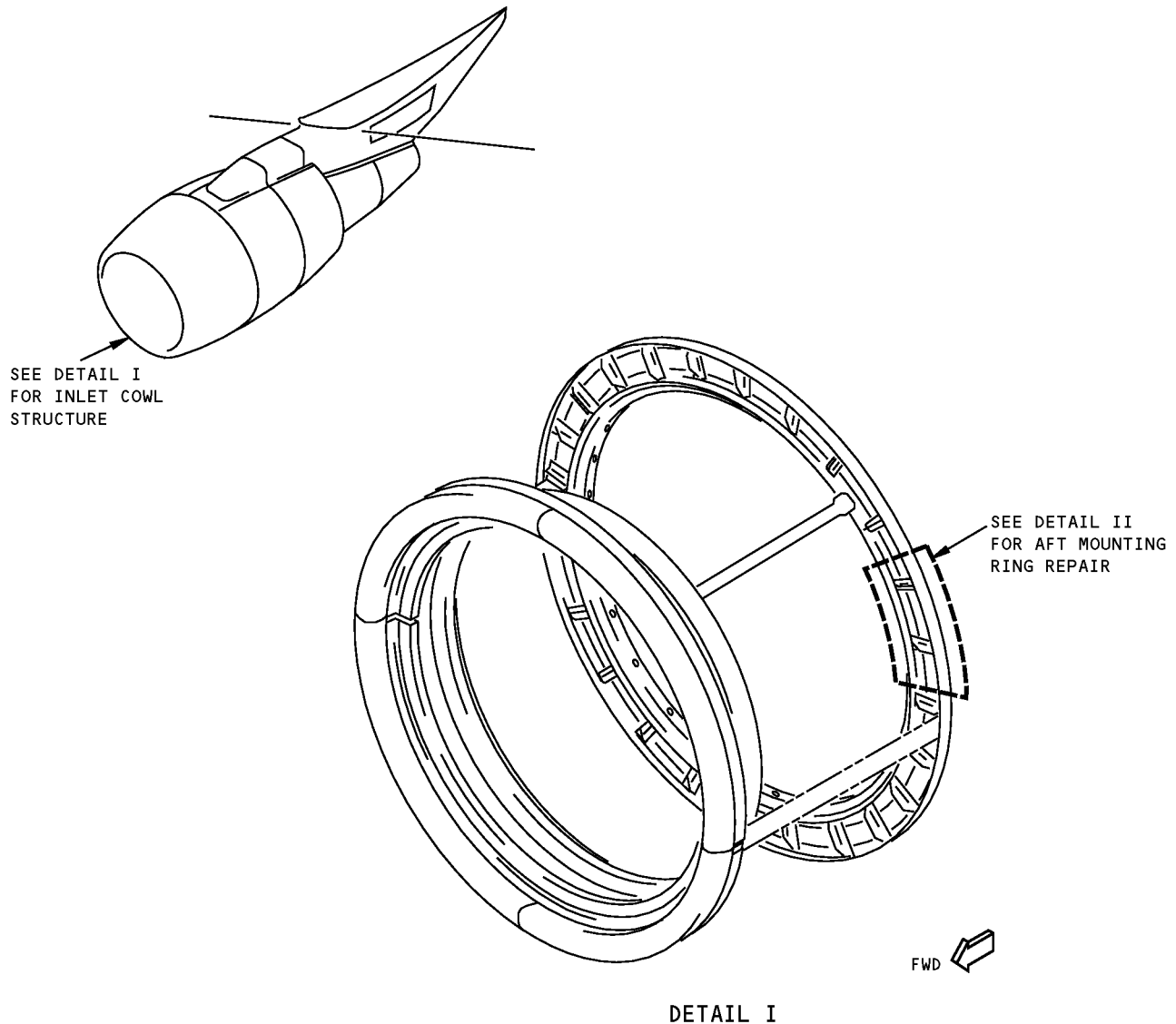
5. Make repair parts with edges having a machine finish of 125 microinches or better.

NOTE: Repair parts may be blanked or sheared with 0.03 inch excess around periphery of part. Remove excess by routing, shaping or other machining methods.

6. Locate machined bar and filler and drill new fastener holes.
7. Remove repair parts and deburr holes.
8. Break sharp edges of repair parts 0.015 to 0.030 inch.
9. Remove all nicks, scratches, and corners from repair parts and existing structure.
10. Alodize all bare surfaces and raw edges of repair parts and existing structure according to 51-20-01.
11. Apply one coat of BMS 10-11, Type I primer to all surfaces of repair parts, and reworked surfaces of existing structure.
12. Install repair parts with BMS 5-79, (BMS 5-95 optional) sealant applied to all faying surfaces.
13. Install fasteners wet with BMS 5-79 sealant. (BMS 5-95 optional).
14. Remove loose debris from cavity of nose cowl.
15. Reinstall inner and outer nose cowl panels.
16. Fill gaps between panels and damaged area of ring segment with aerodynamic smoother according to 51-30-01 of the 767 Maintenance Manual.
17. Reinstall nose cowl according to 71-11-01 of the 767 Maintenance Manual.

**Inlet Cowl Structure - Aft Mounting Ring Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 5)**

767-300
STRUCTURAL REPAIR MANUAL



NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
51-40 FOR FASTENER CODE, REMOVAL,
INSTALLATION, HOLE SIZES AND EDGE MARGINS
51-10-01 FOR AERODYNAMIC SMOOTHNESS
REQUIREMENTS

A CHECK MATERIAL OF FORGED RING BEFORE REPAIR,
AND FASHION REPAIR PARTS FROM SAME MATERIAL

Inlet Cowl Structure - Aft Mounting Ring Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 5)

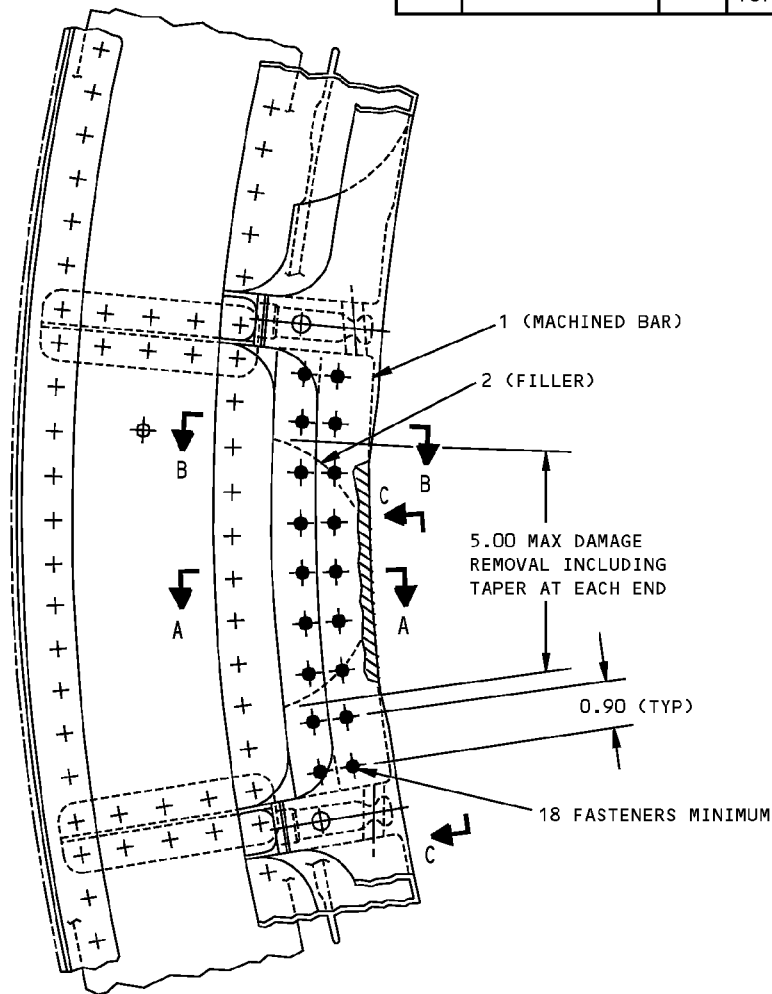
**767-300
STRUCTURAL REPAIR MANUAL**

APPLICABILITY
THIS REPAIR LIMITED TO DAMAGE BETWEEN ENGINE FLANGE FASTENER LOCATIONS. A MAXIMUM OF 6 REPAIRS ARE ALLOWED PER RING.

SYMBOLS

- + ORIGINAL FASTENER LOCATIONS
- ◆ REPAIR FASTENER LOCATIONS.
BACB30JC6A() HEX-DRIVE BOLT WITH BACC30X6 COLLAR, COUNTERSUNK FLUSH IN RING SEGMENT

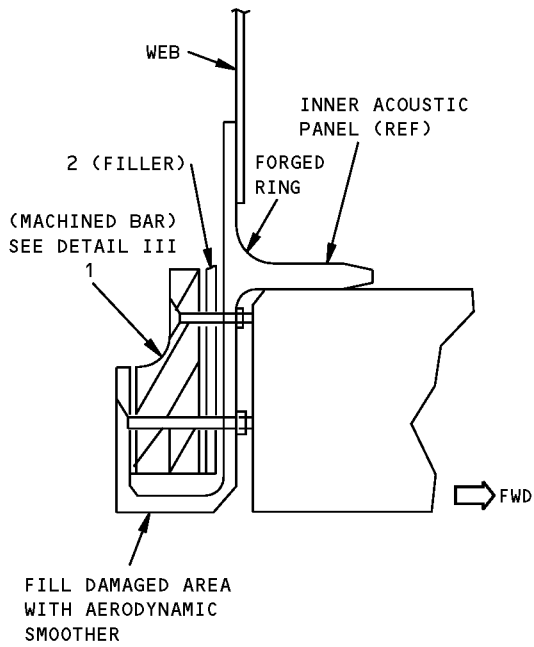
REPAIR MATERIAL		
PART	QTY	MATERIAL
1	MACHINED BAR	1 0.70 2024-T4 OR 7075-T73 [A]
2	FILLER	1 0.15 2024-T4 OR 7075-T73 [A]



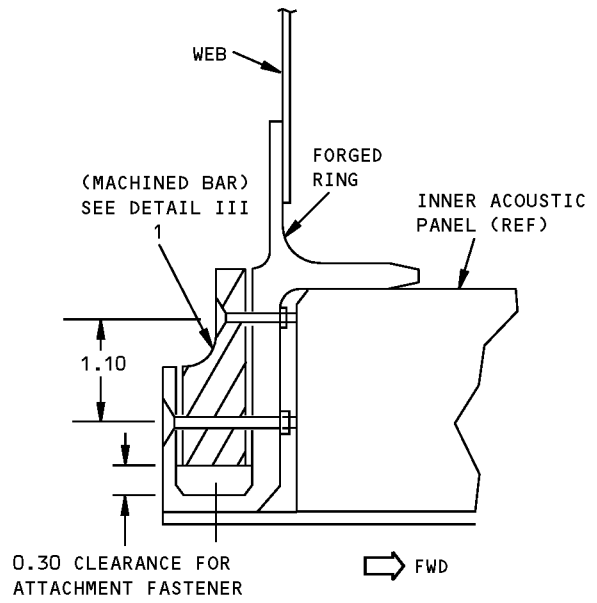
VIEW LOOKING FORWARD
DETAIL II

**Inlet Cowl Structure - Aft Mounting Ring Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 5)**

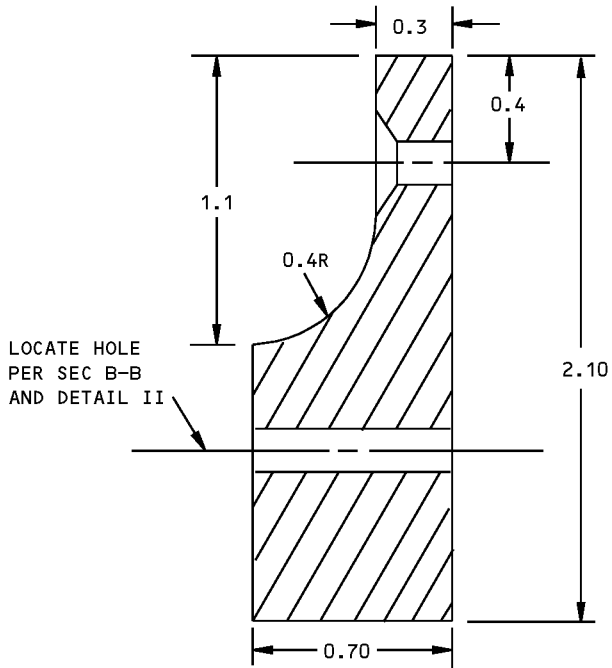
STRUCTURAL REPAIR MANUAL



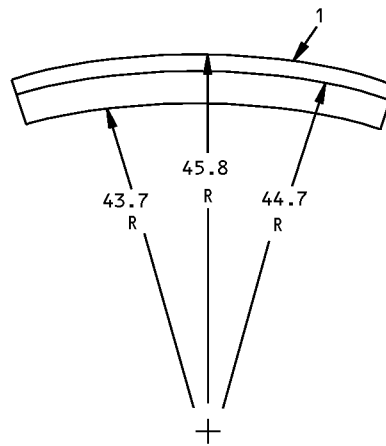
SECTION A-A



SECTION B-B



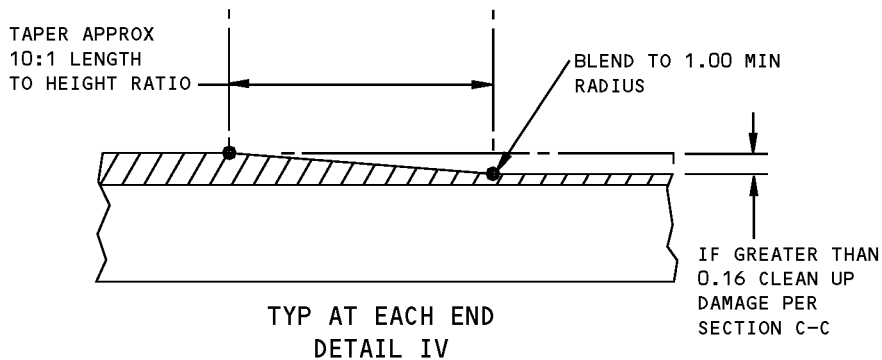
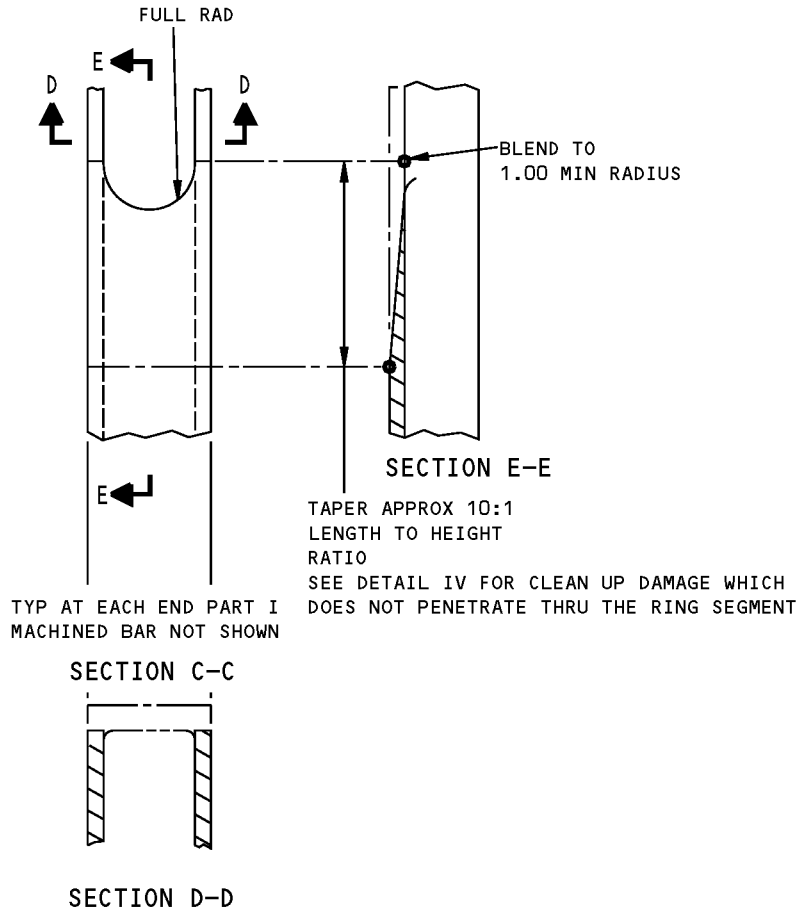
CROSS-SECTION OF MACHINED BAR-ITEM I
DETAIL III



CONTOUR MACHINED
BAR TO ABOVE
SPECIFICATIONS

**Inlet Cowl Structure - Aft Mounting Ring Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Inlet Cowl Structure - Aft Mounting Ring Repair - CF6-80A Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - THERMAL ANTI-ICING D-DUCT SKIN REPAIR - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Remove inlet cowl leading edge skin section and damaged D-duct section.
2. Stop drill cracks 0.25 inch (6 mm) diameter.
3. Make the repair parts. Form doublers, skin or shims to required contour. Make repair skin large enough to extend two rows of fasteners past the crack in all four directions. See Detail I. For cracks too near an edge of the D-duct to allow room for two rows of fasteners, refer to Detail II.

Note: The repair skin may be cut from an existing damaged D-duct.
4. Break all sharp edges of initial and repair parts 0.015 to 0.030 inch (0.38 to 0.76 mm) radius.
5. Locate, drill and countersink fastener holes.
6. Apply a chemical conversion coating to the repair part and to the bare surfaces of skin. Refer to SRM 51-20-01. Apply one coat of BAC 5710, Type 51 (Desoto Hi-Temp) primer to all surfaces of doublers, raw edges and interior surface of repair skin.
7. Rivet doublers and shims to existing D-duct skin using BACR15BB6AD rivets.
8. Rivet inner diameter edge of D-duct to angle with NAS1398CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
9. Attach cowl leading edge skin outer diameter edge and outer diameter edge of D-duct together to outer chord with Cleco fasteners. Fasten cowl leading edge skin inner diameter edge in its initial location with Cleco fasteners.
10. Rivet cowl leading edge skin and outer diameter of D-duct into place with NAS1399CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
11. Fill gaps with aerodynamic smoother.
12. Restore finish as shown in SRM 51-21.

NOTES

- FOR CRACK IN D-DUCT NEAR AN INITIAL D-DUCT SPLICE, REPLACE SPLICE WITH A WIDER SPLICE SO THAT AT LEAST TWO ROWS OF FASTENERS EXTEND BEYOND CRACK
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-40 FOR FASTENER REMOVAL, INSTALLATION, HOLE SIZES, AND EDGE MARGINS

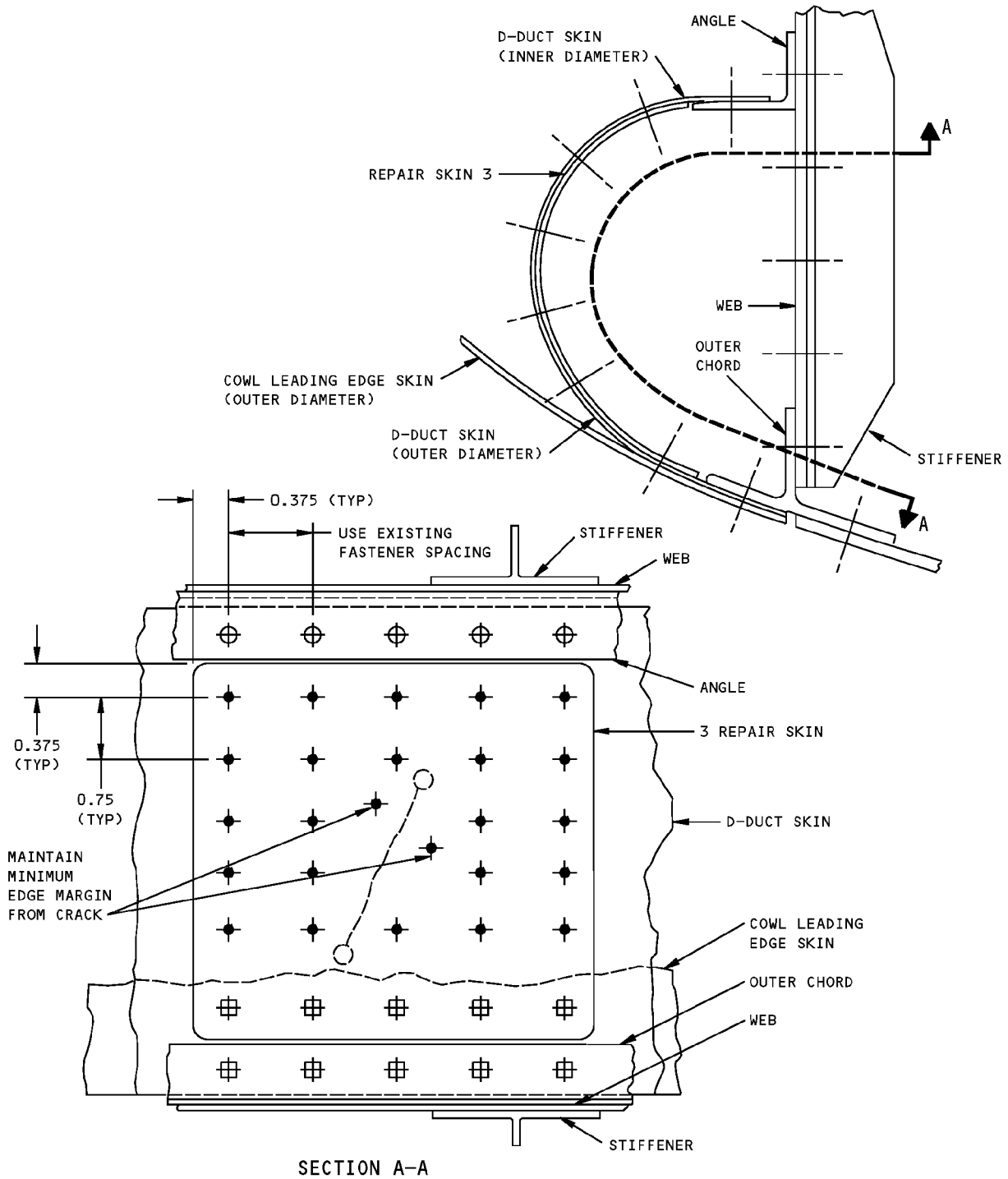
FASTENER SYMBOLS

- ✦ REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15BB6AD
- ⊕ REPAIR FASTENER IN INITIAL LOCATION. INSTALL NAS1398CW6 PROTRUDING HEAD BLIND RIVET
- ⊞ REPAIR FASTENER IN INITIAL LOCATION. INSTALL NAS1399CW6 FLUSH HEAD BLIND RIVET

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	SHIM	1	0.05 2219-0 BARE SHEET HT TR T62 AFTER FORMING
2	REPAIR DOUBLER	AS REQD	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING
3	REPAIR SKIN	1	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING

**Thermal Anti-Icing D-Duct Skin Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

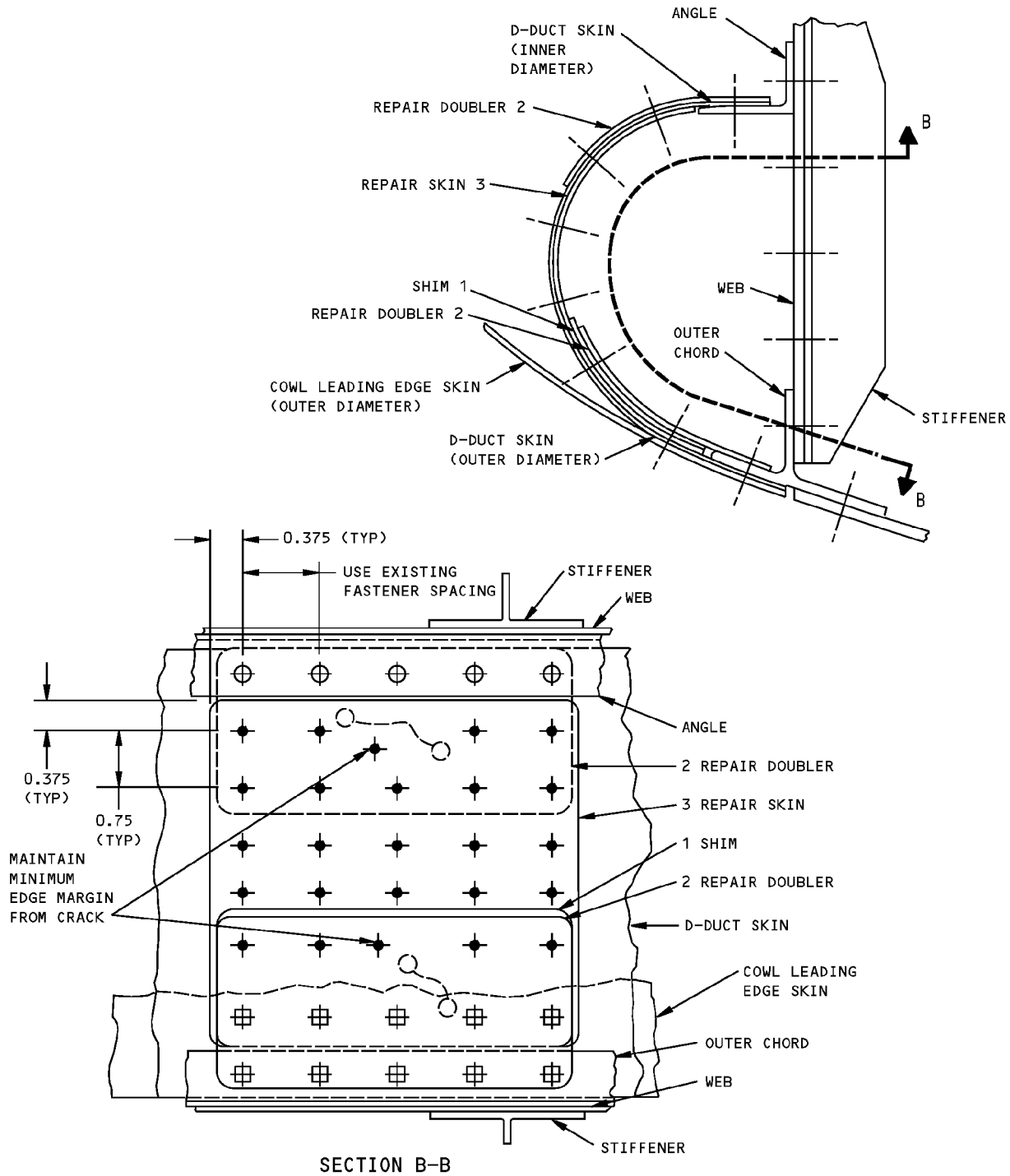
**767-300
STRUCTURAL REPAIR MANUAL**



REPAIR FOR CRACKS AT CENTER OF D-DUCT
DETAIL I

**Thermal Anti-Icing D-Duct Skin Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR FOR CRACKS NEAR EDGE OF D-DUCT
DETAIL II**

**Thermal Anti-Icing D-Duct Skin Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL STRUCTURE - AFT BULKHEAD WEB REPAIR - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Remove the outer cowl skin.
2. Remove the thermal anti-icing duct (TAI) duct. Refer to AMM 71-11-09, Fig. 401 and Fig. 402.
3. Remove the fasteners as shown in Detail III.
4. Cut and remove part of the web as shown in Detail II. Make sure no other parts are damaged when the web is cut.
5. Make the repair parts.
6. Assemble the repair parts and drill the fastener holes. Refer to Detail III for the distance between fasteners.
7. Remove the repair parts.
8. Remove all of the nicks, scratches, gouges, and burrs from the web and the repair parts.
9. Remove the sharp edges from the cut edges of the web and the repair parts 0.015 to 0.030 inch (0.38 to 0.76 mm).
10. Apply a chemical conversion coating to the repair part and to the bare surfaces of the web. Refer to SRM 51-20-01.
11. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare edges of the web. Refer to AMM 51-21-00.
12. Install the repair parts. Install the fasteners wet with BMS 10-11, Type I primer.

FASTENER SYMBOLS

- + OTHER FASTENER LOCATION
- ⊠ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACB30NX6K4X HI-LOK.
- ⦿ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACR15ET7AD3 RIVET.
- ⊙ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL BACR15AD7AD3 RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15BB6AD3 RIVET.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPLACEMENT WEB	1	0.050 CLAD 2024-T81
2	SPLICE STRAP	1	0.063 CLAD 2024-T81

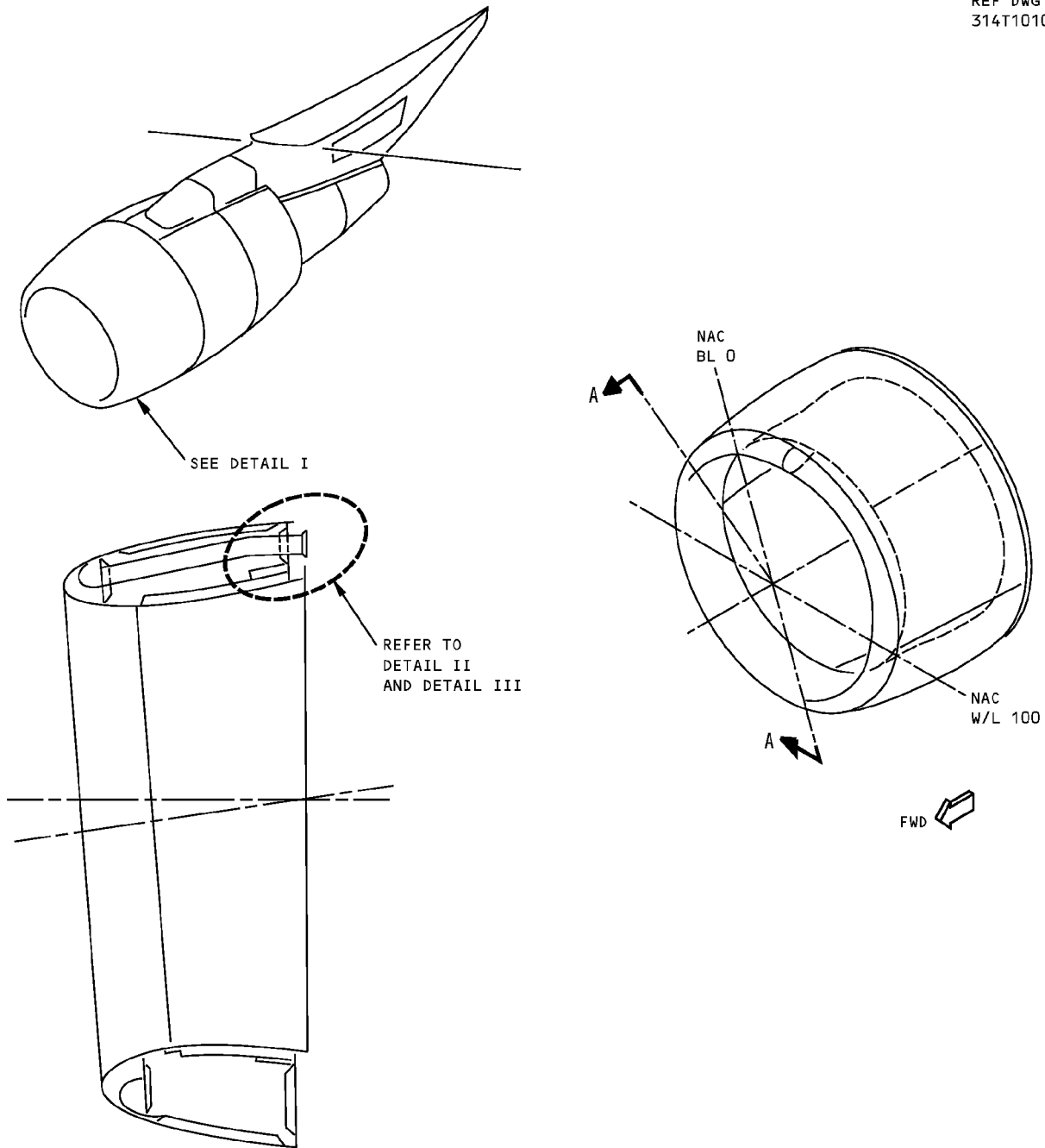
NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES.
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

**Inlet Cowl Structure - Aft Bulkhead Web Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1010



SECTION A-A

DETAIL I

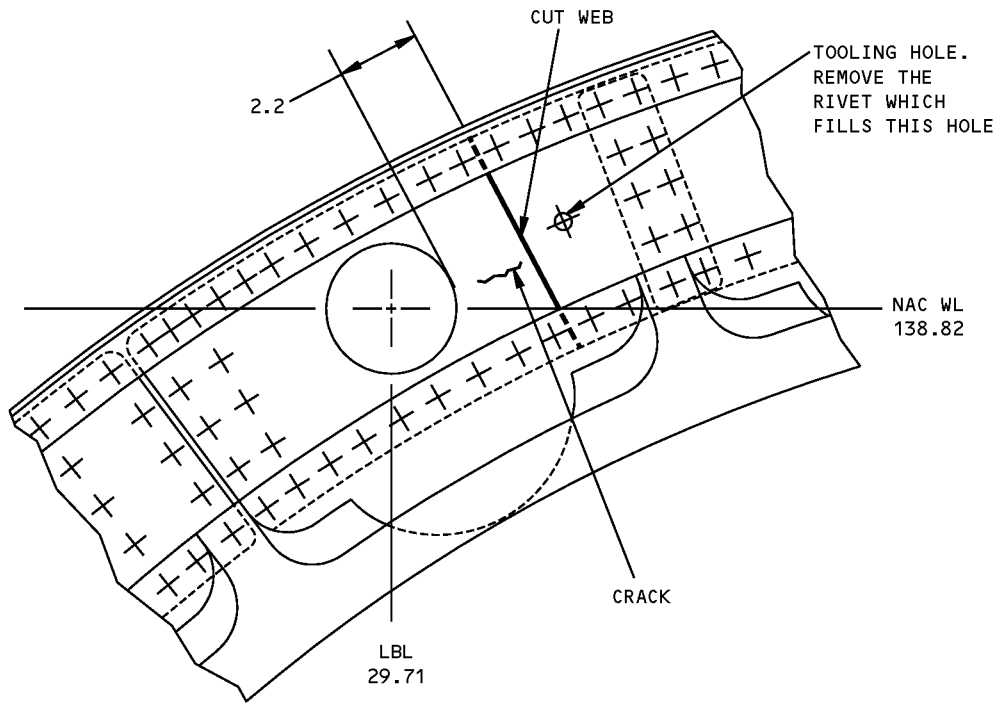
**Inlet Cowl Structure - Aft Bulkhead Web Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 4)**

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54-11-02

REPAIR 3
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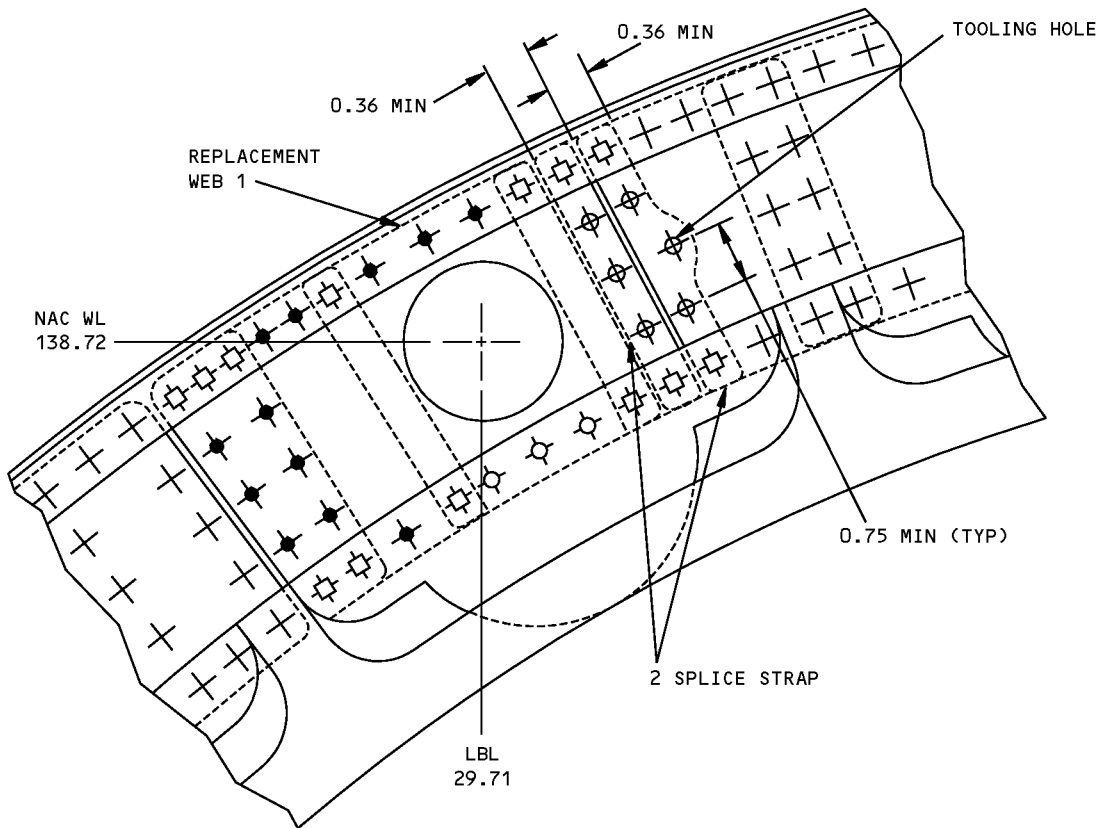
**767-300
STRUCTURAL REPAIR MANUAL**



**WEB CUT LOCATION
DETAIL II**

**Inlet Cowl Structure - Aft Bulkhead Web Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



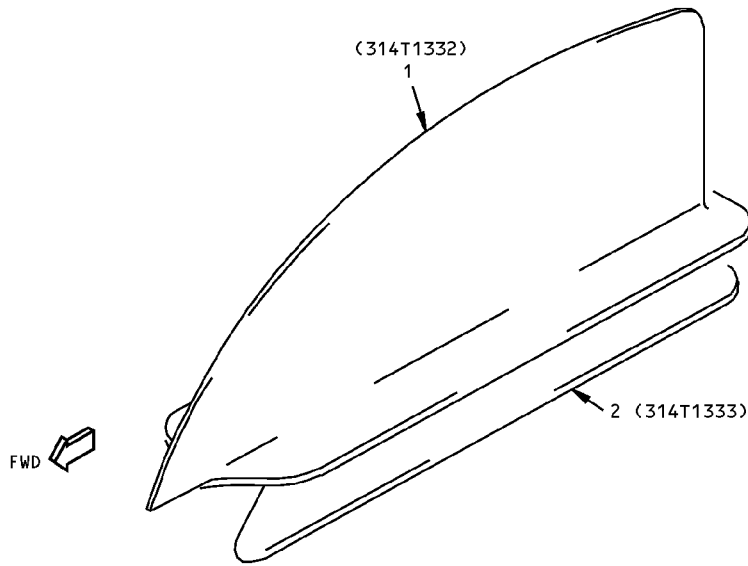
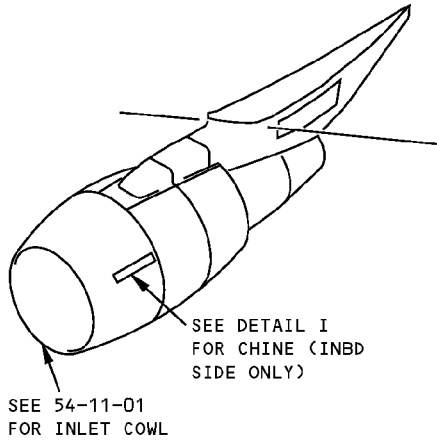
**WEB REPAIR
DETAIL III**

**Inlet Cowl Structure - Aft Bulkhead Web Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL CHINE - CF6-80A ENGINE

REF DWG
314T1244



DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHINE		FORGING 7075-T73	
2	INSULATOR		FIBERGLASS LAMINATE (2 PLYES) BMS 8-79, TYPE 120	

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Chine Identification - CF6-80A Engine
Figure 1**

IDENTIFICATION 1
Page 1
Apr 01/2005

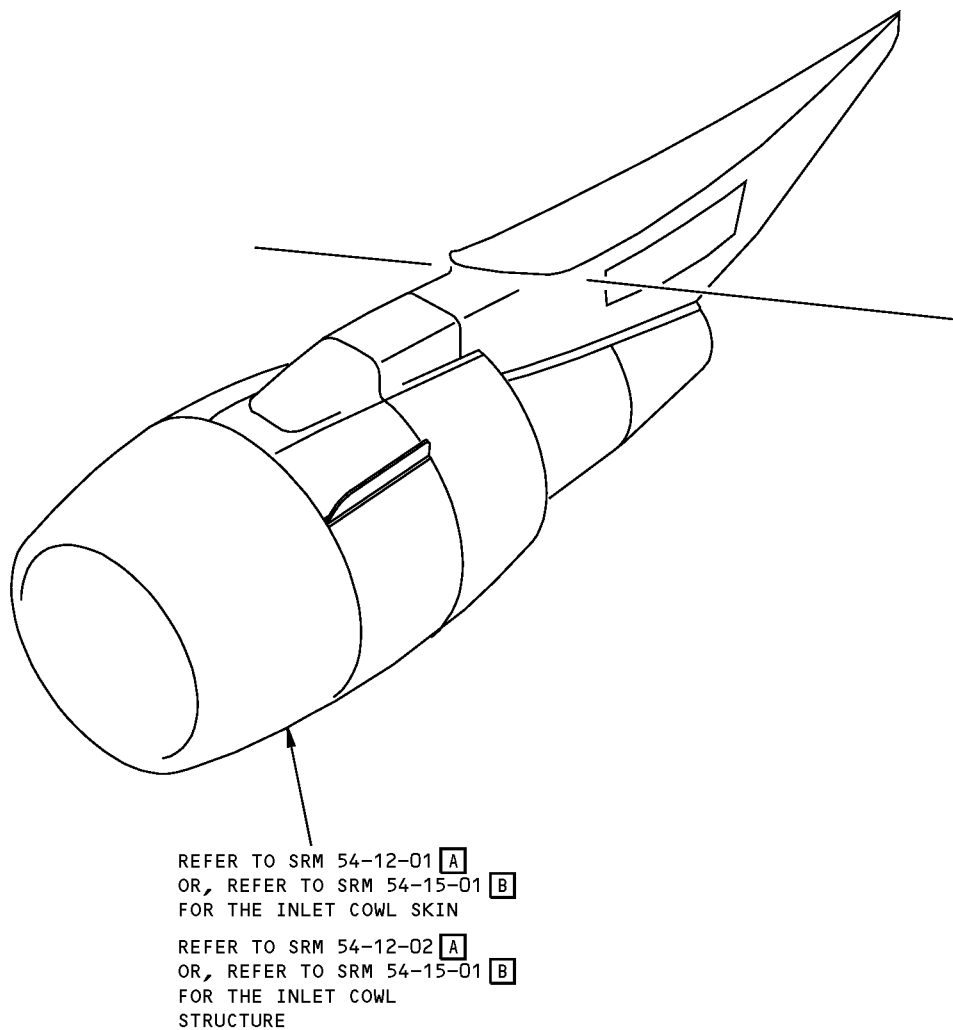
54-11-30

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STRUCTURAL REPAIR MANUAL

GENERAL - INLET COWL STRUCTURE DIAGRAM - CF6-80C2 ENGINE



NOTES

- A** FOR INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001
- B** FOR INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON.

Inlet Cowl Structure Diagram - CF6-80C2 Engine
Figure 1

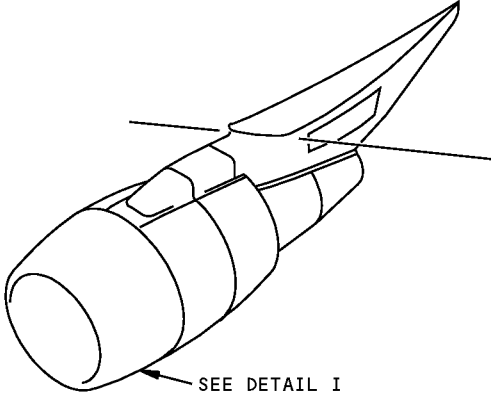
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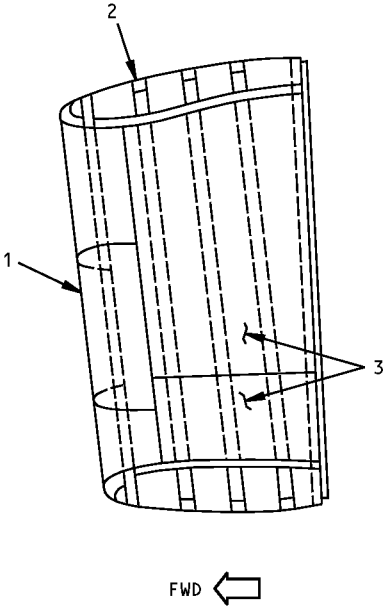
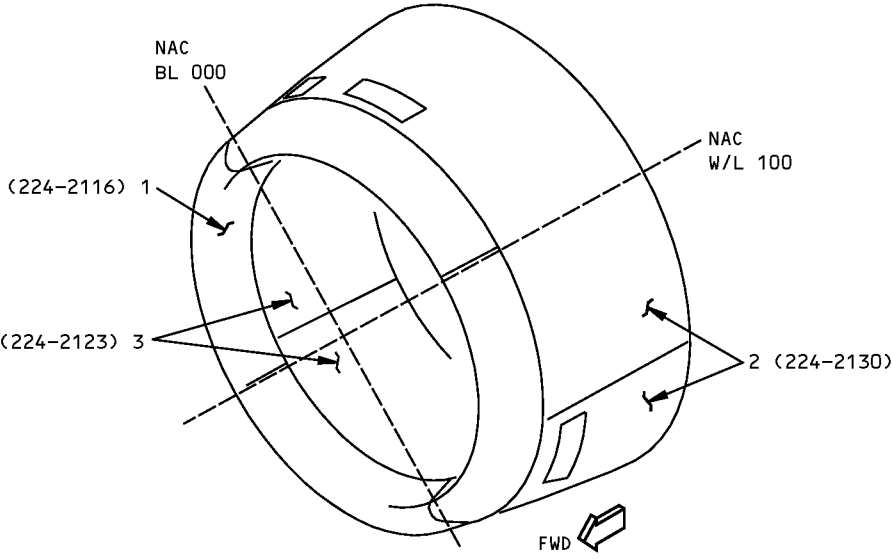
GENERAL
Page 1
Apr 15/2006

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL SKIN - CF6-80C2 ENGINE



THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001. REFER TO SRM 54-15-01 FOR THE INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON.



DETAIL I

SECTION THRU COWL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	L/E SKIN	0.080	2219-T62	
2	OUTER PANEL SKIN	0.057	FILAMENT-WOUND CARBON FIBER, ARAMID FABRIC, GRAPHITE TAPE, EPOXY MATERIAL. SEE DETAIL II	
	RIB	0.842		
3	INNER PANEL	0.025	2024-T3 NONPERFORATED	
	BACKSHEET	0.032	2024-T3 34% PERFORATED	
	CORE			
	INNER SKIN			

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL

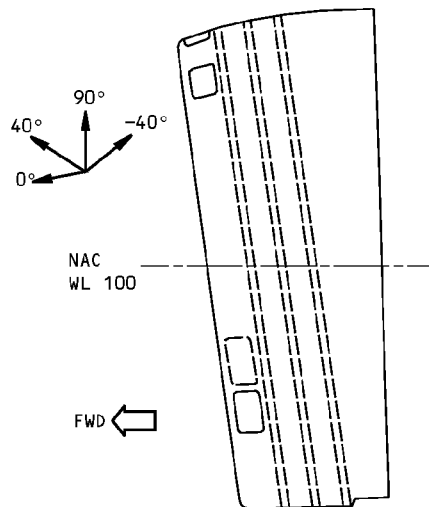
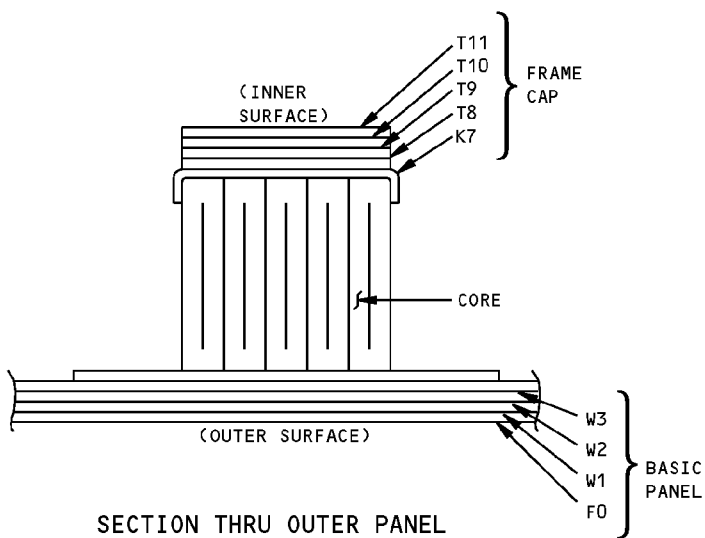


DIAGRAM OF PLY ORIENTATION, SEE TABLE FOR PLY ORIENTATION AND MATERIAL [G]

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION [G]
2	F0	[A]	0°, 90°
	W2	[B]	90°
	W1, W3	[C]	40°, -40°
	K7	[D]	0°, 90°
	T8, T9, T10, T11	[E]	90°

PLY ORIENTATION TABLE [H]

OUTER BARREL
DETAIL II

NOTES

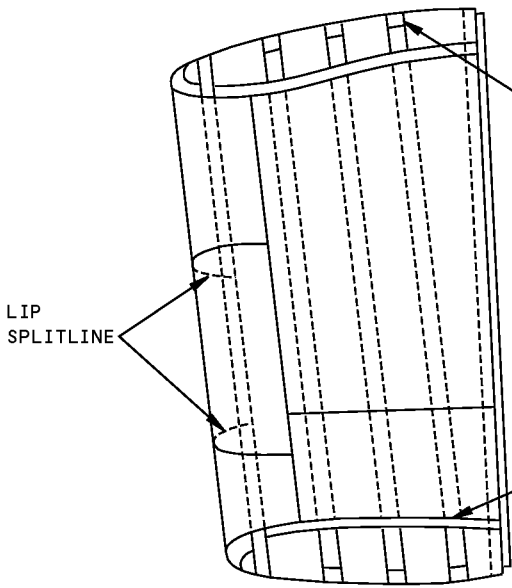
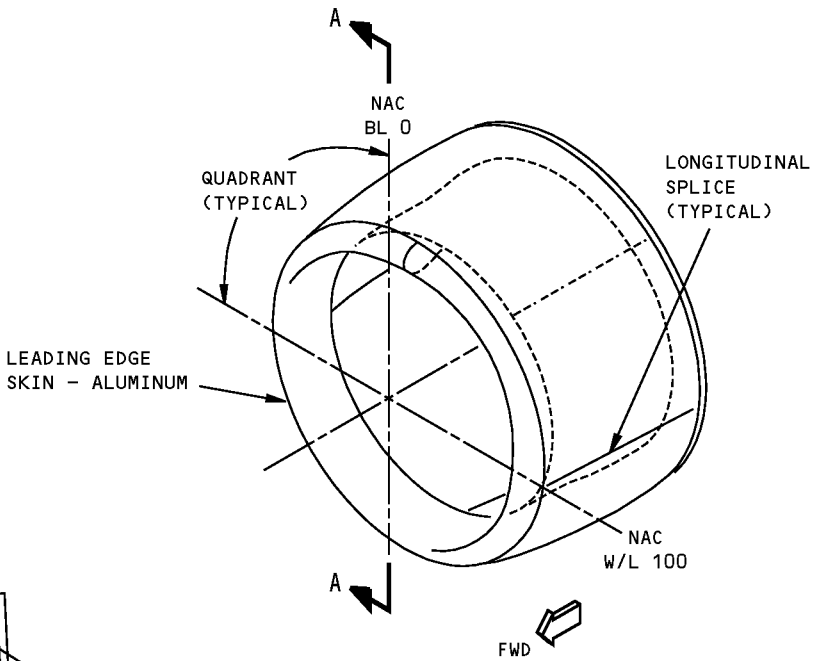
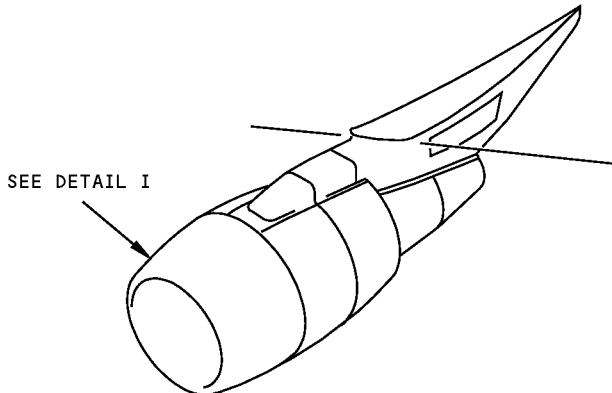
- [A] 0.0145-INCH GAGE, GRAPHITE FABRIC MATERIAL, GROUP 1, TYPE 2, CLASS 1, GRADE 1, AH370-5H/3501-5A, AS4 FIBER, V10396 [F]
- [B] 0.0085-INCH GAGE, FILAMENT-WOUND, CARBON FIBER, TYPE 1, GRADE 6, EA91D1-1 XAS6K TOW, V10396 [F]
- [C] 0.0170-INCH GAGE, FILAMENT-WOUND, CARBON FIBER, TYPE 1, GRADE 6, EA91D1-1 XAS6K TOW, V10396 [F]
- [D] 0.0095-INCH GAGE, ARAMID FABRIC (KEVLAR), KEVLAR 285 F161-186, GROUP 1, TYPE V, GRADE 1, CLASS 2, V33564 [F]
- [E] 0.0055-INCH GAGE, GRAPHITE TAPE, GROUP 1, TYPE 1, CLASS 1, GRADE 1, 3501-5A, AS-4 FIBER, V10396 [F]
- [F] ORIGINAL CURE: 60 TO 90 MINUTES AT 330°F TO 360°F (166°C TO 182°C)
- [G] PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- [H] MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE ROHR DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

Inlet Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001. REFER TO SRM 54-15-01 FOR THE INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON.



OUTER BARREL ACOUSTIC PANEL:
- FILAMENT-WOUND CARBON FIBER
- ALUMINUM HONEYCOMB RIBS

INNER BARREL ACOUSTIC PANEL:
- PLASTIC HONEYCOMB CORE
- PERFORATED ALUMINUM FACESHEET WITH A WOVEN WIRE OVERLAY
- SOLID ALUMINUM BACKSHEET

SECTION A-A

DETAIL I

**Inlet Cowl Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
LEADING EDGE SKIN	A	B	G	C	NOT APPLICABLE
OUTER BARREL PANEL SKIN	E	F	NOT PERMITTED	D	NOT PERMITTED
OUTER BARREL PANEL RIB	NOT PERMITTED	F	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED
INNER BARREL ACOUSTIC PANEL J	A	B	G	NOT PERMITTED	H
INNER BARREL PANEL WIRE OVERLAY L	K	NOT APPLICABLE	NOT APPLICABLE	K	NOT APPLICABLE

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- REFER TO SRM 51-11-00 FOR INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-11-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-11-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFINISH REWORKED AREAS AS GIVEN IN SRM 51-21-01.

A CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED. SEE DETAILS II AND VI.

B REMOVE DAMAGE, SEE DETAILS II, III AND V.

C CLEAN PUNCTURES UP TO 0.25 INCH (6 mm) MAX DIA. HOLES PERMITTED UP TO 0.25 INCH (6 mm) DIA, NOT CLOSER THAN 4D TO ANY ADJACENT HOLE. HOLE IS TO BE FILLED WITH A NAS1399D BLIND RIVET FOR HOLE UP TO 0.16 INCH (4 mm) DIA, AND NAS1398D BLIND RIVET FOR HOLE 0.19 TO 0.25 INCH (4.6 TO 6 mm) DIA. INSTALLED WET WITH 825-009 DESOTO HI-TEMP PRIMER. OTHER HOLES TO BE REPAIRED.

D MAXIMUM PERMITTED HOLE - 1.0 INCH (25 mm) DIA PERMITTED PROVIDED DAMAGE IS A MINIMUM OF 4D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP EXCEPT TO REMOVE RESIN BURR EXTENDING INTO SURFACE CONTOUR. PROTECT DAMAGE AREA FROM ENTRANCE OF WATER, SUNLIGHT, OR FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD HOLE LOCATION AND INSPECT AT EACH AIRPLANE "A" CHECK. REPAIR DAMAGE NO LATER NEXT AIRPLANE "C" CHECK.

E CRACKS INVOLVING FASTENER HOLE ARE NOT PERMITTED. CLEAN UP EDGE CRACKS, SEE DETAILS II AND VI. FOR ALL OTHER CRACKS, MAXIMUM PERMITTED CRACK LENGTH IS 1.5 INCHES (38 mm) IN ANY DIRECTION WITH A MINIMUM OF 10.0 INCHES (25 cm) OF SEPARATION FROM ANY OTHER HOLES OR DAMAGE. ONE CRACK MAXIMUM PERMITTED PER BARREL HALF. CLEAN UP DAMAGE AND APPLY ALUMINUM FOIL TAPE (SPEED TAPE). RECORD LOCATION AND INSPECT AT EACH AIRPLANE "A" CHECK. REPAIR CRACK NO LATER THAN NEXT AIRPLANE "C" CHECK.

F MAXIMUM DEPTH 0.010 INCH (0.25 mm) OVER 10.00 INCHES (25 cm) LENGTH. IF FIBERS ARE DAMAGED TREAT AS A CRACK. CLEAN UP AND APPLY ALUMINUM FOIL TAPE AND INSPECT AT EACH AIRPLANE "A" CHECK. REPAIR NOT LATER THAN NEXT AIRPLANE "C" CHECK.

G TWO DENTS MAXIMUM PERMITTED PER QUADRANT PROVIDED DENTS ARE AT LEAST 15.0 INCHES (38 cm) APART. (SEE DETAIL I). SEE DETAIL IV.

H SEE DETAIL VII FOR DELAMINATION (DISBONDING) OF PERFORATED FACESHEET. SEE DETAIL VIII FOR DISBONDING OF SOLID BACKFACE. DAMAGE NOT EXCEEDING THESE LIMITS IS PERMITTED, PROVIDED THAT PANELS ARE INSPECTED EVERY 300 FLIGHT HOURS UNTIL PANEL IS REPAIRED OR REPLACED.

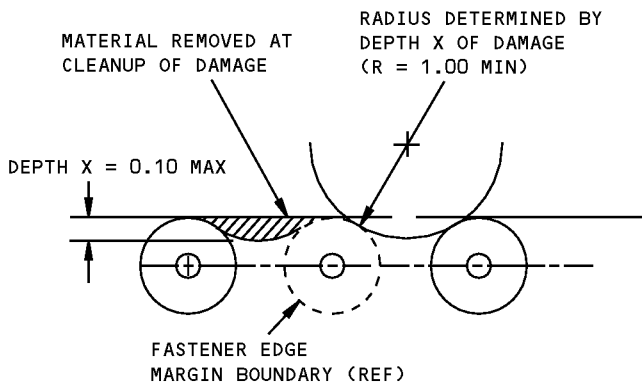
J INNER PANEL CAN BE INSPECTED FOR DAMAGE ON BACKFACE BY REMOVING ANY ONE OF FOUR INSPECTION PANELS, THROUGH THE VENT, OR BY REMOVING THE OUTER BARREL.

K RIPS UP TO 4.0 INCHES (100 mm) LONG ARE PERMITTED. RIPS MUST BE AT LEAST 3.0 INCHES (75 mm) APART. MAKE AN INSPECTION OF THE DAMAGE EVERY "A" CHECK. REPAIR THE DAMAGE NO LATER THAN THE NEXT "C" CHECK. THE TOTAL DECREASE IN WIRE OVERLAY AREA BECAUSE OF DAMAGE MUST BE LESS THAN 100 SQUARE INCHES (645 SQUARE cm).

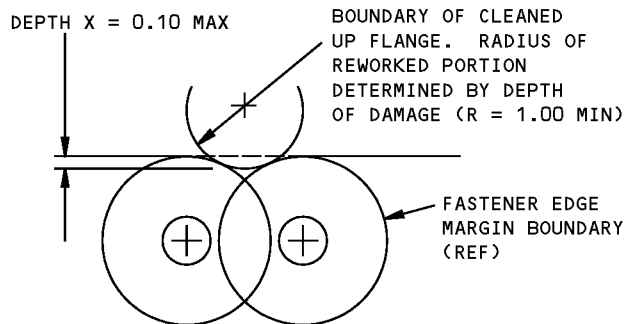
L THESE LIMITS ARE NOT APPLICABLE TO INLET COWLS ON WHICH BF GOODRICH SB 71-021 IS ACCOMPLISHED. SB 71-021 REMOVES THE WIRE MESH.

Inlet Cowl Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 5)

767-300
STRUCTURAL REPAIR MANUAL

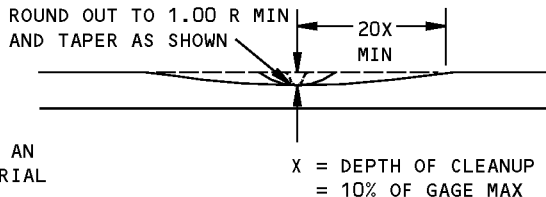
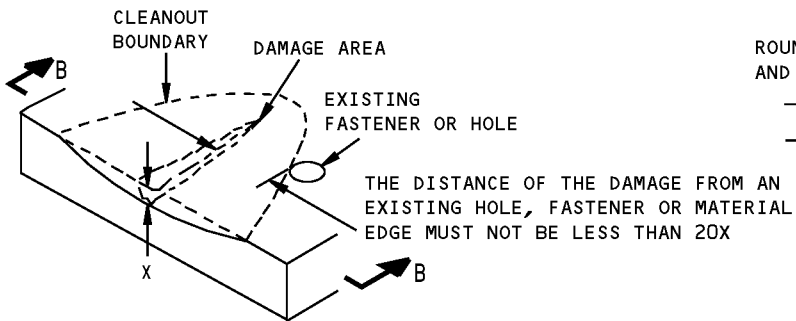


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



SECTION B-B

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
 DETAIL III

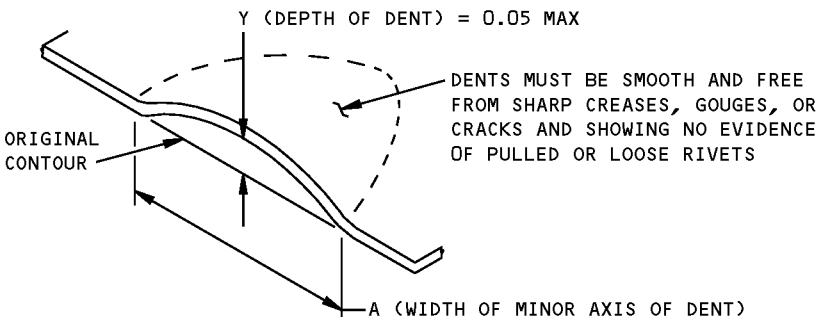
Inlet Cowl Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 5)

767-300
STRUCTURAL REPAIR MANUAL

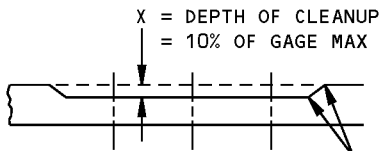
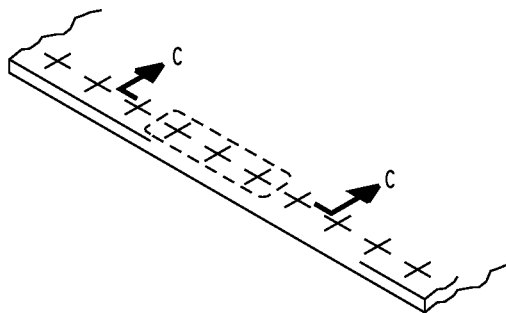
CAUTION: DO NOT FILL DENTS

MAJOR AXIS = 4.00 MAX

$\frac{A}{Y}$ MUST NOT BE LESS THAN 30



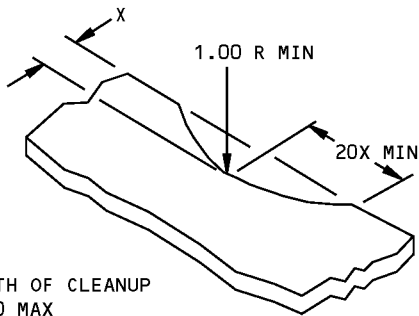
ALLOWABLE DAMAGE FOR DENT
DETAIL IV



SMOOTH BLENDOUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

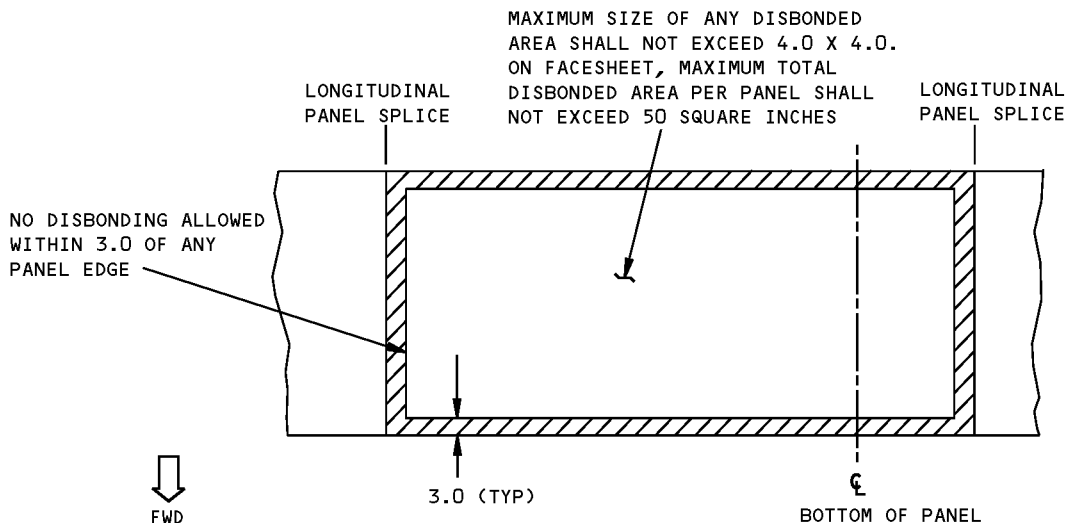
CORROSION CLEANUP
DETAIL V



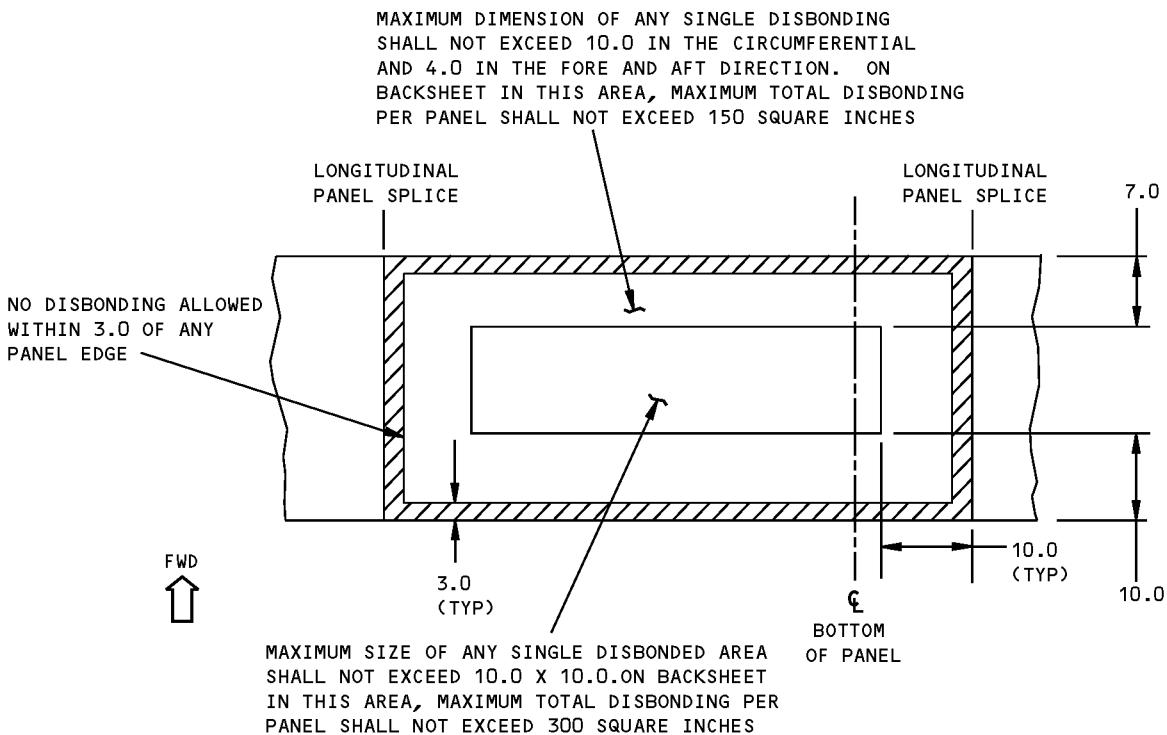
DETAIL VI

Inlet Cowl Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 5)

767-300
STRUCTURAL REPAIR MANUAL



ALLOWABLE DISBOND LIMITS FOR INNER ACOUSTIC PANEL, PERFORATED FACESHEET
DETAIL VII



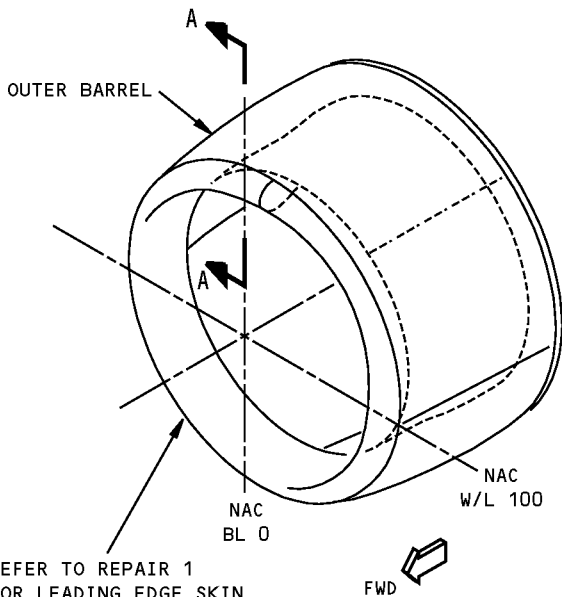
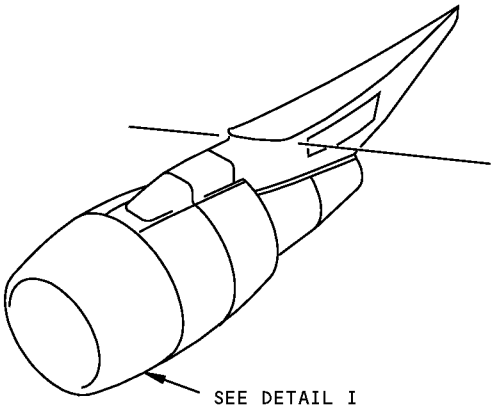
ALLOWABLE DISBOND LIMITS FOR SOLID BACKFACE (SHOWN WITH OUTER PANEL REMOVED)
DETAIL VIII

Inlet Cowl Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 5 of 5)

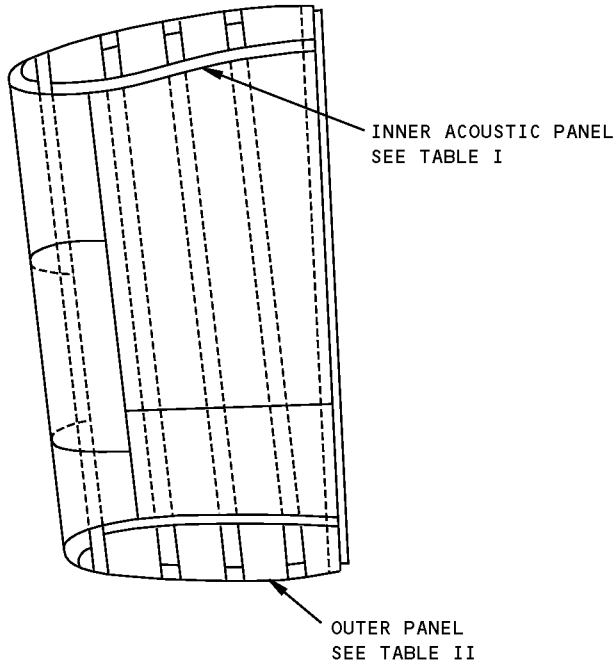
767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - INLET COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001. REFER TO SRM 54-15-01 FOR THE INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON.



REFER TO REPAIR 1
FOR LEADING EDGE SKIN
EXTERNAL PATCH REPAIR
REFER TO REPAIR 2
FOR FLUSH PATCH REPAIR



SECTION A-A

DETAIL I

Inlet Cowl Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

767-300
STRUCTURAL REPAIR MANUAL

REPAIR DESCRIPTION	REPAIR
INLET COWL ACOUSTIC DYNAROHR PANEL (1 INCH OR LESS) REPAIR - CF6-80C2 ENGINE	3
INLET COWL ACOUSTIC DYNAROHR PANEL CRACK REPAIR - CF6-80C2 ENGINE	4
INLET COWL ACOUSTIC DYNAROHR PARTIAL PENETRATION REPAIR - CF6-80C2 ENGINE	5
INLET COWL ACOUSTIC DYNAROHR WIRE MESH REPAIR (TEAR, RIP, OR SCRATCH) - CF6-80C2 ENGINE	6

INNER ACOUSTIC PANEL REPAIRS
TABLE I

REPAIR DESCRIPTION	REPAIR
INLET COWL OUTER BARREL FILAMENT WOUND DELAMINATION REPAIR - CF6-80C2 ENGINE	7
INLET COWL - REPAIR OF GRAPHITE COMPOSITE SKIN DAMAGE LESS THAN 0.010 INCH DEEP - CF6-80C2 ENGINE	8
INLET COWL - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN MORE THAN 0.010 INCH DEEP - CF6-80C2 ENGINE	9
INLET COWL - REPAIR FOR DENTS IN GRAPHITE SKINS - CF6-80C2 ENGINE	10
INLET COWL - REPAIR OF EDGE EROSION DAMAGE - CF6-80C2 ENGINE	11
INLET COWL - REPAIR OF DAMAGE TO EDGE OF GRAPHITE COMPOSITE SKIN - CF6-80C2 ENGINE	12
INLET COWL - REPAIR OF FULL PENETRATION HOLE IN OUTER BARREL SKIN - CF6-80C2 ENGINE	13
INLET COWL - REPAIR OF PENETRATION OF GRAPHITE SKIN WITH ACCESS TO BOTH SIDES - CF6-80C2 ENGINE	14
INLET COWL - REPAIR OF DAMAGE TO FRAME COMPOSITE OUTER CAP AND ALUMINUM HONEYCOMB CORE - CF6-80C2 ENGINE	15
INLET COWL - REPAIR OF DAMAGE TO FRAME COMPOSITE OUTER CAP, HONEYCOMB CORE, AND DUST COVER - CF6-80C2 ENGINE	16

OUTER PANEL - FILAMENT WOUND COMPOSITE REPAIRS
TABLE II

Inlet Cowl Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL LEADING EDGE SKIN EXTERNAL PATCH REPAIR- CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR APPLIES TO CRACKS AND HOLES IN THE INLET COWL LIP SKIN. EXTERNAL PATCH REPAIR IS NOT PERMITTED ON THE LEADING EDGE LIP SKINS INBOARD OF THE LIP HIGHLIGHT. SEE DETAIL I.

REPAIR INSTRUCTIONS

1. Drill a 0.25 inch stop hole at the ends of each crack or cut. Refer to SRM 51-11-00 for investigation and cleanup of damage.
 2. Locate repair area (A or B). Determine size of repair patch required, and remove damaged skin. See Detail I.
 3. Fabricate repair patch from aluminum sheet. See Detail II.
 4. Install repair patch. Pilot-drill (No. 40 drill) holes.
 5. Ream fastener holes to 0.205-inch diameter (No. 5 drill) through skin and repair patch.
 6. Countersink attach rivet holes to accept NAS1739MW6 flush blind rivets.
- WARNING:** USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.
- AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.
- PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.
7. Mark area of patch overlap on inlet lip skin. Remove patch and clean burrs from patch and skin. Remove surface finish from patch area of skin with 240-grit abrasive paper. Clean sanding dust from skin with cloth moistened with methyl ethyl ketone (MEK).

CAUTION: REMOVE ALL RIVET DEBRIS AND DRILL CUTTINGS FROM THE INLET LIP, TO PREVENT INADVERTENT BLOCKING OF ANTIICING VENTS.

8. Disassemble parts and remove all burrs and sharp edges.
9. Heat-treat 2219 aluminum patch to T-62.

WARNING: PROTECTIVE GLOVES AND CHEMICAL GOGGLES MUST BE WORN TO PREVENT CONTACT WITH ALODINE. MIST OR DUST MAY CAUSE IRRITATION TO THE NOSE, THROAT, AND LUNGS.

ALODINE IS AN OXIDIZER; AVOID CONTACT WITH COMBUSTIBLE MATERIALS.

SWABS OR CLOTH SATURATED WITH SOLUTION MUST BE RINSED THOROUGHLY WITH CLEAN, COLD WATER AFTER USE. THESE MATERIALS CONSTITUTE A FIRE HAZARD IF ALLOWED TO DRY.

10. Apply alodine to aluminum patch. Refer to SRM 51-21-01 for surface finish of metal parts.

WARNING: AVOID PROLONGED OR REPEATED SKIN CONTACT WITH DC1200 PRIMER. USE ONLY IN AREAS WITH GOOD VENTILATION. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

11. Apply a thin coat of Dow Corning (DC1200) primer to faying surfaces of skin and repair patch. Allow to dry at room temperature for one-half hour. Refer to SRM 51-21-05.

WARNING: USE SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

12. Apply silicone sealant (RTV157) to faying surfaces of skin and repair patch.
13. Install skin patch with temporary fasteners.
14. Wet install NAS1739MW6 fasteners with RTV157.
15. Trim protruding rivet stems and restore initial surface finish. Refer to SRM 51-21-01.

NOTES

- A** THIS IS A TIME LIMITED REPAIR. UP TO 36 SQUARE INCHES ALLOWED, FOR ONE FLIGHT ONLY, TO PERMIT FERRY OF THE INLET COWL TO A REPAIR FACILITY.
- B** IF THERE IS DAMAGE IN THIS AREA, USE FLUSH PATCH REPAIR AS GIVEN IN REPAIR 2.

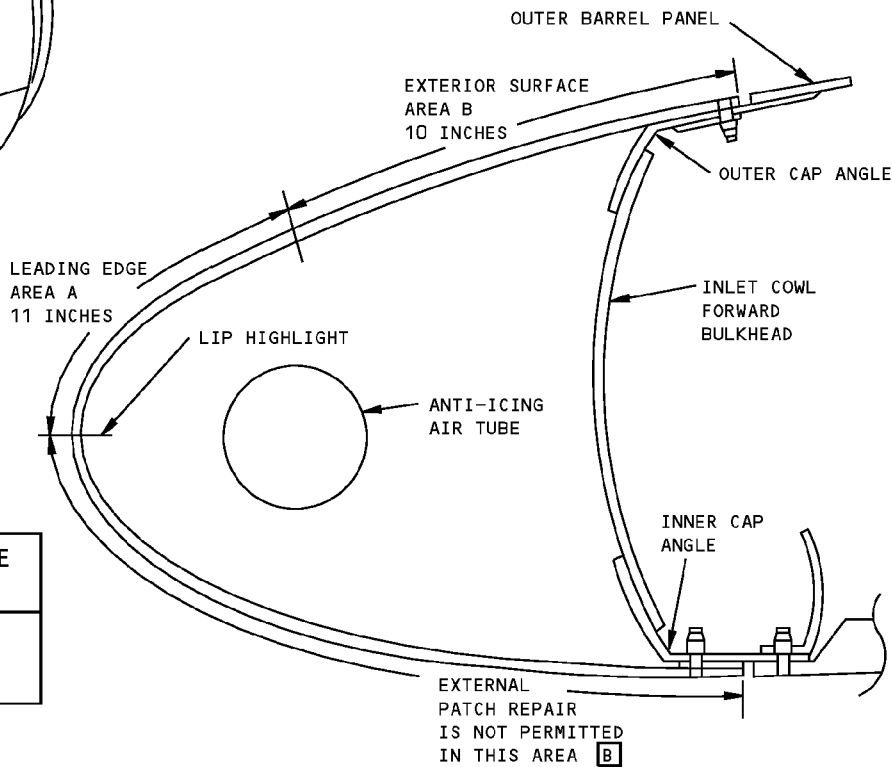
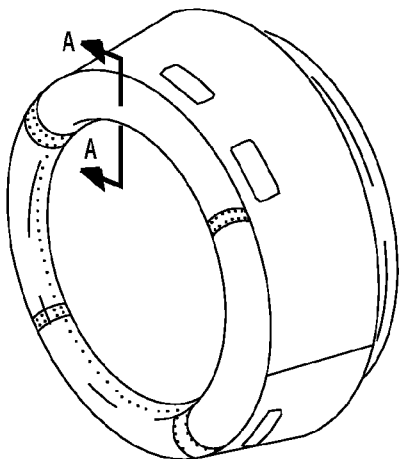
**Inlet Cowl Leading Edge Skin External Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

767-300
STRUCTURAL REPAIR MANUAL

SYMBOLS

✦ REPAIR RIVET NAS1739MW6-3.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR PATCH	1	2219-0 BARE AL ALLOY 0.080-IN. GAUGE HT-T62

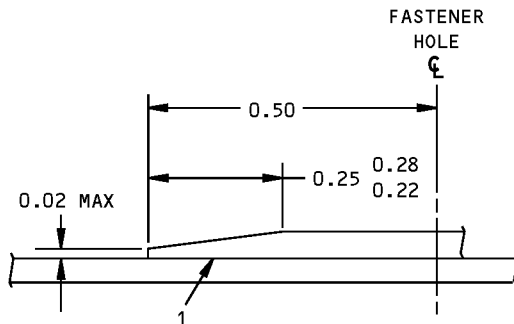
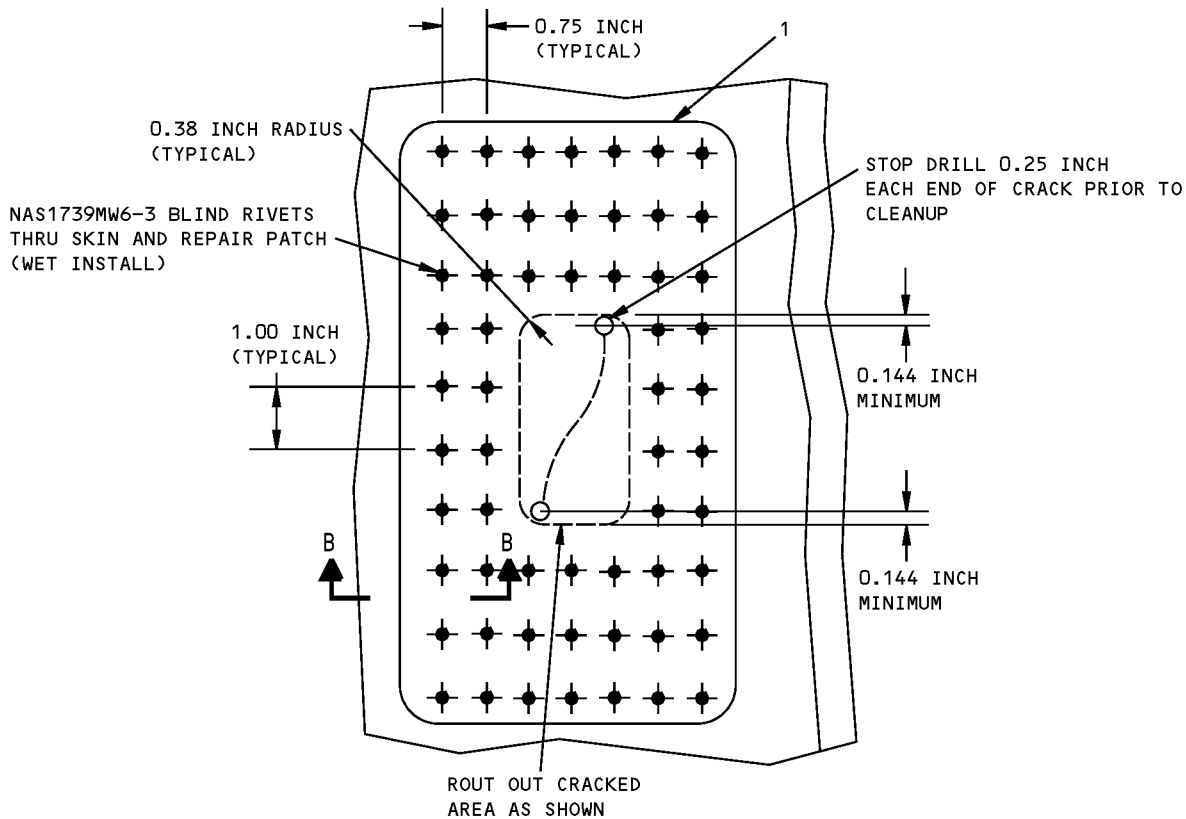


REPAIR AREA	MAXIMUM SIZE OF REPAIR
A	A
B	120 SQ INCHES

DETAIL I

Inlet Cowl Leading Edge Skin External Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)

767-300
STRUCTURAL REPAIR MANUAL



SECTION B-B
TYPICAL ALL EDGES

DETAIL II

Inlet Cowl Leading Edge Skin External Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL LEADING EDGE SKIN FLUSH PATCH REPAIR - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR APPLIES TO CRACKS AND HOLES IN THE INLET COWL LIP SKIN

REPAIR INSTRUCTIONS

1. Drill a 0.25 inch (6.35 mm) stop hole at the ends of each crack or cut. Refer to SRM 51-11-00 for investigation and cleanup of damage.
 2. Locate repair area (A,B, or C). Determine size of repair patch required, and remove damaged skin. See Detail I.
 3. Fabricate repair skin patch and doubler from aluminum sheet. See Detail II.
 4. Clamp doublers (segmented if necessary) and pilot-drill (No. 40 drill) attachment fastener holes with drill, through skin and doubler. Install temporary fasteners through skin and doubler.
 5. Install repair skin patch. Pilot-drill (No. 40 drill) holes.
- NOTE:** If doubler is segmented, it must have joggled overlap to provide air pressure seal.
6. Ream fastener holes to 0.205-inch diameter (No. 5 drill) through skin, doubler, and repair patch.
 7. Remove repair patch and doubler. Deburr repair patch, doubler and skin.
 8. Attach repair patch and doubler to skin with temporary fasteners.
 9. Countersink attach rivet holes to accept CR3552-6-3 flush blind rivets.

CAUTION: REMOVE ALL RIVET DEBRIS AND DRILL CUTTINGS FROM THE INLET LIP, TO PREVENT INADVERTENT BLOCKING OF ANTI-ICING VENTS.

10. Disassemble parts and remove all burrs and sharp edges.
11. Heat-treat 2219 aluminum patch to T-62.

WARNING: PROTECTIVE GLOVES AND CHEMICAL GOGGLES MUST BE WORN TO PREVENT CONTACT WITH ALODINE. MIST OR DUST MAY CAUSE IRRITATION TO THE NOSE, THROAT, AND LUNGS.

ALODINE IS AN OXIDIZER; AVOID CONTACT WITH COMBUSTIBLE MATERIALS.

SWABS OR CLOTH SATURATED WITH SOLUTION MUST BE RINSED THOROUGHLY WITH CLEAN, COLD WATER AFTER USE. THESE MATERIALS CONSTITUTE A FIRE HAZARD IF ALLOWED TO DRY.

12. Apply alodine to aluminum patch. Refer to SRM 51-21-01 for surface finish of Metal parts.

WARNING: AVOID PROLONGED OR REPEATED SKIN CONTACT WITH DC1200 PRIMER. USE ONLY IN AREAS WITH GOOD VENTILATION. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

13. Apply a thin coat of Dow Corning (DC1200) primer to faying surfaces of skin, doubler, and repair patch. Allow to dry at room temperature for one-half hour. Refer to SRM 51-21-05.

WARNING: USE SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

14. Apply silicone sealant (RTV157) to faying surfaces of skin, doubler, and repair patch.
15. Install doubler and skin patch with temporary fasteners.
16. Install CR3552-6-3 fasteners wet with RTV157.
17. Restore initial surface finish. Refer to SRM 51-21-01.

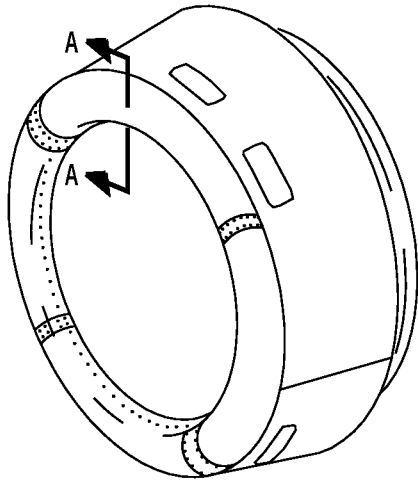
FASTENER SYMBOLS

✦ REPAIR RIVET CR3552-6-3

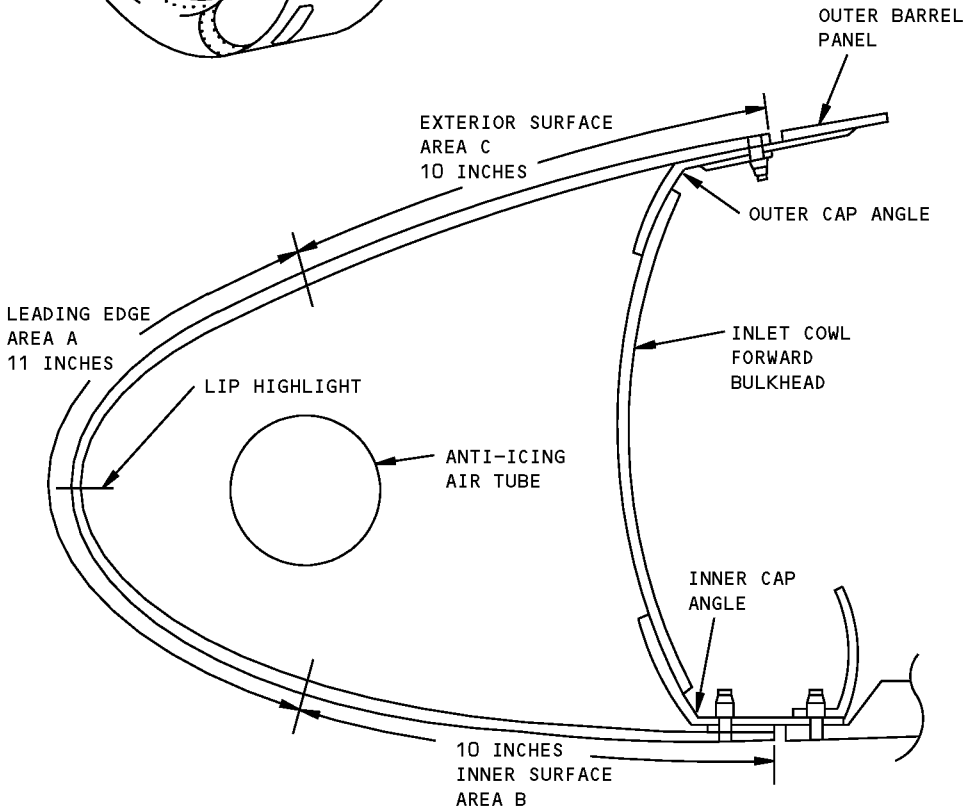
REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR PATCH	1	2219-0 BARE AL ALLOY 0.080-IN. GAUGE HT-T62
2	DOUBLER	AS REQD	2219-0 BARE AL ALLOY 0.080-IN. GAUGE HT-T62

**Inlet Cowl Leading Edge Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

767-300
STRUCTURAL REPAIR MANUAL



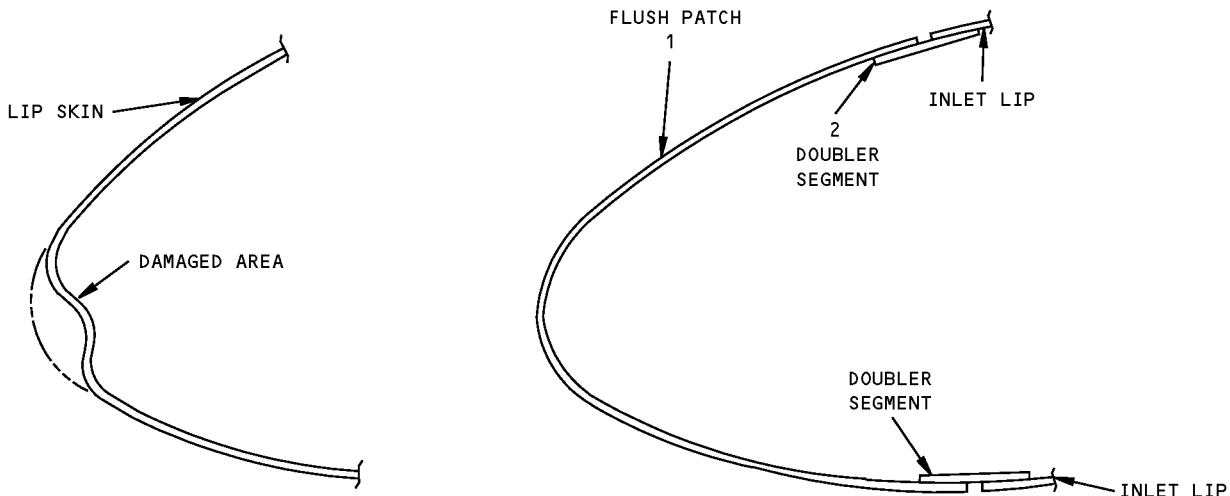
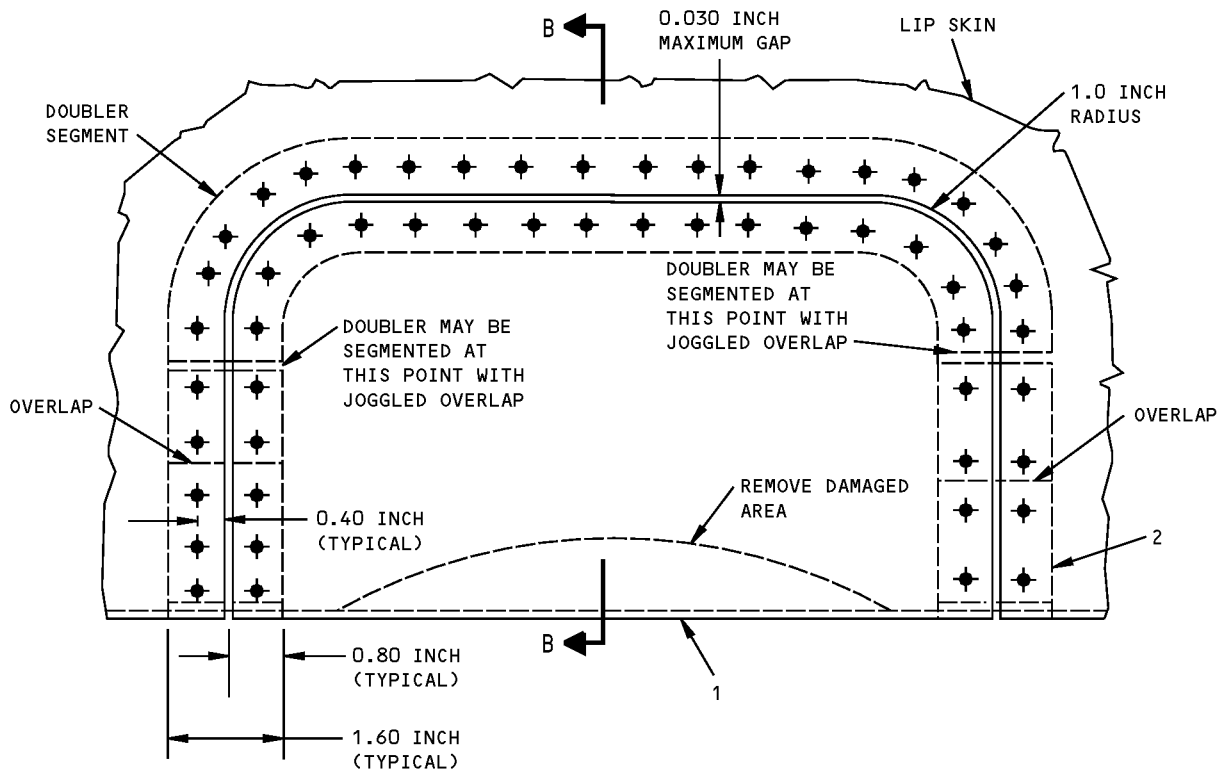
REPAIR AREA	MAXIMUM SIZE OF REPAIR
A	80 SQ INCHES
B	100 SQ INCHES
C	120 SQ INCHES



SECTION A-A
DETAIL I

Inlet Cowl Leading Edge Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)

767-300
STRUCTURAL REPAIR MANUAL



SECTION B-B

DETAIL II

Inlet Cowling Leading Edge Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL ACOUSTIC DYNAROHR PANEL (1-INCH OR LESS) REPAIR - CF6-80C2 ENGINE

APPLICABILITY
<p>THIS REPAIR IS FOR DAMAGE TO DYNAROHR PANELS. DAMAGE IS NOT TO EXCEED 1.0 INCH IN DIAMETER. THE DAMAGE MUST BE A MINIMUM OF 2.0 INCHES AWAY FROM THE PANEL EDGE AND IT MUST NOT BE CLOSER THAN 4.0 INCHES FROM ANY OTHER DAMAGE. DEPTH OF DAMAGE MAY BE UP TO THE FULL THICKNESS OF THE CORE WITHOUT DAMAGING THE SOLID ALUMINUM BACKSHEET</p>

REPAIR INSTRUCTIONS

NOTE: See SRM 54-00-00 for the total combined acoustical blockage allowed (perforated skin and/or exposed wire mesh) from any repair or stabilization.

See Detail I for the following repair instructions:

1. Stabilize woven wire mesh by applying adhesive to wire strands.
2. Drill or cut out damage, through septum using smallest diameter and depth possible.

CAUTION: MAKE SURE ALL LOOSE WIRE PARTICLES ARE CLEANED AWAY. STAINLESS STEEL WIRE HAS A STRONG ELECTROLYTIC REACTION WHEN IN CONTACT WITH ALUMINUM ALLOYS, CAUSING GALVANIC CORROSION TO OCCUR.

3. Using a small knife, cut wire mesh 0.125-inch back from edge of cutout.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

4. Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area. Wipe surface dry with clean cloth before solvent evaporates.
5. Mask repair area with teflon tape.

WARNING: USE EA934 ADHESIVE, ONLY IN AREAS WITH ADEQUATE VENTILATION. WORK PERFORMED IN CONFINED AREAS REQUIRES ADDITIONAL FORCED VENTILATION. AVOID ALL CONTACT WITH SKIN AND EYES. PROTECTIVE GLOVES SHOULD BE WORN DURING USE.

6. Mix EA934 adhesive (parts A and B), in accordance with manufacturer's instructions.
7. Using a spatula, fill repair cutout with the adhesive mixture.
8. Place nonporous parting film over repair, and tape in place.
9. Place heating blanket over nonporous parting film and cure at 180°F-200°F (82°C-93°C) for 30 minutes.
10. Remove heating blanket, nonporous parting film, and teflon tape.
11. Using 150-320 grit abrasive paper, sand repair area to a featheredge.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

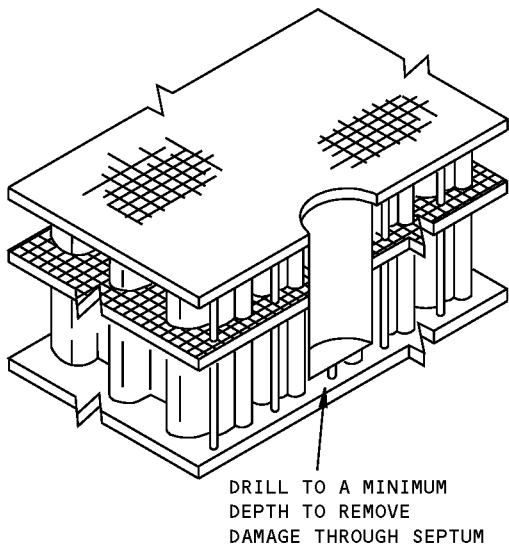
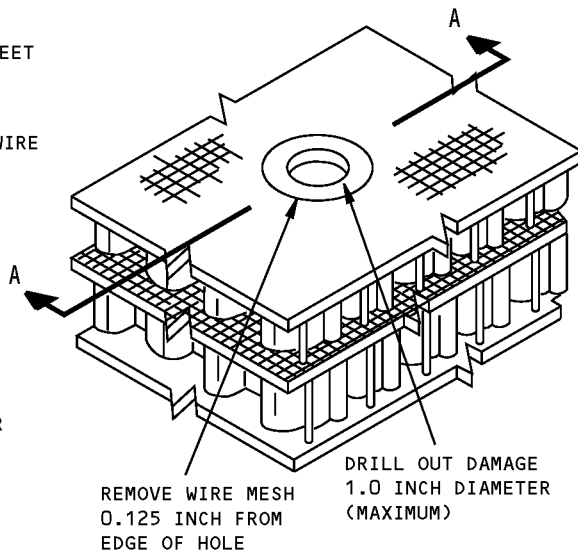
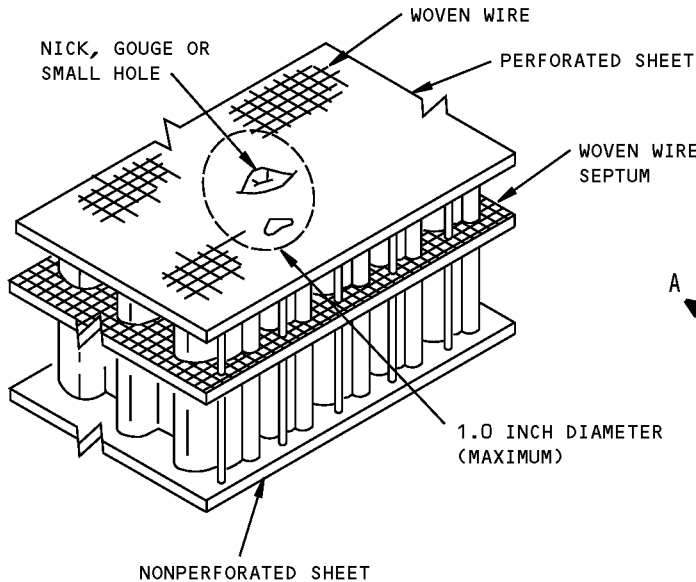
AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

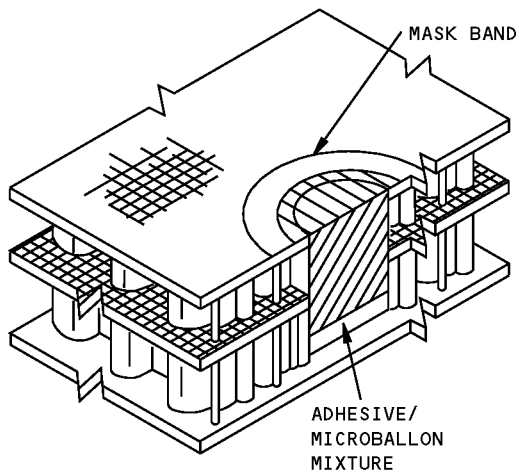
12. Using a clean cloth and MEK, remove sanding dust from the surface of the repair. Wipe surface dry with clean cloth before solvent evaporates.

**Inlet Cowl Acoustic DynaRohr Panel (1-Inch or less) Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



SECTION A-A

DETAIL I

**Inlet Cowl Acoustic DynaRohr Panel (1-Inch or less) Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - INLET COWL ACOUSTIC DYNAROHR PANEL CRACK REPAIR - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS FOR CRACKS IN DYNAROHR PANELS. CRACKS ARE NOT TO EXCEED 3.0 INCHES IN ANY DIRECTION. THE DAMAGE MUST BE A MINIMUM OF 10.0 INCHES AWAY FROM THE INLET THROAT PANEL EDGE, IT MUST BE A MINIMUM OF 4 INCHES AWAY FROM ANY OTHER PANEL EDGE, AND IT MUST NOT BE CLOSER THAN 4.0 INCHES FROM ANY OTHER DAMAGE. DEPTH OF DAMAGE MAY BE UP TO THE FULL THICKNESS OF THE CORE WITHOUT DAMAGING THE SOLID ALUMINUM BACKSHEET.

REPAIR INSTRUCTIONS

CAUTION: MAKE SURE ALL LOOSE WIRE PARTICLES ARE CLEANED AWAY. STAINLESS STEEL WIRE HAS A STRONG ELECTROLYTIC REACTION WHEN IN CONTACT WITH ALUMINUM ALLOYS, CAUSING GALVANIC CORROSION TO OCCUR.

NOTE: Refer to SRM 54-00-00 for the total combined acoustical blockage allowed (perforated skin and/or exposed wire mesh) from any repair or stabilization.

- Using a knife or scissors, cut loose wire mesh from around crack.
- Stabilize woven wire mesh 0.75-inch all around crack.
- Drill stop holes (No. 30 drill) at each end of crack. Remove all drill debris.
- Dye penetrate inspect all cracks before and after top drilling. If dye penetrate inspection shows evidence that the end of the crack was not removed, repeat step 2 using the next size larger drill. However, do not exceed 0.50-inch drill.
- Fabricate doubler from nonperforated sheet stock, of the same material and gauge as the original skin. Use full radius and chamfer doubler edge at 30° X 0.125 all around. Brush chamfered edge with alodine 1000L.
- Locate and drill holes in doubler and perforated skin at 0.75-inch pitch, maintaining a 0.31-inch edge margin. See Detail I.
- Remove doubler and deburr holes. Remove all drill debris from repair area.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

- Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area and doubler. Wipe surface dry with a clean cloth before solvent evaporates.

WARNING: USE EA956 (PARTS A AND B) IN AREAS WITH ADEQUATE VENTILATION. WORK PERFORMED IN CONFINED AREAS REQUIRES ADDITIONAL FORCED MECHANICAL VENTILATION. AVOID ALL CONTACT WITH SKIN AND EYES. PROTECTIVE GLOVES SHOULD BE WORN DURING USE.

- Mix EA956 parts A and B adhesive in accordance with manufacturer's instructions.
- Using a stiff bristle brush, coat the repair area and the doubler backface with adhesive.
- Align fastener holes and place doubler over repair area. Attach doubler using CR3253-5-2 blind rivet fasteners. Wet install fasteners with adhesive.
- Place nonporous parting film over repair area and tape in place with 2-inch wide teflon tape.
- Place a heating blanket over the parting film and cure at 180°F-200°F (82°C-93°C) for 30 minutes.
- Remove heating blanket and parting film. Sand to a feather-edge using 150-320 grit abrasive paper, to produce a smooth surface between doubler and stabilized wire.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

- Using a clean cotton cloth and MEK, remove sanding dust from repair surface. Wipe surface dry with a clean cloth before solvent evaporates.

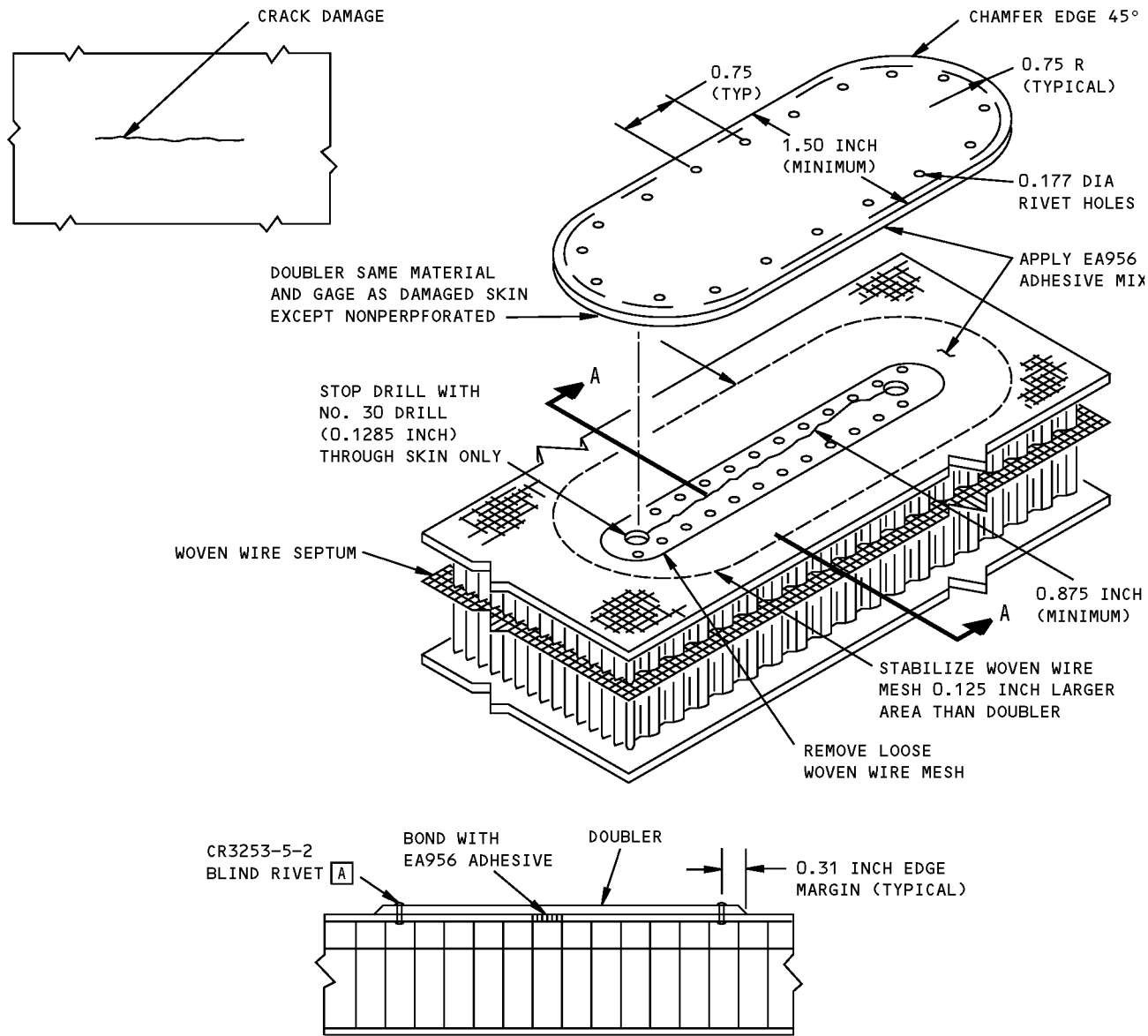
**Inlet Cowl Acoustic DynaRohr Panel Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

A INSTALL WET WITH EA956 ADHESIVE

REPAIR MATERIAL		
PART	QTY	MATERIAL
DOUBLER	AS REQD	NONPERFORATED SHEET STOCK



**Inlet Cowl Acoustic DynaRohr Panel Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - INLET COWL ACOUSTIC DYNAROHR PARTIAL PENETRATION REPAIR - CF6-80C2 ENGINE**APPLICABILITY**

THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER BEFORE 1922001. REFER TO SRM 54-15-01 FOR INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON.

THIS REPAIR IS FOR DAMAGE IN DYNAROHR PANELS GREATER THAN 1.0-INCH IN DIAMETER

REPAIR INSTRUCTIONS

NOTE: See SRM 54-00-00 for the total combined acoustical blockage allowed (perforated skin and/or exposed wire mesh) from any repair or stabilization.

1. Make a mark of the damage area to be cut out. The cutout must have the smallest possible diameter, D, that removes the damage completely. See Detail I.
2. Make a mark of an area that is larger than the cutout by 1.0 inch all around. Stabilize the woven wire within all of this area.

CAUTION: MAKE SURE ALL LOOSE WIRE PARTICLES ARE CLEANED AWAY. STAINLESS STEEL WIRE HAS A STRONG ELECTROLYTIC REACTION WHEN IN CONTACT WITH ALUMINUM ALLOYS, CAUSING GALVANIC CORROSION TO OCCUR.

3. Use a hole saw to cut out the damaged perforated skin and core as marked. Remove core to full depth, but do not remove adhesive fillets. Remove all nicks, scratches, burrs, and sharp corners. Do not cut into the solid skin.
4. Make a mark of the outline of the woven wire to be cut from around the cutout. The mark must be 0.76 inch from the edge of the cutout all around. See Detail I.
5. Cut and remove the woven wire as marked using a sharp knife. Do not cut into the perforated skin under the woven wire. Remove burrs.
6. Make a repair plug from a repair panel, part number 224-2187-501. See Detail II. Before you cut the repair plug, stabilize a 0.40 inch wide area of the woven wire on the repair panel. Then cut the repair plug. Trim the core as necessary for the plug to fit inside the cutout. (When installed, the exposed side of the core must be in contact with the solid skin inside the cutout, and the skin overhang must be in contact with the perforated skin around the cutout.) Form the plug as necessary. The plug must fit in place with light finger pressure. Chamfer edge 45 degrees all around.

7. Place repair plug in cutout. Using a No. 16 drill bit, locate and drill fastener holes at 0.75-inch pitch and 0.31-inch edge margin.
8. Remove repair plug and deburr fastener holes. Remove all drill debris from repair area and repair plug.

WARNING: USE SOLVENTS IN A WELL-VENTILATED AREA. SOME SOLVENTS ARE FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

9. Using a clean cotton cloth and a solvent, series 99 (AMM 20-30-99 or SOPM 20-30-99), remove any grease, oil, or dirt from the repair area and the repair plug. Wipe surface dry with clean cloth before solvent evaporates.

WARNING: PROTECTIVE GLOVES AND CHEMICAL GOGGLES MUST BE WORN TO PREVENT CONTACT WITH ALODINE. MIST OR DUST MAY CAUSE IRRITATION TO THE NOSE, THROAT AND LUNGS.

ALODINE IS AN OXIDIZER; AVOID CONTACT WITH COMBUSTIBLE MATERIALS.

SWABS OR CLOTH SATURATED WITH SOLUTION MUST BE RINSED THOROUGHLY WITH CLEAN, COLD WATER AFTER USE.

THESE MATERIALS CONSTITUTE A FIRE HAZARD IF THEY ARE ALLOWED TO DRY.

10. Apply alodine 1200L to all bare aluminum surfaces. Refer to SRM 51-21-01.

WARNING: USE EA956 (PARTS A AND B) IN AREAS WITH ADEQUATE VENTILATION. WORK PERFORMED IN CONFINED AREAS REQUIRES ADDITIONAL FORCED MECHANICAL VENTILATION. AVOID ALL CONTACT WITH SKIN AND EYES. PROTECTIVE GLOVES SHOULD BE WORN DURING USE.

11. Mix EA956 (parts A and B) adhesive in accordance with manufacturer's instructions. Add 5 percent-by-weight of phenolic microballoons and mix thoroughly.

**Inlet Cowl Acoustic DynaRohr Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

12. Use a stiff bristle bush to thoroughly coat the mating surfaces of the repair area and repair plug with adhesive.

NOTE: Use enough adhesive to make sure all cut core cells around the edges of the cutout and the repair plug are completely full of adhesive.

13. Insert repair plug into repair cutout. Rotate the repair plug 360 degrees to make sure there is a good adhesive bond between plug and cutout. Align fastener holes and attach repair plug using CR3253-5-2 blind rivets. Wet-install fasteners with adhesive.
14. Place nonporous parting film over repair area and tape in place.
15. Place heating blanket over parting film and cure at 180°F-200°F (82°C-93°C) for 60 minutes or 24 hours at room temperature (65°F-75°F (18°C-24°C)).
16. Remove heating blanket and parting film. Sand to a featheredge using 150-320 grit abrasive paper to produce a smooth surface between repair plug and original face skin.

WARNING: USE SOLVENTS IN A WELL-VENTILATED AREA. SOME SOLVENTS ARE FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

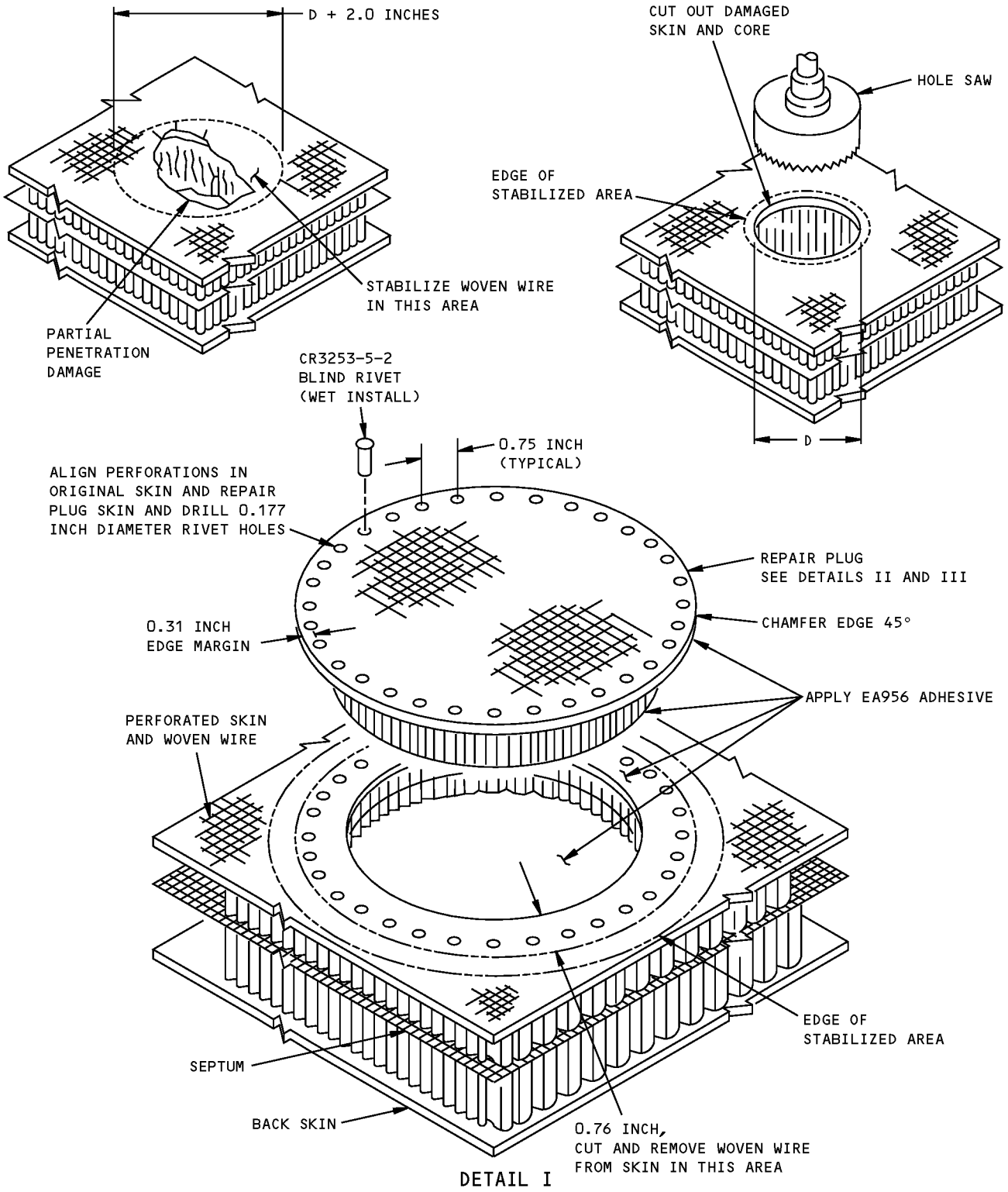
PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

17. Using a clean cotton cloth and a solvent, series 87 (AMM 20-30-87 or SOPM 20-30-87), remove any grease, oil, or dirt from the repair area. Wipe surface dry with clean cloth before solvent evaporates.

REPAIR MATERIAL		
PART	QUANTITY	MATERIAL
REPAIR PANEL	AS REQUIRED	PART NUMBER 224-2187-501

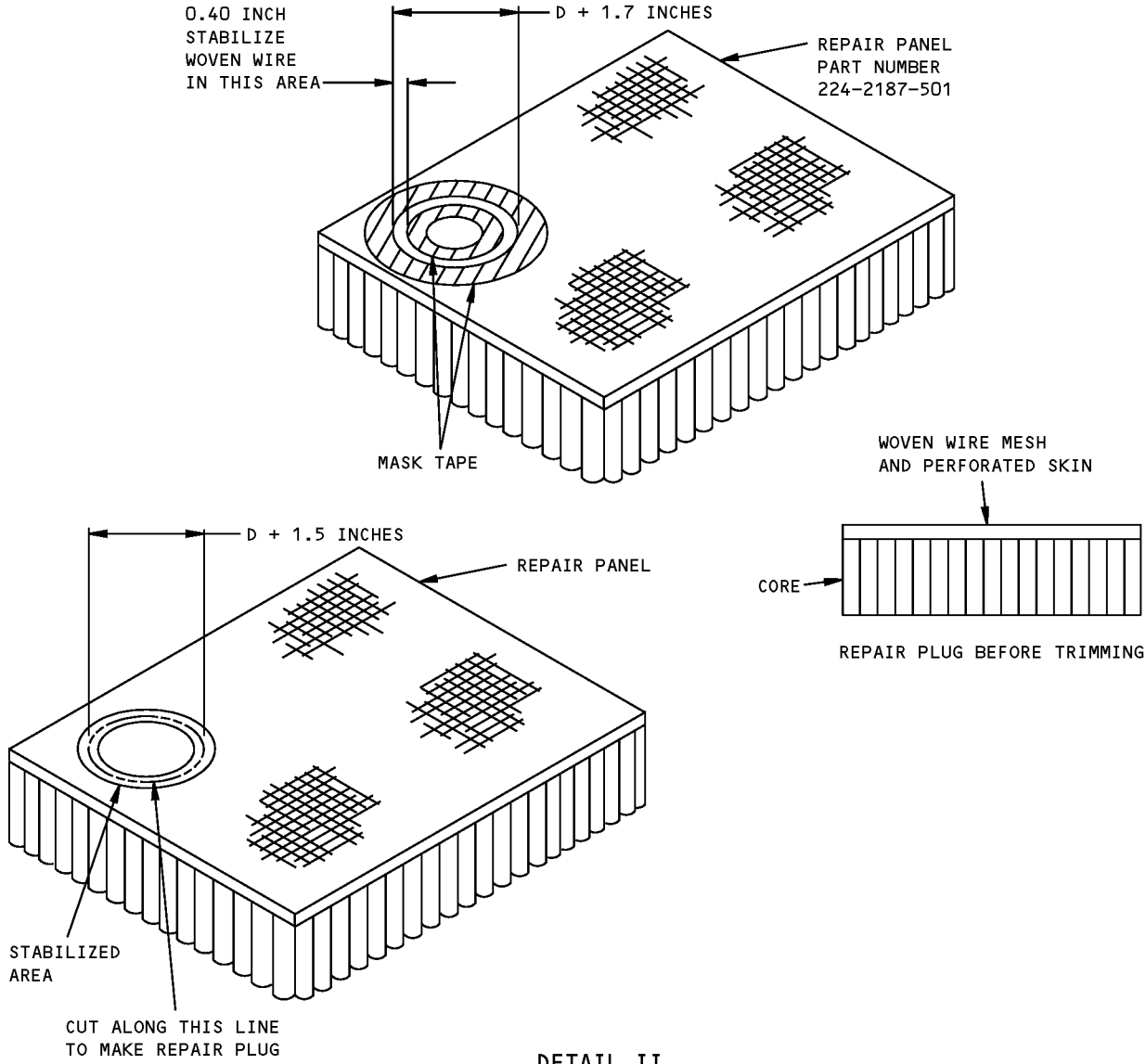
Inlet Cowl Acoustic DynaRohr Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

767-300
STRUCTURAL REPAIR MANUAL

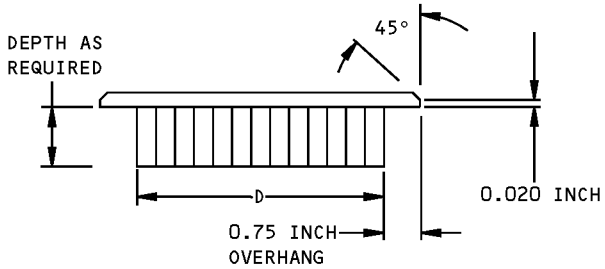
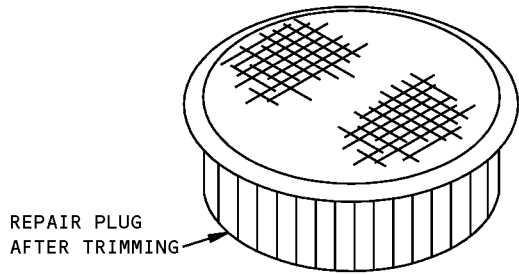


Inlet Cowl Acoustic DynaRohr Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)

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STRUCTURAL REPAIR MANUAL



DETAIL II



DETAIL III

Inlet Cowl Acoustic DynaRohr Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL

REPAIR 6 - INLET COWL ACOUSTIC DYNAROHR WIRE MESH REPAIR (TEAR, RIP, OR SCRATCH) - CF6-80C2 ENGINE

APPLICABILITY
THIS REPAIR IS FOR TEARS, RIPS, OR SCRATCHES IN DYNAROHR PANELS

REPAIR INSTRUCTIONS

NOTE: See 54-00-00 for the total combined acoustical blockage allowed (perforated skin and/or exposed wire mesh) from any repair or stabilization.

CAUTION: MAKE SURE ALL LOOSE WIRE PARTICLES ARE CLEANED AWAY. STAINLESS STEEL WIRE HAS A STRONG ELECTROLYTIC REACTION WHEN IN CONTACT WITH ALUMINUM ALLOYS, CAUSING GALVANIC CORROSION TO OCCUR.

- Using a knife or scissors, remove all loose woven wire mesh from damaged area. See Detail I.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

- Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area. Wipe surface dry with clean cloth before solvent evaporates.
- Mask repair area with 2-inch wide teflon tape.

WARNING: USE EA956 (PARTS A AND B) IN AREAS WITH ADEQUATE VENTILATION. WORK PERFORMED IN CONFINED AREAS REQUIRES ADDITIONAL FORCED MECHANICAL VENTILATION. AVOID ALL CONTACT WITH SKIN AND EYES. PROTECTIVE GLOVES SHOULD BE WORN DURING USE.

- Mix EA956 adhesive (parts A and B) in accordance with manufacturer's instructions. Add 5 percent-by-weight of microballoons and mix thoroughly to a paste consistency.

- Using a spatula, fill repair area with adhesive/microballoon mixture.
- Place nonporous parting film over the filled repair and tape in place.
- Place a heating blanket over the nonporous parting film and cure repair 180°F–200°F (82°C–93°C) for one hour or 24 hours at room temperature (65°F–75°F (18°C–24°C)).
- Remove heating blanket, parting film, and teflon tape. Sand to a featheredge using 150–320 grit abrasive paper.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

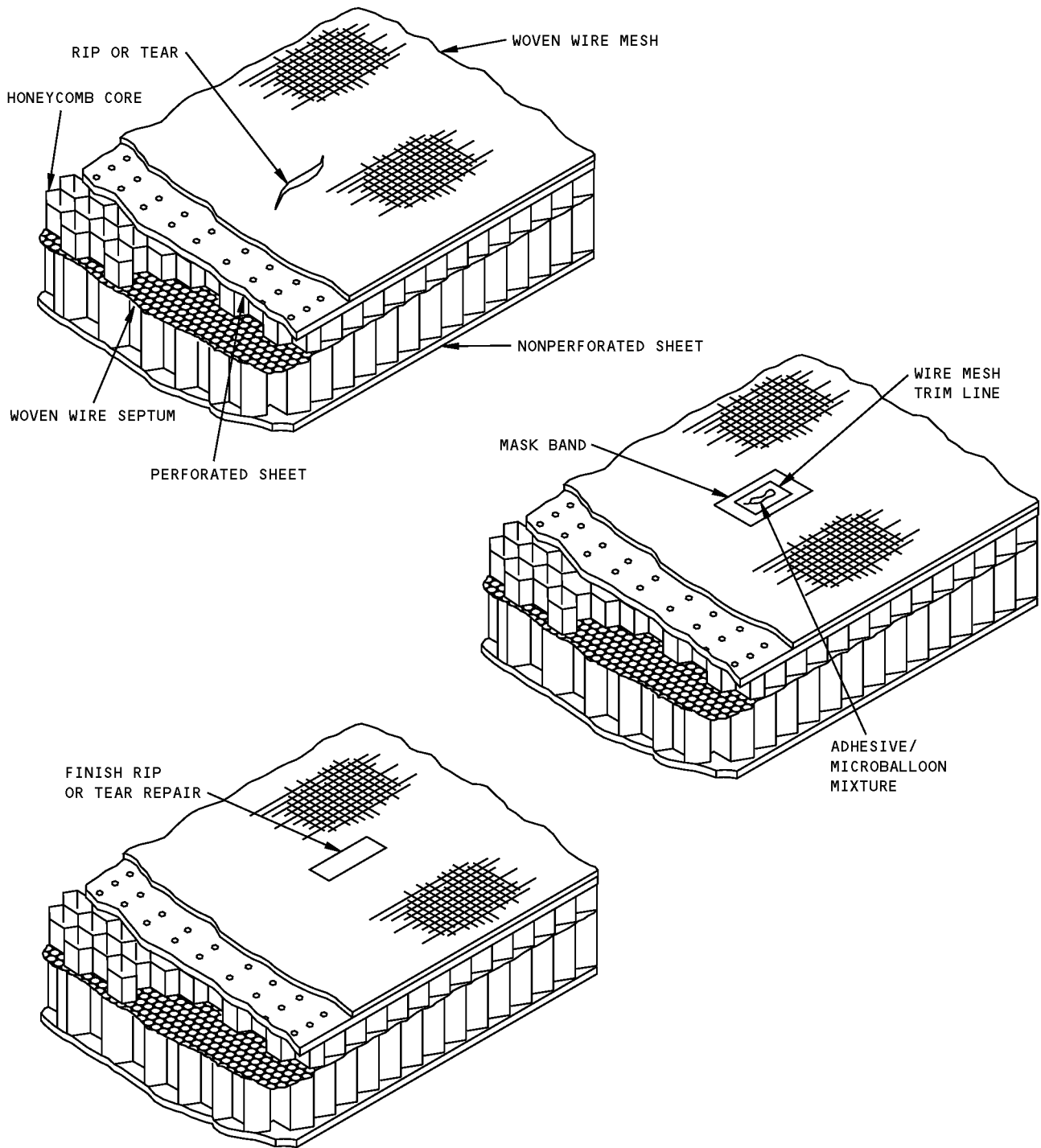
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PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

- Using a clean cotton cloth and MEK, remove sanding dust from surface of repair. Wipe surface dry with a clean cloth before solvent evaporates.

**Inlet Cowl Acoustic DynaRohr Wire Mesh Repair (Tear, Rip, or Scratch) - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

Inlet Cowl Acoustic DynaRohr Wire Mesh Repair (Tear, Rip, or Scratch) - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 7 - INLET COWL OUTER BARREL FILAMENT WOUND DELAMINATION REPAIR - CF6-80C2 ENGINE

APPLICABILITY
TOTAL DAMAGE AREA IN ANY DIRECTION IS 2-INCHES MAXIMUM WITH A MINIMUM OF 6-INCHES FROM EDGE OR ANY OTHER DAMAGE

REPAIR INSTRUCTIONS

NOTE: This repair may only be applied to the top outer layer (D.0145-inch gauge, graphite fabric, at ply direction of 0° and 90°). This adhesive fill type of repair may not be used if any of the filament-wound, carbon fiber plies are affected. See Inlet Cowl Outer Barrel Identification for locations of plies.

WARNING: GLOVES, PROTECTIVE CLOTHING, REGULATORY AGENCY APPROVED DUST MASKS, AND APPROPRIATE EYE PROTECTION MUST BE WORN WHEN WORKING WITH COMPOSITE MATERIALS. BREATHING OF DUST OR PROLONGED CONTACT OF DUST WITH SKIN MUST BE AVOIDED. SANDING, CUTTING OR DRILLING OF COMPOSITE MATERIALS MAY PRODUCE DUST IN EXCESS OF ACCEPTABLE EXPOSURE LEVELS.

1. Smooth edges of damage with 150-grit or finer abrasive paper. Remove all loose fibers. See Detail I.
2. Sand area around damage to remove surface finish, using 150-grit abrasive paper.

NOTE: Outer primer coat is gray and first coat is yellow.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

AVOID PROLONGED BREATHING OF VAPOR OR PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION OF EYES, NOSE, THROAT, AND SKIN. HIGH CONCENTRATIONS MAY CAUSE IMPAIRED JUDGEMENT.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

3. Using a clean cotton cloth and MEK, remove sanding debris from exterior skin surface. Wipe surface dry with a clean cloth before solvent evaporates.

WARNING: USE EA956 (PARTS A AND B) IN AREAS WITH ADEQUATE VENTILATION. WORK PERFORMED IN CONFINED AREAS REQUIRES ADDITIONAL FORCED MECHANICAL VENTILATION.

PROTECTIVE GLOVES SHOULD BE WORN DURING USE. AVOID ALL CONTACT WITH SKIN AND EYES.

4. Mix EA956 (part A and B) adhesive in accordance with manufacturer's instructions. Add 5 percent-by-weight microballoons and mix thoroughly.
5. Using a spatula, apply adhesive/microballoon mixture to a level slightly above surrounding skin level and cure with heat lamp at 180°F-200°F (82°C-93°C) for one hour.
6. Using 150-320 grit abrasive paper, sand air-wetted surface of repair to a featheredge all around and a smooth contour suitable for painting.

WARNING: USE METHYL ETHYL KETONE (MEK) IN A WELL-VENTILATED AREA. MEK IS FLAMMABLE AND VAPOR IS HARMFUL.

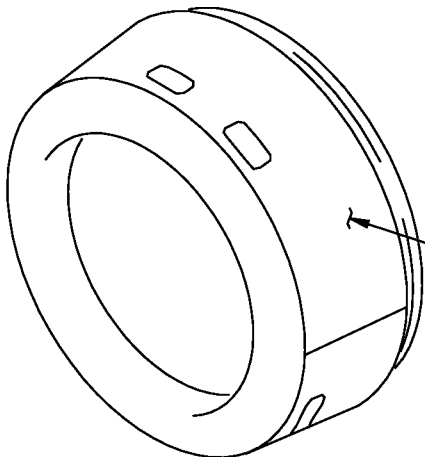
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PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

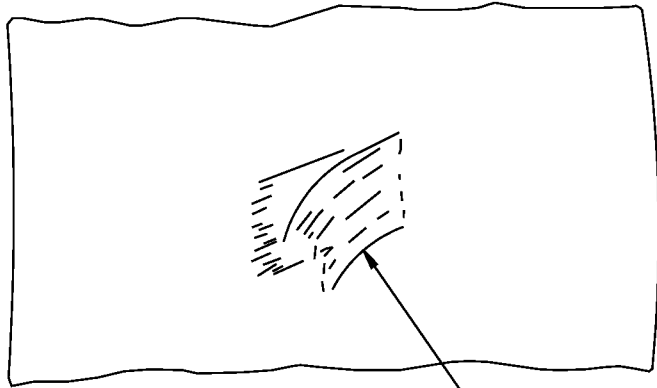
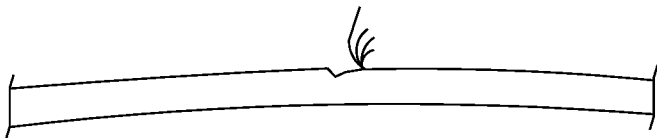
7. Using a clean cotton cloth and MEK, remove sanding dust from surface of repair. Wipe surface dry with a clean cloth before solvent evaporates.
8. Apply paint primer and topcoat. See 51-21-01, Surface Finish Restoration.

**Inlet Cowl Outer Barrel Filament Wound Delamination Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

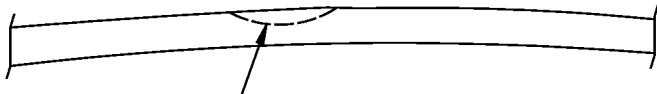
**767-300
STRUCTURAL REPAIR MANUAL**



OUTER BARREL FILAMENT WOUND
DELAMINATION. SEE DETAIL I



REMOVE DELAMINATED SKIN



FILL WITH EA956 PARTS A AND B
ADHESIVE. CURE AND SAND TO
AERODYNAMIC SMOOTHNESS

DETAIL I

**Inlet Cowl Outer Barrel Filament Wound Delamination Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 8 - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN LESS THAN 0.010 INCH DEEP - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on.
- B. This repair is applicable to the inlet cowl outer barrel. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- C. This repair is for skin damage area not more than 2.0 in. (5.1 cm).

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Smooth edges of damage with 150-grit or finer abrasive paper. Remove all loose fibers.
- B. Sand area around damage to remove all surface finish, using 150-grit abrasive paper.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- C. Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- D. Prepare and apply a potting compound mixture from one of the two following mixtures:
 - (1) EA9390/Milled glass fiber mixture (Option 1)

767-300**STRUCTURAL REPAIR MANUAL**

(a) Mix thoroughly in a metal or plastic container 100 parts by weight of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener and 39 parts (by weight) of chopped glass fibers. Use a metal spatula and mix by hand to avoid heat rise in resin chopped fiber mixture.

(b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

(c) Apply resin/chopped fiber mixture with spatula to a level slightly above surrounding skin level.

(d) Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.

WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

(2) EA934NA Potting Compound (Option 2)

(a) Mix EA934NA potting compound thoroughly in a metal or plastic container.

(b) Cover container to prevent contamination of mixture and store in a cool place.

(c) Apply resin/chopped fiber mixture with spatula to a level slightly above surrounding skin level.

(d) Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 60 minutes.

E. Use 150-180 grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with BMS 11-7, CDG-110, CDG-211, FCC-55, MPK, MEK: sec-butyl alcohol 42:58, MEK: Toluene 1:1, or MEK. Wipe surface dry with a clean cloth before solvent evaporates.

F. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 9 - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN MORE THAN 0.010 INCH DEEP - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on.
- B. This repair is applicable to the inlet cowl outer barrel. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- C. This repair is for holes not more than 12 in. (30 cm) in diameter. For holes more than 12 in. (30 cm) in diameter contact the Boeing company.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

- A. Clean up damage area. Refer to Figure 201/REPAIR 9.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Smooth edges of damage with 150-grit or finer abrasive paper.
- (2) Determine number of skin plies damaged. Refer to Structure Identification.
- (3) Mask outline of repair area around damage. Measure 1 in. (2.5 cm) from edge of damage for each layer of original structure penetrated, plus 1 in. (2.5 cm) for outer layer of fiberglass and apply teflon tape for 2 in. (5 cm) wide mask band.
- (4) Sand masked area around damage with 150-grit abrasive paper to remove all surface finish.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (5) Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- B. Fill the damaged area with a potting mixture level with the outer skin surface. Refer to REPAIR 8 for potting compound. Cure as given in REPAIR 8.
- C. Cut repair plies. For damage to filament winding, regardless of depth of damage, replace with 3 plies of graphite fabric (0.0145 in. (0.368 mm) thick). 1st ply $\pm 45^\circ$; 2nd ply $0^\circ, 90^\circ$; 3rd ply $\pm 45^\circ$.

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- (1) Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (2.5 cm) all around past damage area. Trim corners 1 in. (2.5 cm) by 45 degrees.

NOTE: To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair plies. Trim to final size after soaking with resin and just before installation.

- (2) Cut graphite fabric repair ply No. 2 and 3 large enough to extend 0.75 in. (1.9 cm) all around past edges of ply No. 1. Trim corners 1 in. (2.5 cm) by 45 degrees. Repeat procedure for remainder of repair plies required.
- (3) Cut fiberglass fabric sanding ply large enough to overlay all the exterior graphite repair plies and extend to edge of masked area. Trim corners 1 in. (2.5 cm) by 45 degrees.

D. Soak repair plies with resin mixture.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (1) Mix EA9390 resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair and fiberglass sanding plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (2) Place each graphite repair and fiberglass ply on sheet of nonporous parting film and apply resin to top sides. Cover plies with sheet of nonporous parting film and use roller to thoroughly soak plies with resin.
- (3) Trim graphite and fiberglass plies to final size. Leave parting film in place.

E. Install repair and sanding plies on skin panel. Refer to Figure 201/REPAIR 9.

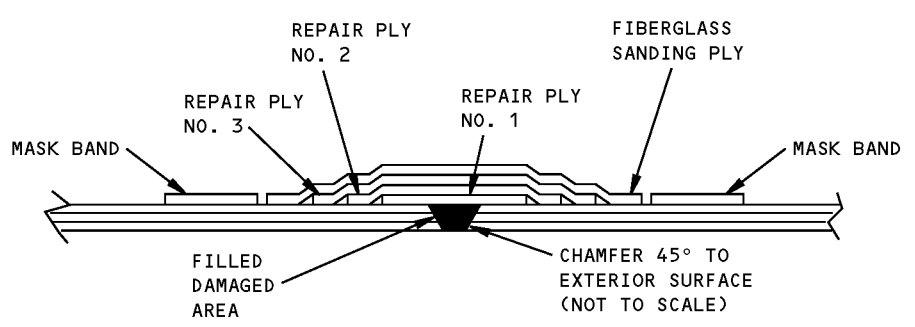
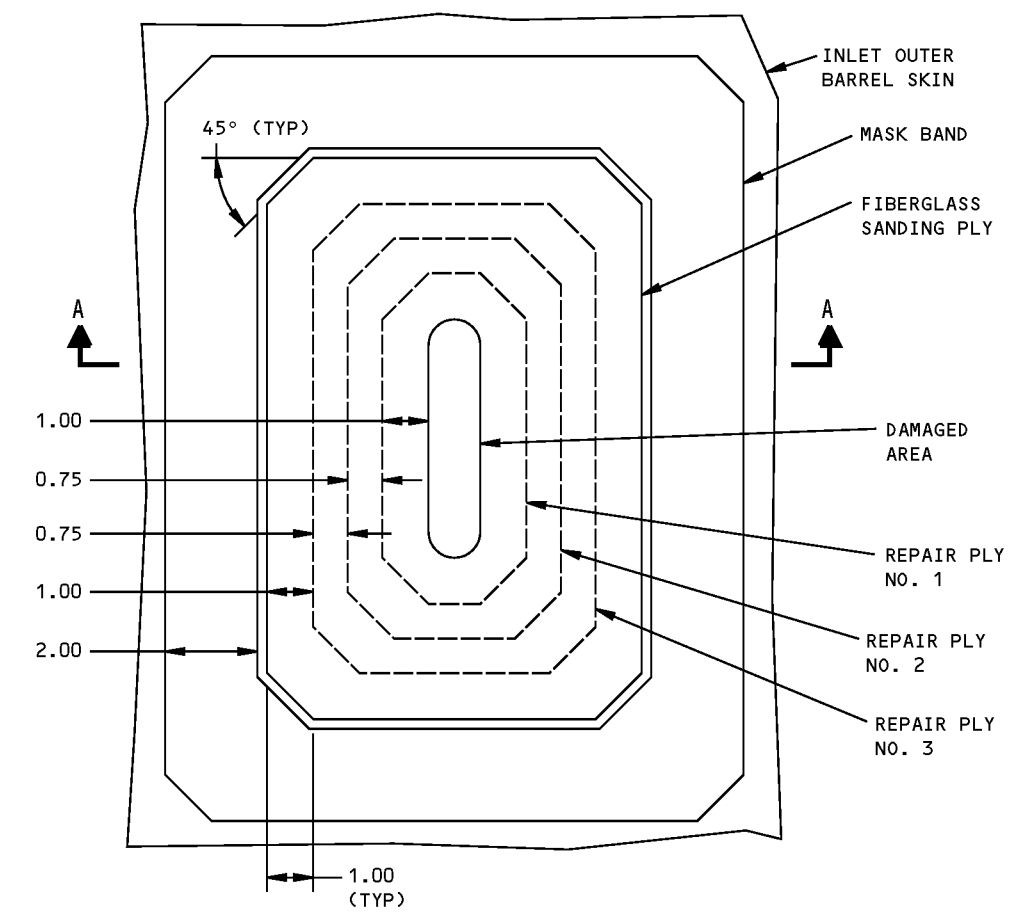
NOTE: Install repair plies as follows: 1st ply $\pm 45^\circ$, 2nd ply 0° , 90° ; 3rd ply $\pm 45^\circ$.

- (1) Remove parting film from one side of ply No. 1 and put in center over damage area. Use a roller to smooth out wrinkles. Remove parting film from top of repair ply No. 1.
- (2) Remove parting film from one side of ply No. 2. Put ply No. 2 in center of ply No. 1. Make sure No. 2 ply extends 0.75 in. (1.9 cm) past ply No. 1. Use roller to smooth out wrinkles. Remove parting film from top of ply No. 2.
- (3) Repeat procedure for any additional repair ply.
- (4) Remove parting film from one side of fiberglass sanding ply. Place fiberglass ply over graphite repair plies. Make sure glass ply extends to edge of masked area. Smooth out wrinkles. Remove remaining parting film from fiberglass ply.

STRUCTURAL REPAIR MANUAL

- F. Prepare repair and sanding plies for curing.
- (1) Cover repair and fiberglass plies with porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass ply.
 - (2) Cover porous parting film with a layer of bleeder cloth for each graphite and fiberglass ply.
 - (3) Cover bleeder cloth with layer of nonporous parting film.
 - (4) Cover parting film with silicone rubber sheet.
 - (5) Cover rubber sheet with two layers of fiberglass breather cloth.
 - (6) Place heat blanket over breather plies.
 - (7) Cover repair area with vacuum bag larger than repair area. Place temperature probe and vacuum connector under bag and seal edges with bag sealant.
- G. Cure graphite repair and fiberglass sanding plies.
- (1) Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
 - (2) Turn on heat blanket and raise temperature of repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
- H. Finish repair surface.
- (1) Remove vacuum bag, heat blanket, breather cloth, silicone rubber sheet, nonporous parting film, bleeder plies, temperature probe, vacuum probe, porous parting film, mask band, and bag sealant.
 - (2) Use 150-320 grit abrasive paper to sand surface of repair to a feather edge and smooth contour suitable for painting.
 - (3) Remove sanding dust from surface with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, BMS 11-7, MPK, MEK: Toluene 1:1, or Turco 6709. Wipe surface dry with a clean cloth before solvent evaporates.
 - (4) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

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STRUCTURAL REPAIR MANUAL**



SECTION A-A
DETAIL I

**Inlet Cowl - Repair of Damage to Graphite Composite Skin more than 0.010 Inch Deep - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 10 - REPAIR FOR DENTS IN GRAPHITE SKINS - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on.
- B. This repair is for dents in the inlet cowl outer barrel. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- C. This repair is for dents not more than 2 in. (5.1 cm) in diameter, that do not cause fiber damage or delamination. For dents more than 2 in. (5.1 cm) in diameter, and dents which cause fiber damage, remove damaged area and repair as a hole.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

- A. Mask outline of repair area around damage. Measure 1 in. (2.5 cm) from edge of dent for the repair ply.
- B. Sand masked area around damage with 150-grit abrasive paper to remove all surface finish.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- C. Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- D. Prepare a potting compound mixture as given in REPAIR 8.
- E. Apply potting compound mixture with a spatula to a level slightly above the surrounding graphite ply level.
- F. Cure the potting compound as given in REPAIR 8.
- G. Sand cured potting compound level with outer skin surfaces.
- H. Cut fiberglass fabric repair ply. The ply is to be 2 in. (5.1 cm) larger than the potted area. Trim corners 0.5 in. (1.3 cm) by 45 degrees.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

I. Mix EA9390 resin.

- (1) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA 9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (2) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

J. Place fiberglass sanding ply on sheet of nonporous parting film and apply resin to top side. Cover ply with sheet of nonporous parting film and use roller to thoroughly soak ply with resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair ply.

K. Install fiberglass sanding ply on skin panel.

- (1) Remove parting film from one side of sanding ply and center over damaged area. Use a roller to smooth out the wrinkles. Remove parting film from top of repair ply.

L. Prepare fiberglass sanding ply for curing.

- (1) Cover fiberglass sanding ply with porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass ply.
- (2) Cover porous parting film with a layer of bleeder cloth.
- (3) Cover bleeder cloth with layer of nonporous parting film.
- (4) Cover parting film with silicone rubber sheet.
- (5) Cover rubber sheet with two layers of fiberglass breather cloth.
- (6) Place heat blanket over breather plies.
- (7) Cover repair area with vacuum bag larger than repair area. Place temperature probe and vacuum connector under bag and seal edges with bag sealant

M. Cure the repair.

- (1) Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
- (2) Turn on heat blanket and raise temperature of repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.

N. Finish repair surface.

- (1) Remove vacuum bag, heat blanket, breather cloth, silicone rubber sheet, nonporous parting film, bleeder plies, temperature probe, vacuum probe, porous parting film, mask band and bag sealant.
- (2) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 11 - REPAIR OF EDGE EROSION DAMAGE - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- B. This repair is for edge erosion damage to graphite/epoxy structures of the inlet cowl outer barrel. Edge erosion damage repair is limited to areas 0.5 in. (1.3 cm) long and 0.02 in. (0.51 mm) deep. For larger erosion, remove damage and repair as a hole.

2. References

Reference	Title
51-21-01, GENERAL P/B GENERAL	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

NOTE: Do not taper or break graphite fibers from exposed graphite plies.

- A. Preparation of surface.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Remove sanding debris with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (2) Remove sanding debris with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, MPK, MEK: Toluene 1:1, or Turco 6209. Wipe surface dry with a clean cloth before solvent evaporates.

- B. Prepare and apply an adhesive filler.

- (1) EA934NA Potting Compound

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WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

- (a) Mix EA934NA potting compound thoroughly in a metal or plastic container.
- (b) Cover container to prevent contamination of mixture and store in a cool place.
- (2) Fill erosion cavities with potting compound and apply 1 in. (2.5 cm) wide teflon tape to create a smooth surface.
- C. Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 1 hour.
- D. Remove tape and use 150-180 grit abrasive paper to sand potting compound smooth.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (1) Remove sanding debris with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, MPK, MEK: Toluene 1:1, or Turco 6209 . Wipe surface dry with a clean cloth before solvent evaporates.
- (2) Apply paint primer and topcoat. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, PAGEBLOCK 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 12 - REPAIR OF DAMAGE TO EDGE OF GRAPHITE COMPOSITE SKIN - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on.
- B. This repair is for holes not more than 12.0 in. (30.5 cm) in dimension. Larger holes require prepreg repair. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

- A. The repair may be accomplished as follows if the damaged outer barrel has been removed from the inlet cowl.

Clean up damage areas. Refer to Figure 201/REPAIR 12, Detail I.

NOTE: Repair is limited to barrel land only. barrel land: -The barrel land exists around the periphery of the cowl panels. section A-A on DETAIL I shows labeled reference parts which are not part of the barrel land repair. These parts help illustrate the layout of the repair. This repair may be done at the Fwd land, Aft land, and the splice area between the frames. Do not extend into core.

The repair may be accomplished as follows if the damaged outer barrel has been removed from the inlet cowl

- (1) Transfer rivet location in panel attach land into a 2024-T3 aluminum drill template 0.040 in. (1.0 mm) thick, 1.5 in. (3.8 cm) wide and 2 in. (5.1 cm) longer on each side than repair layup will extend. Place blank template on underside of attach land aligned with panel edge and pick up existing rivet locations in template. Use a No. 5 drill for CR3552 blind rivets. Remove template and hold to drill attach rivet holes in repair panel edge.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (2) Cut out damaged area of skin to remove all loose particles, cracks and delaminations. Form a 0.25 in. (6.4 mm) radius on inner corners. Taper sides of cutout 45 degrees toward outer surface. Smooth edges of cutout using 80-grit or finer abrasive paper.
- (3) Determine number of skin plies. See Structure Identification.
- (4) To mask outline of repair area around cutout; measure 1 in. (2.5 cm) minimum from edge of cutout for repair No. 1. Add 0.75 in. (1.9 cm) for each additional repair ply and add 1 in. (2.5 cm) for fiberglass sanding ply. Use teflon tape for 2 in. (5.1 cm) wide mask band.

NOTE: Do not taper or break graphite fibers from the top surface of the outer skin ply.

STRUCTURAL REPAIR MANUAL

- (5) Sand masked area to remove all surface finish and lightly abrade top surface of outer skin, using 150-grit abrasive paper.

NOTE: Outer finish coat is gray and first coat is yellow.

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- (6) Remove sanding debris from exterior skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with a clean cloth before solvent evaporates.

B. Prepare repair materials.

NOTE: Fabric style and orientation of repair plies must be the same as the plies being replaced. Graphite fabric (5 harness): 0.015 in. (0.38 mm) thick. Use 1 ply of graphite fabric 5 harness to replace one ply of filament wind skin: 0.017 in. (0.43 mm) thick.

- (1) Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (2.5 cm) beyond cutout. Trim corner 0.5 in. (1.3 cm) by 45 degrees.

NOTE: To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair plies. Trim to final size after soaking with resin and just before installation.

- (2) Cut graphite fabric repair ply No. 2 large enough to extend 0.75 in. (1.9 cm) beyond ply No. 1. Trim corners 45 degrees by 0.5 in. (1.3 cm). Repeat procedure for other repair plies.
- (3) Cut a fiberglass fabric sanding ply large enough to overlay all of the exterior repair plies and extend to edge of masked area. Trim corners 45 degrees by 1 in. (2.5 cm).
- (4) Place nonporous parting film and aluminum backup plate overlapping cutout on underside and edge of outer barrel land. Secure with clamps or teflon tape.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (5) Mix EA9390 resin.
- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (6) Cut a strip of fiberglass fabric and trim to fit cutout as bottom fill ply. Soak fiberglass filler with resin and place on bottom of cutout.

STRUCTURAL REPAIR MANUAL

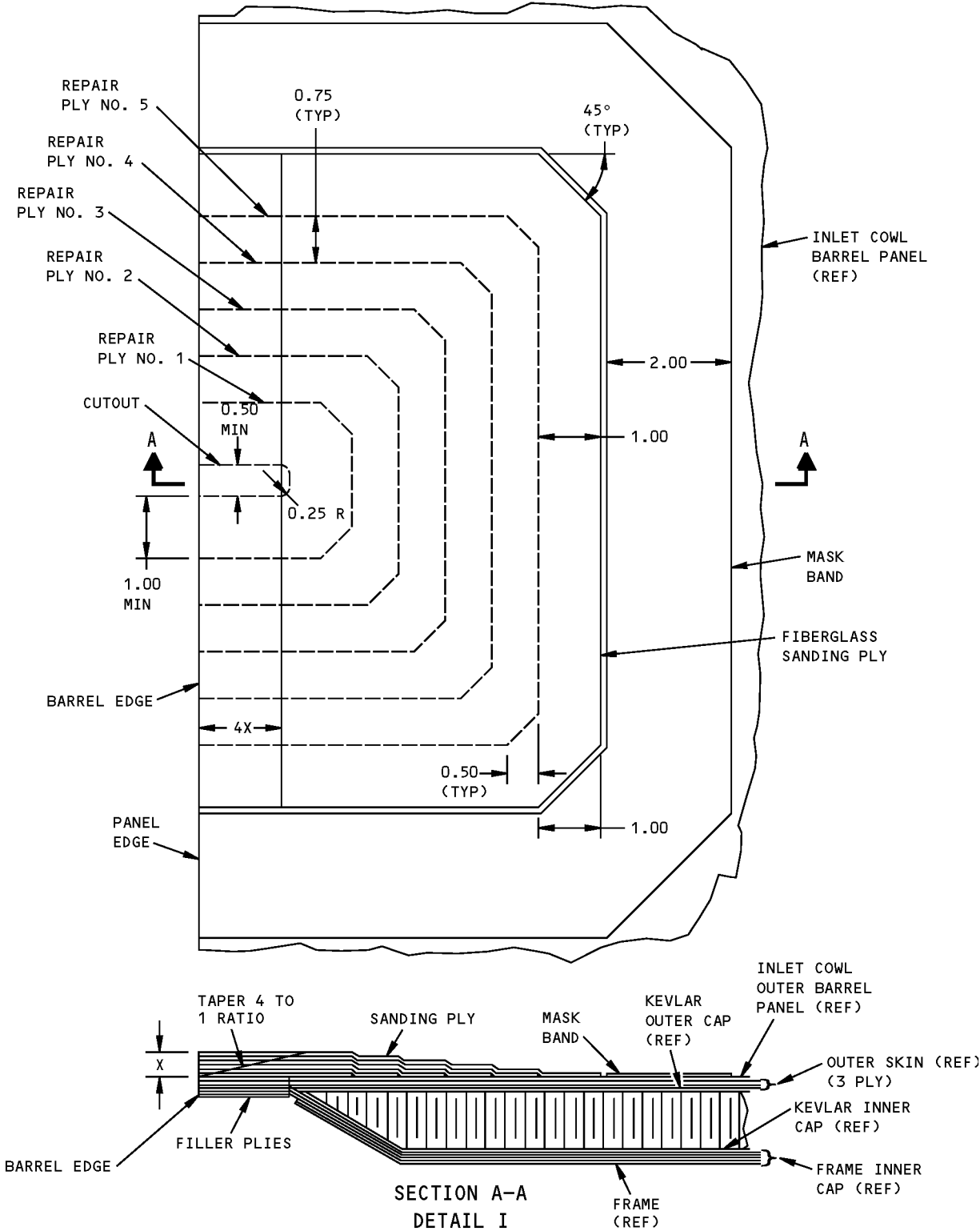
- (7) Cut enough graphite fabric plies to fill cutout flush with outer surfaces of barrel land. Place fabric on parting film, apply resin, cover with parting film and use a roller to thoroughly soak fabric with resin. Cut required fill plies and install in cutout.
- C. Cure fill plies. Refer to Figure 201/REPAIR 12, Detail II.
- (1) Cover fill plies with porous parting film, two plies of bleeder cloth, and one sheet of nonporous parting film.
 - (2) Place a strip of silicone rubber sheet over fill ply stack. Cover with breather layers of fiberglass fabric, and install vacuum bag of 2-mil nylon film. Use a heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (3) Remove heat blanket, vacuum bag materials, and backup plate. Sand cured fill plies flush with surrounding graphite fabric outer surface, and with fiberglass strip on inner surface.
- D. Install repair and sanding plies on barrel skin. Refer to Figure 201/REPAIR 12, Detail I.
- NOTE:** Fabric style and orientation of repair plies must be the same as the plies being replaced.
- (1) Place repair plies on sheet of nonporous parting film and apply resin to one side of each ply. Cover plies with nonporous parting film and use roller to thoroughly soak plies with resin.
 - (2) Trim repair plies to final size with nonporous parting film on both sides of plies.
 - (3) Remove parting film from bottom side of repair ply No. 1 and center over cutout along edge of panel and to extend 1.0 in. (2.54 cm) beyond cutout on other three sides. Smooth out wrinkles in ply with roller and remove top sheet of parting film.
 - (4) Remove parting film from bottom side of repair ply No. 2. Center ply over ply No. 1 along edge of panel and extending 0.75 in. (1.9 cm) beyond edge of ply No. 1 on other three sides. Smooth out wrinkles in ply and remove top sheet of parting film. Repeat procedure for all additional repair plies.
 - (5) Cover repair plies with a fiberglass fabric ply which has been soaked with resin. Fabric should extend to edge of masked area. Smooth out wrinkles.
- E. Prepare repair and sanding plies for curing. Refer to Figure 201/REPAIR 12, Detail II.
- (1) Cover repair layup with a layer of porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass fabric ply. Cover parting film with a layer of bleeder cloth for each of the exterior repair plies including the fiberglass ply. Cover bleeder cloth with a sheet of nonporous parting film. Cover parting film with a silicone rubber sheet.
 - (2) Place two plies of fiberglass fabric over rubber sheet and extending over barrel edge. Place a heat blanket over breather plies and cover with a vacuum bag approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum probe under bag and seal around edges with bag sealant. Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
- NOTE:** Breather cloth layers and vacuum bag must extend over edge to underside of barrel.
- F. Cure graphite repair and fiberglass sanding plies. Refer to Figure 201/REPAIR 12, Detail II.
- (1) Turn on the heat blanket and raise temperature of repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (2) Remove vacuum bag, heat blanket, rubber sheet, bleeder cloth, breather plies, parting film, and teflon tape.
- G. Finish repair surface. Refer to Figure 201/REPAIR 12, Detail I.

STRUCTURAL REPAIR MANUAL

- (1) Taper-sand (4 to 1 ratio) the edge of repair plies and sanding ply. Sand exterior surface of fiberglass (sanding ply) to a feather edge all around and a smooth contour suitable for painting. Use a 150-320 grit abrasive paper to produce a smooth surface. Remove sanding dust from surface with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, BMS 11-7, MPK (Methyl Propyl Ketone), or Turco 4460BK. Wipe surface dry with a clean cloth before solvent evaporates.
- (2) Apply attach rivet hole transfer template to underside of panel attach land with original rivet holes on each side of repair. Install temporary fasteners through original rivet holes on each side of repair and clamp template to panel land. Use template as guide and drill attach rivet holes closed by repair procedures. Trim edge of repair to align with edge of template and fair with original trim on either side of repair. Remove template. Refer to Figure 201/REPAIR 12, Detail III.
- (3) Use piloted countersink and countersink outer surface of holes for flush rivets. Use MS20427M5 solid rivets whenever possible use CR3552 blind rivets only when necessary to close the repair. Smooth edges of rivet holes, countersinks and panel edge trim.
- (4) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface restoration of graphite/epoxy composites.

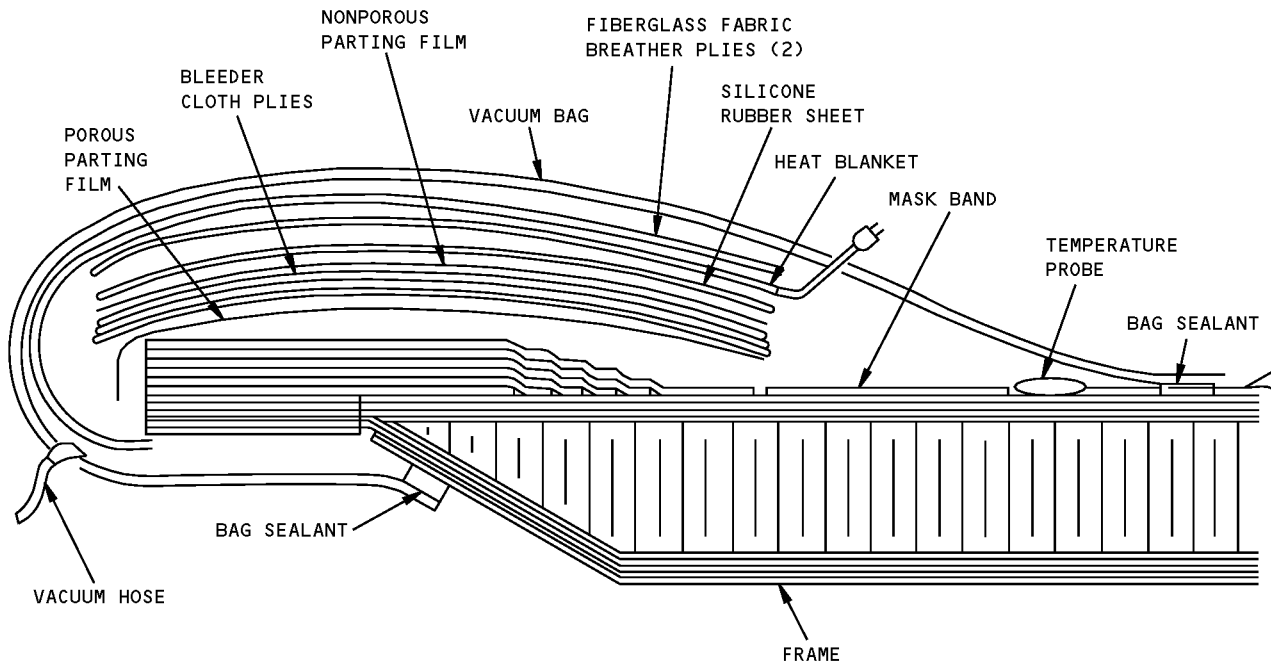
NOTE: During installation of panel, areas of rivet countersinks on tapered surfaces not filled by rivet heads may be filled with aerodynamic filler prior to paint touchup.

STRUCTURAL REPAIR MANUAL



**Inlet Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

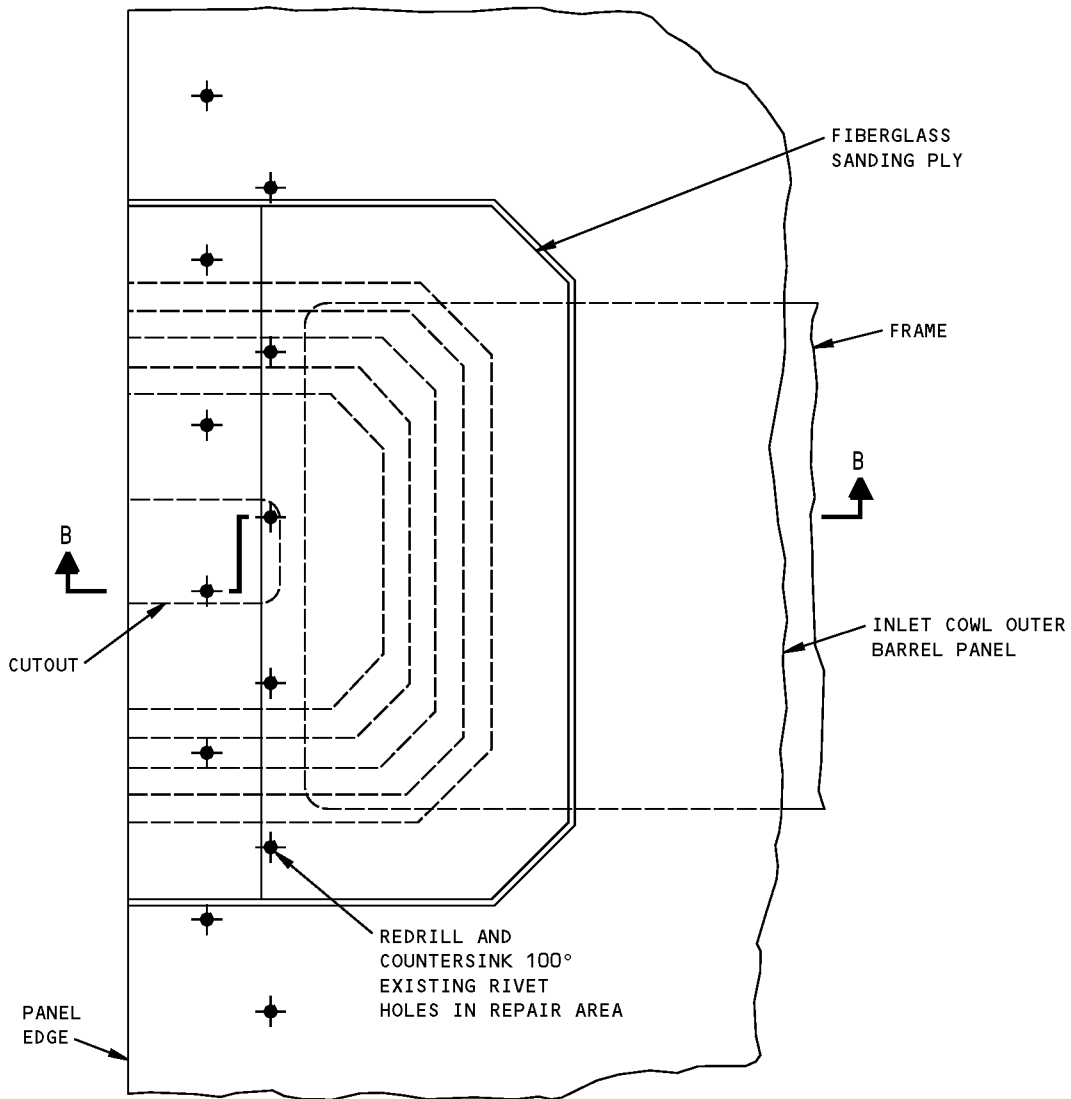
**767-300
STRUCTURAL REPAIR MANUAL**



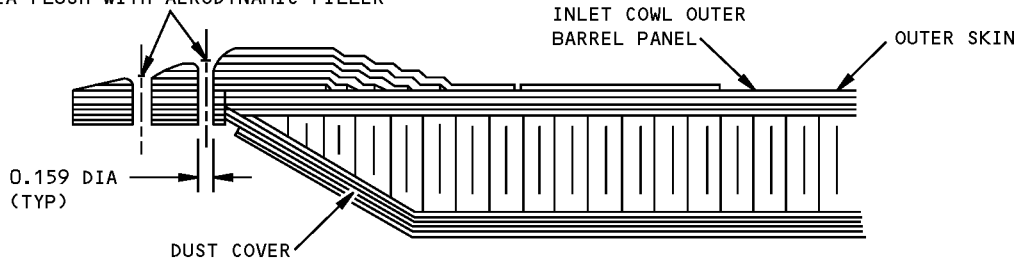
DETAIL II

**Inlet Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL



AFTER INSTALLATION OF RIVET FILL
AREA FLUSH WITH AERODYNAMIC FILLER



SECTION B-B
DETAIL III

Inlet Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 13 - REPAIR OF FULL PENETRATION HOLE IN OUTER BARREL SKIN - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- B. This repair is for holes not more than 12.0 in. (30.5 cm) in diameter. For holes more than 12.0 in. (30.5 cm) in diameter, contact the Boeing company.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

NOTE: Damage to the skin which has fractured or penetrated all plies may be repaired without removing the panel.

- A. Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Keep a geometric shape (oval or rectangular) which will permit passage of a backup plate (refer to Figure 201/REPAIR 13, Detail I). Form a 0.5 in. (1.3 cm) radius on all corners and chamfer sides 45 degrees (open to external surface). Smooth edges of cutout using 80-grit or finer abrasive paper.
- B. Determine number of skin plies and material. See Structure Identification.
- C. Mask outline of repair area around cutout. Add 1 in. (2.5 cm) inch (from exterior chamfered edge of cutout) for each ply in original composite skin, including fiberglass sanding ply. Use teflon tape for 2 in. (5 cm) wide mask band.

NOTE: Do not taper or break graphite fibers from the top surface of the outer skin plies.

- D. Sand masked area to remove all surface finish and lightly abrade top surface of outer skin ply, using 150-grit abrasive paper.

NOTE: Outer finish coat is gray, and first coat is yellow.

- E. Working through cutout, smooth and lightly abrade interior surface of innermost skin ply in an area 1 in. (2.5 cm) all around cutout.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- F. Remove sanding debris from interior and exterior skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with clean cloth before solvent evaporates.
- G. Prepare a fiberglass backup plate. Refer to Figure 201/REPAIR 13, Detail II.
- (1) Use this size and shape of backup plate which will pass through cutout and provide a 1 in. (2.5 cm) overlap all around when installed.
 - (2) Cut three pieces of BMS 8-79, Type 1581 fiberglass fabric 1.5 in. (3.8 cm) larger all around than cutout. Cut two pieces of fabric with a warp parallel to the centerline of the cutout. Cut the other piece with warp 90 degrees to the first two.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (3) Mix EA9390 resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair and fiberglass sanding plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (4) Place a sheet of nonporous parting film on a flat surface capable of withstanding temperatures in excess of 200°F (93°C). Place precut peel ply in center of parting film sheet. Soak three pieces of fiberglass fabric with resin. Place first fiberglass fabric ply, which has warp parallel to cutout longest centerline, on top of peel ply. Place second ply, which has warp at 90 degrees to cutout longest centerline, on top of first ply, and place remaining ply on top of second to make a three-ply backup plate. Cover fiberglass layup with perforated parting film and three pieces of fiberglass bleeder cloth.
- (5) Stretch a piece of nylon film over layup and seal around edges with bag sealing compound. Insert temperature probe and vacuum connector inside bag and seal opening.
- (6) While maintaining 20 in/Hg (68 kPa) of vacuum pressure under the bag, use the heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.

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- (7) Remove vacuum bag material, bleeder cloth, and perormated parting film from backup plate. Leave peel ply in place.
- (8) Trim backup plate to provide 1 in. (2.5 cm) inch of overlap all around cutout.
- (9) Drill two pairs of 0.070 in. (1.78 mm) holes, 0.375 in. (9.525 mm) apart through plate near centerline.

NOTE: Holes will be used to keep backup plate in place during installation.

- H. Install backup plate on interior surface of skin. Refer to Figure 201/REPAIR 13, Detail II.

WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

- (1) Mix EA934NA adhesive.
 - (a) Mix thoroughly in a metal or plastic container.
 - (b) Cover container to prevent contamination of mixture and store in a cool place.
- (2) Hold backup plate with peel ply facing up. Remove peel ply and pass a short loop of lockwire up through each pair of holes in backup plate. Twist wires together one turn to hole in place.
- (3) Use a brush to coat top surface of backup plate with adhesive mixture. Coat only the area which will touch interior surface of the skin. Use brush or spatula to apply a coat of resin/microballoon mixture to an area 1 in. (2.5 cm) wide all around skin cutout on interior surface of skin.
- (4) Pass backup plate through cutout and put plate against interior surface skin.

NOTE: Excessive tension on the lockwire will warp the backup plate and cause the outer edges of the plate to separate from the skin.

- (5) Pass small rod through lockwire loop(s) and bridge cutout. Twist lockwire against rod until backup plate is held tight against skin interior surface.
- (6) Apply adhesive mixture to seal wire holes in backup plate.
- (7) Use a heat lamp or a heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 60 minutes.
- (8) Cut wire loops just above backup plate. Remove any debris from cutout.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

(9) Mix EA9390 resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair and fiberglass sanding plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

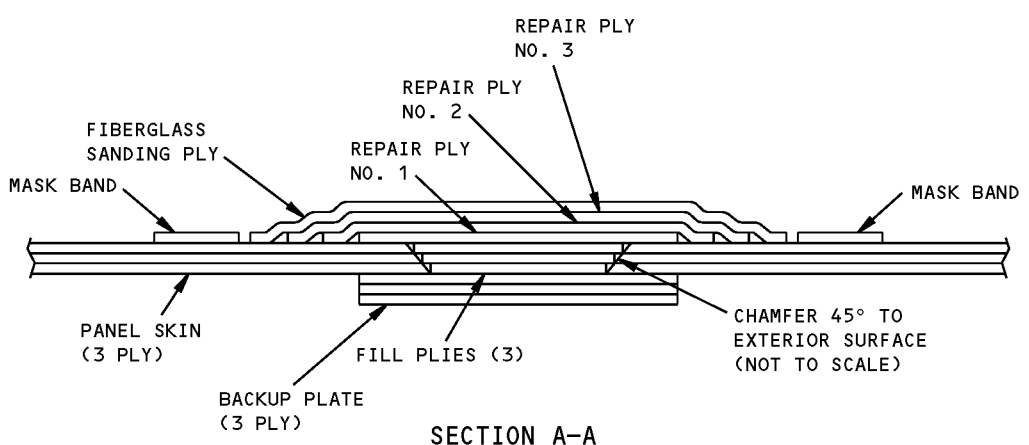
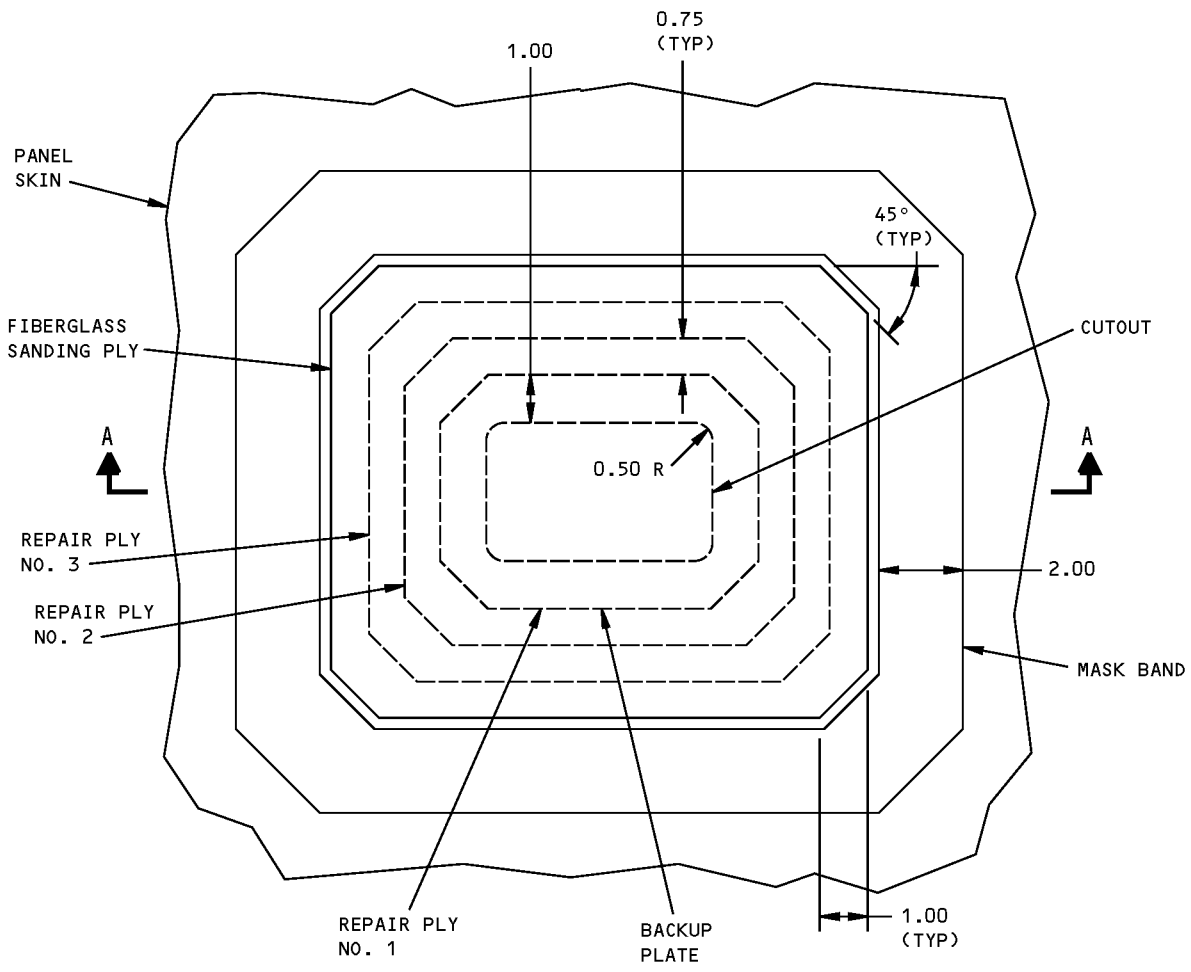
- I. Cut enough graphite fabric fill plies to be flush with original skin. Place fill plies on sheet of nonporous parting film and use spatula to apply resin to plies. Cover top surface of plies with film and use a roller to thoroughly soak resin into fill plies. Trim plies to fit inside cutout. Use a brush to coat inside of cutout with resin. Remove parting film and install fill plies in cutout. Use a roller to press plies into place and thoroughly soak them with resin.
- J. Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (2.5 cm) past cutout on all side. Trim corners 45 degrees by 1 in. (2.5 cm). Fabric style and orientation of repair plies must be the same as the plies being replaced.

NOTE: To avoid edge fraying add 0.5 in. (1.3 cm) all around to all repair plies and trim to final size after soaking with resin and just before installing.
- K. Cut graphite fabric repair ply No. 2 large enough to extend 0.75 in. (1.9 cm) all around past edges of ply No. 1. Trim corners 45 degrees by 1 in. (2.5 cm). Repeat procedure for ply No. 3 (or more original skin plies).
- L. Cut a fiberglass fabric ply large enough to overlay all of the exterior repair ply and extending to the edge of the masked area. Trim corners 45 degrees by 1 in. (2.5 cm). This will be used as a sanding ply.
- M. Place repair ply No. 1 on sheet of nonporous film and use spatula to apply resin. Cover repair ply top surface with film and use roller to thoroughly soak ply with resin. Remove bottom sheet of film and center ply on exterior surface of skin to cover cutout. Smooth out all wrinkles with roller and remove top sheet of film.
- N. Use film, spatula, and roller to soak ply No. 2 with resin. Remove film from bottom surface and center on top of ply No. 1. Smooth out all wrinkles and remove trapped air with roller. Remove film from top surface. Repeat procedure for ply No. 3 and any additional plies required for repair.
- O. Cover repair plies with a fiberglass fabric sanding ply which has been soaked with resin. Extend fiberglass ply to edge of masked area. Smooth out all wrinkles with roller.

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- P. Cover repair layup with a sheet of porous parting film approximately 3 in. (7.6 cm) larger all around the fiberglass fabric ply. Cover parting film with a layer of bleeder cloth for each of the exterior repair plies including the fiberglass ply. Cover bleeder cloth with a sheet of nonporous parting film. Cover parting film with a silicone rubber sheet (refer to Figure 201/REPAIR 13, Detail III).
- Q. Cover rubber sheet with two layers of fiberglass fabric breather cloth. Place a heat blanket over breather cloth layers and cover with a vacuum bag approximately 2 in. (5 cm) larger all around the heat blanket and rubber sheet. Place temperature probe and vacuum probe under bag and seal edges with bag sealant. Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
- R. Turn on the heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
- S. Remove vacuum bag, heat blanket, breather plies, rubber sheet, bleeder cloth, parting film, and teflon tape.
- T. Use 150-320 grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, MPK, or Turco 4460BK. Wipe surface dry with a clean cloth before solvent evaporates.
- U. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface restoration of graphite/epoxy composites.

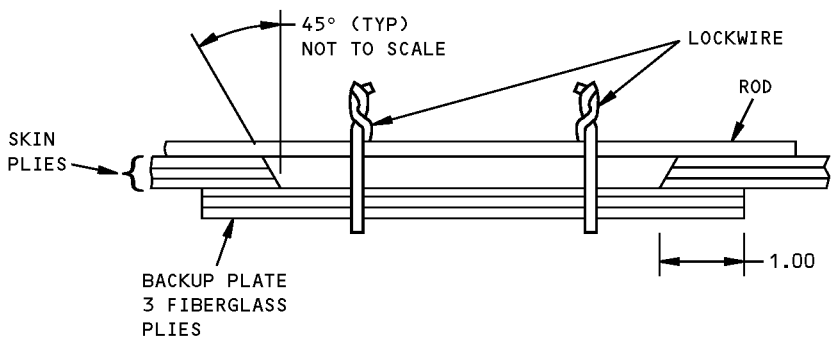
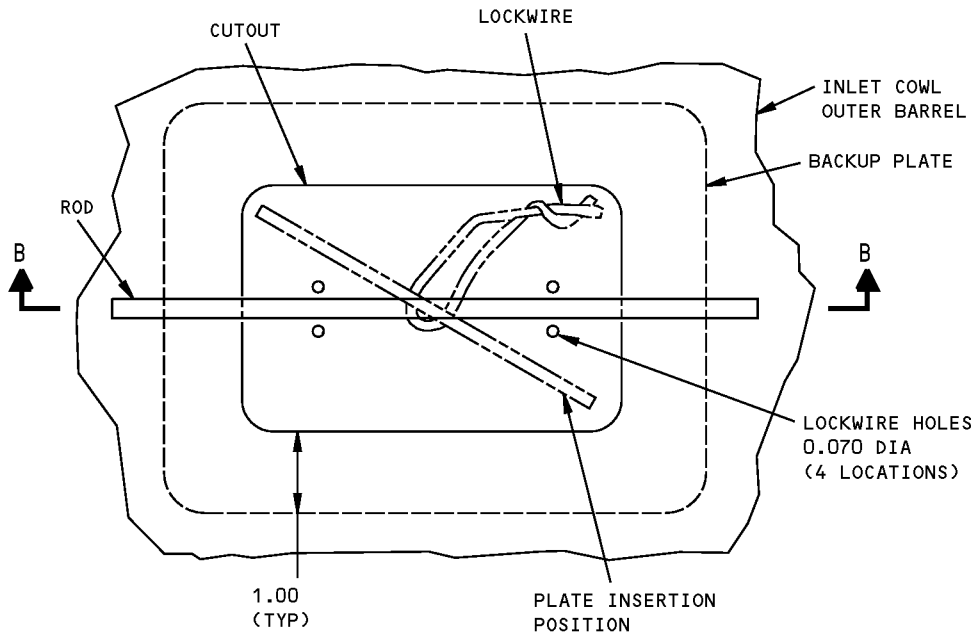
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STRUCTURAL REPAIR MANUAL



SECTION A-A
DETAIL I

Inlet Cowl - Repair of Full Penetration Hole in Outer Barrel Skin - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)

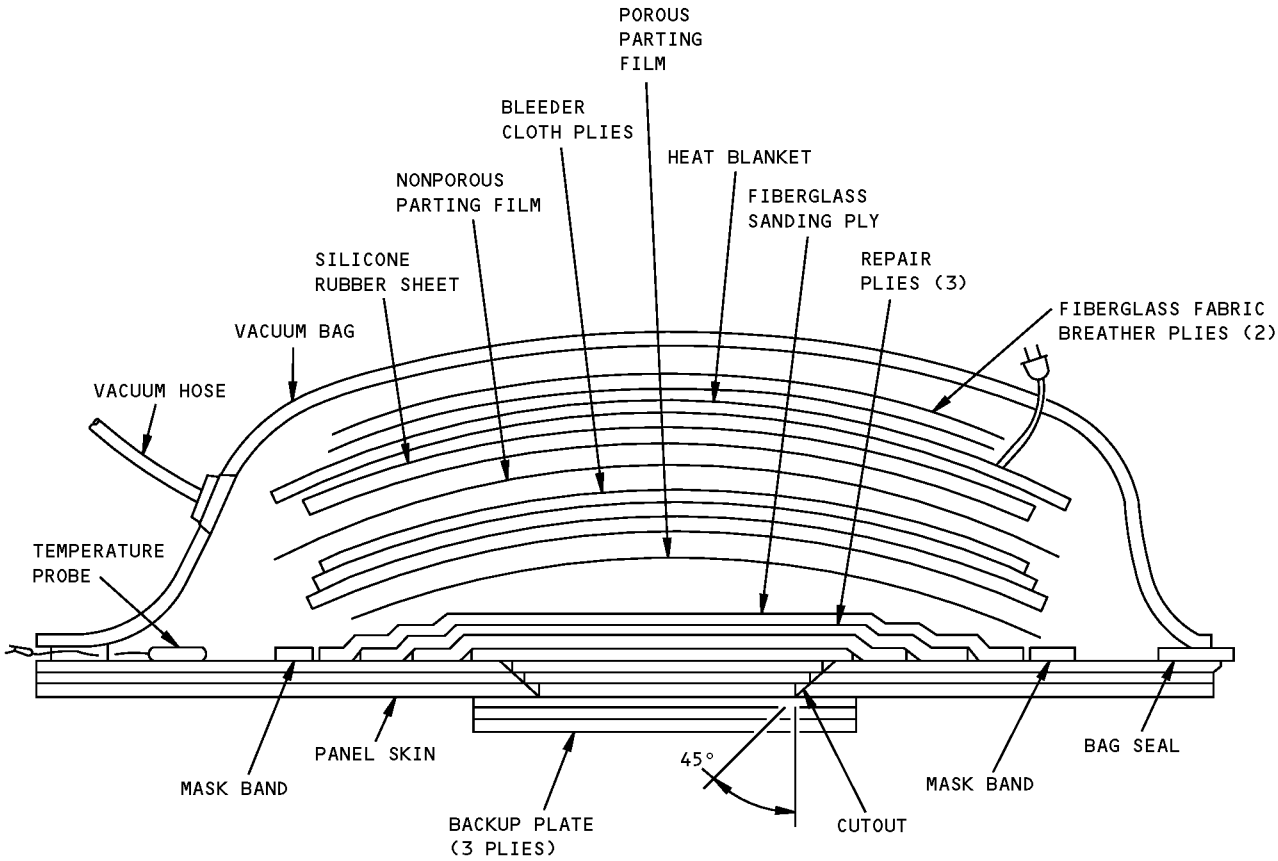
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SECTION B-B
DETAIL II

Inlet Cowl - Repair of Full Penetration Hole in Outer Barrel Skin - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)

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STRUCTURAL REPAIR MANUAL



DETAIL III

Inlet Cowl - Repair of Full Penetration Hole in Outer Barrel Skin - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 14 - REPAIR OF PENETRATION OF GRAPHITE SKIN WITH ACCESS TO BOTH SIDES - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- B. This repair is for holes not larger than 12.0 in. (30.5 cm) in diameter. For holes larger than 12.0 in. (30.5 cm) in diameter contact the Boeing company.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

CAUTION: IF YOU REMOVE THE OUTER BARREL FROM THE INLET COWL ASSEMBLY TO GAIN ACCESS TO INTERIOR SURFACE, MAKE SURE THAT YOU IT PUT IN ON THE FORWARD OR THE AFT EDGE. IF YOU DO NOT, A DISTORTION OF THE SKIN CONTOUR CAN BE THE RESULT.

- A. Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Form a minimum of 0.5 in. (1.3 cm) radius on all corners and chamfer sides 45 degrees (opening to external surface). Smooth edges of cutout using 80-grit abrasive paper. Refer to Figure 201/REPAIR 14, Detail I.
- B. Determine number of skin plies. See Structure Identification.
- C. Mask outline of repair area on exterior skin surface around cutout. Add 0.75 in. (1.9 cm) all around (from exterior chamfered edge of cutout) for each exterior repair ply and for the fiberglass sanding ply. (Number of exterior repair plies should equal number of original plies plus one ply.) Use teflon tape for 2 in. (5 cm) wide mask band.
- D. Mask outline of repair area on interior skin surface around cutout. Add 1 in. (2.5 cm) all around (from interior edge of cutout) for graphite interior repair ply. Use teflon tape for 2 in. (5 cm) wide mask band.
- E. Remove two inner plies of fiberglass fabric 1 in. (2.5 cm) from edge of cutout all around. Cut corners 45 degrees by 0.5 in. (1.3 cm).

NOTE: Do not taper or break the graphite fibers from the surface of the outer or inner skin plies.

- F. Sand masked area to remove all surface finish, smooth exposed plies, and lightly abrade top surface of outer skin ply. Use 150-grit abrasive paper.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- G. Remove sanding debris from skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with a clean cloth before solvent evaporates.
- H. Cut backup plate from 2024-T3 aluminum sheet, 2 in. (5 cm) larger all around than cutout in interior surface skin. Form plate to contour of skin interior surfaces.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- I. Mix EA9390 resin.

- (1) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (2) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- J. Install interior surface repair plies.

NOTE: Fabric style and orientation of repair plies must be the same as the plies being replaced.

- (1) Cut interior graphite fabric repair ply 1 in. (2.5 cm) larger than cutout all around. Trim corners 45 degrees by 0.5 in. (1.3 cm).

NOTE: To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair plies. Trim to final size after soaking with resin and just before installation.

- (2) Lay interior repair ply on sheet of nonporous parting film and apply resin to one side. Cover ply with nonporous parting film and use a roller to thoroughly soak ply. Trim ply to final size while still covered with parting film.
- (3) Remove parting film from one side of interior graphite repair ply and center ply into recess. Use a roller to remove wrinkles and trapped air from repair ply. Remove remaining sheet of nonporous parting film from repair ply.
- (4) Cover repair ply with porous parting film. Place two layers of bleeder cloth and a sheet of nonporous parting film. Place an aluminum backup plate over repair layup and secure with teflon tape.
- (5) Cover backup plate with two plies of fiberglass fabric extending at least 2 in. (5 cm) beyond backup plate.

STRUCTURAL REPAIR MANUAL

- (6) Install heat blanket, temperature probe, vacuum connector and cover with vacuum bag. Seal vacuum bag with bag sealant.

K. Install fill plies and exterior surface repair plies. Refer to Figure 201/REPAIR 14, Detail I.

NOTE: Fabric style and orientation of repair plies must be the same as the plies being replaced.

To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair plies. Trim to final size after soaking with resin just before installation.

- (1) Cut enough graphite fabric plies to fill damage hole flush with outer surface.
 - (2) Cut graphite fabric exterior repair ply No. 1 large enough to extend 1 in. (2.5 cm) all around past cutout. Trim corners 45 degrees by 1.0 in. (2.5 cm).
 - (3) Cut graphite fabric exterior repair ply No. 2 large enough to extend 0.75 in. (1.9 cm) past edge of repair ply No. 1. Trim corners 45 degrees by 1.0 in. (2.5 cm).
 - (4) Cut a fiberglass sanding ply large enough to extend 0.75 in. (1.9 cm) beyond edge of final exterior repair ply and to mask band. Trim corners 45 degrees by 1.0 in. (2.5 cm).
 - (5) Place fill plies, repair plies, and sanding ply on a sheet of nonporous parting film and use spatula to apply resin evenly over surfaces. Cover plies with another sheet of nonporous parting film and use roller to thoroughly soak plies with resin. Leave nonporous parting films in place and trim plies to final size.
 - (6) Support previously installed interior surface repair plies.
 - (7) Use a brush to coat inside of cutout and area inside mask band with resin. Remove nonporous parting film from one side of first fill ply and place in cutout on top surface of interior graphite repair ply. Use a roller to remove wrinkles and trapped air from fill ply and then remove top ply of nonporous parting film. Repeat for remaining fill plies.
 - (8) Remove nonporous parting film from one side of exterior repair ply No. 1 and center over cutout and fill plies. Use a roller to remove wrinkles, trapped air, and excess resin. Remove remaining nonporous parting film from repair ply (Figure 201/REPAIR 14, Detail I).
 - (9) Remove nonporous parting film from one side of exterior repair ply No. 2 and install on top of ply No. 1, extending 0.75 in. (1.9 cm) past edge of repair ply No. 1. Use a roller to remove wrinkles, trapped air and excess resin. Remove nonporous parting film from top of repair ply No. 2. Repeat procedure for remainder of repair plies (Figure 201/REPAIR 14, Detail I).
 - (10) Remove nonporous parting film from one side of fiberglass sanding ply and install on top of repair plies. Sanding ply must extend 0.75 in. (1.9 cm) beyond final exterior repair ply and to edge of mask band. Roll sanding ply to remove wrinkles, trapped air, and excess resin. Remove nonporous parting film from top of sanding ply.
- L. Install heat blanket and vacuum bag over exterior surface repair plies. Refer to Figure 201/REPAIR 14, Detail II.
- (1) Cover repair and sanding plies with a sheet of porous parting film to extend beyond mask band. Cover parting film with a layer of fiberglass bleeder cloth for each of the exterior repair plies including the fiberglass sanding ply.
 - (2) Cover bleeder cloth layers with a sheet of nonporous parting film. Cover film with a silicone rubber sheet. Cover rubber sheet with two layers of fiberglass fabric breather plies.
 - (3) Place a heat blanket over breather plies and cover with a nylon film vacuum bag approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum connector under bag and seal around edges with bag sealant.

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(4) Apply 5 in/Hg (17 kPa) of vacuum pressure to exterior and interior surface bag.

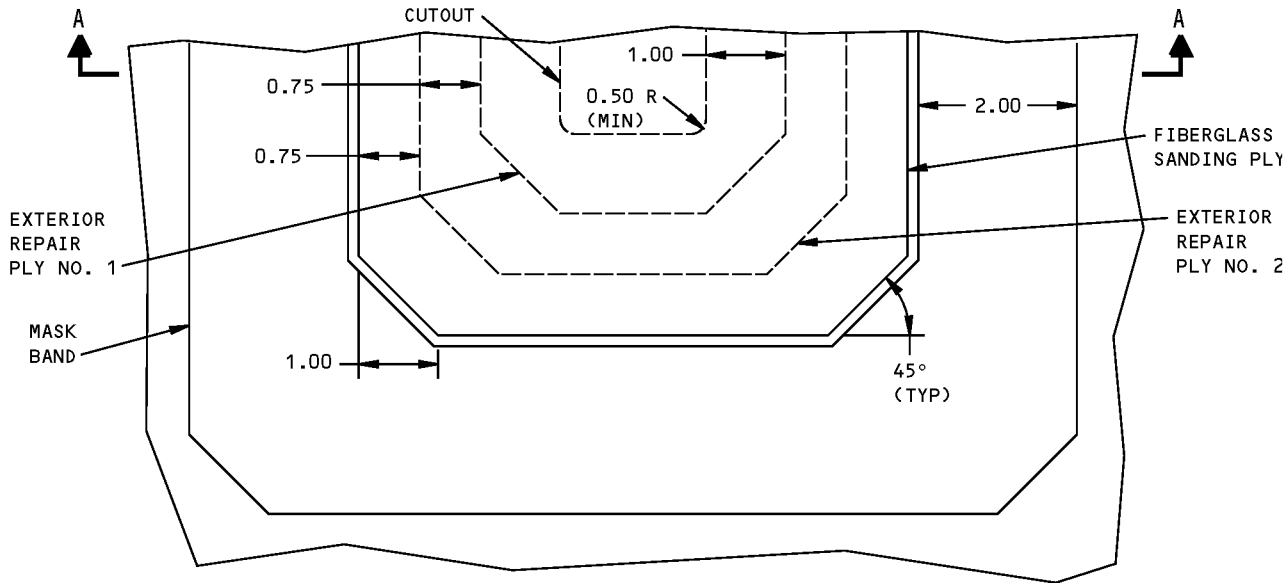
NOTE: Vacuum pressure is to be applied simultaneously to interior and exterior bags to avoid displacement of plies.

- M. Increase simultaneously the vacuum pressure under both exterior and interior bags to 20 in/Hg (68 kPa) minimum. Check for leaks and seal as necessary.
- N. Turn on the heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
- O. Remove vacuum bags, heat blankets, rubber sheets, breather plies, parting films, bleeder plies, temperature probes, vacuum probes, and teflon tape mask band.

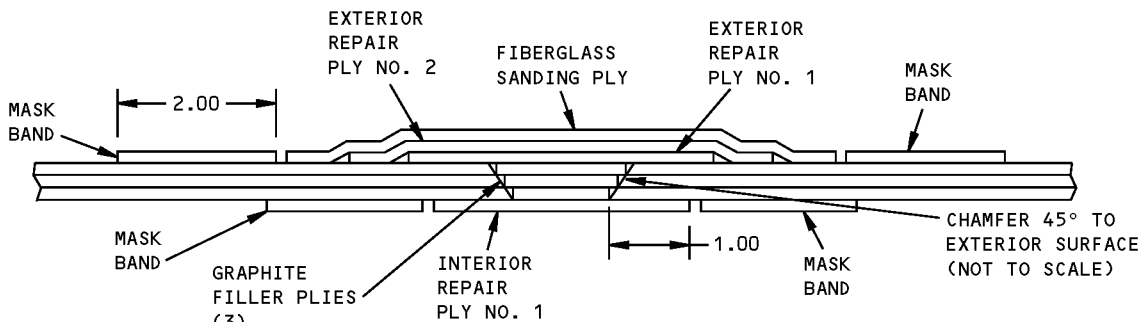
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- P. Use 150-grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with MEK CDG - 110, CDG - 211, FCC - 55, BMS 11-7. MPK, or Turco 6709. Wipe surface dry with a clean cloth before solvent evaporates.
- Q. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface finish restoration of graphite/epoxy composites.

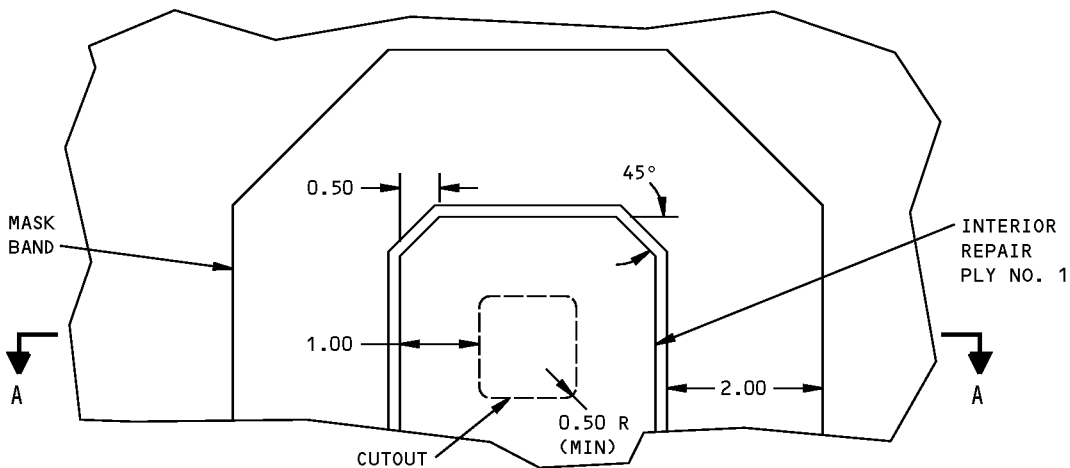
STRUCTURAL REPAIR MANUAL



TOP VIEW



SECTION A-A

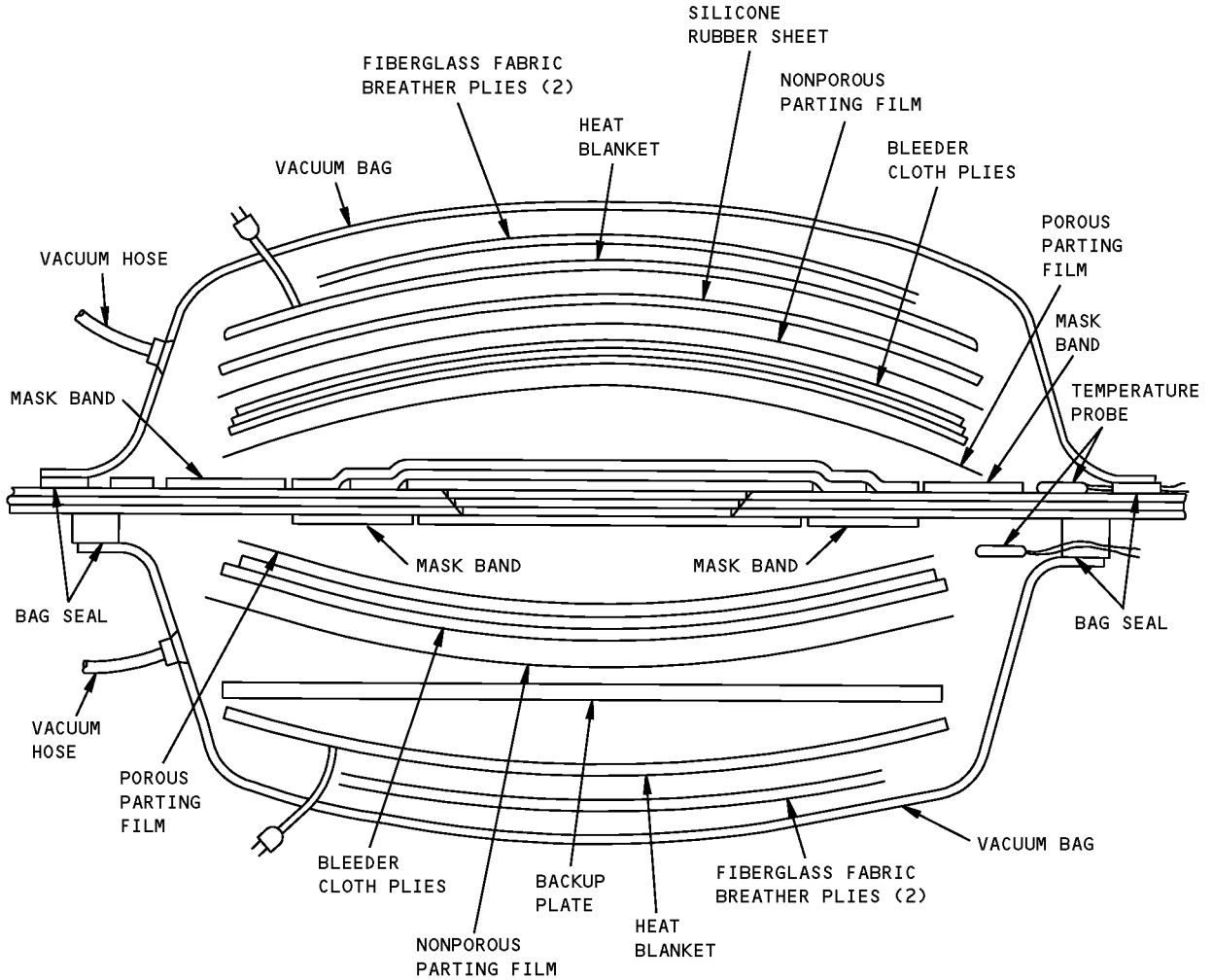


BOTTOM VIEW

DETAIL I

Inlet Cowl - Repair of Penetration of Graphite Skin with Access to Both Sides - CF6-80C2 Engine Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

**Inlet Cowl - Repair of Penetration of Graphite Skin with Access to Both Sides - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 15 - REPAIR OF DAMAGE TO FRAME COMPOSITE OUTER CAP AND ALUMINUM HONEYCOMB CORE - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- B. This repair is for damage not more than 12.0 in. (30.5 cm) in diameter. For holes larger than 12.0 in. (30.5 cm) in diameter contact the Boeing company.

2. References

Reference	Title
51-21-01, GENERAL P/B GENERAL	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

- A. Clean up damage area. Refer to Figure 201/REPAIR 15, Detail I.

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- (1) Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Form a 0.25 in. (0.6 cm) radius on inner corners. Taper sides of cutout 45 degrees toward outer surface. Smooth edges of cutout using 80-grit or finer abrasive paper.
- (2) Cut away damaged part of aluminum honeycomb core. Straighten side walls of honeycomb cells. Remove sanding, grinding and cutting debris from honeycomb cells using light air pressure (10 psi (69 kPa) to 20 psi (138 kPa)).
- (3) Determine number of frame outer cap plies. See Structure Identification.

NOTE: An outer cap ply 3 in. (7.6 cm) wide reinforces the three basic skin plies in the frame area.

- B. Fill honeycomb core with resin and install filler plies. Refer to Figure 201/REPAIR 15, Details I and II.

- (1) Cut a BMS 8-79, Type 1581 (0.01 in. (0.25 mm) cap thickness) fiberglass fabric filler ply large enough to replace the portion of aramid frame cap ply which was adjacent to the aluminum honeycomb core.

NOTE: To avoid edge fraying, cut all plies 0.5 in. (1.3 cm) larger all around. Trim to final size after soaking with resin and just prior to installation.

- (2) Cut enough graphite filler plies to be flush with outer barrel skin surface.

STRUCTURAL REPAIR MANUAL

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- (3) Mix enough EA9390 resin to fill exposed honeycomb core and soak fill plies.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
 - (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately two 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (4) Place filler plies on a sheet of nonporous parting film. Apply resin to one side of plies and cover with another sheet of nonporous parting film. Use a roller to thoroughly soak filler plies and remove excess resin.
 - (5) Add 5 percent (by weight) of phenolic microballoons to resin and mix thoroughly. Fill open honeycomb core flush to outer surface of core with resin/microballoon mixture.
 - (6) Remove parting film from fiberglass filler ply and place on outer surface of resin/microballoon mixture. Remove parting film from graphite fabric filler plies and fill cutout flush to outer skin surface. Before removal of final ply parting film, roll top surface of fill plies to remove excess resin.
 - (7) Cover fill plies with a sheet of porous parting film, a layer of bleeder cloth for each filler ply and a sheet of nonporous parting film, cover with a breather ply of fiberglass fabric, a heat blanket, and a vacuum bag. Place a temperature probe and a vacuum connector under vacuum bag.
 - (8) Turn on heat blanket and raise temperature of repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (9) Remove vacuum bag, breather ply, heat blanket, silicone rubber sheet, bleeder plies, and parting film. Sand filler plies flush with outer barrel skin surface using 150-grit abrasive paper.
- C. Install repair and sanding plies. Refer to Figure 201/REPAIR 15, Detail I.
- (1) Mask outline of repair area around damage cutout. Measure 1 in. (2.5 cm) from edge of cutout for repair ply No. 1, plus an additional 0.75 in. (1.9 cm) for each remaining repair ply and a sanding ply. Apply teflon tape for a 2 in. (5 cm) wide mask band.
 - (2) Sand masked area around damage cutout to remove all surface finish using 150-grit abrasive paper.

NOTE: Outer primer coat is gray and first coat is yellow.

STRUCTURAL REPAIR MANUAL

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- (3) Remove sanding debris from outer skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- (4) Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (2.5 cm) all around past damage cutout. Trim corners 45 degrees by 0.5 in. (1.3 cm).

NOTE: Fabric style and orientation of repair plies must be the same as the plies being replaced.

To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair and sanding plies. Trim plies to final size after soaking with resin and just before installation.

- (5) Cut graphite fabric repair ply No. 2 large enough to extend 0.75 in. (1.9 cm) all around past edge of ply No. 1. Trim corners 45 degrees by 0.5 in. (1.3 cm). Repeat procedure for remainder of repair plies required.
- (6) Cut a BMS 8-79, Type 120 or 1581 fiberglass fabric sanding ply large enough to cover repair plies and extend to mask band.

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- (7) Mix a sufficient quantity of EA9390 resin for repair and sanding plies.

NOTE: Weight of resin required should be equal to the dry weight of the repair and sanding plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in cool place.

NOTE: Useful life of a 250-gram pound mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (8) Place repair and sanding plies on a sheet of nonporous parting film and apply resin with spatula to one side of plies. Cover plies with another sheet of nonporous parting film and use a roller to thoroughly soak plies with resin.
- (9) Trim repair and sanding plies to final size with nonporous parting film cover sheets still in place.

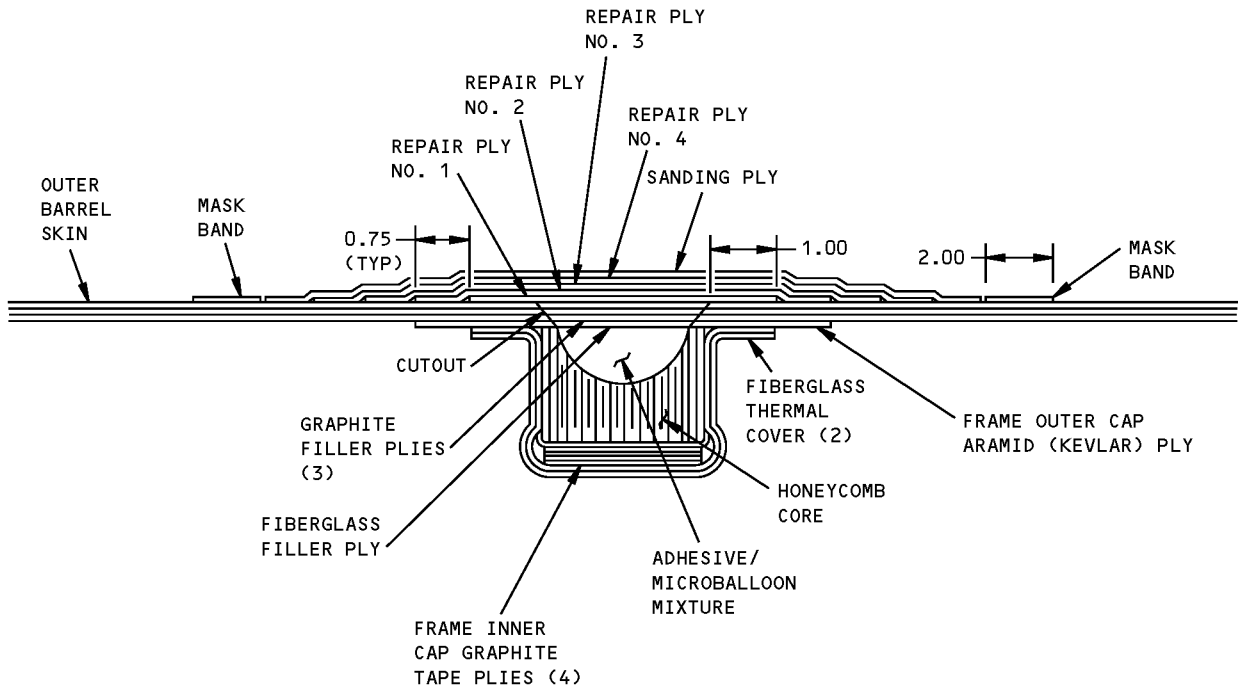
STRUCTURAL REPAIR MANUAL

- (10) Use a brush or spatula and apply resin to top surface of filler plies and all area within mask band. Remove bottom sheet of nonporous parting film and install on outer skin surface centered over cutout and fill plies. Use a roller to remove all wrinkles, trapped air, and excess resin. Remove top sheet of nonporous parting film.
 - (11) Remove bottom sheet of nonporous parting film from repair ply No. 2 and install on skin centered over ply No. 1. Use a roller to remove all wrinkles, trapped air, and excess resin. Remove top layer of nonporous parting film. Repeat procedure for remaining repair plies and sanding ply to cover all skin area to mask band.
- D. Prepare repair and sanding plies for curing. Refer to Figure 201/REPAIR 15, Detail II.
- (1) Cover repair ply layup with a sheet of porous parting film approximately three inches larger than fiberglass sanding ply. Cover parting film with a layer of bleeder cloth for each of the repair plies and sanding ply. Cover bleeder cloth with a sheet of nonporous parting film. Cover parting film with a silicone rubber sheet.
 - (2) Place two plies of fiberglass fabric over rubber sheet. Place a heat blanket over breather plies and cover with a vacuum bag approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum connector under bag and seal around edges with bag sealant. Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
- E. Cure repair and sanding plies.
- (1) Turn on heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (2) Remove vacuum bag, heat blanket, rubber sheet, bleeder cloth, breather plies, parting film, and teflon tape.
- F. Finish repair surface.
- (1) Sand exterior surface of fiberglass sanding ply to a feather edge all around and a smooth contour suitable for painting.

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- (2) Remove sanding residue with MEK, CDG-110, CDG-211, BMS 11-7, FCC-55, MPK, or Turco 4460BK and wipe dry.
- (3) Apply paint primer and topcoat. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, PAGEBLOCK 51-21-01, GENERAL for surface restoration of graphite/fiberglass composite parts.

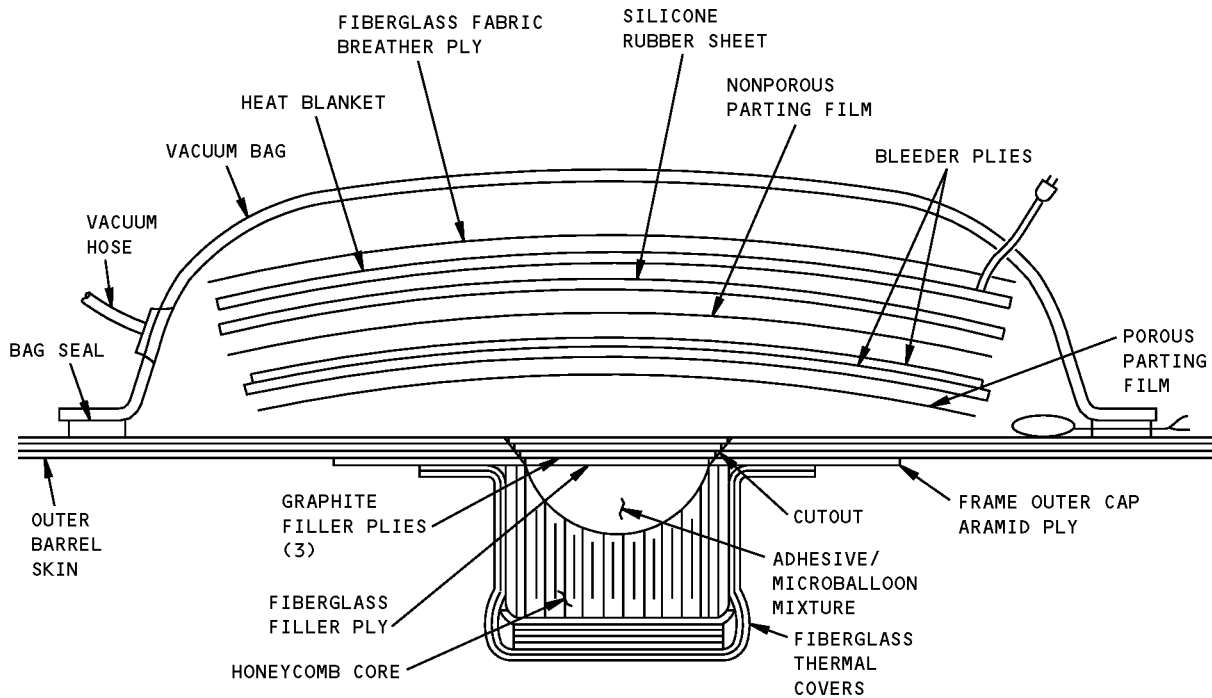
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STRUCTURAL REPAIR MANUAL



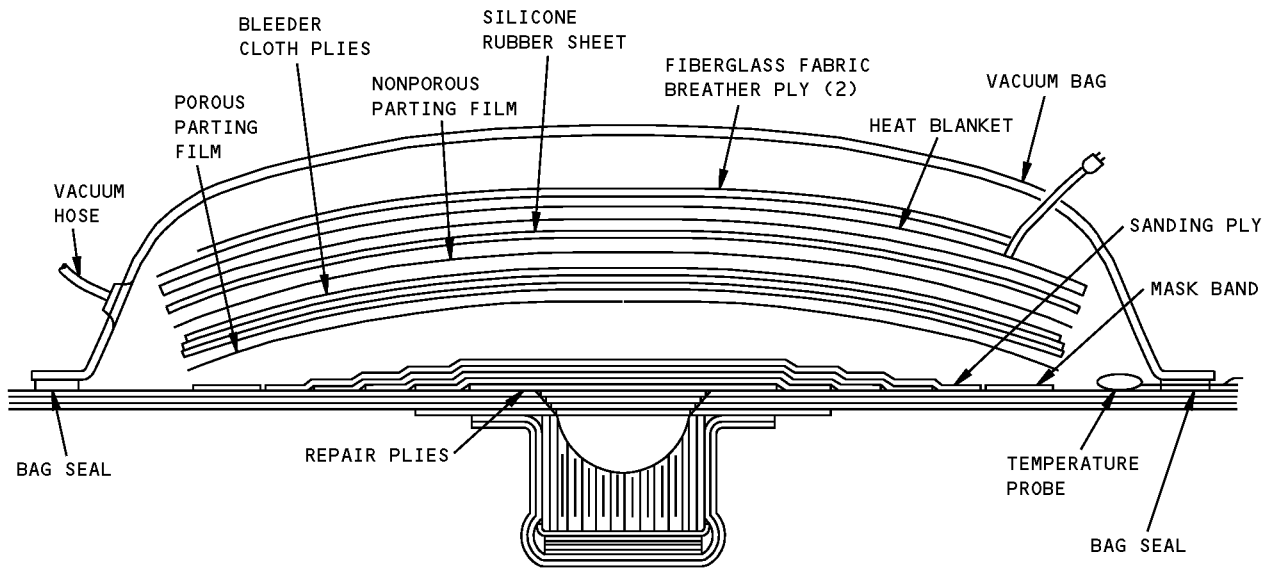
DETAIL I

Inlet Cowl - Repair of Damage to Frame Composite Outer Cap and Aluminum Honeycomb Core - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

STRUCTURAL REPAIR MANUAL



CURE FILLER PLIES



CURE REPAIR PLIES

DETAIL II

Inlet Cowl - Repair of Damage to Frame Composite Outer Cap and Aluminum Honeycomb Core - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 16 - REPAIR OF DAMAGE TO FRAME COMPOSITE OUTER CAP, HONEYCOMB CORE, AND DUST COVER - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- B. This repair is for damage not more than 12.0 in. (30.5 cm) in diameter. For holes larger than 12.0 in. (30.5 cm) in diameter contact the Boeing company.

2. References

Reference	Title
51-21-01, GENERAL P/B GENERAL	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

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- A. Clean up damage area. Refer to Figure 201/REPAIR 16, Detail I.
 - (1) Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Form a 0.25 in. (6.35 mm) radius on inner corners. Taper sides of cutout 45 degrees toward outer surface. Smooth edges of cutout using 80-grit or finer abrasive paper.
 - (2) Cut away damaged part of aluminum honeycomb core.
 - (3) Cut away damaged area of dust cover (frame sidewall) to remove all loose particles and cracks.
 - (4) Determine size of fiberglass repair backup angle required and adjust size of hole in skin, core, and thermal cover to permit passage of angle.
 - (5) Sand outer surface of dust cover and interior surface of outer barrel skin which interfaces with backup angle using 150-grit abrasive paper. Sand surfaces to smooth matte finish for bonding.

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- (6) Remove sanding, grinding, and cutting debris from honeycomb cells using light air pressure (10 psi (69 kPa) to 20 psi (138 kPa)). Wipe sanding dust from skin and dust cover surfaces with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- B. Prepare backup angle. Refer to Figure 201/REPAIR 16, Details I and II.
 - (1) Determine size of backup angle which will pass through cutouts in skin and dust cover and provide 0.75 in. (1.90 cm) overlap (minimum) all around when installed.

STRUCTURAL REPAIR MANUAL

- (2) Cut three pieces of BMS 8-79, Type 1581 fiberglass. The fiberglass pieces should be one inch larger all around than cutout in dust cover and adjacent skin area. Cut two pieces of fabric so that the warp is parallel to the longest centerline of the cutout and the remaining piece so that the warp is at 90 degrees to the first two.
- (3) Cut two filler BMS 8-79, Type 1581 fiberglass fabric plies to fill gap between backup angle and interior surface of outer barrel skin for full length of cutout.
- (4) Measure angle between dust cover and interior surface of skin (normally 90 degrees). Prepare a wooden form block (with proper angle) for curing fiberglass backup angle. Form a 0.090 in. (2.29 mm) radius to mate existing dust cover radius. Refer to Figure 201/REPAIR 16, Detail II.

NOTE: If backup angle exceeds two inches in length, incorporate a 0.0163 in. (0.414 mm) per inch of contour in the form block to mate with outer barrel skin contour.

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- (5) Mix EA9390 resin.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
 - (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (6) Place form block on flat surface capable of withstanding temperatures in excess of 210°F (99°C).
- (7) Place a sheet of nonporous parting film over wooden form block. Soak three pieces of fiberglass fabric with resin. Place first fiberglass fabric ply which has warp parallel to cutout longest centerline on parting film. Place second fiberglass ply which has warp at 90 degrees over first ply. Place remaining fiberglass ply on top of second to make a fiberglass backup angle. Cover fiberglass layup with a sheet of nonporous parting film and use roller to remove trapped air, wrinkles, and excess resin. Remove nonporous parting film.
- (8) Place two filler plies on a sheet of nonporous parting film and apply resin to top surfaces. Cover plies with another sheet of nonporous parting film and roll thoroughly soak plies. Leave nonporous parting film in place and trim filler plies to final size. Remove bottom ply of nonporous parting film from first filler ply and lay in place on backup angle. Use a roller to remove wrinkles and trapped air. Remove top sheet of nonporous parting film. Repeat procedure for second filler ply.
- (9) Cover fiberglass layup with a sheet of porous parting film and three sheets of fiberglass bleeder cloth. Cover bleeder cloth with a sheet of nonporous parting film and a larger breather ply.
- (10) Stretch a piece of nylon film over material stack and seal around edges with bag sealing compound to create a vacuum bag. Insert temperature probe and vacuum connector inside bag and seal openings.

STRUCTURAL REPAIR MANUAL

- (11) Use a heat lamp or a heat blanket and raise temperature of the backup angle to 190°F (88°C) to 210°F (99°C) for 220 minutes.
- (12) Remove vacuum bag material, breather ply, bleeder plies, and form block from backup angle. Leave parting films on backup angle until ready to install.
- (13) Trim backup angle to provide 0.75 in. (1.90 cm) minimum overlap all around cutouts when installed. Make sure fill plies on angle do not interfere with existing thermal cover flanges.
- (14) Drill two 0.070 in. (1.78 mm) holes 0.375 in. (0.95 cm) inch apart through radius in backup angle. Remove parting film from both surfaces of backup angle. Pass one end of a short loop of lockwire through each of the holes in backup angle and flatten wire against backup angle. Twist wire ends together one turn to hold loop in place.

NOTE: Wire loop will be used in conjunction with a bridging rod to hold backup angle in place during honeycomb core potting cure cycle. If angle exceeds 2 in. (5 cm) in length, additional wire loops may be necessary.

- C. Install backup angle. Refer to Figure 201/REPAIR 16, Detail III.

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- (1) Mix EA9390 potting compound.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener and 39 parts (by weight) of chopped glass fibers. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
 - (b) Cover container to prevent contamination of mixture and store in a cool place until used.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (2) Apply a thin layer of EA9390 potting compound mixture to surface of backup angle. Apply a thin layer to mating surfaces of frame thermal cover and under surface or outer cap ply.
- (3) Carefully insert backup angle through cutout and position against mating surfaces of frame dust cover and under surface of outer cap ply.

NOTE: Excessive tension on the lockwire will warp the backup angle and cause the outer edges of the angle to separate from the thermal cover and the outer cap ply.

- (4) Pass steel or wood rod through lockwire loop and bridge cutout. Twist lockwire against rod until backup angle is held snugly against frame thermal cover and against center cap ply. Fill wire holes in backup angle with potting compound mixture.
- (5) Place a heat blanket over repair area. Turn on the heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes. Remove heat blanket and bridging rod.

STRUCTURAL REPAIR MANUAL

- (6) Cut wire loop just above backup angle and withdraw wire, leave flattened wire loop on outside of back angle. Repeat for any additional wire loops used. Remove any debris from backup angle and honeycomb core cells.

D. Fill honeycomb core.

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- (1) Mix EA9390 resin/microballoon mixture.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Add 5 percent (by weight) of phenolic microballoons. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in cool place until used.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin mixture gel time and cure time.

- (2) Fill open honeycomb core cells completely with resin/microballoon mixture. Work trapped air out of cells.
- (3) Fill cavity in honeycomb core flush with top surface of core and top surface of filler plies on backup angle.

E. Install fill plies. Refer to Figure 201/REPAIR 16, Detail IV.

- (1) Cut first fill ply from BMS 8-79, Type 1581 fiberglass fabric.
- (2) Cut enough graphite fabric fill plies so that top fill ply is flush with outer barrel skin outer surface.

NOTE: To avoid edge fraying, cut all fill plies 0.5 in. (1.3 cm) larger all around the cutout. Trim to final size after soaking with resin and just before installation.

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- (3) Mix EA9390 resin.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.

STRUCTURAL REPAIR MANUAL

(b) Cover container to prevent contamination of mixture and store in a cool place until used.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (4) Place fiberglass and graphite fill plies on a sheet of nonporous parting film. Use a spatula and cover each ply with resin. Cover plies with another sheet of nonporous parting film and use a roller to thoroughly soak plies with resin to remove trapped air and to remove excess resin.
 - (5) Leave nonporous parting film in place and trim all fill plies to final size.
 - (6) Use a brush to coat sides of cutout with resin. Make sure resin/microballoon mixture is flush with top surface of backup angle and top of honeycomb core.
 - (7) Remove bottom ply of nonporous parting film from fiberglass fill ply and install on top of backup angle, honeycomb core, and resin/microballoon mixture. Smooth out all wrinkles and remove trapped air before removing top ply of nonporous parting film from fill ply.
 - (8) Remove bottom ply of nonporous parting film from first graphite fill ply and install on top of fiberglass fill ply. Smooth out all wrinkles and remove trapped air before removing top ply of nonporous parting film from graphite fill ply. Repeat for remaining graphite fill plies until all plies are installed and are flush with outer barrel skin outer surface. Rest part of roller on outer barrel skin outer surface around cutout and roll carefully to remove all wrinkles and trapped air from top graphite fill ply before removing nonporous parting film.
 - (9) Cover cutout with porous parting film to extend 2 in. (5 cm) past cutout. Place one layer of bleeder cloth for each fill ply on top of porous parting film and cover with a sheet of nonporous parting film. Place a silicone rubber sheet over nonporous parting film and cover with two fiberglass plies. Place heat blanket over breather plies.
 - (10) Cover entire repair layup with vacuum bag approximately 2 in. (5 cm) larger all around than cutout. Place temperature probe and vacuum connector under bag and seal around edges with bag sealant.
 - (11) Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
 - (12) Turn on heat blanket and raise temperature of repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (13) Remove all vacuum bagging materials and heat blanket. Remove parting film from surface of repair.
 - (14) Sand fill plies flush with surface of outer barrel skin.
- F. Install repair plies. Refer to Figure 201/REPAIR 16, Detail V.

- (1) Determine the number of repair plies required. One repair ply is required for each skin ply and frame cap ply penetrated. See Structure Identification. Fabric style and orientation of repair plies must be the same as the plies being replaced.

NOTE: An outer cap ply three inches wide reinforces the three basic skin plies in the frame area.

- (2) Mask outline of repair to establish extent of repair area around cutout. Add 1 in. (2.5 cm) from edge of cutout for first repair ply, and 0.75 in. (1.90 cm) for each remaining repair ply including fiberglass sanding ply. Use teflon tape for 2 in. (5 cm) wide mask band.

NOTE: Do not taper or break the graphite fibers from the top surface of the outer skin ply.

- (3) Sand masked area to remove all surface finish and lightly abrade top surface of outer skin ply using 150-grit abrasive paper.

NOTE: Outer finish coat is gray and first coat is yellow.

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- (4) Remove sanding debris from outer skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99).
- (5) Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (2.5 cm) all around past damage cutout. Trim corners 0.5 in. (1.3 cm) by 45 degrees.

NOTE: To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all repair and sanding plies. Trim plies to final size after soaking with resin and just before installation.

- (6) Cut graphite fabric repair ply No. 2 large enough to extend 0.75 in. (1.90 cm) all around past edge of ply No. 1. Trim corners 0.5 in. (1.3 cm) by 45 degrees. Repeat procedure for remainder of repair plies required.

NOTE: A minimum of four repair plies plus a sanding ply will be required for frame repair.

- (7) Cut a BMS 8-79, Type 120 or 1581 fiberglass fabric sanding ply to cover repair plies and extend to mask band.
- (8) Mix a sufficient quantity of EA9390 resin (refer to Paragraph 3.B.(5)/REPAIR 16 for EA9390 mixing instructions) for repair and sanding plies.

NOTE: Weight of resin should be equal to dry weight of repair and sanding plies.

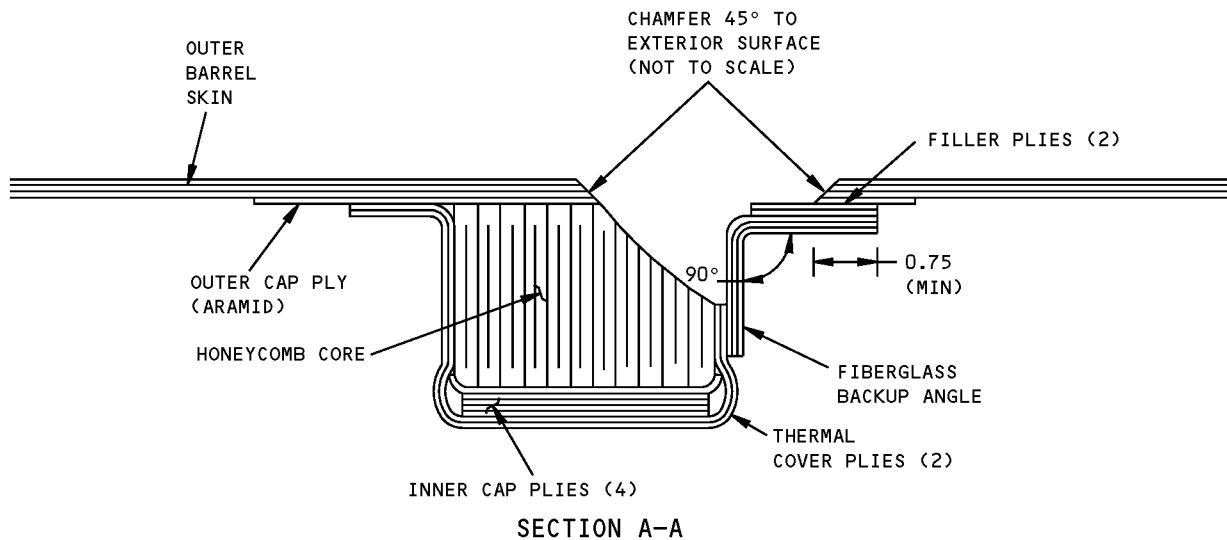
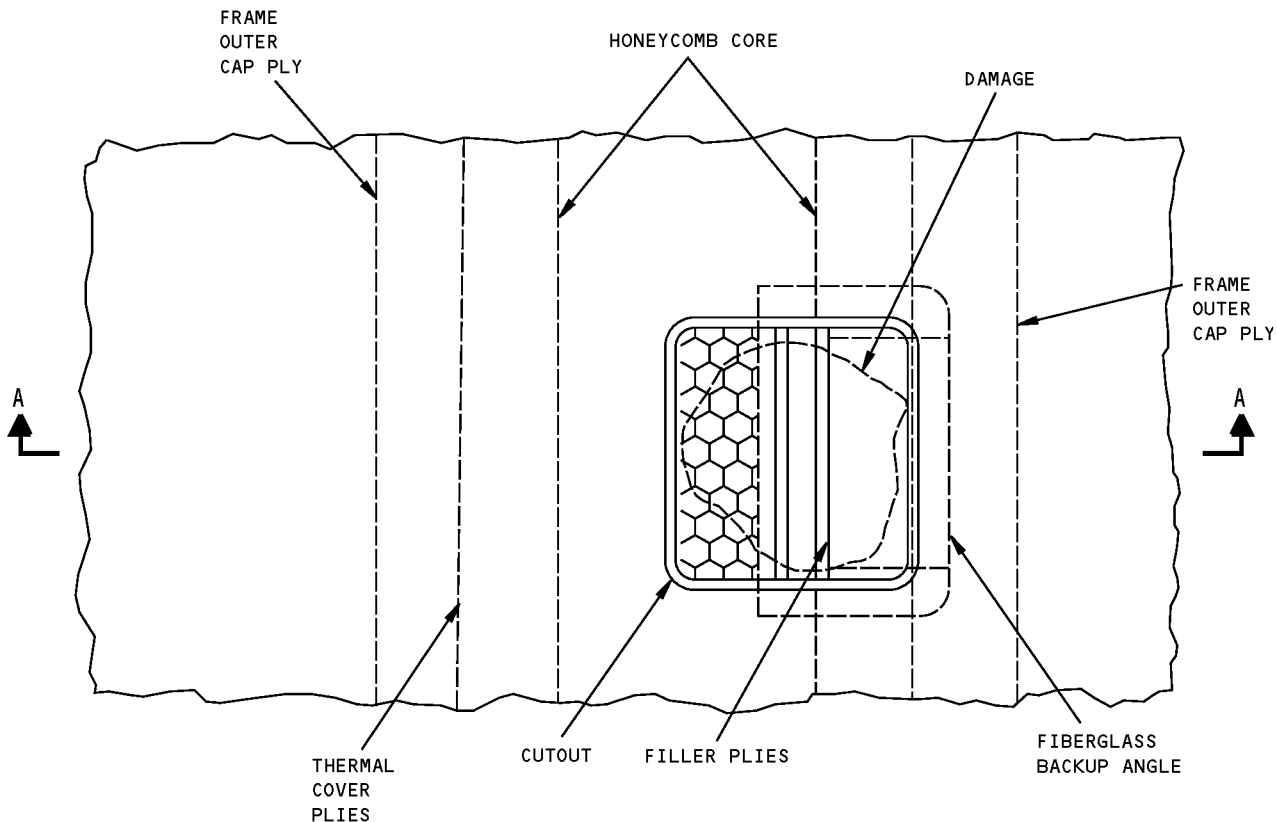
- (9) Place repair and sanding plies on a sheet of nonporous parting film and apply resin with spatula to top sides of plies. Cover plies with another sheet of nonporous parting film and use a roller to thoroughly soak plies with resin.
 - (10) Trim repair and sanding plies to final size with nonporous parting film cover sheets still in place.
 - (11) Use a brush or spatula to apply resin to top surface of filler plies and all area within mask band. Remove bottom sheet of nonporous parting film from repair ply No. 1 and install on outer skin surface centered over cutout and fill plies. Use a roller to remove all wrinkles, trapped air, and excess resin. Remove top sheet of nonporous parting film.
 - (12) Remove bottom sheet of nonporous parting film from repair ply No. 2 and install on skin, centered over ply No. 1. Roll to remove all wrinkles, trapped air, and excess resin. Repeat procedure for remaining repair plies and sanding ply to cover all skin area to mask band.
- G. Prepare repair and sanding plies for curing. Refer to Figure 201/REPAIR 16, Detail VI.
- (1) Cover repair ply sheet with a sheet of porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass sanding ply. Cover parting film with a layer of bleeder cloth for each of the repair plies and sanding ply. Cover bleeder cloth with a sheet of nonporous parting film. Cover parting film with a silicone rubber sheet.
 - (2) Place two layers of fiberglass fabric over rubber sheet. Place a heat blanket over breather plies and cover with a vacuum bag of nylon film approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum connector under bag and seal around edges with bag sealant. Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
- H. Cure repair and sanding plies.
- (1) Turn on heat blanket and raise temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (2) Remove vacuum bag, heat blanket, rubber sheet, bleeder cloth, breather plies, parting film, and teflon tape.
- I. Finish repair surface.
- (1) Sand exterior surface of fiberglass sanding ply to a feather edge all around and a smooth contour suitable for painting.

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WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (2) Remove sanding residue with MEK, CDG-110, CDG-211, BMS 11-7, FCC-55, MPK, or Turco 4460BK and wipe dry.
- (3) Apply paint primer and topcoat. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, PAGEBLOCK 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

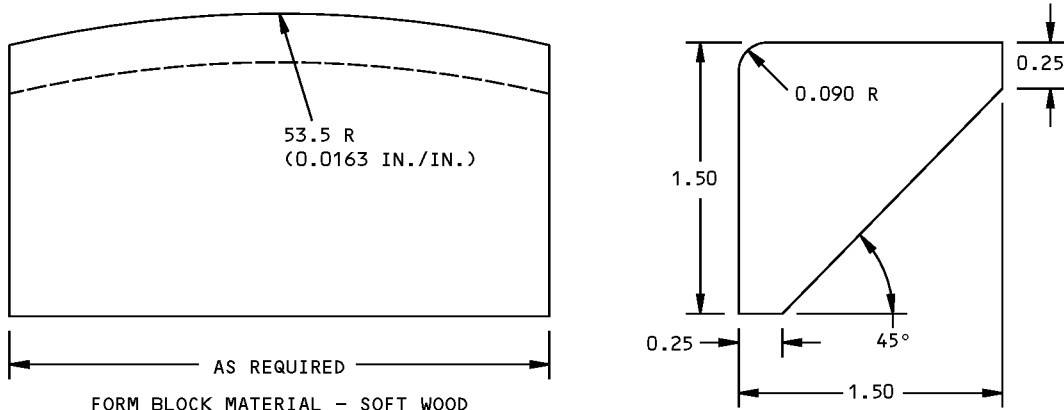
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STRUCTURAL REPAIR MANUAL



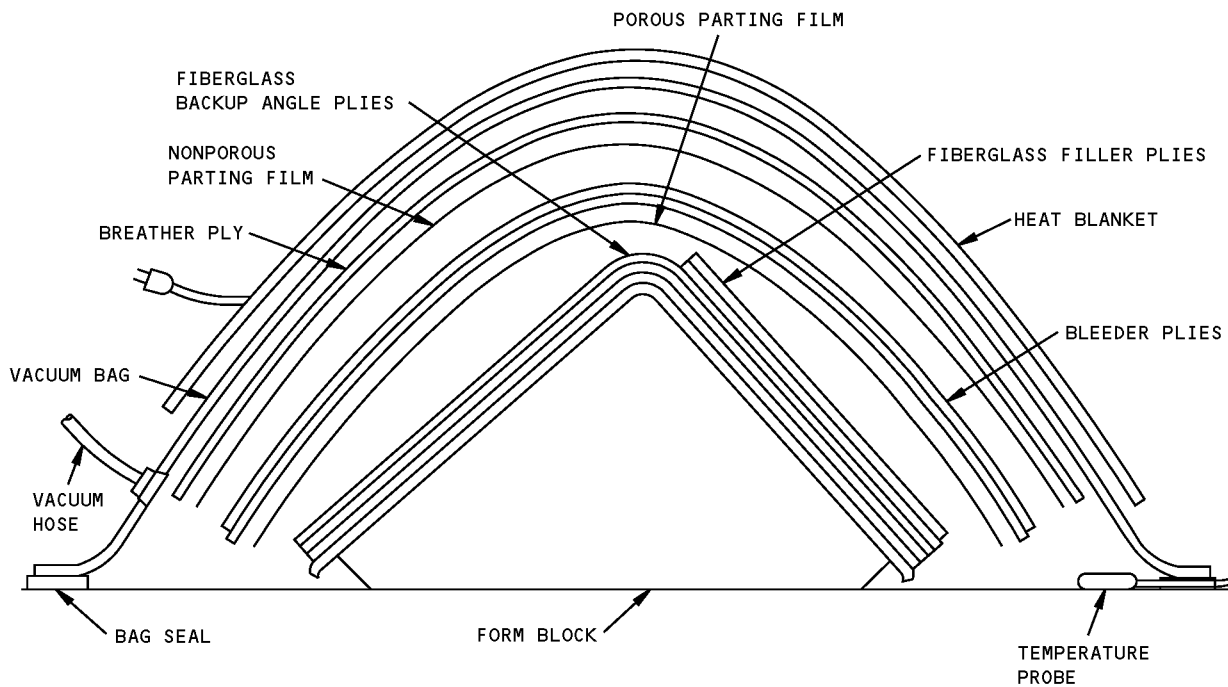
DETAIL I

Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2 Engine
Figure 201 (Sheet 1 of 6)

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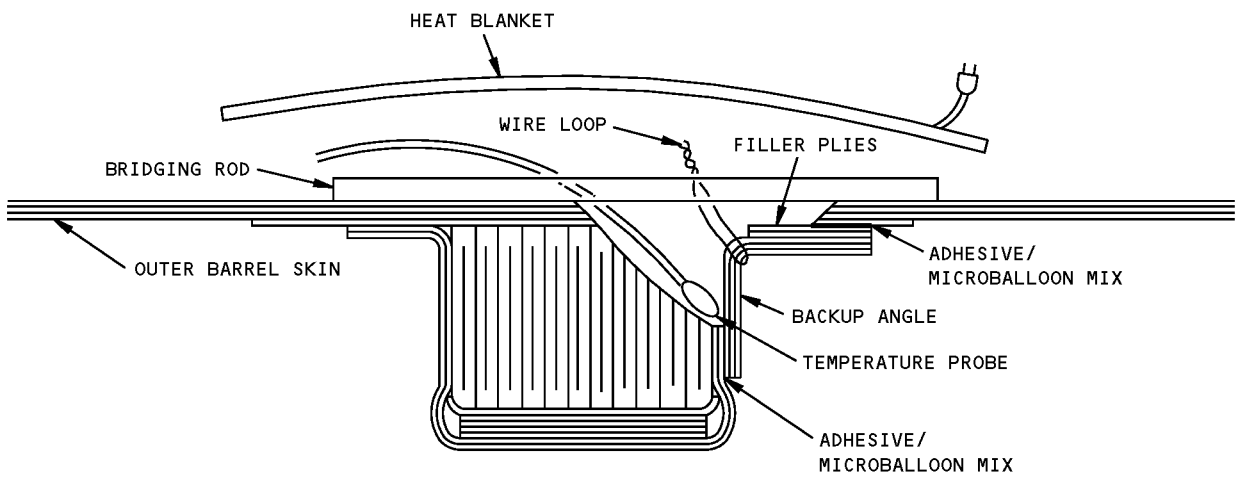
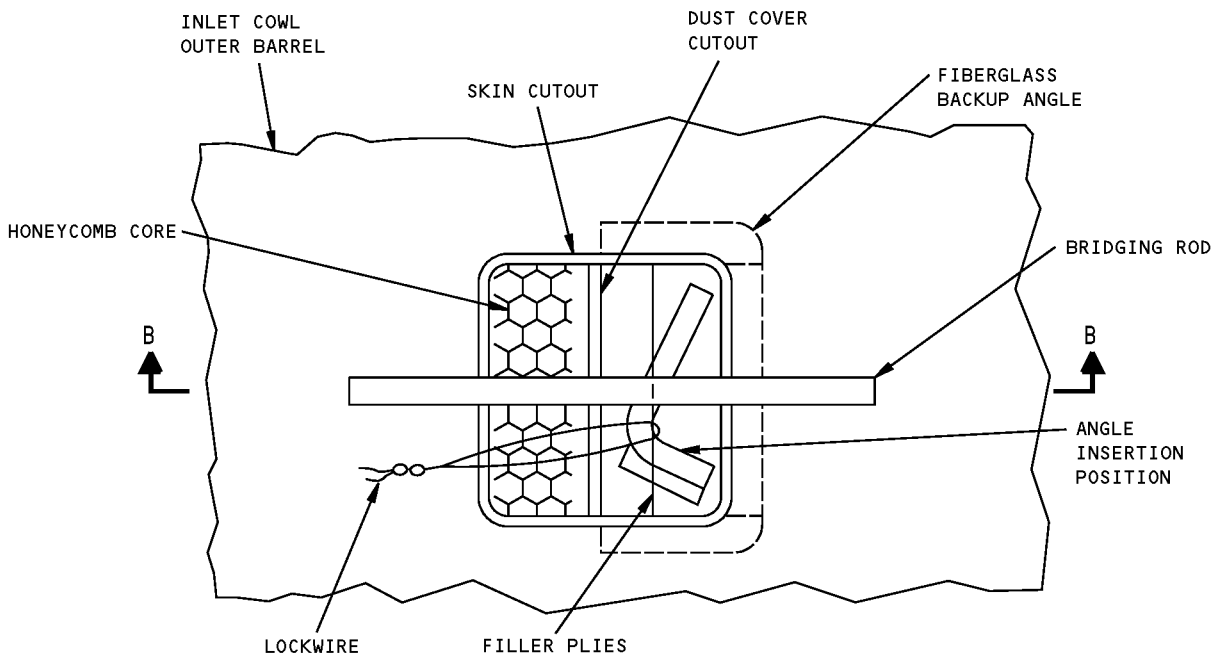
FORM BLOCK FABRICATION



FORM BLOCK APPLICATION
DETAIL II

Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2
Engine
Figure 201 (Sheet 2 of 6)

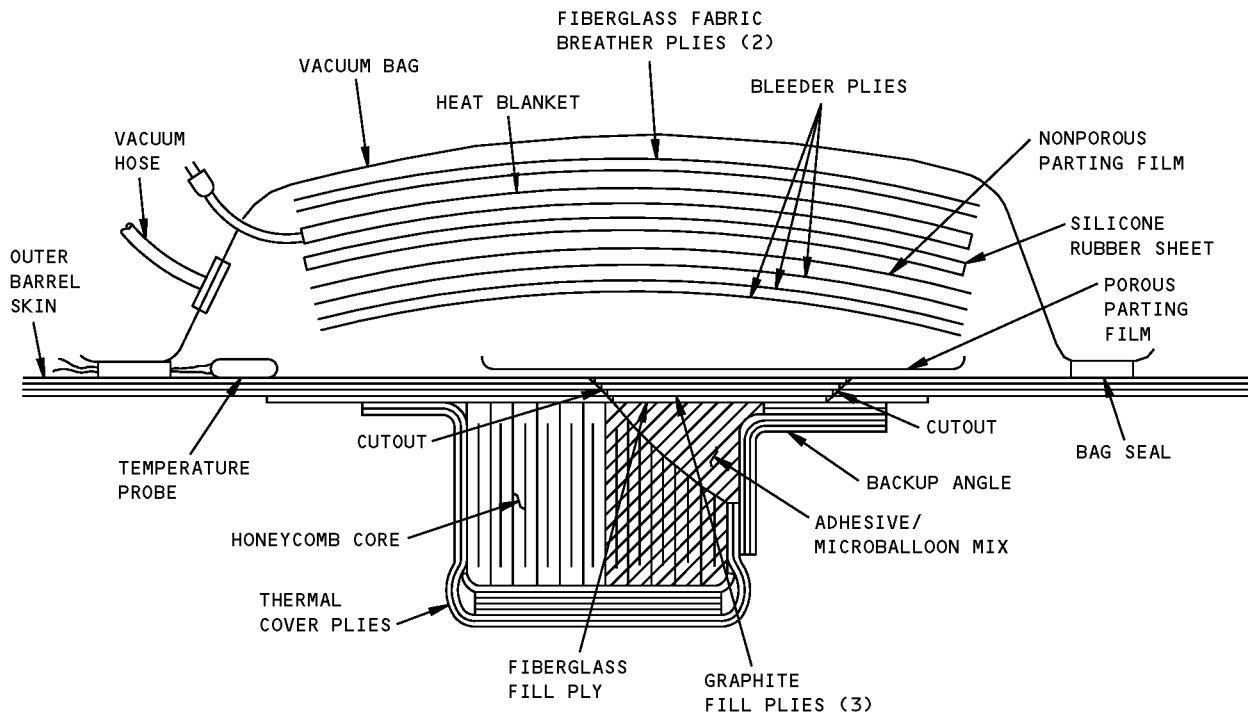
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SECTION B-B
DETAIL III

Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2 Engine
Figure 201 (Sheet 3 of 6)

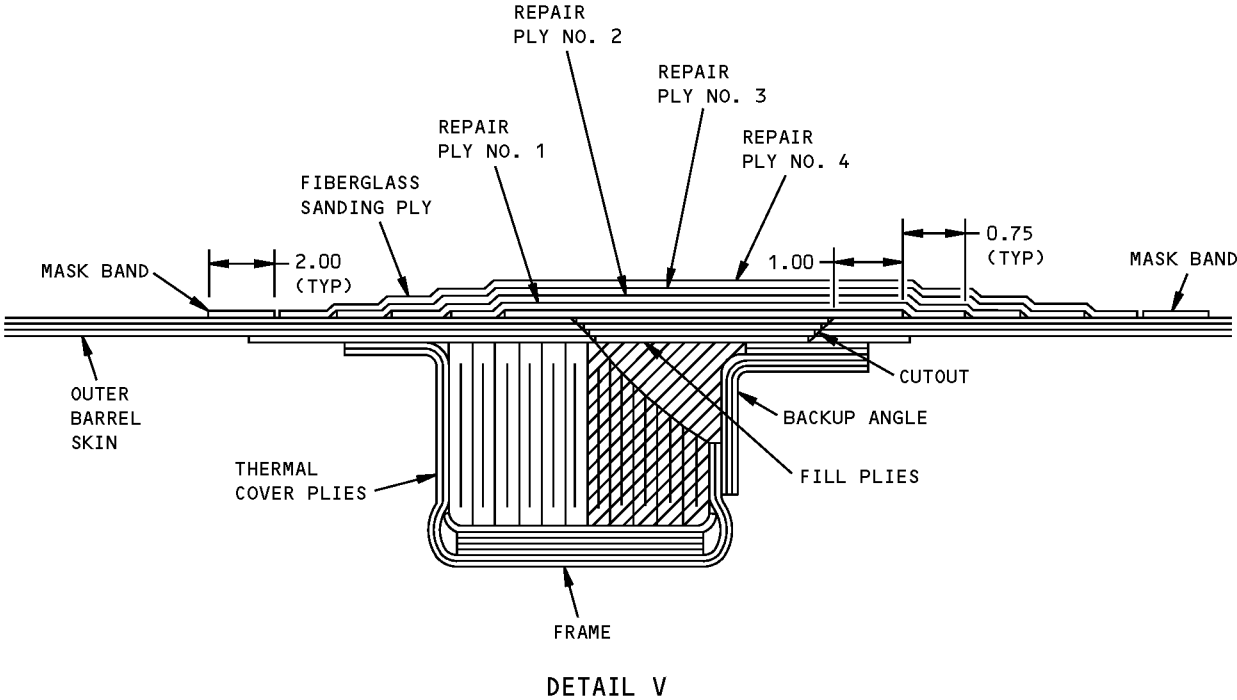
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DETAIL IV

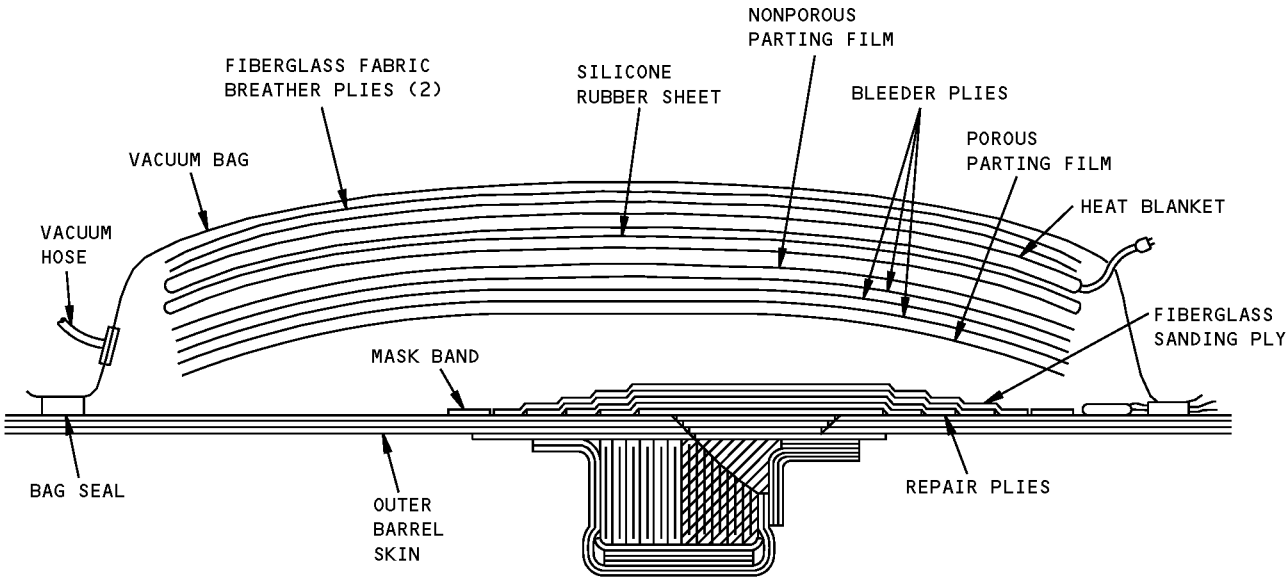
**Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2 Engine
Figure 201 (Sheet 4 of 6)**

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**Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2 Engine
Figure 201 (Sheet 5 of 6)**

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DETAIL VI

**Inlet Cowl - Repair of Damage to Frame Composite Outer Cap, Honeycomb Core, and Dust Cover - CF6-80C2 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 17 - INLET COWL REPAIR - RECEPTACLE REPLACEMENT - CF6-80C2 ENGINE**1. Applicability**

- A. This repair is applicable only to Inlet Cowls with a serial number prior to 1922001. Refer to SRM 54-15-01 for Inlet Cowls with a serial number 1922001 and on. For nonmetallic material sources, refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Procedure

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Drill out the rivets and remove the damaged receptacle.
- B. Cut a 2.0 in. (5.1 cm) X 4.5 in. (11.4 cm) opening in the skin. The long axis of the opening must be oriented along the 90-degree direction. Form a 0.5 in. (1.3 cm) radius on all corners. Smooth the edges of the cutout using 80-grit or finer abrasive paper. Refer to Figure 201/REPAIR 17, Detail I.
- C. Mask the outline of the repair around the cutout a minimum of 4 in. (10 cm). Use teflon tape for a 2 in. (5 cm) wide mask band.

NOTE: Do not taper or break the graphite fibers of the top surface of the outer skin.

- D. Sand the repair area to remove all surface finish and lightly abrade the top surface of the outer skin ply, using 150-grit or finer abrasive paper.

NOTE: The outer finish coat is gray and the first coat is yellow. Do not sand into the fibers.

- E. Working through the cutout, smooth and lightly abrade the interior surface of the innermost skin ply in an area 1 in. (2.5 cm) all around the cutout.

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- F. Remove sanding debris from the interior and exterior surfaces with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe the surfaces dry with a clean cloth before the solvent evaporates.
- G. Prepare the graphite fabric, Style 6K-135-5H (Rohr reference: AH-370-5H) (thickness = 0.0135 in. (0.343 mm)) for the graphite repair and backup plies. All repair schematics show Style 6K-135-5H for graphite repair and backup plies. The fabric orientation of the repair plies must be the same as the plies being replaced.

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- (1) Place a sheet of graphite fabric, large enough to cut three 4.0 in. (10.2 cm) X 6.5 in. (16.5 cm) plies, onto a large sheet of nonporous parting film. Refer to Figure 201/REPAIR 17, Detail I.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Mix the EA9390 resin (BMS 8-301, Class 1).

NOTE: The weight of the resin required will be approximately the same as the total weight of the graphite fabric.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid a heat rise in resin mixture.
- (b) Cover the container to prevent contamination of the mixture and store it in a cool place.

NOTE: The useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (3) Apply the resin to top of the graphite fabric. Cover with a sheet of nonporous parting film and use a roller to thoroughly soak the fabric with the resin.
- (4) Cut three 4.0 in. (10.2 cm) X 6.5 in. (16.5 cm) graphite backup plies. The first with the 4.0 in. (10.2 cm) edge along the warp direction, the second with the 6.5 in. (16.5 cm) edge along the warp, and the third with the 4.0 in. (10.2 cm) edge along the warp. Trim the corners 45 degrees X 1 in. (2.5 cm). Refer to Figure 201/REPAIR 17, Detail I.

H. Assemble the graphite fabric backup plate.

- (1) Place a sheet of nonporous parting film on a flat surface which is capable of withstanding temperatures in excess of 200°F (93°C).
- (2) Place the first ply of graphite fabric on the flat surface and remove the upper parting film. Remove the parting film from both sides of the second ply and place the ply on the first ply. Remove the parting film from one side of the third ply and place it on the second ply, parting film side up. Use a roller to remove trapped air.
- (3) Remove the parting film and put a layer of peel ply on the surface that will be bonded.

I. Prepare the backup plate for curing. Refer to Figure 201/REPAIR 17, Detail II.

- (1) Cover the backup plate with porous parting film approximately 3 in. (7.6 cm) larger all around than the backup plate.
- (2) Cover the porous parting film with a layer of bleeder cloth for each graphite ply.
- (3) Cover the bleeder cloth with a layer of nonporous parting film.
- (4) Cover the parting film with a cured silicone rubber sheet.
- (5) Place a heat blanket over the rubber sheet.
- (6) Cover the heat blanket with two layers of RC-3000-10 breather material. You may use an alternative material as specified in BAC 5317.

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- (7) Cover the backup plate with a vacuum bag larger than the backup plate. Place a temperature probe on or near the backup plate.
- (8) Put a vacuum connector under the bag and seal the edges with bag sealant. Refer to Figure 201/REPAIR 17, Detail II.

J. Cure the backup plate.

- (1) Apply a minimum of 20 in/Hg (68 kPa) of vacuum pressure inside the bag.
- (2) Turn on the heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
- (3) Remove the vacuum bag, temperature probe, vacuum probe, breather material, heat blanket, silicone rubber sheet, porous parting film, bleeder plies, nonporous parting film, mask band and bag sealant.

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K. Install the receptacle on the backup plate. Refer to Figure 201/REPAIR 17, Detail II.

- (1) Locate the center of the backup plate. Drill a 0.125 in. (3.18 mm) diameter pilot hole in the backup plate. Open the hole to 0.625 in. (15.88 mm) inch diameter.
- (2) Remove the drilling debris from the backup plate with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with a clean cloth before the solvent evaporates.
- (3) Mask off the top of the receptacle.
- (4) Install the receptacle.
 - (a) Place the receptacle body through the hole in the backup plate.
 - (b) Use the mounting plate as a template and drill four 0.124 in. (3.15 mm) diameter rivet holes.
 - (c) Countersink the holes drilled in the mounting plate.
 - (d) Wet install four NAS1739M4-2 blind rivets with 463-6-27 or 463-6-11 primer. Refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.
- (5) Remove debris from the skin surfaces with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe the surfaces dry with a clean cloth before the solvent evaporates.

L. Install the backup plate containing the receptacle on the interior surface of the skin. Refer to Figure 201/REPAIR 17, Detail III.

- (1) Drill two pairs of 0.070 in. (1.78 mm) diameter holes, 0.375 in. (9.52 mm) apart through the backup plate near the centerline of the long axis of the plate. Refer to Figure 201/REPAIR 17, Detail III.
- (2) Hold the backup plate with the peel ply up. Remove the peel ply and pass a short loop of lockwire up through each pair of holes in the backup plate. Twist the wires together one turn to hold them in place.

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WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

- (3) Mix the EA934NA adhesive (BMS 5-109, Type II, Class II).
 - (a) Mix thoroughly in a metal or plastic container.
 - (b) Put a cover on the container to prevent contamination of the mixture and store it in a cool place.
- (4) Apply the EA934NA adhesive with a brush to the top surface of the backup plate. Apply the adhesive only to the area which will touch the interior surface of the skin. Use a brush or a spatula to apply the adhesive mixture to an area 1 in. (2.5 cm) wide all around the skin cutout on the interior surface of the skin.
- (5) Pass the backup plate through the skin cutout and put the plate against the interior surface of the skin. Refer to Figure 201/REPAIR 17, Detail III.

NOTE: Excessive tension on the lockwire will warp the backup plate and cause the outer edges of the plate to separate from the skin.

- (6) Pass a small rod through each of the lockwire loops and bridge the cutout. Twist the lockwire against the rod until the backup plate is held tight against the interior skin surface.
 - (7) Apply the EA934NA adhesive mixture to seal the wire holes in the backup plate.
 - (8) Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 60 minutes.
 - (9) Cut the wire loops just above the backup plate. Remove any debris from the cutout.
- M. Prepare to install the fiberglass filler plies. Refer to Figure 201/REPAIR 17, Detail IV.
- (1) Place a sheet of BMS 9-3, Type H-2, Style 181-150 or Type H3, Style 181-77 fiberglass fabric large enough to make six 2.5 in. (6.4 cm) X 5.0 in. (12.7 cm) fill plies, onto a large sheet of nonporous parting film.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Mix the EA9390 resin.

NOTE: The weight of the resin necessary will be approximately the same as the total weight of the fiberglass filler plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid a heat rise in the resin mixture.

STRUCTURAL REPAIR MANUAL

- (b) Cover the container to prevent contamination of the mixture and store it in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (c) Apply the resin to top of the fiberglass fabric. Cover with a sheet of nonporous parting film and use a roller to thoroughly soak the sheet with the resin.
- (3) Cut six 2.5 in. (6.4 cm) X 5.0 in. (12.7 cm) fiberglass fabric fill plies.
- (4) Cut the mounting plate opening in each of the filler plies.
- (a) Place the receptacle in the center of each filler ply.
- (b) Trace the outline of the receptacle mounting plate onto each filler ply.
- (c) Cut a hole around the outline in each filler ply to fit the receptacle mounting plate.
- (5) Remove the nonporous parting film from the six fiberglass filler plies.
- (6) Trim the filler plies to final size and install in the skin cutout.
- (7) Install the filler plies to the level of the basic skin surface.

- N. Prepare the graphite fabric repair plies and the fiberglass fabric sanding ply. Refer to Figure 201/REPAIR 17, Detail IV

NOTE: To avoid edge fraying, add 0.5 in. (1.3 cm) all around to all graphite fabric repair plies and to the fiberglass fabric sanding ply. Trim a ply to final size after you impregnate it with resin and immediately before you install it.

NOTE: Use BMS 9-8 graphite fabric, Style 6K-135-5H (thickness = 0.0135 in. (0.343 mm)) for graphite repair and graphite backup plate plies. All repair schematics show Style 6K-135-5H for graphite plies. Fabric orientation of repair plies must be the same as the plies being replaced. Refer to Figure 201/REPAIR 17, Detail IV for ply orientation.

- (1) Cut graphite repair ply No. 1 large enough to extend 1 in. (2.5 cm) inch past the cutout on all sides. Trim the corners 45 degrees by 1 in. (2.5 cm).
- (2) Cut graphite repair ply No. 2 large enough to extend 0.75 in. (1.90 cm) all around past the edges of ply installed before it. Trim the corners 45 degrees by 1 in. (2.5 cm). Repeat this procedure for plies No. 3 and No. 4.
- (3) Cut a ply of BMS 9-3, Type H-2, Style 181-150 fiberglass fabric cloth large enough to overlay all of the exterior repair plies and extend to the edge of the masked area. Trim the corners 45 degrees by 1 in. (2.5 cm). This will be used as a sanding ply.

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- O. Mix the EA9390 resin.

NOTE: The weight of the resin necessary will be approximately the same as the total weight of the dry graphite repair plies and the fiberglass sanding plies.

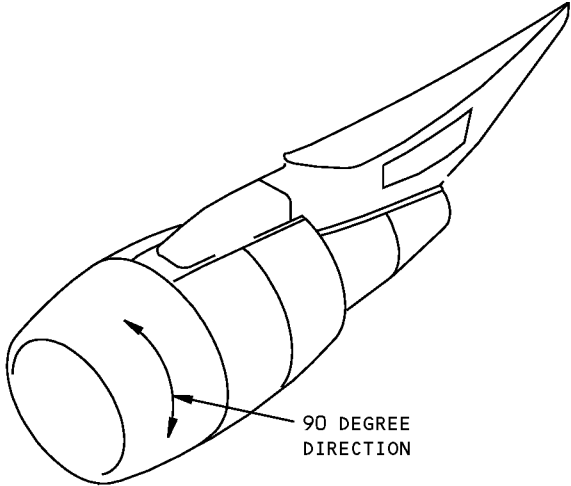
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- (1) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid a heat rise in the resin mixture.
 - (2) Cover the container to prevent contamination of the mixture and store it in a cool place.
NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.
- P. Install the graphite fabric repair plies and the fiberglass fabric sanding ply. Refer to Figure 201/REPAIR 17, Detail IV.
- (1) Install repair ply No. 1.
 - (a) Place repair ply No. 1 on a sheet of nonporous parting film and use a spatula to apply EA9390 resin. Cover the repair ply top surface with a sheet of nonporous parting film and use a roller to thoroughly soak the ply with resin.
 - (b) Cut a 0.500 in. (12.7 mm) hole in the center of the ply for the receptacle.
 - (c) Remove the bottom sheet of nonporous parting film and put the ply on the exterior skin surface with its center over the skin cutout and the receptacle. Smooth all wrinkles with the roller. Remove the top sheet of nonporous parting film.
 - (2) Install repair ply No. 2.
 - (a) Place repair ply No. 2 on a sheet of nonporous parting film and use a spatula to apply EA9390 resin. Place a sheet of nonporous parting film on the ply and use a roller to thoroughly soak the ply with resin.
 - (b) Cut a 0.500 in. (12.7 mm) hole in the center of the ply for the receptacle.
 - (c) Remove the bottom sheet of nonporous parting film and put the ply on the exterior skin surface with its center over the skin cutout and the receptacle. Smooth all wrinkles with the roller. Remove the top sheet of nonporous parting film.
 - (d) Repeat this procedure for repair ply No. 3 and any additional plies necessary for this repair.
 - (3) Install the fiberglass fabric sanding ply.
 - (a) Apply EA9390 resin to the fiberglass sanding ply. Put a sheet of nonporous parting film on the ply and use a roller to thoroughly soak the ply with resin.
 - (b) Cut a 0.500 in. (12.7 mm) hole in the center of the sanding ply for the receptacle.
 - (c) Remove the bottom sheet of nonporous parting film and put the sanding ply centered on the repair plies and the receptacle. The sanding ply should extend to the edges of the masked area. Smooth all wrinkles with the roller.
 - (d) Remove the top sheet of nonporous parting film.
- Q. Prepare to cure the repair. Refer to Figure 201/REPAIR 17, Detail V.
- (1) Put a sheet of porous parting film over the repair layup approximately 3 in. (7.6 cm) larger all around than the fiberglass sanding ply.
 - (2) Put a ply of fiberglass bleeder cloth on the porous parting film for each of the exterior repair plies and the sanding ply.
 - (3) Put a sheet of nonporous parting film on the bleeder cloth.
 - (4) Put a silicone rubber sheet on the nonporous parting film.
 - (5) Put a heat blanket over the rubber sheet.
 - (6) Put two layers of RC-3000-10 breather material (or an alternative material as specified in BAC 5317) over the heat blanket.

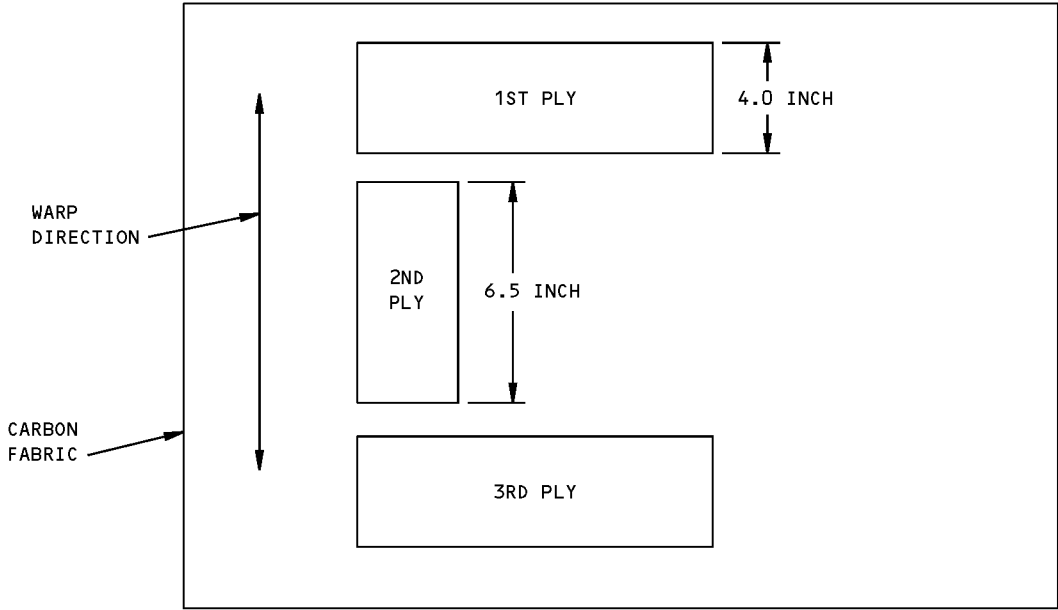
767-300**STRUCTURAL REPAIR MANUAL**

- (7) Put a vacuum bag approximately 2 in. (5 cm) larger all around on the heat blanket and rubber sheet. Put a temperature probe and a vacuum probe under the bag and seal the edges with bag sealant.
- R. Cure the repair.
- (1) Apply a minimum of 20 in/Hg (68 kPa) of vacuum pressure inside the bag.
 - (2) Turn on the heat blanket and raise the temperature of the repair area to 190°F (88°C) to 210°F (99°C) for 220 minutes.
 - (3) After the repair is cured, remove the vacuum bag, temperature probe, vacuum probe, breather material, heat blanket, silicone rubber sheet, nonporous parting film, bleeder plies, porous parting film, mask band and bag sealant.
- S. Use 150-320 grit abrasive paper to sand the exterior surface of the repair to a featheredge all around with a smooth contour suitable for painting. Remove the sanding dust with a clean cloth moistened with MEK, CDG-110, CDG-211, FCC-55, MPK, or Turco 4460BK . Wipe the surface dry with a clean cloth before the solvent evaporates.
- T. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface finish restoration of graphite/epoxy composites.

**767-300
STRUCTURAL REPAIR MANUAL**



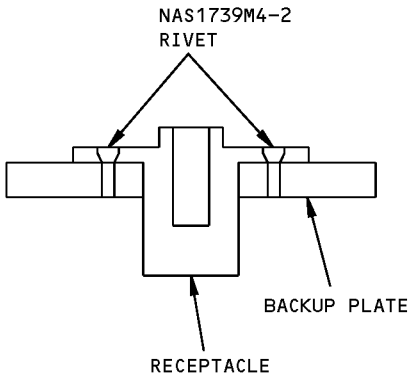
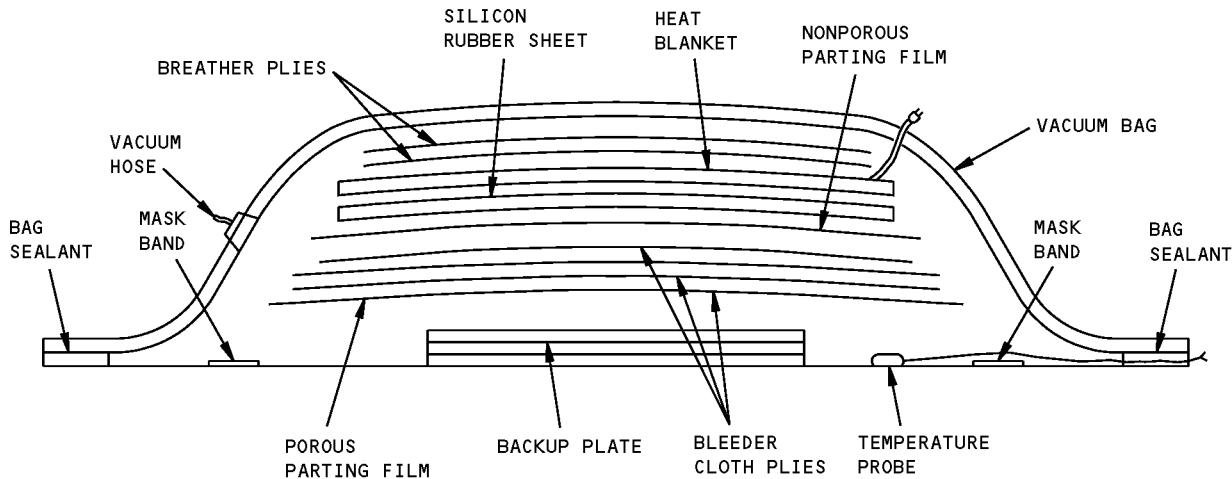
LOCATION OF CUTOUT - LONG AXIS
ALONG 90 DEGREE DIRECTION



DETAIL I

**Inlet Cowl Repair - Receptacle Replacement - CF6-80C2 Engine
Figure 201 (Sheet 1 of 5)**

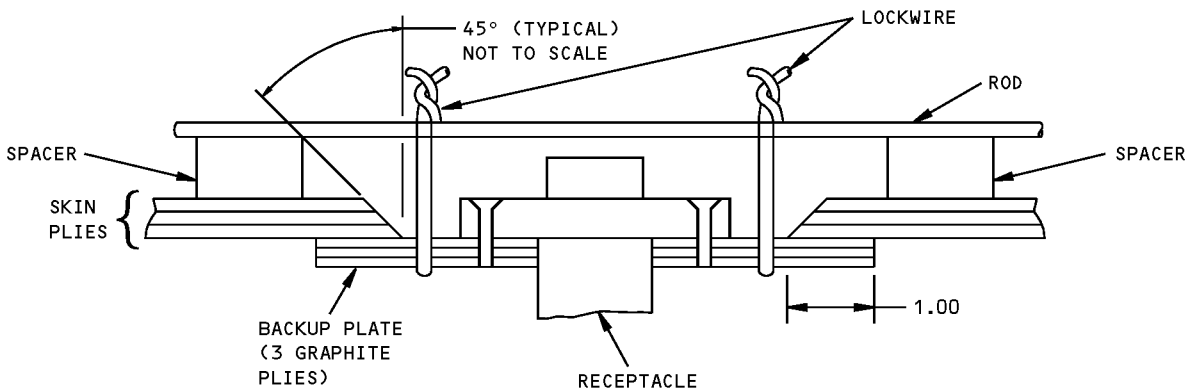
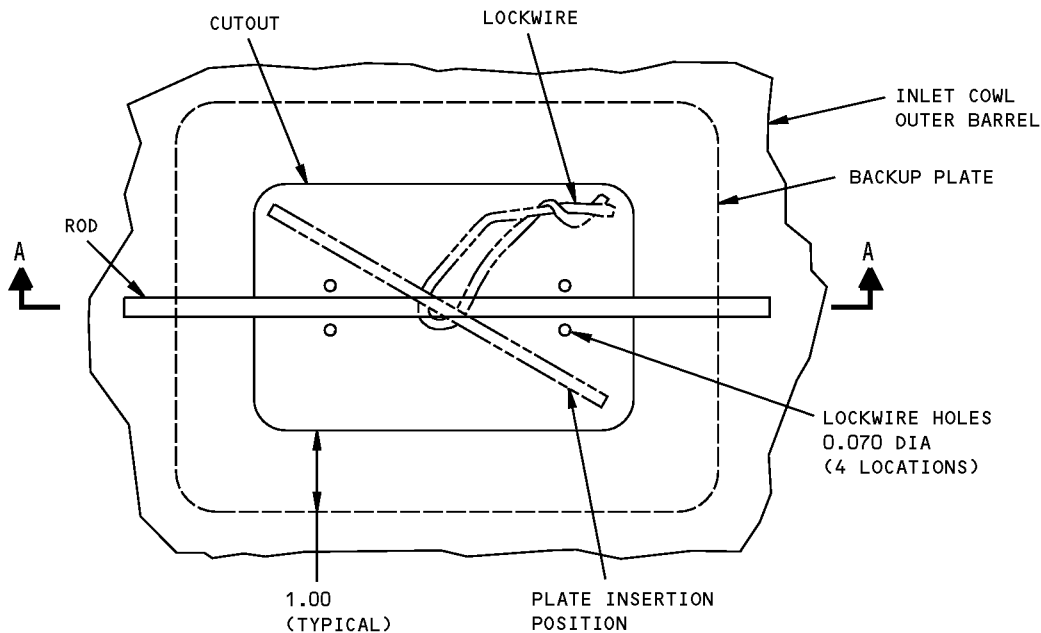
767-300
STRUCTURAL REPAIR MANUAL



DETAIL II

Inlet Cowl Repair - Receptacle Replacement - CF6-80C2 Engine
Figure 201 (Sheet 2 of 5)

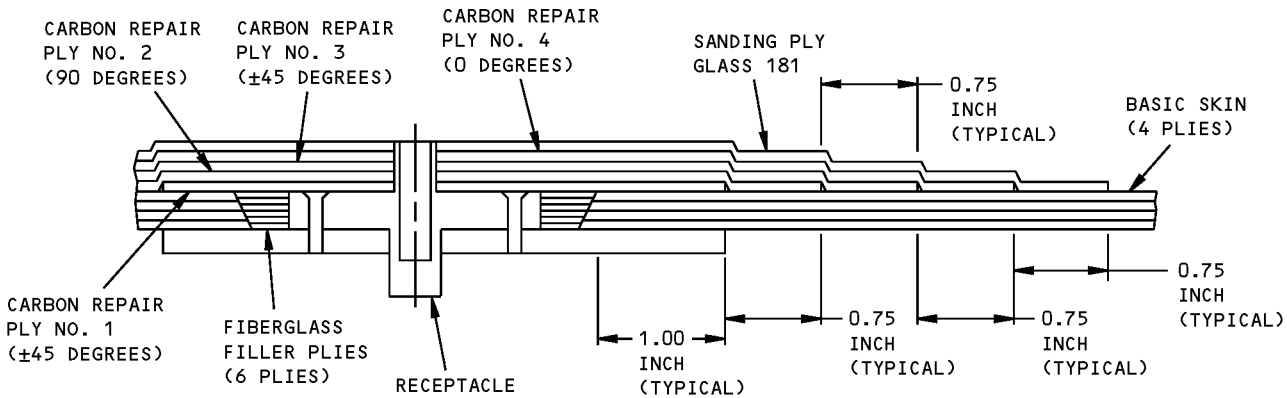
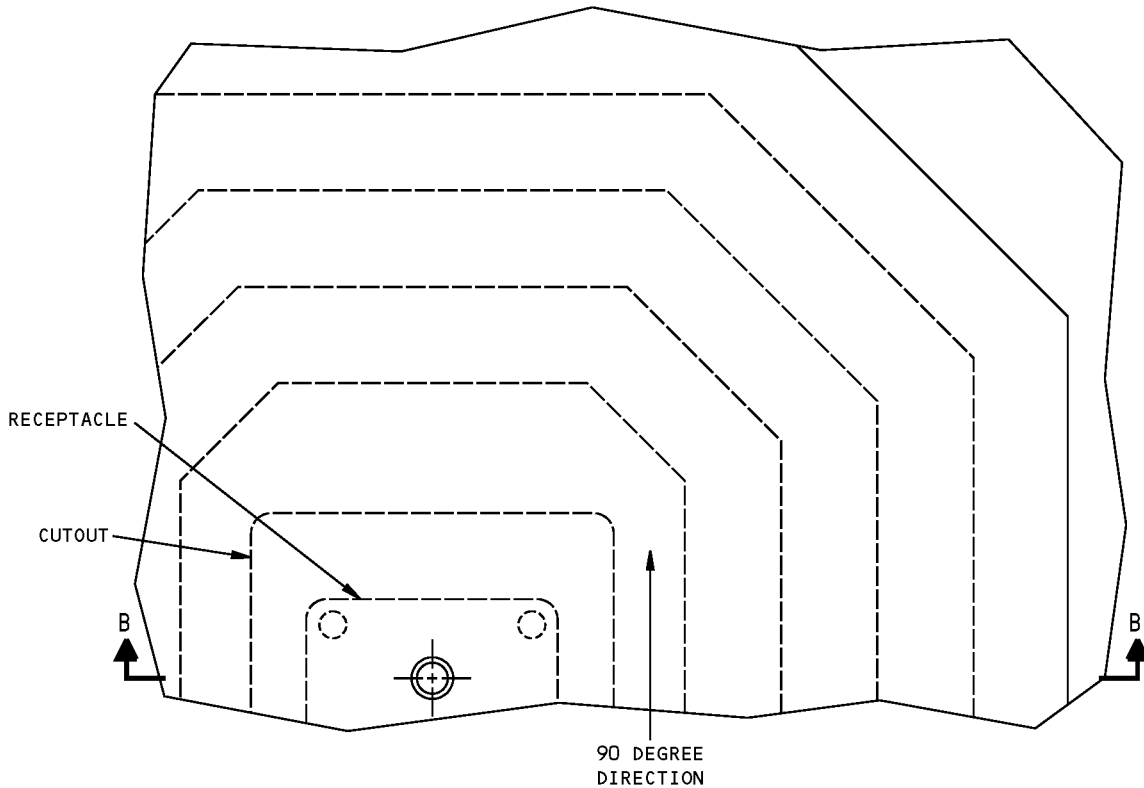
767-300
STRUCTURAL REPAIR MANUAL



SECTION A-A
DETAIL III

Inlet Cowl Repair - Receptacle Replacement - CF6-80C2 Engine
Figure 201 (Sheet 3 of 5)

767-300
STRUCTURAL REPAIR MANUAL

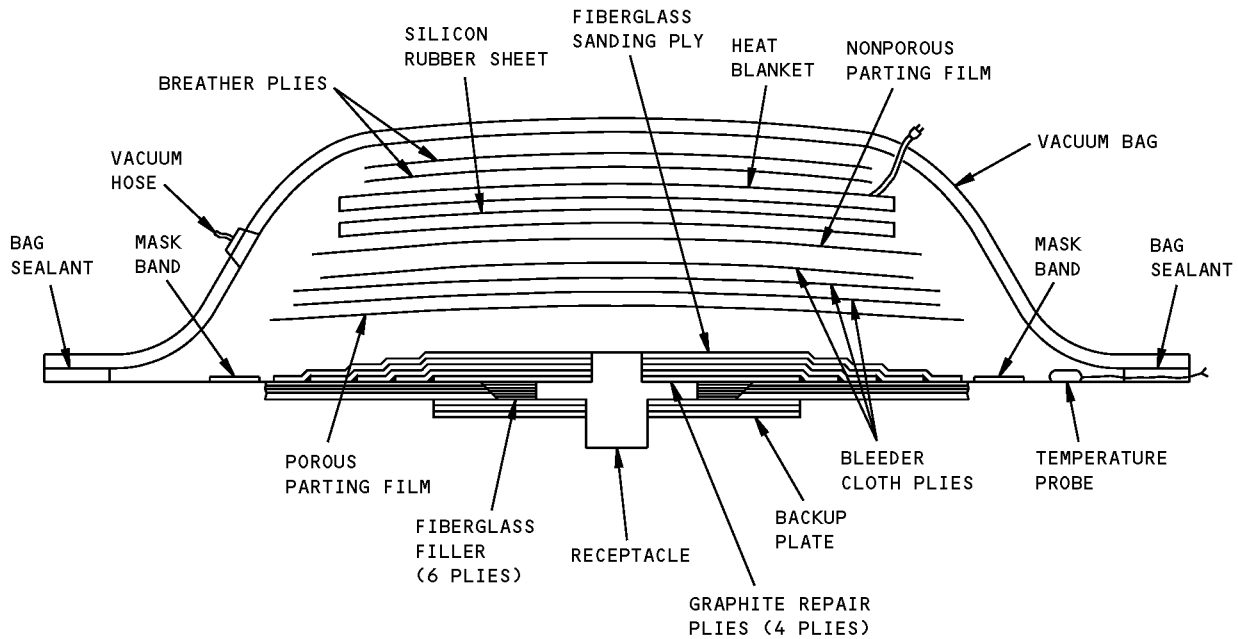


SECTION B-B

DETAIL IV

Inlet Cowl Repair - Receptacle Replacement - CF6-80C2 Engine
Figure 201 (Sheet 4 of 5)

**767-300
STRUCTURAL REPAIR MANUAL**



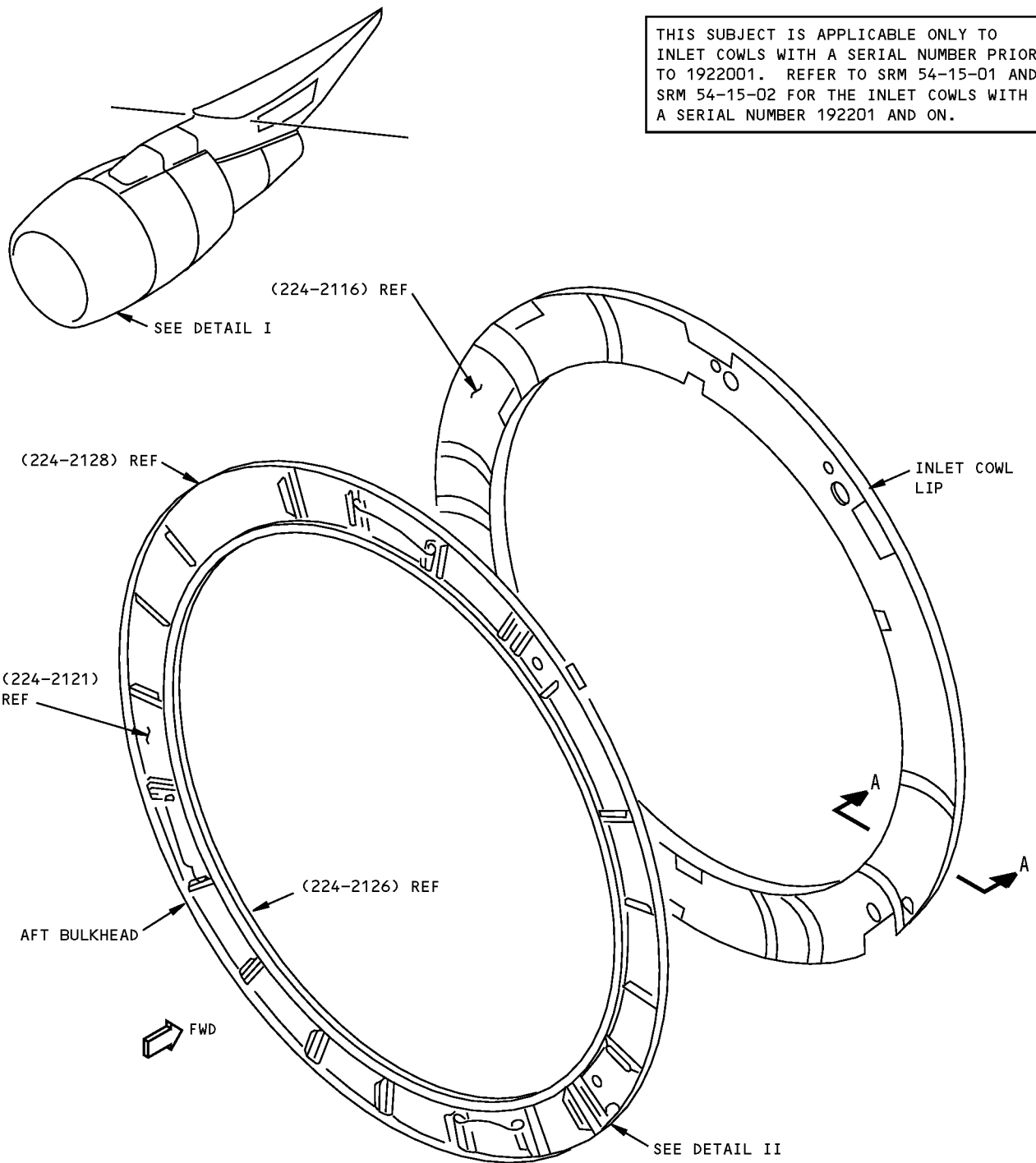
DETAIL V

**Inlet Cowl Repair - Receptacle Replacement - CF6-80C2 Engine
Figure 201 (Sheet 5 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL STRUCTURE - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001. REFER TO SRM 54-15-01 AND SRM 54-15-02 FOR THE INLET COWLS WITH A SERIAL NUMBER 192201 AND ON.

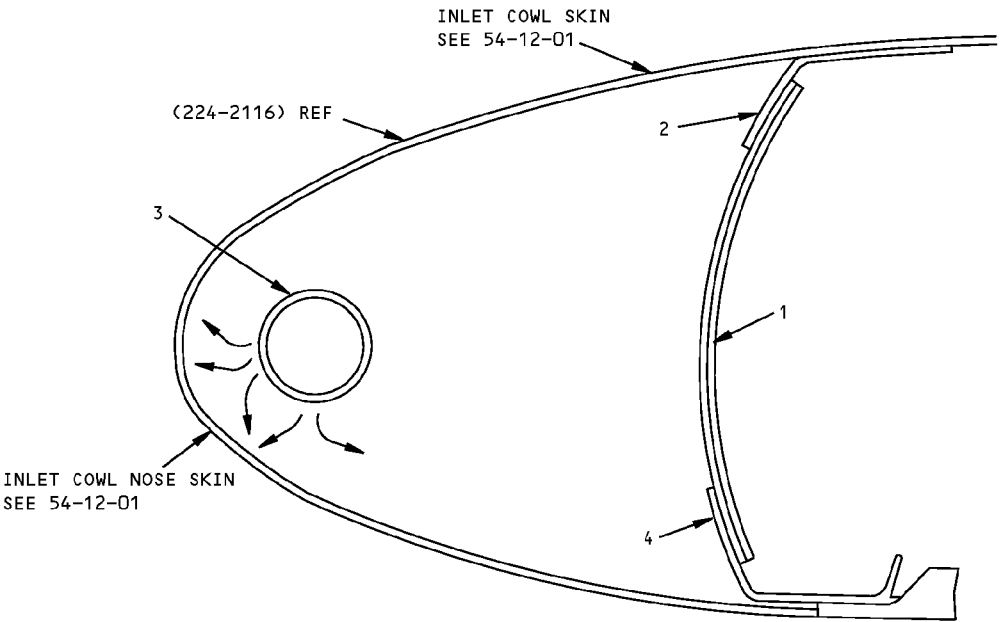


DETAIL I

**Inlet Cowl Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

ROHR REF DWG
224-2111



SECTION A-A

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB	0.063	TI-6AL-4V SH, AMS 4911 ANNEALED	
2	OUTER CAP ANGLE	0.063	TI-6AL-4V SH, AMS 4911 ANNEALED	
3	TUBE, ANTI-ICE	0.032	INCONEL 625 SH, AMS 5599	
4	INNER CAP ANGLE	0.080	TI-6AL-4V SH, AMS 4911 ANNEALED	

LIST OF MATERIALS FOR SECTION A-A

**Inlet Cowl Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 3)**

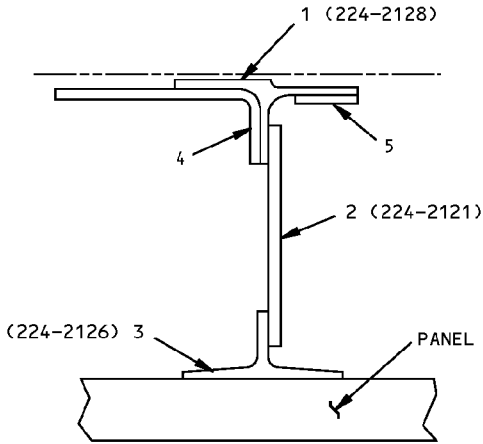
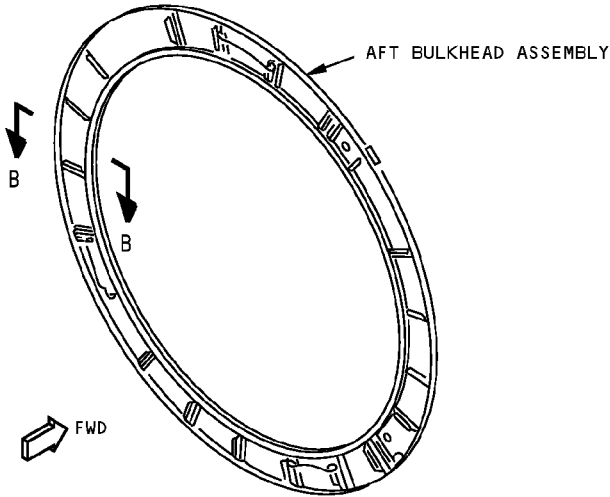
IDENTIFICATION 1
Page 2
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54-12-02

D634T210

767-300
STRUCTURAL REPAIR MANUAL

ROHR REF DWG
224-2126



SECTION B-B

DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER FRAME		2024-0 AL, HT TR T-42 QQ-A-200/3, EXTRUSION, S700E0589	
2	WEB	0.040	6AL-4V TITANIUM SH, AMS 4911 ANNEALED	
3	INNER FRAME		2024-0 AL, HT TR T-42 QQ-A-200/3, EXTRUSION, S700E0590	
4	SPLICE PLATE	0.071	2024-0 CLAD AL SH, HT TR T-62 QQ-A-250/5	
5	SPLICE	0.071	2024-0 CLAD AL SH, HT TR T-62 QQ-A-250/5	

LIST OF MATERIALS FOR DETAIL II

Inlet Cowl Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 3)

IDENTIFICATION 1
Page 3
Apr 15/2006

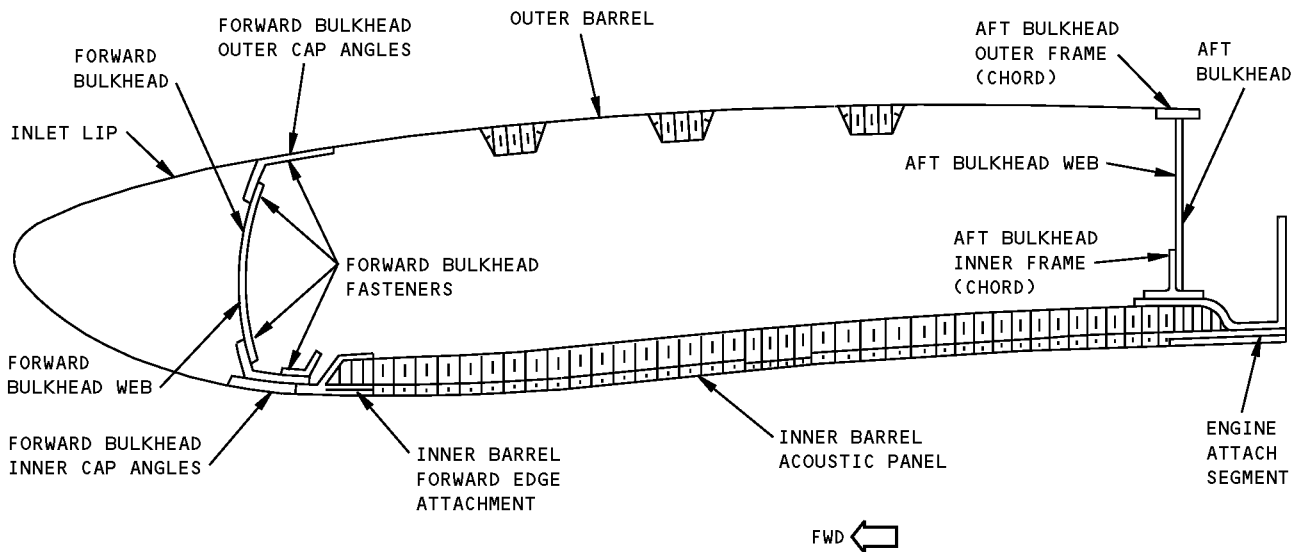
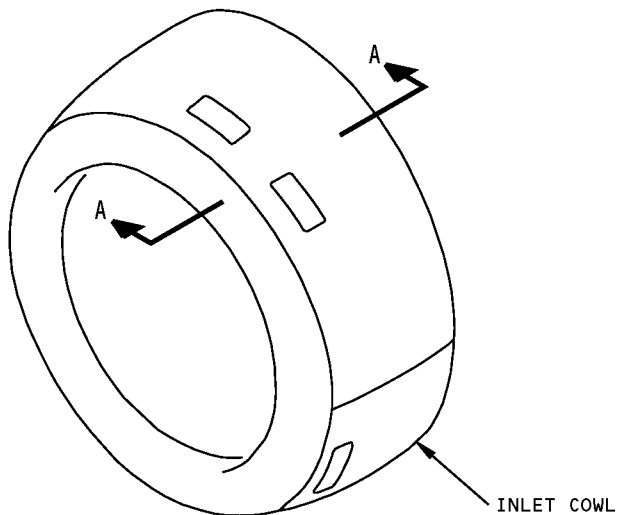
54-12-02

D634T210

767-300
STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - INLET COWL FORWARD AND AFT BULKHEAD - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001. REFER TO SRM 54-15-01 AND SRM 54-15-02 FOR THE INLET COWLS WITH A SERIAL NUMBER 192201 AND ON.



SECTION A-A

**Inlet Cowl Forward and Aft Bulkhead Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 4)**

767-300
STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FORWARD BULKHEAD WEB	A	B	E	F
FORWARD BULKHEAD CAP ANGLES	A	B	NOT ALLOWED	NOT ALLOWED
INNER BARREL FORWARD EDGE ATTACHMENT	A	B	NOT ALLOWED	NOT ALLOWED
AFT BULKHEAD WEB	A	B	E	F
AFT BULKHEAD FRAMES	C	D	NOT ALLOWED	NOT ALLOWED
ENGINE ATTACH SEGMENT	C	D	NOT ALLOWED	NOT ALLOWED

NOTES

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS FOR BOTH MATERIALS AND MACHINIST. CONSULT 51-30-01 BEFORE REWORKING TITANIUM MATERIALS. IMPROPERLY REWORKED TITANIUM METAL CAN CAUSE EFFECTS WORSE THAN THE ORIGINAL DAMAGE.

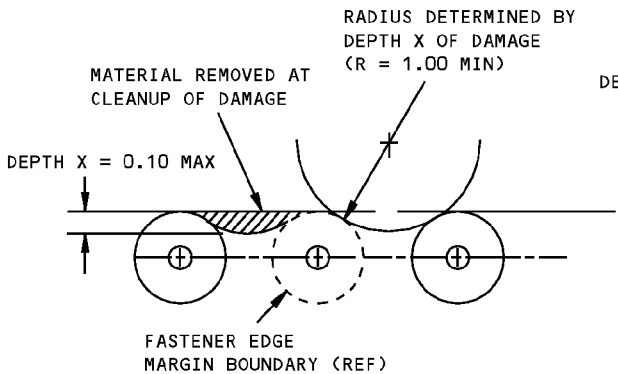
E SEE DETAIL III FOR DENT ALLOWABLE DAMAGE

F COMPLETELY CLEAN OUT DAMAGE UP TO 0.18 INCH MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE OR TO OTHER DAMAGE. FILL HOLE WITH A CR3553-5 BLIND RIVET INSTALLED WET WITH HIGH-TEMP 825-009 DESOTO PRIMER. SEE 51-21-01 FOR PRIMER MIXING INSTRUCTIONS

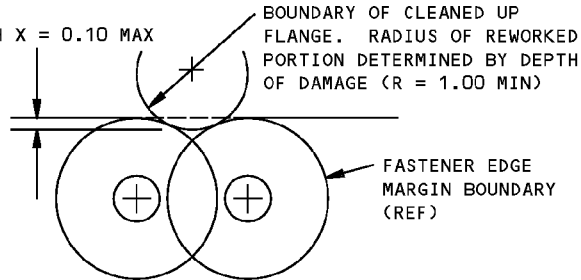
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS I OR V. SEE 51-30-01 FOR WORKING WITH TITANIUM
- B** NICKS, GOUGES, AND CORROSION ARE ALLOWED ONLY IF ALL THE EFFECTED AREA CAN BE REMOVED PER DETAILS I, II, OR IV
- C** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS I OR V. SEE 51-21-01 FOR PROTECTIVE TREATMENT OF ALUMINUM ALLOYS
- D** NICKS, GOUGES, AND CORROSION ARE ALLOWED ONLY IF ALL OF THE EFFECTED AREA CAN BE REMOVED PER DETAILS I, II, OR IV. SEE 51-21-01 FOR PROTECTIVE TREATMENT OF ALUMINUM ALLOYS

Inlet Cowl Forward and Aft Bulkhead Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 4)

767-300
STRUCTURAL REPAIR MANUAL

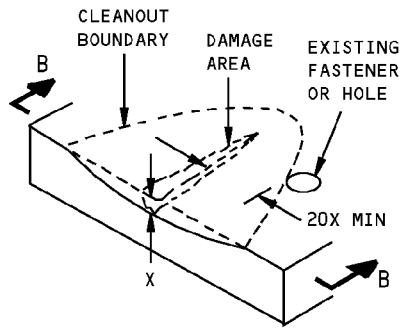


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

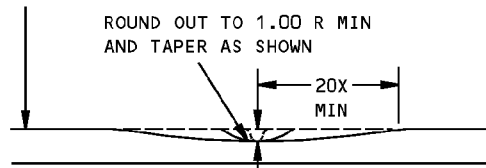


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL I



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, CUTOUT, FASTENERS, SKIN EDGE, OR ANY OTHER DAMAGE MUST NOT BE LESS THAN 20X



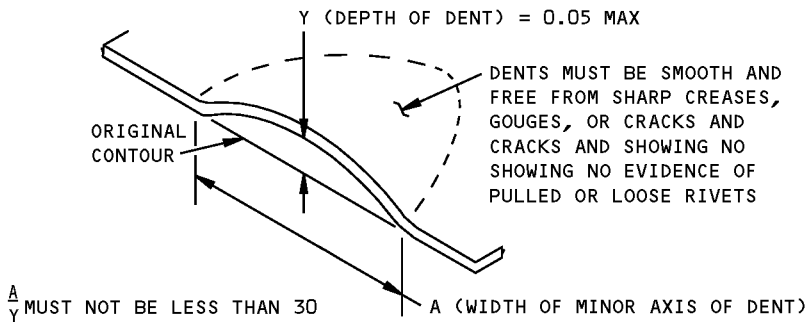
X = DEPTH OF CLEANUP = 10% OF GAGE MAX

SECTION B-B

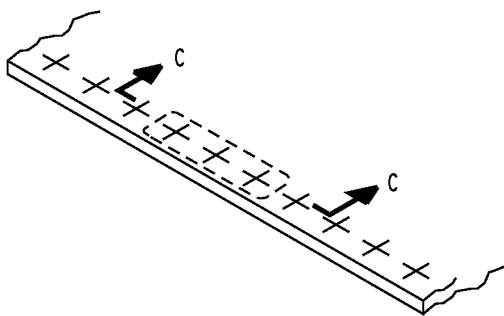
ALLOWABLE NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL II

Inlet Cowl Forward and Aft Bulkhead Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 4)

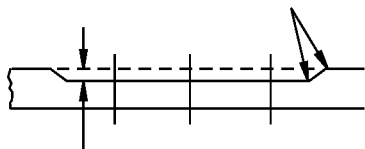
767-300
STRUCTURAL REPAIR MANUAL



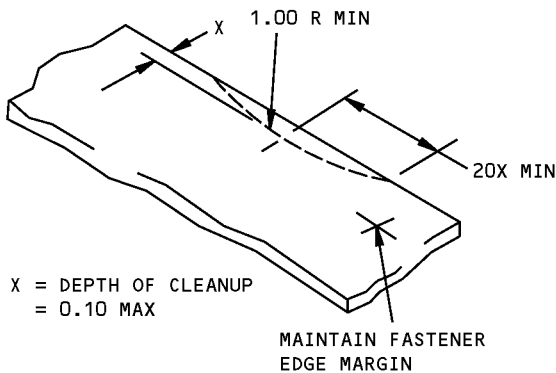
ALLOWABLE DAMAGE FOR DENT
DETAIL III



SMOOTH BLENDOUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH



CORROSION CLEANUP
DETAIL IV



DETAIL V

Inlet Cowl Forward and Aft Bulkhead Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL STRUCTURE - AFT BULKHEAD REPAIR - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS FOR PUNCTURES WITH A MINIMUM OF 1.5 INCH DISTANCE FROM PUNCTURE TO EDGE OF MATERIAL OR TO CONNECTING MATERIAL. MINIMUM DISTANCE FROM PUNCTURE TO OTHER DAMAGE IS 3.0 INCHES. THIS REPAIR IS FOR INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM MATERIAL.

1. Drill a 0.25-inch diameter hole at ends of all cracks that radiate from puncture and deburr holes. See Detail I.
2. Route out damaged web to remove all bent material and cracks. Finish edge of cutout per 51-20-01.
3. Determine size of repair doubler and mark outline of doubler on bulkhead. Maintain proper edge distance and pitch for CR3553-5-2 fasteners. See Detail I for fastener locations.
4. Make a doubler of the same material as the web, but one gauge thicker. Using a No. 40 drill bit, drill pilot holes around perimeter of doubler. Ensure a 0.31-inch edge margin is maintained.
5. Position doubler on web. Using doubler as template, drill pilot holes through web with a No. 40 drill bit.
6. With doubler positioned on web, ream pilot holes for attach fasteners to 0.177-inch diameter (No. 16 drill).
7. Remove doubler from web and deburr doubler and web rivet holes.

WARNING: METHYL ETHYL KETONE (MEK) IS HIGHLY FLAMMABLE AND TOXIC. KEEP AWAY FROM ANY IGNITION SOURCE. PROTECTIVE CLOTHING AND GLOVES SHOULD BE WORN. USE ONLY IN WELL VENTILATED AREAS.

8. Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area.

WARNING: AVOID PROLONGED OR REPEATED SKIN CONTACT WITH DC1200 PRIMER. USE ONLY IN AREAS WITH GOOD VENTILATION. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

9. Apply a thin coat of Dow Corning DC1200 silicone primer to faying surfaces of web and doubler. See 51-21-05 for primer application.

WARNING: USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

10. Apply DC93-006 silicone sealant to faying surfaces of web and doubler. See 51-21-05 for sealant application.
11. Install doubler on aft bulkhead web using CR3553-5-2 fasteners. Install fasteners wet with DC93-006 silicone sealant.

SYMBOLS

+ ORIGINAL FASTENER LOCATION

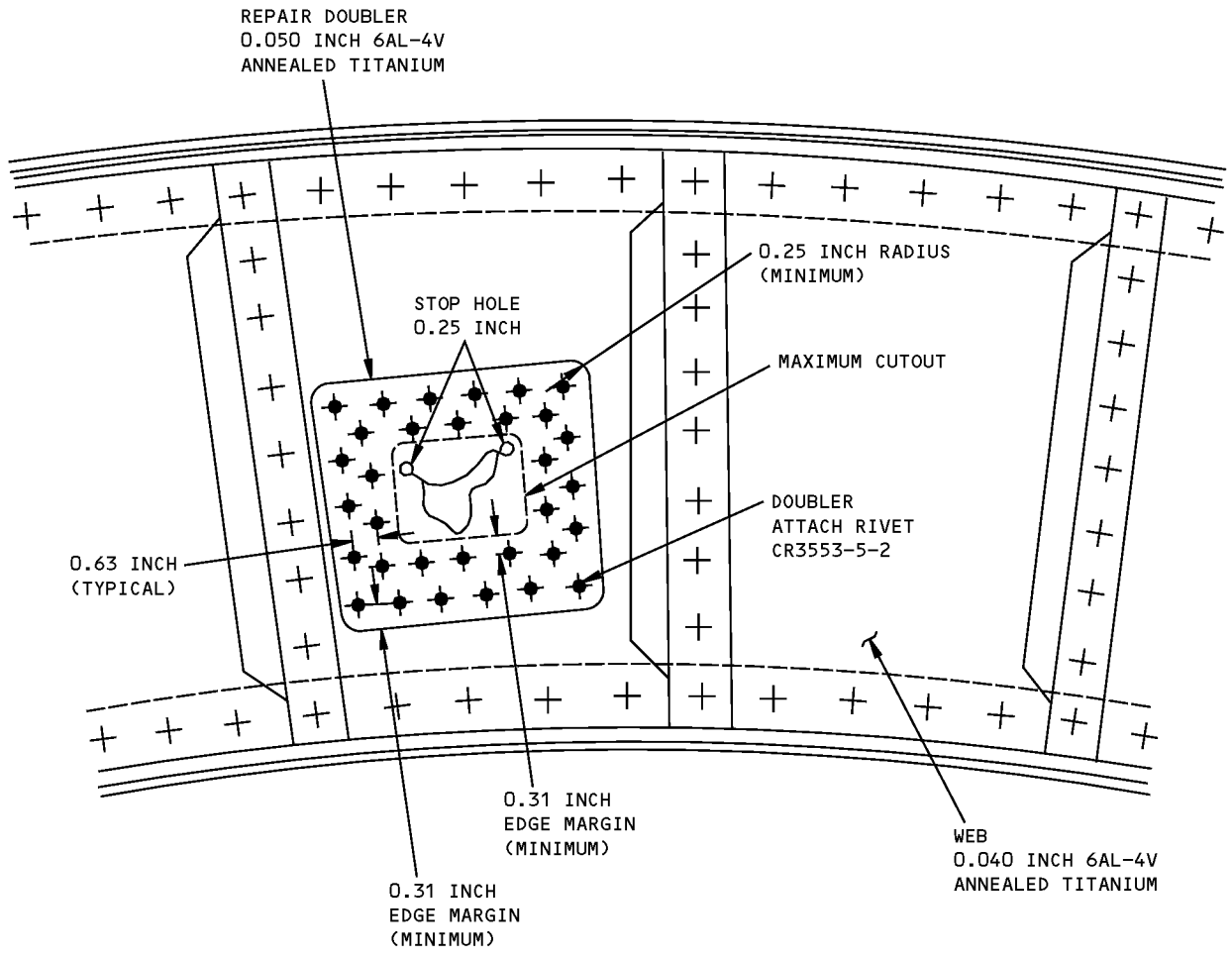
◆ REPAIR FASTENER LOCATION

REPAIR MATERIAL

PART	QTY	MATERIAL
DOUBLER	AS REQD	6AL-4V TITANIUM ANNEALED SHEET 0.050-INCH

Inlet Cowl Structure - Aft Bulkhead Web Puncture Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

**Inlet Cowl Structure - Aft Bulkhead Web Puncture Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL STRUCTURE - AFT BULKHEAD WEB CRACK REPAIR - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS FOR CRACKS WITH A MINIMUM OF 1.5 INCHES DISTANCE FROM CRACK TO EDGE OF MATERIAL OR TO CONNECTING MATERIAL. MINIMUM DISTANCE FROM CRACK TO OTHER DAMAGE IS 3.0 INCHES. THIS REPAIR IS FOR INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM MATERIAL.

1. Drill a 0.25-inch diameter hole at ends of crack and deburr holes. See Detail I.
2. Determine size of repair doubler and mark outline of doubler on bulkhead. Maintain proper edge distance and pitch for CR3553-5-2 fasteners and clearance for crack stop holes. See Detail I for general layout.
3. Make a doubler of the same material as the web, but one gauge thicker. Using a No. 40 drill bit, drill pilot holes around perimeter of doubler, ensuring a 0.31-inch edge margin is maintained.
4. Position doubler on web. Using doubler as a template, drill pilot holes through web with a No. 40 drill bit.
5. Remove doubler and prepare paper or clear plastic template to determine location for crack stabilizing fastener holes. Using template, mark hole locations on doubler.
6. Position doubler on web and drill pilot holes for crack stabilizing fasteners through doubler and web using a No. 40 drill bit.
7. Ream perimeter fastener pilot holes through doubler and web to 0.177 inch (No. 16 drill).
8. Ream pilot holes for crack stabilizing fasteners through doubler and web to 0.144 inch (No. 27 drill).
9. Remove doubler and deburr doubler and web fastener holes.

WARNING: METHYL ETHYL KETONE (MEK) IS HIGHLY FLAMMABLE AND TOXIC. KEEP AWAY FROM ANY IGNITION SOURCE. PROTECTIVE CLOTHING AND GLOVES SHOULD BE WORN. USE ONLY IN WELL VENTILATED AREAS.

10. Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area.

WARNING: AVOID PROLONGED OR REPEATED SKIN CONTACT WITH DC1200 PRIMER. USE ONLY IN AREAS WITH GOOD VENTILATION. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

11. Apply a thin coat of Dow Corning (DC1200) silicone primer to faying surfaces of web and doubler. See 51-21-05 for application.

WARNING: USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

12. Apply Dow Corning (DC93-006) silicone sealant to faying surfaces of web and doubler. See 51-21-05.
13. Install doubler on bulkhead web using CR3553-5-2 fasteners around perimeter of doubler and CR3553-4-2 fasteners in crack edge stabilizing holes. Install fasteners wet with DC93-006 silicone sealant.

SYMBOLS

⊕ ORIGINAL FASTENER LOCATION

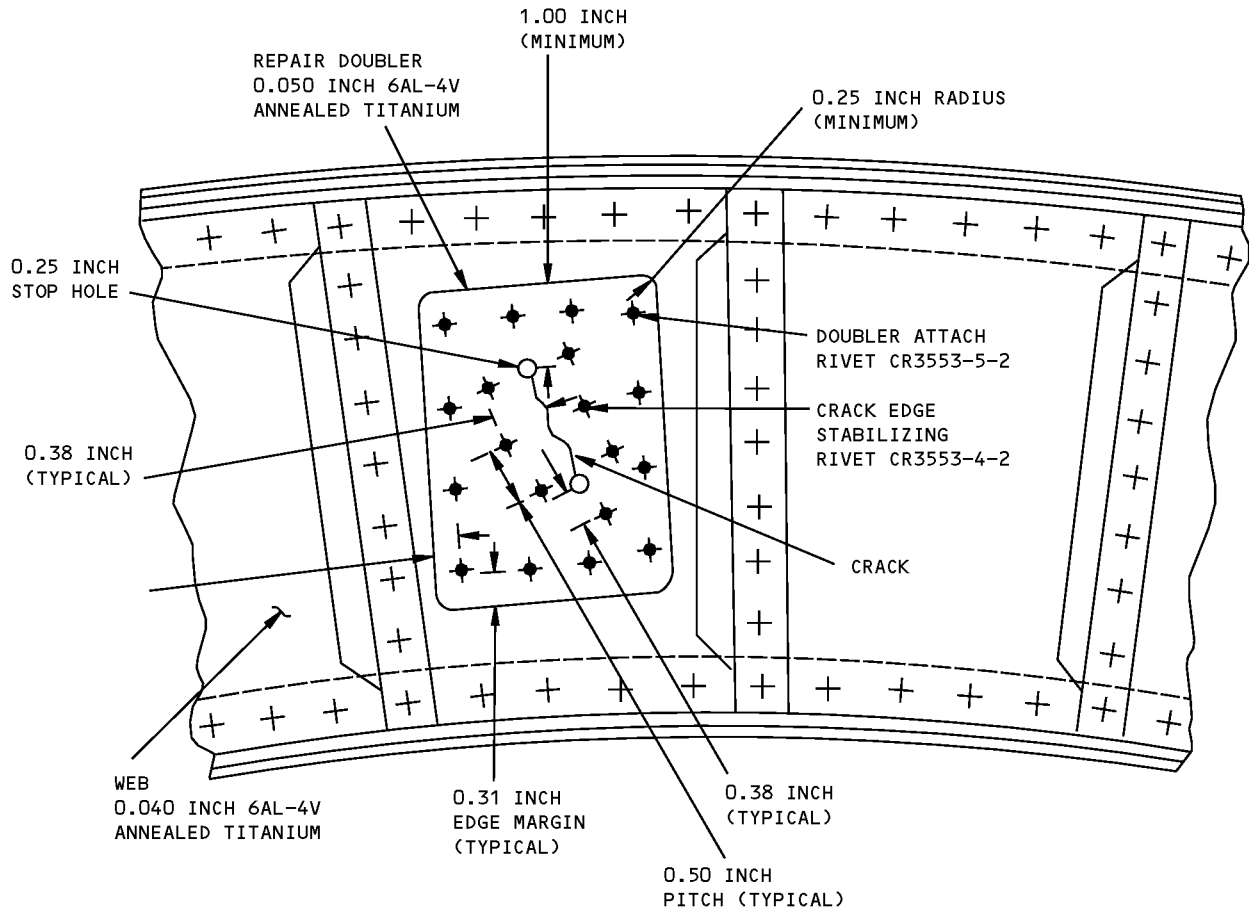
⊕ REPAIR FASTENER LOCATION

REPAIR MATERIAL

REPAIR MATERIAL		
PART	QTY	MATERIAL
DOUBLER	AS REQD	6AL-4V TITANIUM ANNEALED SHEET 0.050-INCH

**Inlet Cowl Structure - Aft Bulkhead Web Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

767-300
STRUCTURAL REPAIR MANUAL



DETAIL I

Inlet Cowl Structure - Aft Bulkhead Web Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL STRUCTURE - AFT BULKHEAD SPLICE REPAIR - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS FOR AFT BULKHEAD WEB WHEN DAMAGE TO WEB EXCEEDS LIMITS IDENTIFIED FOR CRACKS FOR PUNCTURES. THIS REPAIR IS FOR INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

- Outline damaged section of aft bulkhead web to be removed.
 - Mark outline of splice plates on bulkhead. Maintain plate width of approximately 2-inches minimum for proper edge margin for fasteners. See Detail I for splice plate fastener location.
 - Remove affected fasteners and zee stiffeners, and cut out damaged section of web. Retain zee stiffeners for reuse.
 - Make a replacement web from 0.040-inch 6AL-4V, annealed titanium sheet.
 - Position replacement web section on frame and cap angle in cutout.
 - Pick up fastener holes in frame and cap angle for replacement web section and drill pilot holes with a No. 40 drill bit.
- NOTE:** Position of original web-to-frame and cap angle fasteners can be determined by preparing a template for transfer to replacement web section.
- Fabricate web splice plate from 0.040 inch, 6AL-4V, annealed titanium. Using a No. 40 drill bit, drill pilot holes to match zee stiffener holes. Maintain an 0.31-inch edge margin in splice plate. Drill pilot holes for web-to-inner-cap and web-to-outer-cap fastener holes.
 - Position splice plate on web and drill pilot holes in replacement web, with a No. 40 drill bit.
 - Position zee stiffeners on splice plates and replacement web. Pick up existing fastener holes in cap angles and frame. Drill fastener holes into replacement web and splice plates using existing fastener holes in stiffeners.
 - Ream pilot holes in splice plates and replacement web to 0.177-inch (No. 16 drill).

- Remove stiffeners, splice plates, and replacement web and deburr all fastener holes.

WARNING: METHYL ETHYL KETONE (MEK) IS HIGHLY FLAMMABLE AND TOXIC. KEEP AWAY FROM ANY IGNITION SOURCE. PROTECTIVE CLOTHING AND GLOVES SHOULD BE WORN. USE ONLY IN WELL VENTILATED AREAS.

- Using a clean cotton cloth and MEK, remove any grease, oil, or dirt from repair area.

WARNING: AVOID PROLONGED OR REPEATED SKIN CONTACT WITH DC1200 PRIMER. USE ONLY IN AREAS WITH GOOD VENTILATION. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

- Apply a thin coat of Dow Corning (DC1200) silicone primer to faying surfaces of splice plates, stiffeners, original and replacement web, cap angles, and inner frame. See 51-21-05 for primer application.

WARNING: USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

- Apply Dow Corning (DC93-006) silicone sealant to faying surfaces of splice plates, stiffeners, original and replacement web, cap angles, and inner frame. See 51-21-05.

- Install replacement web, splice plates, and stiffeners using CR3553-5 fasteners. See Detail I for fastener length. Install fasteners wet with DC93-006.

SYMBOLS

+ ORIGINAL FASTENER LOCATION

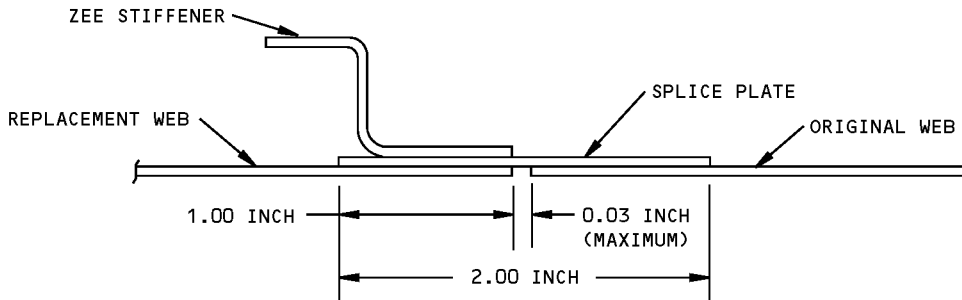
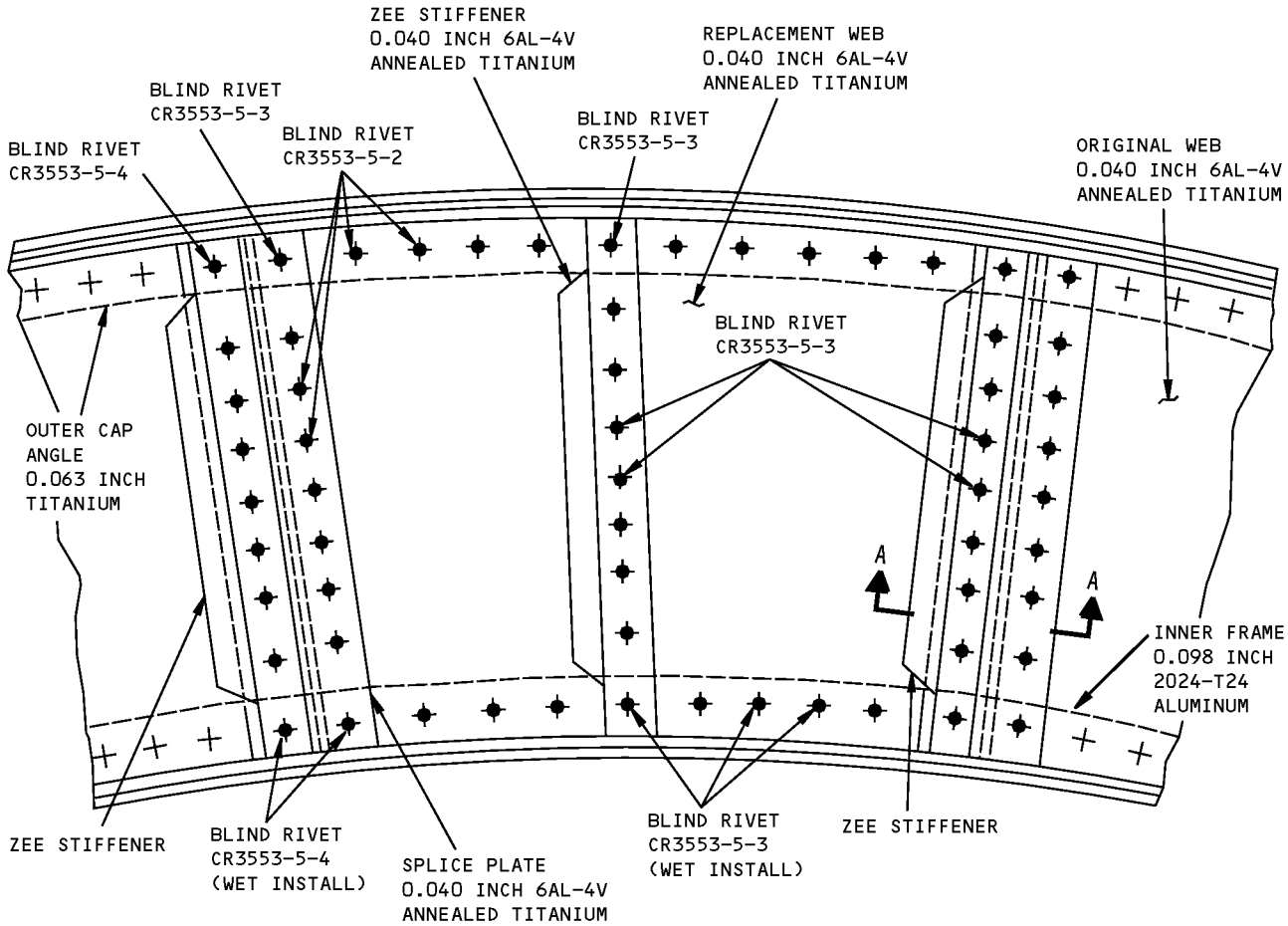
◆ REPAIR FASTENER LOCATION

REPAIR MATERIAL

REPAIR MATERIAL		
PART	QTY	MATERIAL
REPLACEMENT WEB	AS REQD	6AL-4V TITANIUM ANNEALED SHEET 0.040-INCH
SPLICE PLATE		6AL-4V TITANIUM ANNEALED SHEET 0.040-INCH

**Inlet Cowl Structure - Aft Bulkhead Splice Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

767-300
STRUCTURAL REPAIR MANUAL



SECTION A-A

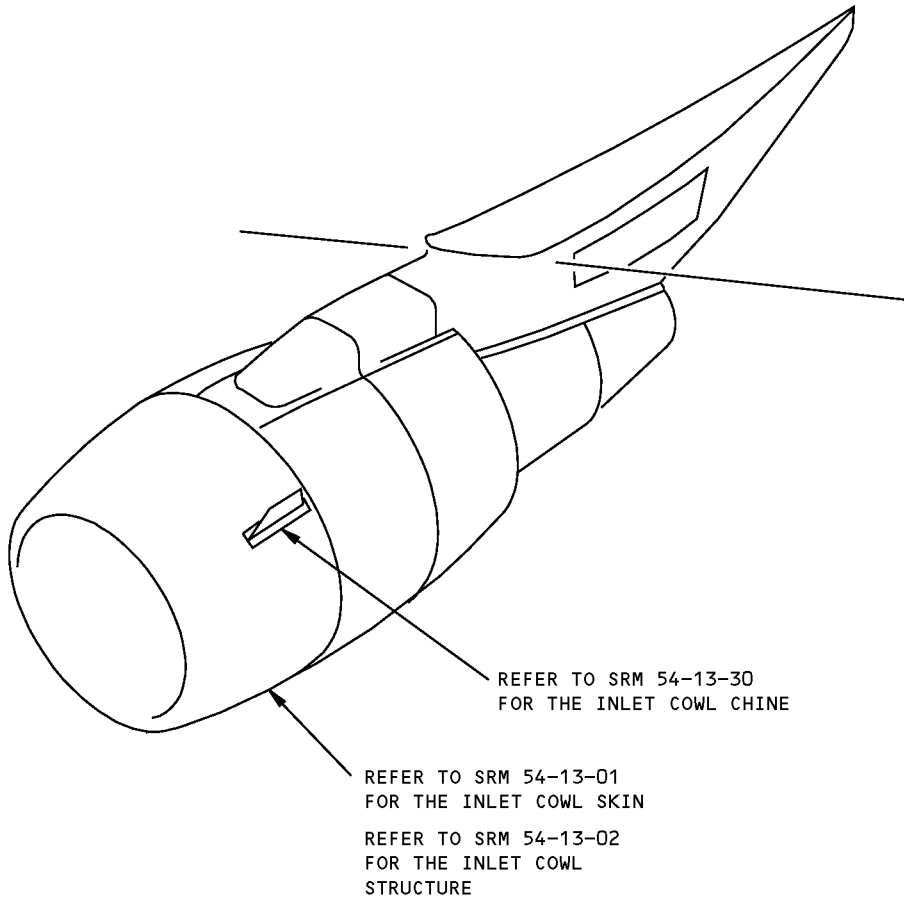
DETAIL I

Inlet Cowl Structure - Aft Bulkhead Splice Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)



767-300
STRUCTURAL REPAIR MANUAL

GENERAL - INLET COWL STRUCTURE DIAGRAM - PW4000 ENGINE



Inlet Cowl Structure Diagram - PW4000 Engine
Figure 1

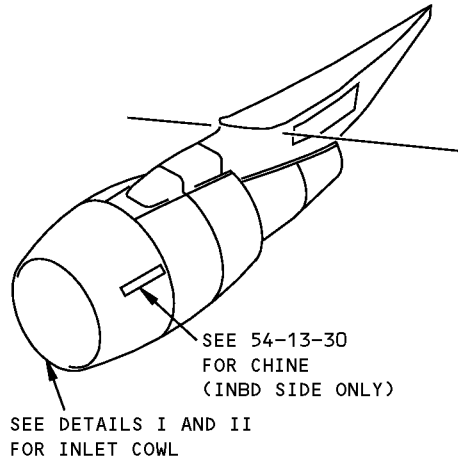
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GENERAL
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STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INLET COWL SKIN - PW4000 ENGINE

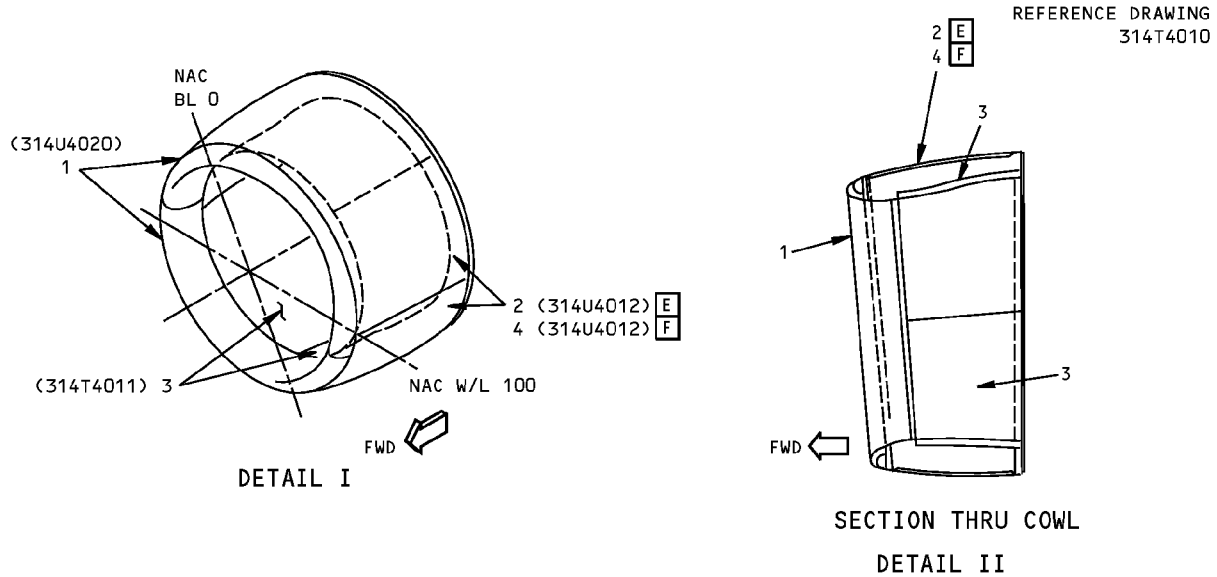


NOTES

- A** PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION.
- B** EPOXY IMPREGNATED GRAPHITE FABRIC AS GIVEN IN BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE.
- C** EPOXY IMPREGNATED ARAMID FABRIC AS GIVEN IN BMS 8-218, STYLE 120, 350°F (177°C) CURE.
- D** EPOXY IMPREGNATED GRAPHITE FABRIC AS GIVEN IN BMS 8-256, CLASS 2, TYPE IV, STYLE 3K-70-PW, 350°F (177°C) CURE. OPTIONAL MATERIAL IS BMS 8-297, CLASS 2, TYPE IV, STYLE 3K-70-PW.
- E** FOR AIRPLANES WITH CUM LINE NUMBERS: 1 THRU 797.
- F** FOR AIRPLANES NOT LISTED IN **E**.

Inlet Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 1 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	L/E SKIN	0.125	2219-T62	
2	OUTER PANEL SKIN CORE DENSE CORE (UPPER SIDE)		GRAPHITE/ARAMID EPOXY SANDWICH SEE DETAIL III NOMEX HONEYCOMB AS GIVEN IN BMS 8-124, CLASS IV, TYPE 1, GRADE 4.0 NOMEX HONEYCOMB AS GIVEN IN BMS 8-124, CLASS IV, TYPE 5.0, GRADE 9.0	E
3	INNER PANEL BACKSHEET FWD CORE AFT CORE DENSE CORE INNER SKIN	0.032 0.032	CLAD 2024-T62 FLEX CORE AS GIVEN IN BMS 4-6, TYPE 4.1-25, CLASS I FLEX CORE AS GIVE IN BMS 4-6, TYPE 5.7-37, CLASS I ALUMINUM HONEYCOMB CORE 22.1-1/8-60N 5052 AS GIVEN IN MIL-C-7438E PERFORATED CLAD 2024-T62 AS GIVEN IN BMS 7-209, TYPE 1B-32, GRADE 1A, CLASS 39-117	
4	OUTER PANEL SKIN CORE DENSE CORE (UPPER SIDE)		GRAPHITE EPOXY SANDWICH SEE DETAIL IV NOMEX HONEYCOMB AS GIVEN IN BMS 8-124, CLASS IV, TYPE 1, GRADE 4.0 NOMEX HONEYCOMB AS GIVEN IN BMS 8-124, CLASS IV, TYPE 5.0, GRADE 9.0	F

LIST OF MATERIALS FOR DETAILS I AND II

**Inlet Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

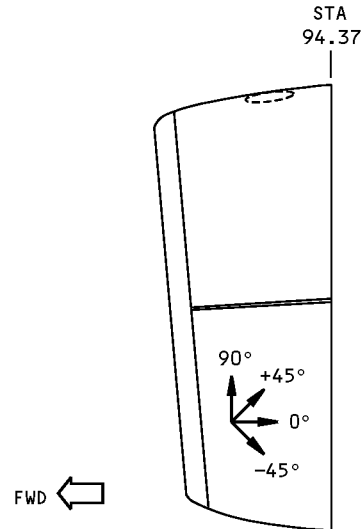
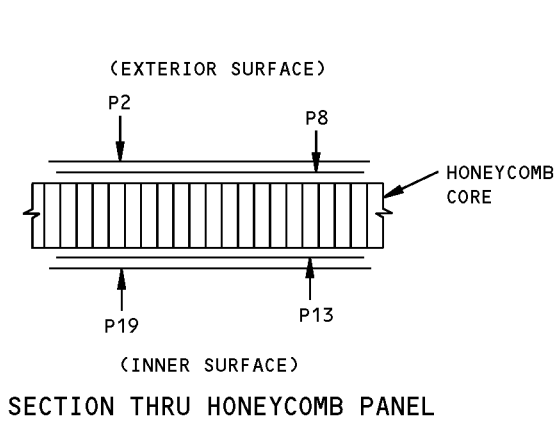


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
2	P2	^B	0°/90°
	P8	^C	±45°
	P13	^C	±45°
	P19	^B	0°/90°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

DETAIL III ^E

**Inlet Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**

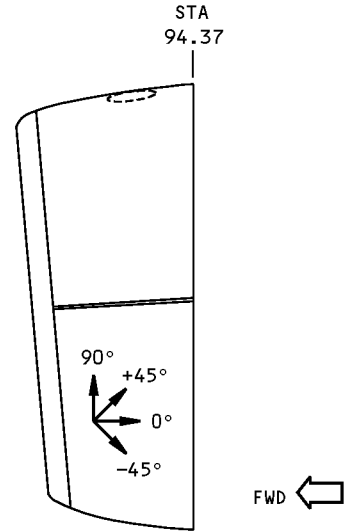
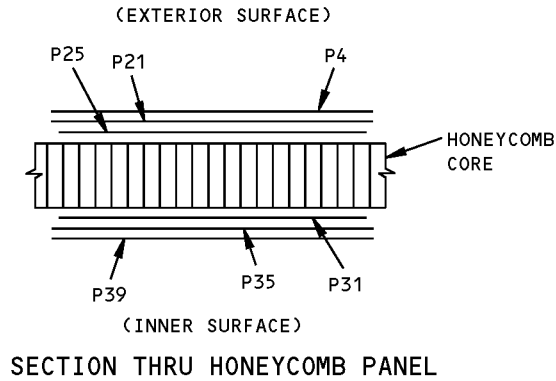


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY
ORIENTATION AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION [A]
4	P4	[D]	±45°
	P21	[D]	0°/90°
	P25	[D]	0°/90°
	P31	[D]	0°/90°
	P35	[D]	0°/90°
	P39	[D]	±45°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

DETAIL IV [F]

**Inlet Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 4 of 4)**

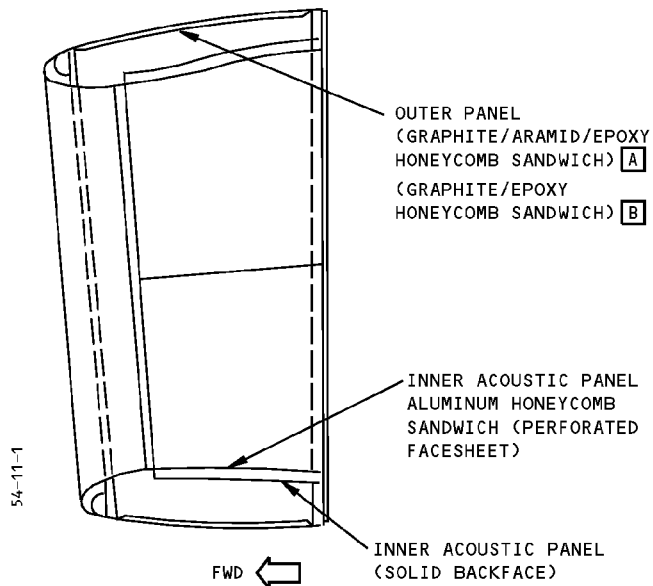
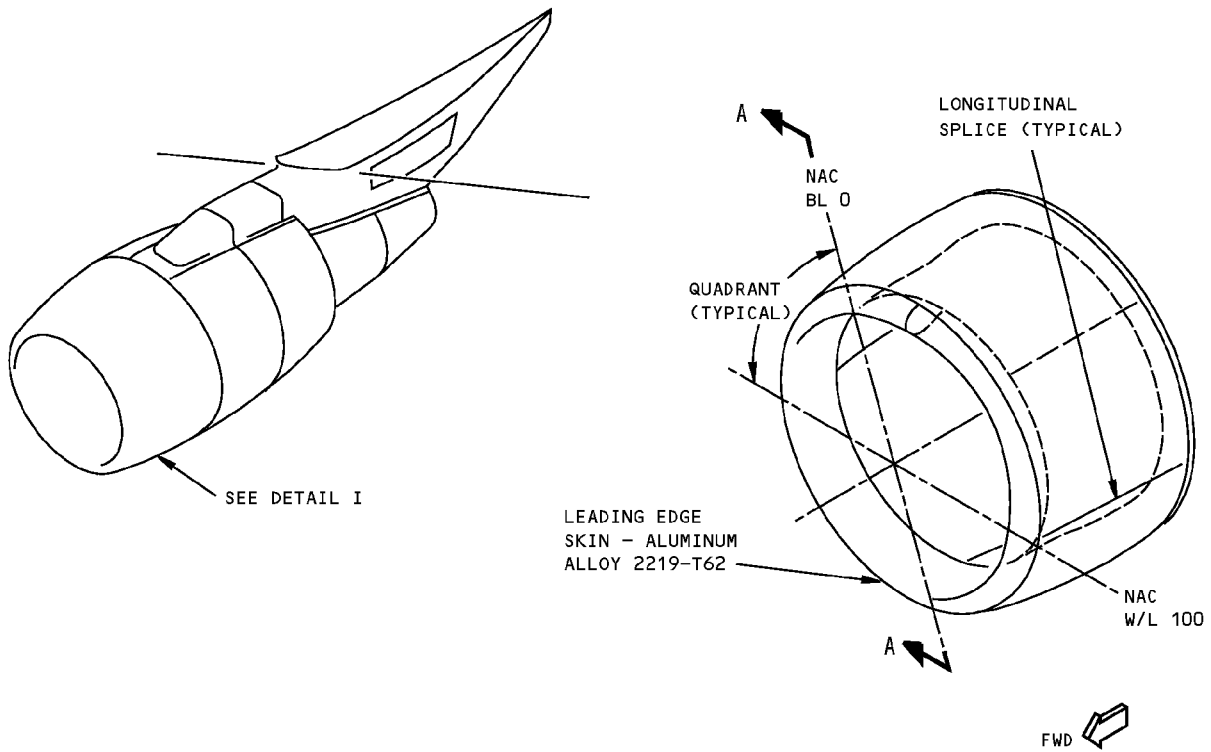
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - INLET COWL SKIN - PW4000 ENGINE



SECTION A-A

DETAIL I

**Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 1 of 6)**

NOTES

- [A] FOR AIRPLANES WITH CUM LNE NUMBERS:
1 THRU 797.
- [B] FOR AIRPLANES NOT LISTED IN [A].

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES, CORROSION, AND SCRATCHES	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
LEADING EDGE SKIN	A	B	J	C	—
OUTER PANEL	F	G	H	I	E
INNER PANEL—PERFORATED FACESHEET, SOLID BACK-FACE	A	B	J	NOT ALLOWED	K

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFINISH REWORKED AREAS PER AMM 51-21
- TYPICAL DAMAGE TO A PANEL EDGE BAND MAY CONSIST OF EDGE CRUSHING, CRACKS OR DELAMINATION. DAMAGE AROUND HOLES MAY CONSIST OF OVALIZATION, FASTENER PULL-THROUGH OR CRACKS OUT OF HOLE. DAMAGE MAY REDUCE THE EFFECTIVE CROSS SECTIONAL AREA OF AN EDGE BAND. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. IF FIBERS ARE DAMAGED, TREAT AS A CRACK

- A CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED PER DETAILS II AND VI
- B REMOVE DAMAGE PER DETAILS II, III, AND V
- C CLEAN PUNCTURES UP TO 0.25 INCH (6 mm) DIA MAX. HOLES ALLOWED UP TO 0.25 INCH (6 mm) DIA, NOT CLOSER THAN 4D TO ANY ADJACENT HOLE. HOLE IS TO BE FILLED WITH A NAS 1399D BLIND RIVET FOR HOLE UP TO 0.16 INCH (4 mm) DIA AND NAS 1398D BLIND RIVET FOR HOLE 0.19 INCH (5 mm) TO 0.25 INCH (6 mm) DIA, INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. OTHER HOLES TO BE REPAIRED

- D REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
- E 4.00 INCHES (100 mm) MAX. DIA ALLOWED IN HONEYCOMB AREA. A MAX OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. REPAIR DELAMINATION IN HONEYCOMB AREA PER 51-70 NO LATER THAN THE NEXT "C" CHECK. D
- F CRACKS IN FASTENER HOLES ALONG LONGITUDINAL SPLICE ALLOWED PER DETAIL VII D. FOR DAMAGE OTHER THAN LONGITUDINAL SPLICE:

CLEAN UP EDGE CRACKS PER DETAILS II AND VI. NOT MORE THAN ONE FASTENER HOLE IN SIX MAY BE CRACKED OR DAMAGED. DAMAGE MUST NOT EXCEED 2% OF EDGE BAND LENGTH. 0.50 INCH (12.7 mm) MAX DIMENSION IN EDGE BAND AND 2.00 INCHES (50 mm) MAX DIMENSION (D) IN HONEYCOMB AREA IS ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 4D (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE OR PANEL EDGE. D
- G IF FIBERS ARE DAMAGED, TREAT AS A CRACK. IF FIBERS ARE NOT DAMAGED PROTECT PER NOTE D

Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 2 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

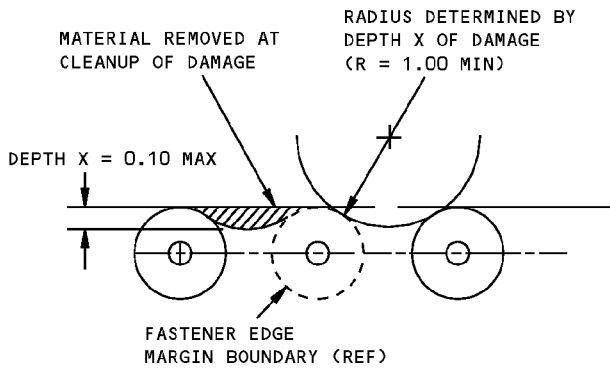
NOTES (CONTINUED)

H DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 2.0 DIA MAX ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6 INCHES FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE

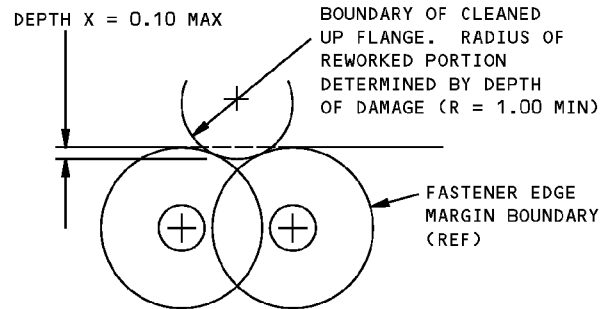
I 1.0 MAX DIA. IN HONEYCOMB AREA ONLY AND MIN OF 4D FROM NEAREST HOLE, MATERIAL EDGE OR OTHER DAMAGE (EDGE TO EDGE). DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **D**

J TWO DENTS MAX ALLOWED PER QUADRANT (SEE DETAIL I), WITH NO LESS THAN 15.0 INCHES BETWEEN DENTS. SEE DETAIL IV

K SEE DETAIL VIII FOR DELAMINATION (DISBONDING) OF PERFORATED FACESHEET. SEE DETAIL IX FOR SOLID BACKFACE. DAMAGE NOT EXCEEDING THESE LIMITS ARE ALLOWED, PROVIDING THAT PANELS ARE INSPECTED EVERY 300 FLIGHT HOURS UNTIL PANEL IS REPAIRED OR REPLACED

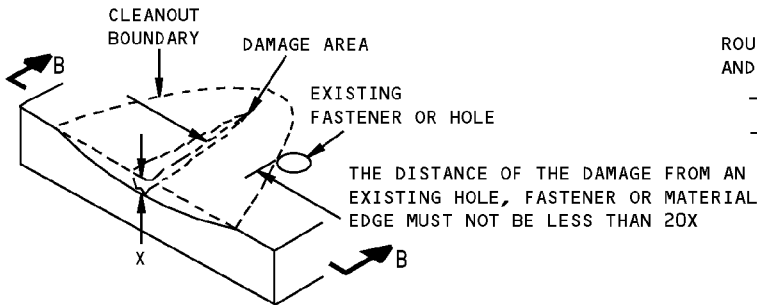


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

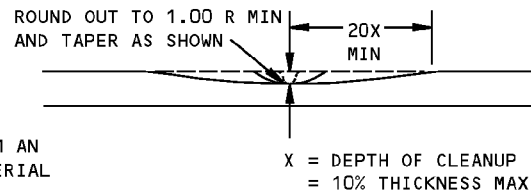


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III



SECTION B-B

**Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 3 of 6)**

STRUCTURAL REPAIR MANUAL

CAUTION: DO NOT FILL DENTS

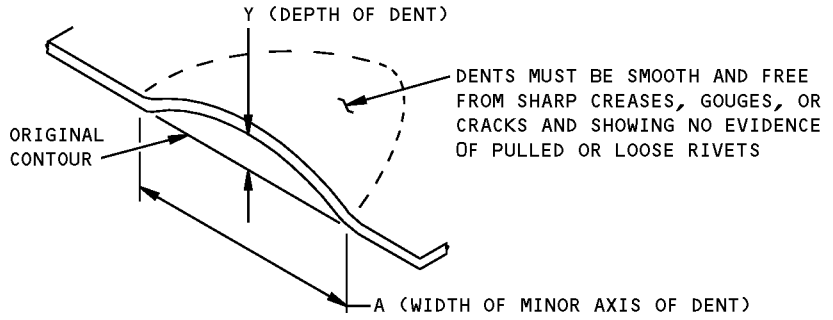
$\frac{A}{Y}$ MUST NOT BE LESS THAN 30

FOR LEADING EDGE SKIN:

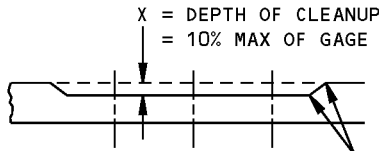
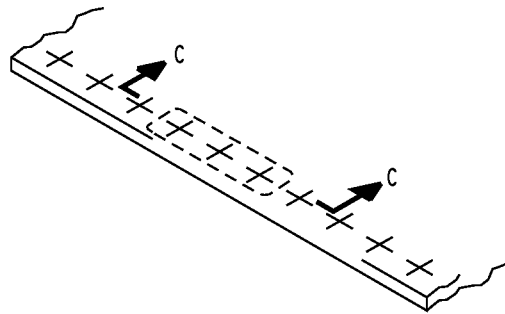
Y = 0.125 MAX
MAJOR AXIS = 4.0 MAX

FOR INNER PANEL, PERFORATED

INNER SKIN:
Y = 0.050 MAX
MAJOR AXIS = 3.0 MAX



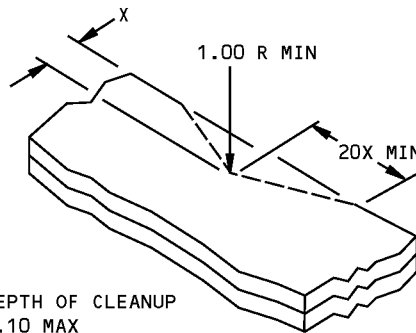
ALLOWABLE DAMAGE FOR DENT
DETAIL IV



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

CORROSION CLEANUP
DETAIL V



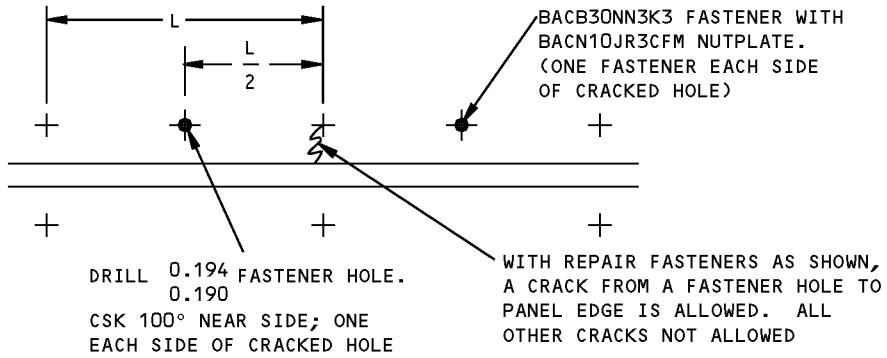
X = DEPTH OF CLEANUP
= 0.10 MAX

DETAIL VI

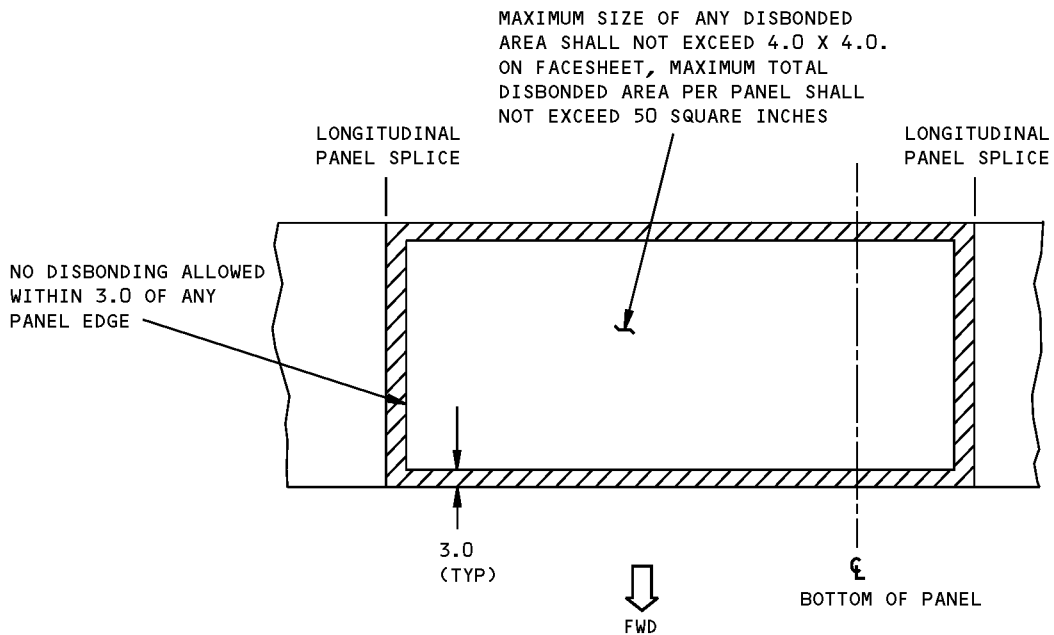
Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 4 of 6)

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STRUCTURAL REPAIR MANUAL**

L = EXISTING FASTENER SPACING



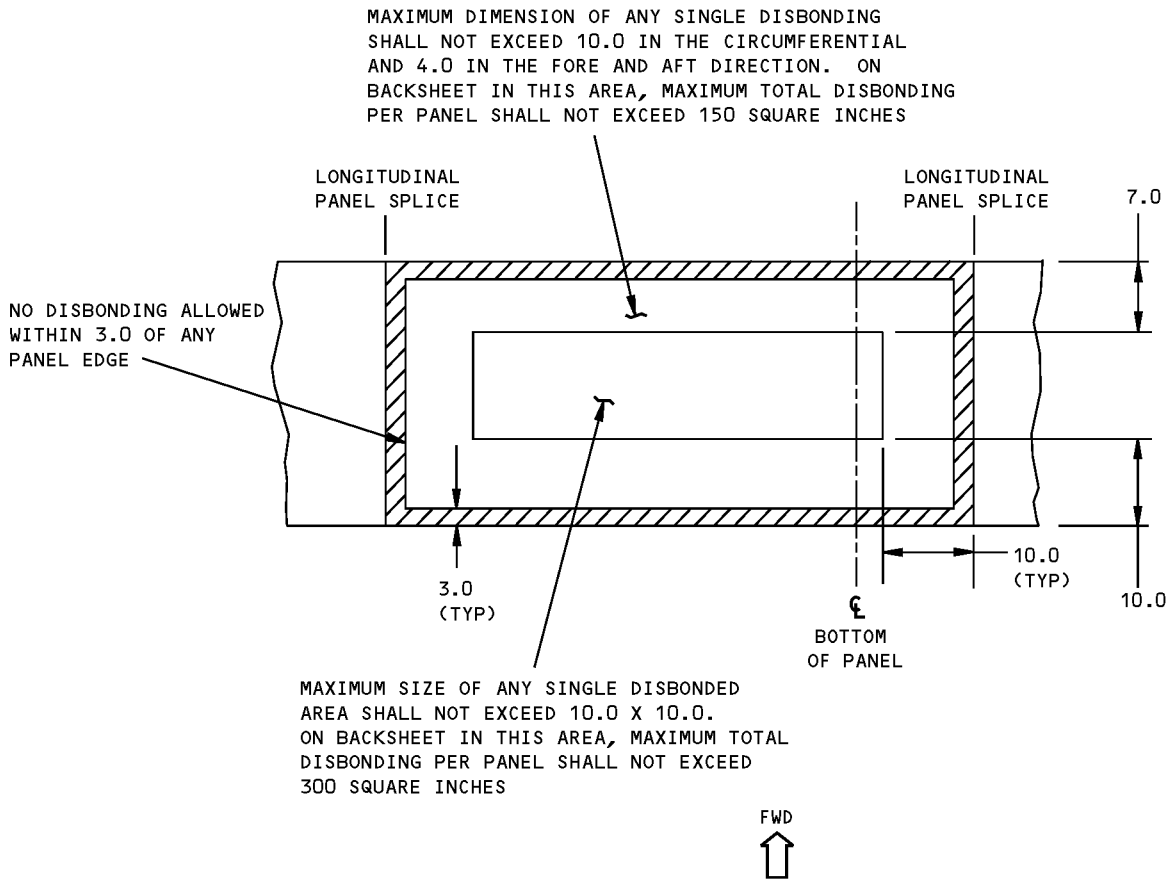
**ALLOWABLE CRACKS ALONG A LONGITUDINAL SPLICE
DETAIL VII**



**ALLOWABLE DISBOND LIMITS FOR INNER
ACOUSTIC PANEL, PERFORATED FACESHEET
DETAIL VIII**

**Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



ALLOWABLE DISBOND LIMITS FOR SOLID BACKFACE
(SHOWN WITH OUTER PANEL REMOVED)
DETAIL IX

**Inlet Cowl Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 6 of 6)**



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STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL LEADING EDGE SKIN - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Cut out the damaged skin to a rectangular shape. The cut can not be closer than 3.00 inches to the outer row of fasteners or 2.10 inches to the inner row of fasteners.
2. Make the repair parts. Form doublers to required contour. The repair skin may be cut from scrap or spare nose cowl.
3. Assemble the repair parts and drill the fastener holes.
4. Disassemble the repair parts.
5. Remove all nicks, scratches, burrs, and corners from original and repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710 Type 51 (Desoto Hi-Temp) primer, except dry film thickness should be 0.002 inch to 0.003 inch, to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Rivet doublers to existing skin using BACR15CE5KEA() rivets.
9. Rivet skin to doublers using blind rivets NAS1399CW5A(). Install wet with BAC5710 Type 51 primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish per AMM 51-21.

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21 FOR FINISHES
 - AMM 51-31-01 FOR SEALS AND SEALING
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS, WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS

SYMBOLS

- REPAIR FASTENER LOCATION AS AN OPTION TO NAS1399CW()A() USE NAS1399MW()A().

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
2	DOUBLER	1	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
3	DOUBLER	2	0.10 2219-T62 OPTIONAL: 0.10 2024-T62
4	SKIN	1	SAME GAGE AS ORIGINAL MATERIAL 2219-T62 OPTIONAL: 2024-T62

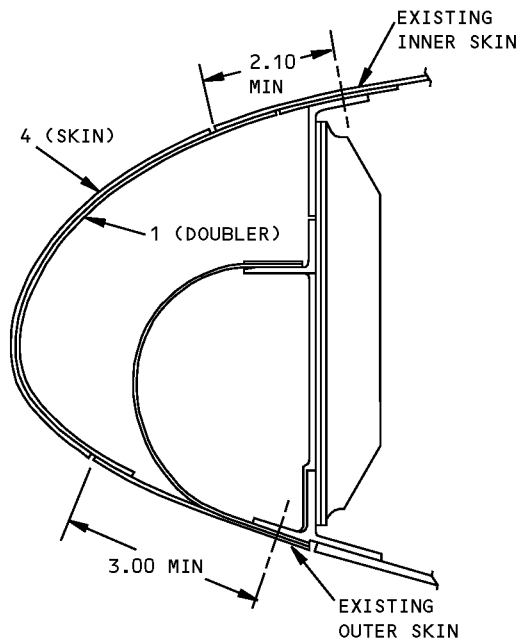
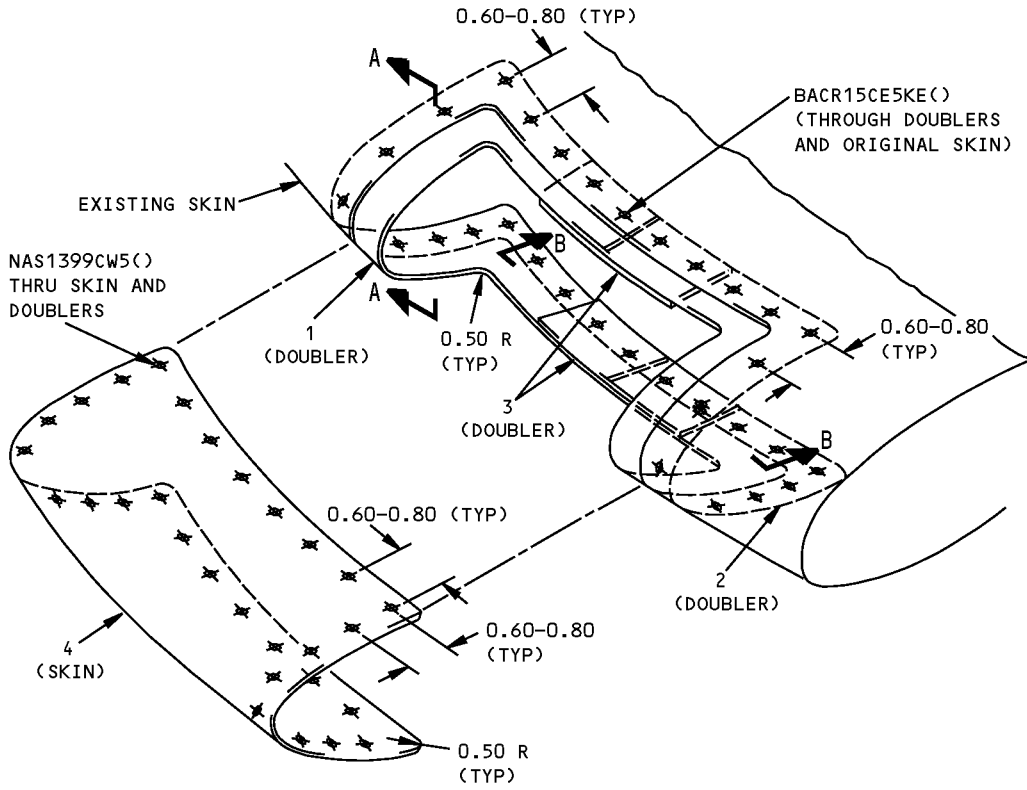
Inlet Cowl Leading Edge Skin Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)

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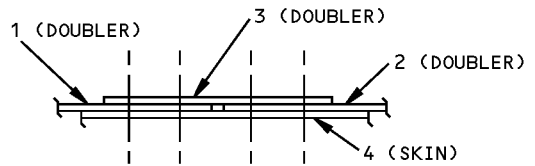
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REPAIR 1
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SECTION A-A

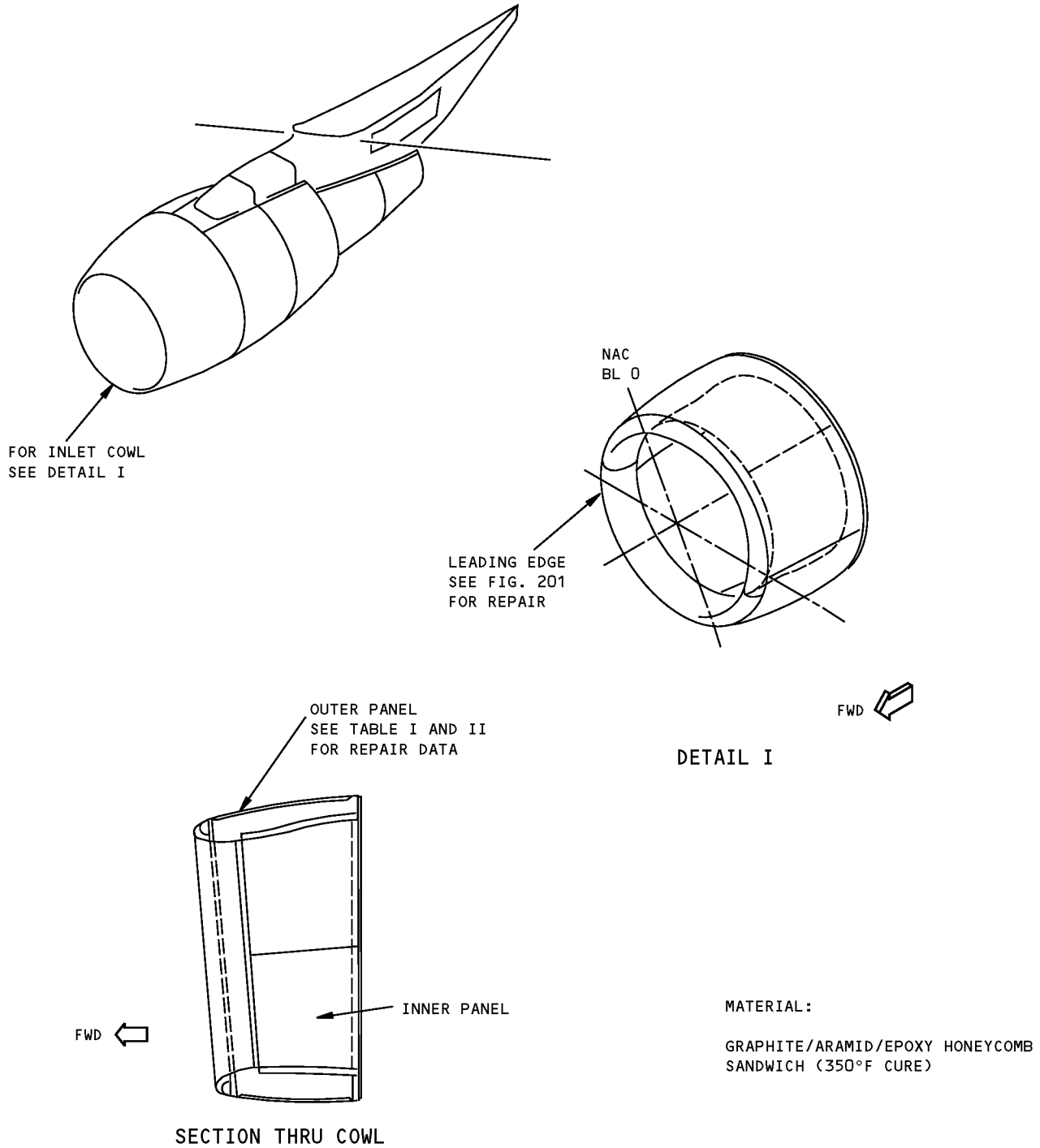


SECTION B-B

**Inlet Cowl Leading Edge Skin Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - INLET COWL SKIN - PW4000 ENGINE



**Inlet Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS [G] [A]	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) [F]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [B]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. [D]	NO SIZE LIMIT
DELAMI-NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR GRAPHITE/ARAMID HONEYCOMB PANEL
TABLE I

NOTES

- FINISH REPAIRED AREA AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.

- [A] MINIMUM OF 3.50 INCHES (89 mm) FROM PANEL EDGE
- [B] LIMITED TO REPAIR OF DAMAGE TO ONE FACE SHEET SKIN AND HONEYCOMB CORE
- [C] INSPECT TIME LIMITED REPAIR AT EACH "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN NEXT "C" CHECK.

- [D] ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER REPAIR.
- [E] FOR ROOM TEMP CURE REFER TO SRM 51-70-03.
- [F] FOR WET LAYUP REPAIRS USE 1.0 INCH (25 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) PER PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- [G] INSPECT INTERIM REPAIR USING VISUAL AND "TAP" METHODS (SRM 51-70-03) EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT.

**Inlet Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C E	PERMANENT REPAIRS	
		WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) F	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.025 INCH (6 mm) DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 INCH (2.5 mm) DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES (15 cm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH MAX (12.7 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (12.7 mm) MAX DIA HOLE THRU EDGE BAND LAMINATE - MIN 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03, PAR. 5.G.	POTTING IS ALLOWED FOR 0.25 INCH (6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.H. 1.0 INCH (25 mm) OVERLAP REQUIRED PER PLY. USE 2 EXTRA PLIES.	POTTING IS ALLOWED FOR 0.25 INCH (6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.H.
DELAMINATION	2 SQ INCH (13 sq cm) (2.0 INCH (50 mm) MAX LENGTH) ALLOWED, MIN 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

FOR GRAPHITE/ARAMID EDGE BAND LAMINATE

TABLE II

Inlet Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL LEADING EDGE SKIN - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Drill out as necessary the fasteners in the region of the damaged or corroded skin.
2. Carefully cut away the damaged skin to a rectangular shape, inserting sheet metal guards at the corners. Radius all corners.
CAUTION: DO NOT GOUGE, SCRATCH, OR CUT THE REMAINING SKIN SURFACE.
3. Make the repair parts. Form doublers and skin to required contour.
NOTE: THE REPAIR SKIN MAY BE CUT FROM AN EXISTING DAMAGED NOSE COWL.
4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Apply a chemical conversion coating to the bare surfaces of the initial parts and the repair parts. Use a clear colored chemical conversion coating if available. Refer to SRM 51-10-02.
7. Apply BAC5710 Type 51 (Desoto Hi-Temp) primer, except dry film thickness should be 0.002 to 0.003 inch (0.05 to 0.07 mm), to the doubler, skin edges, and interior surfaces of the initial parts and repair parts.
8. Rivet doublers and taper fillers to existing skin using BACR15CE6KEA() rivets.
9. Rivet skin to doublers and chords using blind rivets. Install wet with BAC5710, Type 51 primer. Attach skin to inside chord using blind bolts. Install wet with BAC5710, Type 51 primer.
10. Fill gaps with aerodynamic smoother.
11. Restore the finish according to AMM 51-21.

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - SRM 51-40-00 FOR FASTENER REMOVAL, INSTALLATION HOLE SIZES, AND EDGE MARGINS.

A CHAMFER END TO FIT

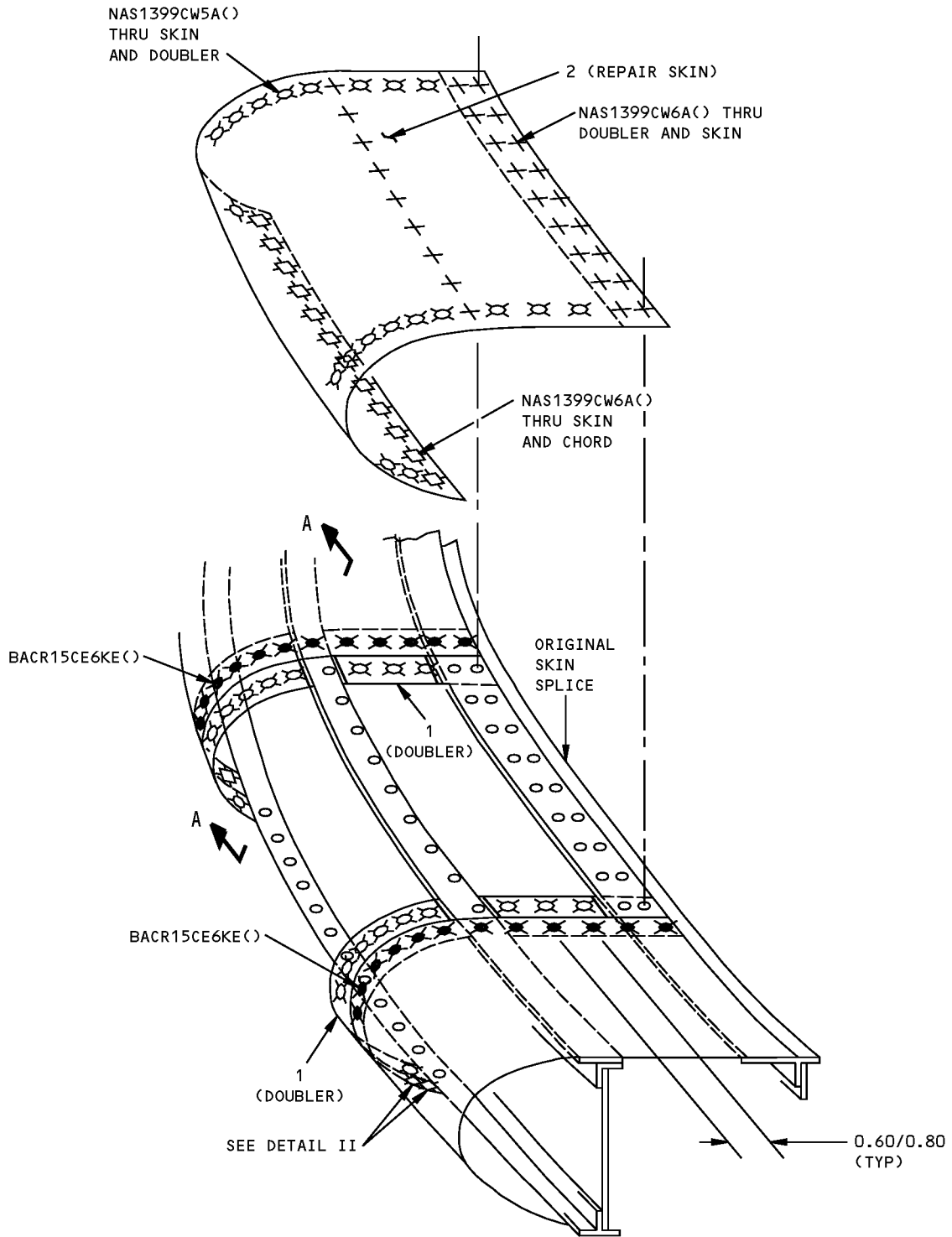
SYMBOLS

- ORIGINAL HOLES.
- + EXISTING FASTENER LOCATION
INSTALL NAS1399CW6A() REPAIR FASTENER.
- ⊕ NAS1399CW5A() REPAIR FASTENER.
- ⊞ REPAIR FASTENER OR EXISTING FASTER LOCATION
INSTALL NAS1399CW6A() REPAIR FASTENER.
- ⊛ BACR15CE6KE() REPAIR FASTENER.
AS AN OPTION USE A NAS1399MW()A().

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	4	0.100 2219-T62 OPTIONAL: 0.100 2024-T62
2	SKIN	1	SAME GAGE AS ORIGINAL MATERIAL 2219-T62 OPTIONAL: 2024-T62
3	TAPER FILLER	2	SIZE TO SUIT 2024-T4

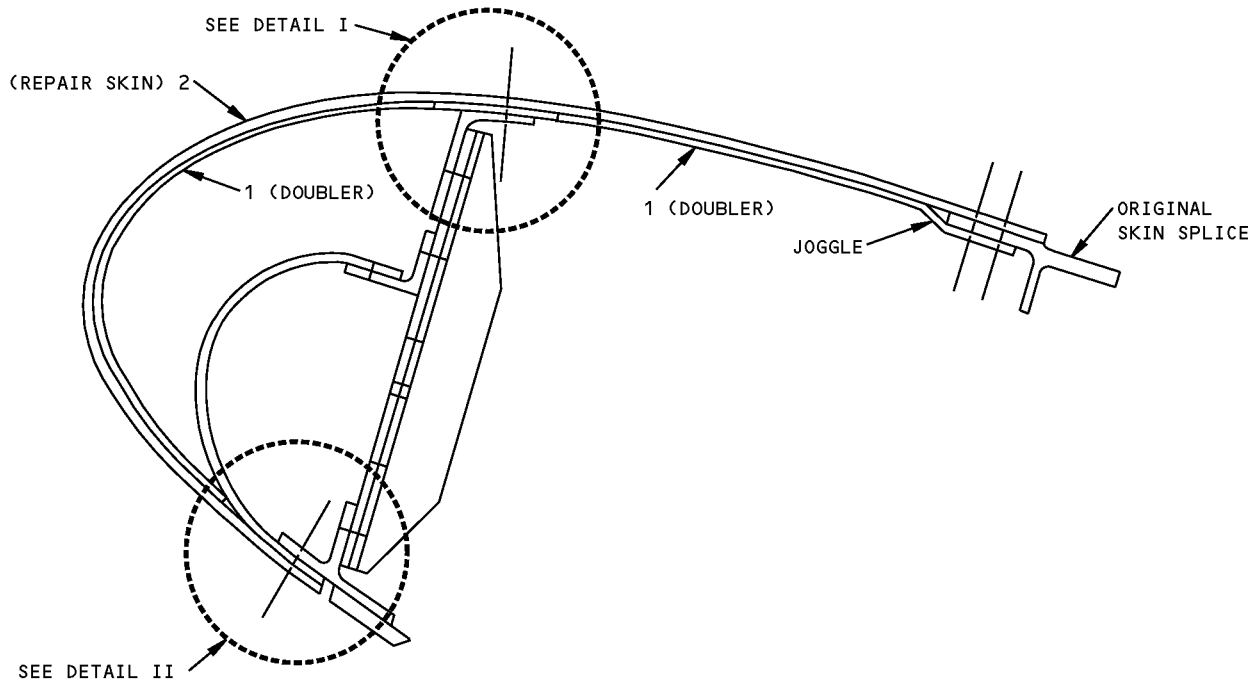
**Inlet Cowl Leading Edge Skin Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

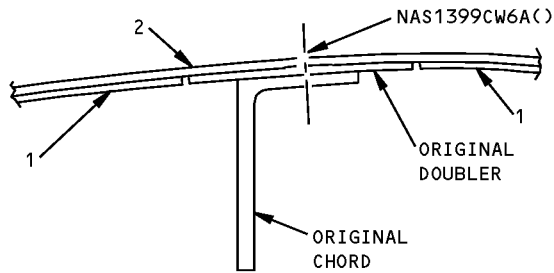


**Inlet Cowl Leading Edge Skin Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

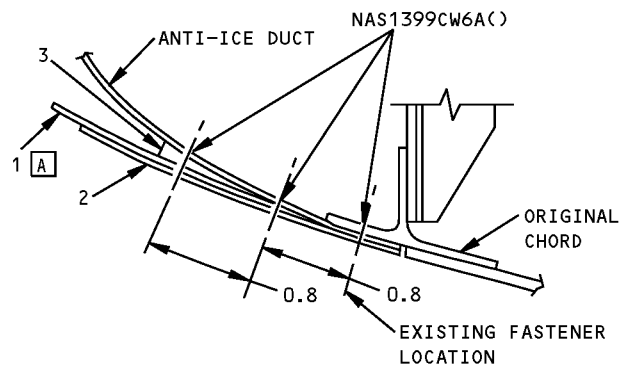
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



DETAIL I

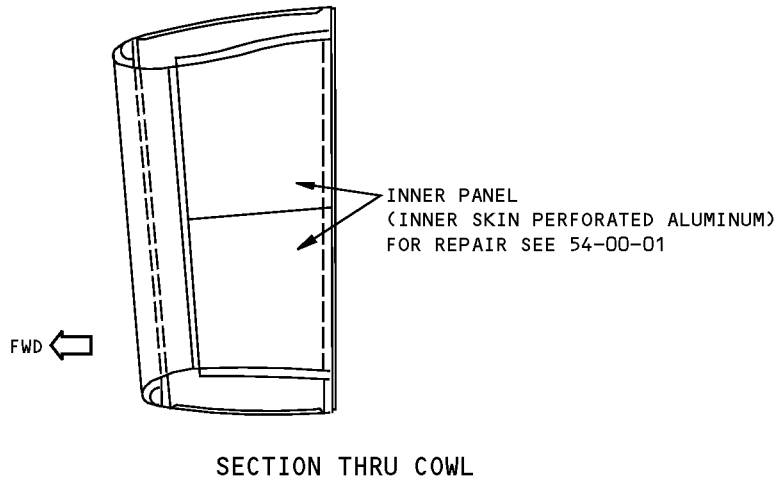
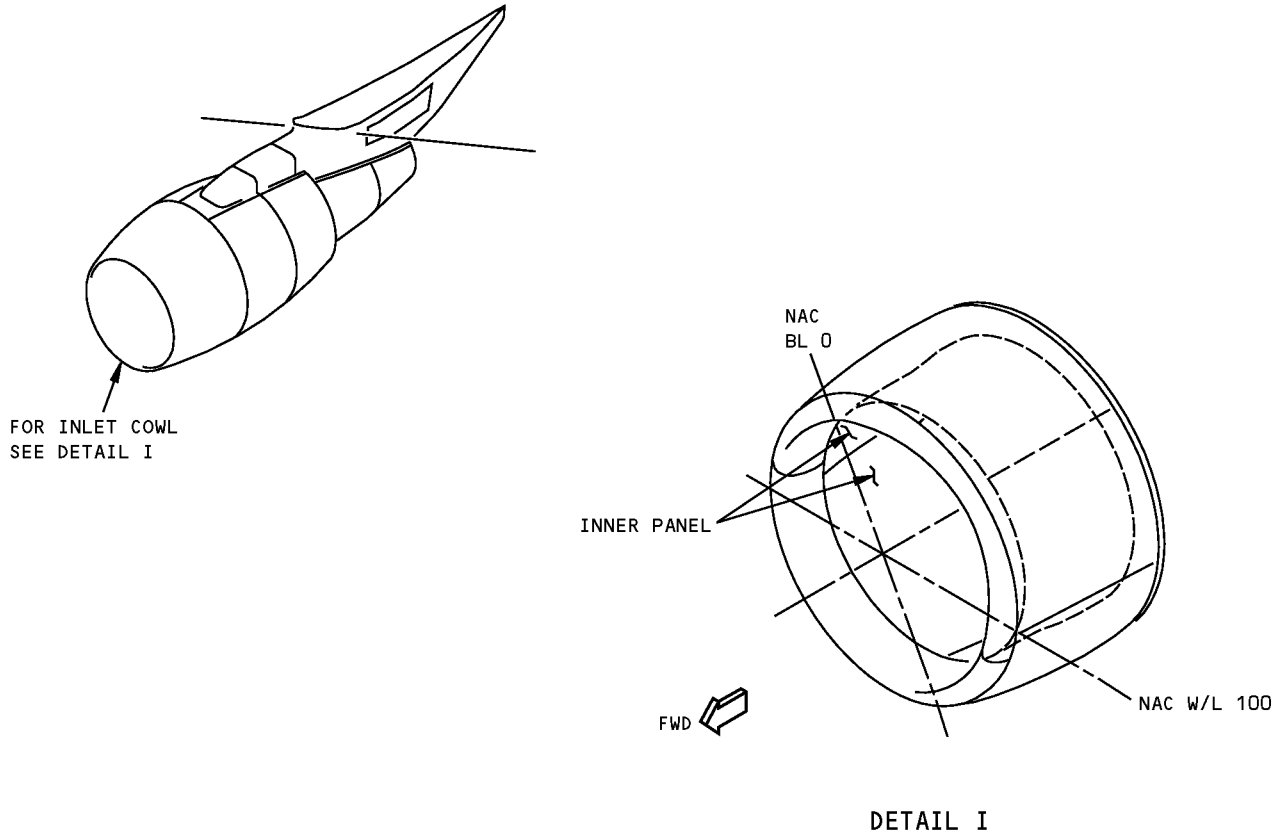


DETAIL II

**Inlet Cowl Leading Edge Skin Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 4 - INLET COWL ACOUSTIC PANEL - PW4000 ENGINE

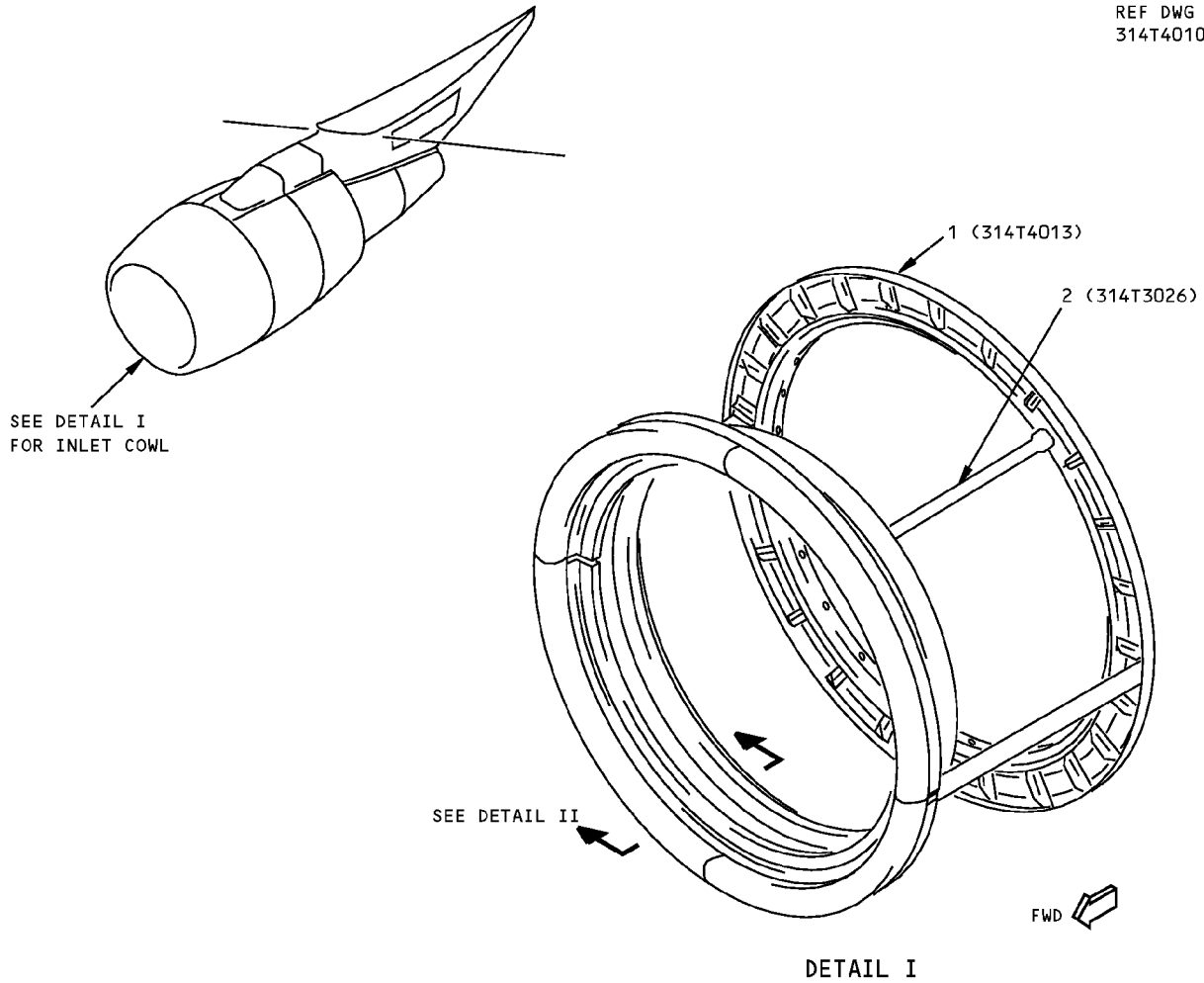


**Inlet Cowl Acoustic Panel Repair - PW4000 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL STRUCTURE - PW4000 ENGINE

REF DWG
314T4010



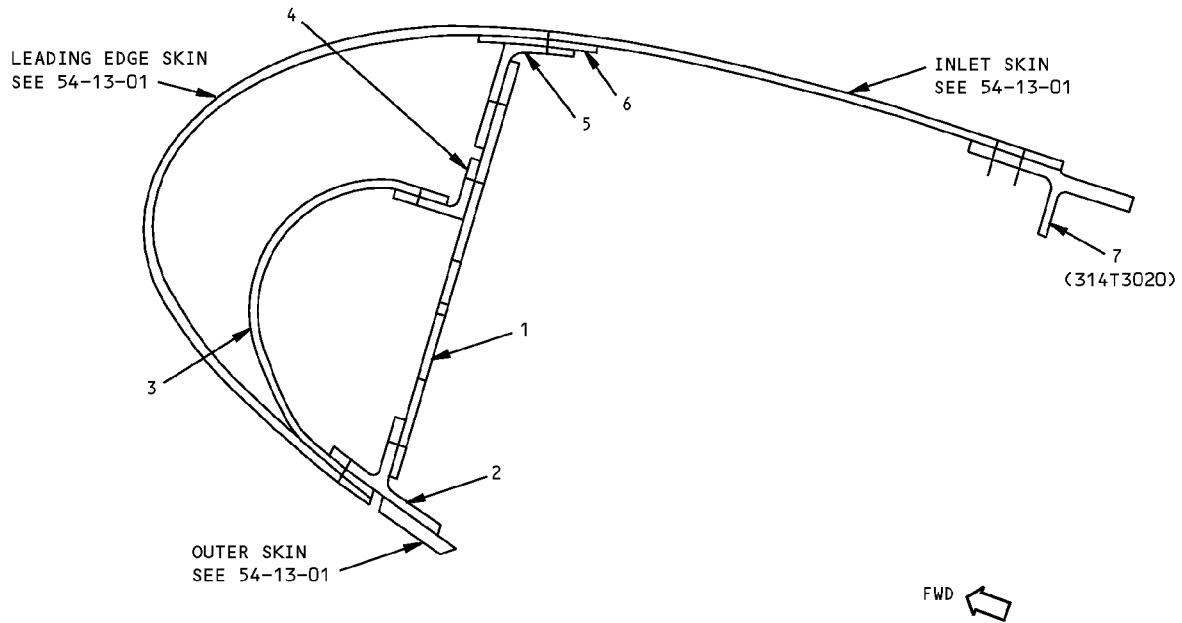
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	BULKHEAD ASSY UPR AND LWR CHORD WEB INNER RING	0.050	BAC1506-3111 2024-T42 CLAD 2024-T81 7075-T73 FORGING	
2	TEE		BAC1505-100569 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Structure Identification - PW4000 Engine
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314U4020



DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB	0.125	CLAD 2024-T81	
2	OUTER CHORD		BAC1506-3529 2024-T42	
3	D DUCT	0.125	2219-T62	
4	D DUCT ANGLE		BAC1503-100550 2219-T62	
5	INNER CHORD		BAC1514-2630 2024-T42	
6	DOUBLER	0.050	CLAD 2024-T62	
7	RING		BAC1506-3212 2024-T62	

LIST OF MATERIALS FOR DETAIL II

**Inlet Cowl Structure Identification - PW4000 Engine
Figure 1 (Sheet 2 of 2)**

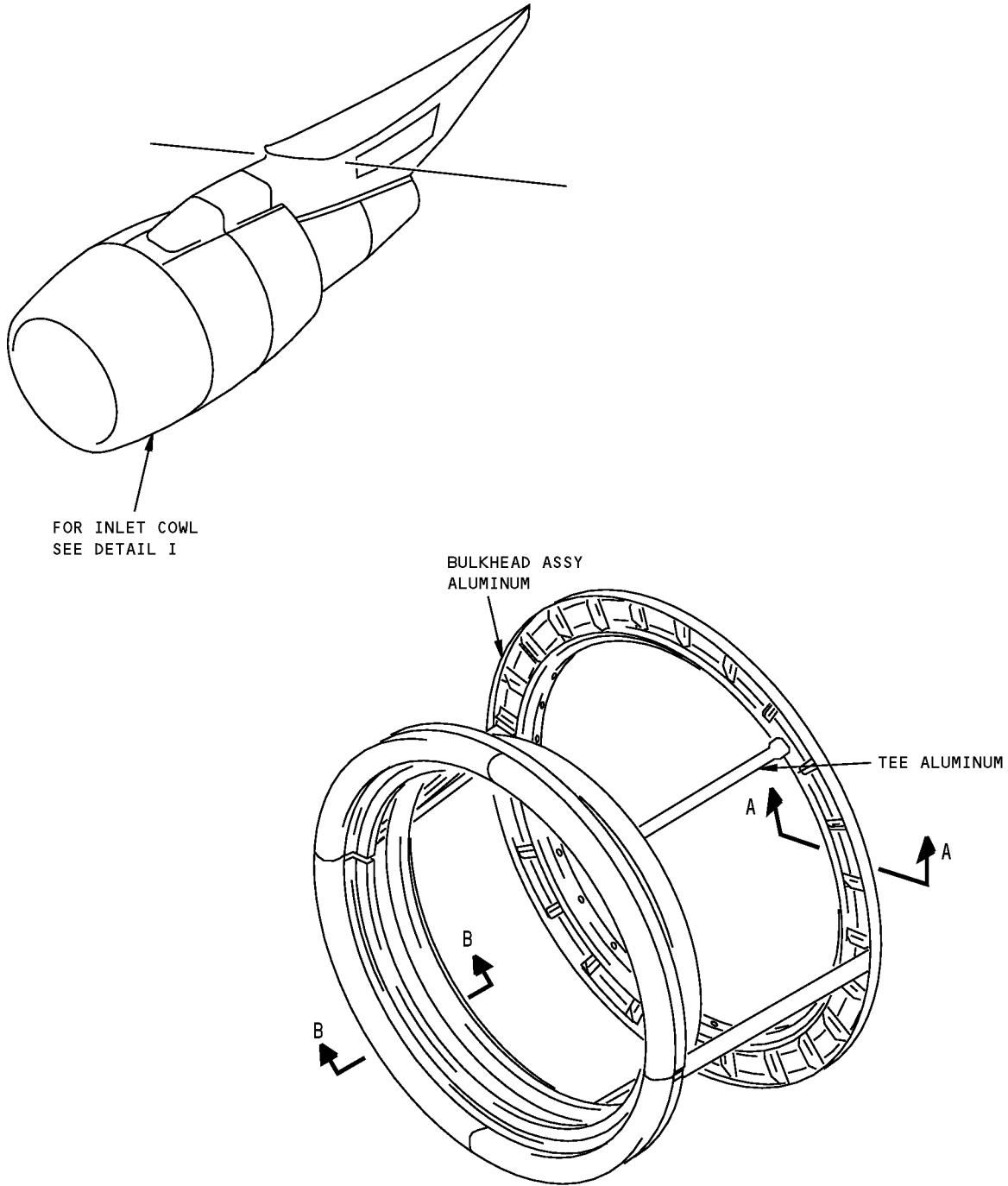
IDENTIFICATION 1
Page 2
Apr 01/2005

54-13-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

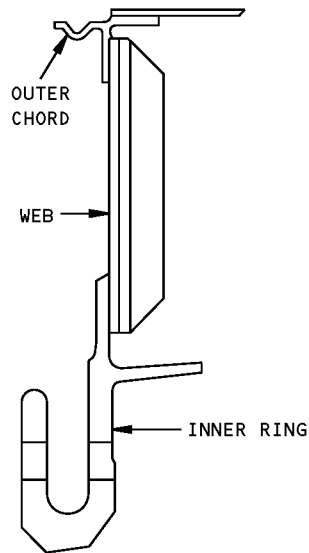
ALLOWABLE DAMAGE 1 - INLET COWL STRUCTURE - PW4000 ENGINE



DETAIL I

**Inlet Cowl Structure Allowable Damage - PW4000 Engine
Figure 101 (Sheet 1 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

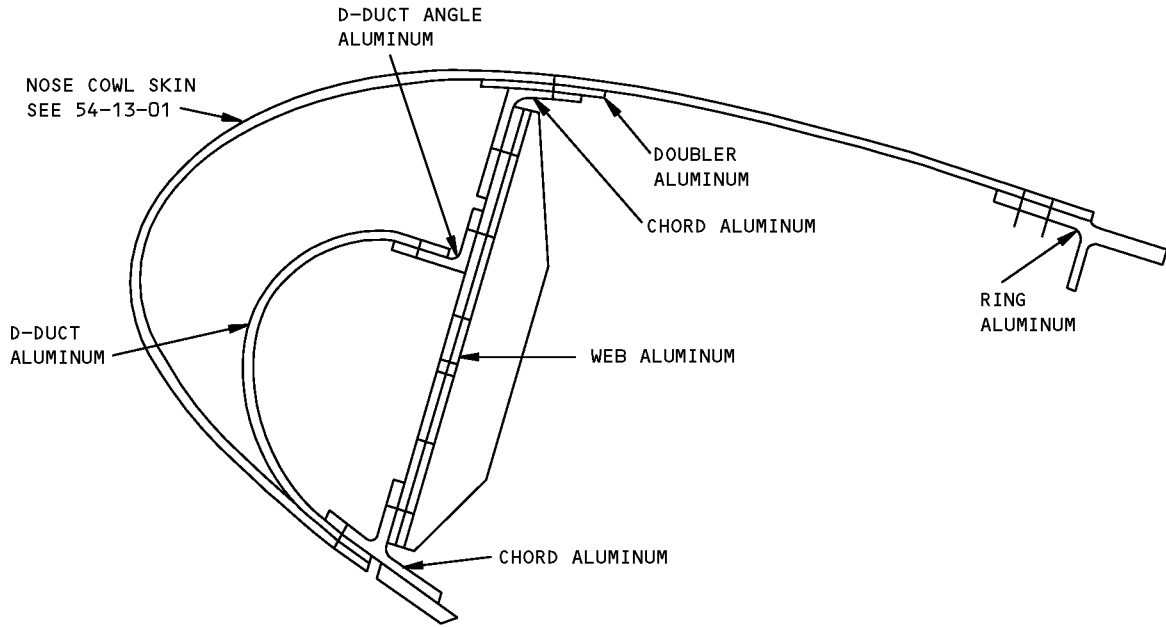


**BULKHEAD ASSEMBLY
SECTION A-A**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
BULKHEAD ASSY				
OUTER CHORD	A	B	NOT ALLOWED	NOT ALLOWED
WEB	A	B	SEE DETAIL IV	E
INNER RINGS	C	D	NOT ALLOWED	NOT ALLOWED
TEE	A	B	NOT ALLOWED	E STEM ONLY

**Inlet Cowl Structure Allowable Damage - PW4000 Engine
Figure 101 (Sheet 2 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
WEB	A	B	SEE DETAIL IV	F
D-DUCT	A	B	NOT ALLOWED	NOT ALLOWED
D-DUCT ANGLE	A	B	NOT ALLOWED	NOT ALLOWED
CHORD	A	B	NOT ALLOWED	NOT ALLOWED
DOUBLER	A	B	NOT ALLOWED	NOT ALLOWED
RING	A	B	NOT ALLOWED	NOT ALLOWED

**Inlet Cowl Structure Allowable Damage - PW4000 Engine
Figure 101 (Sheet 3 of 5)**

D634T210

ALLOWABLE DAMAGE 1
Page 103
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Apr 01/2005

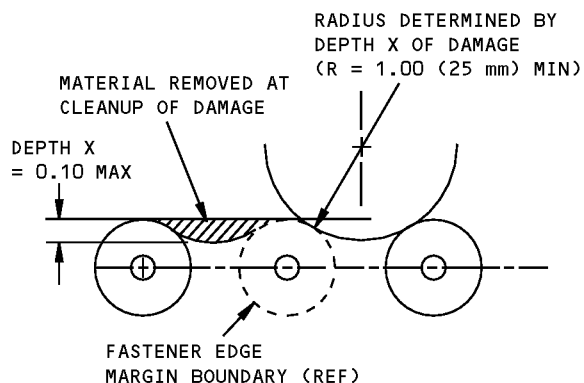
STRUCTURAL REPAIR MANUAL

NOTES

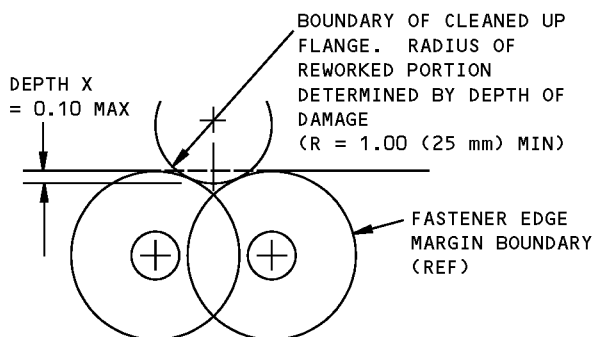
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER AMM 51-21

- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III, AND V
- C** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI. SHOT PEEN REWORKED AREA. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. SEE SRM 51-20-06.

- D** REMOVE DAMAGE PER DETAILS II, III, AND V. SHOT PEEN REWORKED AREAS OF RING. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT AFTER REWORK. SEE SRM 51-20-06
- E** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- F** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

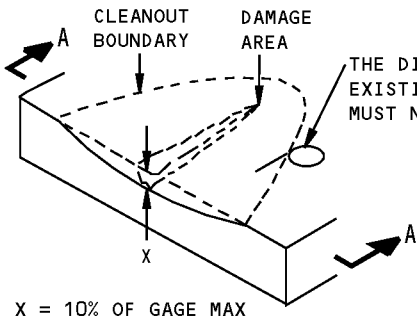


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

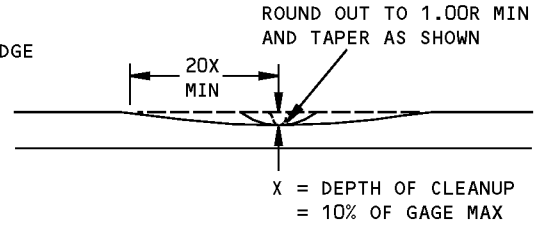
DETAIL II

Inlet Cowl Structure Allowable Damage - PW4000 Engine
Figure 101 (Sheet 4 of 5)

STRUCTURAL REPAIR MANUAL

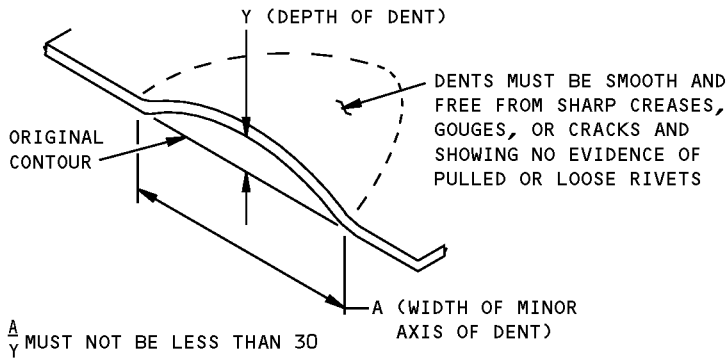


X = 10% OF GAGE MAX

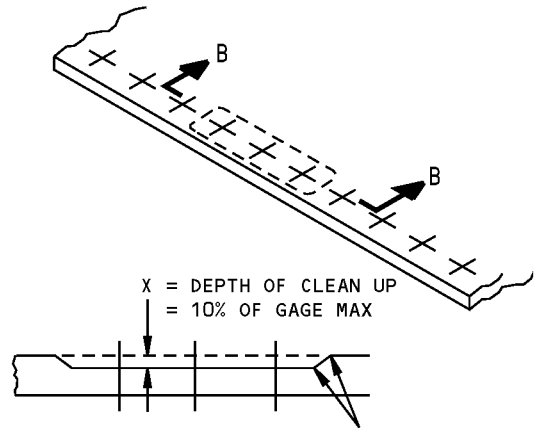


SECTION A-A

**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**



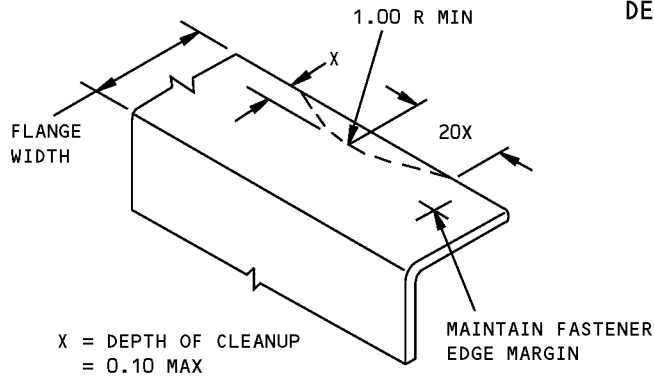
**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEAN UP AROUND ANY THREE
FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL V**



**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VI**

**Inlet Cowl Structure Allowable Damage - PW4000 Engine
Figure 101 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 1 - THERMAL ANTI-ICING D-DUCT SKIN - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Remove inlet cowl leading edge skin section and damaged D-duct section.
2. Stop drill cracks 0.25 inch (6 mm) diameter.
3. Make the repair parts. Form doublers, skin or shims to required contour. Make repair skin large enough to extend two rows of fasteners past the crack in all four directions. See Detail I. For cracks too near an edge of the D-duct to allow room for two rows of fasteners, refer to Detail II.
Note: The repair skin may be cut from an existing damaged D-duct.
4. Locate, drill and countersink fastener holes.
5. Remove all the nicks, scratches, gouges, and sharp edges from the initial skin and repair parts.
6. Alodine treat repair parts and raw edges of skin per 51-20-01. Apply one coat of BAC 5710, Type 51 (Desoto Hi-Temp) primer to all surfaces of doublers, raw edges and interior surface of repair skin.
7. Rivet doublers and shims to existing D-duct skin using BACR15BB6AD rivets.
8. Rivet inner diameter edge of D-duct to angle with NAS1398CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
9. Attach cowl leading edge skin outer diameter edge and outer diameter edge of D-duct together to outer chord with Cleco fasteners. Fasten cowl leading edge skin inner diameter edge in its original location with Cleco fasteners.
10. Rivet cowl leading edge skin and outer diameter of D-duct into place with NAS1399CW6 blind rivets installed wet with BAC 5710, Type 51 (Desoto Hi-Temp) primer.
11. Fill gaps with aerodynamic smoother.
12. Restore finish per AMM 51-21.

NOTES

- FOR CRACK IN D-DUCT NEAR AN EXISTING D-DUCT SPLICE, REPLACE SPLICE WITH A WIDER SPLICE SO THAT AT LEAST TWO ROWS OF FASTENERS EXTEND BEYOND CRACK
- REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
SRM 51-40-00 FOR FASTENER REMOVAL, INSTALLATION, HOLE SIZES, AND EDGE MARGINS

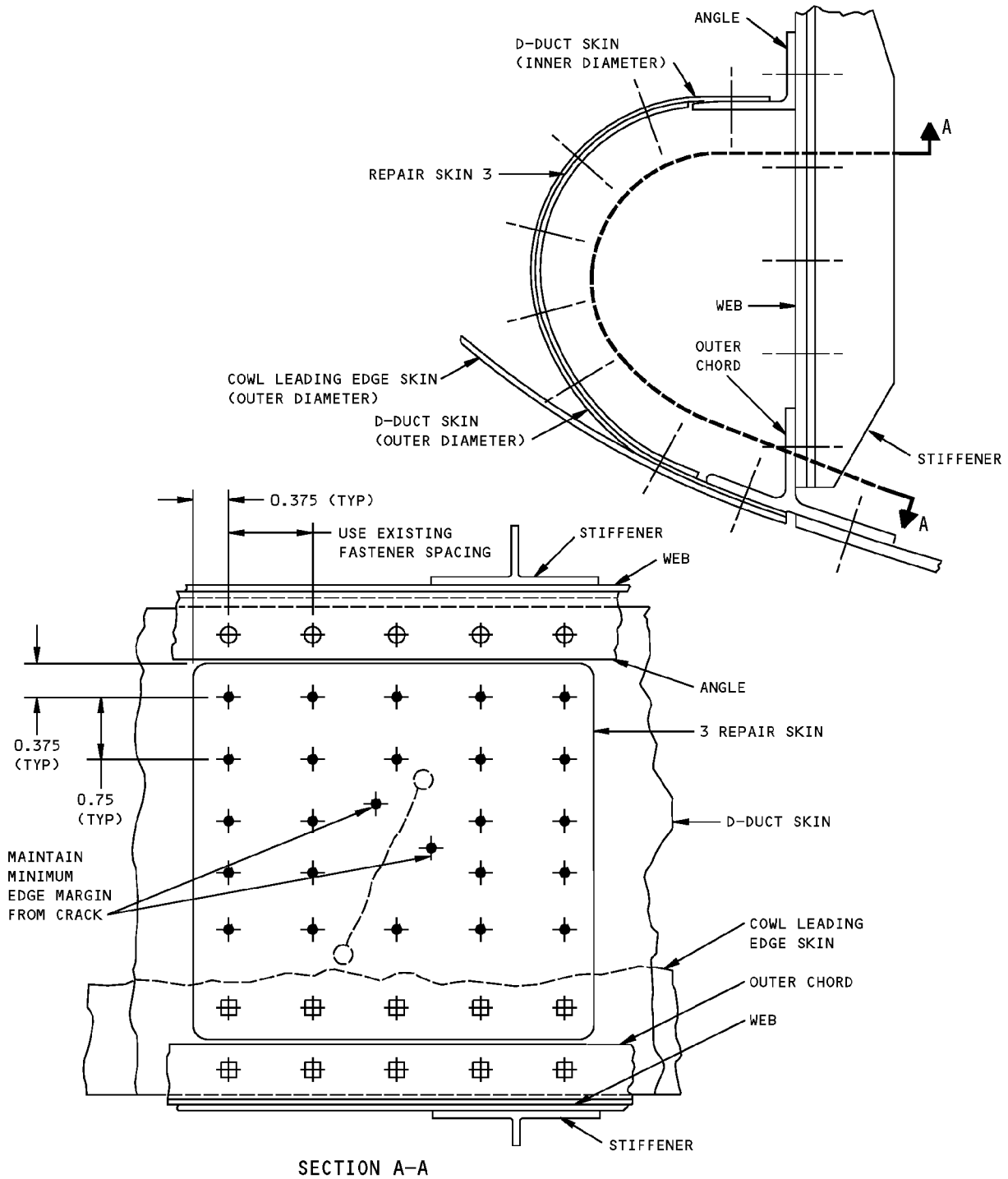
SYMBOLS

- ✦ REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15BB6AD
- ⊕ REPAIR FASTENER IN EXISTING LOCATION. INSTALL NAS1398CW6 PROTRUDING HEAD BLIND RIVET
- ⊞ REPAIR FASTENER IN EXISTING LOCATION. INSTALL NAS1399CW6 FLUSH HEAD BLIND RIVET

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	SHIM	1	0.05 2219-0 BARE SHEET HT TR T62 AFTER FORMING
2	REPAIR DOUBLER	AS REQD	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING
3	REPAIR SKIN	1	0.045 2219-0 BARE SHEET HT TR T62 AFTER FORMING

**Thermal Anti-Icing D-Duct Skin Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

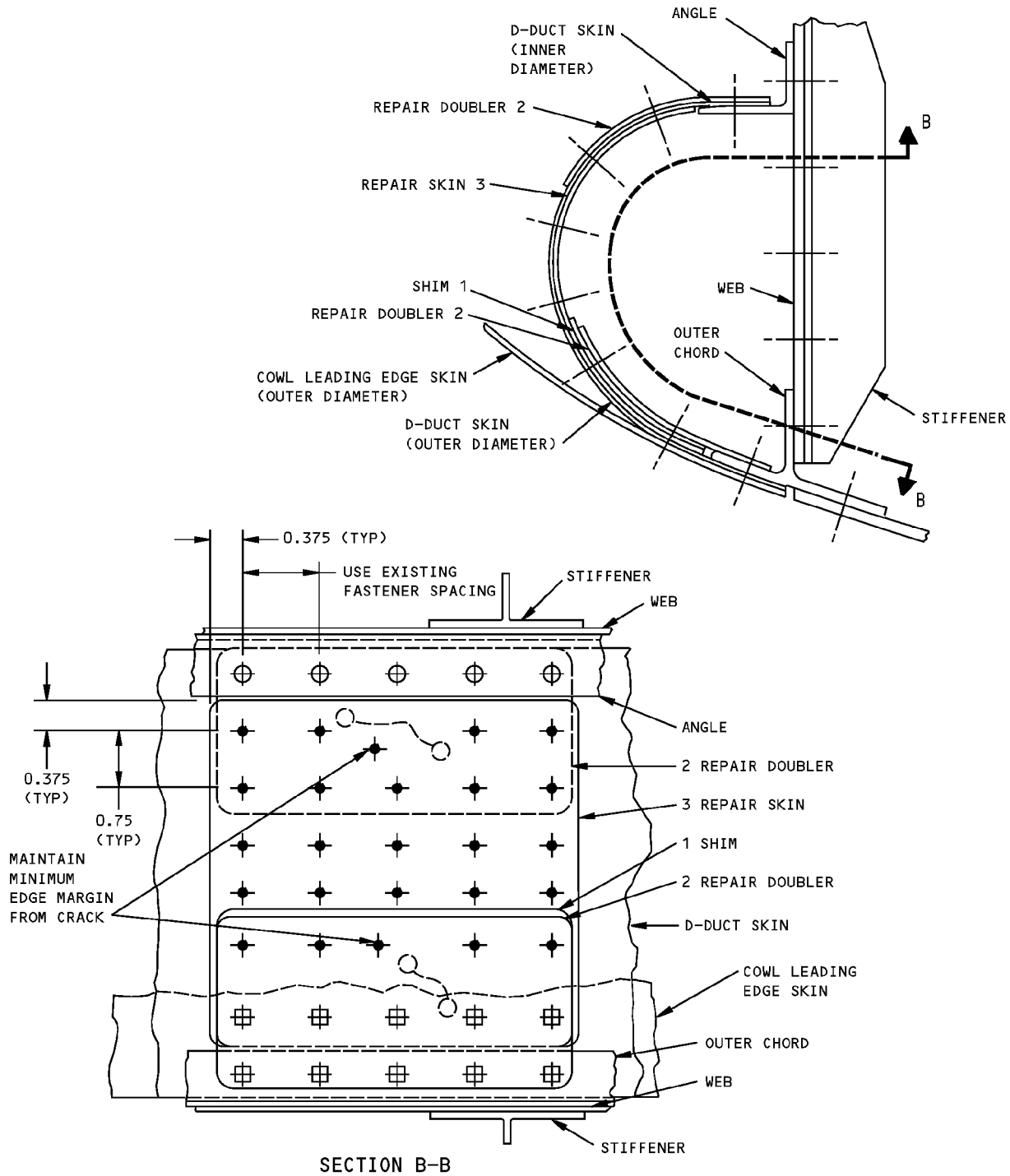
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR FOR CRACKS AT CENTER OF D-DUCT
DETAIL I**

**Thermal Anti-Icing D-Duct Skin Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR FOR CRACKS NEAR EDGE OF D-DUCT
DETAIL II**

**Thermal Anti-Icing D-Duct Skin Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL STRUCTURE - AFT BULKHEAD WEB - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Remove the outer cowl skin.
2. Remove the thermal anti-icing duct (TAI) duct. Refer to AMM 71-11-09.
3. Remove the fasteners as shown in Detail III.
4. Cut and remove part of the web as shown in Detail II. Make sure no other parts are damaged when the web is cut.
5. Make the repair parts.
6. Assemble the repair parts and drill the fastener holes. Refer to Detail III for the distance between fasteners.
7. Remove the repair parts.
8. Remove all of the nicks, scratches, gouges, and sharp edges from the web and the repair parts.
9. Apply alodine to the repair parts and the bare edges of the web. Refer to SRM 51-20-01.
10. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare edges of the web. Refer to SRM 51-21-00.
11. Install the repair parts. Install the fasteners wet with BMS 10-11, Type I primer.

FASTENER SYMBOLS

- + OTHER FASTENER LOCATION
- ⊞ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACB30NX6K4X HEX DRIVE BOLT WITH BACC30X6 COLLAR.
- ✦ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL A BACR15ET7AD RIVET.
- ⊕ REMOVE THIS FASTENER TO INSTALL THE REPLACEMENT WEB AND INSTALL BACR15AD7AD RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15BB6AD4 RIVET.

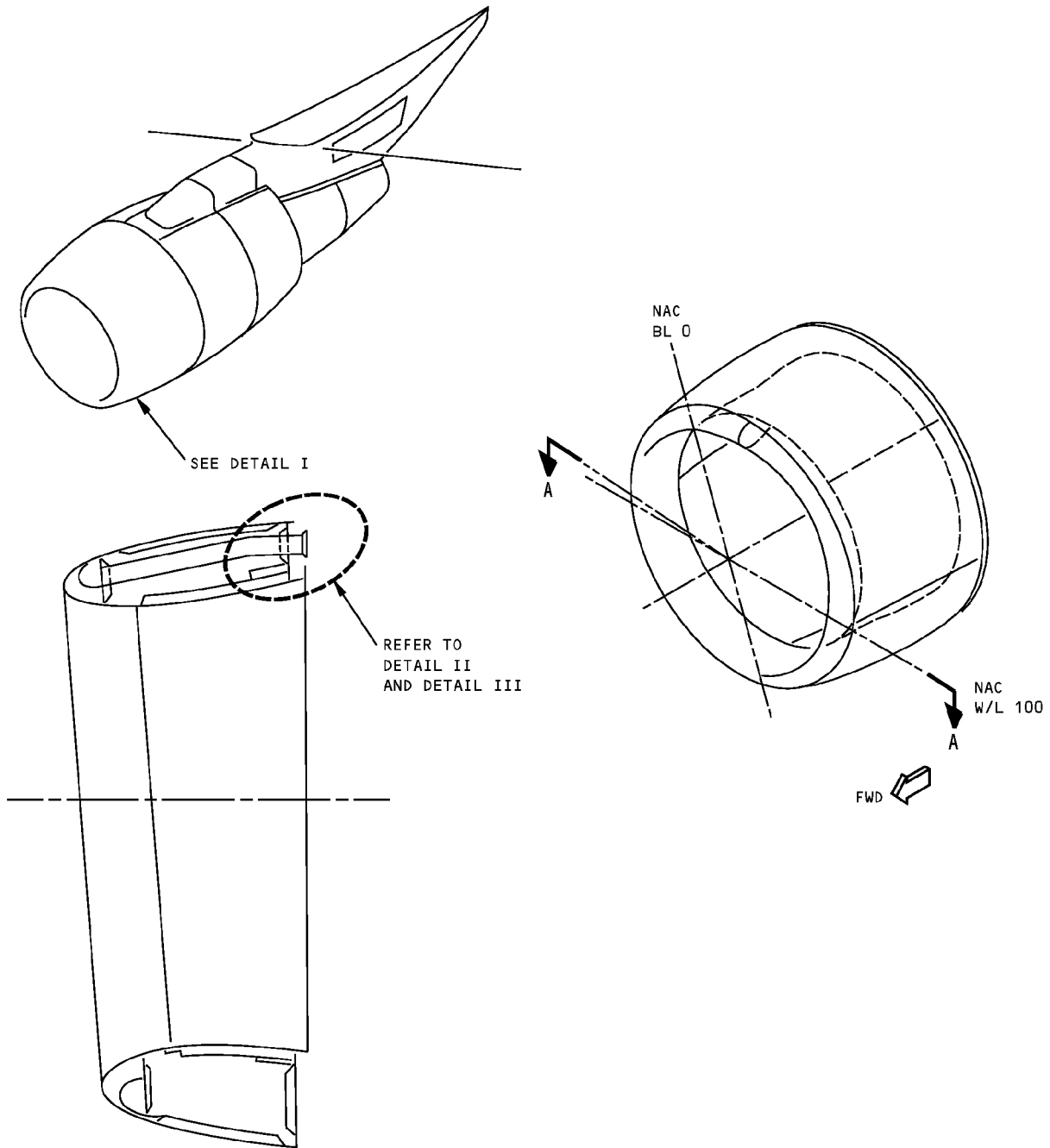
REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPLACEMENT WEB	1	0.050 CLAD 2024-T81
2	SPLICE STRAP	1	0.063 CLAD 2024-T81

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES.
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS

**Inlet Cowl Structure - Aft Bulkhead Web Repair - PW4000 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

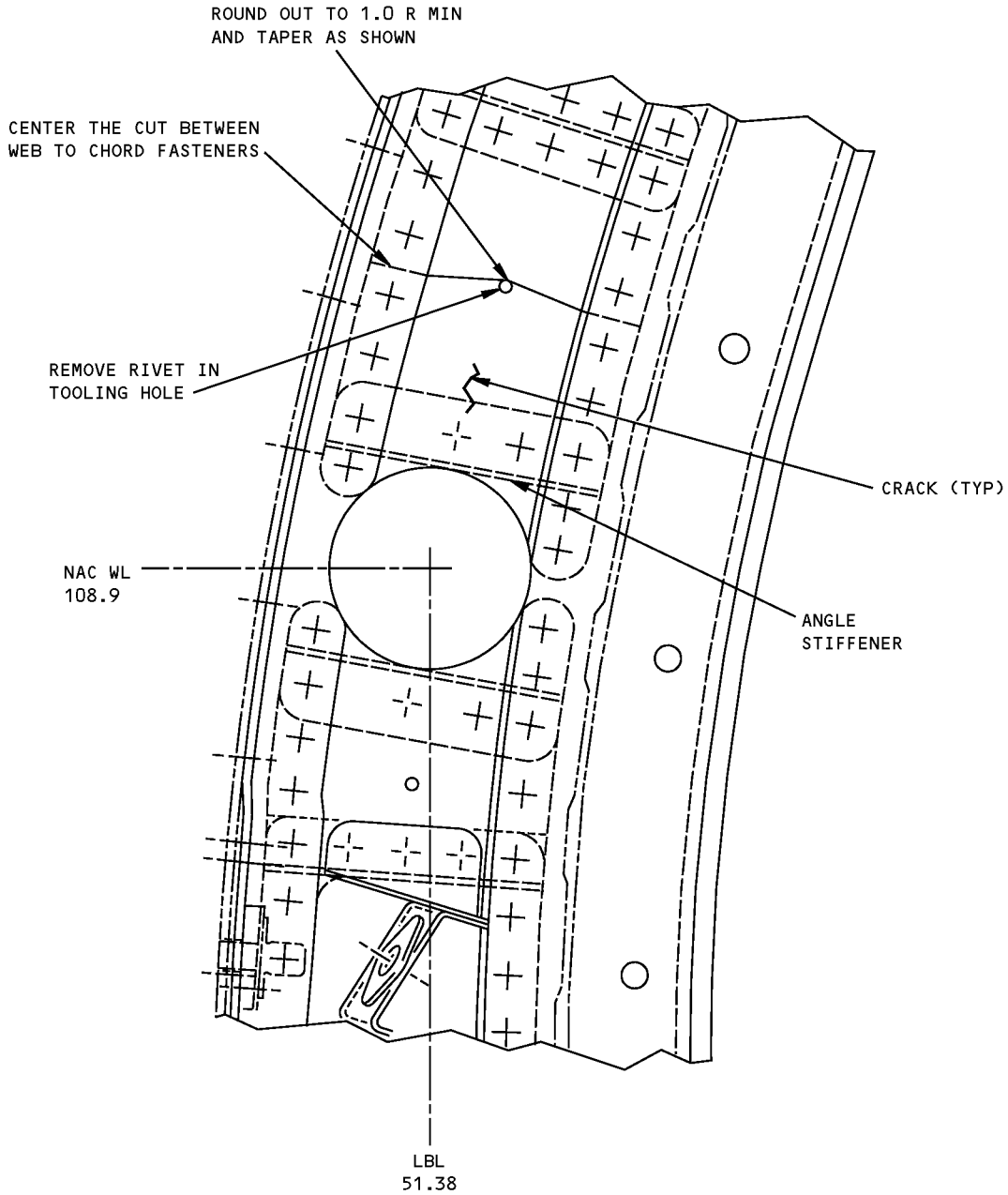


SECTION A-A

DETAIL I

**Inlet Cowl Structure - Aft Bulkhead Web Repair - PW4000 Engine
Figure 201 (Sheet 2 of 4)**

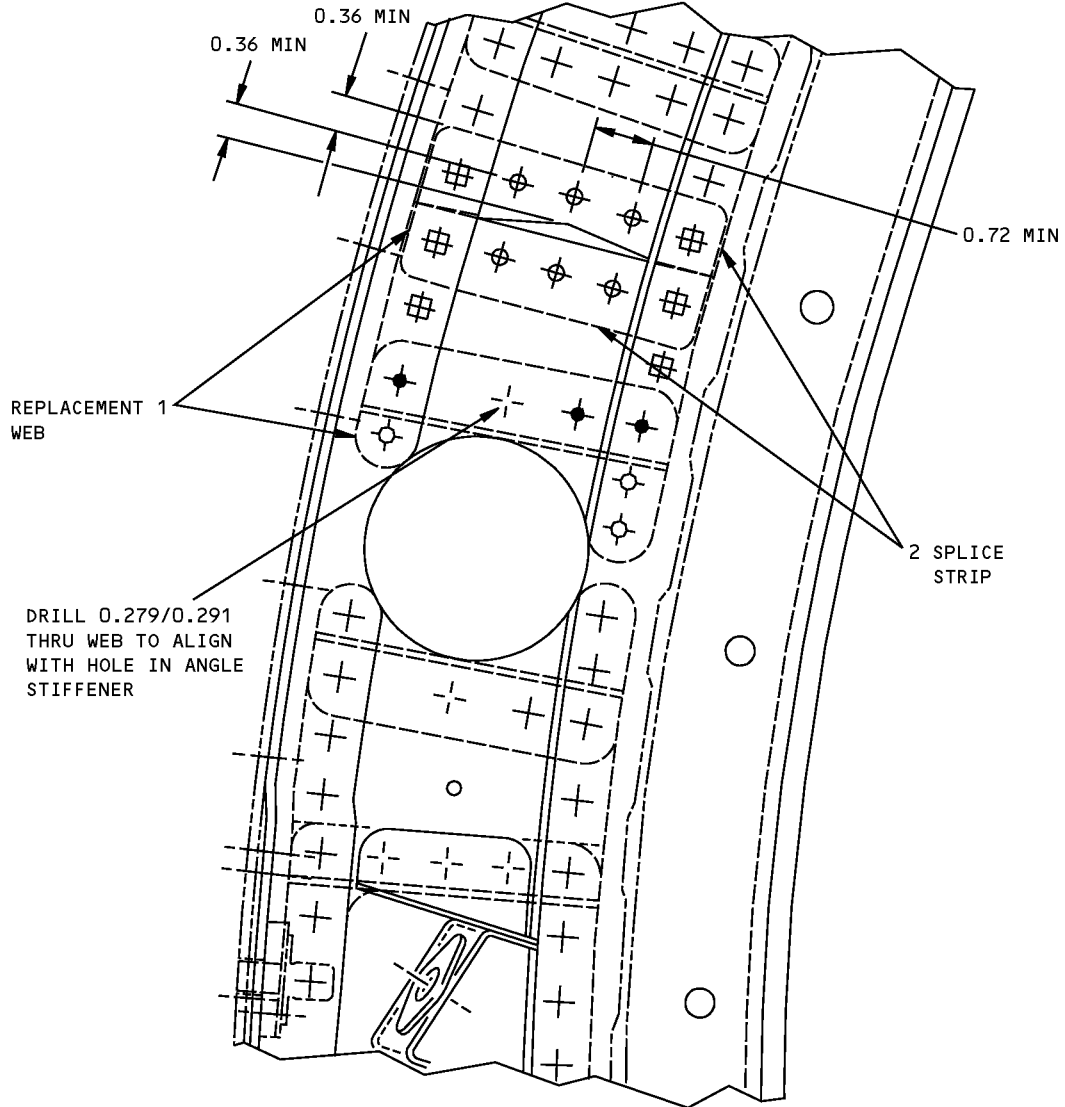
**767-300
STRUCTURAL REPAIR MANUAL**



**WEB CUT LOCATION
DETAIL II**

**Inlet Cowl Structure - Aft Bulkhead Web Repair - PW4000 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



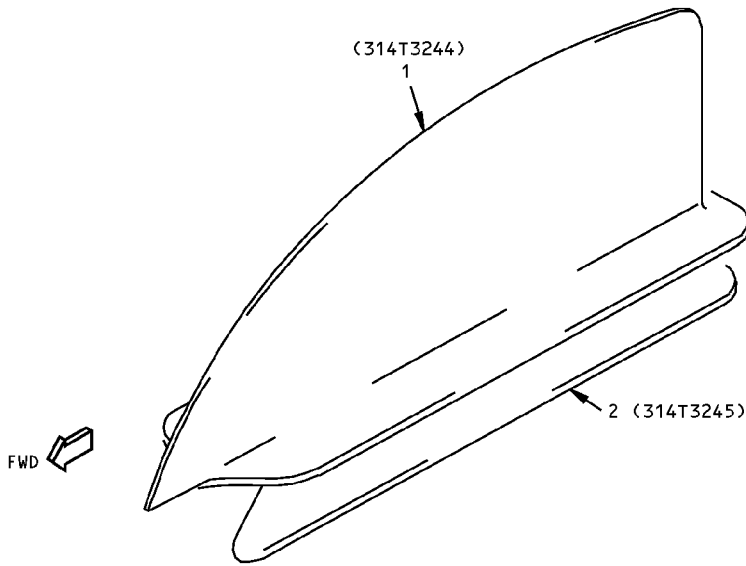
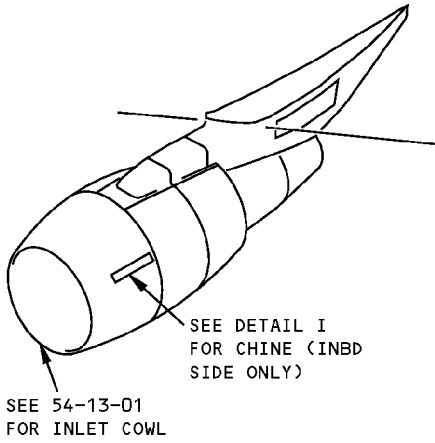
**WEB REPAIR
DETAIL III**

**Inlet Cowl Structure - Aft Bulkhead Web Repair - PW4000 Engine
Figure 201 (Sheet 4 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL CHINE - PW4000 ENGINE

REF DWG
314T3239



DETAIL I

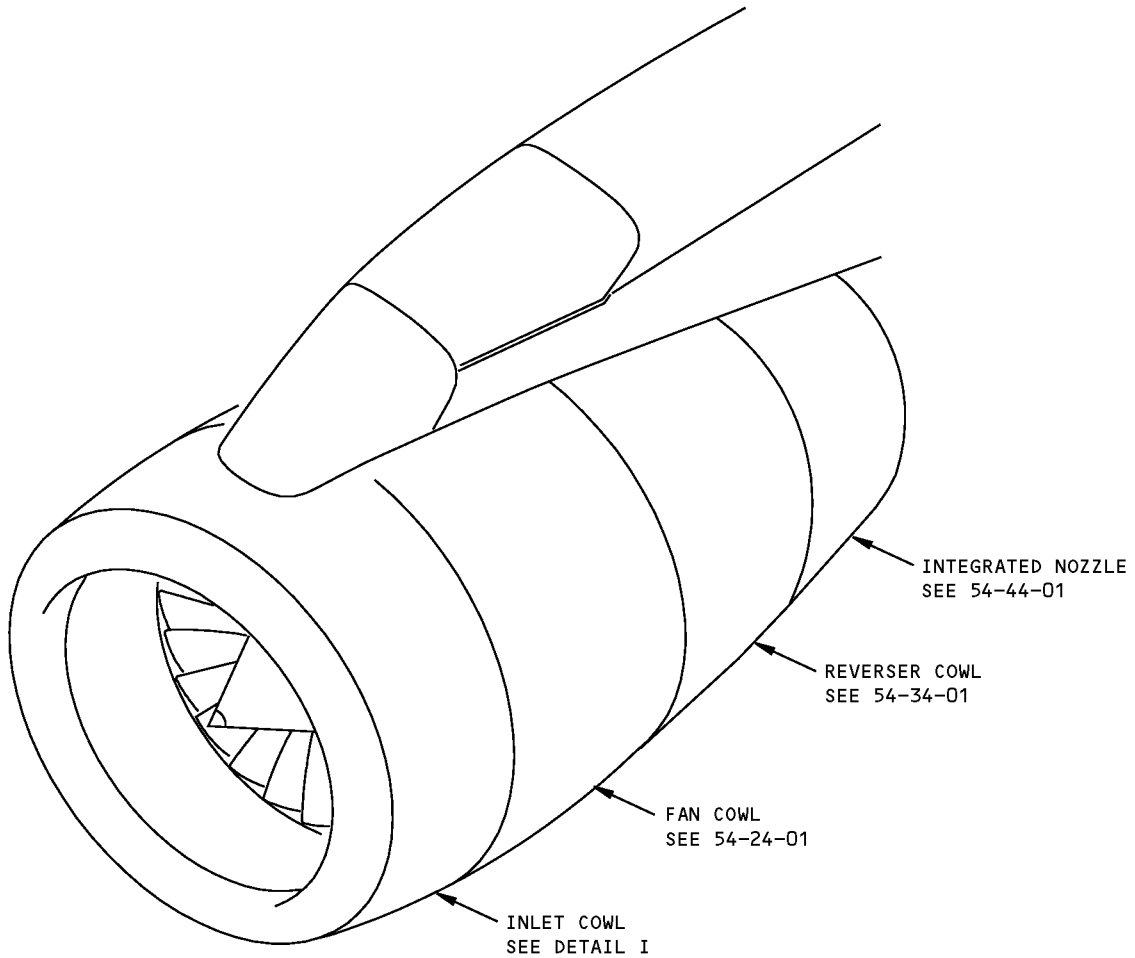
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHINE		FORGING 7075-T73	
2	INSULATOR		FIBERGLASS LAMINATE (2 PLYES) BMS 8-79, TYPE 120	

LIST OF MATERIALS FOR DETAIL I

**Inlet Cowl Chine Identification - PW4000 Engine
Figure 1**

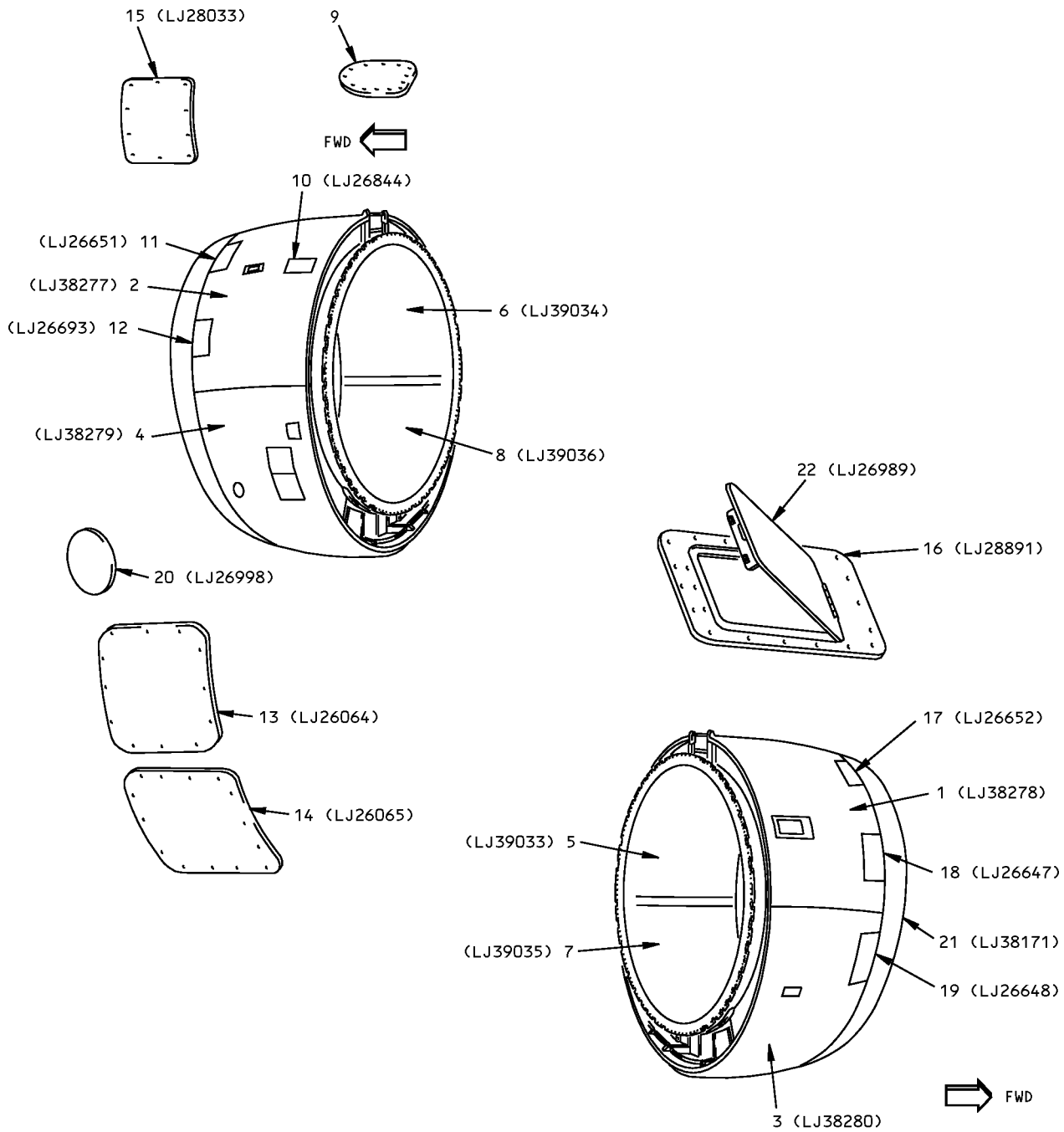
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INLET COWL SKIN IDENTIFICATION - RB211-524 ENGINES



Inlet Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 3)

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STRUCTURAL REPAIR MANUAL



DETAIL I

Inlet Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 3)

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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER RH OUTER SKIN	0.064	L73 (CHEMICALLY ETCHED TO 0.055 MIN)	
2	UPPER LH OUTER SKIN	0.064	L73 (CHEMICALLY ETCHED TO 0.055 MIN)	
3	LOWER RH OUTER SKIN	0.064	L73 (CHEMICALLY ETCHED TO 0.040 MIN)	
4	LOWER LH OUTER SKIN	0.064	L73 (CHEMICALLY ETCHED TO 0.040 MIN)	
5	UPPER LH INNER SKIN	0.080	L73	
6	UPPER RH INNER SKIN	0.080	L73	
7	LOWER LH INNER SKINS	0.080	L73	
8	LOWER RH INNER SKIN	0.080	L73	
9	ACCESS DOOR	0.128	L73	
10	ACCESS DOOR	0.128	L73	
11	ACCESS DOOR	0.128	L73	
12	ACCESS DOOR	0.128	L73	
13	ACCESS DOOR	0.128	L73	
14	ACCESS DOOR	0.128	L73	
15	ACCESS DOOR	0.128	L73	
16	BLOW OUT DOOR PANEL	0.128	L73	
17	ACCESS DOOR	0.128	L73	
18	ACCESS DOOR	0.128	L73	
19	ACCESS DOOR	0.128	L73	
20	ACCESS DOOR	0.064	L72	
21	LIP SKINS	0.104	2219-T62 OR 2219-T81	
22	BLOW OUT DOOR	0.080	L72	

LIST OF MATERIALS FOR DETAIL I

Inlet Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 3)

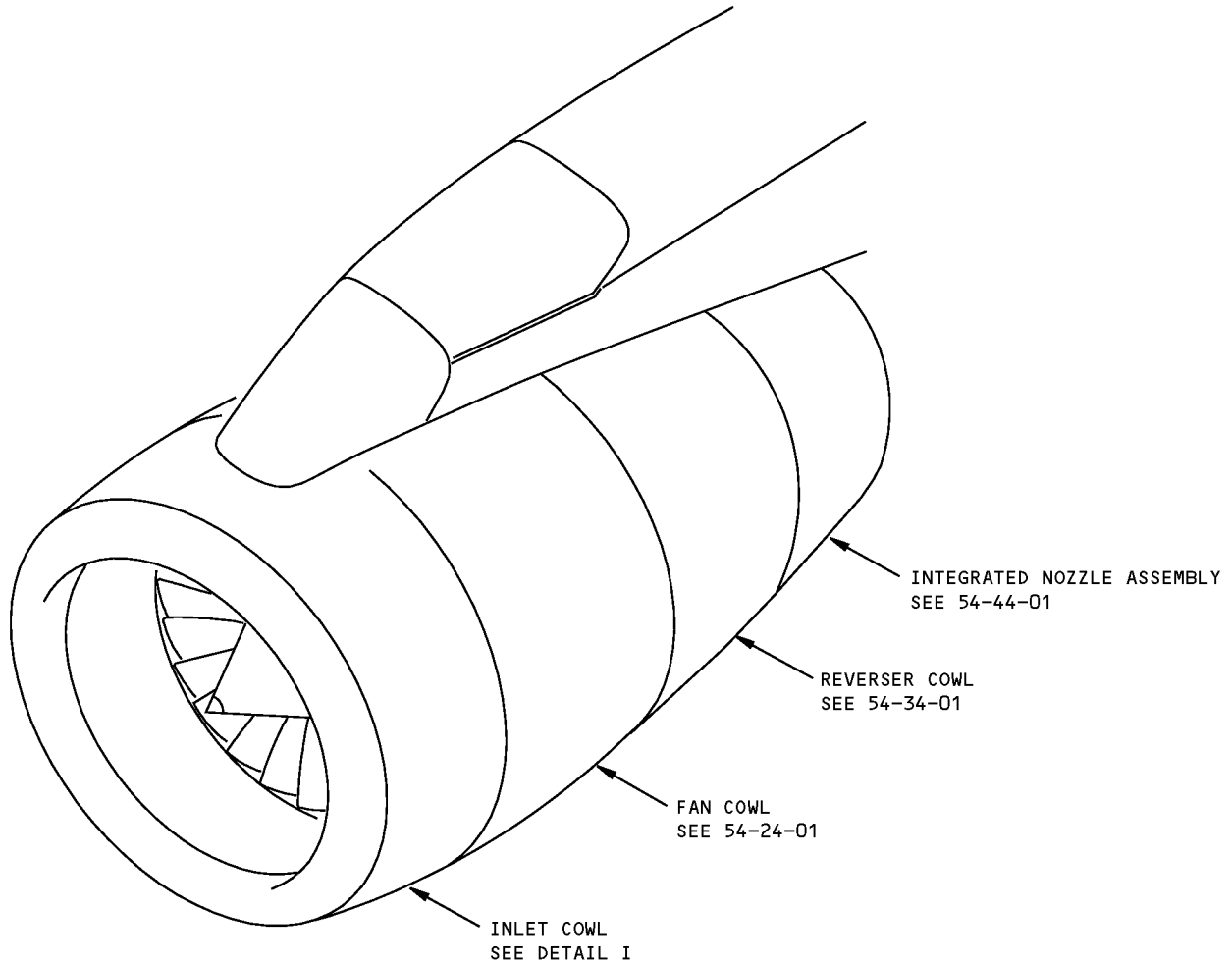
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IDENTIFICATION 1
Page 3
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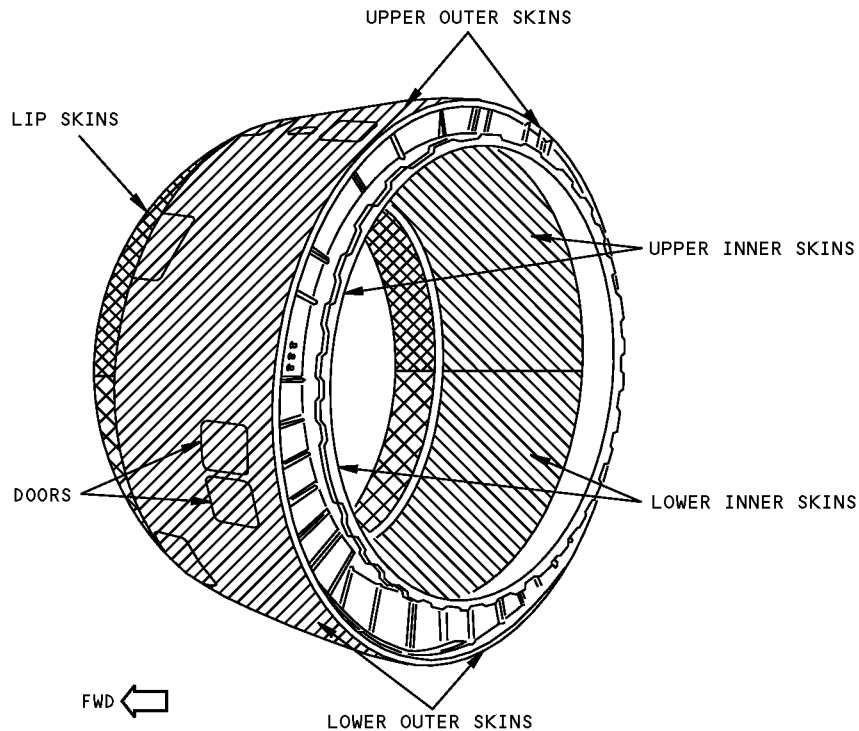
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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - INLET COWL SKIN ALLOWABLE DAMAGE - RB211-524 ENGINE

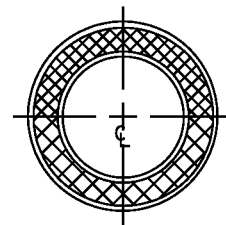
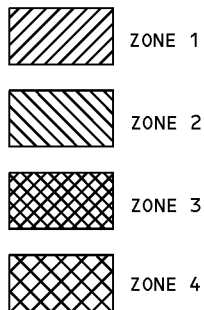


Inlet Cowl Skin Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 1 of 4)

767-300
STRUCTURAL REPAIR MANUAL



DETAIL I



NOSE COWL LIP SKIN
LOOKING AFT

		CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES
NOSE COWL	ZONE 1 SKINS	A, B AND DETAIL IV	D AND DETAIL II	E AND DETAIL III	A
	ZONE 2 SKINS	C			E, F, G AND DETAIL III
	ZONE 4 SKINS	C			
	ZONE 3 SKINS	C			

Inlet Cowl Skin Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 2 of 4)

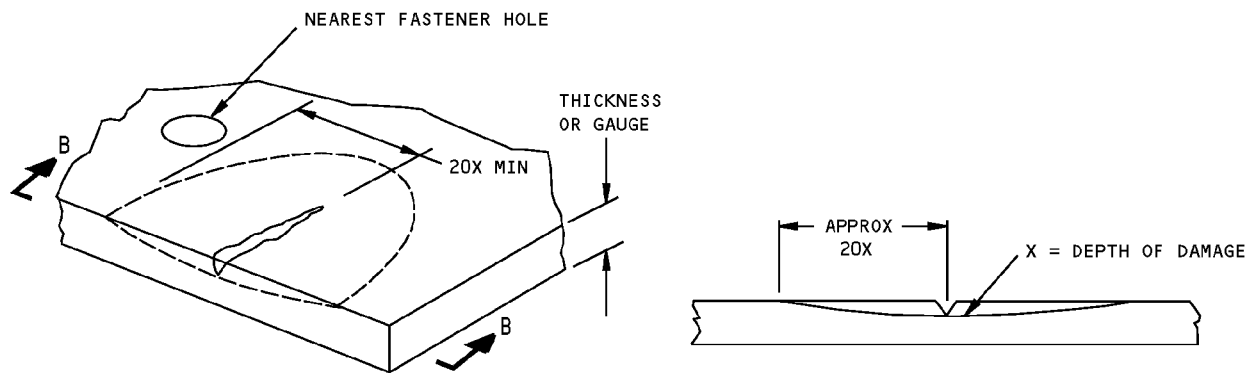
STRUCTURAL REPAIR MANUAL

NOTES

- UPON COMPLETION OF REPAIR CLEANUP, REPROTECT IN ACCORDANCE WITH 51-22-01
- A** CRACKS TO A MAXIMUM OF 1.00 ARE ACCEPTABLE. CLEAN OUT CRACKS TO A SMOOTH ROUND HOLE AND COVER WITH SCOTCH BRAND 425 TAPE
- B** CRACKS WHICH EMANATE FROM RIVETS ATTACHING SKIN TO CIRCULAR BUTT-STRAP AT ACCESS DOOR POSITIONS (DETAIL IV) ARE ACCEPTABLE. CRACKS WHICH HAVE NOT EXTENDED ACROSS FULL WIDTH 'Y' ARE TO BE FITTED WITH 0.125 IN. STOP AND HOLDING RIVETS
- C** CRACKS ARE NOT ACCEPTABLE
- D** DAMAGE IS ALLOWABLE UP TO 25 PERCENT OF MATERIAL THICKNESS IN DEPTH AND 2.00 IN LENGTH. REMOVE DAMAGE
- E** DENTS AND DISTORTION ARE ALLOWED PROVIDED 'X' (DETAIL III) DOES NOT EXCEED 0.150 AND RADIUS AT 'Z' IS NOT LESS THAN FIVE (5) TIMES 'M'. DAMAGE 'W' MUST NOT EXCEED 4.00 DIAMETER WITH A MINIMUM OF 4.00 SEPARATING EACH DAMAGED AREA
- F** ONE DENT OR DISTORTION IS ALLOWED PROVIDED 'X' (DETAIL III) DOES NOT EXCEED 0.250 AND RADIUS 'Z' IS NOT LESS THAN FIVE (5) TIMES 'M'. DAMAGE 'W' MUST NOT EXCEED 4.00 DIAMETER WITH A MINIMUM OF 4.00 SEPARATION FROM ANY OTHER DAMAGE AREA

NOTE: A DENT OR DISTORTION ABOVE 0.150 OR BELOW 0.250 MUST BE REPAIRED WITHIN 125 FLIGHT HOURS. REFER TO 54-14-01 FIG. 201

- G** A DENT OR DISTORTION ABOVE 0.250 MUST BE REPAIRED. REFER TO 54-14-01 FIG. 201



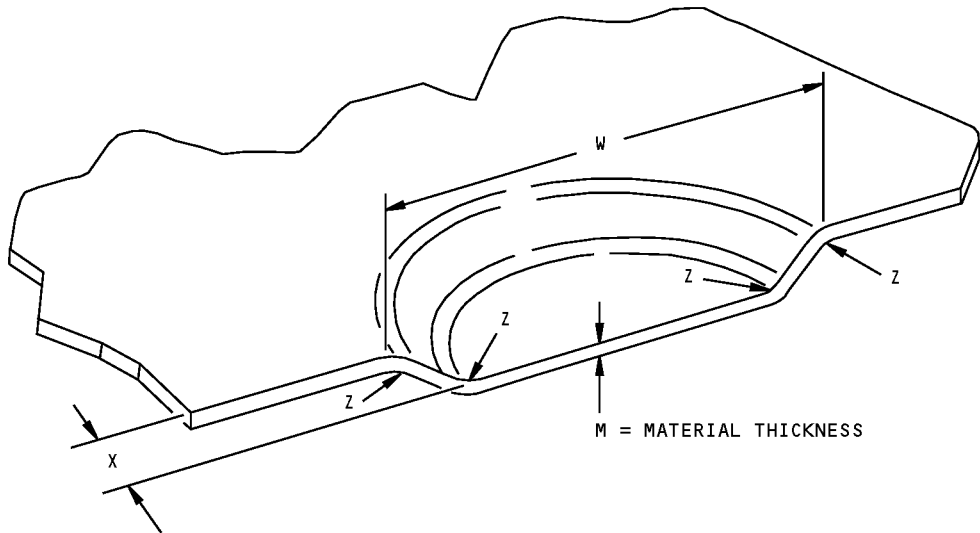
DOTTED LINE INDICATES CLEANUP AREA

BLEND OUT DAMAGE TO A SMOOTH CONTOUR

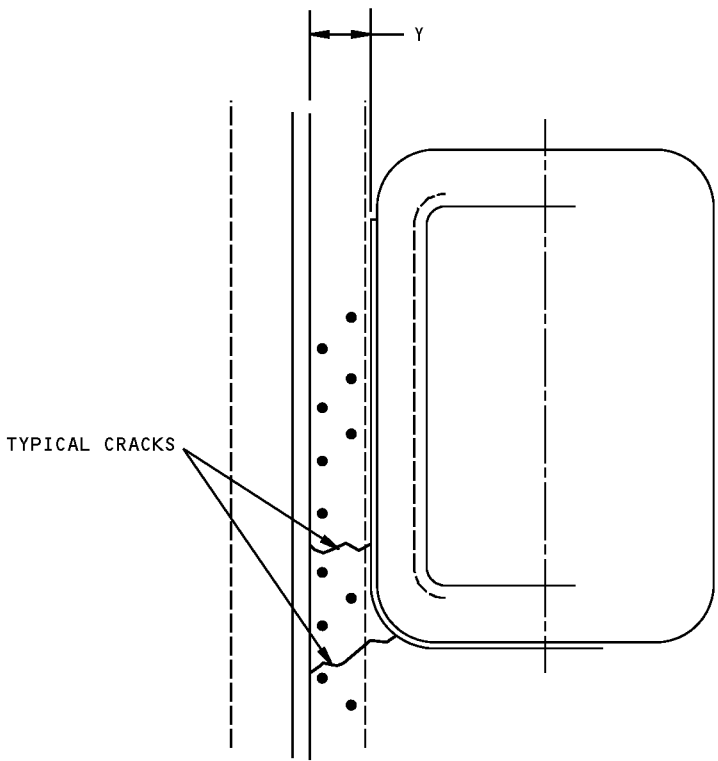
DETAIL II

Inlet Cowl Skin Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 3 of 4)

767-300
STRUCTURAL REPAIR MANUAL



DETAIL III

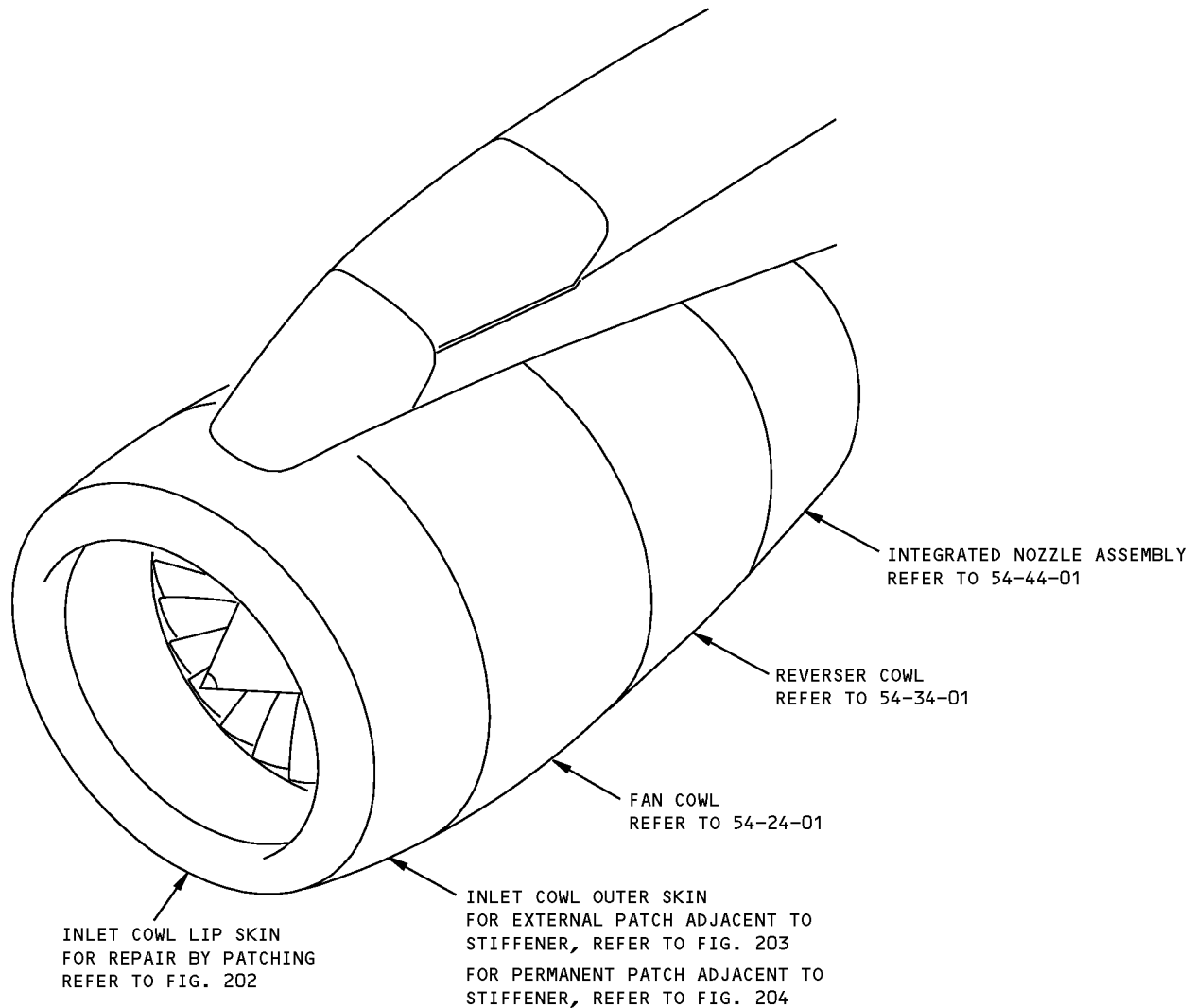


DETAIL IV

Inlet Cowl Skin Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 4 of 4)

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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - INLET COWL SKIN REPAIRS - RB211-524 ENGINE



Inlet Cowl Skin Repairs - RB211-524 Engine Repairs
Figure 201

STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL OUTER SKIN - PERMANENT PATCH ADJACENT TO STIFFENER - RB211 ENGINES

REPAIR INSTRUCTIONS

1. Mark and cut out damaged area to rectangular shape, taking care not to damage stiffener member. Apply Skydrol resistant faying surface finish (refer to 51-24-01 of the Maintenance Manual) to raw edges of skin. Use hand tools.
 2. Make patch, part 1.
 3. Make landing plates, part 2.
 4. Make packer plates, part 3.
- NOTE:** Only required when repairing chemically etched skin.
5. Drill the existing skin, patch, packer plates, and landing plates.
 6. Countersink the patch and existing skin. Deburr all parts.
 7. Apply alodine (refer to 51-22-01).
 8. Apply one coat of BMS 10-11, type I primer to each surface (refer to 51-21-00 of the Maintenance Manual).
 9. Apply faying surface seal to stiffener member, underside of landing plates and patch. Use Hylomar PL32M or BMS 5-95 sealant. Refer to 51-32-03.
 10. Fit the landing plates and patch.



NOTE: Place the packer plates between the landing plates and panel skin if a chemically etched skin is being repaired.

11. Rivet parts in position. Use 1/8-inch 100° countersunk SP71, NASM20426A-D, or equivalent in aluminum alloy or if inaccessible from both sides use 1/8-inch 100° countersunk Bulbed Cherrylock CR2238 series in repair rivet locations and 5/32 inch in existing locations. Refer to 51-42-01.
12. Apply Skydrol resistant finish to the repaired area.

NOTES

- REFER TO THE FOLLOWING WHEN USING THE REPAIR:
 - 51-22-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - 51-22-05 FOR REPAIR SEALING INSTRUCTIONS
 - 51-24-01 OF THE MAINTENANCE MANUAL FOR HYDRAULIC FLUID RESISTANT FINISH
 - 51-32-03 FOR NON-METALLIC MATERIAL SOURCES
 - 70-42-12 OF THE MAINTENANCE MANUAL FOR LOCAL SURFACE PROTECTION.
- ALL DIMENSIONS ARE IN INCHES.
- CARE MUST BE TAKEN NOT TO DAMAGE THE FRAME MEMBER.
- PATCH AND LANDING PLATE TO BE OF SAME THICKNESS & SPEC AS EXISTING SKIN. USE 1/8 DIA 100° COUNTERSUNK RIVETS SP71, NASM20426A-D, OR EQUIVALENT IN ALUM ALLOY; OR IF INACCESSIBLE AVDEL EQUIVALENTS.

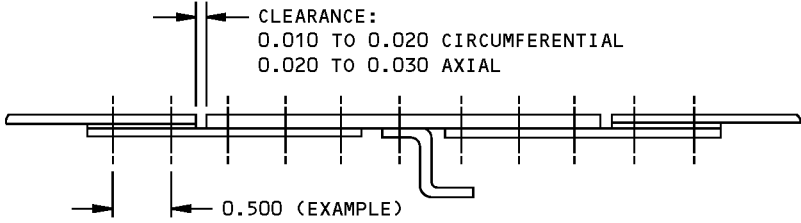
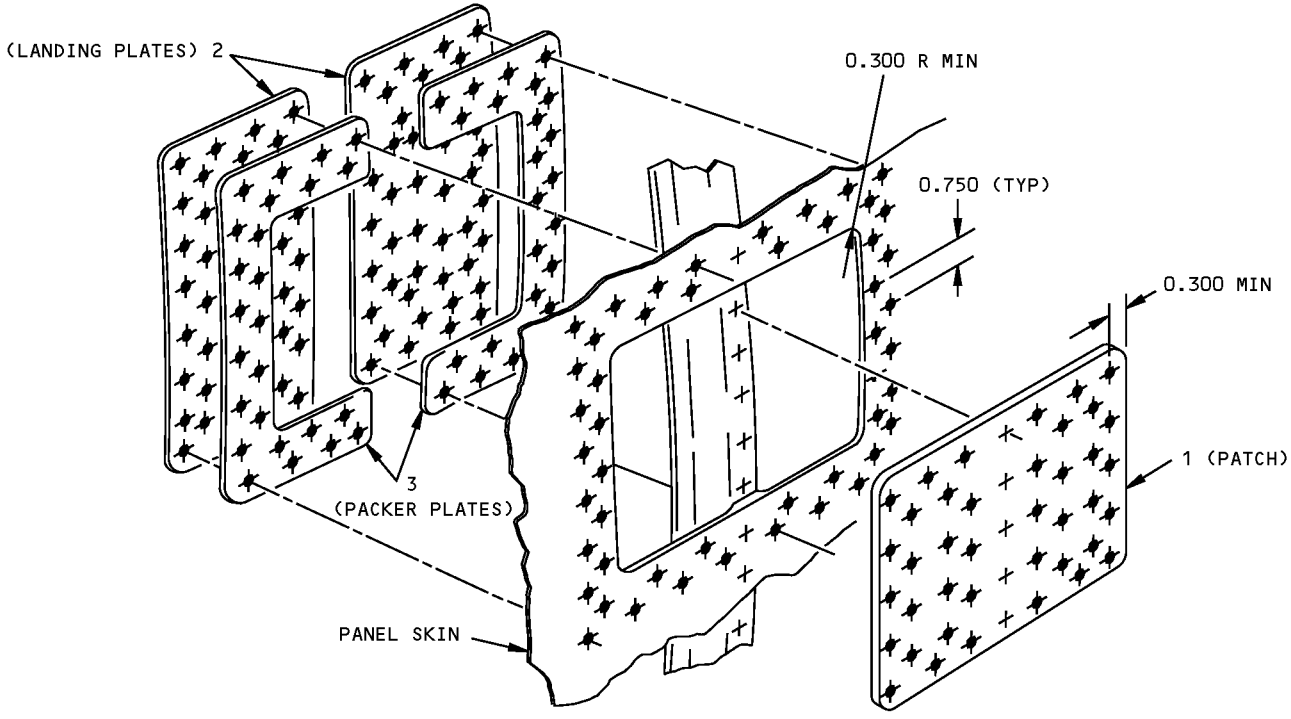
FASTENER SYMBOLS

-  EXISTING RIVET
 REPAIR RIVET

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PATCH	1	0.064 L73
2	LANDING PLATES	2	0.064 L73
3	PACKER PLATES	2	0.024 L73
		LOWER SKINS ONLY	

**Repair of the Inlet Cowl Outer Skin - Permanent Patch Adjacent to Stiffener - RB211 Engines
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THROUGH INLET COWLING ASSEMBLY SHOWING EXAMPLE REPAIR

A3605

**Repair of the Inlet Cowl Outer Skin - Permanent Patch Adjacent to Stiffener - RB211 Engines
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL LIP - REPAIR BY PATCHING - RB211-524 ENGINES

REPAIR INSTRUCTIONS

1. Mark and cut out damaged area. Use hand tools.
2. Make the doubler plate, part 1.
NOTE: The area of lip skin removed must be limited to the minimum necessary to remove the damage.
3. Make the patch, part 2, from correct spareable nose lip skin.
4. Drill, countersink and deburr nose cowl patch and doubler plate.
5. Apply alodine (refer to 51-20-01) or alochrom (refer to 51-22-01) coating.
6. Apply one coat of BMS 10-11, type I primer to each surface (refer to 51-22-01)
7. Apply fay surface seal to all contact surfaces. Use Hylomar PL 32M. Refer to 51-22-05.
8. Attach the doubler plate to nose cowl. Use solid rivets NASM20426DD6 or equivalent. Refer to 51-42-01.
9. Attach the patch to doubler plate. Use cherry-lock "Bulbed" flush head rivets CR2238 series. Refer to 51-42-01.

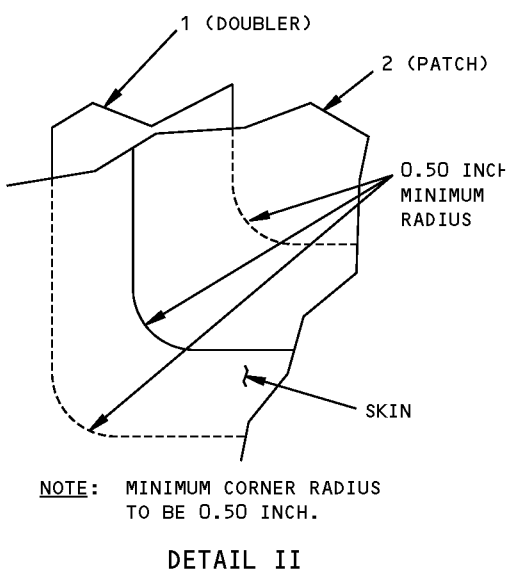
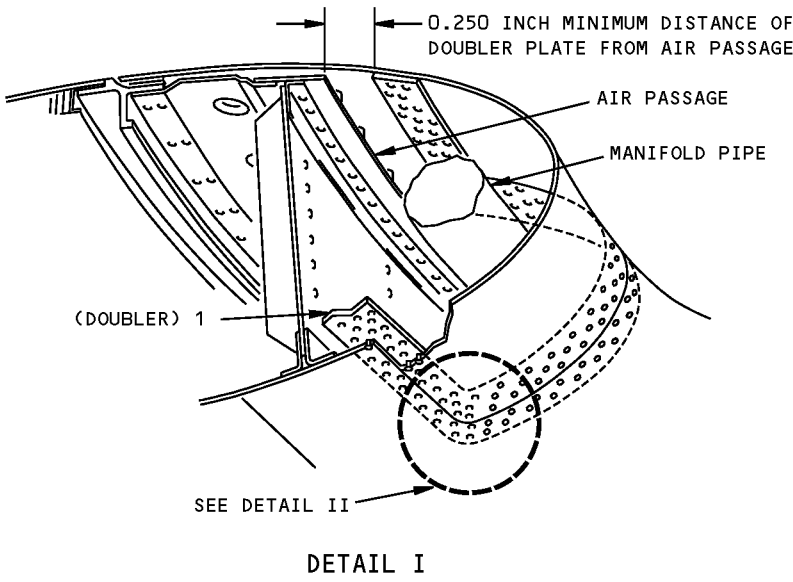
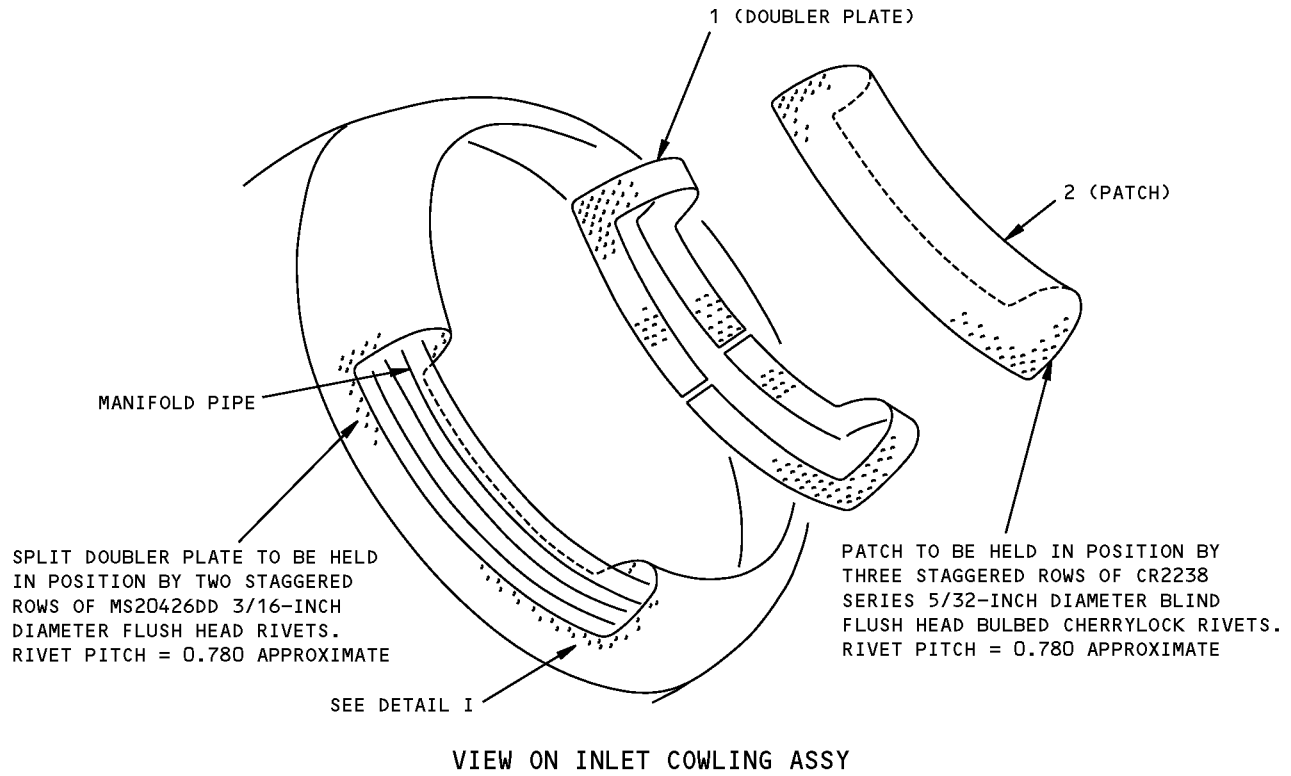
NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - 51-22-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - 51-22-05 FOR REPAIR SEALING INSTRUCTIONS.
- DIMENSIONS ARE IN INCHES. IN ALL CASES, DISTANCE FROM EDGE OF MATERIAL TO CENTERLINE OF FIRST ROW OF RIVETS HOLES TO BE 0.312 INCH. DISTANCE BETWEEN CENTERLINE OF ROWS OF RIVET HOLES TO BE 0.469 INCH.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER PLATE	1	0.080 2219-T81 (AMS 4094)(MAKE FROM PART NO. LJ34524)
2	PATCH (SPAREABLE)	1	0.104 2219-T81 (AMS 4094)

Repair of the Inlet Cowl Lip by Patching - RB211-524 Engines
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL



Repair of the Inlet Cowl Lip by Patching - RB211-524 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL OUTER SKIN - EXTERNAL PATCH ADJACENT TO STIFFENER - RB211-524 ENGINES

REPAIR INSTRUCTIONS

1. Mark and cut out damaged area to a rectangular shape taking care not to damage the stiffener member. Use hand tools.
2. Produce patch.
3. Produce packing plate.
4. Drill existing skin, patch and packing plate.
5. Countersink patch and deburr all parts.
6. Apply fay surface seal to stiffener member packing plate and underside of patch. Use Hylomar PL 32M. See 51-22-05.
7. Fit packing plate and patch then rivet in position. Use 1/8 in. 100 degrees countersunk SP71, NASM20426A-D, or equivalent in aluminum alloy or if inaccessible from bothsides use 1/8 inch 100 degrees Bulbed CherryLock CR2238 series in Repair rivet locations and 5/32 inch in existing locations. See 51-42-01.

SYMBOLS

- ⊕ EXISTING RIVET LOCATION
 ⊕ REPAIR RIVET LOCATION

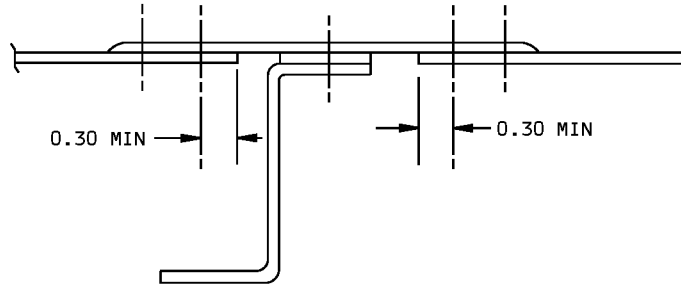
NOTES

- REFER TO THE FOLLOWING WHEN USING THE REPAIR:
 - 51-22-01 FOR PROTECTIVE TREATMENT OF METAL REPAIR PARTS
 - 51-22-05 FOR REPAIR SEALING INSTRUCTIONS.

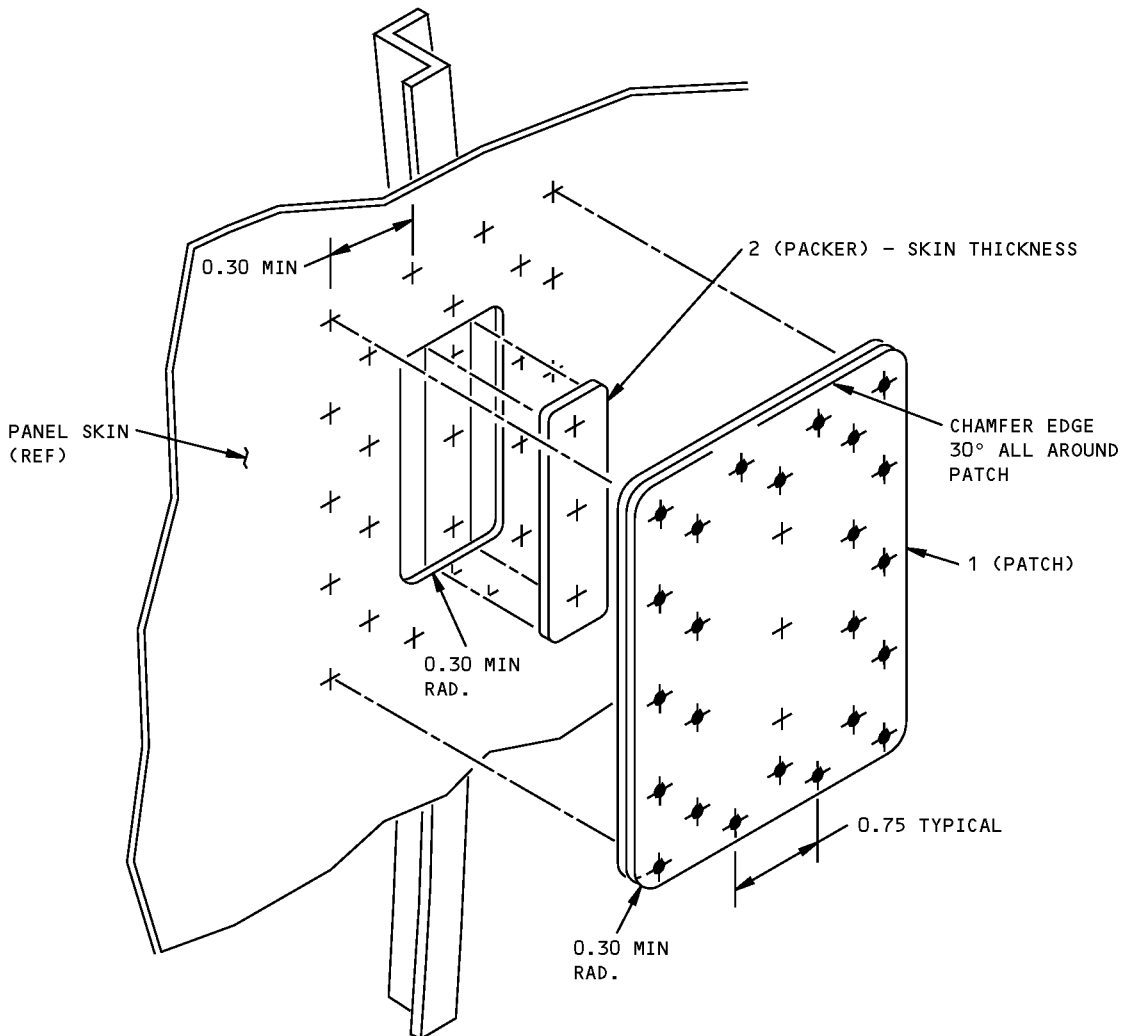
REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PATCH	1	0.040 L73
2	PACKING PLATE	1	0.064 L73

**Repair of the Inlet Cowl Outer Skin - External Patch Adjacent to Stiffener - RB211-524 Engines
 Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



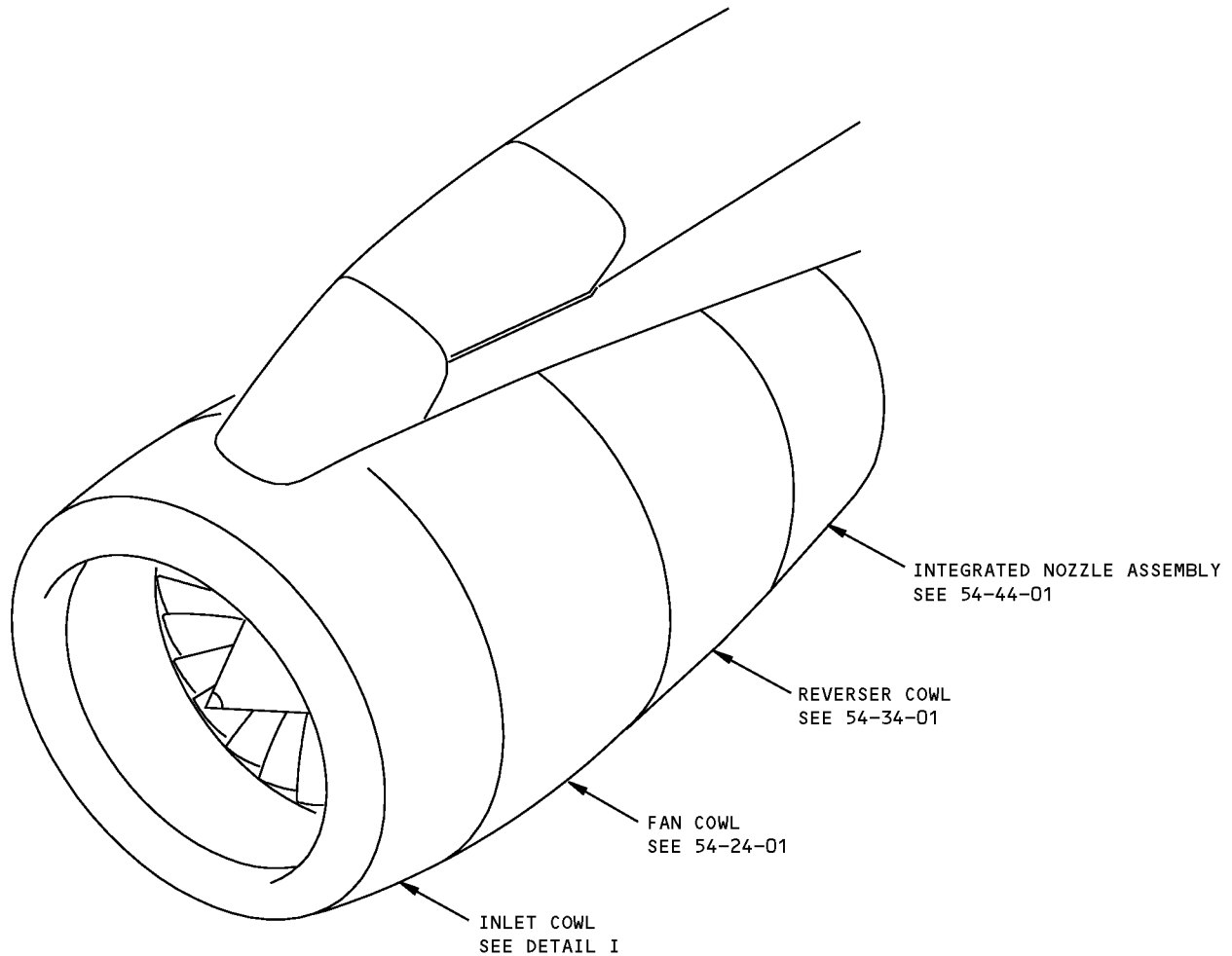
SECTION THROUGH REPAIR



Repair of the Inlet Cowl Outer Skin - External Patch Adjacent to Stiffener - RB211-524 Engines
Figure 201 (Sheet 2 of 2)

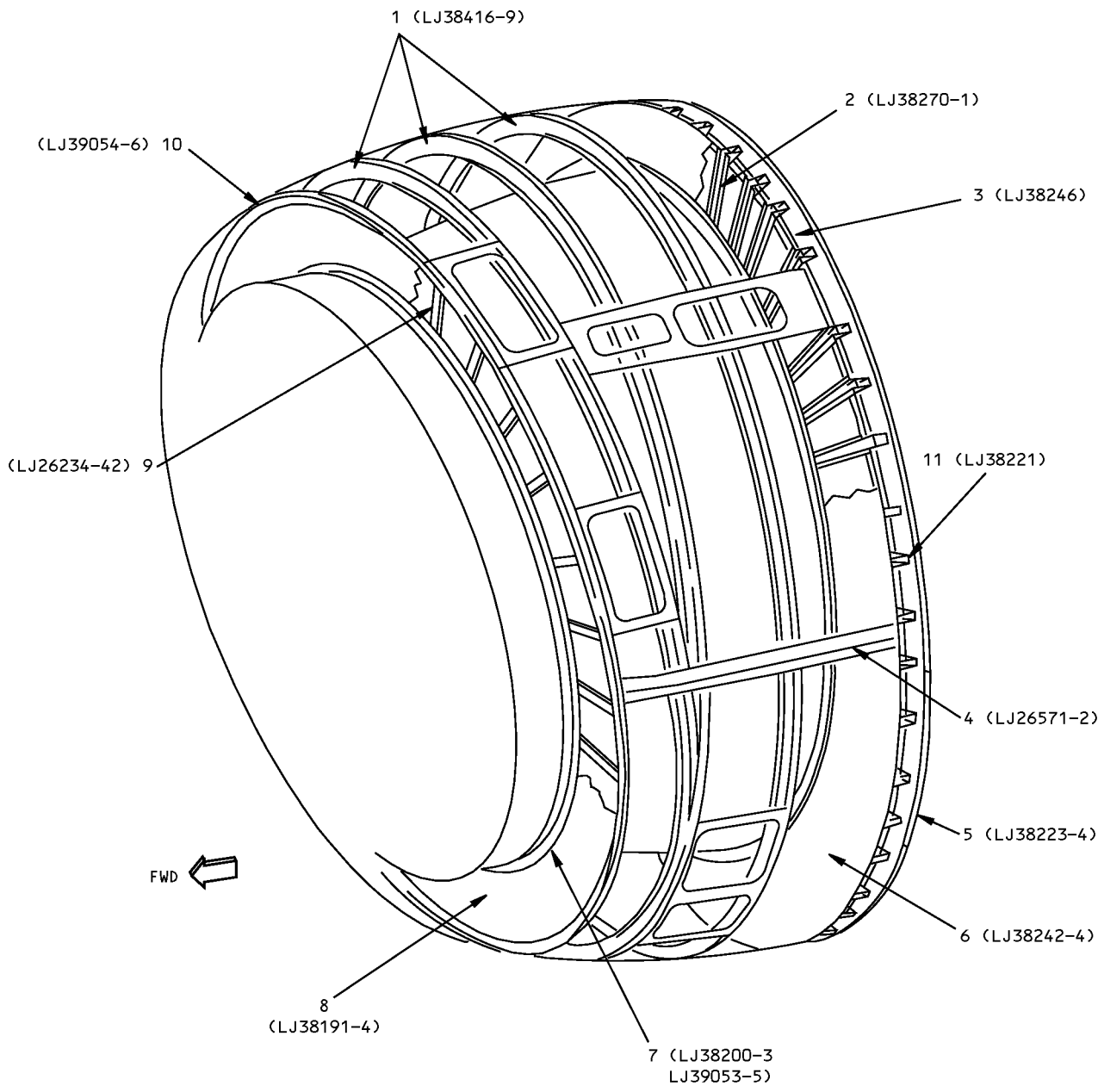
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INLET COWL STRUCTURE - RB211-524 ENGINE



Inlet Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

LIST OF
MATERIAL

**Inlet Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN STIFFENERS	0.048	L72	
2	REAR DIAPHRAGM STIFFENERS	0.048	L73	
3	UPPER REINFORCING ANGLE	0.048	TA6	
4	BUTT STRAPS	0.048	L72	
5	REINFORCING ANGLE	0.048	TA6	
6	REAR DIAPHRAGM	0.064	TA6	
7	REINFORCING ANGLE FRONT INNER REAR INNER	0.036 0.036	TA6	
8	FRONT DIAPHRAGM	0.028	TA6	
9	FRONT DIAPHRAGM STIFFENERS	0.036	TA6	
10	REINFORCING ANGLE FRONT AND REAR OUTER	0.040	DTD 5070	
11	SUPPORT BRACKET	0.036	L72	

LIST OF MATERIALS FOR DETAIL I

Inlet Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 3)

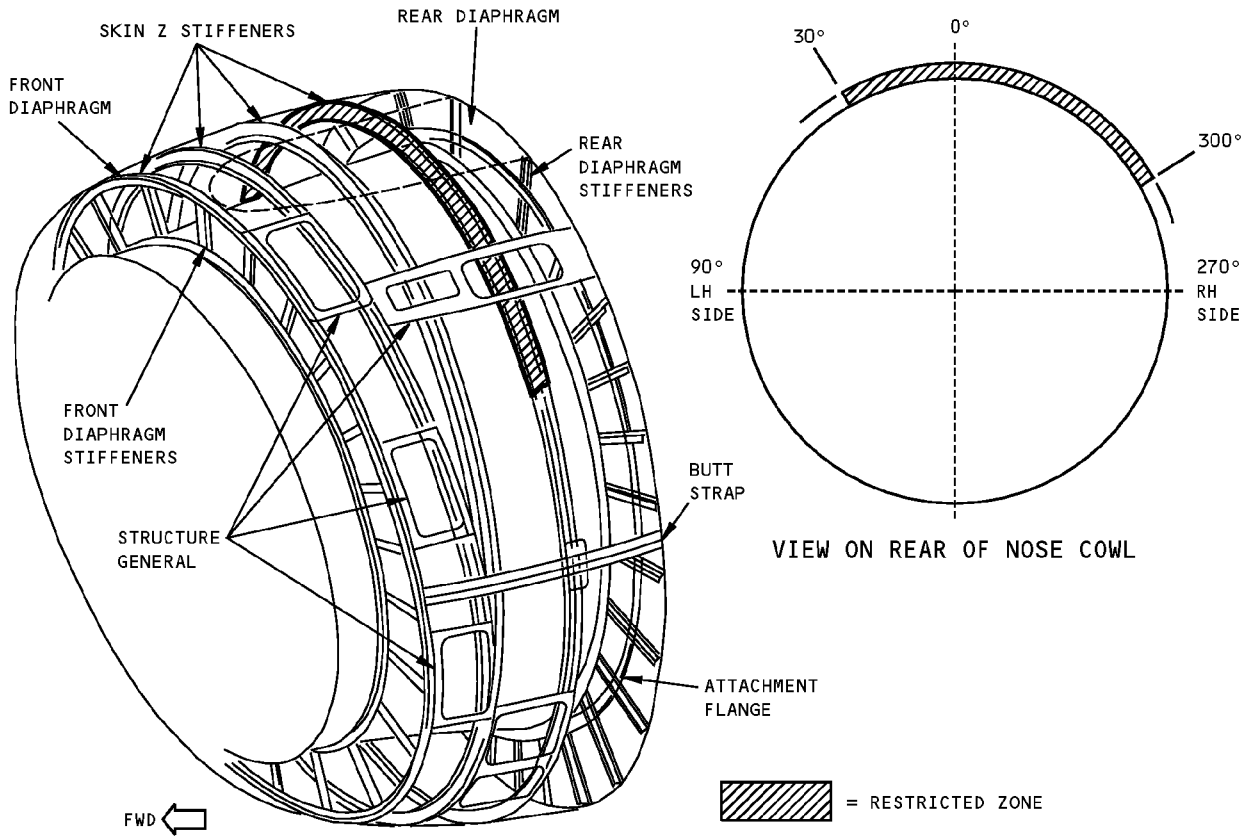
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - INLET COWL STRUCTURE - RB211-524 ENGINES



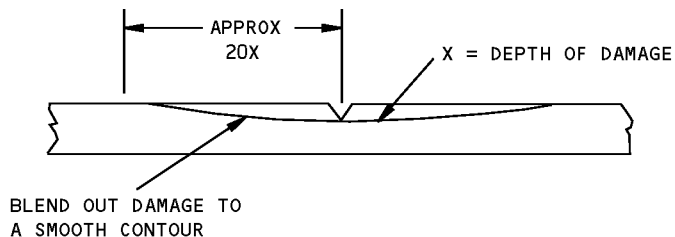
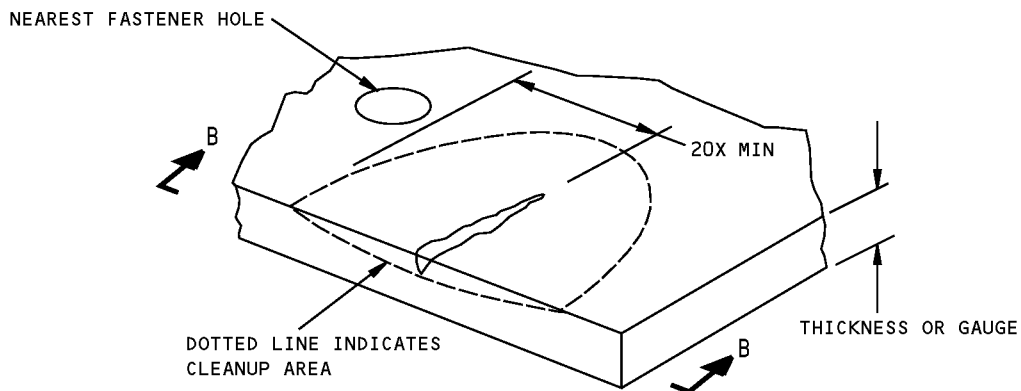
LOCATION		CRACKS	NICKS GOUGES AND CORROSION	DENTS	HOLES
NOSE COWL	STRUCTURE GENERAL	NOT ALLOWED	SEE DETAIL I [A]	SEE DETAIL II [B]	NOT ALLOWED
	DIAPHRAGMS			SEE DETAILS III AND IV [C]	
	FRONT DIAPHRAGM STIFFENERS				
	REAR DIAPHRAGM STIFFENERS				
	SKIN Z-STIFFENERS			SEE DETAIL V [D]	
	BUTT STRAPS			NOT ALLOWED	
	ATTACHMENT FLANGE				

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Allowable Damage - Inlet Cowl Structure - RB211-524 Engines
Figure 101 (Sheet 1 of 4)

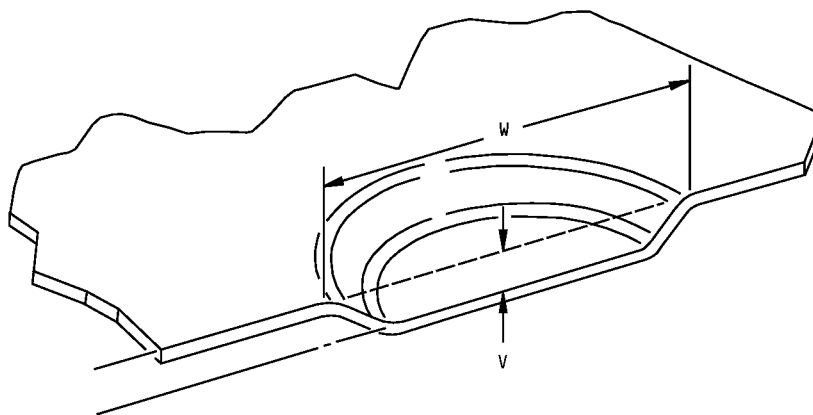
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STRUCTURAL REPAIR MANUAL



SECTION B-B

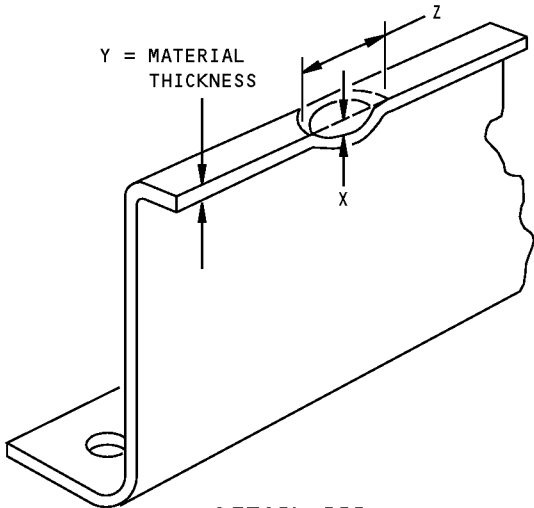
DETAIL I



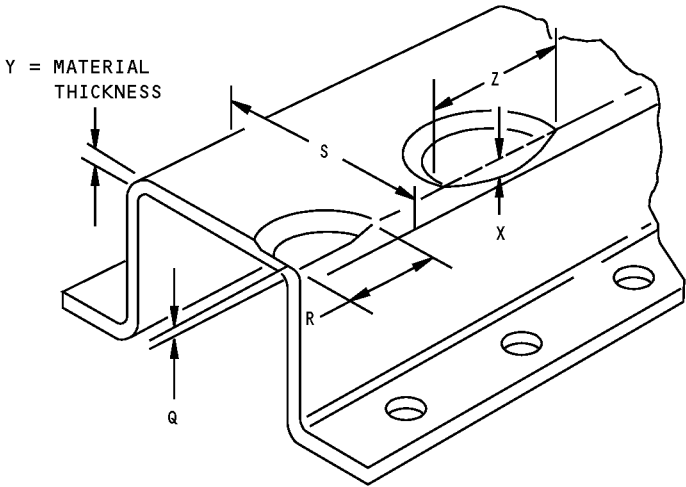
DETAIL II

Allowable Damage - Inlet Cowl Structure - RB211-524 Engines
Figure 101 (Sheet 2 of 4)

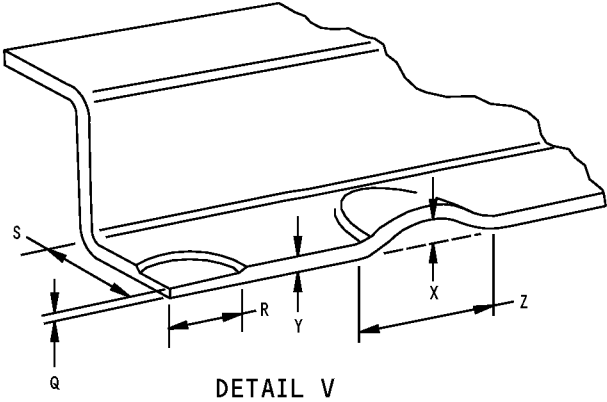
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STRUCTURAL REPAIR MANUAL



DETAIL III



DETAIL IV



DETAIL V

Allowable Damage - Inlet Cowl Structure - RB211-524 Engines
Figure 101 (Sheet 3 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

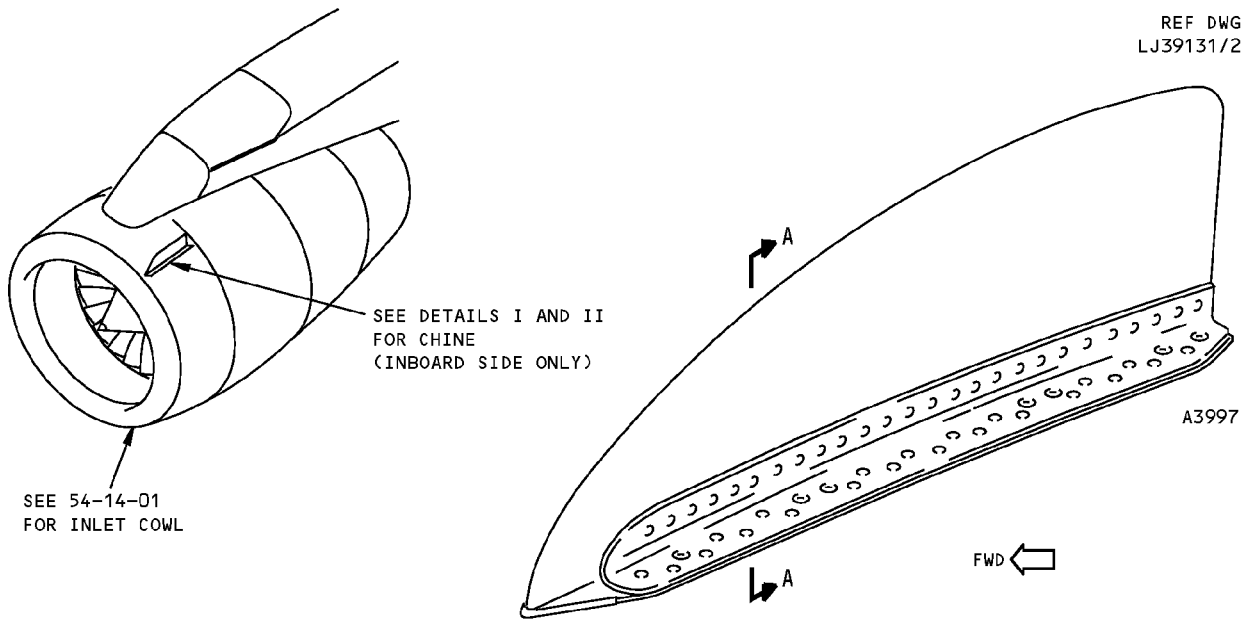
- REFINISH REWORKED AREAS PER 51-22-01
- A** DAMAGE IS ALLOWED UP TO 4% OF MATERIAL THICKNESS AND 2.00 LONG. REMOVE DAMAGE AS SHOWN IN DETAIL I
- B** SMOOTH DENTS ARE ALLOWED, OTHER THAN IN FRONT DIAPHRAGM, PROVIDING "V" (DETAIL II) DOES NOT EXCEED 0.10, AREA OF DAMAGE "W" DOES NOT EXCEED 2.00 DIAMETER AND THERE IS A MINIMUM OF 4.00 SEPARATING EACH DAMAGED AREA. NO DENTS ARE ALLOWED IN FRONT DIAPHRAGM
- C** DISTORTION IS ALLOWED PROVIDED "X" (DETAILS III AND IV) DOES NOT EXCEED TWO TIMES "Y" AND DAMAGE "Z" DOES NOT EXCEED 1.50. THINNING IS ALLOWED (DETAIL IV) PROVIDED "Q" IS NOT LESS THAN HALF (1/2) "Y" AND AREA OF THINNING "R" DOES NOT EXCEED ONE EIGHTH (1/8) OF "S" WIDE BY 1.50
- D** DISTORTION IS ALLOWED PROVIDED "X" (DETAIL V) DOES NOT EXCEED TWO TIMES "Y" AND DAMAGE "Z" DOES NOT EXCEED 1.50. THINNING IS ALLOWED (DETAIL V) PROVIDED "Q" IS NOT LESS THAN HALF (1/2) "Y" AND AREA OF THINNING "R" DOES NOT EXCEED ONE EIGHTH (1/8) OF "S" BY 1.50. NO DAMAGE IS ALLOWED IN RESTRICTED ZONE

**Allowable Damage - Inlet Cowl Structure - RB211-524 Engines
Figure 101 (Sheet 4 of 4)**

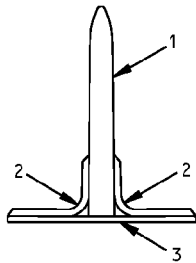
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INLET COWL CHINE - RB211-524 ENGINE

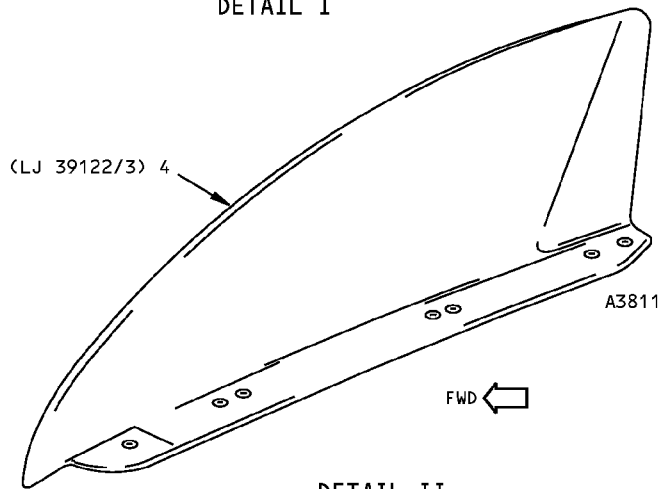
REF DWG
LJ39131/2



NACELLE CHINE FOR ENGINES PRIOR TO MOD 71-9021
DETAIL I



SECTION A-A



DETAIL II

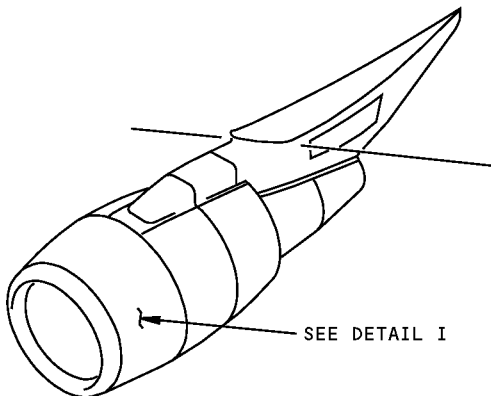
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	BLADE		GRAPHITE PRE-PREG SMS 30 TYPE III CLASS 2	
2	ANGLE		L 72	
3	BASEPLATE	0.128	L 72	
4	CHINE		FORGING L.77	MOD 71-9021

LIST OF MATERIALS FOR DETAILS I AND II

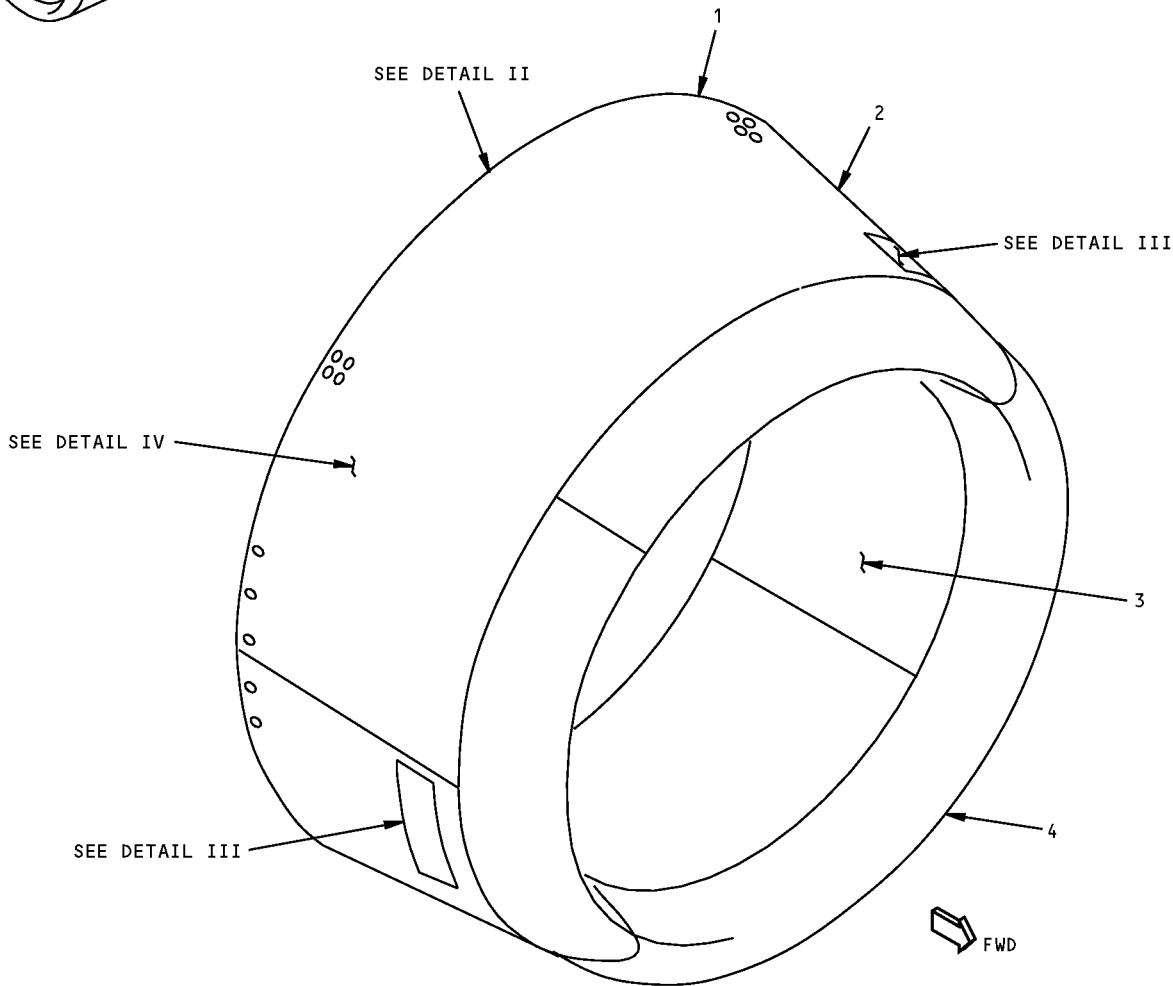
Inlet Cowl Chine Identification - RB211-524 Engine
Figure 1

STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INLET COWL OUTER BARREL SKIN - CF6-80C2 ENGINE



THIS SUBJECT IS ONLY APPLICABLE TO INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON. REFER TO SRM 54-12-01 FOR THE INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.

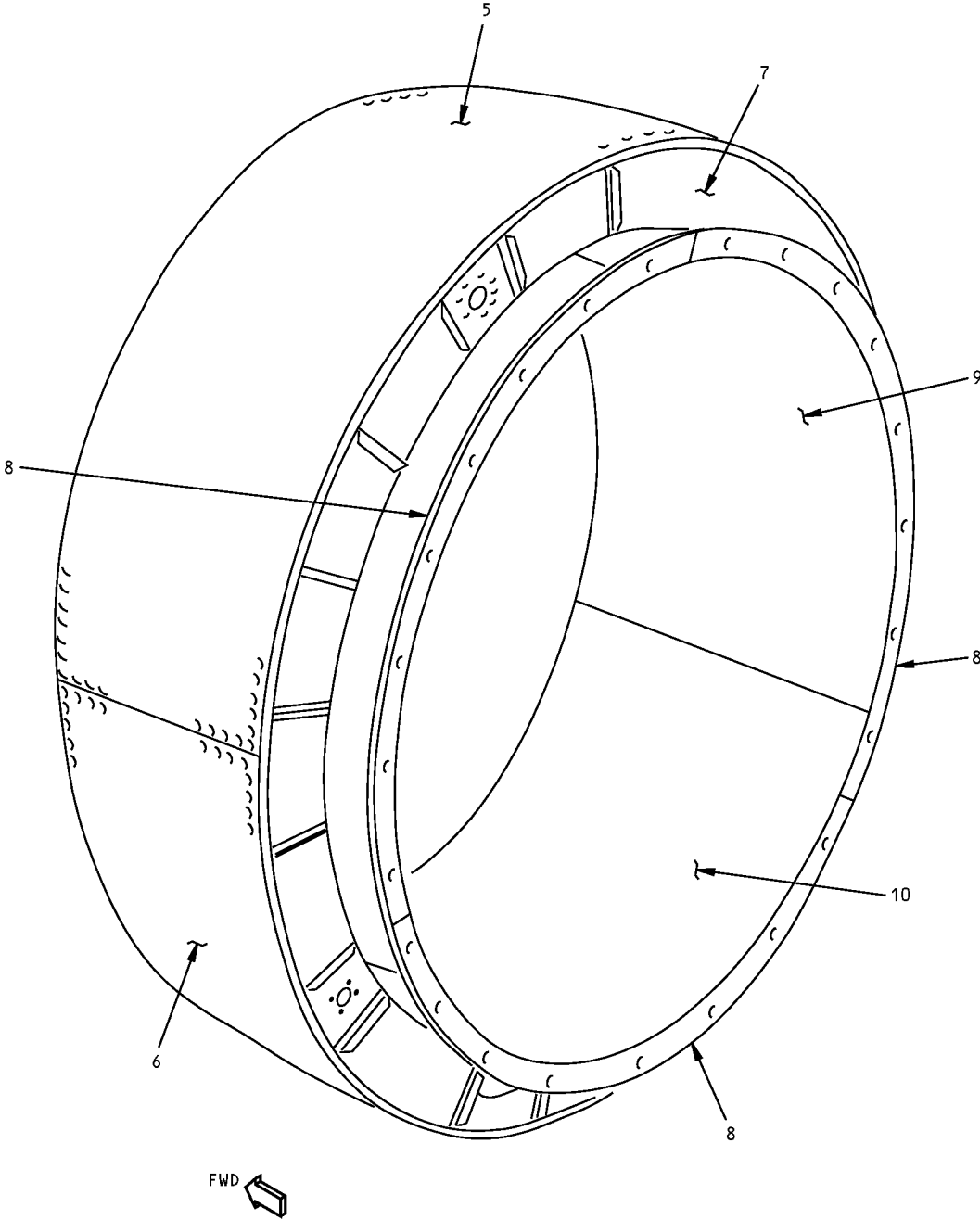


OUTER BARREL ASSEMBLY
DETAIL I

S76S-001-00

**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 14)**

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STRUCTURAL REPAIR MANUAL**



DETAIL II

S76S-002-00

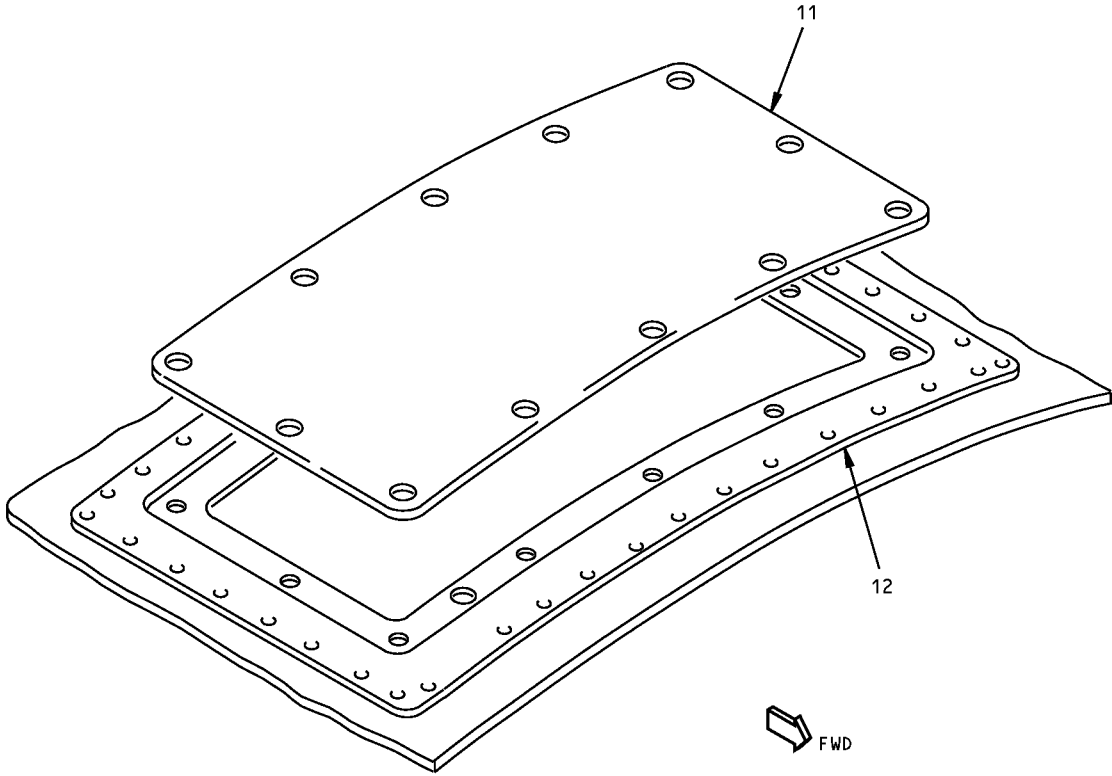
**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 14)**

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STRUCTURAL REPAIR MANUAL**



DETAIL III

S76S-003-00

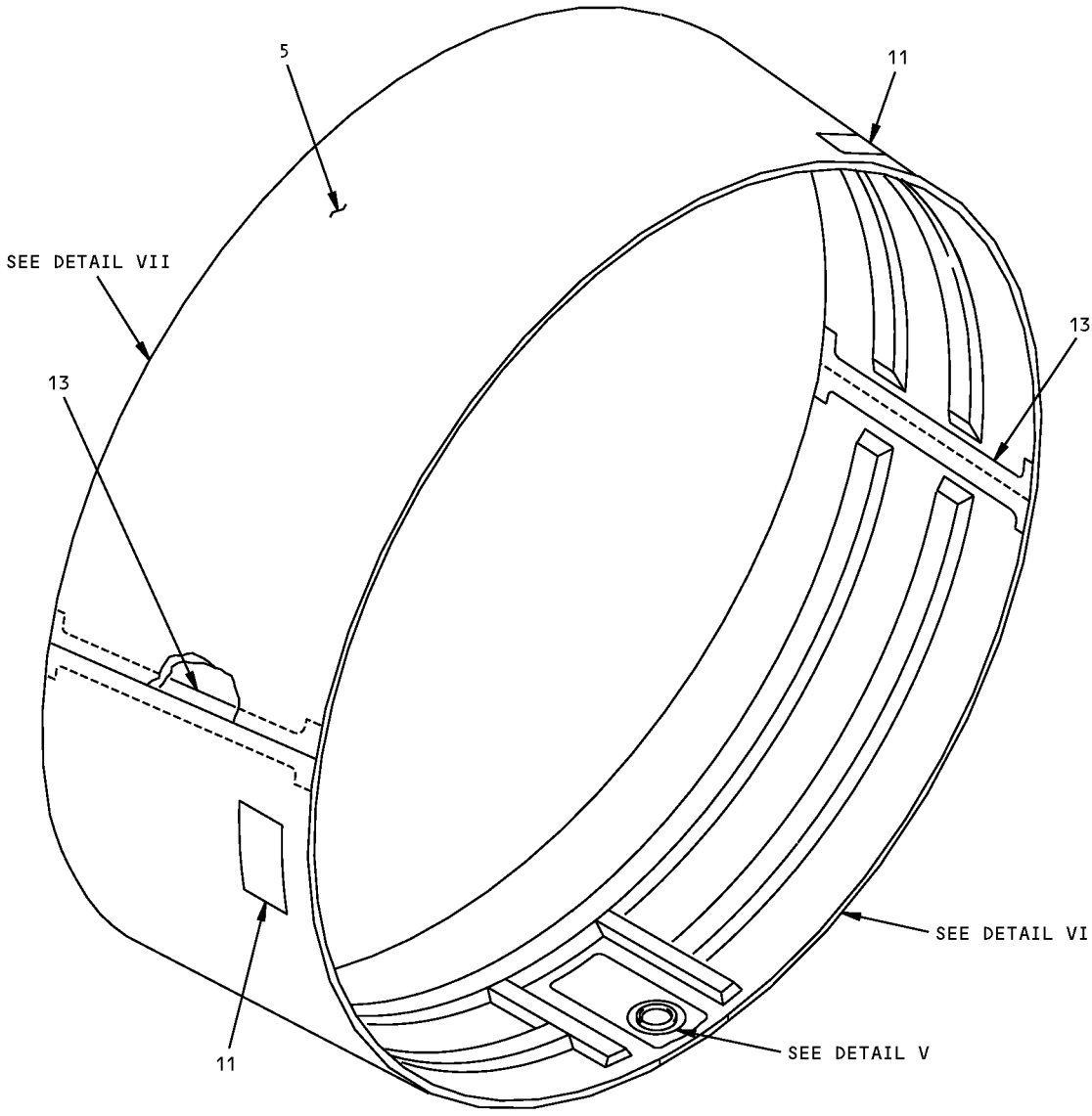
**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 14)**

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DETAIL IV

S76S-004-00

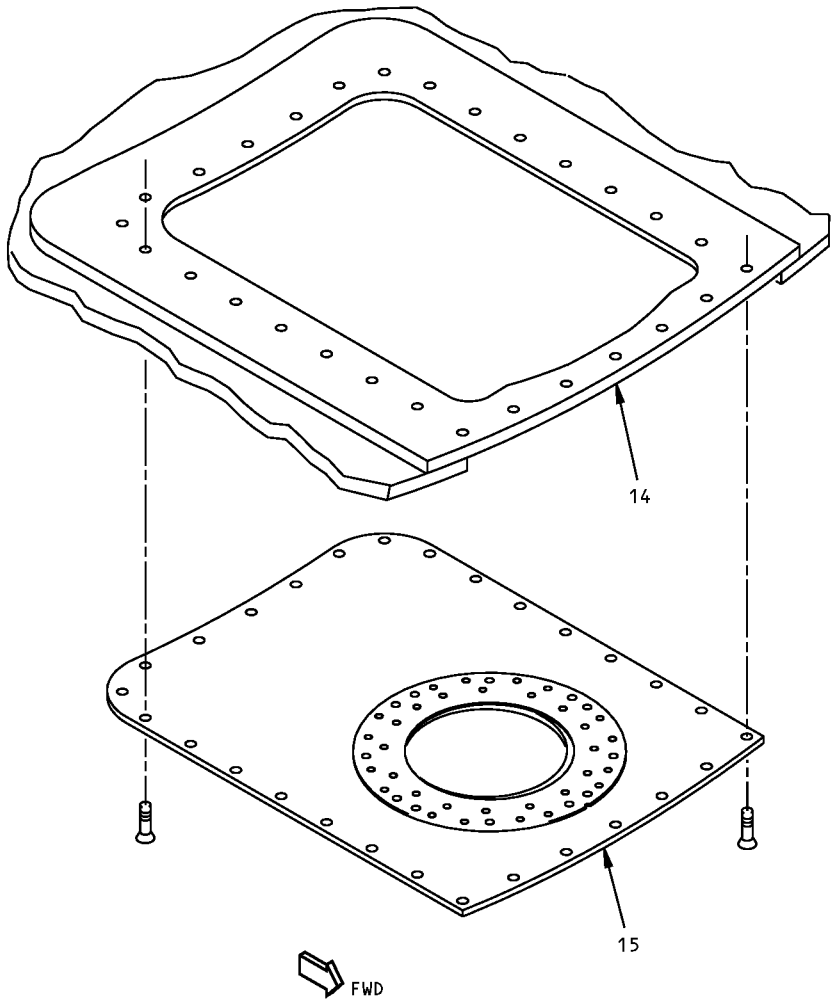
**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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DETAIL V

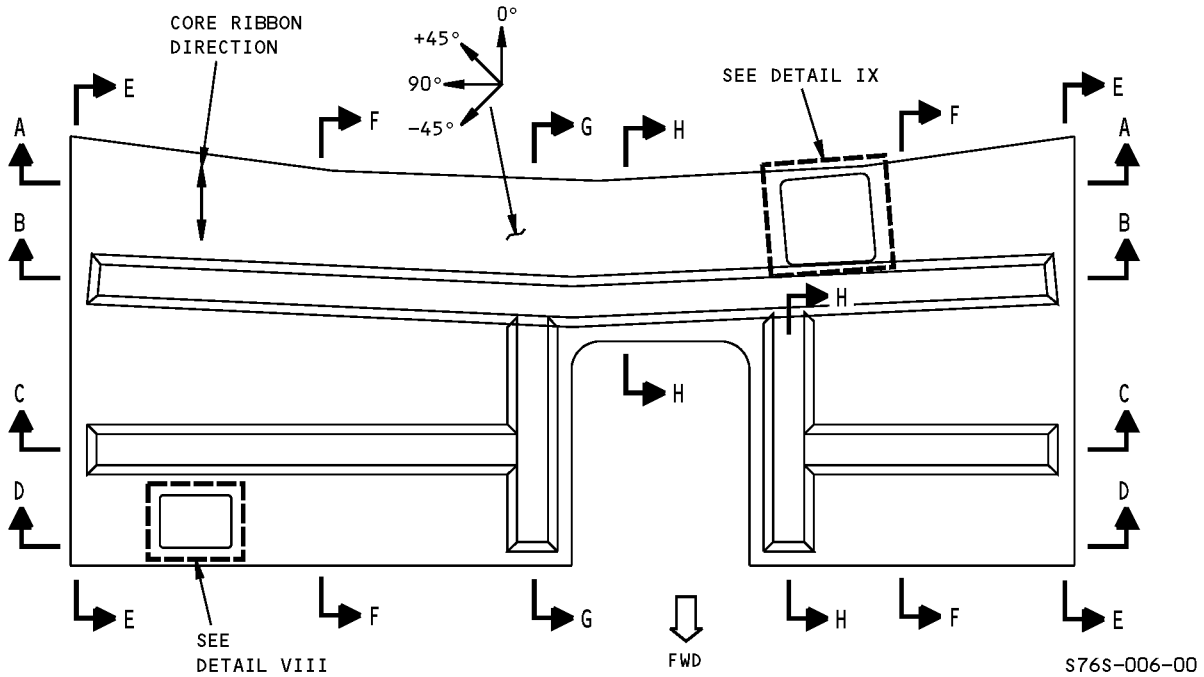
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**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 14)**

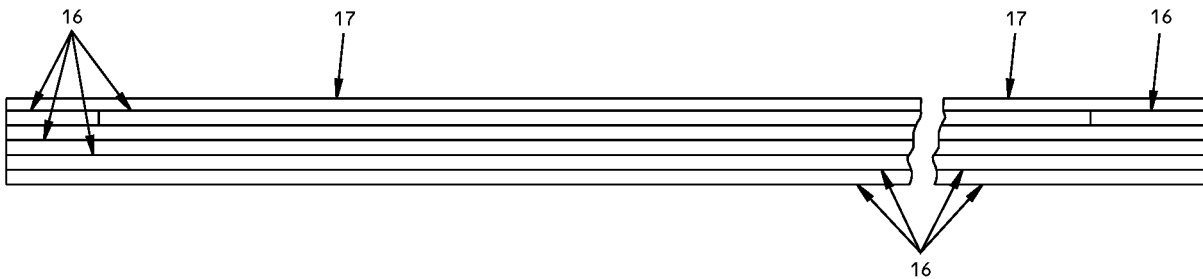
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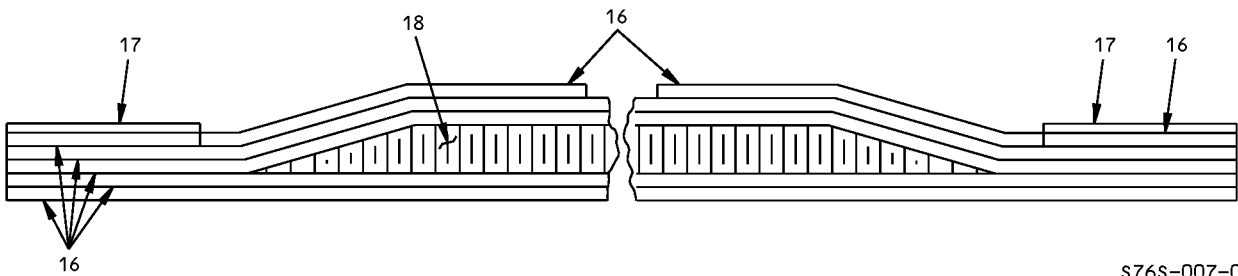
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(VIEW LOOKING OUTBOARD)
DETAIL VI



SECTION A-A



SECTION B-B

s76s-007-00

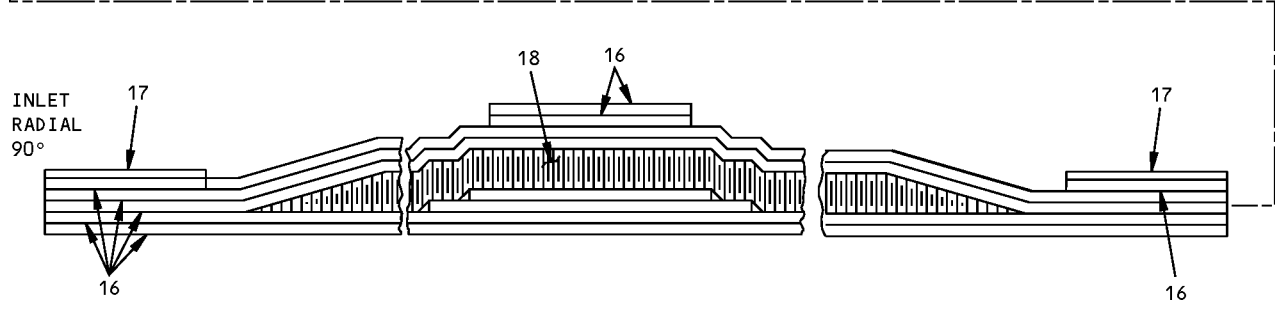
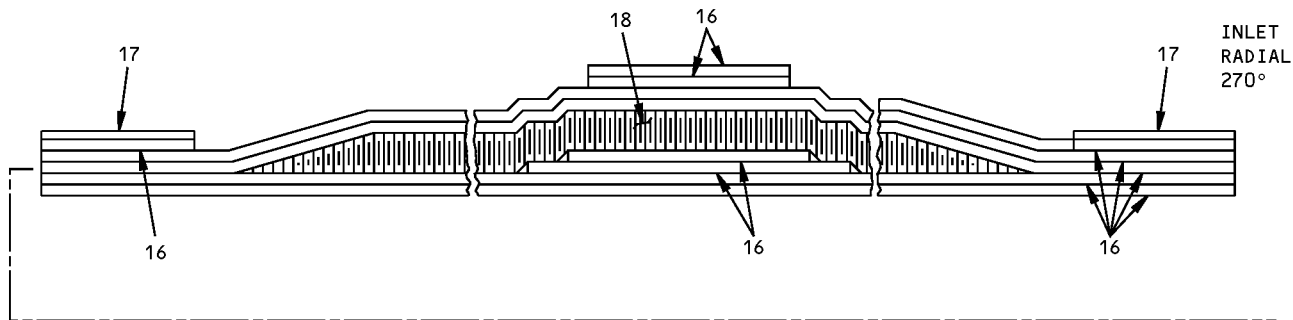
Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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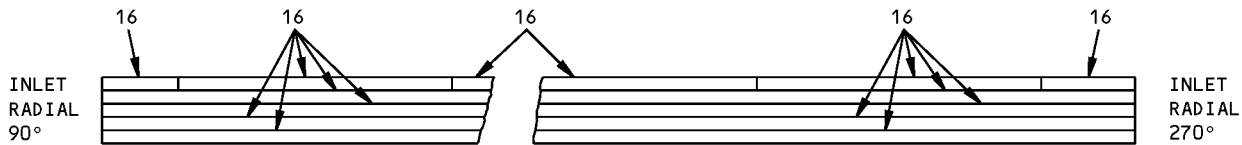
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SECTION C-C



SECTION D-D

S76S-008-00

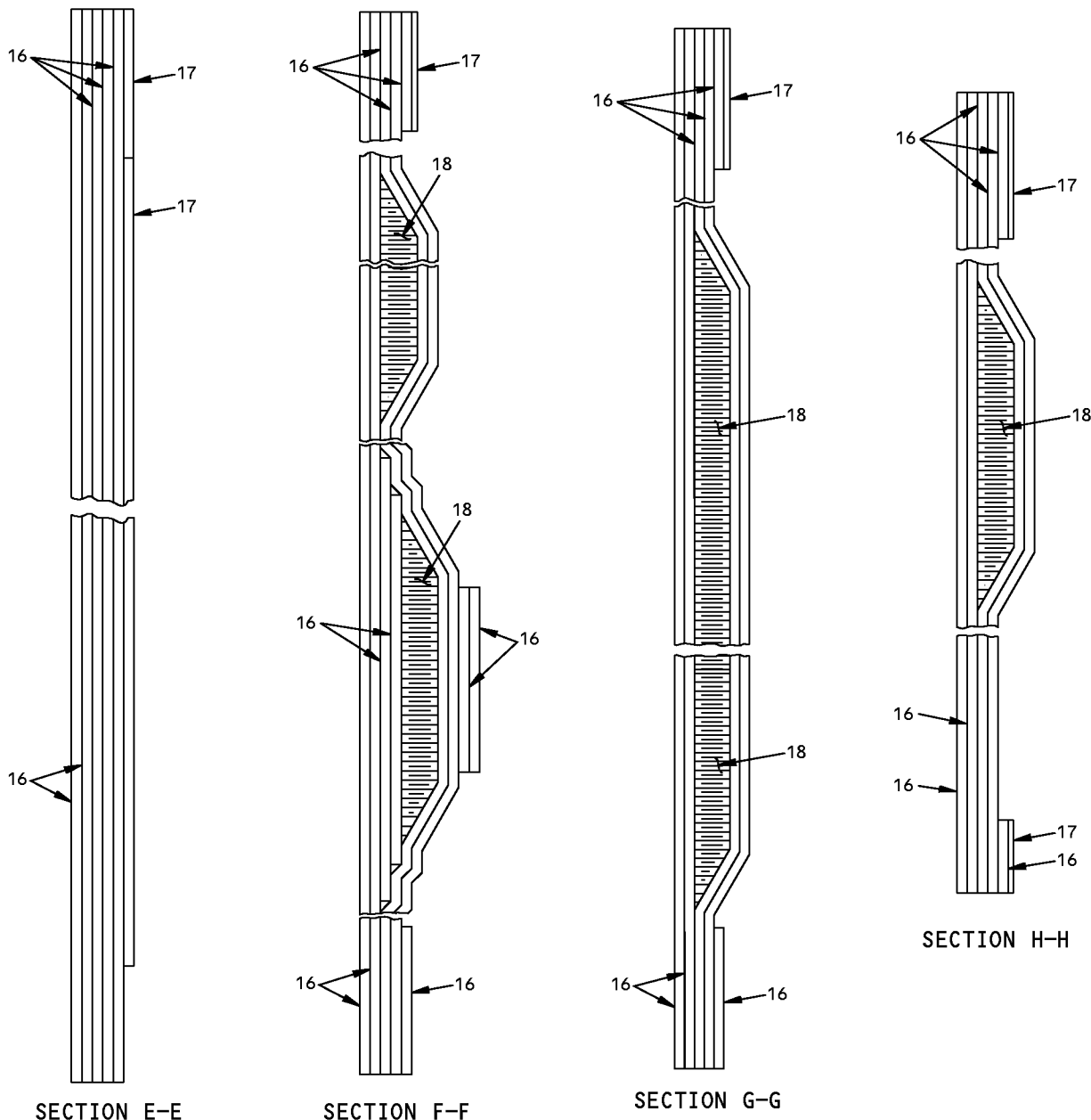
Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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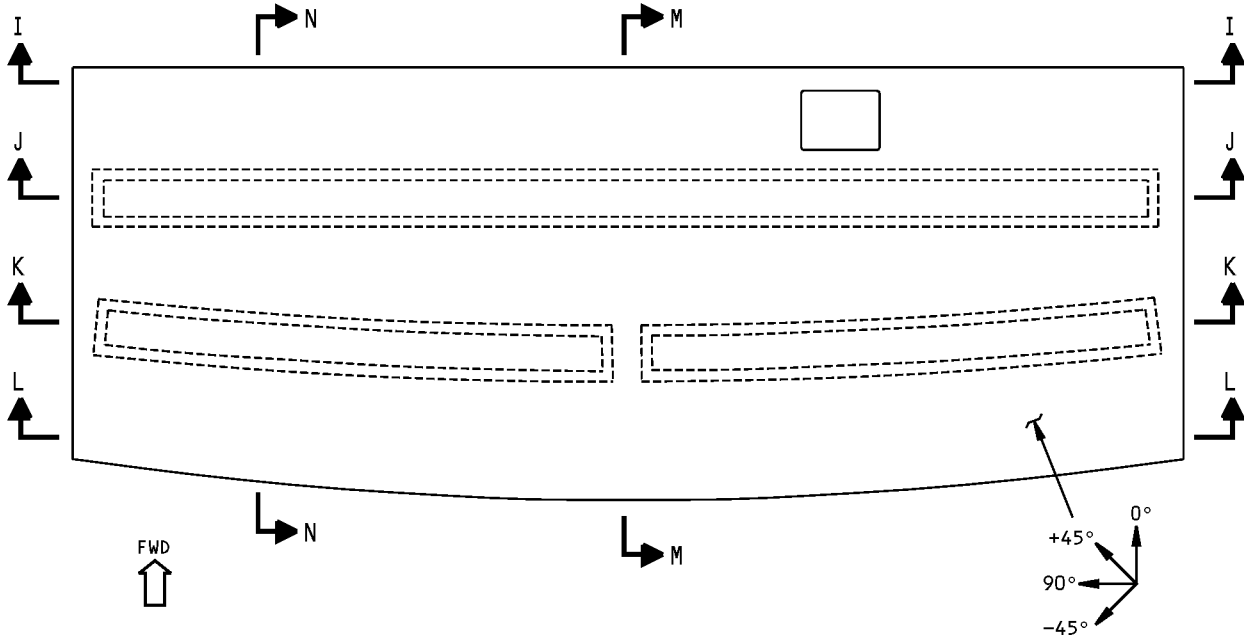
Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 8 of 14)

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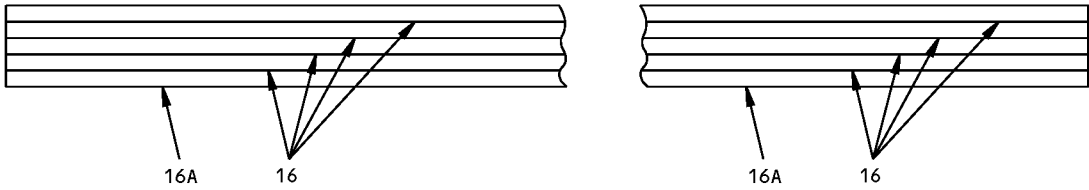
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VIEW LOOKING OUTBOARD
DETAIL VII

S76S-011-00



SECTION I-I

S76S-050-00

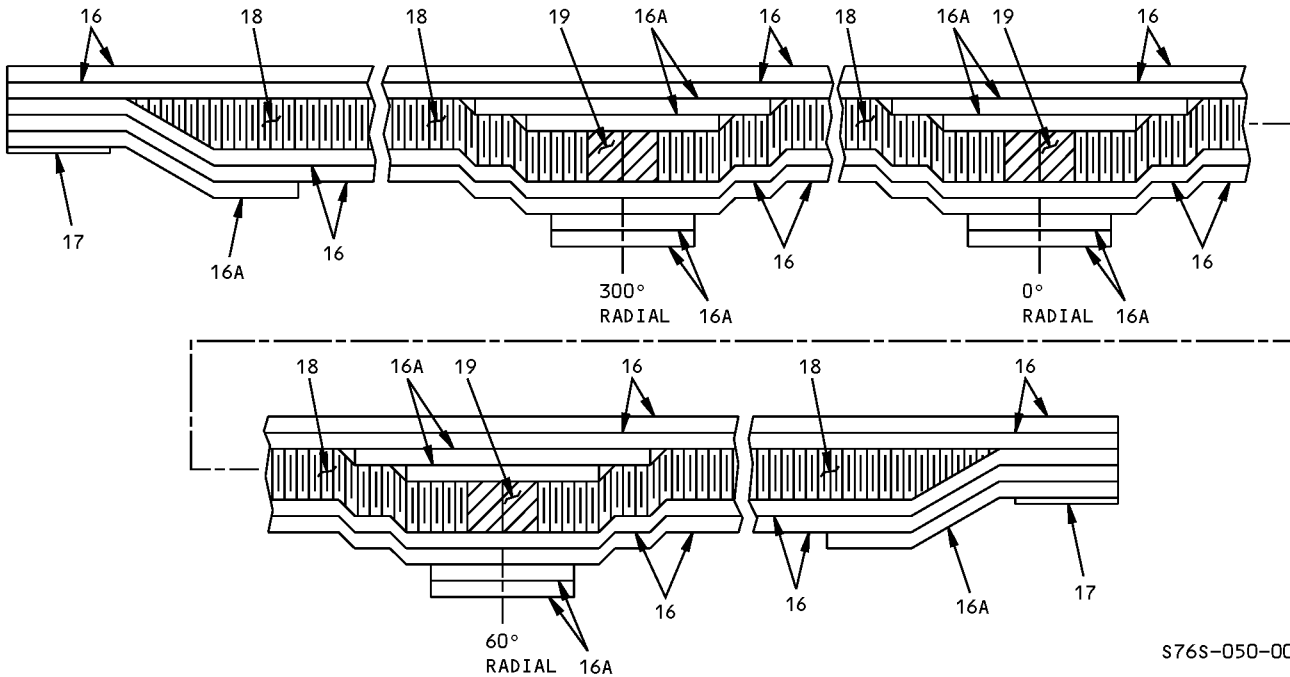
Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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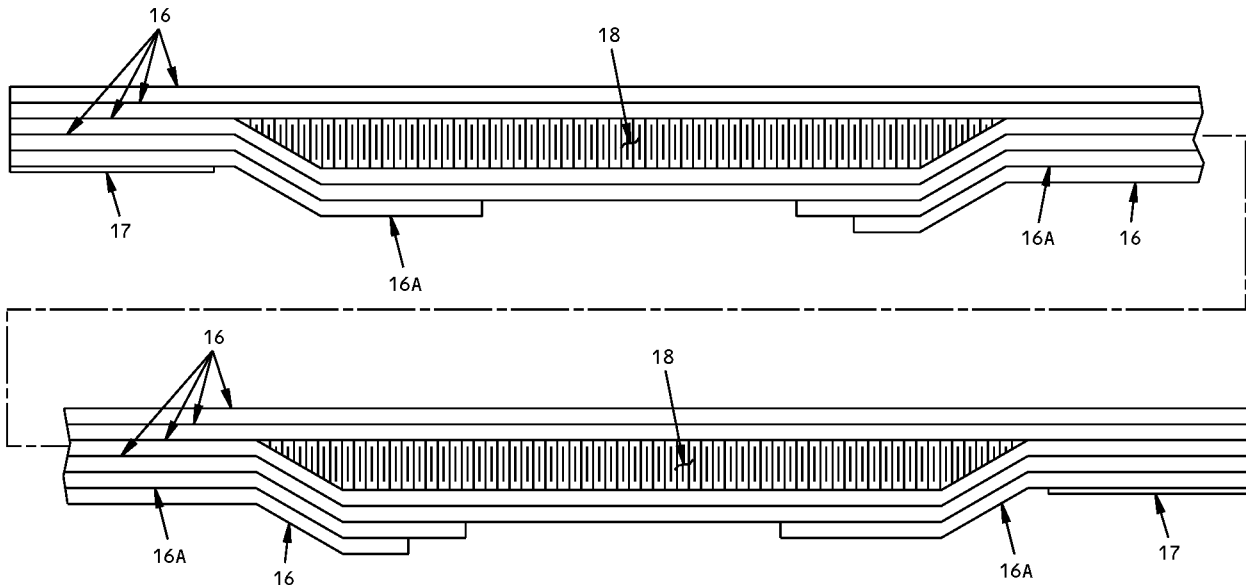
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SECTION J-J



SECTION K-K

S76S-051-00

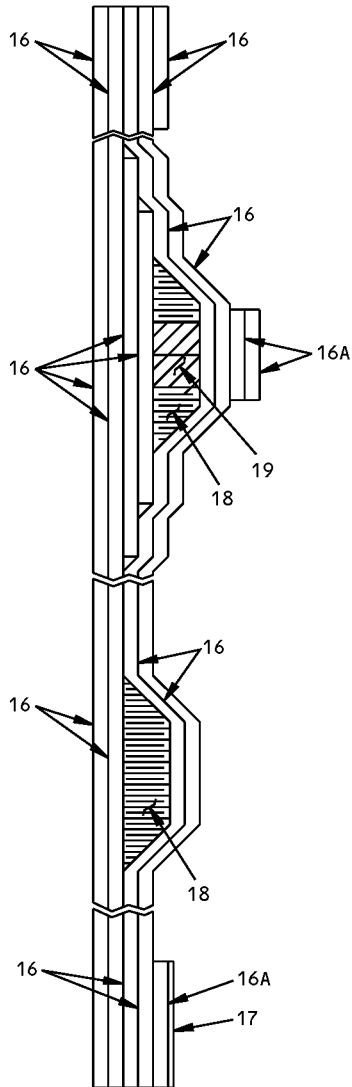
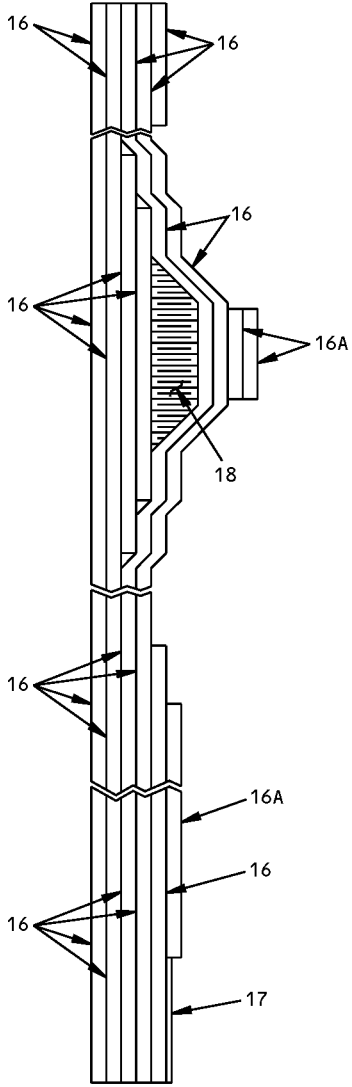
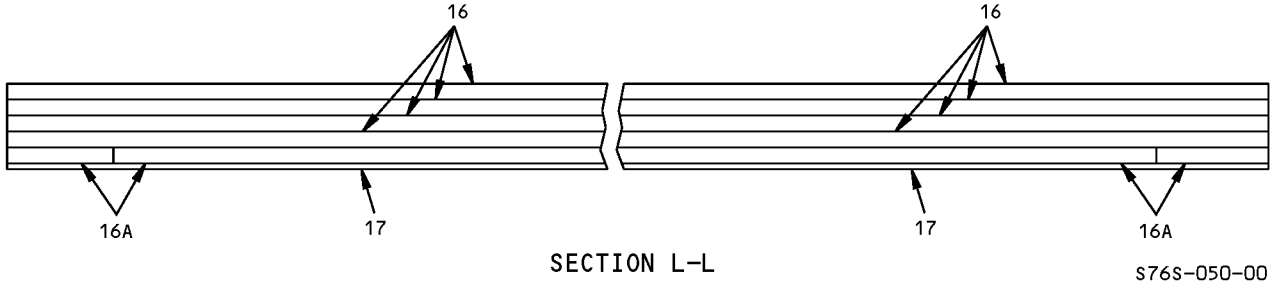
**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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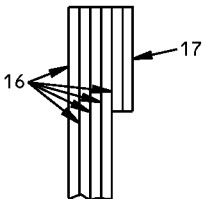
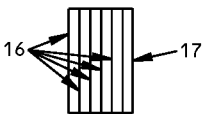
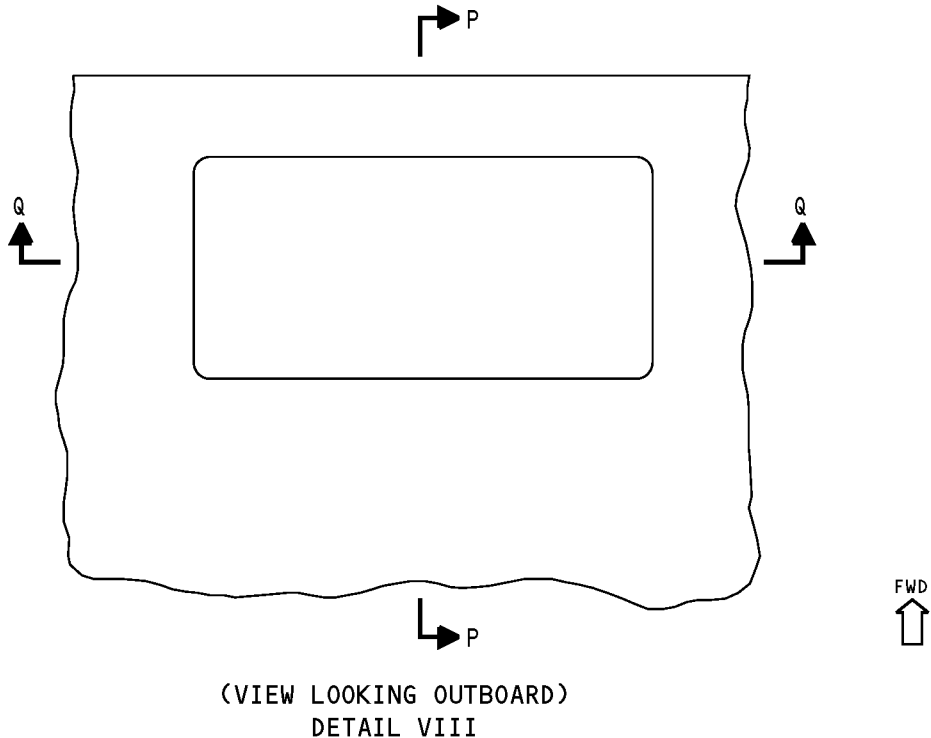
Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 11 of 14)

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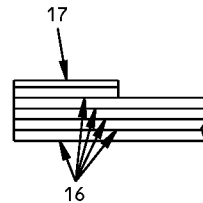
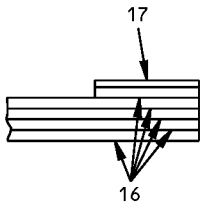
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SECTION P-P



SECTION Q-Q

S76S-010-00

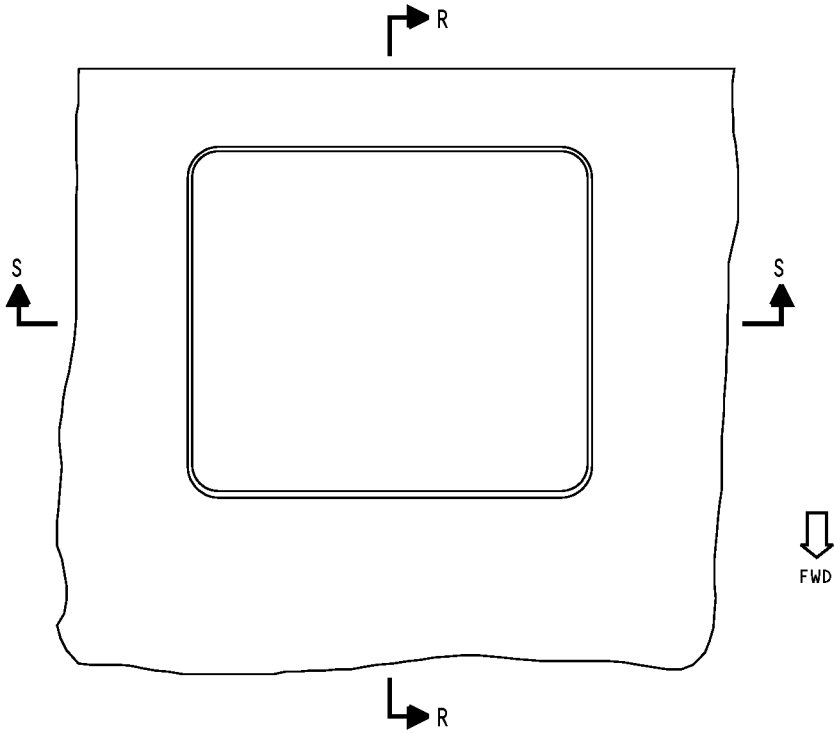
**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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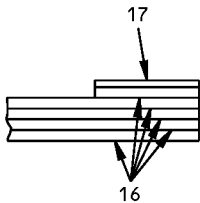
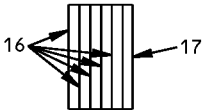
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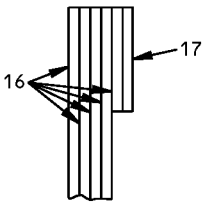
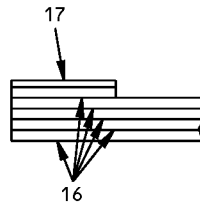
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(VIEW LOOKING OUTBOARD)
DETAIL IX



SECTION S-S



SECTION R-R

S76S-009-00

**Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ENGINE INLET COWL			
2	OUTER BARREL			
3	INNER BARREL			
4	LIP ASSY			
5	OUTER BARREL UPPER PANEL ASSY			
6	OUTER BARREL LOWER BARREL ASSY			
7	AFT BULKHEAD ASSY			
8	SEGMENT, ATTACH RING			
9	UPPER PANEL, INNER BARREL ASSY			
10	LOWER PANEL, INNER BARREL ASSY			
11	DOOR	0.063	2024-T42 CLAD ALUMINUM SHEET, QQ-A-250/5	
12	DOUBLER	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
13	SPLICE PLATE	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
14	DOUBLER	0.090	2024-T3 CLAD ALUMINUM SHEET	
15	PANEL	0.080	2219-T62 ALUMINUM CLAD SHEET, AMS 4096	
16	GRAPHITE FABRIC	0.014	RMS 060, GROUP 1, TYPE 2, CLASS 1, GRADE 1, AH 370-5H/3501-5A AS4 FIBER, 9J614 "0" DEGREE PLY ORIENTATION	
16A	GRAPHITE FABRIC	0.014	RMS 060, GROUP 1, TYPE 2, CLASS 1, GRADE 1, AH 370-5H/3501-5A AS4 FIBER, 9J614 "0" OR "90" DEGREE PLY ORIENTATION	
17	GLASS FABRIC	0.006	RMS 082, GROUP 1, TYPE 1, CLASS 1, CYCOM 985-1/120, 04622 PLY ORIENTATION OPTIONAL	
18	CORE	0.500	RMS 065, CLASS II, TYPE V, GRADE 5.0, HRH-109-1/8-5 HONEYCOMB, 6D159	
19	POTTING		EPOCAST 1614-ATF, CIBA SPECIALTY CHEMICALS CORP	

LIST OF MATERIALS

Inlet Cowl Outer Barrel Skin Identification - CF6-80C2 Engine
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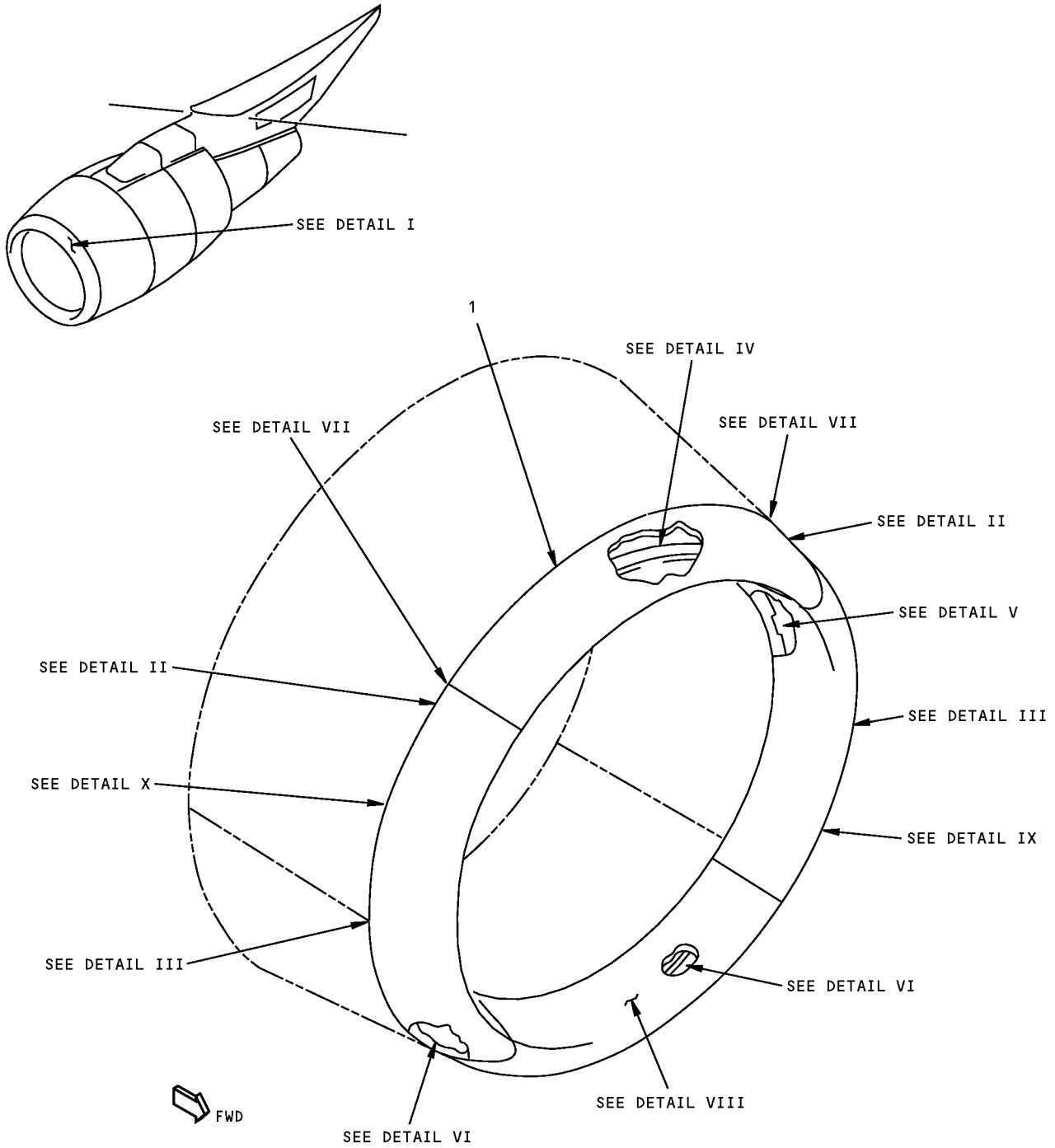
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IDENTIFICATION 2 - INLET COWL LIP ASSEMBLY SKIN - CF6-80C2 ENGINE

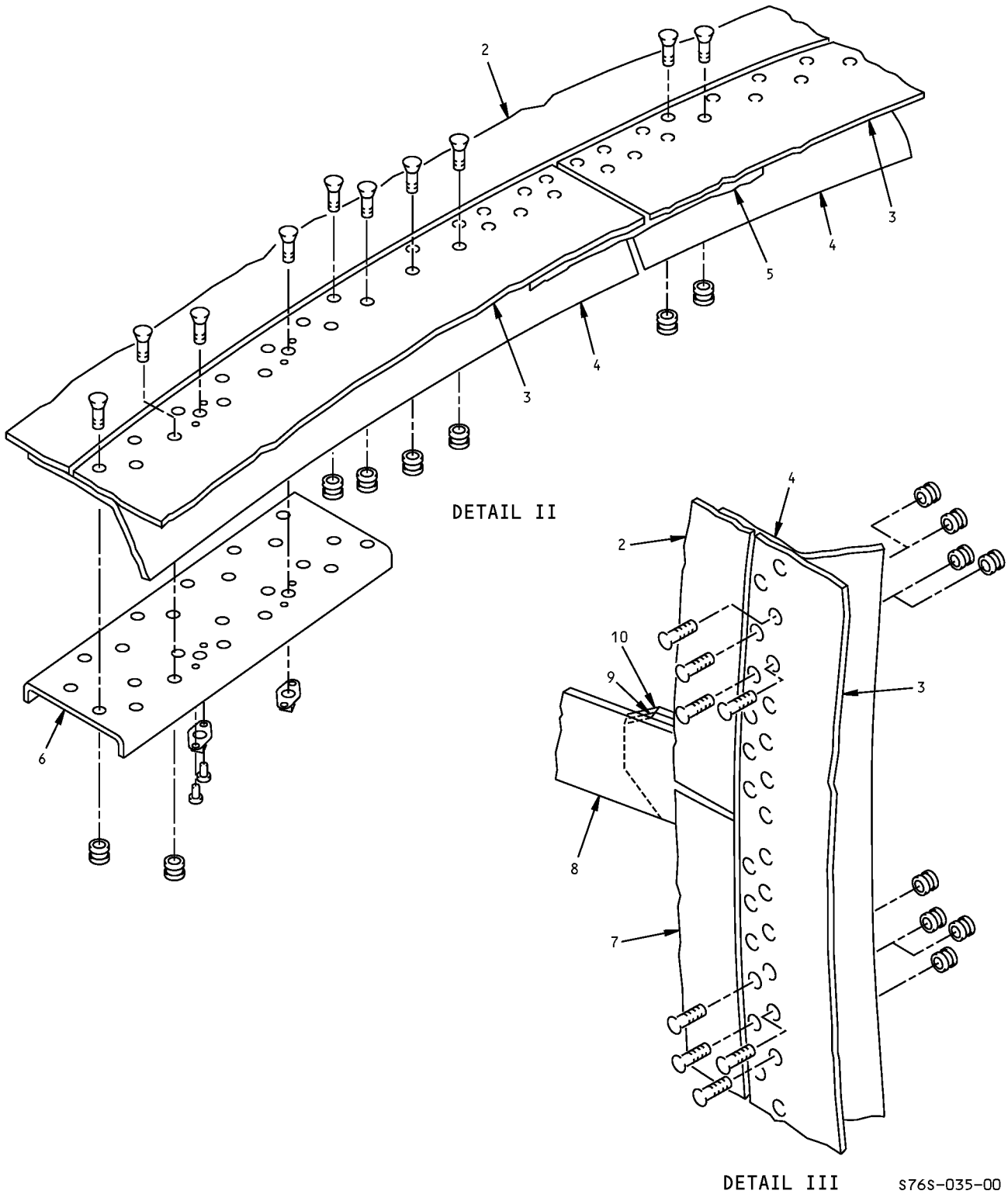


**LIP ASSEMBLY
DETAIL I**

S76S-034-00

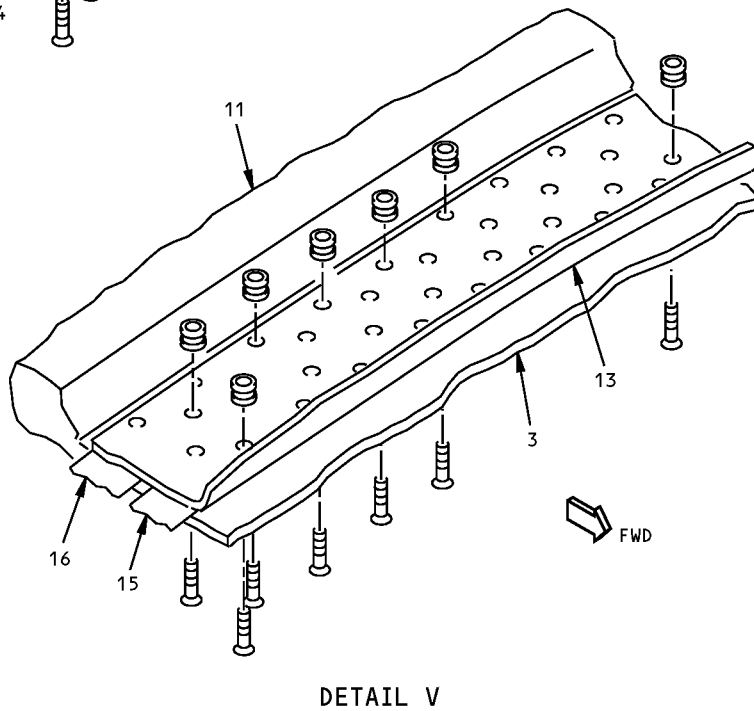
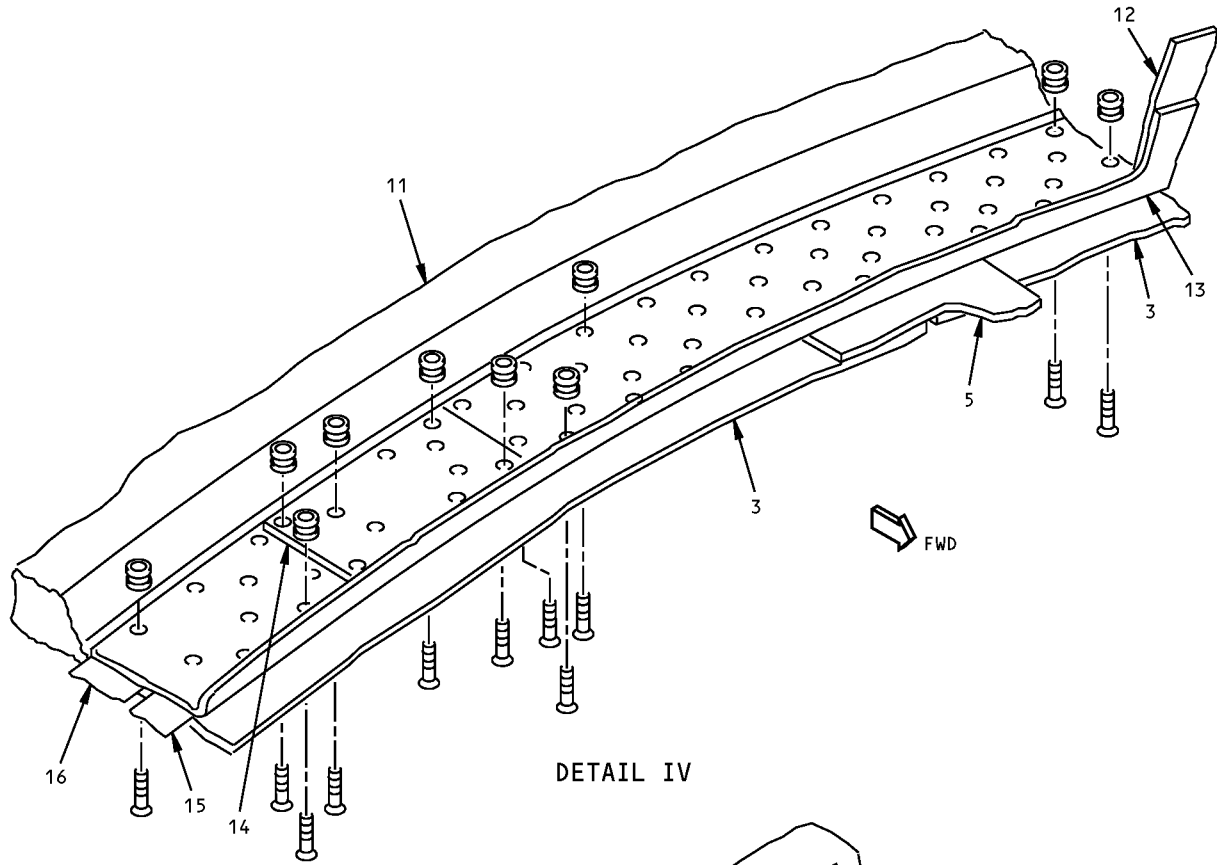
**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 8)**

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**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 8)**

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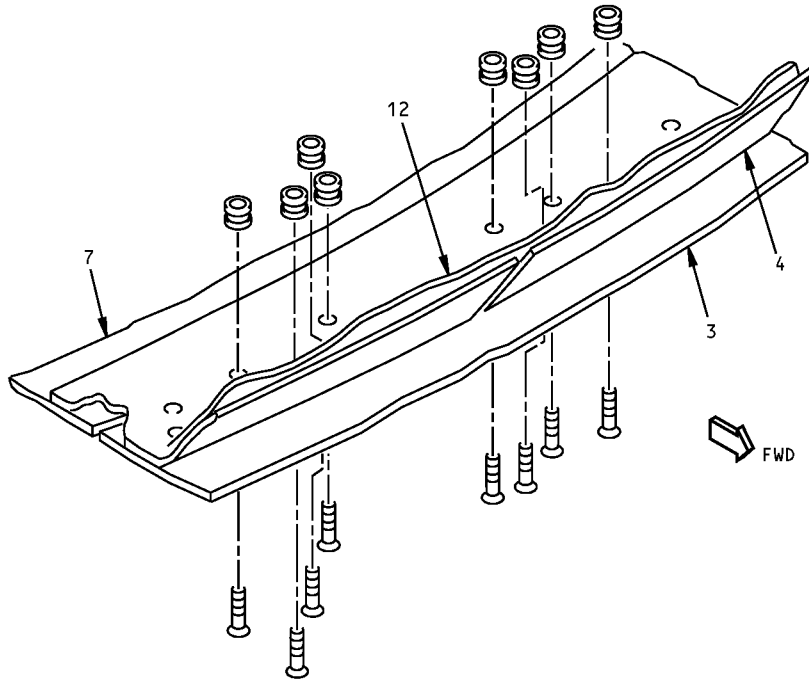
**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 8)**

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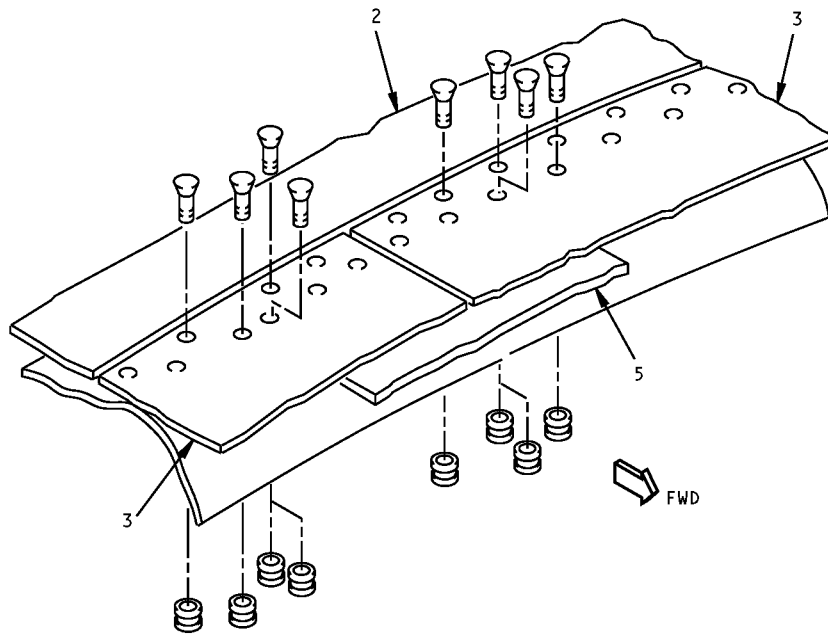
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DETAIL VI



DETAIL VII

S76S-037-00

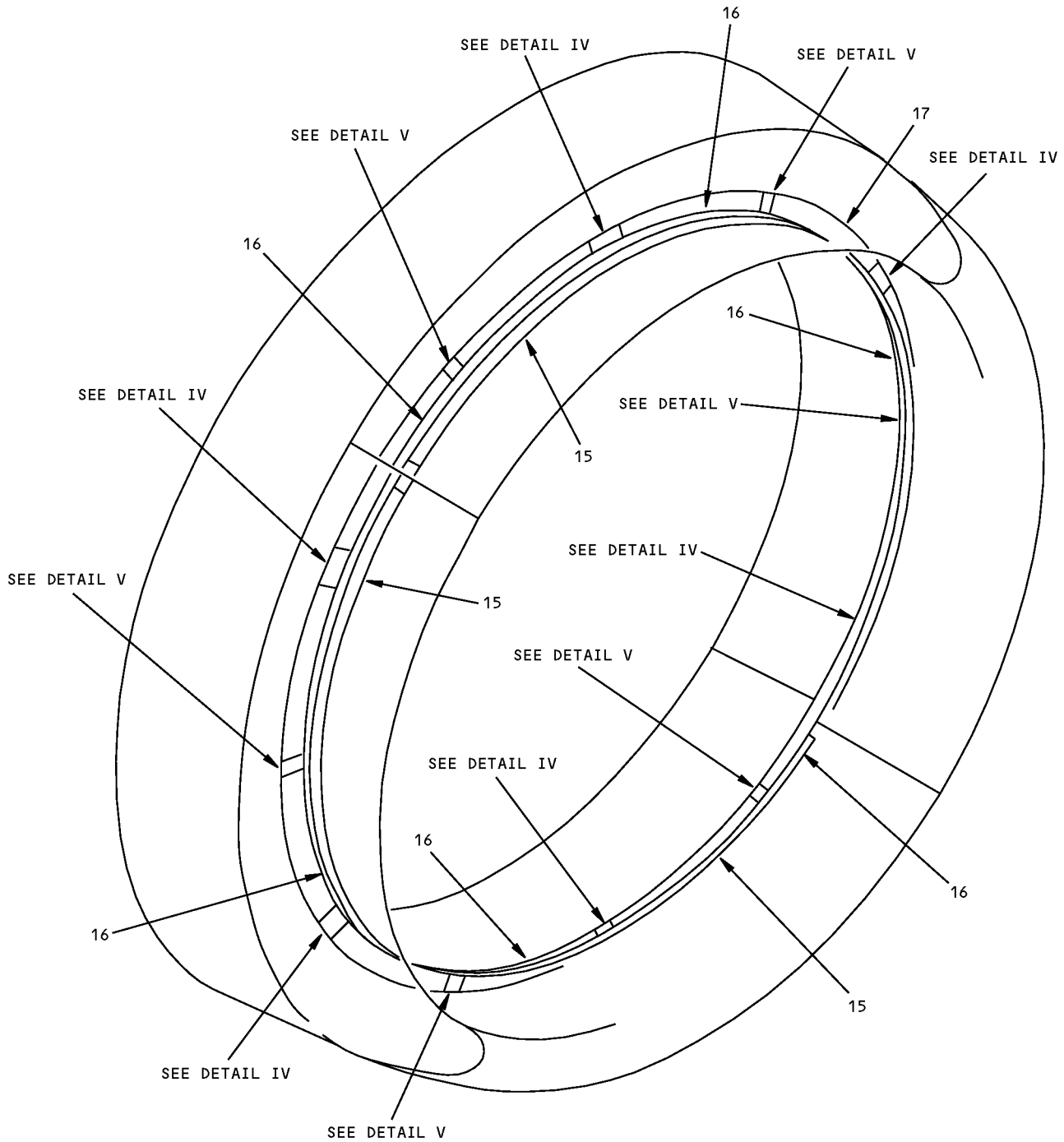
**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
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DETAIL VIII

S76S-038-00

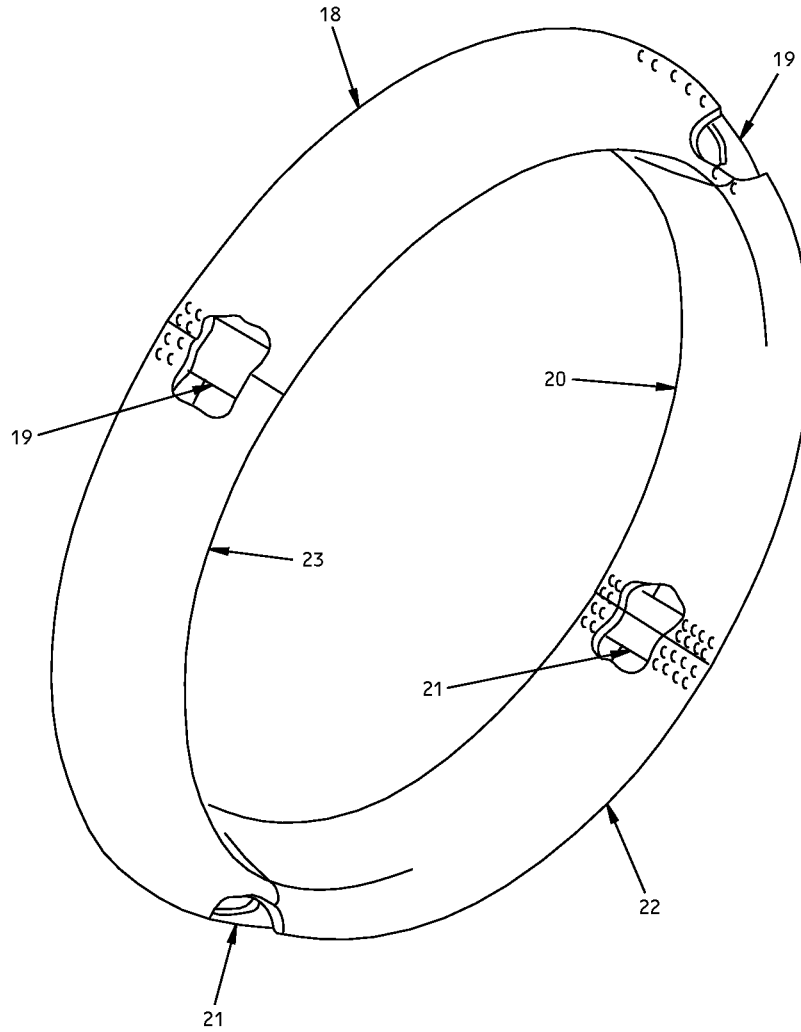
**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
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DETAIL IX

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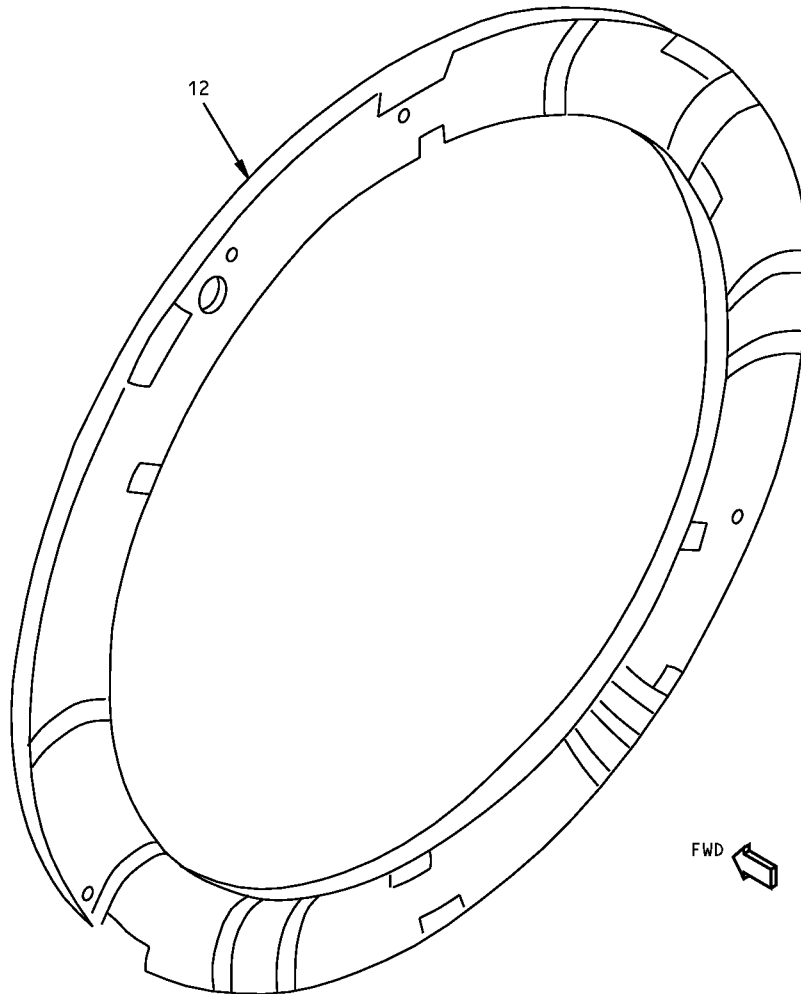
**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
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DETAIL X

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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INLET COWL LIP ASSEMBLY			
2	FORWARD LAND, UPPER OUTER BARREL SKIN			
3	LIP SKIN SEGMENT	0.090	2219-0 BARE AL SH, QQ-A-250/30 (HEAT TREAT T-62)	
4	OUTER CAP ANGLE, FORWARD BULKHEAD	0.063	TI-CP-70 SHEET ANL, AMS 4901	
5	SPLICE, INLET LIP SKIN	0.080	2219-0 BARE AL SH, AMS 4096, (HEAT TREAT T-62)	
6	BRACKET	0.080	321 CRES SH ANL, AMS 5510	
7	FORWARD LAND, LOWER OUTER BARREL SKIN			
8	SPLICE PLATE, OUTER BARREL	0.063	2024-T3 CLAD AL SH, QQ-A-250/5	
9	FILLER, TAB	0.012	AL SH CLAD 2024-T3 QQ-A-250/5	
10	SPLICE, OUTER CAP	0.063	TI-CP-70 SHEET ANL, AMS 4901	
11	INLET COWL INNER BARREL ASSEMBLY			
12	WEB, FORWARD BULKHEAD	0.063	TI-CP-70 SHEET ANL, AMS 4901	
13	INNER CAP ANGLE, FORWARD BULKHEAD	0.080	TI-CP-70 SHEET ANL, AMS 4901	
14	SPLICE, INNER CAP	0.080	TI-CP-70 SHEET ANL, AMS 4901	
15	FILLER	0.080	AL SH CLAD, QQ-A-250/5 T3	
16	SHIM	0.016	LAMINATE ALUM, MIL-S-22499, COMP 1, TYPE 1, CLASS 2	
17	DEFLECTOR	0.090	6AL-4V-T1 SH ANL, AMS 4911	
18	INLET LIP SKIN, UPPER	0.090	2219-0 BARE ALUM SHEET, QQ-A-250/30 (HEAT TREAT T-62)	
19	SPLICE, UPPER	0.080	2219-0 CLAD ALUM SHEET, AMS 4096 (HEAT TREAT T-62)	
20	INLET LIP SKIN, LEFT	0.090	2219-0 BARE ALUM SHEET, QQ-A-250/30 (HEAT TREAT T-62)	
21	SPLICE, LOWER	0.080	2219-0 CLAD ALUM SHEET, AMS 4096 (HEAT TREAT T-62)	
22	INLET LIP SKIN, LOWER	0.090	2219-0 BARE ALUM SHEET, QQ-A-250/30 (HEAT TREAT T-62)	
23	INLET LIP SKIN, RIGHT	0.080	2219-0 BARE ALUM SHEET, QQ-A-250/30 (HEAT TREAT T-62)	

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**Inlet Cowl Lip Assembly Skin Identification - CF6-80C2 Engine
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ALLOWABLE DAMAGE 1 - INLET COWL SKIN - CF6-80C2 ENGINE

1. Applicability

- A. This subject is only applicable to inlet cowls with a serial number 1922001 and on. Refer to SRM 54-12-01 for the inlet cowls with a serial number prior to 1922001.

2. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-21-01	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
54-15-01, IDENTIFICATION P/B IDENTIFICATION	INLET COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION

3. General

- A. Allowable damage data permits an operator to determine if a damaged inlet cowl can be returned to service without structural repair.
- (1) Damage permitted by these data will have no significant effect on the ultimate static strength or fatigue life of the structure, and will be capable of fulfilling its design function.
 - (2) It is assumed in these damage limits that exposed edges do not protrude from the skin contour. This type of damage must be reworked to remove or feather all protrusions. Holes and cracks in pressure boundaries must be sealed with appropriate tape.
- B. Allowable Damage Usage
- (1) Unlimited Usage
 - (a) Minor damage not affecting the structural integrity or functional capability of the component and requiring no repair over the airplane design life.
 - (2) Time Limited Usage
 - (a) Minor damage not affecting the structural integrity of the component in normal operation, but could reduce design life of component. Therefore, damage must be permanently repaired not later than the next maintenance "C" check. The location and size of the damage must be noted and checked at each subsequent "A" check to ensure that the damage has not grown beyond the allowable damage limits.

4. General - Damage Types

- A. Damage Types
- (1) Composite Materials - The types of damage permitted to the inlet cowl outer barrel are defined below. They do not include damage to surface finish such as paint. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail I.
 - (a) Abrasion*: Damage which results in a cross-sectional area change due to scuffing, rubbing, scraping, or other surface erosion.
 - (b) Crack: A partial fracture or complete break in the material.
 - (c) Delamination: A separation of the laminated plies from each other.
 - (d) Gouge*: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.
 - (e) Hole: A complete penetration of a single face sheet of material.
 - (f) Nick*: A local gouge with sharp edges. Consider a series of knicks in a line as a gouge.

STRUCTURAL REPAIR MANUAL

- (g) Scratch*: Light, narrow, shallow, mark or marks in the surface of a part. It is usually caused by contact with a very sharp object across the surface. Material is displaced, not removed.
- (h) Disbond: Separation of skin from core or core from faying surface of other parts, fittings, frames, etc.

NOTE: If the graphite epoxy fibers are broken, you must treat the damage as a crack. If the damage is limited to the surface finish, it is not considered a crack.

- (2) Aluminum Sheet Metal Structures - The types of damage permitted to the inlet lip are defined below. They do not include damage to surface finish such as paint.
 - (a) Abrasion: Damage which results in a cross-sectional area change due to scuffing, rubbing, scraping, or other surface erosion.
 - (b) Crack: A partial fracture or complete break in the material.
 - (c) Dent: A damage area, which is depressed with respect to its normal contour. There is a no cross-sectional area change in the materials and area boundaries are smooth. Its form is generally the result of impact with a relatively smoothly contoured object.
 - (d) Gouge: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.
 - (e) Hole: A complete penetration of sheet.
 - (f) Nick: A local gouge with sharp edges. Consider a series of knicks in a line as a gouge.
 - (g) Scratch: Light, narrow, shallow, mark or marks in the surface of a part. It is usually caused by contact with a very sharp object across the surface. Material is displaced, not removed.
- (3) Titanium Structures - The types of allowable damage permitted on the inlet cowl forward and aft bulkheads are defined below.
 - (a) Buckle: Damage similar to a dent but is caused by overstress.
 - (b) Crack: A partial fracture or complete break in the material.
 - (c) Dent: A damage area which is depressed with respect to its normal contour. There is a no cross-sectional area change in the material and area boundaries are smooth. Its form is generally the result of impact with a relatively smoothly contoured object.
 - (d) Gouge: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.
 - (e) Hole: A complete penetration of panel.
- (4) Bonded Acoustic Panel Structure - The types of allowable damage permitted on the inlet cowl inner barrel acoustic panels are defined below. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail II.
 - (a) Disbond: Separation of the face sheet from honeycomb core or faying surfaces.
 - (b) Dent: A damage area which is depressed with respect to its normal contour. There is a no cross-sectional area change in the material and area boundaries are smooth. Its form is generally the result of impact with a relatively smoothly contoured object.
 - (c) Gouge: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.
 - (d) Nick: A local gouge with sharp edges. Consider a series of nicks in a line as a gouge.
 - (e) Scratch: Light, narrow, shallow, mark or marks in the surface of a part. It is usually caused by contact with a very sharp object across the surface. Material is displaced, not removed.
 - (f) Void/Disbond: Separation of the face sheet from honeycomb core or faying surfaces.

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B. Sealing of Damage Area - Clean up the damage area and apply protective sealing tape. Refer to Figure 101/ALLOWABLE DAMAGE 1, Details III through VIII.

(1) Remove loose particles from damage area. Cut frayed strands of carbon fibers.

WARNING: SANDING, CUTTING, OR DRILLING OF COMPOSITE MATERIALS MAY PRODUCE DUST IN EXCESS OF ACCEPTABLE EXPOSURE LEVELS. GLOVES, PROTECTIVE CLOTHING, REGULATORY AGENCY APPROVED DUST MASKS, AND APPROPRIATE EYE PROTECTION MUST BE WORN WHEN WORKING WITH THESE MATERIALS. AVOID BREATHING OF DUST OR PROLONGED CONTACT OF DUST ON SKIN.

(2) Remove raised material to fair with air-wetted surface.

(3) Smooth sides of crack or hole damage and chamfer or radius the edges of the air-wetted surface.

(4) Use 320-grit abrasive paper and remove surface gloss from area at least 1 inch beyond cleanup limits.

WARNING: ISOPROPYL ALCOHOL IS FLAMMABLE AND VAPOR IS HARMFUL. USE IN A WELL-VENTILATED AREA. AVOID PROLONGED BREATHING OF VAPOR AND PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION TO THE EYES, NOSE, THROAT, AND SKIN. OVEREXPOSURE MAY CAUSE HEADACHE, UNCOORDINATION, AND DROWSINESS. PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

(5) Clean sanding debris from surface with clean cloth moistened with isopropyl alcohol, wipe dry with clean cloth before the alcohol evaporates.

(6) Cut sealing patch from aluminum-backed sealing tape.

(a) Cut patch 1 inch (25 mm) larger all around than damage cleanup area.

(b) Remove all square corners from patch by trimming to a rounded configuration.

(c) Apply tape over damage area.

(d) Stretch and smooth tape as it is applied to avoid wrinkles.

(e) Press patch in place with plastic roller or squeegee to remove trapped air and wrinkles.

(f) Roll edges of patch to ensure proper adhesion.

(7) Remove damaged tape patch by peeling it from the structure surface.

WARNING: ISOPROPYL ALCOHOL IS FLAMMABLE AND VAPOR IS HARMFUL. USE IN A WELL-VENTILATED AREA. AVOID PROLONGED BREATHING OF VAPOR AND PROLONGED OR REPEATED CONTACT WITH SKIN. MAY CAUSE IRRITATION TO THE EYES, NOSE, THROAT, AND SKIN. OVER EXPOSURE MAY CAUSE HEADACHE, UNCOORDINATION, AND DROWSINESS. PROTECTIVE GLOVES SHOULD BE WORN DURING USE. MAY CAUSE DERMATITIS BY REMOVING SKIN OILS.

(8) Clean adhesive residue from patch area using a clean cloth moistened with isopropyl alcohol. Wipe area dry with a clean cloth before alcohol evaporates. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail IX.

(9) Cut a new patch and install it.

C. Damage Zones

STRUCTURAL REPAIR MANUAL

- (1) Inlet Cowl Outer Barrel Composite Structure - There are three damage zones for the inlet cowl outer barrel. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail IX.
- (a) Refer to Table 101/ALLOWABLE DAMAGE 1 for the following items:
- 1) allowable damage types
 - 2) damage zones
 - 3) allowable damage limits
 - 4) cleanup requirements
- (b) Refer to Table 101/ALLOWABLE DAMAGE 1 for the following items:
- 1) allowable damage types
 - 2) damage zones
 - 3) allowable damage limits
 - 4) cleanup requirements
- (c) Allowable Damage Zones - The allowable damage zones for the inlet cowl barrel are:
- Zone C1: Forward barrel land and aft barrel land, interfacing with the forward and aft inlet cowl bulkheads. Horizontal lands of upper barrel half and lower barrel half in splice areas. Doubler plies around access panels and pressure relief door.
 - Zone C2: Internal frames which contain honeycomb core.
 - Zone C3: Outer barrel panel composite skins, bound by frames, bulkhead lands, splice lands, and access panel frames. Includes all areas not covered in Zones C1 through C2. Refer to Table 101/ALLOWABLE DAMAGE 1.

Table 101: Inlet Cowl Outer Barrel

[1][2]						
DESCRIPTION	ABRASION	CRACK	DISBOND	DELAMINATION	NICK SCRATCH GOUGE	HOLE
Zone C1	*[3]	—	—	—	*[4]	—
Zone C2	*[3]	*[5]	*[6]	—	*[4]	*[7]
Zone C3	*[3]	*[8]	—	*[9]	*[4]	*[10]

*[1] Any damage not described in the table must be repaired before the next flight.

*[2] Refer to INLET COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-15-01, IDENTIFICATION for the material thickness.

*[3] Abrasion damage allowed to surface finish only. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1, Detail VIII. Record and check at each "A" check. Replace tape if peeled. If the graphite fibers are damaged, you must treat the damage as a crack.

*[4] Maximum depth 0.010 in. (0.254 mm) over 10.0 in. (25.4 cm) length without graphite fiber damage. Apply tape, record, and check at each "A" check. Replace tape if peeled or damaged. If the graphite fibers are damaged, you must treat the damage as a crack. Repair at or before the next "C" check.

*[5] Maximum crack length 3.0 in. (7.6 cm) in circumferential direction, more than 1.0 in. (25.4 mm) from reinforced areas. Cracks not allowed in tapered edges. A 12.0 in. (30.5 cm) minimum edge-to-edge separation from other cracks in one facesheet only.

*[6] A 1.0 in. (25.4 mm) maximum diameter in stiffeners. A 10.0 in. (25.4 cm) minimum separation from other defects. Five disbonds maximum in frames of barrel half. No disbonds in doubler area of frames or splices. Record and check at each "A" check. Repair at or before the next "C" check.

*[7] A 0.5 in. (12.7 mm) maximum diameter, penetration through one side (facesheet) only, with or without core damage. No holes allowed in the tapered edge of the frames. One hole per frame per quadrant. A 15.0 in. (38.1 cm) circumferential distance between any two holes in adjacent frames.

STRUCTURAL REPAIR MANUAL

- *[8] Maximum crack length 3.0 in. (7.6 cm) in any direction, more than 1.0 in. (25.4 mm) from reinforced areas. A 10.0 in. (25.4 cm) minimum edge-to-edge separation from other cracks, holes, or disbonds. Five cracks maximum per barrel half. Cracks wider than 0.010 in. (0.254 mm) are to be treated as holes. Apply tape and inspect at each "A" check. Repair at or before next "C" check.
- *[9] A 5.0 in. (12.7 cm) maximum diameter, 3.0 in. (7.6 cm) from frames, and 1.0 in. (25.4 mm) from reinforced areas. A 10.0 in. (25.4 cm) minimum separation from other defects. Five delaminations maximum in one barrel half. Record and inspect at each "A" check. Repair at or before the the next "C" check.
- *[10] A 3.0 in. (7.6 cm) maximum diameter. A 15.0 in. (38.1 cm) minimum edge-to-edge separation from other defects, 1.0 in. (25.4 mm) from frames or reinforced areas. Five holes maximum per barrel half. Apply tape and inspect at each "A" check. Repair at or before next "C" check.
- (2) Aluminum Inlet Lip Structure - There are two damage zones for the inlet lip. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail X.
- (a) Refer to Table 102/ALLOWABLE DAMAGE 1 for the following items:
- 1) allowable damage types
 - 2) damage zones
 - 3) allowable damage limits
 - 4) cleanup requirements
- (b) Allowable Damage Zones - The allowable damage zones for the inlet lip structure are:
- Zone CL1: Lip segment splice fastener areas and fastener areas of lip skin to inlet cowl forward bulkhead attachment.
 - Zone CL2: All areas of lip skin not in Zone CL1.

Table 102: Aluminum Inlet Lip Structure

[1][2]						
DESCRIPTION	CRACK	DENT	SCRATCH/ GOUGE	NICK	CORROSION	HOLES AND PUNCTURES
Zone CL1	*[3]	---	*[4]	*[5]	*[6]	*[7]
Zone CL2	---	*[8]	*[9]	*[10]	*[11]	*[7]

- *[1] Any damage not described in the table must be repaired before the next flight.
- *[2] Refer to INLET COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-15-01, IDENTIFICATION for the material thickness.
- *[3] No cracks through fastener holes. Clean up edge cracks as given in Figure 101/ALLOWABLE DAMAGE 1, Details III and VII.
- *[4] Repair as given in Figure 101/ALLOWABLE DAMAGE 1, Details III, IV, and VII.
- *[5] Repair as given in Figure 101/ALLOWABLE DAMAGE 1, Details III, IV, and VII.
- *[6] Repair as given in Figure 101/ALLOWABLE DAMAGE 1, Detail VI.
- *[7] Clean punctures up to 0.25 in. (6.35 mm) maximum diameter. Holes permitted up to 0.25 in. (6.35 mm) diameter, not closer than 4 diameters to any adjacent hole. Hole is to be filled with a NAS1399D blind rivet for holes up to 0.16 in. (4.06 mm) diameter, and NAS1398D blind rivet for holes 0.19 in. (4.83 mm) to 0.25 in. (6.35 mm) diameter. Wet install with 825-009 Desoto Hi-Temp Primer. Other holes to be repaired.
- *[8] A 5.0 in. (12.7 cm) maximum diameter. Depth of dent must not be more than 0.020 in. (0.508 mm) out of contour. Not allowed within 1.6 in. (4.1 cm) of forward bulkhead. The A/Y dimension must not be less than 30 as given in Figure 101/ALLOWABLE DAMAGE 1, Detail V. A 15.0 in. (38.1 cm) minimum edge-to-edge separation from other defects. Maximum of 3 dents in upper 180-degree segment.
- *[9] 10.0 in. (25.4 cm) long in any direction. If depth exceeds 10 percent of material thickness or is wider than 0.10 in. (2.54 mm), consider as a crack. A 10.0 in. (25.4 cm) minimum separation from other defects. Blend no later than the next "A" check as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV.
- *[10] If deeper than 10 percent of material thickness, or wider than 0.10 in. (2.54 mm), consider as a crack. No more than five within a 25 in² (161 cm²) area. Blend at the next "A" check as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV.

STRUCTURAL REPAIR MANUAL

*[11] Maximum of 10 percent of material thickness and 1.0 ft² (929 cm²) area per quadrant, or equivalent volume. Blend at the next "A" check as given in Figure 101/ALLOWABLE DAMAGE 1, Detail VI. Use a minimum blend radius of 0.5 in. (12.7 mm).

(3) Bulkhead Structures - There are six damage zones for the bulkhead. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail XI.

(a) Refer to Table 103/ALLOWABLE DAMAGE 1 Table III for the following items:

- 1) allowable damage types
- 2) damage zones
- 3) allowable damage limits
- 4) cleanup requirements

(b) Allowable Damage Zones - The allowable damage zones for the inlet cowl forward bulkhead and the inlet cowl aft bulkhead are:

- Zone CB1: Forward bulkhead panel webs and cap angles (titanium)
- Zone CB2: Aft bulkhead panel webs (Aluminum and titanium)
- Zone CB3: Stiffeners, upstanding leg of mount flange, and aft bulkhead frames
- Zone CB4: Forward bulkhead fastener joints
- Zone CB5: Aft bulkhead fastener joints
- Zone CB6: Engine attach fittings

Table 103: Bulkhead Structure

[1][2]*[3]						
DESCRIPTION	CRACK	DENT/ BUCKLE	SCRATCH/ GOUGE	NICK	CORROSION	HOLE
Zone CB1	*[4]	—	—	—	—	—
Zone CB2	*[4]	*[5]	*[6]	*[7]	—	*[8]
Zone CB3	*[9]	—	*[6]	*[7]	*[10]	—
Zone CB4	—	—	—	—	—	—
Zone CB5	—	—	—	—	—	—
Zone CB6	—	—	—	—	—	—

*[1] WARNING: ANY MACHINING OF TITANIUM IS HAZARDOUS FOR BOTH MATERIAL AND MACHINIST. REFER TO 51-10-02, GENERAL BEFORE REWORKING TITANIUM MATERIALS. IMPROPERLY REWORKED TITANIUM METAL CAN CAUSE EFFECTS WORSE THAN THE ORIGINAL DAMAGE.

*[2] Any damage not described in the table must be repaired before the next flight.

*[3] Refer to INLET COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-15-01, IDENTIFICATION for the material thickness.

*[4] Cracks not allowed except for edge cracks, which must be removed as given in Figure 101/ALLOWABLE DAMAGE 1, Details III and VII. See the above WARNING for machining of titanium.

*[5] A 5.0 in. (12.7 cm) maximum diameter. Depth of dent must not be more than one percent of diameter. A 10.0 in. (25.4 cm) minimum separation from other defects.

*[6] 10.0 in. (25.4 cm) long in any direction. If depth exceeds 10 percent of material thickness or is wider than 0.10 in. (2.54 mm), consider as a crack. A 10.0 in. (25.4 cm) minimum separation from other defects. Repair as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV at or before the next "A" check.

*[7] Consider as a crack if deeper than 10 percent of material thickness or wider than 0.10 in. (2.54 mm); otherwise, accept after being repaired as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV at or before the next "A" check.

STRUCTURAL REPAIR MANUAL

- *[8] Completely clean out the damage up to 0.18 in. (4.57 mm) maximum diameter and not closer than 1.0 in. (25.4 mm) to a fastener hole or to other damage. Fill the hole with a CR3553-5 blind rivet installed wet with high temperature 825-009 Desoto Primer. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-21-01 for primer mixing instructions.
- *[9] Cracks not allowed except for edge cracks, which must be removed as given in Figure 101/ALLOWABLE DAMAGE 1, Details III and VII. Apply protective treatment for aluminum alloy after blending.
- *[10] On the exposed surfaces: 10.0 in. (25.4 cm) long in any direction. A 10.0 in. (25.4 cm) minimum separation from other defects. Repair as given in Figure 101/ALLOWABLE DAMAGE 1, Detail VI at or before the next "A" check. If damage is deeper than 0.010 in. (0.25 mm), or wider than 0.10 in. (2.54 mm), consider as crack.
- (4) Bonded Acoustic Panel Structure - There are four damage zones for the acoustic panel. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail XII.
- (a) Refer to Table 104/ALLOWABLE DAMAGE 1 for the following items:
- 1) allowable damage types
 - 2) damage zones
 - 3) allowable damage limits
 - 4) cleanup requirements
- (b) Allowable Damage Zones - The allowable damage zones for the inlet cowl inner barrel acoustic panels are:
- Zone CA1: Backskin
 - Zone CA2: Perforated inner face sheet
 - Zone CA3: Riveted joint
 - Zone CA4: Bonded (non-riveted) joint

Table 104: Inlet Cowl Inner Barrel

[1][2]					
DESCRIPTION	CORROSION/ DELAMINATION	DENT	GOUGE	NICK	SCRATCH
Zone CA1	*[3]	—	—	—	—
Zone CA2	*[4]	*[5]	*[6]	*[7]	*[8]
Zone CA3	*[9]	—	—	—	—
Zone CA4	*[10]	—	—	—	—

*[1] Any damage not described in the table must be repaired before the next flight.

*[2] Refer to INLET COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-15-01, IDENTIFICATION for the material thickness.

*[3] 150 in² (968 cm²) area maximum, and must be separated from other delaminations, corrosion, or voids by four times the maximum dimension of delamination. Must not be opposite corrosion, voids or delamination on the other facesheet. The maximum delaminated length for a non-riveted joint is 12.0 in. (30.5 cm).

*[4] A 50 in² (323 cm²) area maximum, and must be separated from other delaminations, corrosion, or voids by four times the maximum dimension of delamination. Must not be opposite corrosion, void, or delamination on the other facesheet. The maximum delaminated length for a non-riveted joint is 12 in. (30.5 cm).

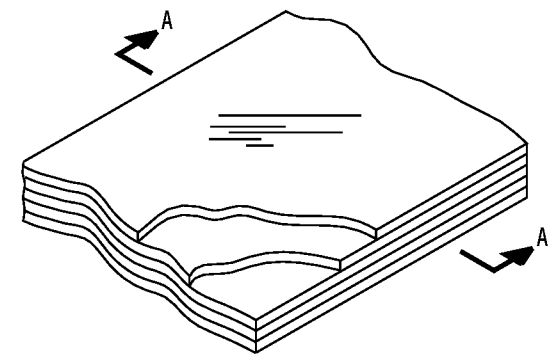
*[5] 1.5 in. (3.8 cm) minimum distance from reinforced area or edge of honeycomb 3 in. (7.6 cm) maximum diameter, 0.3 in. (7.6 mm) maximum depth. 6 in. (15.2 cm) minimum separation between dents. Check at "A" check. Repair at or before the next "C" check.

*[6] Length, 1.0 in. (2.5 cm) maximum; Width, 0.10 in. (2.54 mm) maximum; Depth, 0.010 in. (0.254 mm) maximum; Radius, 0.05 in. (1.27 mm) minimum. 1.5 in. (3.8 cm) minimum separation from reinforced area or edges of honeycomb. A 3.0 in. (7.6 cm) minimum separation from other defects. Blend no later than at each "A" check. Repair at or before next "C" check.

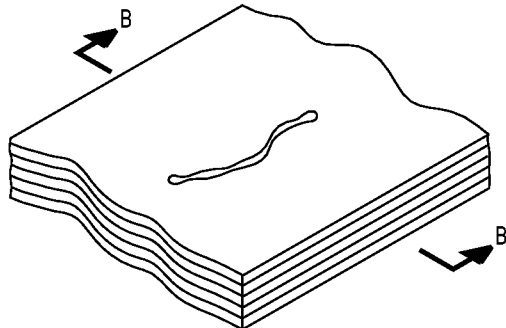
767-300**STRUCTURAL REPAIR MANUAL**

- *[7] 1.5 in. (3.8 cm) minimum distance from reinforced area or edge of honeycomb. Length, 0.75 in. (1.90 cm) maximum; Depth, 0.01 in. (0.25 mm) maximum. A minimum 2.0 in. (5.1 cm) separation from other defects. Blend no later than at each "A" check. Repair at or before the next "C" check.
- *[8] Maximum 1.5 in. (3.8 cm) long and 0.005 in. (0.127 mm) deep. Minimum of 1.5 in. (3.8 cm) from reinforced area or edge of honeycomb. A 2.0 in. (5.1 cm) minimum separation from other defects. Blend no later than at each "A" check. Repair at or before the next "C" check.
- *[9] Maximum 6 in. (15.2 cm) along rivet line per quadrant not to exceed 10 percent skin thickness in depth. Blend no later than the next "A" check. Repair at or before the next "C" check.
- *[10] Maximum delaminated or corrosion length is 12 in. (30.5 cm) of joint length. The delamination must not extend from one edge of the part to opposite edge. There must be a minimum of 0.12 in. (3.05 mm) between delamination and edge of part. Check at "A" check. Repair at next "C" check.

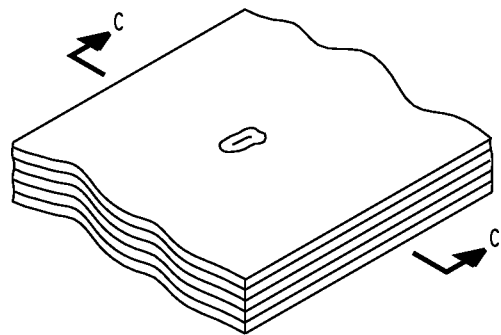
**767-300
STRUCTURAL REPAIR MANUAL**



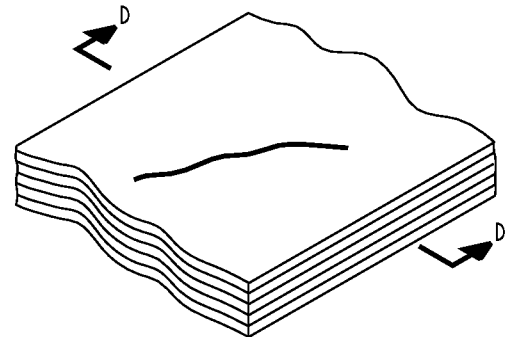
SECTION A-A
ABRASION



SECTION B-B
GOUGE



SECTION C-C
NICK



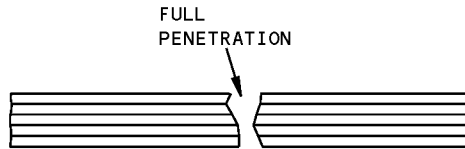
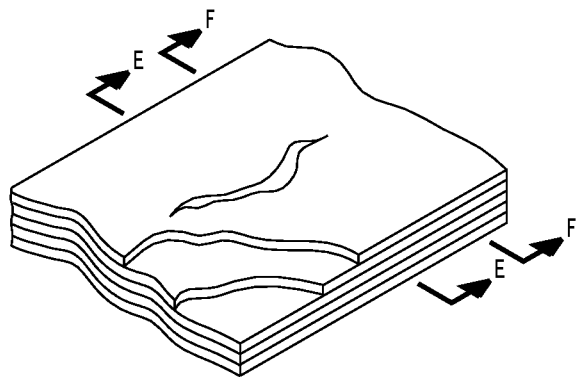
SECTION D-D
SCRATCH

TYPES OF DAMAGE TO INLET COWL
DETAIL I

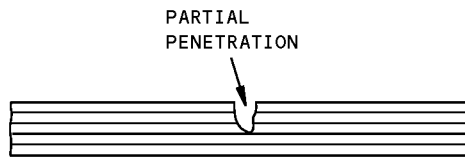
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**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
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STRUCTURAL REPAIR MANUAL

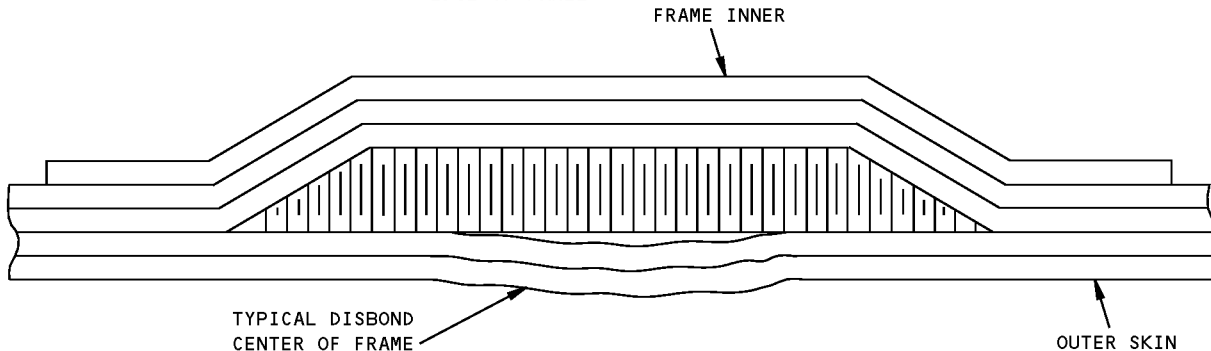
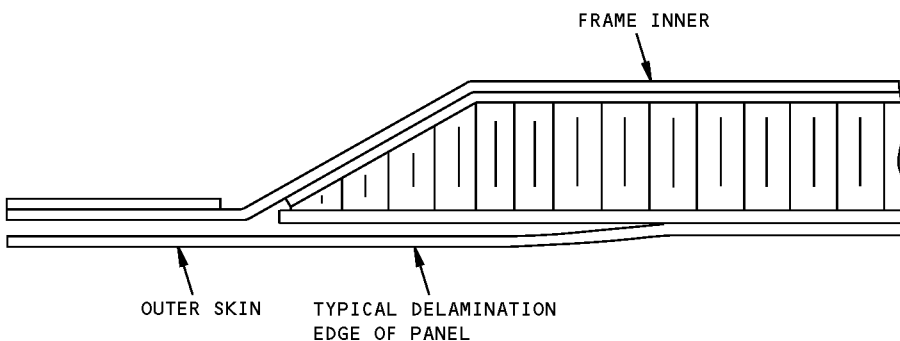


SECTION E-E

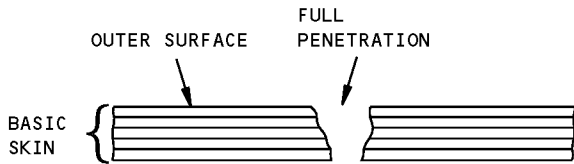


SECTION F-F

CRACK



DISBOND



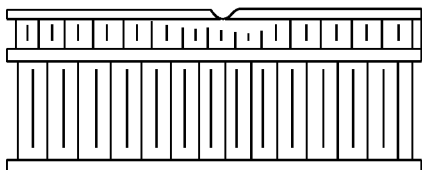
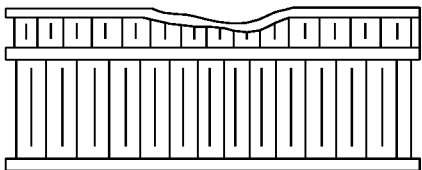
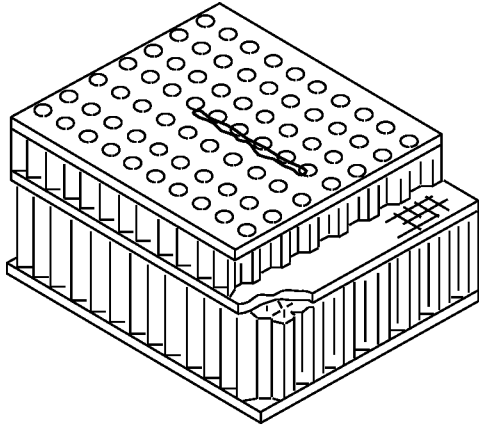
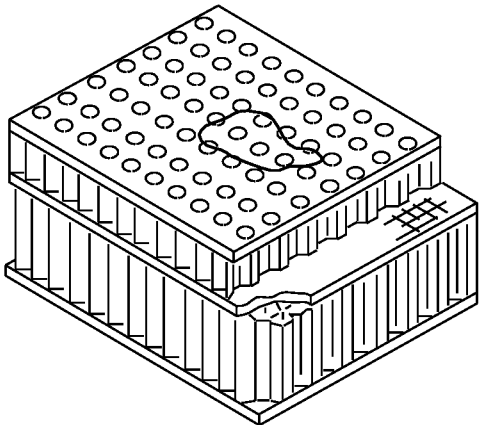
HOLE

TYPES OF DAMAGE TO INLET COWL
DETAIL I (CONTINUED)

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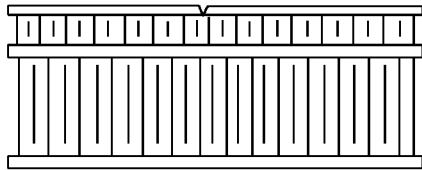
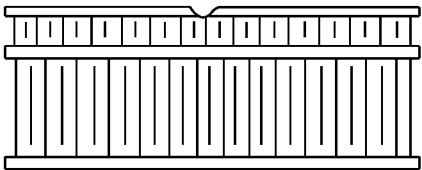
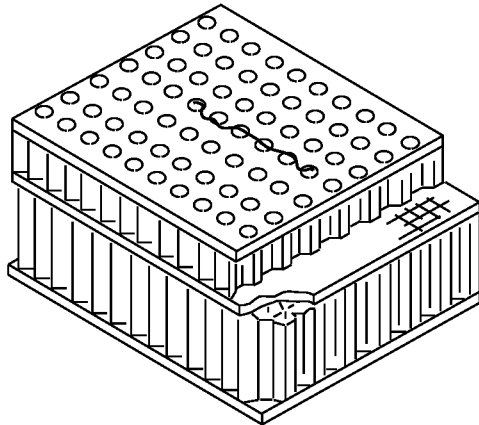
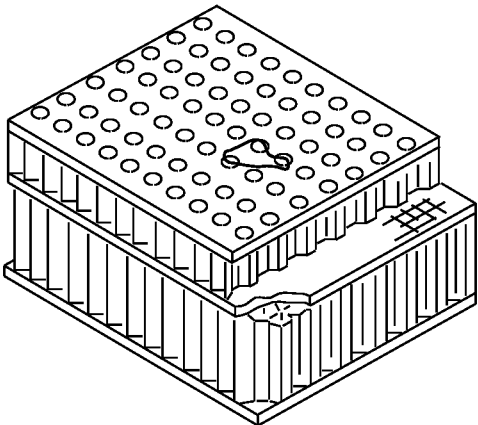
**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 2 of 15)**

STRUCTURAL REPAIR MANUAL



DENT

GOUGE—WIDER AND DEEPER THAN SCRATCH



NICK—LOCAL GOUGE

SCRATCH—PARTIAL PENETRATION

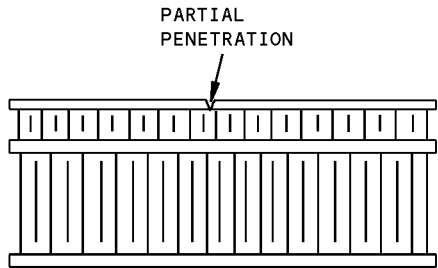
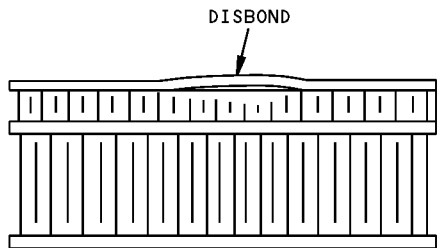
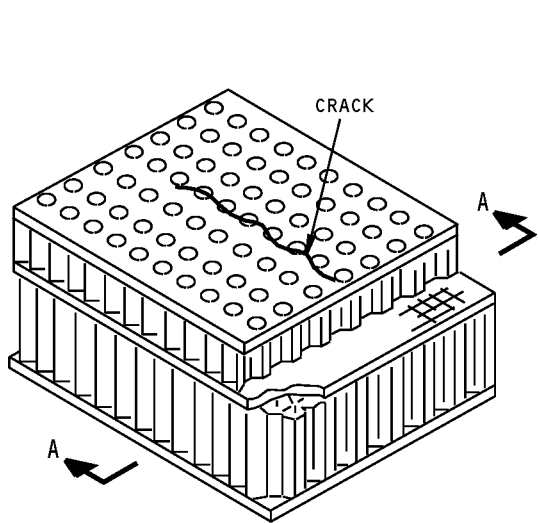
TYPES OF DAMAGE TO ACOUSTIC PANEL

DETAIL II

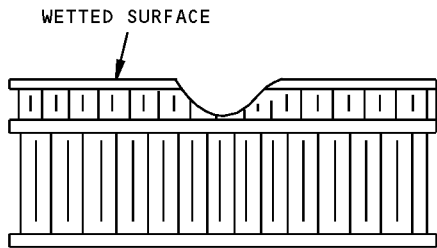
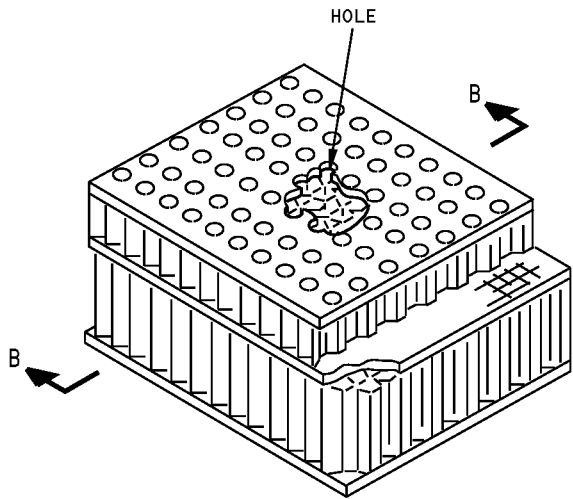
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**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 3 of 15)**

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STRUCTURAL REPAIR MANUAL



SECTION A-A



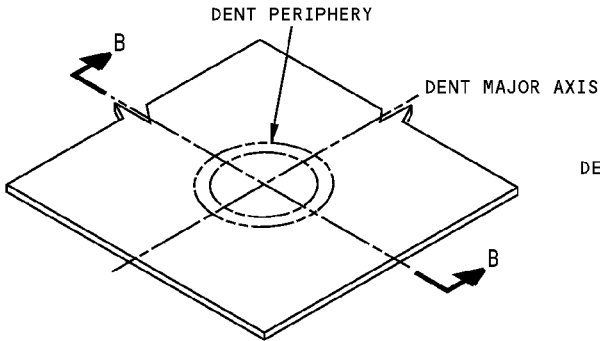
SECTION B-B

TYPES OF DAMAGE TO ACOUSTIC PANEL
DETAIL II (CONTINUED)

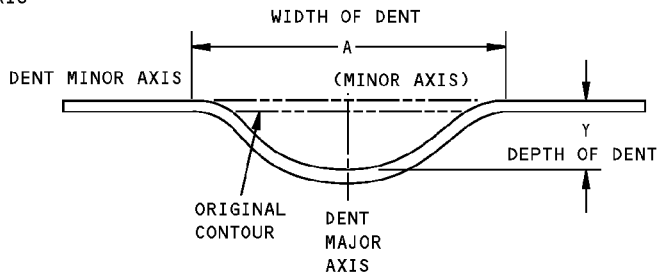
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Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 4 of 15)

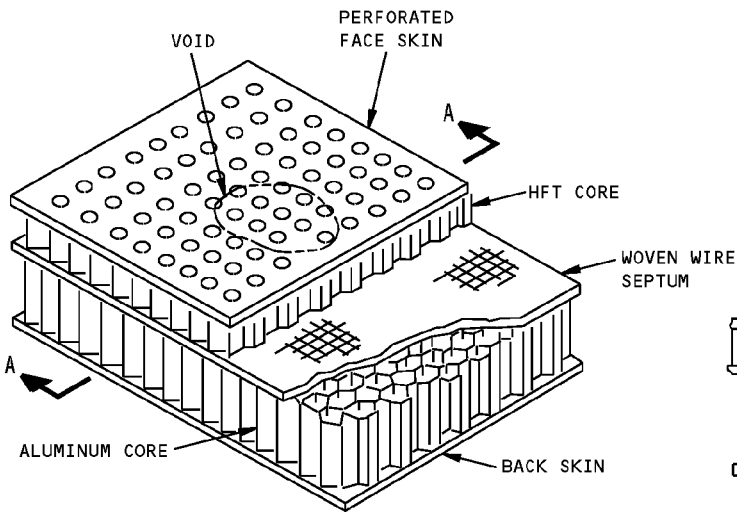
**767-300
STRUCTURAL REPAIR MANUAL**



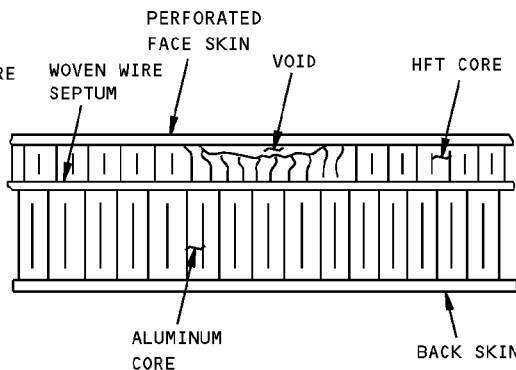
TYPICAL DENTED PANEL



SECTION B-B



TYPICAL BONDED PANEL VOID



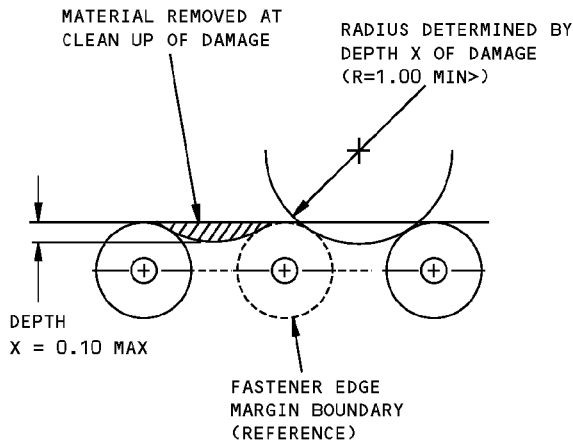
SECTION A-A

TYPES OF DAMAGE TO ACOUSTIC PANEL
DETAIL II (CONTINUED)

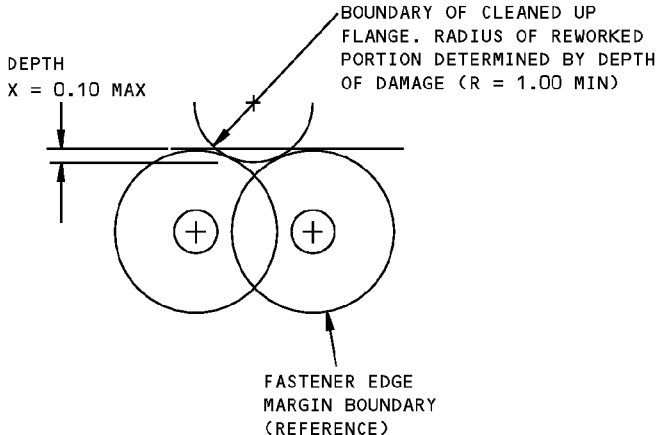
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**Allowable Damage - Inlet Cowling - CF6-80C2 Engine
Figure 101 (Sheet 5 of 15)**

**767-300
STRUCTURAL REPAIR MANUAL**



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

CAUTION

ANY DAMAGE NOT DESCRIBED IN TABLE MUST BE REPAIRED BEFORE NEXT FLIGHT.

NOTE: SEE STRUCTURE IDENTIFICATION FOR MATERIAL THICKNESS.

DAMAGE CLEANUP OF EDGES
DETAIL III

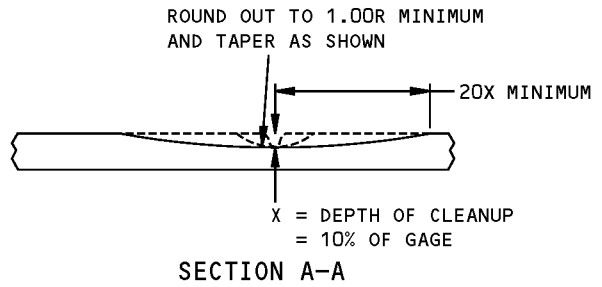
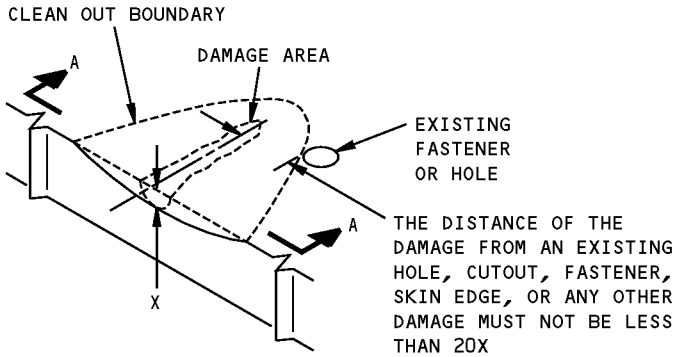
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**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 6 of 15)**

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ALLOWABLE DAMAGE 1
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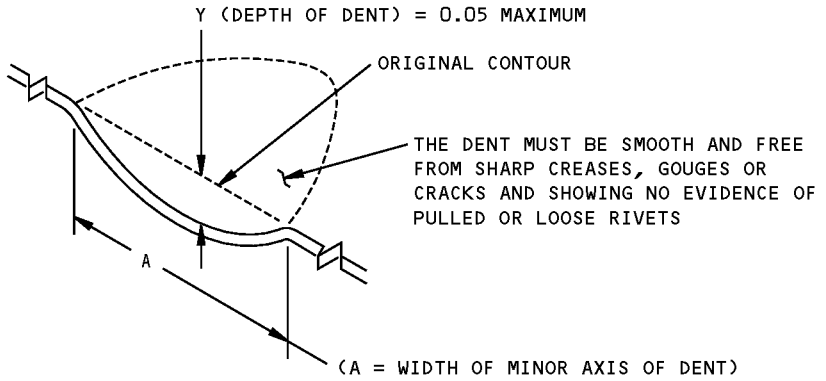
**767-300
STRUCTURAL REPAIR MANUAL**



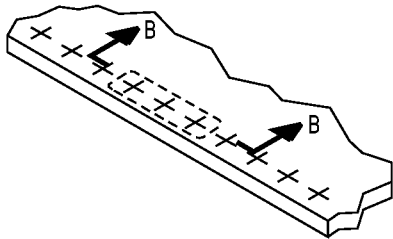
**ALLOWABLE NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL IV**

CAUTION: DO NOT FILL DENTS
MAJOR AXIS - 4.00 MAXIMUM

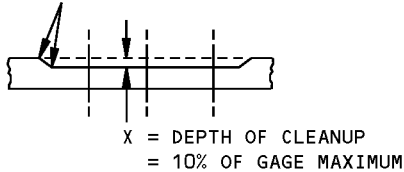
$\frac{A}{Y}$ MUST NOT BE LESS THAN 30



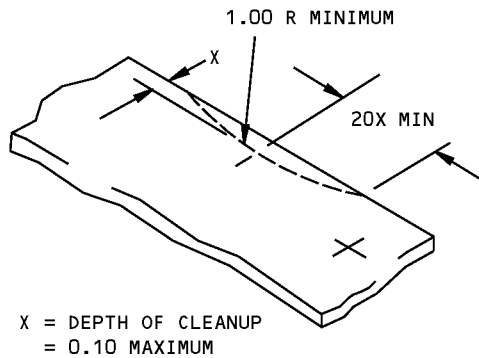
**ALLOWABLE DAMAGE FOR DENT
DETAIL V**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAXIMUM DEPTH



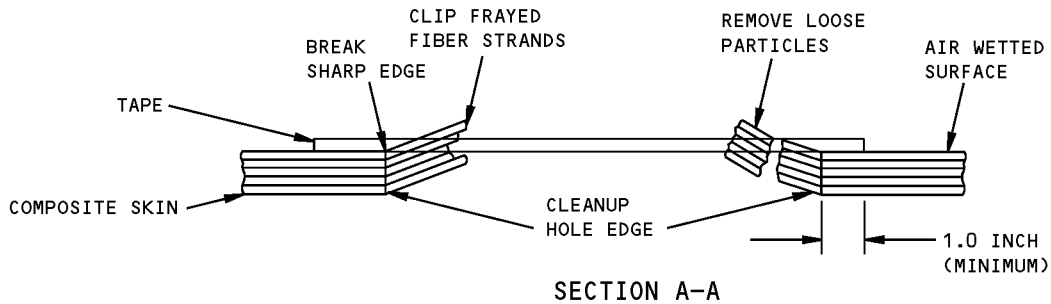
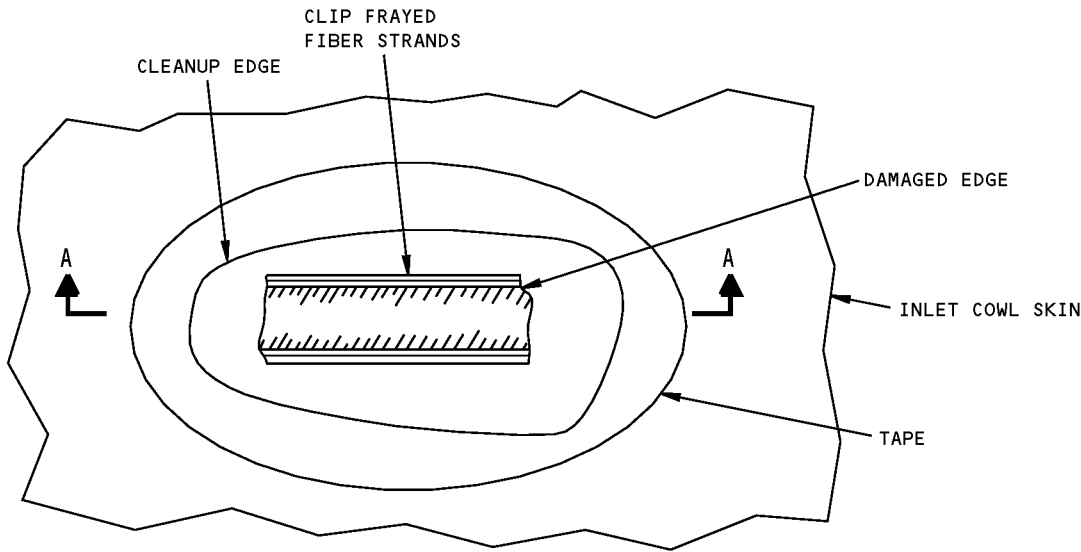
**SECTION B-B
CORROSION CLEANUP
DETAIL VI**



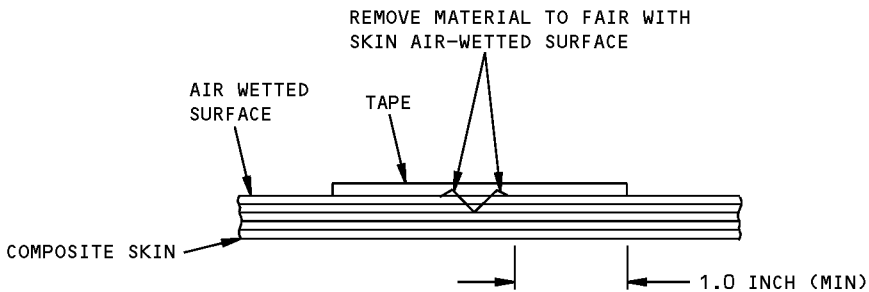
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL VII** S76S-075-00

**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 7 of 15)**

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STRUCTURAL REPAIR MANUAL



APPLICATION OF TAPE TO HOLE OR CRACK



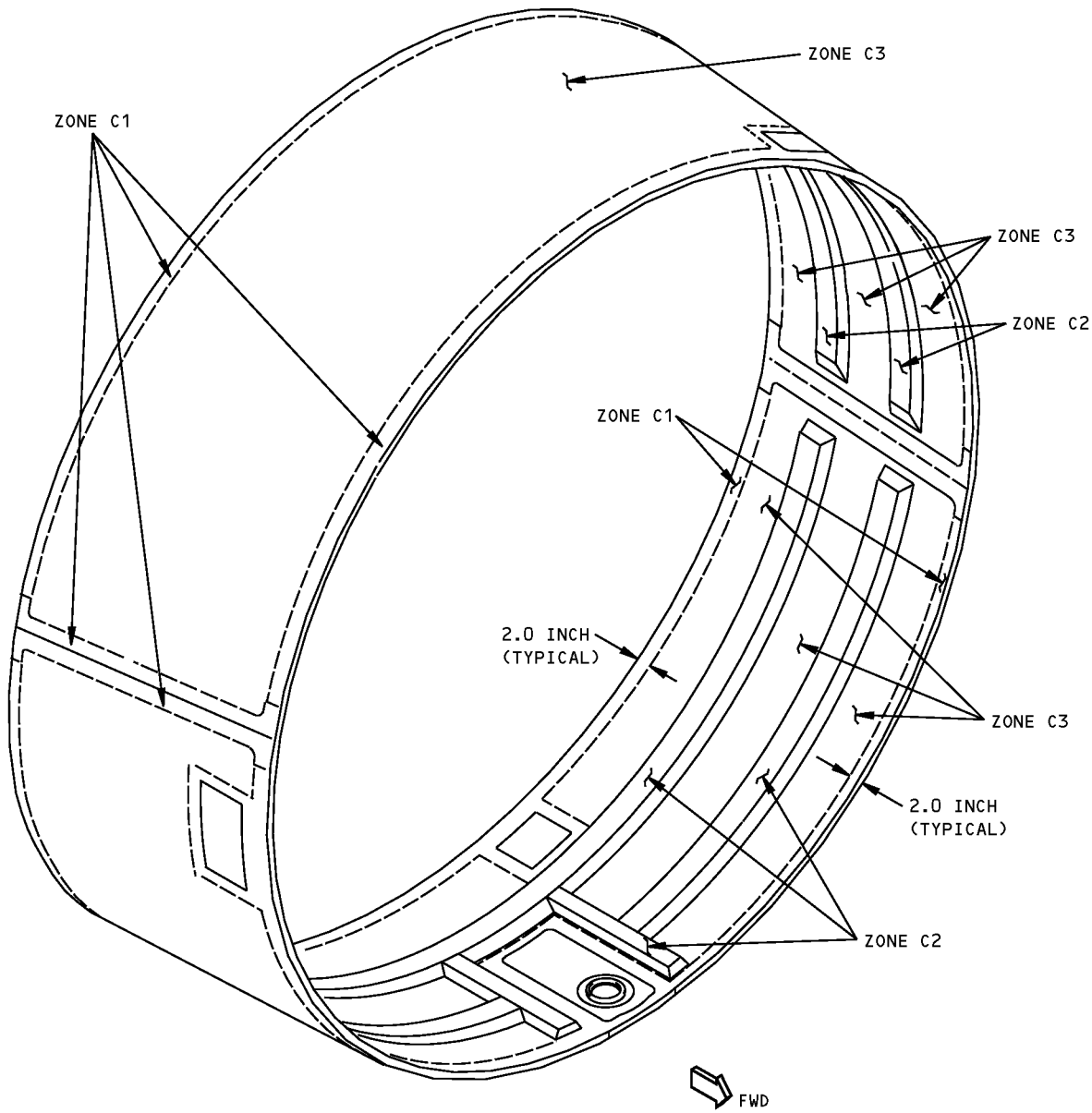
APPLICATION OF TAPE TO NICK, GOUGE, OR SCRATCH

APPLICATION OF TAPE TO AIR-WETTED SURFACES (COMPOSITE ONLY)
DETAIL VIII

S76S-068-00

Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 8 of 15)

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STRUCTURAL REPAIR MANUAL**



INLET COWL OUTER BARREL DAMAGE ZONES
DETAIL IX

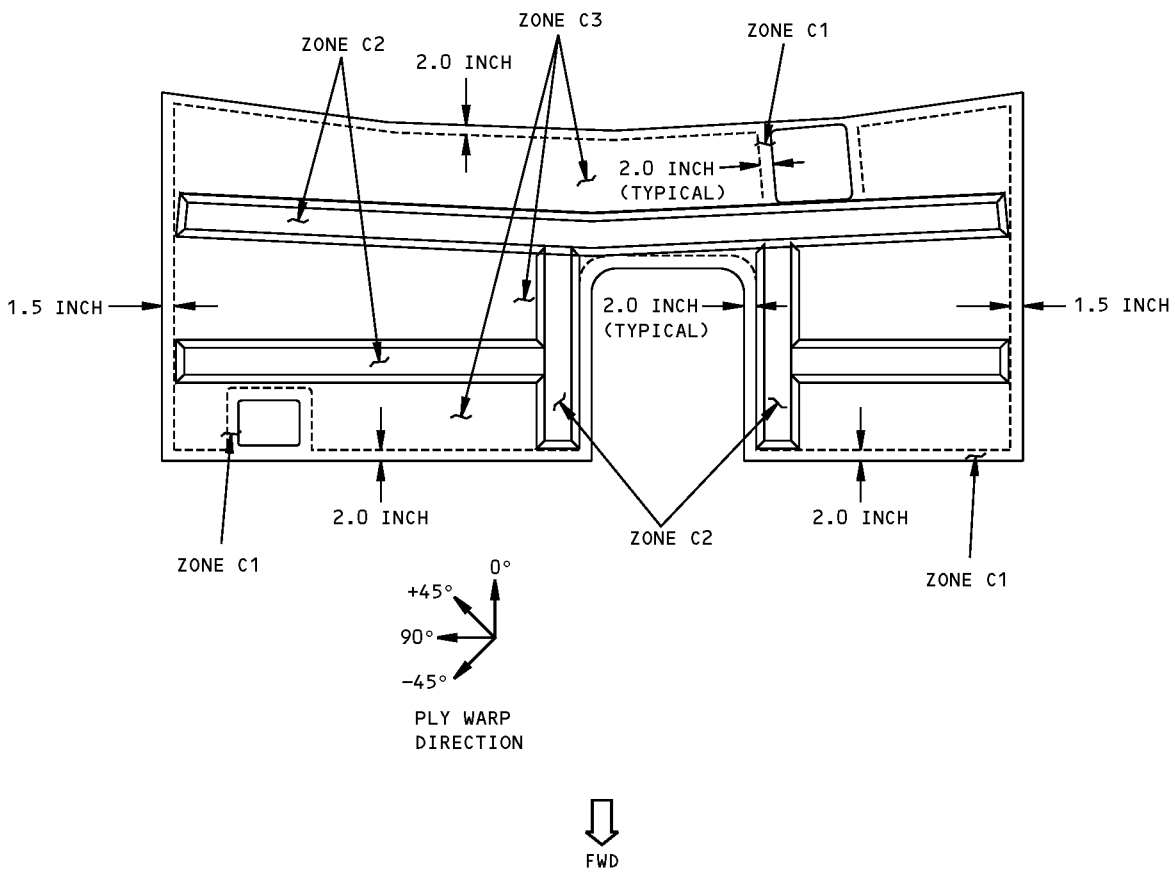
S76S-059-00

**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 9 of 15)**

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ALLOWABLE DAMAGE 1
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STRUCTURAL REPAIR MANUAL



VIEW LOOKING OUTBOARD

INLET COWL OUTER BARREL DAMAGE ZONES
DETAIL IX (CONTINUED)

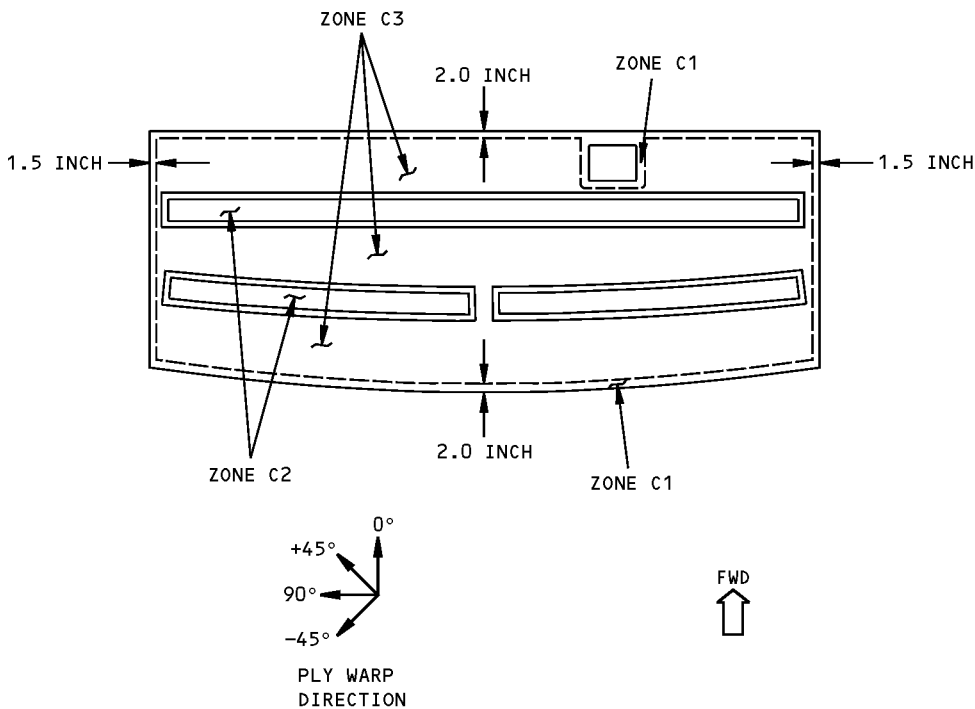
S76S-061-00

Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 10 of 15)

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STRUCTURAL REPAIR MANUAL**



VIEW LOOKING OUTBOARD

INLET COWL OUTER BARREL DAMAGE ZONES
DETAIL IX (CONTINUED)

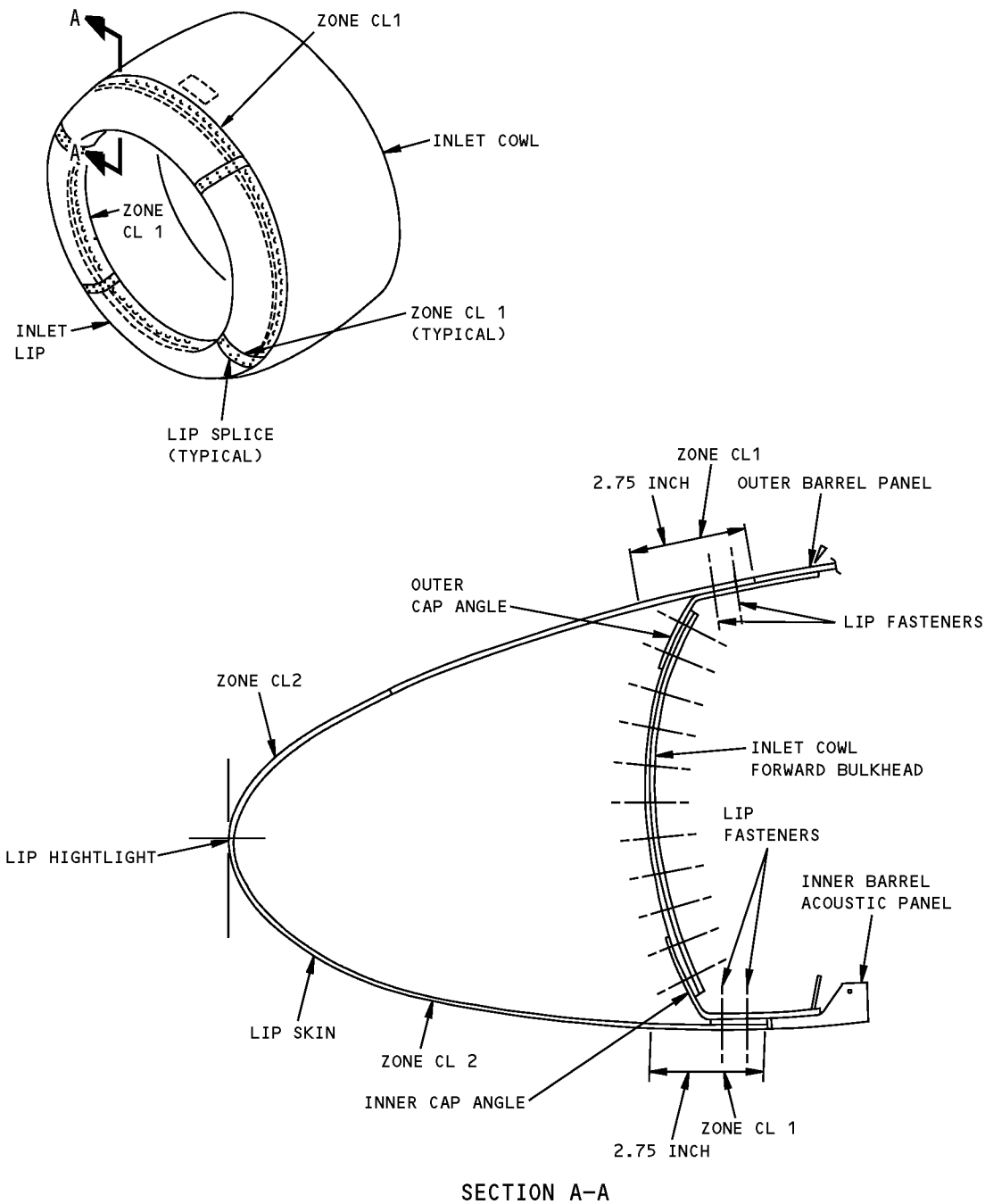
S76S-060-00

**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 11 of 15)**

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STRUCTURAL REPAIR MANUAL



SECTION A-A
ALUMINUM INLET LIP STRUCTURE
DETAIL X

S76S-058-00

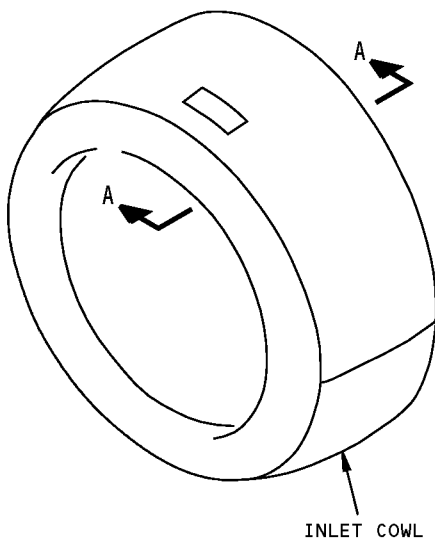
Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 12 of 15)

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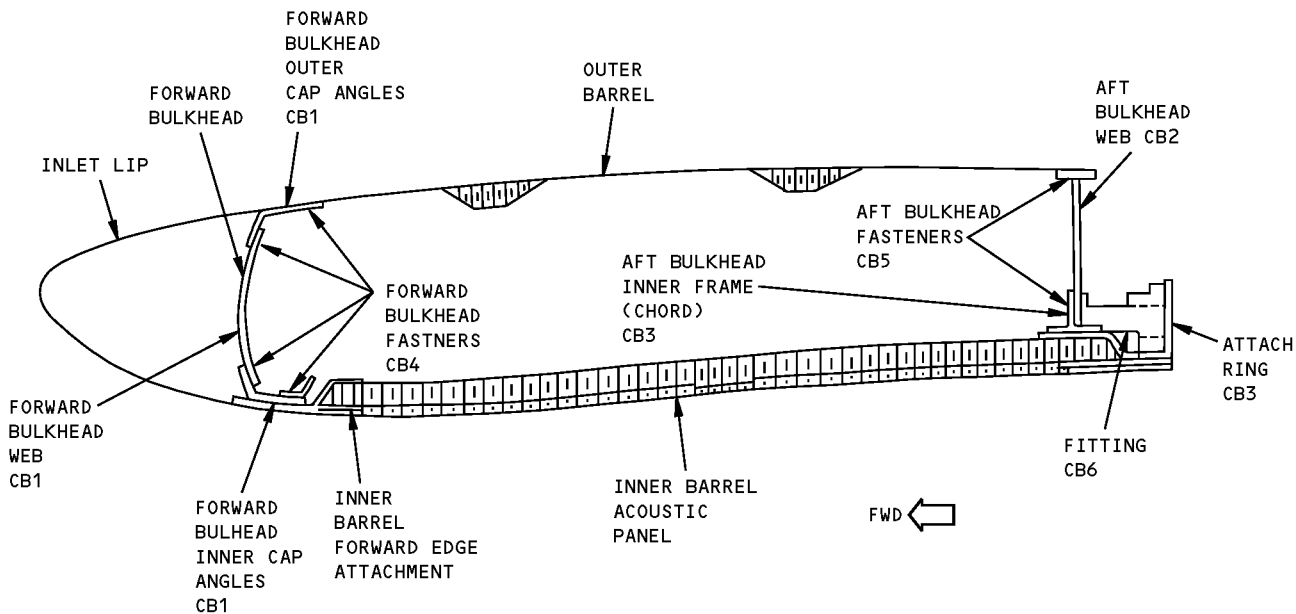
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BULKHEAD STRUCTURE
DETAIL XI



SECTION A-A

S76S-057-00

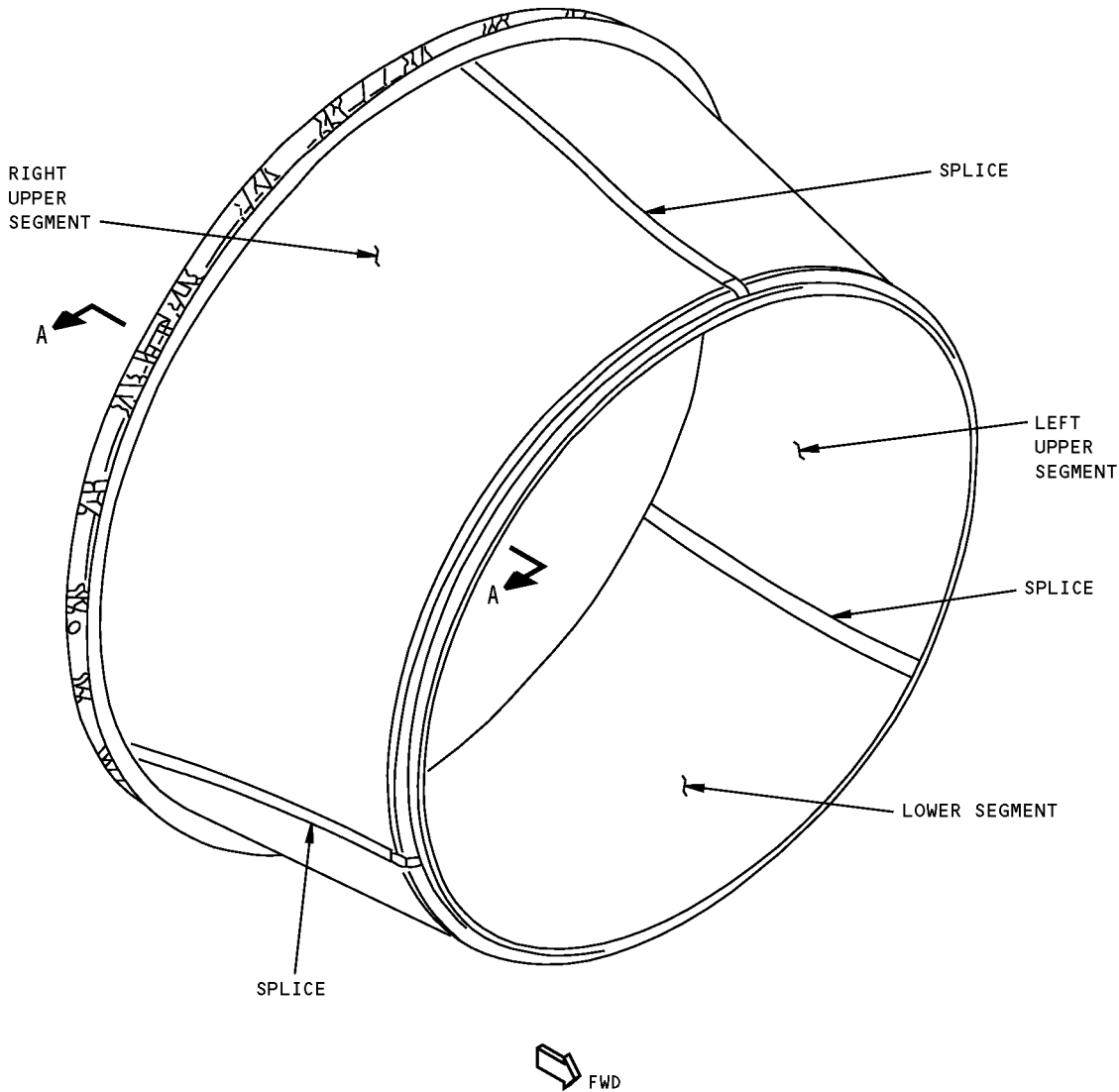
Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 13 of 15)

ALLOWABLE DAMAGE 1
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INLET COWL INNER BARREL ACOUSTIC PANEL
DETAIL XII

S76S-065-00

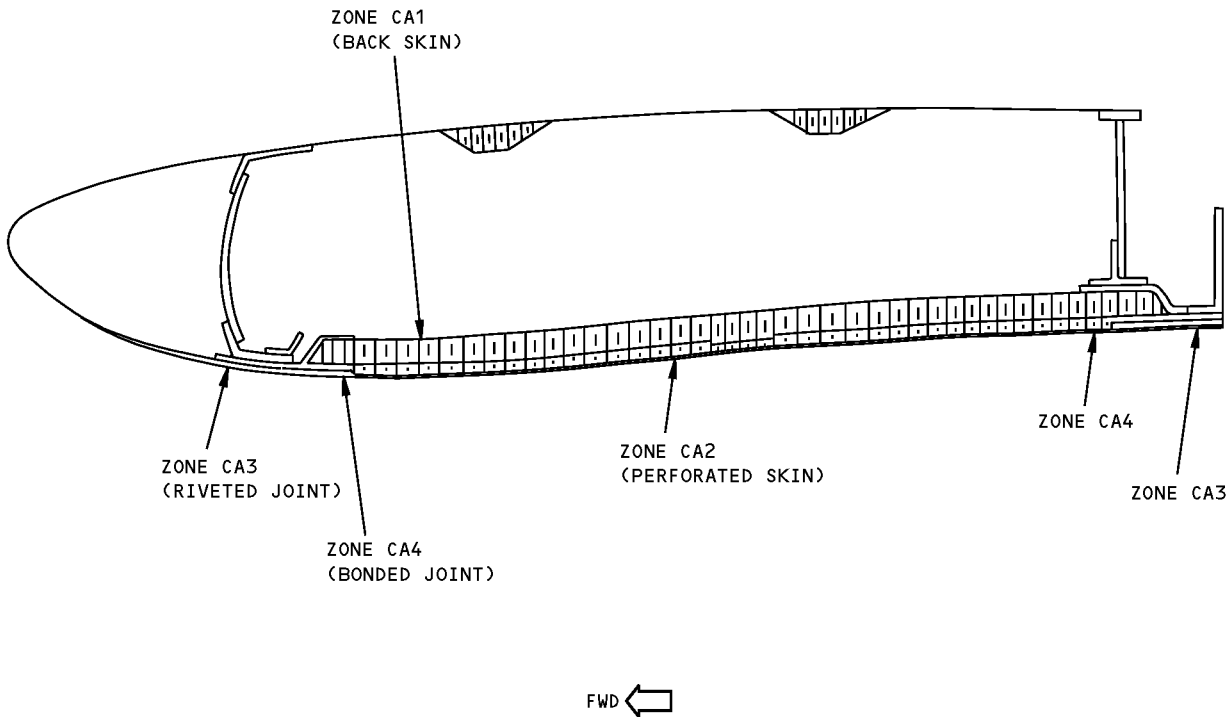
Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 14 of 15)

ALLOWABLE DAMAGE 1
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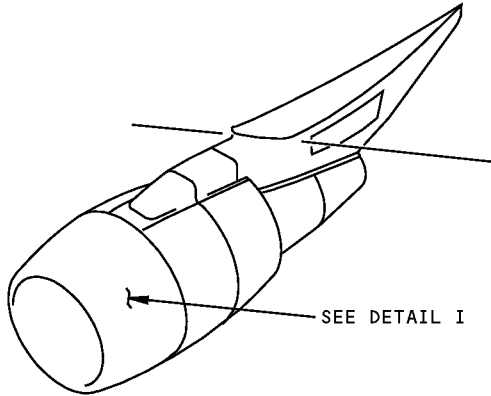
SECTION A-A

S76S-073-00

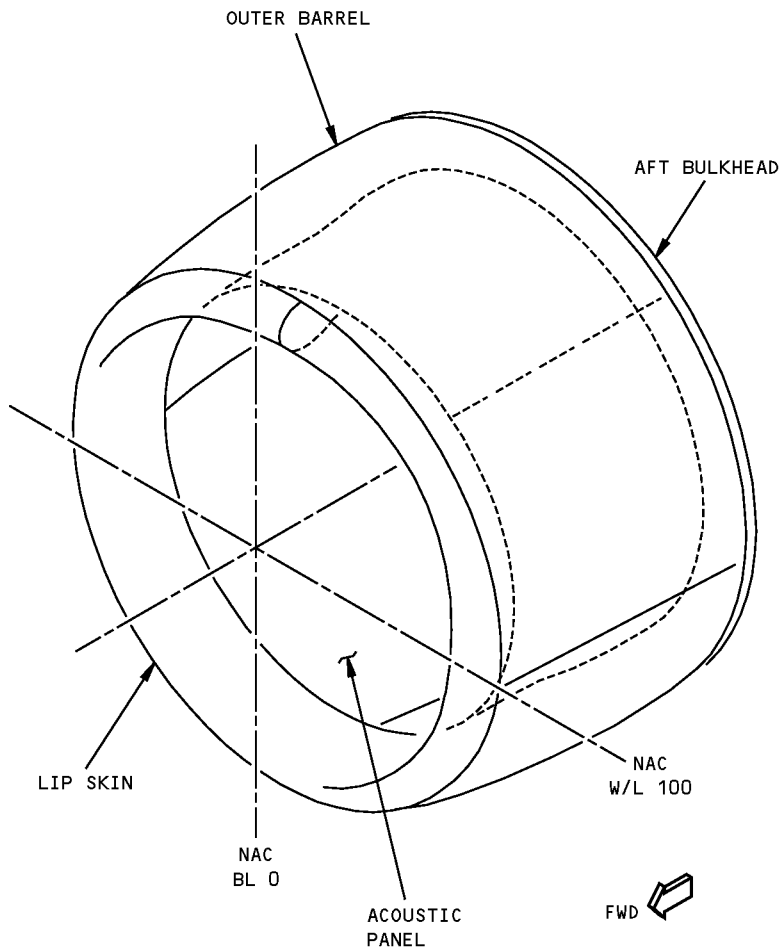
**Allowable Damage - Inlet Cowl - CF6-80C2 Engine
Figure 101 (Sheet 15 of 15)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - INLET COWL - CF6-80C2 ENGINE



THIS SUBJECT IS ONLY APPLICABLE TO INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON. REFER TO SRM 54-12-01 FOR THE INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.



DETAIL I

**Inlet Cowl Repairs - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR NUMBER	REPAIR DESCRIPTION
1	FLUSH PATCH REPAIR
2	EXTERNAL PATCH REPAIR
3	SMALL HOLE REPAIR
4	CRACK REPAIR
5	PARTIAL PENETRATION REPAIR (THROUGH THE PERFORATED SKIN)
6	FULL PENETRATION REPAIR
7	SMALL DISBOND REPAIR
8	AFT BULKHEAD ALUMINUM WEB DAMAGE REPAIR
9	COMPOSITE SKIN SURFACE DAMAGE REPAIR LESS THAN 0.010 INCH
10	DEEP COMPOSITE SKIN SURFACE DAMAGE REPAIR MORE THAN 0.010 INCH DEEP
11	FULL PENETRATION REPAIR (WITH ACCESS TO THE BACKSIDE)
12	FULL PENETRATION REPAIR (WITHOUT ACCESS TO THE BACKSIDE)
13	PARTIAL PENETRATION REPAIR
14	FRAME FULL PENETRATION REPAIR (WITH ACCESS TO THE BACKSIDE)
15	AERODYNAMIC SEALANT REPLACEMENT REPAIR
16	SURFACE FINISH RESTORATION REPAIR
17	REPAIR OF SMALL DAMAGE TO ACOUSTIC PANEL AFT EDGE PERFORATED SKIN
18	REPAIR OF SMALL DAMAGE TO ACOUSTIC PANEL AFT EDGE PERFORATED SKIN AND DOUBLER
19	REPAIR OF SMALL DAMAGE TO ACOUSTIC PANEL FORWARD EDGE PERFORATED SKIN

INLET COWL LIST OF REPAIRS
TABLE I

Inlet Cowl Repairs - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - INLET COWL LIP SKIN FLUSH PATCH - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to the inlet cowl lip skins that are cracked or otherwise damaged.
- B. This repair is not applicable if the edge of the damage is less than 3.5 inches (89 mm) from any of the edges of the damaged lip skin segment, or if the size of the patch is more than 100 square inches (645 square centimeters) per lip skin segment. Refer to Figure 201/REPAIR 1.
- C. This type of damage is repaired by installation of a flush patch on the lip skin.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL P/B GENERAL	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL
SOPM 20-20-02	Penetrant Methods of Inspection

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.

- B. Remove the damage.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the lip skin. Do not damage the structure below the surface. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Repeat the applicable steps if necessary.

- (2) Make a mark of the damaged area of the lip skin to be cut out. The cutout must have the smallest size possible that removes the damage completely, and must be a minimum of 0.5 inch (13 mm) beyond the edge of damage all around. The cutout must be rectangular, and must have a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Cut and remove the damaged lip skin as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Figure 201/REPAIR 1.

- C. Make the repair parts. Refer to Table 201/REPAIR 1 for the list of repair materials.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a skin patch to fit inside the cutout. Make from 0.090 inch thick 2219-0 aluminum alloy sheet. The space between the patch and the edge of cutout must not be more than 0.03 inch (0.8 mm) all around. Trim the patch as necessary. Remove the burrs.

NOTE: Because the lip skin has a complicated shape, a spare lip skin can be used to make the patch. Cut the patch from the corresponding area of the spare lip skin. If you do this, it is not necessary to form or heat treat the patch.

- (2) Make a doubler from 0.090 inch thick 2219-0 aluminum alloy sheet. The doubler must be large enough to install two rows of rivets on each side of the edge of the cutout all around. Use a minimum radius of 0.5 inch (13 mm) at the corners. Remove the burrs.

NOTE: 1. The doubler can be made in one piece. If necessary, for a large damage you can make the doubler in two or more segments. In this case the segments must be joggled to overlap at the ends as required.

2. If the cutout in the lip skin is less than 2.5 inches (63 mm) wide or long, do not make a cutout in the doubler, and only install as many rivets through the patch as applicable per the rivet spacing requirements.

- (3) Form the repair parts that are made from 2219-0 material. Form as necessary to match the contour of the lip skin in the repair area.

The parts must fit in place with light finger pressure.

- (4) Heat treat the repair parts that are made from 2219-0 material to T62 condition.
- (5) Make a mark of the rivet holes on the lip skin and on the patch. Drill pilot holes as marked. Put the doubler through the cutout and into position. Match drill the pilot holes through the doubler and the lip skin. Use clamps and temporary fasteners to keep the doubler in place. Put the patch into position on the doubler.

Match drill the pilot holes through the doubler and the patch. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for CR2664-5 rivets. If a hole is damaged, it is acceptable to install the next size rivet. Final hole size is 0.192 to 0.196 inch (4.88 to 4.98 mm) for the CR2664-6 rivets.

- (6) Countersink the rivet holes on the air wetted surfaces. The rivets cannot protrude above the surface and cannot be more than 0.004 inch (0.10 mm) below the surface. Remove the burrs.
- (7) Temporarily install the repair parts. The edges of the patch must be at the same level as the existing lip skin all around. The mismatch cannot be more than 0.010 inch (0.25 mm). Use aluminum laminated shims if necessary.
- (8) Remove all the repair parts. Remove the sharp edges. Lightly sand all mating surfaces. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: REMOVE THE DRILLING PIECES FROM THE LIP SKIN CAVITY. IF YOU DO NOT DO THIS, THE LIP SKIN CAN BE DAMAGED DURING ANTI-ICE OPERATION.

- (9) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the repair area and from inside the lip skin cavity. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

D. Apply surface finish.

- (1) Apply surface finish to the doubler.

- (a) Apply conversion coating and urethane primer to the surfaces of the doubler and to all bare edges, holes, and countersinks per REPAIR 16, Surface Finish Restoration Repair.

For conversion coating application, use the applicable instructions from Step 2.D. of that repair. For primer application, use the applicable instructions from Step 2.E. of that repair.

- (2) Apply surface finish to the patch.

- (a) If the patch is made from aluminum alloy sheet, polish the outer surface of the patch. Then phosphoric acid anodize the patch per standard procedures. Then urethane prime the inner surface per REPAIR 16, Surface Finish Restoration Repair.

- (b) If the patch is made from a spare lip skin, do not treat its inner and outer surfaces. Apply conversion coating and urethane primer to all bare edges, holes, and countersinks per REPAIR 16, Surface Finish Restoration Repair.

E. Install the repair parts.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Apply a thin layer of the RTV 157 sealant to the mating surfaces of the doubler, patch, and lip skin. Put the repair parts into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.
- (2) Apply the RTV 157 sealant to the space between the patch and lip skin all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Cure the sealant. Use heat lamps if necessary.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

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STRUCTURAL REPAIR MANUAL

F. Examine the damage area.

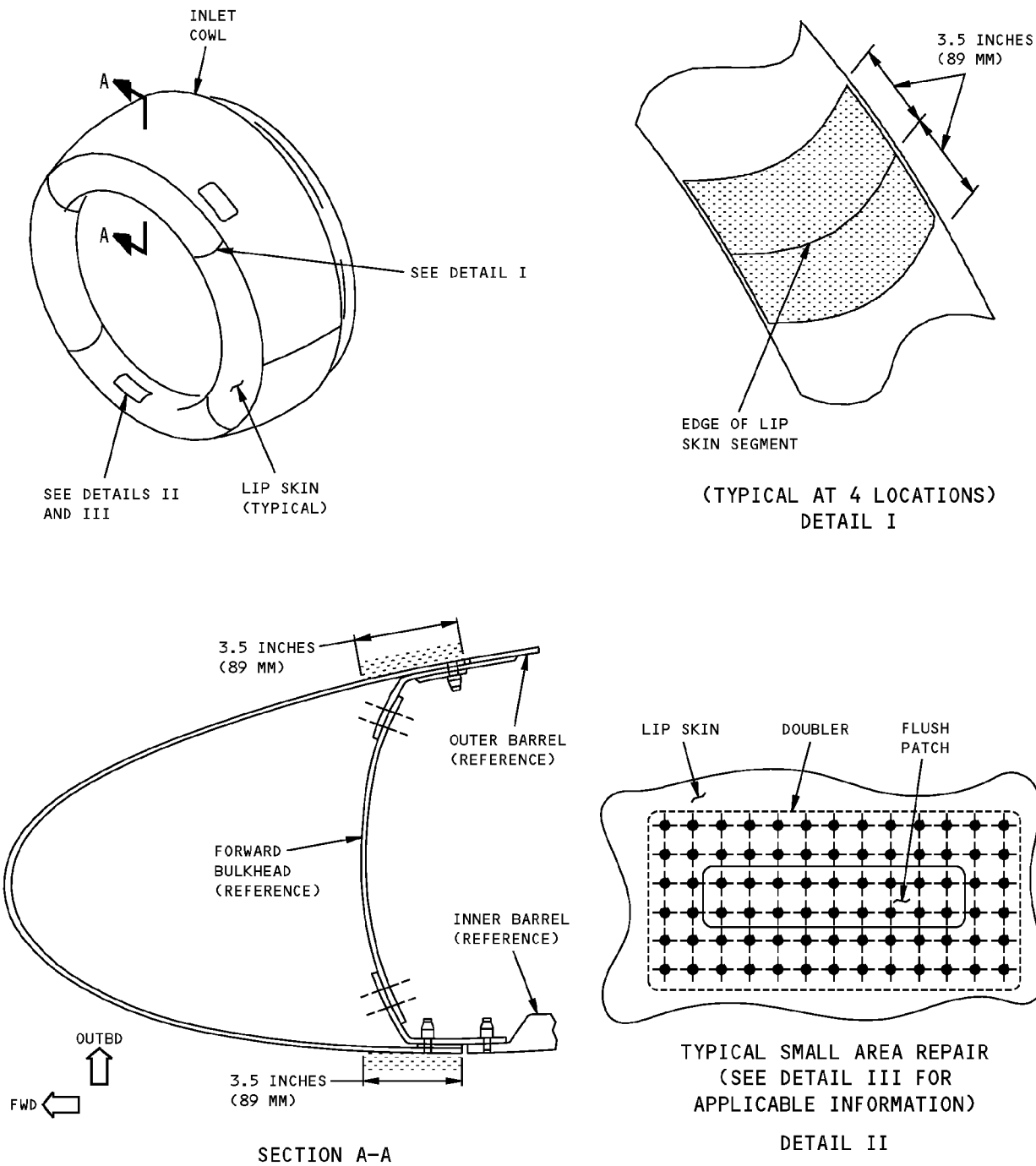
- (1) Examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.090 inch thick 2219-T0	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivets, blind, nominal size	CR2664-5-3 CR2664-5-5	Commercially Available
Rivet, blind, oversize	CR2664-6-3 CR2664-6-5	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Road Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL.

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STRUCTURAL REPAIR MANUAL



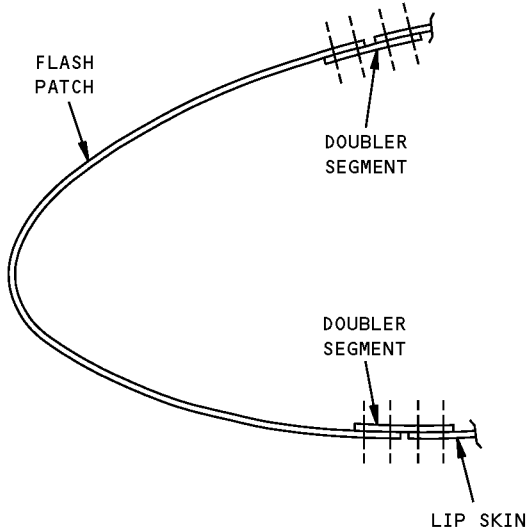
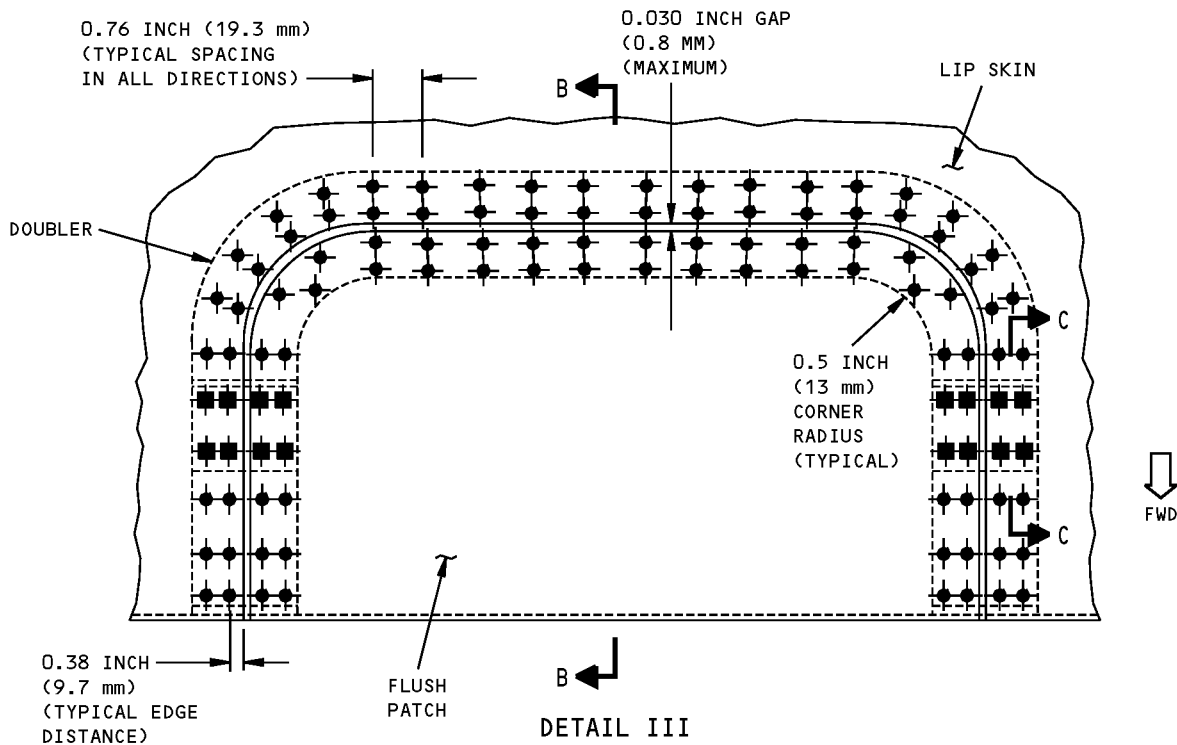
NOTES

- THIS REPAIR IS NOT APPLICABLE IN SHADED AREAS.

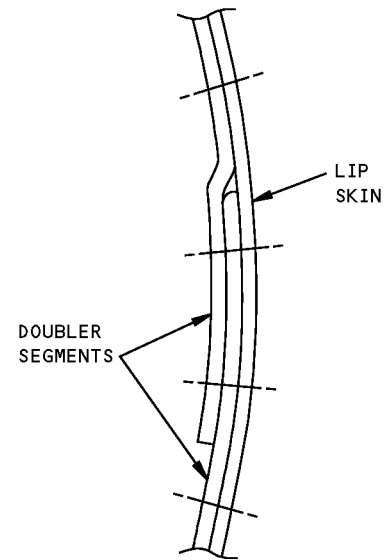
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Inlet Cowl Lip Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



ROTATED 90° CLOCKWISE
SECTION B-B



TYPICAL THROUGH OVERLAPPING
DOUBLER SEGMENTS

SECTION C-C

- ◆ RIVET CR2664-5-3
- RIVET CR2664-5-5

GRS184-02A

**Inlet Cowl Lip Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - INLET COWL LIP SKIN EXTERNAL PATCH - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to the inlet cowl lip skins that are cracked or otherwise damaged.
- B. This repair is considered permanent if the damage is within the applicable areas. In certain areas, however, it can only be used as a temporary repair for a one time ferry flight to a repair facility. Refer to Figure 201/REPAIR 2.
- C. There can be more than one permanent repair. The total size of the patches (permanent and temporary) cannot be more than 100 square inches (645 square centimeters) on each of the four lip skin segments.
- D. This type of damage is repaired by installation of an external patch on the lip skin.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
SOPM 20-20-02	Penetrant Methods of Inspection

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends, if any.
- (3) Make a mark of the damaged area to be cut out, if applicable. If the lip skin is cracked but not otherwise damaged, it is not necessary to cut it out. The cutout must have the smallest size possible that includes the damaged area, and must be a minimum of 0.5 inch (13 mm) beyond the crack ends or edge of damage all around.

The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- B. Prepare the damage area for repair.

NOTE: 1. If lip skin is cracked but not otherwise damaged, you must stop drill and route the crack. If the crack is inside a damage area that will be cut out, stop drill only.

2. This repair is not applicable if, after damage removal, the requirements of Figure 201/REPAIR 2 are exceeded.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends, if applicable. Drill through the lip skin. Do not damage the structure below the surface. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Repeat the applicable steps if necessary.

- (2) Route the crack if applicable. Route to a maximum width of 0.10 inch (2.5 mm) along the length of the crack. Do not damage the structure below the surface. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been removed. Repeat the applicable steps if necessary.

- (3) If applicable, cut the lip skin as marked. Do not damage the structure below the surface. Remove the burrs. Make a mark of the external patch on the lip skin. This is the area that will be covered by the patch. The patch must be large enough to install a minimum of two rows of rivets beyond the damage or stop drill holes all around.

NOTE: The patch can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (4) Apply teflon tape to the lip skin to mask off the repair area as marked.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (5) Lightly sand the surface in the area between the pieces of tape. Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive paper.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Use dry air blast to remove the drilling, routing, and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

C. Make the patch. Refer to Table 201/REPAIR 2 for the list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a patch from 0.090 inch thick 2219-0 aluminum alloy sheet as marked. Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (2) Form the patch as necessary to match the contour of the lip skin in the repair area. The patch must fit in place with light finger pressure.
- (3) Heat treat the patch to T62 condition per applicable standard procedures.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (4) Make a mark of the rivet holes on the patch. Drill pilot holes as marked. Put the patch into position. Match drill the pilot holes through the patch and the lip skin. Make sure all holes are aligned, then ream the holes to their final size. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for NAS1721C-5 nominal size rivets. If a hole is damaged, it is acceptable to install a first oversize rivet. Final hole size is 0.176 to 0.180 inch (4.47 to 4.57 mm) for NAS1739-5 first oversize rivets.

- (5) Countersink the rivet holes on the air wetted surface of the patch. The rivets cannot protrude above the surface and cannot be more than 0.004 inch (0.10 mm) below the surface.
- (6) Chamfer the edges with a 4:1 ratio. Remove the burrs.
- (7) Remove the sharp edges. Lightly sand the surfaces of the patch and the mating surface on the lip skin. Use 150 to 400 grit aluminum oxide abrasive paper.

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CAUTION: REMOVE THE DRILLING PIECES FROM THE LIP SKIN CAVITY. IF YOU DO NOT DO THIS, THE LIP SKIN CAN BE DAMAGED DURING ANTI-ICE OPERATION.

- (8) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the patch, repair area, and inside the lip skin cavity. Clean the surfaces with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

D. Apply the surface finish.

- (1) Polish the air wetted surface of the patch. Then phosphoric acid anodize the patch per standard procedures. Then urethane prime the inner surface as given in Figure 201/REPAIR 17, Surface Finish Restoration Repair. Use the applicable steps from Step E. of that repair to apply the urethane primer.
- (2) Apply conversion coating and urethane primer to the mating surface of the existing lip skin, and to all bare edges, holes, and countersinks per REPAIR 16, Surface Finish Restoration Repair. For conversion coating application, use the applicable steps from Step D. of that repair. For primer application, use the applicable steps from Step E. of that repair.

E. Install the patch.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Apply a thin layer of the RTV 157 sealant to the mating surfaces of the patch and lip skin. Put the patch into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.
- (2) Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Cure the sealant. Use heat lamps if necessary.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

F. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.090 inch thick 2219-0	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available

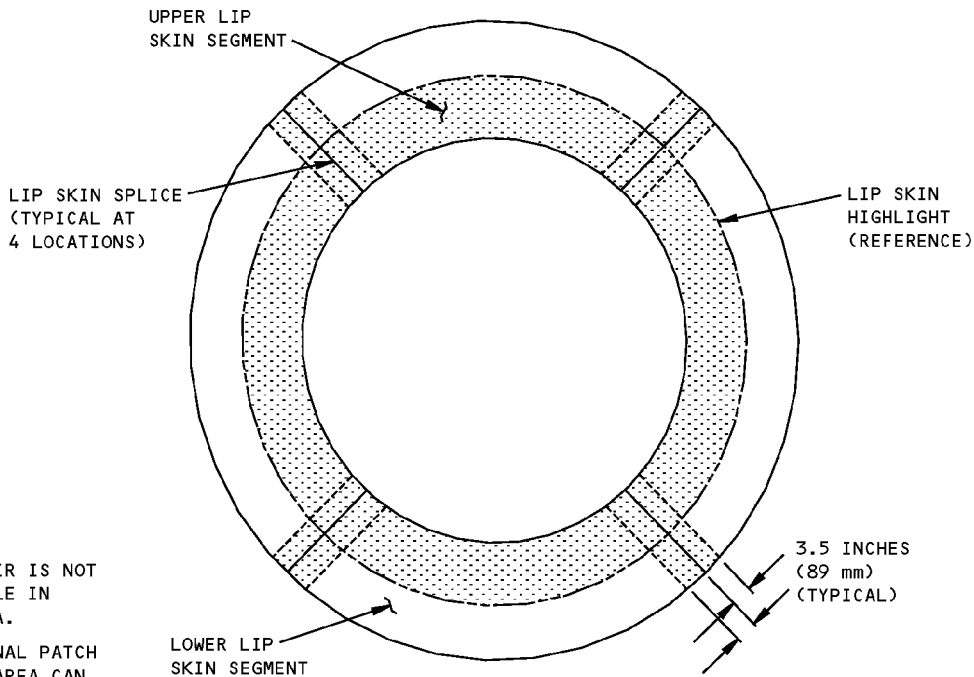
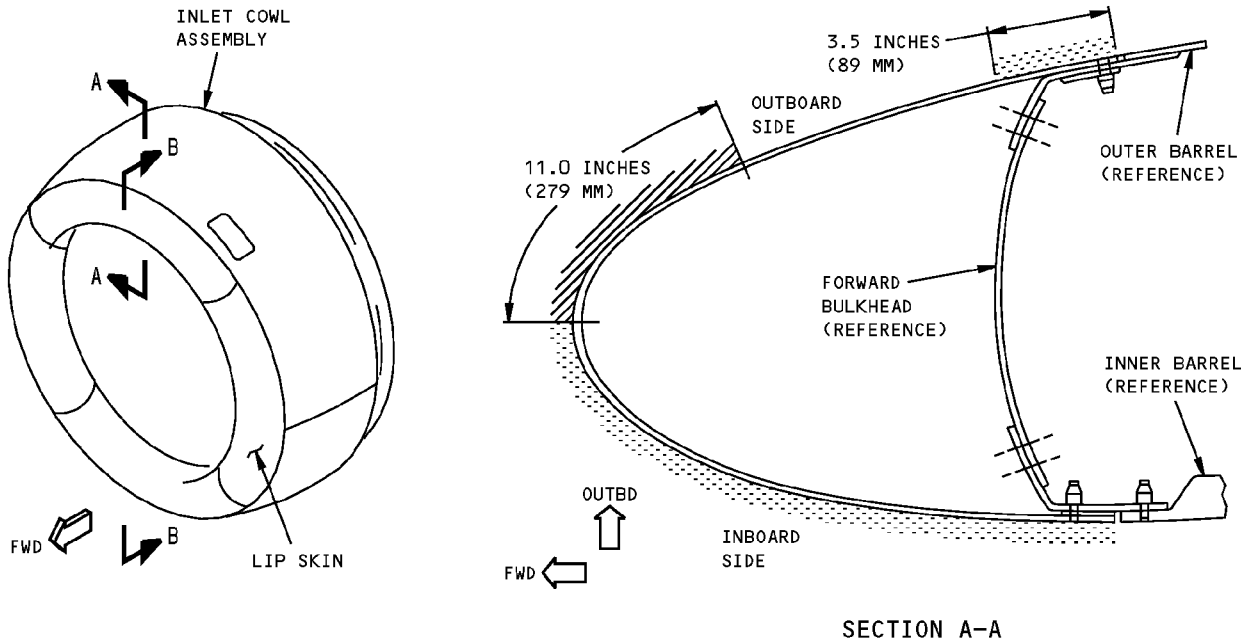
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STRUCTURAL REPAIR MANUAL



Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Rivets, blind, nominal size	NAS1721C5-3 (Alternatives: NAS1399C5-3 or CR2672-5-3)	Commercially Available
Rivet, blind, first oversize	NAS1739-5-3 (Alternative: CR3852-5-3)	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Road Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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STRUCTURAL REPAIR MANUAL



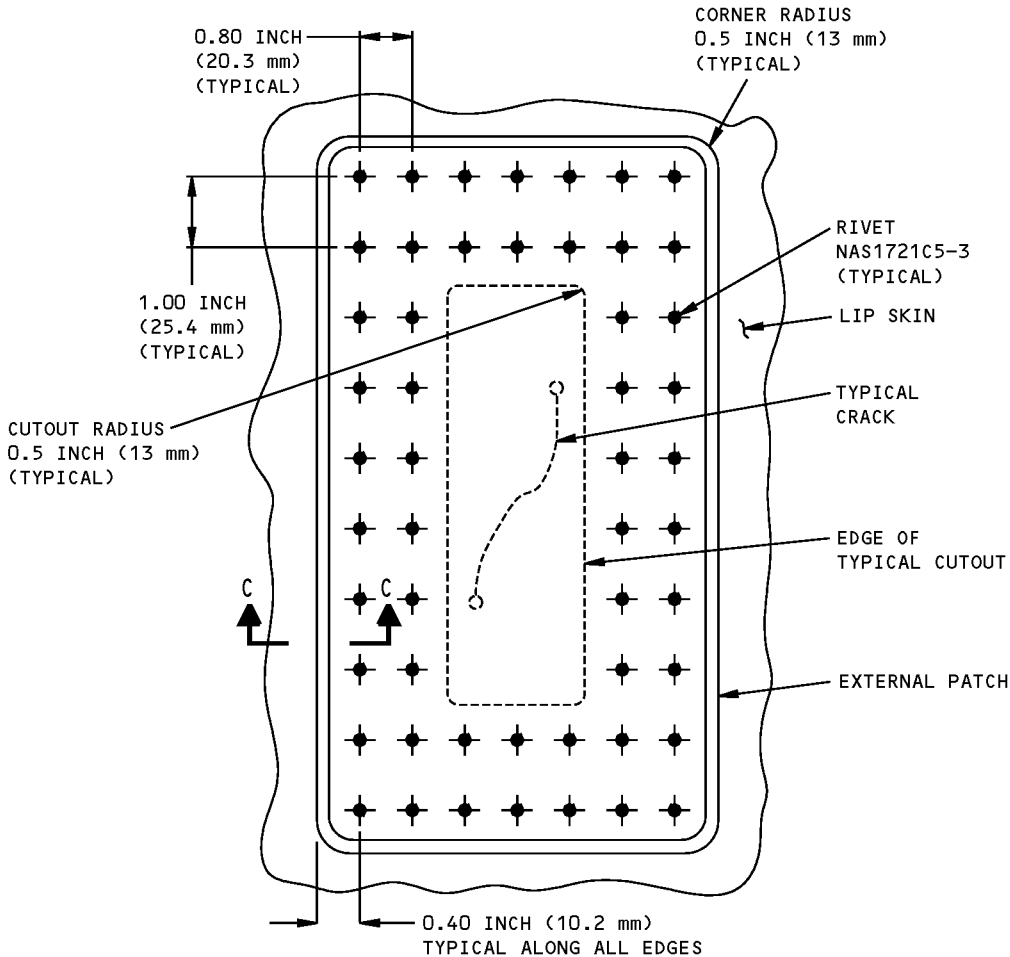
-  THE REPAIR IS NOT APPLICABLE IN THIS AREA.
-  AN EXTERNAL PATCH IN THIS AREA CAN BE USED FOR ONE FERRY FLIGHT TO A REPAIR FACILITY.

VIEW WHEN YOU LOOK AFT
VIEW B-B

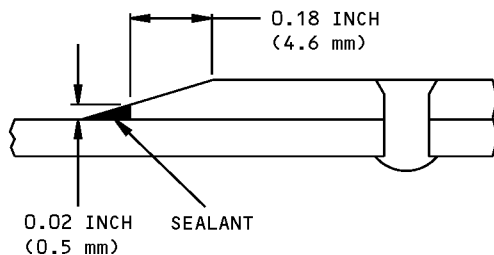
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Inlet Cowl Lip Skin External Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

STRUCTURAL REPAIR MANUAL



TYPICAL REPAIR
DETAIL I



TYPICAL CHAMFER
SECTION C-C

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Inlet Cowl Lip Skin External Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - INLET COWL ACOUSTIC PANEL SMALL HOLE - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to minor nicks, gouges, and small holes through the inner (perforated) skin of the acoustic panels. The damage must be less than 1.0 inch (25 mm) in diameter, and must not go through the panel.
- B. This repair is not applicable if the edge of the damage is less than 4.0 inches (102 mm) from the edge of the panel, or from the edge of other repairs. Refer to Figure 201/REPAIR 3.
- C. This type of damage is repaired by the removal of the damaged skin and core. The hole will be then filled with adhesive.
- D. This repair causes the blockage of the perforated skin in the acoustically treated areas. Refer to 54-00-00, REPAIR GENERAL, for the applicable allowable repair limits.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
54-00-00, REPAIR GENERAL	Acoustic Panel Repair Limits

3. Repair Instructions

- A. Examine the damage area.

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- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Do a tap test to examine for disbonds. Make a mark of the damage area. If necessary, do a visual inspection of the area to find cracks. Use a magnifying glass with minimum 10X magnification.

Make a mark of the crack ends, if any.

- B. Remove the damage.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill or cut out the damage. Use the smallest diameter and depth possible to remove the damage completely. Do not drill or cut through the panel.

NOTE: 1. If damage is on one of the two upper panels, you can remove the core material down to the opposite skin. Do not cut into the opposite skin.

2. If damage is on the lower panel, remove the core to the depth shown.

3. If, after damage removal, the damage is more than the applicable limits, this repair is not applicable.

STRUCTURAL REPAIR MANUAL

- (2) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive paper.

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- (3) Use dry air blast to remove the cutting and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

C. Remove the contamination.

NOTE: Do the following procedure if there is evidence of moisture or other contamination in the repair area.

- (1) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. Clean and repeat the applicable steps until the contamination is completely removed.

D. Prepare the lower panel for repair. Refer to Table 201/REPAIR 3 for the list of repair materials.

NOTE: Do the following procedure only if the damage is on the lower acoustic panel. If the damage is on one of the two upper panels, go to Step E.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Make a spacer from 0.020 inch thick 2024-T3 aluminum alloy sheet to fit inside the cutout. The gap between the edges of the spacer and the cell walls inside the cutout must not be more than 0.010 inch (0.25 mm) all around. Use 150 to 400 grit aluminum oxide abrasive paper to remove the sharp edges.

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- (2) Clean the spacer with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO WO-1 SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: 1. DAB THE SOLUTION ON THE SKIN PANEL. DO NOT RUB THE SOLUTION ACROSS THE SKIN.

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (4) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.
- (5) Apply the Turco WO-1 solution to the mating surfaces of the core and the spacer. Use a clean, lint-free cloth. Dab the solution on the surface, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (6) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let the water get into the core.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the acid etch solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).
- (9) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (10) Air dry the primer for 30 minutes. Then cure for 1 hour at 230°-250°F (110°-121°C). Use an explosion proof heat lamp.

STRUCTURAL REPAIR MANUAL

(11) Apply a layer of the FM300-2M film adhesive to the mating surface of the spacer. Make sure you remove the protective lining from the film adhesive.

(12) Put the spacer into position inside the cutout and press against the honeycomb cells.

NOTE: All gaps between the edges of the spacer and the cell walls inside the cutout must be filled with the film adhesive. Cut small pieces of the film adhesive, and use them to fill the gaps.

(13) Apply pressure to the spacer to press the spacer against the honeycomb cells. You must maintain this pressure during the cure cycle.

NOTE: The spacer must be exposed to the heat source. Make sure you do not fully block the spacer from heat when you apply the pressure.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(14) Apply the heat until the repair area reaches a temperature of 240° to 260°F (116° to 127°C). Cure the film adhesive for 2 hours at this temperature. Use an explosion proof heat lamp.

(15) Let the repair area cool down to room temperature. Remove the curing material.

E. Fill the cutout with adhesive.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(1) Make a border around the cutout with teflon tape. Apply the tape 0.02 to 0.05 inch (0.5 to 1.3 mm) larger than the cutout all around.

This will prevent the blockage of the skin perforations by the adhesive.

WARNING: EA934NA ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(2) Use the manufacturer's instructions to mix the EA934NA Part A and Part B adhesive.

(3) Fill the repair cutout with the adhesive mixture. Apply the adhesive slowly to prevent air entrapment in the core cells.

NOTE: If the damage is in the lower panel, you will fill the cutout down to the installed spacer. If the damage is in one of the two upper panels, you will fill the cutout down to the opposite skin.

F. Cure the adhesive.

(1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

(2) Put a layer of non-porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber. Use pieces of teflon tape, or apply pressure, to keep it in place.

STRUCTURAL REPAIR MANUAL

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

(3) Put a sheet of silicone rubber above the non-porous parting film.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(4) Put a heat blanket above the parting film. Apply the heat until the repair area reaches a temperature of 190°-210°F (88°-99°C). Cure the adhesive for 1 hour at this temperature.

(5) Let the repair area cool down to room temperature. Remove the heat blanket, parting film, and teflon tape.

G. Prepare the surface.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

(1) Use 150 to 400 grit aluminum oxide abrasive paper. Remove the sharp edges. Make the surface of the cured adhesive flush with the adjacent surface. Do not remove the surface finish of the skin in the repair area.

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(2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

H. Apply the surface finish, if necessary.

(1) If the surface finish in the repair area is damaged, apply conversion coating and primer per REPAIR 16 Surface Finish Restoration Repair. Use the instructions in Step C. of that repair.

I. Examine the repair.

(1) Visually examine the repair area, and do a tap test, to make sure all the requirements of this repair are done. Repeat the applicable steps, if necessary.

Table 201: Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Acid etch solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Adhesive	EA934NA	Dexter Hysol Aerospace, Inc. The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031

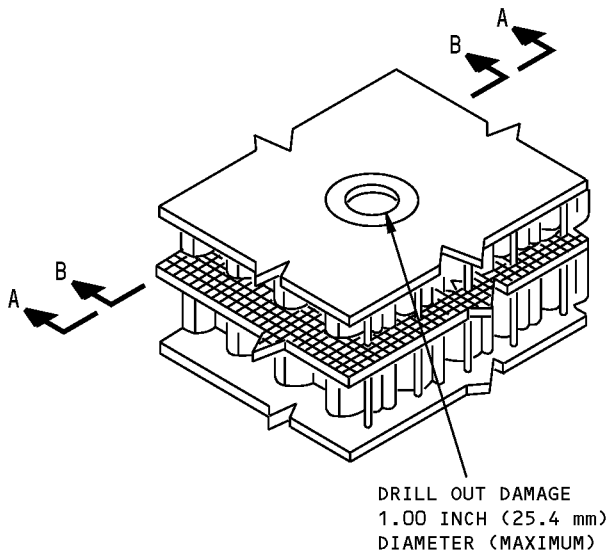
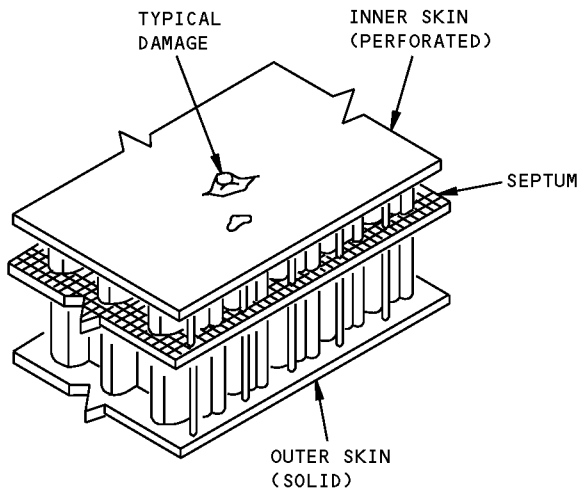
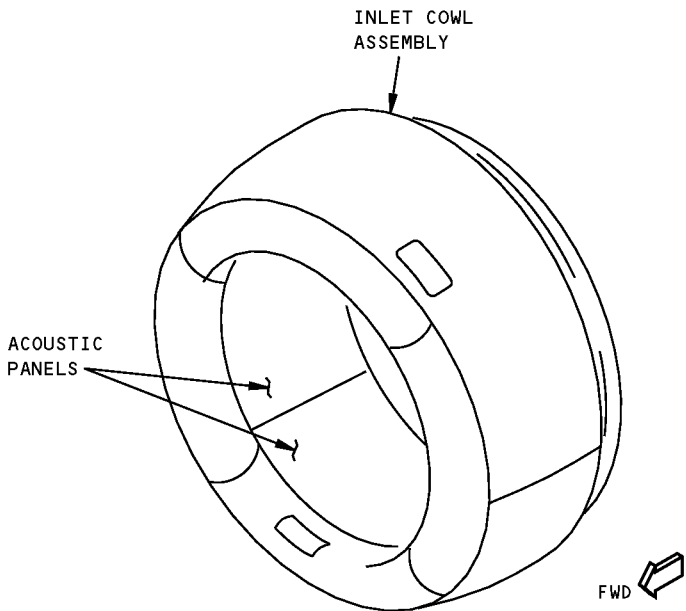
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Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive, Film	FM300-2M (Alternative: FM300-2K)	Cytec Materials, Inc. 1300 Revolution Street Harve De Grace, MD 21078
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Clothing	Protective	Commercially Available
Container	Metal or plastic	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Primer	BR-127	Cytec Materials, Inc. 1300 Revolution Street Harve De Grace, MD 21078
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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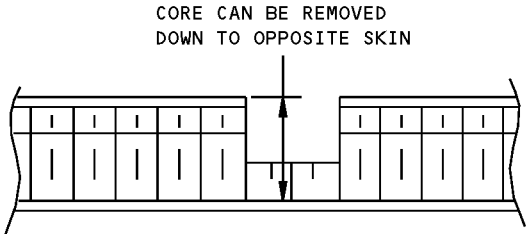


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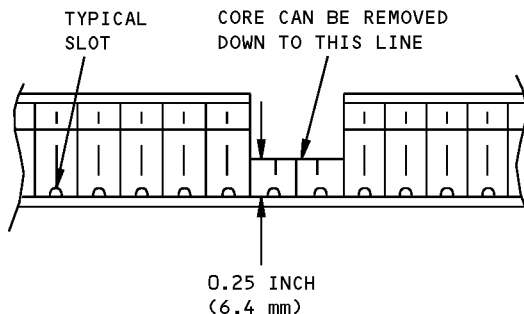
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Inlet Cowl Acoustic Panel Small Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**

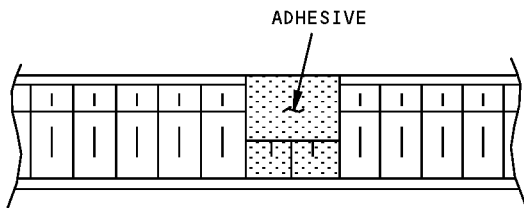


TYPICAL SECTION FOR
DAMAGED UPPER PANEL

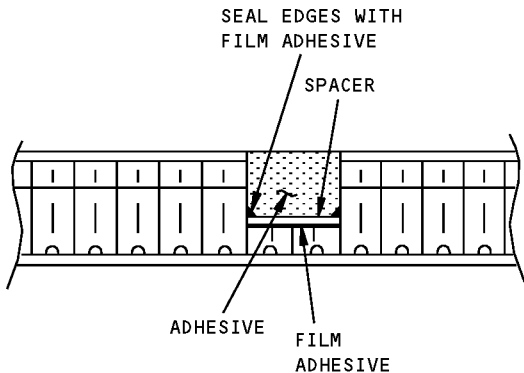


TYPICAL SECTION FOR
DAMAGED LOWER PANEL

AFTER DAMAGE REMOVAL
SECTION A-A



TYPICAL FOR UPPER PANELS



TYPICAL FOR LOWER PANEL

THROUGH THE COMPLETED REPAIR
SECTION B-B

GRS185-02

**Inlet Cowl Acoustic Panel Small Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - INLET COWL ACOUSTIC PANEL CRACK - CF6-80C2 ENGINE**1. General**

- A. This repair is applicable to cracks in the inner (perforated) skin of the inlet cowl acoustic panels. The damage must be less than 6.0 inches (152 mm) long, and the skin must not be disbanded from the core.
- B. On the lower acoustic panel only, this repair is not applicable if the edge of the doubler will be less than 10.0 inches (254 mm) from the forward edge of the acoustic panel. Refer to Figure 201/REPAIR 4.
- C. This repair is not applicable if the edge of the damage is less than 4.0 inches (102 mm) from the edge of the panel, or from the edge of other repairs.
- D. This repair causes the blockage of the perforated skin in the acoustically treated areas. Refer to 54-00-00, REPAIR GENERAL, for the applicable allowable repair limits.
- E. This type of damage is repaired by installation of an external repair doubler on the perforated skin.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL P/B GENERAL	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL
54-00-00, REPAIR GENERAL	Acoustic Panel Repair Limits

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Do a visual inspection of the area to find cracks. Use a magnifying glass with minimum 10X magnification.

Make a mark of the crack ends.

NOTE: Do a tap test to examine for disbonds. If the skin is disbanded from the core, this repair is not applicable.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the skin, but not through the panel. Remove the burrs.
- (2) Do a visual inspection to make sure the crack has been stop drilled. Use a magnifying glass with minimum 10X magnification. Repeat the applicable steps if necessary.

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- (3) Route the crack along its length to a maximum width of 0.10 inch (2.5 mm). Do not damage the structure below the surface. Remove the burrs.
- (4) Make a mark of the outline of the doubler on the perforated skin. This is the area that will be covered by the doubler. The doubler must be large enough to install a minimum of one row of rivets all around.

NOTE: The doubler can be circular or rectangular. If the doubler is rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (5) Apply teflon tape to the skin to mask off the repair area as marked.
- (6) Lightly sand the surface in the area between the pieces of tape. Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

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- (7) Use dry air blast to remove the routing and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

C. Make the doubler. Refer to Table 201/REPAIR 4 for the list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a repair doubler as marked. Make from 0.032 inch thick 2024-T3 aluminum alloy sheet. Chamfer the edges with a 4:1 ratio. Remove the burrs.
- (2) Form the doubler as necessary to match the contour of the acoustic panel in the damage area. The doubler must fit in place with light finger pressure.
- (3) Make a mark of the rivet holes on the doubler. Drill pilot holes in the doubler as marked. Put the doubler into position in the repair area. Drill the pilot holes through the doubler and the skin. Do not drill through the panel. Use temporary fasteners to keep the holes aligned. Drill the final size holes through the doubler and the skin. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for the nominal size -5 rivets. If a hole is damaged, it is acceptable to install a first oversize rivet. The hole size is 0.176 to 0.180 inch (4.47 to 4.57 mm) for the first oversize -5 rivets.

- (4) Lightly sand the surfaces of the doubler. Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

D. Prepare all repair surfaces for repair.

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WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Use dry air blast to remove the drilling and sanding particles. Clean the doubler and the repair area with a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: 1. DAB THE TURCO WO-1 SOLUTION ON THE SKIN PANEL. DO NOT RUB IT ACROSS THE SKIN.

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (3) Apply the Turco WO-1 solution to all bare aluminum surfaces. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (4) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let the water get into the core.

- (5) All repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.
- (7) Let the area cool down to room temperature before you apply the primer.

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WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Air dry the primer for 30 minutes. Then cure for 1 hour at 230°-250°F (110°-121°C). Use an explosion proof heat lamp.

E. Install the doubler.

WARNING: EA9394 ADHESIVE OR RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
- (2) Apply a thin layer of the EA9394 adhesive mixture to the mating surfaces of the doubler and the skin.
- (3) Cut a piece of scrim cloth and apply to the mating surface of the doubler or the skin.
- (4) Put the doubler into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned.
- (5) Wet install the rivets with the RTV 157 sealant.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the excess adhesive or sealant from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (7) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (8) Cure the adhesive. Use explosion proof heat lamps. Apply the heat until the repair area reaches a temperature of 190°-210°F (88°-99°C). Cure the adhesive for 60 minutes at this temperature.
- (9) Let the repair area cool down to room temperature. Remove the curing materials.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (10) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If you damage the surface finish in the repair area, you must restore it per REPAIR 16, Surface Finish Restoration Repair. Use the applicable instructions in Step C. of that repair.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (11) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

F. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds.

Repeat the applicable steps, if necessary.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace, Inc. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Aluminum alloy sheet	0.032 inch thick 2024-T3	Commercially Available
Blanket, Heat (Alternative to the heat lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Scrim		Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available

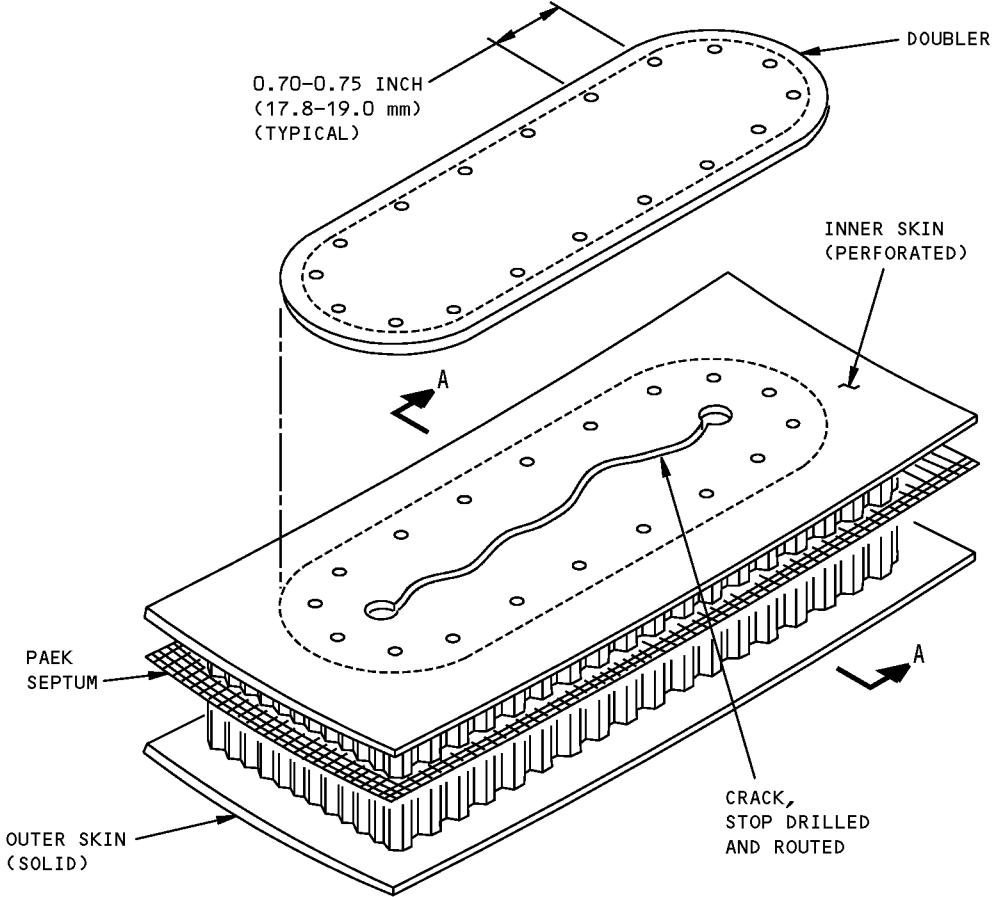
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Table 201: Repair Materials and Equipment (Continued)

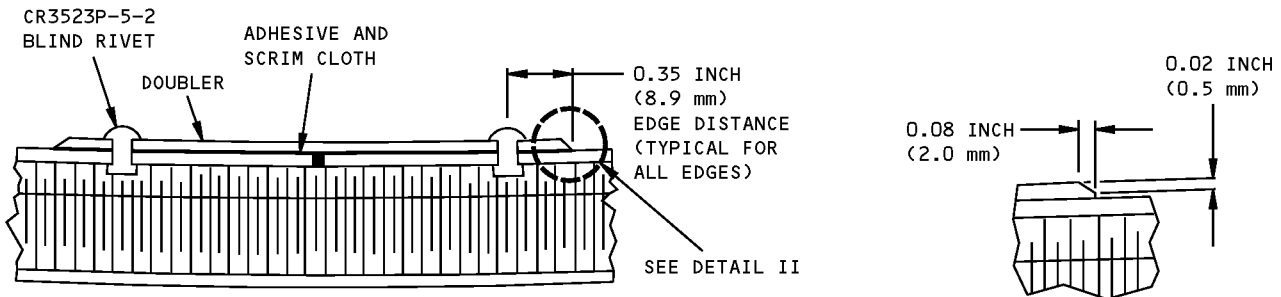
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Etching solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corp. 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Blind, Protruding head, nominal size	CR3523P5-2 (Alternatives: CR3223-5-2, or NAS1398C5-2)	Commercially Available
Rivet, Blind, Protruding head, first oversize	CR3553P5-2 (Alternatives: CR3253-5-2, or NAS1738C5-2)	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Road Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL.

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DETAIL I



THROUGH THE COMPLETED REPAIR
SECTION A-A

DETAIL II

GRS186-01A

**Inlet Cowl Acoustic Panel Crack Repair - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - INLET COWL ACOUSTIC PANEL PARTIAL PENETRATION REPAIR - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to the partial penetration damage through the inner (perforated) skin of the upper left and upper right acoustic panels on the inlet cowl assembly. The damage must be less than 10 inches (254 mm) in length or width, or less than 100 square inches (645 square centimeters) in area. The outer (solid) skin must not be damaged. See Figure 201/REPAIR 5.
- B. This repair is not applicable to the lower acoustic panel. The repair is not applicable if the edge of the damage is less than 4.0 inches (102 mm) from the edge of the panel, or from the edge of other repairs.
- C. This repair causes the blockage of the perforated skin in the acoustically treated areas. Refer to 54-00-00, REPAIR GENERAL, for the applicable allowable limits.
- D. This type of damage is repaired by replacing the damaged core with a replacement core, and installing an external repair doubler on the perforated skin.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-30-03, GENERAL	Nonmetallic Materials
54-00-00, REPAIR GENERAL	Acoustic Panel Repair Limits

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Do a tap test to examine for disbonds. Make a mark of the disbonded area. Do a visual inspection of the area to find cracks. Use a magnifying glass with minimum 10X magnification. Make a mark of the crack ends.
- (3) Make a mark of the area to be cut out. The cutout must have the smallest size possible that includes the disbonded or damaged skin and damaged core, and must be a minimum of 0.5 inch (13 mm) beyond the crack ends or edge of damage.

NOTE: The cutout can be circular or rectangular. If it is rectangular, you must have a minimum radius of 0.5 inch (13 mm) at the corners.

- B. Remove the damage.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends, if applicable. Drill through the skin. Do not drill through the panel. Remove the burrs.

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- (2) Do a visual inspection to make sure the crack has been stop drilled. Use a magnifying glass with minimum 10X magnification. Repeat the applicable steps if necessary.
- (3) Cut and remove the damaged skin and core as marked. Remove the core down to the opposite skin inside the cutout. Remove the adhesive material, but do not cut into the opposite skin inside the cutout.

Remove the burrs.

- (4) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

C. Make the repair parts. Refer to Table 201/REPAIR 5 for the list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make the replacement core from the applicable aluminum alloy honeycomb core. The replacement core must have the same size as the cutout, and the same ribbon direction as the existing core. Remove the burrs.
- (2) Put the replacement core inside the cutout. The space between the replacement core and the existing core must not be more than 0.05 inch (1.3 mm) all around. The surface of the replacement core must touch the doubler when installed. Trim the replacement core as necessary. Remove the burrs.
- (3) Make a mark of the outline of the doubler on the perforated skin. The doubler must be large enough to install a minimum of two rows of rivets on the skin all around.

NOTE: If the doubler is rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (4) Apply teflon tape to the skin to make a border for the doubler as marked.
- (5) Make a repair doubler as marked. Make from 0.032 inch thick 2024-T3 aluminum alloy sheet. Chamfer the edges with a 4:1 ratio. Remove the burrs.
- (6) Form the doubler as necessary to match the contour of the acoustic panel in the damage area. The doubler must fit in place with light finger pressure.
- (7) Lightly sand the surface of the skin between the teflon tape and the cutout. Do the same for the surfaces of the doubler. Use 150-400 grit aluminum oxide abrasive paper. Remove the sharp edges.

D. Clean the repair area.

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- (1) Use dry air blast to remove the cutting and sanding particles. Clean the surfaces with a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surfaces clean before they become dry.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- E. Prepare all repair surfaces for repair.

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: 1. DAB THE TURCO WO-1 SOLUTION ON THE SKIN PANEL. DO NOT RUB IT ACROSS THE SKIN.

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE OND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (2) Apply the Turco WO-1 solution to all bare aluminum surfaces. This includes the mating surfaces of the replacement core and the skin inside the cutout. Use a clean, lint-free cloth. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (3) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let the water get into the core.

- (4) All repair surfaces (including the replacement core) must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

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WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.
- (6) Let the area cool down to room temperature before you apply the primer.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (7) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (8) Air dry the primer for 30 minutes. Then cure for 1 hour at 230°-250°F (110°-121°C). Use an explosion proof heat lamp.

F. Install the replacement core.

WARNING: EA9394 ADHESIVE IS CLASSIFIED AS HAZARDOUS MATERIALS WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES, OR FILM ADHESIVES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
- (2) Apply a thin layer of the adhesive mixture to the skin inside the cutout. The layer must be 0.01 to 0.03 inch (0.3 to 0.8 mm) thick.
- (3) Put the replacement core inside the cutout and press into position.
- (4) Use a clean syringe to inject the adhesive mixture into the space between the replacement core and the existing core all around. Fill the space with the adhesive mixture. Inject the adhesive slowly to prevent air entrapment.
- (5) Remove the excess adhesive from the repair area before it cures. Use a clean, lint-free cloth.

G. Cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the replacement core. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

- (2) Put a layer of non-porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Put a sheet of silicone rubber above the non-porous parting film.
(4) Put a heat blanket above the sheet of silicone rubber.

NOTE: If hard points, such as fittings, are near the repair area, the heat distribution will not be uniform. If necessary, you must use additional heat blankets to compensate for the heat loss.

- (5) Put two plies of fiberglass fabric breather cloth above the heat blanket.
(6) Put 5 to 10 lbs (2 to 4 kg) of weight above the breather cloth to press the replacement core against the adhesive during the cure.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Turn on the heat blanket and raise the temperature to 190°-210°F (88°-99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 1 hour.

- (8) Let the repair area cool down to room temperature. Remove the heat blanket, the weight, and other curing equipment from the repair area.

WARNING: WHEN METALS AND ADHESIVES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (9) Remove the sharp edges and excess cured adhesive. Use 150-400 grit aluminum oxide abrasive paper, or grinders if necessary, to remove the excess material. The exposed surface of the replacement core and the cured adhesive must not be above the adjacent skin surface, and must not be more than 0.005 inch (0.13 mm) below it.

NOTE: If the replacement core is more than 0.005 inch (0.13 mm) below the adjacent skin surface, remove it. Then repeat the applicable steps to make and install a new replacement core.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (10) Use dry air blast to remove the cutting and sanding particles. Clean the area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur.

H. Install the doubler.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(1) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

WARNING: ADHESIVES ARE CLASSIFIED AS HAZARDOUS MATERIALS WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES, OR FILM ADHESIVES. THIS PREVENTS CONTAMINATION.

(2) Apply a layer of the FM300-2M film adhesive to the mating surface of the doubler.

(3) If necessary, apply one more layer of the FM300-2M film adhesive to the mating surface of the replacement core in places where the surface of the replacement core is below the adjacent skin surface.

NOTE: The surface of the replacement core cannot be more than 0.005 inch (0.13 mm) below the adjacent skin surface.

(4) Put the doubler in place and press into position.

I. Vacuum bag and cure the repair.

(1) Put a minimum of two thermocouples around the perimeter of the repair area, near the doubler-adhesive bond line. Hold in place with teflon tape.

(2) Put a layer of non-porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

(3) Put a sheet of silicone rubber above the non-porous parting film.

(4) Put a heat blanket above the sheet of silicone rubber.

NOTE: If hard points, such as fittings, are near the repair area, the heat distribution will not be uniform. If necessary, you must use additional heat blankets to compensate for the heat loss.

(5) Put two plies of fiberglass fabric breather cloth above the heat blanket.

(6) Put a sheet of nylon bagging film above the repair area. The film must be 2.0 inches (51 mm) larger than the repair all around.

(7) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film, and seal the edges, with bag sealant.

(8) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in five minutes.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(9) Turn on the heat blanket and raise the temperature to 250° to 270°F (121° to 132°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 90 minutes. Keep a steady vacuum pressure of 22 inches of mercury during the cure.

(10) Let the repair area cool down to room temperature. Remove the bagging material.

J. Install the fasteners.

WARNING: WHEN METALS ARE DRILLED OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

(1) Make a mark of the rivet holes on the doubler. Drill the holes through the doubler and skin as marked. Do not drill through the panel. Do not damage the holes. Remove the burrs.

NOTE: The hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for the nominal size -5 rivets. If a hole is damaged, it is acceptable to install a first oversize rivet. The hole size is 0.176 to 0.180 inch (4.47 to 4.57 mm) for the first oversize -5 rivets.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(2) Use dry air blast to remove the drilling and sanding particles. Clean the area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(3) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(4) Wet install the rivets with the sealant.

(5) Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(6) Cure the sealant. Use heat lamps if necessary.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

(7) Let the repair area cool down to room temperature.

K. Examine the repair.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds.

Repeat the applicable steps if necessary.

L. Apply the surface finish.

(1) Apply the surface finish to the repair area. Refer to REPAIR 16, Surface Finish Restoration Repair. Use the instructions in Paragraph 3.C./REPAIR 16 of that repair.

Table 201: Repair Materials and Equipment

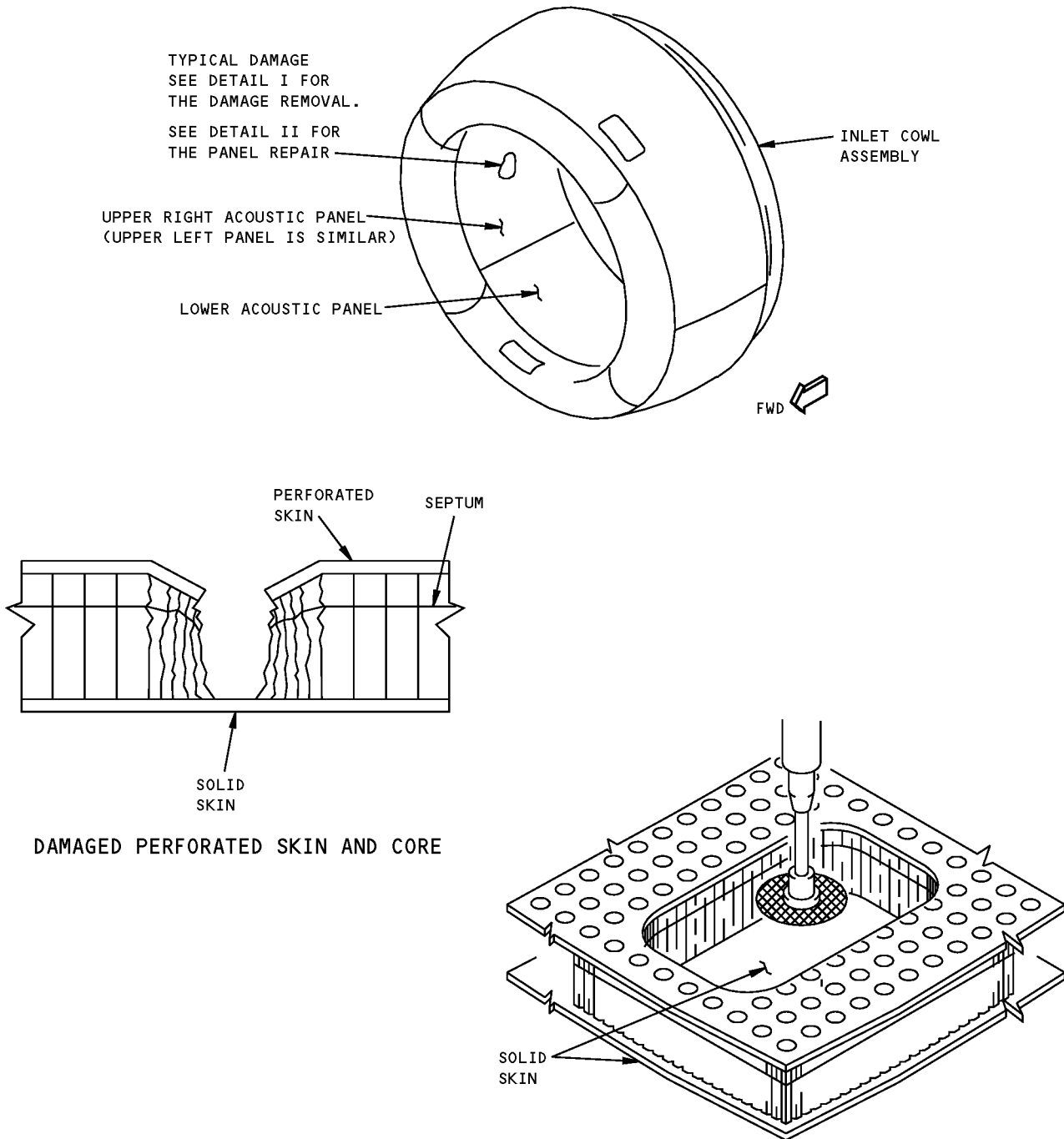
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace, Inc. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Adhesive, Film Supported	FM300-2M (Alternative: FM300-2K)	Cytec materials, Inc. 1300 Revolution Street Harve De Grace, MD 21078
Aluminum alloy honeycomb core	5052 alum alloy 3.7 PCF, 3/8 cell 0.0025 thick (Alternative: 5056 alum alloy)	Commercially Available
Aluminum alloy sheet	0.032 inch thick 2024-T3	Commercially Available
Blanket, Heat	0° to 270°F 10W/Square inch (-18° to 132°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Etching solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corp. 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Film, Bagging	3 Mil, Nylon	Commercially Available

STRUCTURAL REPAIR MANUAL**Table 201: Repair Materials and Equipment (Continued)**

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Film, Parting	Nonporous	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	BR-127	Cytec Materials, Inc.
Probe, temperature	0° to 270°F (-18° to 132°C)	Commercially Available
Rivet, Blind, Protruding head, nominal size	CR3523P5-2 (Alternatives: CR3223-5-2, or NAS1398C5-2)	Commercially Available
Rivet, Blind, Protruding head, first oversize	CR3553P5-2 (Alternatives: CR3253-5-2, or NAS1738C5-2)	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Road Waterford, NY 12188
Sealant, Bag	Tacky tape	Schnee-Morehead Chemical 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Syringe, Injection	Plastic nozzle	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-30-03, GENERAL.

STRUCTURAL REPAIR MANUAL



TYPICAL DAMAGE
 SEE DETAIL I FOR
 THE DAMAGE REMOVAL.
 SEE DETAIL II FOR
 THE PANEL REPAIR

INLET COWL
 ASSEMBLY

UPPER RIGHT ACOUSTIC PANEL
 (UPPER LEFT PANEL IS SIMILAR)

LOWER ACOUSTIC PANEL

FWD

PERFORATED
 SKIN

SEPTUM

SOLID
 SKIN

DAMAGED PERFORATED SKIN AND CORE

SOLID
 SKIN

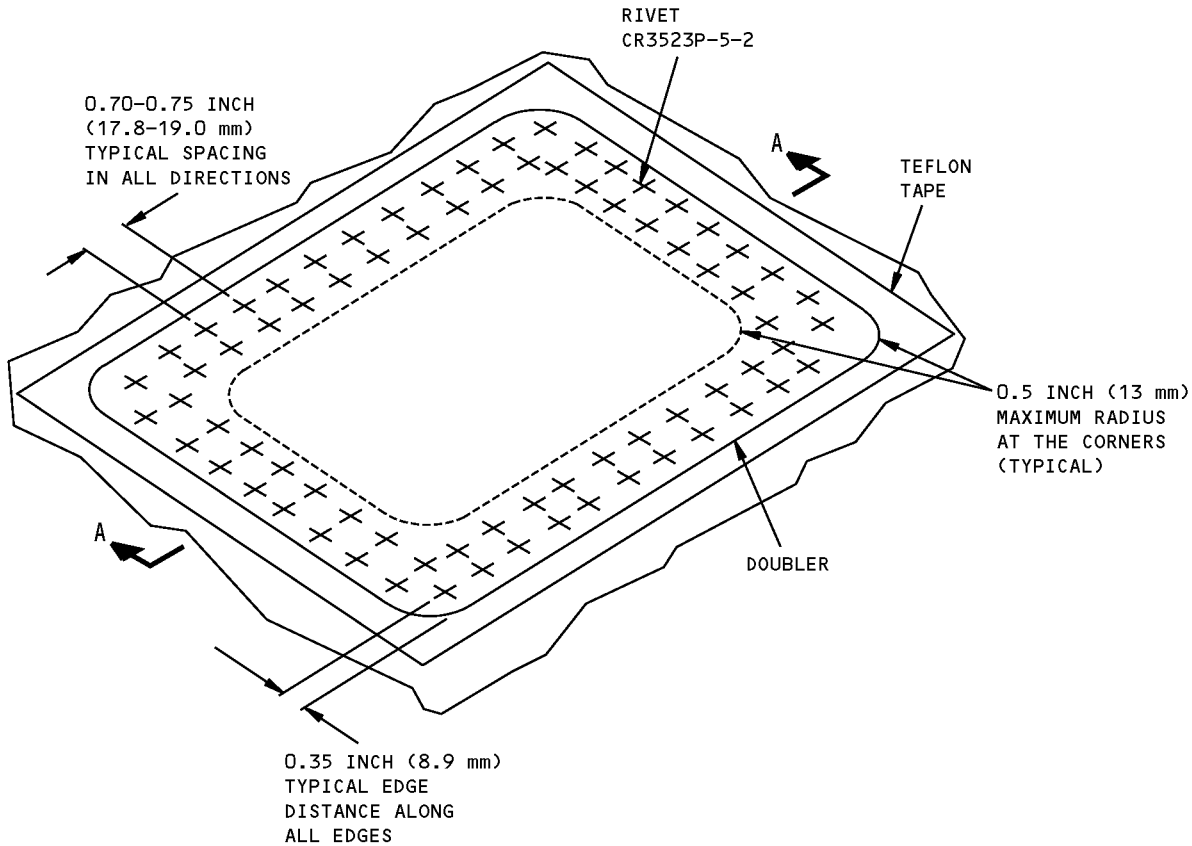
TYPICAL VIEW AFTER DAMAGE REMOVAL

DETAIL I

GRS188-01A

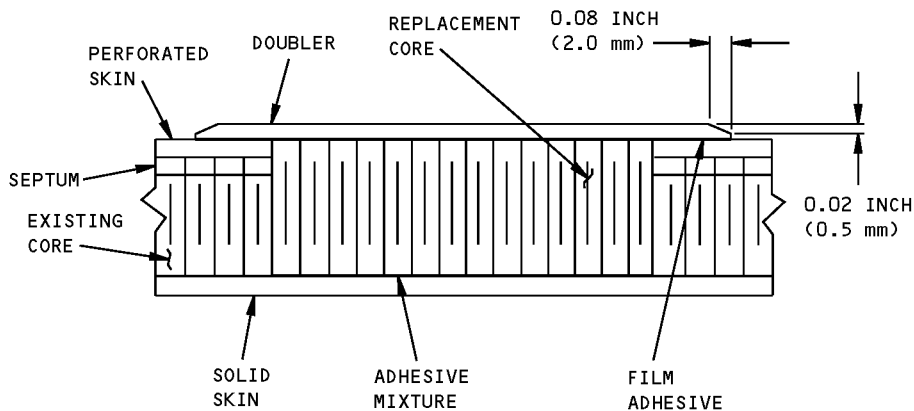
**Inlet Cowl Acoustic Panel Partial Penetration Repair - CF6-80C2 Engine
 Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



TYPICAL VIEW OF THE COMPLETED REPAIR

DETAIL II



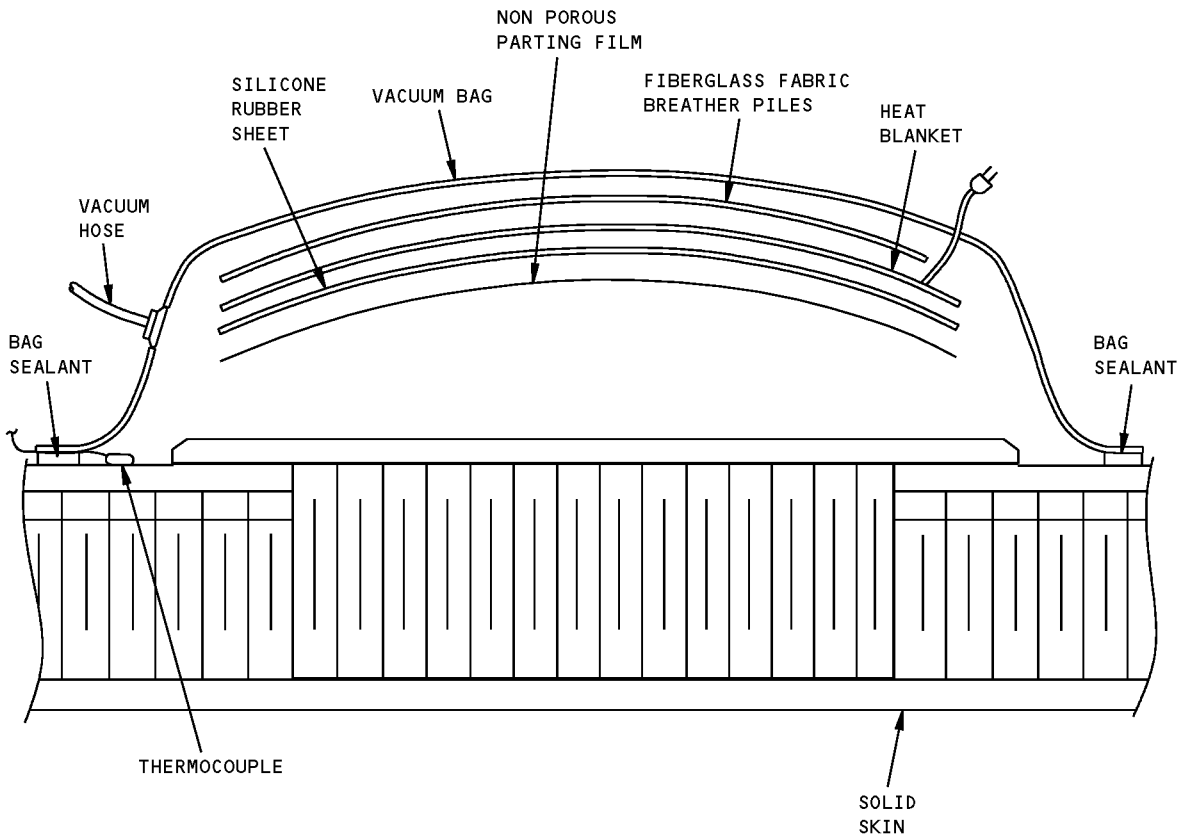
FASTENERS NOT SHOWN

SECTION A-A

GRS188-02A

**Inlet Cowl Acoustic Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

767-300
STRUCTURAL REPAIR MANUAL



TYPICAL BAGGING

GRS188-03

Inlet Cowl Acoustic Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

D634T210

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REPAIR 5
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REPAIR 6 - INLET COWL ACOUSTIC PANEL FULL PENETRATION - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable to the full penetration damage through the upper left and upper right acoustic panels on the inlet cowl assembly.

The damage must be less than 10 inches (254 mm) in length or width, or 100 sq. inches (645 square centimeters) in area. See Figure 201/REPAIR 6.

- B. This repair is not applicable to the lower acoustic panel. The repair is not applicable if the edge of the damage is less than 4.0 inches (102 mm) from the edge of the panel, or from the edge of other repairs.
- C. This repair causes the blockage of the perforated skin in the acoustically treated areas. Refer to 54-00-00, REPAIR GENERAL, for the applicable allowable repair limits.
- D. This type of damage is repaired by replacing the damaged core with a replacement core, and installing repair doublers on the inner and outer skins.

2. General

NOTE: This repair procedure can be done if the outer barrel has not been removed from the inlet cowl assembly (there is no access to the backside).

3. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
54-00-00, REPAIR GENERAL	Acoustic Panel Repair Limits

4. Repair Instructions

- A. Examine the damage area.

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- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Do a tap test to examine for disbonds. Make a mark of the disbonded area. Do a visual inspection of the area to find cracks. Use a magnifying glass with minimum 10X magnification. Make a mark of the crack ends.
- (3) Make a mark of the area to be cut out. The cutout must have the smallest size possible that includes the disbonded or damaged perforated skin and damaged core, and must be a minimum of 0.5 inch (13 mm) beyond the crack ends or edge of damage.

NOTE: The cutout can be circular or rectangular. If rectangular, you must have a minimum radius of 0.5 inch (13 mm) at the corners.

- B. Remove the damaged perforated skin and core.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends, if applicable. Drill through the cracked skin. Do not drill through the panel. Remove the burrs.
- (2) Do a visual inspection to make sure the crack has been stop drilled. Use a magnifying glass with minimum 10X magnification. Repeat the applicable steps if necessary.
- (3) Cut and remove the damaged perforated skin and core as marked. Remove the core down to the opposite skin inside the cutout. Remove the adhesive material, but do not cut into the opposite skin inside the cutout.
- (4) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

C. Remove the damaged solid skin.

- (1) If necessary, do a fluorescent penetrant inspection of the solid skin to find cracks. Make a mark of the crack ends, if applicable.
- (2) Make a mark of the damaged area to be cut out from the solid skin inside the cutout. The cutout must have the smallest size possible that removes the damage completely, and must be a minimum of 0.5 inch (13 mm) beyond the crack ends or edge of damage.

NOTE: The cutout can be circular or rectangular. If rectangular, you must have a minimum radius of 0.5 inch (13 mm) at the corners.

CAUTION: WHEN YOU CUT THE SOLID SKIN, OR DRILL HOLES IN IT, MAKE SURE YOU DO NOT CAUSE DISBOND BETWEEN SOLID SKIN AND CORE. SUPPORT THE SOLID SKIN IF NECESSARY.

- (3) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends, if applicable. Cut and remove the damaged solid skin as marked.
Remove the burrs.
- (4) Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Repeat the applicable steps if necessary.
- (5) Measure the width of the remaining solid skin overhang inside the cutout. The overhang must be at least 1.5 inch (38 mm) wide to install a minimum of two rows of rivets all around. Refer to Figure 201/REPAIR 6 for the rivet spacing and edge distance requirements. If necessary, cut and remove the perforated skin and core down to the solid skin to have the correct width.
- (6) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

D. Make the repair parts. Refer to Table 201/REPAIR 6 for the list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make an internal doubler to fit inside the cutout. The space between the internal doubler and the existing core must not be more than 0.03 to 0.05 inch (0.8 to 1.3 mm) all around. Make from 0.032 inch thick 2024-T3 aluminum alloy sheet. Remove the burrs.

STRUCTURAL REPAIR MANUAL

- (2) Make a mark of the external doubler on the perforated skin. The doubler must be large enough to install a minimum of two rows of rivets on the perforated skin all around. Apply teflon tape to the skin as marked.

NOTE: If the doubler is rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make an external doubler as marked. Make from 0.032 inch thick 2024-T3 aluminum alloy sheet. Chamfer the edges with a 4:1 ratio.

Remove the burrs.

- (4) Form the doublers to match the contour of the acoustic panel in the damage area. The doublers must fit in place with light finger pressure.

- (5) Make the replacement core from the applicable aluminum alloy honeycomb core. The replacement core must have the same size as the cutout, and the same ribbon direction as the existing core.

- (6) Put the internal doubler and the replacement core inside the cutout. Make sure the surface of the replacement core will touch the external doubler when the two doublers are installed. The space between the replacement core and the existing core must not be more than 0.05 inch (1.3 mm) all around. Trim the edges as necessary.

Remove the burrs.

CAUTION: WHEN YOU DRILL HOLES IN THE SOLID SKIN, MAKE SURE YOU DO NOT CAUSE DISBOND BETWEEN SOLID SKIN AND CORE. SUPPORT THE SOLID SKIN IF NECESSARY.

- (7) Remove the parts. Make a mark of the rivet holes on the internal doubler. Drill the holes in the doubler as marked. Match drill the holes in the solid skin. Do not damage the holes. Remove the doubler. Remove the burrs.

NOTE: The hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for the nominal size -5 rivets. If a hole is damaged, it is acceptable to install a first oversize rivet. The hole size is 0.176 to 0.180 inch (4.47 to 4.57 mm) for the first oversize -5 rivets.

- (8) Put the internal doubler inside the cutout. Line up the holes and temporarily put the rivets inside them. Put the replacement core inside the cutout. The rivet heads must not have interference with the replacement core when installed. Trim the replacement core as necessary.

- (9) Lightly sand all repair surfaces, including the perforated skin between the teflon tape and the cutout. Use 150-400 grit aluminum oxide abrasive paper. Remove the sharp edges.

E. Prepare the repair surfaces for repair.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use dry air blast to remove the cutting and sanding particles. Clean the surfaces with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: 1. DAB THE TURCO WO-1 SOLUTION ON THE SKIN PANEL. DO NOT RUB IT ACROSS THE SKIN.

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (3) Apply the Turco WO-1 solution to all bare aluminum surfaces. This includes the mating surfaces of the replacement core and the skin inside the cutout. Use a clean, lint-free cloth. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (4) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let the water get into the core.

- (5) All repair surfaces (including the replacement core) must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.
(7) Let the area cool down to room temperature before you apply the primer.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Air dry the primer for 30 minutes. Then cure for 1 hour at 230°-250°F (110°-121°C). Use an explosion proof heat lamp.

F. Install the internal doubler.

WARNING: EA9394 ADHESIVE OR RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
- (2) Apply a thin layer of the EA9394 adhesive mixture to the mating surfaces of the internal doubler and the solid skin inside the cutout.
- (3) Cut a piece of scrim cloth and apply to the mating surface of the internal doubler or the solid skin.
- (4) Put the internal doubler into position. Align the holes and wet install the rivets with the RTV 157 sealant.
- (5) Remove the excess adhesive or sealant before it cures. Use a clean, lint-free cloth.
- (6) Put a minimum of two thermocouples around the perimeter of the repair area, near the doubler-adhesive bond line. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Use explosion proof heat lamps and apply heat until the repair area reaches a temperature of 190°-210°F (88°-99°C). Cure the adhesive at this temperature for 60 minutes. Let the repair area cool down to room temperature.

G. Remove moisture or other contamination from the repair area.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (1) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable cleaning and bagging steps until the moisture is completely removed.

STRUCTURAL REPAIR MANUAL

H. Install the replacement core.

WARNING: EA9394 ADHESIVE IS CLASSIFIED AS HAZARDOUS MATERIALS WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES, OR FILM ADHESIVES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
- (2) Apply a thin layer of the adhesive mixture to the surface of the internal doubler inside the cutout. The layer must be 0.01 to 0.03 inch (0.3 to 0.8 mm) thick.
- (3) Put the replacement core inside the cutout and press into position.
- (4) Use a clean syringe to inject the adhesive mixture into the space between the replacement core and the existing core all around. Fill the space with the adhesive mixture. Inject the adhesive slowly to prevent air entrapment.

I. Cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the replacement core. Hold in place with teflon tape.
- (2) Put a layer of non-porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Put a sheet of silicone rubber above the non-porous parting film.
- (4) Put a heat blanket above the sheet of silicone rubber.

NOTE: If hard points, such as fittings, are near the repair area, the heat distribution will not be uniform. If necessary, you must use additional heat blankets to compensate for the heat loss.

- (5) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (6) Put 5 to 10 lbs (2 to 4 kg) of weight above the breather cloth to press the replacement core against the adhesive during the cure.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Turn on the heat blanket and raise the temperature to 190°-210°F (88°-99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 1 hour.

- (8) Let the repair area cool down to room temperature. Remove the heat blanket, the weight, and other curing equipment from the repair area.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS AND ADHESIVES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (9) Remove the sharp edges and excess cured adhesive. Use 150-400 grit aluminum oxide abrasive paper, or grinders if necessary, to remove the excess material. The exposed surface of the replacement core and the cured adhesive must not be above the adjacent skin surface, and must not be more than 0.005 inch (0,13 mm) below it.

NOTE: If the replacement core is more than 0.005 inch (0.13 mm) below the adjacent skin surface, remove it. Then repeat the applicable steps to make and install a new replacement core.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (10) Use dry air blast to remove the cutting and sanding particles. Clean the area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not disbonds can occur.

J. Install the external doubler.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (1) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

WARNING: ADHESIVES ARE CLASSIFIED AS HAZARDOUS MATERIALS WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES, OR FILM ADHESIVES. THIS PREVENTS CONTAMINATION.

- (2) Apply a layer of the FM300-2M film adhesive to the mating surface of the doubler.
(3) If necessary, apply one more layer of the FM300-2M film adhesive to the mating surface of the replacement core in places where the surface of the replacement core is below the adjacent skin surface.

NOTE: The surface of the replacement core cannot be more than 0.005 inch (0.13 mm) below the adjacent skin surface.

- (4) Put the doubler in place and press into position.

K. Vacuum bag and cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area, near the doubler-adhesive bond line. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

- (2) Put a layer of non-porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Put a sheet of silicone rubber above the non-porous parting film.
- (4) Put a heat blanket above the sheet of silicone rubber.

NOTE: If hard points, such as fittings, are near the repair area, the heat distribution will not be uniform. If necessary, you must use additional heat blankets to compensate for the heat loss.

- (5) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (6) Put a sheet of nylon bagging film above the repair area. The film must be 2.0 inch (51 mm) larger than the repair all around.
- (7) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film, and seal the edges, with bag sealant.
- (8) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in 5 minutes.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Turn on the heat blanket and raise the temperature to 250° to 270°F (121° to 132°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 90 minutes. Keep a steady vacuum pressure of 22 inches of mercury during the cure.
 - (10) Let the repair area cool down to room temperature. Remove the bagging material.
- L. Install rivets on the external doubler.

WARNING: WHEN METALS ARE DRILLED OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a mark of the rivet holes on the doubler. Drill the holes through the doubler and skin as marked. Do not drill through the panel. Do not damage the holes. Remove the burrs.

NOTE: See Section 2.D.(7) for hole sizes.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the drilling and sanding particles. Clean the area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(3) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(4) Wet install the rivets with the sealant.

(5) Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(6) Cure the sealant. Use heat lamps if necessary.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

(7) Let the repair area cool down to room temperature.

M. Examine the repair.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds.

Repeat the applicable steps if necessary.

N. Apply the surface finish.

(1) Apply the surface finish to the repair area. Refer to REPAIR 16. Use the instructions in Paragraph 3.C./REPAIR 16.

Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace, Inc. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Adhesive, Film Supported	FM300-2M (Alternative: FM300-2K)	Cytec materials, Inc. 1300 Revolution Street Harve De Grace, MD 21078
Aluminum alloy honeycomb core	5052 alum alloy 3.7 PCF, 3/8 cell 0.0025 thick	Commercially Available
Aluminum alloy sheet	0.032 inch thick 2024-T3	Commercially Available

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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 270°F 10W/Square inch (-18° to 132°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Scrim		Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Etching solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corp. 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Paper, Litmus		Commercially Available
Primer	BR-127	Cytec Materials, Inc.
Probe, temperature	0° to 270°F (-18° to 132°C)	Commercially Available
Rivet, Blind, Protruding head, nominal size	CR3523P5-2 (Alternatives: CR3223-5-2, or NAS1398C5-2)	Commercially Available
Rivet, Blind, Protruding head, first oversize	CR3553P5-2 (Alternatives: CR3253-5-2, or NAS1738C5-2)	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Road Waterford, NY 12188

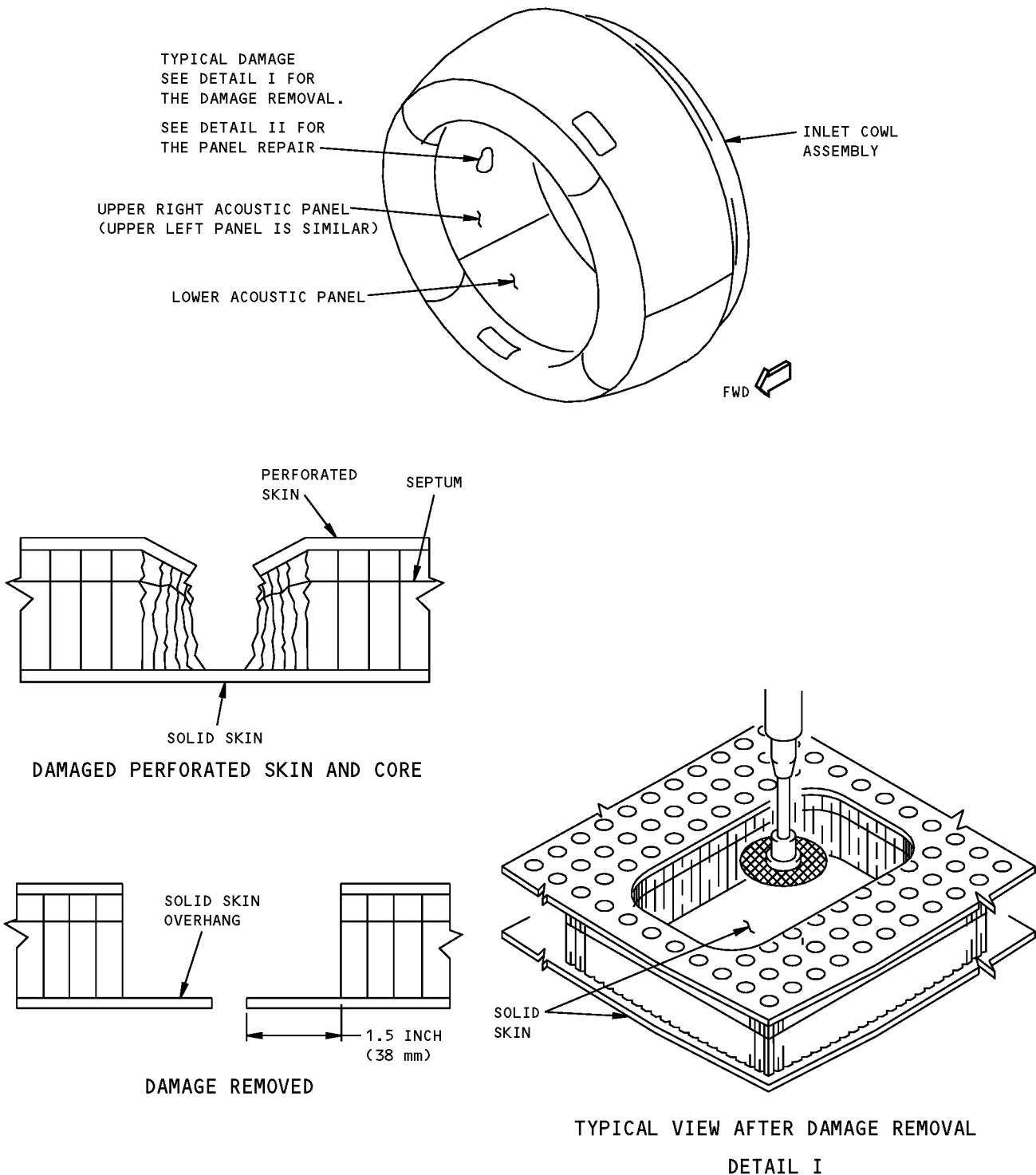
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Sealant, Bag	Tacky tape	Schnee-Morehead Chemical 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Syringe, Injection	Plastic nozzle	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

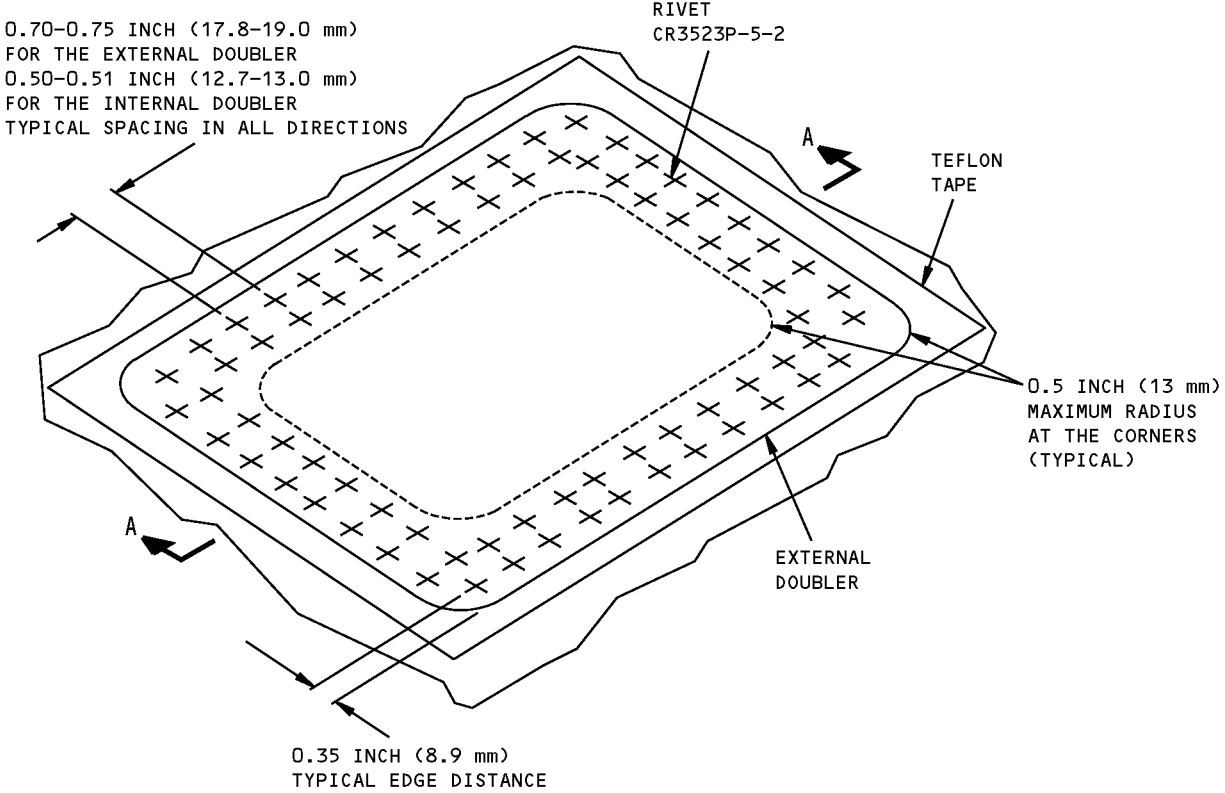
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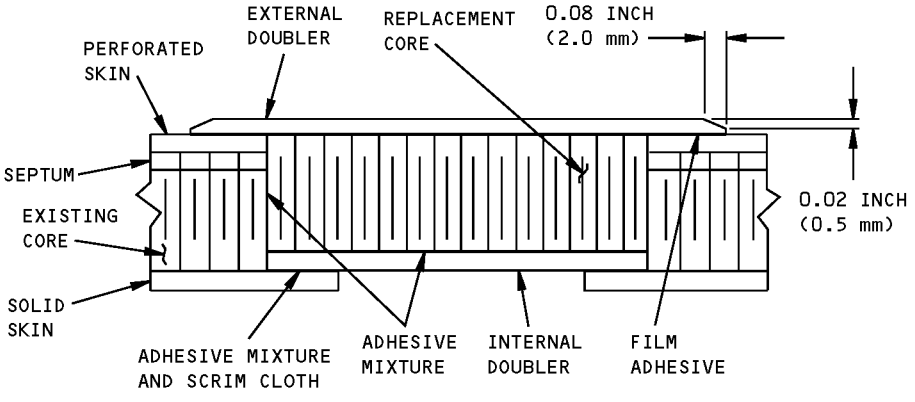
Inlet Cowl Acoustic Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)

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EXTERNAL DOUBLER IS SHOWN, INTERNAL DOUBLER IS SIMILAR
TYPICAL VIEW OF THE COMPLETED REPAIR

DETAIL II



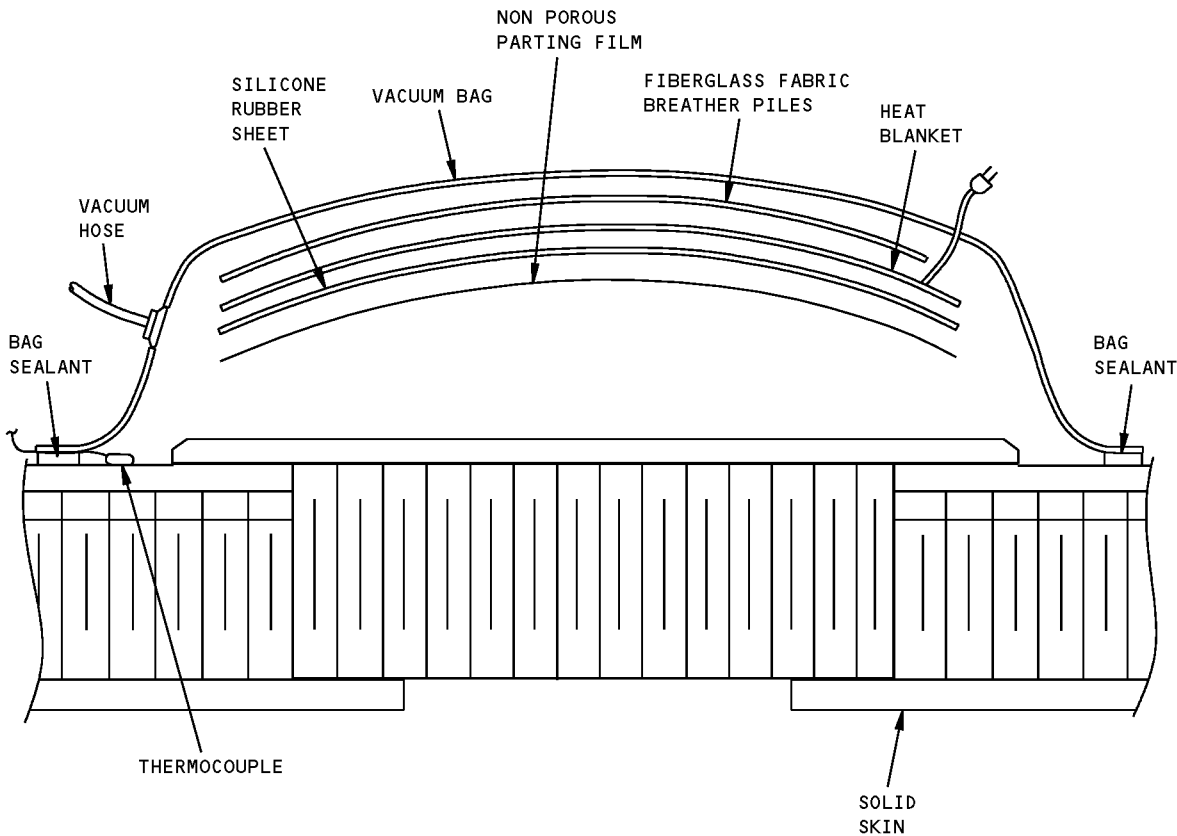
FASTENERS NOT SHOWN

SECTION A-A

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**Inlet Cowl Acoustic Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

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TYPICAL BAGGING

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**Inlet Cowl Acoustic Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

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REPAIR 6
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STRUCTURAL REPAIR MANUAL

REPAIR 7 - INLET COWL ACOUSTIC PANEL SMALL DISBOND - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to small disbonds of the inner (perforated) skin from the core of the inlet cowl acoustic panels. The damage must be less than 1.0 inch (25 mm) in length and/or width.
- B. This repair is not applicable if the edge of the damage is less than 4.0 inches (102 mm) from the edge of the panel, or from the edge of other repairs. Refer to Figure 201/REPAIR 7.
- C. This type of damage is repaired by injection of adhesive under the skin in the disbonded area.
- D. There can be no more than three disbonds on each panel repaired per this repair scheme, and each repair cannot be closer than 6.0 inches (152 mm) to other similar (repaired) disbond damage.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-30-03, GENERAL	Nonmetallic Materials

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Do a tap test to examine for disbonds. Determine the extent of damage and make a mark of the disbond area.

NOTE: Do a visual inspection of the area to find cracks. Use a magnifying glass with minimum 10X magnification. If the skin is cracked, this repair is not applicable.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Use No. 30 drills to drill two holes at the opposite ends of the disbonded area. Center the holes on the perforations. One hole will be the injection hole, the other hole will be the vent hole.
Drill through the skin only.

NOTE: Drill through the skin, but not through the septum. The septum is 0.230 inch (5.84 mm) below the surface. Use a mechanical drill stop to make sure the septum is not damaged. If the septum is damaged, this repair is not applicable.

- (2) Use 150-320 grit aluminum oxide abrasive paper to remove the sharp edges. Do not remove the surface finish of the skin in the repair area.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use dry air blast to remove the drilling and sanding particles. Flush the core in the disbanded area with Turco 6646 solvent. Clean the repair area with a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.

C. Remove the contamination.

NOTE: Do the following procedure if there is evidence of moisture or other contamination in the repair area.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (1) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable sanding and cleaning steps until the contamination is completely removed.

D. Inject the adhesive. Refer to Table 201/REPAIR 7 for the list of repair materials.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Dry the repair area for one hour at 230°-250°F (110°-121°C). Use an explosion proof heat lamp.

WARNING: EA934NA ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to mix the EA9321 Part A and Part B adhesive.
- (3) Use a clean syringe to inject the adhesive mixture into the injection hole. Inject the adhesive slowly to prevent air entrapment in the honeycomb cells. Inject until the adhesive comes out of the vent hole.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (4) Remove the excess adhesive from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent.

Wipe the surface clean before the solvent becomes dry.

E. Cure the repair.

- (1) Put a layer of non-porous release cloth above the repair area, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber. Hold the release cloth in place with teflon tape.
- (2) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Put a sheet of silicone rubber above the non-porous parting film.
- (4) Put a heat blanket above the sheet of silicone rubber.
- (5) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (6) Put 5 to 10 lbs (2 to 4 kg) of weight above the breather cloth to press the disbanded skin against the core during the cure cycle.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Turn on the heat blanket and raise the temperature to 190°-210°F (88°-99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 70 minutes.

- (8) Let the repair area cool down to room temperature. Remove the heat blanket, the weight, and other curing equipment from the repair area.

WARNING: WHEN METALS AND ADHESIVES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (9) Remove the sharp edges and excess cured foaming adhesive. Use 150-400 grit aluminum oxide abrasive paper to remove the excess material. Do not remove the surface finish of the skin in the repair area.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (10) Use dry air blast to remove the cutting and sanding particles. Clean the area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- F. Examine the repair area.
- (1) Visually examine the repair area and do a tap test to make sure the procedures in this repair are done. If necessary, do the applicable steps again.
- G. Apply the surface finish, if necessary.
- (1) If the surface finish is damaged in the repair area, apply a layer of aluminized epoxy primer to the surface per the applicable steps in REPAIR 16, Surface Finish Restoration Repair.

Table 201: Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9321 or EA934NA, alternative for EA9321	Dexter Hysol Aerospace, Inc. The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Glasses	Safety	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available

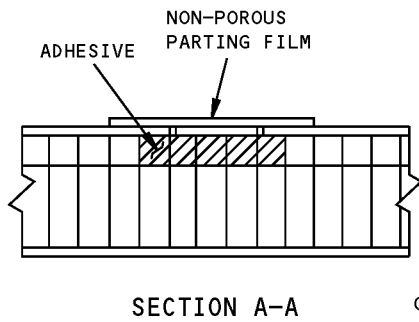
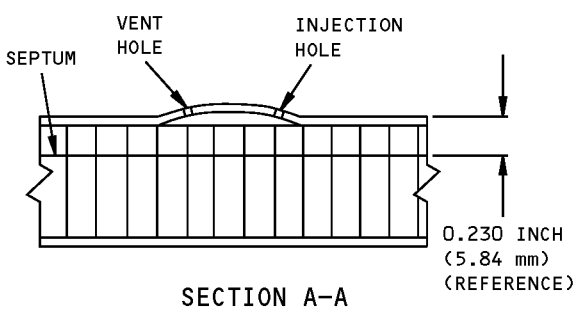
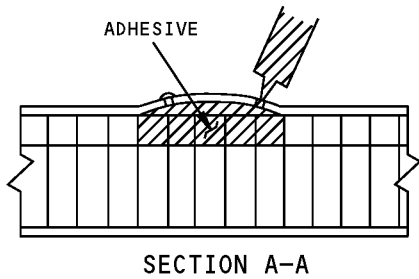
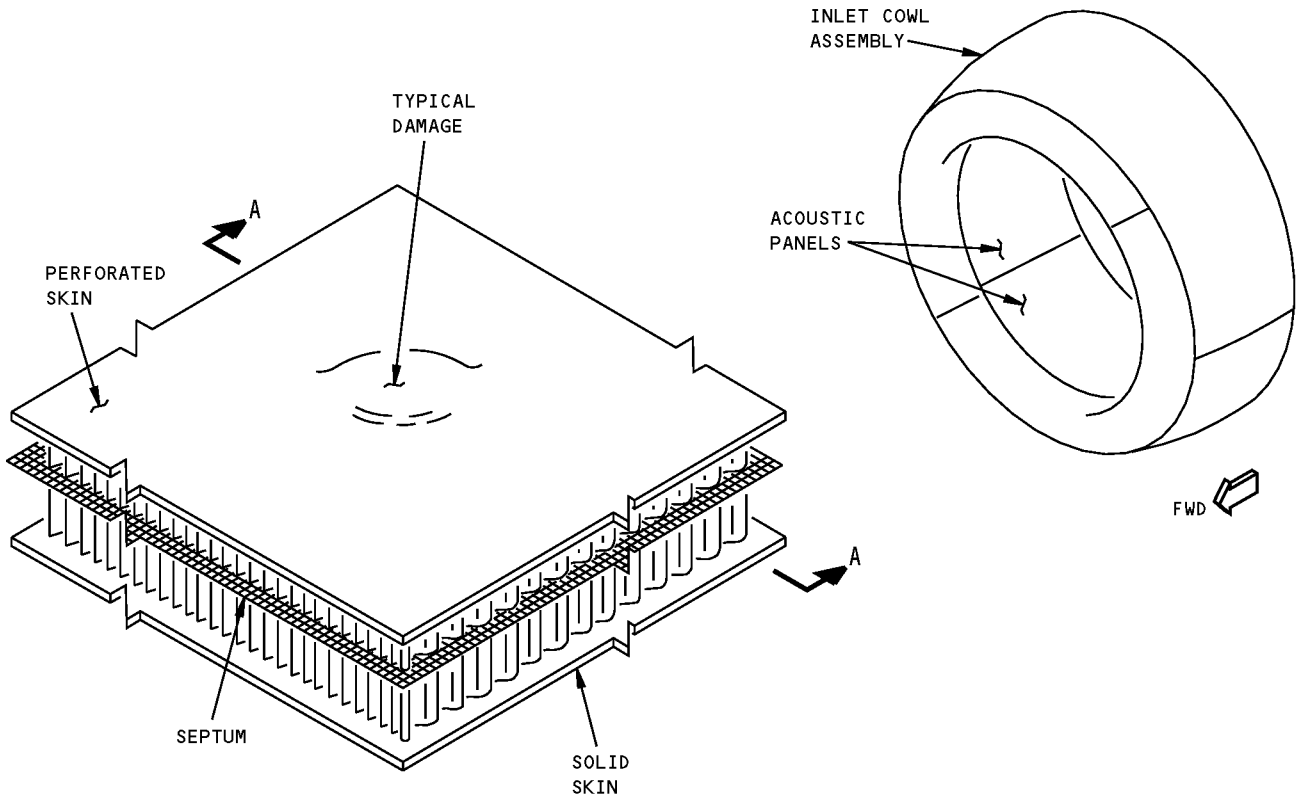
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Syringe, Injection	Plastic nozzle	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-30-03, GENERAL.

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STRUCTURAL REPAIR MANUAL



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Inlet Cowl Acoustic Panel Small Disbond Repair - CF6-80C2 Engine
Figure 201

STRUCTURAL REPAIR MANUAL

REPAIR 8 - AFT BULKHEAD ALUMINUM WEB DAMAGE - CF6-80C2 ENGINE**1. General**

- A. This repair is applicable to cracks, punctures, and holes in the aft bulkhead web of the inlet cowl assembly. The repair is applicable to aluminum web sections between the stiffeners, and to aluminum webs of door assemblies. The damage must be less than 5.0 inches (127 mm) long in the circumferential direction, and less than 3.0 inches (76 mm) long in the radial direction.
- B. This repair is not applicable if the edge of the damage is less than 2.0 inches (51 mm) from the edge of the web or the edge of the existing stiffeners. Refer to Figure 201/REPAIR 8.
- C. There can be only one repair per web section or door. This repair is not applicable if adjacent web sections or doors are damaged.
- D. This type of damage is repaired by installation of a repair doubler on the damaged web.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
SOPM 20-20-02	Penetrant Methods of Inspection

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. Do a fluorescent penetrant inspection of the area, if necessary, to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends, if any.
- (3) Make a mark of the damaged area to be cut out. The cutout must have the smallest size possible that includes the damaged area, and must be a minimum of 0.5 inch (13 mm) beyond the crack ends or edge of damage.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- B. Prepare the damage area for repair.

NOTE: If, after damage removal, the damage is more than the applicable limits, this repair is not applicable.

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WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill 0.25 inch (6.4 mm) diameter holes at the crack ends, if applicable. Do not damage the structure below the surface. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Repeat the applicable steps if necessary.

- (2) Cut the web as marked. Do not damage the structure below the surface. Remove the burrs.
- (3) Make a mark of the doubler on the web. This is the area that will be covered by the doubler. The doubler must be large enough to install a minimum of two rows of rivets all around.

NOTE: The doubler can be circular or rectangular. If the doubler is rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (4) Apply teflon tape to the web to mask off the repair area as marked.
- (5) Lightly sand the surface in the area between the pieces of tape. Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Use dry air blast and a suction cleaner to remove the drilling, routing, and sanding particles from the repair area, including the area fwd of the web. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

C. Make the doubler. Refer to Table 201/REPAIR 8 for the list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a repair doubler as marked. Make from 0.063 inch thick 2024-T3 aluminum alloy sheet. Remove the burrs.
- (2) Make a mark of the rivet holes on the doubler. Drill pilot holes in the doubler as marked. Put the doubler into position in the repair area. Drill the pilot holes through the doubler and the web. Use temporary fasteners to keep the holes aligned. Ream the holes to their final size. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for NAS1398B-5 nominal size rivets. If a hole is damaged, it is acceptable to install a first oversize rivet. Final hole size is 0.176 to 0.180 inch (4.47 to 4.57 mm) for NAS1738B -5 oversize rivets.

- (3) Lightly sand the surfaces of the doubler. Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (4) Use dry air blast and a suction cleaner to remove the drilling, routing, and sanding particles from the repair area, including the area fwd of the web. Clean the doubler with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

D. Apply the conversion coating.

- (1) Apply conversion coating to the repair surfaces per REPAIR 16, Surface Finish Restoration Repair. Use the instructions in Paragraph 3.D./REPAIR 16.

E. Apply the primer.

WARNING: DC 1200 PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the mating surfaces of the web and doubler. Use a brush and follow the manufacturer's instructions.
- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

F. Install the doubler.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces.
- (2) Put the doubler into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.
- (3) Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

G. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Repeat the applicable steps, if necessary.

Table 201: Repair Materials and Equipment

*1)		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.063 inch thick 2024-T3	Commercially Available
Blanket, Heat (Alternative to the heat lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivets, blind, nominal size	NAS1398B-5-2 (Alternatives: CR2263-5-2 or CR3523P-5-2)	Commercially Available
Rivet, blind, oversize	NAS1738B-5 (Alternatives: CR2249-5-2 or CR3553P-5-2)	Commercially Available
Sealant	DC 93-006 (Color grey)	Dow Corning

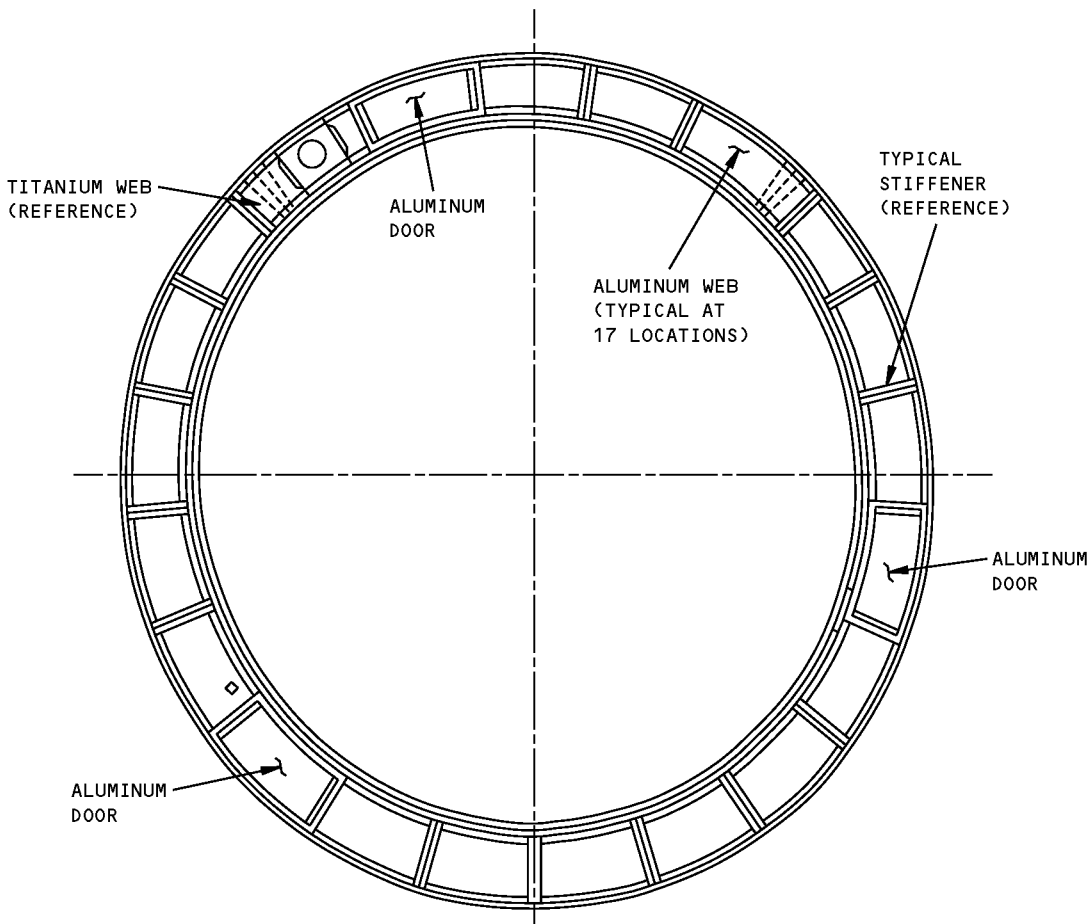
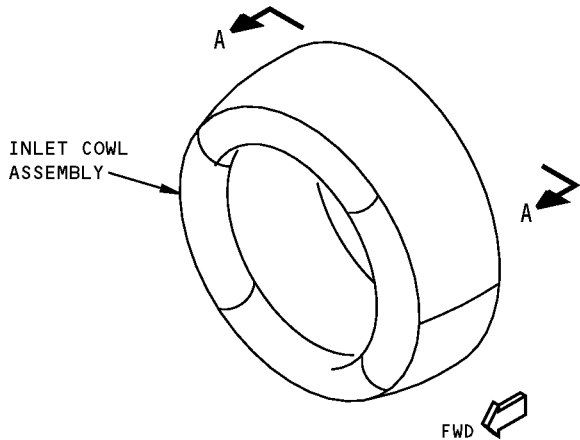
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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STRUCTURAL REPAIR MANUAL



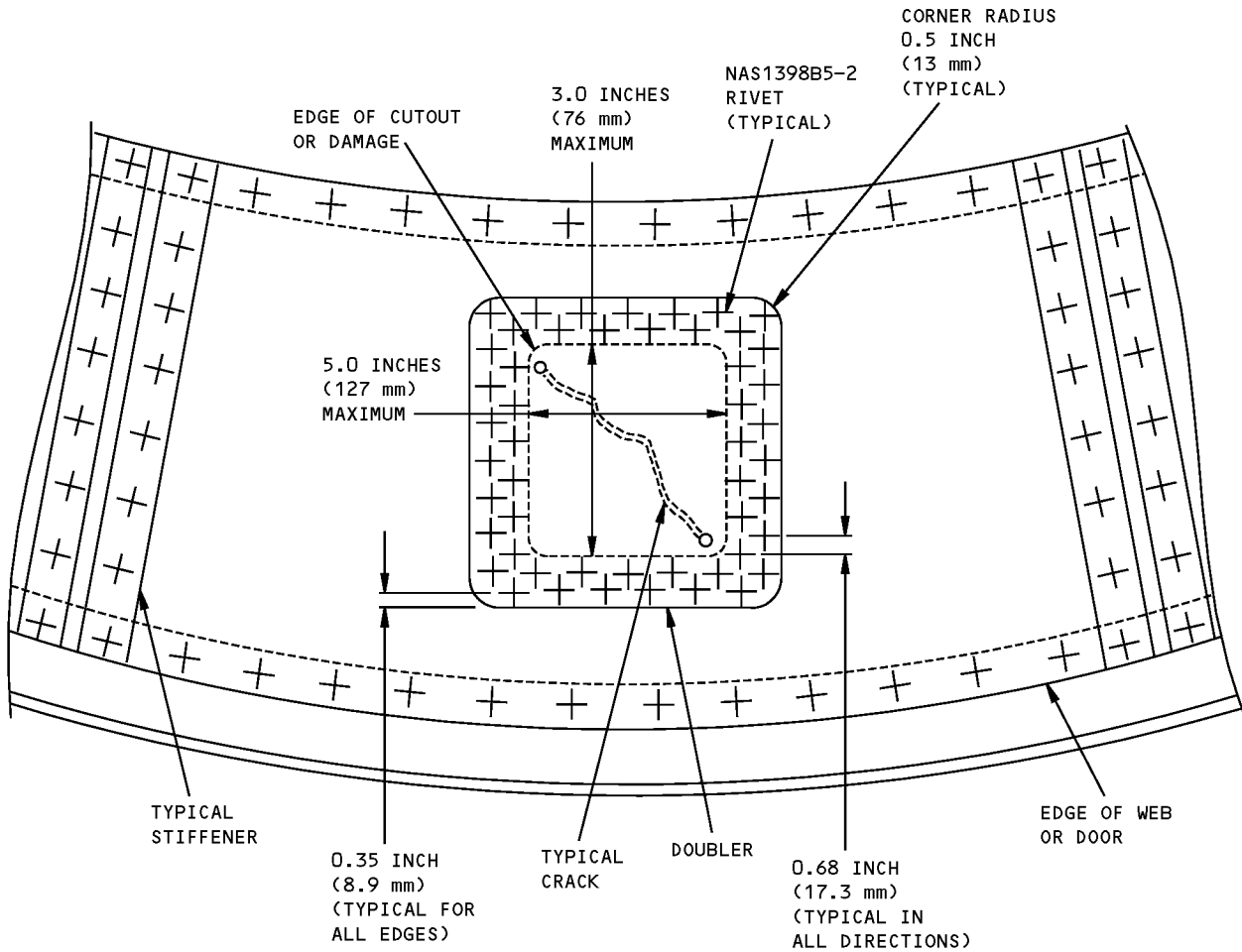
VIEW WHEN YOU LOOK FORWARD AT THE AFT BULKHEAD

VIEW A-A

GRS191-02

Aft Bulkhead Aluminum Web Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



VIEW OF A TYPICAL REPAIR
DETAIL I

GRS191-01A

**Aft Bulkhead Aluminum Web Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 9 - OUTER BARREL COMPOSITE SKIN SURFACE DAMAGE - CF6-80C2 ENGINE**1. General**

- A. This repair is used to repair minor damage to the surface of the outer barrel composite skin on the inlet cowl assembly. The damage must be less than 0.010 inch (0.25 mm) deep.
- B. This repair is not applicable if the damage is more than 0.10 inch (2.5 mm) wide, or more than 15.0 inches (381 mm) long in any direction.
- C. This repair is not applicable if the edge of damage is less than 2.0 inches (51 mm) from the edges of the outer barrel, access door openings, and other structure, or is less than 4.0 inches (102 mm) from the edge of other repaired damage.
- D. This type of damage is repaired by application of adhesive to fill the damaged area.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of surface damage. Make a mark of the damage area.
- (3) Apply pieces of teflon tape around the area to be repaired. Apply the tape a minimum of 0.5 inch (13 mm) beyond the edge of the damage all around.

- B. Prepare the damage area for repair.

WARNING: WHEN COMPOSITE SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

STRUCTURAL REPAIR MANUAL

(CAUTION PRECEDES)

2. WHEN YOU ABRABE THE UNDA MAGED COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Remove the sharp edges and loose fibers. Sand the surface in the area between the pieces of teflon tape to remove the surface finish.

Feather the edges of the finish. Use 180 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers where the surface is not damaged.

NOTE: If, after damage removal, the damage is more than the applicable limits, this repair is not applicable.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C). Let the repair area cool down to room temperature.

C. Apply the adhesive. Refer to Table 201/REPAIR 9 for the list of repair materials.

WARNING: EA934NA ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Use the manufacturer's instructions to mix the EA934NA Part A and Part B adhesive.
- (2) Use a spatula or knife to fill the repair cutout with the adhesive mixture.
- (3) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (4) Put a piece of nonporous parting film above the repair area. Use pieces of teflon tape, or apply pressure, to keep it in place.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(5) Use a heat blanket or a heat lamp. Apply the heat until the repair area reaches a temperature of 190°-210°F (88°-99°C). Cure the adhesive for 60 minutes at this temperature.

(6) Let the repair area cool down to room temperature. Remove the parting film, and teflon tape.

D. Prepare the surface.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

(1) Use 150 to 400 grit aluminum oxide abrasive paper. Remove the sharp edges. Make the surface of the cured adhesive flush with the adjacent surface.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

E. Examine the repair.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Repeat the applicable steps, if necessary.

F. Apply the surface finish.

(1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16. Use the instructions in Paragraph 3.B./REPAIR 16.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA934NA	Dexter Hysol Aerospace, Inc. The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Blanket, Heat (Alternative to the heat lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Glasses	Safety	Commercially Available

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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

STRUCTURAL REPAIR MANUAL

REPAIR 10 - OUTER BARREL COMPOSITE SKIN SURFACE DAMAGE - CF6-80C2 ENGINE

1. General

- A. This repair is used to repair surface damage to the outer barrel composite skin on the inlet cowl assembly. The damage can be more than 0.010 inch (0.25 mm) deep, but can not go through the two sides of the skin, or penetrate the honeycomb core. Refer to Figure 201/REPAIR 10.
- (1) In the solid laminated skin areas (areas without honeycomb), the repair is applicable if up to three skin plies are damaged. No damage is allowed to the fourth ply.
 - (2) In the areas with honeycomb, the repair is applicable if the skin plies are damaged, and the honeycomb core is exposed. The honeycomb core must not be damaged.
- B. This repair is not applicable if the damage is more than 100 square inches (645 square centimeters) in area, or more than 15.0 inches (381 mm) wide or long.
- C. This repair is not applicable if the edge of damage is less than 2.0 inches (51 mm) from the edges of the outer barrel access door openings, and other structure, or is less than 4.0 inches (102 mm) from the edge of other repaired damage.
- D. This type of damage is repaired by installation of a wet lay up repair with graphite fabric plies.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged plies will be removed.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make a mark of the repair area. Apply pieces of teflon tape around the area to be repaired.

NOTE: The illustration in this repair shows damage that is only one ply deep, but the repair is applicable if more plies are damaged and removed. For each removed ply, you must use two filler plies and two repair plies.

- B. Prepare the damage area for repair.

WARNING: WHEN COMPOSITE SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Remove the damaged plies as marked. Remove the sharp edges and loose fibers. Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers where the surface is not damaged.

NOTE: If, after damage removal, the damage is more than the applicable limits, this repair is not applicable.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. If the honeycomb core is exposed, make sure you remove the sanding particles from the cells. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable cleaning and bagging steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (4) The repair surfaces must be water break free. Do a water break free test of the surfaces in the repair area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the plies at this time.

- (6) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

STRUCTURAL REPAIR MANUAL

- C. Make the filler and repair plies. Refer to Table 201/REPAIR 10 for the list of repair materials.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film (and the graphite fabric in the next step) must be large enough so that you can make all filler and repair plies. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
(4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
(5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
(6) Make a mark of the filler and repair plies on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 inch (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

3. The filler plies must fit inside the cutout. Make two filler plies for each skin ply that was removed.

4. Cut the first repair ply 0.50 inch (13 mm) larger than the cutout all around. Cut the second ply 0.50 inch (13 mm) larger than the first ply all around. Repeat until all repair plies are made. Make two repair plies for each skin ply that was removed.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- D. Make the sanding ply.

STRUCTURAL REPAIR MANUAL

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 3.C./REPAIR 10 to make and cut the sanding ply, but use the notes below.

NOTE: 1. Make the sanding ply from the Type 181 fiberglass fabric.
2. The sanding ply must be 0.50 inch (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the teflon tape.

E. Install the plies.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.

NOTE: If the honeycomb core is exposed, apply the mixture to the edges of the exposed cells.

- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the existing skin and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining filler, repair, and sanding plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

F. Bag and Cure the Repair.

STRUCTURAL REPAIR MANUAL

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around.
- (3) Put three plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 inches (51 mm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in five minutes.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190o to 210oF (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 inches (559 mm) of mercury during the cure.

- (12) Let the repair area cool down to room temperature. Remove the bagging material.

G. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

H. Prepare the surface.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Use 150 to 400 grit silicon carbide abrasive paper. Remove the sharp edges. Do not cut into the graphite fibers.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

I. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16. Use the instructions in Paragraph 3.B./REPAIR 16.

Table 201: Repair Materials and Equipment

*1)		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc.
Film, Parting	Porous	Richmond Technology, Inc.
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available

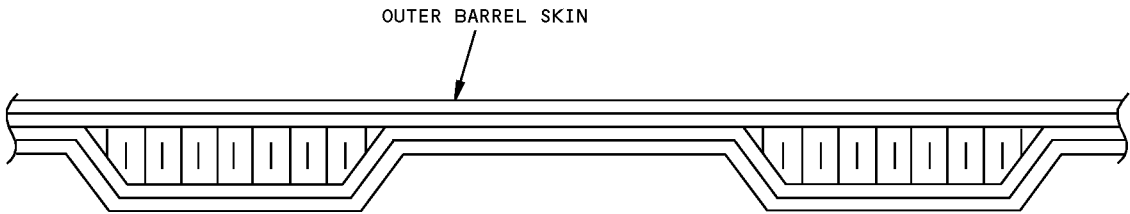
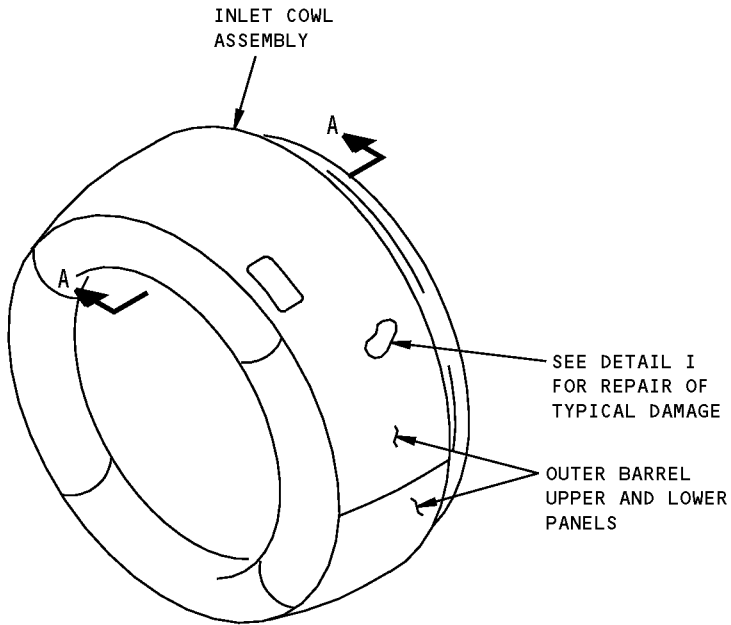
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemical 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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TYPICAL SECTION THROUGH THE BONDED PANEL, ADJACENT STRUCTURE NOT SHOWN
SECTION A-A

GRS196-02

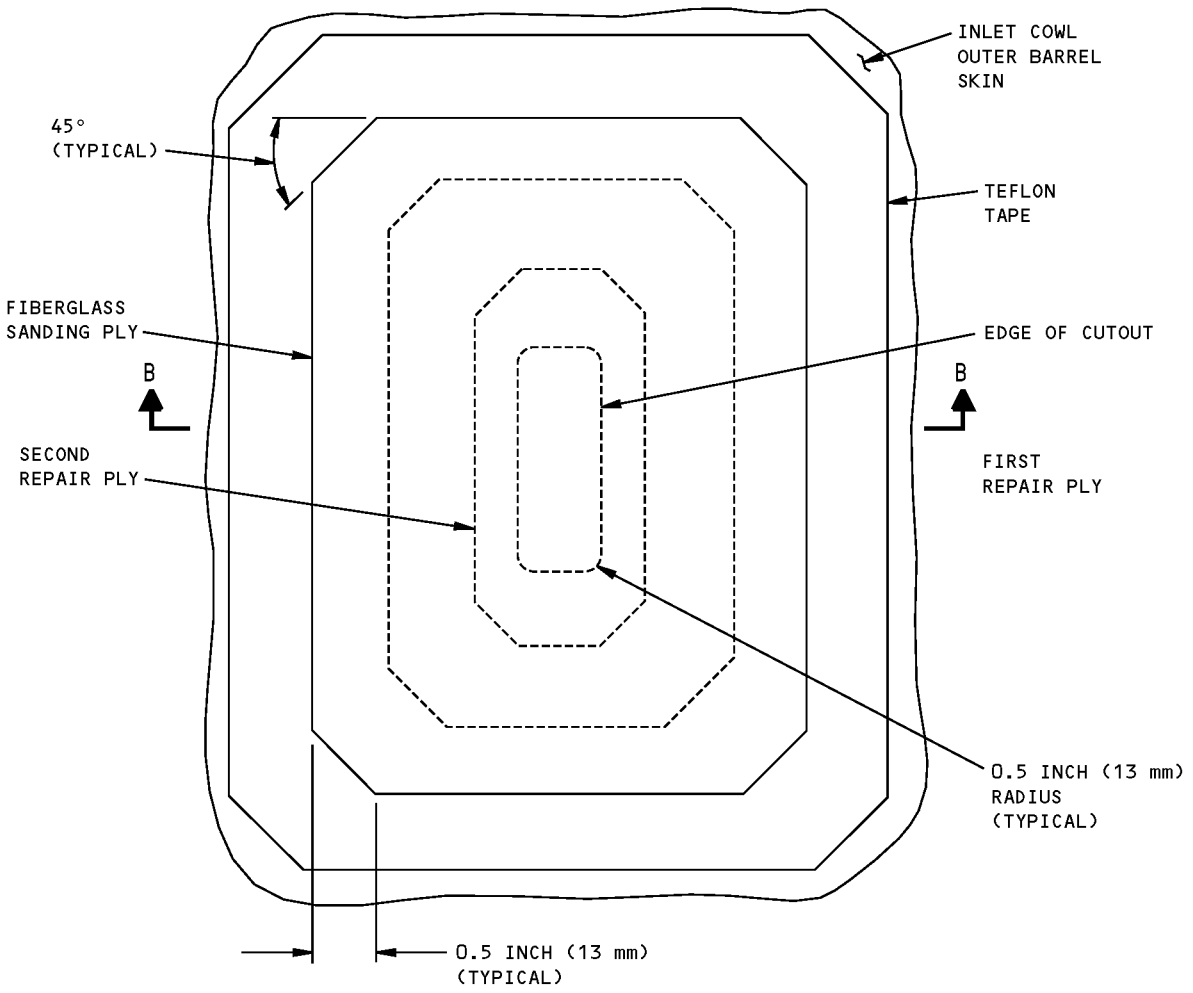
**Outer Barrel Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

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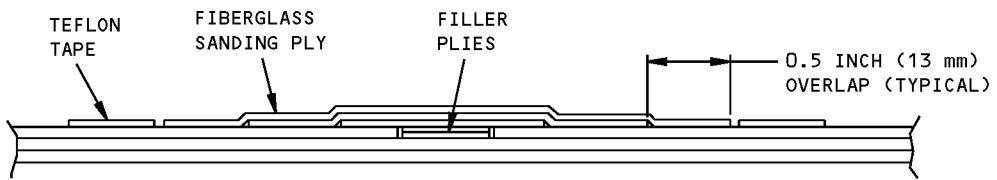
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DETAIL I

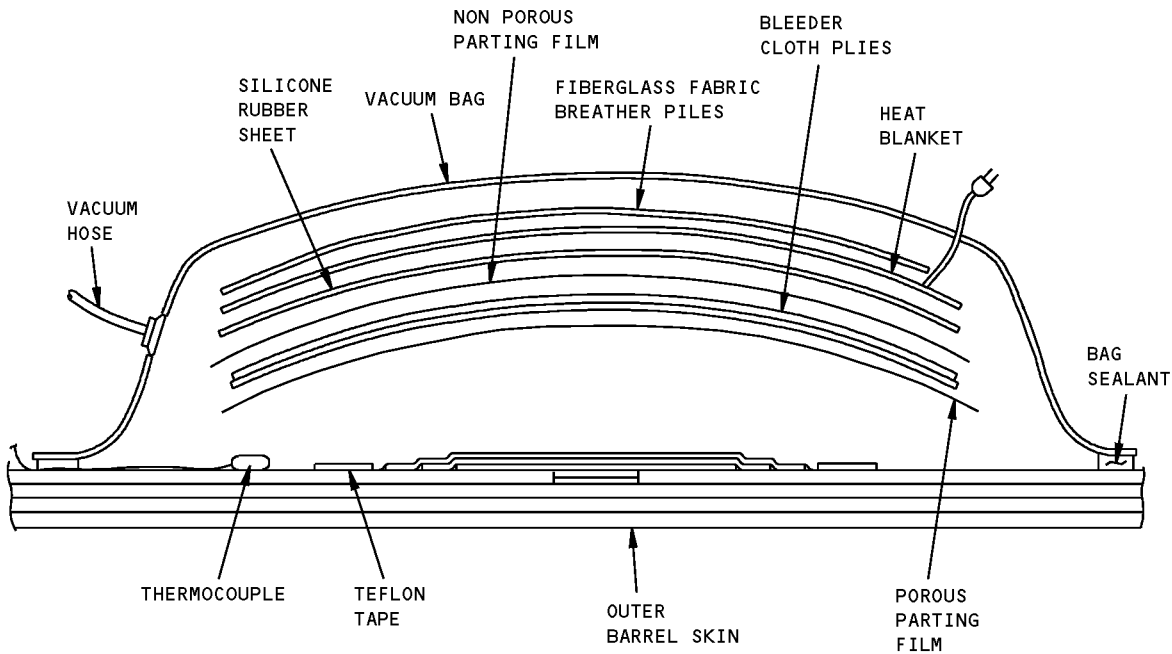


TYPICAL SECTION THROUGH THE COMPLETED REPAIR
SECTION B-B

GRS196-01A

**Outer Barrel Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

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TYPICAL BAGGING

GRS196-03

Outer Barrel Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

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REPAIR 11 - OUTER BARREL SKIN FULL PENETRATION REPAIR (WITH ACCESS TO THE BACKSIDE) - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number 1922001 and on. Refer to SRM 54-12-01 for Inlet Cowls with a serial number prior to 1922001.
- B. The repair is applicable to full penetration damage through the laminated skin of the outer barrel on the inlet cowl assembly. The damage must not be more than 12.0 in. (30.5 cm) in length or width. Refer to Figure 201/REPAIR 11.

NOTE: This repair procedure is applicable if the outer barrel has been removed from the inlet cowl assembly so that there is access to the backside.

- C. This repair is not applicable in the honeycomb areas of the outer barrel.
- D. This repair is not applicable if the edge of the damage is less than 4.5 in. (11.4 cm) from edge of the panel or less than 2.0 in. (5.1 cm) from edge of a frame, or less than 10.0 in. (25.4 cm) from edge of other damage.

2. General

- A. This type of damage is repaired by removal of the damaged skin, and the installation of filler and repair plies made from graphite fabric.

3. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

4. Repair Instructions

- A. Examine the damage area.

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- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged skin will be removed.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make a mark of the repair area on the inner and outer surfaces. Apply pieces of teflon tape on the inner and outer surfaces as marked.

- B. Prepare the damage area for repair.

WARNING: WHEN COMPOSITE SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Cut the skin as marked. Taper the edges 45 degrees as shown. Remove the sharp edges and loose fibers.
- (2) On the inner and outer skins between the pieces of teflon tape, sand the surfaces to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.
- (3) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth.

C. Make the caul plate.

WARNING: WHEN METALS ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a caul plate to be installed on the inner surface in the repair area. Make the caul plate from available aluminum alloy sheet or plate stock. The caul plate must be 1.0 inch (25 mm) larger than the cutout all around, and must be thick enough for bagging application.
- (2) Make the caul plate to align with the contour of the repair area. The caul plate must fit in place with light finger pressure.
- (3) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper.

D. Clean the repair area.

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- (1) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

If not, disbonds can occur between the skin and the repair plies later.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable sanding and cleaning steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces. It is not necessary to do this for the caul plate.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler and repair plies for the outer surface. Refer to Table 201/REPAIR 11 for the list of repair materials.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film (and the graphite fabric in the next step) must be large enough so that you can make all filler plies and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

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- (3) Use the manufacturer's instructions to mix the EA9390 resin.

- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.

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- (5) Put another sheet of non-porous parting film above the graphite ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of the filler and repair plies on the non-porous parting film.

NOTE: 1. The illustrations in this repair show the skin with four plies. If there are more plies in the damage area, you must make more filler and repair plies as necessary.

2. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 inch (13 mm).

3. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

4. The filler plies must fit inside the cutout. Make two filler plies for each ply that was removed.

5. Make the repair plies for the outer surface. Make one repair ply for each ply that was removed. Cut the first repair ply 0.50 inch (13 mm) larger than the cutout all around. Cut the second ply 0.50 inch (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the sanding ply for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 11 to make and cut the sanding ply for the outer surface, but use the notes below.

NOTE: 1. Make the sanding ply from the Type 181 fiberglass fabric.

2. The sanding ply must be 0.50 inch (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the teflon tape.

- G. Install the filler, repair, and sanding plies on the outer surface.

- (1) Apply a layer of release cloth to the mating surface of the caul plate.
- (2) Put the caul plate into position on the inner surface against the edges of the cutout. Apply teflon tape or mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

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STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.
- (5) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the caul plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (6) Repeat the above steps for the remaining filler, repair, and sanding plies for the outer surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

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- (7) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

H. Bag and cure the repair on the outer surface.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.

STRUCTURAL REPAIR MANUAL

- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 inches (51 mm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in 5 minutes.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Increase the temperature at a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 inches (559 mm) of mercury during the cure.
 - (12) Let the repair area cool down to room temperature. Remove the bagging material and the caul plate.
- I. Examine the repair on the outer surface.
 - (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.
 - J. Make the repair and sanding plies for the inner surface.
 - (1) Repeat the procedure in Paragraph 4.E./REPAIR 11 and Paragraph 4.F./REPAIR 11 to make and cut the repair and sanding plies for the inner surface.
 - K. Install the repair and sanding plies on the inner surface.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area between the pieces of teflon tape. Use a clean, lint free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, disbond can occur between the skin and the repair plies later.

STRUCTURAL REPAIR MANUAL

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Apply a thin layer of the resin mixture to the area between the pieces of teflon tape.
- (4) Remove the bottom sheet of the non-porous parting film from the first repair ply. Put the repair ply into position above the cured filler plies. Press the repair ply against the filler plies and the skin to remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (5) Repeat the above steps for the remaining plies for the inner surface.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

L. Bag and cure the repair on inner surface.

- (1) Install bagging material on the inner surface repair plies and cure. Use the procedure in Paragraph 4.H./REPAIR 11 above.

M. Examine the repair.

- (1) Visually examine the repair area on the two surfaces to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

N. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16, Surface Finish Restoration Repair. Use the instructions in Paragraph 3.B./REPAIR 16.

Table 201: Repair Materials and Equipment

*1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet or plate	Any heat treated designation 0.032-0.20 inch (0.81-5.08 mm) thick	Commercially Available
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available

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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

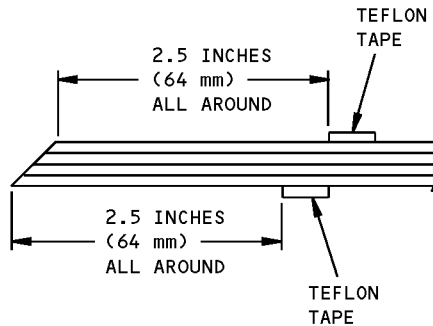
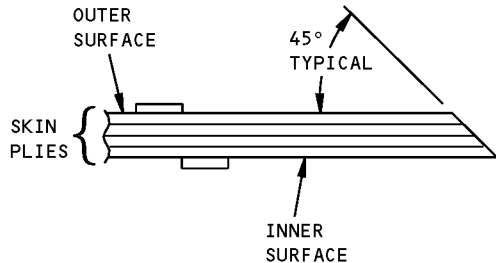
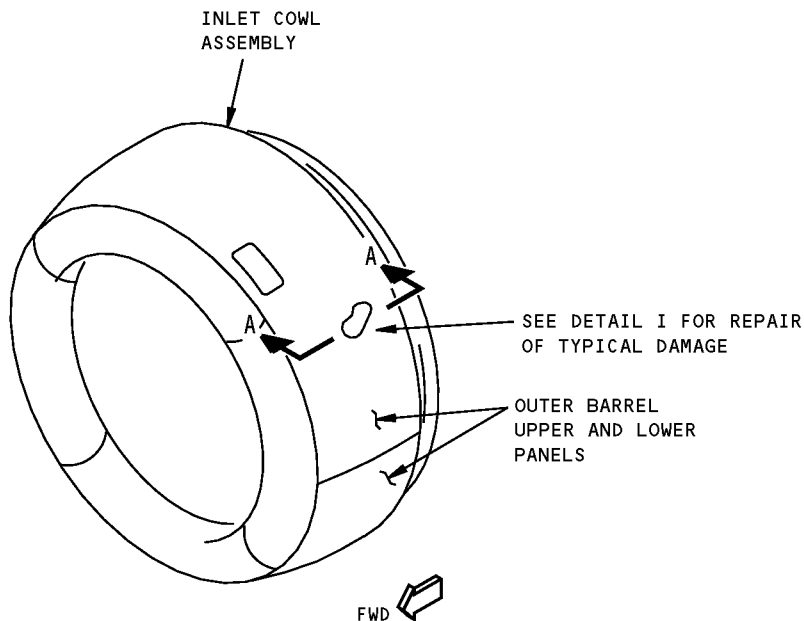
* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics (Formerly Hercules Aerospace) 16320 Bloomfield Avenue Cerritos, CA 90703-2114
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc
Film, Parting	Porous	Richmond Technology, Inc
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available

**767-300
STRUCTURAL REPAIR MANUAL****Table 201: Repair Materials and Equipment (Continued)**

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL

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STRUCTURAL REPAIR MANUAL**

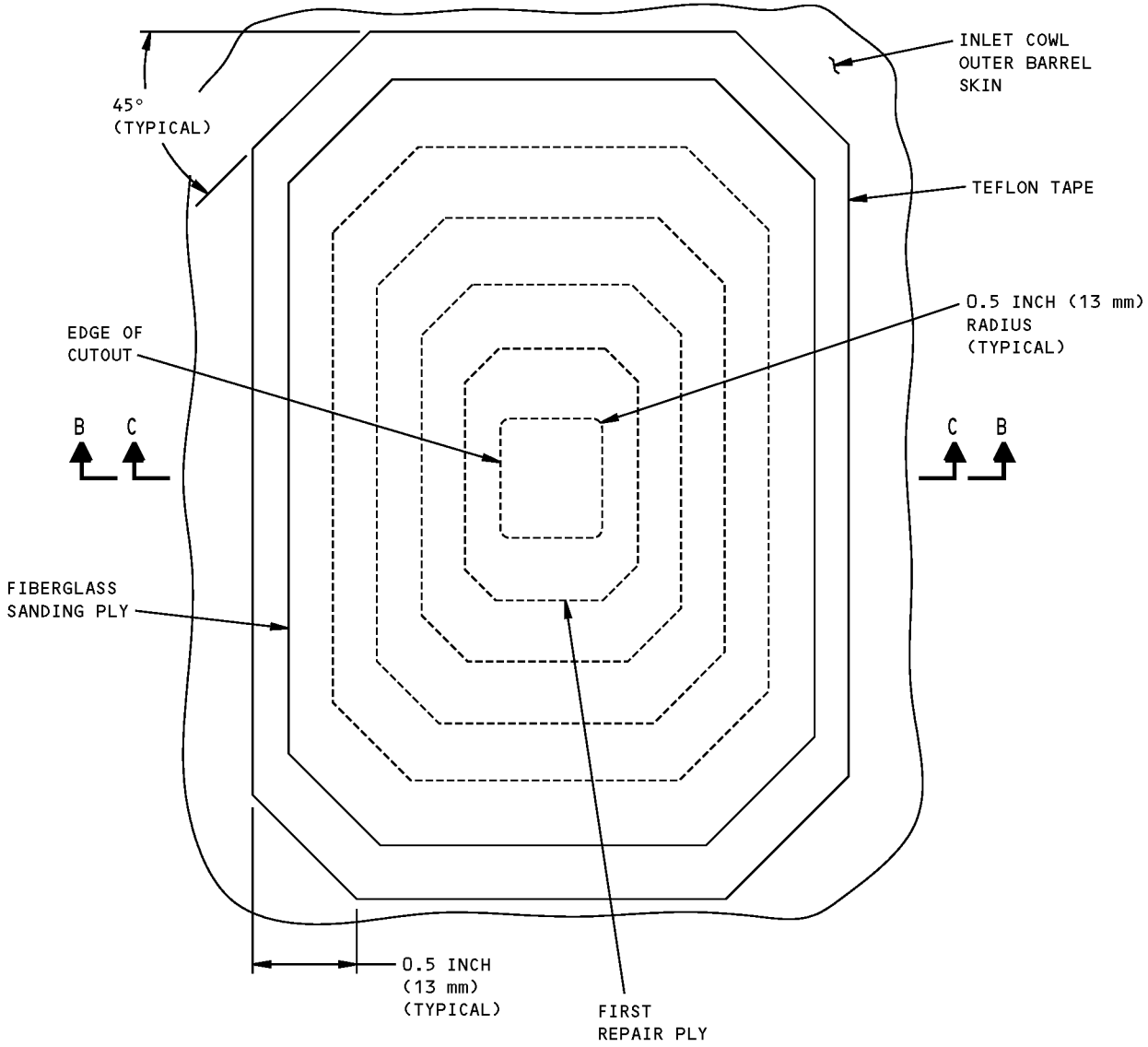


SECTION THROUGH THE CUTOUT AFTER DAMAGE REMOVAL
SECTION A-A

GRS201-03

**Outer Barrel Skin Full Penetration Repair (With Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL

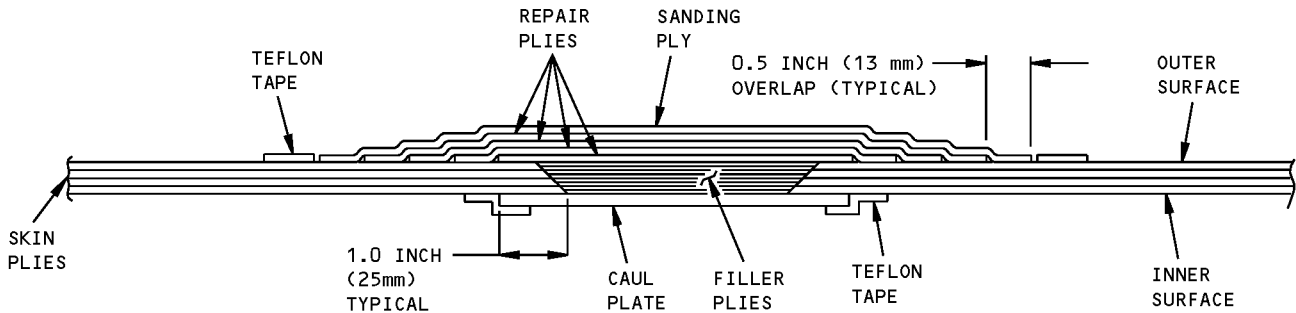


DETAIL I

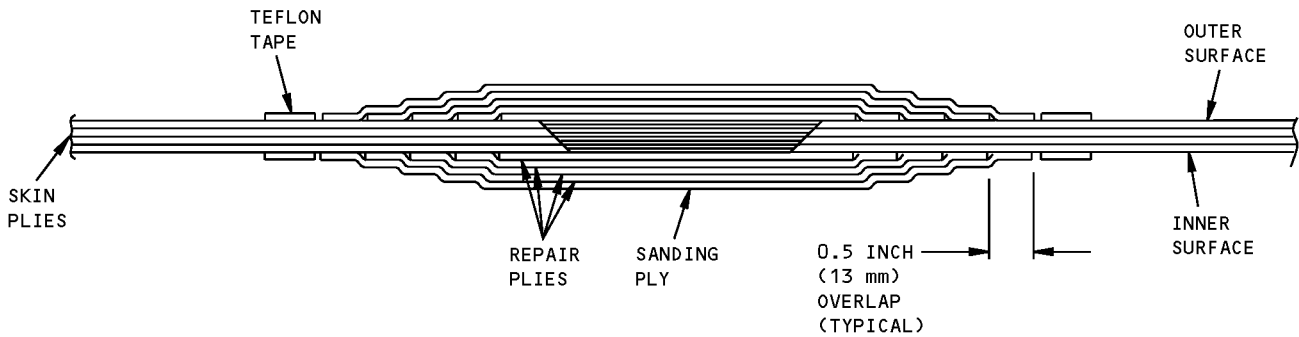
GRS201-01A

Outer Barrel Skin Full Penetration Repair (With Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

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STRUCTURAL REPAIR MANUAL**



SECTION THROUGH THE REPAIR FOR THE OUTER SURFACE
SECTION B-B

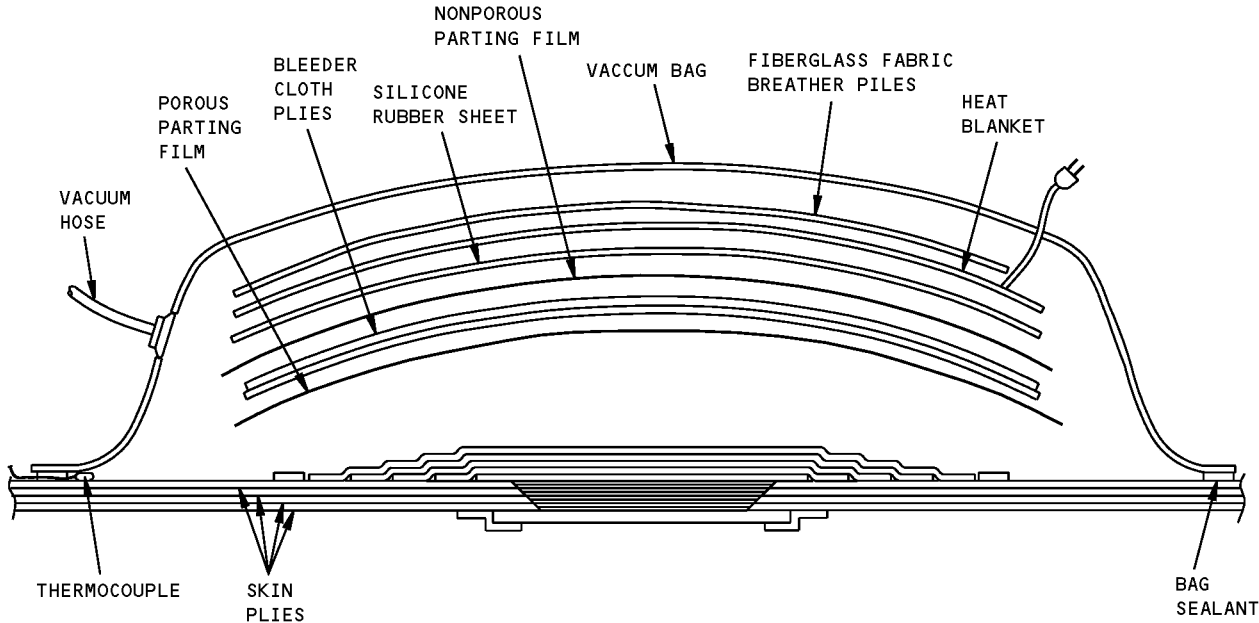


SECTION THROUGH THE COMPLETED REPAIR
SECTION C-C

GRS201-05

**Outer Barrel Skin Full Penetration Repair (With Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR IS SHOWN, INNER SURFACE REPAIR IS SIMILAR
TYPICAL BAGGING

GRS201-04

**Outer Barrel Skin Full Penetration Repair (With Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

**REPAIR 12 - OUTER BARREL SKIN FULL PENETRATION REPAIR (WITHOUT ACCESS TO THE BACKSIDE) -
CF6-80C2 ENGINE**

1. Applicability

- A. This repair is applicable only to Inlet Cowls with a serial number 1922001 and on. Refer to SRM 54-12-01 for Inlet Cowls with a serial number prior to 1922001.
- B. This repair is applicable to full penetration damage through the laminated skin of the outer barrel on the inlet cowl assembly. The damage must be less than 6.0 in. (15.2 cm) in length or width. Refer to Figure 201/REPAIR 12.

NOTE: This repair procedure is applicable if the outer barrel has not been removed from the inlet cowl assembly (there is no access to the backside).

- C. This repair is not applicable in the honeycomb areas of the outer barrel.
- D. This repair is not applicable if the edge of damage is less than 4.5 in. (11.4 cm) from the edge of the panel or edge of the frame, or is less than 10.0 in. (25.4 cm) from the edge of other damage.

2. General

- A. This type of damage is repaired by removal of the damaged skin, and the installation of filler and repair plies made from graphite fabric.

3. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

4. Repair Instructions

- A. Examine the damage area.

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- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged skin will be cut out. The cutout must be rectangular with a minimum radius of 0.5 inch (13 mm) at the corners.

NOTE: You must be able to insert the back-up plate through the cutout. The back-up plate will be larger than the cutout by 1.0 inch (25 mm) all around.

- (3) Make a mark of the repair area on the outer surface. Apply pieces of teflon tape on the outer surface as marked.

- B. Remove the damage.

WARNING: WHEN COMPOSITE SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Cut the skin as marked. Taper the edges 45 degrees. Remove the sharp edges and loose fibers. Use 150 to 400 grit silicon carbide abrasive paper.
- (2) Make the outer surface rough between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive paper. Do not cut into the composite fibers. Do the same on the inner surface of the skin in an area 1.0 inch (25 mm) wide all around the cutout.

C. Clean the repair area.

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- (1) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

If not, a disbond can occur later.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable cleaning and bagging steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break free. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.
- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

STRUCTURAL REPAIR MANUAL

- D. Make the back-up plate plies. Refer to Table 201/REPAIR 12 for the list of repair materials.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the fiberglass fabric in the next step, must be large enough so that you can make all back-up plate plies. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of Type 181 fiberglass fabric on the sheet of non-porous parting film.

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- (3) Use the manufacturer's instructions to mix the EA9390 resin.

- (4) Apply the resin to the ply of fiberglass fabric with a spatula. Make sure you apply enough resin.

- (5) Put another sheet of non-porous parting film above the fiberglass ply. Use a roller to force the resin fully into all areas of the fiberglass ply.

- (6) Make a mark of the back-up plate plies on the non-porous parting film.

NOTE: The back-up plate must be 1.0 inch (25 mm) larger than the cutout all around. The number of the back-up plate plies must be equal to the number of the removed plies.

- (7) With the fiberglass ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- E. Make the back-up plate.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) You must cure the back-up plate on a surface that has the same contour as the repair area. To do this, make a support plate that is large enough and thick enough for bagging application. Make the support plate from available aluminum alloy sheet or plate stock.

Remove the sharp edges, and clean with a lint-free cloth.

- (2) Apply a layer of non-porous release cloth to the mating surface of the support plate. The release cloth must be 1.0 inch (25 mm) larger than the back-up plate plies all around.

STRUCTURAL REPAIR MANUAL

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Remove the bottom sheet of the non-porous parting film from the first ply for the back-up plate. Center the ply on the release cloth. Press the ply against the support plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps to install the remaining back-up plate plies.
- (5) Remove the excess resin from the stack of the back-up plate plies before it cures. Use a clean, lint-free cloth.

F. Bag and cure the back-up plate.

- (1) Put a layer of porous parting film above the back-up plate plies, 3.0 inches (76 mm) larger all around.
- (2) Put a minimum of two thermocouples around the perimeter of the back-up plate. Hold in place with teflon tape.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 2.0 inches (51 mm) larger than the bleeder cloth all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 inches (51 mm) larger than the non-porous parting film all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in five minutes.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Increase the temperature at a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the back-up plate at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 inches (559 mm) of mercury during the cure.
- (12) Let the repair area cool down to room temperature. Remove the bagging material and the back-up plate from the support plate.

G. Install the back-up plate.

WARNING: WHEN COMPOSITES ARE DRILLED OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Drill four each 0.07 inch (1.9 mm) diameter holes through the back-up plate near the centerline. Locate the holes approximately as shown in the repair figures.
- (2) Install pieces of the AMS 5687 lockwire through the holes as shown. Twist the wire ends tightly together.

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- (3) Use the manufacturer's instructions to mix the EA9390 resin. Add 5% by weight of phenolic microballoons to the resin mixture.
- (4) Apply a thin layer of the resin/microballoon mixture to the mating surfaces of the back-up plate and the backside of the skin around the cutout.
- (5) Put the back-up plate through the cutout. Put it into position against the backside of the skin around the cutout. Use a rod as shown. Twist the pieces of lockwire around the rod until the back-up plate is firmly in place.

NOTE: Do not apply too much tension to the lockwire. This can cause the plate to warp.

- (6) Apply more resin/microballoon mixture to fill the lockwire holes, if necessary.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Cure the resin for 1 hour at 180° to 200°F (82° to 93°C). Use an explosion proof heat lamp.

STRUCTURAL REPAIR MANUAL

- (8) Let the repair area cool down to room temperature. Remove the rod. Cut the lockwire at the back-up plate. Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive papers.

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- (9) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

If not, a disbond can occur later.

H. Make the repair and filler plies.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat a procedure similar to that in Paragraph 4.D./REPAIR 12 to make and cut the repair and filler plies, but use the notes below.

NOTE: 1. Make the repair and filler plies from the Type A193-P plain weave graphite fabric.

2. The illustrations in this repair show the skin with four plies. If there are more plies in the damage area, you must make more filler and repair plies as necessary.

3. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

4. The filler plies must fit inside the cutout. Make two filler plies for each ply that was removed.

5. Make two repair plies for each ply that was removed. Cut the first repair ply 0.5 inch (13 mm) larger than the cutout all around. Cut the next ply 0.5 inch (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

6. Trim the corners of the repair plies 45 degrees by 0.5 inch (13 mm).

I. Make the sanding ply.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat a procedure similar to that in Paragraph 4.H./REPAIR 12 to make and cut the sanding ply, but use the notes below.

NOTE: 1. Make the sanding ply from the Type 181 fiberglass fabric.

2. The sanding ply must be 0.5 inch (13 mm) larger than the last repair ply all around, but must not overlap the teflon tape.

3. Trim the corners of the sanding ply 45 degrees by 0.5 inch (13 mm).

STRUCTURAL REPAIR MANUAL

J. Install the filler plies, repair plies, and sanding ply.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.
- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the back-up plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps to install the remaining filler plies, repair plies, and the sanding ply.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

K. Bag and cure the repair.

- (1) Install bagging material above the repair plies, and cure. Use the bagging procedure in Paragraph 4.F./REPAIR 12.

L. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

M. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16 Surface Finish Restoration Repair.

STRUCTURAL REPAIR MANUAL**Table 201:** Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet or plate	Any heat treated designation 0.032-0.20 inch (0.81-5.08 mm) thick	Commercially Available
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics (Formerly Hercules Aerospace) 16320 Bloomfield Avenue Cerritos, CA 90703-2114
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc
Film, Parting	Porous	Richmond Technology, Inc
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lockwire	AMS 5687	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031

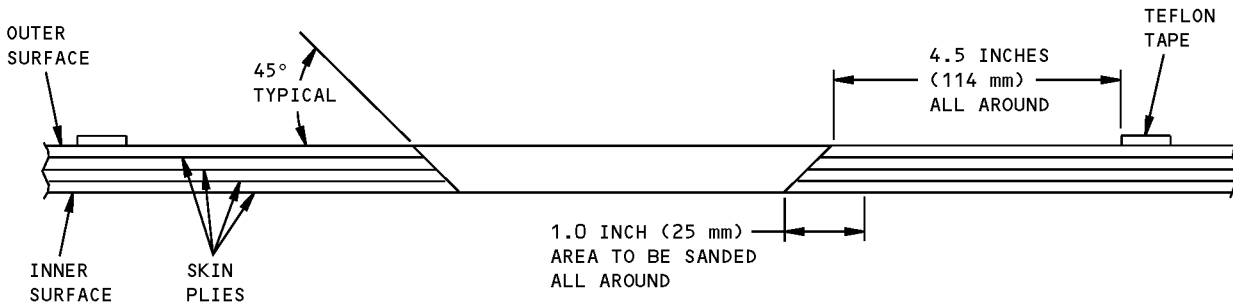
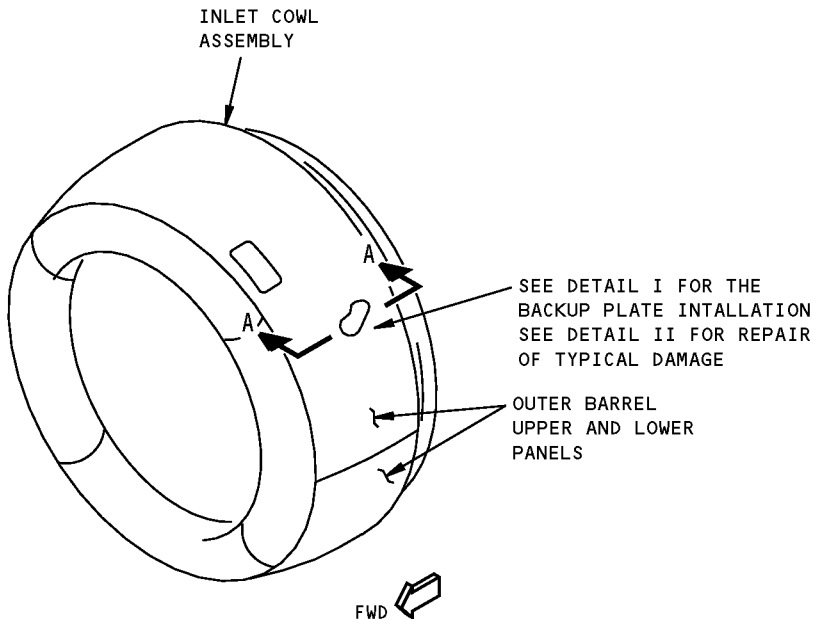
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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STRUCTURAL REPAIR MANUAL**

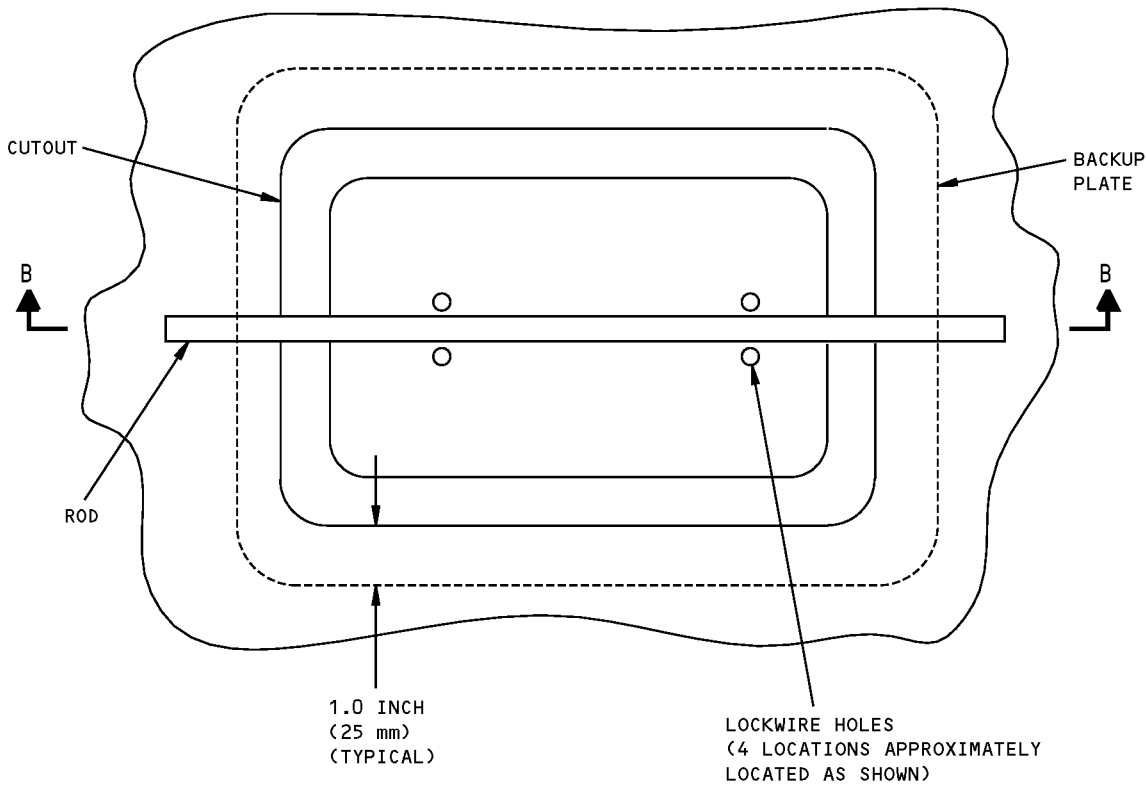


SECTION THROUGH THE CUTOUT AFTER DAMAGE REMOVAL
SECTION A-A

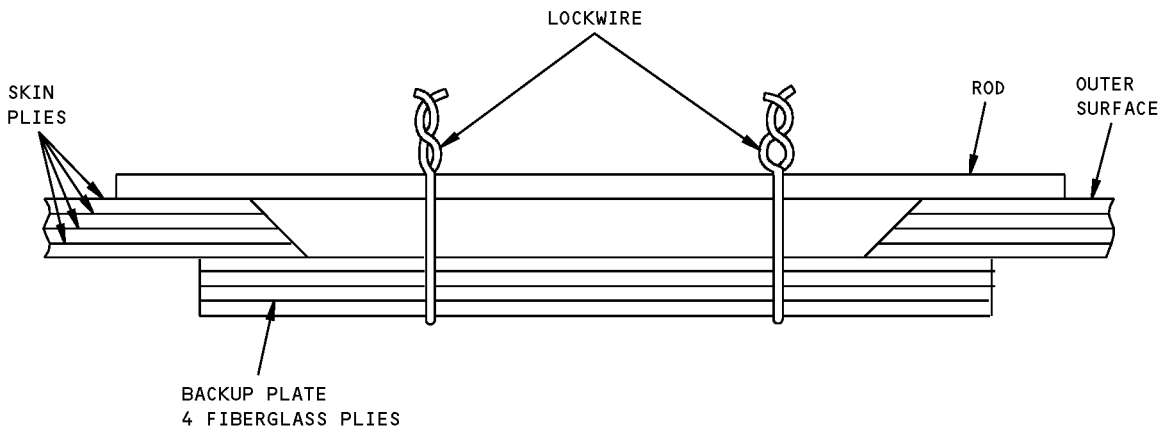
GRS183-01A

**Outer Barrel Skin Full Penetration Repair (Without Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL



DETAIL I



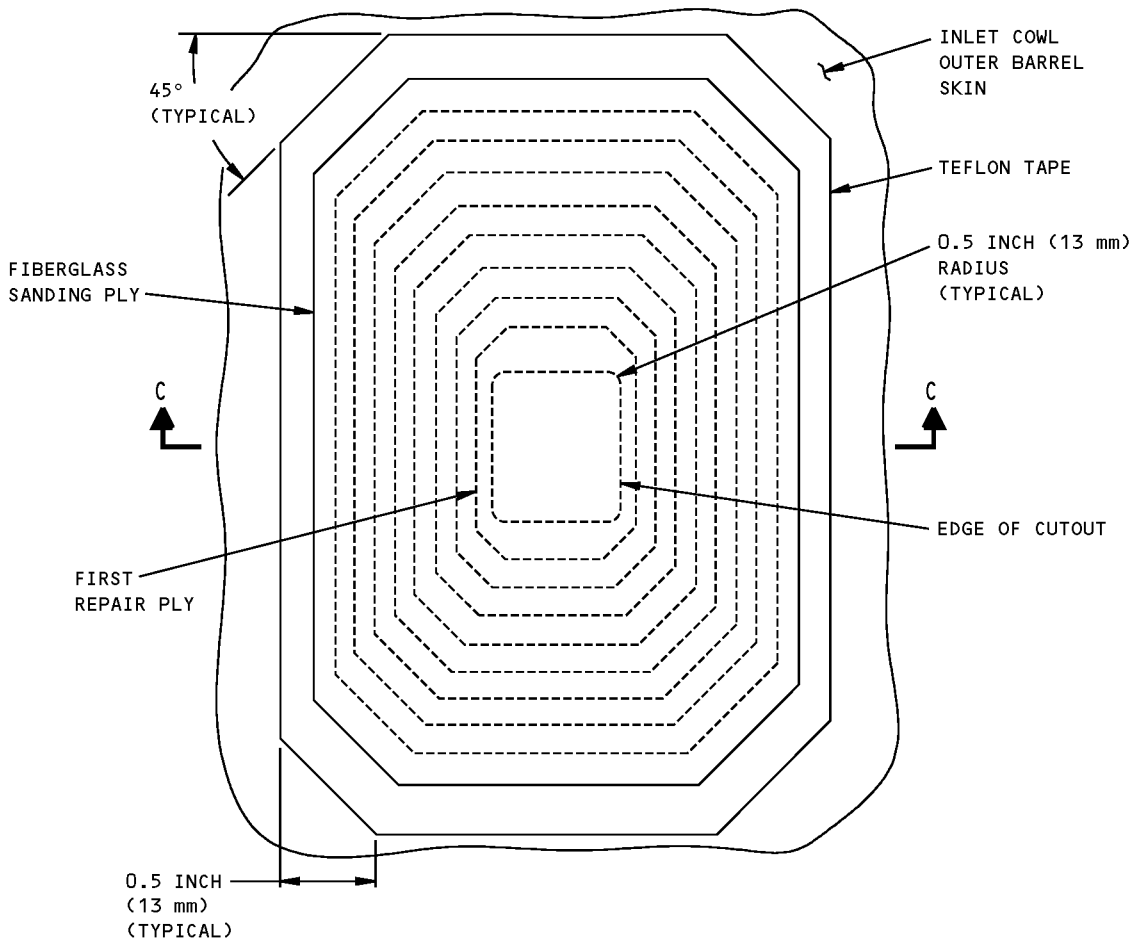
TYPICAL BACKUP PLATE INSTALLATION

SECTION B-B

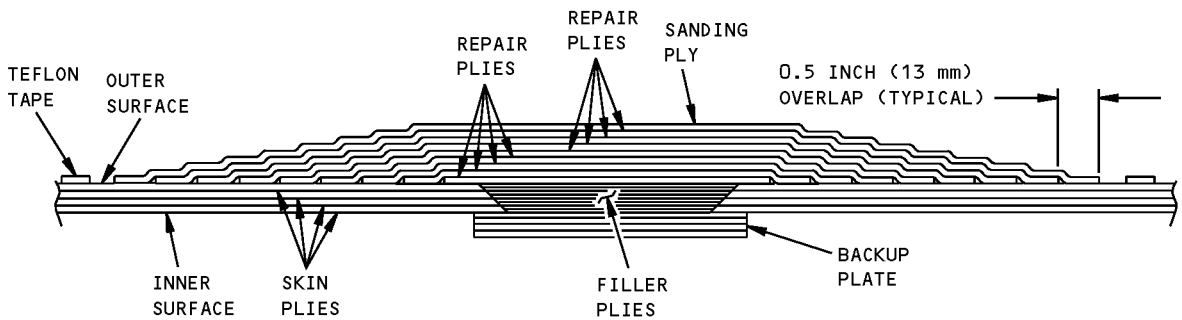
GRS183-02A

Outer Barrel Skin Full Penetration Repair (Without Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

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STRUCTURAL REPAIR MANUAL



DETAIL II



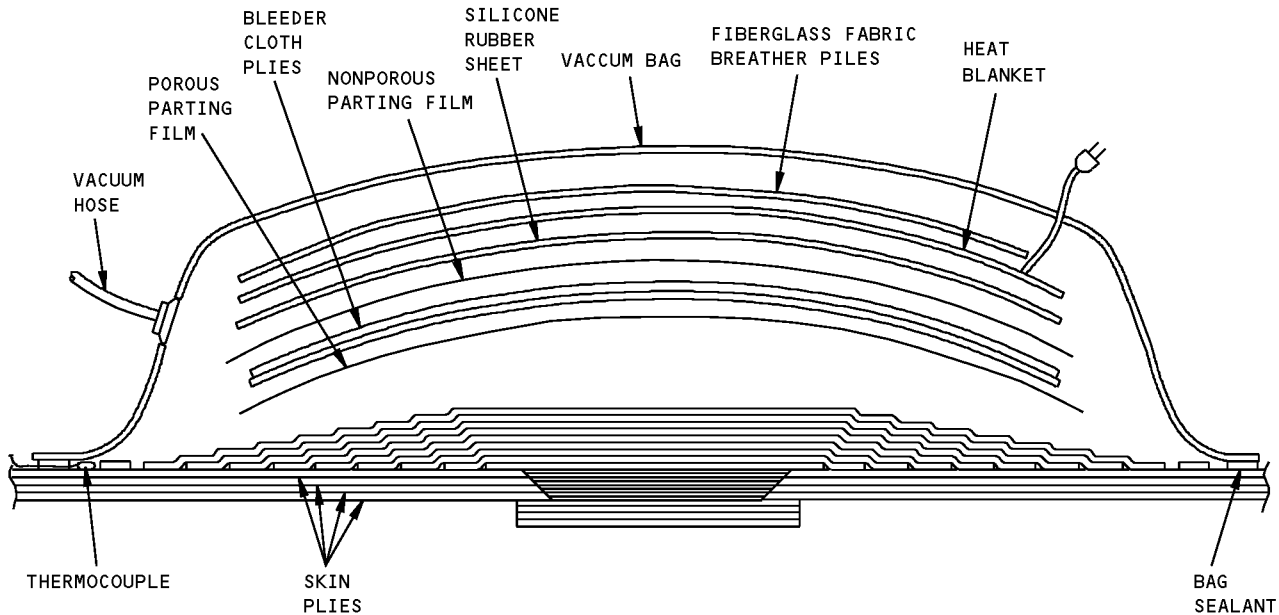
SECTION THROUGH THE COMPLETED REPAIR

SECTION C-C

GRS183-03A

Outer Barrel Skin Full Penetration Repair (Without Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)

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STRUCTURAL REPAIR MANUAL**



BAGGING FOR OUTER SURFACE REPAIR IS SHOWN, BACKUP PLATE BAGGING IS SIMILAR
TYPICAL BAGGING

GRS183-04

**Outer Barrel Skin Full Penetration Repair (Without Access to the Backside) - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 13 - OUTER BARREL FRAME PARTIAL PENETRATION - CF6-80C2 ENGINE**1. General**

- A. This repair is applicable to partial penetration damage through the laminated outer skin and frame of the outer barrel on the inlet cowl assembly. The damage can not be more than 15.0 inches (381 mm) in length or width. Refer to Figure 201/REPAIR 13.
- B. This repair is not applicable if the edge of the damage is less than 4.5 inches (114 mm) from the edge of the panel, or less than 10.0 inches (254 mm) from the edge of other damage.
- C. This type of damage is repaired by removal of the damaged skin and core, and the installation of filler and repair plies, and a replacement core.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
54-15-01	INLET COWL SKIN - CF6-80C2 ENGINE (WITH A SERIAL NUMBER 1922001 AND ON)

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damage will be removed. The cutout must have the minimum size that will remove the damage completely.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make a mark of the repair area on the outer surface. Apply pieces of teflon tape on the outer surface as marked.

- B. Prepare the damage area for repair.

WARNING: WHEN COMPOSITES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

STRUCTURAL REPAIR MANUAL

(CAUTION PRECEDES)

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Remove the outer skin and honeycomb core as marked. In the laminated skin area, remove the two outer skin plies. In the frame area, remove the honeycomb core down to the opposite skin plies.

Make sure you do not damage the remaining skin plies. Remove the sharp edges and loose fibers.

NOTE: If the two remaining skin plies in the cutout area are damaged, this repair is not applicable. In that case, the damage must be treated as full penetration damage.

- (2) Sand the outer surface between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

C. Make the replacement core. Refer to Table 201/REPAIR 13 for the list of repair materials.

WARNING: WHEN COMPOSITES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make the replacement core from Nomex-reinforced honeycomb core. The replacement core must have the same shape, size, and ribbon direction as the original core that was removed. Remove the burrs.

NOTE: As an alternative, you can make the replacement core thicker than the existing core. If you do this, the replacement core surface will be at the same level as the adjacent surface when installed, and it will not be necessary to make and install filler plies for the cutout.

- (2) Put the replacement core inside the cutout. Trim the edges as necessary. The space between the replacement core and the existing core must not be more than 0.05 inch (1.3 mm) on each side. Remove the replacement core.
- (3) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

D. Clean the repair area and the replacement core.

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- (1) Use dry air blast to remove the sanding particles. Clean the repair area and the replacement core with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, delamination can occur later.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the filler, repair, and sanding plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler plies and repair plies.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film (and the graphite fabric in the next step) must be large enough so that you can make all filler and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.

STRUCTURAL REPAIR MANUAL

- (6) Make a mark of all filler and repair plies on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 inch (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

3. The filler plies must fit inside the cutout. Make four filler plies.

4. Make 8 repair plies. Cut the first repair ply 0.5 inch (13 mm) larger than the cutout all around. Cut the next ply 0.5 inch (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the sanding ply.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 3.E./REPAIR 13 to make and cut the sanding ply, but use the notes below.

NOTE: 1. Make the sanding ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 inch (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the teflon tape.

- G. Install the replacement core.

NOTE: Before you do the next steps, make sure the repair area is horizontal. Turn the outer barrel as necessary to do this.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area inside the cutout. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbands can occur later.

STRUCTURAL REPAIR MANUAL

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Save a part of the resin mixture in a container. Add 5% by weight of phenolic microballoons to the remaining resin mixture and save it in another container.
- (4) Apply a layer of the resin mixture (without microballoons) to the area inside the cutout and around the edges.
- (5) Put the replacement core into position inside the cutout. Make sure the ribbon direction of the replacement core is correct.
- (6) Apply the resin/microballoon mixture to the space between the replacement core and the existing core. If necessary, use pieces of teflon tape to prevent leakage of the mixture. Apply more resin/microballoon mixture to fill the space all around.

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- (7) Remove the excess mixture from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur later.

H. Cure the resin/microballoon mixture.

NOTE: Do this step if you had to use pieces of teflon tape to prevent leakage of the mixture from the spaces. If not, go to the next step to install the plies.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (1) Raise the temperature of the repair area to 190° to 210°F (88° to 99°C). Use explosion proof heat lamps. Cure the mixture at this temperature for 220 minutes.

NOTE: Remove the teflon tape before the cure cycle is complete, but after the mixture becomes hard.

WARNING: WHEN RESINS ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (2) Let the repair area cool down to room temperature. If necessary, remove the excess cured mixture and sharp edges from the repair area. Use 150 to 400 grit silicon carbide abrasive paper. Do not damage the graphite fibers.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (3) Use dry air blast to remove the sanding particles. Clean the area between the pieces of teflon tape on the inner surface. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination can occur later.

- I. Install the filler plies, the repair plies, and the sanding ply.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the area of the inner surface between the pieces of teflon tape.
- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the replacement core and the land area. Remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining filler, repair, and sanding plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

STRUCTURAL REPAIR MANUAL

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

J. Bag and cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 inches (51 mm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in 5 minutes.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 inches (559 mm) of mercury during the cure.

- (12) Let the repair area cool down to room temperature. Remove the bagging material and the caul plate.

K. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

L. Apply the surface finish.

STRUCTURAL REPAIR MANUAL

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16. Use the instructions in Paragraph 3.B./REPAIR 16.

Table 201: Repair Materials and Equipment

*[*1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb	HRH-109-1/8-5 (1/8 inch Nomex- reinforced, 5.0 PCF density)	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics (Formerly Hercules Aerospace) 16320 Bloomfield Avenue Cerritos, CA 90703-2114
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc
Film, Parting	Porous	Richmond Technology, Inc
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Lamp, Heat, Explosion-proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lockwire	AMS 5687	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031

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Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL

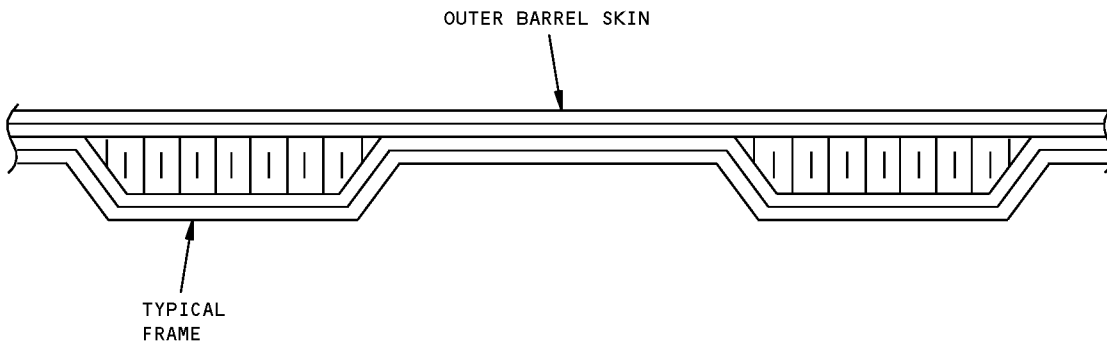
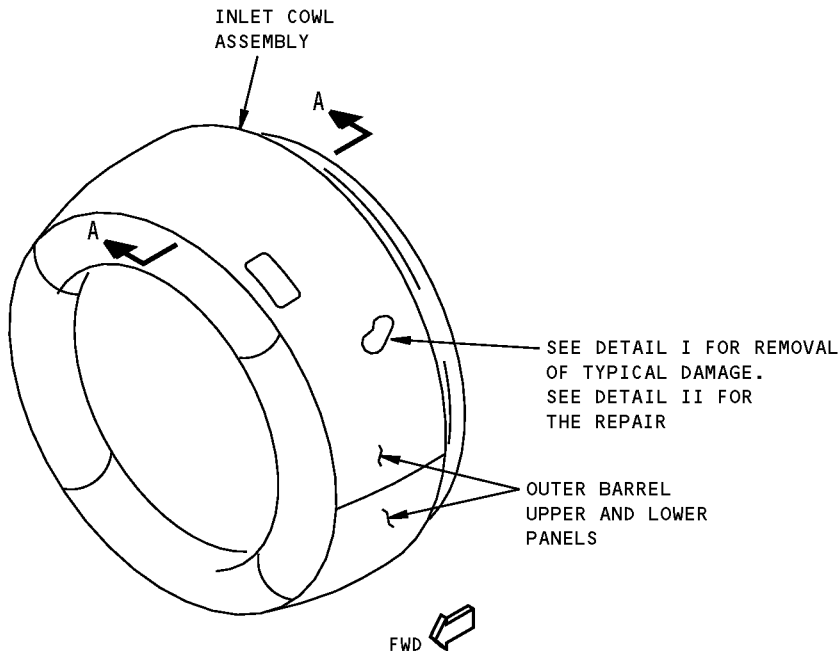
- (2) Apply the surface finish and external paint to the repair area. Refer to 54-15-01, Repair 16, Surface Finish Restoration Repair.

Use the instructions in Step B. of that repair.

Table 202:

DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb	HRH-109-1/8-5 (1/8 inch Nomex- reinforced, 5.0 PCF density)	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics (Formerly Hercules Aerospace) 16320 Bloomfield Avenue Cerritos, CA 90703-2114
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc
Film, Parting	Porous	Richmond Technology, Inc

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STRUCTURAL REPAIR MANUAL**

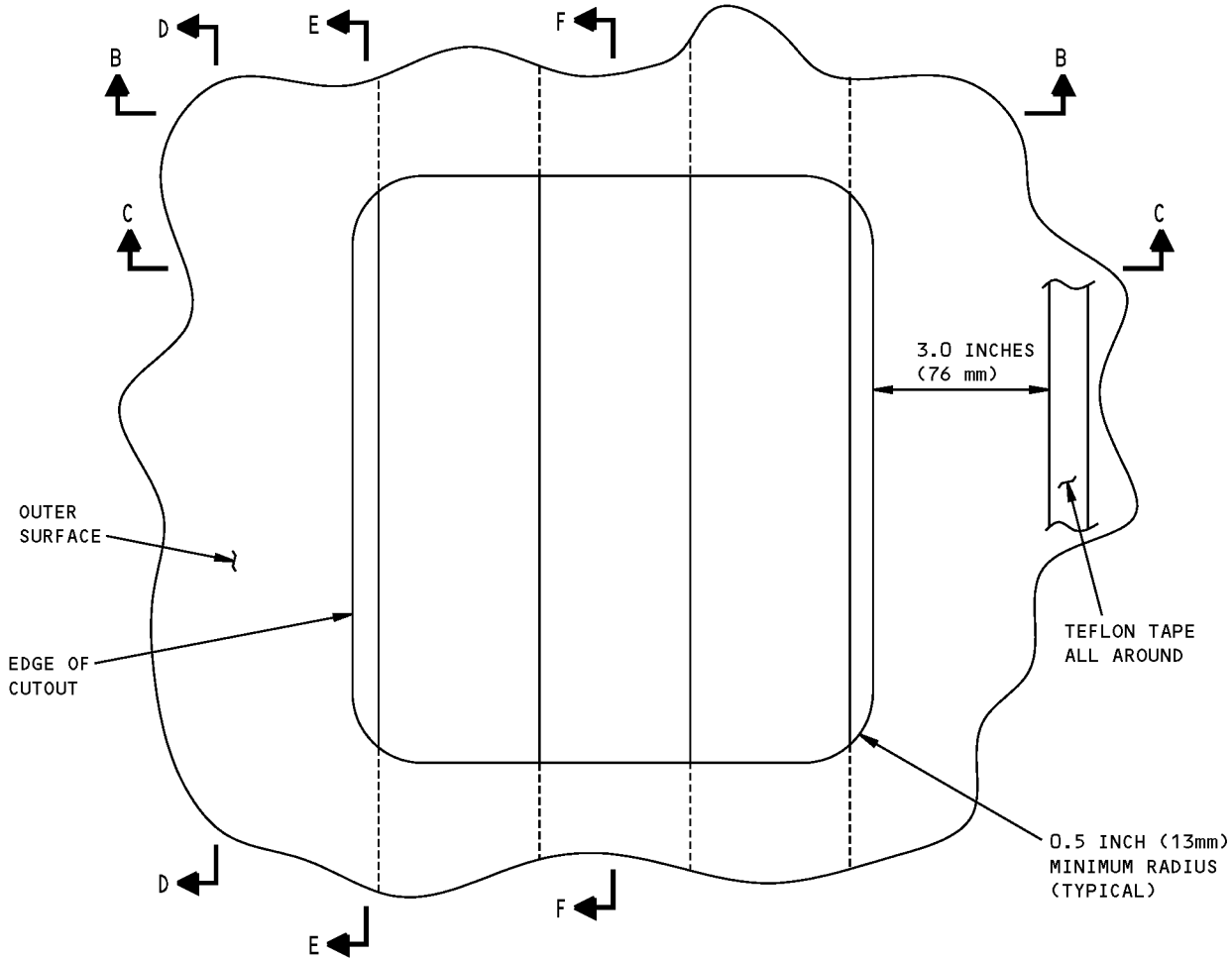


TYPICAL SECTION THROUGH THE BONDED PANEL
ADJACENT STRUCTURE NOT SHOWN
SECTION A-A

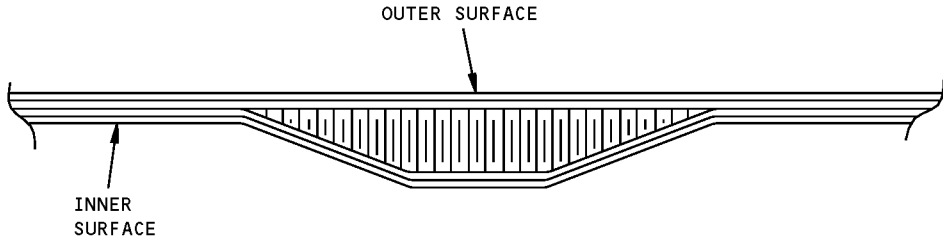
GRS203-05

**Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 6)**

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STRUCTURAL REPAIR MANUAL



VIEW AFTER DAMAGE REMOVAL
DETAIL I

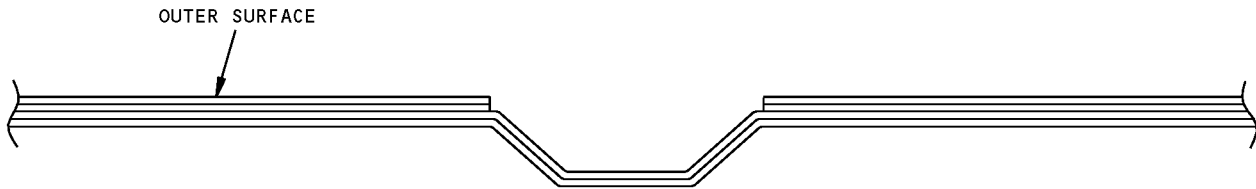


THROUGH UNDAMAGED FRAME
SECTION B-B

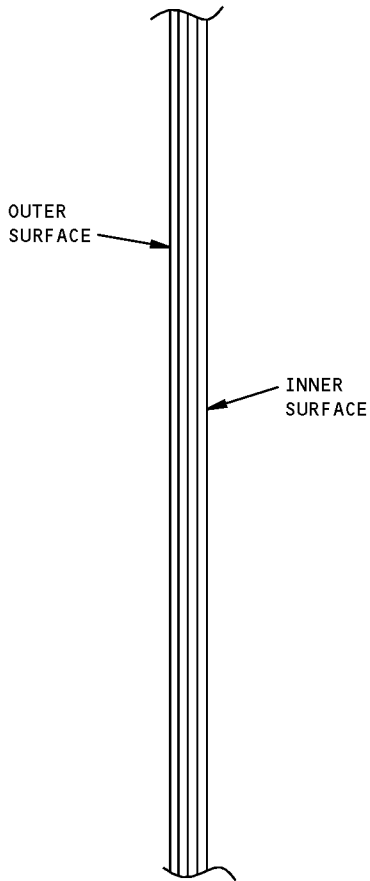
GRS203-01A

Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 6)

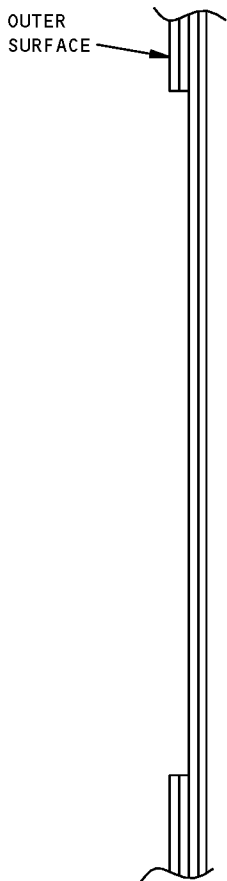
**767-300
STRUCTURAL REPAIR MANUAL**



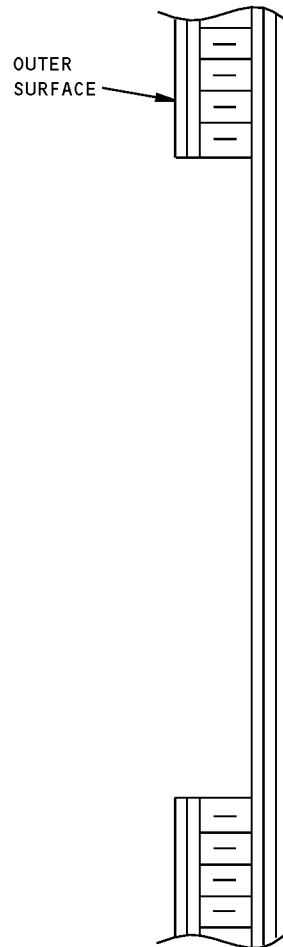
SECTION C-C



THROUGH THE UNDAMAGED SKIN
SECTION D-D



SECTION E-E



SECTION F-F

GRS203-02A

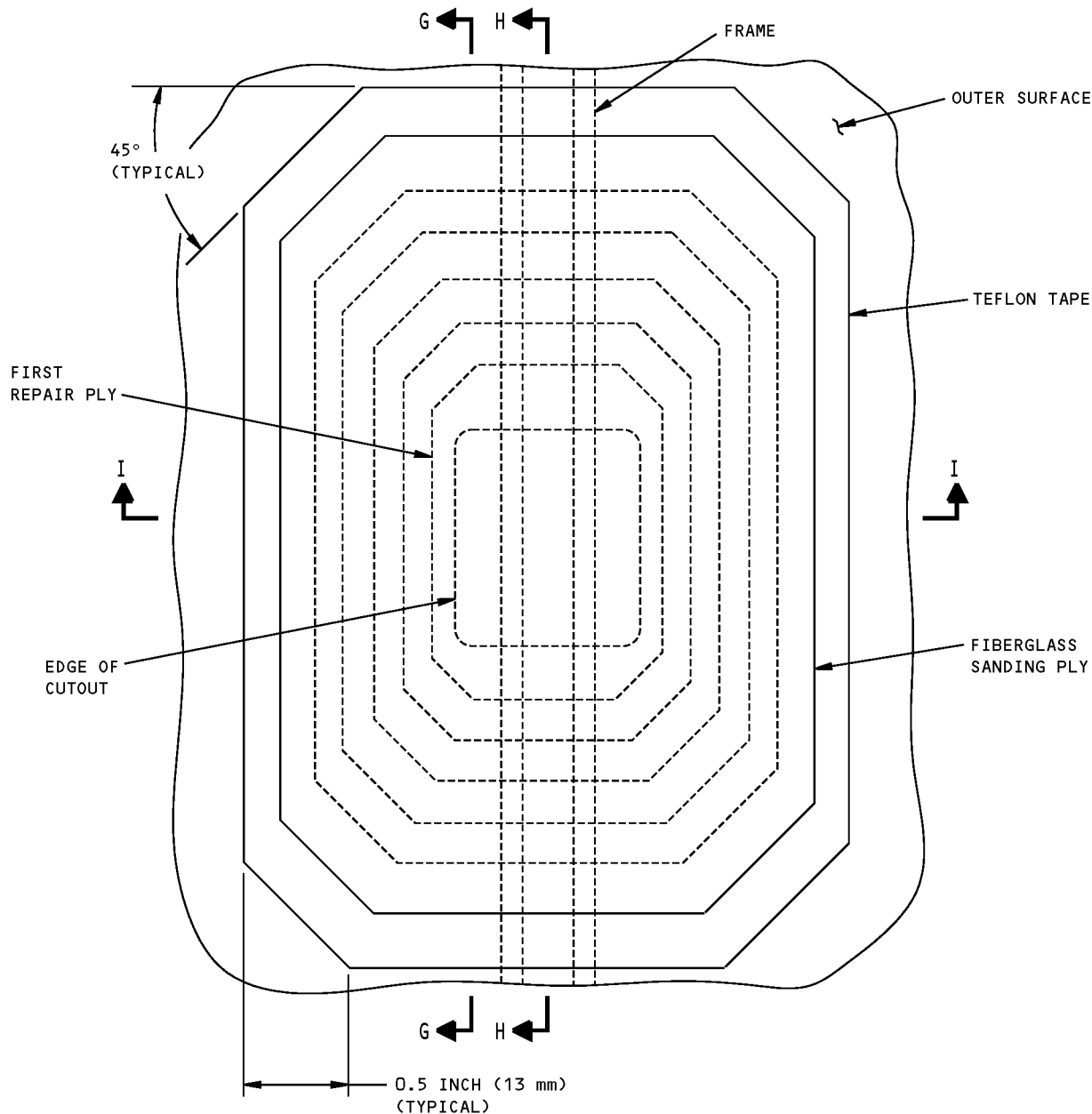
**Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 6)**

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54-15-01

REPAIR 13
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STRUCTURAL REPAIR MANUAL**

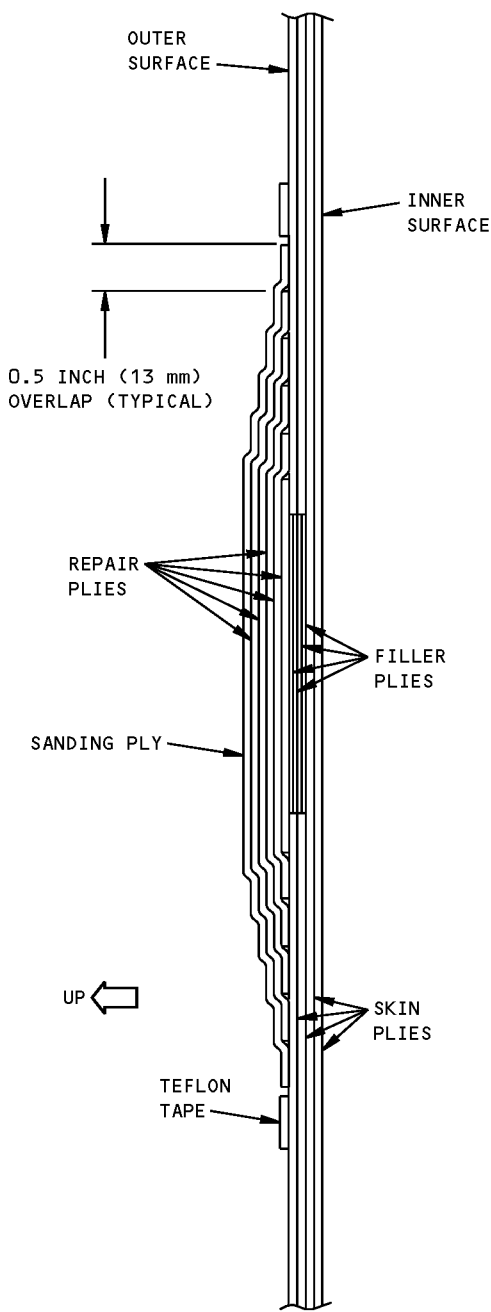


TYPICAL VIEW OF REPAIR
DETAIL II

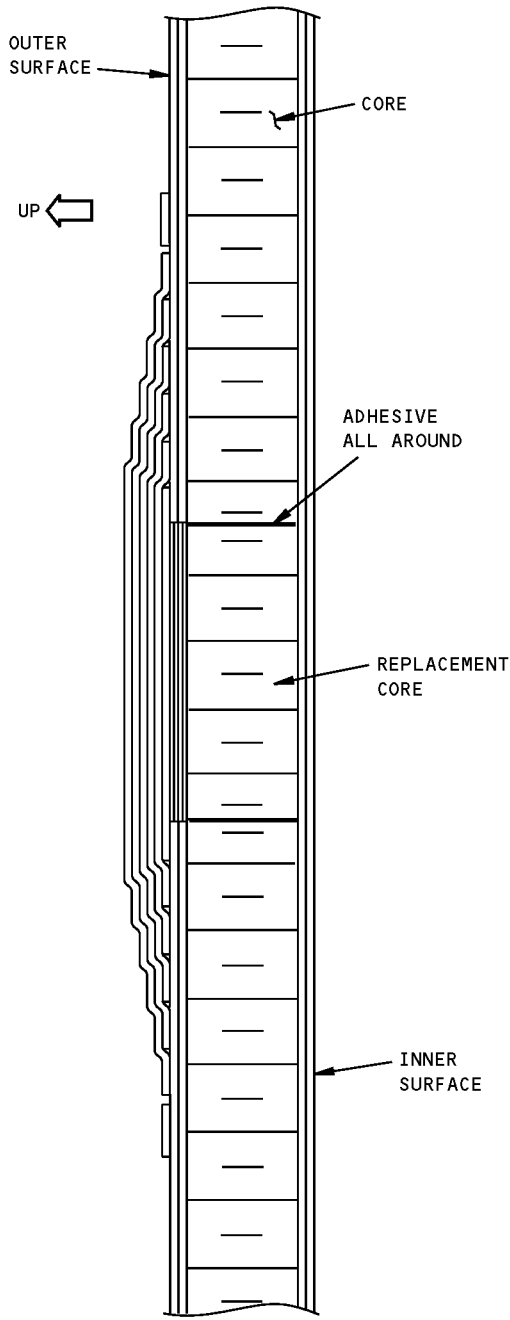
GRS203-06

**Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 6)**

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STRUCTURAL REPAIR MANUAL



SECTION G-G

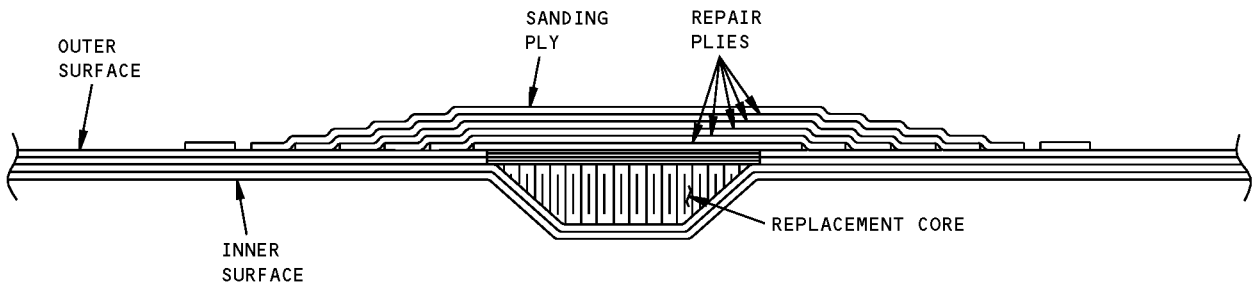


SECTION H-H

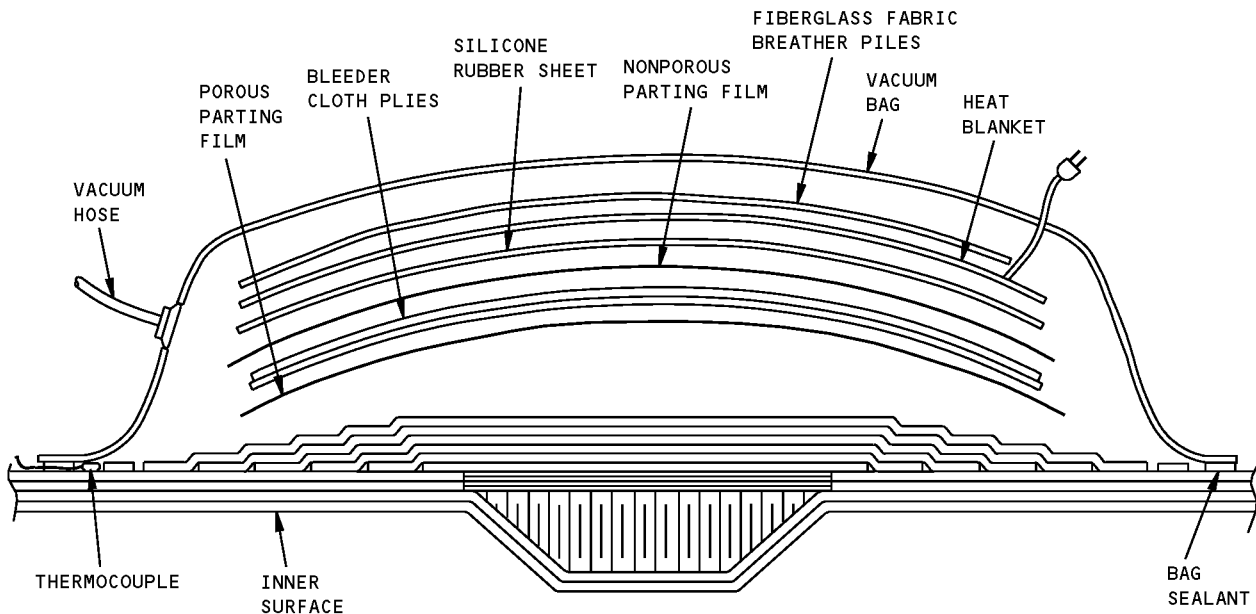
GRS203-03A

Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 6)

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STRUCTURAL REPAIR MANUAL



SECTION I-I



TYPICAL BAGGING

GRS203-04A

Outer Barrel Frame Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 6)

STRUCTURAL REPAIR MANUAL

REPAIR 14 - OUTER BARREL FRAME FULL PENETRATION - CF6-80C2 ENGINE**1. Applicability**

- A. This repair is applicable only to Inlet Cowls with a serial number 1922001 and on. Refer to SRM 54-12-01 for Inlet Cowls with a serial number prior to 1922001.
- B. This repair is applicable to full penetration damage through the laminated skin and frame of the outer barrel on the inlet cowl assembly. The damage can not be more than 15.0 inches (381 mm) in length or width.

NOTE: This repair procedure is applicable if the outer barrel has been removed from the inlet cowl assembly (there is access to the backside). Refer to Figure 201/REPAIR 14.

- C. This repair is not applicable if the edge of the damage is less than 4.5 inches (114 mm) from the edge of the panel, or less than 10.0 inches (254 mm) from the edge of other damage.

2. General

- A. This type of damage is repaired by removal of the damaged skin and core, and the installation of filler and repair plies, and a core plug.

3. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

4. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damage will be removed. The cutout must have the minimum size that will remove the damage completely.

NOTE: 1. The inner cutout (for the core and for the inner graphite plies of the skin) is larger than the outer cutout (for the outer graphite plies) by 0.5 inch (13 mm). This makes a 0.5 inch (13 mm) wide land area all around the cutout.

2. The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make a mark of the repair area on the inner and outer surfaces. Apply pieces of teflon tape on the inner and outer surfaces as marked.

- B. Prepare the damage area for repair.

WARNING: WHEN COMPOSITES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Remove the honeycomb core down to the skin ply in the land area. Make sure you do not damage the remaining graphite plies. Remove the inner graphite plies from the skin in the land area as marked.

Remove the sharp edges and loose fibers.

- (2) Sand the inner and outer surfaces between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

C. Make the core plug and the caul plate. Refer to Table 201/REPAIR 14 for the list of materials.

WARNING: WHEN METALS OR COMPOSITES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make the core plug from Nomex-reinforced honeycomb core. The plug must have the same shape, size, and ribbon direction as the original core that was removed. Remove the burrs.
- (2) Put the core plug inside the cutout. Trim the edges as necessary. The space between the plug and the existing core must not be more than 0.05 inch (1.3 mm) on each side. Remove the core plug. Remove the burrs.
- (3) Make a caul plate to be installed inside the cutout against the land area. Make the caul plate from available aluminum alloy sheet or plate stock. The caul plate must be thick enough for vacuum bagging application. Remove the burrs.
- (4) Make the caul plate to align with the contour of the repair area. The caul plate must fit in place with light finger pressure.
- (5) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper.

D. Clean the repair area and repair parts.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area and repair parts with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, delamination can occur later.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable sanding and cleaning steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces. It is not necessary for the caul plate to have a water break free surface.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the outer surface filler, repair, and sanding plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler and repair plies for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all filler and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.

- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.

- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.

STRUCTURAL REPAIR MANUAL

- (6) Make a mark of all filler and repair plies for the outer surface on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 inch (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

3. The filler plies must fit inside the cutout on the outer surface. Make 4 filler plies.

4. Make 5 repair plies for the outer surface. Cut the first repair ply 0.5 inch (13 mm) larger than the cutout all around. Cut the next ply 0.5 inch (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the sanding ply for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 14 to make and cut the sanding ply for the outer surface, but use the notes below.

NOTE: 1. Make the sanding ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 inch (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the teflon tape.

- G. Install the filler, repair, and sanding plies on the outer surface.

- (1) Apply a layer of release cloth to the mating surface of the caul plate.

- (2) Put the caul plate into position against the land area inside the cutout. Apply teflon tape or mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.

- (4) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.

STRUCTURAL REPAIR MANUAL

- (5) Remove the bottom sheet of the non-porous parting film from the first filler ply for the outer surface. Put the filler ply into position inside the cutout. Press the ply against the caul plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (6) Repeat the above steps for the remaining filler, repair, and sanding plies for the outer surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (7) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

H. Bag and cure the repair on the outer surface.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 inches (51 mm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.

STRUCTURAL REPAIR MANUAL

- (10) Apply a vacuum pressure of 22 inches (559 mm) of mercury and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 inches (127 mm) of mercury in 5 minutes.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 inches (559 mm) of mercury during the cure.

- (12) Let the repair area cool down to room temperature. Remove the bagging material and the caulplate.

I. Examine the repair on the outer surface.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations. Repeat the applicable steps, if necessary.

J. Install the core plug.

NOTE: Before you do the next steps, make sure the repair area is horizontal, and the outer surface is on the bottom. Turn the outer barrel as necessary to do this.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area inside the cutout. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbands can occur later.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Save a part of the resin mixture in a container. Add 5% by weight of phenolic microballoons to the remaining resin mixture and save it in another container.
- (4) Apply a layer of the resin mixture (without microballoons) to the area inside the cutout, including the land area, the edges, and the cured filler plies.

STRUCTURAL REPAIR MANUAL

- (5) Put the core plug into position inside the cutout. Make sure the ribbon direction of the core plug is correct.
- (6) Apply the resin/microballoon mixture to the spaces between the core plug and the existing core. Use pieces of teflon tape to prevent leakage of the mixture. Apply more resin/microballoon mixture to fill the gaps.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (7) Remove the excess mixture from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.
Wipe the surfaces clean before the solvent becomes dry.

K. Cure the resin/microballoon mixture.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Raise the temperature of the repair area to 190° to 210°F (88° to 99°C). Use explosion proof heat lamps. Cure the mixture at this temperature for 220 minutes.

NOTE: Remove the teflon tape before the cure cycle is complete, but after the mixture becomes hard.

WARNING: WHEN RESINS ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (3) Let the repair area cool down to room temperature. Remove the excess cured mixture and sharp edges from the repair area. Use 150 to 400 grit silicon carbide abrasive paper. Do not damage the graphite fibers.

L. Make the filler, repair, and sanding plies for the inner surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 14 to make and cut the filler and repair plies for the inner surface.
- (2) Repeat the procedure in Paragraph 4.F./REPAIR 14 to make and cut the sanding ply for the inner surface.

M. Install the filler, repair, and sanding plies on the inner surface.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use dry air blast to remove the sanding particles. Clean the area between the pieces of teflon tape on the inner surface. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination can occur later.

WARNING: EA9390 RESIN IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Apply a thin layer of the resin mixture to the area between the pieces of teflon tape on the inner surface.
- (4) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position above the core plug and the land area on the existing skin ply. Press the filler ply against the core plug and the existing skin ply to remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets between the existing skin ply and the filler ply. Remove the top sheet of non-porous parting film from the installed ply.
- (5) Repeat the above steps for the remaining filler, repair, and sanding plies for the inner surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

N. Bag and cure the repair on the inner surface.

- (1) Install bagging material on the inner surface repair plies and cure. Use the procedure in Paragraph 4.H./REPAIR 14.

STRUCTURAL REPAIR MANUAL

O. Examine the repair.

- (1) Visually examine the repair area on the two surfaces to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

P. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 16. Use the instructions in Paragraph 3.B./REPAIR 16 of that repair.

Table 201: Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy plate	Any heat treated designation 0.20-0.25 inch (5.1-6.4 mm) thick	Commercially Available
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb	HRH-109-1/8-5 (1/8 inch Nomex- reinforced, 5.0 PCF density)	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics (Formerly Hercules Aerospace) 16320 Bloomfield Avenue Cerritos, CA 90703-2114
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Richmond Technology, Inc
Film, Parting	Porous	Richmond Technology, Inc
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available

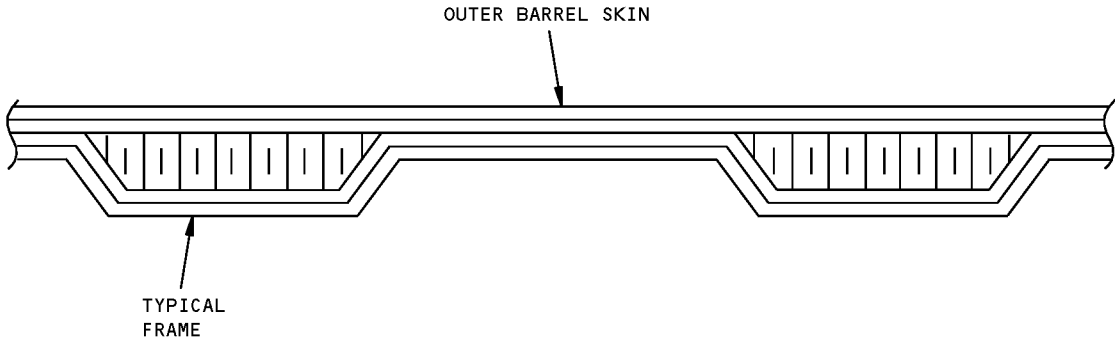
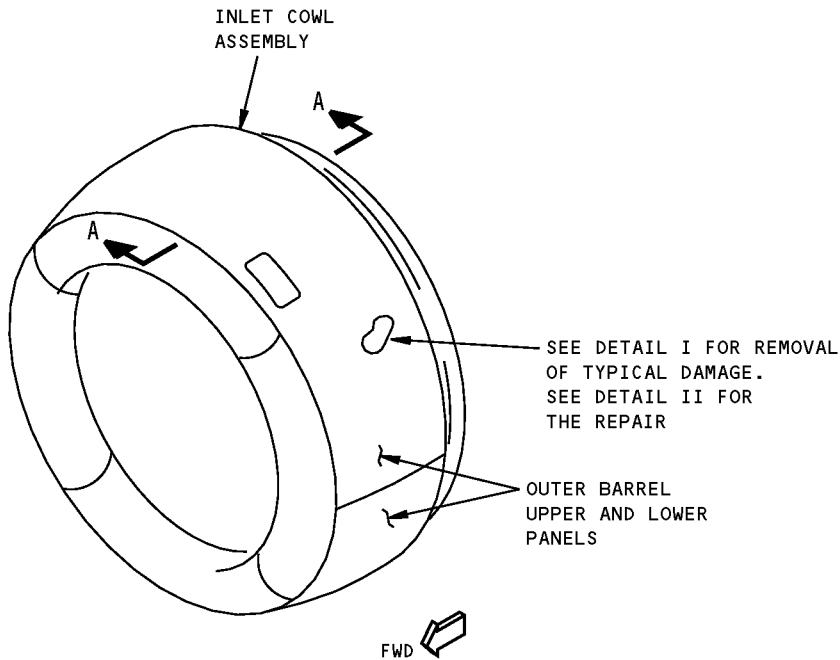
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Lockwire	AMS 5687	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL

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STRUCTURAL REPAIR MANUAL**

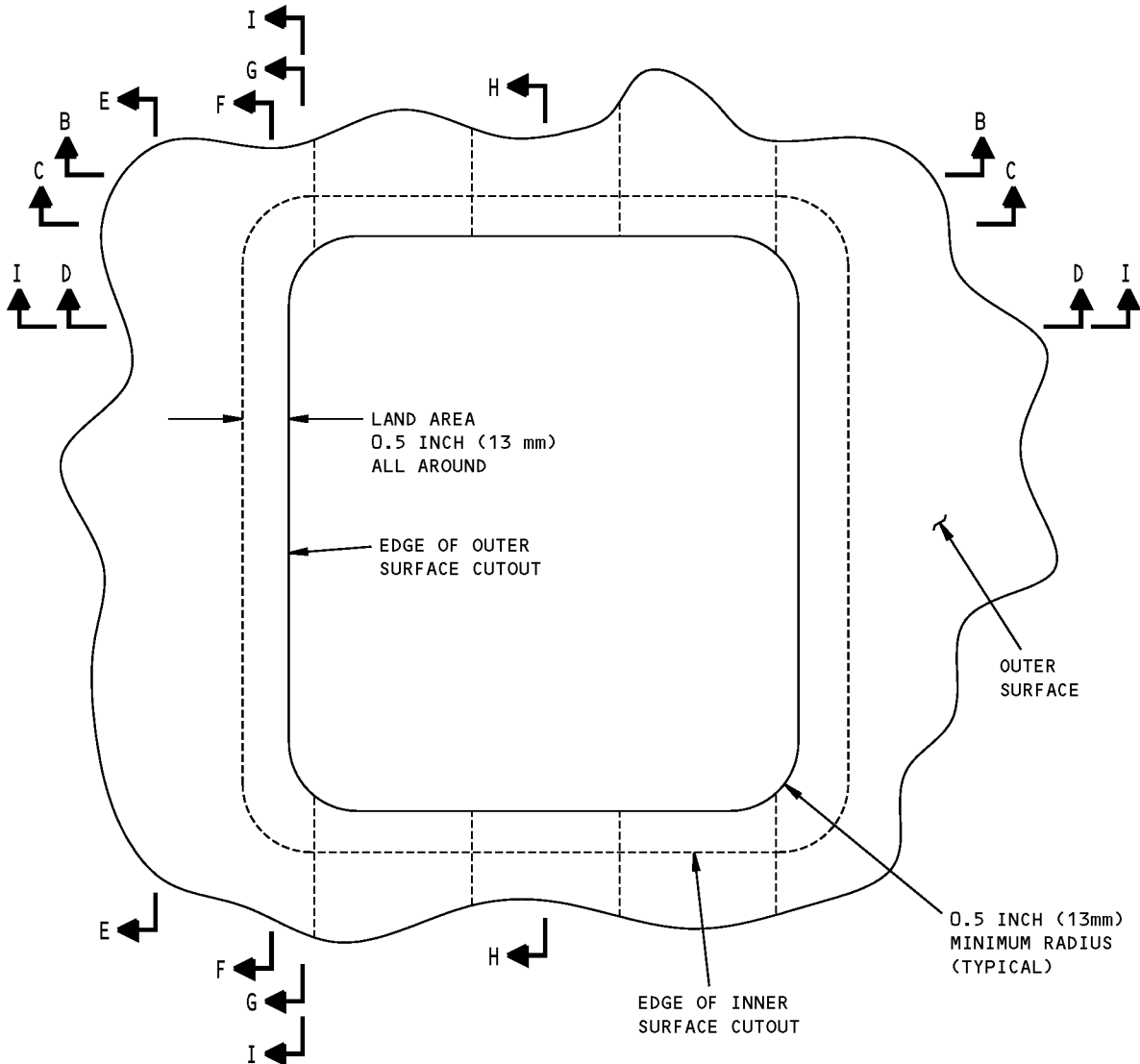


TYPICAL SECTION THROUGH THE BONDED PANEL
ADJACENT STRUCTURE NOT SHOWN
SECTION A-A

GRS202-04A

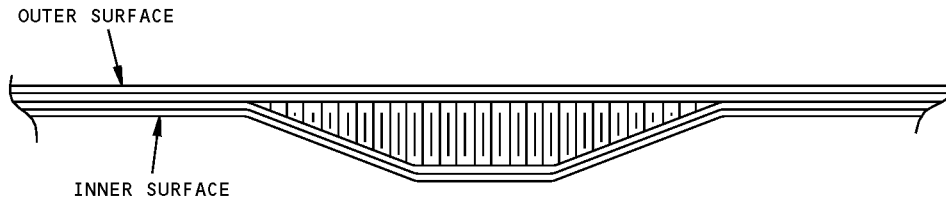
**Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 8)**

STRUCTURAL REPAIR MANUAL



VIEW AFTER DAMAGE REMOVAL

DETAIL I



THROUGH UNDAMAGED FRAME

SECTION B-B

GRS202-01A

Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 8)

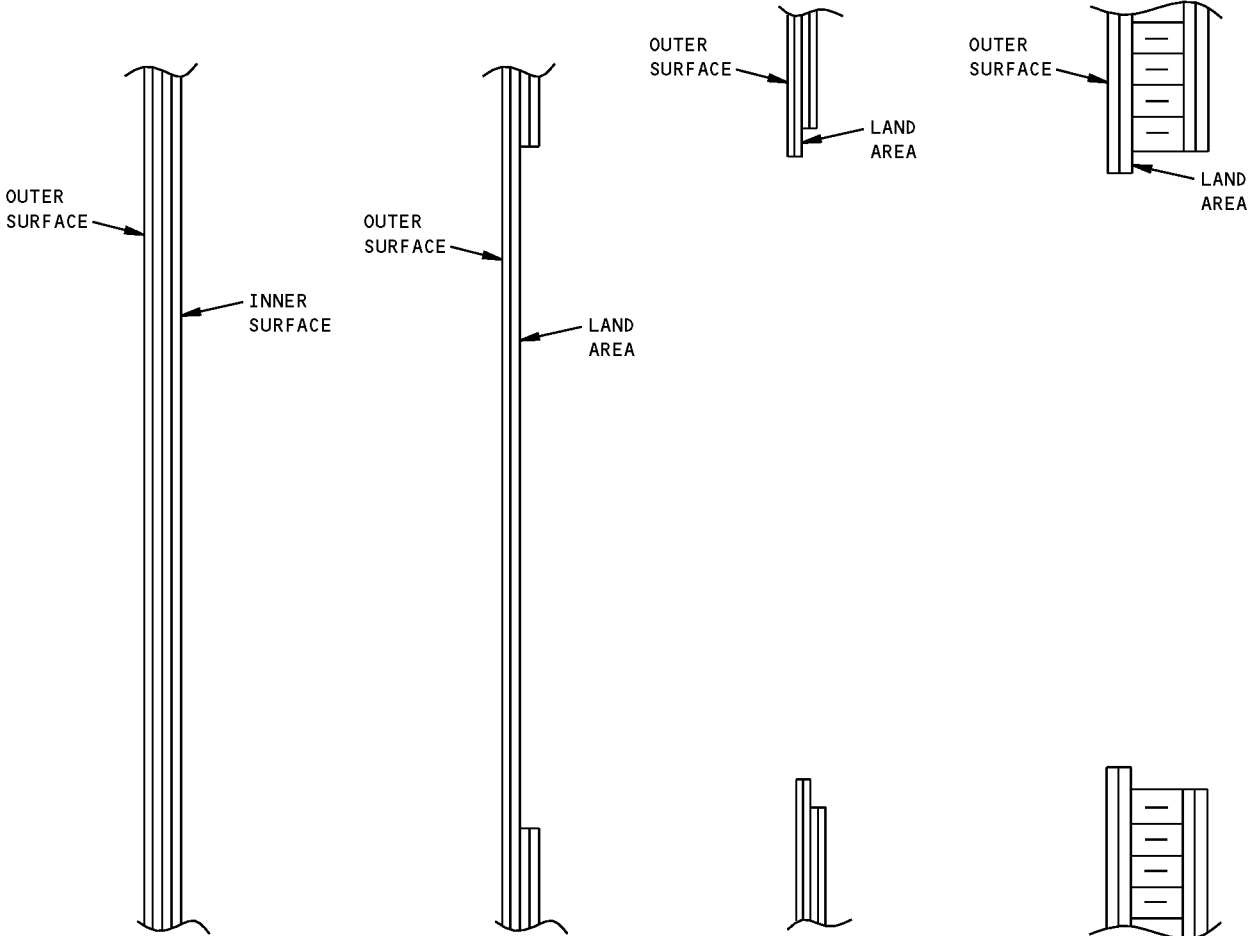
767-300
STRUCTURAL REPAIR MANUAL



SECTION C-C



SECTION D-D



THROUGH THE UNDAMAGED SKIN
SECTION E-E

SECTION F-F

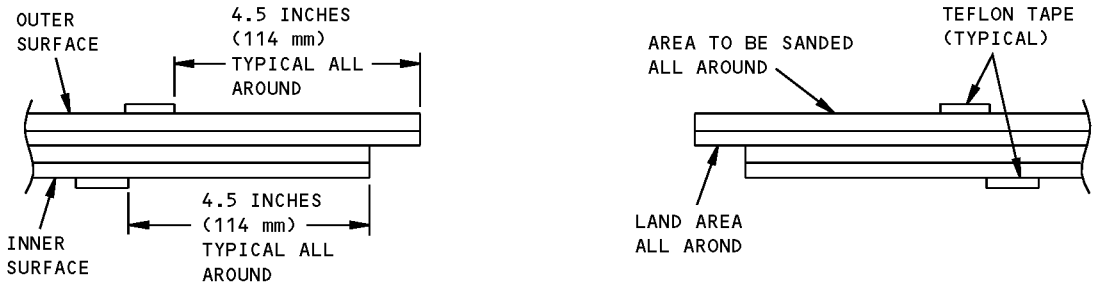
SECTION G-G

SECTION H-H

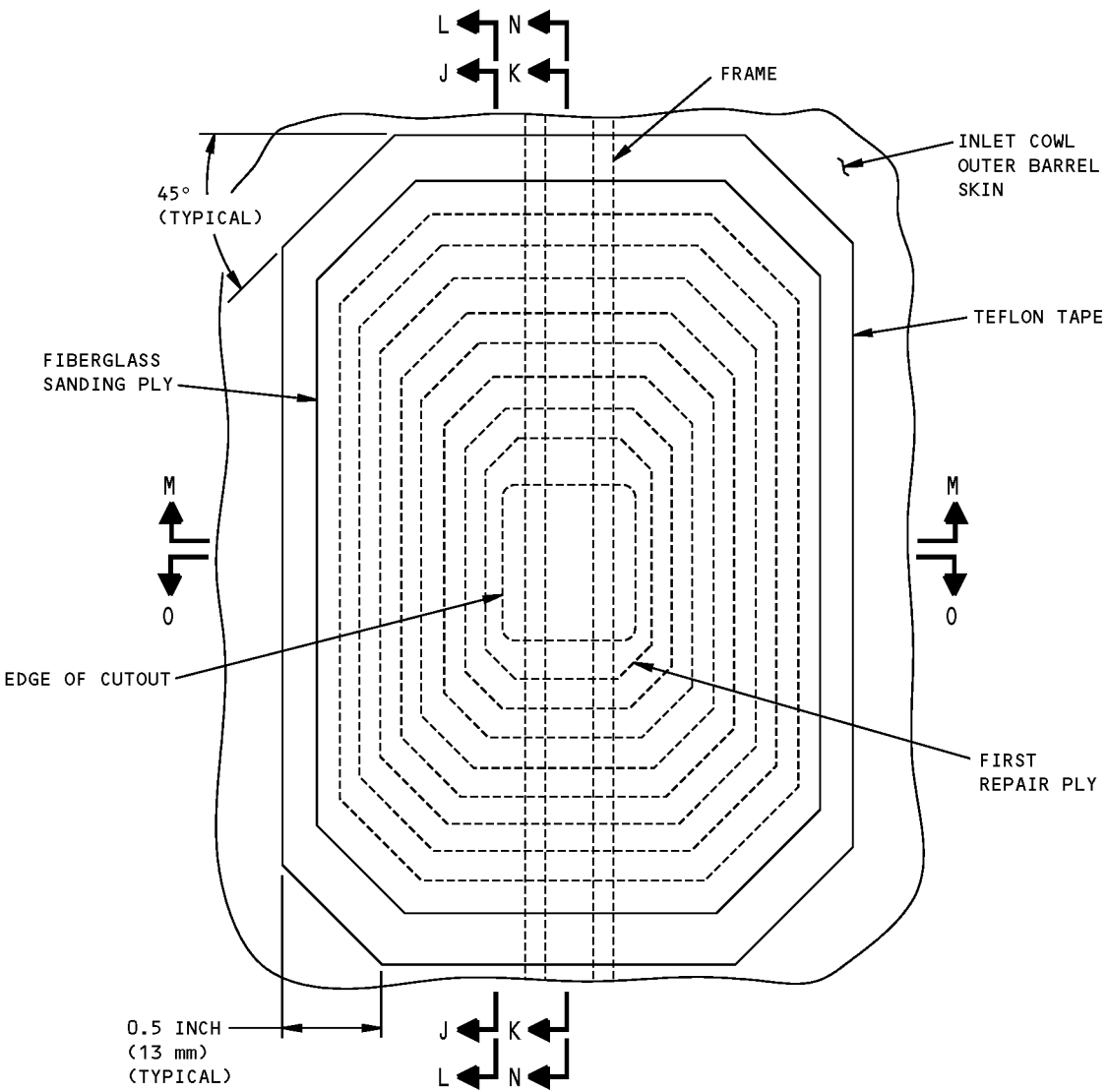
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Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 8)

STRUCTURAL REPAIR MANUAL



TYPICAL SURFACE PREPARATION SECTION I-I

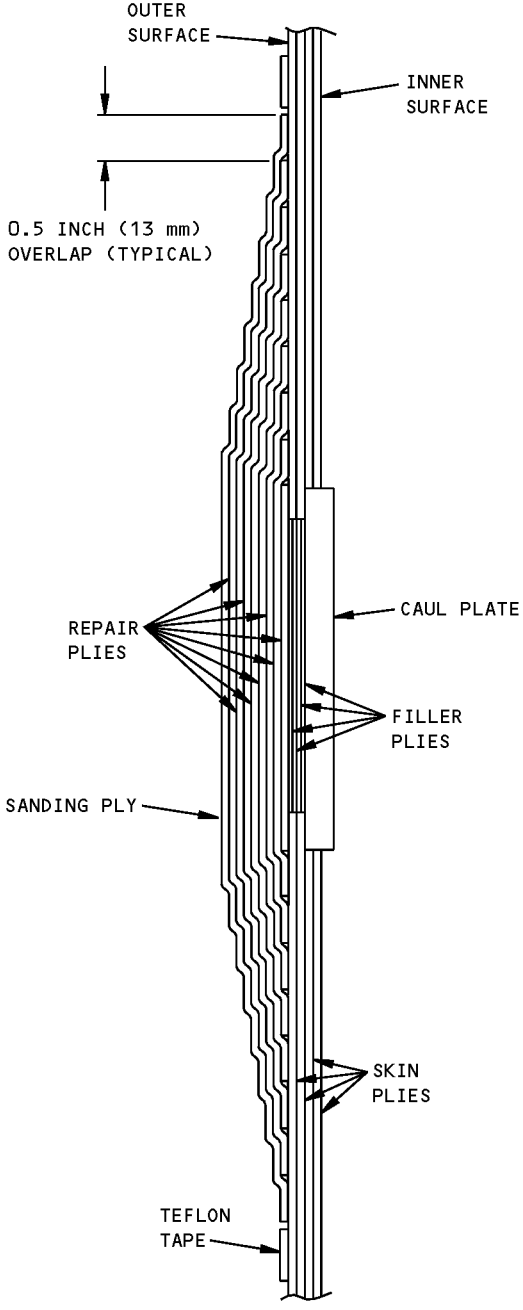


TYPICAL VIEW OF REPAIR DETAIL II

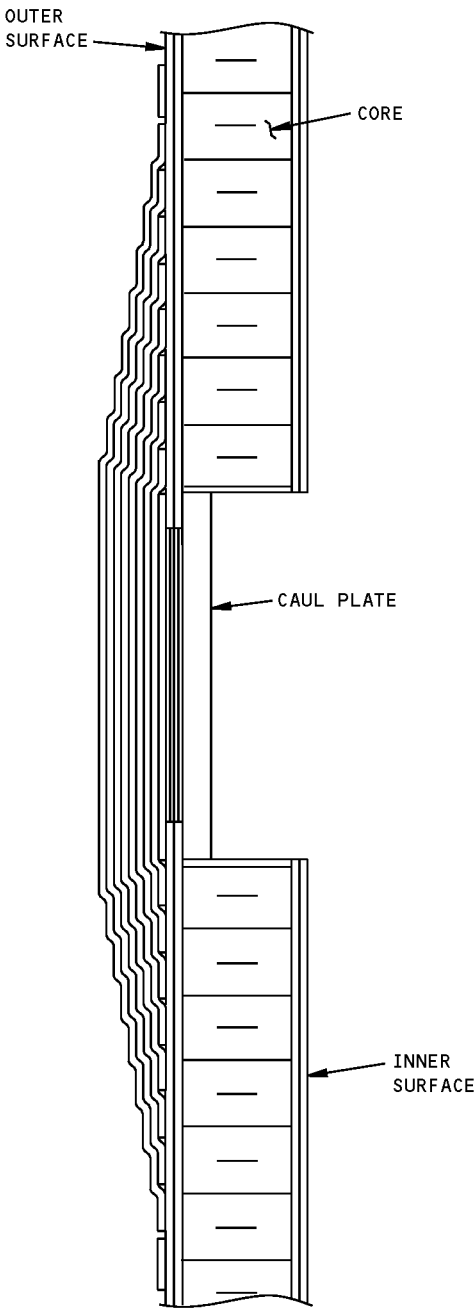
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**Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 8)**

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STRUCTURAL REPAIR MANUAL**



SECTION THROUGH
OUTER SURFACE REPAIR
SECTION J-J
(SECTION M-M ROTATED)

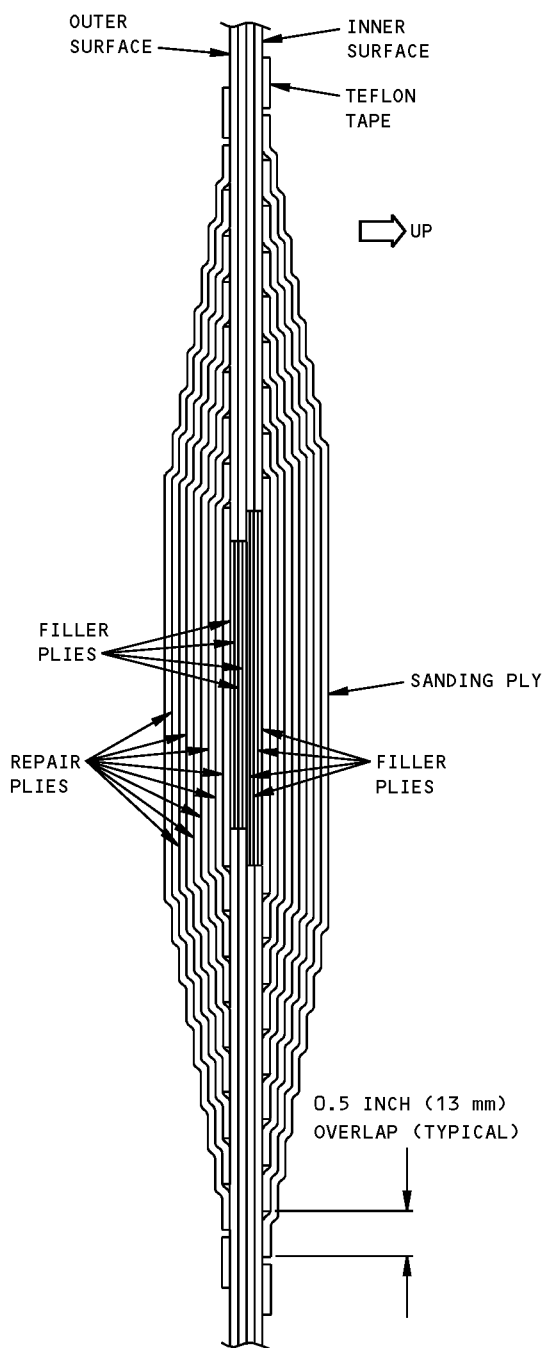


SECTION THROUGH
OUTER SURFACE REPAIR
SECTION K-K

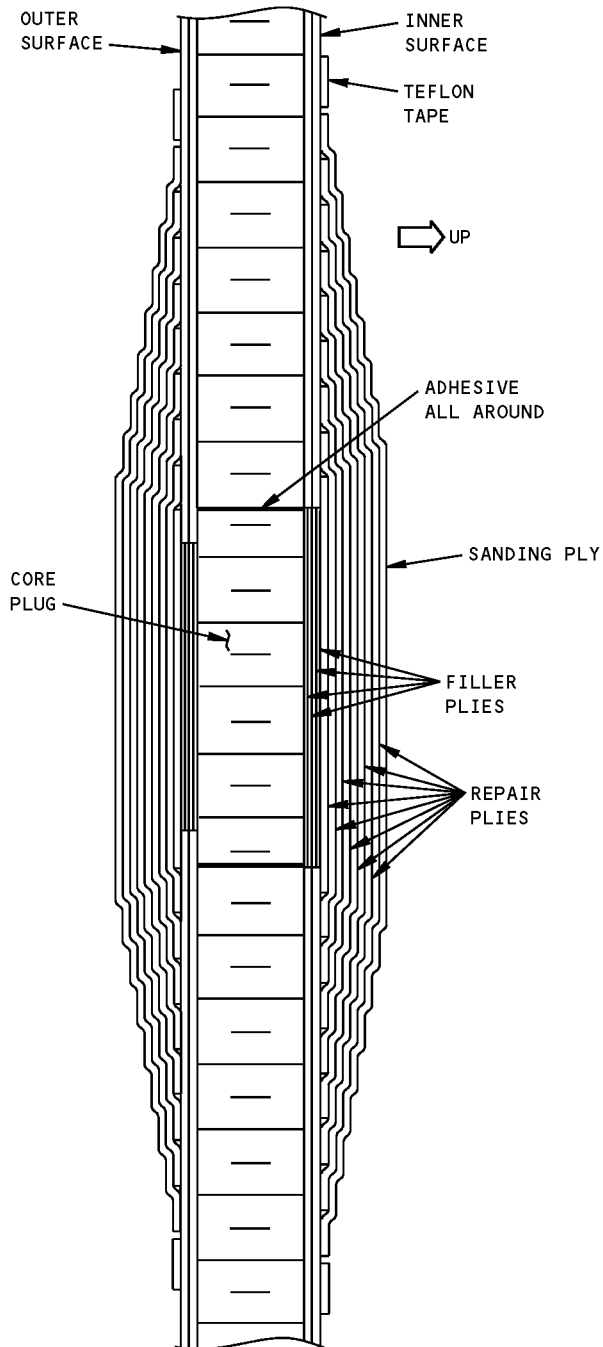
GRS202-03A

**Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 8)**

STRUCTURAL REPAIR MANUAL



SECTION THROUGH THE COMPLETED REPAIR SECTION L-L

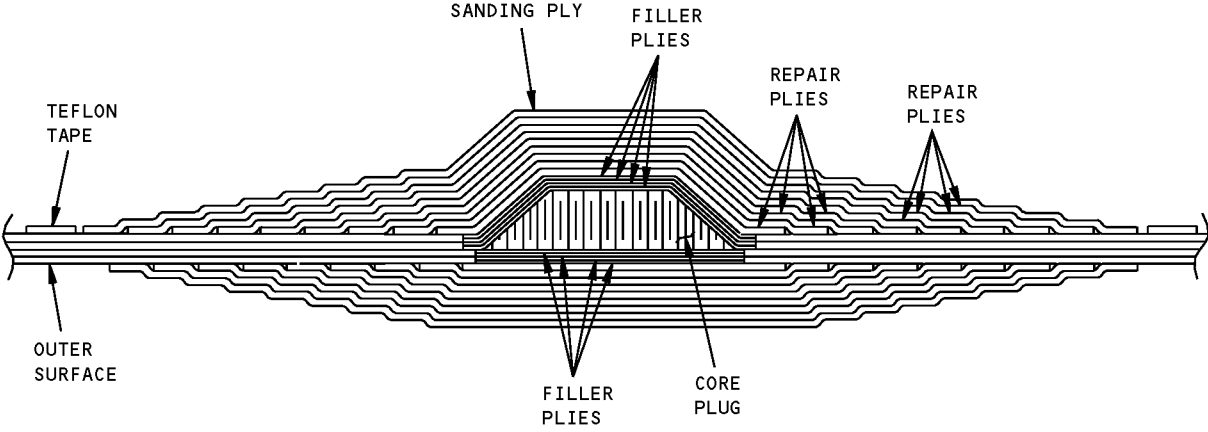


SECTION THROUGH THE COMPLETED REPAIR SECTION N-N

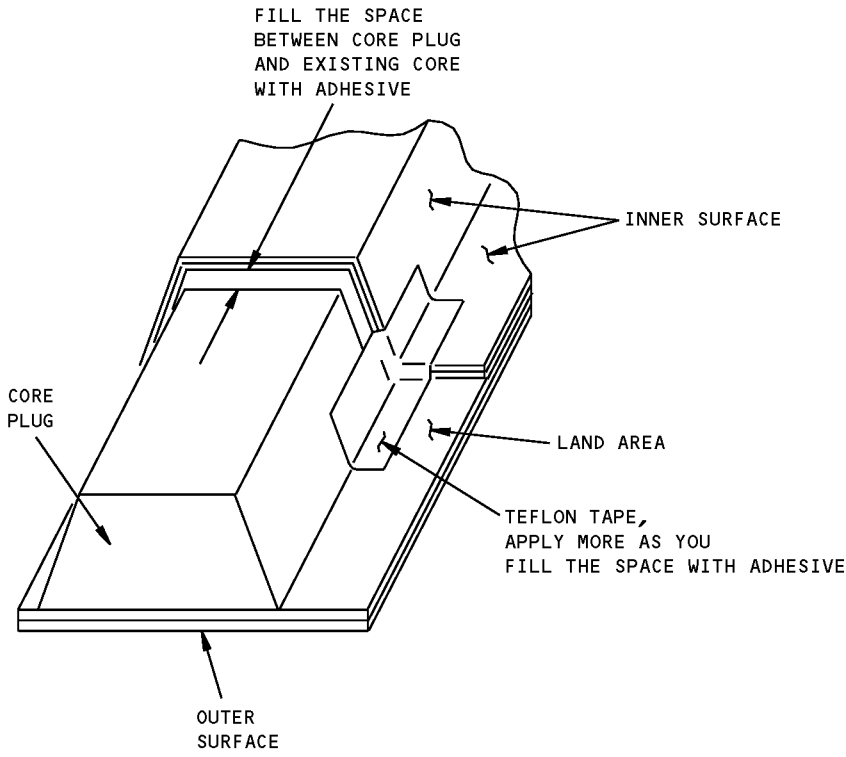
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Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine Figure 201 (Sheet 6 of 8)

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THROUGH THE COMPLETED REPAIR
SECTION 0-0



TYPICAL CORE PLUG INSTALLATION

GRS202-07

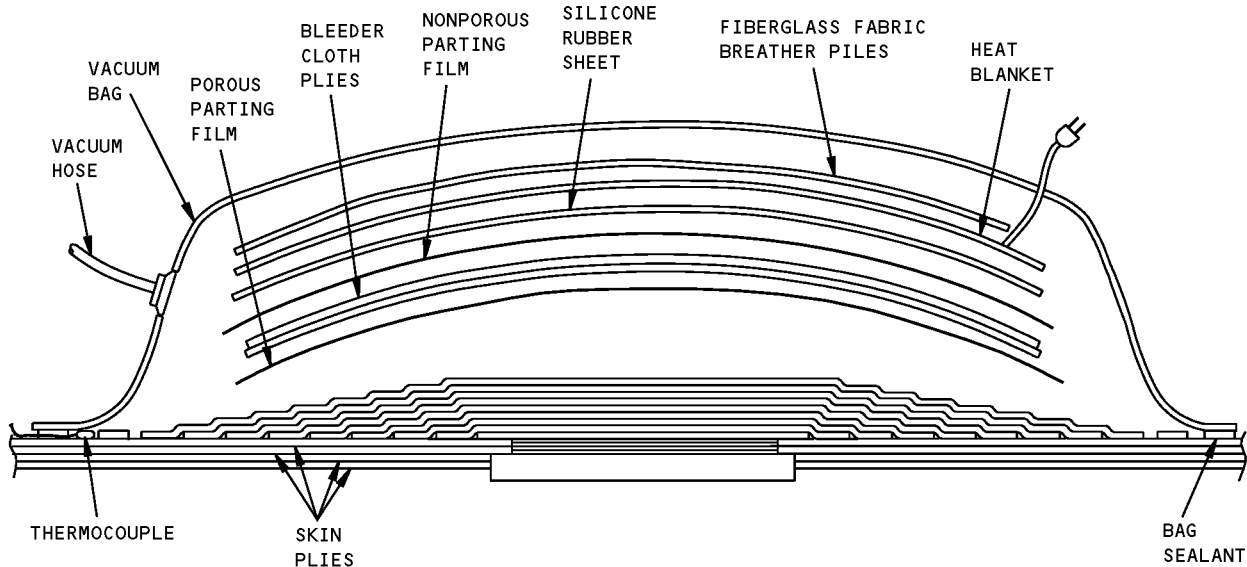
**Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 7 of 8)**

REPAIR 14
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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR IS SHOWN, INNER SURFACE REPAIR IS SIMILAR
TYPICAL BAGGING

GRS202-08

**Outer Barrel Frame Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 8 of 8)**

STRUCTURAL REPAIR MANUAL

REPAIR 15 - AERODYNAMIC SEALANT REPLACEMENT - CF6-80C2 ENGINE**1. General**

- A. This repair is used to replace the aerodynamic sealant on the inlet cowl assembly. Refer to Figure 201/REPAIR 15.
- B. This type of damage is repaired by removal of damaged or loose sealant from the applicable spaces, and application of new aerodynamic sealant.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. Make a mark of the damage area. Apply pieces of teflon tape along the edges of the spaces in the area as marked.

- B. Prepare the damage area for repair.

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CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE SURFACES, DO NOT CUT INTO THE EXISTING STRUCTURE.

- (1) Use a plastic knife to remove all loose or otherwise damaged aerodynamic sealant from the applicable spaces. Use Scotchbrite pads moistened with Turco 6646 solvent to remove the remaining pieces of cured sealant from the spaces. Do not damage the existing surface finish.
- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (3) Do a visual inspection of the area to make sure the existing structure is not damaged. Use a magnifying glass with minimum 10X magnification. If there is damage, you must repair per the related repair procedure before you go to the next step.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(4) Force air dry the repair area for a minimum of 1 hour at 180° to 200°F (82° to 93°C). Let the repair area cool down to room temperature.

C. Apply the surface finish, if necessary.

(1) If the surface finish in the repair area is damaged and bare aluminum is exposed, you must repair the surface finish now. Refer to REPAIR 16, Surface Finish Restoration Repair, and use the applicable instructions to restore the surface finish.

D. Apply the sealant primer. Refer to Table 201/REPAIR 15 for the list of repair materials.

WARNING: DC 1200 PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(1) Use the manufacturer's instructions to prepare the DC 1200 sealant primer.

(2) Apply a thin layer of the primer mixture to the area between the teflon tapes. Let the primer dry at room temperature.

NOTE: If the primer causes a dull finish or dusty chalk to show on the surface, rub the surface clean with a piece of clean, lint-free cloth.

E. Apply the aerodynamic sealant.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(1) Use the manufacturer's instructions to prepare the DC 93-006 sealant.

(2) Apply the sealant mixture to fill the space between the pieces of teflon tape. Remove the unwanted sealant from the area before it cures. Use a piece of clean, lint-free cloth.

NOTE: The sealant must not be above the adjacent surface, and must not be more than 0.010 inch (0.25 mm) below it.

(3) Cure the sealant for 10 hours at room temperature. The sealant will be tack free in one hour. Remove the teflon tape before the sealant cures.

F. Examine the repair.

767-300**STRUCTURAL REPAIR MANUAL**

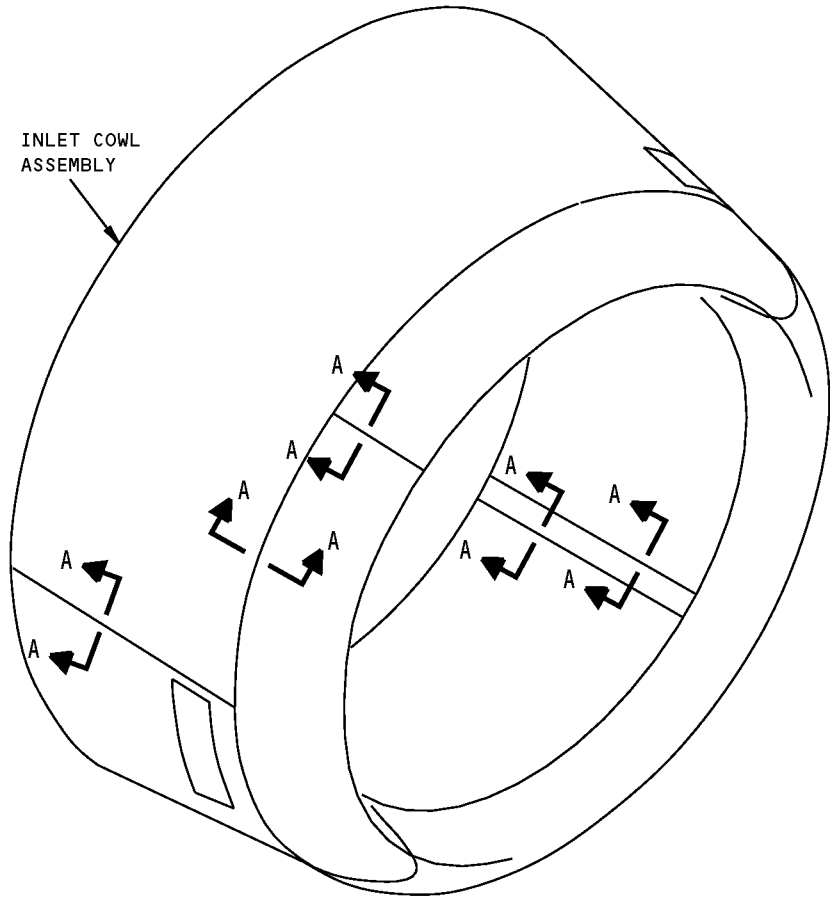
- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Repeat the applicable steps, if necessary.
- G. Apply the surface finish, if necessary.
- (1) If the surface finish or external paint is damaged in the repair area, you must replace it. Refer to REPAIR 16, and use the applicable instructions to restore the surface finish.

Table 201: Repair Materials and Equipment

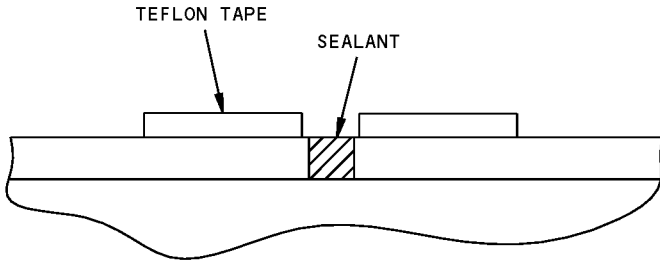
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	180° to 200°F (83° to 93°)	Commercially Available
Knife	Putty	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Pad	Scotchbrite	Commercially Available
Primer	DC 1200	Dow Corning Corp. 3901 South Saginaw Road P.O. Box 997 Midland, MI 48640
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Sealant	DC 93-006	Dow Corning Corp.
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

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STRUCTURAL REPAIR MANUAL**



INLET COWL ASSEMBLY



TYPICAL AT SPLICE JOINTS
SECTION A-A

GRS198-01

**Aerodynamic Sealant Replacement Repair - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 16 - SURFACE FINISH RESTORATION - CF6-80C2 ENGINE

1. General

- A. This repair is used to replace the surface finish on the inlet cowl assembly. This repair is not applicable to the air-wetted surface of the lip skin.
- B. This repair is not applicable if the skin is damaged.
- C. This type of damage is repaired by application of primer to the surface. Refer to Table 201/REPAIR 16 for the list of repair materials.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. Make a mark of the damage area.
- (3) Apply pieces of teflon tape around the area to be repaired. Apply the tape a minimum of 0.5 inch (13 mm) beyond the edge of the damage all around.

- B. Repair the surface finish damage on the outer barrel outer skin.

WARNING: WHEN FINISHED SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Feather the edges of the finish. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (3) The repair area must be a water break free surface. Do a water break-free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C). Let the repair area cool down to room temperature.
- (5) Apply the filler material.

NOTE: Do this step only if necessary to fill the surface imperfections.

WARNING: FILLER MATERIAL IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (a) Use the manufacturer's instructions to mix the filler material. Let the mixture stand per the manufacturer's instructions.

CAUTION: DO NOT APPLY THE FILLER MATERIAL TO FASTENER HEAD OR TO THE ADJACENT SURFACE. THE FILLER CAN CAUSE THE EXISTING PAINT TO PEEL.

- (b) Apply the filler to the applicable areas. Use a putty knife or clean lint-free cloth. Use a criss-cross method with the knife, or circular motion with the cloth, to press the filler material firmly into place. Remove the excess material before it cures.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (c) Cure the filler at room temperature for 15 minutes. Use explosion proof heat lamps and apply heat until the repair area reaches a temperature of 160°-180°F (71°-82°C). Cure the filler for 1 hour at this temperature.

STRUCTURAL REPAIR MANUAL

- (d) Let the repair area cool down to room temperature. Use 240 or finer grit silicon carbide abrasive paper to remove the sharp edges and excess filler material.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (e) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

- (6) Apply the primer.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (a) Use the manufacturer's instructions to mix the Mil-PRF-23377, Class L, epoxy primer. Let the mixture stand per the manufacturer's instructions.

NOTE: Mil-PRF-23377 epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (b) Apply a thin layer of the primer mixture to the area between the masking tapes. The dried primer layer must be between 0.0006 and 0.0009 inch (0.015 and 0.023 mm) thick. Use a spray gun or brush.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (c) Cure for a minimum of 30 minutes at 75°F (24°C) before you reapply the primer. You can handle the parts after 4 hours at this temperature.

- (7) Apply the external paint.

- (a) Use the airline specifications to select the external paint. Use the manufacturer's instructions to mix, apply, and cure the external paint.

- C. Repair the surface finish damage on the inner barrel perforated skin.

WARNING: WHEN FINISHED SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

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(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Feather the edges of the finish. Use 150 to 400 grit silicon carbide abrasive papers.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (3) The repair area must be a water break free surface. Do a water break-free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Force air dry the repair area for a minimum of 1 hour at 180° to 200°F (82° to 93°C).

WARNING: CHEMICAL CONVERSION COATING IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: 1. DAB THE SOLUTION ON THE SKIN PANEL. DO NOT RUB THE SOLUTION ACROSS THE SKIN.

2. CHEMICAL CONVERSION COATING CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE COATING OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

3. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Apply conversion coating alodine 1000 to the tested surfaces. Use a clean, lint-free cloth slightly moistened with the solution and gently touch the surface. Do not let the solution get inside the perforations. Do not let the solution dry on the surface. Keep the surfaces wet with fresh solution for 2 to 5 minutes.
- (6) Rinse the surfaces thoroughly. Use a clean, lint-free cloth slightly moistened with demineralized water and gently touch the surface. Do not let the solution get inside the perforations.

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Repeat until there is no evidence of alodine on the cloth.

- (7) Air dry for 30 minutes. The surfaces must be colorless with no visible difference between parts.

NOTE: If the alternative conversion coating alodine 1200 is used the surfaces will have a golden color.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to mix the aluminized epoxy primer. Let the mixture stand for a minimum of 30 minutes, but no more than 18 hours.

NOTE: Use 463-6-4 primer base, X-306 primer converter, and TL-52 primer thinner.

- (9) Apply a thin layer of the aluminized primer mixture to the area between the masking tapes. The dried primer layer must be between 0.0005 and 0.0012 inch (0.013 and 0.030 mm) thick.

NOTE: If you use a spray gun, apply a misty layer. If you are not careful, the primer can get through the perforations and block the septum.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (10) Cure the primer at room temperature for 15 minutes. Use explosion proof heat lamps and apply heat until the repair area reaches a temperature of 140° to 180°F (60° to 82°C). Cure for a minimum of 15 minutes at this temperature before you reapply the primer. You can handle the parts after 40 minutes at this temperature.

- D. Repair the surface finish damage on the internal aluminum surfaces, but not inside the lip skin assembly.

WARNING: WHEN FINISHED SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Feather the edges of the finish. Use 150 to 400 grit silicon carbide abrasive papers.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

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- (3) The repair area must be a water break free surface. Do a water break free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C).

WARNING: CHEMICAL CONVERSION COATING IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: 1. DAB THE SOLUTION ON THE SKIN. DO NOT RUB THE SOLUTION ACROSS THE SKIN.

2. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Apply conversion coating alodine 1000 to the tested surfaces. Use a nylon brush or a lint-free cloth. Do not let the solution dry on the surface. Keep the surfaces wet with fresh solution for 2 to 5 minutes.
- (6) Rinse the surfaces thoroughly with demineralized water. Air dry for 30 minutes. The surfaces must be colorless with no visible difference between parts.

NOTE: If the alternative conversion coating alodine 1200 is used the surfaces will have a golden color.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (7) Use the manufacturer's instructions to mix the epoxy primer. Let the mixture stand for a minimum of 30 minutes, but no more than 6 hours.

NOTE: Epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (8) Apply a thin layer of the primer mixture to the area between the masking tapes. Use a spray gun or brush.

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WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(9) Air dry for a minimum of 15 minutes at room temperature. Then cure for a minimum of 40 minutes at 140° to 180°F (60° to 82°C). Use explosion proof heat lamps.

E. Repair the surface finish damage on the internal aluminum surfaces of the lip skin assembly.

WARNING: WHEN FINISHED SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(1) Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Feather the edges of the finish. Use 150 to 400 grit silicon carbide abrasive papers.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(3) The repair area must be a water break free surface. Do a water break-free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: PHOSPHORIC ACID IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(4) Phosphoric acid anodize the surface per standard procedures.

WARNING: URETHANE PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(5) Use the manufacturer's instructions to mix the urethane primer. Let the mixture stand for a minimum of 15 minutes, but no more than 8 hours.

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- (6) Apply a thin layer of the primer mixture to the area between the masking tapes. Use a spray gun or brush.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Cure for a minimum of 30 minutes at room temperature. Then cure for a minimum of 2 hours at 250°F (121°C).

Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat (Alternative to the heat lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Coating, chemical conversion	Alodine 1000 or Alodine 1200	Parker & Amchem 32100 Stephenson Madison Heights, MI 48071
Container	Metal or plastic	Commercially Available
Filler material	Base 467-9 Converter CA-41	Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Filler material (Alternative to above)	Base WLS 100-38 Converter WLS CA-69	WLS Coatings
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp	190 ± 10°F (88 ± 6°C)	Commercially Available
Knife	Putty	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Primer, Aluminized epoxy	Base 463-6-4 Converter X-306 Thinner TL-52	Dexter Aerospace (Formerly Sikkens) East Waters Street Waukegen, IL 60085-5652
Primer, Epoxy	Base 44-GN-60 Converter 44-GN-60 Thinner DM water	Deft, Inc. 17451 Von Karman Avenue Irvine, CA 92714-6205
Primer, Epoxy	Base 463-6-78 Converter X-515 Thinner TL-164	Dexter Aerospace (Formerly Sikkens) East Waters Street Waukegen, IL 60085-5652

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Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Primer MIL-PRF-23377 Class L	Base 513X395 Converter 910-710 Thinner 010-313	Courtauld Aerospace (Formerly DeSoto) P.O. Box 3704 Glendale, CA 91221-0704
Primer MIL-PRF-23377 Class L	Base 10-P2-13 Converter EC-142 Thinner TR-55	Dexter Aerospace (Formerly Crown Metro) East Waters Street Waukegen, IL 60085-5652
Primer MIL-PRF-23377 Class L	Base 463-7-32 Converter X-432 Thinner T-74/TL164	Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Primer, Urethane MIL-PRF-23377 Class L	Base 825-009 Catalyst 910-175 Thinner 020-044	Courtauld Aerospace (Formerly DeSoto) P.O. Box 3704 Glendale, CA 91221-0704
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL.

STRUCTURAL REPAIR MANUAL

REPAIR 17 - INLET COWL - REPAIR OF SMALL DAMAGE TO ACOUSTIC PANEL AFT EDGE PERFORATED SKIN - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to corroded or otherwise damaged perforated skin along the aft edge of the inlet cowl acoustic panels. The damage must be less than 6.0 inches (152 mm) long in the circumferential direction, and less than 1.3 inches (33 mm) wide. Refer to Figure 201/REPAIR 17, Detail I
- B. This repair is not applicable if there is damage to the underlying doubler that is more than 0.020 inch (0.51 mm) deep.
- C. This repair is not applicable if the edge of the damage is less than 1.0 inch (25 mm) from the edge of an existing flow diverter, or less than 2.0 inches (51 mm) from the edge of the splice at a panel split, or less than 2.0 inches (51 mm) from the edge of other similar repairs.
- D. This type of damage is repaired by removal of the damaged piece of perforated skin and installation of a filler in its place.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area using a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface dry before the solvent evaporates.
- (2) Find the extent of damage. Do a tap test to examine for disbonds. Make a mark of the area to be cut out.

NOTE: The cutout must include a minimum of one existing rivet hole. the cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.25 inch (6.3 mm) at the corners.

- (3) Apply teflon tape to the skin to mask off the repair area. Apply the tape 0.2 inch (5 mm) larger than the cutout all around.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill out the initial fasteners in the cutout area. Use applicable size drill bits. Do not damage the holes. Remove the burrs.

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- (2) Cut the perforated skin as marked. Do not damage the structure below the surface. Remove the burrs.
- (3) If the underlying doubler in the cutout area is corroded, or otherwise damaged, remove the damage and sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If, after removal of material, the damage is more than 0.020 inch (0.51 mm) deep, this repair is not applicable.

- (4) Lightly sand the surface in the area between the pieces of tape. Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

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- (5) Use dry air blast to remove the cutting and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

C. Make the filler.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a filler to fit inside the cutout. Make from 0.032 inch (0.81 mm) thick 2024-T3 aluminum alloy sheet. The space between the filler and the edge of the cutout must not be more than 0.050 inch (1.27 mm) all around. Remove the burrs.
- (2) Form the filler as necessary to match the contour of the acoustic panel in the damaged area. The filler must fit in place with light finger pressure.
- (3) Make a mark of the initial holes on the filler. (Use a template if necessary.) Drill pilot holes in the filler as marked. Put the filler into position in the cutout. Drill the final size holes in the filler. Use temporary fasteners to keep the holes aligned. Use applicable size drill bits. Do not damage the initial holes.

Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for the -5 rivets and 0.190 to 0.193 inch (4.83 to 4.90 mm) for the -6 Hi-loks.

- (4) Countersink the holes on the airwetted surface of the filler. Remove the burrs.
- (5) Lightly sand the surfaces of the filler. Remove the sharp edges, including the countersink edges from the filler holes to eliminate knife edges. Use 150-400 grit aluminum oxide abrasive paper.

D. Prepare all repair surfaces for repair.

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WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Use dry air blast to remove the drilling and sanding particles. Clean the filler and the repair area with a clean, lint-free cloth lightly moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: 1. DAB THE TURCO WO-1 SOLUTION ONTO THE ALUMINUM SURFACE. DO NOT RUB IT ACROSS THE ALUMINUM SURFACE.

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (3) Apply the Turco WO-1 solution to all bare aluminum surfaces. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (4) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.
- (5) All repair surfaces must be water break-free surfaces. Do a water break-free test of these surfaces.

NOTE: A surface is water break-free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Dry the repair area at 190-210°F (88-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: Do not let the water get into the core.

- (7) Let the area cool down to room temperature before you apply the primer.

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WARNING: BR-127 ADHESIVE PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Air dry the primer for 30 minutes. Then cure for 1 hour at 230-250°F (110-121°C). Use an explosion proof heat lamp.

E. Install the filler.

WARNING: EA9394 ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
(2) Apply a thin layer of the EA9394 adhesive mixture to the mating surfaces of the filler and the underlying doubler.
(3) Cut a piece of scrim cloth and apply to the mating surface of the filler.
(4) Put the filler into position. Align the rivet holes. Use temporary fasteners to keep the holes aligned.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Wet-install the applicable initial type fasteners with the RTV 157 sealant.

NOTE: If a BH00928-3 nut is installed, it must be torqued to 27 to 33 in-lbs. If a Hi-lok collar is used as an alternative, same torque values must be used, and the head of the collar must be removed without twisting or applying more torque.

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WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the excess adhesive or sealant from the repair area before it cures. Use a clean, lint-free cloth lightly moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.
- (7) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (8) Cure the adhesive using an explosion proof heat lamp. Apply the heat until the repair area reaches a temperature of 190-210°F (88-99°C). Cure the adhesive for 60 minutes at this temperature.
- (9) Let the repair area cool down to room temperature before removing the curing materials.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (10) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If you damage the surface finish in the repair area, you must restore it as shown in REPAIR 16.

WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (11) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

F. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds. Repeat the applicable steps, if necessary.

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Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace Inc. The Dexter Corp. 2850 Willow Pass road P.O. Box 312 Pittsburg, CA 94565-0031
Aluminum Alloy Sheet	0.032 inch (0.81 mm) thick 2024-T3	Commercially Available
Blanket, Heat (Alternative to the Heat Lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Scrim		Commercially Available
BMS 5-121 (Alternative to the Cloth, Scrim)	CEREXR 230336 or Type 23 0.0018 to 0.0030 inch thick, 0.25 to 0.35 oz/yd2 weight	Cerex Advanced Fabrics 610 Chemstrand Road Cantonment, FI 32533
Cloth, Wiper	Cotton, Lint-free	Commercially Available
Container	Metal or Plastic	Commercially Available
Etching Solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corp. 24600 S. Main Street P.O. Box 2600 Carson, CA 90749
Glasses	Safety	Commercially Available
Gloves	Cotton, Lint-free	Commercially Available
Gloves	Neoprene or Poly- vinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat, Explosion-Proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory Agency Approved	Commercially Available
Nut	BH00928-3	Bristol Industries Brea, CA
Paper, Abrasive	150-400 Grit, Aluminum Oxide	Commercially Available
Bolt, hex drive	HL633-6-5	Hi-Shear Corp. Torrance, CA
Probe, Temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Solid, Flush Head	NASM20427M5	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Rd Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Isobutyl Ketone (MIBK)-	Commercially Available
Solvent	Turbo 6646	Commercially Available

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Table 201: Repair Materials and Equipment (Continued)

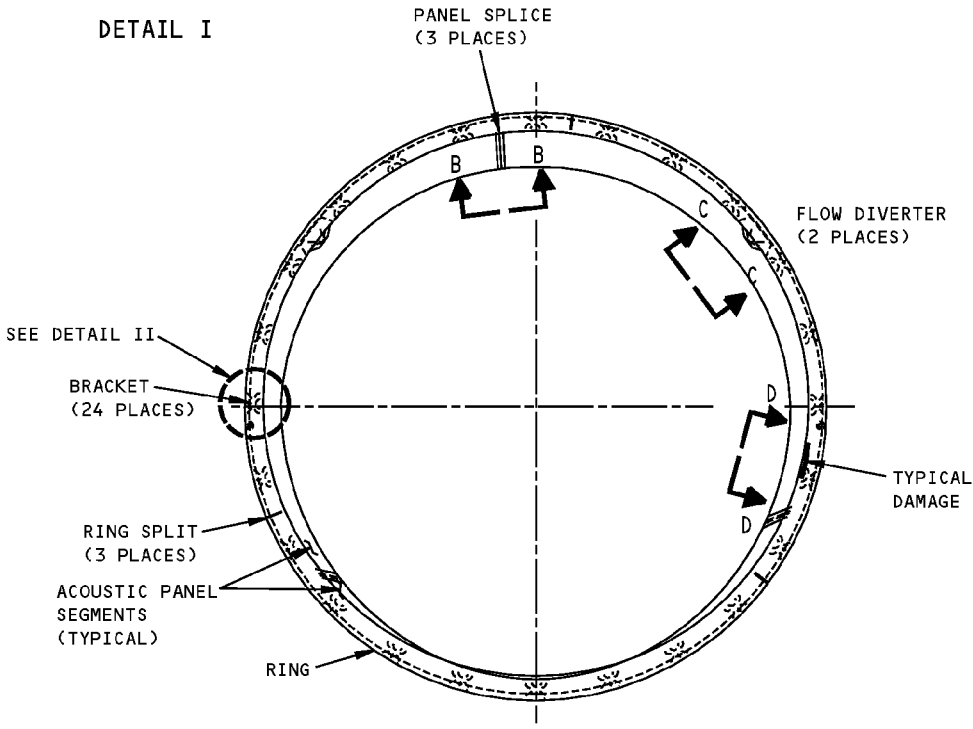
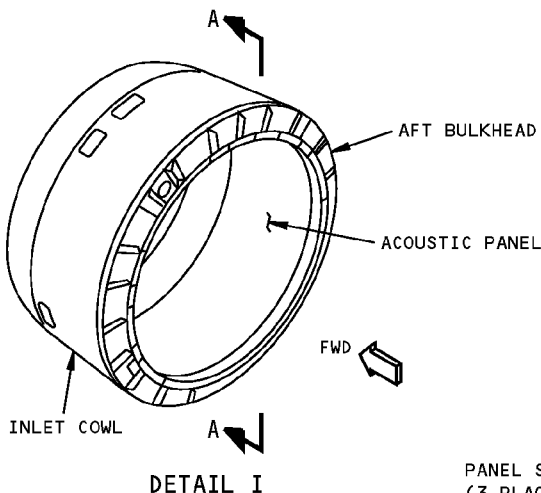
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Spatula	Plastic	Commercially Available
Tape	Teflon, 2 inches (51 mm) Wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-31-03, GENERAL

- (2) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds.

Repeat the applicable steps, if necessary.

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C2S-582-01

VIEW A-A
VIEW LOOKING FWD AT AFT RING
(AFT BULKHEAD IS NOT SHOWN FOR CLARITY)

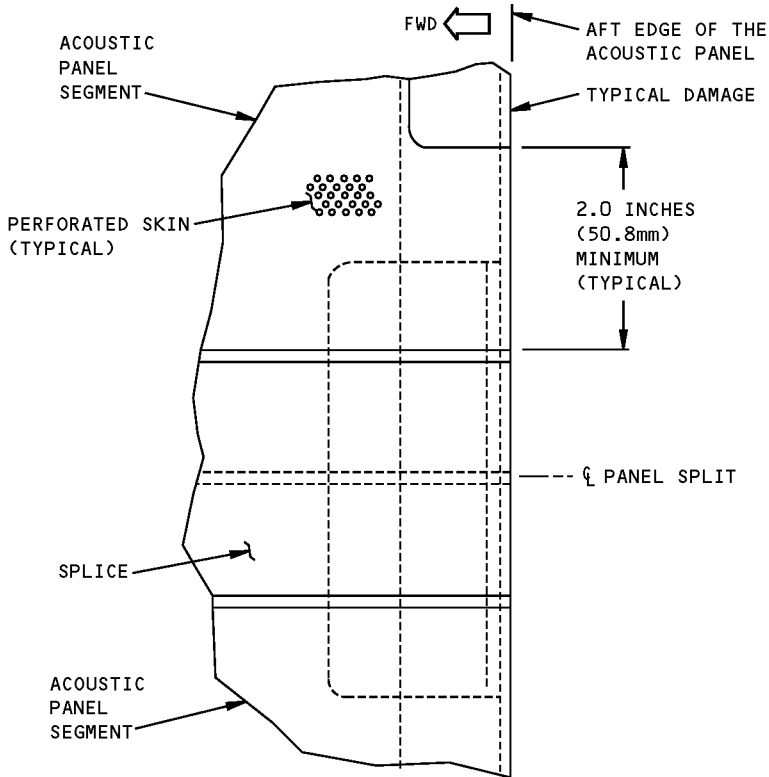
**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

D634T210

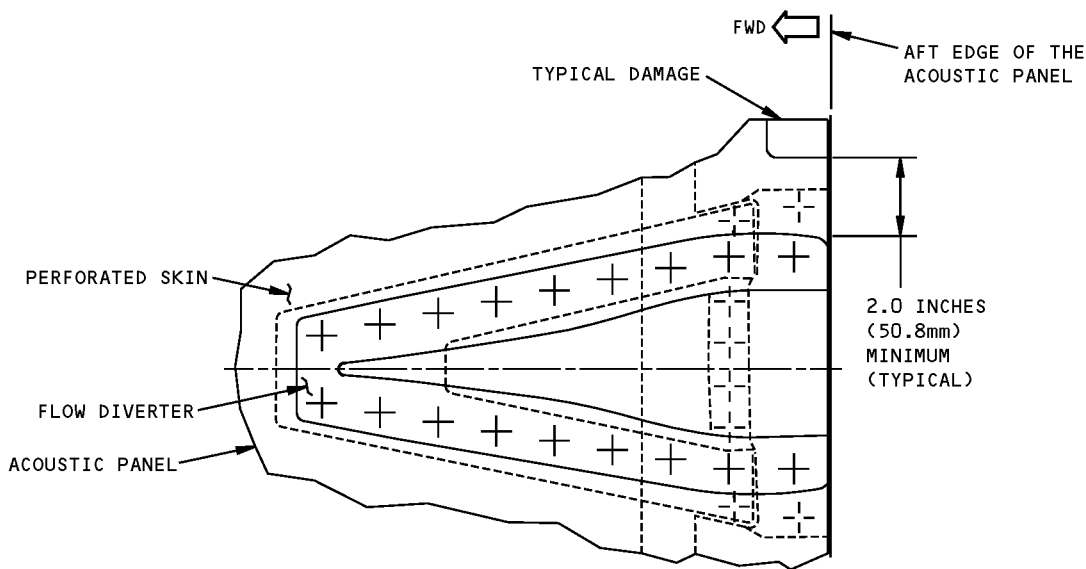
54-15-01

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**VIEW B-B
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL**

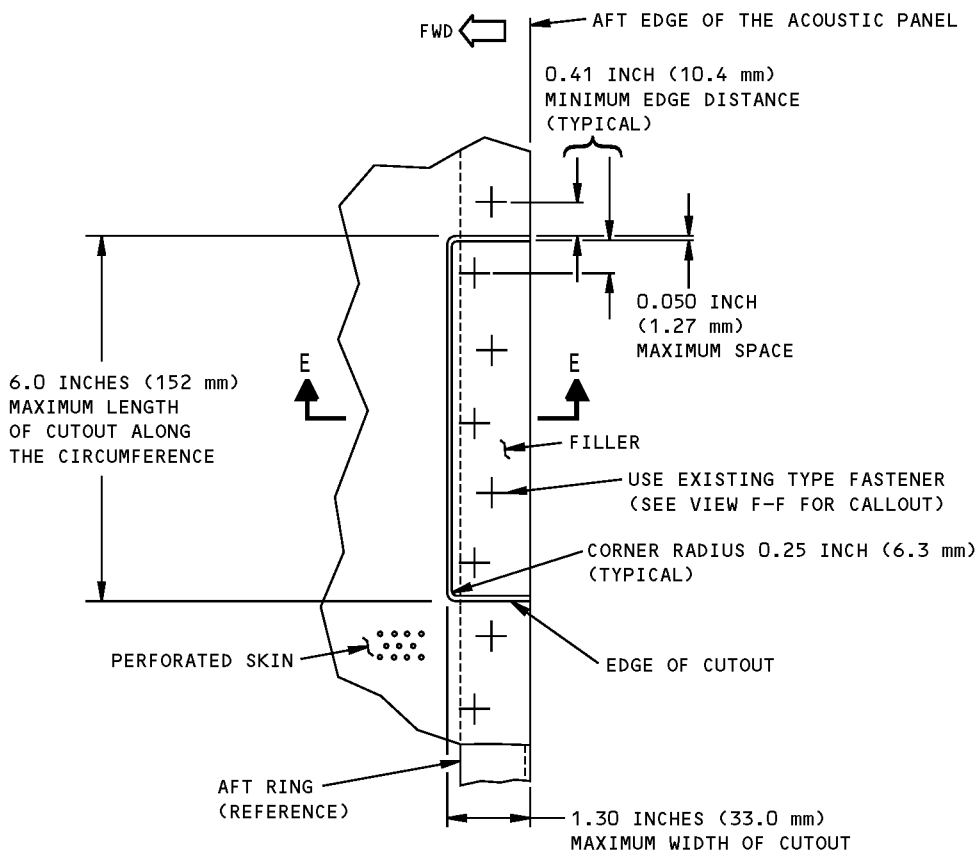


**VIEW C-C
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL**

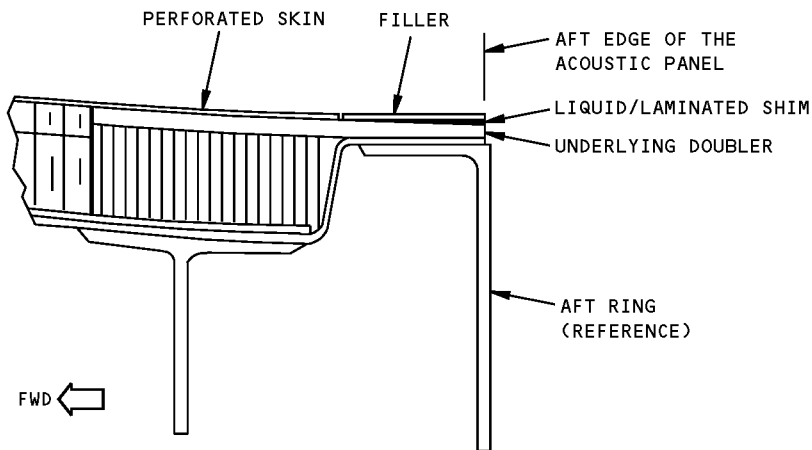
c2S-583-01

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



**VIEW D-D
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL**

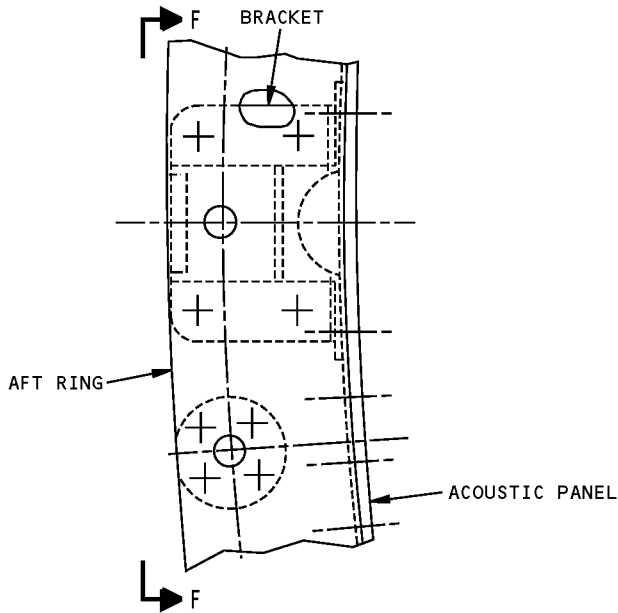


SECTION E-E

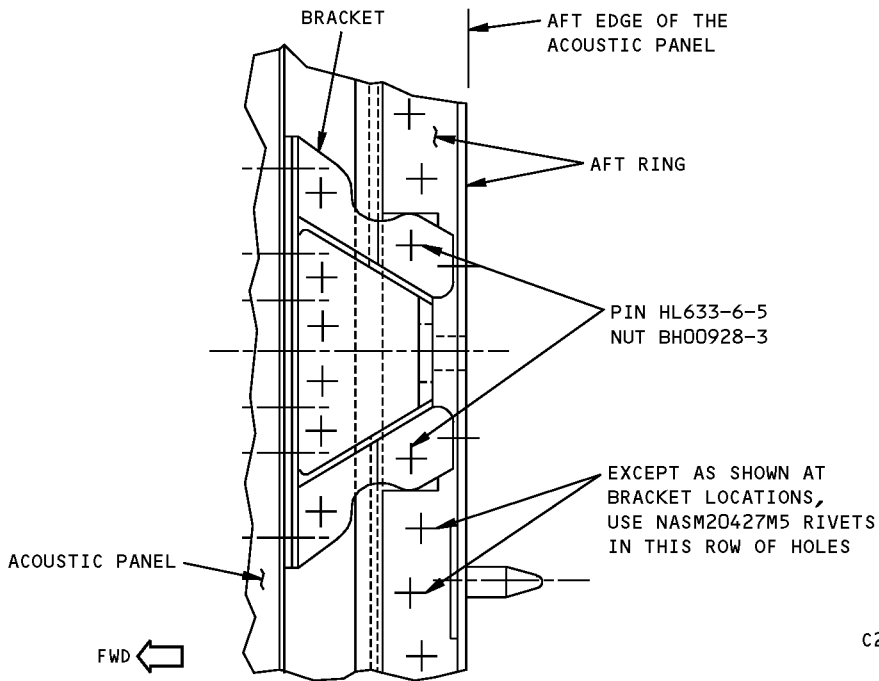
C2S-585-01

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



VIEW LOOKING FORWARD
DETAIL II



C2S-586-00

BRACKET SHOWN AT 9 O'CLOCK POSITION, OTHER BRACKETS ARE SIMILAR
VIEW LOOKING INBOARD
VIEW F-F

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**



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STRUCTURAL REPAIR MANUAL

REPAIR 18 - INLET COWL - REPAIR OF SMALL DAMAGE TO ACOUSTIC PANEL AFT EDGE PERFORATED SKIN AND DOUBLER - CF6-80C2 ENGINE

1. General

- A. This repair is applicable to corroded or otherwise damaged perforated skin and underlying doubler along the aft edge of the inlet cowl acoustic panels. The damage must be less than 6.0 inches (152 mm) long in the circumferential direction, and less than 1.3 inches (33 mm) wide. Refer to Figure 201/REPAIR 18, Detail I.
- B. This repair is not applicable if there is damage to the underlying doubler that is more than 0.060 inch (1.52 mm) deep.
- C. This repair is not applicable if the edge of the damage is less than 2.0 inches (51 mm) from the edge of an existing flow diverter, or from the edge of the splice at a panel split, or from the edge of the doubler used in another similar repair.
- D. This type of damage is repaired by removal of the damaged piece of perforated skin, blending the underlying doubler, and installation of a filler and doubler.

2. References

Reference	Title
51-30-02, GENERAL	Metallic Materials
51-30-03, GENERAL	Nonmetallic Materials
51-40-08	COUNTERSINKING

3. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area using a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface dry before the solvent evaporates.
- (2) Find the extent of damage. Do a tap test to examine for disbonds. Make a mark of the perforated skin to be cut out.

NOTE: The cutout must include a minimum of one existing rivet hole. The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.25 inch (6.3 mm) at the corners.

- (3) Make a mark of the outline of the doubler on the perforated skin. The doubler must be in line with the perforated skin along the aft edge, and 1.3 inches (33 mm) larger than the cutout around the remaining sides.
- (4) Apply teflon tape to the perforated skin to mask off the repair area. On the aft side, apply the tape along the aft edge of the perforated skin. Apply the tape 0.2 inch (5 mm) larger than the doubler around the remaining sides.

- B. Prepare the damage area for repair.

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WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill out the existing fasteners in the cutout area. Use applicable size drill bits. Do not damage the holes. Remove the burrs.
- (2) Cut the perforated skin as marked. Do not damage the structure below the surface. Remove the burrs.
- (3) Remove the corrosion or other damage from the underlying doubler in the cutout area. Blend the area with a minimum width-to-depth ratio of 10:1. Remove sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: This repair is not applicable if, after removal of material, the damage is more than 0.060 inch (1.52 mm) deep.

- (4) Lightly sand the surface in the area between the pieces of tape. Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

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- (5) Use dry air blast to remove the cutting, drilling, and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

C. Make the repair parts.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a doubler from 0.080 inch (2.03 mm) thick 2024-T3 aluminum alloy sheet as marked. Chamfer the edges. Remove the burrs.
- (2) Make a filler to fit inside the perforated skin cutout. Make from a 0.032 inch (0.81 mm) thick 2024-T3 aluminum alloy sheet. The space between the filler and the edge of the cutout must not be more than 0.050 inch (1.27 mm) all around. Remove the burrs.
- (3) Make a laminated shim, if applicable. Remove the burrs.

NOTE: If the depth of the material removed from the underlying doubler is less than 0.030 inch (0.76 mm), you can fill the gap with liquid shim only. If the depth is more, you must use a combination of liquid shim and laminated shims.

- (4) Form the repair parts as necessary to match the contour of the acoustic panel in the damage area. The repair parts must fit in place with light finger pressure.
- (5) Make a mark of the initial holes on the repair parts (use a template if necessary). Drill pilot holes in the repair parts as marked.



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Put the repair parts into position. Drill the final size holes in the repair parts. Use temporary fasteners to keep the holes aligned. Use applicable size drill bits. Do not damage the initial holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for the -5 rivets and 0.190 to 0.193 inch (4.83 to 4.90 mm) for the -6 Hi-loks.

CAUTION: WHEN YOU DRILL THE NEW HOLES THROUGH THE PERFORATED SKIN, MAKE SURE YOU DO NOT DRILL THROUGH THE ACOUSTIC PANEL.

- (6) Make a mark of the new holes on the doubler. Drill pilot holes as marked. Put the repair parts into position. Use temporary fasteners to align the initial holes, if necessary. Drill the final size new holes through the doubler and the perforated skin. Do not drill through the panel. Remove burrs.
- (7) Countersink the holes on the airwetted surface of the doubler to accept the rivets. Remove the burrs.
- (8) Lightly sand the surfaces and remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.
- (9) For the initial countersinks that are below the repair doubler, make and install countersink repair washers as shown in 51-40-08.

D. Prepare all repair surfaces for repair.

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- (1) Use dry air blast to remove the drilling and sanding particles. Clean the repair parts and the repair area with a clean, lint-free cloth lightly moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to prepare a solution of Turco WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: 1. DAB THE TURCO WO-1 SOLUTION ONTO THE ALUMINUM SURFACE. DO NOT RUB IT ACROSS THE ALUMINUM SURFACE.



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(CAUTION PRECEDES)

2. TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (3) Apply the Turco WO-1 solution to all bare aluminum surfaces. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (4) Rinse the treated surfaces thoroughly with clean, lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let the water get into the core.

- (5) All repair surfaces must be water break-free surfaces. Do a water break-free test of these surfaces.

NOTE: A surface is water break-free if a thin, unbroken film of water can stay on it for at least 10 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Dry the repair area at 190-210°F (88-99°C) for 30 minutes. Use an explosion proof heat lamp.
(7) Let the area cool down to room temperature before you apply the primer.

WARNING: BR-127 ADHESIVE PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Air dry the primer for 30 minutes. Then cure for 1 hour at 230-250°F (110-121°C). Use an explosion proof heat lamp.

- E. Apply the liquid shim/EA9394 adhesive (and laminated shim if applicable).



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STRUCTURAL REPAIR MANUAL

WARNING: LIQUID SHIM/EA9394 ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the liquid shim/EA9394 adhesive.
- (2) Apply liquid shim/EA9394 adhesive to the blended area of the underlying doubler.

NOTE: If a laminated shim is used, apply liquid shim/EA9394 adhesive to its mating surface with the underlying doubler, and put it into position. Make sure the holes are aligned. Use temporary fasteners if necessary to align the holes, but remove them before the liquid shim/EA9394 adhesive cures.

- (3) Remove the unwanted liquid shim/EA9394 adhesive from the repair area before it cures. Use a clean, lint-free cloth.
- (4) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Cure the liquid shim/EA9394 adhesive using an explosiveproof heat lamp. Apply the heat until the repair area reaches a temperature of 190-210°F (88-99°C). Cure the liquid shim/EA9394 adhesive for 60 minutes at this temperature.
- (6) Let the repair area cool down to room temperature before removing the curing materials.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (7) The shimmed surface must be level with the adjacent surface. Remove the unwanted cured liquid shim/EA9394 adhesive (or peel off the unwanted laminates) as necessary to do so. Remove the sharp edges.

Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If you damage the surface finish in the repair area, you must restore it as shown in REPAIR 16.



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STRUCTURAL REPAIR MANUAL

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- (8) Use dry air blast to remove the drilling and sanding particles. Clean the repair parts and the repair area with a clean, lint-free cloth lightly moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

F. Install the repair parts.

WARNING: LIQUID SHIM/EA9394 ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the liquid shim/EA9394 adhesive.
- (2) Apply a thin layer of the liquid shim/EA9394 adhesive mixture to all mating surfaces.
- (3) Cut pieces of scrim cloth and apply to the two mating surfaces of the filler only.
- (4) Put the repair parts into position. Align the rivet holes. Use temporary fasteners to keep the holes aligned.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Wet install the applicable original type fasteners with the RTV 157 sealant.

NOTE: If a BH00928-3 nut is installed, it must be torqued to 27 to 33 in-lbs. If a Hi-lok collar is used as an alternative, the same torque values must be used, and the head of the collar must be removed without twisting or applying more torque.



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STRUCTURAL REPAIR MANUAL

WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the unwanted adhesive or sealant from the repair area before it cures. Use a clean, lint-free cloth lightly moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.
- (7) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (8) Cure the adhesive using an explosion proof heat lamps. Apply the heat until the repair area reaches a temperature of 190-210°F (88-99°C). Cure the adhesive for 60 minutes at this temperature.
- (9) Let the repair area cool down to room temperature before removing the curing materials.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (10) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If you damage the surface finish in the repair area, you must restore it as given in REPAIR 16.

WARNING: TURCO 6646 IS FLAMMABLE AND IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (11) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface dry before the solvent evaporates.

G. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds. Repeat the applicable steps, if necessary.



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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace Inc. The Dexter Corp. 2850 Willow Pass road P.O. Box 312 Pittsburg, CA 94565-0031
Aluminum Alloy Sheet	0.032 inch (0.81 mm) thick and 0.080 inch (2.03 mm) thick 2024-T3	Commercially Available
Blanket, Heat (Alternative to the Heat Lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Scrim		Commercially Available
BMS 5-121 (Alternative to the Cloth, Scrim)	CEREXR 230336 or Type 23 0.0018 to 0.0030 inch thick, 0.25 to 0.35 oz/yd ² weight	Cerex Advanced Fabrics 610 Chemstrand Road Cantonment, FI 32533
Cloth, Wiper	Cotton, Lint-free	Commercially Available
Container	Metal or Plastic	Commercially Available
Etching Solution	Turco WO-1	Turco Products, Inc. Subsidiary of Penwalt Corp. 24600 S. Main Street P.O. Box 2600 Carson, CA 90749
Glasses	Safety	Commercially Available
Gloves	Cotton, Lint-free	Commercially Available
Gloves	Neoprene or Poly- vinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat, Explosion-Proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory Agency Approved	Commercially Available
Nut	BH00928-3	Bristol Industries Brea, CA
Paper, Abrasive	150-400 Grit, Aluminum Oxide	Commercially Available
Bolt, hex drive	HL633-6-6, HL633-6-21	Hi-Shear Corp. Torrance, CA
Probe, Temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Solid, Flush Head	NASM20427M5	Commercially Available
Sealant	RTV 157	General Electric Company 260 Hudson River Rd Waterford, NY 12188



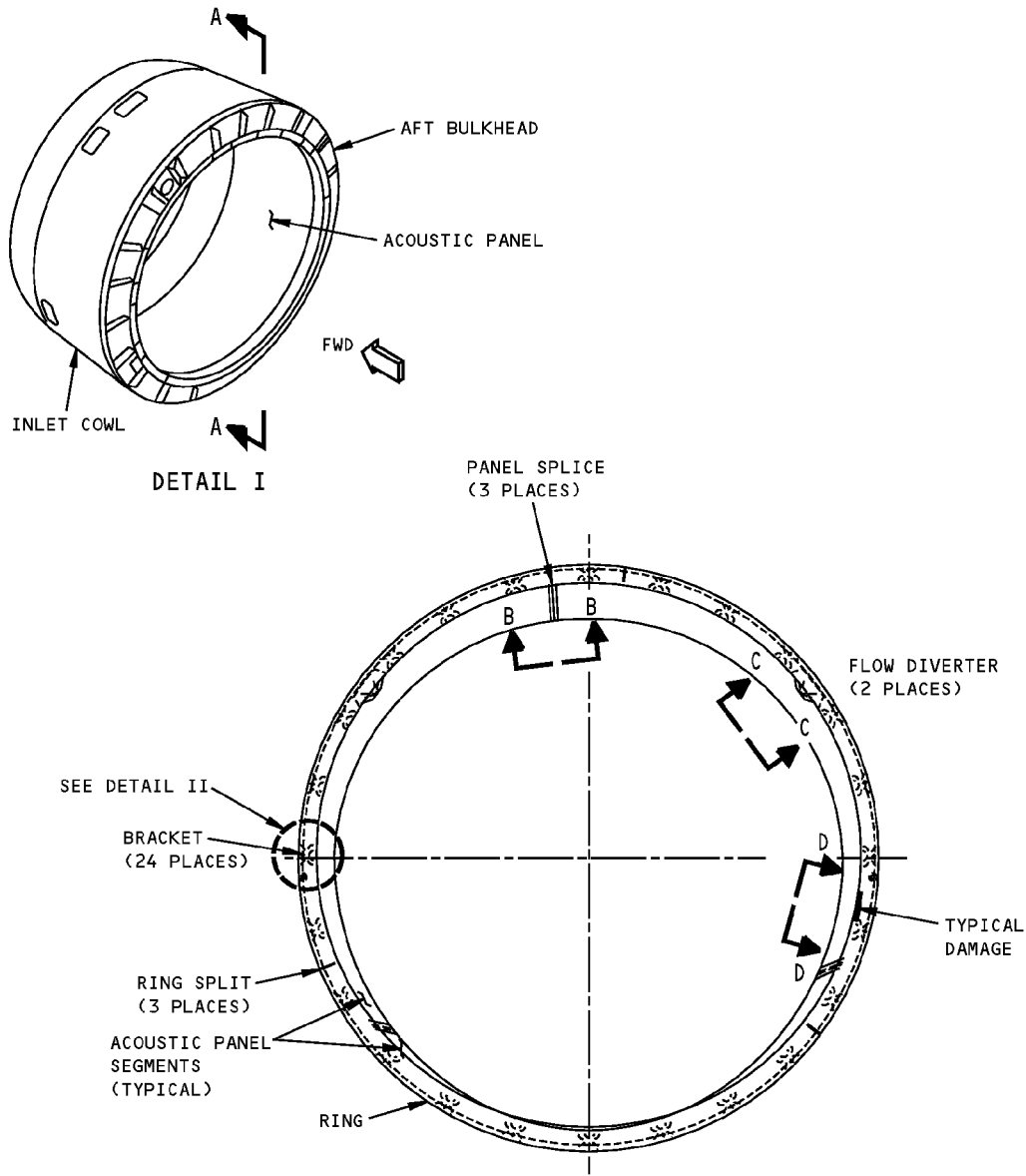
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent (Alternative for Turco 6646)	Methyl Isobutyl Ketone (MIBK)	Commercially Available
Solvent	Turco 6646	Commercially Available
Spatula	Plastic	Commercially Available
Tape	Teflon, 2 inches (51 mm) Wide	Commercially Available

*[1] Alternative sources for these materials can be found in 51-30-02, GENERAL and 51-30-03, GENERAL

**767-300
STRUCTURAL REPAIR MANUAL**

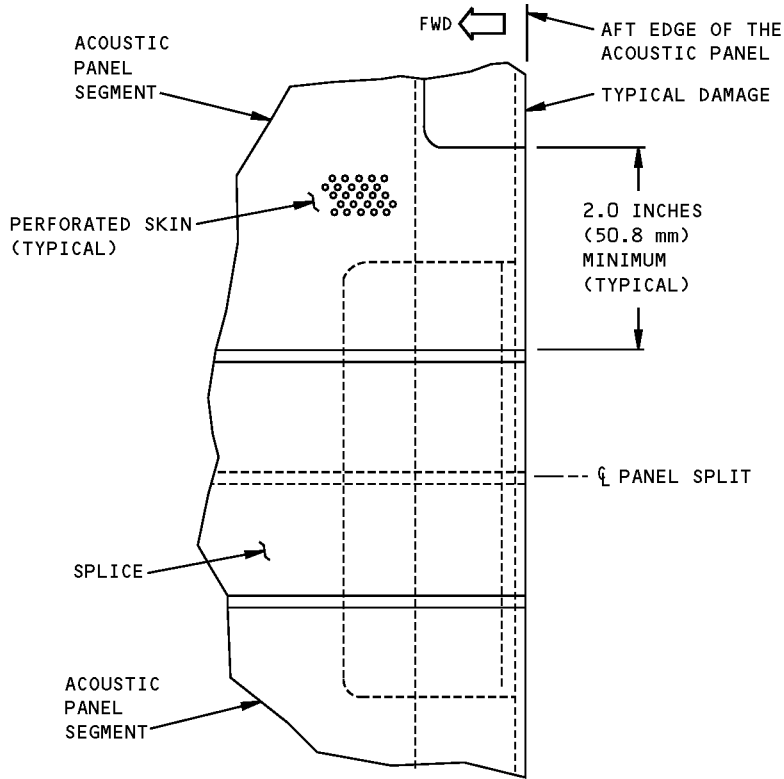


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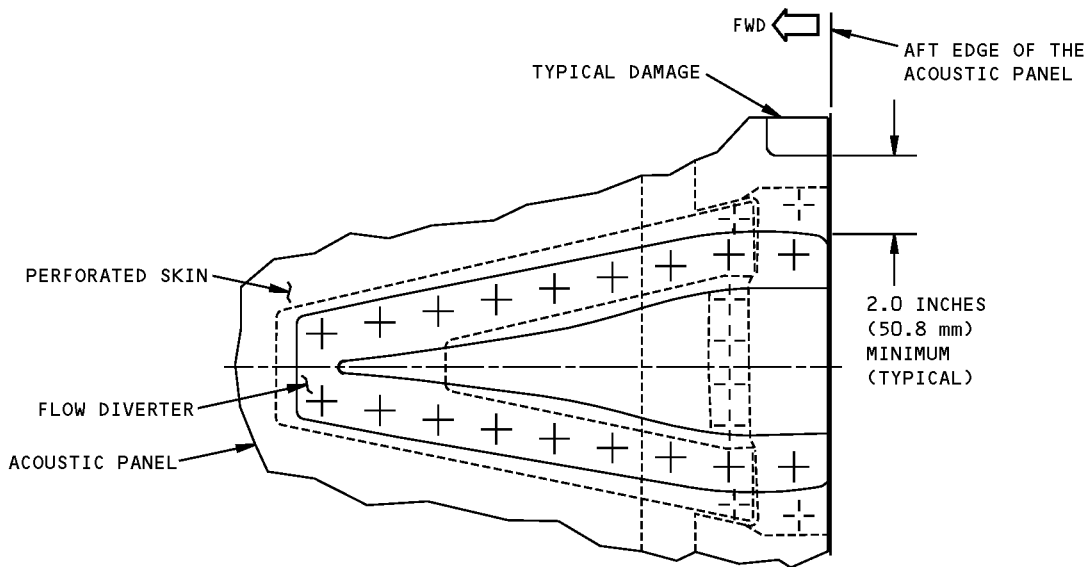
VIEW A-A
VIEW LOOKING FWD AT AFT RING
(AFT BULKHEAD IS NOT SHOWN FOR CLARITY)

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin and Doubler - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**VIEW B-B
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL**

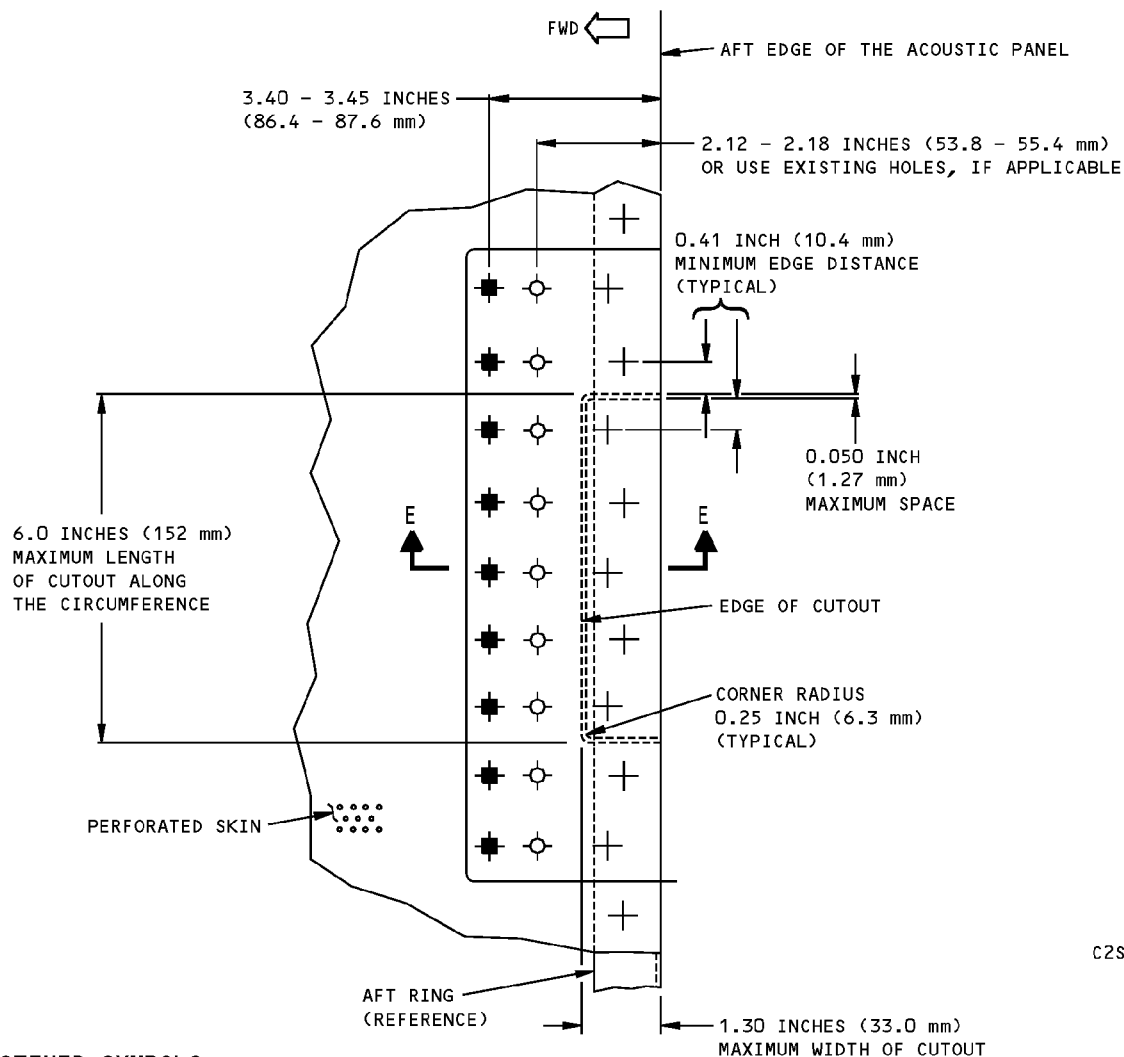


**VIEW C-C
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL**

c2S-583-01

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin and Doubler - CF6-80C2
Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



C2S-587-00

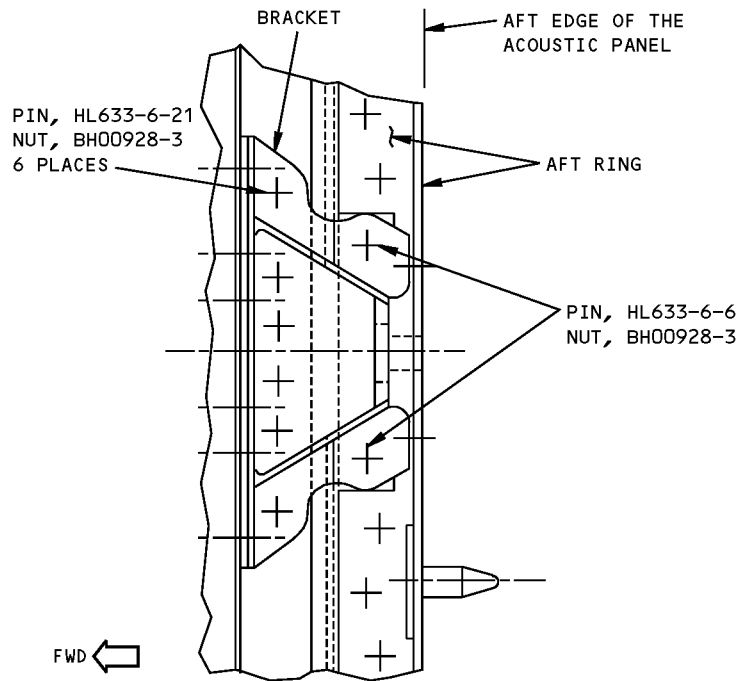
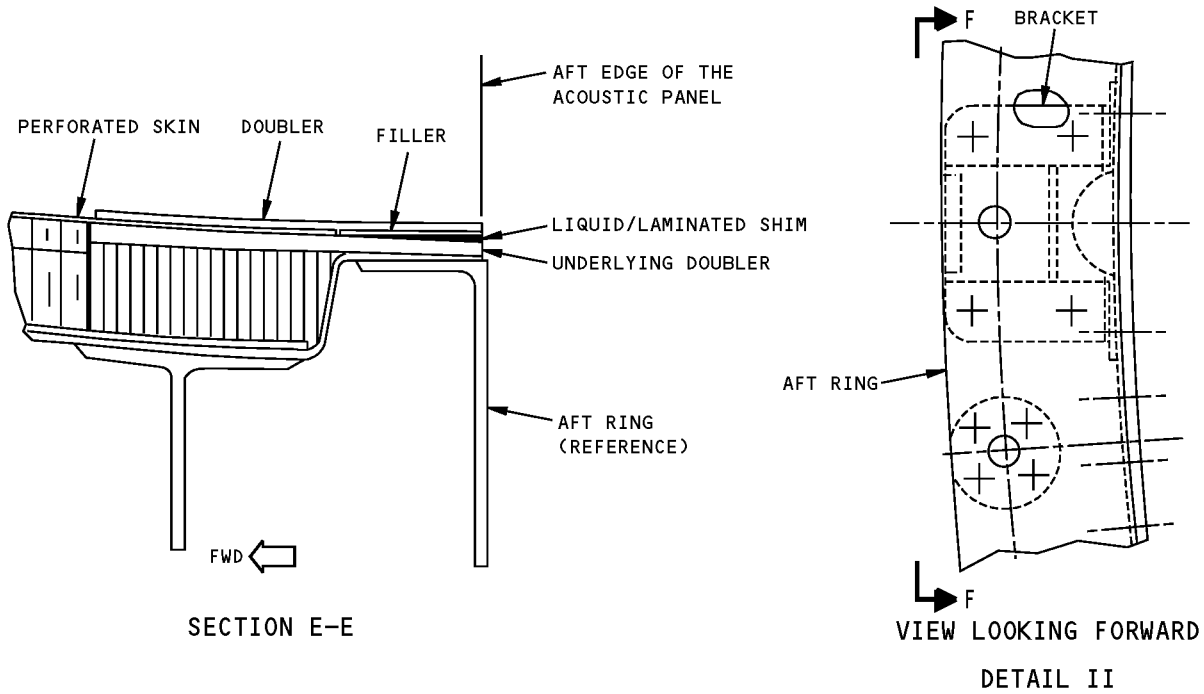
FASTENER SYMBOLS

- INITIAL HOLES ALONG THE AFT EDGE:
USE HILOKS AS SHOWN IN VIEW F-F, IF AT A BRACKET LOCATION. IF NOT, USE NASM20427M5 RIVETS. INSTALL THE COUNTERSINK REPAIR WASHERS IN THE INITIAL COUNTERSINKS THAT ARE BELOW THE REPAIR DOUBLER.
- IF INITIAL HOLES AT A BRACKET LOCATION, USE HILOKS AS SHOWN IN VIEW F-F. IF NEW HOLES, USE CR3522-5 RIVETS.
- NEW HOLES: USE CR3522-5 RIVETS

VIEW D-D
VIEW LOOKING OUTBOARD AT ACOUSTIC PANEL

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin and Doubler - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



C2S-586-00

BRACKET SHOWN AT 9 O'CLOCK POSITION, OTHER BRACKETS ARE SIMILAR
VIEW LOOKING INBOARD
VIEW F-F

**Inlet Cowl - Repair of Small Damage to Acoustic Panel Aft Edge Perforated Skin and Doubler - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL**REPAIR 19 - INLET COWL - REPAIR OF SMALL DAMAGE TO THE ACOUSTIC PANEL FORWARD EDGE
PERFORATED SKIN - CF6-80C2 ENGINE****1. General**

- A. This repair is applicable to corroded or otherwise damaged perforated skin along the forward edge of the inlet cowl acoustic panels. The damage must be less than 6.0 inches (152 mm) long in the circumferential direction, and less than 1.5 inches (38 mm) wide. (Figure 201/REPAIR 19.)
- B. This repair is not applicable if there is damage to the underlying doubler that is more than 0.005 inch (0.13 mm) deep.
- C. This repair is not applicable if the edge of the damage is less than 2.0 inches (51 mm) from the edge of the splice at a panel split, or from the edge of the other similar repairs.
- D. This type of damage is repaired by removal of the damaged piece of perforated skin and installation of a filler in its place.

2. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. USE IN A WELL-VENTILATED AREA. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface dry before the solvent becomes dry.
- (2) Find the extent of damage. Do a tap test to examine for disbonds. Make a mark of the perforated skin to be cut out.

NOTE: The cutout must include a minimum of one rivet hole. The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.25 inch (6.4 mm) at the corners.

- (3) Apply teflon tape to mask off the repair area. On the forward side, apply the tape in line with the aft edge of the lipskin. On the remaining sides apply the tape 0.2 inch (5 mm) larger than the cutout.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Drill out the initial fasteners in the cutout area. Use applicable size drill bits. Do not damage the holes. Remove the burrs.
- (2) Cut the perforated skin along the mark. Do not damage the structure below the surface. Remove the burrs.
- (3) If the underlying doubler is corroded in the cutout area, remove the corrosion. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If, after removal of material, the damage to the underlying doubler is more than 0.005 inch (0.13 mm) deep, this repair is not applicable.

STRUCTURAL REPAIR MANUAL

- (4) Lightly sand the surfaces in the area between the pieces of tape. Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Use dry air blast to remove the cutting and sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

C. Make the filler.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a filler to fit inside the cutout. Make from 0.032 inch (0.81 mm) thick 2024-T3 aluminum alloy sheet. The space between the filler and the edge of the cutout must not be more than 0.05 inch (1.3 mm) all around. Remove the burrs.
- (2) Form the filler as necessary to match the contour of the acoustic panel in the damage area. The filler must fit in place with light finger pressure.
- (3) Make a mark of the initial holes on the filler. Use a template if necessary. Drill pilot holes in the filler at the marks. Put the filler into position. Use temporary fasteners to keep the holes aligned. Drill the final size holes in the filler. Do not damage the initial holes. Remove the burrs.

NOTE: 1. Initial holes are for -5 hexÄdrive bolts. If a hole is damaged, it is acceptable to install a Ä6 hexÄdrive bolt in that hole.

2. If there is no access to the backside of a hole, it is acceptable to install a blind rivet in that hole.

3. For the fasteners and the related hole limits refer to Table 201/REPAIR 19
Table 202/REPAIR 19
Table 203/REPAIR 19
Table 204/REPAIR 19.

- (4) Countersink the holes on the air-wetted surface of the filler. Remove the burrs.
- (5) Lightly sand the surfaces of the filler. Remove all sharp edges. Use 150-400 grit aluminum oxide abrasive.

D. Prepare the repair surfaces for repair.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Use dry air blast to remove the drilling and sanding particles. Clean the filler and the repair area with a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

STRUCTURAL REPAIR MANUAL

WARNING: TURCO WO-1 ETCHING SOLUTION IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (2) Use the manufacturer's instructions to prepare a solution of TURCO WO-1 diluted with demineralized water. Use 20-25% Turco by volume.

CAUTION: DAB THE TURCO WO-1 SOLUTION ON THE SKIN. DO NOT RUB IT ACROSS THE SKIN.

CAUTION: TURCO WO-1 SOLUTION CAUSES CORROSION TO THE BOND SURFACES. WHEN YOU APPLY THE SOLUTION, OR RINSE THE SURFACE, DO NOT LET THE SOLUTION GET THROUGH THE PERFORATIONS.

- (3) Apply the Turco WO-1 solution to all bare aluminum surfaces. Dab the solution on, do not rub. Wait for 8 to 10 minutes.

NOTE: Do not let the solution get into the core.

- (4) Rinse the treated surfaces thoroughly with clean lint-free cloth made moist with demineralized water. Use litmus paper to make sure the Turco WO-1 solution is completely removed.

NOTE: Do not let water get into the core.

- (5) All repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Dry the repair area at 190-210°F (88-99°C) for 30 minutes. Use an explosion proof heat lamp.

- (7) Let the area cool down to room temperature before you apply the primer.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (8) Use the manufacturer's instructions to prepare the BR-127 adhesive primer. Apply the primer to the edges and surfaces that were treated with the Turco WO-1 solution. The primer must have a dry film thickness of 0.0001 to 0.0004 inch (0.003 to 0.010 mm).

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(9) Air dry the primer for 30 minutes. Then cure for one hour at 230-250°F (110-121°C). Use an explosion proof heat lamp.

E. Install the filler.

WARNING: EA9394 ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9394 adhesive.
- (2) Apply a thin layer of the EA9394 adhesive mixture to the mating surfaces of the filler and the underlying doubler.
- (3) Cut a piece of scrim cloth and apply to the mating surface of the filler.
- (4) Put the filler into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned.

WARNING: RTV 157 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (5) Wet install the applicable initial type fasteners with the RTV 157 sealant.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Remove the excess adhesive or sealant from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (7) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (8) Cure the adhesive. Use explosion proof heat lamps. Apply the heat until the repair area reaches a temperature of 190-210°F (88-99°C).

Cure the adhesive for 60 minutes at this temperature.

- (9) Let the repair area cool down to room temperature. Remove the curing materials.

WARNING: WHEN ADHESIVES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (10) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

NOTE: If you damage the surface finish in the repair area, you must restore it as given in REPAIR 16.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (11) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

F. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds.

Repeat the applicable steps, if necessary.

Table 201:

Fastener	Hole Diameter
HL633-5	0.1605 to 0.1625 in. (4.077 to 4.128 mm)
HL633-6	0.1865 to 0.1885 in. (4.737 to 4.788 mm)
CR3555-5	0.176 to 0.180 in. (4.47 to 4.57 mm)
CR3555-6	0.205 to 0.209 in. (5.21 to 5.31 mm)

Table 202:

DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive	EA9394	Dexter Hysol Aerospace Inc. The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Aluminum Alloy Sheet	0.032 inch thick 2024-T3	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Scrim		Commercially Available

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STRUCTURAL REPAIR MANUAL

DESCRIPTION	DESIGNATION	MANUFACTURER
BMS 5-121 (Alternate to the cloth, scrim)	CEREXR 230336 or Type 23 0.0018 to 0.0030 inch thick 0.25 to 0.35 ounce/square yard weight	CEREX Advanced Fabrics 610 Chemstrand Road Cantonment, FL
Cloth, Wiper	Cotton, lint-free	Commercially Available
Collar, Hi-lok	HL585-5AW HL585-6AW	Hi-Shear Corp, Torrance, CA
Container	Metal or plastic	Commercially Available

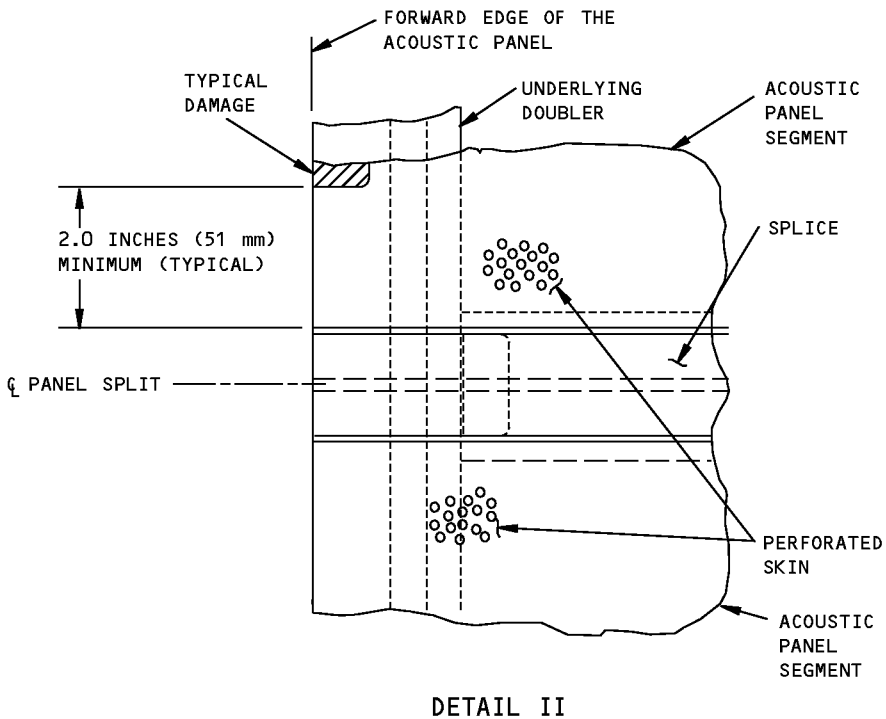
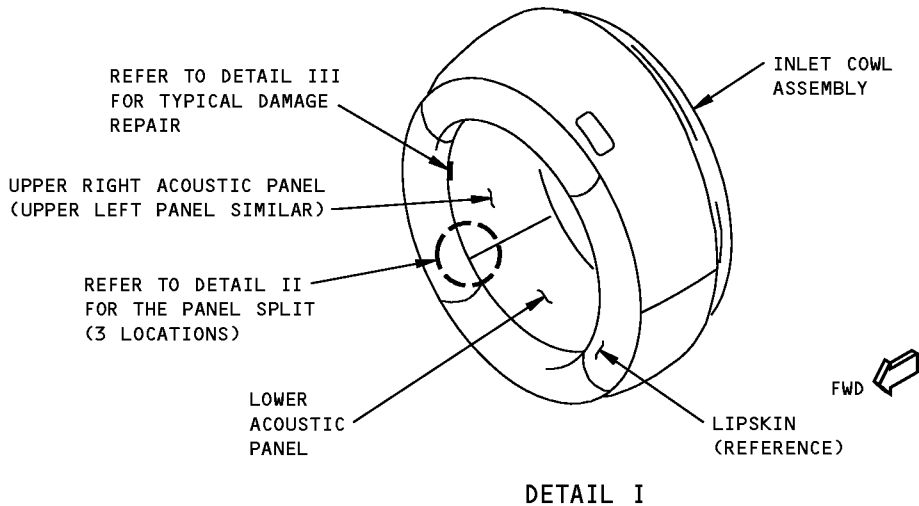
Table 203:

DESCRIPTION	DESIGNATION	MANUFACTURER
Etching Solution	Turco WO-1	Turco Products, Inc. Subsidiary of Pennwalt Corp. 24600 S. Main Street P.O. Box 2600 Carson, CA 90749
Glasses	Safety	Commercially Available
Gloves	Cotton lint-free	Commercially Available
Gloves Knife	Neoprene or Polyvinyl Chloride Putty	Commercially Available Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat (Explosion proof)	180° to 200°F (83° to 93°C)	Commercially Available
Blanket, Heat (Alternative to the Heat Lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150-400 Grit, Aluminum oxide	Commercially Available

Table 204:

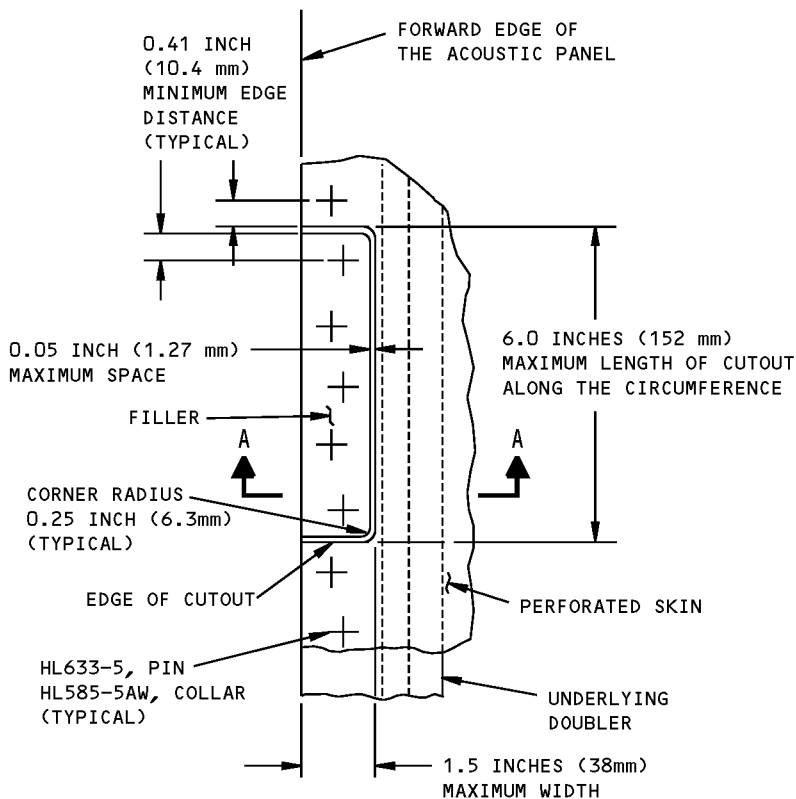
DESCRIPTION	DESIGNATION	MANUFACTURER
Pin, Hi-lok	HL633-5-() HL633-6-()	Hi-Shear Corp, Torrance, CA
Probe, Temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Blind, (Alternative for Hi-loks)	CR3555-5-() CR3555-6-()	Commercially Available
Sealant	RTV-157	General Electric Company 260 Hudson River Rd Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc.
Spatula	Plastic	Commercially Available
Tape	Teflon, 2-inch (51 mm) wide	Commercially Available

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STRUCTURAL REPAIR MANUAL**



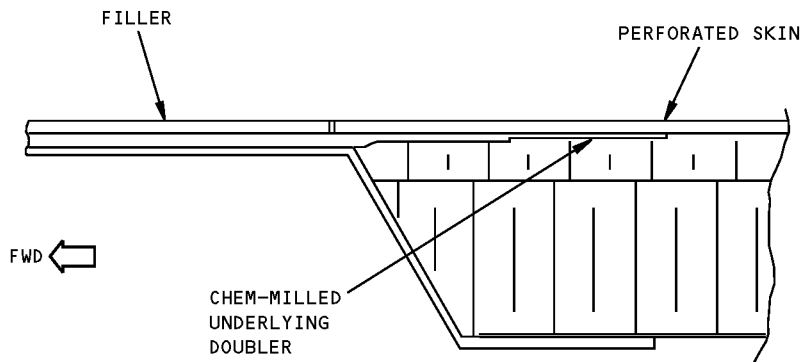
**Inlet Cowl - Repair of Small Damage to the Acoustic Panel Forward Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL



VIEW LOOKING OUTBOARD AT THE ACOUSTIC PANEL

DETAIL III

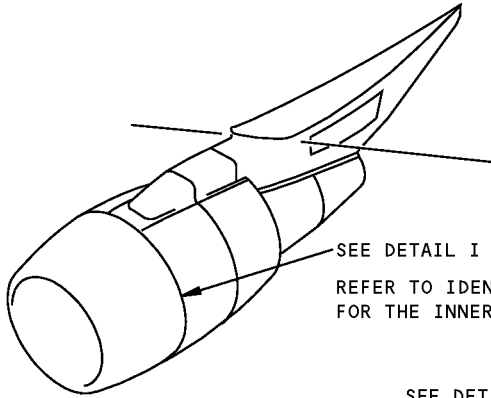


SECTION A-A

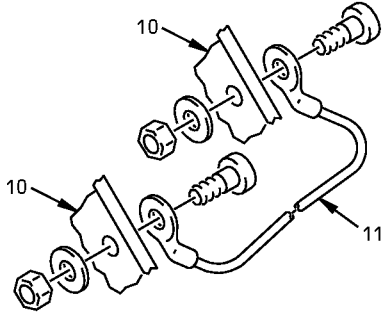
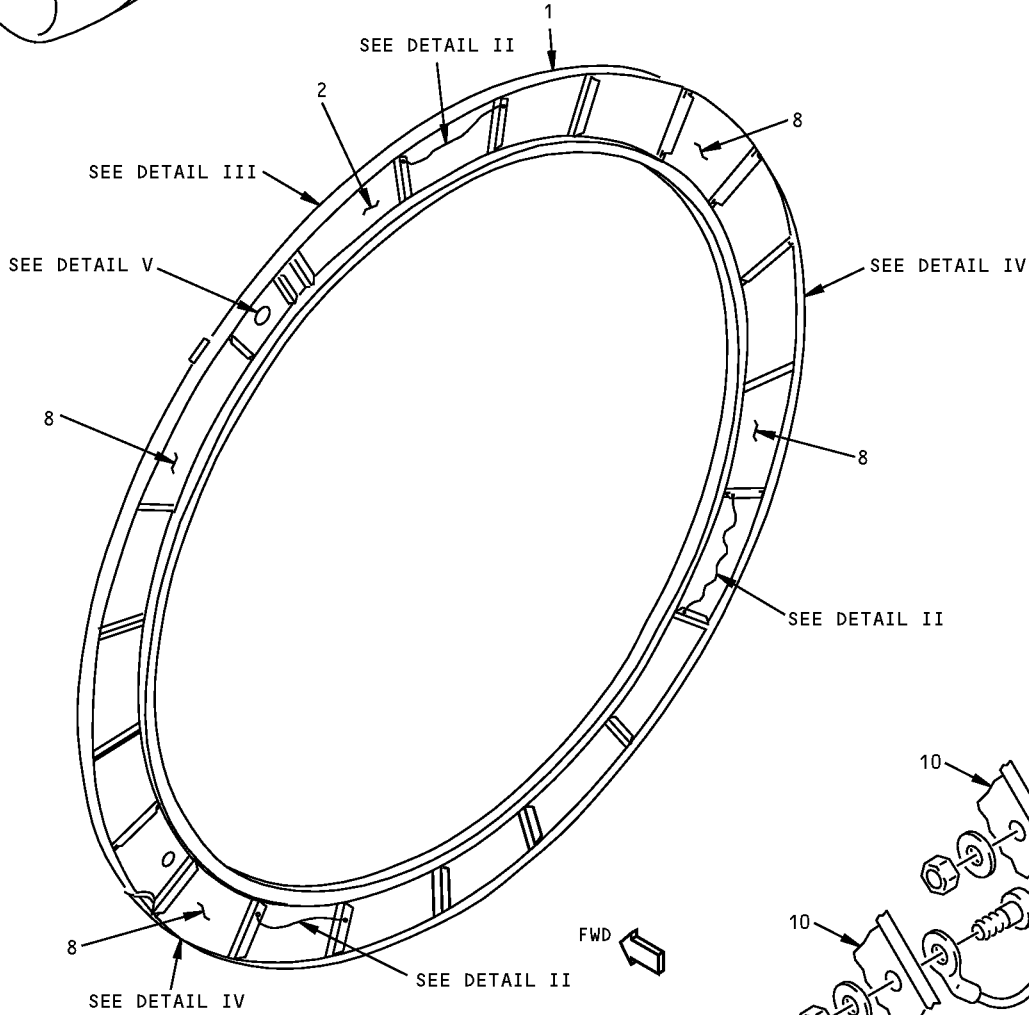
**Inlet Cowl - Repair of Small Damage to the Acoustic Panel Forward Edge Perforated Skin - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - INLET COWL AFT BULKHEAD STRUCTURE - CF6-80C2 ENGINE



THIS SUBJECT IS ONLY APPLICABLE TO INLET COWLS WITH A SERIAL NUMBER 1922001 AND ON. REFER TO SRM 54-12-02 FOR THE INLET COWLS WITH A SERIAL NUMBER PRIOR TO 1922001.

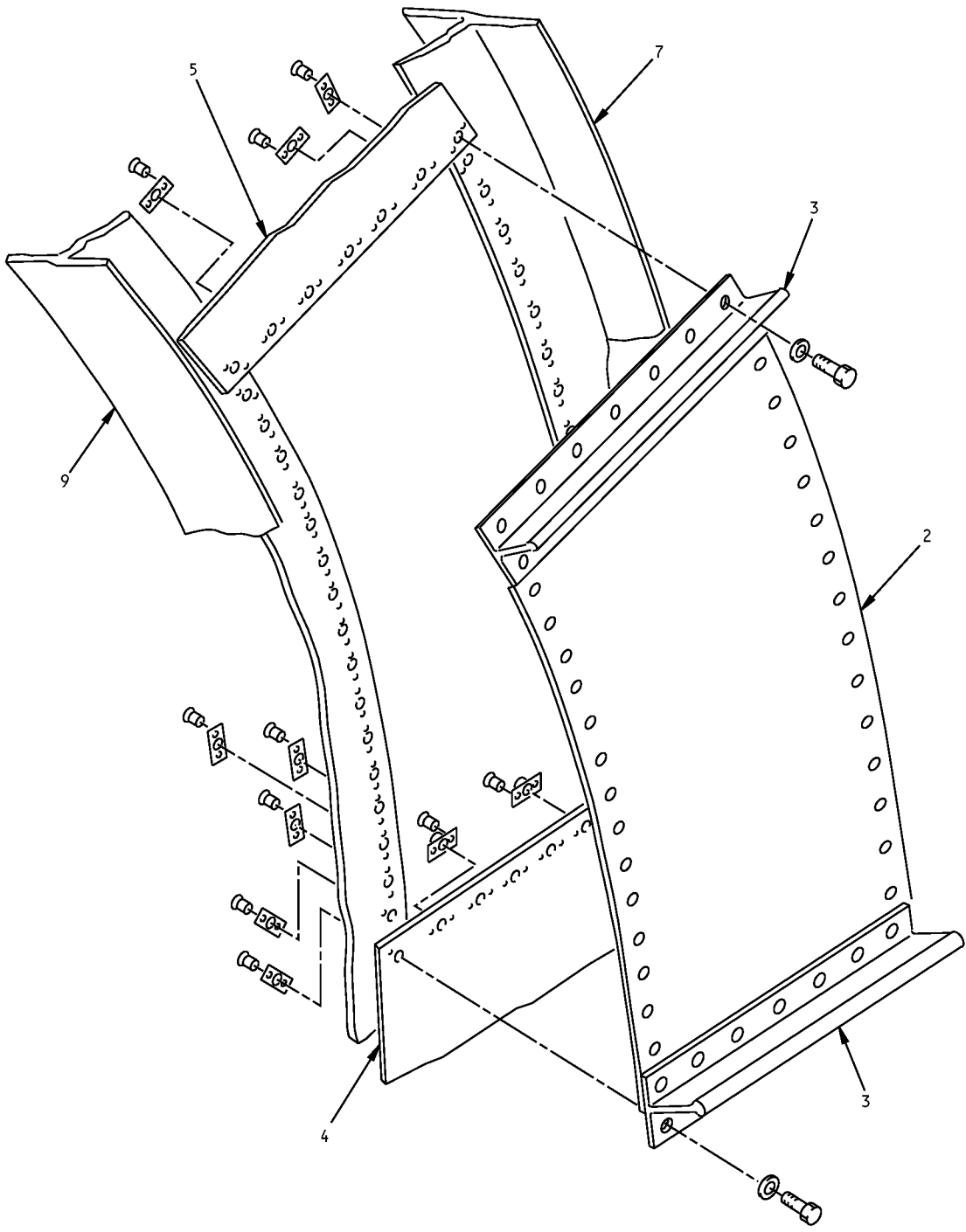


DETAIL I

DETAIL II s76S-041-00

**Inlet Cowl Aft Bulkhead Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III

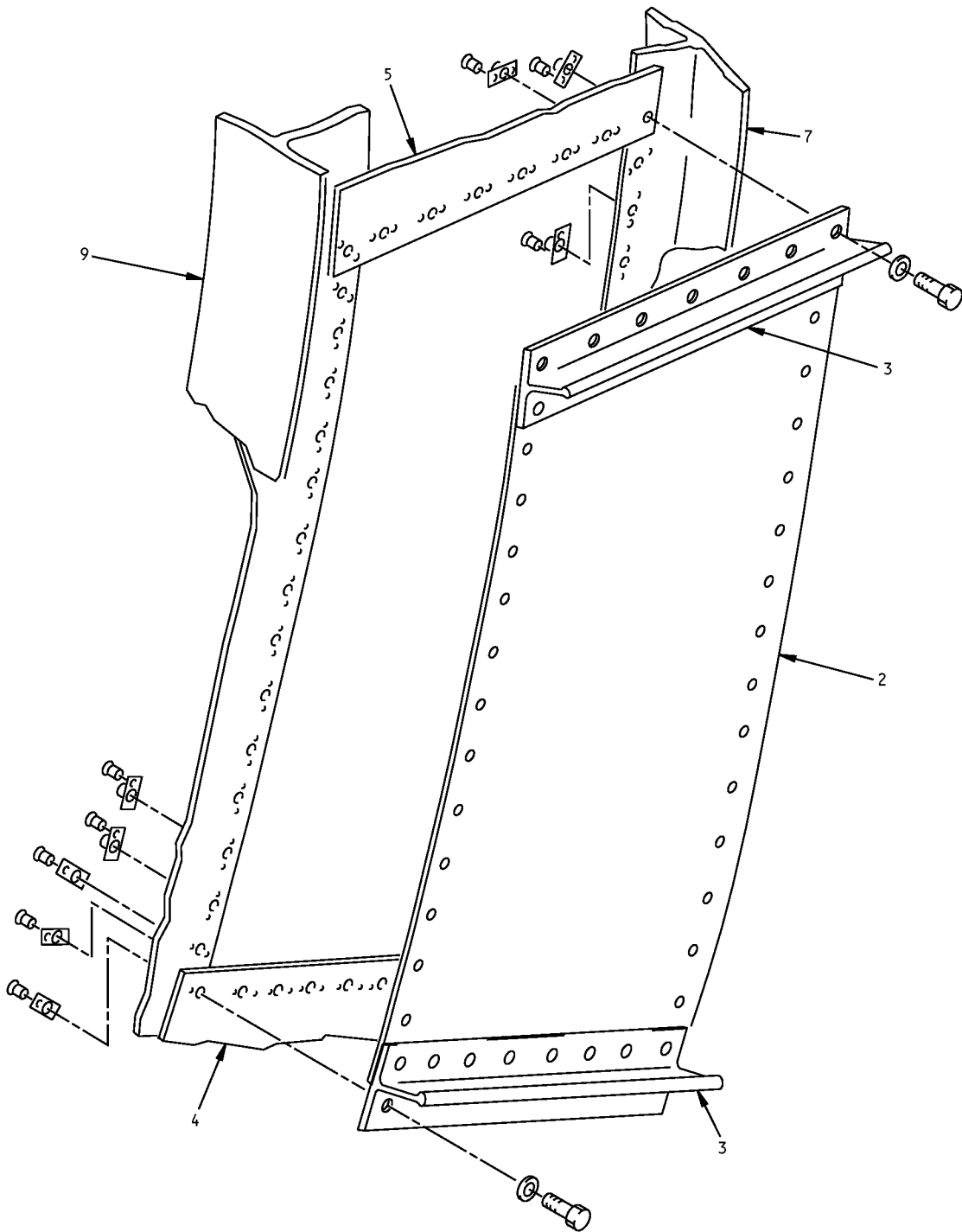
S76S-042-00

**Inlet Cowl Aft Bulkhead Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 5)**

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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**



DETAIL IV

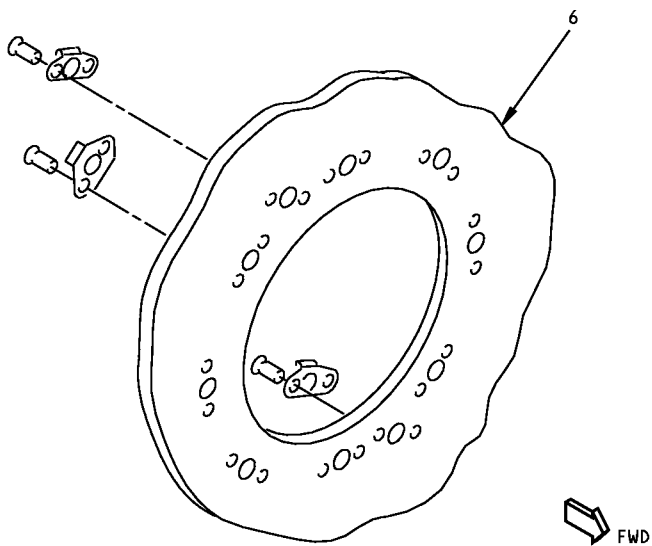
S76S-043-00

**Inlet Cowl Aft Bulkhead Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 5)**

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DETAIL V

S76S-044-00

**Inlet Cowl Aft Bulkhead Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 5)**

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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INLET COWL AFT BULKHEAD ASSY			
2	DOOR ASSY			
3	TEE STIFFENER	0.080	(S700E1483-2) 2024-T3511 AL EXTRUSION, QQ-A-200/3	
4	AFT BULKHEAD WEB	0.063	2024-T3 CLAD ALUM SHEET, QQ-A-250/4	
5	BULKHEAD WEB	0.063	TI-CP-70, TI SH, AMS 4901	
6	DOUBLER	0.063	TI-CP-70, TI SH, AMS 4901	
7	FRAME, OUTER, AFT BULKHEAD	0.071	(S700E0589) 2024-T42 AL EXTRUSION, QQ-A-200/3	
8	DOOR WEB	0.063	2024-T3 CLAD ALUM SHEET, QQ-A-250/4	
9	FRAME, INNER, AFT BULKHEAD	0.080	(S700E0590) 2024-T42 AL EXTRUSION, QQ-A-200/3	
10	TEE STIFFENER	0.064	2024-T3511 BARE ALUM SHEET, QQ-A-200/3	
11	LANYARD		52305A19-6 (V84256)	

LIST OF MATERIALS

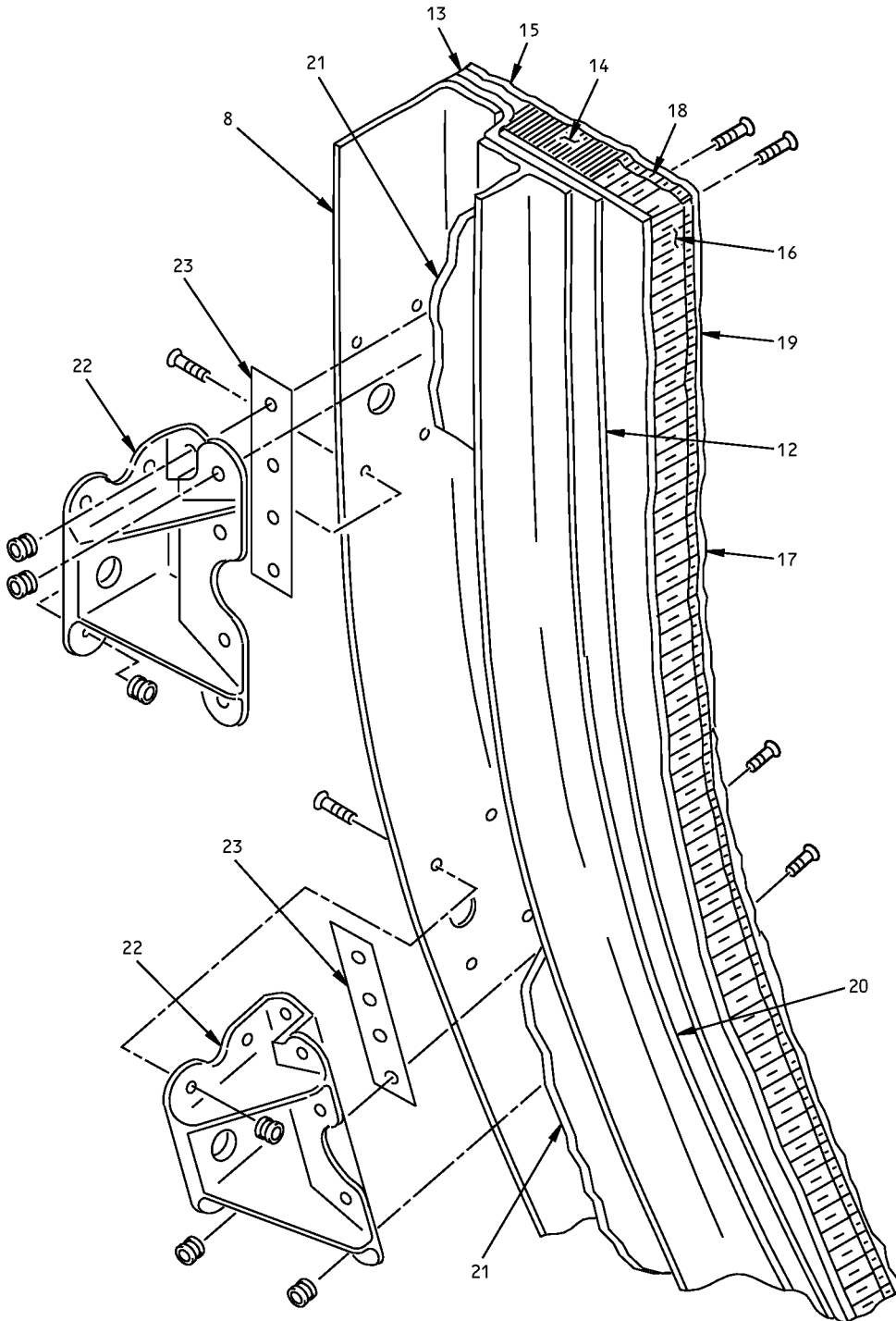
**Inlet Cowl Aft Bulkhead Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 5)**

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DETAIL I

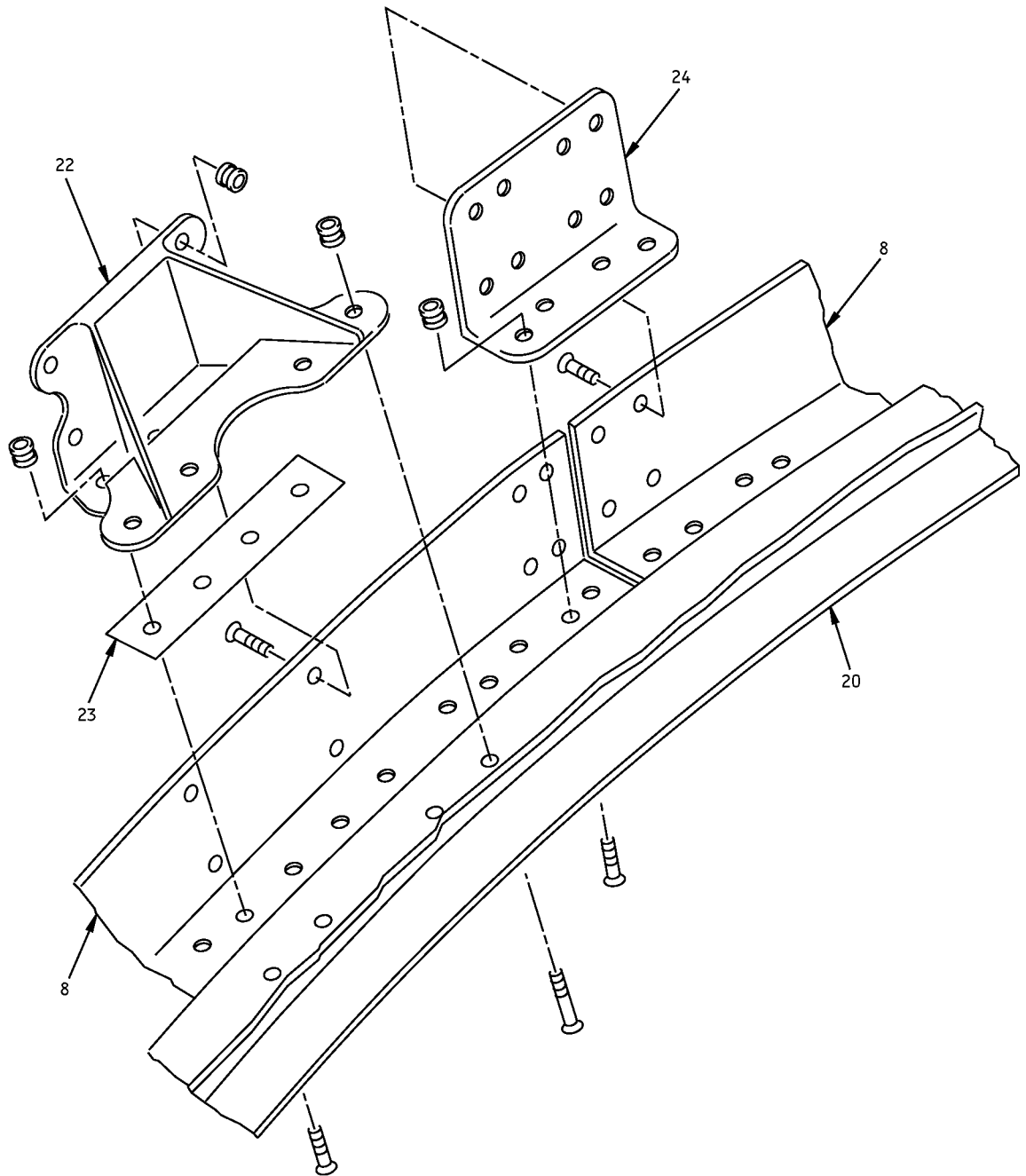
S76S-046-00

**Inlet Cowl Inner Barrel Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 7)**

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DETAIL II

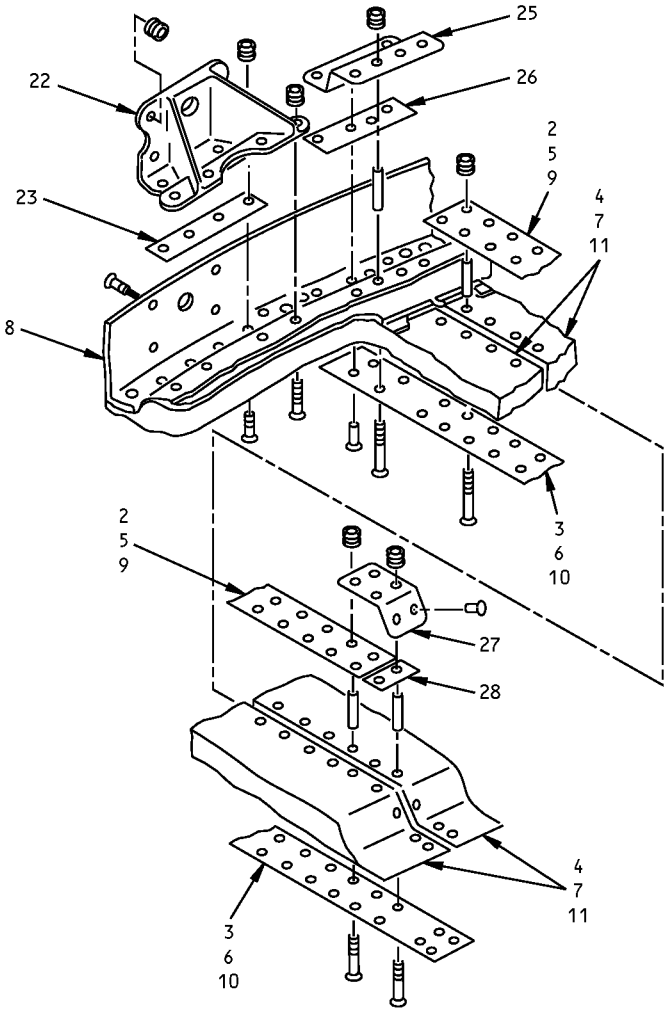
S76S-047-00

**Inlet Cowl Inner Barrel Structure Identification - CF6-80C2 Engine
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DETAIL III

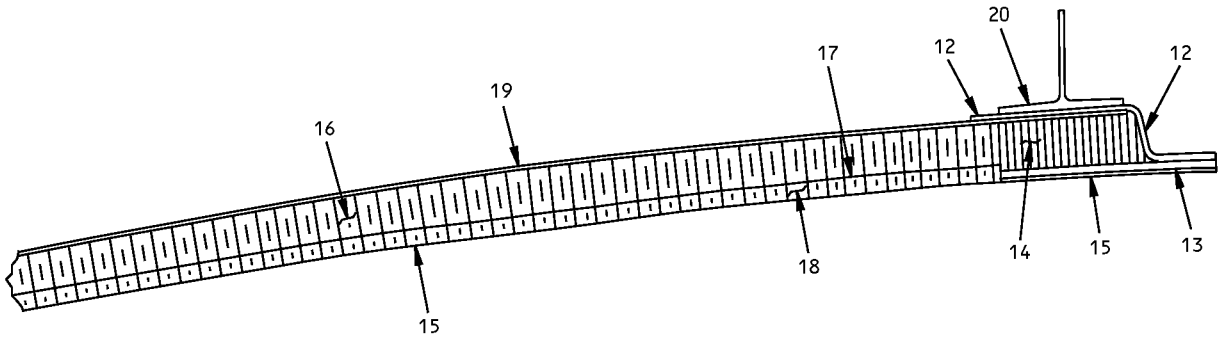
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**Inlet Cowl Inner Barrel Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 7)**

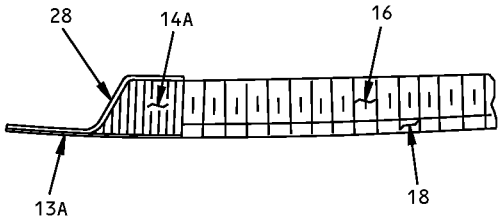
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DETAIL IV



DETAIL V

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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INNER BARREL ASSEMBLY- INLET COWL			
2	SPLICE, OUTER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
3	SPLICE, INNER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
4	PANEL ASSEMBLY, ACOUSTIC, UPPER LEFT			
5	SPLICE, OUTER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
6	SPLICE, INNER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
7	PANEL ASSEMBLY, ACOUSTIC LOWER			
8	ATTACH RING SEGMENT	0.100	(S700E0700) 2024-T62 ALUM EXT, QQ-A-200/3	
9	SPLICE, OUTER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
10	SPLICE, INNER SKIN	0.063	2024-T3 CLAD ALUMINUM SHEET, QQ-A-250/5	
11	PANEL ASSEMBLY, ACOUSTIC UPPER RIGHT			
12	CLOSURE, AFT	0.040	2024-0 BARE ALUMINUM SHEET, QQ-A-250/4 (HEAT TREAT T-42)	
13	DOUBLER, AFT	0.071	2024-T3 BARE ALUMINUM SHEET, QQ-A-250/4	
13A	DOUBLER, FORWARD	0.040	2024-T3 BARE ALUMINUM SHEET, QQ-A-250/4	
14	HD FRAME CORE, AFT	0.871	5052 ALUMINUM ALLOY HONEYCOMB, 1/8-.003 12.0 LB/CU FT	
14A	HD FRAME CORE, FORWARD	0.845	5052 ALUMINUM ALLOY HONEYCOMB, 1/8-.003 12.0 LB/CU FT	
15	PERFORATED SKIN	0.032	2024-T3 BARE ALUMINUM SHEET, QQ-A-250/4, 0.050-IN. HOLE, 28 PERCENT PERFORATE	
16	ALUMINUM CORE, OUTER	0.725	ALUMINUM HONEYCOMB, 5052 3/8-.0025 3.7 LB/CU FT	
17	SEPTUM		PAEK	
18	ALUMINUM CORE, INNER	0.200	ALUMINUM HONEYCOMB, 5052 3/8-.0025 3.7 LB/CU FT	

LIST OF MATERIALS

Inlet Cowl Inner Barrel Structure Identification - CF6-80C2 Engine
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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
19	OUTER SKIN, AFT	0.025	2024-T3 BARE ALUMINUM SHEET, QQ-A-250/4	
20	FRAME, INNER, AFT BULKHEAD	0.080	(S700E0590) 2024-T42 ALUMINUM EXT, QQ-A-200/3	
21	WEB, AFT BULKHEAD			
22	ATTACH BRACKET		7175-T74 AL ALY AMS 4149	
23	SHIM	0.125	LAMINATED ALUMINUM, MIL-S-22499, COMP 1, TYPE 1, CLASS 2	
24	SPLICE	0.100	2024-0 CLAD ALUMINUM SHEET, QQ-A-250/5 (HEAT TREAT T-42)	
25	SPLICE	0.063	2024-0 CLAD ALUMINUM SHEET, QQ-A-250/5 (HEAT TREAT T-42)	
26	SHIM	0.040	LAMINATED ALUMINUM, MIL-S- 22499, COMP 1, TYPE 1, CLASS 2	
27	SPLICE	0.063	2024-0 CLAD ALUMINUM SHEET, QQ-A-250/5 (HEAT TREAT T-42)	
28	CLOSURE, FORWARD	0.040	2024-0 BARE ALUMINUM SHEET, QQ-A-250/4 (HEAT TREAT T-42)	

LIST OF MATERIALS

**Inlet Cowl Inner Barrel Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 7 of 7)**

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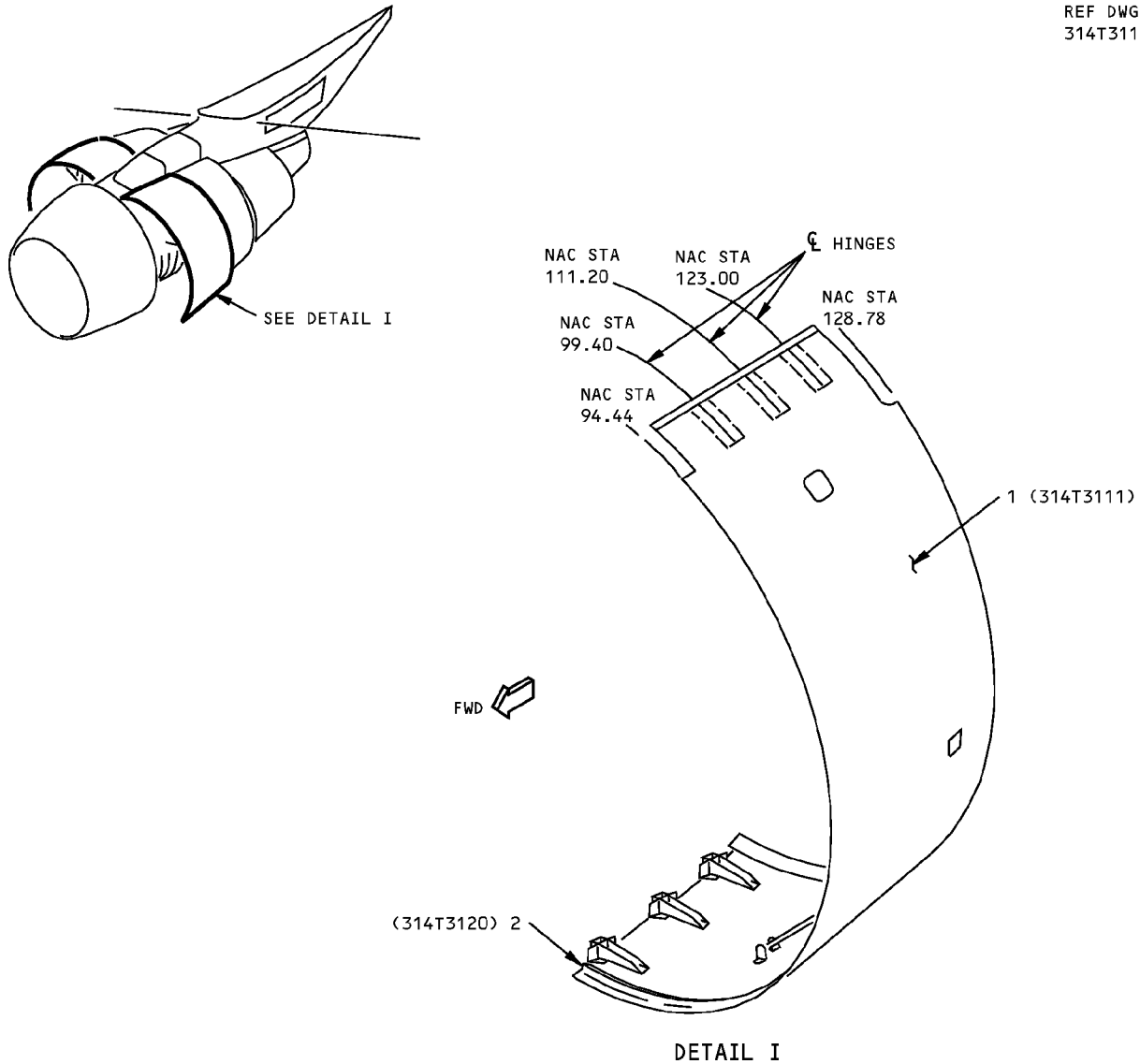
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IDENTIFICATION 1 - FAN COWL SKIN - JT9D-7R4 ENGINE

REF DWG
314T3110

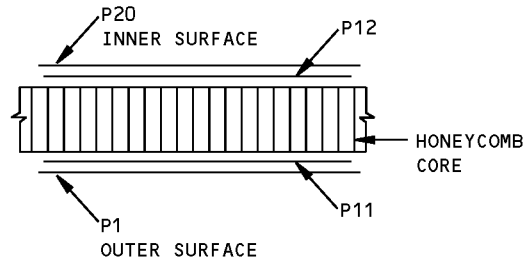


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/GRAPHITE/EPOXY HONEYCOMB SANDWICH SEE DETAIL II NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV TYPE I, GRADE 4.0	
2	RING	0.375	PLATE 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 2)**

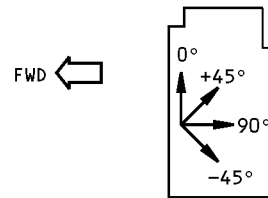
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SECTION THRU HONEYCOMB PANEL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1	P1	^C	0° OR 90°
	P11	^D	45°
	P12	^D	45°
	P20	^C	90°

PLY ORIENTATION TABLE ^B



**DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL**

DETAIL II

NOTES

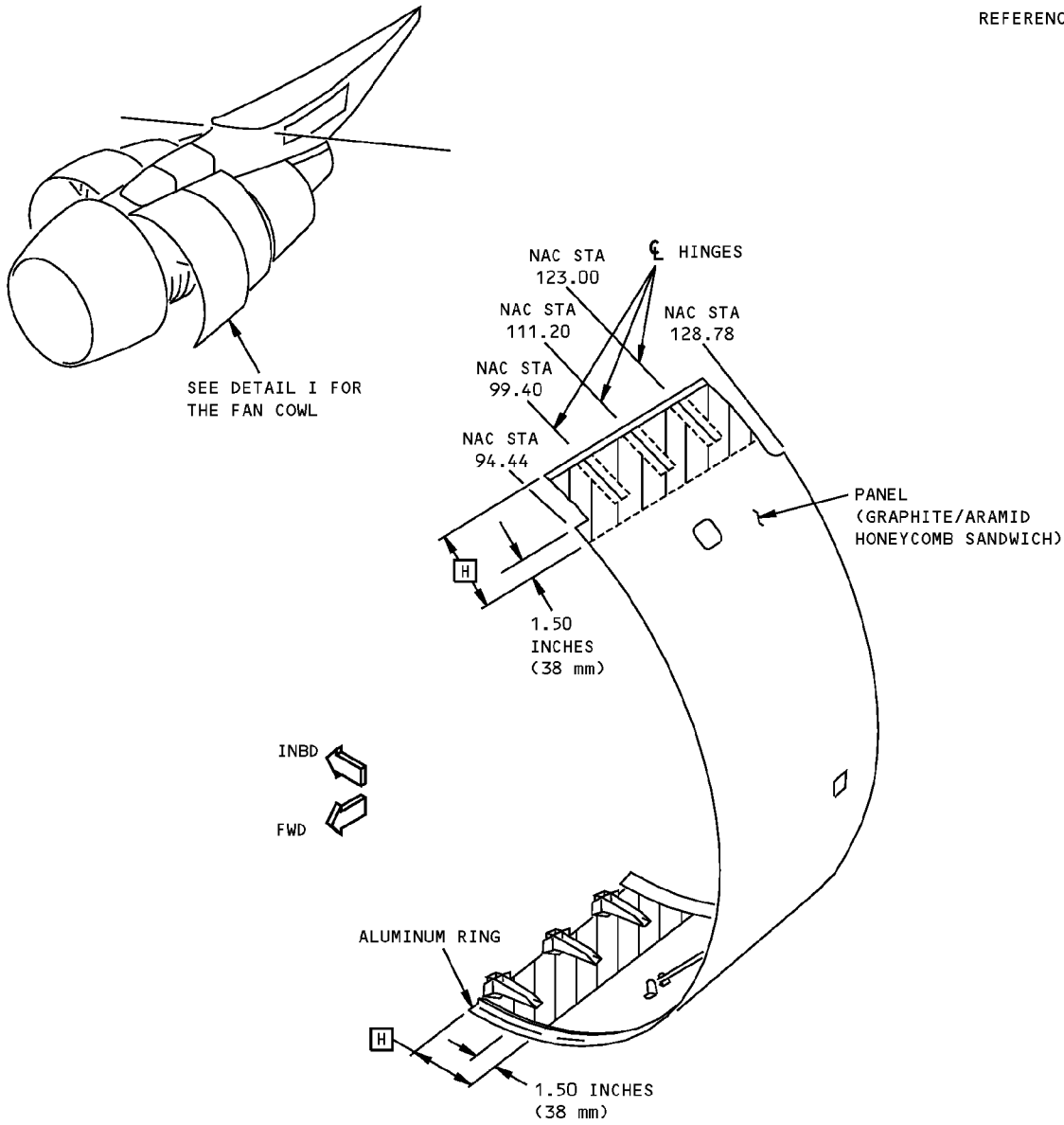
- ^A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- ^B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS
- ^C EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (170°C) CURE
- ^D EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE

**Fan Cowl Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL SKIN - JT9D-7R4 ENGINE

REFERENCE DRAWING
314T3110



LEFT COWL PANEL IS SHOWN, RIGHT PANEL IS SIMILAR
DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	EDGE EROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PANEL	A	B	SEE DETAIL VII	C	D	E
RING	F	G	—	NOT PERMITTED	NOT PERMITTED	—

**Allowable Damage - Fan Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 4)**

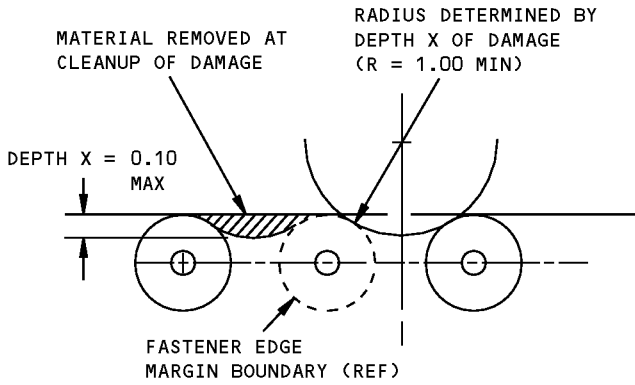
STRUCTURAL REPAIR MANUAL

NOTES

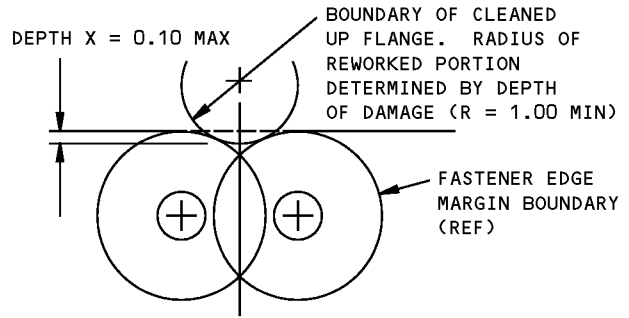
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED
- A** 1.50 INCH (38 mm) MAXIMUM LENGTH IN HONEYCOMB AREA IS ALLOWED PER SQUARE FOOT OF AREA. MINIMUM OF 6.0 INCH (15 cm) FROM ANY OTHER CRACK. EDGE CRACKS MUST BE REMOVED AS SHOWN IN DETAILS II AND V. **I**
 - B** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. **I**
 - C** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.0 INCH (25 mm) DIA MAX ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE
 - D** 1.00 INCH (25 mm) MAX DIAMETER ALLOWED PROVIDED DAMAGE IS MIN OF 3.0 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **I**
 - E** 1.00 INCH (25 mm) MAX DIAMETER IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.8 mm) DELAMINATION FROM EDGE IS ALLOWED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. **I**
 - F** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI
 - G** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND IV
 - H** CRITICAL AREA OF THE FAN COWL SKIN EXTENDS FROM THE TOP EDGE OF THE FAN COWL SKIN PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE HINGES. THE CRITICAL AREA ALSO EXTENDS FROM THE BOTTOM EDGE OF THE PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE LATCHES. AT EACH LOCATION, THE CRITICAL AREA EXTENDS FROM THE LEADING EDGE TO THE TRAILING EDGE OF THE PANEL. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE. LEADING AND TRAILING EDGE EROSION IS PERMITTED AS GIVEN IN DETAIL VII. EDGE DELAMINATION IS PERMITTED. A MAXIMUM OF 0.03 INCH (0.8 mm) FROM THE LEADING OR TRAILING EDGE IS ALLOWED. CONTACT THE BOEING COMPANY FOR OTHER DAMAGE.
 - I** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
 - J** DO NOT CHAMFER BEYOND EDGE OF COUNTERSINK AT FASTENER LOCATION. AS AN OPTION TO SEALING WITH SPEED TAPE, THE CHAMFER MAY BE REPAIRED WITHOUT REQUIREMENT FOR "A" CHECK INSPECTIONS AND "C" CHECK REPAIR BY SEALING WITH BMS 5-92 TYPE I OR TYPE III, OR WITH BMS 5-123. CURE BMS 5-92 TYPE I OR TYPE III AT 75°F (24°C) FOR 24 HOURS. CURE BMS 5-123 AT 75°F (24°C) FOR 1 HOUR

Allowable Damage - Fan Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 4)

STRUCTURAL REPAIR MANUAL

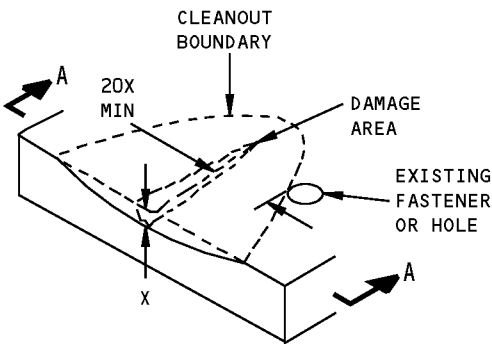


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

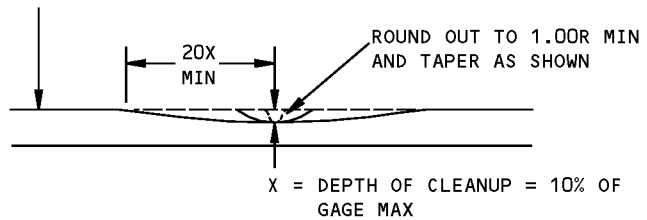


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



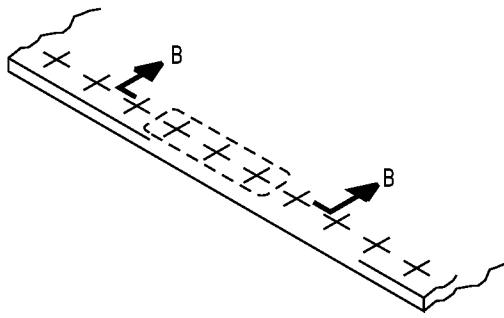
SECTION A-A

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

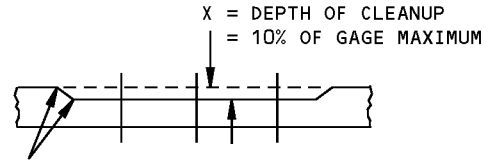
DETAIL III

**Allowable Damage - Fan Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**

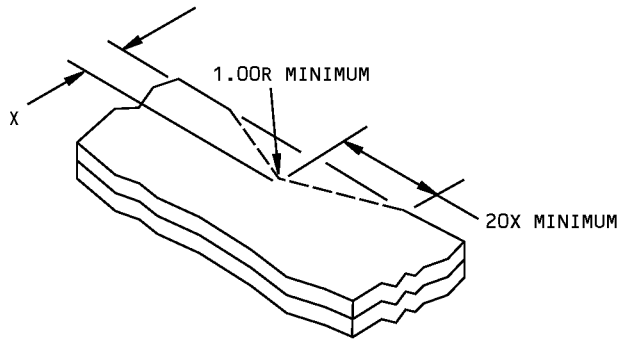


**CORROSION CLEANUP
DETAIL IV**



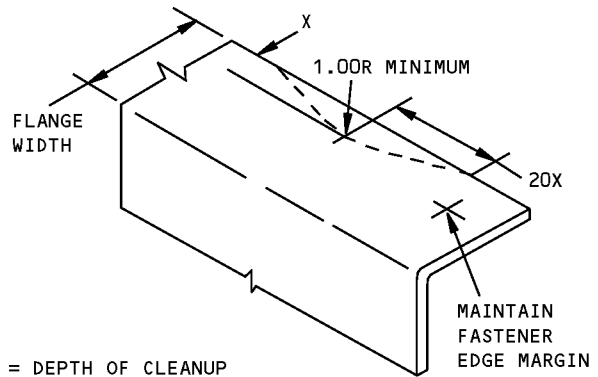
SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAXIMUM DEPTH

SECTION B-B



X = DEPTH OF CLEANUP = 0.10 MAXIMUM

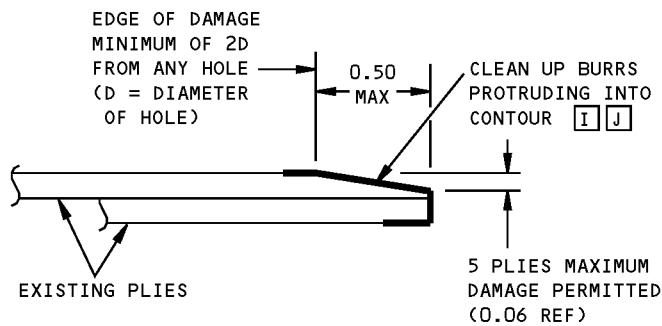
DETAIL V



X = DEPTH OF CLEANUP = 0.10 MAXIMUM

**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE**

DETAIL VI



**DAMAGE CLEANUP AND SEALING
OF EDGE EROSION**

DETAIL VII

**Allowable Damage - Fan Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 4)**



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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - FAN COWL SKIN - JT9D-7R4 ENGINE

1. General

- A. See Figure 201/REPAIR GENERAL for typical fan cowl skin repairs.
- B. See Paragraph 3./REPAIR GENERAL thru Paragraph 5./REPAIR GENERAL for alternative edgeband delamination repairs.

2. References

Reference	Title
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Preparation

- A. Determine extent of delamination.

NOTE: Maximum size of delamination permitted by this repair is 5.00 from any panel edge. If delamination or crack exceeds 5 inches, repair per 51-70-04. Figure 203/REPAIR GENERAL is the preferred method of repairing cracks or delamination. If geometry constraints prohibit the use of a repair plate in the vicinity of panel latches. Then Figure 202/REPAIR GENERAL is an acceptable repair.

- B. Check in vicinity of damage for entry of water, dirt and other foreign matter.
- C. Remove any water present by means of suction or blowing warm air over the damaged area.

WARNING: KEEP SOLVENTS AWAY FROM SOURCES OF HEAT, FIRE, OR SPARKS. HEAT, FIRE, OR SPARKS CAN CAUSE AN EXPLOSION.

AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. WEAR EYE PROTECTION. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN WORKING IN CONFINED SPACE OR AREA. BREATHING VAPORS OR ALLOWING SOLVENT TO CONTACT SKIN OR EYES IS HAZARDOUS.

CAUTION: DO NOT USE PAINT STRIPPERS FOR THE REMOVAL OF FINISH. DAMAGE TO THE ADHESIVE SYSTEM WILL OCCUR.

DO NOT IMMERSE PARTS IN SOLVENT OR ALLOW STANDING SOLVENT TO REMAIN ON PART. DAMAGE TO PART WILL OCCUR.

- D. Wipe the area around damage with clean cheesecloth moistened with solvent, Series 99 (AMM/ SOPM 20-30-99).

4. Repair Instructions (Figure 202/REPAIR GENERAL)

- A. If delamination occurs in the vicinity of an existing fastener hole, remove fastener and remove honeycomb core to an open diameter of 1.0. If delamination occurs in an area without fasteners, pierce one side of composite skin to allow for removal of honeycomb core to an open diameter of 1.0 inch.
- B. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core.
- C. Inject BMS 5-28 Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.
- D. Install fasteners wet with BMS 5-26 sealant.

REPAIR GENERAL

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- E. Cure adhesive per Figure 204/REPAIR GENERAL.
- F. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked area.

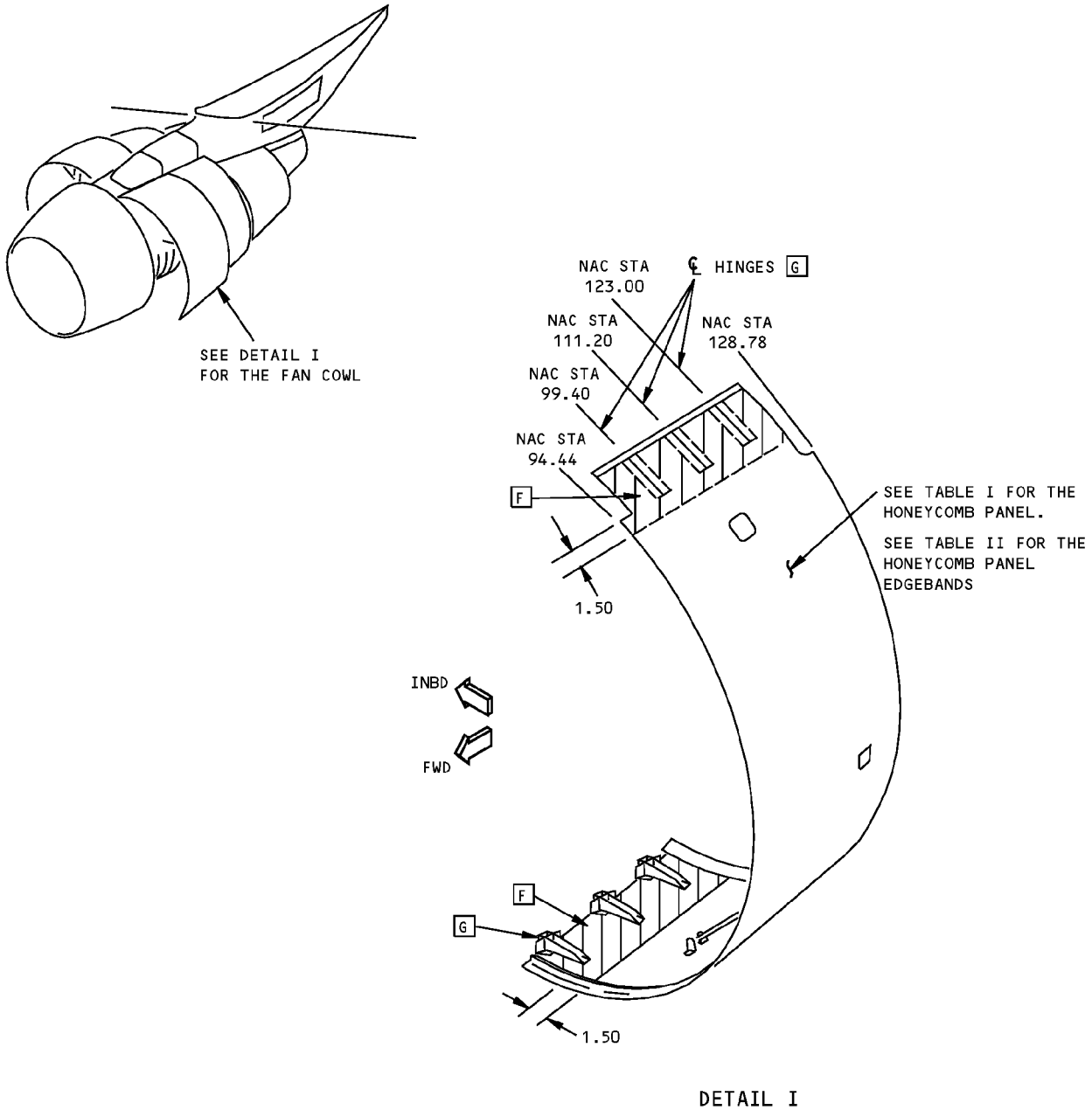
5. Repair instructions (Figure 203/REPAIR GENERAL)

- A. Mark out damaged area and determine size of repair plate.

NOTE: Multiple repairs shall be no closer centerline-to-centerline, than six times the maximum diameter of the delaminated areas and not less than 6.0 centerline to centerline.

- B. Manufacture repair plate 0.063 CRES 301 half hard or equivalent. Mark and drill fastener holes.
- C. Drill fastener holes through panel using repair plate as a template.
- D. Increase diameter of fastener holes in honeycomb core only, to 1.0. Use care to prevent damage to composite skin.
- E. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core. Clamp up repair while adhesive is curing.
- F. Inject BMS 5-28, Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.
- G. Countersink holes in aerodynamic surface (see Fig. 202, Sheet 1, Section A-A or Fig. 203, Sheet 2, Section B-B).
- H. Abrade faying surface of repair plate with 80 grit sandpaper. Remove all dust and residue from faying surface of CRES plate.
- I. Apply two coats of BMS 10-11, Type I on both sides of CRES repair plate.
- J. Spread layer of BMS 5-109, Type II, Class 2 adhesive over area to be covered by repair plate.
- K. Fit repair plate and insert CRES or titanium bolts wet with BMS 5-26 sealant, taking care not to contaminate area to be painted.
- L. Cure adhesive (Figure 204/REPAIR GENERAL).
- M. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked areas.

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STRUCTURAL REPAIR MANUAL**



MATERIAL: GRAPHITE/ARAMID HONEYCOMB SANDWICH (350°F CURE)

**Fan Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 4)**



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STRUCTURAL REPAIR MANUAL

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIRS EXCEED THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REPAIRED AREAS AS GIVEN IN AMM 51-21.
- A** MINIMUM OF 3.50 INCHES (89 mm) FROM PANEL EDGE, HINGES OR LATCHES
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SHEET SKIN AND HONEYCOMB CORE
- C** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN NEXT "C" CHECK. **J**
- D** ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER REPAIR.
- E** MINIMUM OF 1.50 INCHES (38 mm) FROM HINGES AND/OR LATCHES
- F** CRITICAL AREA. REPAIR ONLY LEADING AND TRAILING EDGE EROSION AND EDGE DELAMINATION. CONTACT THE BOEING COMPANY FOR REPAIR OF OTHER DAMAGE.
- G** FOR REPAIRS TO ATTACHMENT FITTINGS, REFER TO SRM 54-20-90.
- H** FOR WET LAYUP REPAIRS, USE 1.00 INCH (25 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) PER PLY OVER-LAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- I** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. **J**
- J** FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.J. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- K** REFER TO PARAGRAPHS 2 THRU 4 FOR ALTERNATIVE FAN COWL EDGE BAND DELAMINATION REPAIR.

Fan Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 4)

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS [I] [A]	PERMANENT REPAIRS	
	WET LAYUP ROOM TEMP/150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93°C-110°C) CURE (SRM 51-70-17) [H]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [B]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. [D]	NO SIZE LIMIT
DELAMI- NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR HONEYCOMB PANEL

TABLE I

Fan Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 4)

REPAIR GENERAL

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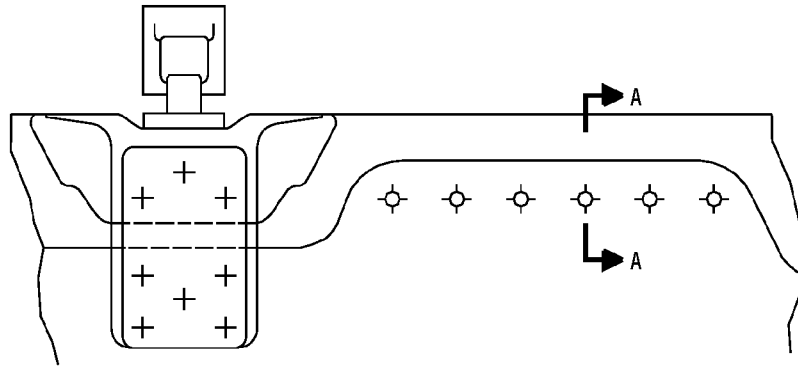
STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE [C] [E]	PERMANENT REPAIRS	
		WET LAYUP 200°F-230°F CURE (SRM 51-70-17) [H]	350°F CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES MAX LENGTH X 0.025 DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES FROM ANY OTHER DAMAGE. 0.10 INCH DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEANUP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEANUP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH DIA X 0.010 DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH MAX DIA HOLE THRU EDGE BAND LAMINATE - MIN 6.0 INCHES FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03 PAR 4.G.	POTTING IS ALLOWED FOR 0.25 INCH MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH FROM EDGE OF PANEL. FOR HOLES 0.50 INCH DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03 PAR. 4.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17 PAR. 3.H. 1.0 INCH OVERLAP REQUIRED PER PLY. USE 2 EXTRA PLIES.	POTTING IS ALLOWED FOR 0.25 INCH MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH FROM EDGE OF PANEL. FOR HOLES 0.50 INCH DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 4.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 3.H.
DELAMINATION [K]	2 SQ IN. (2.0 INCHES MAX LENGTH) ALLOWED, MIN 6.0 INCHES FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.
EDGE EROSION		SRM 51-70-17, PARA 3G.	SRM 51-70-04, PARA 4G.

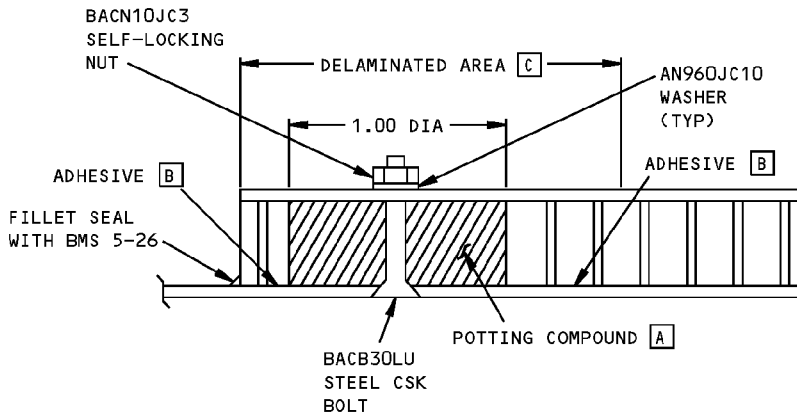
FOR GRAPHITE/ARAMID EDGE BAND LAMINATE
TABLE II

Fan Cowl Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH



SECTION A-A

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
REFER TO PARA. 3 FOR REPAIR OF FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH
51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS

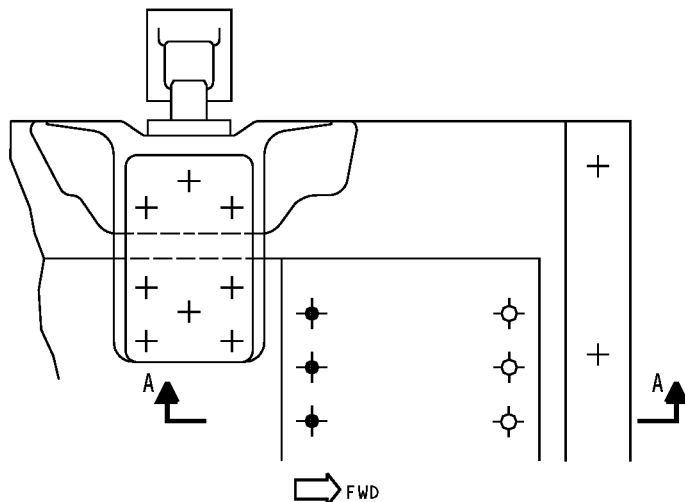
- A** BMS 5-28, TYPE 7
- B** BMS 5-109 TYPE II, CLASS 2
- C** FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT EXCEED 5 INCHES IN LENGTH. FOR DELAMINATION GREATER THAN 5 INCHES SEE 51-70-04

SYMBOLS

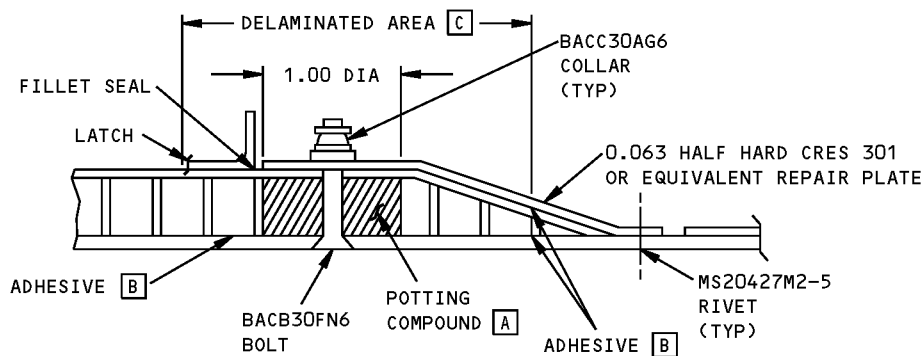
- + ORIGINAL FASTENERS LOCATIONS
- ⊙ REPAIR FASTENER LOCATION
BACB30LU BOLT, BACN10JC3 NUT, AN960JC10 WASHER

**Fan Cowl Squared Edge Delamination Repair - JT9D-7R4 Engine
Figure 202**

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION REPAIR IN VICINITY OF AFT PANEL EDGE



SECTION A-A

NOTES

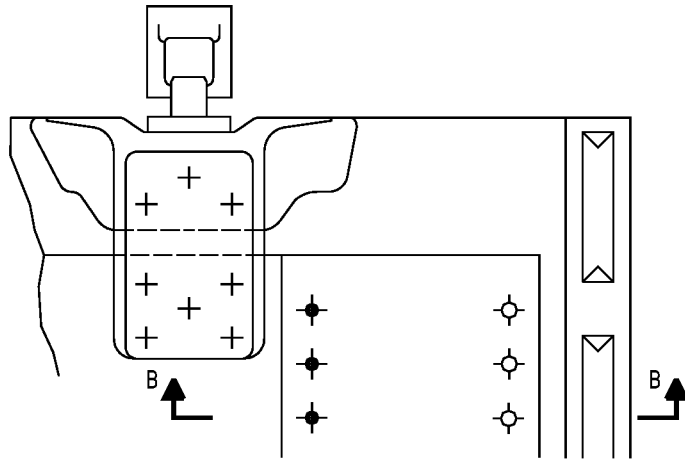
- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
REFER TO PARA. 4 FOR REPAIR OF FAN COWL DELAMINATION ALONG PANEL EDGE
51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
- [A] BMS 5-28, TYPE 7
- [B] BMS 5-109 TYPE II, CLASS 2
- [C] FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT EXCEED 6 INCHES IN LENGTH. FOR DELAMINATION GREATER THAN 6 INCHES SEE 51-70-04

SYMBOLS

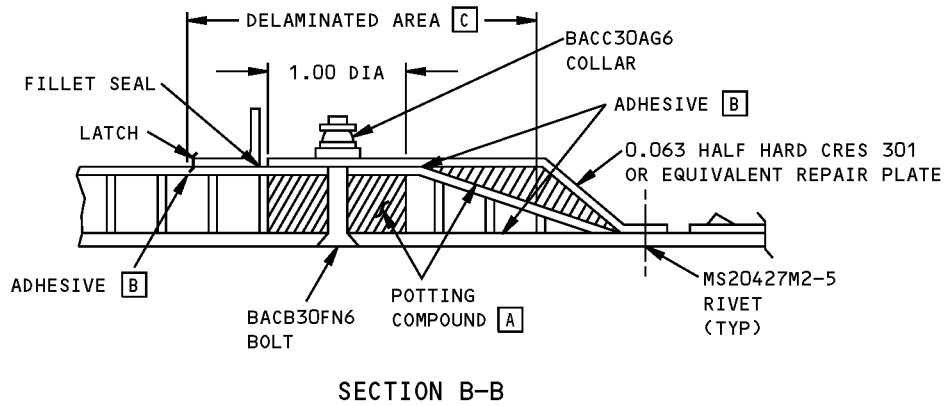
- + ORIGINAL FASTENERS LOCATIONS
- REPAIR FASTENER LOCATION (BACB30FN6 BOLT, BACC30AG6 COLLAR)
- ⊙ REPAIR FASTENER LOCATION MS20427M2-5 RIVET (TYP)

**Fan Cowl Tapered Edge Delamination Repair - JT 9D-7R4 Engine
Figure 203 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION REPAIR IN VICINITY OF FWD PANEL EDGE



Fan Cowl Tapered Edge Delamination Repair - JT 9D-7R4 Engine
Figure 203 (Sheet 2 of 2)



**767-300
STRUCTURAL REPAIR MANUAL**

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 7	EPOCAST 8414A RESIN	100 ±1	60 MINUTES AT 70°F (21°C)	12 HOURS AT 65°F MIN (19°C) 2 HOURS AT 125°F (52°C) A
	EPOCAST 8414B HARDENER	22 ±1		
	CG-1305 RESIN	100		
	CG-1305 HARDENER	22		
	FR 7162 RESIN	100 ±5		
	FR 7162 HARDENER	40 ±2		
BMS 5-109, TYPE II CLASS 2 ADHESIVE	EA 934 A/B EA 934NA A/B FR 7010 A/B	B B C	30 MINUTES D	1 HOUR AT 200 ±10°F (93 ±5°C) 9 HOURS AT 160 ±10°F (71 ±5°C) 25 HOURS AT 120 ±10°F (49 ±5°C) 7 DAYS AT 77 ±10°F (25 ±5°C)

TABLE I

A FOR OPTIMUM PROPERTIES CURE 7 DAYS AT 65°F (19°C) OR 5 HOURS AT 125°F (52°C) OR 1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (177°C)

B MIX RATIO 32-34 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

C MIX RATIO 36-38 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

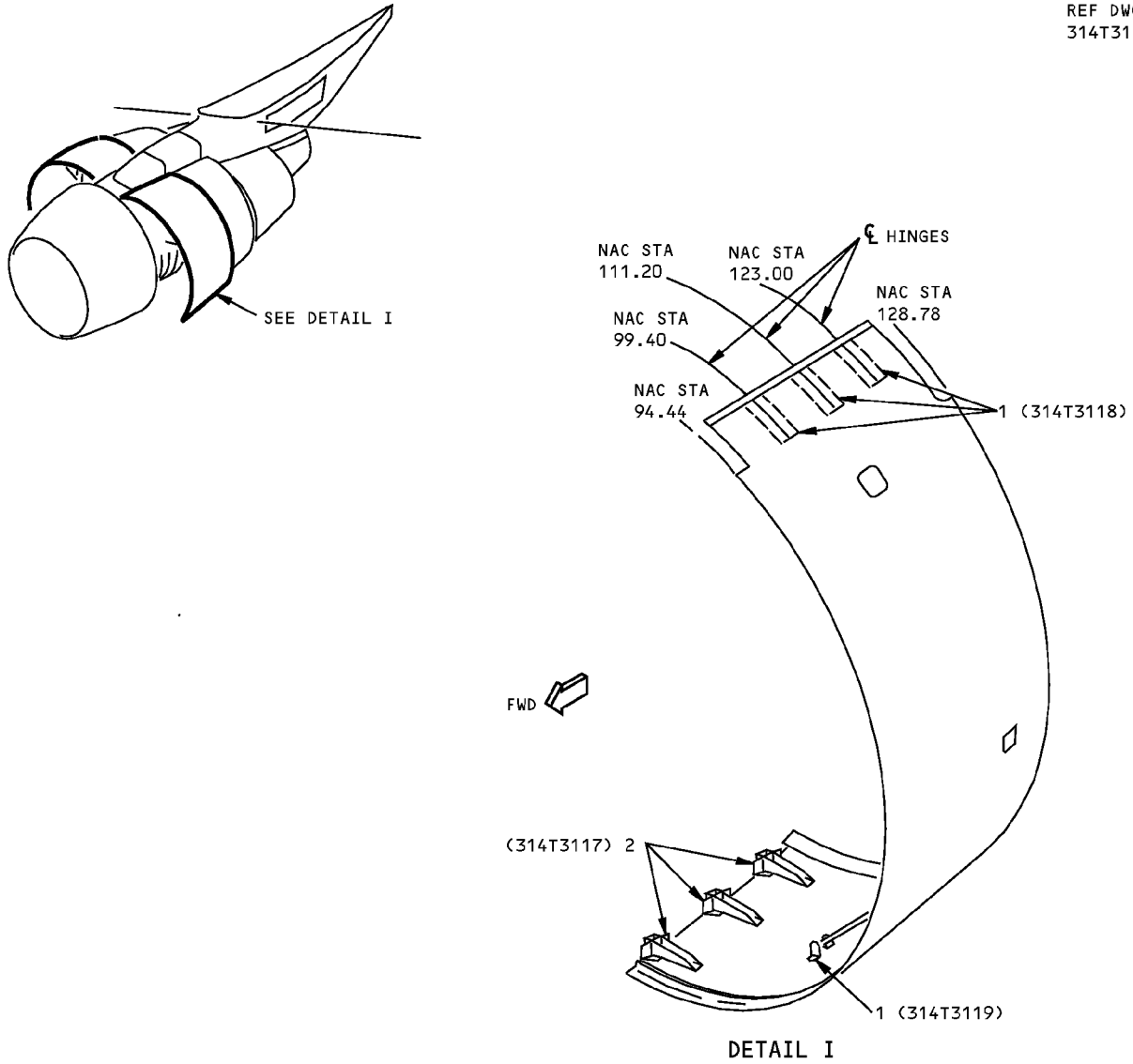
D REPAIR MUST BE PLANNED SO THAT 30 MINUTE ADHESIVE WORK TIME (TIME OF ADHESIVE MIX TO TIME OF FASTENER INSTALLATION) IS NOT EXCEEDED

**Resin Type Specifications and Mixing Procedures
Figure 204**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE

REF DWG
314T3110



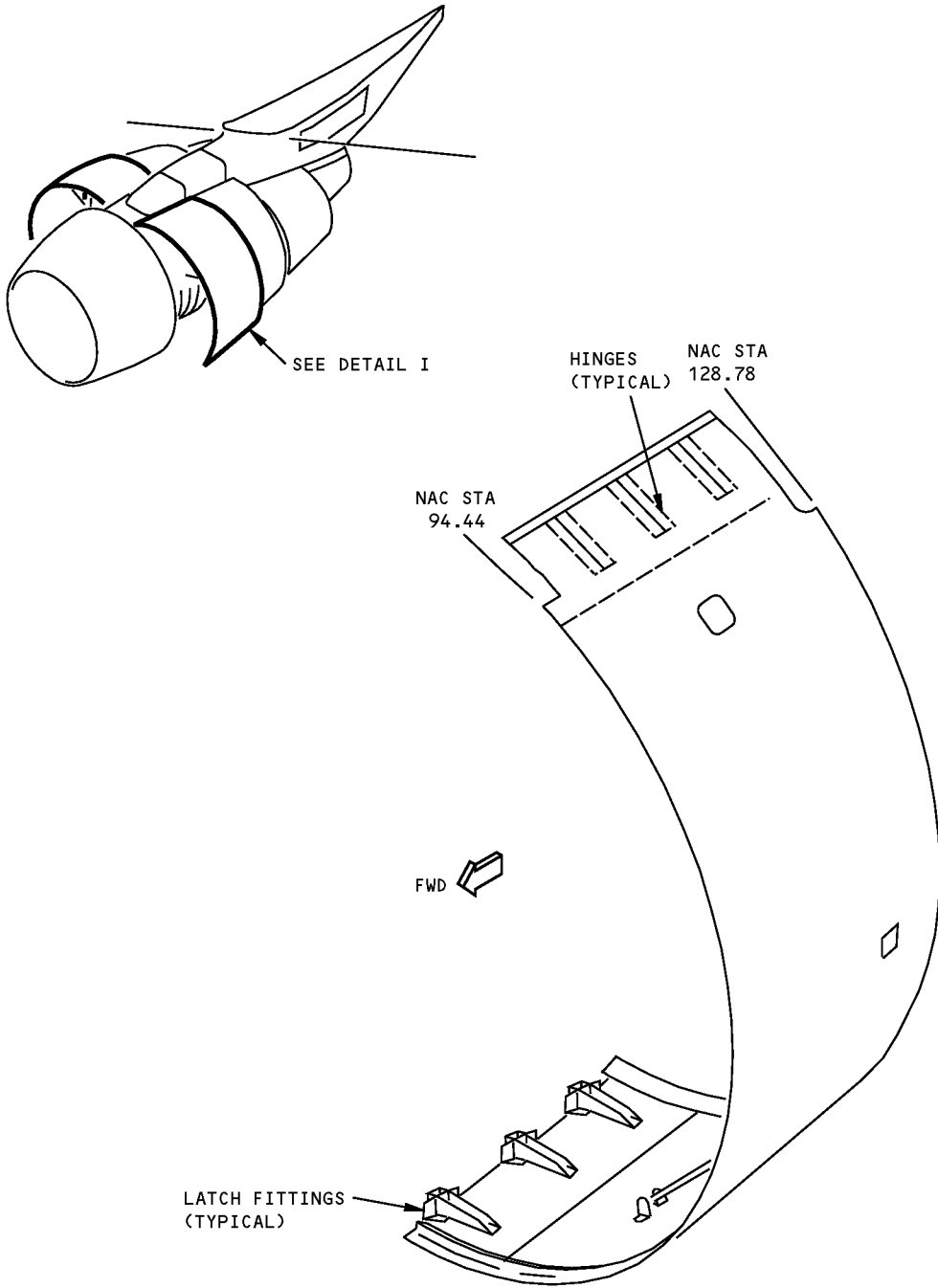
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FTG		FORGING 7075-T73	
2	LATCH FTG		FORGING 7075-T73	

LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



DETAIL I

**Allowable Damage - Fan Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

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ALLOWABLE DAMAGE 1
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STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

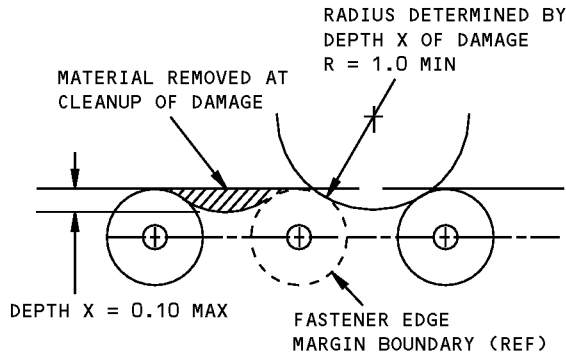
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INSPECTION AND REMOVAL OF DAMAGE, REFER TO SRM 51-10-02

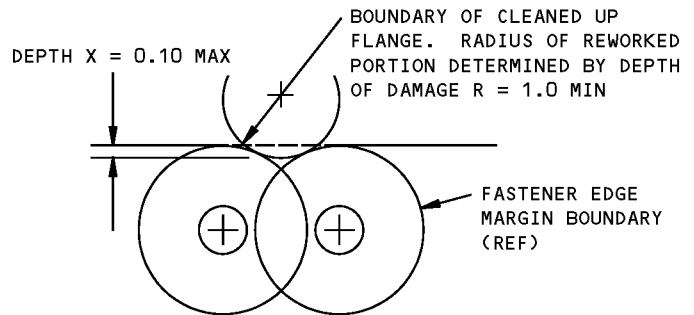
[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS NOT ALLOWED

[C] SHOT PEEN REWORKED AREAS PER 51-20-06



**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP**

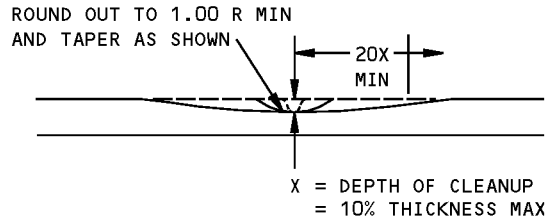
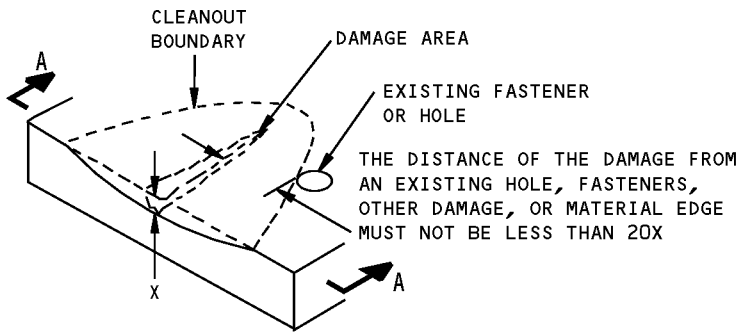


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP**

DETAIL II

**Allowable Damage - Fan Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)**

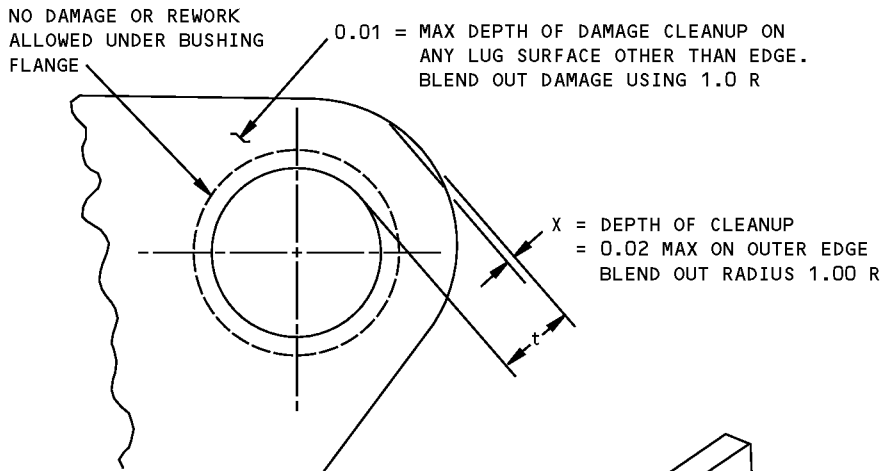
**767-300
STRUCTURAL REPAIR MANUAL**



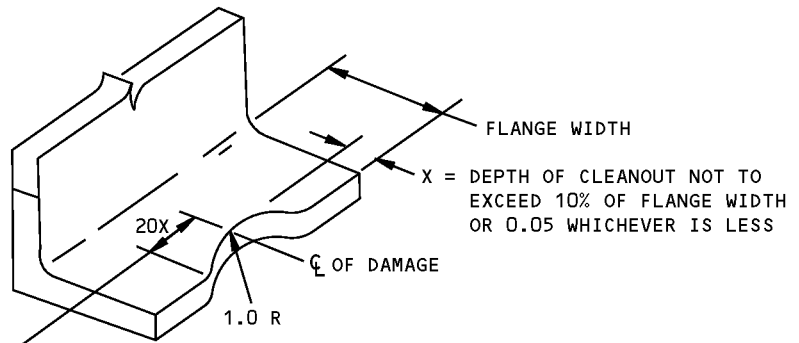
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**

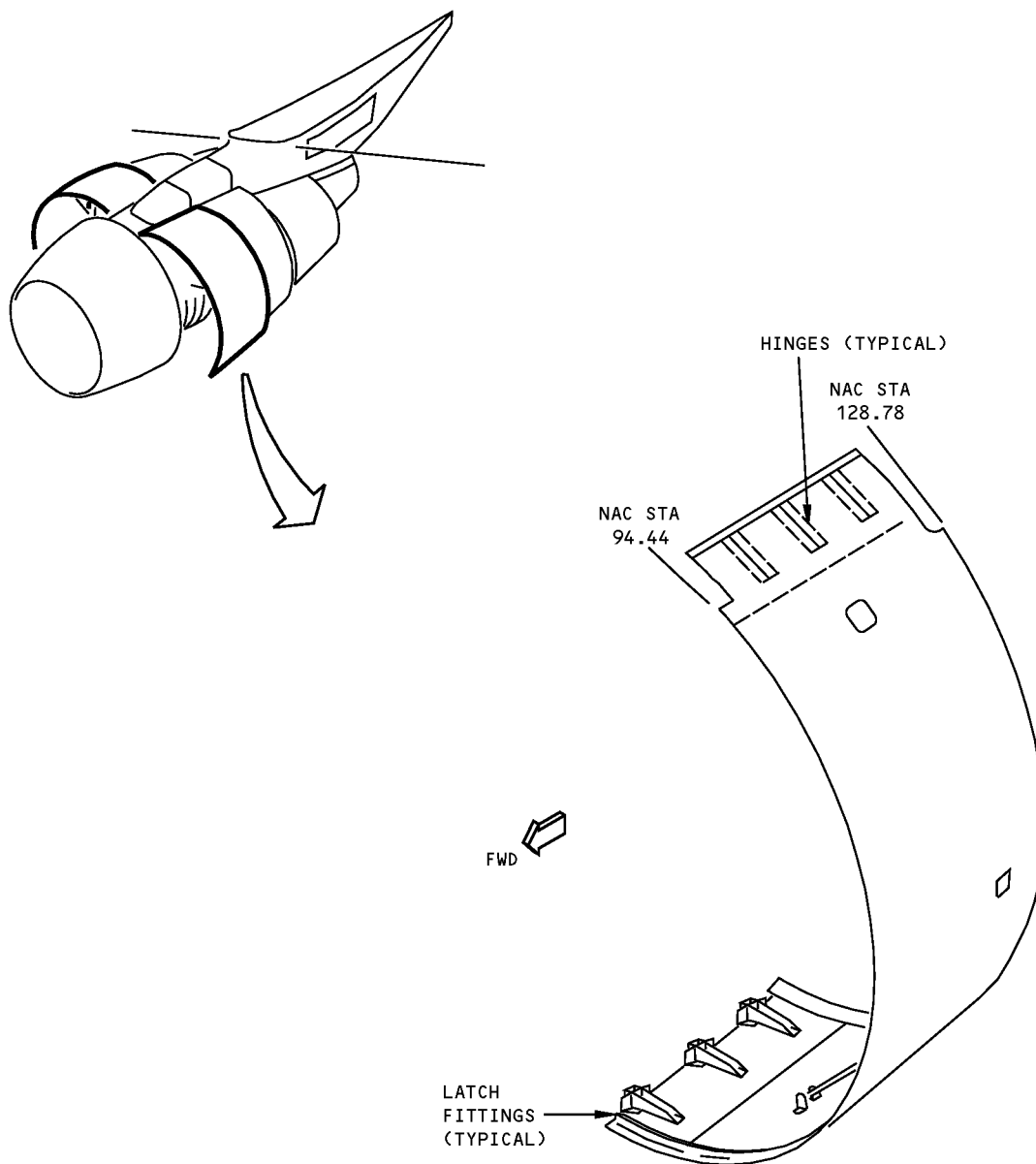


**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Fan Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL

REPAIR 1 - FAN COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



NOTES

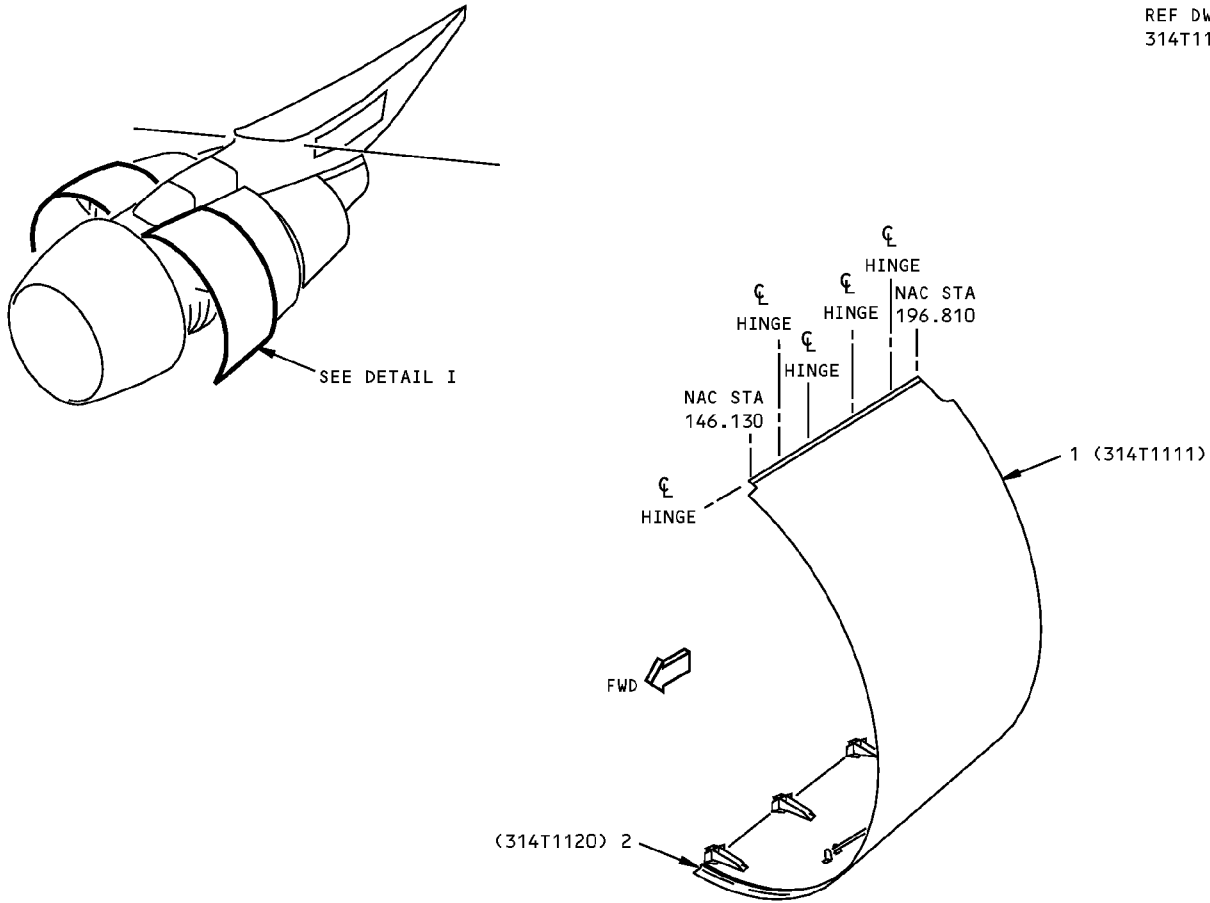
- NO TYPICAL REPAIR TO FITTINGS AVAILABLE. SPECIFIC REPAIRS TO FITTINGS WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- SEE 54-20-01 FOR FAN COWL IDENTIFICATION

Fan Cowl Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL SKIN - CF6-80A ENGINE

REF DWG
314T1110



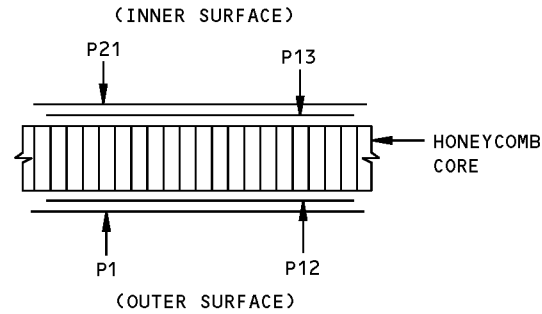
LEFT COWL PANEL SHOWN
RIGHT PANEL OPPOSITE
DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/GRAPHITE/EPOXY HONEYCOMB SANDWICH SEE DETAIL II NONMETALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE 1, GRADE 4.0	
2	RING	0.375	PLATE 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Skin Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL

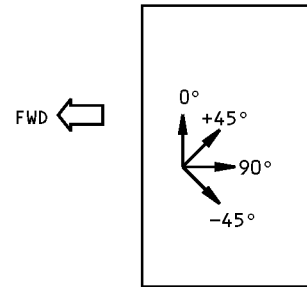


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^[A]
1	P12,P13	[D]	45°
	P1,P21	[C]	0° OR 90°

PLY ORIENTATION TABLE ^[B]

DETAIL II

NOTES

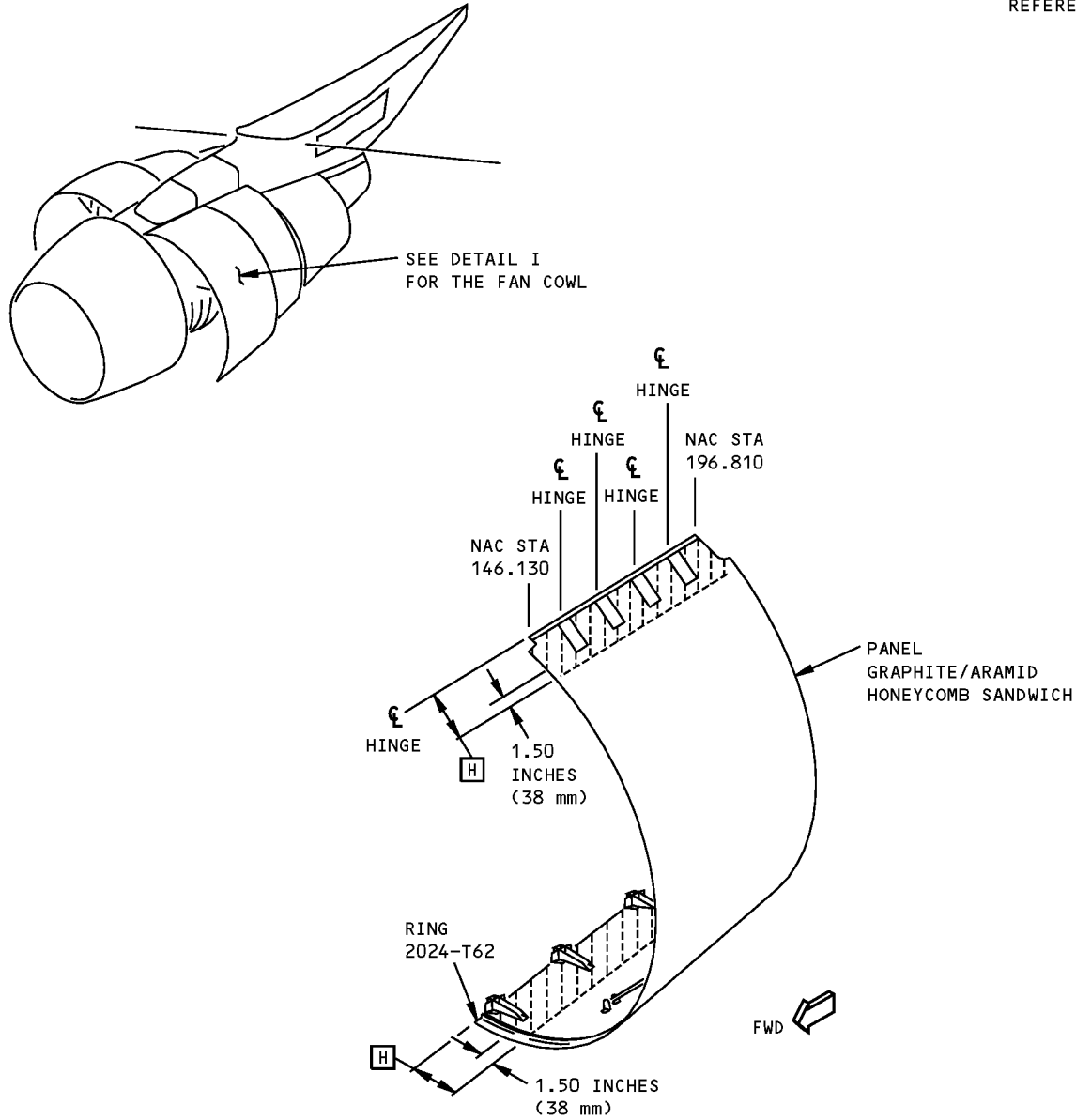
- [A] PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- [B] MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS
- [C] EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE
- [D] EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE

**Fan Cowl Skin Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL SKIN - CF6-80A ENGINE

REFERENCE DRAWING
314T1111



LEFT COWL PANEL IS SHOWN, RIGHT PANEL IS SIMILAR
DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	EDGE EROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PANEL	A	B	SEE DETAIL VII	C	D	E
RING	F	G	—	NOT PERMITTED	NOT PERMITTED	—

**Allowable Damage - Fan Cowl Skin - CF6-80A Engine
Figure 101 (Sheet 1 of 4)**

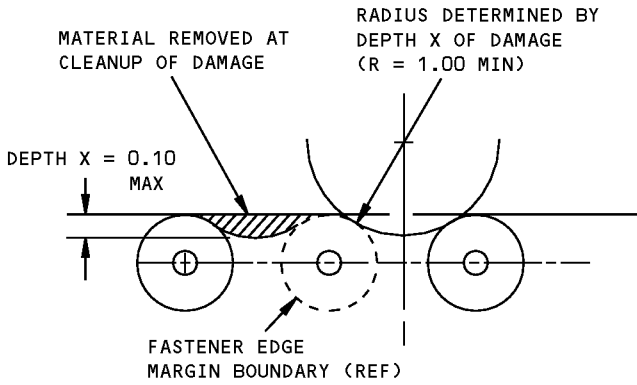
STRUCTURAL REPAIR MANUAL

NOTES

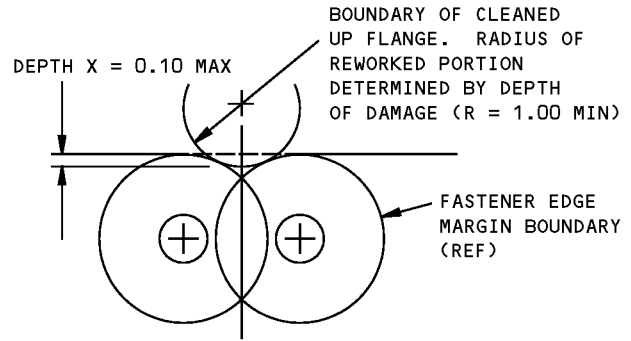
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED
- A** 1.50 INCHES (38 mm) MAXIMUM LENGTH IN HONEYCOMB AREA IS PERMITTED PER SQUARE FOOT OF AREA. MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER CRACK. EDGE CRACKS MUST BE REMOVED AS GIVEN IN DETAILS II AND V. **I**
- B** DAMAGE IS PERMITTED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS IS NOT PERMITTED. **I**
- C** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.0 INCH (25 mm) DIAMETER MAX ARE PERMITTED. ONE DENT PER SQUARE FOOT OF AREA PERMITTED WHICH MUST BE A MINIMUM OF 6 INCHES (150 mm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE
- D** 1.00 INCH (25 mm) MAX DIAMETER PERMITTED PROVIDED DAMAGE IS MIN OF 3.0 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **I**
- E** 1.00 INCH (25 mm) MAX DIA IS PERMITTED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.76 mm) DELAMINATION FROM EDGE IS PERMITTED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. **I**
- F** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAIL II AND VI
- G** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND IV
- H** CRITICAL AREA OF THE FAN COWL SKIN EXTENDS FROM THE TOP EDGE OF THE FAN COWL SKIN PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE HINGES. THE CRITICAL AREA ALSO EXTENDS FROM THE BOTTOM EDGE OF THE PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE LATCHES. AT EACH LOCATION, THE CRITICAL AREA EXTENDS FROM THE LEADING EDGE TO THE TRAILING EDGE OF THE PANEL. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE. LEADING AND TRAILING EDGE EROSION IS PERMITTED AS GIVEN IN DETAIL VII. EDGE DELAMINATION IS PERMITTED. A MAXIMUM OF 0.03 INCH (0.76 mm) FROM THE LEADING EDGE AND TRAILING EDGE IS PERMITTED. CONTACT THE BOEING COMPANY FOR OTHER DAMAGE.
- I** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK.
- J** DO NOT CHAMFER BEYOND EDGE OF COUNTERSINK AT FASTENER LOCATION. AS AN OPTION TO SEALING WITH SPEED TAPE, THE CHAMFER MAY BE REPAIRED WITHOUT REQUIREMENT FOR "A" CHECK INSPECTIONS AND "C" CHECK REPAIR BY SEALING WITH BMS 5-92 TYPE I OR TYPE III, OR WITH BMS 5-123. CURE BMS 5-92 TYPE I OR TYPE III AT 75°F (24°C) FOR 24 HOURS. CURE BMS 5-123 AT 75°F (24°C) FOR 1 HOUR

**Allowable Damage - Fan Cowl Skin - CF6-80A Engine
Figure 101 (Sheet 2 of 4)**

STRUCTURAL REPAIR MANUAL

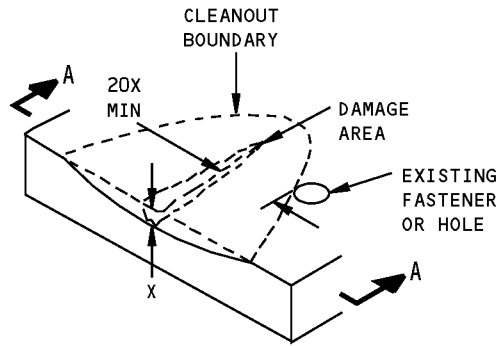


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

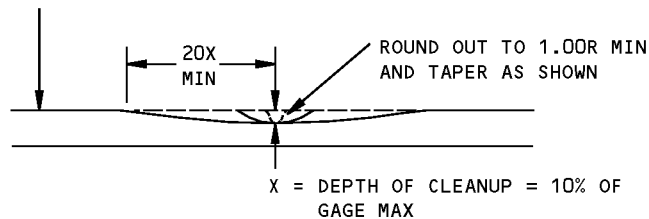
DETAIL II



REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

DETAIL III

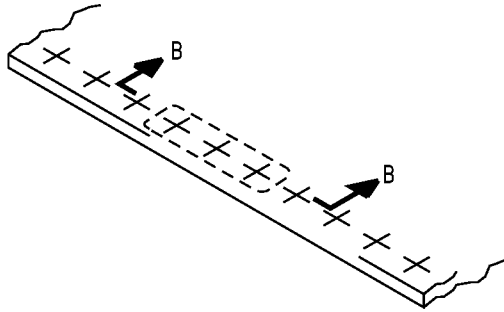
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



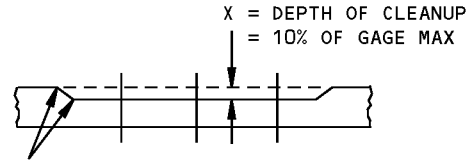
SECTION A-A

**Allowable Damage - Fan Cowl Skin - CF6-80A Engine
Figure 101 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



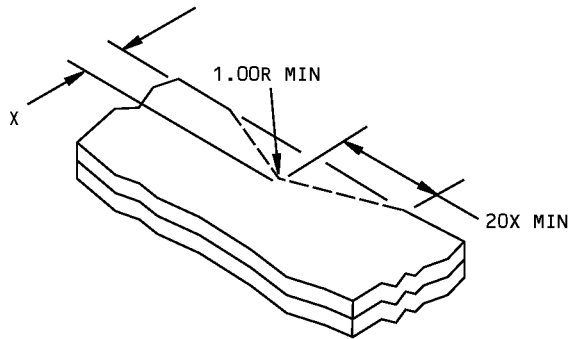
**CORROSION CLEANUP
DETAIL IV**



X = DEPTH OF CLEANUP
= 10% OF GAGE MAX

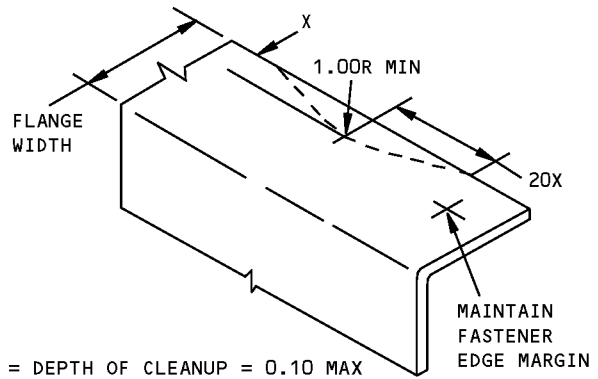
SMOOTH BLEND-OUT RADIUS 0.50 INCH
MINIMUM. CORROSION CLEANUP AROUND
ANY THREE FASTENERS IN TEN IS
PERMITTED TO MAX DEPTH

SECTION B-B



X = DEPTH OF CLEANUP = 0.10 MAX

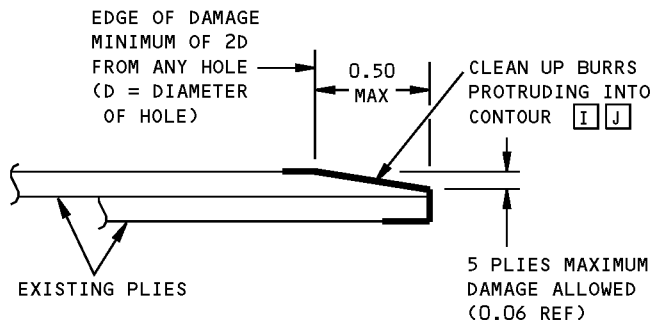
DETAIL V



X = DEPTH OF CLEANUP = 0.10 MAX

**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE**

DETAIL VI



**DAMAGE CLEANUP AND SEALING
OF EDGE EROSION**

DETAIL VII

**Allowable Damage - Fan Cowl Skin - CF6-80A Engine
Figure 101 (Sheet 4 of 4)**



767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - FAN COWL SKIN - CF6-80A ENGINE

1. **General**

- A. Refer to REPAIR 1 for typical fan cowl skin repairs.
- B. Refer to par. 2 thru 4 for alternative edgeband delamination repair.

2. **References**

Reference	Title
AMM 20-30-99	Aircraft Maintenance Manual

3. **Repair Preparation**

- A. Determine extent of delamination.

NOTE: Maximum size of delamination permitted by this repair is 5.00 inches (125 mm) from any panel edge. If delamination or crack is more than 5 inches (125 mm), repair as given in SRM 51-70-04. REPAIR 3 is the preferred method of repairing cracks or delamination, however in the vicinity of panel latches, geometry constraints prohibit the use of a repair plate and REPAIR 2 is an acceptable repair.

- B. Check in vicinity of damage for entry of water, dirt and other foreign matter.
- C. Remove any water present by means of suction or blowing warm air over the damaged area.

WARNING: KEEP SOLVENTS AWAY FROM SOURCES OF HEAT, FIRE, OR SPARKS. HEAT, FIRE, OR SPARKS CAN CAUSE AN EXPLOSION.

AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. WEAR EYE PROTECTION. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN WORKING IN CONFINED SPACE OR AREA. BREATHING VAPORS OR ALLOWING SOLVENT TO CONTACT SKIN OR EYES IS HAZARDOUS.

CAUTION: DO NOT USE PAINT STRIPPERS FOR THE REMOVAL OF FINISH. DAMAGE TO THE ADHESIVE SYSTEM WILL OCCUR.

DO NOT IMMERSE PARTS IN SOLVENT OR ALLOW STANDING SOLVENT TO REMAIN ON PART. DAMAGE TO PART WILL OCCUR.

- D. Wipe the area around damage with clean cheesecloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99).

4. **Repair Instructions (REPAIR 2)**

- A. If delamination occurs in the vicinity of an initial fastener hole, remove fastener and remove honeycomb core to an open diameter of 1.0 inch (25 mm). If delamination occurs in an area without fasteners, pierce one side of composite skin to allow for removal of honeycomb core to an open diameter of 1.0 inch (25 mm).
- B. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core.
- C. Inject BMS 5-28 Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.
- D. Install fasteners wet with BMS 5-26 sealant.
- E. Cure adhesive as given in REPAIR 4.



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STRUCTURAL REPAIR MANUAL

F. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked area.

5. Repair instructions (REPAIR 3)

A. Mark out damaged area and determine size of repair plate.

NOTE: Multiple repairs shall be no closer centerline-to-centerline, than six times the maximum diameter of the delaminated areas and not less than 6.0 centerline to centerline.

B. Manufacture repair plate 0.063 CRES 301 half hard or equivalent. Mark and drill fastener holes.

C. Drill fastener holes through panel using repair plate as a template.

D. Increase diameter of fastener holes in honeycomb core only to 1.0 inch (25 mm). Use care to prevent damage to composite skin.

E. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core. Clamp up repair while adhesive is curing.

F. Inject BMS 5-28, Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.

G. Countersink holes in aerodynamic surface REPAIR 3.

H. Abrade faying surface of repair plate with 80 grit sandpaper. Remove all dust and residue from faying surface of CRES plate.

I. Apply two coats of BMS 10-11, Type I on both sides of CRES repair plate.

J. Spread layer of BMS 5-109, Type II, Class 2 adhesive over area to be covered by repair plate.

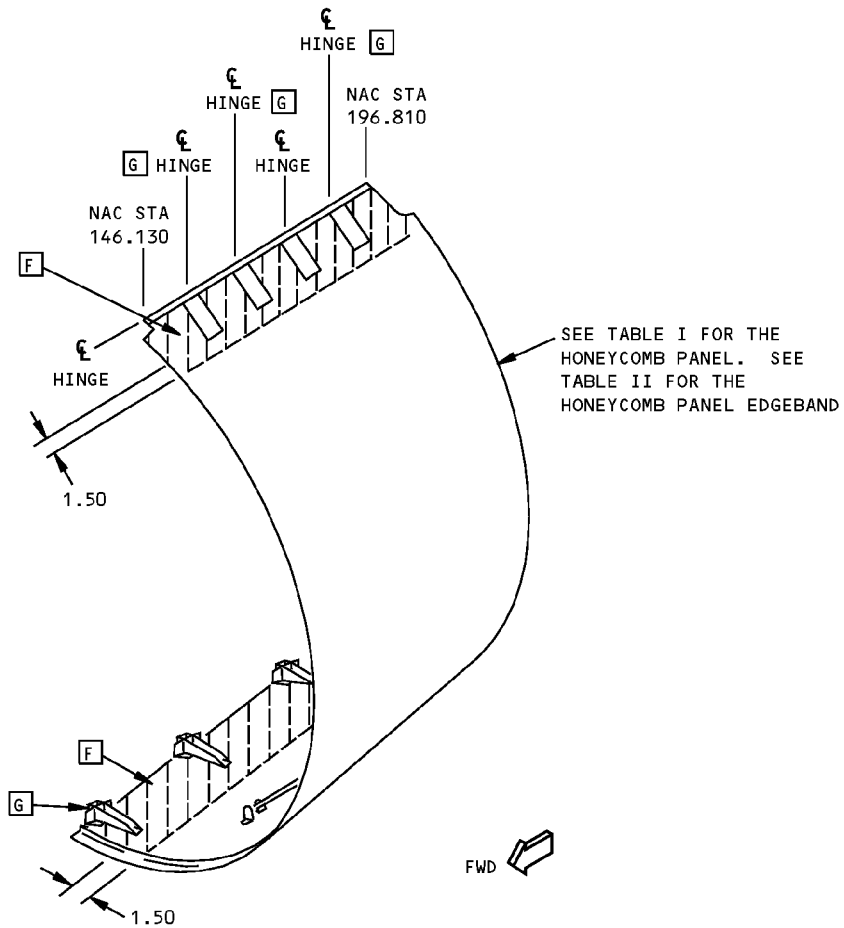
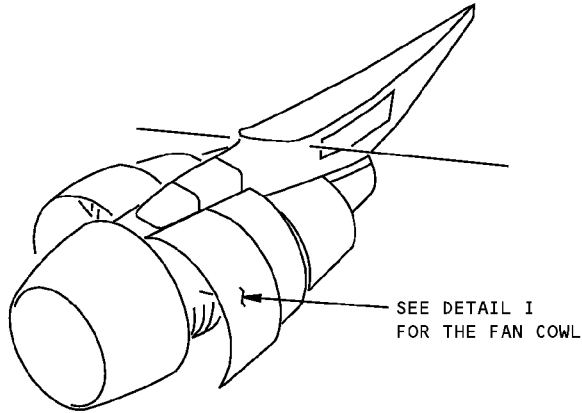
K. Fit repair plate and insert CRES or titanium bolts wet with BMS 5-26 sealant, taking care not to contaminate area to be painted.

L. Cure adhesive as given in REPAIR 4.

M. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked areas.

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - TYPICAL FAN COWL SKIN REPAIR - CF6-80A ENGINE



DETAIL I

**Typical Fan Cowl Skin Repair
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIRS ARE MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - FINISH REPAIRED AREAS AS GIVEN IN AMM 51-21.
- A** MINIMUM OF 3.50 INCHES (88 mm) FROM PANEL EDGE, HINGES OR LATCHES
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SHEET SKIN AND HONEYCOMB CORE
- C** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN NEXT "C" CHECK. **J**
- D** ONE REPAIR PERMITTED FOR EACH SQUARE FOOT OF AREA AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER REPAIR.
- E** MINIMUM OF 1.50 INCHES (38 mm) FROM HINGES AND/OR LATCHES
- F** CRITICAL AREA. REPAIR ONLY LEADING AND TRAILING EDGE EROSION AND EDGE DELAMINATION. CONTACT THE BOEING COMPANY FOR REPAIR OF OTHER DAMAGE.
- G** FOR REPAIRS TO ATTACHMENT FITTINGS, REFER TO SRM 54-21-90.
- H** FOR WET LAYUP REPAIRS, USE 1.00 INCH (25 mm) FOR EACH PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (13 mm) FOR EACH PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- I** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. **J**
- J** FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.I. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- K** REFER TO REPAIR GENERALD, PARAGRAPHS 2 THRU 4 FOR ALTERNATIVE FAN COWL EDGE BAND DELAMINATION REPAIR.

Typical Fan Cowl Skin Repair
Figure 201 (Sheet 2 of 4)

STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS A I	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) H	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. B	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. B	12.0 INCHES (30 mm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES FOR EACH FACESHEET REPAIRED. D	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. D OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR HONEYCOMB PANEL
TABLE I

Typical Fan Cowl Skin Repair
Figure 201 (Sheet 3 of 4)

STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE [C] [E]	PERMANENT REPAIRS	
		WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) [H]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE PERMITTED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.025 DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE PERMITTED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE PERMITTED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 DEEP IN EDGE BAND LAMINATE - MIN 6.0 INCHES (150 mm) FROM SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (13 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 (13 mm) INCH MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (13 mm) MAX DIA HOLE THRU EDGE BAND LAMINATE - MIN 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03, PAR. 5.H.	POTTING PERMITTED FOR 0.25 INCH (2.5 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (13 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (2.5 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.I. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.I. 1.0 INCH (25 mm) OVERLAP REQUIRED PER PLY. USE 2 EXTRA PLIES.	POTTING PERMITTED FOR 0.25 INCH (6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (13 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.I. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.I.
DELAMINATION [K]	2 SQ INCHES (13 sq cm) (2.0 INCHES (50 mm) MAX LENGTH) PERMITTED. MIN 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.
EDGE EROSION		SRM 51-70-17, PARA 4.H.	SRM 51-70-04, PARA 5.H.

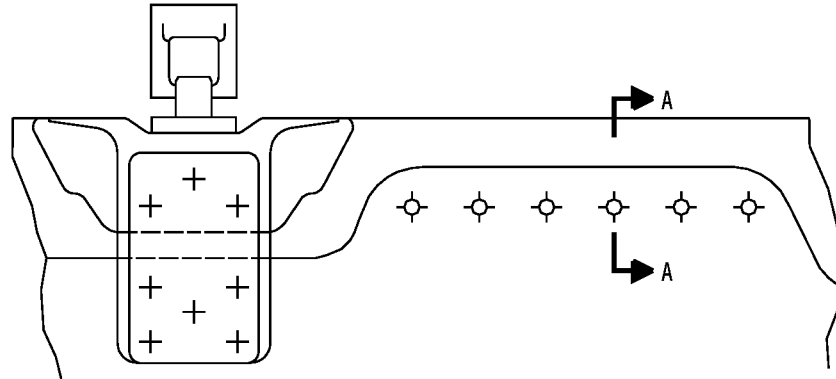
FOR GRAPHITE/ARAMID EDGE BAND LAMINATE

TABLE II

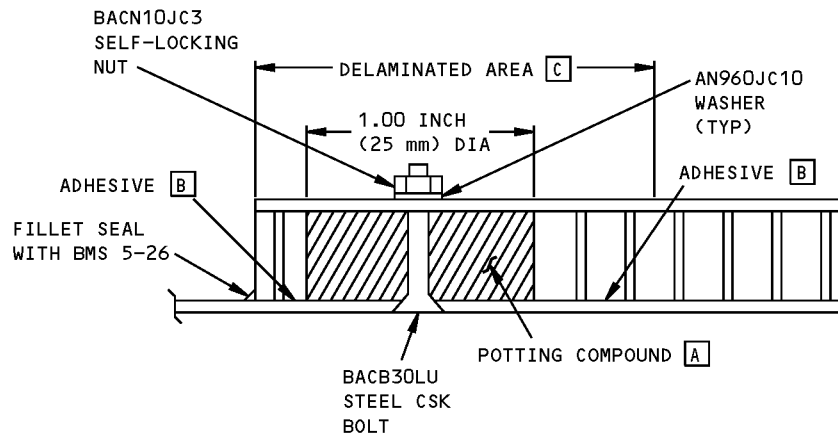
Typical Fan Cowl Skin Repair
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - FAN COWL SQUARED EDGE DELAMINATION - CF6-80A ENGINE



FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH



SECTION A-A

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
- REFER TO REPAIR GENERAL, PARA. 3 FOR REPAIR OF FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH

- [A]** BMS 5-28, TYPE 7
- [B]** BMS 5-109 TYPE II, CLASS 2
- [C]** FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT BE MORE THAN 5 INCHES (125 mm) IN LENGTH. IF DELAMINATION IS MORE THAN 5 INCHES (125 mm), REFER TO SRM 51-70-04.

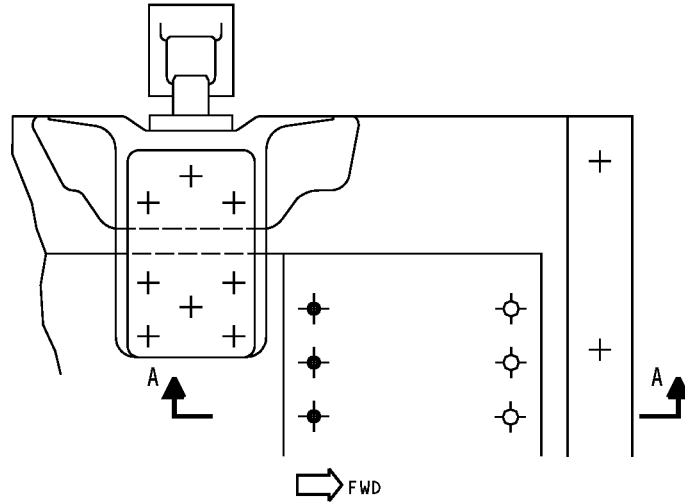
FASTENER SYMBOLS

- + INITIAL FASTENERS LOCATIONS
- ⊗ REPAIR FASTENER LOCATION
BACB30LU BOLT, BACN10JC3 NUT, AN960JC10 WASHER

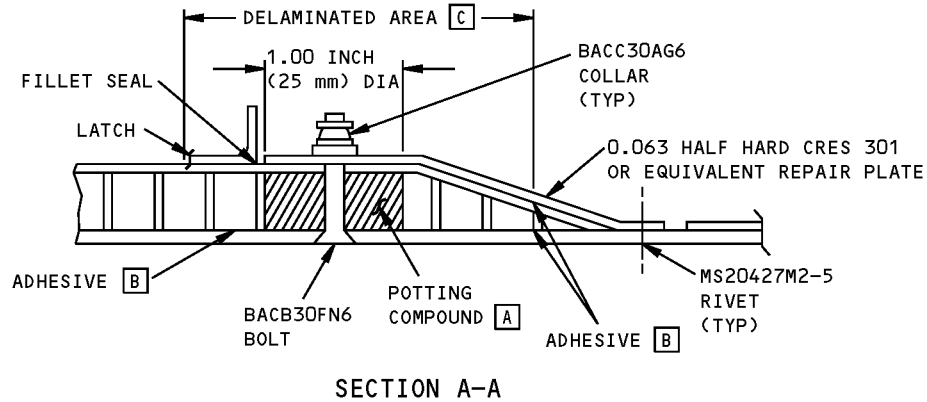
**Fan Cowl Squared Edge Delamination Repair
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 3 - FAN COWL TAPERED EDGE DELAMINATION - CF6-80A ENGINE



FAN COWL DELAMINATION REPAIR IN VICINITY OF AFT PANEL EDGE



NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS.
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
- REFER TO REPAIR GENERAL, PARA. 4 FOR REPAIR OF FAN COWL DELAMINATION ALONG PANEL EDGE

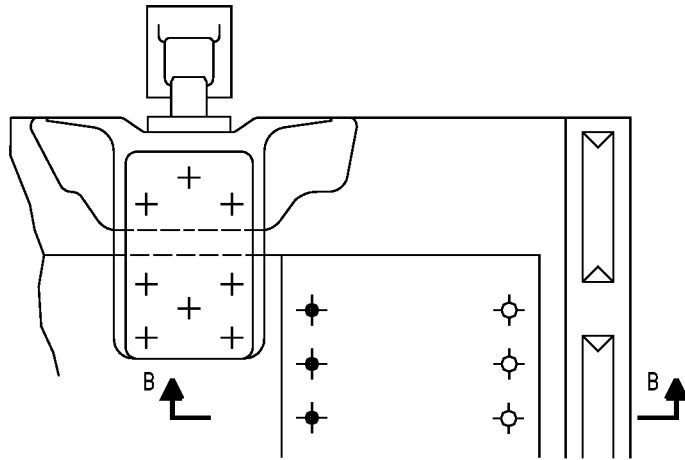
- A** BMS 5-28, TYPE 7
- B** BMS 5-109 TYPE II, CLASS 2
- C** FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT BE MORE THAN 6 INCHES (150 mm) IN LENGTH. IF DELAMINATION IS MORE THAN 6 INCHES (150 mm), REFER TO SRM 51-70-04.

FASTENER SYMBOLS

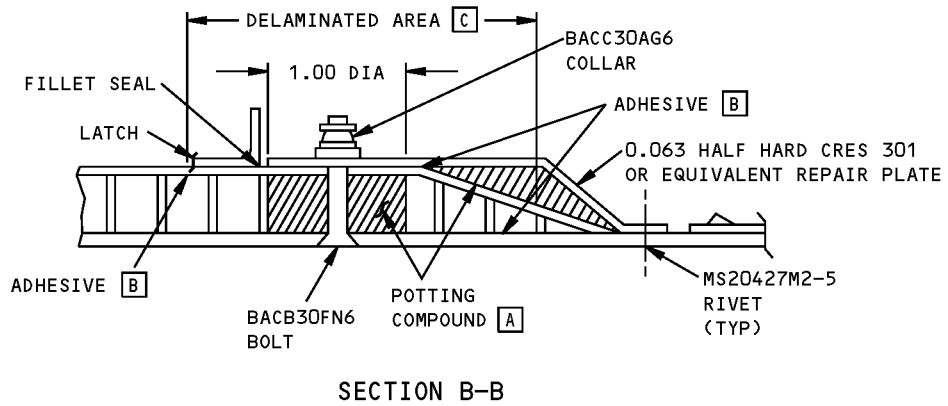
- + INITIAL FASTENERS LOCATIONS
- REPAIR FASTENER LOCATION (BACB30FN6 BOLT, BACC30AG6 COLLAR)
- REPAIR FASTENER LOCATION MS20427M2-5 RIVET (TYP)

**Fan Cowl Tapered Edge Delamination Repair
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION REPAIR IN VICINITY OF FWD PANEL EDGE



**Fan Cowl Tapered Edge Delamination Repair
Figure 201 (Sheet 2 of 2)**



767-300

STRUCTURAL REPAIR MANUAL

REPAIR 4 - RESIN TYPE SPECIFICATIONS AND MIXING PROCEDURES

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 7	EPOCAST 8414A RESIN EPOCAST 8414B HARDENER	100 ±1 22 ±1	60 MINUTES AT 70°F (21°C)	12 HOURS AT 65°F MIN (19°C) 2 HOURS AT 125°F (52°C) A
	CG-1305 RESIN CG-1305 HARDENER	100 22		
	FR 7162 RESIN FR 7162 HARDENER	100 ±5 40 ±2		
BMS 5-109, TYPE II CLASS 2 ADHESIVE	EA 934 A/B EA 934NA A/B FR 7010 A/B	B B C	30 MINUTES D	1 HOUR AT 200 ±10°F (93 ±5°C) 9 HOURS AT 160 ±10°F (71 ±5°C) 25 HOURS AT 120 ±10°F (49 ±5°C) 7 DAYS AT 77 ±10°F (25 ±5°C)

TABLE I

A FOR OPTIMUM PROPERTIES CURE 7 DAYS AT 65°F (19°C) OR 5 HOURS AT 125°F (52°C) OR 1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (177°C)

B MIX RATIO 32-34 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

C MIX RATIO 36-38 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

D REPAIR MUST BE PLANNED SO THAT 30 MINUTE ADHESIVE WORK TIME (TIME OF ADHESIVE MIX TO TIME OF FASTENER INSTALLATION) IS NOT EXCEEDED

Resin Type Specifications and Mixing Procedures
Figure 201

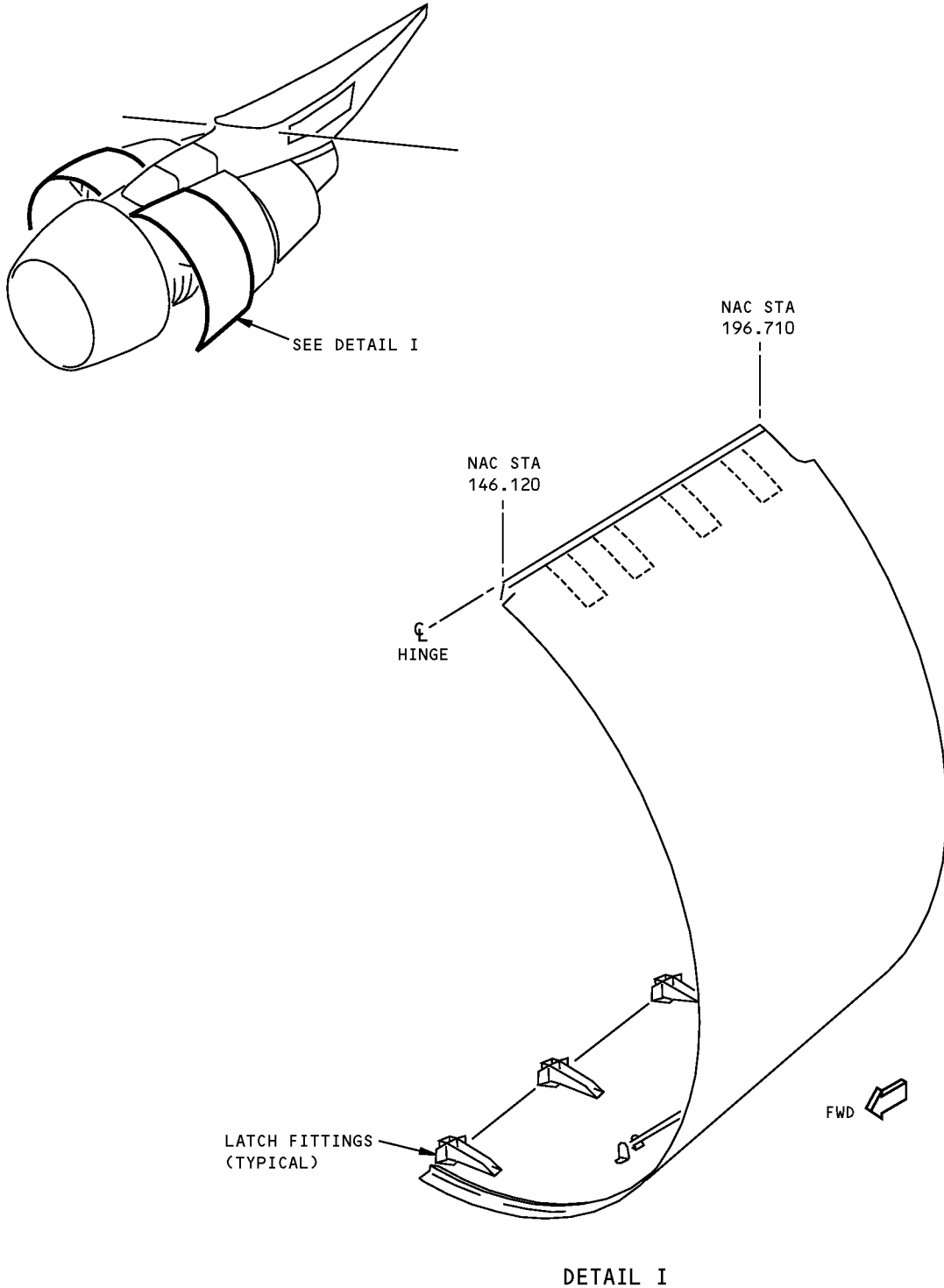
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54-21-01

REPAIR 4
Page 201
Apr 15/2005

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL ATTACHMENT FITTING - CF6-80A ENGINE



**Allowable Damage - Fan Cowl Attachment Fitting - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

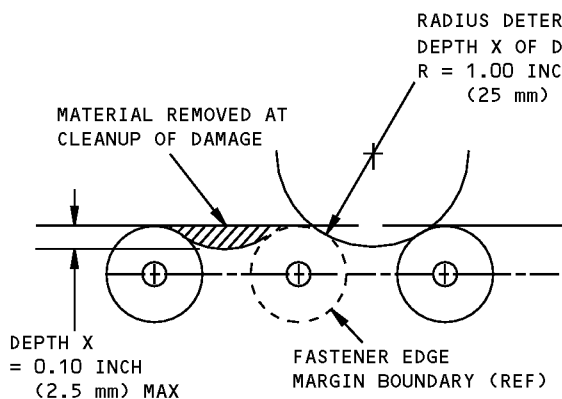
**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT PERMITTED	NOT PERMITTED
LATCH FITTINGS [C]	[A]	[B]		

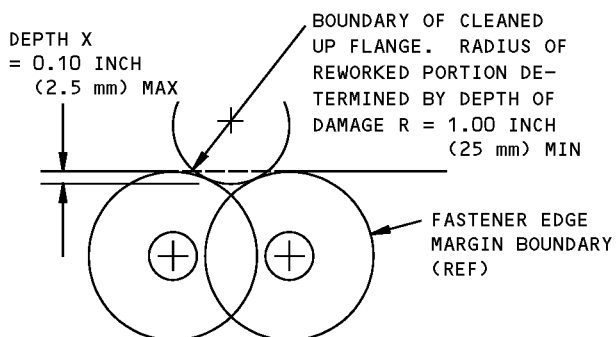
ALLOWABLE DAMAGE

NOTES

- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- [A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS ARE NOT PERMITTED
- [B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE IS NOT PERMITTED IN VICINITY OF BUSHINGS
- [C] SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

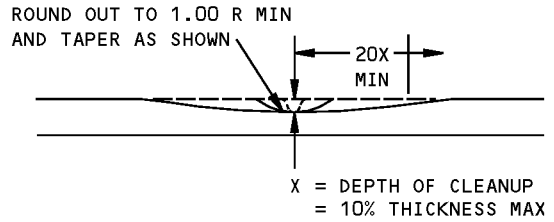
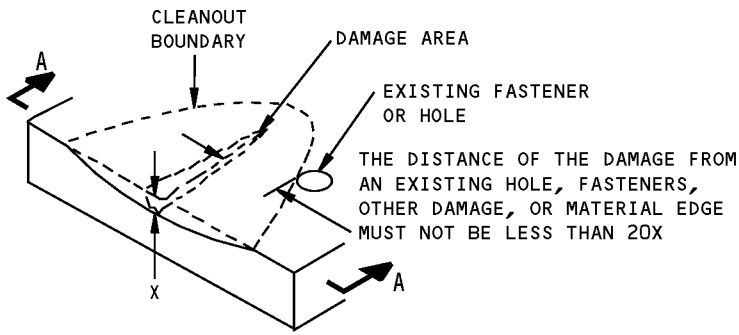


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II

**Allowable Damage - Fan Cowl Attachment Fitting - CF6-80A Engine
Figure 101 (Sheet 2 of 3)**

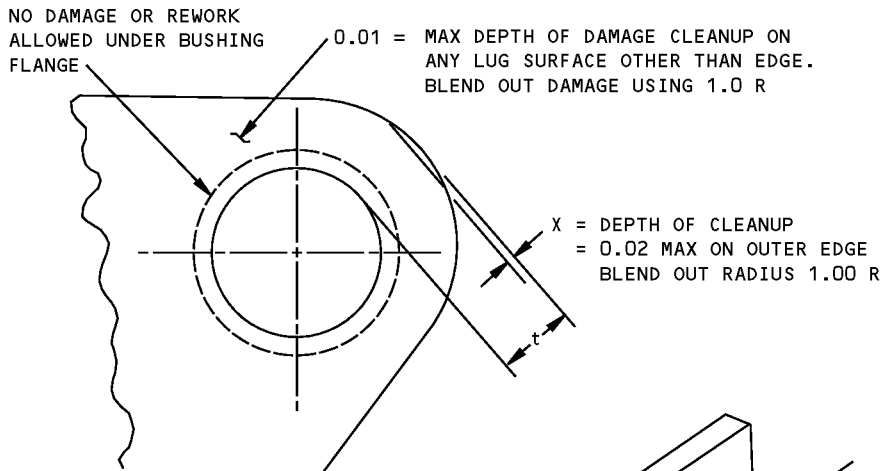
**767-300
STRUCTURAL REPAIR MANUAL**



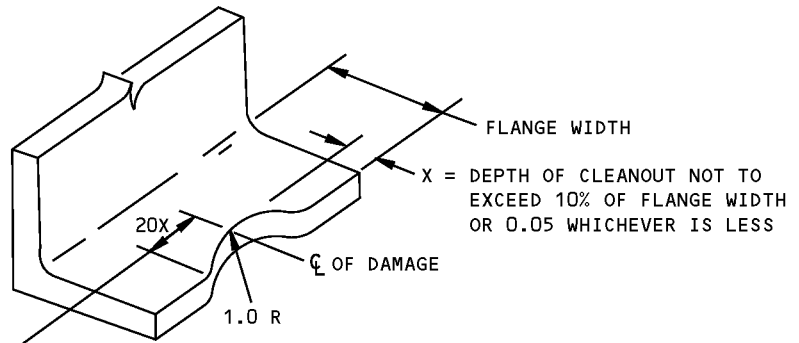
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**

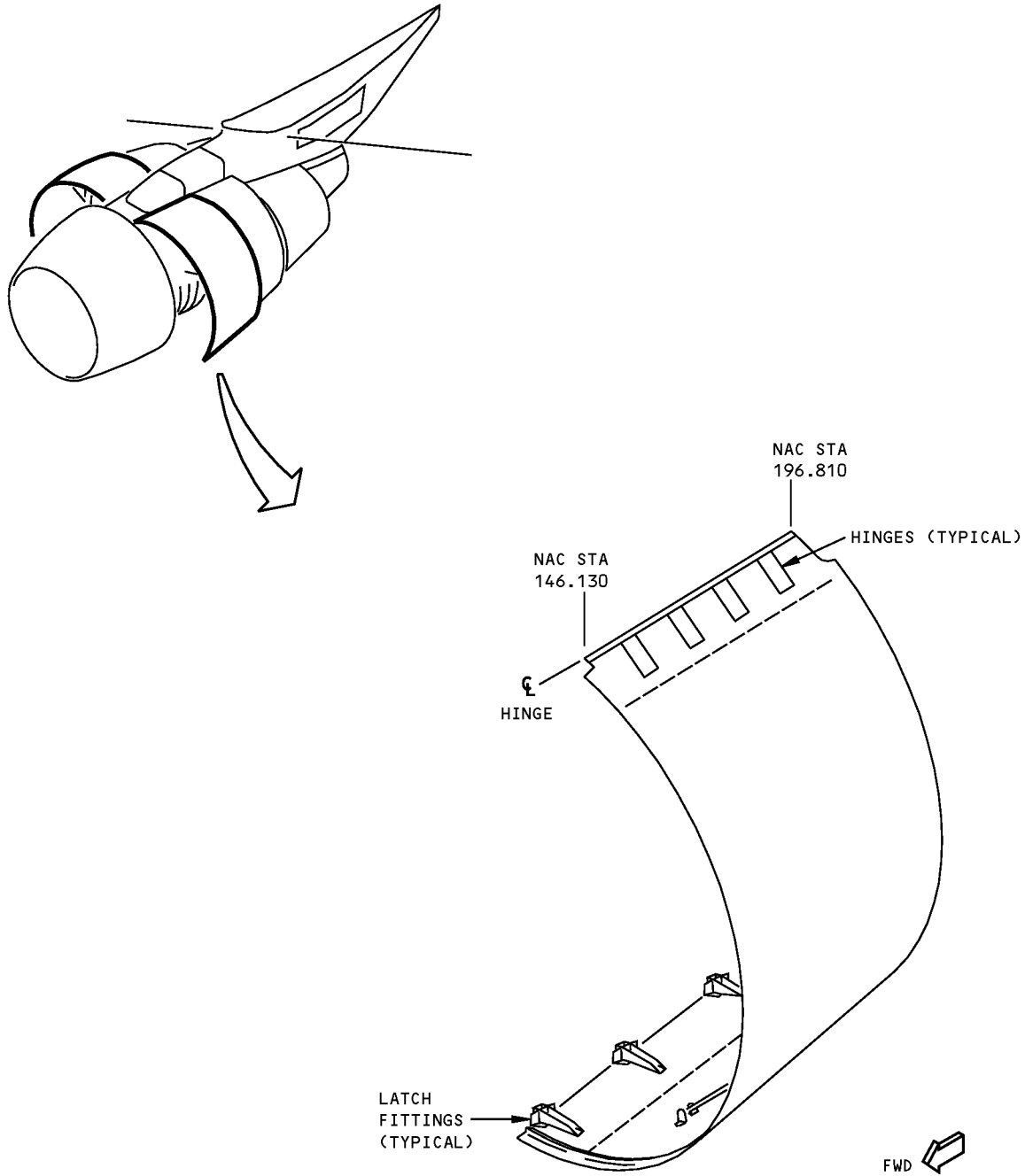


**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Fan Cowl Attachment Fitting - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN COWL ATTACHMENT FITTING - CF6-80A ENGINE



NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE. SPECIFIC REPAIRS TO FITTING WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- SEE 54-21-01 FOR FAN COWL IDENTIFICATION

**Fan Cowl Attachment Fitting Repair - CF6-80A Engine
Figure 201**

D634T210

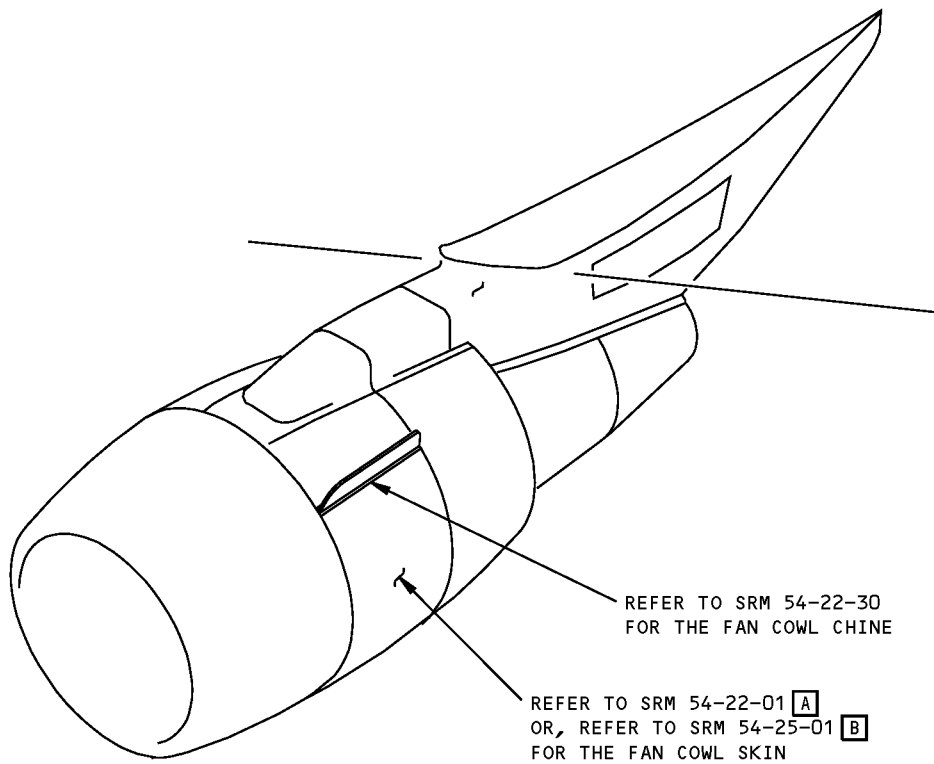
54-21-90

REPAIR 1
Page 201
Apr 01/2005



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STRUCTURAL REPAIR MANUAL

GENERAL - FAN COWL STRUCTURE DIAGRAM - CF6-80C2 ENGINE



NOTES

- A** FOR FAN COWLS WITH A SERIAL NUMBER PRIOR TO 3373001.
- B** FOR FAN COWLS WITH A SERIAL NUMBER 3373001 AND ON

Fan Cowl Structure Diagram - CF6-80C2 Engine
Figure 1

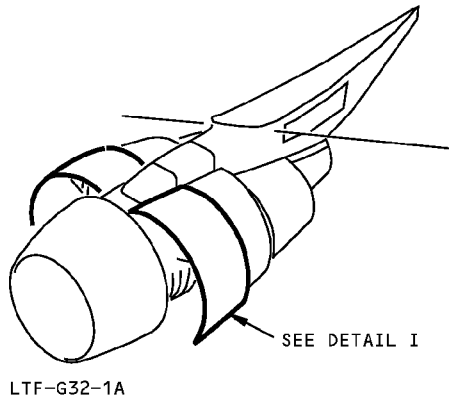
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54-22-00

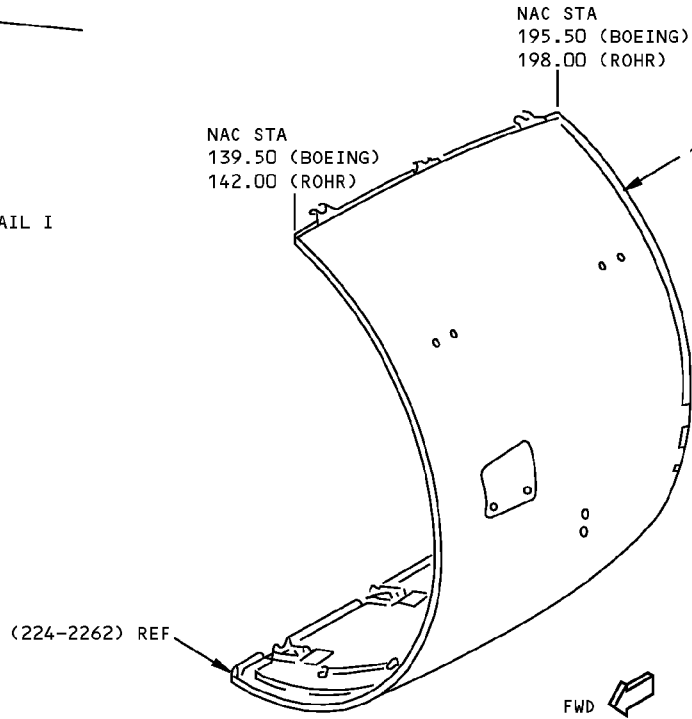
GENERAL
Page 1
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL SKIN - CF6-80C2 ENGINE



ROHR REFERENCE DRAWING
224-2201
224-2202



NOTE: THIS SUBJECT IS ONLY APPLICABLE TO FAN COWLS WITH A SERIAL NUMBER PRIOR TO 3373001. REFER TO SRM 54-25-01 FOR THE FAN COWLS WITH A SERIAL NUMBER 3373001 AND ON.

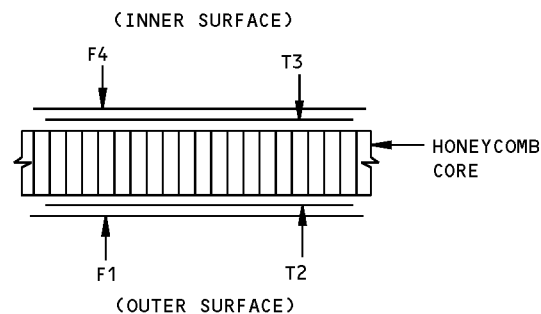
LEFT COWL PANEL SHOWN
RIGHT PANEL OPPOSITE
DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN		GRAPHITE FABRIC AND GRAPHITE TAPE EPOXY RESIN BONDED TO HONEYCOMB CORE. SEE DETAIL II	
	CORE		AL HONEYCOMB, NON-PERFORATED, AMERICAN CYNAMID, F40 OR F41, TYPE 1 OR 2, CLASS 2	
	FIELD	0.0010	5052 OR 5056 ALUMINUM ALLOY HONEYCOMB, NON-PERFORATED, 2.3 POUNDS PER CUBIC FOOT	
	EDGES	0.0015	5052 OR 5056 ALUMINUM ALLOY HONEYCOMB, NON-PERFORATED, 6.1 POUNDS PER CUBIC FOOT	

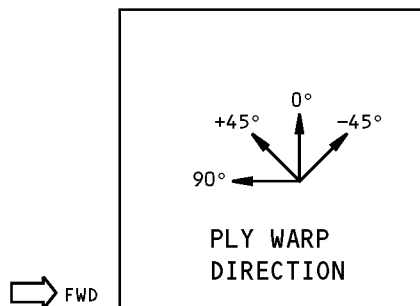
LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 2)**

767-300
STRUCTURAL REPAIR MANUAL



SECTION THRU HONEYCOMB PANEL



LEFT FAN COWL INNER SKIN
LOOKING OUTBOARD

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1	F1	^D	0°
	T2	^C	0°
	T3	^C	0°
	F4	^D	0°

PLY ORIENTATION TABLE ^B

FAN COWL INNER SKIN
DETAIL II

NOTES

^A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION

^B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE ROHR DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

^C GRAPHITE TAPE, HUTCO MATERIALS GROUP, SANTA ANA, CA, EF7203 CELION 6KST FIBER, GROUP 1, TYPE 1, CLASS 2, GRADE 1 ^E

^D GRAPHITE FABRIC, AH370-5H3501-5A, AS4, FIBER, V10396, GROUP 1, TYPE 1, CLASS 1, GRADE 1 ^E

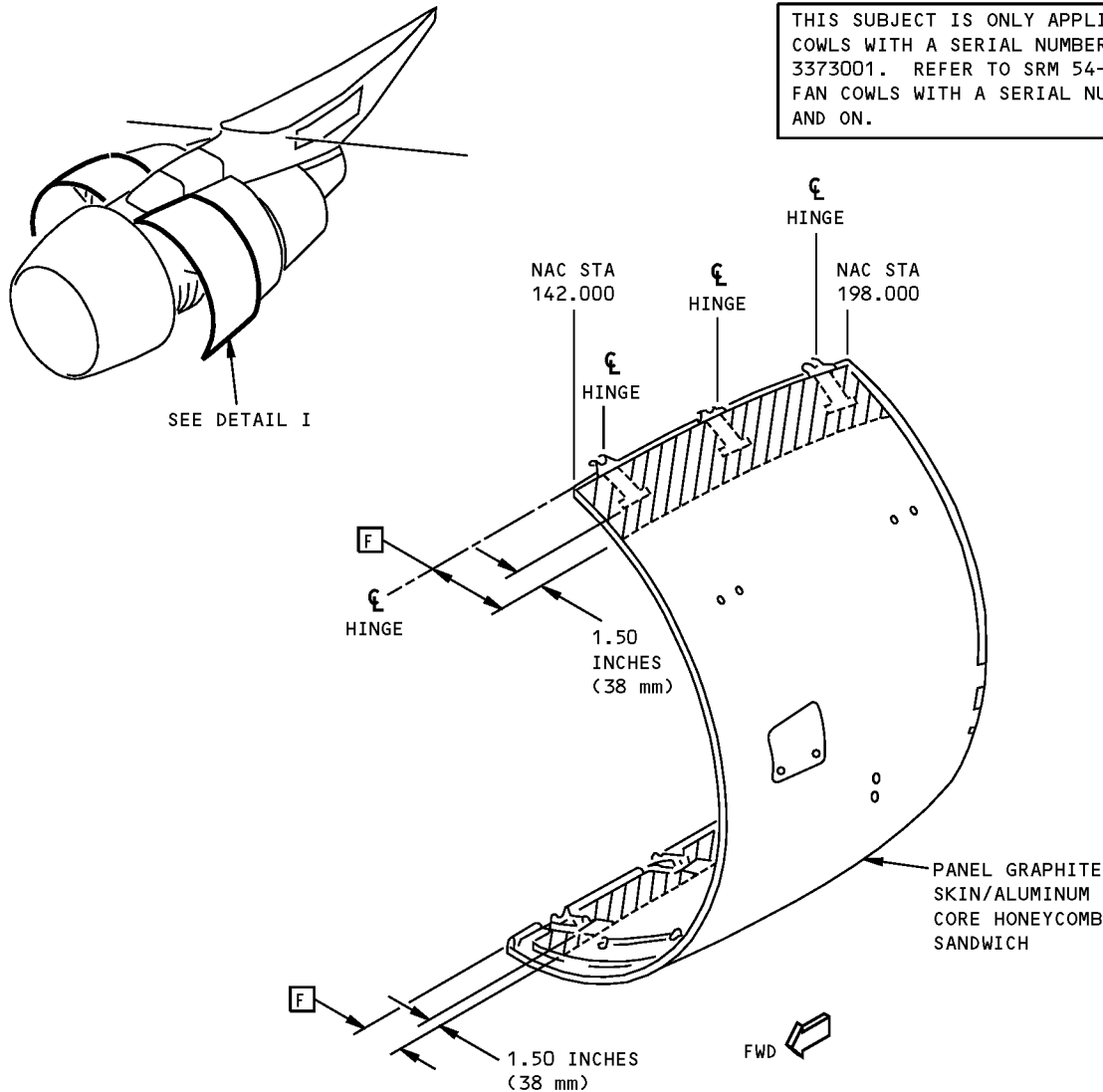
^E ORIGINAL CURE: 60 TO 70 MINUTES AT 340°F TO 360°F (171°C TO 182°C)

Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS ONLY APPLICABLE TO FAN COWLS WITH A SERIAL NUMBER PRIOR TO 3373001. REFER TO SRM 54-25-01 FOR THE FAN COWLS WITH A SERIAL NUMBER 3373001 AND ON.



DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	EDGE EROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PANEL	A	B	SEE DETAIL III	C	D	E

**Allowable Damage - Fan Cowl Skin - CF6-80C2 Engine
Figure 101 (Sheet 1 of 3)**

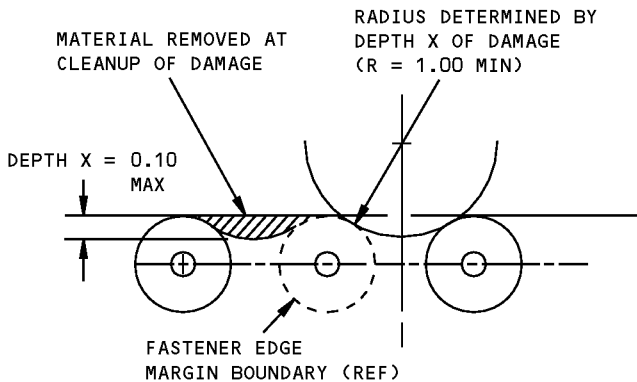
STRUCTURAL REPAIR MANUAL

NOTES

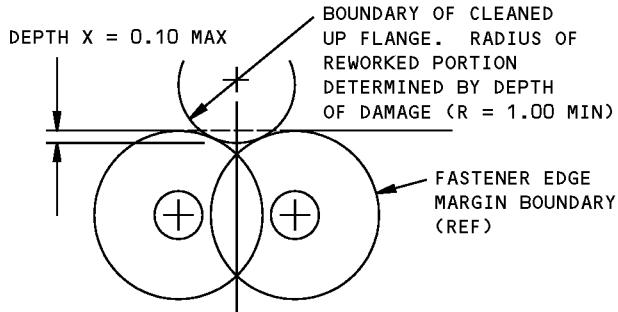
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
 - REFER TO SRM 51-11-00 FOR GENERAL DAMAGE CLEANUP.
 - REFER TO 51-11-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE IS MORE THAN THE LIMITS SHOWN IN 51-11-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFINISH REWORKED AREAS AS GIVEN IN SRM 51-21-01.
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION, OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED, AND THE CRITERIA FOR CRACKS SHOULD BE APPLIED.
- A** 1.5 INCHES (38 mm) MAXIMUM LENGTH IN HONEYCOMB AREA IS ALLOWED PER SQUARE FOOT OF AREA WITH A MINIMUM OF 6.0 INCHES (150 mm) DISTANCE FROM ANY OTHER CRACK. EDGE CRACKS MUST BE REMOVED AS GIVEN IN DETAIL II, SEE NOTE **G**.
- B** DAMAGE PERMITTED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS IS NOT PERMITTED, SEE NOTE **G**.
- C** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. PROVIDED THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.0 INCH (25 mm) MAX DIA ARE PERMITTED. ONE DENT FOR EACH SQUARE FOOT OF AREA PERMITTED WHICH MUST BE A MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE.
- D** 1.0 MAX DIA PERMITTED, PROVIDED DAMAGE IS A MINIMUM OF 3D FROM OTHER DAMAGE, CUTOUT, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. SEE NOTE **G**.
- E** 1.0 INCH (25 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.76 mm) DELAMINATION FROM EDGE IS PERMITTED. REPAIR DELAMINATION IN HONEYCOMB AREA NO LATER THAN THE NEXT AIRPLANE "C" CHECK, SEE NOTE **G**.
- F** THE CRITICAL AREA OF THE FAN COWL SKIN EXTENDS FROM THE TOP EDGE OF THE FAN COWL SKIN PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE HINGES. THE CRITICAL AREA ALSO EXTENDS FROM THE BOTTOM EDGE OF THE PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE LATCHES. AT EACH LOCATION, THE CRITICAL AREA EXTENDS FROM THE LEADING EDGE TO THE TRAILING EDGE OF THE PANEL. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE.
- G** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX 125°F 52°C) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT, OR FOREIGN MATTER, BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT AT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN THE NEXT AIRPLANE "C" CHECK.
- H** DO NOT CHAMFER BEYOND EDGE OF COUNTERSINK AT FASTENER LOCATION. AS AN OPTION TO SEALING WITH SPEED TAPE, THE CHAMFER MAY BE REPAIRED WITHOUT REQUIREMENT FOR "A" CHECK INSPECTIONS AND "C" CHECK REPAIR BY SEALING WITH BMS 5-92 TYPE I OR TYPE III, OR WITH BMS 5-123. CURE BMS 5-92 TYPE I OR TYPE III AT 75°F (24°C) FOR 24 HOURS. CURE BMS 5-123 AT 75°F (24°C) FOR 1 HOUR.

Allowable Damage - Fan Cowl Skin - CF6-80C2 Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

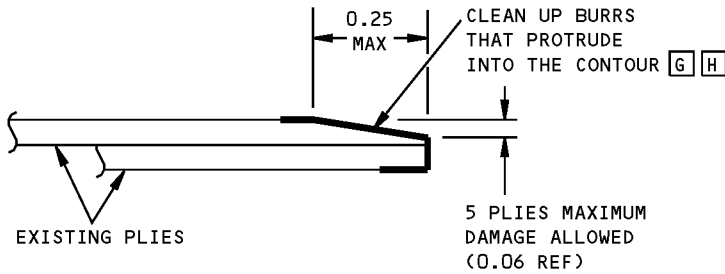


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



DAMAGE CLEANUP AND SEALING OF EDGE EROSION

DETAIL III

**Allowable Damage - Fan Cowl Skin - CF6-80C2 Engine
Figure 101 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 1 - FAN COWL - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN LESS THAN 0.010 INCH DEEP - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior to 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for skin damage not larger than 1.0 in. (25.4 mm) maximum dimension. For nonmetallic material sources, refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Smooth edges of damage with 150-grit or finer abrasive paper. Remove all loose fibers.
- B. Sand area around damage to remove all surface finish, using 150-grit abrasive paper.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- C. Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- D. Prepare and apply a potting compound mixture from one of the two following mixtures:

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

(1) EA9390/Milled Glass Fiber Mixture (Option 1)

- (a) Mix thoroughly in a metal or plastic container 100 parts-by-weight of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener and 39 parts (by weight) of chopped glass fibers. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (c) Apply resin/chopped fiber mixture with spatula to a level slightly above surrounding skin level.
- (d) Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190-210°F (88-99°C) for 220 minutes.

WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

(2) EA934NA Potting Compound (Option 2)

- (a) Mix EA934NA potting compound thoroughly in a metal or plastic container.
- (b) Cover container to prevent contamination of mixture and store in a cool place.
- (c) Apply mixed EA934NA with spatula to a level slightly above surrounding skin level.
- (d) Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190-210°F (88-99°C) for 60 minutes.

- E. Use 150-180 grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
- F. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FAN COWL - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN MORE THAN 0.010 INCH DEEP - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for holes not larger than 12 in. (30.5 cm) maximum diameter. For holes larger than 12 in. (30.5 cm) maximum dimension, contact the Boeing company. For nonmetallic material sources, refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

- A. Clean up damage area as shown in Figure 201/REPAIR 2.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Smooth edges of damage with 150-grit or finer abrasive paper.
- (2) Determine number of skin plies damaged. See Structure Identification.
- (3) Mask outline of repair area around damage. Measure 1 in. (2.5 cm) from edge of damage for each layer or original structure penetrated, plus 1 in. (2.5 cm) for outer layer of fiberglass and apply teflon tape for 2 in. (5 cm) wide mask band.
- (4) Sand masked area around damage with 150-grit abrasive paper to remove all surface finish.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (5) Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- B. Fill the damaged area with a potting mixture level with the outer skin surface. (Refer to REPAIR 1 for potting compounds). Cure as shown in REPAIR 1.
- C. Cut the repair plies from AH370-5H, AS4-6K (refer to 51-31-03, GENERAL). Fabric orientation of repair plies must be the same as the plies being replaced.

STRUCTURAL REPAIR MANUAL

- (1) Cut graphite fabric repair ply No. 1 large enough to extend 1 in. (25 mm) all around past damage area. Trim corners 1 in. (25 mm) by 45 degrees.

NOTE: To avoid edge fraying, add 0.5 in. (13 mm) all around to all repair plies. Trim to final size after soaking with adhesive and just before installation.

- (2) Cut graphite fabric ply No. 2 and remaining plies large enough to provide a minimum 0.75 in. (19 mm) overlap. Trim corners 1 in. (25 mm) by 45 degrees. Repeat procedure for remainder of repair plies required.
- (3) Cut fiberglass fabric sanding ply large enough to overlay all the exterior graphite repair plies and extend to edge of masked area. Trim corners 1 in. (25 mm) by 45 degrees.

D. Soak repair plies with resin.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (1) Mixed EA9390 resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair and fiberglass sanding plies.

- (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (2) Place each graphite repair and fiberglass ply on sheet of nonporous parting film and apply resin to top sides. Cover plies with sheet of nonporous parting film and use roller to thoroughly soak plies with resin.
- (3) Trim graphite and fiberglass plies to final size. Leave parting film in place.

E. Install repair and sanding plies on skin panel as shown in Figure 201/REPAIR 2 .

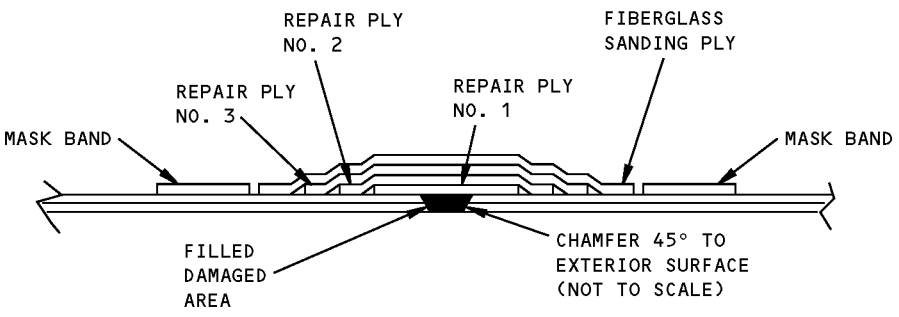
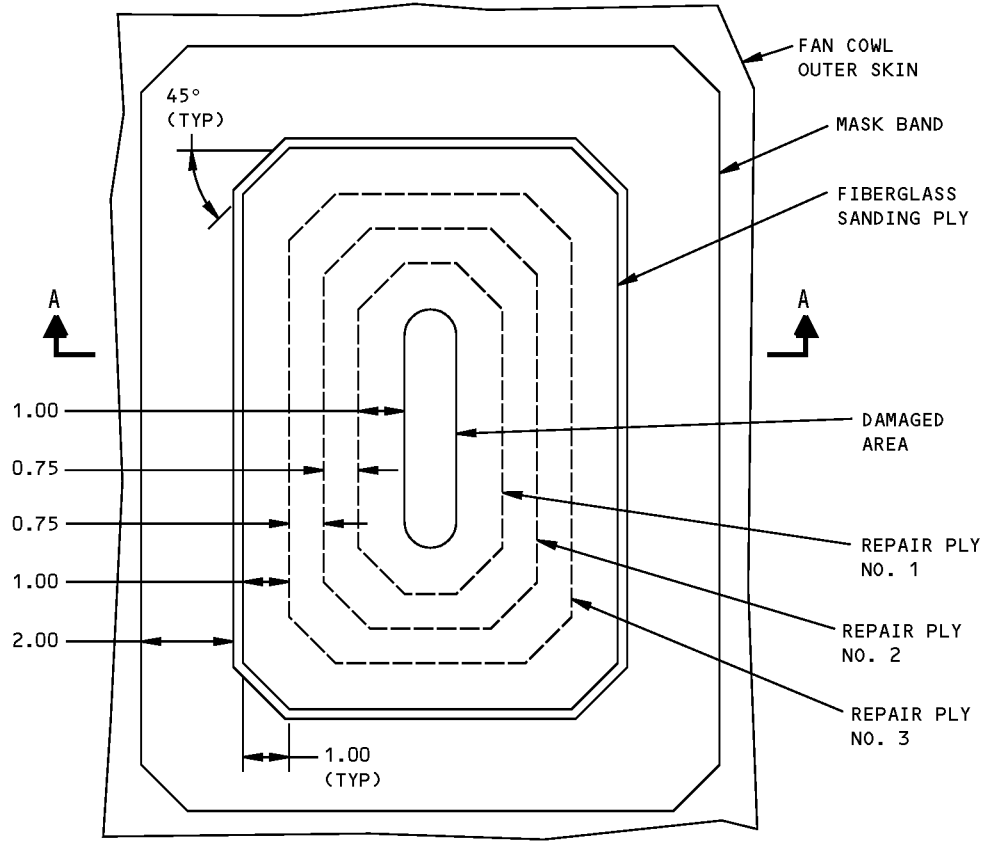
NOTE: Install repair plies in 0-90° orientation to match that of undamaged skin.

- (1) Remove parting film from one side of ply No. 1 and put in center over damage area. Use a roller to smooth out wrinkles. Remove parting film from top of repair ply No. 1.
- (2) Remove parting film from one side of ply No. 2. Put ply No. 2 in center of ply No. 1. Make sure No. 2 ply extends 0.75 in. (19 mm) past ply No. 1. Use roller to smooth out wrinkles. Remove parting film from top of ply No. 2.
- (3) Repeat procedure for any additional repair ply.
- (4) Remove parting film from one side of fiberglass sanding ply. Place fiberglass ply over graphite repair plies. Make sure glass ply extends to edge of masked area. Smooth out wrinkles. Remove remaining parting film from fiberglass ply.

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STRUCTURAL REPAIR MANUAL**

- F. Prepare repair and sanding plies for curing.
- (1) Cover repair and fiberglass plies with porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass ply.
 - (2) Cover porous parting film with a layer of bleeder cloth for each graphite and fiberglass ply.
 - (3) Cover bleeder cloth with a layer of nonporous parting film.
 - (4) Cover parting film with silicone rubber sheet.
 - (5) Cover rubber sheet with two layers of fiberglass breather cloth.
 - (6) Place heat blanket over breather plies.
 - (7) Cover repair area with vacuum bag larger than repair area. Place temperature probe and vacuum connector under bag and seal edges with bag sealant.
- G. Cure graphite repair and fiberglass sanding plies.
- (1) Apply 20 in/Hg (68 kPa) minimum vacuum pressure inside bag.
 - (2) Turn on heat blanket and raise temperature of repair area to 190-210°F (88-99°C) for 220 minutes.
- H. Finish repair surface.
- (1) Remove vacuum bag, heat blanket, breather cloth, silicone rubber sheet, nonporous parting film, bleeder plies, temperature probe, vacuum probe, porous parting film, mask band, and bag sealant.
 - (2) Use 150-320 grit abrasive paper and sand surface of repair to a feather edge and a smooth contour suitable for painting.
 - (3) Remove sanding dust from surface with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
 - (4) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

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STRUCTURAL REPAIR MANUAL**



SECTION A-A
DETAIL I

**Fan Cowl - Repair of Damage to Graphite Composite Skin more than 0.010 Inch Deep - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - FAN COWL - REPAIR FOR DENTS IN GRAPHITE SKINS - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for dents not larger than 2.0 in. (5.1 cm) maximum diameter, that do not cause fiber damage, delamination, or core damage. For dents larger than 2.0 in. (5.1 cm) diameter and dents which cause fiber damage, remove damaged area and repair as a hole. For nonmetallic material sources, refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

- A. Mask outline of repair area around damage. Measure 1 in. (2.5 cm) from edge of dent for the repair ply.
- B. Sand masked area around damage with 150-grit abrasive paper to remove all surface finish.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- C. Remove sanding debris from exterior skin surface with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.
- D. Prepare a potting compound mixture as given in REPAIR 1.
- E. Apply potting compound mixture with a spatula to a level slightly above the surrounding graphite ply level.
- F. Cure the potting compound as given in REPAIR 1.
- G. Sand cured potting compound level with outer skin surface.
- H. Cut fiberglass BMS 8-79, Type 1581 fabric sanding ply. The ply is to be 2.0 in. (5.1 cm) larger than the potted area. Trim corners 0.5 in. (13 mm) by 45 degrees.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

I. Mix EA9390 resin.

- (1) Mix thoroughly in a metal or plastic container 100 parts (by weight) or EA9390/A basic resin with 56 parts (by weight) or EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (2) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

J. Place fiberglass sanding ply on sheet of nonporous parting film and apply resin to top ply. Cover ply with sheet of nonporous parting film and use roller to thoroughly soak ply with resin.

NOTE: Weight of resin required will be approximately the same as the total weight of dry fabric repair ply.

K. Install fiberglass sanding ply on skin panel.

- (1) Remove parting film from one side of sanding ply and center over damaged area. Use a roller to smooth out wrinkles. Remove parting film from top of repair ply.

L. Prepare fiberglass sanding ply for curing.

- (1) Cover fiberglass sanding ply with porous film approximately 3 in. (7.6 cm) larger all around than fiberglass ply.
- (2) Cover porous parting film with a layer of bleeder cloth.
- (3) Cover bleeder cloth with layer of nonporous parting film.
- (4) Cover parting film with silicone rubber sheet.
- (5) Cover rubber sheet with two layers of fiberglass breather cloth.
- (6) Place heat blanket over breather plies.
- (7) Cover repair area with vacuum bag larger than repair area. Place temperature probe and vacuum connector under bag and seal edges with bag sealant.

M. Cure the repair.

- (1) Apply 20 in/Hg (68 kPa) minimum vacuum pressure inside bag.
- (2) Turn on heat blanket and raise temperature of repair area to 190-210°F (88-99°C) for 220 minutes.

N. Finish repair surface.

- (1) Remove vacuum bag, heat blanket, breather cloth, silicone rubber sheet, nonporous parting film, bleeder plies, temperature probe, vacuum probe, porous parting film, mask band, and bag sealant.
- (2) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 4 - FAN COWL - REPAIR OF EDGE EROSION DAMAGE - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for edge erosion damage to graphite/epoxy structures of the fan cowl. Edge erosion damage repair is limited to areas 0.5 in. (12.7 mm) long and 0.02 in. (0.51 mm) deep. For larger erosion, remove damage and repair as a hole. For nonmetallic material sources refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

- A. Preparation of surface.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Use 150-180 grit abrasive paper to remove surface finish and taper exterior coating to a feather edge around the repair area. Be careful not to penetrate the composite surface. Trim loose fibers.

NOTE: Do not taper or break graphite fibers from exposed graphite ply.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (2) Remove sanding debris with a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a clean cloth before solvent evaporates.

- B. Prepare and apply an adhesive filler.

- (1) EA934NA Potting Compound

STRUCTURAL REPAIR MANUAL

WARNING: USE EA934NA IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA934NA. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA934NA TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION.

- (a) Mix EA934NA potting compound thoroughly in a metal or plastic container.
- (b) Cover container to prevent contamination of mixture and store in a cool place.
- (2) Fill erosion cavities with potting compound and apply 1 in. (2.5 cm) wide Teflon tape to create a smooth surface.
- C. Use a heat lamp or a heat blanket and raise the temperature of the repair area to 190-210°F (88-99°C) cure for 60 minutes.
- D. Remove tape and use 150-180 grit abrasive paper to sand adhesive smooth.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- E. Remove sanding debris with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
- F. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for instructions on surface finish restoration or graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

REPAIR 5 - FAN COWL - REPAIR OF DAMAGE TO GRAPHITE COMPOSITE SKIN AND ALUMINUM HONEYCOMB CORE - CF6-80C2 ENGINE

1. Applicability

- A. This is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 with a serial number 3373001 and on.
- B. This repair is for holes not larger than 12 in. (30.5 cm) maximum diameter. For holes larger than 12 in. (30.5 cm) maximum diameter contact the Boeing company. For nonmetallic material sources, refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL P/B GENERAL	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
54-22-01, IDENTIFICATION 1	Fan Cowl Skin - CF6-80C2 Engine
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Form a 0.5 in. (13 mm) radius on all corners and chamfer sides 45 degrees (openings to external surface). Smooth edges of cutout using 80-grit or finer abrasive paper (refer to Figure 201/REPAIR 5).
- B. Determine number of skin plies. Refer to 54-22-01, IDENTIFICATION 1.
- C. Mask outline of repair area around cutout. Add 1 in. (2.5 cm) (from exterior chamfered edge of cutout) for each ply in original composite skin, including fiberglass sanding ply. Use teflon tape for 2 in. (5 cm) wide mask band.
- D. Use 150-grit abrasive paper to sand masked area. Lightly abrade top surface of outer skin ply.

NOTE: Do not taper or break graphite fibers from top surface of outer skin plies.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- E. Remove sanding debris from exterior skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surface dry with a cloth before solvent evaporates.
- F. Repair damage to honeycomb as follows:
 - (1) Damage area less than 1 in. (2.5 cm) in diameter.
 - (a) Prepare a potting compound mixture as shown in REPAIR 1.

STRUCTURAL REPAIR MANUAL

- (b) Straighten honeycomb cell walls and fill damaged honeycomb core with potting compound mixture.
- (c) Cure the potting compound as shown in REPAIR 1.
- (2) Damage area more than 1 in. (2.5 cm) in diameter.
 - (a) Remove damaged honeycomb core entirely (refer to Figure 201/REPAIR 5).

NOTE: Be careful not to damage inner skin surface.

- (b) Determine material and density of honeycomb core. Refer to 54-22-01, IDENTIFICATION 1.
- (c) Cut honeycomb core repair plug to size.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (d) EA9390/Microballoon Mixture

- 1) Mix thoroughly in a metal or plastic container 100 parts (by weight) or EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture. Add 5 percent (by weight) of phenolic microballoons.
- 2) Cover container to prevent contamination of mixture and store in a cool place until used.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (e) Apply EA9390 adhesive/microballoon mixture to circumference and bottom of honeycomb core repair plug, as well as to corresponding surfaces in fan cowl door skin. Insert plug in core and fill gap between plug and core with EA9390 adhesive/microballoon mixture.
- (f) Use heat blanket and core plug at 190-210°F (88-99°C) for 220 minutes.
- G. Cut one piece of fiberglass fabric 0.5 in. (13 mm) larger all around than the exposed core repair plug for cap-to-core repair plug.
- H. Cut one piece of peel ply film slightly larger than the fiberglass fabric.
- I. Place a sheet of nonporous parting film on a flat surface that is capable of withstanding temperatures in excess of 200°F. Place precut peel ply in center of parting film sheet.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

J. Mix EA9390 resin.

- (1) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (2) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- K. Soak fiberglass with adhesive and place on peel ply. Cover with porous parting film and one bleeder cloth.
- L. Stretch a piece of 2-mil nylon film over material stack and seal around edges with sealing compound to create vacuum bag. Insert temperature probe and vacuum probe inside bag and seal openings.
- M. Apply 20 in/Hg (68 kPa) of vacuum pressure under bag and cure at 190-210°F (88-99°C) for 220 minutes.
- N. Remove vacuum bag material, bleeder cloth, and porous parting film from fiberglass. Leave peel ply in place.
- O. Trim core repair cap to seal honeycomb core and to prevent flow of adhesive into core area in subsequent procedure.
- P. Remove peel ply from core repair fiberglass cap and apply sufficient amount of adhesive to bond cap to core. Install cap on core.
- Q. Use a heat lamp or a heat blanket and raise temperature of the repair area to 190-210°F (88-99°C) for 220 minutes.
- R. Cut enough graphite fabric plies to make filler plies flush with original composite skin. Cut the filler plies from AH370-5H, AS4-6K (refer to 51-31-03, GENERAL).

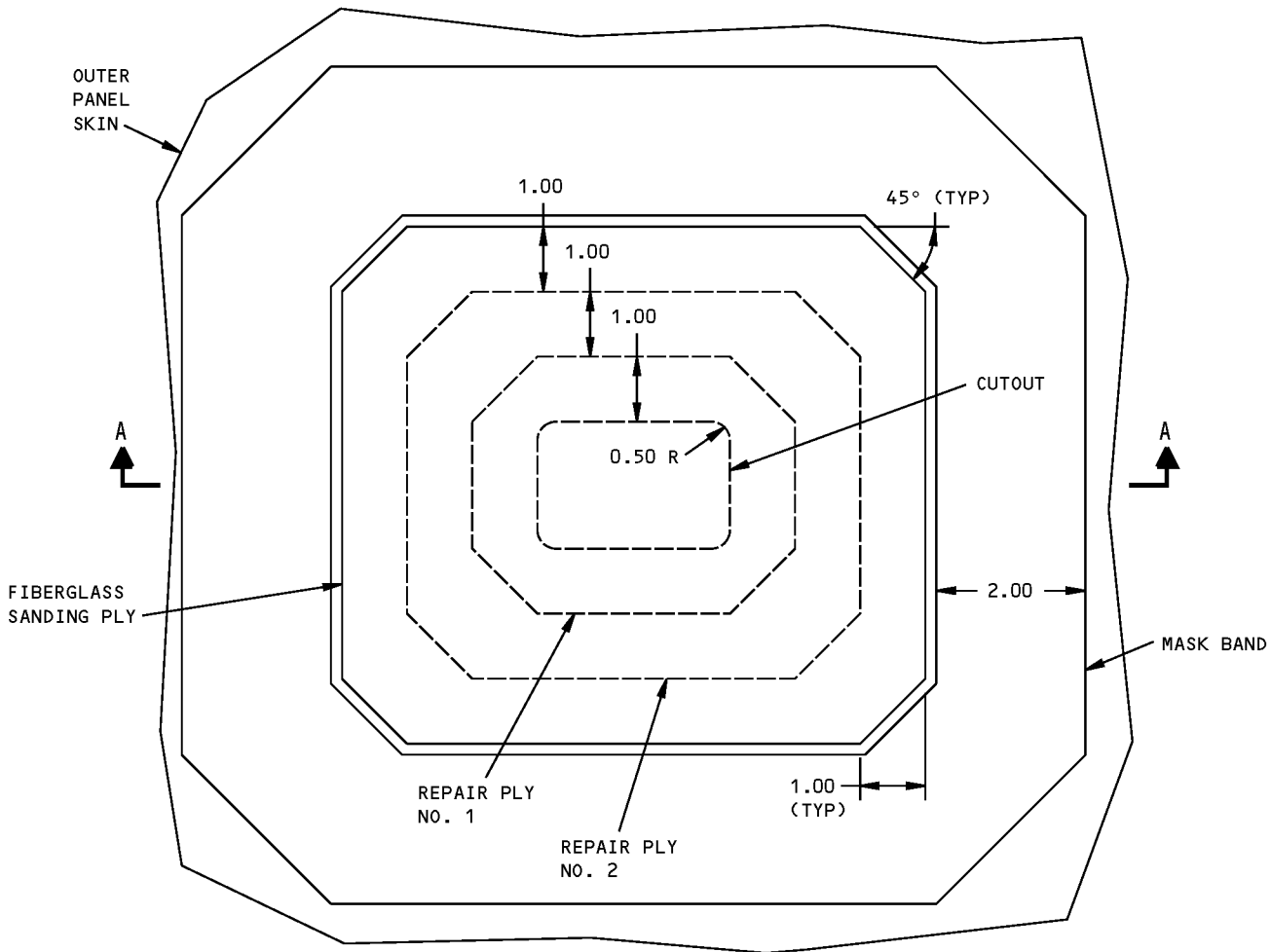
NOTE: To avoid edge fraying, add 0.5 in. (13 mm) all around to all fill, repair, and sanding plies. Trim to final size after soaking with resin and just before installation.

- S. Place filler plies on sheet of nonporous parting film. Mix EA9390 resin as given in Paragraph 3.J./REPAIR 5. Apply resin to one side of each ply. Restore resin. Cover each ply with sheet of nonporous parting film and use a roller to thoroughly soak plies with resin.
- T. Apply resin to inside surfaces of cutout and fiberglass cap. Remove parting film from one side of first filler ply and insert in cutout. Press ply into place with a roller and remove nonporous parting film. Repeat for balance of filler plies.
- U. The fabric orientation of repair plies must be the same as the plies being replaced. Cut the graphite fabric exterior repair ply No. 2 from AH370-5H, AS4-6K (refer to 51-31-03, GENERAL). Make it large enough to extend 1 in. (2.5 cm) past the edge of the repair ply No. 1 on all sides. Trim corners 45 degrees by 1 in. (2.5 cm).

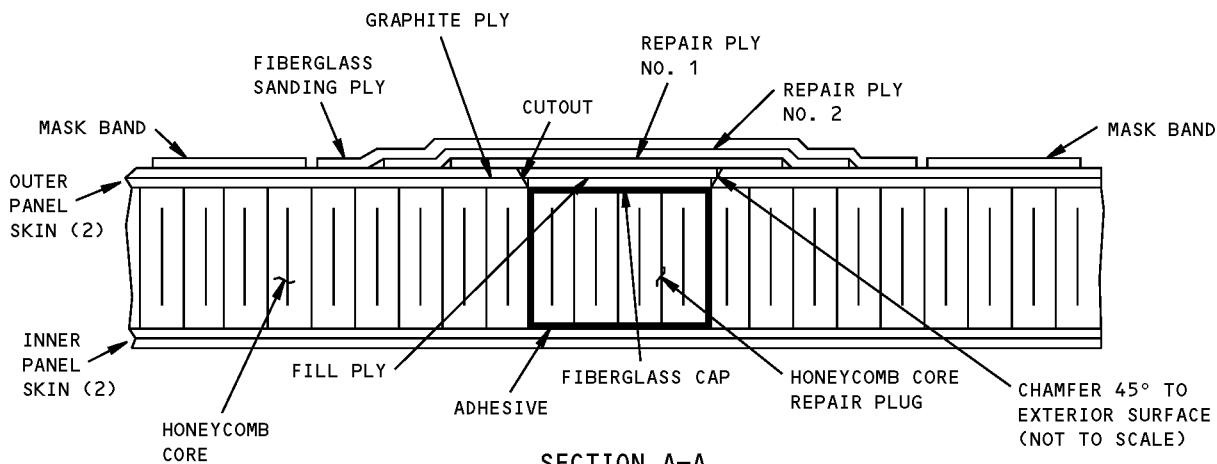
STRUCTURAL REPAIR MANUAL

- V. Cut the graphite fabric exterior repair ply No. 1 from 5HSW, AS4-6K, construction IIXII (refer to 51-31-03, GENERAL). Make it large enough to extend 1 in. (2.5 cm) past the cutout on all sides. Trim corners 45 degrees by 1 in. (2.5 cm). Repeat procedure for remaining original skin plies.
 - W. Cut a fiberglass sanding ply large enough to overlay all of the exterior repair plies and extend 1 in. (2.5 cm) past repair plies and to the edge of the masked area. Trim corners 45 degrees by 1 in. (2.5 cm).
 - X. Place repair ply No. 1 on sheet of nonporous parting film and apply resin to one side. Cover repair ply with nonporous parting film and use a roller to thoroughly soak graphite ply with resin. Remove nonporous parting film and center repair ply on door surface over cutout to extend 1 in. (2.5 cm) past cutout on all sides. Smooth out wrinkles with roller and remove top sheet of nonporous parting film.
 - Y. Repeat procedure for ply No. 2 and any additional repair plies. Cut additional repair plies large enough to extend 1 in. (2.5 cm) past preceding ply.
 - Z. Cover graphite repair plies with fiberglass fabric sanding ply which has been soaked with EA9390 resin. Fiberglass fabric should extend 1 in. (2.5 cm) past repair plies and to edge of masked area. Smooth out wrinkles with roller.
 - AA. Cover repair layup with a sheet of porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass fabric ply. Cover parting film with a layer of bleeder cloth for each of the exterior repair plies including the fiberglass ply. Cover parting film with a silicone rubber sheet. Cover rubber sheet with two plies of fiberglass breather cloth.
 - AB. Place a heat blanket over breather cloth and cover with a vacuum bag approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum probe under bag and seal around edges with bag sealant. Apply 20 in/Hg (68 kPa) of vacuum pressure inside bag.
 - AC. Turn on the heat blanket and raise temperature of the repair area to 190-210°F (88-99°C) for 220 minutes.
 - AD. Remove vacuum bag, heat blanket, breather cloth, rubber sheet, bleeder cloth, parting film, and teflon tape.
- WARNING:** DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.
- AE. Use 150-320 grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
 - AF. Apply paint primer and topcoat. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, PAGEBLOCK 51-21-01, GENERAL for instructions on surface finish restoration of graphite/epoxy composites.

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



**Fan Cowl - Repair of Damage to Graphite Composite Skin and Aluminum Honeycomb Core - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - FAN COWL - REPAIR OF DAMAGE TO EDGE OF GRAPHITE COMPOSITE SKIN - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 with a serial number 3373001 and on.
- B. This repair is for holes not larger than a maximum dimension of 12.0 in. (30.5 cm). For nonmetallic material sources, refer to 51-31-03, GENERAL.

2. References

Reference	Title
51-21-01, GENERAL P/B GENERAL	PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03, GENERAL	Nonmetallic Materials - CF6-80C2 Engine Nacelle
54-22-01, IDENTIFICATION 1	Fan Cowl Skin - CF6-80C2 Engine
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

- A. Clean up damage location. Refer to Figure 201 (Sheet 1) and Figure 201 (Sheet 2).

NOTE: Edge repair is limited to the door land only. Do not extend the repair into the core.

- (1) Remove rubstrip from door land if the damage is on the aft edge of the fan cowl door. Remove a section of the door land rubstrip which will extend approximately 5 in. (13 cm) past completed repair and will pick up at least two attach rivets on each side which are not affected by repair.
- (2) Mark cut lines on the rubstrip which will provide a 0.34 in. (8.6 mm) edge margin for the attach rivets at ends of the remaining rubstrip portions.
- (3) Cut nylon rubstrip at the cut lines and remove the section from the door land. Avoid damage to the door land.

NOTE: Protect undersurface of the door land when you cut the rubstrip.

- (4) Prepare a template for rivet location and edge trim of the repair by aligning a strip of 0.040 in. (1.02 mm) thick 2024-T3 aluminum sheet with the edge of the door land in the area where the rubstrip was removed. Backdrill (No. 21 drill) the rubstrip rivet holes through the door land in the template. Remove the template and keep for later use.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (5) Cut out the damaged area of skin to remove all loose particles, cracks and delaminations. Form a 0.25 in. (6.4 mm) radius on the inner corners. Taper the sides of the cutout 45 degrees toward the outer surface. Smooth the edges of the cutout using 80-grit or finer abrasive paper. Taper sand the dust cover plies 45 degrees on the inner surface of the door edge.
- (6) Determine the number of skin plies. Refer to 54-22-01, IDENTIFICATION 1.

NOTE: Fan cowl door edges contain two basic skin plies, plus six edge reinforcement plies in outer skin. Do not extend into core. To avoid excessive buildup, only four external repair plies need to be used in this repair.

STRUCTURAL REPAIR MANUAL

- (7) To mask the outline of the repair area around the cutout, measure 1 in. (2.5 cm) from the edge of the cutout for repair ply No. 1. Add 0.75 in. (19 mm) for each additional repair ply and add 1 in. (2.5 cm) for the fiberglass sanding ply. Use Teflon tape for a 2 in. (5 cm) wide mask band. Refer to Figure 201 (Sheet 1).
- (8) Sand the masked area to remove all of the surface finish and lightly abrade the top surfaces of the inner and outer skins using 150-grit abrasive paper.

NOTE: Do not taper or break graphite fibers from the top surface of the outer ply.

NOTE: Outer finish coat is gray and the first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (9) Remove sanding debris from the exterior skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe the surfaces dry with a clean cloth before the solvent evaporates.

B. Fill the damage area.

- (1) Form a backup plate from 2024-T3 aluminum to match the contour of the fan cowl door. Place nonporous parting film on the underside and the edge of the door and secure with clamps or teflon tape.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Mix the EA9390 resin.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to prevent heat rise in the resin mixture.
 - (b) Cover the container to prevent contamination of the mixture and store in a cool place.

NOTE: The useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (3) Cut a sufficient quantity of graphite fabric to provide plies to fill the cutout flush with the inner and outer surfaces of the door land. Place the fabric on nonporous parting film and coat with resin. Cover the fabric with nonporous parting film and use a roller to thoroughly soak the fabric.
- (4) Cut filler plies from the soaked fabric, remove the parting film from the plies and fill the cutout flush to the inner and outer surfaces of the door land. Lay up the inner dust cover ply No. 1 first, followed by dust cover No. 2, and then fill flush to the outer surface.

C. Cure the filler plies.

STRUCTURAL REPAIR MANUAL

- (1) Cover the plies with a sheet of porous parting film, two plies of bleeder cloth, and one sheet of nonporous parting film.
- (2) Place a strip of silicone rubber sheet over the filler ply stack. Cover with a breather ply of fiberglass cloth and install a vacuum bag of 2-mil nylon film. Apply a vacuum of 22 in/Hg (75 kPa) minimum to the filler ply stack.
- (3) Use a heat blanket and raise the temperature of the repair area to 190°F and 210°F (80°C and 99°C) for 220 minutes.
- (4) Remove the heat blanket, vacuum bag materials, and backup plate. Sand the cured filler plies flush with the surrounding door land surfaces.

D. Install the repair and sanding plies on the skin.

NOTE: The fabric style and orientation of the repair plies must be the same as the plies being replaced.

- (1) Cut the graphite fabric repair plies. Cut repair ply No. 1 large enough to extend 1 in. (2.5 cm) from the cutout along the door edge and back over the door outer surface. Cut repair ply No. 2 large enough to extend 0.75 in. (19 mm) beyond the edge of ply No. 1. Cut each remaining repair ply large enough to extend 0.75 in. (19 mm) beyond the previous ply. Cut one repair ply for each two plies in the door land except for the dust cover plies on the inner surface of the door land. Refer to 54-22-01, IDENTIFICATION 1. Trim the ply corners 45 degrees by 1 in. (2.5 cm).

NOTE: To prevent frayed edges, add 0.5 in. (13 mm) all around to all of the repair plies. Trim the repair plies to their final sizes after you impregnate them with the EA9390 resin and just before you install them.

- (2) Cut a fiberglass sanding ply large enough to extend 1 in. (2.5 cm) beyond the largest repair ply. Trim corners 45 degrees by 1 in. (2.5 cm).
- (3) Place the repair plies on a sheet of nonporous parting film and apply resin to one side of each ply. Cover the plies with nonporous parting film and use a roller to thoroughly soak the plies with the resin. Trim the plies to final size with nonporous parting film on both sides.
- (4) Remove the nonporous parting film from one side of repair ply No. 1 and center it over the cutout on the door surface. Smooth out wrinkles with a roller and remove the top sheet of nonporous parting film.
- (5) Install repair ply No. 2 and remaining repair plies.
- (6) Apply the EA9390 resin to the fiberglass fabric sanding ply and install over the repair plies, extending 1 in. (2.5 cm) beyond the edges of the largest repair ply. Smooth out wrinkles with a roller and remove the nonporous parting film.

E. Prepare repair and sanding plies for curing. Refer to Figure 201 (Sheet 3).

- (1) Cover the repair layup with a layer of porous parting film approximately 3 in. (7.6 cm) larger all around than the fiberglass fabric ply. Cover the parting film with a layer of bleeder cloth for each of the exterior repair plies including the fiberglass ply. Cover the parting film with a silicone rubber sheet.
- (2) Place a heat blanket over the rubber sheet. Place two plies of fiberglass fabric over the heat blanket which extend over the door edge and cover with a vacuum bag approximately 2 in. (5 cm) larger all around than the heat blanket and the rubber sheet. Place a temperature probe and a vacuum probe under the bag and seal around the edges with bag sealant. Apply 22 in/Hg (75 kPa) of vacuum pressure inside bag.

F. Cure graphite repair and fiberglass sanding plies. Refer to Figure 201 (Sheet 3).

STRUCTURAL REPAIR MANUAL

- (1) Turn on the heat blanket and raise the temperature of the repair area to 190°F and 210°F (88°C and 99°C) for 220 minutes.
 - (2) Remove the vacuum bag, heat blanket, rubber sheet, bleeder cloth, breather plies, parting film, and teflon tape.
- G. Install the rubstrip on the aft door land. Refer to Figure 201 (Sheet 2).
- (1) Place the template made in Paragraph 3.A.(4)/REPAIR 6 on the under surface of the door land and install temporary fasteners at each end. Clamp the center portion of the template against the door land to remove all gaps.
 - (2) Drill (No. 21) the rivet holes through the repair section. Add one hole at each end of the template to provide an attach rivet 0.34 in. (8.6 mm) from each end of the replacement rubstrip. Add another attach rivet hole 1 in. (2.5 cm) back from the first end rivet. Countersink the holes in the outer surface of the fan cowl door to accept MS20426B5 rivet heads. Install temporary fasteners in the remainder of the attach rivet holes.
 - (3) Trim the door edge to match the template and remove the template.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- (4) Taper-sand (4 to 1 ratio) the edge of the repair plies and the sanding ply. Sand the exterior surface of the fiberglass sanding ply to a feather edge all around and a smooth contour suitable for painting. Use 150 - 320 grit abrasive paper to produce a smooth surface. Rework the rivet countersinks if they have been affected by the sanding operations. Remove the sanding dust from the surface with a clean cloth moistened with solvent, series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe the surface dry with a clean cloth before the solvent evaporates.
- (5) Cut the replacement rubstrip for the aft door edge from S700M0593-1 (upper or lower) rubstrip, or S700M0593-3 (extended) nylatron extrusion rubstrip. Refer to 54-22-01, IDENTIFICATION 1. Butt-splice the rubstrip with 0.01 in. (0.25 mm) to 0.06 in. (1.52 mm) gaps between adjacent sections.
- (6) Place the rubstrip on the fan cowl door and clamp in position
- (7) Drill (No. 21) rivet holes through the fan cowl door land and rubstrip. Add a rivet at each end of the replacement rubstrip using a 0.34 in. (8.6 mm) edge margin. Add another rivet 1 in. (2.5 cm) back from each end rivet. Countersink the rivet holes for a double-flush rivet installation in the rubstrip and the door land. Squeeze-install MS20426B5-5 rivets through the rubstrip and the door land using rivet anvils that will not damage the adjacent tapered surfaces.
- (8) If repair is to the aft edge of the fan cowl door, remove excess cured resin along the door edge with 150-grit abrasive paper.

STRUCTURAL REPAIR MANUAL

WARNING: MAKE SURE THAT THERE IS A GOOD FLOW OF CLEAN AIR WHEN YOU MIX THE SEALANTS. DO NOT MIX THE SEALANTS IN A CLOSED SPACE IN THE AIRPLANE. DO NOT LET THE SEALANTS TOUCH YOUR SKIN OR EYES. WEAR RUBBER GLOVES AND EYE PROTECTION WHEN YOU MIX THESE MATERIALS. THEY ARE POISONOUS AND CAN CAUSE INJURY TO PERSONS.

- (9) Apply BMS 5-95 or Proseal P/F 735 sealant to the repair surface gaps and irregularities. If you use Proseal P/F 735 sealant, thoroughly mix 12 parts (by weight) of Proseal P/F 735 catalyst with 100 parts (by weight) of Proseal P/F 735 sealant base in a nonabsorbent container. Mix only the quantity to be used within 2 hours. Use the sealant and a plastic spatula to fill countersink cavities in the tapered areas of the repair flush with the surface of the sanding ply. Work trapped air bubbles from the filler.

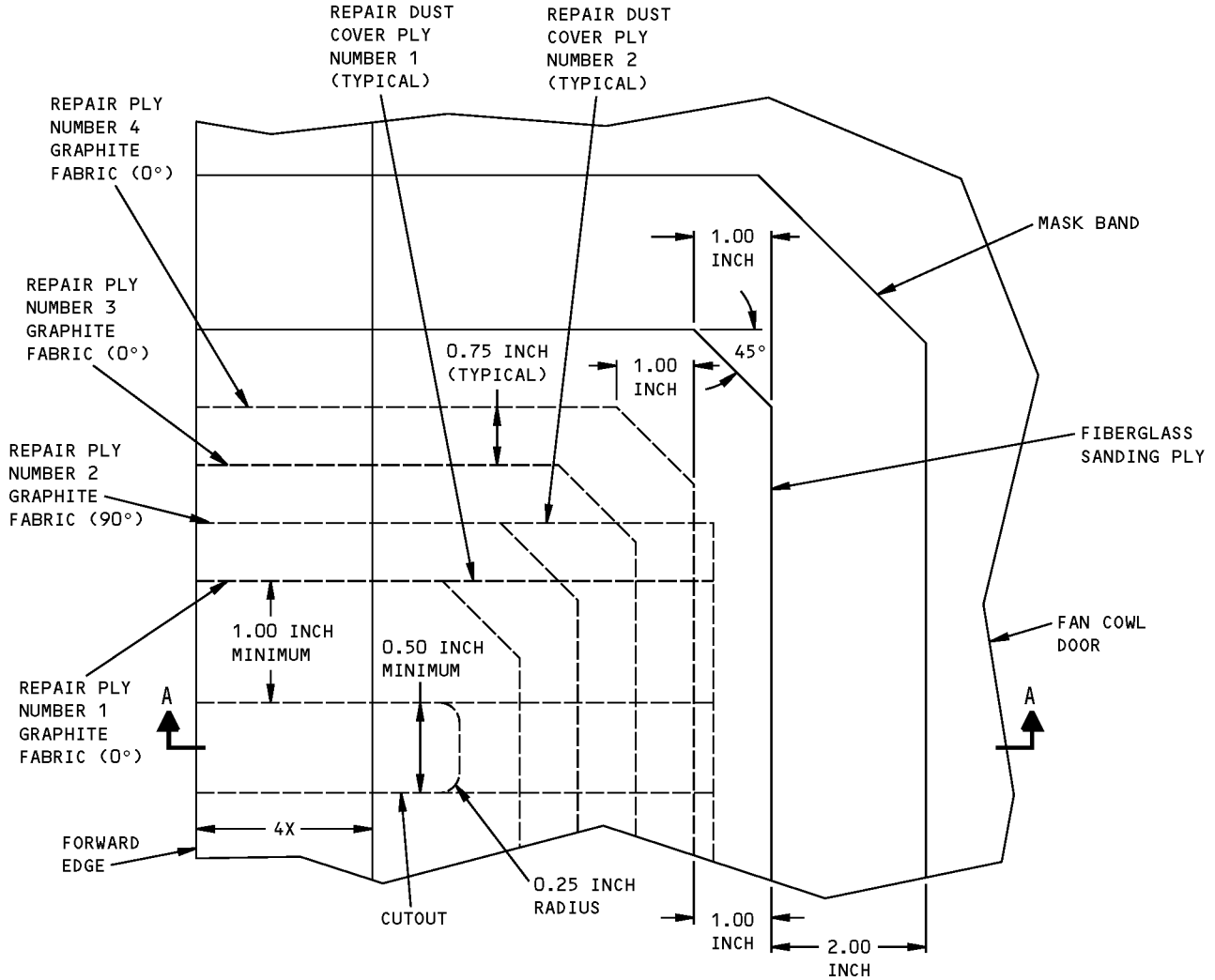
WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- H. Remove excess sealant from the surface of the repair with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe the surface dry before the solvent evaporates.
- I. If Proseal P/F 735 sealant is used, cure the sealant at 70°F to 80°F (21°C to 27°C) for 8 hours and follow with 140°F to 150°F (60°C to 66°C) for 2 hours using a heat blanket.

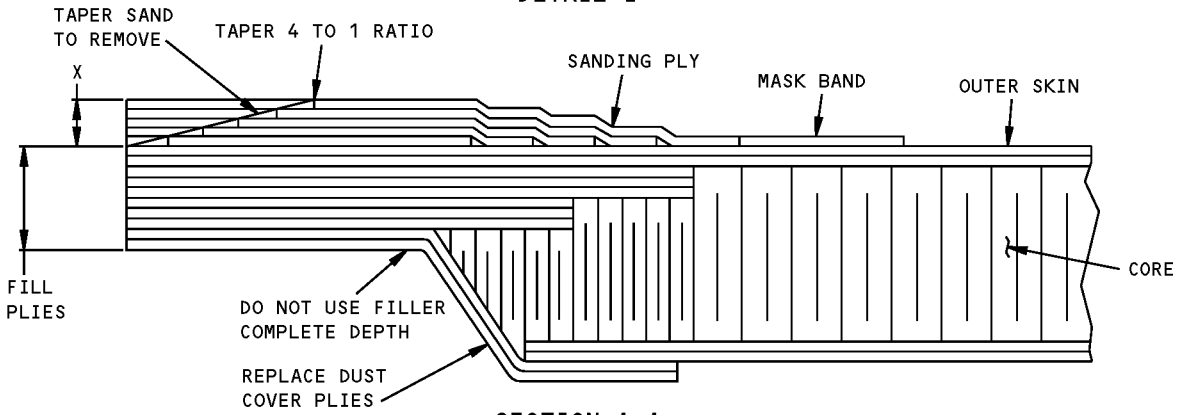
WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- J. Smooth the cured sealant to match the repair contour with 240-320 grit abrasive paper. Remove the sanding dust with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe the surface dry with a clean cloth before the solvent evaporates.
- K. Finish the repair surface.
- (1) Apply the paint primer and topcoats. Refer to PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, PAGEBLOCK 51-21-01, GENERAL for surface finish restoration of graphite/epoxy composites.

STRUCTURAL REPAIR MANUAL

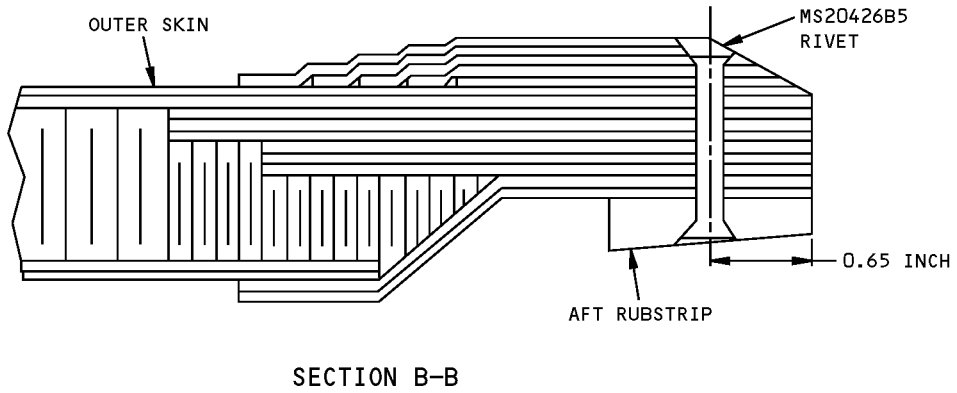
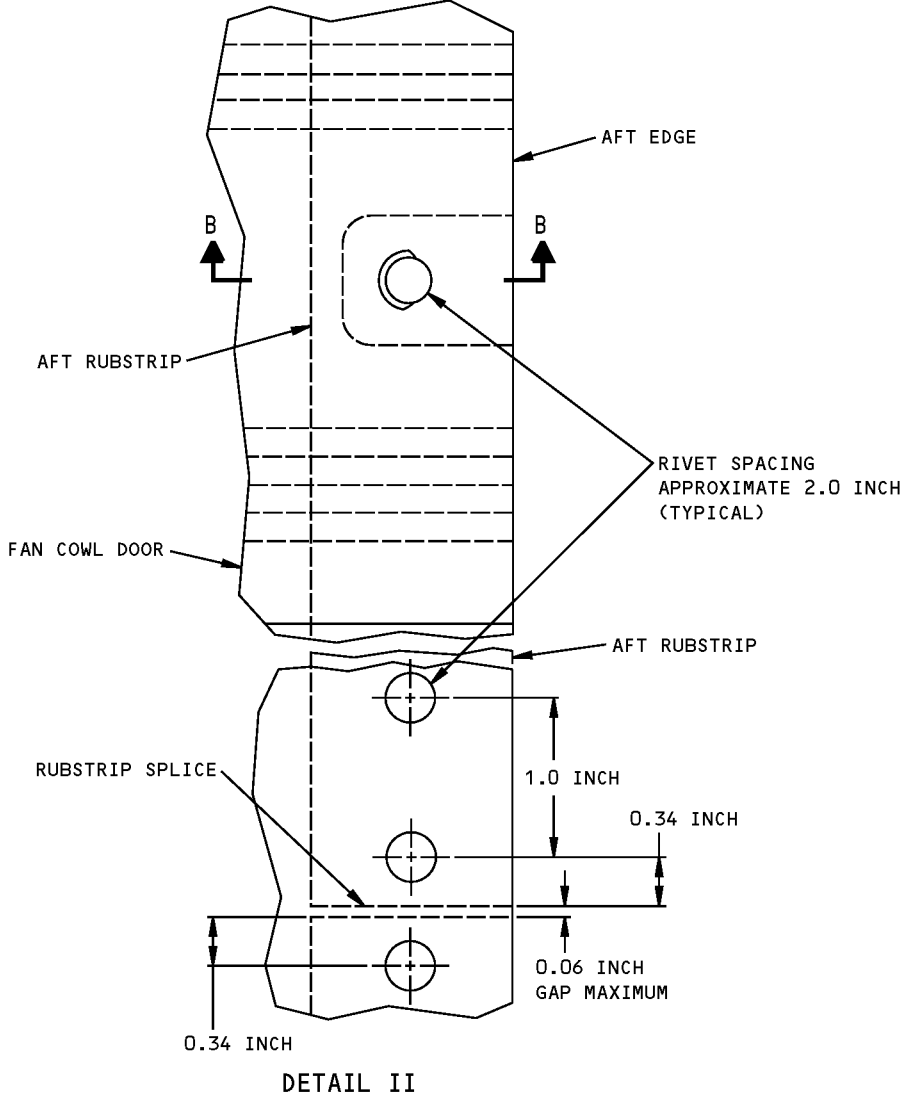


DETAIL I



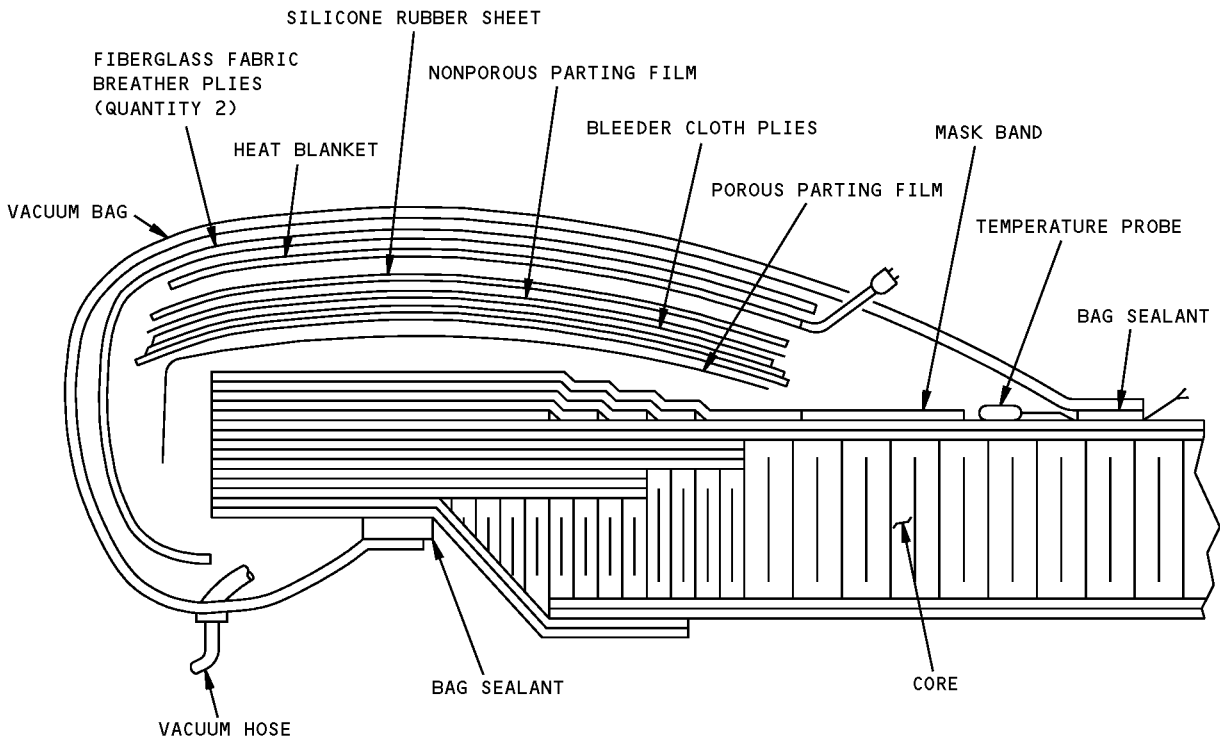
Fan Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine Figure 201 (Sheet 1 of 3)

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STRUCTURAL REPAIR MANUAL**



**Fan Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL



DETAIL III

Fan Cowl - Repair of Damage to Edge of Graphite Composite Skin - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 7 - FAN COWL - REPAIR OF PANDOWN AREA PENETRATION WITH ACCESS TO BOTH SIDES - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for holes not larger than 12.0 in. (30.5 cm) maximum diameter. For holes larger than 12.0 in. (30.5 cm) maximum diameter contact the Boeing company. For other nonmetallic material sources refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL.

2. General

- A. Pandown area of fan cowl door is the area without honeycomb.

3. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03, GENERAL P/B GENERAL	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL
54-22-01, IDENTIFICATION 1	Fan Cowl Skin - CF6-80C2 Engine
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

4. Repair Instructions

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Cut out damaged area of skin to remove all loose particles, cracks, and delaminations. Form a minimum of 0.5 in. (13 mm) radius on all corners and chamfer sides 45 degrees (opening to external surface). Smooth edges of cutout using 80-grit abrasive paper (refer to Figure 201 (Sheet 1)).
- B. Determine number of skin plies. Refer to 54-22-01, IDENTIFICATION 1.

NOTE: The two pandown areas of the right fan cowl door and the one pandown area of the left fan cowl door consist of only the fan cowl door outer skin, which has been reinforced by adding six plies to the two-ply basic outer skin. Due to structure clearance requirements only one repair ply is permitted on the interior surface. Therefore, seven repair plies are used on the exterior surface of the doors for a ply-for-ply repair replacement, plus a sanding ply. Where clearance permits, two repair plies and a sanding ply may be applied to the interior surface and six repair plies applied to the exterior surface.

- C. Mask outline of repair area on exterior skin surface around cutout. Add 1 in. (2.5 cm) all around (from exterior chamfered edge of cutout) for exterior repair ply No. 1. Add 0.75 in. (19 mm) for each remaining exterior repair ply and add 1 in. (2.5 cm) for fiberglass sanding ply (Number of exterior repair plies should equal number of original plies plus one ply and a fiberglass sanding ply.). Use teflon tape for 2 in. (5 cm) wide mask band.

STRUCTURAL REPAIR MANUAL

- D. Mask outline of repair area on interior skin surface around cutout. Add 1 in. (2.5 cm) all around (from interior edge of cutout) for graphite interior filler plies and an additional 1 in. (2.5 cm) for fiberglass repair ply. Use teflon tape for 2 in. (5 cm) wide mask band.
- E. Remove two inner plies of fiberglass fabric 1 in. (2.5 cm) from edge of cutout all around. Cut corners 45 degrees by 0.5 in. (13 mm).
- F. Sand masked area to remove all surface finish, smooth exposed plies, and lightly abrade top surface of outer skin ply. Use 150-grit abrasive paper.

NOTE: Do not taper or break graphite fibers from surface of outer or inner skin plies.

NOTE: Outer finish coat is gray and first coat is yellow.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- G. Remove sanding debris from skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with a clean cloth before solvent evaporates.
- H. Cut backup plate from 2024-T3 aluminum sheet, 2 in. (5 cm) larger all around than cutout in interior surface skin. Form plate to contour of skin interior surfaces.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- I. Mix EA9390 resin.

- (1) Mix thoroughly in a metal or plastic container 100 parts by weight of EA9390/A basic resin with 56 parts by weight of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
- (2) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- J. Install interior surface filler plies and interior repair ply.

NOTE: The fabric orientation of filler plies must be the same as the plies being replaced.

NOTE: To avoid edge fraying, add 0.5 in. (13 mm) all around to all filler plies. Trim to final size after soaking with resin and just before installation.

- (1) Cut the interior graphite filler plies from AH370-5H, AS4-6K (refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL). Make them large enough to extend 1 in. (2.5 cm) past the edge of the cutout on the interior surface of the fan cowl door.

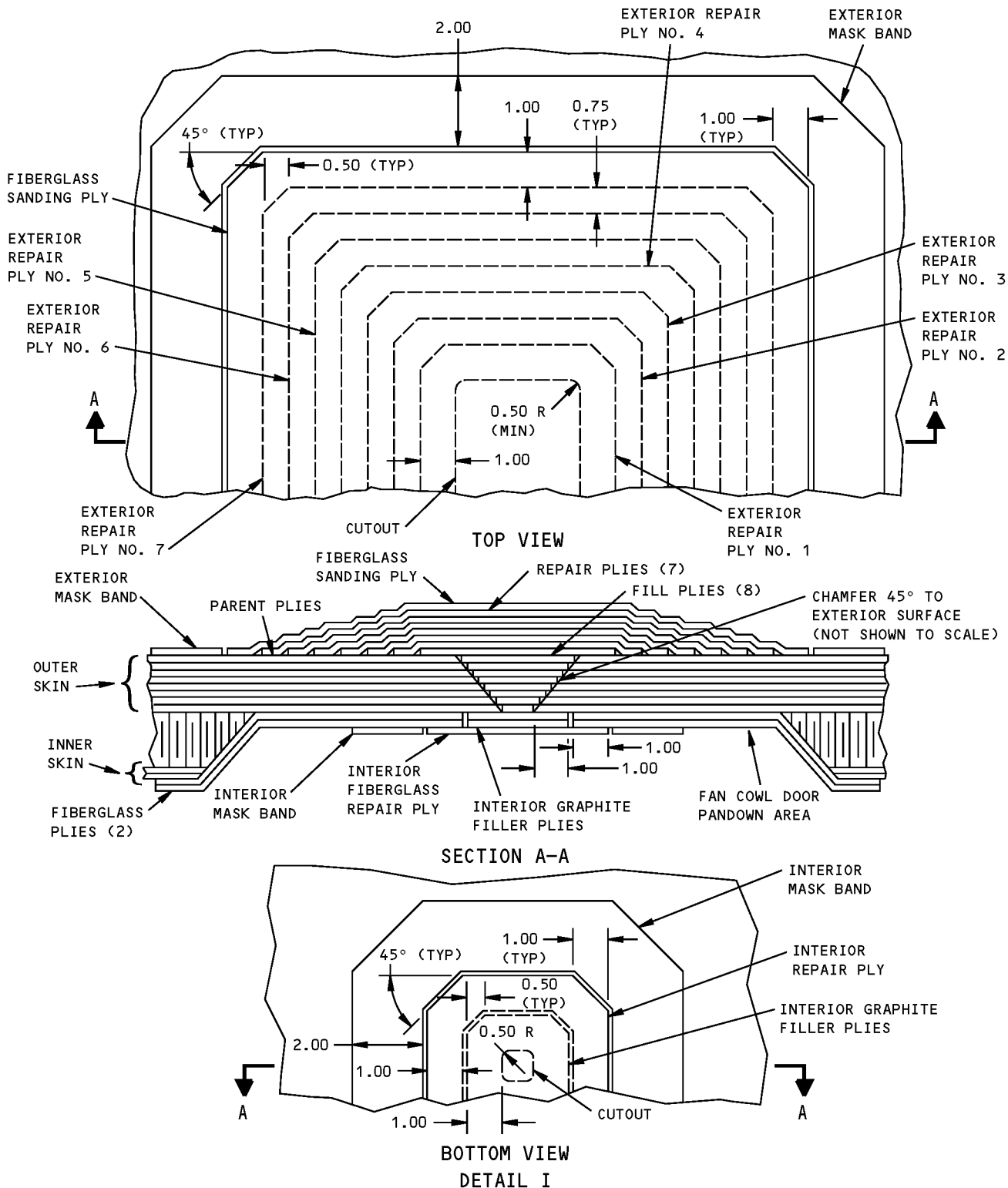
STRUCTURAL REPAIR MANUAL

- (2) Cut fiberglass fabric repair ply large enough to extend 1 in. (2.5 cm) past the edge of the interior graphite filler plies. Trim corners 45 degrees by 1 in. (2.5 cm).
 - (3) Lay interior filler plies on sheet of nonporous parting film and apply resin to one side. Cover plies with nonporous parting film and use a roller to thoroughly soak plies with resin. Trim plies to final size while still covered with parting film.
 - (4) Use a brush to coat interior graphite surface, exposed by the removal of the fiberglass ply, with resin mixture. Remove parting film from one side of the first interior graphite filler ply and install on top of the interior graphite surface. Center interior graphite filler ply into recess. Use a roller to remove wrinkles and trapped air from filler ply. Use a roller to remove wrinkles and trapped air from graphite filler ply. Remove remaining sheet of parting film from filler ply. Remove parting film from one side of the next graphite filler ply and install on top of inner graphite filler ply and center into recess. Use a roller to remove wrinkles and trapped air from the graphite filler ply. Remove remaining sheet of parting film from graphite filler ply. Repeat for each additional graphite filler ply.
 - (5) Remove parting film from one side of interior fiberglass repair ply and install on top of outer graphite filler ply. Center ply inside mask band. Use roller to smooth out wrinkles. Remove parting film from fiberglass repair ply.
 - (6) Cover repair plies with nonporous parting film. Position aluminum backup plate over repair and secure with teflon tape.
 - (7) Cover backup plate with two plies of fiberglass fabric extending at least 2 in. (5 cm) beyond backup plate.
 - (8) Install heat blanket, temperature probe, vacuum probe, and cover with vacuum bag. Seal vacuum bag with bag sealant.
- K. Install fill plies and exterior surface repair plies.
- (1) Cut enough graphite fabric plies to fill damage hole flush with outer surface.
NOTE: To avoid edge fraying, add 0.5 in. (13 mm) all around to all repair plies. Trim to final size after soaking with resin just before installation.
 - (2) The fabric orientation of repair plies must be the same as the plies being replaced. All repair plies are to be cut from AH370-5H, AS4-6K (refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL). Cut graphite fabric exterior repair ply No. 1 large enough to extend 1 in. (2.5 cm) all around cutout. Trim corners 45 degrees by 0.5 in. (13 mm).
 - (3) Cut graphite fabric exterior repair ply No. 2 large enough to extend 0.75 in. (19 mm) past edge of repair ply No. 1. Trim corners 45 degrees by 0.5 in. (13 mm).
 - (4) Cut remaining exterior graphite fabric repair plies with each ply extending 0.75 in. (19 mm) past edge of preceding ply. Trim corners 45 degrees by 0.5 in. (13 mm). Total quantity of exterior surface repair plies shall equal total quantity of plies in original skin plus one ply and a fiberglass sanding ply.
 - (5) Cut a fiberglass sanding ply large enough to extend 1 in. (2.5 cm) beyond edge of final exterior repair ply and to mask band. Trim corners 45 degrees by 1 in. (2.5 cm).
 - (6) Place fill plies, repair plies, and sanding ply on a sheet of nonporous parting film and use spatula to apply resin evenly over surfaces. Cover plies with another sheet of nonporous parting film and use roller to thoroughly soak plies with resin. Leave nonporous parting films in place and trim plies to final size.
 - (7) Support previously installed interior surface filler plies.

STRUCTURAL REPAIR MANUAL

- (8) Use a brush to coat inside of cutout and area inside mask band with resin. Remove nonporous parting film from one side of first exterior fill ply and place in cutout on top surface of interior graphite fill ply. Use a roller to remove wrinkles and trapped air from exterior fill ply and then remove top ply of nonporous parting film. Repeat for remaining fill plies.
 - (9) Remove nonporous parting film from one side of exterior repair ply No. 1 and center over cutout and fill plies. Use a roller to remove wrinkles, trapped air, and excess resin. Remove remaining nonporous parting film from repair ply.
 - (10) Remove nonporous parting film from one side of exterior repair ply No. 2 and install on top of ply No. 1, extending 0.75 in. (19 mm) past edge of repair ply No. 1. Use a roller to remove wrinkles, trapped air, and excess resin. Remove nonporous parting film from top of repair ply No. 2. Repeat procedure for remainder of repair plies.
 - (11) Remove nonporous parting film from one side of fiberglass sanding ply and install on top of repair plies. Sanding ply must extend 1 in. (2.5 cm) beyond final exterior repair ply and to edge of mask band. Roll sanding ply to remove wrinkles, trapped air, and excess resin. Remove nonporous parting film from top of sanding ply.
- L. Install heat blanket and vacuum bag over exterior surface repair plies.
- (1) Cover repair and sanding plies with a sheet of porous parting film to extend beyond mask band. Cover parting film with a layer of fiberglass bleeder cloth for each of the exterior repair plies including the fiberglass sanding ply.
 - (2) Cover bleeder cloth layers with a sheet of nonporous parting film. Cover film with a silicone rubber sheet. Cover rubber sheet with two layers of fiberglass fabric breather plies.
 - (3) Place a heat blanket over breather plies and cover with a nylon film vacuum bag approximately 2 in. (5 cm) larger all around than heat blanket and rubber sheet. Place temperature probe and vacuum connector under bag and seal around edges with bag sealant.
 - (4) Apply 5 in/Hg (17 kPa) of vacuum pressure to exterior surface bag.
- M. Increase simultaneously the vacuum pressure under both exterior and interior bags to 20 in/Hg (68 kPa). Check for leaks and seal as necessary.
- NOTE:** Vacuum Pressure must be applied simultaneously to interior and exterior plies to avoid displacement of interior plies.
- N. Turn on the heat blanket and raise temperature of the repair area to 190-210°F (88-99°F) for 220 minutes.
- O. Remove vacuum bags, heat blankets, rubber sheets, breather plies, parting films, bleeder plies, temperature probes, vacuum probes, and teflon tape mask band.
- WARNING:** DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.
- P. Use 150-grit abrasive paper to sand exterior surface of repair to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with a clean cloth moistened with solvent, Series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
- Q. Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface finish restoration of graphite epoxy composites.

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STRUCTURAL REPAIR MANUAL**



**Fan Cowl - Repair of Pandown Area Penetration with Access to Both Sides - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 8 - FAN COWL - REPAIR OF COMPLETE PENETRATION OF FAN COWL DOOR - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number prior 3373001. Refer to SRM 54-25-01 for Fan Cowls with a serial number 3373001 and on.
- B. This repair is for holes not larger than 12.0 in. (30.5 cm) maximum diameter. For holes larger than 12.0 in. (30.5 cm) maximum diameter contact the Boeing company. For nonmetallic material sources refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03

2. References

Reference	Title
51-21-01, GENERAL	Protective Treatment of Metallic and Nonmetallic Materials - CF6-80C2 Engine Nacelle
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
51-31-03, GENERAL P/B GENERAL	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL
54-22-01, IDENTIFICATION 1	Fan Cowl Skin - CF6-80C2 Engine
AMM 20-30-99	Aircraft Maintenance Manual
SOPM 20-30-87	Final Cleaning of Composites Prior to Painting (Series 87)
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

3. Repair Instructions

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- A. Cut out damaged area of outer skin, core, and inner skin to remove all loose particles, cracks, and delaminations. Make outer skin cutout 0.25 in. (6.4 mm) larger all around than inner skin cutout. Form a minimum of 0.5 in. (13 mm) radius on all corners and chamfer sides 45 degrees (opening to external surface). Smooth edges of cutout using 80-grit abrasive paper. Refer to Figure 201 (Sheet 1).
- B. Remove core even with outer skin cutout and 0.25 in. (6.4 mm) back from inner skin cutout. Leave resin fillets (including metal core particles trapped in fillets) attached to inside surface of inner skin. Abrade inside surface of inner skin adjacent to cutout with 150-grit abrasive paper to obtain a smooth dull matte finish.

NOTE: Removal of resin fillets from the inside surface of inner skin can cause local core/skin delamination.

- C. Determine number of skin plies. Refer to 54-22-01, IDENTIFICATION 1.
- D. Mask outline of repair area on exterior skin surface around cutout. Add 1 in. (2.5 cm) all around (from exterior chamfered edge of cutout) for first exterior skin repair ply, add 0.75 in. (19 mm) for additional repair ply and add 1 in. (2.5 cm) for fiberglass sanding ply. Use teflon tape for 2 in. (5 cm) wide mask band.
- E. Mask outline of repair area on interior skin surface around cutout. Add 1 in. (2.5 cm) all around (from exterior chamfered edge of cutout) for first interior skin repair ply, and 1 in. (2.5 cm) for additional repair ply (refer to Figure 201 (Sheet 2)).

STRUCTURAL REPAIR MANUAL

- F. Sand masked area to remove all surface finish, smooth exposed plies, and lightly abrade top surface of outer ply on outer and inner skin.

NOTE: Do not taper or break graphite fibers from surface of outer or inner skin plies.

NOTE: Outer finish coat is gray and first coat is yellow on outer skin.

WARNING: DO NOT GET SOLVENTS IN YOUR MOUTH, YOUR EYES, OR ON YOUR SKIN. DO NOT BREATHE THE FUMES FROM SOLVENTS. SOLVENTS ARE DANGEROUS MATERIALS. SOLVENTS CAN BE FLAMMABLE OR CAUSE DAMAGE TO THE ENVIRONMENT. REFER TO THE MATERIAL SAFETY DATA SHEETS (MSDS) AND THE LOCAL SAFETY PRECAUTIONS.

- G. Remove sanding debris from skin surfaces using a clean cloth moistened with solvent, Series 99 (AMM 20-30-99 or SOPM 20-30-99). Wipe surfaces dry with a clean cloth before solvent evaporates.
- H. Cut backup plate from 2024-T3 aluminum sheet large enough to cover outer skin cutout masked area, including masking tape. Form plate to match contour of outer skin.
- I. Prepare honeycomb core repair plug.
- (1) Determine material and density of honeycomb core. Refer to 54-22-01, IDENTIFICATION 1.
 - (2) Cut honeycomb core repair plug to size. Trim as necessary to fit over resin fillets on inner surface of inner skin and be flush with outer surface of surrounding core. Provide for 0.0050 in. (0.1270 mm) thickness of fiberglass cap that will separate honeycomb core repair plug from inner skin.
- J. Prepare fiberglass caps for honeycomb core repair plug.
- (1) Cut two pieces of BMS 8-79, Type 120 fiberglass fabric 0.5 in. (13 mm) larger all around than top of honeycomb core repair plug to use as fiberglass caps.
 - (2) Cut two pieces of peel ply film slightly larger than fiberglass fabric caps.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (3) Mix EA9390 resin.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
 - (b) Cover container to prevent contamination of mixture and store in a cool place.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin mixture gel time and cure time.

- (4) Place a sheet of nonporous parting film on a flat surface capable of withstanding temperatures of 210°F (99°C) and place precut peel plies on parting film sheet. Soak fiberglass caps with resin and place on peel ply. Cover with porous parting film and one bleeder cloth.

STRUCTURAL REPAIR MANUAL

- (5) Stretch a sheet of nylon bagging film over material stack and seal around edges to create a vacuum bag. Insert temperature probe and vacuum probe inside bag and seal openings.
 - (6) Use heat lamps or heat blanket and cure fiberglass caps at 190-210°F (88-99°C) for 220 minutes while you keep 20 in/Hg (68 kPa) of vacuum pressure inside bag.
 - (7) Remove vacuum bag material, bleeder cloth, and parting film from fiberglass. Leave peel ply in place.
 - (8) Trim one fiberglass cap to seal outer skin surface of honeycomb core repair plug and one fiberglass cap to fit in core cutout and seal exposed inner skin surface of plug.
- K. Install honeycomb core repair plug and caps.
- (1) Mix EA9390 resin with 5 percent by weight of phenolic microballoons.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture. Add 5 percent (by weight) of phenolic microballoons.
 - (b) Cover container to prevent contamination of mixture and store in a cool place until used.

NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin mixture gel time and resin cure time.
 - (2) Remove peel ply from fiberglass cap for inner skin surface of plug. Apply resin/microballoon mixture to cap surface which will contact inner skin. Apply resin/microballoon to a 0.25 in. (6.4 mm) wide ring of inner skin which will contact cap. Insert cap in core cutout in contact with inner skin. Apply resin/microballoon mixture to inner surface of cap.
 - (3) Apply resin/microballoon mixture to circumference and to bottom of honeycomb core repair plug where it contacts fiberglass cap at inner surface of inner skin. Insert plug in core and fill gap between plug and core with resin/microballoon mixture.
 - (4) Apply a coat of resin/microballoon mixture inside of outer fiberglass cap and to surface of cap opposite peel ply. Position cap to seal outer end of honeycomb core repair plug. Hold caps and repair core in place with tape applied to peel ply surface of outer cap.
 - (5) Use heat lamp or heat blanket on each side and cure plug and caps at 190-210°F (88-99°C) for 220 minutes. Remove tape and peel ply from honeycomb core repair plug outer cap.
- L. Install outer and inner skin fill and repair plies.
- NOTE:** The fabric orientation of repair plies must be the same as the plies being replaced.
- (1) Cut the filler plies from AH370-5H, AS4-6K (refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE - GENERAL, PAGEBLOCK 51-31-03, GENERAL). Cut enough graphite plies to fill cutout flush with surface of outer skin.
- NOTE:** To avoid edge fraying, add 0.5 in. (13 mm) all around to all fill, repair, and sanding plies. Trim to final size after soaking with resin and just before installation.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Mix EA9390 resin.
 - (a) Mix thoroughly in a metal or plastic container 100 parts (by weight) of EA9390/A basic resin with 56 parts (by weight) of EA9390/B hardener. Use a metal spatula and mix by hand to avoid heat rise in resin mixture.
 - (b) Cover container to prevent contamination of mixture and store in a cool place until used.

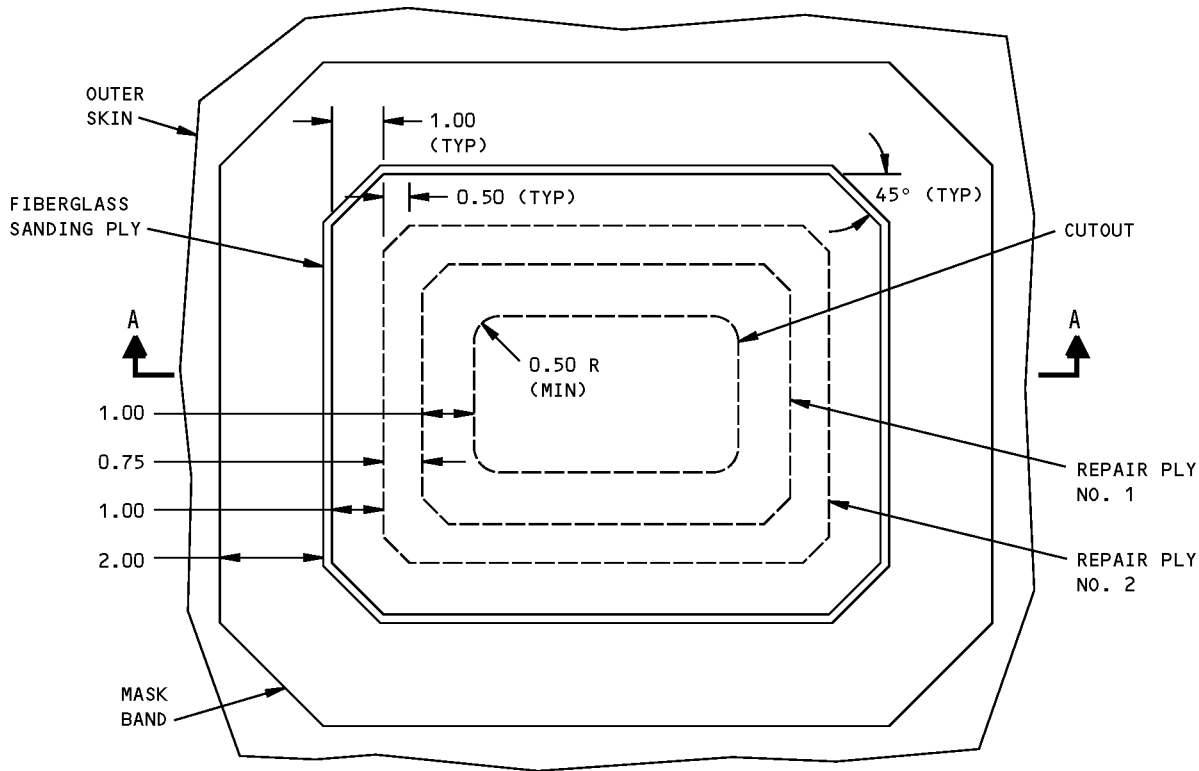
NOTE: Useful life of a 250-gram mixture is approximately 2 hours. Exposure to heat greatly accelerates both resin gel time and resin cure time.

- (3) Place filler plies on sheet of nonporous parting film and apply resin to one side of each ply. Cover each ply with a sheet of nonporous parting film and use a roller to thoroughly soak plies. Trim plies to final size.
- (4) Apply resin to inside surfaces of cutout and fiberglass cap. Remove nonporous parting film from one side of first filler ply and insert ply in cutout. Press ply into place on cap with a roller and remove top nonporous parting film. Repeat for remainder of filler plies.
- (5) Cut the graphite fabric outer skin repair ply No.1 from AH370-5H, AS4-6K (refer to NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03). Make it large enough to extend 1 in. (2.5 cm) past cutout on all sides. Trim corners 45 degrees by 0.5 in. (13 mm). Repeat similar operation for outer skin repair ply No.2 or more repair plies. Refer to Figure 201 (Sheet 1) for overlap dimensions of repair plies and dimensions of trimmed corners.
- (6) Cut a BMS 8-79, Type 120 or 1581 fiberglass fabric sanding ply large enough to overlay all of the outer skin repair plies and extend 1 in. (2.5 cm) past all repair plies and to edge of masked area. Trim corners 45 degrees by 1 in. (2.5 cm).
- (7) Place repair plies and sanding ply on a sheet of nonporous parting film and apply resin to one side. Cover plies with a second sheet of nonporous parting film and use roller to thoroughly soak plies with resin. Leave nonporous parting film in place and trim plies to final size.
- (8) Use a brush to apply resin to outer skin surfaces inside marked area.
- (9) Remove bottom sheet of nonporous parting film from repair ply No.1 and center over cutout, extending 1 in. (2.5 cm) past cutout all around. Smooth out wrinkles and remove trapped air and excess resin with roller. Remove top sheet of nonporous parting film.
- (10) Remove bottom sheet of nonporous parting film from repair ply No.2 and center over repair ply No.1, and extend 1 in. (2.5 cm) past repair ply No.1 on all sides. Use a roller to smooth out wrinkles and remove trapped air and excess resin. Remove top sheet of nonporous parting film. Repeat procedure for other outer skin plies.
- (11) Cover outer skin graphite repair plies with fiberglass fabric sanding ply. Sanding ply should extend 1 in. (2.5 cm) past repair plies and to edge of masked area. Use a roller to smooth out wrinkles, remove trapped air, and remove excess resin.

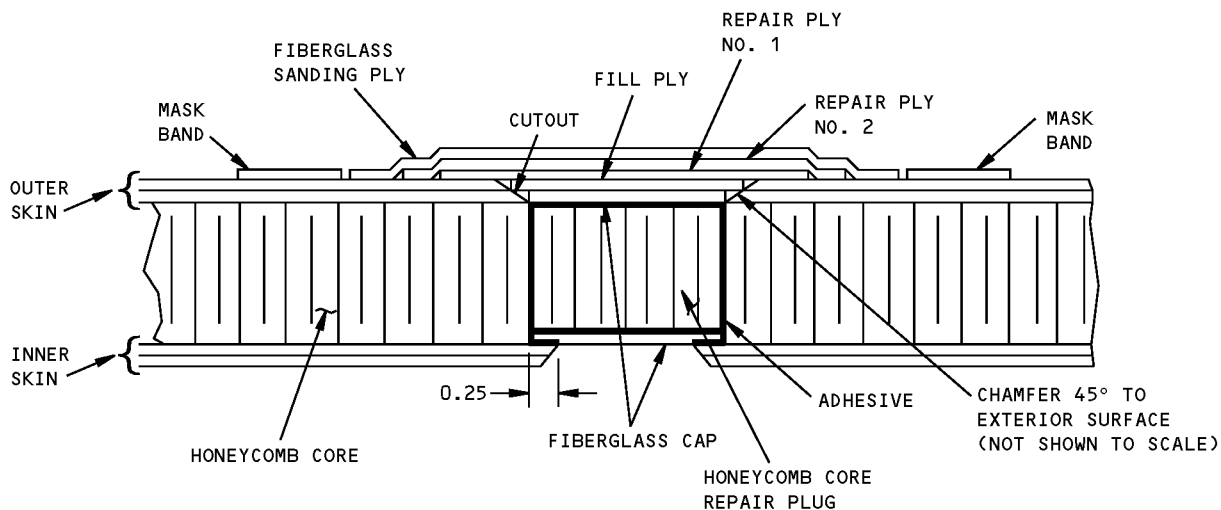
STRUCTURAL REPAIR MANUAL

- (12) Repeat procedure for inner skin except omit fiberglass sanding ply.
- M. Prepare outer skin and inner skin fill, repair, and sanding plies for cure (refer to Figure 201 (Sheet 2)).
- (1) Cover outer skin repair layup with a sheet of porous parting film approximately 3 in. (7.6 cm) larger all around than fiberglass fabric ply. Cover porous parting film with a layer of bleeder cloth for each of the repair and fiberglass plies. Cover bleeder cloth with a sheet of nonporous parting film. Cover nonporous parting film with a silicone rubber sheet. Place aluminum backup plate (which has been formed to fit outer skin contour) over rubber sheet and cover with two layers of breather cloth.
 - (2) Place a heat blanket over breather cloth and cover with a vacuum bagging film approximately 2 in. (5 cm) larger all around than heat blanket and backup plate. Place temperature probe and vacuum probe under bag and seal around edges with bag sealant. Apply 5 in/Hg (17 kPa) of vacuum pressure inside bag. Refer to Figure 201 (Sheet 3).
 - (3) Repeat procedure for inner skin except do not use backup plate and omit fiberglass sanding ply.
- N. Cure outer skin and inner skin fill, repair plies and fiberglass sanding plies.
- (1) Simultaneously increase vacuum under outer skin and inner skin vacuum bags from 5 in/Hg (17 kPa) to 20 in/Hg (68 kPa) in 5 in/Hg (17 kPa) increments.
 - (2) Turn on the heat blankets and raise temperature of the repair area to 190-210°F (88-99°C) for 220 minutes.
 - (3) Remove vacuum bags, backup plate, heat blankets, breather cloth, rubber sheets, bleeder cloth, parting film, and teflon tape.
- O. Finish surfaces of outer skin repair.
- (1) Use 150-320 grit abrasive paper to sand surfaces of fiberglass exterior ply to a feather edge all around and a smooth contour suitable for painting. Remove sanding dust from surface with solvent, series 87 (SOPM 20-30-87). Wipe surface dry with a clean cloth before solvent evaporates.
 - (2) Apply paint primer and topcoat. Refer to 51-21-01, GENERAL for surface restoration of graphite/epoxy composite.
- P. Finish surface of inner skin repair.
- (1) Use 150-320 grit abrasive paper to sand surfaces of top repair ply to a feather edge all around and a smooth contour suitable for painting. Remove sanding debris from skin surfaces using a clean cloth moistened with solvent, series 87 (SOPM 20-30-87). Wipe surfaces dry with a clean cloth before solvent evaporates.
 - (2) Apply green primer to blend with existing finish. Refer to 51-21-01, GENERAL for surface restoration of graphite/epoxy composite.

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STRUCTURAL REPAIR MANUAL



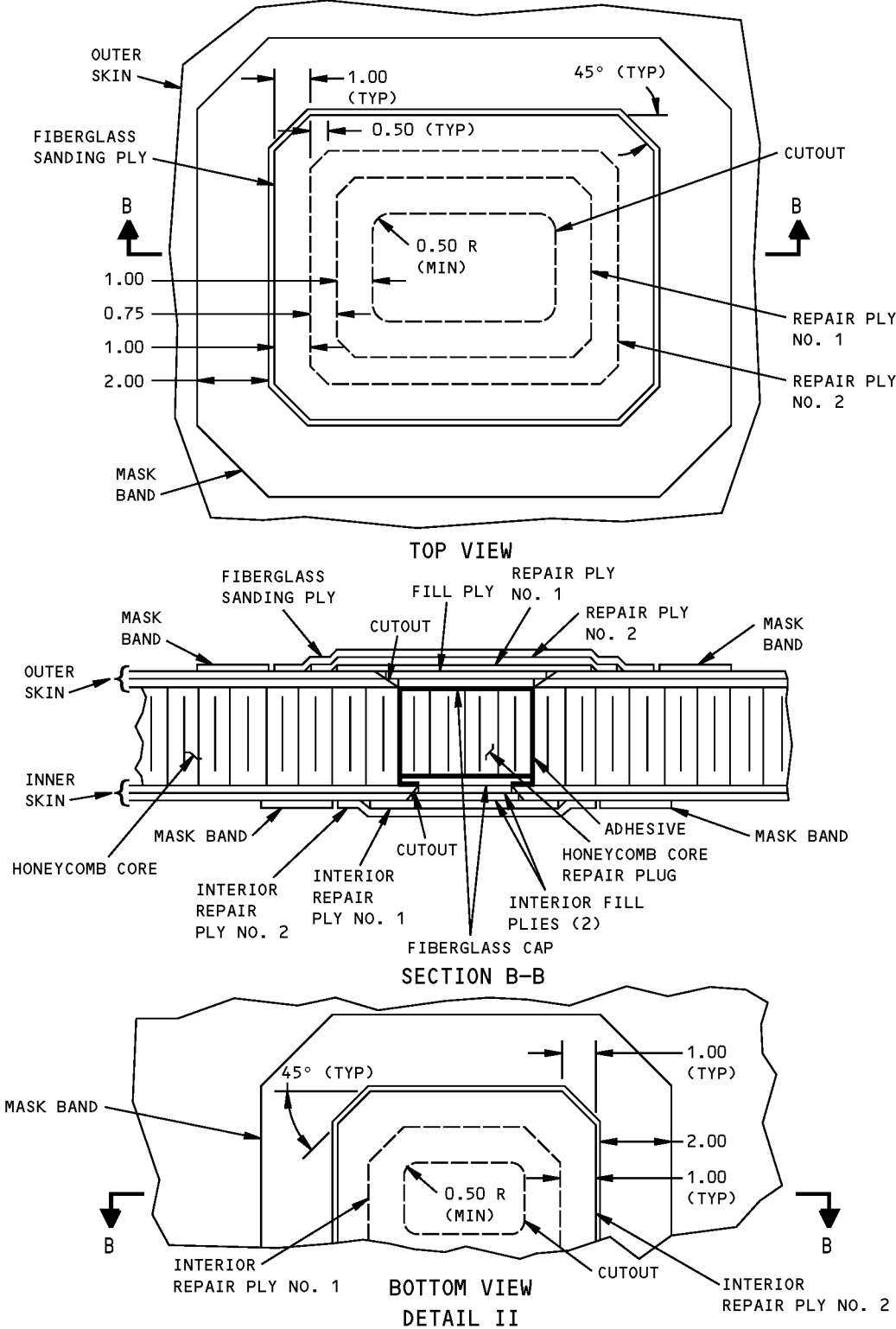
DETAIL I



SECTION A-A

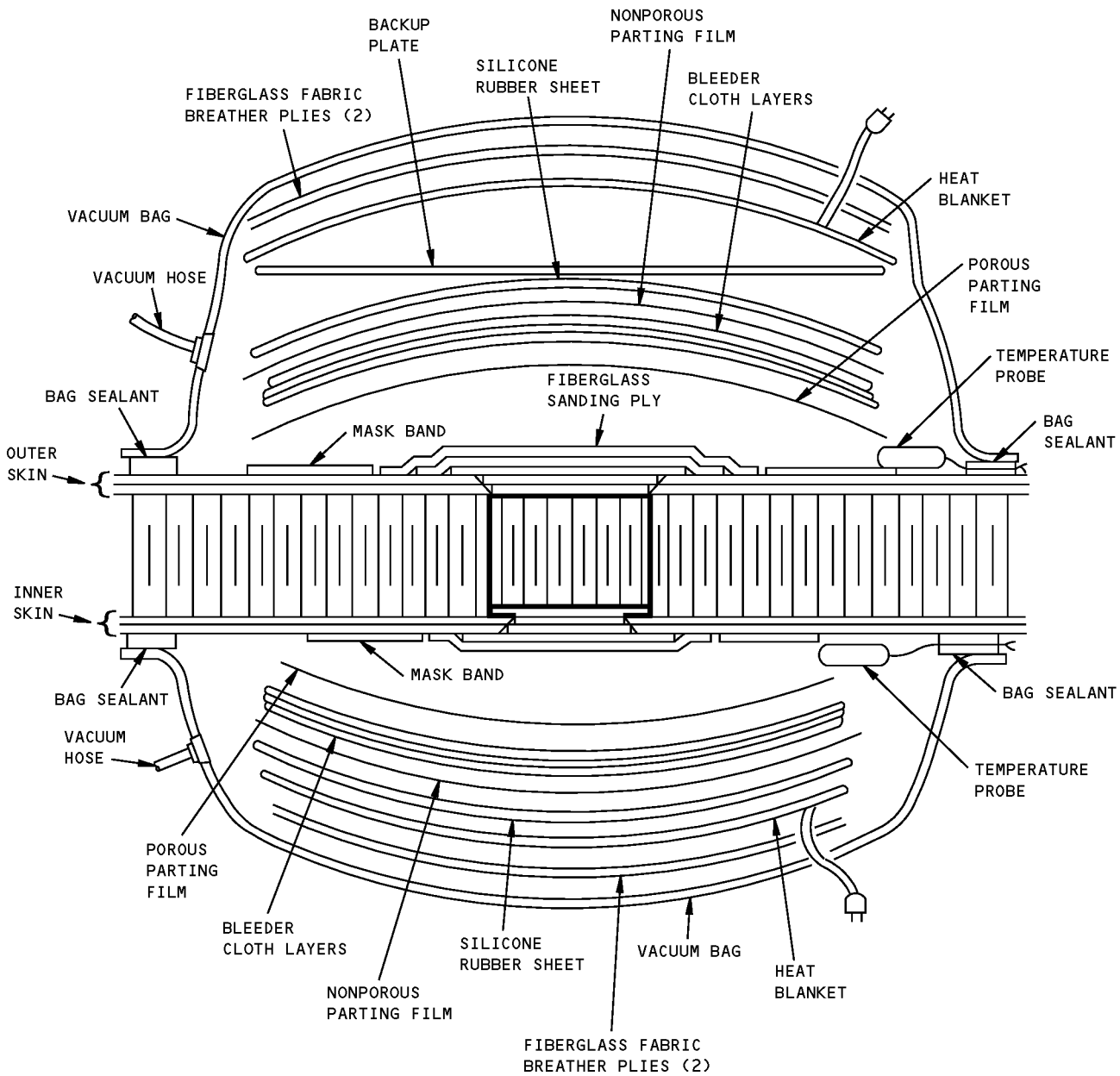
Fan Cowl - Repair of Complete Penetration of Fan Cowl Door - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**



**Fan Cowl - Repair of Complete Penetration of Fan Cowl Door - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**

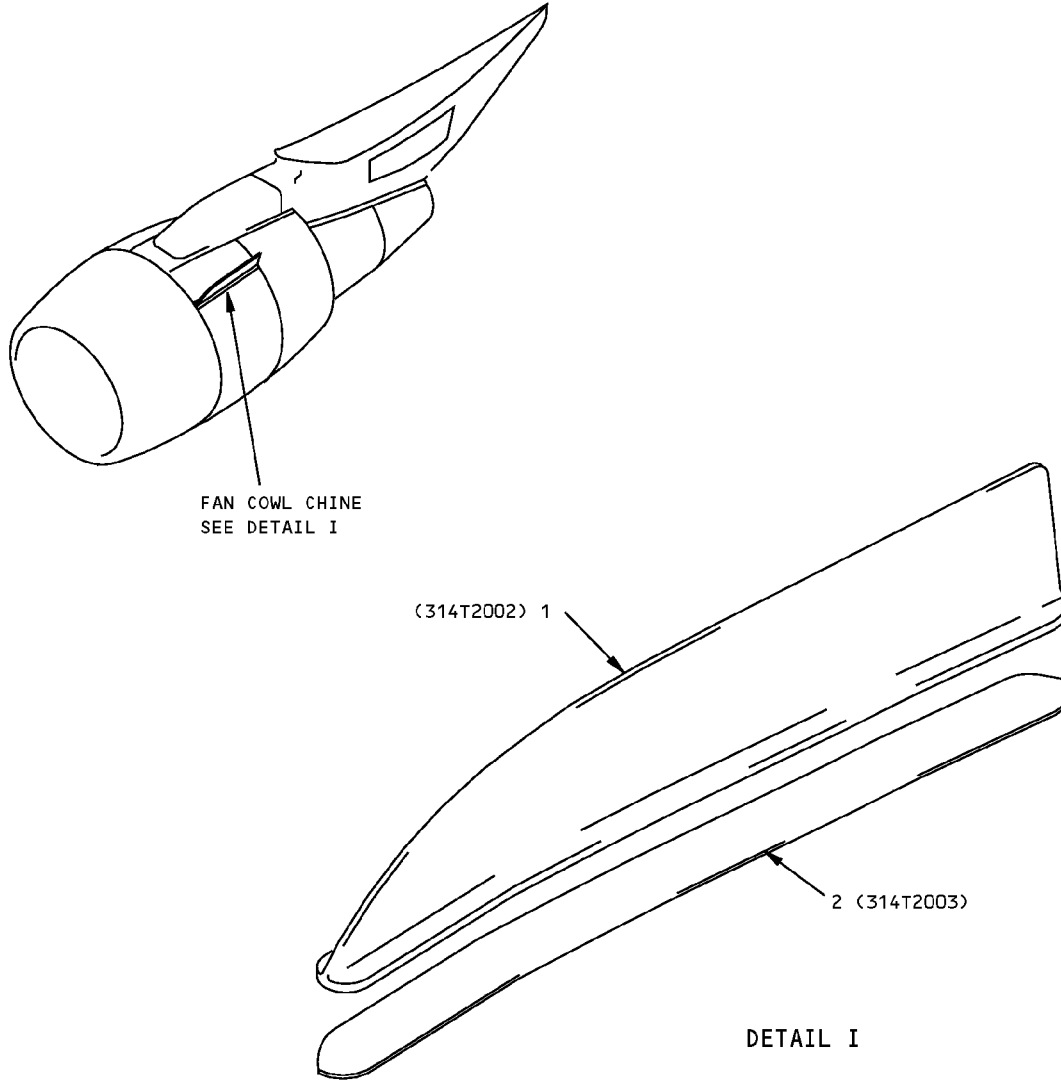


DETAIL III

**Fan Cowl - Repair of Complete Penetration of Fan Cowl Door - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL CHINE - CF6-80C2 ENGINE



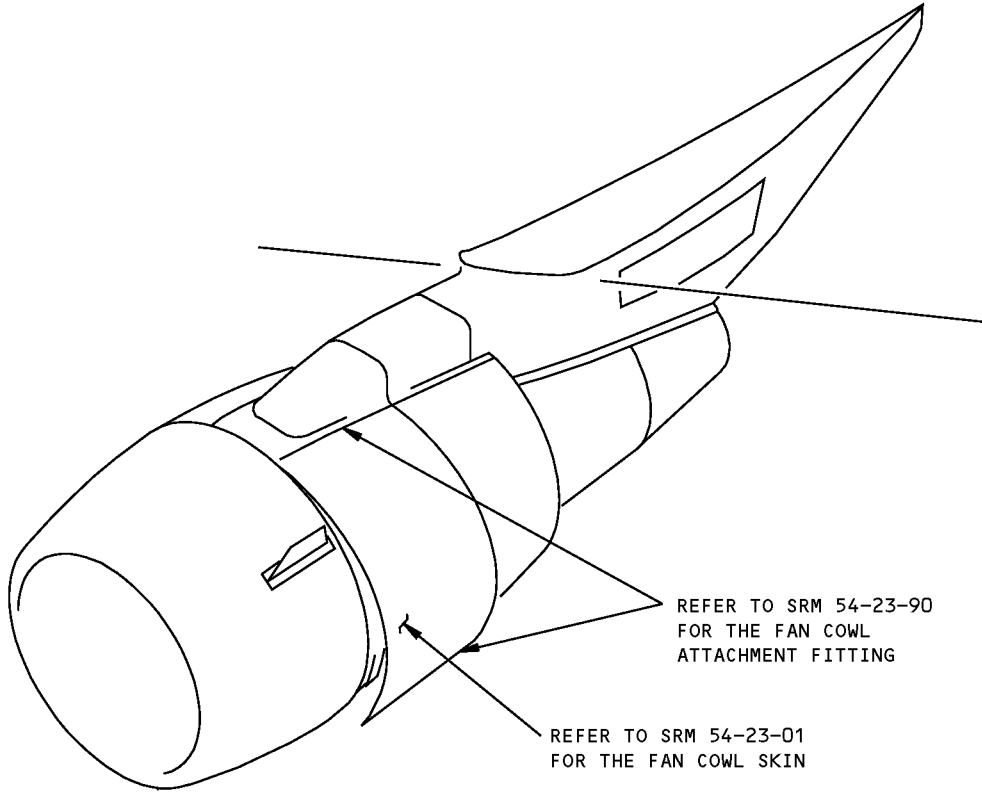
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHINE		BAC1505-101335 7075-T73511	
2	INSULATOR		FIBERGLASS LAMINATE (2 PLYES), BMS 8-79 TYPE 120	

**Fan Cowl Chine Identification - CF6-80C2 Engine
Figure 1**



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STRUCTURAL REPAIR MANUAL

GENERAL - FAN COWL STRUCTURE DIAGRAM - PW4000 ENGINE



Fan Cowl Structure Diagram - PW4000 Engine
Figure 1

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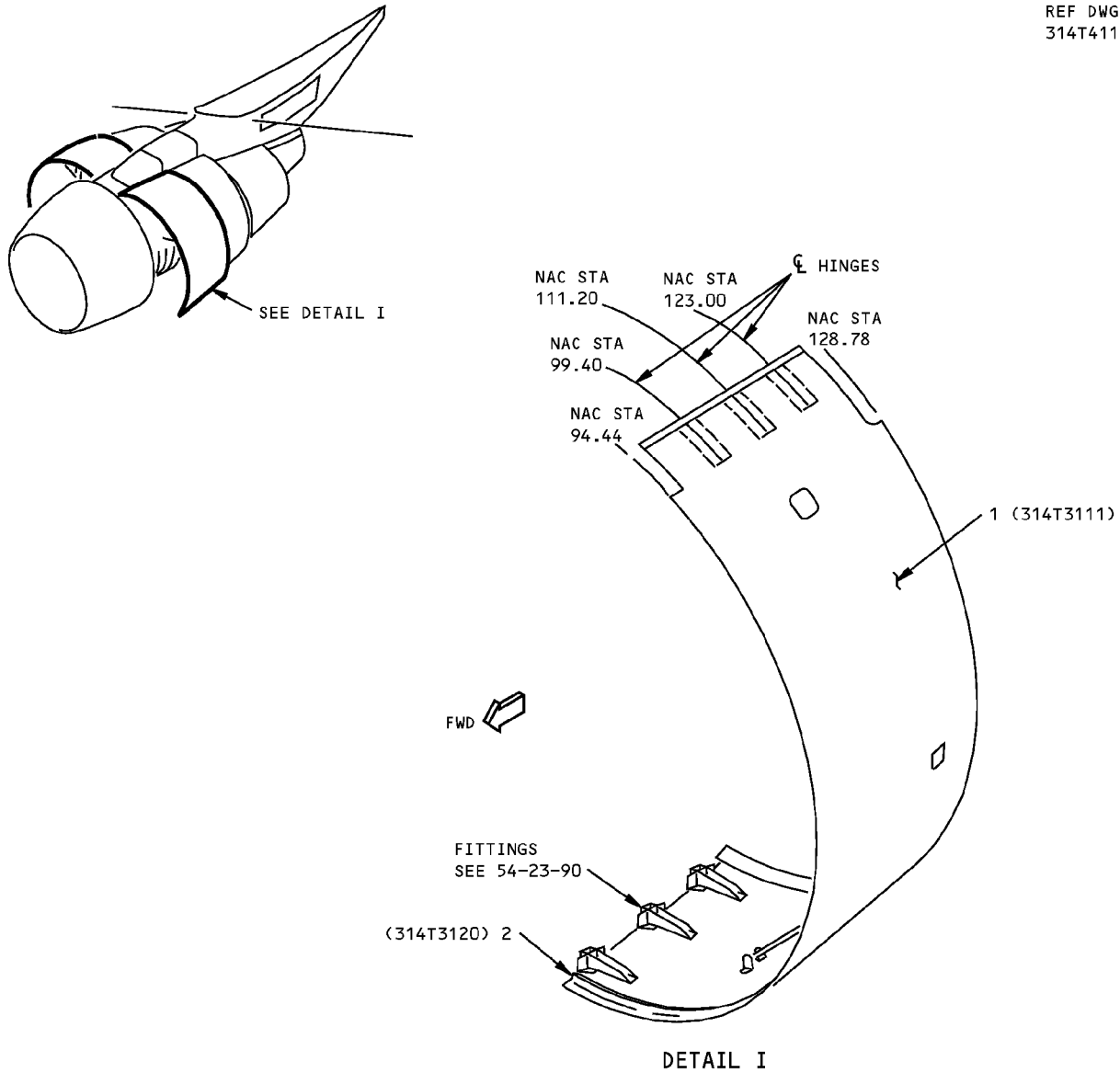
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GENERAL
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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL SKIN - PW4000 ENGINE

REF DWG
314T4110

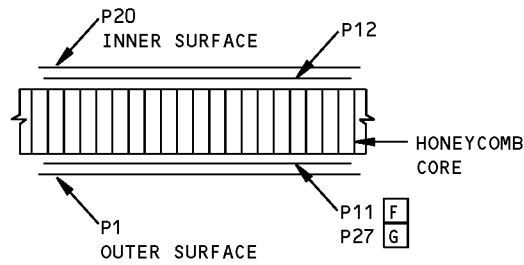


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/GRAPHITE/EPOXY HONEYCOMB SANDWICH SEE DETAIL II NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV TYPE I, GRADE 4.0	
2	RING	0.375	PLATE 2024-T62	

LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^[A]
1	P1	[C]	0° OR 90°
	P11	[D]	45°
	P12	[D]	45°
	P20	[C]	90°
	P27	[E]	45°

PLY ORIENTATION TABLE ^[B]

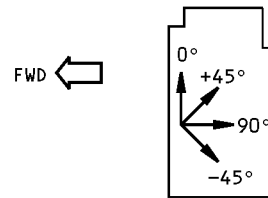


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL

DETAIL II

NOTES

- ^[A] PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- ^[B] MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS
- ^[C] EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (170°C) CURE
- ^[D] EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE
- ^[E] EPOXY INPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 285, 350°F (177°C) CURE
- ^[F] LEFT-HAND FAN COWL ONLY
- ^[G] RIGHT-HAND FAN COWL ONLY

**Fan Cowl Skin Identification - PW4000 Engine
Figure 1 (Sheet 2 of 2)**

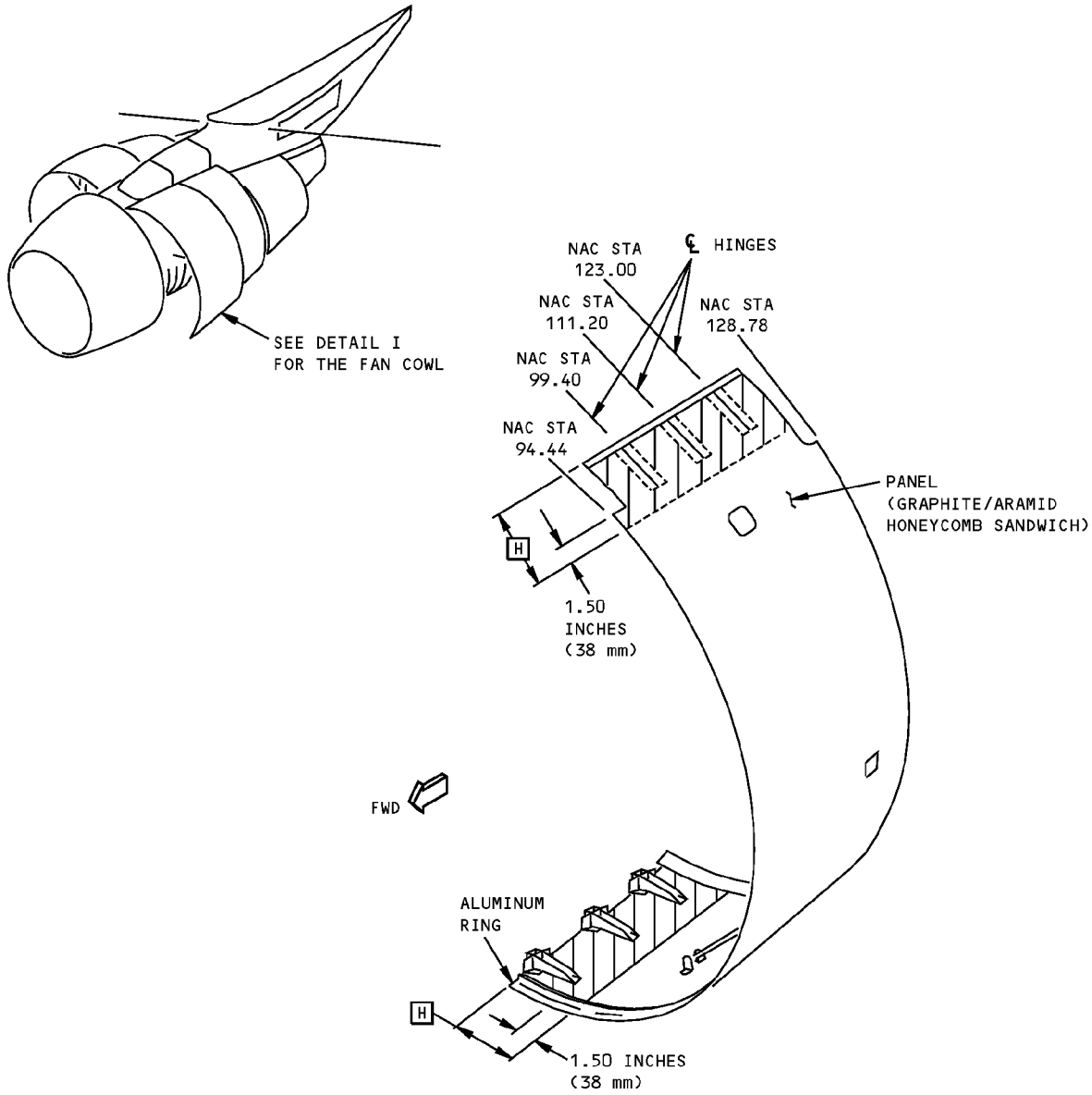
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL SKIN - PW4000 ENGINE



LEFT COWL PANEL IS SHOWN, RIGHT PANEL IS SIMILAR
DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	EDGE EROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PANEL	A	B	SEE DETAIL VII	C	D	E
RING	F	G	—	NOT PERMITTED	NOT PERMITTED	—

**Allowable Damage - Fan Cowl Skin - PW4000 Engine
Figure 101 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

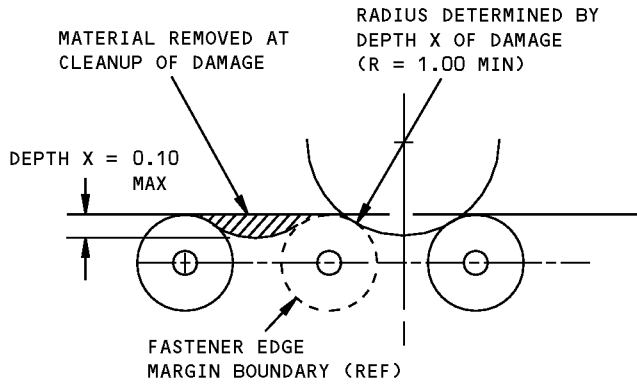
NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED
- A** 1.50 INCHES (38 mm) MAXIMUM LENGTH IN HONEYCOMB AREA IS ALLOWED PER SQUARE FOOT OF AREA. MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER CRACK. EDGE CRACKS MUST BE REMOVED PER DETAILS II AND V. **I**
- B** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. **I**
- C** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.0 INCH (25.4 mm) MAX DIA ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT, REFER TO APPLICABLE DAMAGE DATA IN TABLE.
- D** 1.0 INCH (25.4 mm) MAX DIA ALLOWED PROVIDED DAMAGE IS MIN OF 3D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **I**
- E** 1.0 INCH (25.4 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. 0.03 INCH (0.76 mm) MAX DELAMINATION FROM EDGE IS ALLOWED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. **I**
- F** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI

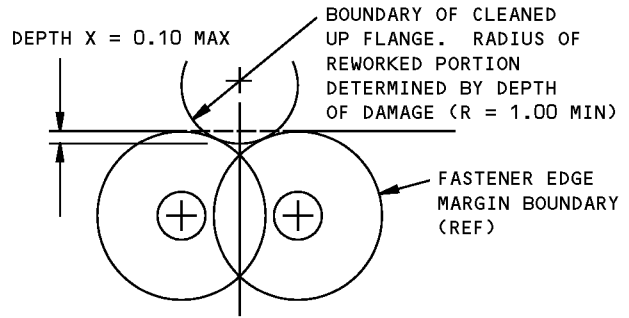
- G** REMOVE DAMAGE PER DETAILS II, III, AND IV
- H** CRITICAL AREA OF THE FAN COWL SKIN EXTENDS FROM THE TOP EDGE OF THE FAN COWL SKIN PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE HINGES. THE CRITICAL AREA ALSO EXTENDS FROM THE BOTTOM EDGE OF THE PANEL TO 1.50 INCHES (38 mm) AWAY FROM THE EDGE OF THE LATCHES. AT EACH LOCATION, THE CRITICAL AREA EXTENDS FROM THE LEADING EDGE TO THE TRAILING EDGE OF THE PANEL. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE. LEADING AND TRAILING EDGE EROSION IS PERMITTED AS GIVEN IN DETAIL VII. EDGE DELAMINATION IS PERMITTED. A MAXIMUM OF 0.03 INCH (0.76 mm) FROM THE LEADING AND TRAILING EDGE IS ALLOWED. CONTACT THE BOEING COMPANY FOR OTHER DAMAGE.
- I** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DE-TERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
- J** DO NOT CHAMFER BEYOND EDGE OF COUNTERSINK AT FASTENER LOCATION. AS AN OPTION TO SEALING WITH SPEED TAPE, THE CHAMFER MAY BE REPAIRED WITHOUT REQUIREMENT FOR "A" CHECK INSPECTIONS AND "C" CHECK REPAIR BY SEALING WITH BMS 5-92 TYPE I OR TYPE III, OR WITH BMS 5-123. CURE BMS 5-92 TYPE I OR TYPE III AT 75°F (24°C) FOR 24 HOURS. CURE BMS 5-123 AT 75°F (24°C) FOR 1 HOUR

Allowable Damage - Fan Cowl Skin - PW4000 Engine
Figure 101 (Sheet 2 of 4)

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STRUCTURAL REPAIR MANUAL**

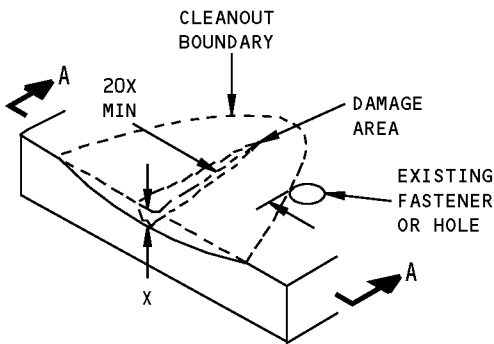


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

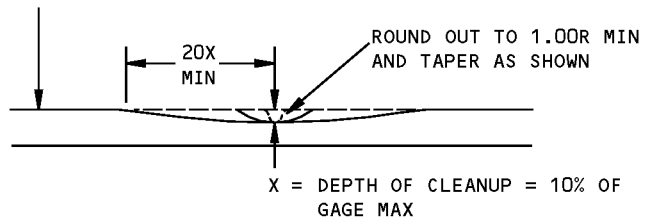


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



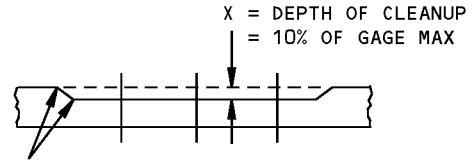
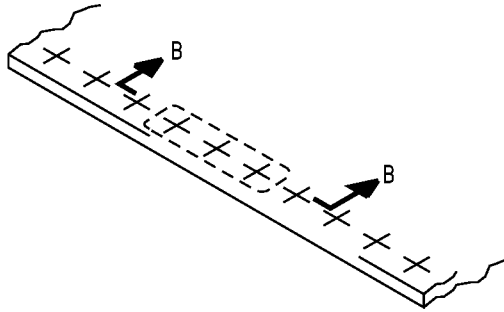
SECTION A-A

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

DETAIL III

**Allowable Damage - Fan Cowl Skin - PW4000 Engine
Figure 101 (Sheet 3 of 4)**

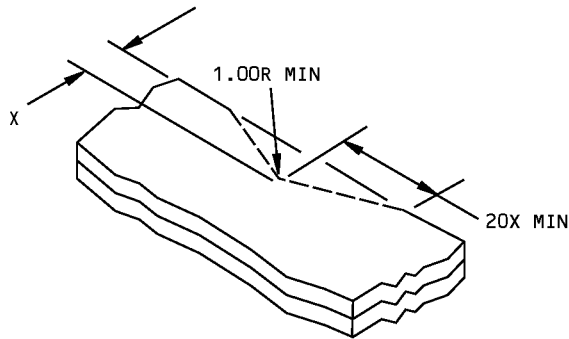
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STRUCTURAL REPAIR MANUAL**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

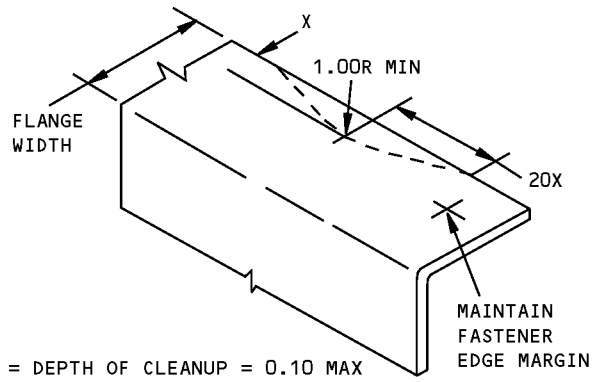
SECTION B-B

**CORROSION CLEANUP
DETAIL IV**



X = DEPTH OF CLEANUP = 0.10 MAX

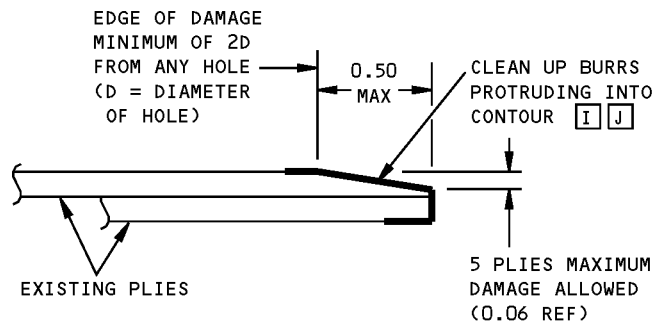
DETAIL V



X = DEPTH OF CLEANUP = 0.10 MAX

**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE**

DETAIL VI



**DAMAGE CLEANUP AND SEALING
OF EDGE EROSION**

DETAIL VII

**Allowable Damage - Fan Cowl Skin - PW4000 Engine
Figure 101 (Sheet 4 of 4)**



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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - FAN COWL SKIN - PW4000 ENGINE

1. General

- A. See Figure 201/REPAIR GENERAL for typical fan cowl skin repairs.
- B. See par. 2 thru 4 for alternative edgeband delamination repair.

2. Repair Preparation

- A. Determine extent of delamination.

NOTE: Maximum size of delamination permitted by this repair is 5.00 from any panel edge. If delamination or crack exceeds 5 inches, repair per 51-70-04. Figure 203/REPAIR GENERAL is the preferred method of repairing cracks or delamination. If geometry constraints prohibit the use of a repair plate in the vicinity of panel latches, then Figure 202/REPAIR GENERAL is an acceptable repair.

- B. Check in vicinity of damage for entry of water, dirt and other foreign matter.
- C. Remove any water present by means of suction or blowing warm air over the damaged area.

WARNING: KEEP SOLVENTS AWAY FROM SOURCES OF HEAT, FIRE, OR SPARKS. HEAT, FIRE, OR SPARKS CAN CAUSE AN EXPLOSION.

AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. WEAR EYE PROTECTION. USE MECHANICAL VENTILATION OR RESPIRATORY PROTECTION WHEN WORKING IN CONFINED SPACE OR AREA. BREATHING VAPORS OR ALLOWING SOLVENT TO CONTACT SKIN OR EYES IS HAZARDOUS.

CAUTION: DO NOT USE PAINT STRIPPERS FOR THE REMOVAL OF FINISH. DAMAGE TO THE ADHESIVE SYSTEM WILL OCCUR.

DO NOT IMMERSE PARTS IN TRICHLOROTHANE OR ALLOW STANDING SOLVENT TO REMAIN ON PART. DAMAGE TO PART WILL OCCUR.

- D. Wipe the area around damage with clean cheesecloth moistened with MEK, MIBK, trichloroethane, or acetone.

3. Repair Instructions (Figure 202/REPAIR GENERAL)

- A. If delamination occurs in the vicinity of an existing fastener hole, remove fastener and remove honeycomb core to an open diameter of 1.0. If delamination occurs in an area without fasteners, pierce one side of composite skin to allow for removal of honeycomb core to an open diameter of 1.0 inch.
- B. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core.
- C. Inject BMS 5-28 Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.
- D. Install fasteners wet with BMS 5-26 sealant.
- E. Cure adhesive per Figure 204/REPAIR GENERAL.
- F. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked area.

REPAIR GENERAL

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STRUCTURAL REPAIR MANUAL

4. Repair instructions (Figure 203/REPAIR GENERAL)

A. Mark out damaged area and determine size of repair plate.

NOTE: Multiple repairs shall be no closer centerline-to-centerline, than six times the maximum diameter of the delaminated areas and not less than 6.0 centerline to centerline.

B. Manufacture repair plate 0.063 CRES 301 half hard or equivalent. Mark and drill fastener holes.

C. Drill fastener holes through panel using repair plate as a template.

D. Increase diameter of fastener holes in honeycomb core only, to 1.0. Use care to prevent damage to composite skin.

E. Inject BMS 5-109, Type II, Class 2 adhesive between delaminated plies or between delaminated ply and core. Clamp up repair while adhesive is curing.

F. Inject BMS 5-28, Type 7 potting compound into fastener holes. When potting compound has cured sufficiently, redrill fastener holes.

G. Countersink holes in aerodynamic surface (see Fig. 202, Sheet 1, Section A-A or Fig. 203, Sheet 2, Section B-B).

H. Abrade faying surface of repair plate with 80 grit sandpaper. Remove all dust and residue from faying surface of CRES plate.

I. Apply two coats of BMS 10-11, Type I on both sides of CRES repair plate.

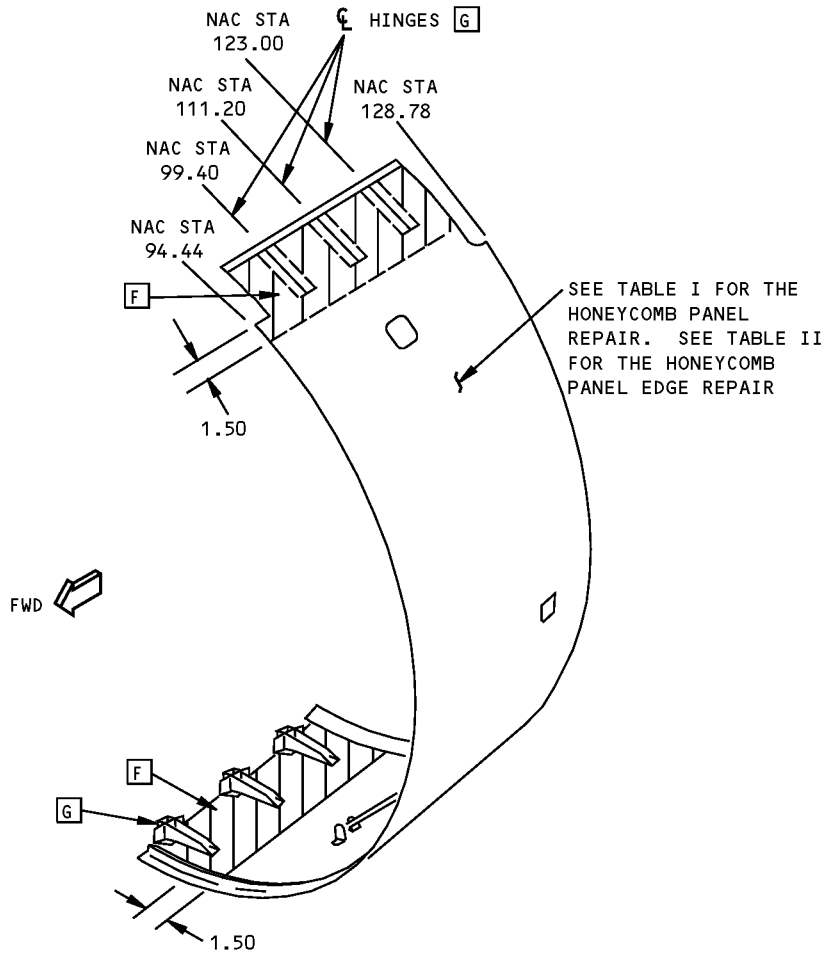
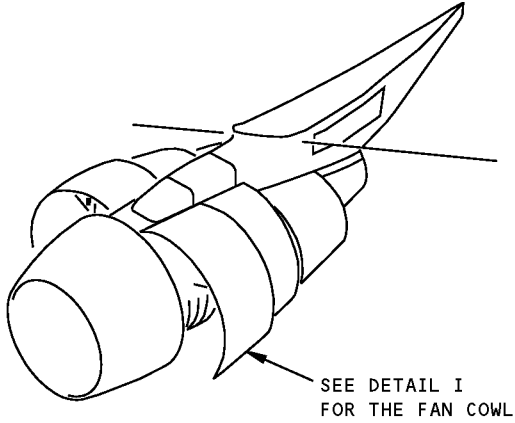
J. Spread layer of BMS 5-109, Type II, Class 2 adhesive over area to be covered by repair plate.

K. Fit repair plate and insert CRES or titanium bolts wet with BMS 5-26 sealant, taking care not to contaminate area to be painted.

L. Cure adhesive (Figure 204/REPAIR GENERAL).

M. Cap and fillet seal fasteners with BMS 5-26 and refinish reworked areas.

**767-300
STRUCTURAL REPAIR MANUAL**



MATERIAL: GRAPHITE/ARAMID HONEYCOMB SANDWICH (350°F CURE)

DETAIL I

Fan Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 1 of 4)

STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIRS EXCEED THE LIMITS SHOWN IN SRM 51-10-01 CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - FINISH REPAIRED AREAS AS GIVEN IN AMM 51-21.
- A** MINIMUM OF 3.50 INCHES (89 mm) FROM PANEL EDGE, HINGES OR LATCHES
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SHEET SKIN AND HONEYCOMB CORE
- C** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN NEXT "C" CHECK. **J**
- D** ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER REPAIR
- E** MINIMUM OF 1.50 INCHES (38 mm) FROM HINGES AND/OR LATCHES
- F** CRITICAL AREA. REPAIR ONLY LEADING AND TRAILING EDGE EROSION AND EDGE DELAMINATION. CONTACT THE BOEING COMPANY FOR REPAIR OF OTHER DAMAGE.
- G** FOR REPAIRS TO ATTACHMENT FITTINGS, REFER TO SRM 54-23-90.
- H** FOR WET LAYUP REPAIRS, USE 1.00 INCH (25.4 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) PER PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- I** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. **J**
- J** FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.J. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- K** FOR ALTERNATIVE FAN COWL EDGE BAND DELAMINATION REPAIR REFER TO PARAGRAPHS 2 THRU 4.

Fan Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 2 of 4)



767-300

STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS I A	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93°C-110°C) CURE (SRM 51-70-17) H	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. B	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. B	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. D	NO SIZE LIMIT
DELAMI- NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCH (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. D OVER 2.0 INCH (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

FOR HONEYCOMB PANEL
TABLE I

Fan Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 3 of 4)

D634T210

54-23-01

REPAIR GENERAL
Page 205
Apr 01/2005

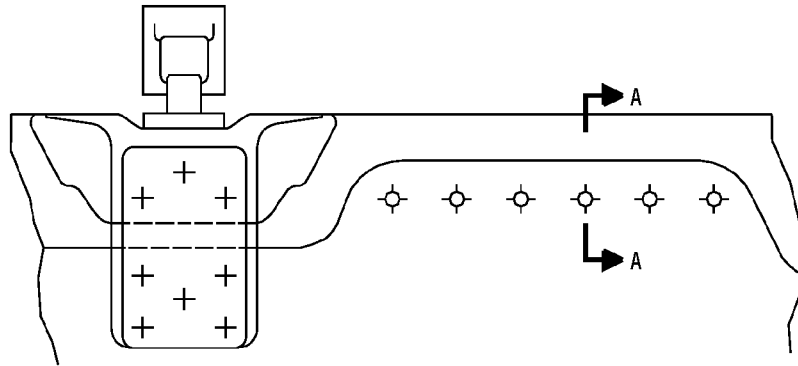
STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE [C][E]	PERMANENT REPAIRS	
		WET LAYUP 200-230°F (93°C-110°C) CURE (SRM 51-70-17)[F]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.00 INCHES (15 cm) MAX LENGTH X 0.25 INCH (6 mm) DEEP IN EDGE BAND LAMINATE - MIN 6.00 INCHES (15 cm) ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.10 INCH (2.5 mm) DEEP IN EDGE BAND LAMINATE - MIN 6.00 INCHES (15 cm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (12.7 mm) MAX DIA HOLE THRU EDGE BAND LAMINATE - MIN 6.00 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE). FOR OTHER DAMAGE, REFER TO SRM 51-70-03, PAR. 5.G.	POTTING ALLOWED FOR 0.25 INCH (6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4.00 INCHES (100 mm) X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.H. 1.0 INCH (25 mm) OVERLAP REQUIRED PER PLY. USE 2 EXTRA PLIES.	POTTING ALLOWED FOR 0.25 INCH (6 mm) MAX DIA HOLE, IF EDGE OF DAMAGE IS 4 X DIA FROM A FASTENER HOLE AND 0.10 INCH (2.5 mm) FROM EDGE OF PANEL. FOR HOLES 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. REPAIR ALL OTHER DAMAGE AS GIVEN IN SRM 51-70-17, PAR. 4.H.
DELAMINATION [K]	2 SQ INCH (13 sq mm) (2.0 INCH (50 mm) MAX LENGTH) ALLOWED. MIN 6.00 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.
EDGE EROSION		SRM 51-70-17, PARA 4.G.	SRM 51-70-04, PARA 5.G.

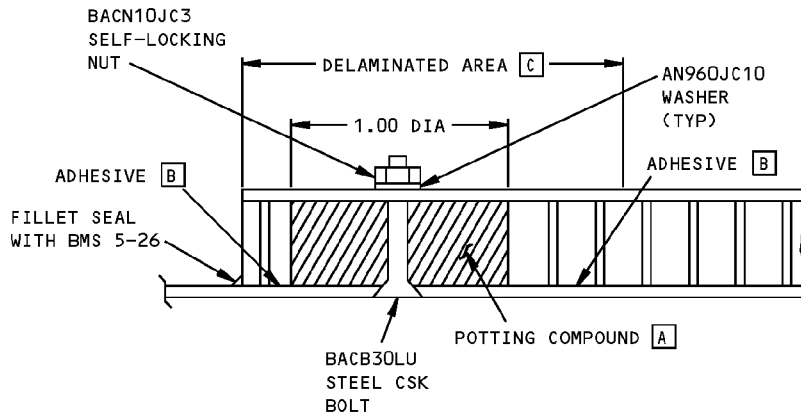
FOR GRAPHITE/ARAMID EDGE BAND LAMINATE - TABLE II

Fan Cowl Skin Repairs - PW4000 Engine
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH



SECTION A-A

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
REFER TO PARA. 3 FOR REPAIR OF FAN COWL DELAMINATION IN VICINITY OF PANEL LATCH
51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS

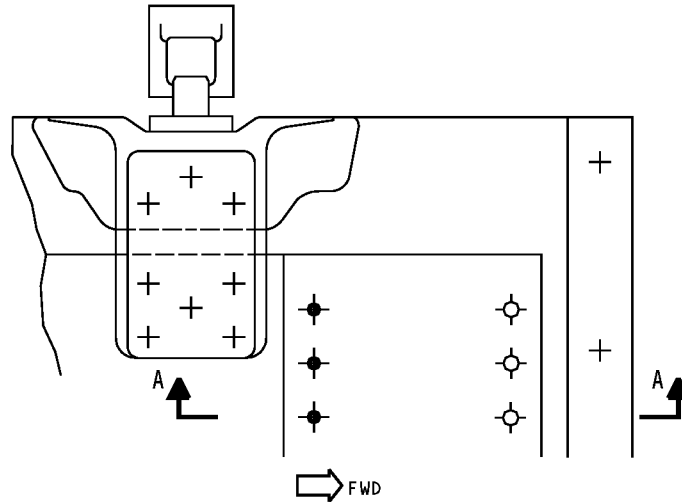
- A** BMS 5-28, TYPE 7
- B** BMS 5-109 TYPE II, CLASS 2
- C** FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT EXCEED 5 INCHES IN LENGTH. FOR DELAMINATION GREATER THAN 5 INCHES SEE 51-70-04

SYMBOLS

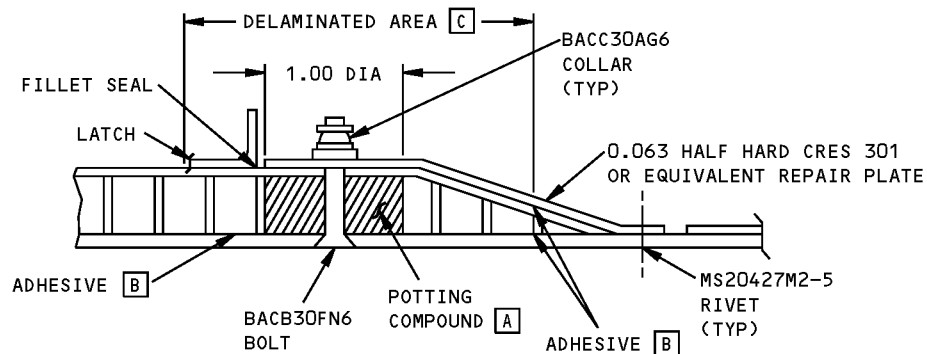
- + ORIGINAL FASTENERS LOCATIONS
- ⊗ REPAIR FASTENER LOCATION
BACB30LU BOLT, BACN10JC3 NUT, AN960JC10 WASHER

**Fan Cowl Squared Edge Delamination Repair
Figure 202**

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION REPAIR IN VICINITY OF AFT PANEL EDGE



SECTION A-A

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
REFER TO PARA. 4 FOR REPAIR OF FAN COWL DELAMINATION ALONG PANEL EDGE
51-40 FOR FASTENER CODE, REMOVAL, INSTALLATIONS, HOLE SIZES AND EDGE MARGINS
51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS

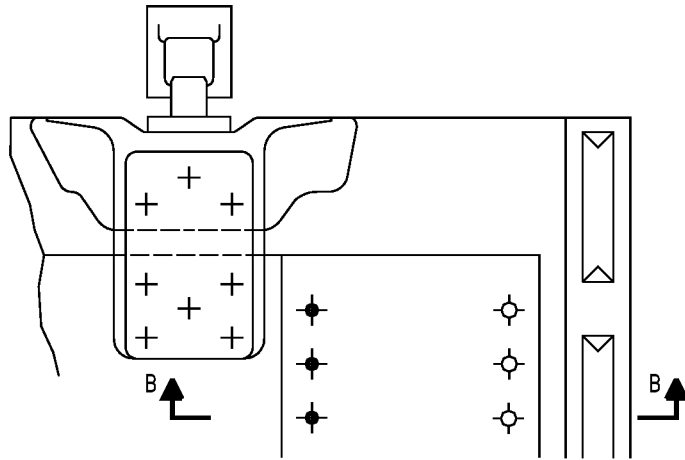
- A** BMS 5-28, TYPE 7
- B** BMS 5-109 TYPE II, CLASS 2
- C** FOR REPAIR TO BE APPLICABLE, DELAMINATION MUST NOT EXCEED 6 INCHES IN LENGTH. FOR DELAMINATION GREATER THAN 6 INCHES SEE 51-70-04

SYMBOLS

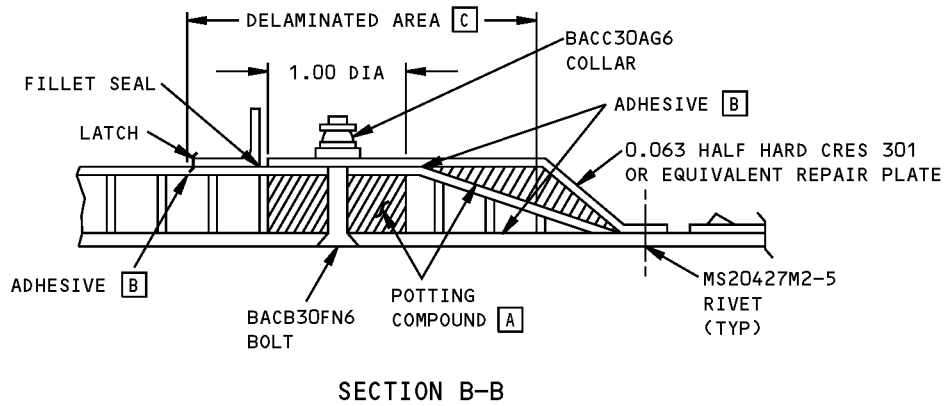
- + ORIGINAL FASTENERS LOCATIONS
- REPAIR FASTENER LOCATION (BACB30FN6 BOLT, BACC30AG6 COLLAR)
- REPAIR FASTENER LOCATION MS20427M2-5 RIVET (TYP)

**Fan Cowl Tapered Edge Delamination Repair
Figure 203 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



FAN COWL DELAMINATION REPAIR IN VICINITY OF FWD PANEL EDGE



**Fan Cowl Tapered Edge Delamination Repair
Figure 203 (Sheet 2 of 2)**



767-300 STRUCTURAL REPAIR MANUAL

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 7	EPOCAST 8414A RESIN	100 ±1	60 MINUTES AT 70°F (21°C)	12 HOURS AT 65°F MIN (19°C) 2 HOURS AT 125°F (52°C) A
	EPOCAST 8414B HARDENER	22 ±1		
	CG-1305 RESIN	100		
	CG-1305 HARDENER	22		
	FR 7162 RESIN	100 ±5		
	FR 7162 HARDENER	40 ±2		
BMS 5-109, TYPE II CLASS 2 ADHESIVE	EA 934 A/B EA 934NA A/B FR 7010 A/B	B B C	30 MINUTES D	1 HOUR AT 200 ±10°F (93 ±5°C) 9 HOURS AT 160 ±10°F (71 ±5°C) 25 HOURS AT 120 ±10°F (49 ±5°C) 7 DAYS AT 77 ±10°F (25 ±5°C)

TABLE I

A FOR OPTIMUM PROPERTIES CURE 7 DAYS AT 65°F (19°C) OR 5 HOURS AT 125°F (52°C) OR 1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (177°C)

B MIX RATIO 32-34 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

C MIX RATIO 36-38 PARTS HARDENER (PART B) TO 100 PARTS RESIN (PART A) BY WEIGHT

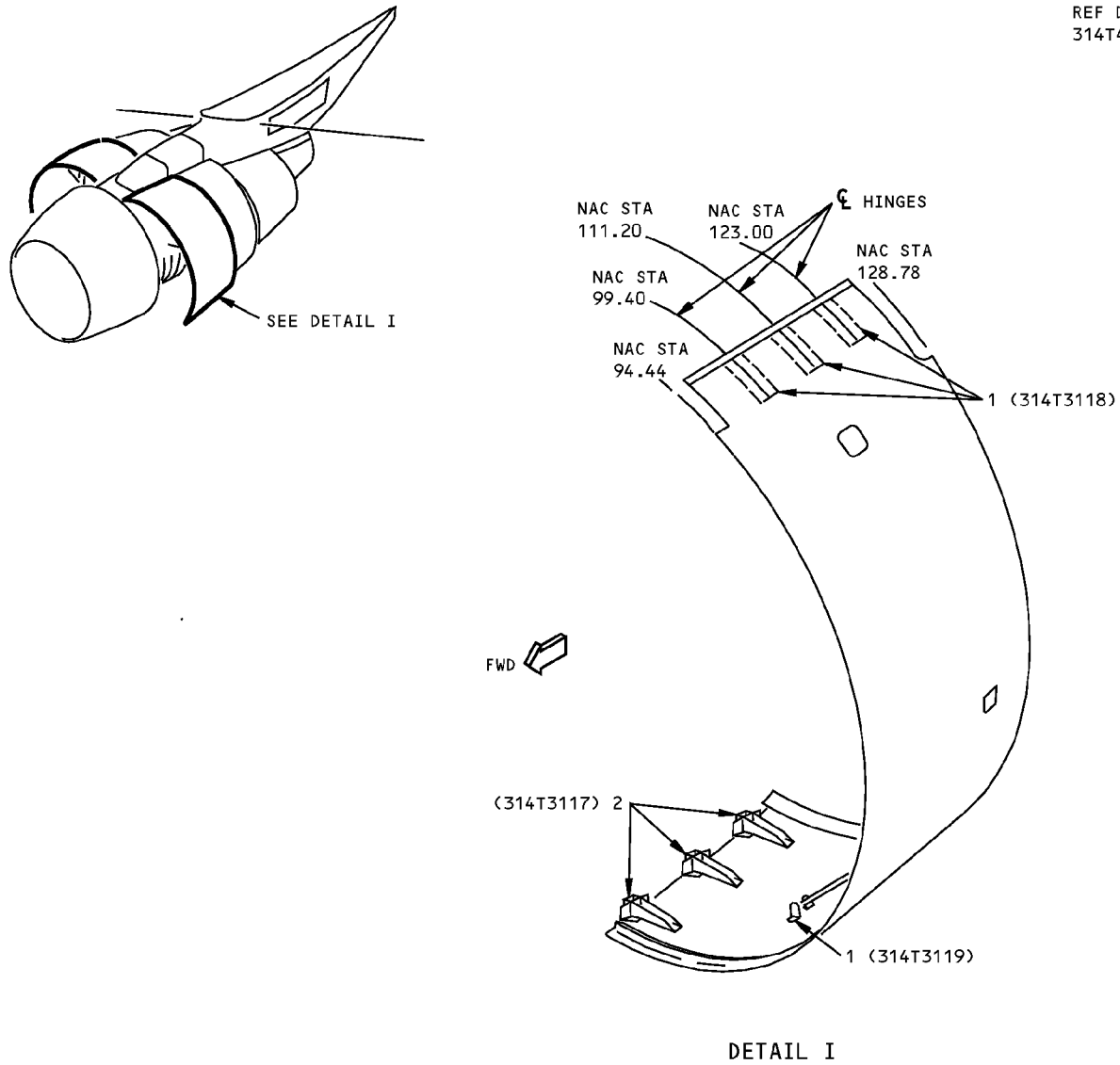
D REPAIR MUST BE PLANNED SO THAT 30 MINUTE ADHESIVE WORK TIME (TIME OF ADHESIVE MIX TO TIME OF FASTENER INSTALLATION) IS NOT EXCEEDED

Resin Type Specifications and Mixing Procedures Figure 204

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN COWL ATTACHMENT FITTING - PW4000 ENGINE

REF DWG
314T4110



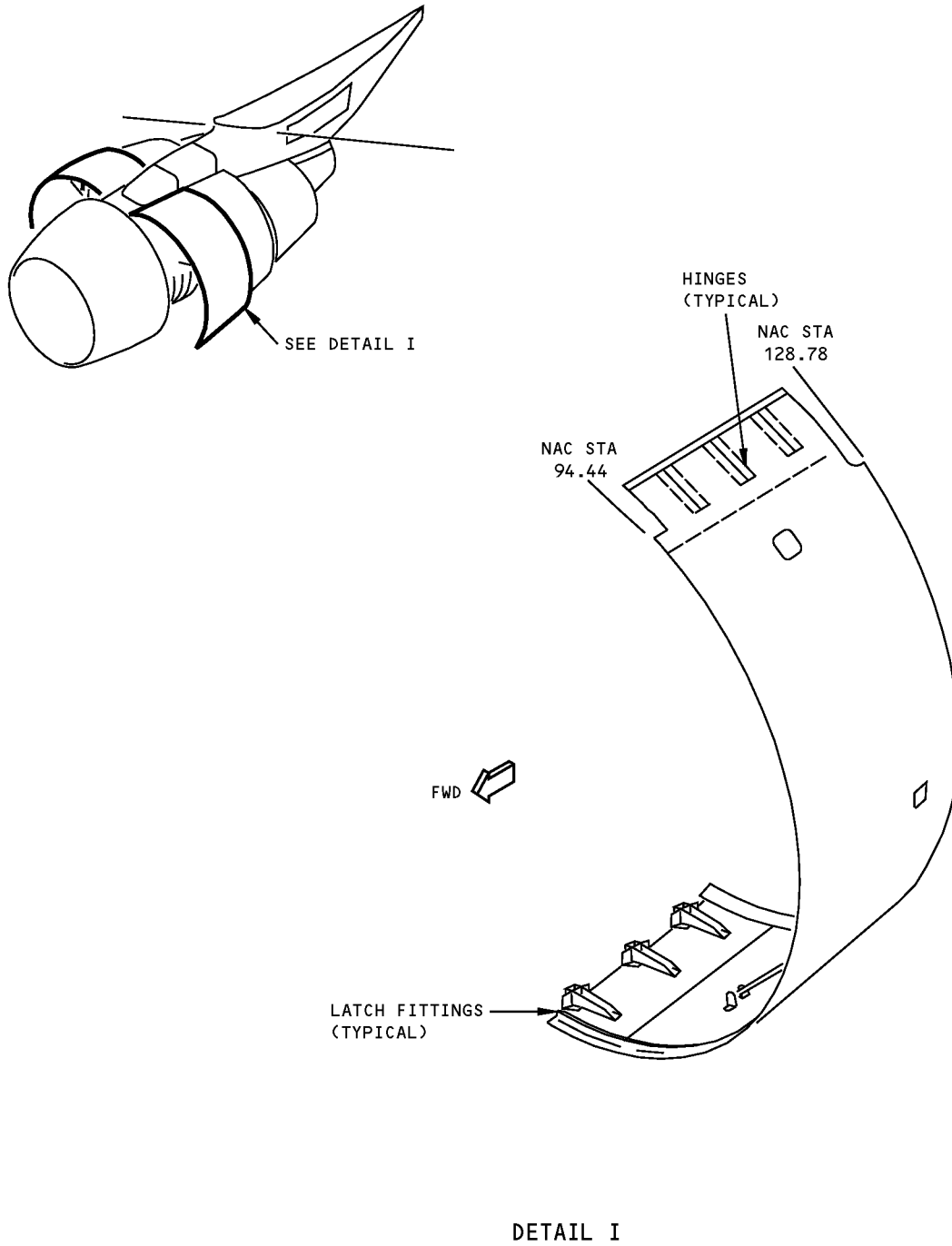
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FTG		FORGING 7075-T73	
2	LATCH FTG		FORGING 7075-T73	

LIST OF MATERIALS FOR DETAIL I

**Fan Cowl Attachment Fitting Identification - PW4000 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN COWL ATTACHMENT FITTINGS - PW4000 ENGINE



**Allowable Damage - Fan Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

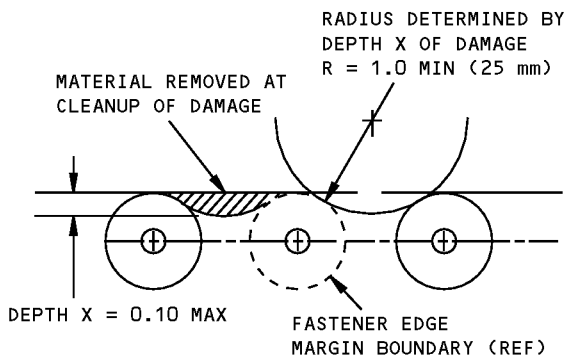
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INSPECTION AND REMOVAL OF DAMAGE, REFER TO SRM 51-10-02

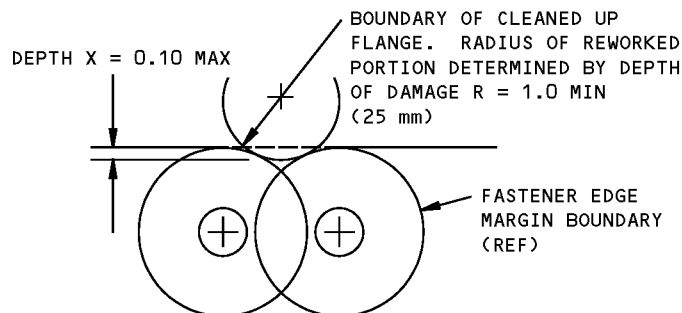
[A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS NOT ALLOWED

[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[C] SHOT PEEN REWORKED AREAS PER 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

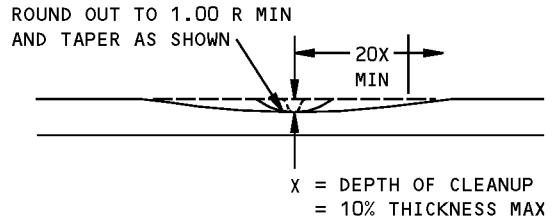
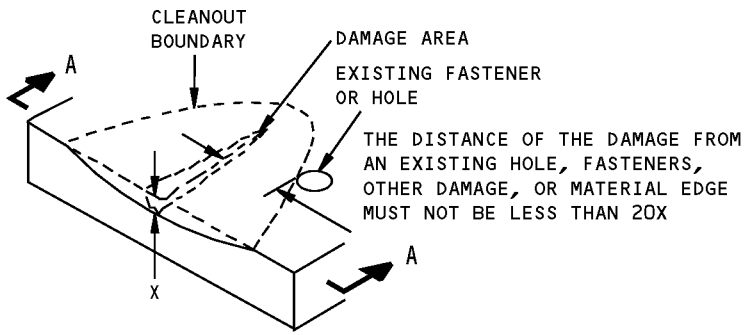


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II

**Allowable Damage - Fan Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 2 of 3)**

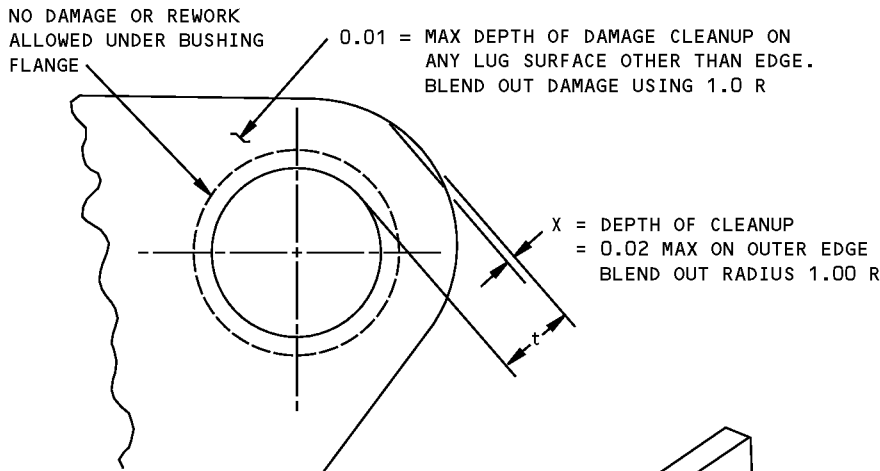
**767-300
STRUCTURAL REPAIR MANUAL**



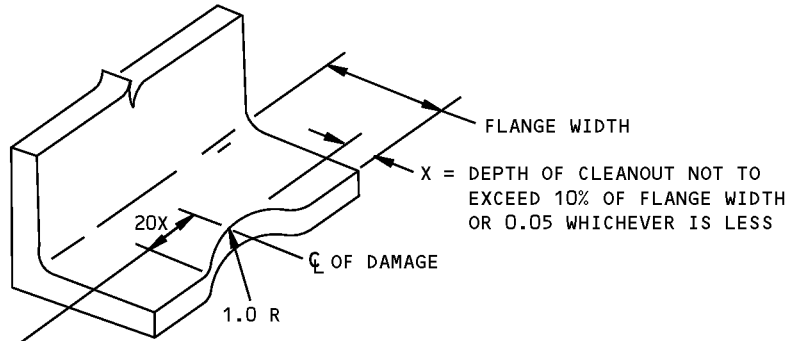
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**



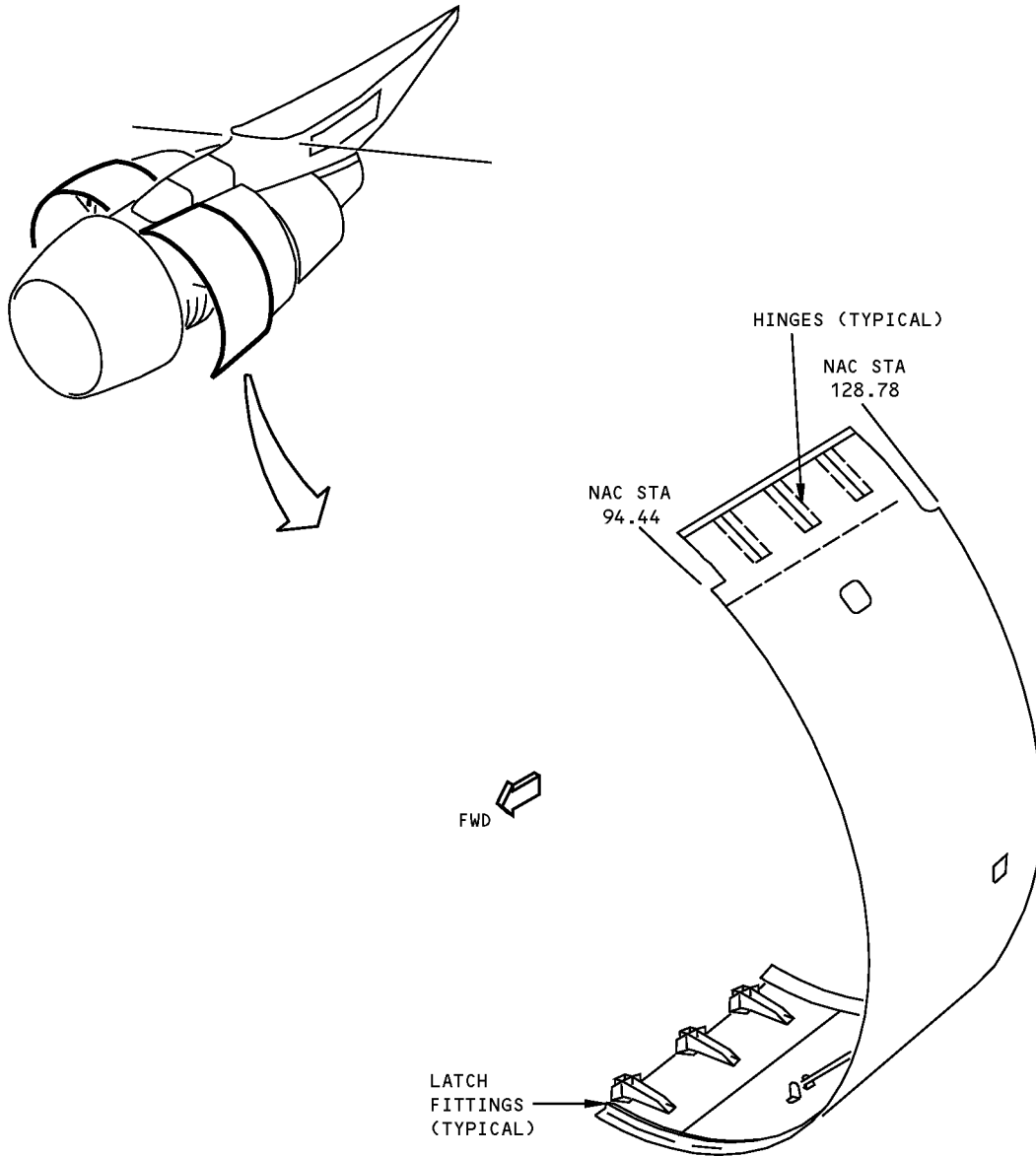
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS, OTHER DAMAGE OR EDGE MUST NOT BE LESS THAN 20X

**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Fan Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN COWL ATTACHMENT FITTINGS - PW4000 ENGINE



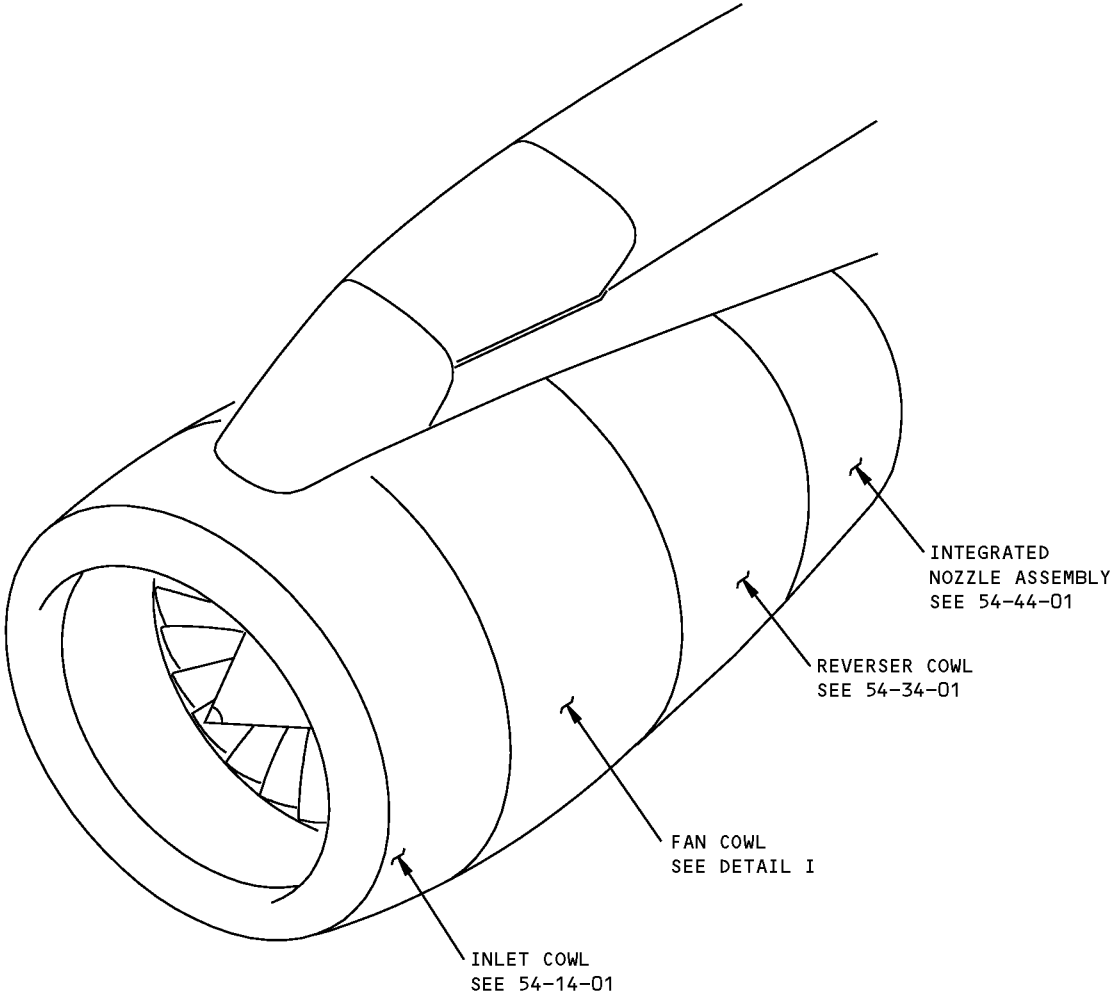
NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE. SPECIFIC REPAIRS TO FITTINGS WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- SEE 54-23-01 FOR FAN COWL IDENTIFICATION

**Fan Cowl Attachment Fitting Repair - PW4000 Engine
Figure 201**

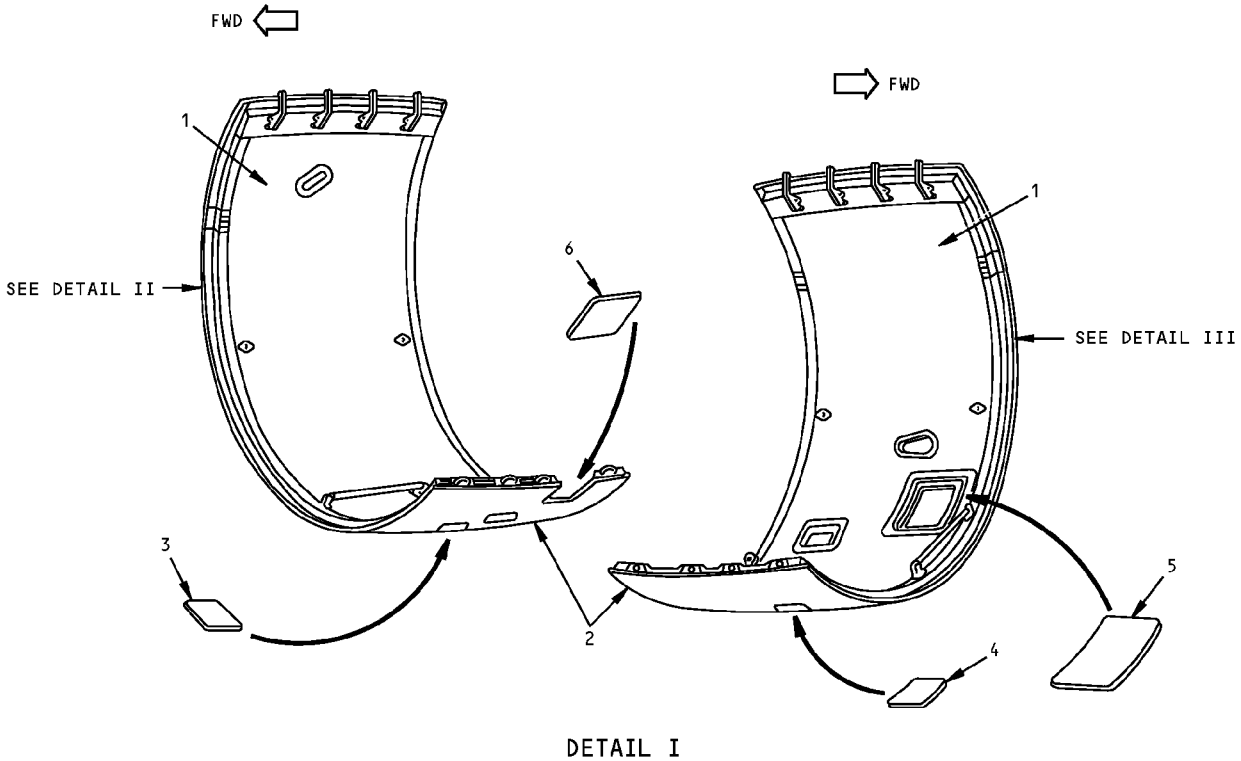
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - FAN COWL SKIN PANEL - RB211-524 ENGINE



Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 8)

767-300
STRUCTURAL REPAIR MANUAL

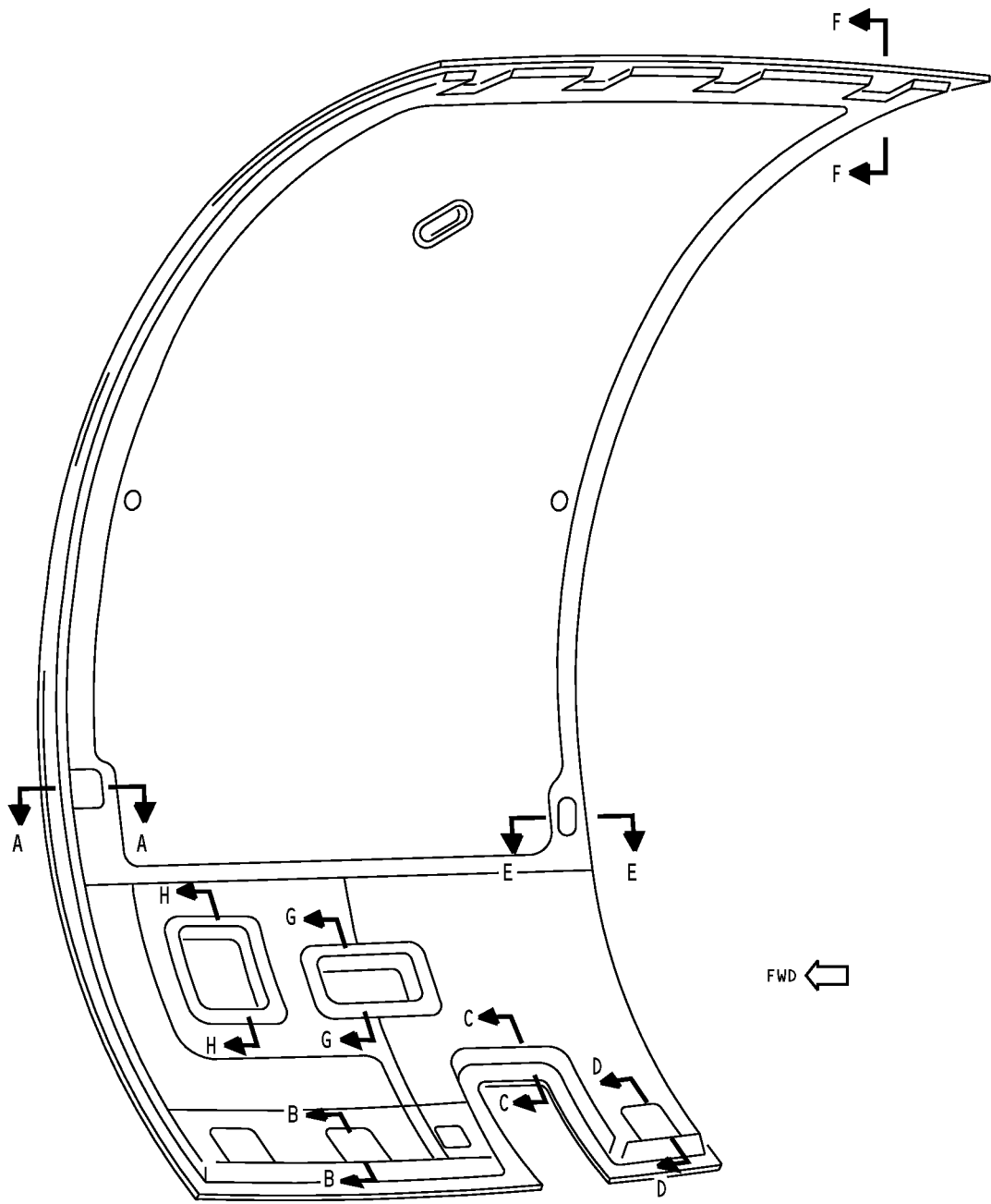


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INNER SKINS	0.064	2024-T62	
2	OUTER SKINS	0.064	2024-T62	
3	DOOR	0.092	L103	
4	DOOR	0.104	L72	
5	DOOR	0.104	L73	
6	DOOR	0.128	L73	

LIST OF MATERIALS FOR DETAIL I

Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 8)

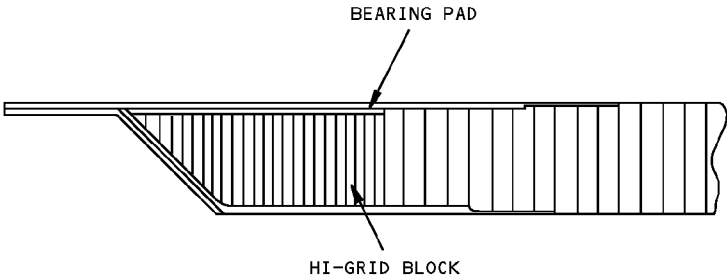
767-300
STRUCTURAL REPAIR MANUAL



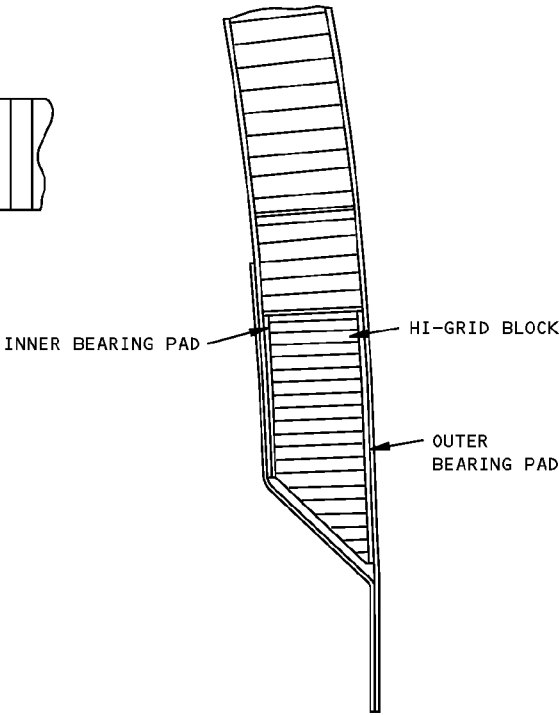
INNER SKIN LOOKING OUTBOARD
FAN COWL - RIGHT HAND
DETAIL II

Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 8)

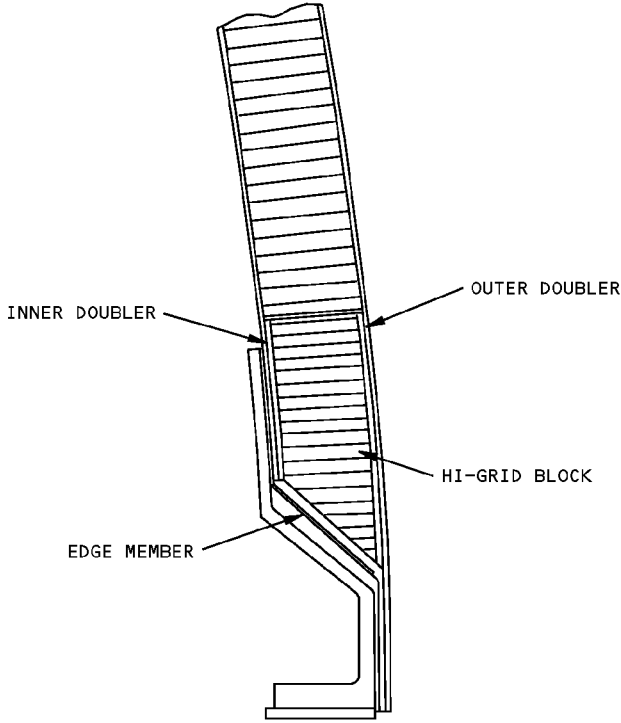
767-300
STRUCTURAL REPAIR MANUAL



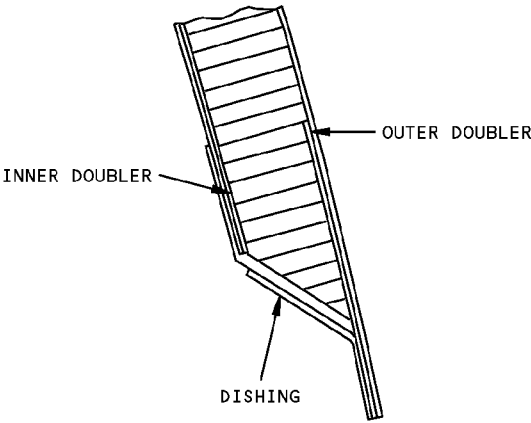
SECTION A-A



SECTION B-B



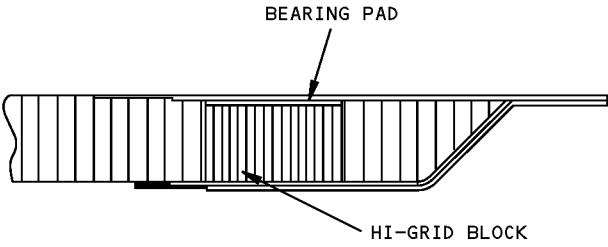
SECTION D-D



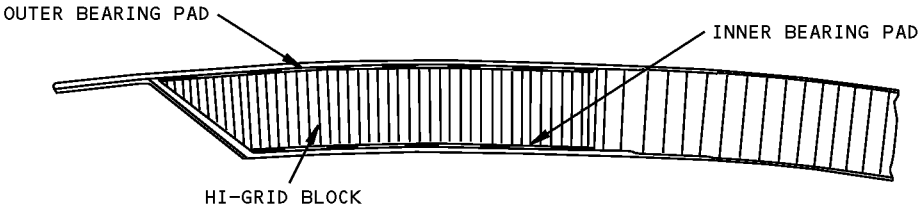
SECTION C-C

Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 8)

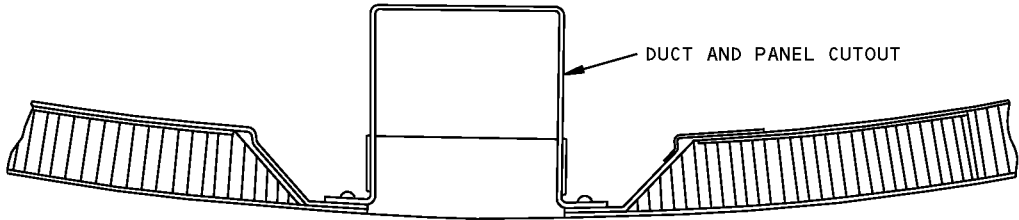
767-300
STRUCTURAL REPAIR MANUAL



SECTION E-E



SECTION F-F



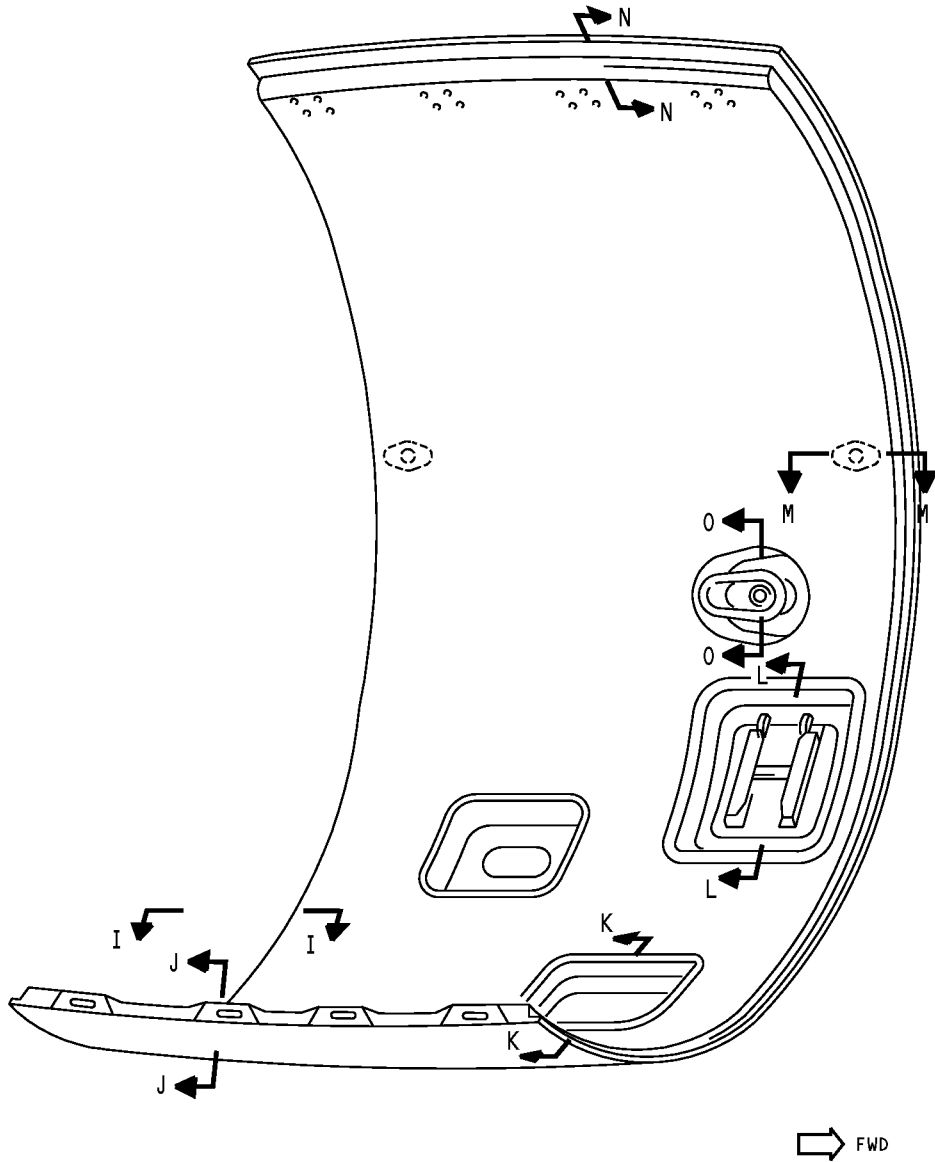
SECTION G-G



SECTION H-H

Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 8)

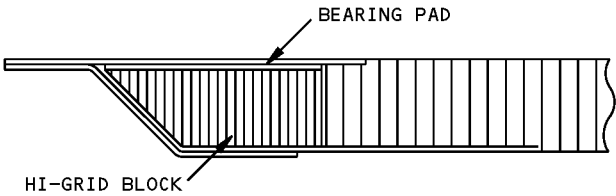
**767-300
STRUCTURAL REPAIR MANUAL**



INNER SKIN LOOKING OUTBOARD
FAN COWL - LEFT HAND
DETAIL III

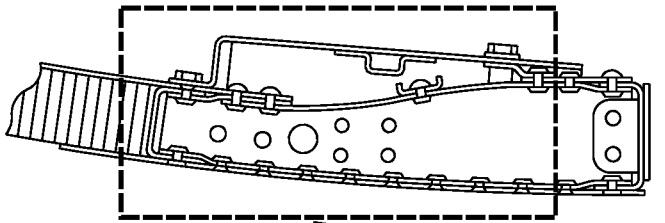
Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 8)

**767-300
STRUCTURAL REPAIR MANUAL**



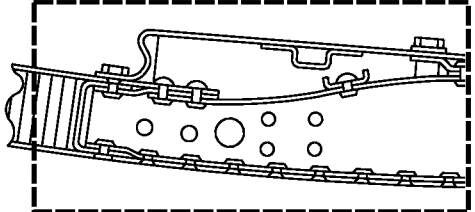
HI-GRID BLOCK

SECTION I-I



SEE ALTERNATE FOR
NO. 3 LATCH POSITION

TYPICAL

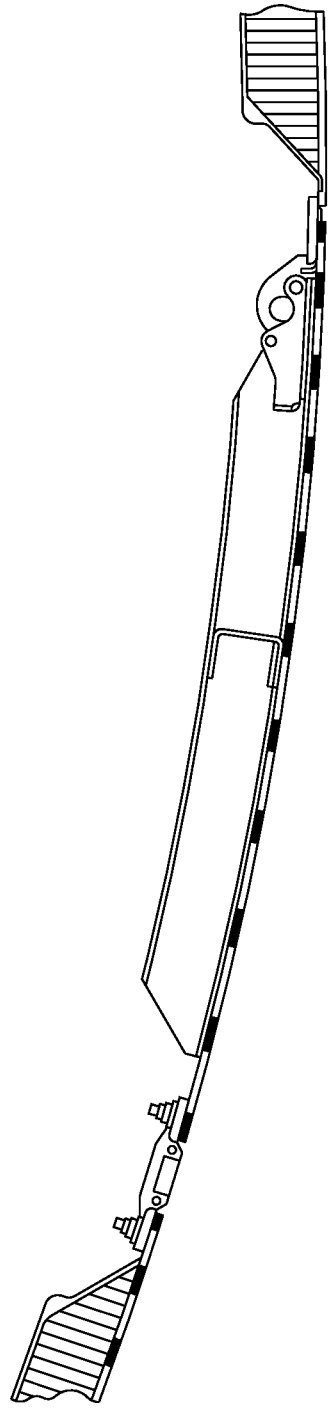


ALTERNATE FOR AIRPLANES WITH SB 71-9102 INCORPORATED
NO. 3 LATCH POSITION ONLY

SECTION J-J



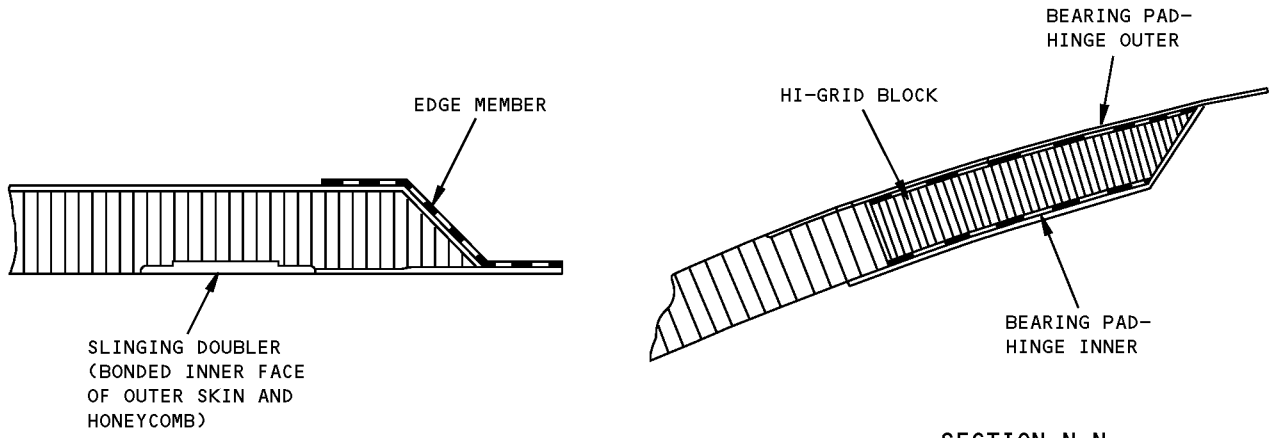
SECTION K-K



SECTION L-L

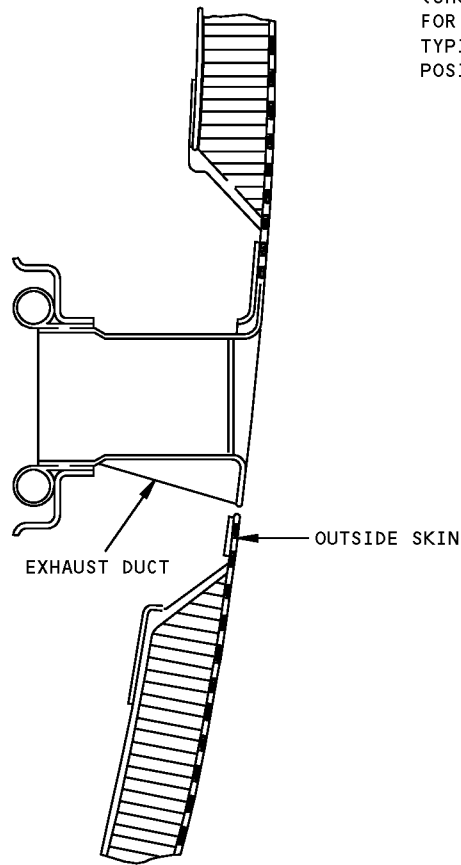
**Fan Cowling Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 7 of 8)**

767-300
STRUCTURAL REPAIR MANUAL



SECTION M-M

SECTION N-N
(SHOWING BEARING PADS,
FOR HINGE ATTACHMENTS
TYPICAL FOR ALL HINGE
POSITIONS)

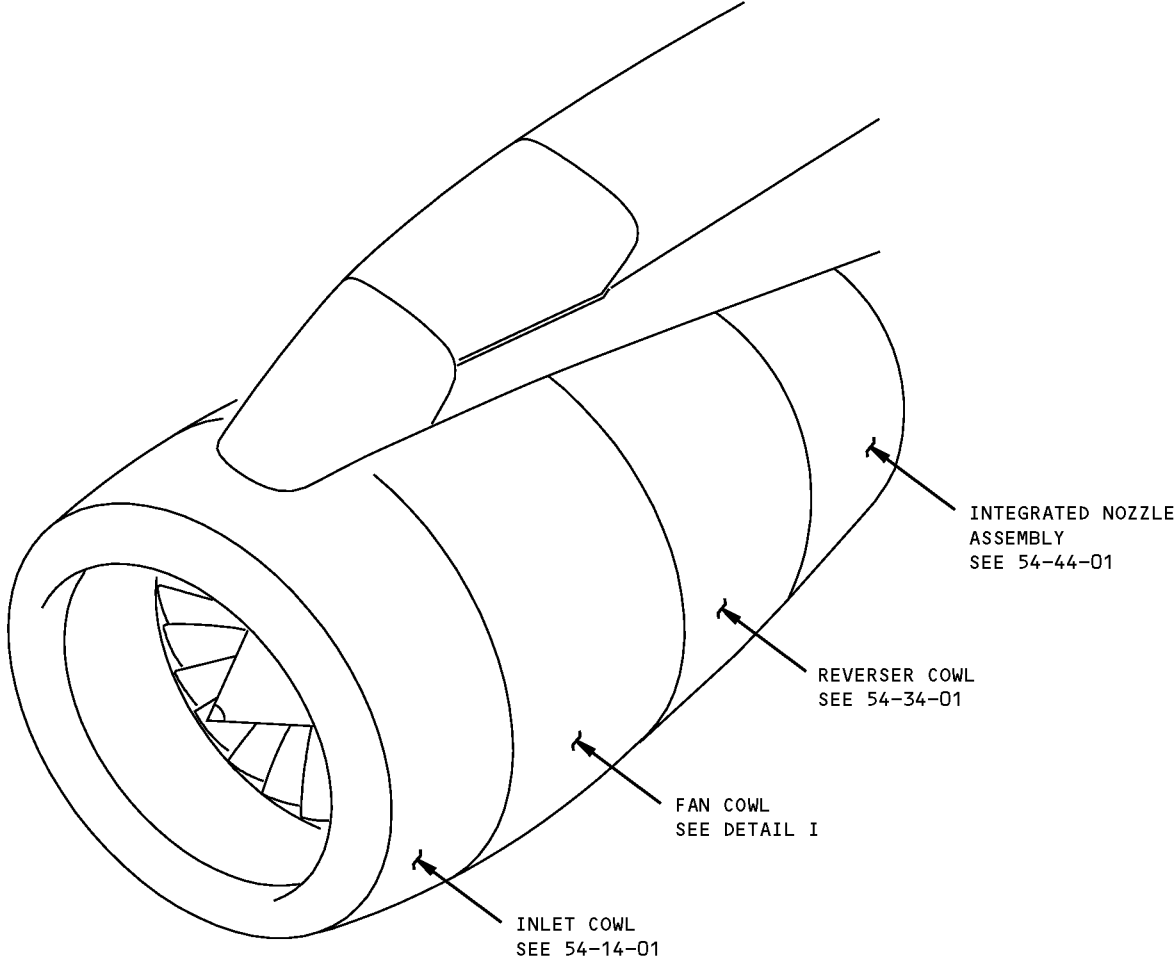


SECTION 0-0

Fan Cowl Skin Panel Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 8)

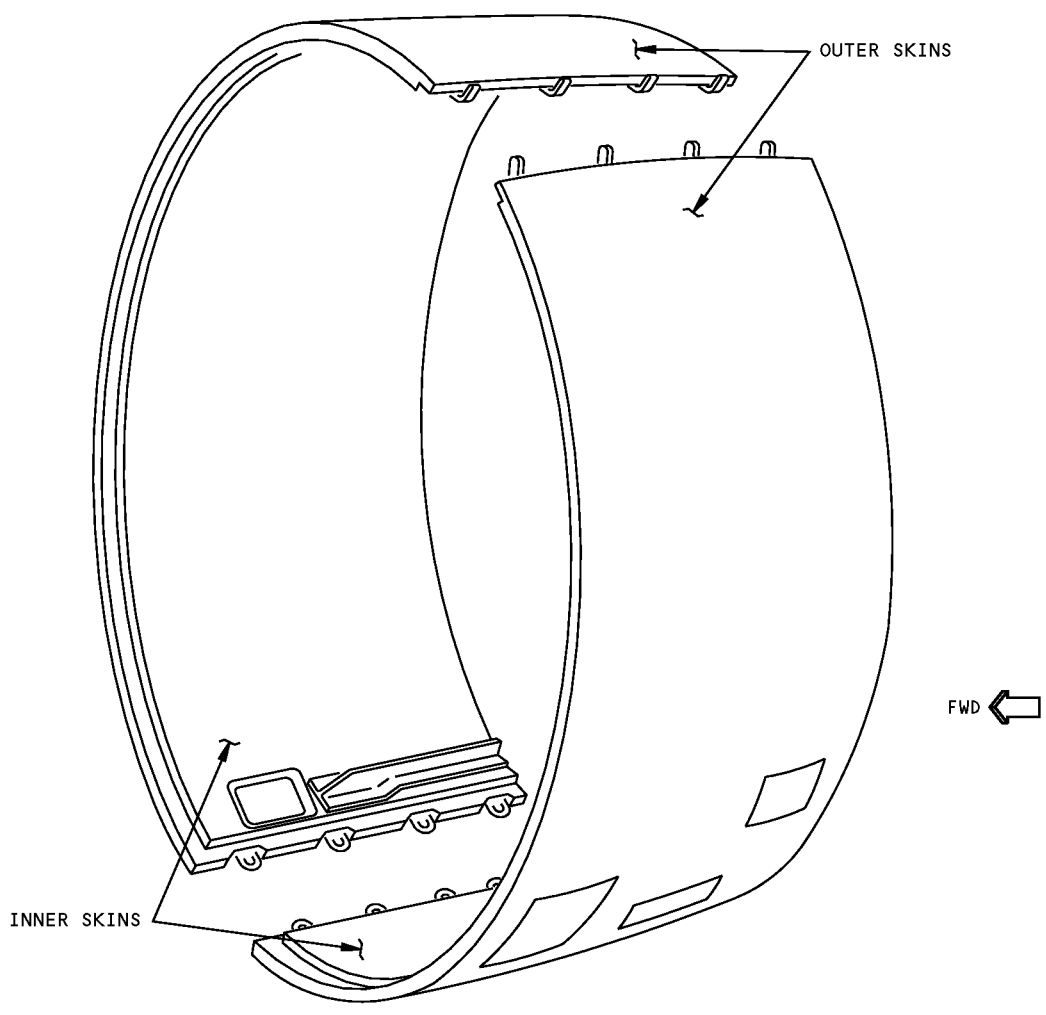
767-300
STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - FAN COWL SKIN - RB211-524 ENGINE



Allowable Damage - Fan Cowl Skin - RB211-524 Engine
Figure 101 (Sheet 1 of 3)

767-300
STRUCTURAL REPAIR MANUAL



DETAIL I

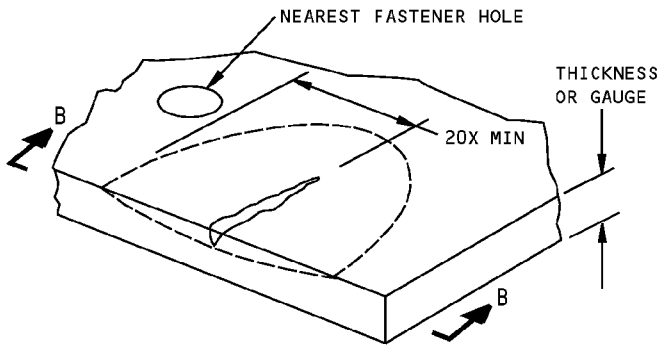
		CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES
HINGED COWLS	INNER AND OUTER SKINS	B	A AND SEE DETAIL II	C AND SEE DETAIL III	D

Allowable Damage - Fan Cowl Skin - RB211-524 Engine
Figure 101 (Sheet 2 of 3)

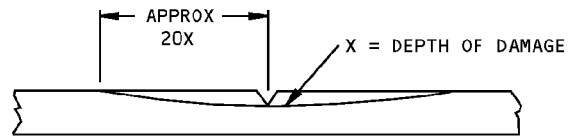
STRUCTURAL REPAIR MANUAL

NOTES

- UPON COMPLETION OF REPAIR CLEAN-UP, REPROTECT IN ACCORDANCE WITH 51-22-01
- A** DAMAGE IS ALLOWABLE UP TO 25 PERCENT OF MATERIAL THICKNESS IN DEPTH AND 2.00 IN LENGTH. REMOVE DAMAGE
- B** CRACKS TO A MAXIMUM OF 1.00 ARE ALLOWABLE IN EITHER THE INNER OR OUTER SKIN. CLEAN OUT CRACKS TO A SMOOTH ROUND HOLE AND COVER WITH SCOTCH BRAND 425 TAPE. CRACKS WITHIN 3.00 OF A SKIN EDGE OR WITHIN 4.00 OF ANOTHER PATCH OR CRACK ARE NOT ACCEPTABLE. CRACKS EMANATING FROM ANY OUTER EDGE OR FASTENER HOLE ARE NOT ACCEPTABLE
- C** DENTS AND DISTORTION ARE ALLOWED PROVIDED 'X' (DETAIL III) DOES NOT EXCEED 0.250 AND RADIUS AT 'Z' IS NOT LESS THAN FIVE (5) TIMES 'M'. DAMAGE 'W' MUST NOT EXCEED 4.00 DIAMETER WITH A MINIMUM OF 4.00 SEPARATING EACH DAMAGED AREA
- D** HOLES IN THE INNER OR OUTER SKINS WHICH WILL CLEAN OUT TO SMOOTH ROUND HOLES NOT MORE THAN 1.00 DIAMETER CAN BE ACCEPTED, SUBSEQUENT TO CLEANOUT AND COVERING WITH SCOTCH BRAND 425 TAPE

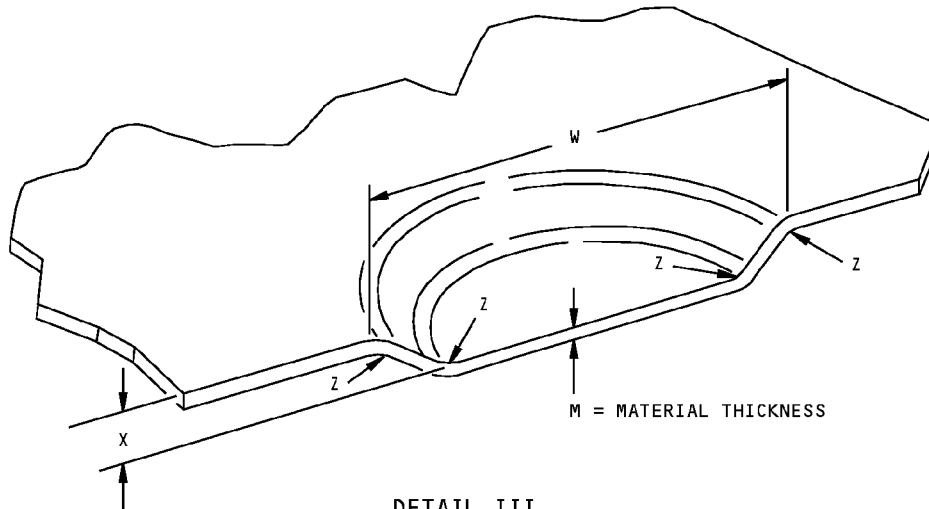


DOTTED LINE INDICATES CLEANUP AREA



BLEND OUT DAMAGE TO A SMOOTH CONTOUR

DETAIL II

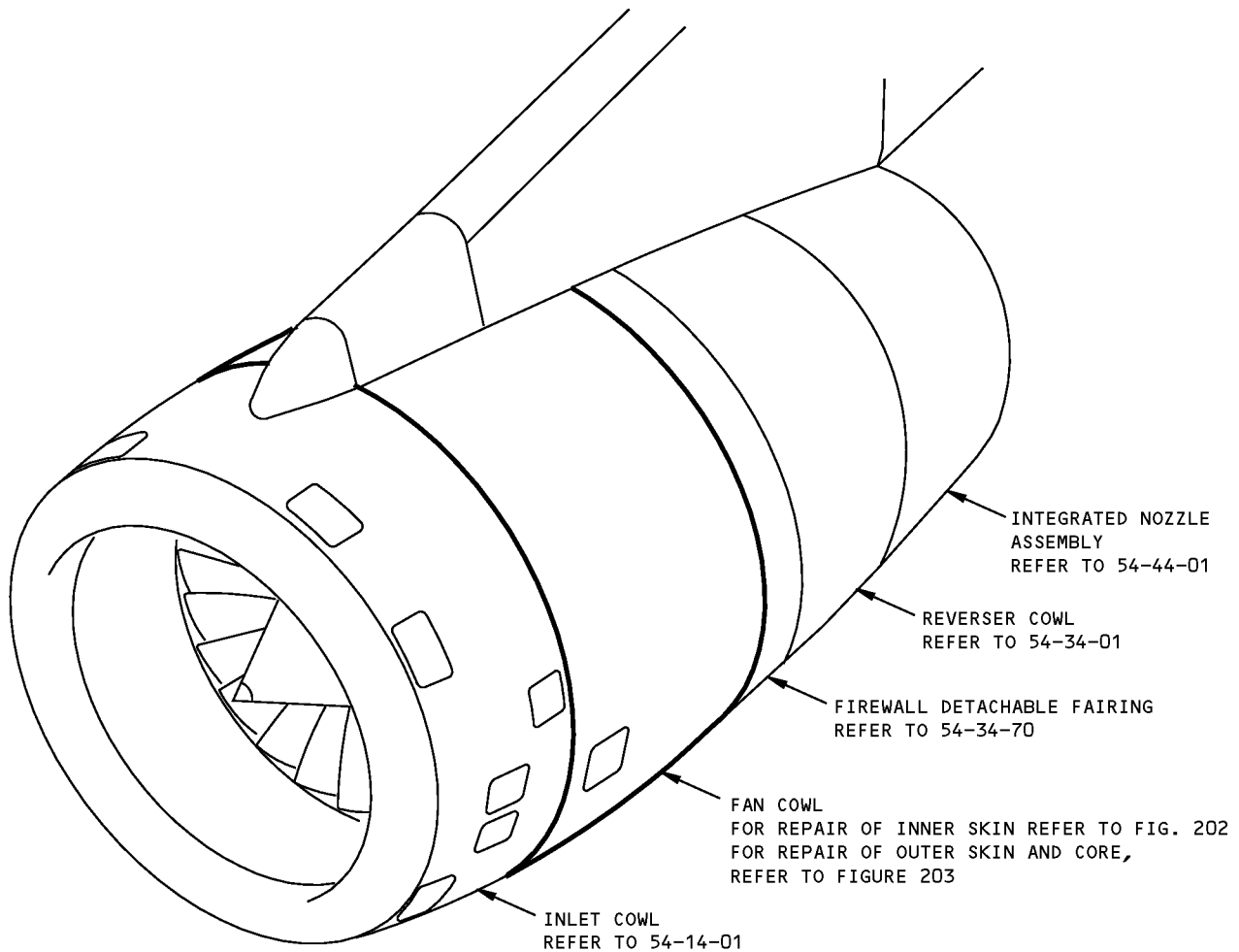


DETAIL III

Allowable Damage - Fan Cowl Skin - RB211-524 Engine
Figure 101 (Sheet 3 of 3)

767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - FAN COWL SKIN - RB211-524 ENGINE



Fan Cowl Skin Repairs - RB211-524 Engine
Figure 201

D634T210

54-24-01

REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - FAN COWL INNER SKIN - FOR DAMAGE NOT EXCEEDING 3.0 INCH DIAMETER**APPLICABILITY**

THIS REPAIR IS FOR DAMAGE TO THE INNER SKIN THAT DOES NOT EXCEED 3.0 INCHES IN DIAMETER AND IS NO CLOSER THAN 4.0 INCHES TO A FRAME MEMBER OR A PANEL EDGE.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. DEGREASERS ARE VERY FLAMMABLE. KEEP THEM AWAY FROM IGNITION SOURCES.

1. Clean the damaged area using Methyl-ethyl-ketone on a clean cotton cloth. Wipe it dry before the solvent evaporates.
2. Remove the damaged skin.
3. Remove the burrs from the skin edges.
4. Remove the loose core and open up the bent cells.
5. Manufacture the doubler ring from a 0.064-inch 2024-T62 bare sheet. Make a round shape to cover the repair area. See Detail I.
6. Remove the paint from the repair area. Use 180 grit abrasive paper.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. DEGREASERS ARE VERY FLAMMABLE. KEEP THEM AWAY FROM IGNITION SOURCES.

7. Clean the repair area using methyl-ethyl-ketone on a clean cotton cloth. Wipe it dry before the solvent evaporates.
8. Locally abrade the bonding surface of the cowl skin doubler ring and glass fiber patch area using 180 grit abrasive paper.
9. Apply alodine 12 echant to the cowl skin and the doubler ring as per 51-20-01.
10. Apply the primer to the cowl skin and the doubler ring.
11. Apply BMS 5-109, Type II, Class 2 adhesive, 0.005 inches thick between the sheet and the doubler ring, and 0.010 inches thick between the metal to core bonds.
12. Position the ring on the repair area.
13. Fill the exposed honeycomb with BMS 5-28, Type 7 or 25 potting compound.
14. Blend the potting compound to the doubler ring.

15. Fit the vacuum bag over the repair area and apply a vacuum.
16. Cure at 260°F for 90 minutes.
17. Allow the repair area to cool to room temperature before removing the vacuum bag.
18. Apply two layers of BMS 9-3, Type H glass fabric using BMS 8-301, Class I resin adhesive.
19. Cure for 250°F for 150 minutes or at 200°F for 220 minutes under a maximum of 22 inches Hg of vacuum.
20. Visually inspect the repair area.

NOTES

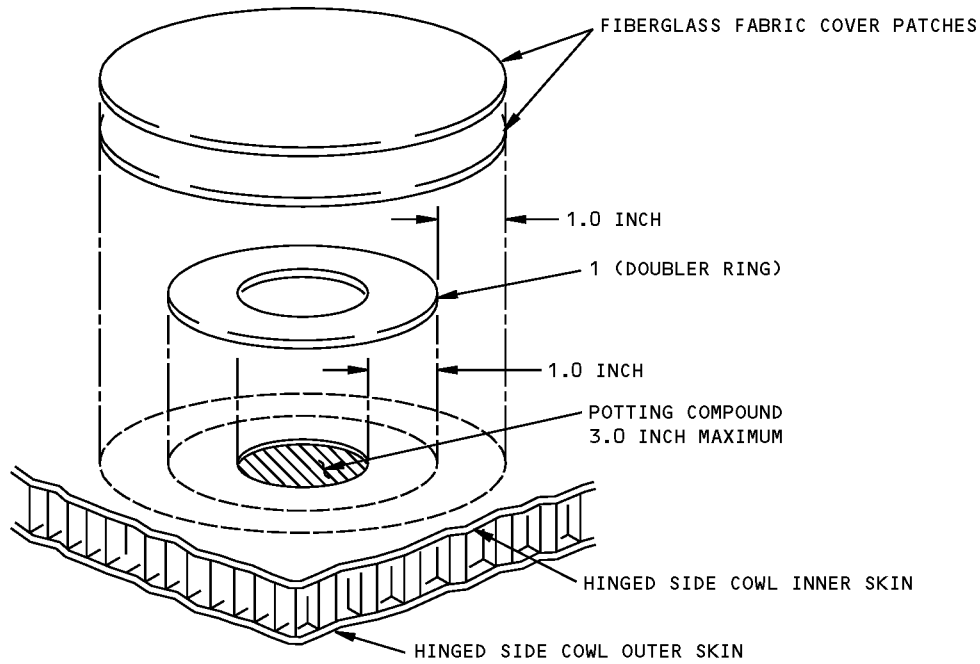
- THIS REPAIR MAY BE DISHED IF NECESSARY TO PROVIDE STRUCTURAL CLEARANCE.
- APPLY THE PROTECTIVE FINISH IN ACCORDANCE WITH 51-22-01.

REPAIR MATERIAL

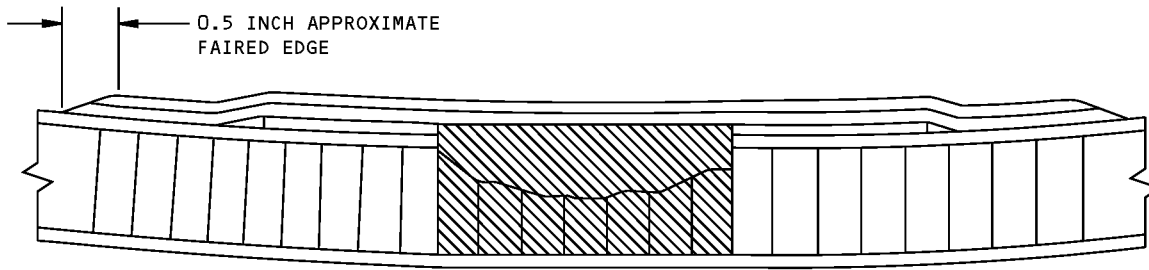
REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER RING	1	0.064 2024-T62 BARE SHEET

**Fan Cowl Inner Skin - Repair for Damage Not Exceeding 3.0 Inch Diameter
Figure 201 (Sheet 1 of 2)**

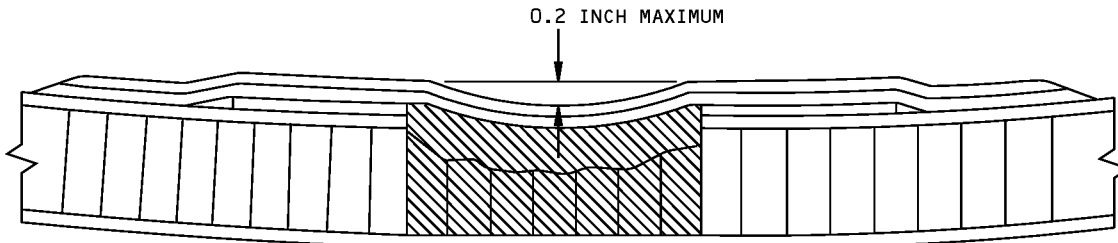
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



SECTION THROUGH REPAIR



ALTERNATIVE REPAIR TO PROVIDE STRUCTURAL CLEARANCE

26390

**Fan Cowl Inner Skin - Repair for Damage Not Exceeding 3.0 Inch Diameter
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FAN COWL - BY PATCHING OUTER SKINS AND CORE - RB211-524 ENGINE

APPLICABILITY
THIS REPAIR IS FOR PATCHING OF THE OUTER SKINS AND CORE.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. DEGREASERS ARE VERY FLAMMABLE. KEEP THEM AWAY FROM IGNITION SOURCES.

1. Clean the damaged area using Methyl ethyl ketone on a clean cotton cloth. Wipe it dry before the solvent evaporates.
2. Cut a hole through the panel assembly, large enough to remove the damaged area.
3. Remove, by machine, the inside skin and the honeycomb to the outer skin. The diameter of this hole should be large enough to permit the fitting of the doubler plate to the outer skin.
4. Make the doubler plate using 2014-T6 sheet.
5. Apply a chemical conversion coating to the doubler plate and the faying surface of the outer skin as given in SRM 51-20-01. Apply Desoto 513-707 or 515-346 primer to the doubler plate and the faying surface of the skin.
6. Position the doubler plate, mark and drill the rivet holes.
7. Remove the doubler plate and deburr.
8. Wipe the contacting faces with acetone.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

9. Mix Araldite SV409 and Versamid 140 hardener or BMS 5-109, Type II, Class 2 adhesive.
10. Apply the adhesive to the contacting faces.
11. Rivet the doubler plate into position using 1/8 inch dia NAS1097 series rivets (install rivets wet with P132m or BMS 5-95). BMS 5-95).
12. Make the patch using 2014-T6 sheet.
13. Apply a chemical conversion coating to the patch as given in SRM 51-20-01. Apply Desoto 513-707 or 515-346 primer to the patch.
14. Position the patch, mark out and drill the holes.
15. Remove the patch and deburr.

16. Wipe the contacting faces with acetone.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

17. Mix Araldite/Polyamide adhesive, or alternative.
18. Apply the adhesive to contacting faces.
19. Rivet the patch to the doubler plate, using 1/8 inch dia NAS1097 series rivets (install rivets wet with P132m or BMS 5-95).
20. Cut the honeycomb to the required shape.
21. Make the cover plate.
22. Apply a chemical conversion coating to the cover plate and the faying surface of the inner skin as given in SRM 51-20-01. Apply Desoto 513-707 or 515-346 primer to cover the faying surface of plate.
23. Position the cover plate, mark and drill the holes.
24. Remove the cover plate and deburr.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. DEGREASERS ARE VERY FLAMMABLE. KEEP THEM AWAY FROM IGNITION SOURCES.

25. Clean the repair area, using inhibited trichloroethane.
26. Dry the area using oil free dry air blast.
27. Check the surface for cleanliness by using the water break test, using clean distilled water. If it is not satisfactory, repeat steps 25 and 26.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH SKIN.

28. Mix Araldite SV409 and Versamid Polyamide 140 in a 70-30 ratio by weight. Mix compound thoroughly using a spatula for three to five minutes, ensure a homogenous mixture is obtained.

NOTE: When mixed, the pot life is approximately two hours, this can be extended by storing at -20°C (-4°F). Polyamide 140 is hygroscopic and deteriorates rapidly if left exposed to atmosphere. Therefore, the container lids must be replaced and sealed immediately after use.

29. Wipe the bottom surface of the honeycomb insert, with acetone prior to bonding.

**Fan Cowl - Repair by Patching Outer Skins and Core - RB211-524 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

30. Apply the adhesive to the inside surface of the outer panel skin, and the bottom surface of the honeycomb insert.
31. Clamp the honeycomb insert in position to maintain good contact between both surfaces.
32. Cure for 24 hours at 25°C (77°F) or one hour at 100°C (212°F) if Araldite/Polyamide is used. Cure per SRM 54-02-01, Fig. 201 if BMS 5-109 is used.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH SKIN.

33. Measure 100 parts of EC3524A (Blue) to 94 parts of EC3524B (White) by weight. Mix the materials by kneading until a uniform blue color free from streaks is obtained. Or, prepare BMS 5-28 Type 7 or 25 potting compound.
34. Spread the material on a clean surface to a depth of approximately 0.5 inch. This allows exothermic heat dissipation and provides a maximum working life of one hour at room temperature 22°C (72°F) (Applies to EC3524B/A).
35. Apply EC3524B/A filler or BMS 5-28, Type 7 or 25 potting compound around the periphery of the honeycomb insert.
36. Cure for 24 hours at room temperature 22°C (72°F) if EC3524B/A is used. Cure per SRM 54-02-01, Fig. 201 if BMS 5-28 is used.

NOTE: A LOWER TEMPERATURE WILL PROLONG THE CURE TIME. A HIGHER TEMPERATURE WILL DECREASE THE CURE TIME; I.E., 93°C (200°F) FOR 30 MINUTES APPROXIMATELY (APPLIES TO EC3524B/A).

37. Trim the honeycomb flush with the inner skin, if required.
38. Wipe the surface of the honeycomb with acetone.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH SKIN.

39. Mix Araldite SV409 and Versamid 140 hardener or BMS 5-109, Type II Class 2.
40. Apply the adhesive to the top surface of the honeycomb insert, the contact area of the cover plate, and the faying surface of the inner skin.

41. Rivet the cover plate to the inner panel skin, using 1/8-inch dia CR2238 or NAS1739E5 rivets wet, with P132m or BMS5-95 sealant.
42. Cure for 24 hours at 25°C (77°F) or one hour at 100°C (212°F) if Araldite/Polyamide adhesive is used. Cure per SRM 54-02-01, Fig. 201 if BMS 5-109 is used.
43. Visually inspect the repair area.
44. Prime the area to be painted with BMS 10-11, Type 2.

NOTES

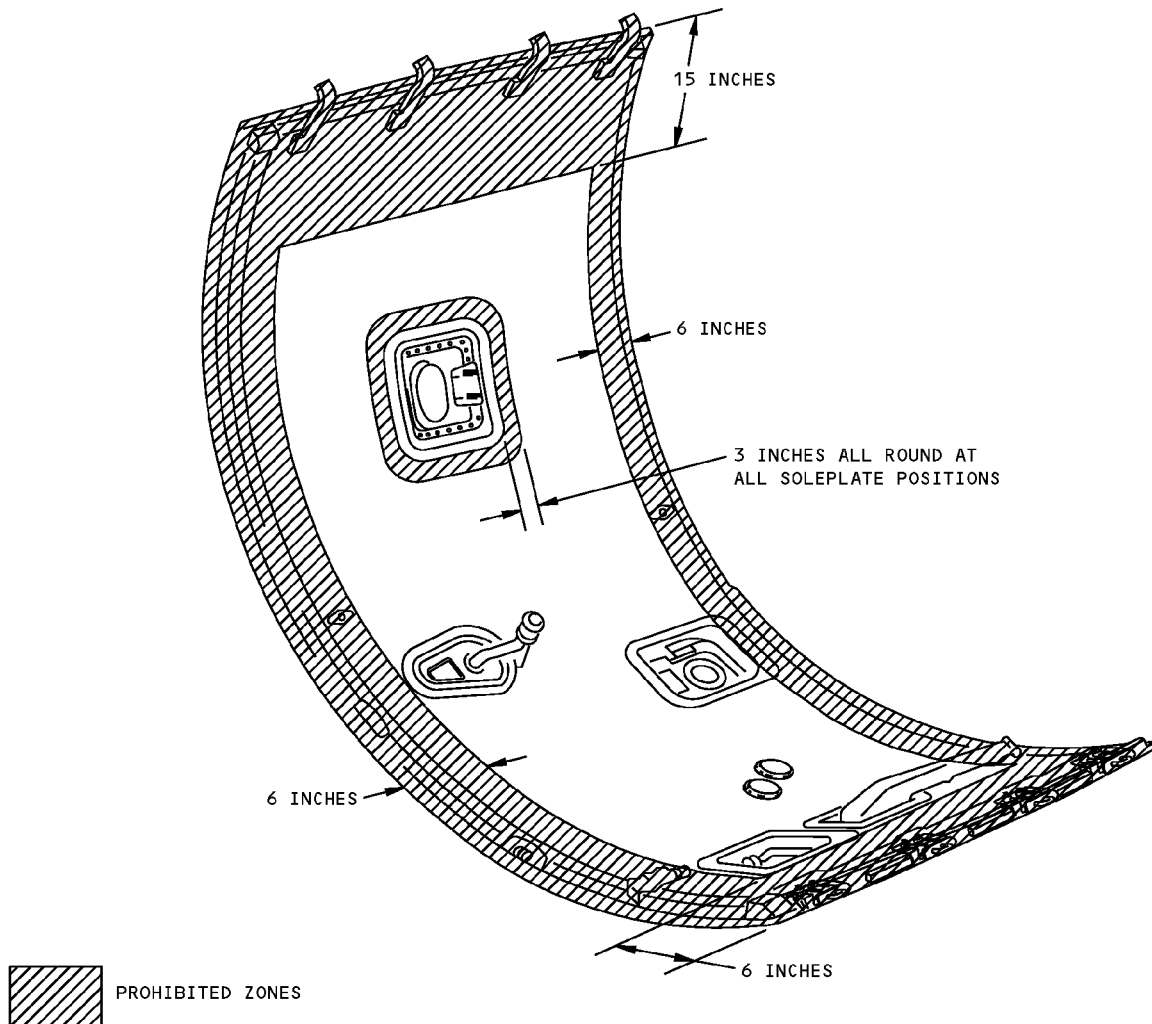
- APPLY PROTECTIVE FINISH IN ACCORDANCE WITH SRM 51-22-01.

Fan Cowl - Repair by Patching Outer Skins and Core - RB211-524 Engine
Figure 201 (Sheet 2 of 4)

767-300
STRUCTURAL REPAIR MANUAL

ONLY THE FOLLOWING CONDITIONS ARE PERMISSIBLE:

- 1 PATCH, 12 INCHES IN DIAMETER
- 2 PATCHES, 8 INCHES IN DIAMETER
AT 36 INCH CENTERS
- 3 PATCHES, 6 INCHES IN DIAMETER
AT 36 INCH CENTERS



VIEW OF HINGED COWL ASSEMBLY
TYPICAL RIGHT AND LEFT PANELS

26933

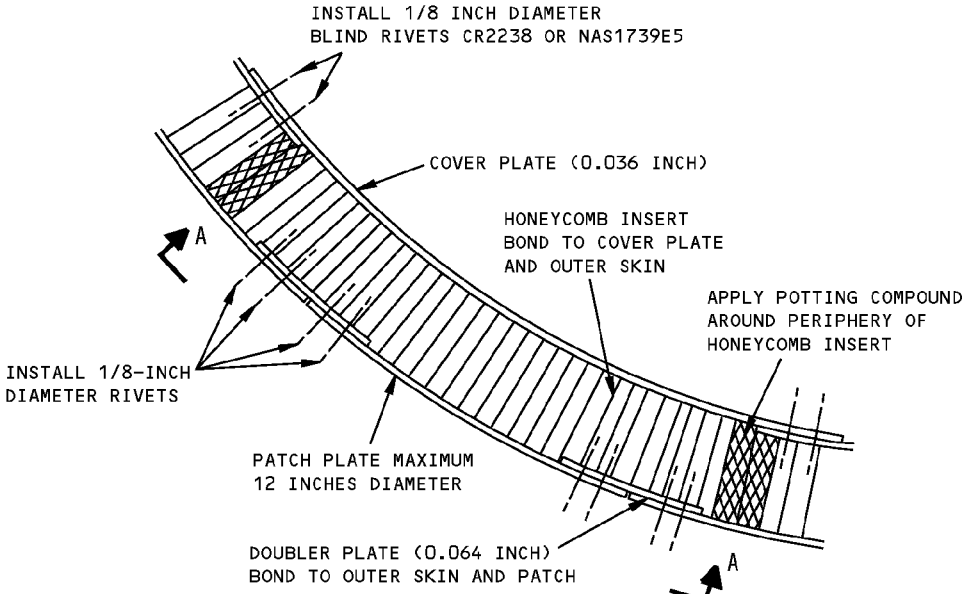
Fan Cowl - Repair by Patching Outer Skins and Core - RB211-524 Engine
Figure 201 (Sheet 3 of 4)

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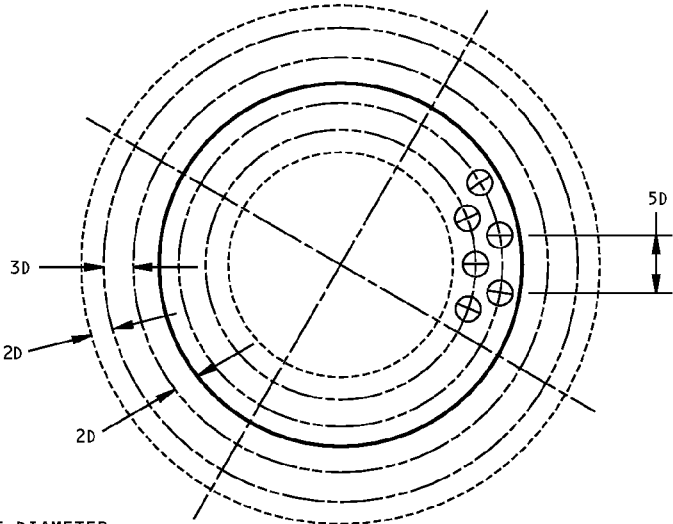
54-24-01

REPAIR 2
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STRUCTURAL REPAIR MANUAL**



DETAIL I



D = NOMINAL RIVET DIAMETER

RIVET POSITIONAL PARTICULARS
TYPICAL FOR BOTH INNER AND OUTER SKINS

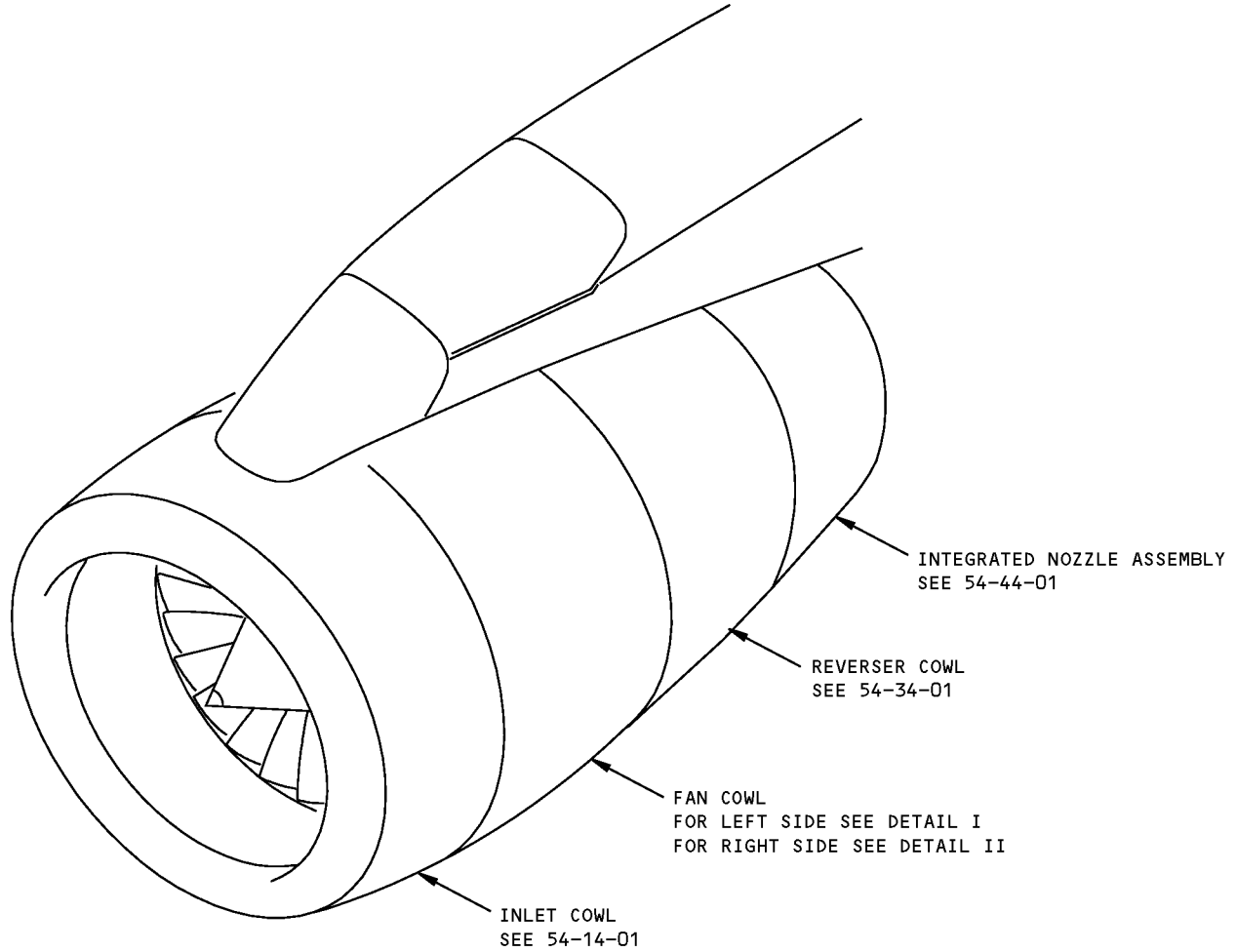
VIEW A-A

83753

**Fan Cowl - Repair by Patching Outer Skins and Core - RB211-524 Engine
Figure 201 (Sheet 4 of 4)**

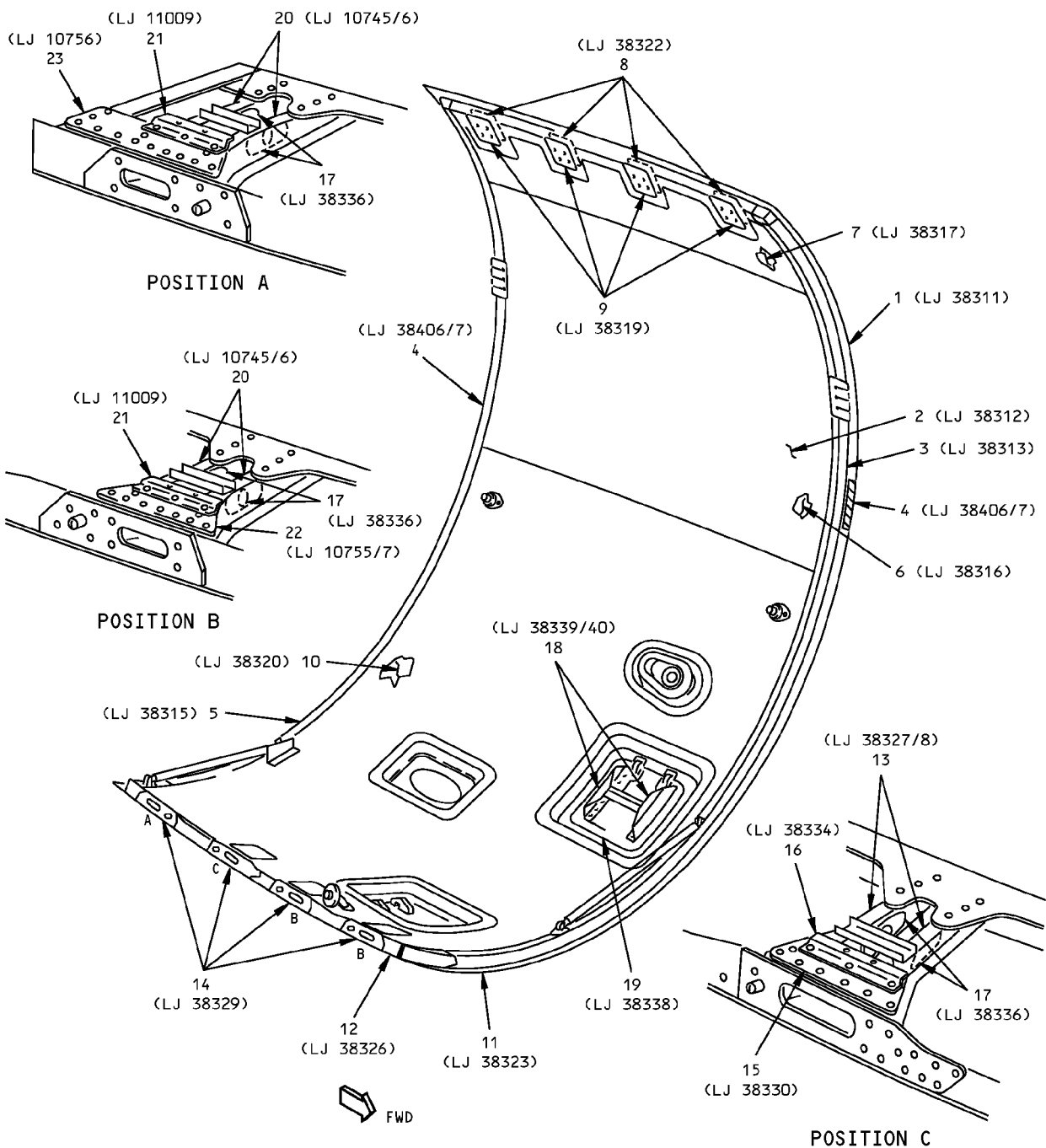
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - FAN COWL STRUCTURE - RB211-524 ENGINE



Fan Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 5)

**767-300
STRUCTURAL REPAIR MANUAL**



LEFT SIDE SHOWN
SEE DETAIL II FOR RIGHT SIDE
DETAIL I

LIST OF
MATERIAL

**Fan Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 5)**

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER SKIN	0.064	2024-T62 (CHEM-MILLED TO 0.048 AND 0.030)	
2	INNER SKIN	0.064	2024-T62 (CHEM-MILLED TO 0.048,0.035 AND 0.022)	
3	EDGE MEMBER FORWARD	0.028	L-73	
4	THIOKOL STRIP			
5	EDGE MEMBER AFT	0.028	L-73	
6	CORE CENTRE		MSRR 8046 3-4/1/4/15 (5052) TD	
7	CORE UPPER	0.002	E 3162 3/16 CELL 5056 US	
8	BEARING PAD HINGES OUTER	0.064	2024-T62	
9	BEARING PAD HINGES INNER	0.064	L-73	
10	CORE LOWER		MSRR 8046 3-4/1/4/15 (5052) TD	
11	HIGH-GRID BLOCK	0.006	1/8 CELL 22 LBS/CU FT	
12	BOTTOM CHANNEL	0.048	L-72	
13	LATCH SUPPORT CHANNEL	0.064	L-73	
14	SPIGOT BEARING PLATE	0.104	L-72	
15	GUSSET PLATE	0.048	L-72	
16	PLATE SUPPORT	0.036	L-72	
17	LATCH BEARING PLATE	0.128	L-73	
18	DOOR STIFFENER	0.048	L-73	
19	BLOWOUT PANEL	0.104	L-73	
20	LATCH SUPPORT CHANNEL	0.064	L-73	
21	PLATE SUPPORT	0.036	L-72	
22	GUSSET PLATE	0.048	L-72	
23	GUSSET PLATE	0.048	L-72	

LIST OF MATERIALS FOR DETAIL I

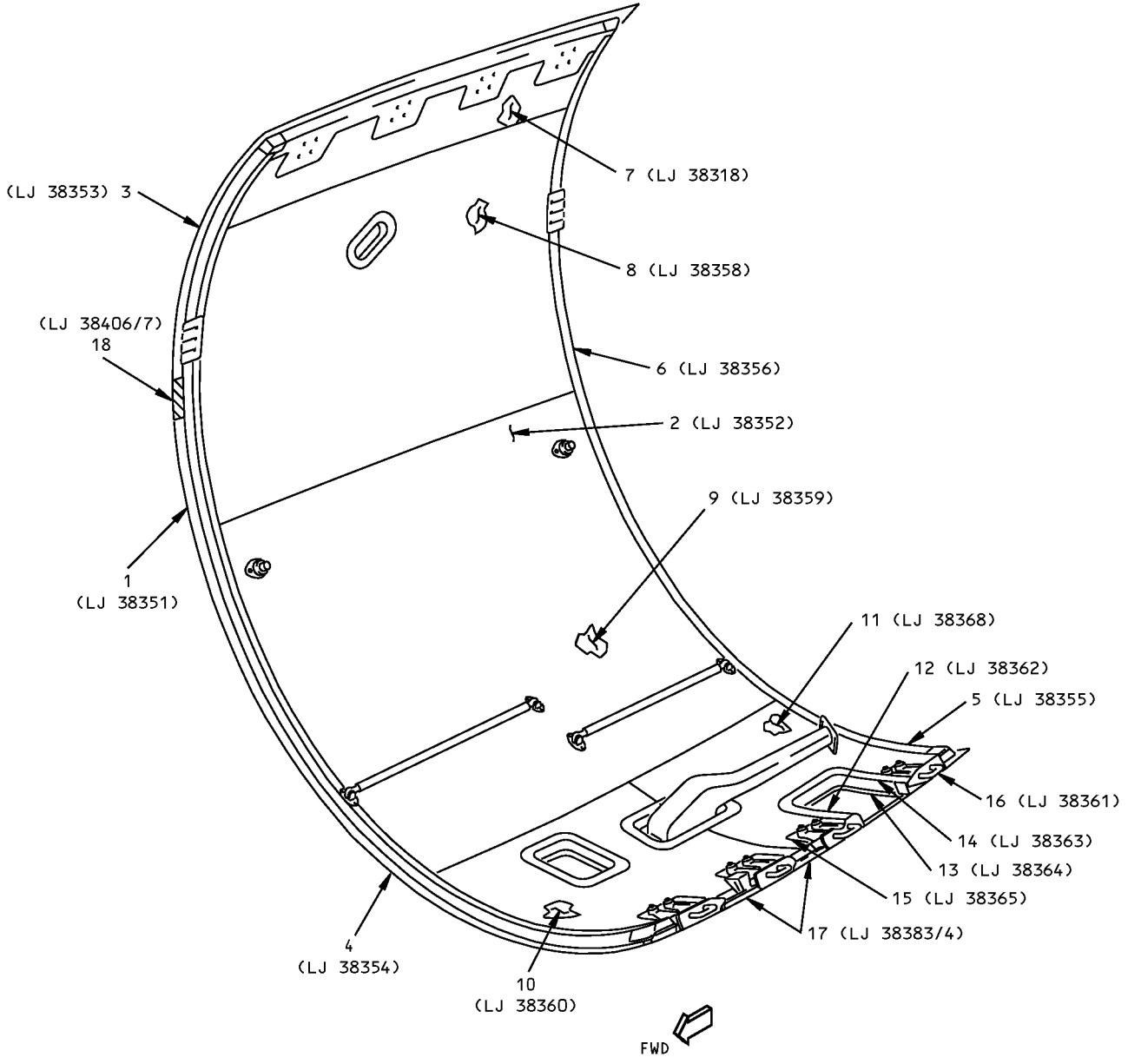
Fan Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 5)

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IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**



RIGHT SIDE SHOWN
SEE DETAIL I FOR LEFT SIDE
DETAIL II

LIST OF
MTRL

**Fan Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 5)**

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER SKIN	0.064	2024-T62 (CHEM-MILLED TO 0.048 AND 0.030)	
2	INNER SKIN	0.048	2024-T62 (CHEM-MILLED TO 0.035 AND 0.022)	
3	EDGE MEMBER FORWARD	0.028	L-73	
4	EDGE MEMBER LOWER FORWARD	0.048	L-73	
5	EDGE MEMBER LOWER AFT	0.028	L-73	
6	EDGE MEMBER AFT	0.028	L-73	
7	CORE UPPER	0.002	3/16 CELL (5056) US E3162	
8	CORE CENTRE UPPER		3-4/1/4/15 (5052) TD	
9	CORE CENTRE LOWER		3-4/1/4/15 (5052) TD	
10	CORE LOWER FORWARD	0.002	3/16 CELL (5056) TD MIL SPEC 7438	
11	CORE LOWER AFT	0.006	1/8 CELL (5052) TD 22LBS/CU FT	
12	DISHING IDG ACCESS	0.028	L-73	
13	DOUBLER - IDG ACCESS	0.056	L-73	
14	IDG DOUBLER	0.064	L-73	
15	HI-GRID BLOCK NO. 3 LATCH	0.006	1/8 CELL H1 GRID (5052) 22LBS/CU FT	
16	BEARING PAD 'U' BOLT BRACKET	0.064	2024-T62	
17	SEAL RETAINER	0.028	L-72	
18	THIOKOL STRIP			

LIST OF MATERIALS FOR DETAIL II

Fan Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 5)

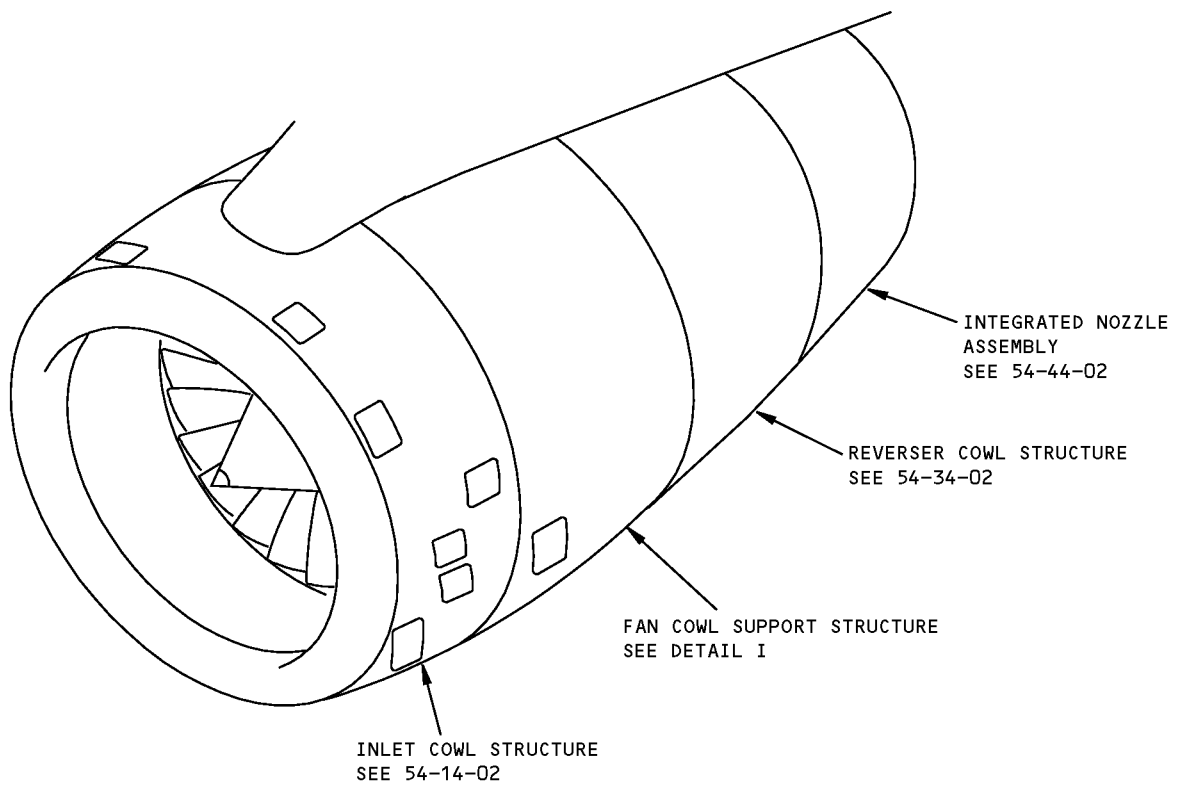
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

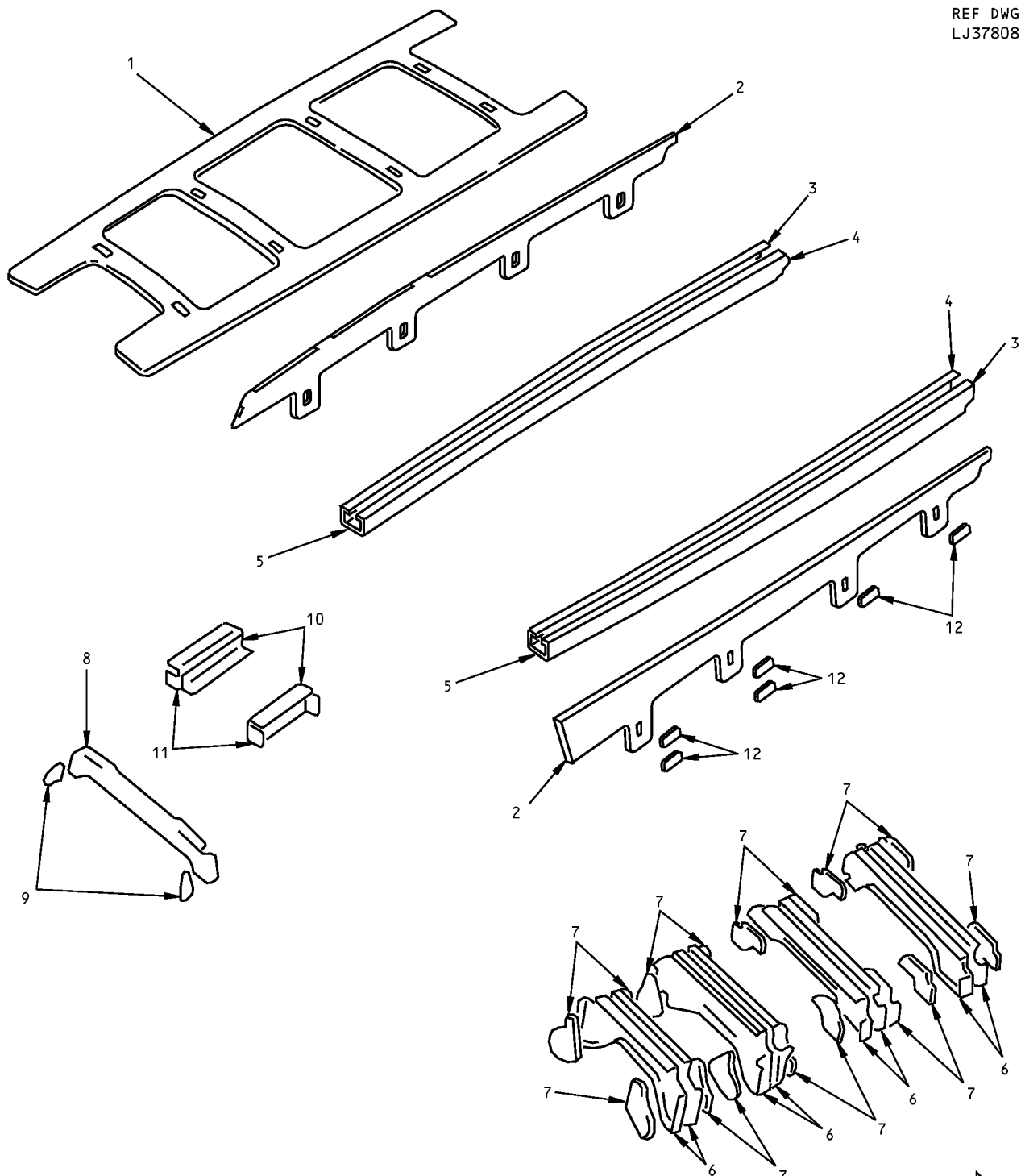
IDENTIFICATION 2 - FAN COWL SUPPORT STRUCTURE - RB211-524 ENGINE



Fan Cowl Support Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 3)

767-300
STRUCTURAL REPAIR MANUAL

REF DWG
LJ37808



FAN COWL SUPPORT STRUCTURE
DETAIL I

LIST OF
MATERIAL

Fan Cowl Support Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 3)

IDENTIFICATION 2
Page 2
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767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.048	TA6	
2	SKIN	0.028	TA6	
3	CHANNEL	0.048	TA6	
4	CHANNEL	0.048	TA6	
5	SKIN	0.048	TA6	
6	CHANNEL	0.048	TA6	
7	PLATE	0.022	TA6	
8	CHANNEL	0.048	TA6	
9	ANGLE		S96	
10	ANGLE	0.036	TA6	
11	ANGLE		S96	
12	PLATE	0.048	TA6	

LIST OF MATERIALS FOR DETAIL I

Fan Cowl Support Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 3)

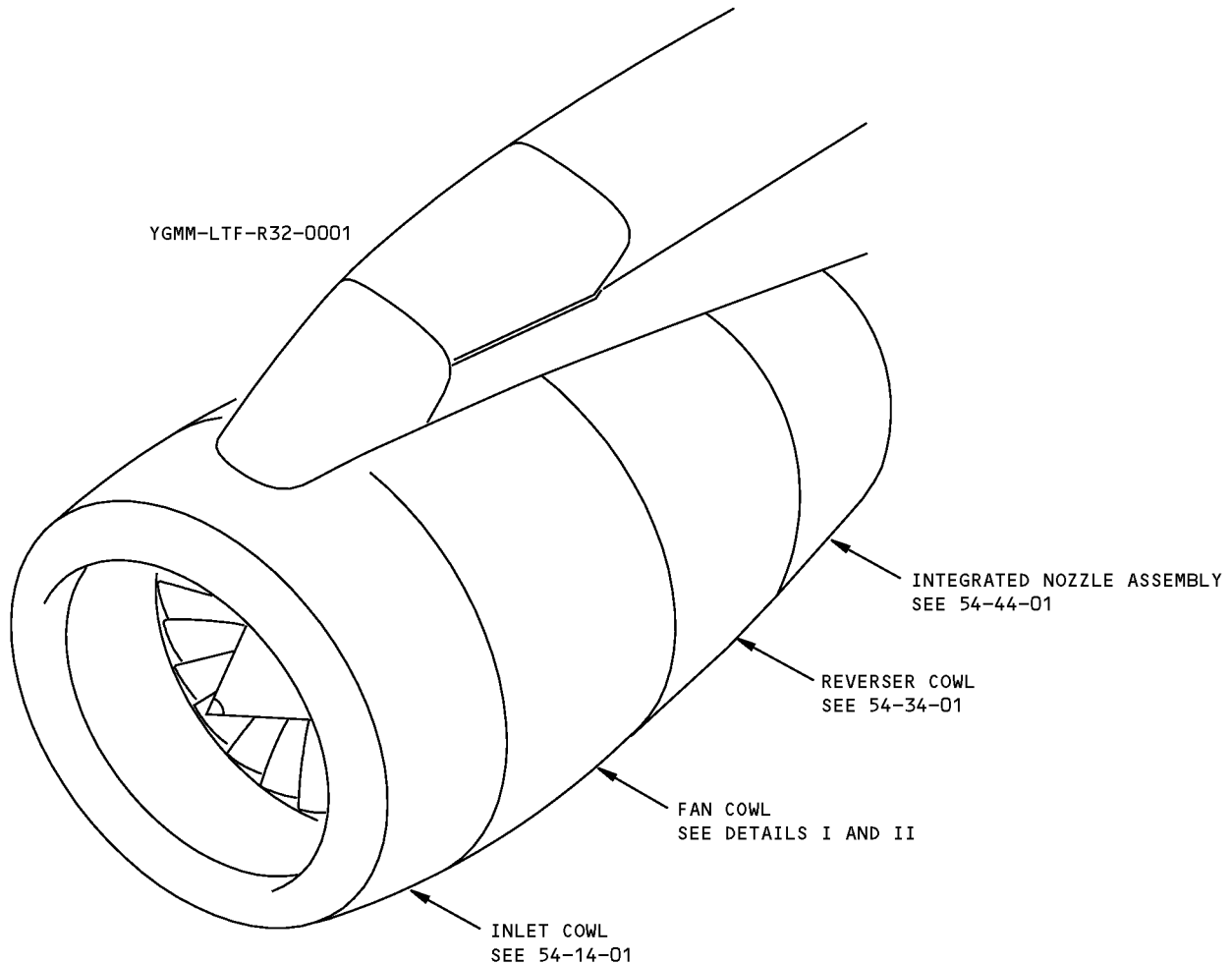
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IDENTIFICATION 2
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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - FAN COWL STRUCTURE - RB211-524 ENGINE

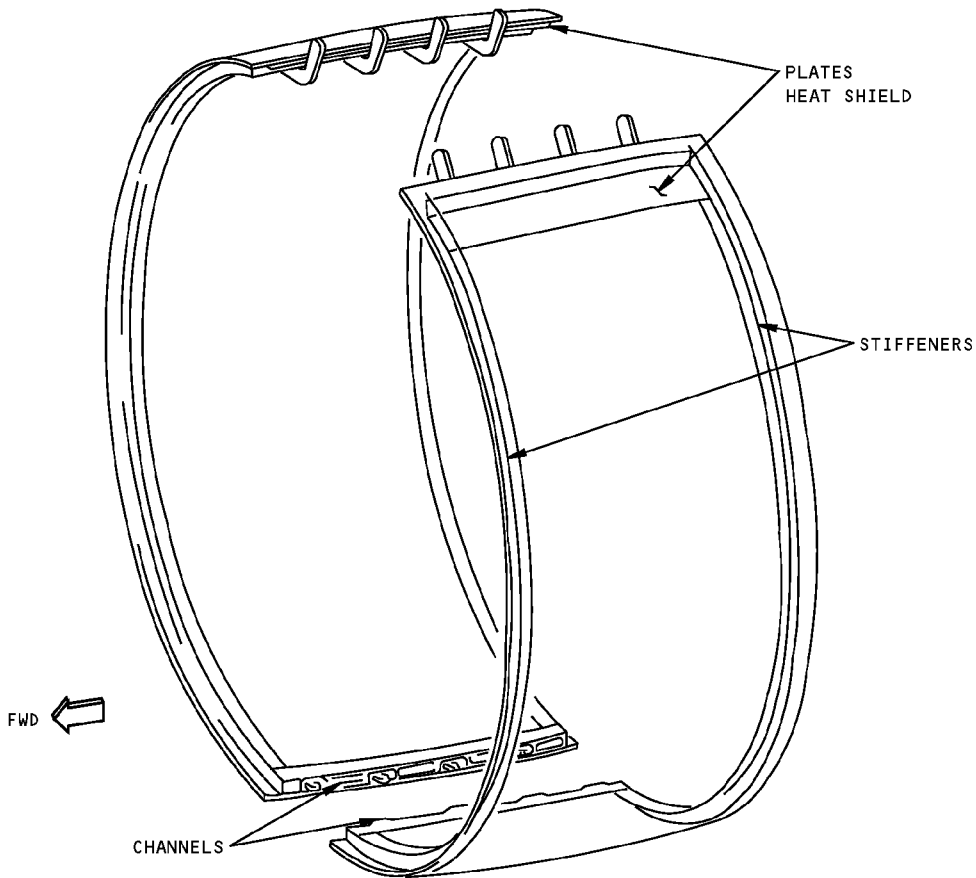


NOTES

- REFINISH REWORKED AREAS PER 51-22-01
- A** DAMAGE IS ALLOWED UP TO 4% OF MATERIAL THICKNESS AND 2.00 LONG. REMOVE DAMAGE AS SHOWN IN DETAIL III
- B** SMOOTH DENTS ARE ALLOWED, PROVIDING "V" (DETAIL IV) DOES NOT EXCEED 0.10, AREA OF DAMAGE "W" DOES NOT EXCEED 2.00 DIAMETER AND THERE IS A MINIMUM OF 4.00 SEPARATING EACH DAMAGED AREA
- C** DISTORTION IS ALLOWED PROVIDED "X" (DETAILS V AND VI) DOES NOT EXCEED TWO TIMES "Y" AND DAMAGE "Z" DOES NOT EXCEED 1.50. THINNING IS ALLOWED (DETAIL VI) PROVIDED "Q" IS NOT LESS THAN ONE HALF (1/2) "Y" AND AREA OF THINNING "R" DOES NOT EXCEED ONE EIGHTH (1/8) OF "S" WIDE BY 1.50

Allowable Damage - Fan Cowl Structure - RB211-524 Engine
Figure 101 (Sheet 1 of 5)

767-300
STRUCTURAL REPAIR MANUAL

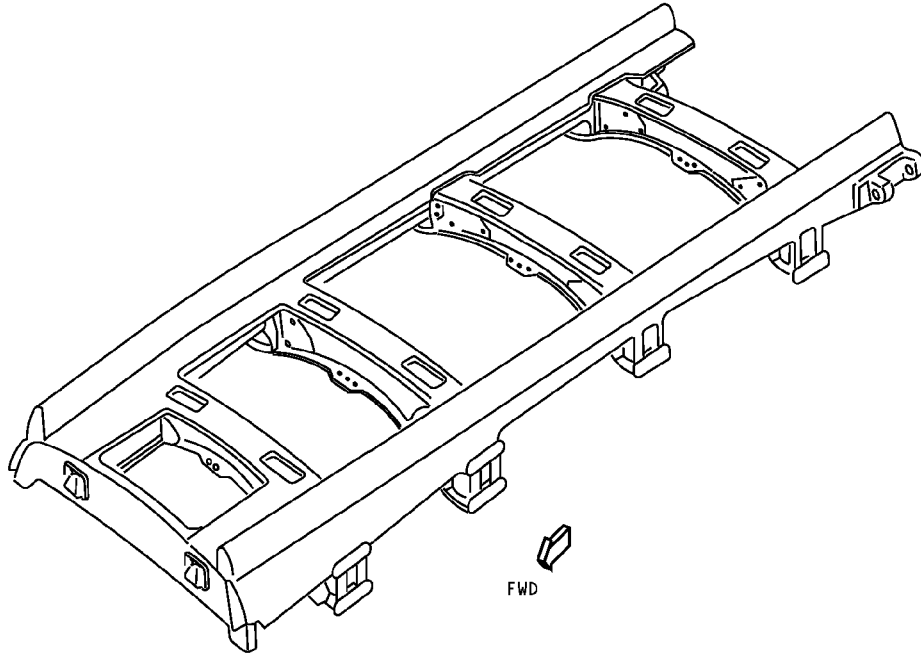


DETAIL I

		CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES
LH AND RH HINGED COWLS	PLATES HEAT SHIELD	CRACKS ARE NOT ACCEPTABLE	A AND DETAIL III	B C AND DETAILS V AND VI	HOLES ARE NOT ACCEPTABLE
	STIFFENERS				
	CHANNELS				

Allowable Damage - Fan Cowl Structure - RB211-524 Engine
Figure 101 (Sheet 2 of 5)

767-300
STRUCTURAL REPAIR MANUAL

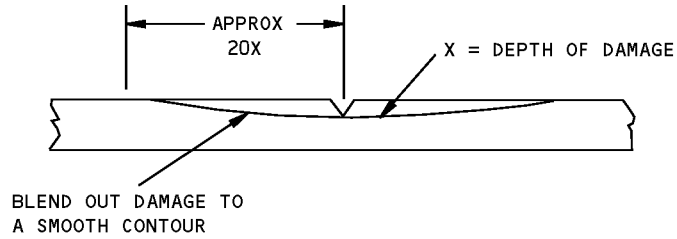
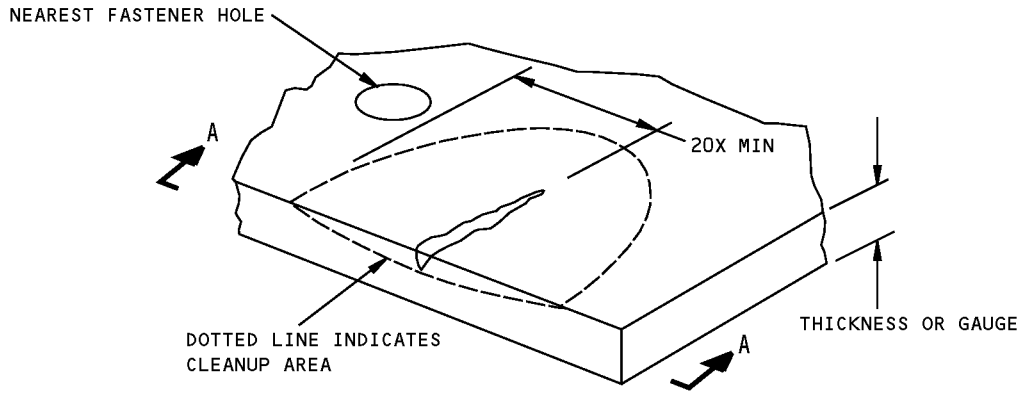


DETAIL II

		CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES
HINGED COWL SUPPORT STRUCTURE	STRUCTURE GENERAL	CRACKS ARE NOT ACCEPTABLE	A AND DETAIL III	B C AND DETAIL IV	HOLES ARE NOT ACCEPTABLE

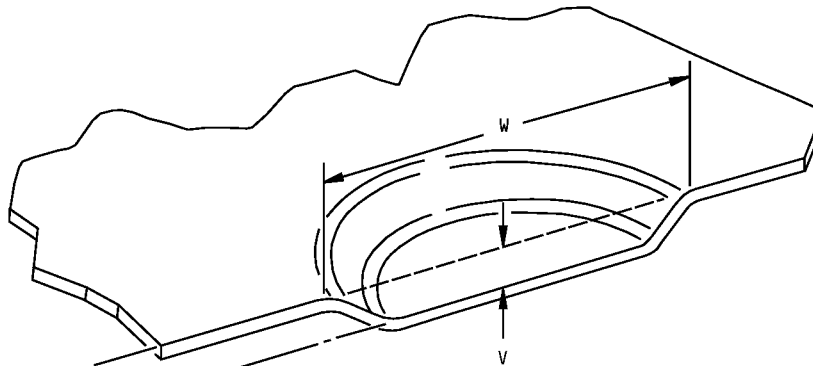
Allowable Damage - Fan Cowl Structure - RB211-524 Engine
Figure 101 (Sheet 3 of 5)

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A

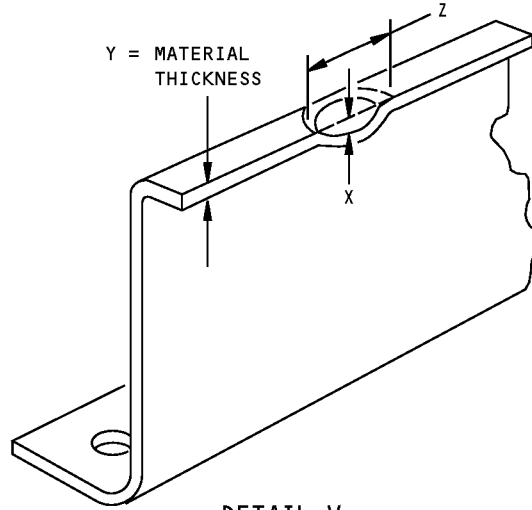
DETAIL III



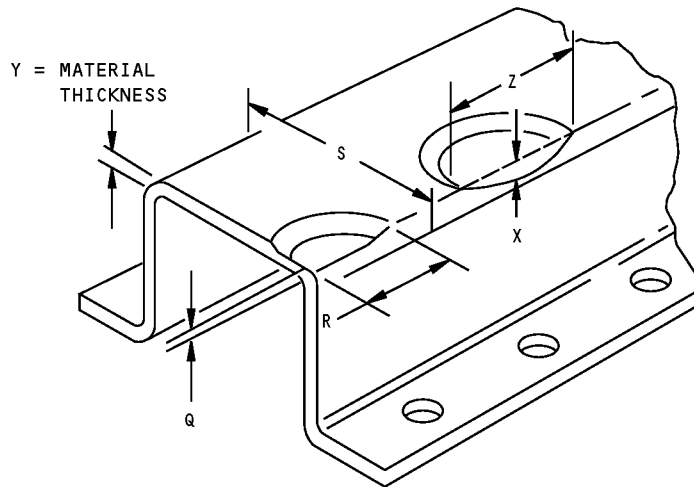
DETAIL IV

**Allowable Damage - Fan Cowling Structure - RB211-524 Engine
Figure 101 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL



DETAIL V



DETAIL VI

Allowable Damage - Fan Cowling Structure - RB211-524 Engine
Figure 101 (Sheet 5 of 5)

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STRUCTURAL REPAIR MANUAL**

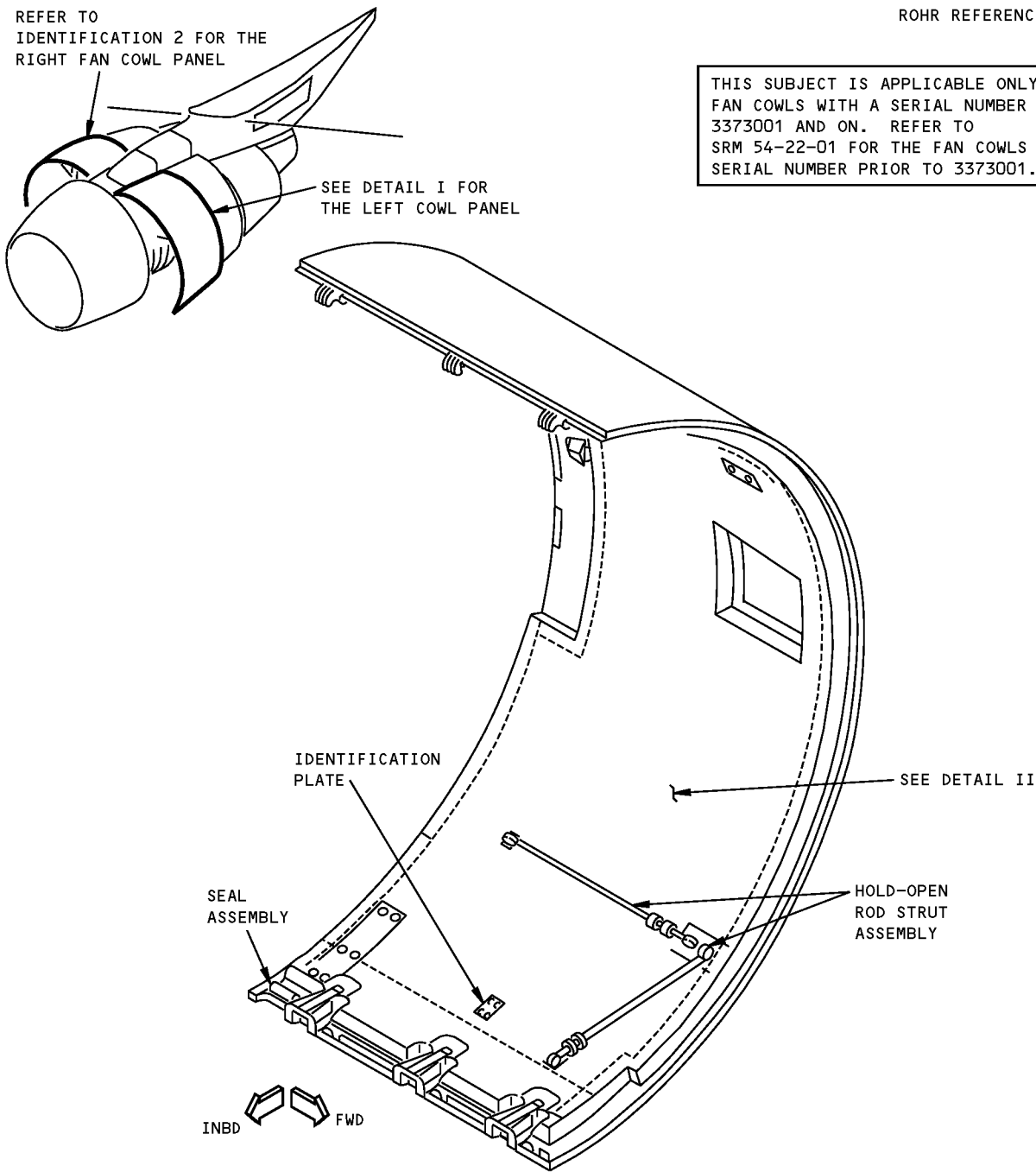
IDENTIFICATION 1 - FAN COWL SKIN - CF6-80C2 ENGINE

ROHR REFERENCE NUMBER
224-2280

REFER TO
IDENTIFICATION 2 FOR THE
RIGHT FAN COWL PANEL

SEE DETAIL I FOR
THE LEFT COWL PANEL

THIS SUBJECT IS APPLICABLE ONLY TO
FAN COWLS WITH A SERIAL NUMBER
3373001 AND ON. REFER TO
SRM 54-22-01 FOR THE FAN COWLS WITH A
SERIAL NUMBER PRIOR TO 3373001.



LEFT COWL PANEL
DETAIL I

S76S-023-00

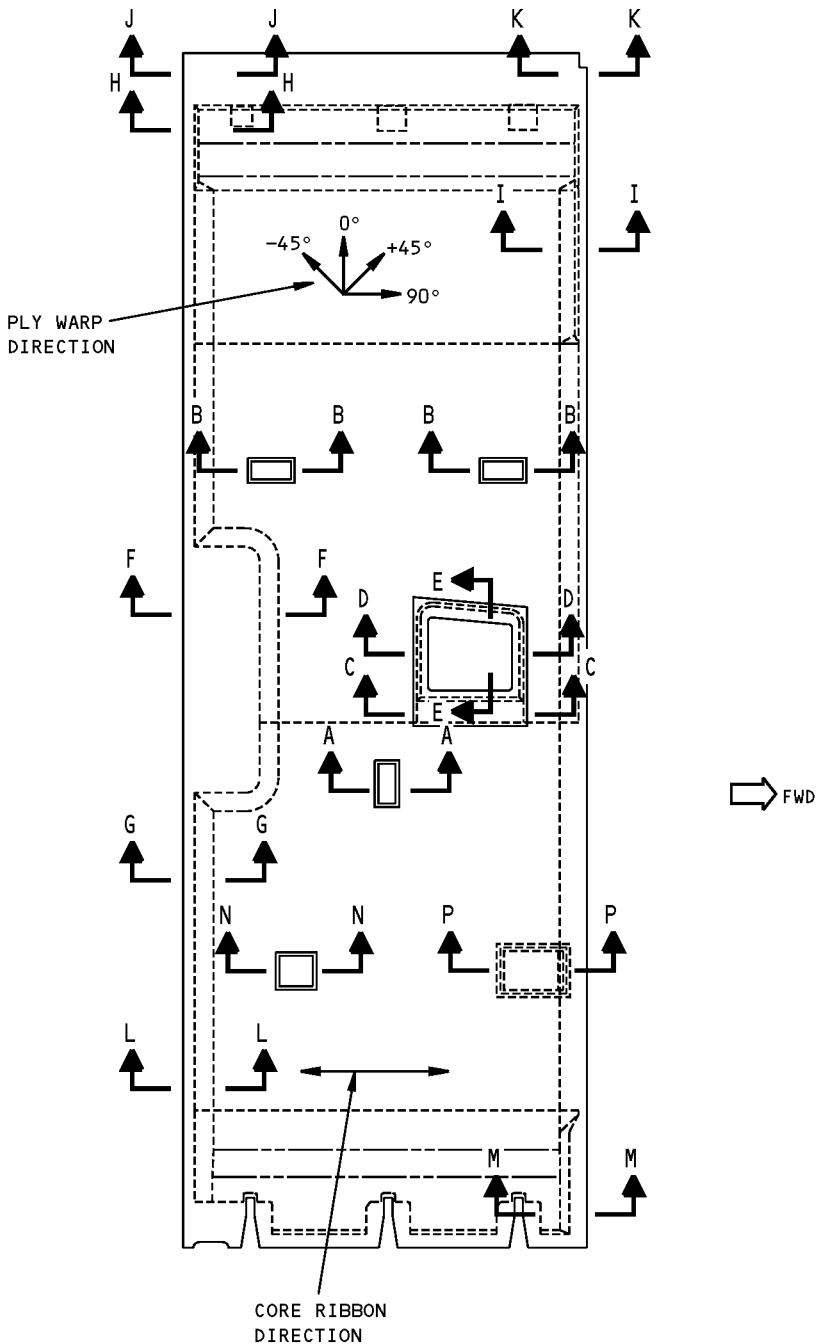
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 11)**

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STRUCTURAL REPAIR MANUAL**



(LOOKING OUTBOARD - COMPOSITE PANEL)
DETAIL II

S76S-025-00

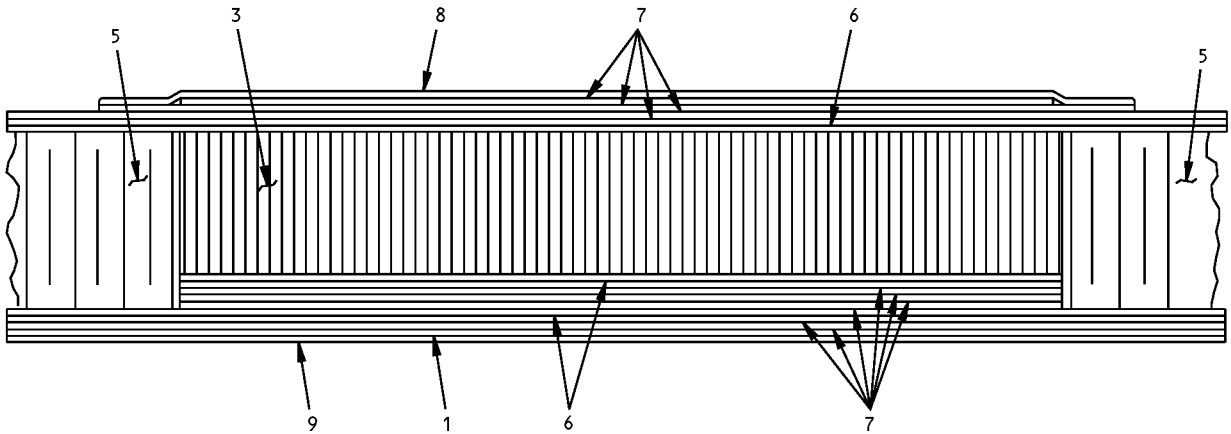
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 11)**

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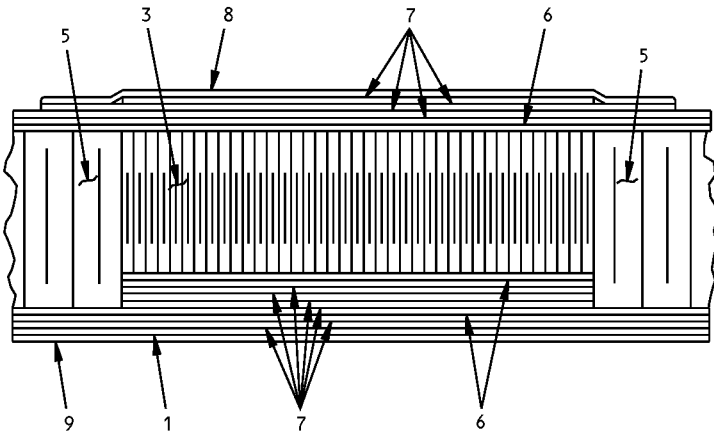
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION A-A



SECTION B-B

S76S-026-00

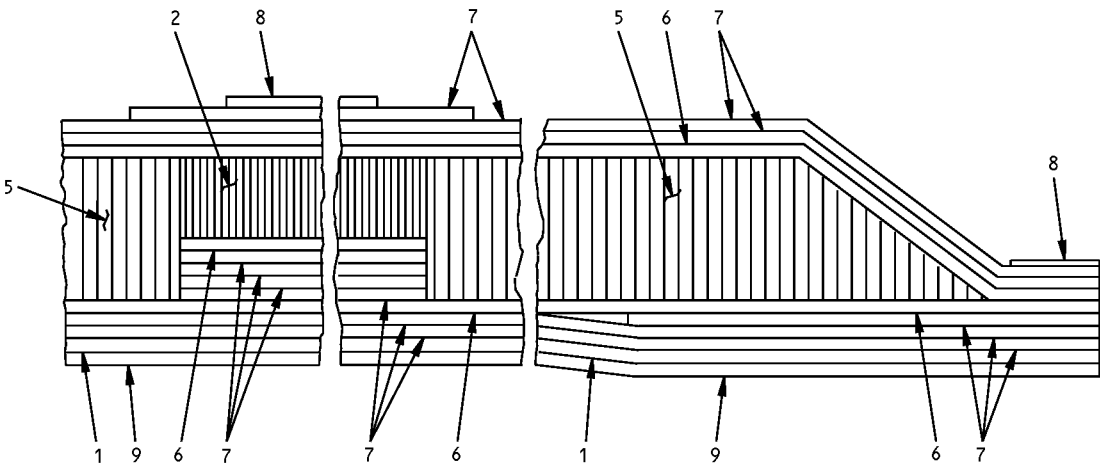
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 11)**

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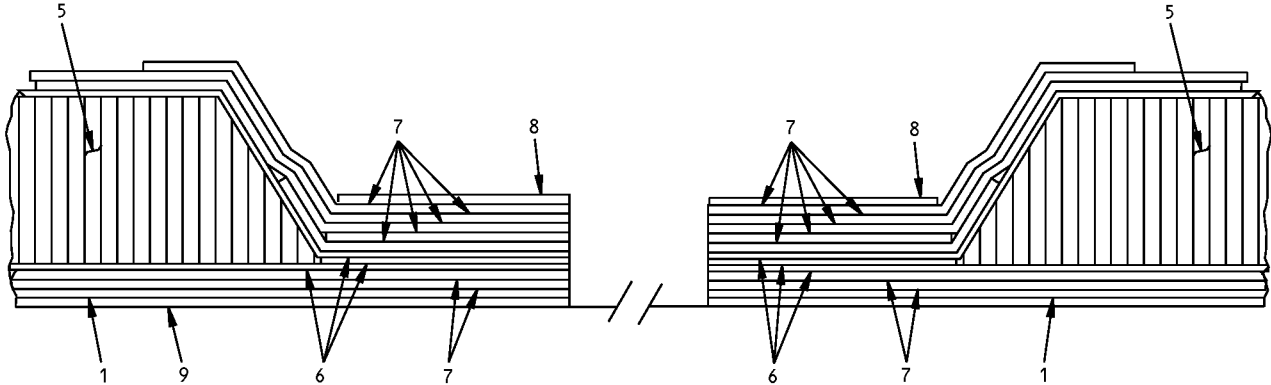
54-25-01

D634T210

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STRUCTURAL REPAIR MANUAL**



SECTION C-C



SECTION D-D

S76S-027-00

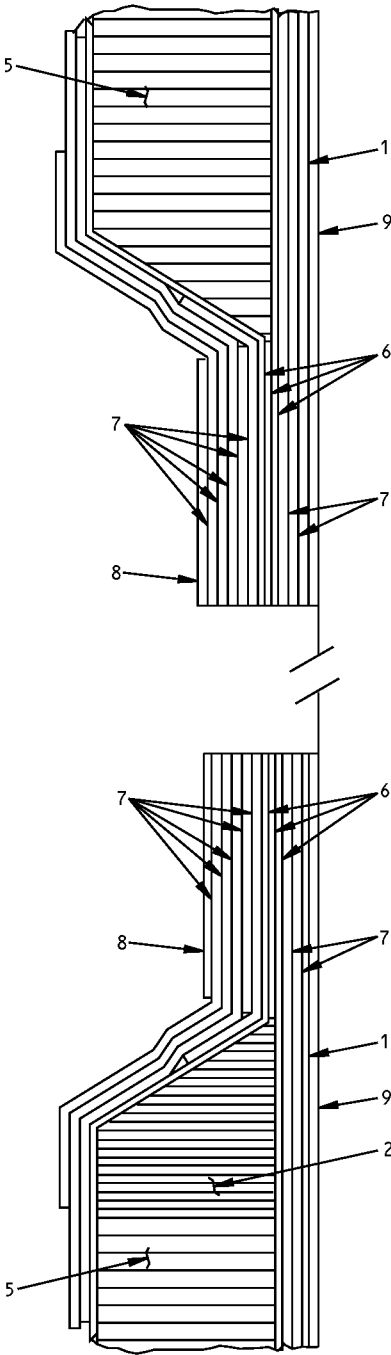
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 11)**

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STRUCTURAL REPAIR MANUAL



SECTION E-E

S76S-028-00

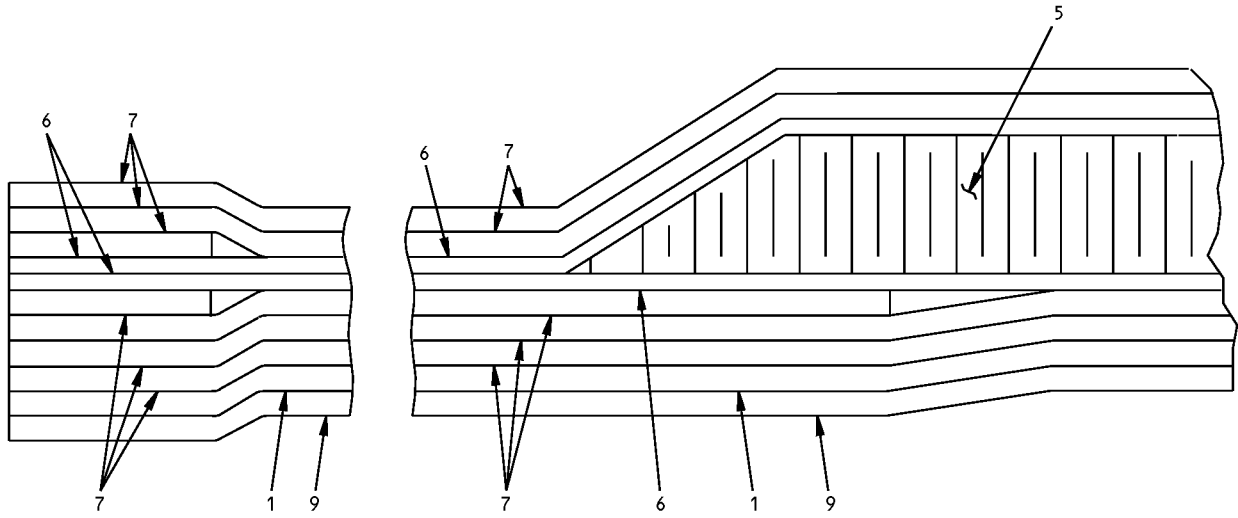
Left Fan Cowling Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 11)

D634T210

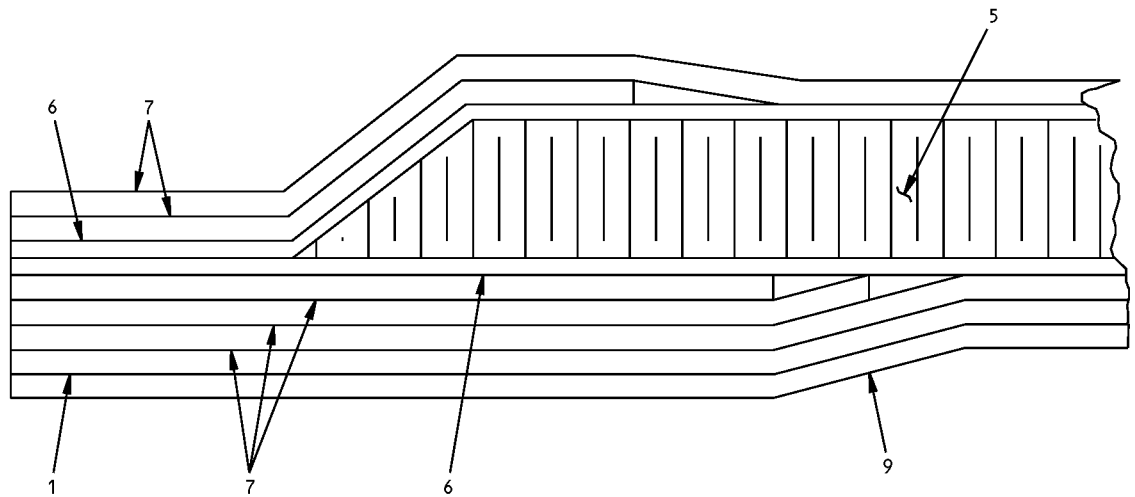
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION F-F



SECTION G-G

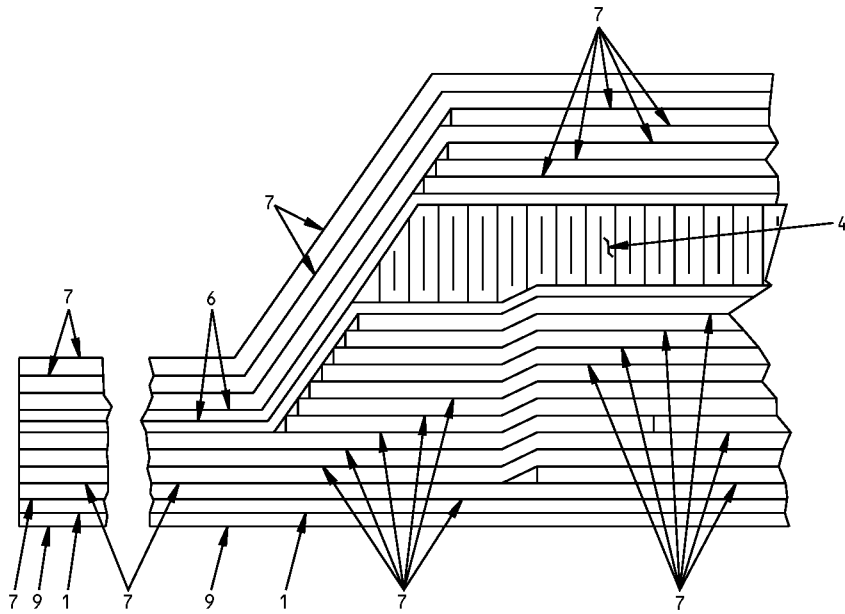
S76S-029-00

**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 6 of 11)**

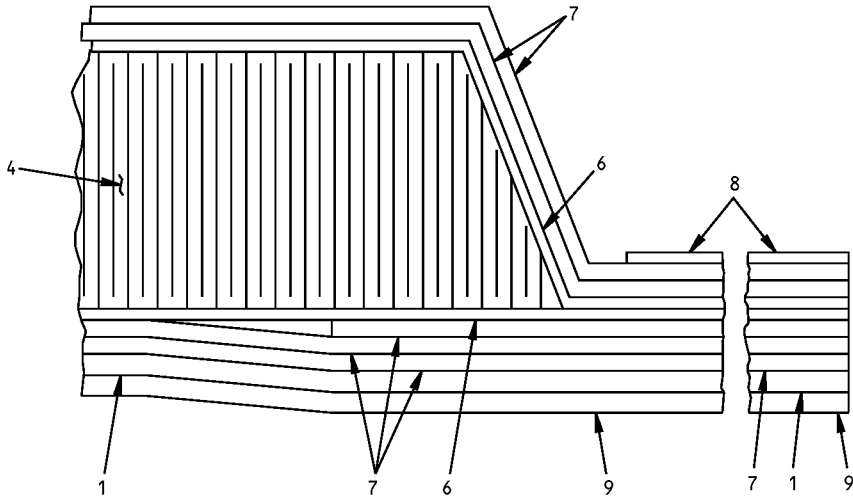
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STRUCTURAL REPAIR MANUAL**



SECTION H-H



SECTION I-I

S76S-030-00

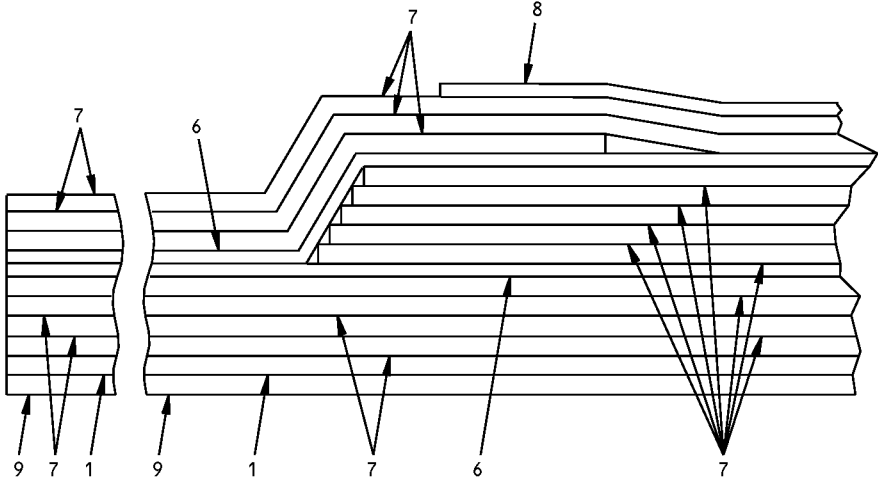
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 7 of 11)**

IDENTIFICATION 1
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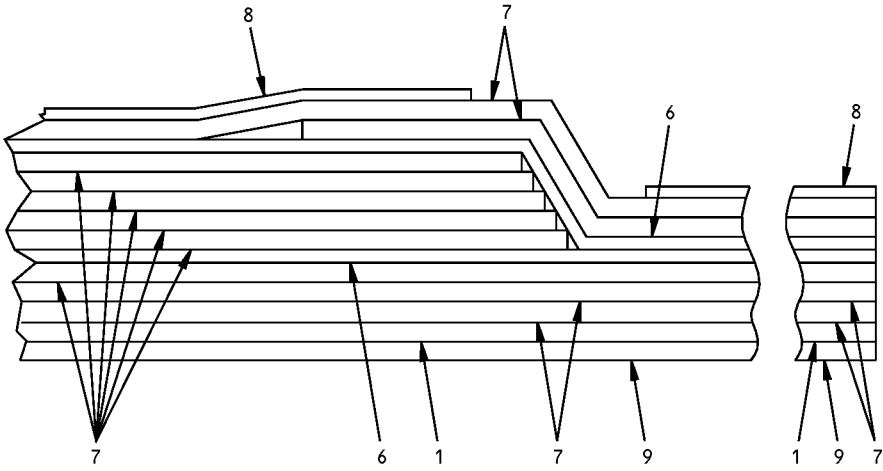
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION J-J



SECTION K-K

s76s-031-00

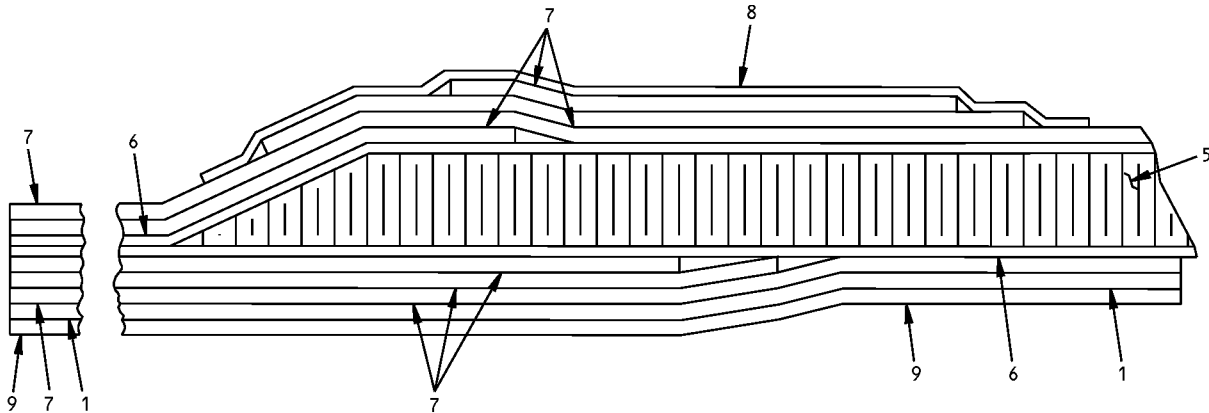
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 8 of 11)**

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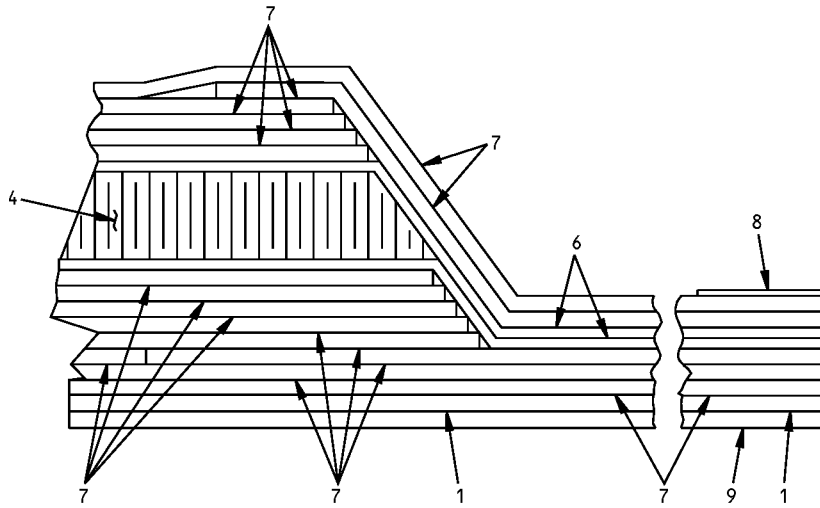
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION L-L



SECTION M-M

S76S-032-00

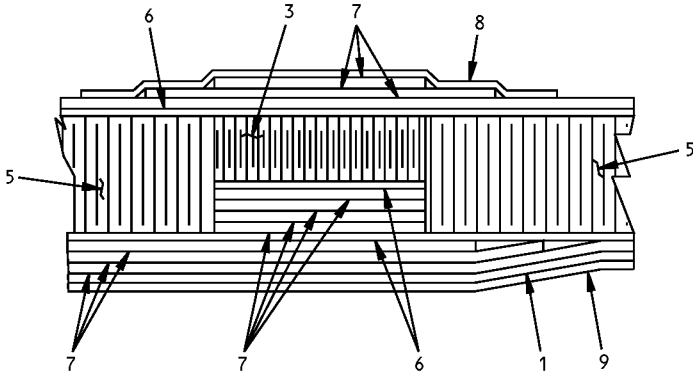
**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 9 of 11)**

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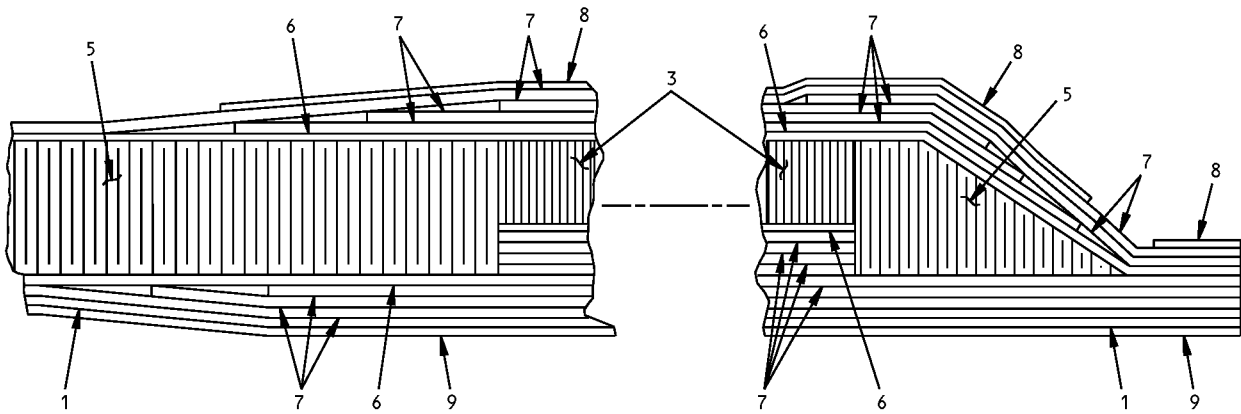
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION N-N



SECTION P-P

S76S-033-00

**Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 10 of 11)**

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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	GLASS FABRIC	0.010	BMS 8-154 TYPE III, CLASS 1, GRADE A, F161-138 S-GLASS PREPREG.	
2	CORE	0.890	NON-METALIC HONEYCOMB 1/8" HEX, 9.0 LBS/CU.FT. HRH-10-1/8-9, 6D159	
3	CORE	0.895	NON-METALIC HONEYCOMB 1/8" HEX, 9.0 LBS/CU.FT. HRH-10-1/8-9, 6D159	
4	CORE	0.950	NON-METALIC HONEYCOMB 1/8" HEX, 9.0 LBS/CU.FT. HRH-10-1/8-9, 6D159	
5	CORE	0.950	NON-METALIC HONEYCOMB 1/8" HEX, 3.0 LBS/CU.FT. HRH-10-1/8-3, 6D159	
6	CARBON FABRIC	Approx 0.007	RMS 083, STYLE 1, TYPE 1, CLASS 1, GRADE 1, HMF E767G/PWC AS4G 3K, OLHZ4, 0 DEGREE PLY ORIENTATION	
7	CARBON FABRIC	Approx 0.0140	RMS 083, STYLE 2, TYPE 1, CLASS 1, GRADE 1, HMF E767G/8HSC AS4G 3K, OLHZ4, 0 DEGREE PLY ORIENTATION	
8	GLASS FABRIC	0.0045	RMS 082 GROUP 1, TYPE 1, CLASS 1, CYCOM 985-1/120, 04622, PLY ORIENTATION OPTIONAL	
9	ALUMINUM SCREEN		ONE LAYER BMS 5-154, TYPE II, CLASS 1, GRADE 05 ADHESIVE FILM ONE LAYER ALUMINUM SCREEN PER BMS 8- 336 TYPE 1, CLASS 1 GRADE 16 FORM A, 96171	

LIST OF MATERIALS

Left Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 11 of 11)

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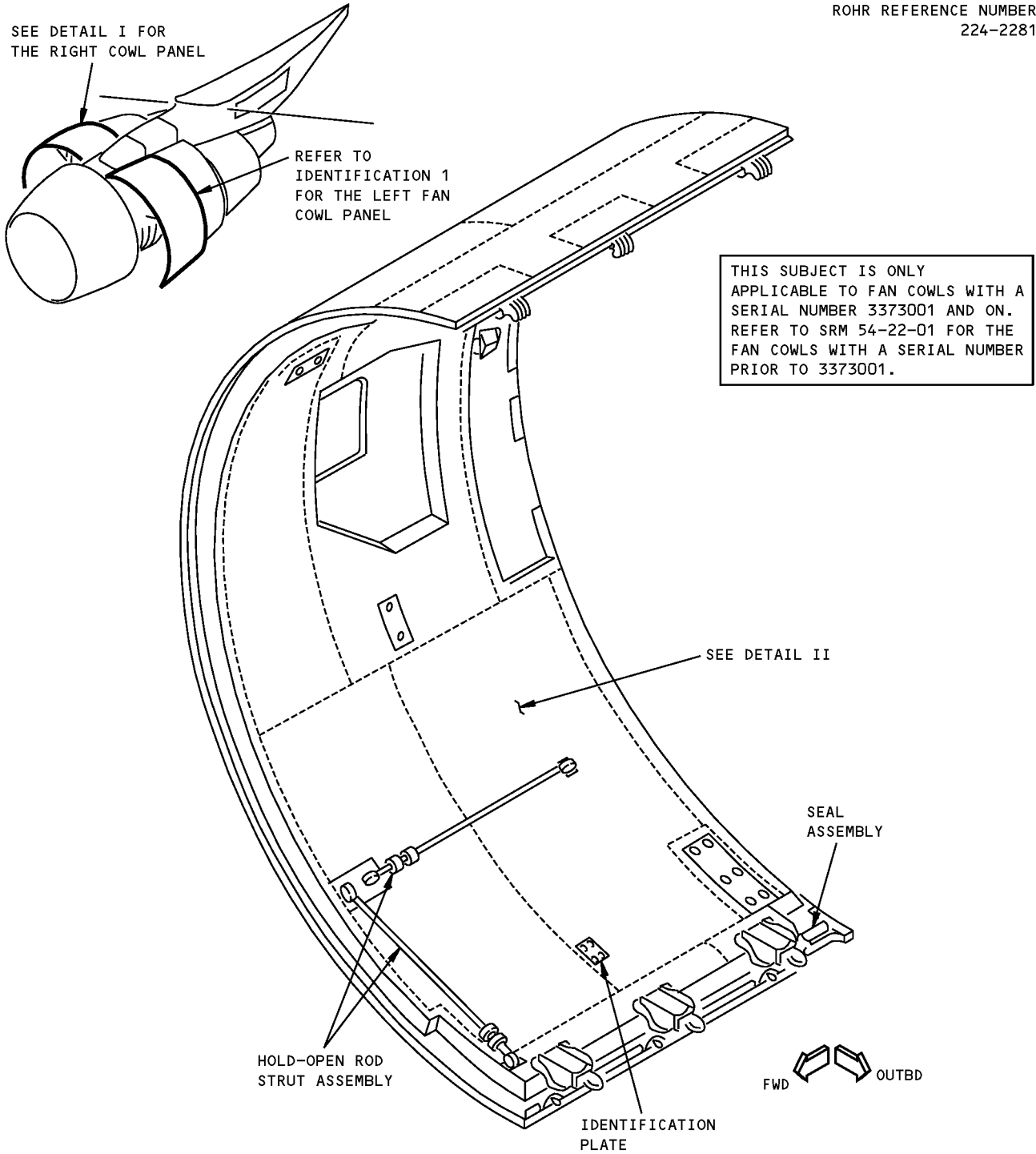
54-25-01

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - RIGHT FAN COWL SKIN - CF6-80C2 ENGINE

ROHR REFERENCE NUMBER
224-2281



**RIGHT COWL PANEL
DETAIL I**

S76S-013-00

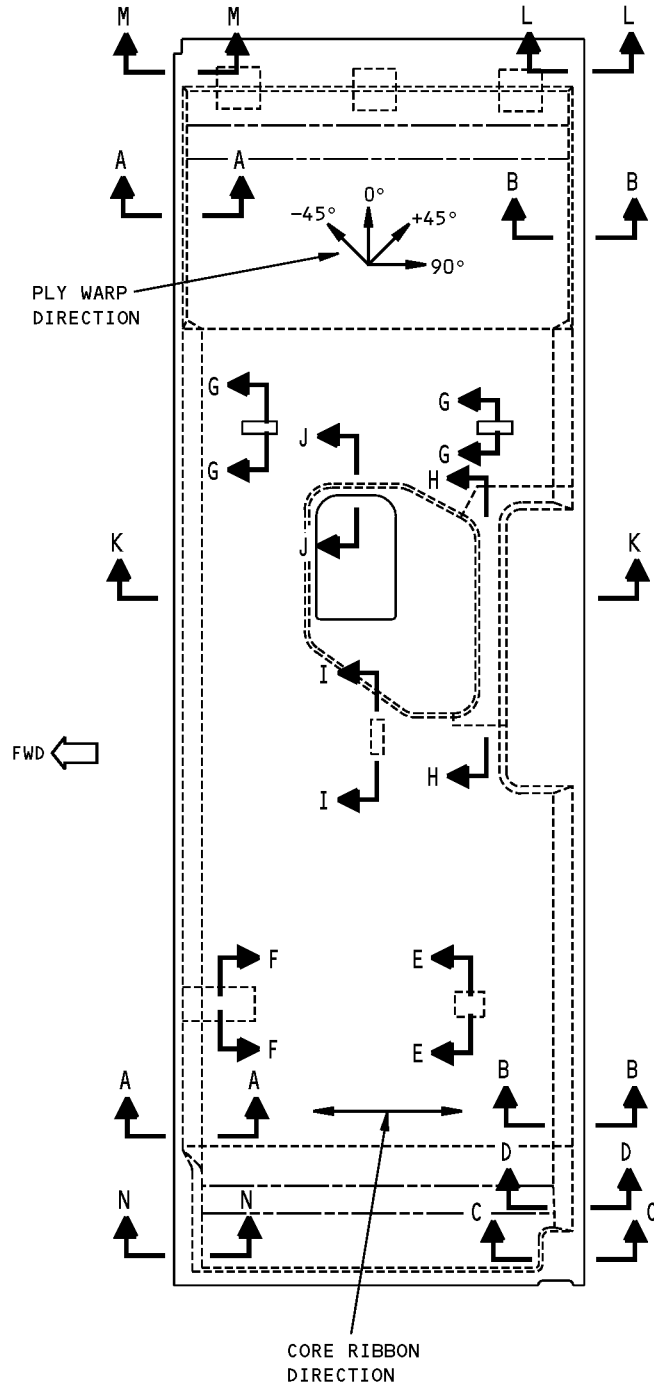
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 11)**

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STRUCTURAL REPAIR MANUAL**



(LOOKING OUTBOARD - COMPOSITE PANEL)
DETAIL II

S76S-014-00

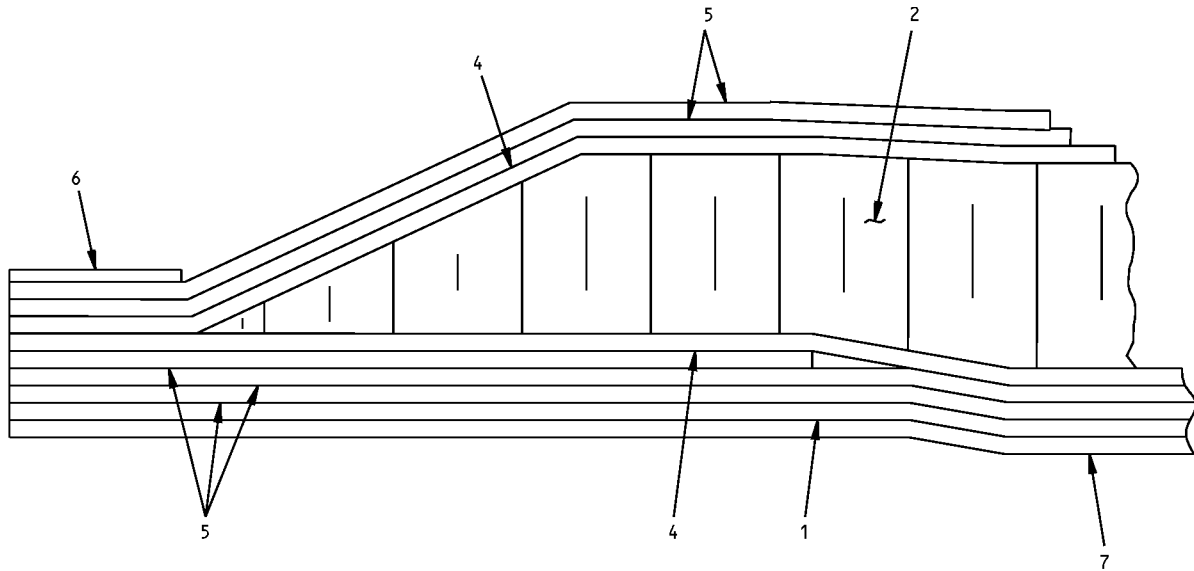
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 11)**

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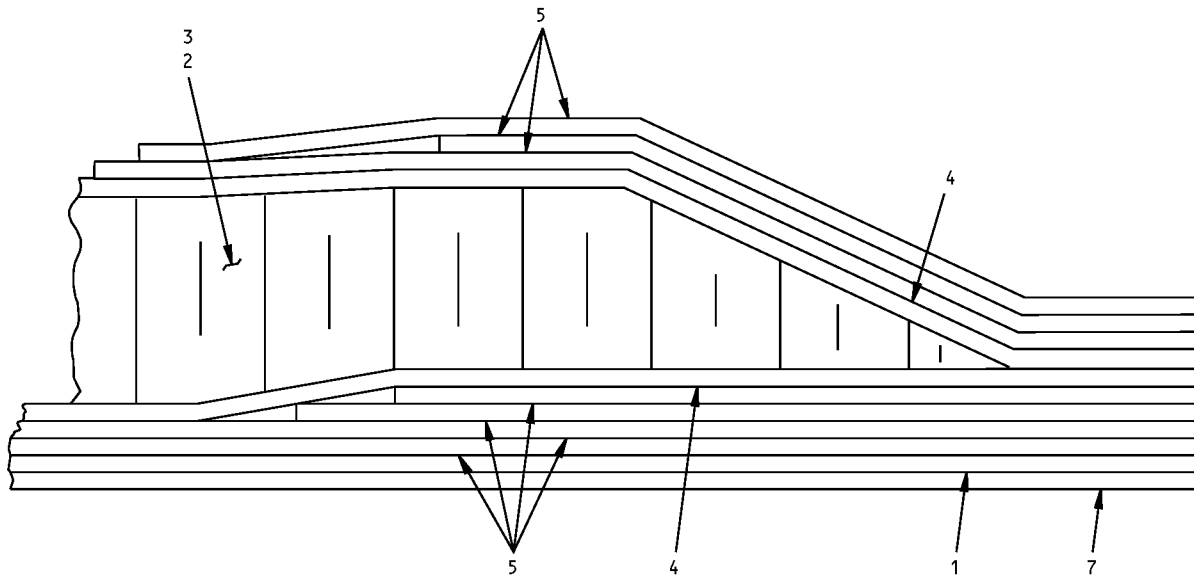
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION A-A



SECTION B-B

S76S-015-00

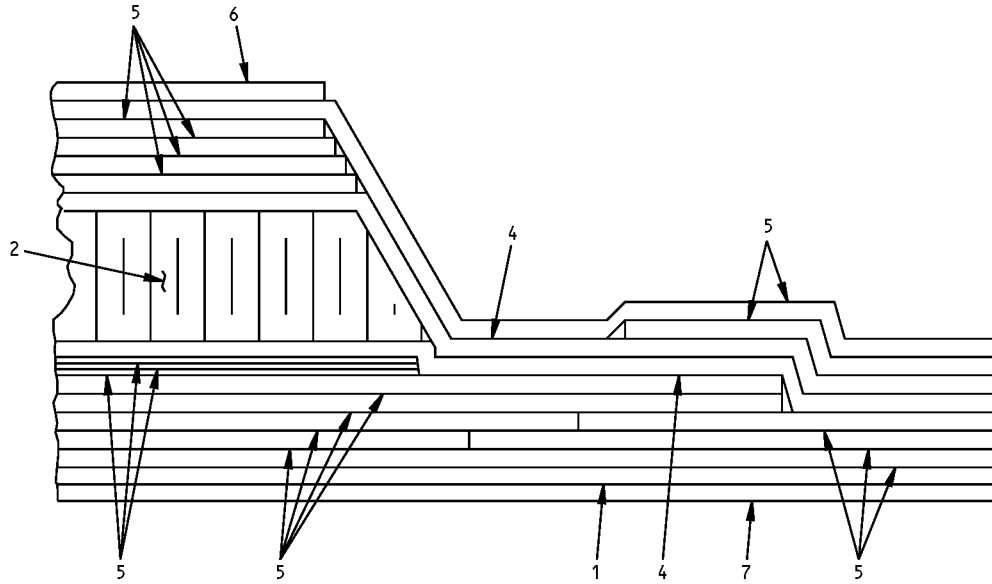
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 11)**

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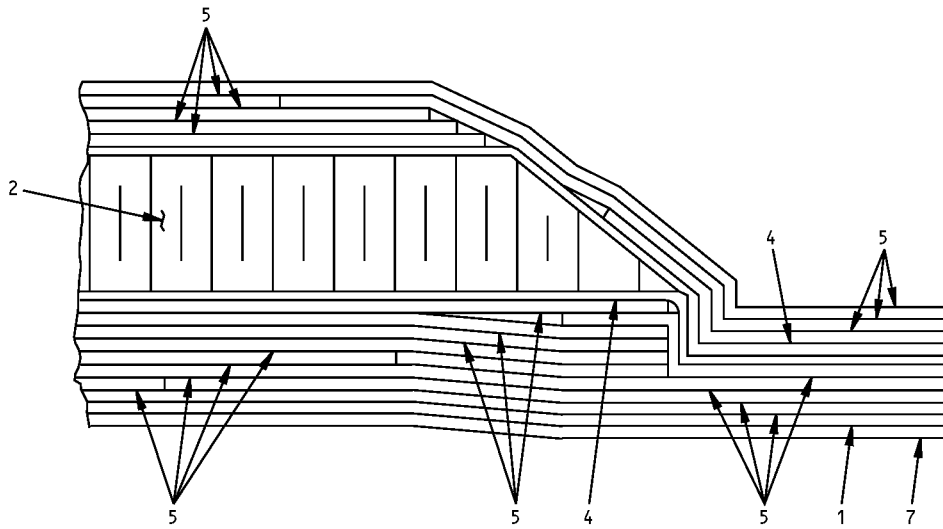
54-25-01

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STRUCTURAL REPAIR MANUAL**



SECTION C-C



SECTION D-D

S76S-016-00

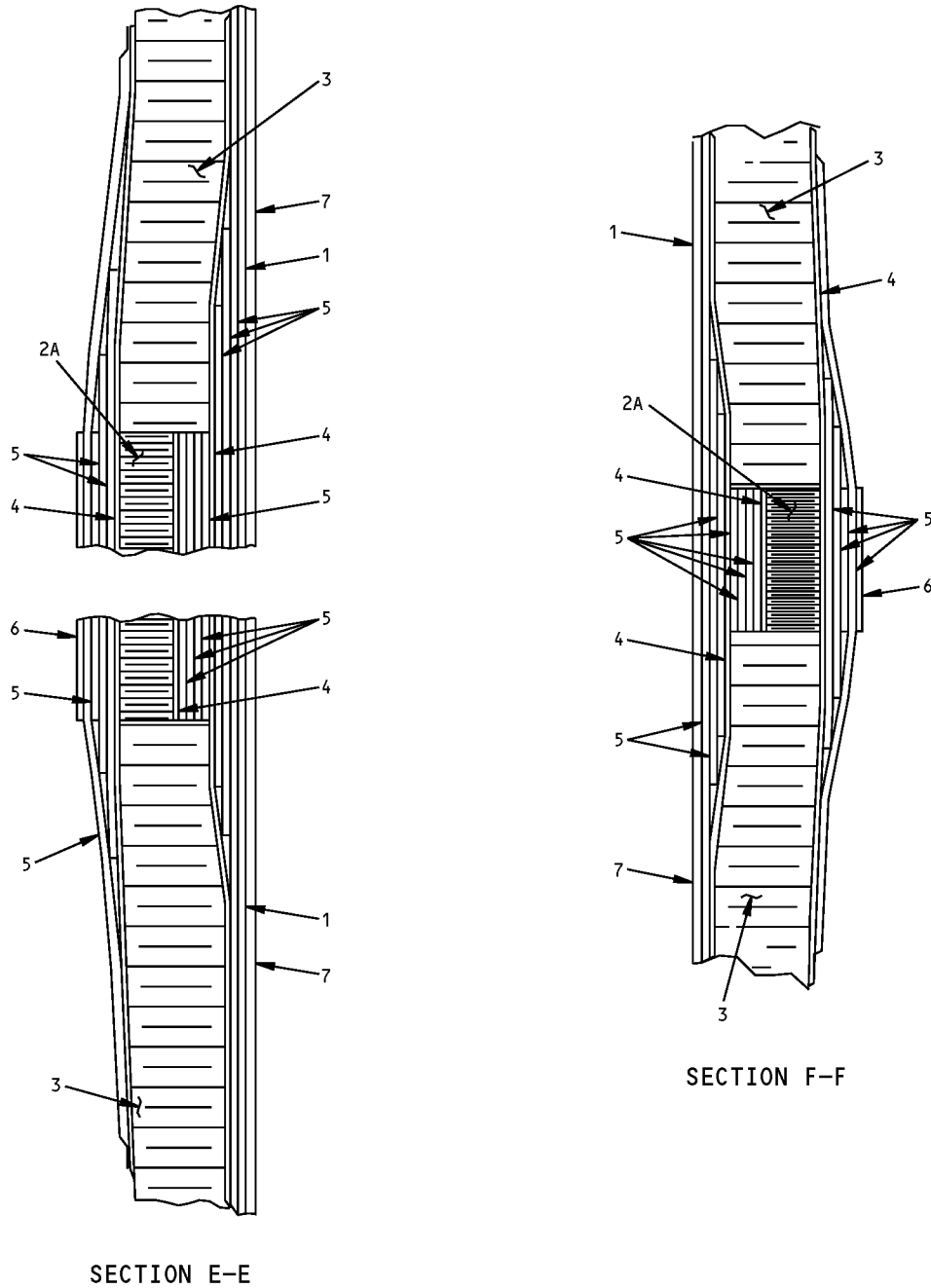
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 11)**

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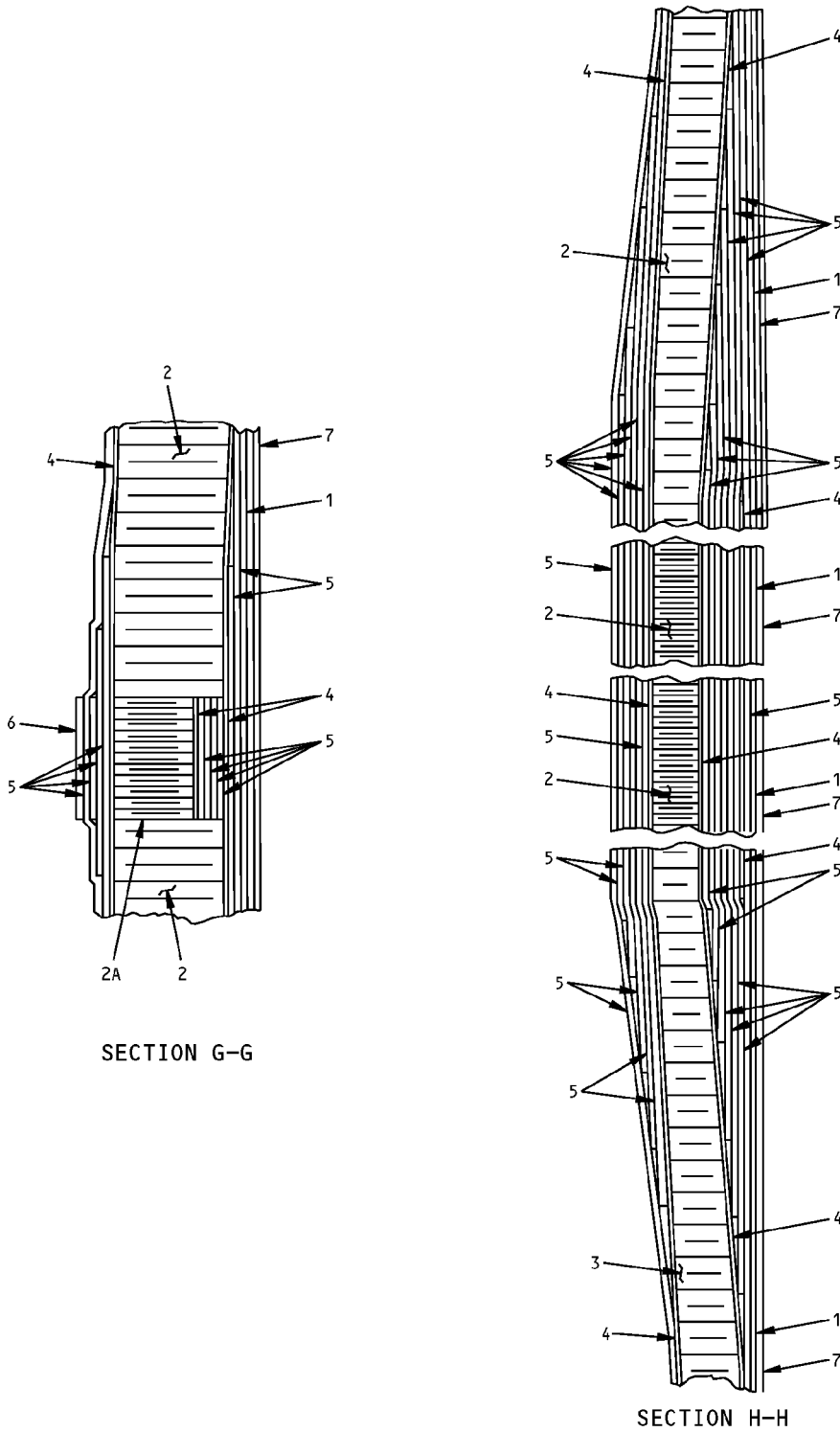
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 11)**

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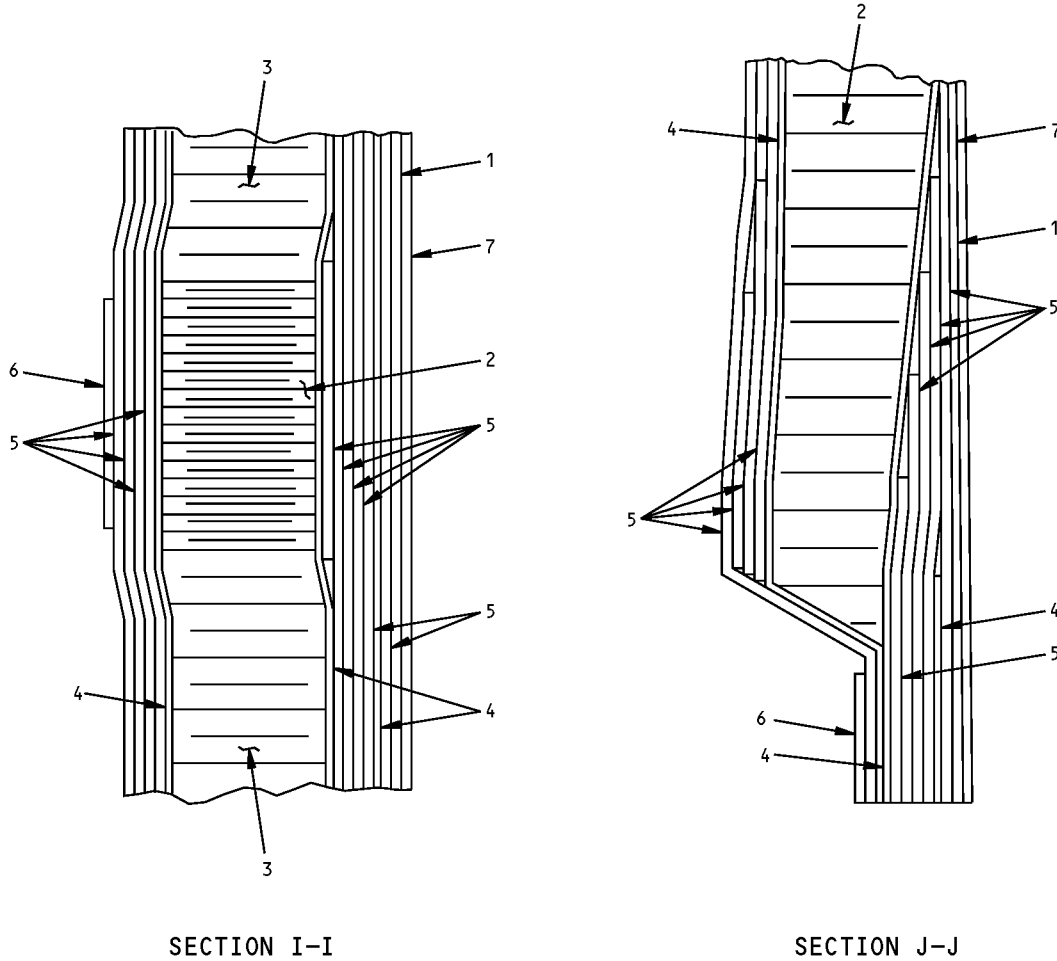
**767-300
STRUCTURAL REPAIR MANUAL**



s76S-018-00

**Right Fan Cowl Skin Identification - CF6-80C2 Engine
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SECTION I-I

SECTION J-J

s76s-019-00

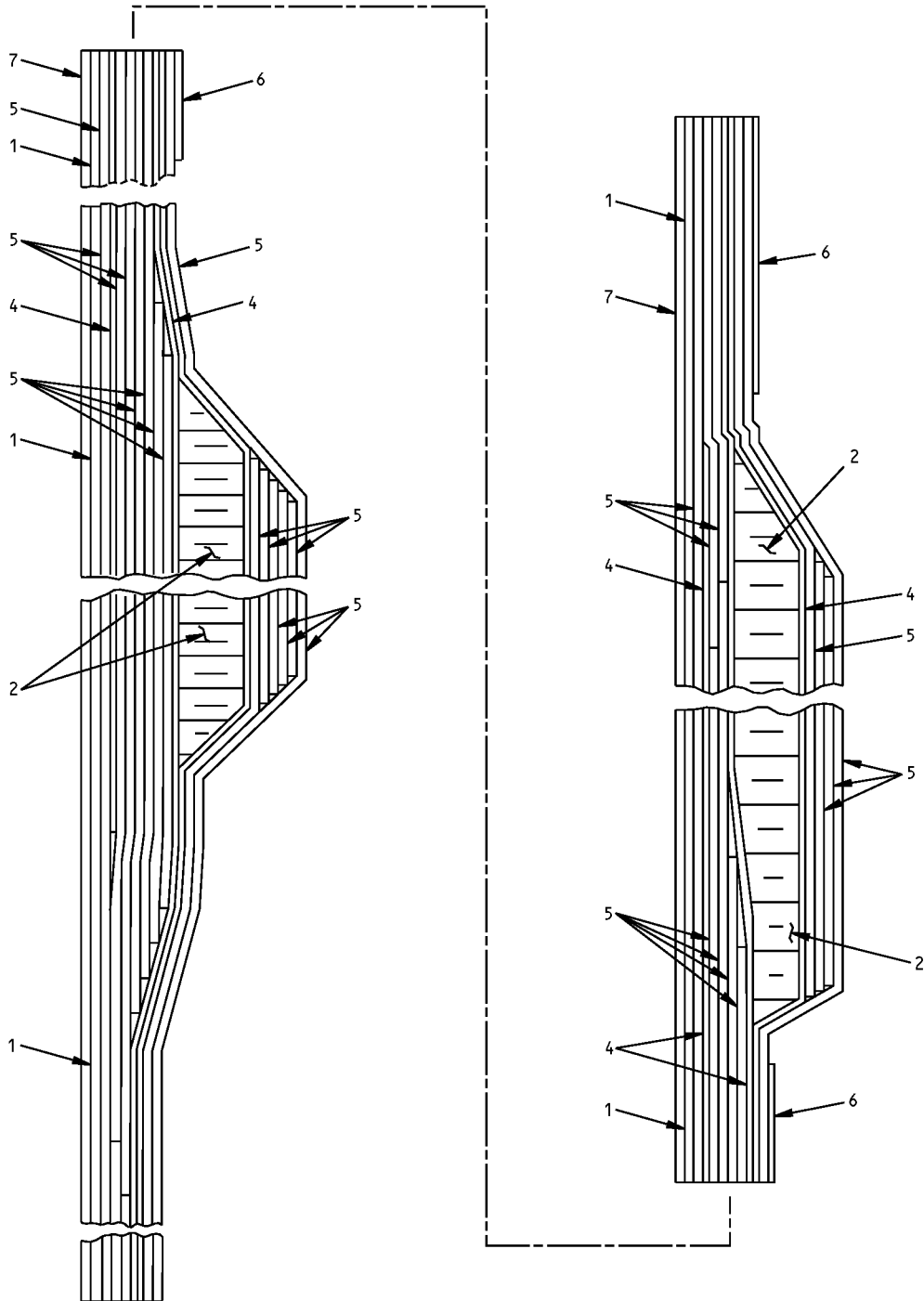
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 7 of 11)**

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STRUCTURAL REPAIR MANUAL**



(VIEW ROTATED 90°)
SECTION K-K

S76S-020-00

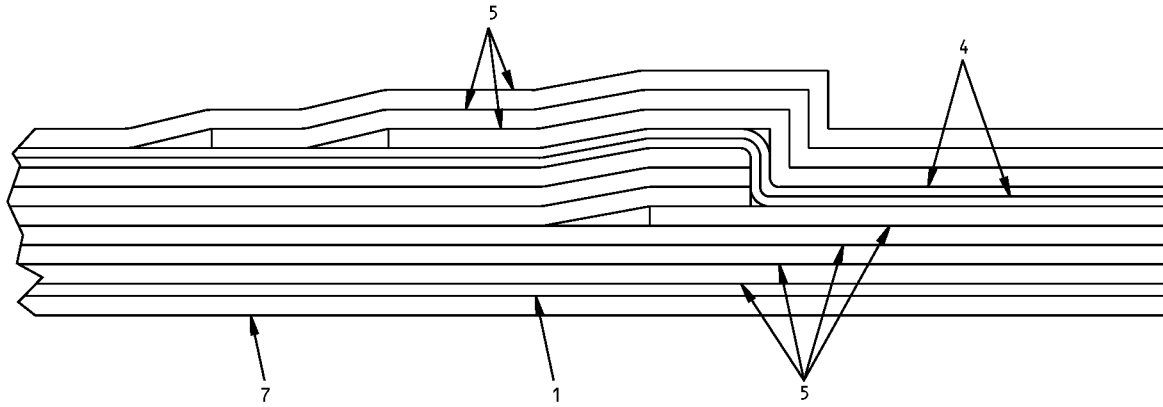
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 8 of 11)**

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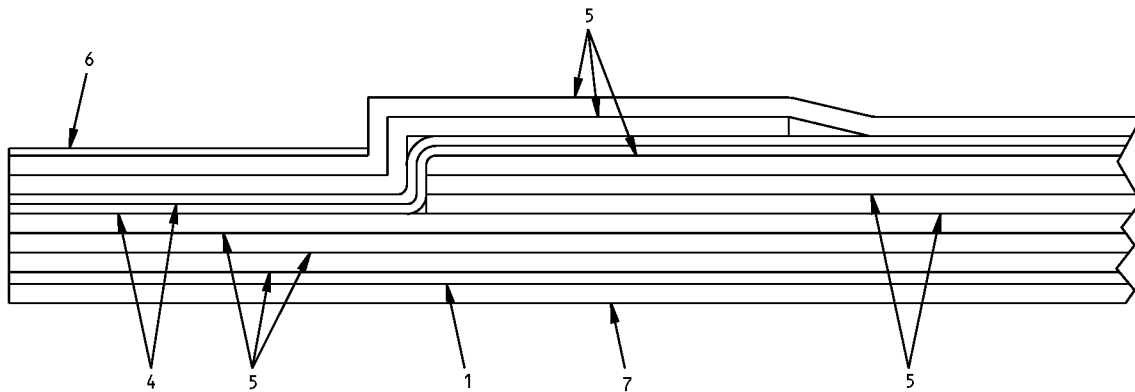
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SECTION L-L



SECTION M-M

S76S-021-00

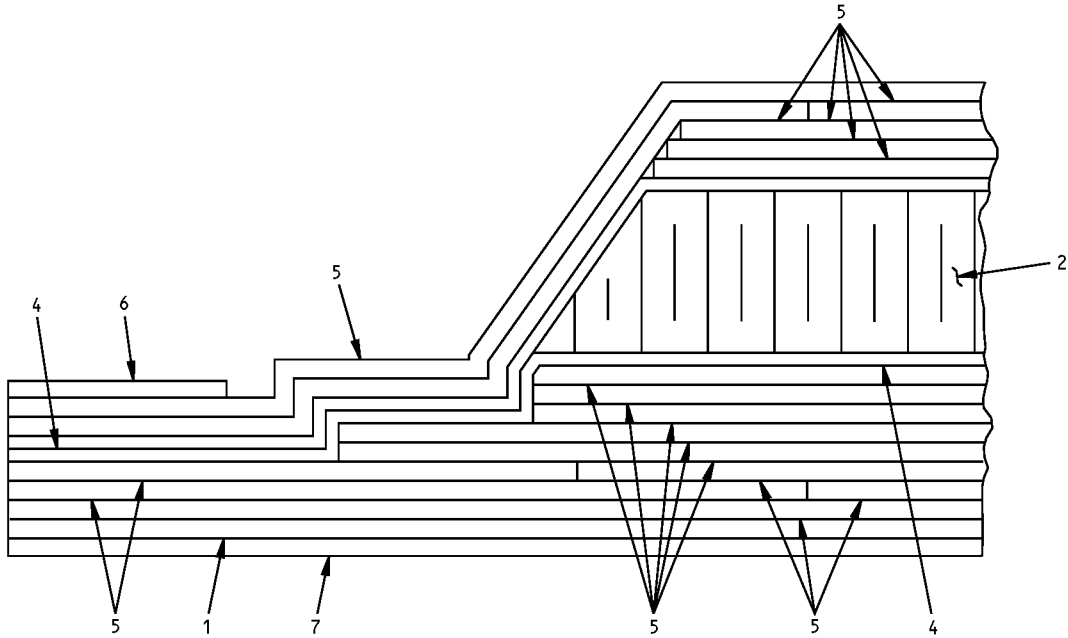
**Right Fan Cowl Skin Identification - CF6-80C2 Engine
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S76S-022-00

**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 10 of 11)**

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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	GLASS FABRIC	0.010	BMS 8-154 TYPE III, CLASS 1, GRADE A, F 161-138 S- GLASS PREPREG.	
2	CORE	0.950	NON-METALIC HONEYCOMB 1/8" HEX, 9.0 LBS/CU.FT. HRH-10-1/8- 9, 6D159	
2A	CORE	0.895	NON-METALIC HONEYCOMB 1/8" HEX, 9.0 LBS/CU.FT. HRH-10-1/8- 9, 6D159	
3	CORE	0.950	NON-METALIC HONEYCOMB 1/8" HEX, 3.0 LBS/CU.FT. HRH-10-1/8- 3, 6D159	
4	CARBON FABRIC	APPROX 0.007	RMS 083, STYLE 1, TYPE I, CLASS 1, GRADE 1, HMF E767G/PWC AS4G 3K, 0LHZ4, 0 DEGREE PLY ORIENTATION	
5	CARBON FABRIC	APPROX 0.014	RMS 083, STYLE 2, TYPE I, CLASS 1, GRADE 1, HMF E767G/8HSC AS4G 3K, 0LHZ4, 0 DEGREE PLY ORIENTATION	
6	GLASS FABRIC	0.0045	RMS 082 GROUP 1, TYPE I, CLASS 1, CYCOM 985-1/120, 04622, PLY ORIENTATION OPTIONAL	
7	ALUMINUM SCREEN		ONE LAYER BMS 5-154, TYPE II, CLASS 1, GRADE 05 ADHESIVE FILM ONE LAYER ALUMINUM SCREEN PER BMS 8-336 TYPE I, CLASS 1, GRADE 16 FORM A, 96171	

LIST OF MATERIALS

**Right Fan Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 11 of 11)**

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ALLOWABLE DAMAGE 1 - FAN COWL SKIN - CF6-80C2 ENGINE**1. Applicability**

- A. This subject is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.

2. References

Reference	Title
54-25-01, IDENTIFICATION P/B IDENTIFICATION	FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION

3. General

- A. Allowable damage data is to permit an operator to determine if a damaged fan cowl can be returned to service without structural repair.
- (1) Damage permitted by these data will have no significant effect on the ultimate static strength or fatigue life of the structure, and will be capable of fulfilling its design function.
 - (2) It is assumed in these damage limits that exposed edges do not protrude from the skin contour. This type of damage must be reworked to remove or feather all protrusions. Holes and cracks in pressure boundaries must be sealed with appropriate tape.
- B. Allowable Damage Usage
- (1) Unlimited Usage
 - (a) Minor damage not affecting the structural integrity or functional capability of the component and requiring no repair over the aircraft design life.
 - (2) Time Limited Usage
 - (a) Minor damage not affecting the structural integrity of the component in normal operation, but could reduce design life of component. Therefore, damage must be permanently repaired not later than the next maintenance "C" check. The location and size of the damage must be noted and checked at each subsequent "A" check to ensure that the damage has not grown beyond the allowable damage limits.
- C. Damage Types
- (1) Composite Materials - The types of damage permitted to the fan cowl are defined below. They do not include damage to surface finish such as paint. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail I.
 - (a) Abrasion: Damage which results in a cross-sectional area change due to scuffing, rubbing, scraping, or other surface erosion.

NOTE: If the graphite epoxy fibers are broken, you must treat the damage as a crack. If the damage is limited to the surface finish, expanded aluminum screen, and the fiberglass ply, it is not considered a crack.
 - (b) Crack: A partial fracture or complete break in the material.
 - (c) Delamination: A separation of the laminated plies from each other.
 - (d) Gouge: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.

NOTE: If the graphite epoxy fibers are broken, you must treat the damage as a crack. If the damage is limited to the surface finish, expanded aluminum screen, and the fiberglass ply, it is not considered a crack.

STRUCTURAL REPAIR MANUAL

- (e) Hole: A complete penetration of a single facesheet of material.
- (f) Nick: A local gouge with sharp edges. Consider a series of nicks in a line as a gouge.
NOTE: If the graphite epoxy fibers are broken, you must treat the damage as a crack. If the damage is limited to the surface finish, expanded aluminum screen, and the fiberglass ply, it is not considered a crack.
- (g) Scratch: Light, narrow, shallow, mark or marks in the surface of a part. It is usually caused by contact with a very sharp object across the surface. Material is displaced, not removed.
NOTE: If the graphite epoxy fibers are broken, you must treat the damage as a crack. If the damage is limited to the surface finish, expanded aluminum screen, and the fiberglass ply, it is not considered a crack.
- (h) Disbond: Separation of skin from core or core from faying surface of other parts, fittings, frames, etc.

- D. Sealing of Damage Area (Fan Cowl) - Clean up the damage area and apply protective sealing tape. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail II and III.

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Remove loose particles from damage area and trim loose ends of graphite tape, graphite fabric, or fiberglass fabric.
- (2) Remove raised material to fair with air-wetted surface.
- (3) Smooth edges of crack or hole damage and chamfer or radius the edges of the air-wetted surface.
- (4) Use 320-grit abrasive paper and remove surface gloss from area at least 1.0 in. (2.5 cm) beyond cleanup limits.

WARNING: USE CARE WHEN YOU WORK WITH ISOPROPYL ALCOHOL. IT IS A HAZARDOUS MATERIAL. USE THIS MATERIAL IN A WELL-VENTED AREA IT IS FLAMMABLE AND THE VAPORS ARE HARMFUL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (5) Clean sanding debris from surface with clean cloth moistened with isopropyl alcohol, wipe dry with clean cloth before the alcohol evaporates.
- (6) Cut sealing patch from aluminum-backed sealing tape.
 - (a) Cut patch 1 in. (2.5 cm) larger all around than damage cleanup area.
 - (b) Remove all square corners from patch by trimming to a rounded configuration.
 - (c) Apply tape over damage area.
 - (d) Stretch and smooth tape as it is applied to avoid wrinkles.
 - (e) Press the patch in place with plastic roller or squeegee to remove trapped air and wrinkles.
 - (f) Roll edges of patch to ensure proper adhesion.
- (7) Remove damaged tape patch by peeling it from structure surface.

STRUCTURAL REPAIR MANUAL

- E. Cleanup of Edge Damage (Fan Cowl) - Cracks which do not extend in from door edge more than 0.25 in. (6.4 mm) and delaminations which do not exceed 1 in. (25.4 mm) in length, or extend in from door edge more than 0.25 in. (6.4 mm) may be prepared for installation of protective tape. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail III and IV .

WARNING: WEAR GLOVES, PROTECTIVE CLOTHING, APPROVED DUST MASKS, AND EYE PROTECTION WHEN YOU WORK WITH COMPOSITE MATERIALS. DO NOT BREATHE THE DUST OR LET IT TOUCH YOUR SKIN. IF YOU DO NOT OBEY, THE RESULT CAN BE INJURY TO PERSONS AND A HAZARD TO YOUR HEALTH.

- (1) Remove edge material adjacent to crack by sanding with silicone carbide rotary sanding drum until bottom of crack is reached.
 - (2) Dress cutout so that depth does not exceed 0.25 in. (6.4 mm) and length along edge does not exceed 1 in. (25.4 mm).
 - (3) Break sharp edges of cutout using 150-grit abrasive paper.
 - (4) Remove surface gloss of area surrounding cutout and apply protective tape.
- F. Damage Zones (Fan Cowl)
- (1) There are four damage zones for the fan cowl doors. Refer to Figure 101/ALLOWABLE DAMAGE 1, Detail V.
 - (a) Refer to Table 101/ALLOWABLE DAMAGE 1 for the following items:
 - 1) Allowable damage types
 - 2) Damage zones
 - 3) Allowable damage limits
 - 4) Cleanup requirements
 - (b) The allowable damage zones for the fan cowl doors are:
 - Zone D1: Area 5 in. (12.7 cm) or less from hinge or latch fittings.
 - Zone D2: The forward and aft fan cowl door lands.
 - Zone D3: Area 3 in. (7.6 cm) or less from pressure relief door or hold-open rod fittings and right hand door rib.
 - Zone D4: The main body of the door which is a full-depth sandwich panel.

Table 101: Fan Cowl Composite Structure Allowable Damage

[1][2]							
DESCRIPTION	ABRASION	CRACK	DISBOND DELAMINATION	DENT	SCRATCH/ GOUGE	NICK	HOLE
Zone D1	*[3]	—	—	—	*[9]	*[10]	—
Zone D2	*[4]	*[5]	*[7]	—	*[9]	*[10]	*[11]
Zone D3	*[3]	—	—	—	*[9]	*[10]	—
Zone D4	*[3]	*[6]	*[8]	*[13]	*[9]	*[10]	*[12]

*[1] Any damage not described in the table must be repaired before next flight.

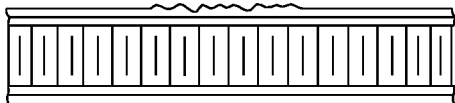
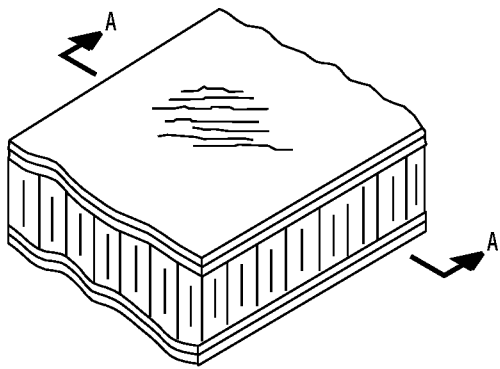
*[2] Refer to FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-25-01, IDENTIFICATION for material thickness

*[3] Damage is allowable to surface finishes. Graphite fibers must not be damaged. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV. Check at each "A" check. Replace tape if peeled

STRUCTURAL REPAIR MANUAL

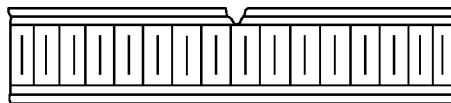
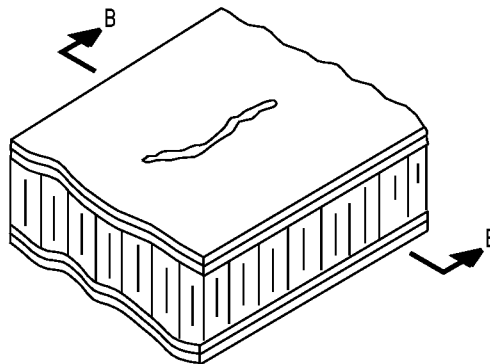
- *[4] Leading edge erosion damage must be repaired if maximum depth of 0.050 in. (1.27 mm) and aft length of 0.25 in. (6.35 mm) is evident.
- *[5] Maximum length in the fore and aft direction is 0.25 in. (6.35 mm). Maximum length in the circumferential direction is 1.0 in. (25.4 mm).
- *[6] Maximum length is 3.0 in. (7.6 cm). No two cracks within 10.0 in. (25.4 cm). Maximum of five per fan cowl door. Cracks wider than 0.10 in. (2.54 mm) are to be treated as holes. Unlimited use of terminated cracks between two adjacent fasteners in a joint of 10 consecutive fasteners. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV. Inspect at each "A" check. Repair at next "C" check.
- *[7] Maximum delamination in the circumferential direction is 1.0 in. (25.4 mm) and in the fore and aft direction is 0.25 in. (6.35 mm).
- *[8] Maximum diameter is 3.0 in. (7.6 cm). No two disbonds within 10.0 in. (25.4 cm). Maximum of five per fan cowl door. Inspect at each "A" check. Repair at next "C" check.
- *[9] Maximum allowable limits: Depth, 0.010 in. (0.254 mm); length, 10.0 in. (25.4 cm); and width, 0.10 in. (2.54 mm). No two within 10.0 in. (25.4 cm). Maximum of 10 gouges and 10 scratches per fan cowl door. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV. Check at each "A" check. Repair at next "C" check. Replace tape if peeled or damaged. If the graphite fibers are broken, you must treat the damage as a crack.
- *[10] Maximum allowable depth of 0.010 in. (0.254 mm). Maximum of 14 nicks per fan cowl door. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1, Detail IV. Check at each "A" check. Repair at next "C" check. Replace tape if peeled or damaged. If the graphite fibers are broken, you must treat the damage as a crack.
- *[11] Maximum of 0.25 in. (6.35 mm) diameter and 5 per fan cowl door.
- *[12] 3.0 in. (7.6 cm) diameter maximum, penetration through one side (facesheet) only, with or without core damage. Two hole per fan cowl door. Apply tape as given in Figure 101/ALLOWABLE DAMAGE 1 Detail IV. Inspect at each "A" check. Replace tape if peeled or damaged. Repair at next "C" check.
- *[13] Maximum diameter of dents is 6 in. (15.2 cm) with no torn fibers or disbonds. Maximum depth is 0.100 in. (2.54 mm). Dents must be smooth with no sharp edges and separated from edges, pan downs, fasteners, or other damage by 10.0 in. (25.4 cm). Limit of one dent per 2 ft² (1858 cm²) area.

STRUCTURAL REPAIR MANUAL



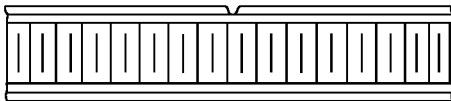
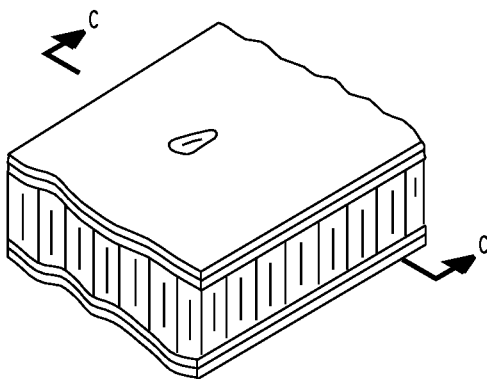
SECTION A-A

ABRASION



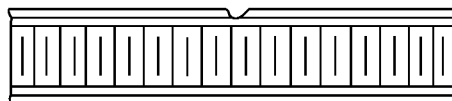
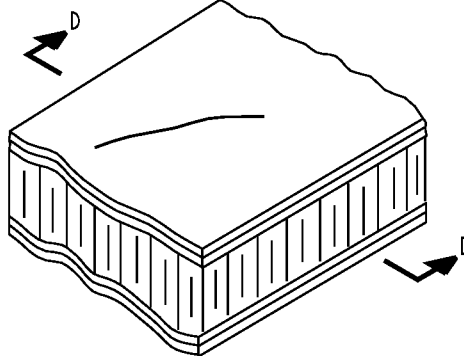
SECTION B-B

GOUGE



SECTION C-C

NICK



SECTION D-D

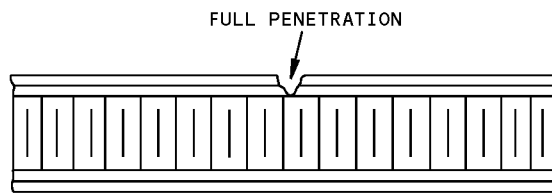
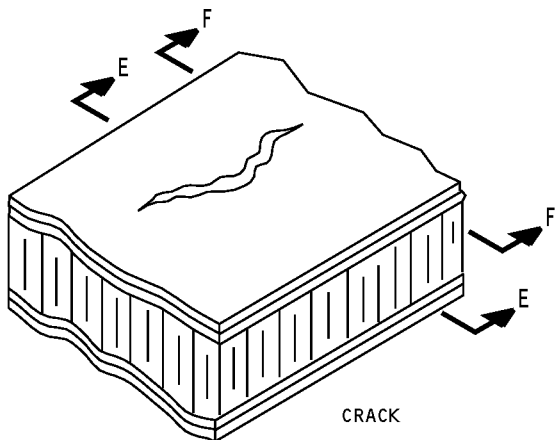
SCRATCH

FAN COWL DAMAGE TYPES
DETAIL I

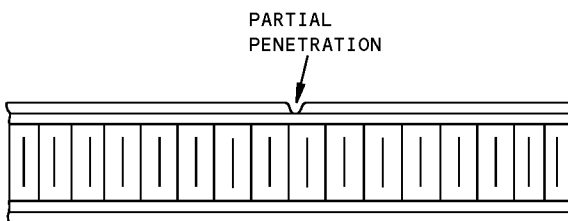
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Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 6)

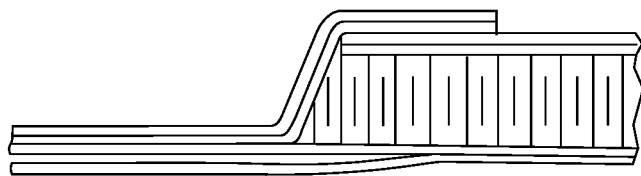
767-300
STRUCTURAL REPAIR MANUAL



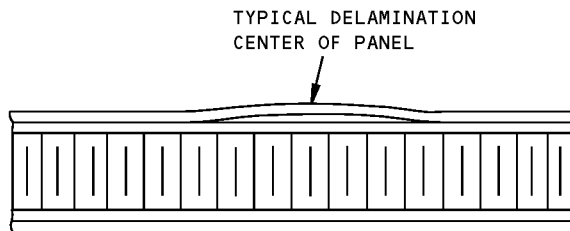
SECTION E-E



SECTION F-F

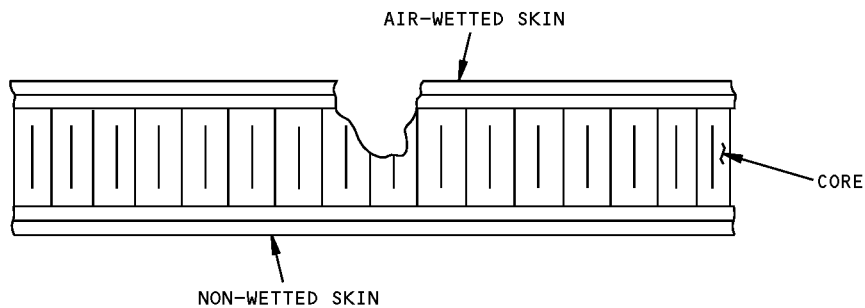


TYPICAL DELAMINATION
EDGE OF PANEL



TYPICAL DELAMINATION
CENTER OF PANEL

DELAMINATION



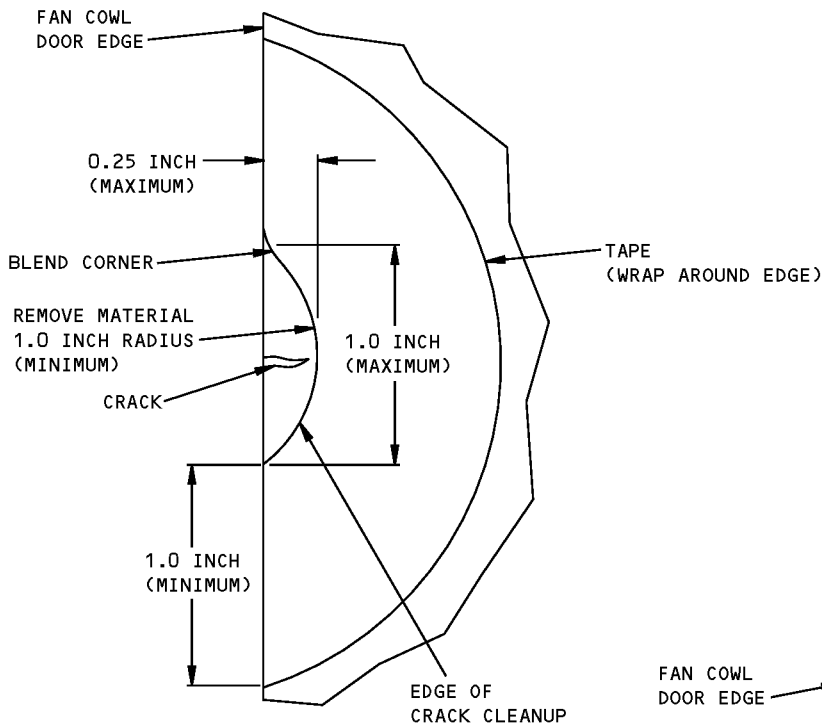
HOLE

FAN COWL DAMAGE TYPES
DETAIL I (CONTINUED)

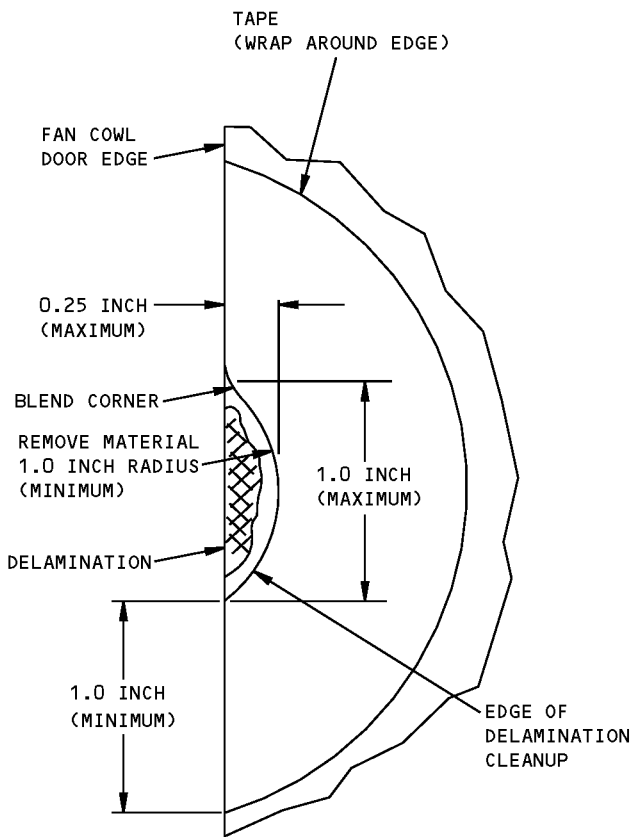
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Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 6)

STRUCTURAL REPAIR MANUAL



EDGE CRACK CLEANUP



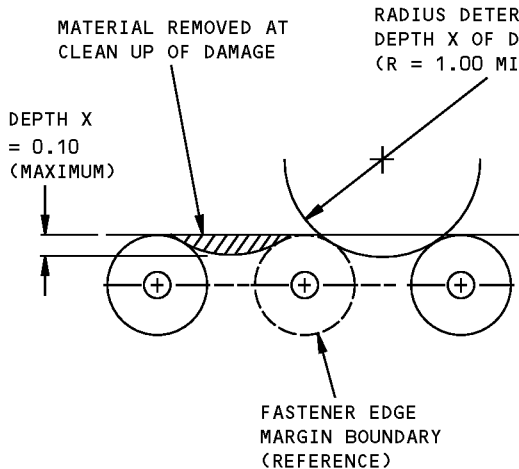
EDGE DELAMINATION CLEANUP

FAN COWL DOOR DAMAGE CLEANUP
DETAIL II

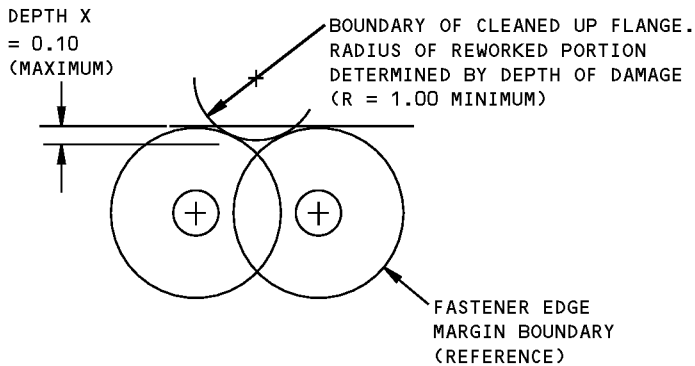
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Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

CAUTION

ANY DAMAGE NOT DESCRIBED IN TABLE MUST BE REPAIRED BEFORE NEXT FLIGHT.

NOTE: SEE STRUCTURE IDENTIFICATION FOR MATERIAL THICKNESS.

DAMAGE CLEANUP OF EDGES
DETAIL III

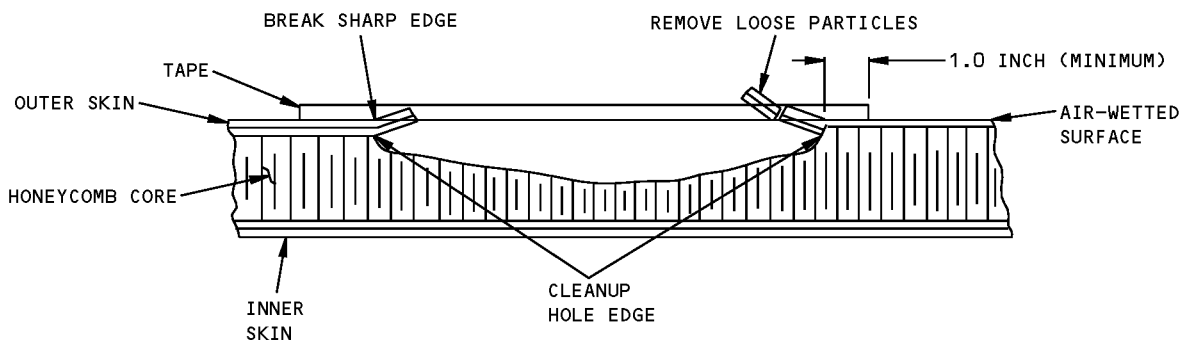
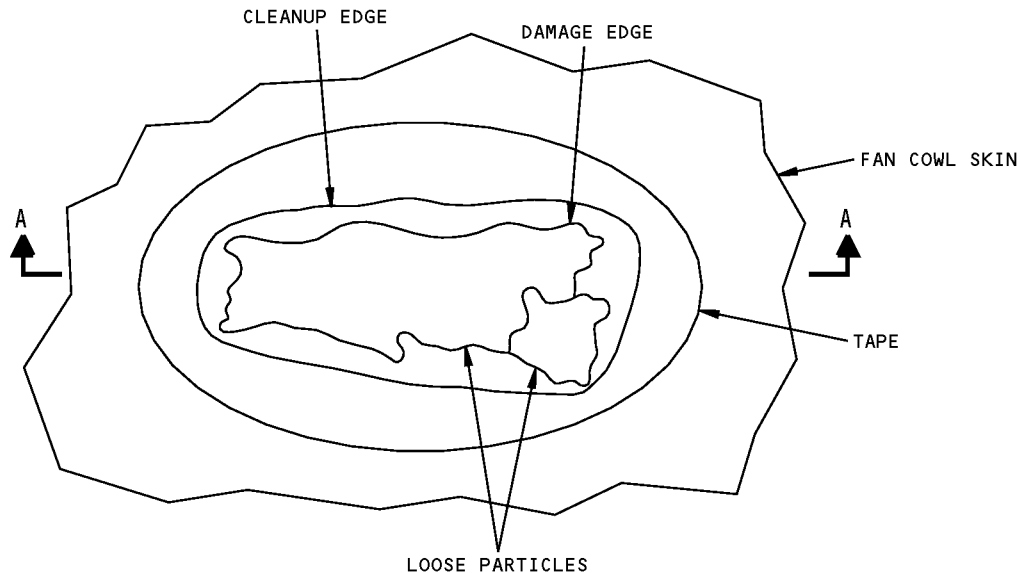
S76S-062-00

**Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 6)**

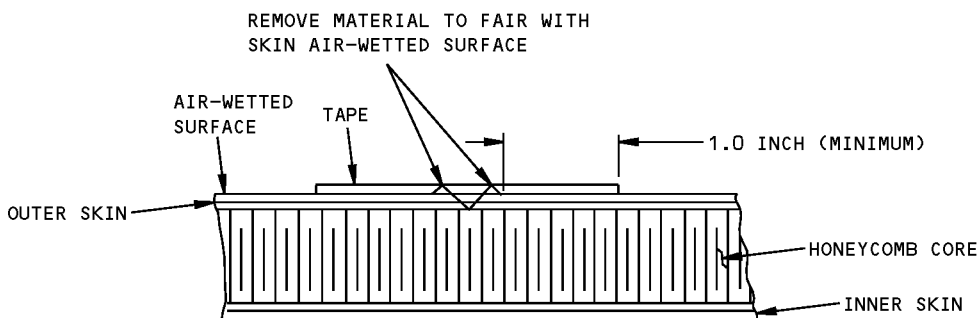
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ALLOWABLE DAMAGE 1
54-25-01
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Apr 01/2005

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STRUCTURAL REPAIR MANUAL**



**SECTION A-A
APPLICATION OF TAPE TO HOLE OR CRACK**



APPLICATION OF TAPE TO NICK, GOUGE, OR SCRATCH

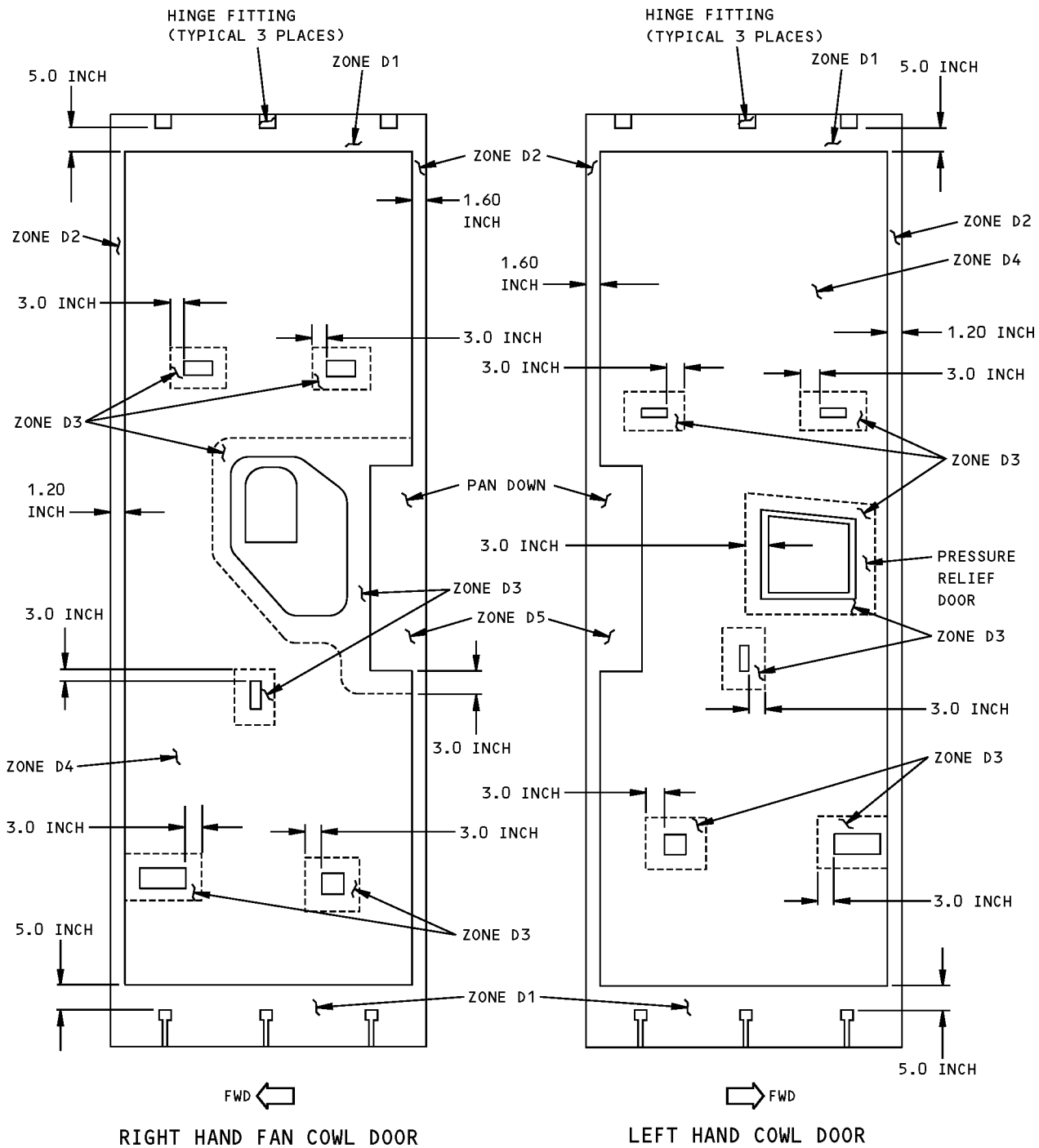
APPLICATION OF TAPE TO AIR-WETTED SURFACES (COMPOSITE ONLY)

DETAIL IV

S76S-069-00

**Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL



RIGHT HAND FAN COWL DOOR

LEFT HAND COWL DOOR

FAN COWL DAMAGE ZONES
DETAIL V

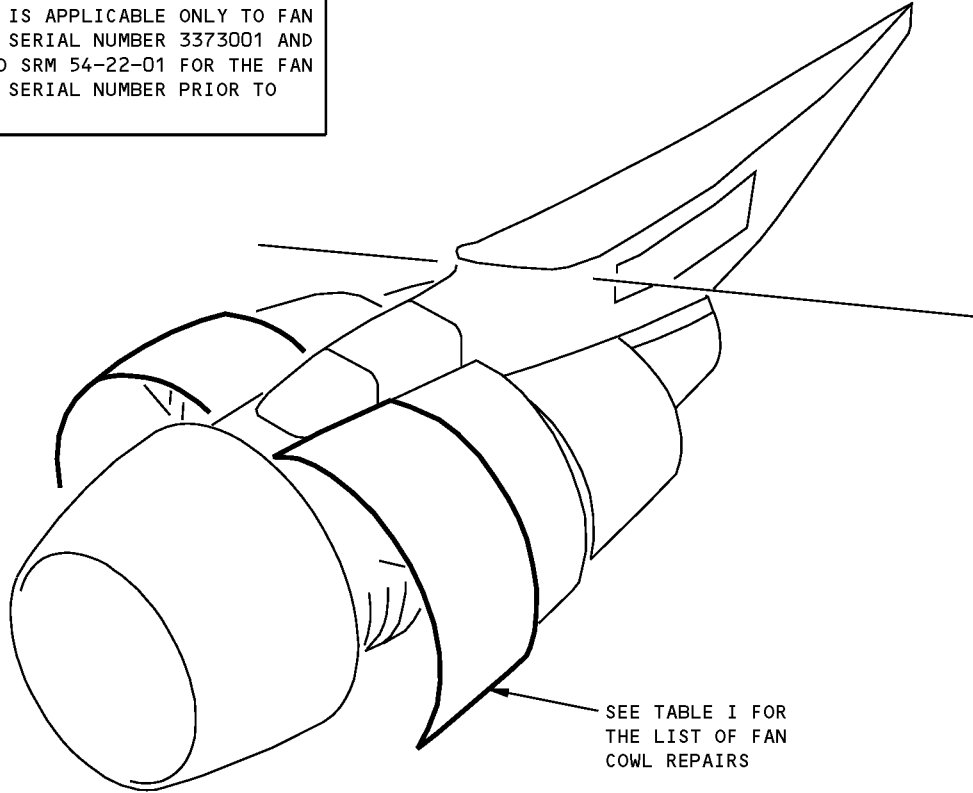
S76S-064-00

Fan Cowl Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 6 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - FAN COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO FAN COWLS WITH A SERIAL NUMBER 3373001 AND ON. REFER TO SRM 54-22-01 FOR THE FAN COWLS WITH A SERIAL NUMBER PRIOR TO 3373001.



REPAIR NUMBER	REPAIR DESCRIPTION
1	FAN COWL COMPOSITE SKIN SURFACE DAMAGE REPAIR
2	FAN COWL COMPOSITE SKIN DAMAGE REPAIR (MORE THAN 0.010 INCH (0.25 mm) DEEP)
3	BONDED PANEL EDGE DAMAGE REPAIR
4	BONDED PANEL PARTIAL PENETRATION REPAIR
5	BONDED PANEL FULL PENETRATION REPAIR
6	EXPANDED ALUMINUM SCREEN REPAIR
7	PANDOWN AREA FULL PENETRATION REPAIR (WITH ACCESS TO THE BACKSIDE)
8	SURFACE FINISH RESTORATION REPAIR

FAN COWL LIST OF REPAIRS
TABLE I

**Fan Cowl Skin Repair - CF6-80C2 Engine
Figure 201**

STRUCTURAL REPAIR MANUAL

REPAIR 1 - FAN COWL COMPOSITE SKIN SURFACE DAMAGE - CF6-80C2 ENGINE**1. Applicability**

- A. This repair is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair procedure is used to repair the surface damage to the composite skins of the fan cowl assembly. The repair is not applicable if the damage goes into the graphite plies. Refer to Figure 201/REPAIR 1.
- C. This repair is applicable to the outer surface and to those areas of the inner surface where the graphite plies are covered by a ply of fiberglass.

2. General

- A. The damage is repaired by application of resin/microballoon mixture to the damage area
- B. If the damage is on the outer surface, it can become necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6 for the applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE

4. Repair Instructions

- A. Prepare the damage area for repair.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the repair area. The repair area must be larger than the damaged area by a minimum of 0.3 in. (8 mm) all around. Apply pieces of Teflon tape as marked.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (3) Remove the sharp edges and loose fibers. Sand the surface in the area between the pieces of Teflon tape to remove the surface finish. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the graphite fibers.

NOTE:

- When you abrade the composite surface, do not cut into the graphite fibers.

- For damage on the outer surface refer to REPAIR 6, if:

The expanded aluminum screen needs to be replaced, cut and remove the expanded aluminum screen, but not the fiberglass isolation ply, from the area between the pieces of Teflon tape, or

The aluminum screen is damaged but does not need to be replaced, only remove the sharp edges of the aluminum screen. Make sure the edges of the aluminum screen do not touch the graphite skin ply below the fiberglass isolation ply in the damage area.

- B. Clean the repair area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not disbands can occur later.
- (2) The repair area must be a water break free surface. Do a water break free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Dry the repair area at 190°-210°F (88°- 99°C) for 30 minutes. Use an explosion proof heat lamp.

- C. Apply the resin to the repair area. Refer to Table 201/REPAIR 1 for the list of repair materials.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (1) Use the manufacturer's instructions to mix the EA9390 resin. Add 5% by weight of phenolic microballoons to the resin mixture.
- (2) Apply a thin layer of the resin/microballoon mixture to the area between the pieces of Teflon tape. Apply more mixture to fill the damage area if necessary.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Use explosion proof heat lamps to raise the temperature of the repair area to 190° to 210°F (88° to 99°C). Cure at this temperature for 220 minutes.
- (4) Let the repair area cool down to room temperature.

D. Make the surface smooth.

WARNING: WEAR GLOVES, EYE PROTECTION AND AN APPROVED MASK WHEN YOU SAND THE STRUCTURAL ADHESIVE. MAKE SURE THAT THERE IS A GOOD FLOW OF CLEAN AIR. WHEN THE STRUCTURAL ADHESIVE IS SANDED, THE RESIDUE IS HAZARDOUS. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Use 150 to 400 grit silicon carbide abrasive paper. Remove the sharp edges and make the repair area smooth with the adjacent surface. Do not cut into the graphite fibers.

NOTE: When you abrade the composite surface, do not cut into the graphite fibers

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

E. Install the expanded aluminum screen on the outer surface, if applicable.

NOTE: Do this procedure if you removed a piece of the expanded aluminum screen from the repair area.

STRUCTURAL REPAIR MANUAL

(1) Refer to REPAIR 6, Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen. Then continue with this repair.

F. Examine the repair area.

(1) Examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

G. Apply the surface finish.

(1) Apply the surface finish and/or external paint to the repair area. Refer to REPAIR 8 Surface Finish Restoration Repair.

Table 201: Repair Materials and Equipment

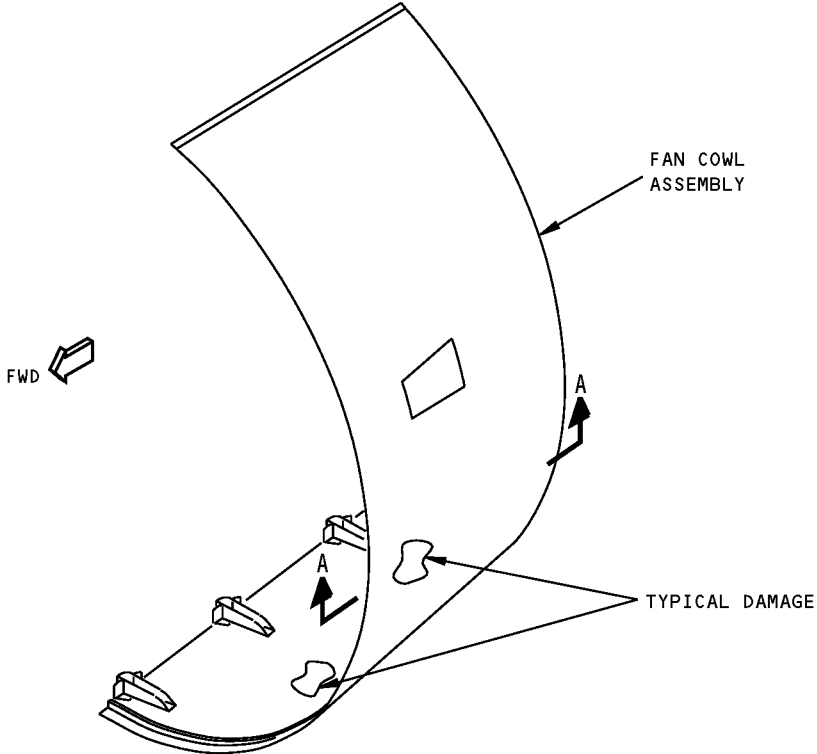
*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available

**767-300
STRUCTURAL REPAIR MANUAL****Table 201: Repair Materials and Equipment (Continued)**

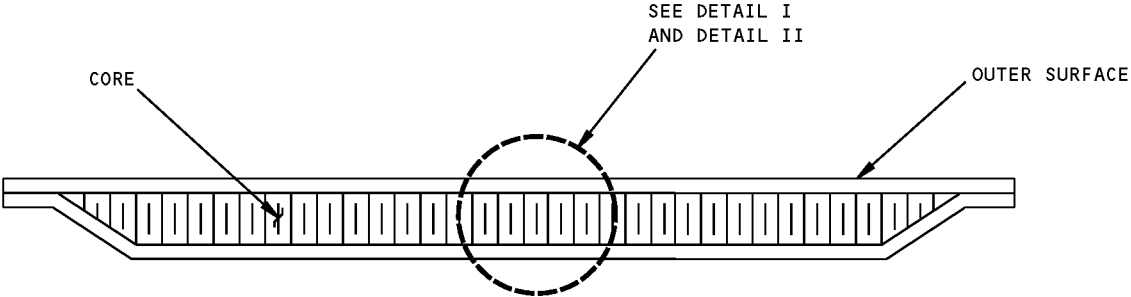
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

**767-300
STRUCTURAL REPAIR MANUAL**



LEFT FAN COWL IS SHOWN,
RIGHT FAN COWL IS SIMILAR



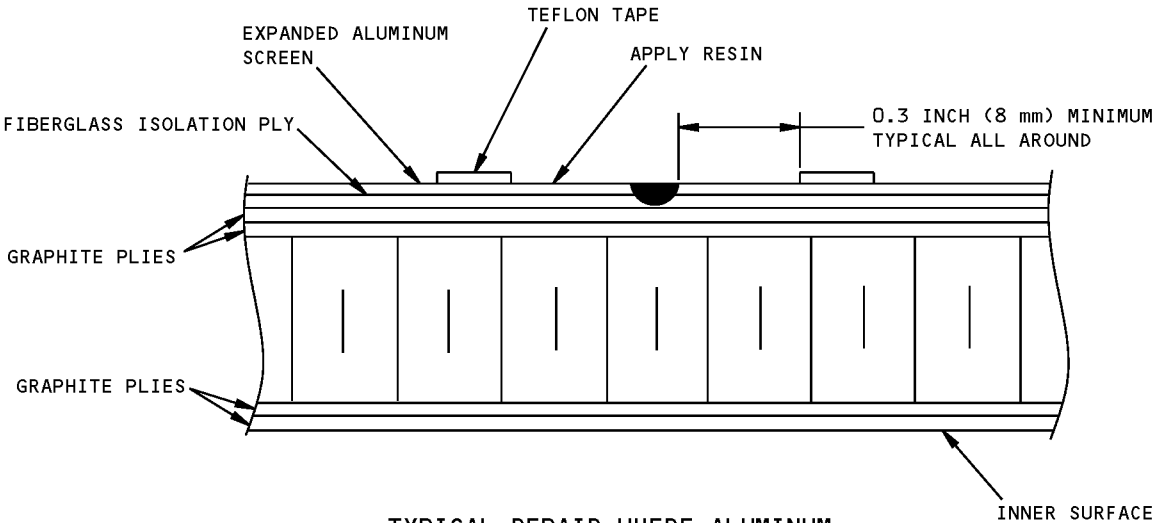
TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL

SECTION A-A

GRS219-01

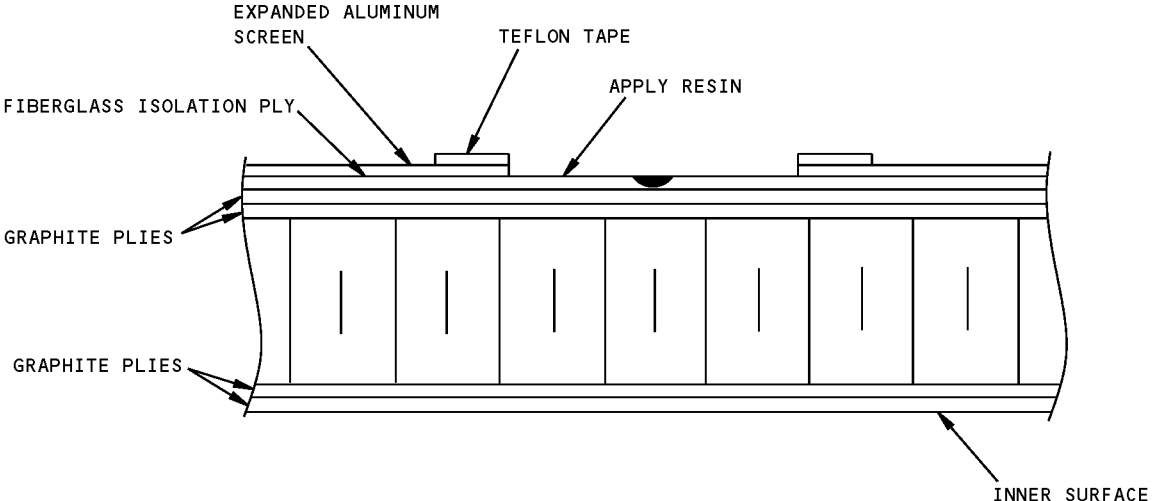
**Fan Cowl Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



TYPICAL REPAIR WHERE ALUMINUM
SCREEN IS NOT REMOVED

DETAIL I



TYPICAL REPAIR WHERE ALUMINUM
SCREEN IS REMOVED

DETAIL II

GRS219-02

**Fan Cowl Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FAN COWL COMPOSITE SKIN DAMAGE - CF6-80C2 ENGINE**1. Applicability**

- A. This repair is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair procedure is used to repair the damage to the graphite plies, of the inner or outer composite skins of the fan cowl assembly, that is more than 0.010 in. (0.25 mm). The repair is applicable if the skin plies are damaged, and the honeycomb core is exposed, but the honeycomb core must not be damaged. Refer to Figure 201/REPAIR 2.
- C. This repair is not applicable if the damage is more than 100 in² (645 cm²) in area, or more than 15 in. (38.1 cm) wide or long.
- D. This repair is not applicable if the edge of damage is less than 2.0 in. (5.1 cm) from the edges of the fan cowl access door openings or other structure, or is less than 4.0 in. (10.2 cm) from the edge of other repaired damage.

2. General

- A. This type of damage is repaired by installation of a wet lay up repair with graphite fabric plies in the damage area.
- B. If the damage is on the outer skin, it will be necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6 for applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
54-25-01, IDENTIFICATION P/B IDENTIFICATION	FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION

4. Repair Instructions

- A. Prepare the damage area for repair.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged plies will be removed.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 in. (13 mm) at the corners.

- (3) Make a mark of the repair area. Apply pieces of Teflon tape around the area to be repaired.

NOTE: The illustrations in this repair show damage that is only one ply deep, but the repair is applicable to deeper damage. For each removed ply, you must use two filler plies and two repair plies.

- B. Prepare the damage area for repair.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (1) Remove the damaged plies as marked. Remove the sharp edges and loose fibers. Sand the surface in the area between the pieces of Teflon tape to remove the surface finish. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers where the surface is not damaged.

- NOTE:**
- When you abrade the composite surface, do not cut into the graphite fibers
 - If, after damage removal, the damage is more than the applicable limits, this repair is not applicable.
 - If the damage is on the outer surface, cut and remove the expanded aluminum screen and the fiberglass isolation ply from the area between the pieces of Teflon tape. Refer to REPAIR 6 for the limits.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (3) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable cleaning and bagging steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (4) The repair surfaces must be water break free. Do a water break free test of the surfaces in the repair area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(5) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the plies at this time.

(6) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

C. Make the filler and repair plies.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

(1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all filler and repair plies. Read the steps below to find the applicable dimensions before you cut the pieces.

(2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

(3) Use the manufacturer's instructions to mix the EA9390 resin.

(4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.

(5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.

(6) Make a mark of all filler and repair plies on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-25-01, IDENTIFICATION for warp directions.

3. Make 2 filler plies. The filler plies must fit inside the cutout.

4. Make 2 repair plies. Cut the first repair ply 0.5 in. (13 mm) larger than the cutout all around. Cut the next ply 0.5 in. (13 mm) larger than the first ply all around.

STRUCTURAL REPAIR MANUAL

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- D. Make the fiberglass sanding or isolation ply. See Table 201/REPAIR 2 for the list of repair materials.

NOTE: If the repair is on the inner surface, the fiberglass ply will act as a sanding ply. If the repair is on the outer surface, the fiberglass ply will act as an isolation ply to isolate the expanded aluminum screen from the graphite plies.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (1) Repeat the procedure in Paragraph 4.C./REPAIR 2 to make and cut the sanding or isolation ply, but use the notes below.

NOTE: 1. Make the ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 inch (13 mm) larger than the last repair ply all around. The ply must not overlap the teflon tape.

- E. Install the plies.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: DO NOT TOUCH THE CLEANED OR PREPARED SURFACES WITH YOUR BARE HANDS. WEAR LINT-FREE GLOVES. THIS WILL HELP TO PREVENT CONTAMINATION OF THE PREPARED SURFACES.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
(2) Apply a thin layer of the resin mixture to the edges of the cutout and to the surface between the pieces of Teflon tape.

NOTE: If the honeycomb core is exposed, apply the mixture to the edges of the exposed cells.

- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the initial skin plies. Remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.

STRUCTURAL REPAIR MANUAL

- (4) Repeat the above steps for the remaining plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

F. Bag and cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with Teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 in. (7.6 cm) larger than the repair all around
- (3) Put three plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 in. (7.6 cm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 in. (5.1 cm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in five minutes.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) during the cure.

(12) Let the repair area cool down to room temperature. Remove the bagging material.

G. Examine the repair area.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.

H. Make the surface smooth.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

(1) Use 150 to 400 grit silicon carbide abrasive paper. Remove the sharp edges and make the repair area smooth with the adjacent surface. Do not cut into the graphite fibers.

NOTE: When you abrade the composite surface, do not cut into the graphite fibers

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

(2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

I. Install the expanded aluminum screen on the outer surface, if applicable.

(1) Refer to REPAIR 6, Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen. Then continue with this repair.

J. Apply the surface finish.

(1) Apply the surface finish and/or external paint to the repair area. Refer to REPAIR 8, Surface Finish Restoration Repair.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available

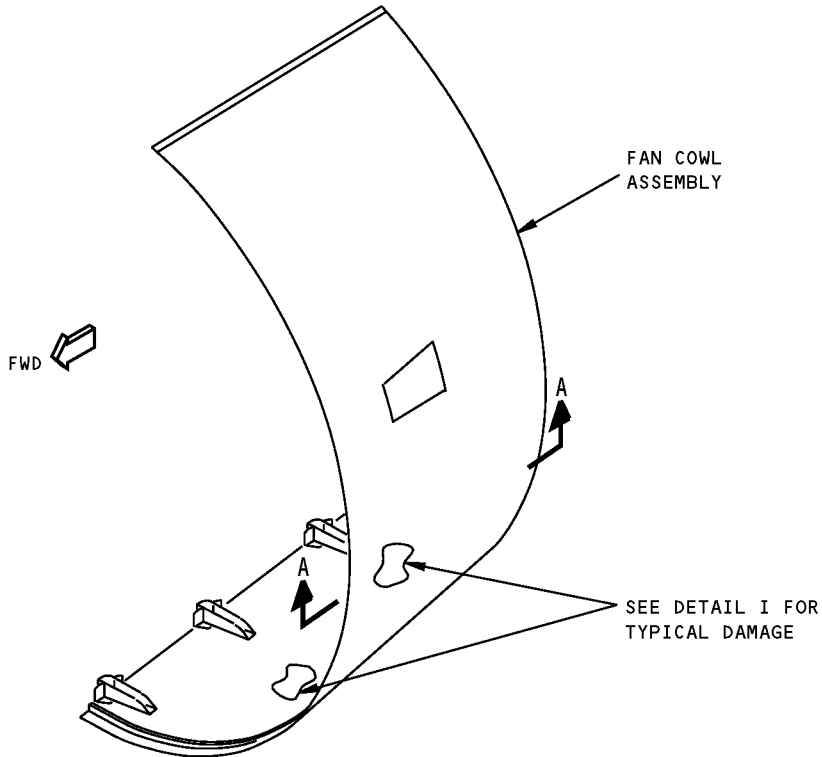
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

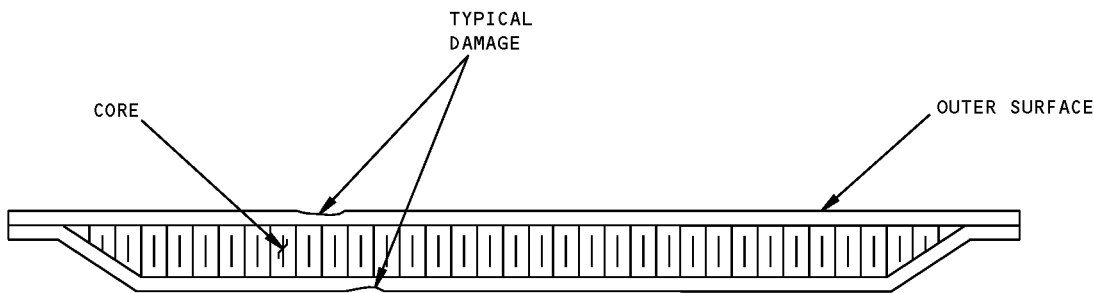
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Commercially Available
Film, Parting	Porous	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03

**767-300
STRUCTURAL REPAIR MANUAL**



LEFT FAN COWL SHOWN,
RIGHT FAN COWL SIMILAR



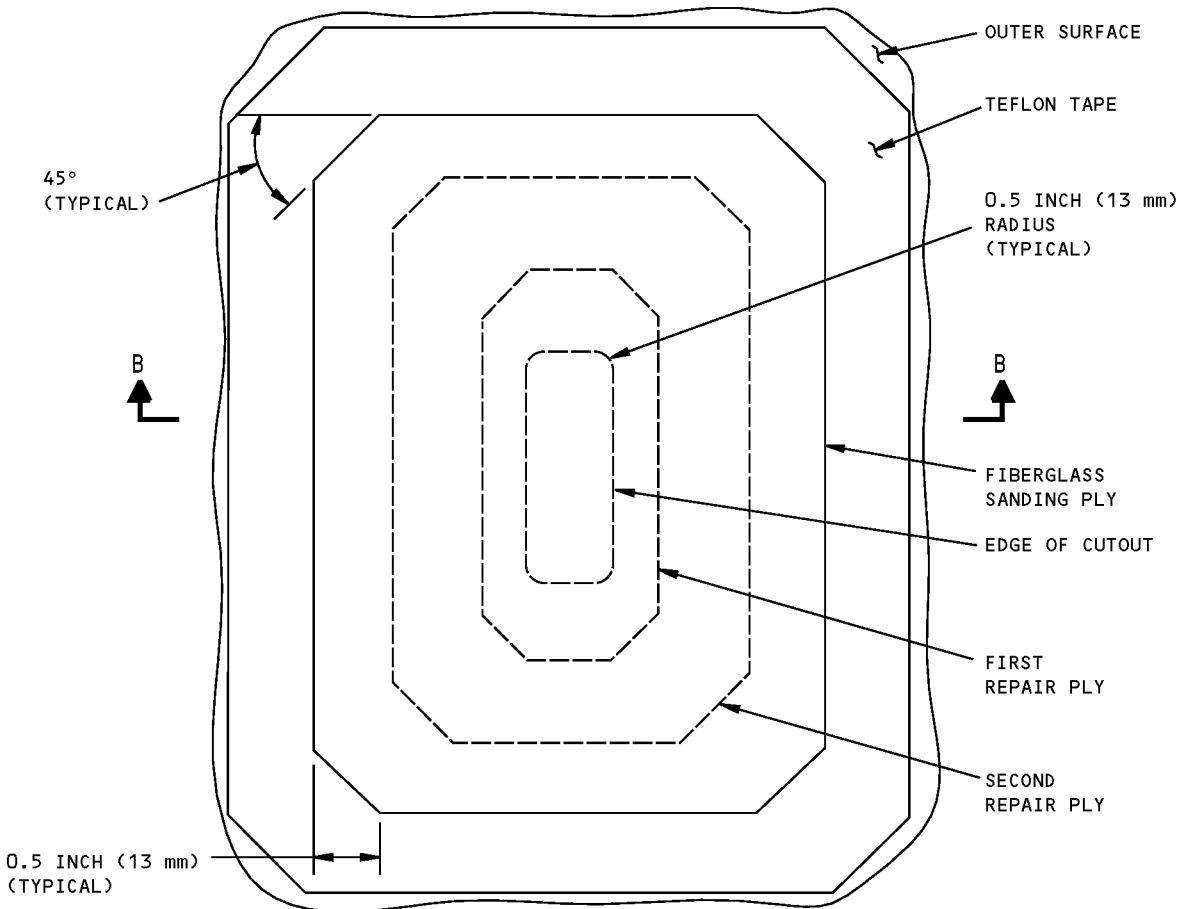
TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL

SECTION A-A

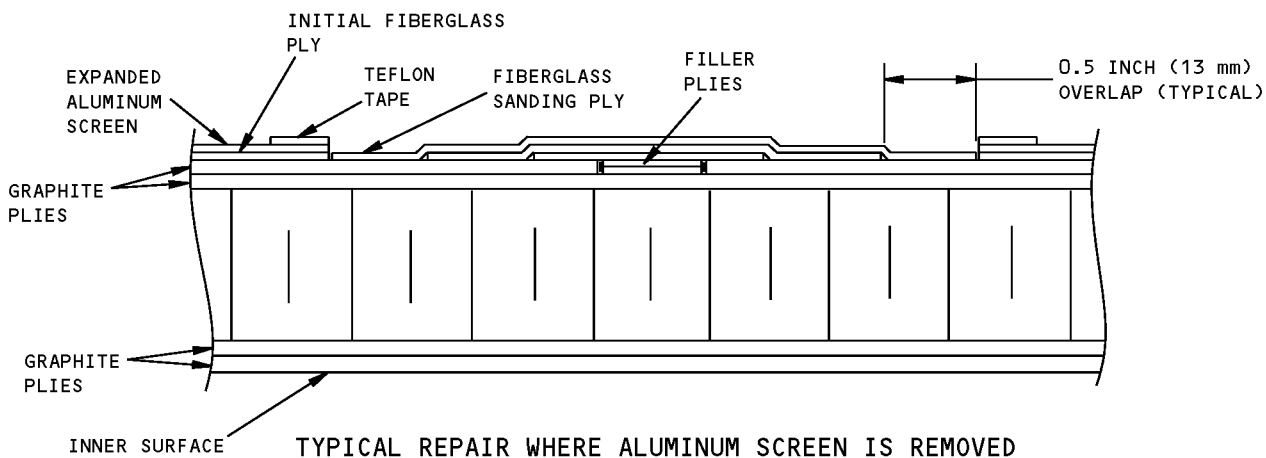
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**Fan Cowl Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL



DETAIL I



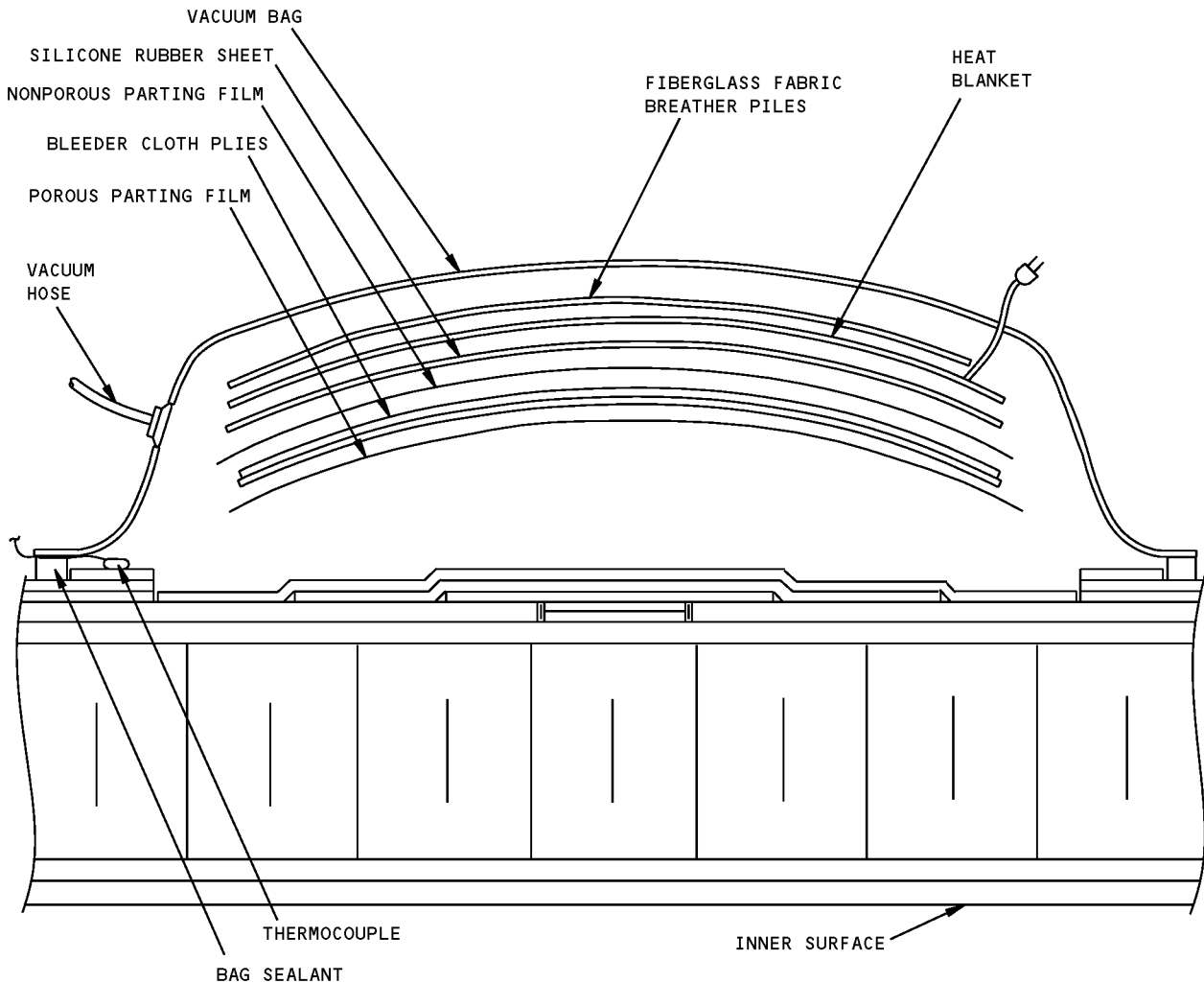
TYPICAL REPAIR WHERE ALUMINUM SCREEN IS REMOVED
OUTER SKIN DAMAGE SHOWN, INNER SKIN SIMILAR

SECTION B-B

GRS303-02

Fan Cowl Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)

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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR SHOWN,
INNER SURFACE REPAIR SIMILAR

TYPICAL BAGGING

GRS303-03

**Fan Cowl Composite Skin Surface Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - FAN COWL BONDED PANEL EDGE DAMAGE - CF6-80C2 ENGINE

1. Applicability

- A. This repair is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is applicable to the damaged forward and aft edges of the bonded panel on the fan cowl assembly. The damage must be less than 10.0 in. (25.4 cm) in length, and less than 4.0 in. (10.2 cm) in width. Refer to Figure 201/REPAIR 3.
- C. This repair is not applicable if the edge of the damage is less than 10.0 in. (25.4 cm) from the edge of other damage.

2. General

- A. This type of damage is repaired by removal of the damaged skin plies and core, if applicable, and installation of filler and repair plies and a replacement core, if applicable.
- B. Because the outer skin is damaged, it will be necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6 for applicable limits and for necessary preparation before you do this repair.
- C. The illustrations in this repair show the damage through the two sides of the bonded panel, but the repair procedure is applicable if the damage does not go through the two sides.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE

4. Prepare the Damage Area for the Repair

- A. Examine the damage area for repair.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged material will be removed.

NOTE: 1. If the damage is along the aft edge, there can be rub strips in the repair area. If so, there must be a minimum of 0.1 in. (2.5 mm) between the edge of the cutout and the adjacent rub strip rivet hole. See the repair figures.

2. The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 in. (13 mm) at the corners.

- (3) Make a mark of the repair area on the damaged surface. Apply pieces of teflon tape on the surface as marked. See the repair figures for dimensional information.

- B. Remove the damage.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Remove the rub strip(s), if applicable.

NOTE: If the damage is along the aft edge, you must remove the existing rub strips within the marked repair area.

- (a) Make a mark of two or more reference points on the rub strip and the adjacent surface. These references will be needed later to locate the applicable rivet holes.
- (b) Drill out the rub strip attach rivets. Do not damage the holes. Remove the rub strips. Remove the burrs. Keep the rub strips for re-installation.
- (2) Cut and remove the damaged skin plies and core, if applicable as marked. Remove the sharp edges and loose fibers.

NOTE: 1. On the outer surface, cut and remove the expanded aluminum screen and the fiberglass isolation ply from the area between the pieces of Teflon tape. Refer to REPAIR 6 for the limits.

2. This repair is not applicable if, after damage removal, the cutout is larger than the applicable limits.

- (3) Sand the surface between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.
- (4) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth.
- C. Make the caul plate and the replacement core, if applicable. See Table 201/REPAIR 3 for the list of repair materials.

NOTE: 1. If all plies are damaged, a caul plate is required.

2. If the existing core is damaged, a replacement core is required.

WARNING: WHEN METALS AND COMPOSITES ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a caul plate to be installed in the repair area. If the damage is limited to the land area, the caul plate must be installed on the inner surface. If the core is also damaged, the caul plate must be installed on the outer surface. Make the caul plate from available aluminum alloy sheet or plate stock. The caul plate must be 1.0 in. (2.5 cm) larger than the cutout all around, and must be thick enough for bagging application. Remove the burrs.
- (2) Make the caul plate to align with the contour of the repair area. The caul plate must fit in place with light finger pressure.

STRUCTURAL REPAIR MANUAL

- (3) Make the replacement core from Nomex-reinforced honeycomb core. The replacement core must have the same shape, size, and ribbon direction as the original core that was removed. Remove the burrs.
 - (4) Put the replacement core inside the cutout. Trim the edges as necessary. The space between the replacement core and the initial core must not be more than 0.05 in. (1.3 mm) all around. Remove the replacement core.
 - (5) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper.
- D. Clean the repair area.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area, the caul plate, and the replacement core with a clean, lint free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur between the skin and the repair plies later.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable steps to sand and clean until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of contamination in the repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces. It is not necessary for the caul plate to have a water break free surface.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

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- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the filler or repair plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

5. Repair instructions for the damage that is limited to the land area

NOTE: If the core is damaged, you must do the repair as given in Paragraph 6./REPAIR 3

- A. Make the filler and repair plies for the outer surface.

STRUCTURAL REPAIR MANUAL

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all filler and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

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- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of the filler and repair plies on the non-porous parting film.

NOTE: 1. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

2. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

3. The filler plies must fit inside the cutout. Make two filler plies for each 8-harness ply that was removed. Make one filler ply for each plain weave ply that was removed.

4. Cut the first repair ply a minimum of 0.5 in. (13 mm) larger than the cutout all around. If there are rub strips within the repair area, cut the repair plies such that the rivet holes are centered on the ply overlaps. Cut the second ply a minimum of 0.5 in. (13 mm) larger than the first ply all around. Repeat until all repair plies are made. If all skin plies were removed, make 9 repair plies. If fewer plies were removed, make two repair plies for each 8-harness ply that was removed, and one repair ply for each plain weave ply that was removed.

- (7) With the graphite ply between two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged. Do not remove the non-porous parting films at this time.

B. Install the caul plate, if applicable.

- (1) Apply a layer of release cloth to the mating surface of the caul plate.

STRUCTURAL REPAIR MANUAL

- (2) Put the caul plate into position on the inner surface against the edges of the cutout. Apply teflon tape or mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

C. Install the filler and repair plies on the outer surface.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.
- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply into position and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining filler and repair plies for the outer surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

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- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

D. Bag and cure the repair on the outer surface.

- (1) Put a layer of porous parting film above the repair area, 3.0 in. (7.6 cm) larger than the repair all around.
- (2) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous parting film above the bleeder cloth. The piece of film must be a minimum of 2.0 in. (5.1 cm) larger than the repair area all around. This will prevent contamination of the repair surface by the silicone rubber.
- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 3.0 in. (7.6 cm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in 5 minutes..

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- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Increase the temperature at a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) of mercury during the cure.
 - (12) Let the repair area cool down to room temperature. Remove the bagging materials.
- E. Examine the repair on the outer surface.
- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.
- F. Taper the edge of the repair.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (1) Taper the edge of the repair on the outer surface. Use 150 to 400 grit silicon carbide abrasive papers. Remove the sharp edges.

STRUCTURAL REPAIR MANUAL

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the inner and outer surfaces clean before the solvent becomes dry. If not, disbonds can occur between the skin and the installed plies later.

NOTE: You can start to make the repair plies for the outer surface at this time.

- (3) Cover the repair area to prevent contamination.

G. Make the fiberglass isolation ply for the outer surface.

- (1) Repeat the procedure in Paragraph 5.A./REPAIR 3 to make the fiberglass isolation ply for the outer surface, but use the notes below.

NOTE: 1. Make the ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 in. (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the Teflon tape.

H. Make the repair and sanding plies for the inner surface, if applicable.

NOTE: Do this step only if all skin plies were removed.

- (1) Repeat the procedure in Paragraph 5.A./REPAIR 3 to make only three repair plies for the inner surface.
- (2) Repeat the procedure in Paragraph 5.G./REPAIR 3 to make the sanding ply for the inner surface.

I. Install the remaining plies.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the area between the pieces of Teflon tape.

STRUCTURAL REPAIR MANUAL

(3) Repeat the procedure in Paragraph 5.C./REPAIR 3 to install the remaining plies. Make sure you remove the non-porous parting films from the plies when you install them. Make sure all air pockets are removed from under each installed ply. Trapped air pockets can cause delamination between plies.

- (a) On the outer surface, install the fiberglass isolation ply.
- (b) On the inner surface, if applicable, install the repair and sanding plies.

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(4) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

J. Bag and cure the remaining plies.

(1) Install bagging material on the remaining plies and cure. Use the procedure in Paragraph 5.D./REPAIR 3.

(2) Let the repair area cool down to room temperature. Remove the bagging materials.

K. Examine the repair.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

(2) Go to Paragraph 7./REPAIR 3.

6. Repair Instructions for the Damage that Extends into the Core

NOTE: If the core is not damaged, you must do the repair as given in Paragraph 5./REPAIR 3.

A. Make the outer skin filler plies.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

(1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all of the filler plies for the outer skin. Read the steps below to find the applicable dimensions before you cut the pieces.

(2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

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(3) Use the manufacturer's instructions to mix the EA9390 resin.

STRUCTURAL REPAIR MANUAL

- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of the filler plies on the non-porous parting film.

NOTE: 1. Make two filler plies for each 8-harness ply that was removed. Make one filler ply for each plain weave ply that was removed. The filler plies must fit inside the cutout.

2. Each filler ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

- (7) With the graphite ply between two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged. Do not remove the non-porous parting films at this time

B. Install the caul plate, if applicable

- (1) Apply a layer of release cloth to the mating surface of the caul plate.
- (2) Put the caul plate into position on the outer surface. Use clamps or other mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

C. Install the outer skin filler plies.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the edges of the cutout in the outer skin.
- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply into position and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining outer skin filler plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

STRUCTURAL REPAIR MANUAL

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(5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

D. Bag and cure the outer skin filler plies.

(1) Install bagging material above the installed filler plies and cure. Use the procedure in Paragraph 5.D./REPAIR 3.

(2) Let the repair area cool down to room temperature. Remove the bagging materials.

E. Examine the cured outer skin filler plies.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

F. Make the repair plies for the outer surface.

(1) Repeat the procedure in Paragraph 6.A./REPAIR 3 to make and cut the repair plies for the outer surface, but use the notes below.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

2. Each repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

3. Cut the first repair ply a minimum of 0.5 in. (13 mm) larger than the cutout all around. If rib strips are within the repair area, cut the repair plies such that the rivet holes are centered on the ply overlaps. Cut the second ply a minimum of 0.5 in. (13 mm) larger than the first ply all around. Repeat until all repair plies are made. If all skin plies were removed, make 6 repair plies. If fewer plies were removed, make two repair plies for each 8-harness ply that was removed, and one repair ply for each plain weave ply that was removed.

G. Install the outer skin repair plies.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

(1) Use the manufacturer's instructions to mix the EA9390 resin.

(2) Apply a thin layer of the resin mixture to the outer surface between the pieces of teflon tape.

STRUCTURAL REPAIR MANUAL

- (3) Repeat the procedure in Paragraph 6.C./REPAIR 3 to install the outer skin repair plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

3. Make sure you remove the excess resin from the repair area before it cures.

- H. Bag and cure the repair on the outer surface.

(1) Install bagging material above the installed repair plies and cure. Use the procedure in Paragraph 5.D./REPAIR 3.

(2) Let the repair area cool down to room temperature. Remove the bagging materials.

- I. Examine the repair on the outer surface.

(1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

- J. Taper the edge of the repair.

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(1) Taper the edge of the repair on the outer surface. Use 150 to 400 grit silicon carbide abrasive papers. Remove the sharp edges.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(2) Use dry air blast to remove the sanding particles. Clean the repair area. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the inner and outer surfaces clean before the solvent becomes dry. If not, disbonds can occur between the skin and the installed plies later.

(3) Cover the repair area to prevent contamination.

- K. Install the replacement core.

NOTE: Before you do the steps below, make sure the repair area is horizontal, and the outer surface is on the bottom. Turn the fan cowl as necessary to do this.

STRUCTURAL REPAIR MANUAL

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Save a part of the resin mixture in a container. Add 5% by weight of phenolic microballoons to the remaining resin mixture and save it in another container.
- (3) Apply a layer of the resin mixture, without microballoons to the area inside the cutout, including the edges of the existing core and the cured filler plies.
- (4) Put the replacement core into position inside the cutout. Make sure the ribbon direction of the replacement core is correct.
- (5) Apply the resin/microballoon mixture to the space between the replacement core and the existing core. If necessary, use pieces of teflon tape to prevent leakage of the mixture. Apply more resin/microballoon mixture to fill the space all around.

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- (6) Remove the excess mixture from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- L. Cure the resin/microballoon mixture.

NOTE: Do this step if you had to use pieces of teflon tape to prevent leakage of the mixture from the spaces. If not, go to the next step to install the plies.

- (1) Put a layer of non-porous parting film above the repair area. The piece of film must be a minimum of 2.0 in. (5.1 cm) larger than the repair area all around. This will prevent contamination of the repair surface by the silicone rubber.
- (2) Put a minimum of two thermocouples around the perimeter of the replacement core. Hold in place with teflon tape.
- (3) Put a sheet of silicone rubber above the non-porous parting film.
- (4) Put a heat blanket above the sheet of silicone rubber.
- (5) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (6) Put 5 lb (2.3 kg) to 10 lb (4.5 kg) of weight above the breather cloth to press the replacement core against the adhesive during the cure.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Turn on the heat blanket and raise the temperature to 250° to 270°F (121° to 132°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 70 minutes.

NOTE: You can start to make the remaining plies at this time.

- (8) Let the repair area cool down to room temperature. Remove the heat blanket, the weight, and other curing equipment from the repair area. Remove the teflon tape.

WARNING: WHEN RESINS ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (9) If necessary, remove the excess cured mixture and sharp edges from the repair area. Use 150 to 400 grit silicon carbide abrasive paper. Do not damage the graphite fibers.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (10) Use dry air blast to remove the sanding particles. Clean the area between the pieces of teflon tape on the inner surface. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination can occur later.

M. Make the outer surface fiberglass isolationply.

- (1) Repeat the procedure in Paragraph 6.A./REPAIR 3 to make and cut the fiberglass isolation ply for the outer surface, but use the notes below.

NOTE: 1. Make the ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 in. (13 mm) larger than the last repair ply all around. The sanding ply must not overlap the Teflon tape.

N. Make the filler, repair, and sanding plies for the inner surface.

STRUCTURAL REPAIR MANUAL

- (1) Repeat the procedure in Paragraph 6.A./REPAIR 3 to make and cut the filler and repair plies for the inner surface, but use the notes below.

NOTE: 1. The first repair ply must be 1.5 in. (3.8 cm) wide, and must be 0.75 in. (19.05 mm) larger than the cutout on each side in the circumferential direction. The circumferential centerline of the first repair ply must be aligned with the edge of the cutout in the circumferential direction.

2. Cut the second ply a minimum of 0.5 in. (13 mm) larger than the first ply all around. Cut the third ply a minimum of 0.5 in. (13 mm) larger than the second ply all around.

3. Cut the fourth ply a minimum of 0.5 in. (13 mm) larger than the third ply on three sides, as shown, and extended to the edge of the panel on the remaining side.

4. Cut the fifth ply a minimum of 0.5 in. (13 mm) larger than the fourth ply all around. Cut the sixth ply a minimum of 0.5 in. (13 mm) larger than the fifth ply all around.

5. You can only have three repair plies (fourth, fifth, and sixth plies) in the land area. If this condition cannot be met, contact the manufacturer.

- (2) Repeat the procedure in Paragraph 6.M./REPAIR 3 to make and cut the sanding ply for the inner surface. The sanding ply must be 0.50 in. (13 mm) larger than the last repair ply all around..

- O. Install the remaining plies.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
(2) Apply a thin layer of the resin mixture to the areas between the pieces of teflon tape.
(3) Repeat the procedure in Paragraph 6.C./REPAIR 3 to install the remaining plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

3. Make sure you remove the excess resin from the repair area before it cures.

- P. Bag and cure the repair.

STRUCTURAL REPAIR MANUAL

- (1) Install bagging material above the installed plies and cure. Use the procedure in Paragraph 6.H./REPAIR 3.
- (2) Let the repair area cool down to room temperature. Remove the bagging materials.

Q. Examine the repair.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

7. Complete the Repair**A. Make the surfaces smooth.**

WARNING: WHEN RESINS ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Remove the excess cured mixture and sharp edges from the repair area. If plies were installed on the inner surface, make the repaired surface smooth with the adjacent surface. Use 150 to 400 grit silicon carbide abrasive paper. Do not cut into the graphite fibers.

B. Install the rub strip(s), if applicable.

- (1) Put the rub strip in place and in the correct direction. Use the marked reference points to accurately locate the rub strip, and use clamps to hold it in place. Make a mark of the rivet holes on the panel.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: WHEN YOU DRILL HOLES, MAKE SURE YOU DO NOT CAUSE DELAMINATION BETWEEN THE PLYS, OR DAMAGE THE EDGES. SUPPORT THE BACK SIDE OF THE PANEL IF NECESSARY.

- (2) Remove the rub strip and drill the holes in the panel as marked. The holes must have the same final size as the original holes.

Countersink the holes on the outer surface to accept MS20426B5 rivets.

- (3) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper. Do not cut into the graphite plies.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (4) Use dry air blast to remove the sanding particles. Clean the repair area. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Use the manufacturer's instructions to prepare the DC 1200 sealant primer.
- (6) Apply a thin layer of the primer mixture to the holes and countersinks and to the mating surfaces of the rub strip and bonded panel. Let the primer dry at room temperature.

NOTE: If the primer causes a dull finish or dusty chalk to show on the surface, rub the surface clean with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 93-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (7) Use the manufacturer's instructions to prepare the DC 93-006 sealant.
- (8) Apply a thin layer of the sealant mixture to the mating surface of the rub strip. Put the rub strip in place. Align the holes. Wet install the rivets with the sealant mixture. Remove the unwanted sealant from the area before it cures. Use a piece of clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (9) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

C. Install the expanded aluminum screen on the outer surface.

- (1) Refer to REPAIR 6, Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen.

D. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 8, for Surface Finish Restoration Repair.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet or plate	Any heat treated designation 0.032-0.20 inch (0.81-5.08 mm) thick	Commercially Available

STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb (1/8" Nomex-reinforced, 3.0 PCF density)	HRH-10-1/8-3.0 or HMX-7-1/8-3.0	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222 Ciba Geigy Corp. Orbitex Products Dept. 3550 NW 49th Street Miami, FL 33142
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Commercially Available
Film, Parting	Porous	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Primer	DC 1200	Dow Corning

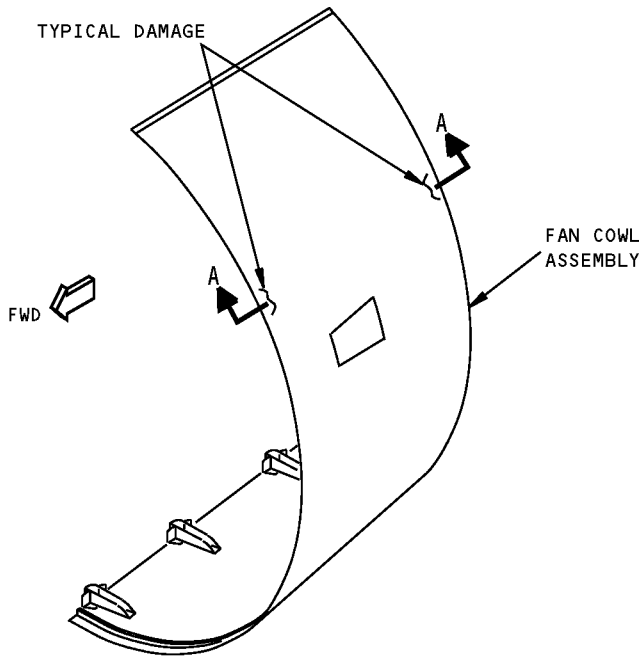
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

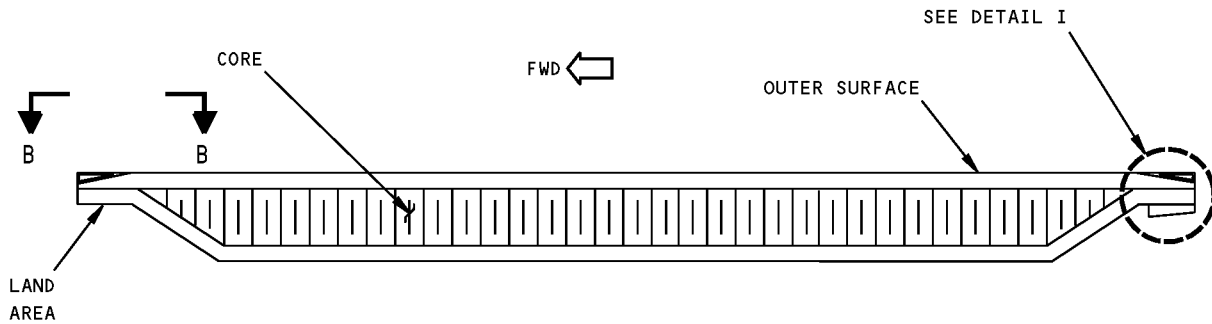
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Rivet	MS20426B5	Commercially Available
Sealant	DC 90-006 (color red) or GE RTV 88/9910 (color red, equivalent to DC 90-006)	Dow Corning Chemicals General Electric Company 260 Hudson River Road Waterford, NY 12188
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

STRUCTURAL REPAIR MANUAL



LEFT FAN COWL SHOWN,
RIGHT FAN COWL SIMILAR



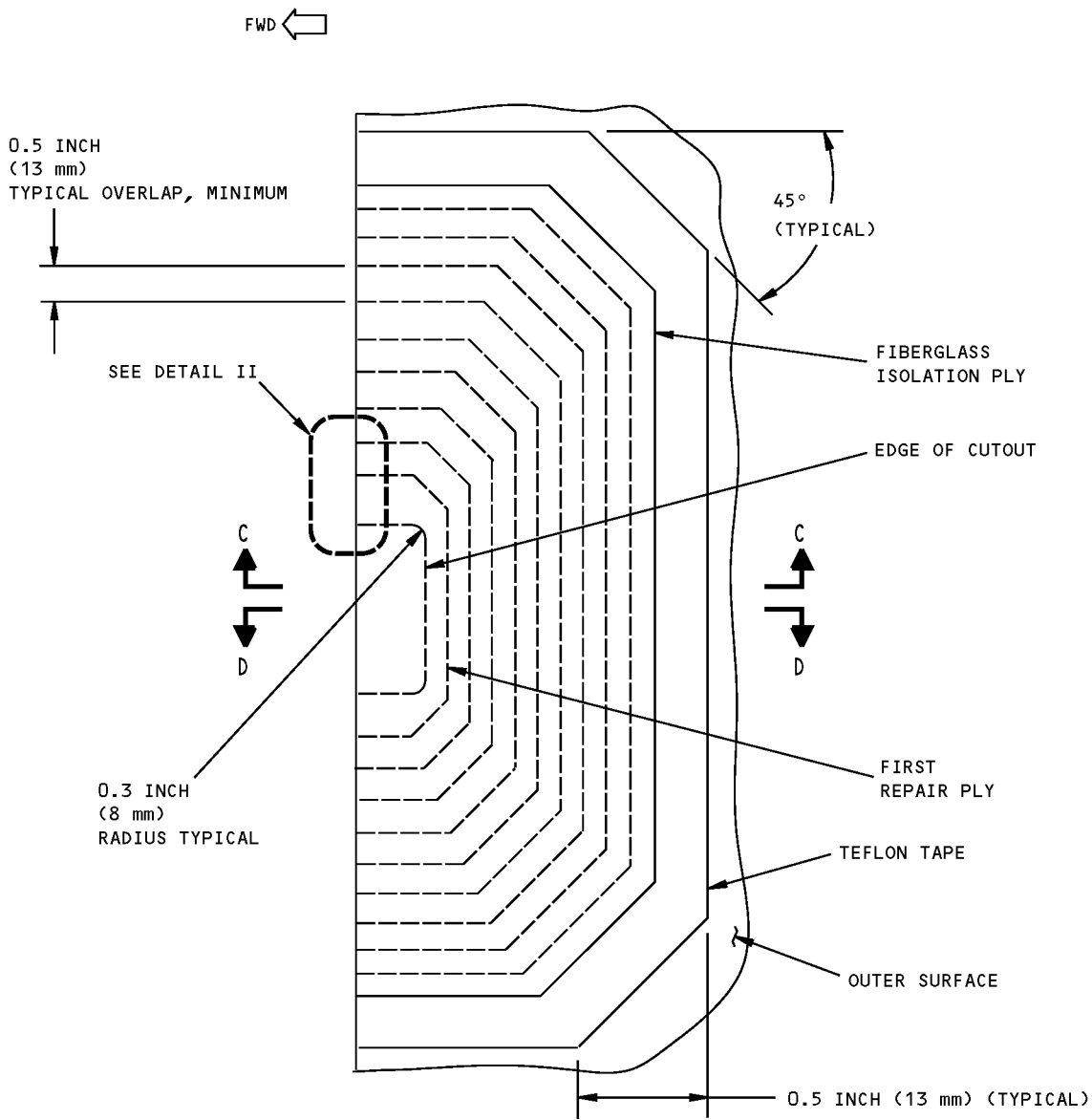
TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL

SECTION A-A

GRS230-01A

Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**

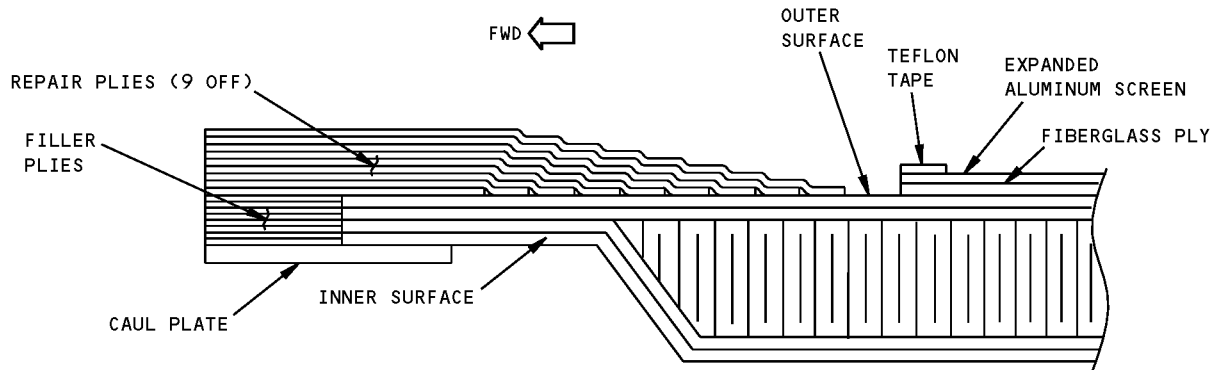


TYPICAL VIEW OF REPAIR
SECTION B-B

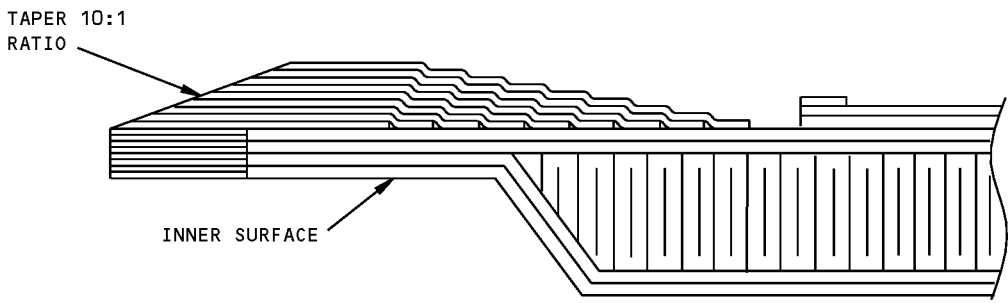
GRS230-02A

Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 7)

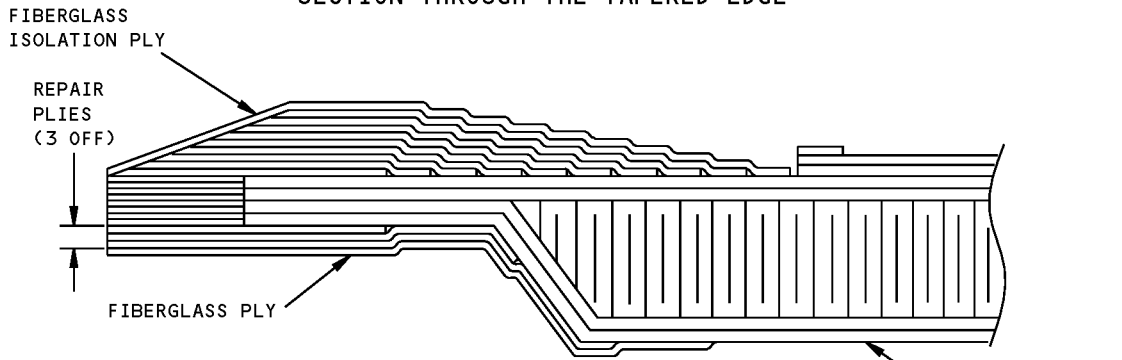
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THROUGH THE OUTER SURFACE REPAIR



SECTION THROUGH THE TAPERED EDGE



SECTION THROUGH THE COMPLETED REPAIR

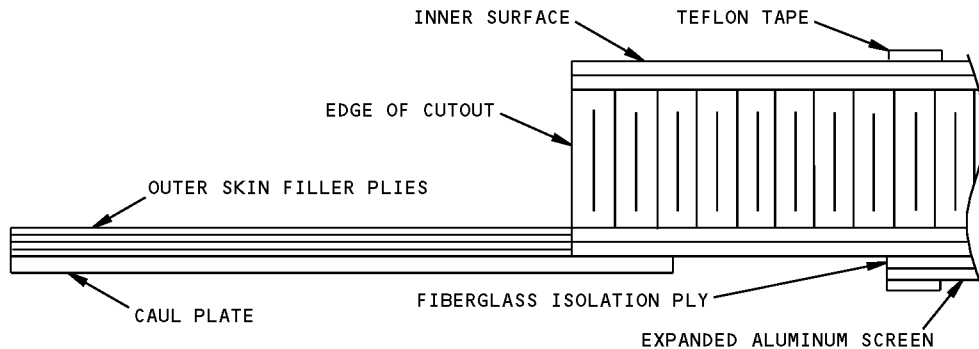
(TYPICAL FOR LAND AREA DAMAGE REPAIR)

SECTION C-C

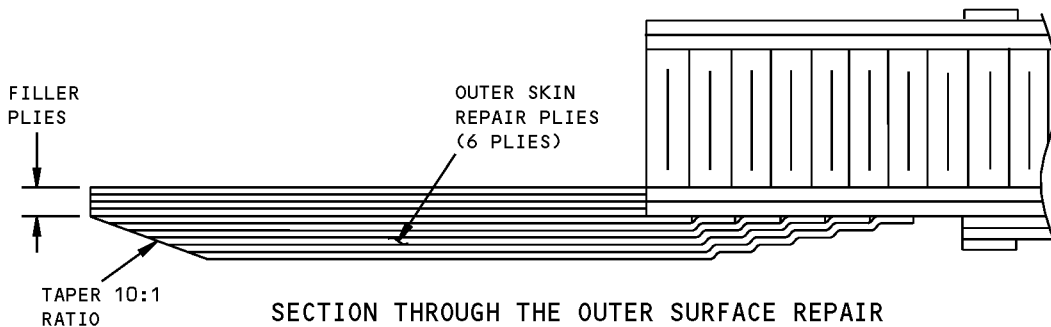
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**Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 7)**

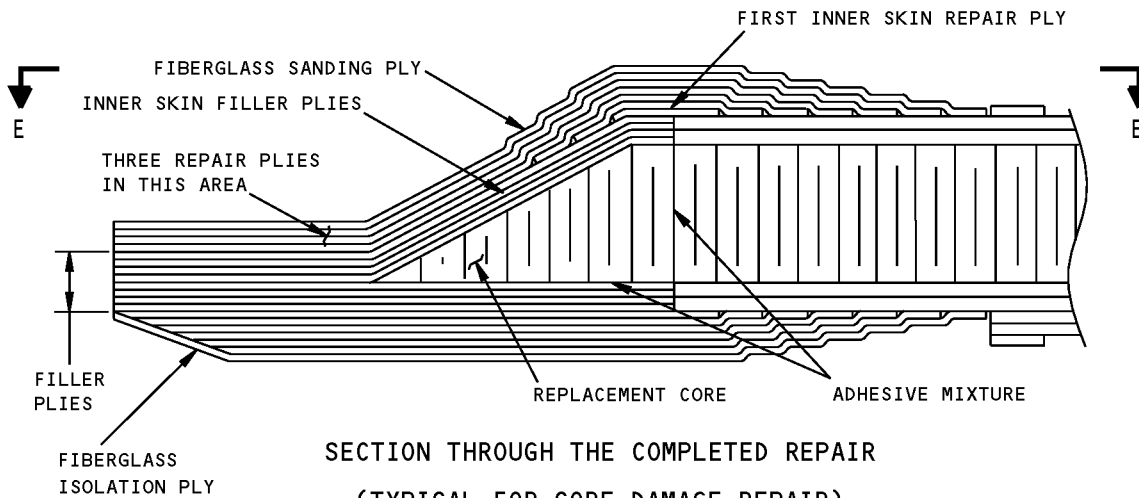
767-300
STRUCTURAL REPAIR MANUAL



SECTION THROUGH THE OUTER SKIN FILLER PLIES



SECTION THROUGH THE OUTER SURFACE REPAIR



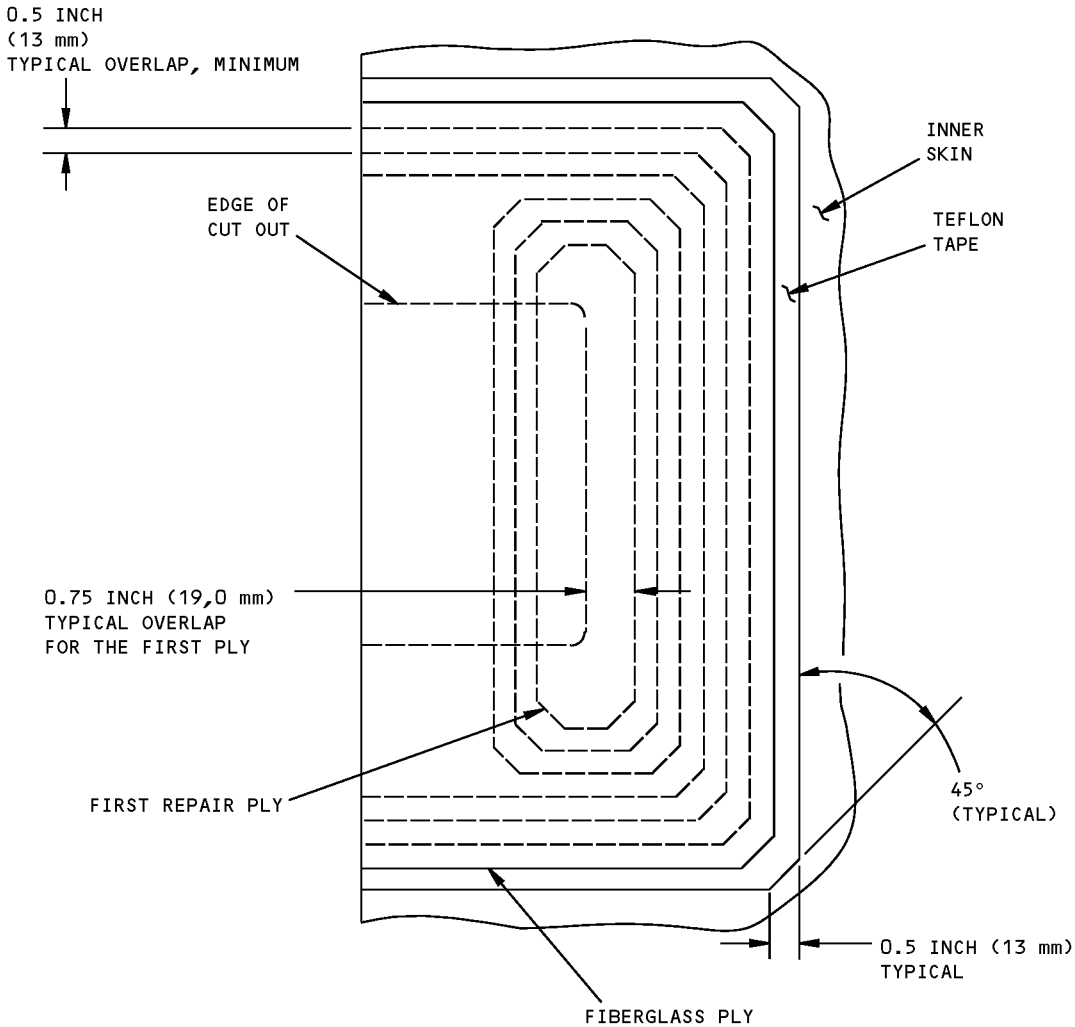
SECTION THROUGH THE COMPLETED REPAIR
(TYPICAL FOR CORE DAMAGE REPAIR)

SECTION D-D

GRS230-04A

Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**



VIEW OF THE REPAIR ON THE INNER SURFACE
FOR THE CORE DAMAGE REPAIR
VIEW E-E

GRS230-06

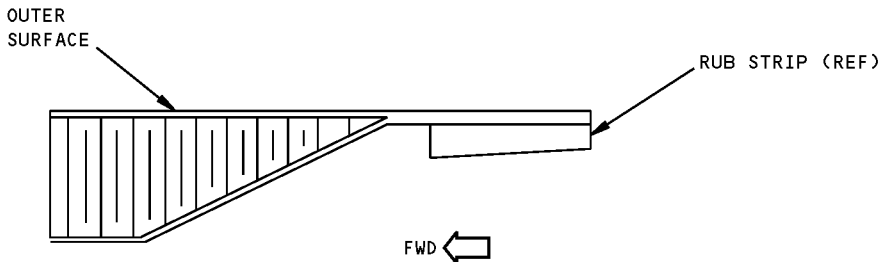
**Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 7)**

D634T210

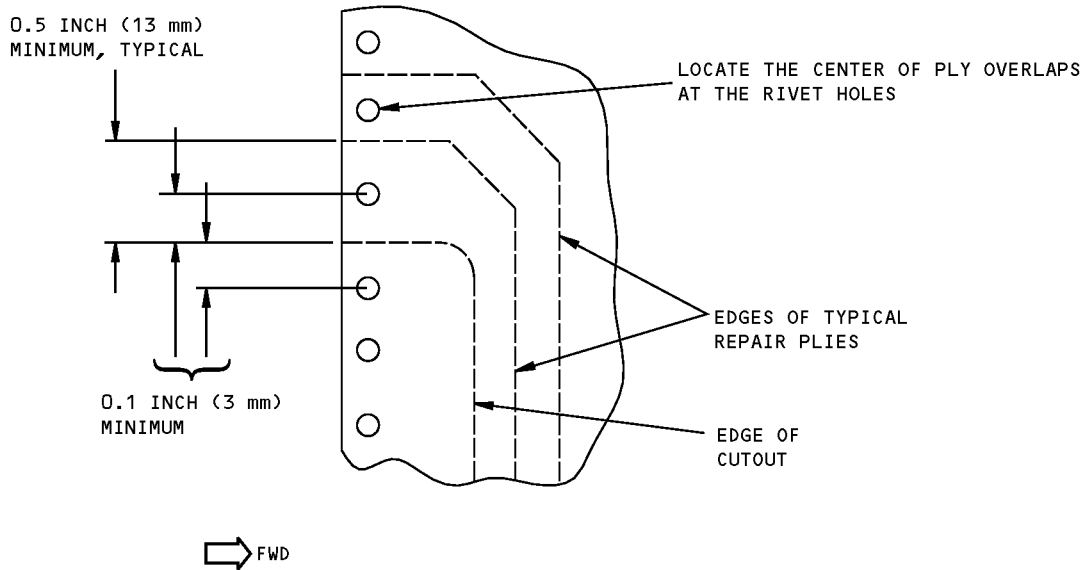
54-25-01

REPAIR 3
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Apr 01/2005

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STRUCTURAL REPAIR MANUAL**



**TYPICAL RUB STRIP INSTALLATION
DETAIL I**



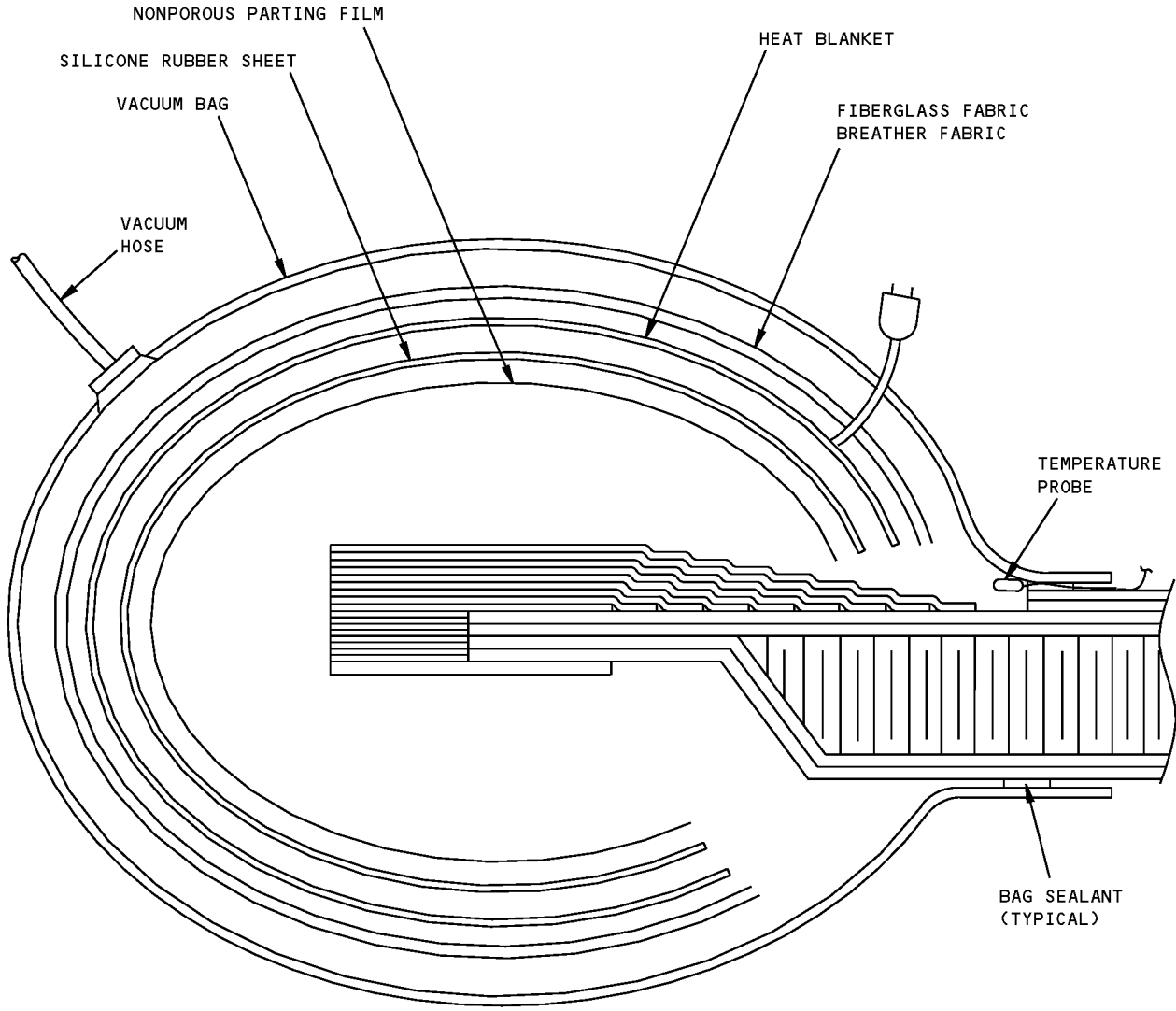
(FOR AFT EDGE ONLY)

DETAIL II

GRS230-07

**Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



LAND AREA OUTER SURFACE REPAIR SHOWN,
OTHER BAGGINGS SIMILAR
TYPICAL BAGGING

GRS230-05A

**Fan Cowl Bonded Panel Edge Damage Repair - CF6-80C2 Engine
Figure 201 (Sheet 7 of 7)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - FAN COWL BONDED PANEL PARTIAL PENETRATION REPAIR- CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is applicable to partial penetration damage to the bonded panel on the fan cowl assembly. The damage can be through the inner or outer skin, but not through the two skins. The damage can not be more than 15.0 in. (38.1 cm) in length or width. Refer to Figure 201/REPAIR 4.
- C. This repair is not applicable to high density core areas, or if the edge of the damage is less than 4.5 in. (11.4 cm) from the edge of the panel, or if it is less than 10.0 in. (25.4 cm) from the edge of other damage.

2. General

- A. This type of damage can be repaired by removal of the damaged skin and core, and installation of repair plies and a replacement core.
- B. If the damage is on the outer skin, it will be necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6 for the applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
54-25-01, IDENTIFICATION P/B IDENTIFICATION	FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the material will be removed. The cutout must have the minimum size that will remove the damage completely.

NOTE: The cutouts can be circular or rectangular. If rectangular, use a minimum radius of 0.5 in. (13 mm) at the corners.

- (3) Make a mark of the repair area on the skin. Apply pieces of teflon tape to the skin as marked.

NOTE: The illustrations in this repair show the damage on the outer surface, but the repair is also applicable if the inner surface is damaged.

- B. Prepare the damage area for repair.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED R PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Cut the damaged skin and core as marked. Remove the core down to the opposite skin plies. Do not damage the opposite skin plies.

Remove the sharp edges and loose fibers.

- (2) If the damage is on the outer surface, cut and remove the expanded aluminum screen and the existing fiberglass ply from the area between the pieces of teflon tape. Remove the sharp edges.
- (3) Sand the surface between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

C. Make the replacement core. Refer to Table 201/REPAIR 4 repair materials.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (1) Make the replacement core from Nomex-reinforced honeycomb core. The replacement core must have the same shape, size, and ribbon direction as the original core that was removed. Remove the burrs.

NOTE: As an alternative, you can make the replacement core thicker than the existing core by the thickness of the skin plies. If you do this, it is not necessary to make and install filler plies for the cutout.

- (2) Put the replacement core inside the cutout. Trim the edges as necessary. The space between the replacement core and the initial core must not be more than 0.05 in. (1.3 mm) on each side. Remove the replacement core.
- (3) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.

D. Clean the repair area and the replacement core.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area and the replacement core with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, delamination can occur later.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable sanding and cleaning steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break-free surfaces. Do a water break-free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler and repair plies.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all filler and repair plies. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of all filler and repair plies on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-25-01, IDENTIFICATION for warp directions.

3. Make 4 filler plies. The filler plies must fit inside the cutout.

4. Make 4 repair plies. Cut the first repair ply 0.5 in. (13 mm) larger than the cutout all around. Cut the next ply 0.5 in. (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the fiberglass sanding (or isolation) ply.

NOTE: If the repair is on the inner surface, the fiberglass ply will act as a sanding ply. If the repair is on the outer surface, the fiberglass ply will act as an isolation ply to isolate the expanded aluminum screen from the graphite plies.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 4 to make and cut the sanding (or isolation) ply, but use the notes below.

NOTE: 1. Make the ply from the Type 181 fiberglass fabric.

2. The ply must be 0.5 inch (13 mm) larger than the last repair ply all around. The ply must not overlap the teflon tape.

STRUCTURAL REPAIR MANUAL

- G. Install the replacement core.

NOTE: Before you do the following steps, make sure the repair area is horizontal. Turn the fan cowl as necessary to do this.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area inside the cutout. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur later.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Save a part of the resin mixture in a container. Add 5% by weight of phenolic microballoons to the remaining resin mixture and save it in another container.
- (4) Apply a layer of the resin mixture (without microballoons) to the area inside the cutout and around the edges.
- (5) Put the replacement core into position inside the cutout. Make sure the ribbon direction of the replacement core is correct.
- (6) Apply the resin/microballoon mixture to the space between the replacement core and the existing core. If necessary, use pieces of teflon tape to prevent leakage of the mixture. Apply more resin/microballoon mixture to fill the space all around.

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- (7) Remove the excess mixture from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur later.

- H. Cure the resin/microballoon mixture.

NOTE: Do this step if you had to use pieces of teflon tape to prevent leakage of the mixture from the spaces. If not, go to the next step to install the plies.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Raise the temperature of the repair area to 190° to 210°F (88° to 99°C). Use explosion proof heat lamps. Cure the mixture at this temperature for 220 minutes.

NOTE: Remove the Teflon tape before the cure cycle is complete, but after the mixture becomes hard.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (3) Let the repair area cool down to room temperature. If necessary, remove the excess cured mixture and sharp edges from the repair area. Use 150 to 400 grit silicon carbide abrasive paper. Do not damage the graphite fibers.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (4) Use dry air blast to remove the sanding particles. Clean the area between the pieces of teflon tape on the inner surface. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination can occur later.

- I. Install the filler, repair, and sanding (or isolation) plies.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the area between the pieces of teflon tape.

STRUCTURAL REPAIR MANUAL

- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the replacement core. Remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining filler, repair, and sanding plies.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

J. Bag and cure the repair.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 in. (7.6 cm) larger than the repair all around.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 in. (7.6 cm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 in. (5.1 cm) larger than the breather cloth all around.
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in 5 minutes.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) during the cure.
- (12) Let the repair area cool down to room temperature. Remove the bagging material.
- K. Examine the repair.
- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.
- L. Install the aluminum screen, if applicable.
- (1) If the damage is on the outer surface, refer to REPAIR 6, Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen. Then continue with this repair.
- M. Apply the surface finish.
- (1) Apply the surface finish and/or external paint to the repair area. Refer to REPAIR 8, Surface Finish Restoration Repair.

Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb (1/8" Nomex-reinforced, 3.0 PCF density)	HRH-10-1/8-3.0	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222
	Or HMX-7-1/8-3.0	Ciba Geigy Corp. Orbitex Products Dept. 3550 NW 49th Street Miami, FL 33142
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Commercially Available
Film, Parting	Porous	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available

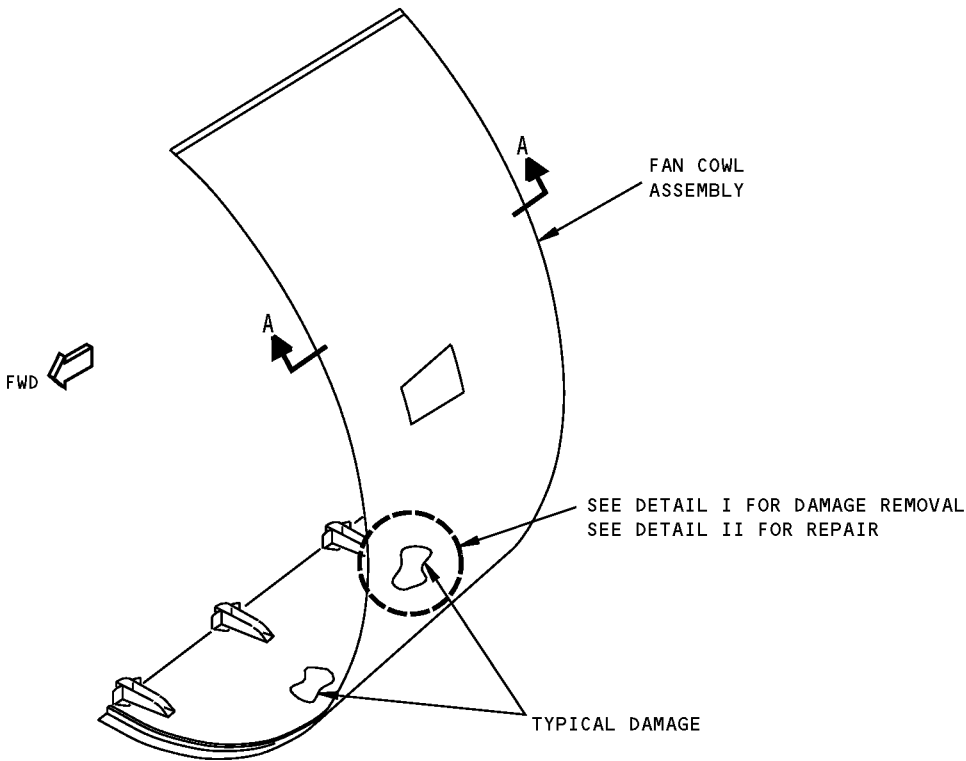
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

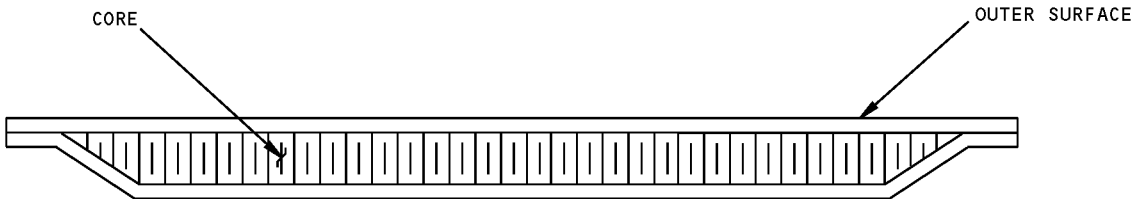
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**



LEFT FAN COWL SHOWN,
RIGHT FAN COWL SIMILAR



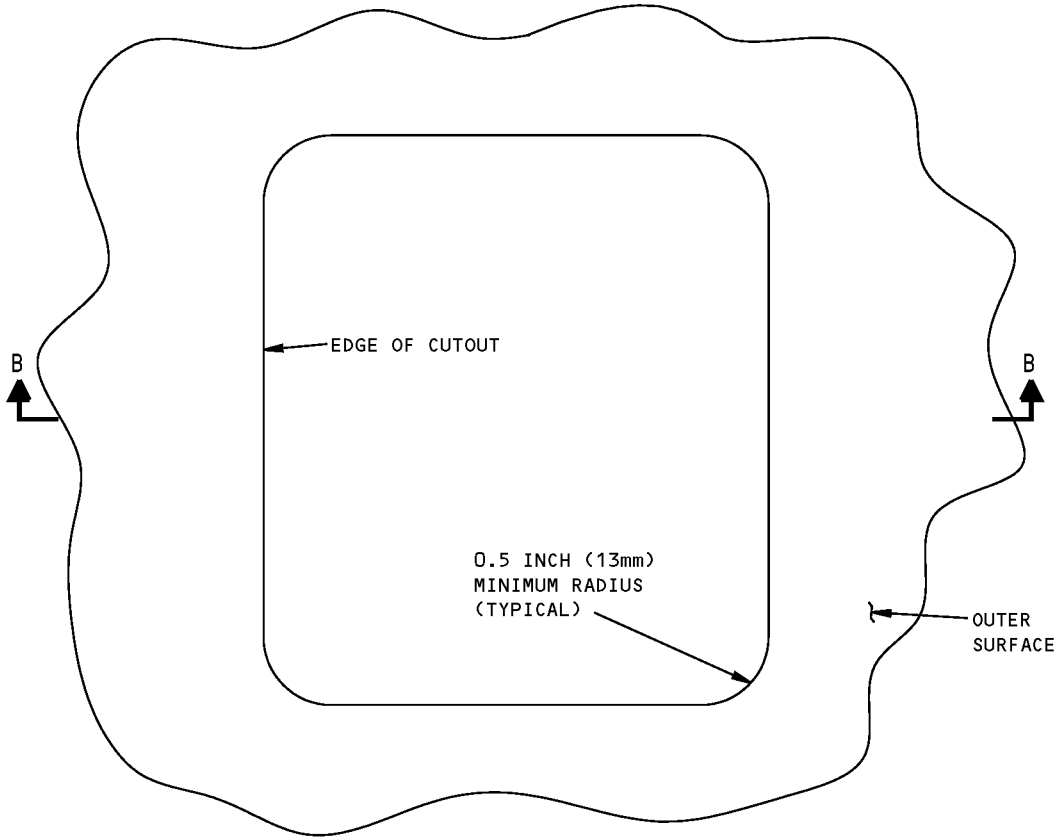
TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL

SECTION A-A

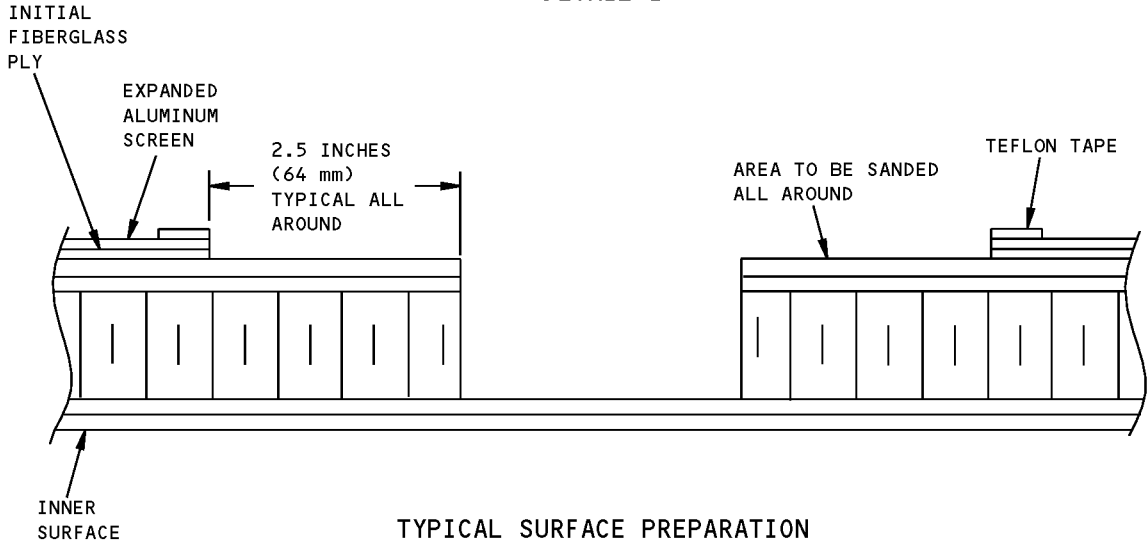
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**Fan Cowl Bonded Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



DETAIL I



TYPICAL SURFACE PREPARATION
SECTION B-B

GRS206-02A

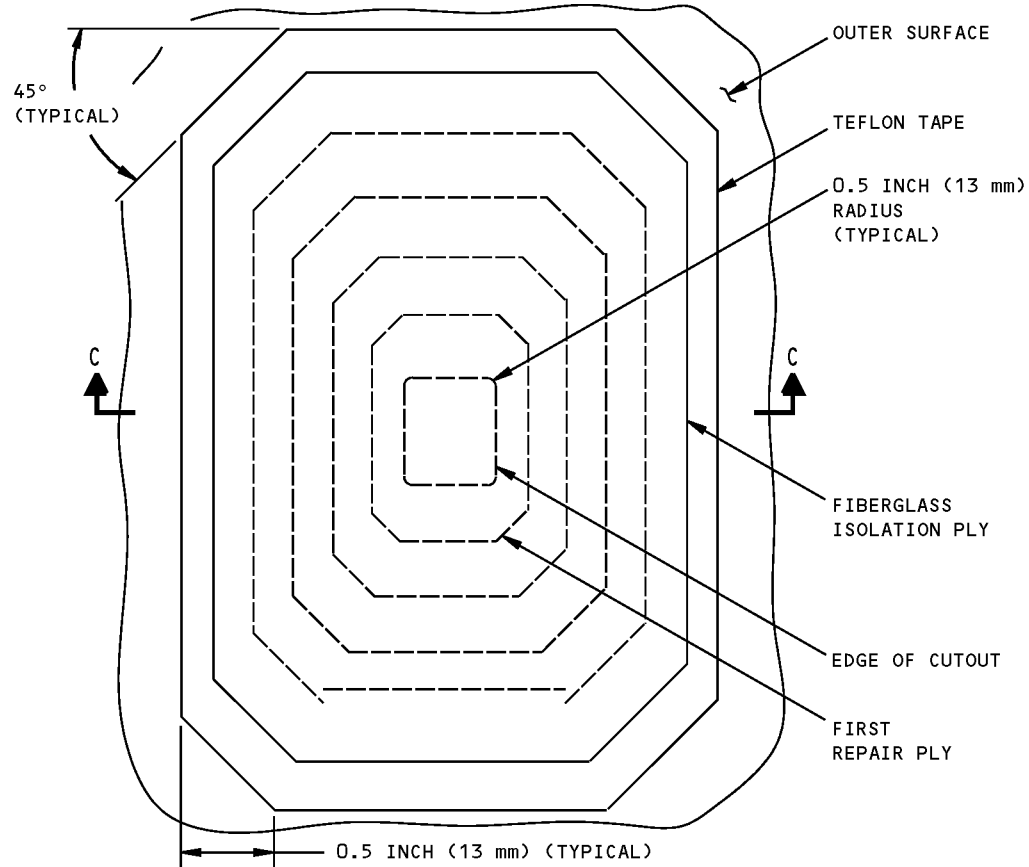
**Fan Cowl Bonded Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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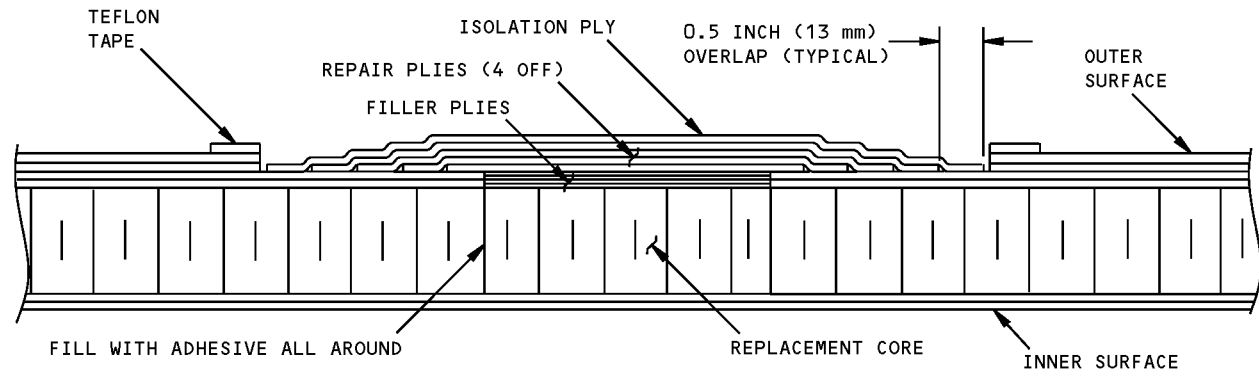
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REPAIR 4
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DETAIL II

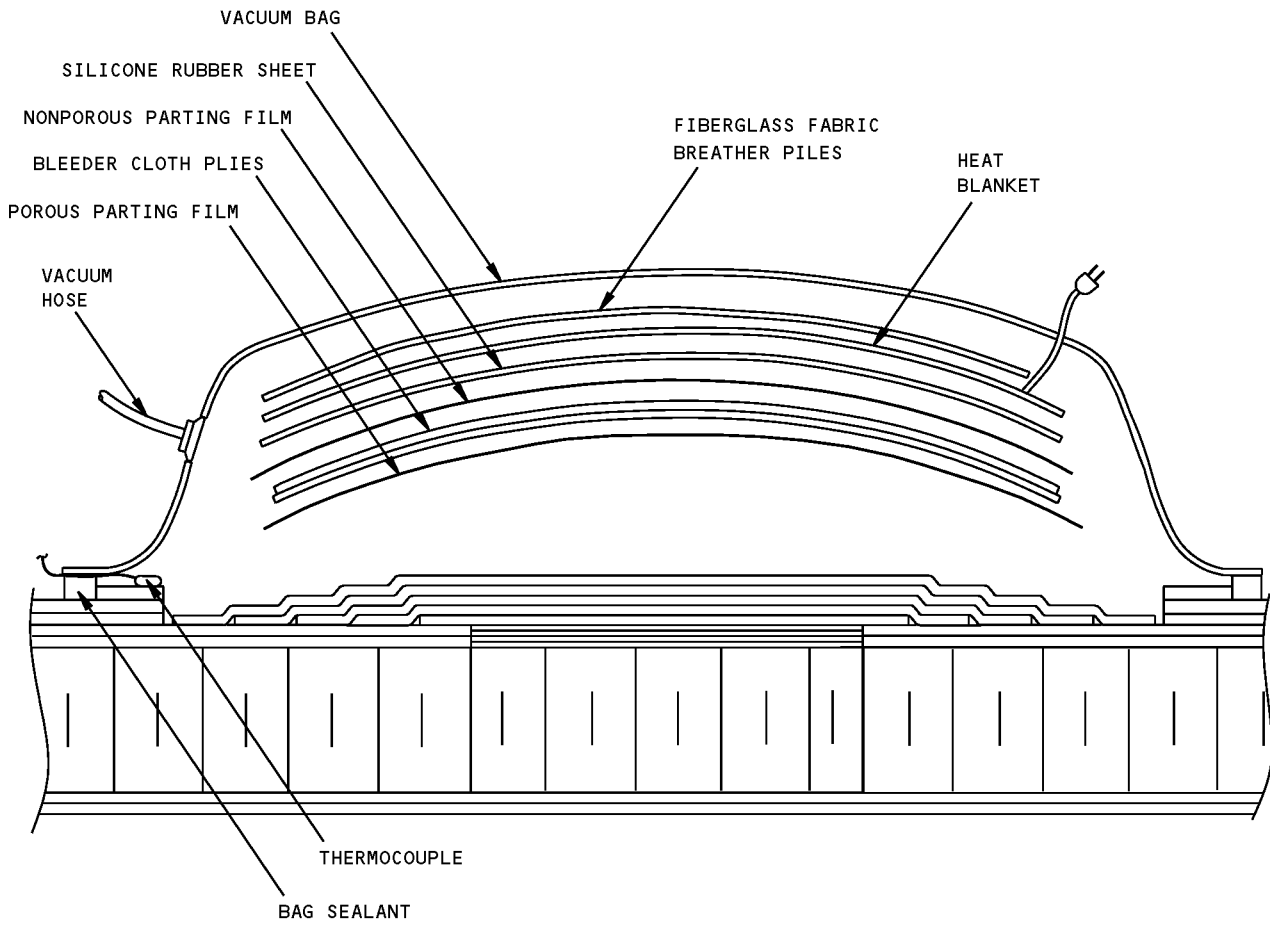


SECTION THROUGH THE COMPLETED REPAIR
SECTION C-C

GRS206-03A

**Fan Cowl Bonded Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR SHOWN,
INNER SURFACE REPAIR SIMILAR
TYPICAL BAGGING

GRS206-04A

**Fan Cowl Bonded Panel Partial Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - FAN COWL BONDED PANEL FULL PENETRATION REPAIR - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is applicable to full penetration damage through the two skins of the bonded panel on the fan cowl assembly. The damage cannot be more than 15.0 in. (38.1 cm) in length or width. Refer to Figure 201/REPAIR 5.
- C. This repair is not applicable to high density core areas, or if the edge of the damage is less than 4.5 in. (11.4 cm) from the edge of the panel, or if it is less than 10.0 in. (25.4 cm) from the edge of other damage.

2. General

- A. This type of damage is repaired by removal of the damaged skins and core, and the installation of the repair plies, and a replacement core.
- B. Because the outer skin is damaged, it will be necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6 for the applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
54-25-01, IDENTIFICATION P/B IDENTIFICATION	FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION

4. Repair Instructions

- A. Examine the damage area.

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- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damage will be removed. The cutout must have the minimum size that will remove the damage completely.

NOTE: 1. The inner skin cutout, for the core and for the inner skin, is larger than the outer skin cutout by 0.5 inch (13 mm). This makes a 0.5 inch (13 mm) wide land area all around the cutout.

2. The illustrations in this repair show the larger cutout on the inner skin. But the larger cutout can be on the outer skin if necessary.

3. The cutouts can be circular or rectangular. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Make a mark of the repair area on the inner and outer surfaces. Apply pieces of teflon tape on the inner and outer surfaces as marked.

- B. Prepare the damage area for repair.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Cut and remove the skins and core as marked. From the inner side, remove the core down to the opposite skin in the land area. Do not damage the opposite skin plies. Remove the sharp edges and loose fibers.
- (2) On the outer surface, cut and remove the expanded aluminum screen and the fiberglass ply from the area between the pieces of teflon tape. Remove the sharp edges.
- (3) Sand the inner and outer surfaces between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the graphite skin plies.

C. Make the replacement core and caul plate. See Table 201/REPAIR 5 for the list of repair materials.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (1) Make the replacement core from Nomex-reinforced honeycomb core. The replacement core must have the same shape, size, and ribbon direction as the original core that was removed. Remove the burrs.

NOTE: As an alternative, you can make the replacement core thicker than the existing core. If you do this, the replacement core surface will be at the same level as the adjacent surface when installed, and it will not be necessary to make and install filler plies for the larger cutout.

- (2) Put the replacement core inside the cutout. Trim the edges as necessary. The space between the replacement core and the existing core must not be more than 0.05 inch (1.3 mm) on each side. Remove the replacement core. Remove the burrs.
- (3) Make a caul plate to be installed inside the cutout against the land area. Make the caul plate from available aluminum alloy sheet or plate stock. The caul plate must be thick enough for vacuum bagging application. Remove the burrs.
- (4) Make the caul plate to align with the contour of the repair area. The caul plate must fit in place with light finger pressure.
- (5) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper.

D. Clean the repair area and repair parts.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area and repair parts with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, delamination can occur later.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable sanding and cleaning steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces. It is not necessary for the caul plate to have a water break free surface.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the outer surface filler, repair, and sanding plies at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler plies and repair plies for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step must be large enough so that you can make all filler and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of all filler and repair plies for the outer surface on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to FAN COWL SKIN - CF6-80C2 ENGINE - IDENTIFICATION, PAGEBLOCK 54-25-01, IDENTIFICATION for warp directions.

3. Make 4 filler plies. The filler plies must fit inside the cutout on the outer surface.

4. Make 5 repair plies for the outer surface. Cut the first repair ply 0.5 in. (13 mm) larger than the cutout all around. Cut the next ply 0.5 in. (13 mm) larger than the first ply all around. Repeat until all repair plies are made.

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the fiberglass isolation ply for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 5 to make and cut the fiberglass isolation ply for the outer surface, but use the notes below.

NOTE: 1. Make the isolation ply from the Type 181 fiberglass fabric.

2. The isolation ply must be 0.5 in. (13 mm) larger than the last repair ply all around, but it must not overlap the Teflon tape.

- G. Install the filler, repair, and isolation plies on the outer surface.

- (1) Apply a layer of release cloth to the mating surface of the caul plate.
- (2) Put the caul plate into position against the land area inside the cutout. Apply teflon tape or mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

STRUCTURAL REPAIR MANUAL

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.
- (5) Remove the bottom sheet of the non-porous parting film from the first filler ply for the outer surface. Put the filler ply into position inside the cutout. Press the ply against the caul plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (6) Repeat the above steps for the remaining plies for the outer surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (7) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth lightly made moist with Turco 6646 solvent.

Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

H. Bag and cure the repair on the outer surface.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 in. (7.6 cm) larger than the repair all around.
- (3) Put five plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

STRUCTURAL REPAIR MANUAL

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 in. (7.6 cm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 in. (5.1 cm) larger than the breather cloth all around
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in five minutes.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) during the cure.
- (12) Let the repair area cool down to room temperature. Remove the bagging material and the caul plate.
- I. Examine the repair on the outer surface.
- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations. Repeat the applicable steps, if necessary.
- J. Install the expanded aluminum screen on the outer surface.

NOTE: You can do this procedure now or after the inner surface repair is done.

- (1) Refer to REPAIR 6, Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen. Then continue with this repair.

- K. Install the replacement core.

NOTE: Before you do the next steps, make sure the repair area is horizontal, and the outer surface is on the bottom. Turn the outer barrel as necessary to do this.

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STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area inside the cutout. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur later.

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- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Save a part of the resin mixture in a container. Add 5% by weight of phenolic microballoons to the remaining resin mixture and save it in another container.
- (4) Apply a layer of the resin mixture (without microballoons) to the area inside the cutout, including the land area, the edges, and the cured filler plies.
- (5) Put the replacement core into position inside the cutout. Make sure the ribbon direction of the replacement core is correct.
- (6) Apply the resin/microballoon mixture to the space between the replacement core and the existing core. If necessary, use pieces of teflon tape to prevent leakage of the mixture. Apply more resin/microballoon mixture to fill the space all around.

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- (7) Remove the excess mixture from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

L. Cure the resin/microballoon mixture.

NOTE: Do this step if you had to use pieces of teflon tape to prevent leakage of the mixture from the spaces. If not, go to the next step.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Raise the temperature of the repair area to 190° to 210°F (88° to 99°C). Use explosion proof heat lamps. Cure the mixture at this temperature for 220 minutes.

NOTE: Remove the teflon tape before the cure cycle is complete, but after the mixture becomes hard.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

- (3) Let the repair area cool down to room temperature. If necessary, remove the excess cured mixture and sharp edges from the repair area. Use 150 to 400 grit silicon carbide abrasive paper. Do not damage the graphite fibers.

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CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (4) Use dry air blast to remove the sanding particles. Clean the area between the pieces of teflon tape on the inner surface. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination can occur later.
- (5) Cover the repair area to prevent contamination.

M. Make the filler, repair, and sanding plies for the inner surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 5 to make and cut the filler and repair plies for the inner surface.
- (2) Repeat the procedure in Paragraph 4.F./REPAIR 5 to make and cut the sanding ply for the inner surface.

N. Install the filler, repair, and sanding plies on the inner surface.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the EA9390 resin.
- (2) Apply a thin layer of the resin mixture to the area of the inner surface between the pieces of teflon tape.
- (3) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position above the replacement core. Press the filler ply against the replacement core and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (4) Repeat the above steps for the remaining filler, repair, and sanding plies for the inner surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

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- (5) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.
- O. Bag and cure the repair on the inner surface.
- (1) Install bagging material on the inner surface repair plies and cure the repair. Use the same procedure as for the outer surface repair.
- P. Examine the repair.
- (1) Visually examine the repair area on the two surfaces to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.
- Q. Apply the surface finish.
- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 8, Surface Finish Restoration Repair.

STRUCTURAL REPAIR MANUAL**Table 201:** Repair materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy plate	Any heat treated designation 0.20-0.25 inch (5.1-6.4mm) thick	Commercially Available
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Core material, Honeycomb (1/8" Nomex-reinforced, 3.0 PCF density)	HRH-10-1/8-3.0	Hexcel Corp. Valley Industrial Park P.O. Box 66 Casa Grande, AZ 85222
	Or HMX-7-1/8-3.0	Ciba Geigy Corp. Orbitex Products Dept. 3550 NW 49th Street Miami, FL 33142
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Commercially Available
Film, Parting	Porous	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Lockwire	AMS 5687	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Microballoons	Phenolic 135 micron	Union Carbide Corp. Chemicals and Plastics Division River Road Bound Brook, NJ 08805
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available

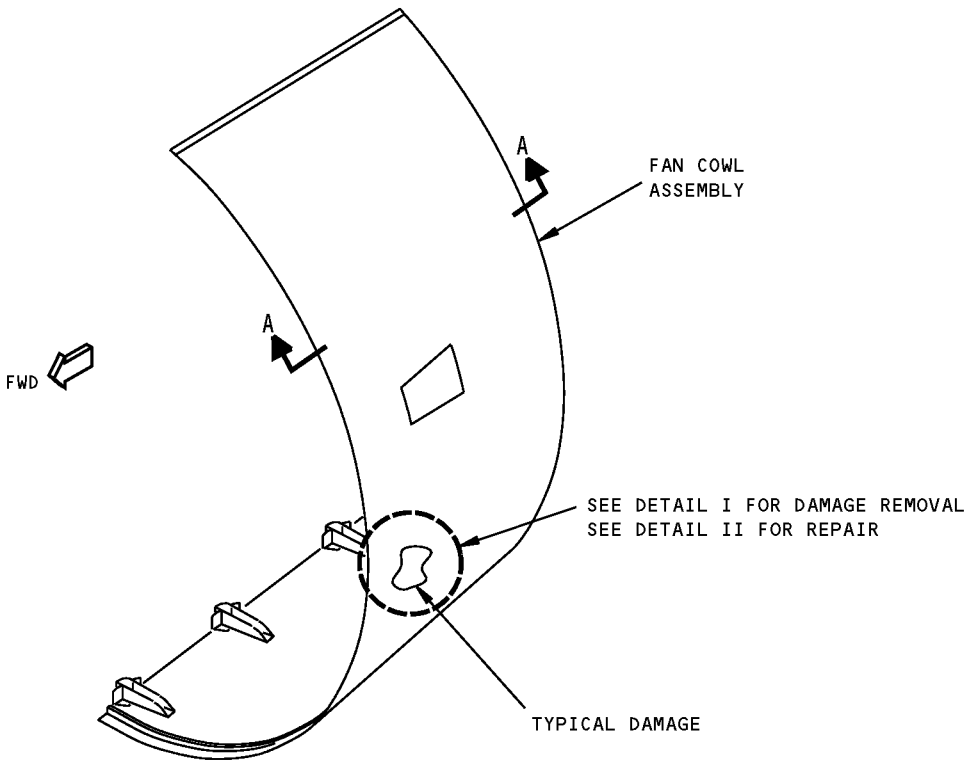
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair materials and Equipment (Continued)

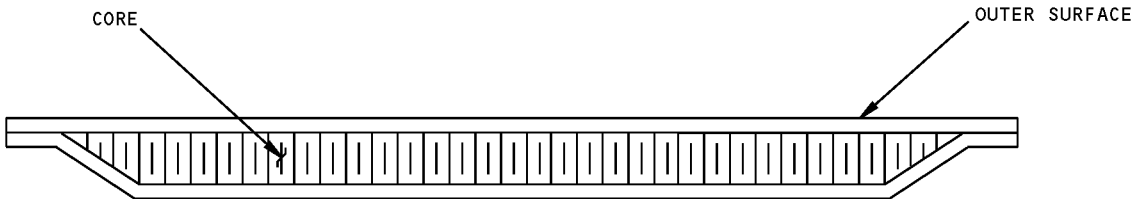
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**



LEFT FAN COWL SHOWN,
RIGHT FAN COWL SIMILAR



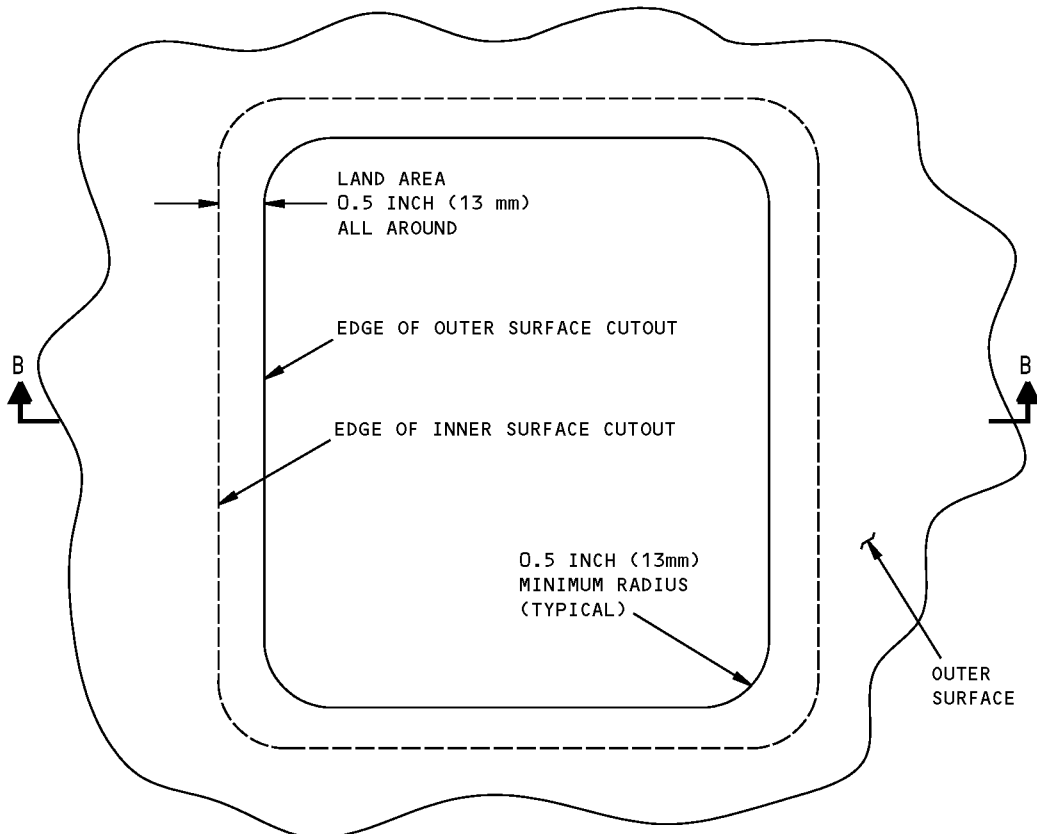
TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL

SECTION A-A

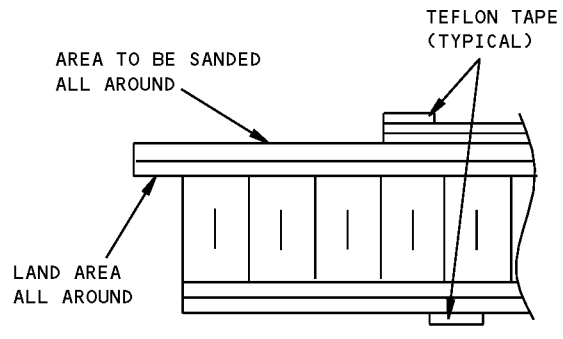
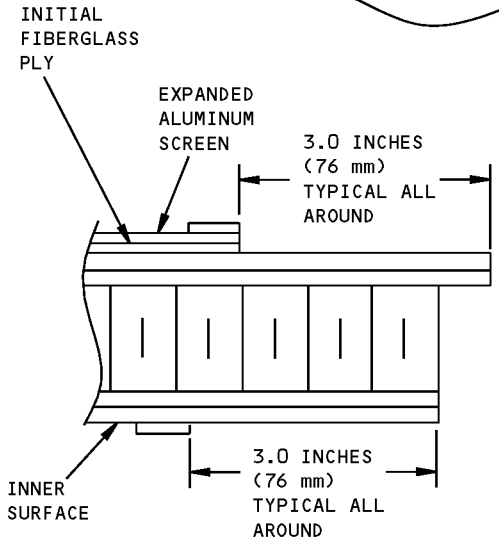
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**Fan Cowl Bonded Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 5)**

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STRUCTURAL REPAIR MANUAL**



DETAIL I



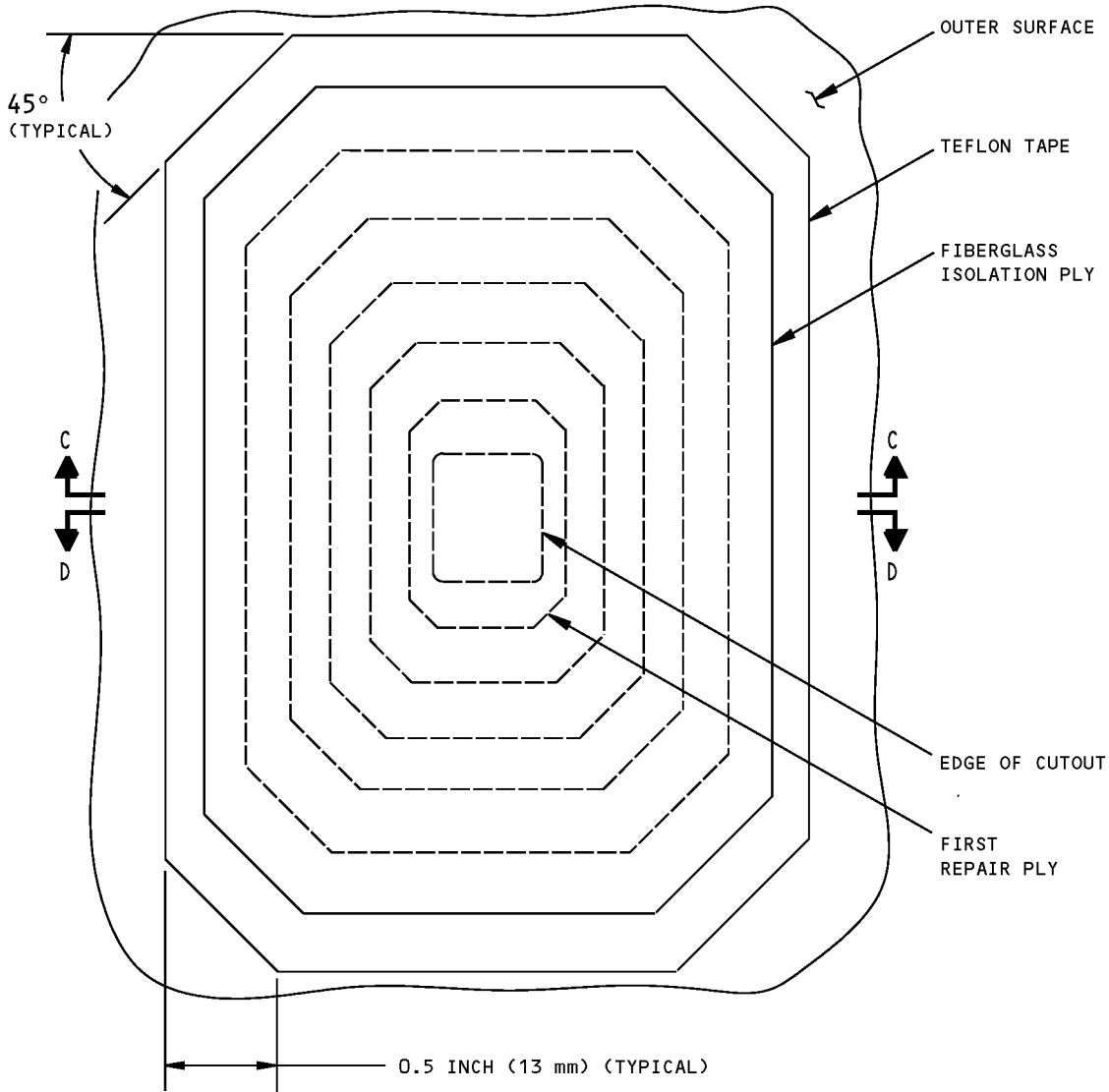
TYPICAL SURFACE PREPARATION

SECTION B-B

GRS205-02A

**Fan Cowl Bonded Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 5)**

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STRUCTURAL REPAIR MANUAL**



TYPICAL VIEW OF REPAIR
DETAIL II

GRS205-03A

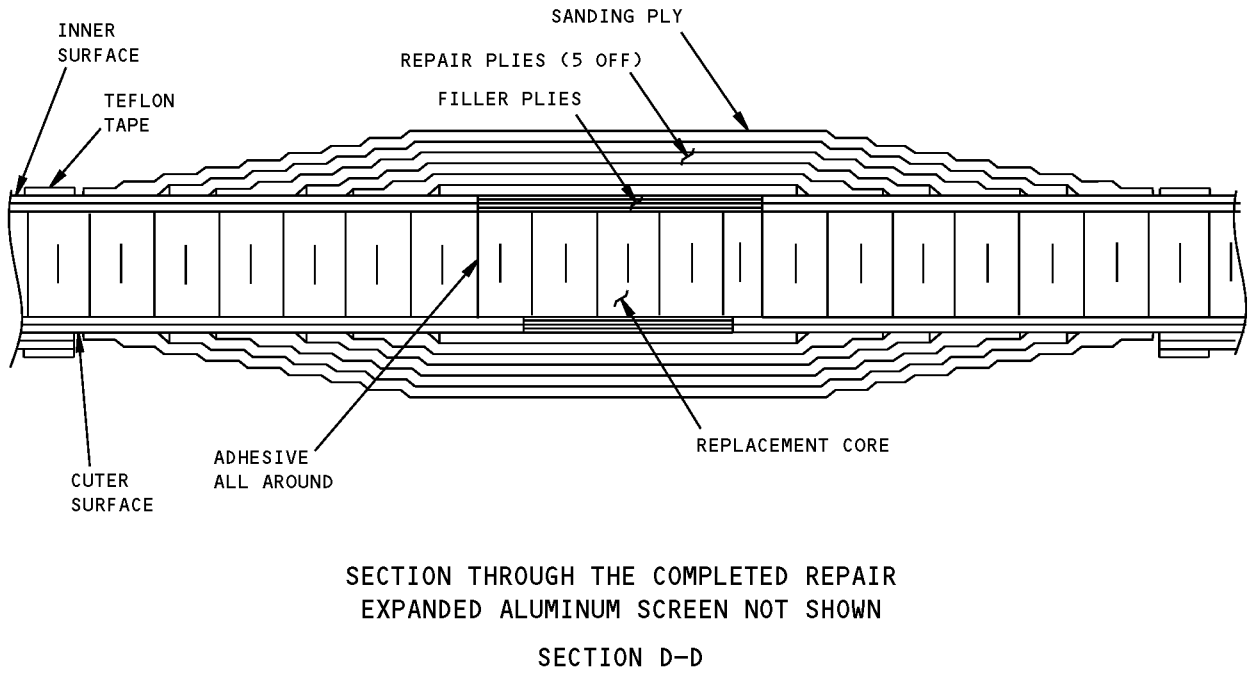
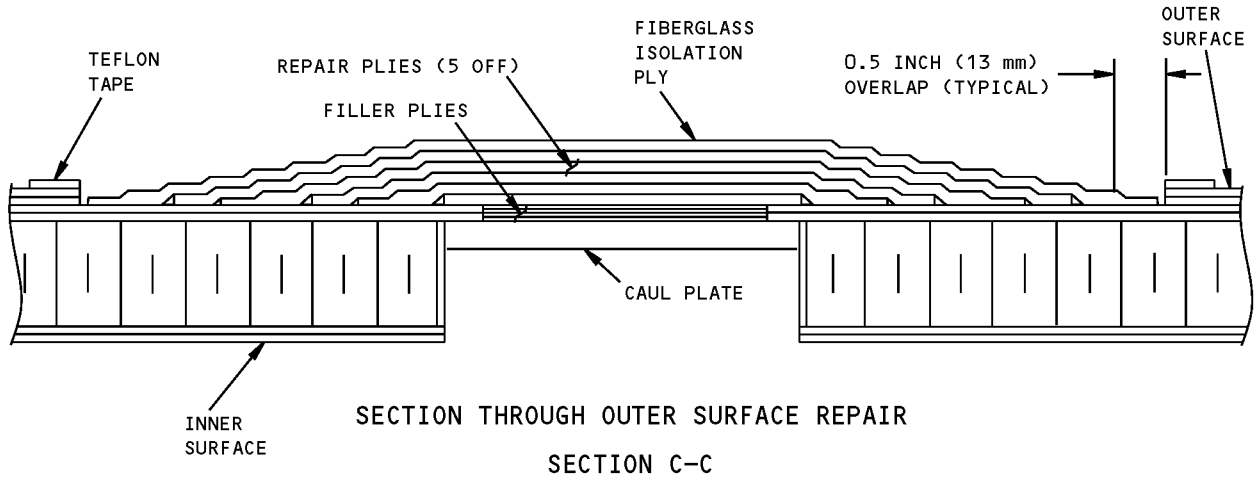
**Fan Cowl Bonded Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 5)**

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REPAIR 5
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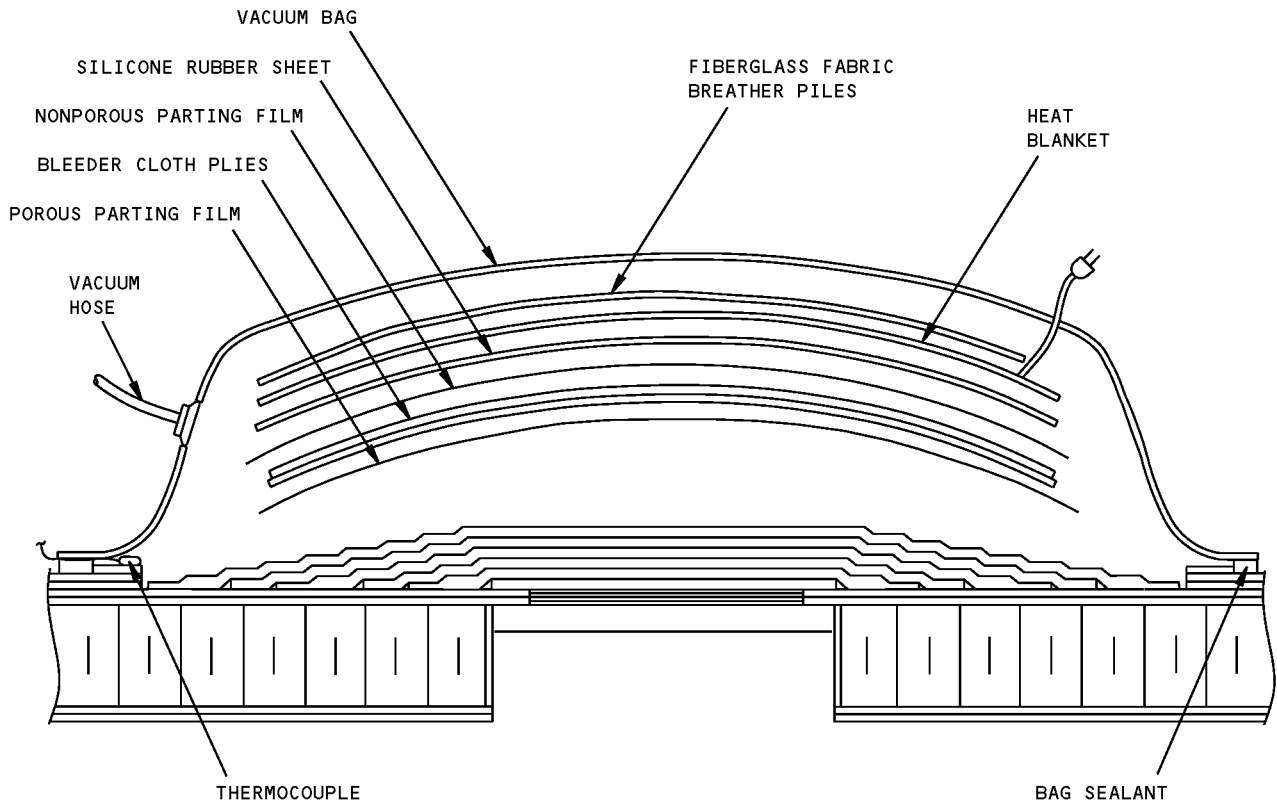
**767-300
STRUCTURAL REPAIR MANUAL**



GRS205-04A

**Fan Cowl Bonded Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR SHOWN,
INNER SURFACE REPAIR SIMILAR
TYPICAL BAGGING

GRS205-05A

**Fan Cowl Bonded Panel Full Penetration Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - FAN COWL EXPANDED ALUMINUM SCREEN REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This subject is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is applicable to expanded aluminum screen damage on the fan cowl assembly outer surface. Refer to Figure 201/REPAIR 6.

2. General

- A. Expanded aluminum screen damage is repaired as follows:
 - (1) If the damage is equal to, or less than, 3.0 in² (19.4 cm²) in area, but no more than 2.0 in. (5.1 cm) in length or width, the damaged screen will be removed. It will not be necessary to install new expanded aluminum screen. A maximum of two such repairs can be done on each fan cowl assembly.
 - (2) If the damage is more, a piece of expanded aluminum screen will be installed in the damage area.
- B. If the skin plies are damaged, it will be necessary to do this repair in conjunction with other applicable repairs. If so, do the necessary surface preparation and skin repair as given in the other applicable repair procedure, and do the expanded aluminum screen installation and the related bagging and curing as given in this repair. Read through the two repair procedures before you start to do the repairs.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE

4. Repair Instructions

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- A. Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- B. Find the extent of damage.
 - (1) Make a mark of the area where the expanded aluminum screen is not there, or is damaged. Measure the size of the damage area.

NOTE: 1. If this repair is done in conjunction with another repair, the size of the damage area is the size of the fiberglass ply installed per that repair.

2. Damage is "Small" if it is equal to, or less than, 3.0 in² (19.4 cm²) in area and is no more than 2.0 in. (5.1 cm) long or wide. Damage is "Large" if it is more.

- C. Remove the damage.

STRUCTURAL REPAIR MANUAL

- (1) Make a mark of the repair area and apply pieces of teflon tape around it.

NOTE: 1. For small damage area, apply the tape 0.5 in. (13 mm) beyond the edge of damage all around.

2. For large damage area, apply the tape 1.5 in. (3.8 cm) beyond the edge of damage all around.

3. If this repair is done in conjunction with another repair, measure the above dimensions from the edge of the fiberglass (isolation) ply installed per that repair. The fiberglass ply isolates the aluminum screen from the graphite plies.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (2) Cut and remove the damaged or loose expanded aluminum screen, if applicable. Remove the burrs.
- (3) Remove the sharp edges in the damage area, if applicable. Remove the existing surface finish in the area between the pieces of tape until you can see the existing expanded aluminum screen. Make the surface rough, but do not damage the skin plies or the expanded aluminum screen. Use 150 to 400 grit silicon carbide abrasive papers.

- D. Clean the repair area. Refer to Table 201/REPAIR 6 for the list of repair materials.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, delamination or disbonds can occur later.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the core in the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

STRUCTURAL REPAIR MANUAL

- (3) The repair surface must be a water break free surface. Do a water break free test of the surface.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.
- (5) Let the repair area cool down to room temperature. Cover the repair area to prevent contamination.
- (6) If this is a small area repair, go to Paragraph 4.H.(1)/REPAIR 6 to apply the surface finish. If this is a large area repair, go to the next step.

- E. Install the expanded aluminum screen, if applicable.

NOTE: 1. Do this step only if you repair a large area damage.

2. Expanded aluminum screen must be "phosphoric acid anodized" and "primed", and must be ready to use. Make sure you specify this when you order the screen. If not, the screen can be damaged when you anodize and prime it.

CAUTION: 1. EXPANDED ALUMINUM SCREEN IS SUPPLIED READY TO USE. USE LINT-FREE GLOVES WHEN YOU TOUCH THE ALUMINUM EXPANDED SCREEN. THIS PREVENTS CONTAMINATION.

2. EXPANDED ALUMINUM SCREEN CAN BE DAMAGED EASILY. MAKE SURE YOU HANDLE WITH CARE. IF DAMAGED, USE A NEW PIECE.

- (1) Cut a piece of expanded aluminum screen. The piece must be large enough to cover the area between the pieces of Teflon tape, and overlap the existing expanded aluminum screen in the repair area by 1.0 in. (2.5 cm) to 1.5 in. (3.8 cm) all around.

NOTE: If necessary, it is acceptable to make the expanded aluminum screen in two or more pieces and splice them together. The pieces must overlap by 1.0 in. (2.5 cm) to 1.5 in. (3.8 cm) along all splices.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (2) If necessary, clean the repair area. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, disbonds can occur later. If you must clean the aluminum screen, make sure you do not damage it.

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WARNING: ADHESIVE IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Apply a layer of the FM300-2M film adhesive to the surface in the repair area between the pieces of teflon tape. This includes the existing or installed fiberglass isolation ply and the area where the existing expanded aluminum screen is exposed.
- (4) Install the expanded aluminum screen above the layer of the film adhesive. Press into position and remove the wrinkles. Make sure the screen overlaps the exposed, existing screen all around.
- (5) Apply a second layer of the film adhesive above the expanded aluminum screen. The adhesive layer must be large enough to cover the installed expanded aluminum screen, including the overlap area.

NOTE: If the installed aluminum screen is made in two or more pieces, you must apply a layer of the film adhesive between the pieces of the screen in all overlap areas.

F. Bag and cure the repair.

- (1) Put a layer of non-porous release cloth above the repair area, 3.0 in. (7.6 cm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (2) Put a sheet of silicone rubber above the non-porous release cloth.
- (3) Put a heat blanket above the sheet of silicone rubber.
- (4) The film must be 2.0 in. (5.1 cm) larger than the heat blanket all around.
- (5) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film with bag sealant.

Seal the edges of the bagging film to the surface with bag sealant.

- (6) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in five minutes.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (7) Turn on the heat blanket and raise the temperature to 240° to 260°F (116° to 127°C). Increase the temperature at a rate of 4° to 7°F (2.2° to 3.8°C) per minute. Cure the repair at this temperature for 90 to 120 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) during the cure.e.
- (8) Let the repair area cool down to room temperature. Remove the bagging material.

G. Examine the repair.

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- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for delaminations or disbonds. Repeat the applicable steps, if necessary.
- (2) If this repair is done in conjunction with another repair, you can continue with that repair at this time. If not, you can go to the next step below.

H. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 8.

Table 201: Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Adhesive, Film	FM300-2M (Alternative: FM300-2K)	Cytec Materials, Inc. 1300 Revolution Street Harve De Grace, MD 21078
Aluminum screen, Expanded	4AL 8-080 (Phosphoric acid anodized per BAC 5555; primed per BAC 5514-5137)	Exmet Corp. 7 Great Hill Road P.O. Box 1266 Naugatuck, CT 06770
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release	200 TFNP (Non-porous, without adhesive backing)	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Film, Bagging	3 Mil, Nylon	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060

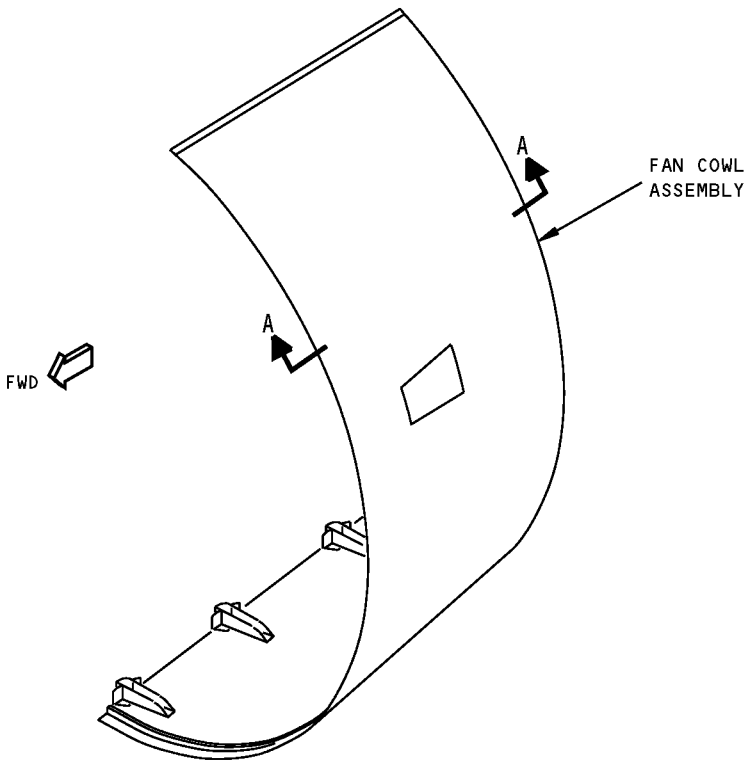
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

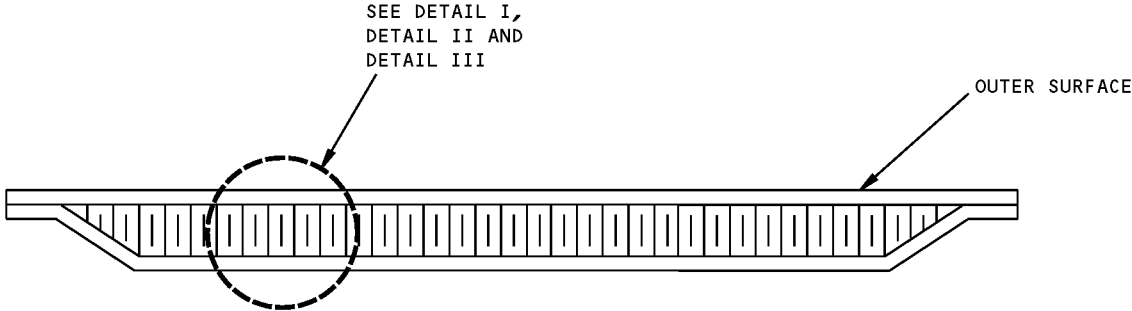
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**



LEFT FAN COWL SHOWN,
RIGHT FAN COWL SIMILAR

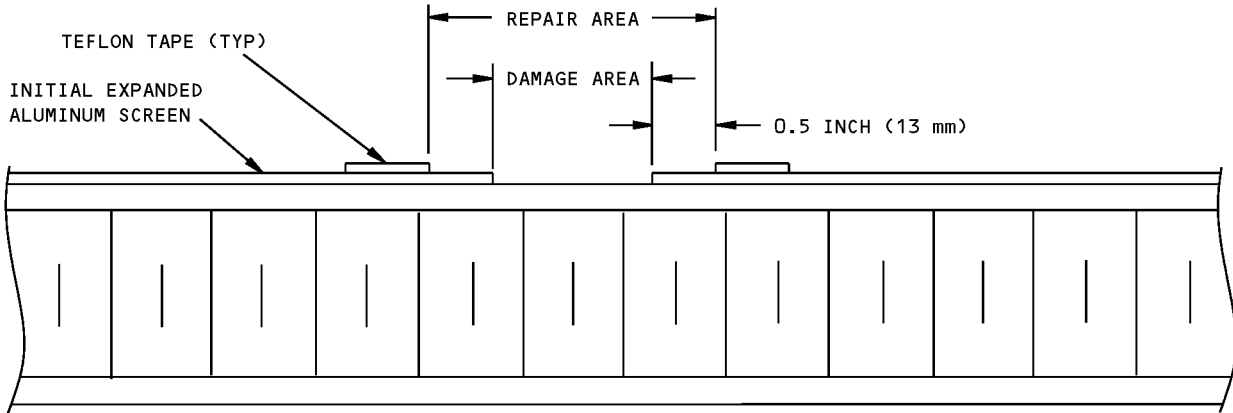


TYPICAL CROSS SECTION
THROUGH THE BONDED PANEL
SECTION A-A

GRS231-01A

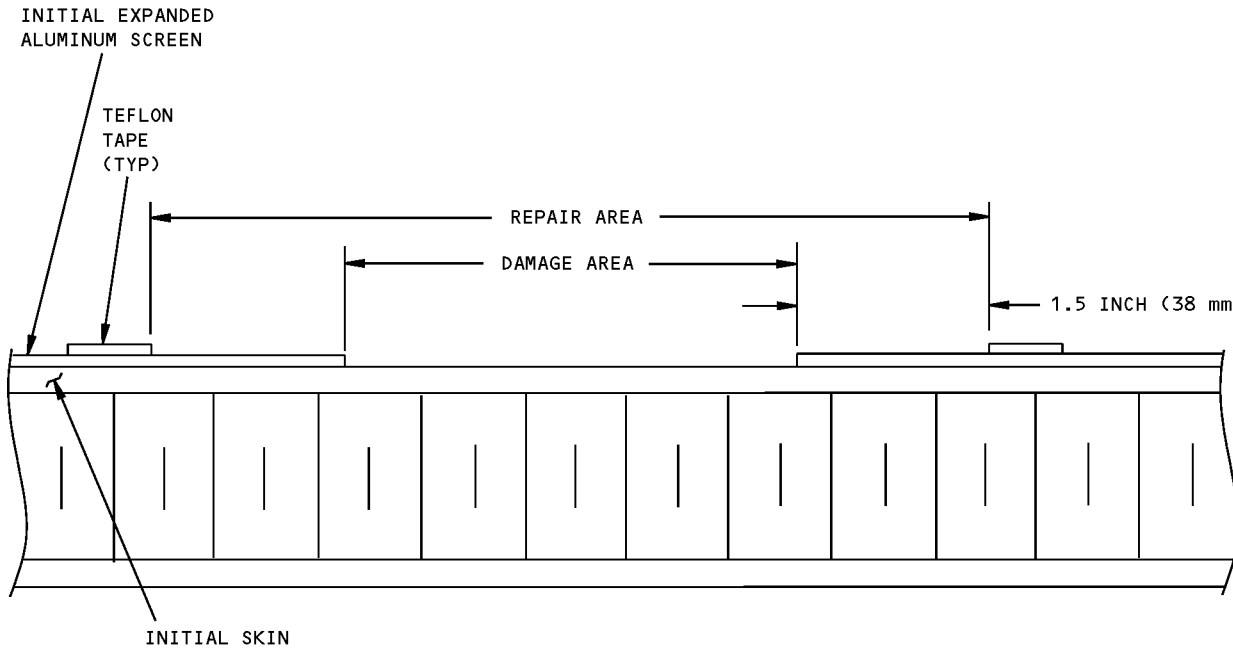
**Fan Cowl Expanded Aluminum Screen Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



SMALL DAMAGE AREA PREPARATION

DETAIL I



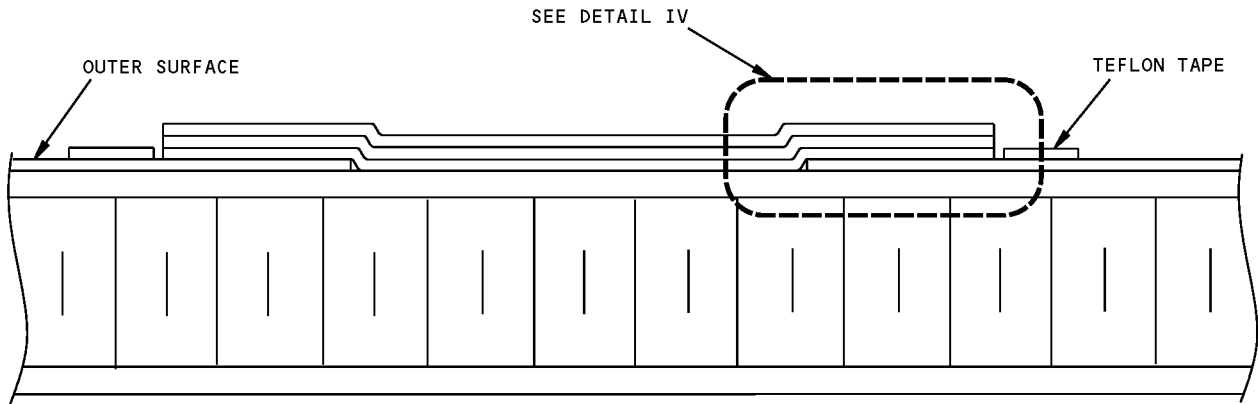
LARGE DAMAGE AREA PREPARATION

GRS231-02

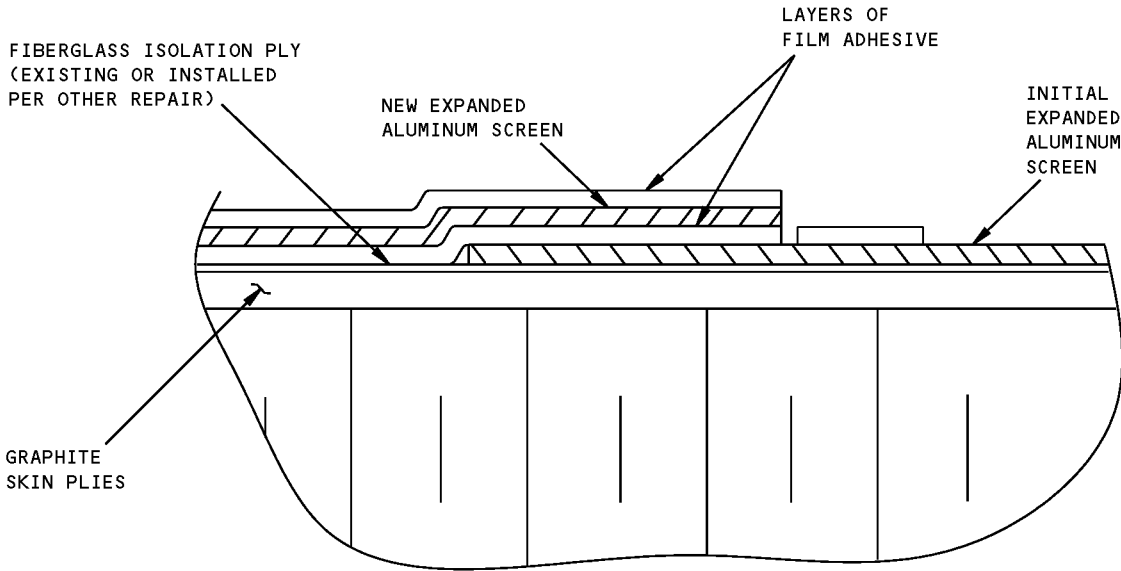
DETAIL II

**Fan Cowling Expanded Aluminum Screen Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



**LARGE DAMAGE REPAIR
DETAIL III**



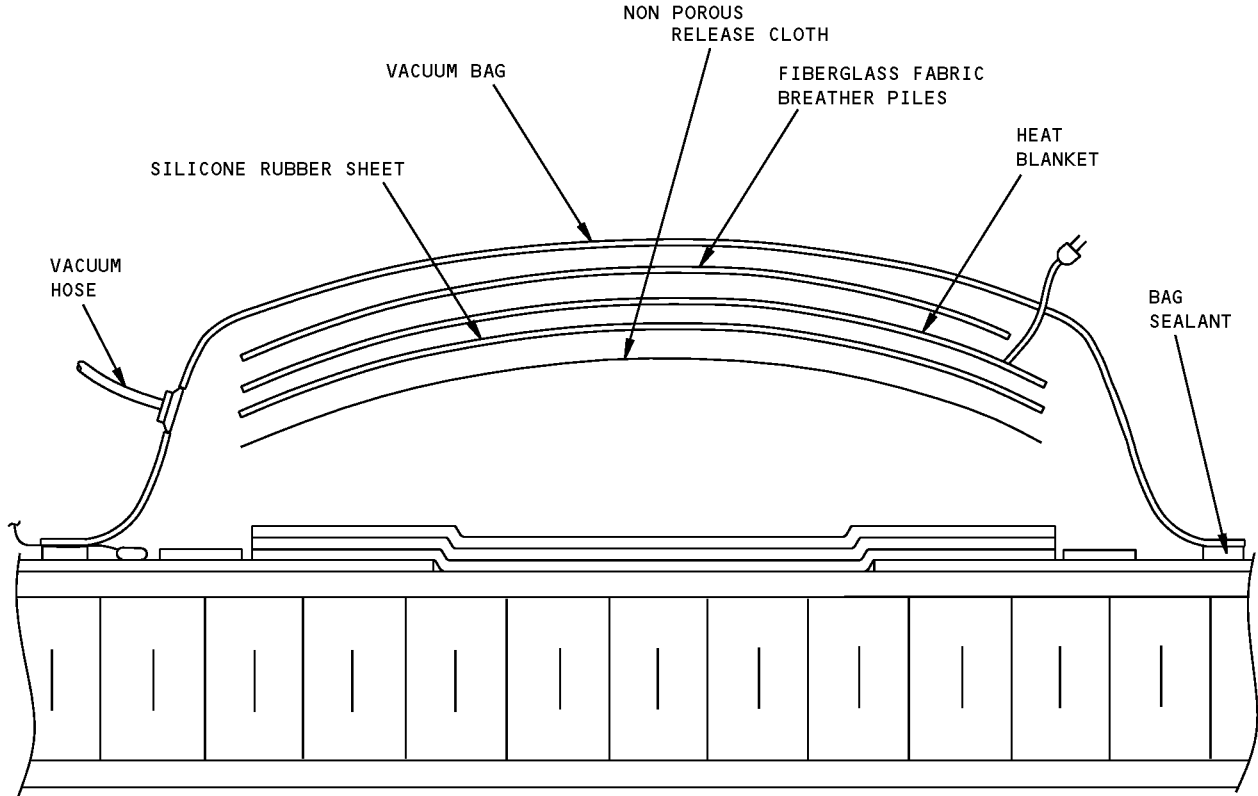
DETAIL IV

NOT TO SCALE

GRS231-03

**Fan Cowl Expanded Aluminum Screen Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



FOR EXPANDED ALUMINUM SCREEN INSTALLATION
TYPICAL BAGGING

GRS231-04

Fan Cowl Expanded Aluminum Screen Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL

**REPAIR 7 - FAN COWL PANDOWN AREA FULL PENETRATION REPAIR WITH ACCESS TO THE BACKSIDE -
CF6-80C2 ENGINE**

1. Applicability

- A. This repair is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is applicable to full penetration damage through the laminated skin of the fan cowl assembly in the pandown areas, or areas without honeycomb core. The damage must be less than 6.0 in. (15.2 cm) in the longitudinal direction, and 12.0 in. (30.5 cm) in the circumferential direction. Refer to Figure 201/REPAIR 7.
- C. This repair is not applicable if the edge of the damage is less than 3.0 in. (7.6 cm) from aft edge of the closeout pandown areas, or is less than 2.0 in. (5.1 cm) from the honeycomb core in all pandown areas.

2. General

- A. This type of damage is repaired by removal of the damaged skin, and the installation of filler and repair plies made from graphite fabric.
- B. Because the outer skin is damaged, it will be necessary to do this repair in conjunction with the Expanded Aluminum Screen Repair. Refer to REPAIR 6, for the applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Make a mark of the area where the damaged skin will be removed.

NOTE: The cutout can be circular or rectangular. If rectangular, use a minimum radius of 0.5 in. (13 mm) at the corners.

STRUCTURAL REPAIR MANUAL

- (3) Make a mark of the repair area on the inner and outer surfaces. Apply pieces of teflon tape on the inner and outer surfaces as marked.

NOTE: 1. If the skin is made from 7 graphite plies, use 12 repair plies. If the skin is made from 9 plies, use 15 repair plies. The illustrations in this repair show the skin in the pandown area with 7 plies. Refer to the Structure Identification section for the correct number of plies in the damage area.

2. Because of clearance requirements, only one repair ply is installed on the inner surface. The remaining repair plies are installed on the outer surface. If you have clearance, install more repair plies on the inner surface and fewer on the outer surface, to meet the necessary requirements. One fiberglass ply is installed on each surface.

- B. Prepare the damage area for repair. Refer to Table 201/REPAIR 7 for the list of repair materials.

WARNING: DO NOT BREATHE THE DUST THAT IS MADE WHEN YOU ABRABE OR CUT CURED COMPOSITE MATERIALS, OR LET THE DUST GET IN YOUR EYES OR ON YOUR SKIN. USE EYE PROTECTION AND PROTECTIVE CLOTHING. MAKE SURE THAT YOU USE RESPIRATORY EQUIPMENT WHEN YOU WORK IN CLOSED LOCATIONS. USE A VACUUM TABLE OR PORTABLE VACUUM TO REMOVE THE DUST WHILE YOU ABRABE OR CUT. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE COMPOSITE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS.

- (1) Cut the skin as marked. Taper the edges 45 degrees. Remove the sharp edges and loose fibers.
- (2) On the outer surface, cut and remove the expanded aluminum screen and the fiberglass ply from the area between the pieces of teflon tape. Remove the sharp edges.
- (3) Sand the inner and outer surfaces between the pieces of teflon tape to remove the surface finish and to make the surface rough. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers.
- (4) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth.

- C. Make the caul plate.

WARNING: WHEN METALS ARE CUT OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a caul plate to be installed on the inner surface in the repair area. Make the caul plate from available aluminum alloy sheet or plate stock. The caul plate must be 2.0 in. (5.1 cm) larger than the cutout all around, and must be thick enough for bagging application.
- (2) Make the caul plate to align with the contour of the repair area. The caul plate must fit in place with light finger pressure.
- (3) Remove the sharp edges. Use 150 to 400 grit silicon carbide abrasive paper.

- D. Clean the repair area.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

If not, disbond can occur between the skin and the repair plies later.

- (2) Use a vacuum bagging procedure to remove moisture or other contamination from the repair area. During this procedure, heat the repair area at 190°-210°F (88°-99°C) for 30 minutes. Repeat the applicable steps until the contamination is completely removed.

NOTE: Do this procedure if there is evidence of moisture or other contamination in the repair area.

- (3) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces. It is not necessary for the caul plate to have a water break free surface.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Dry the repair area at 190°-210°F (88°-99°C) for 30 minutes. Use an explosion proof heat lamp.

NOTE: You can start to make the plies for the outer surface repair at this time.

- (5) Let the area cool down to room temperature. Cover the repair area to prevent contamination.

E. Make the filler and repair plies for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Put a sheet of non-porous parting film on a work bench with a smooth surface.

NOTE: The non-porous parting film, and the graphite fabric in the next step, must be large enough so that you can make all filler plies and repair plies for the outer surface. Read the steps below to find the applicable dimensions before you cut the pieces.

- (2) Put a piece of plain weave graphite fabric on the sheet of non-porous parting film.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply the resin to the ply of graphite fabric with a spatula. Make sure you apply enough resin to fully soak the fabric.
- (5) Put another sheet of non-porous parting film above the ply. Use a roller to force the resin fully into all areas of the ply.
- (6) Make a mark of the filler and repair plies on the non-porous parting film.

NOTE: 1. The repair plies can be circular or rectangular. If rectangular, trim the corners of the plies 45 degrees by 0.5 in. (13 mm).

2. Each filler or repair ply must have the same warp direction as the original ply that was removed. Refer to the Structure Identification section for warp directions.

3. The filler plies must fit inside the cutout. The number of filler plies must be the same as the number of repair plies.

4. Cut the first repair ply 0.5 in. (13 mm) larger than the cutout all around. Cut the second ply 0.5 in. (13 mm) larger than the first ply all around. Repeat until all repair plies are made..

- (7) With the graphite ply between the two sheets of non-porous parting film, cut the plies as marked. Use a sharp knife or a sharp pair of scissors. If not, the plies will be frayed or otherwise damaged.

Do not remove the non-porous parting films at this time.

- F. Make the fiberglass isolation ply for the outer surface.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 7 to make and cut the fiberglass isolation ply for the outer surface, but use the notes below.

NOTE: 1. Make the isolation ply from the Type 181 fiberglass fabric.

2. The isolation ply must be 0.5 inch (13 mm) larger than the last repair ply all around. The ply must not overlap the teflon tape.

- G. Install the filler, repair, and isolation plies on the outer surface.

- (1) Apply a layer of release cloth to the mating surface of the caul plate.
- (2) Put the caul plate into position on the inner surface against the edges of the cutout. Apply teflon tape or mechanical pressure to keep the caul plate in place. Seal the edges with the bag sealant.

STRUCTURAL REPAIR MANUAL

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (3) Use the manufacturer's instructions to mix the EA9390 resin.
- (4) Apply a thin layer of the resin mixture to the edges of the cutout and to the outer surface between the pieces of teflon tape.
- (5) Remove the bottom sheet of the non-porous parting film from the first filler ply. Put the filler ply into position inside the cutout. Press the ply against the caul plate and remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (6) Repeat the above steps for the remaining filler, repair, and isolation plies for the outer surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.
2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (7) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.

H. Bag and cure the repair on the outer surface.

- (1) Put a minimum of two thermocouples around the perimeter of the repair area. Hold in place with teflon tape.
- (2) Put a layer of porous parting film above the repair area, 3.0 inches (76 mm) larger than the repair all around.
- (3) Put eight plies of fiberglass fabric above the porous parting film. This will serve as the bleeder cloth.

NOTE: The number of bleeder cloth plies must be equal to the number of removed plies, plus one.

- (4) Put a layer of non-porous release cloth above the bleeder cloth, 3.0 inches (76 mm) larger than the repair all around. This will prevent contamination of the repair surface by the silicone rubber.

STRUCTURAL REPAIR MANUAL

CAUTION: WHEN YOU PUT THE SHEET OF SILICONE RUBBER IN PLACE, MAKE SURE IT DOES NOT TOUCH THE REPAIR SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Put a sheet of silicone rubber above the non-porous parting film.
- (6) Put a heat blanket above the sheet of silicone rubber.
- (7) Put two plies of fiberglass fabric breather cloth above the heat blanket.
- (8) Put a sheet of nylon bagging film above the fiberglass fabric breather cloth. The film must be 2.0 in. (5.1 cm) larger than the breather cloth all around
- (9) Put the vacuum probes under the nylon bagging film. Seal the vacuum probes and thermocouples to the nylon bagging film. Seal the edges of the bagging film to the surface with bag sealant.
- (10) Apply a vacuum pressure of 22 in/Hg (75 kPa) and do a leak check.

NOTE: You must not lose vacuum pressure by more than 5 in/Hg (17 kPa) in five minutes.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Turn on the heat blanket and raise the temperature to 190° to 210°F (88° to 99°C). Use a rate of 4° to 7°F (2.2° to 3.8°C) per minute.

Cure the repair at this temperature for 220 minutes. Keep a minimum vacuum pressure of 22 in/Hg (75 kPa) during the cure

- (12) Let the repair area cool down to room temperature. Remove the bagging material and the caul plate.

I. Examine the repair on the outer surface.

- (1) Visually examine the repair area to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

J. Install the expanded aluminum screen on the outer surface.

NOTE: You can do this procedure now or after the inner surface repair is done.

- (1) Refer to REPAIR 6, for Expanded Aluminum Screen Repair. Do the necessary steps per that repair to install the expanded aluminum screen. Then continue with this repair.

K. Make the repair plies and the sanding ply for the inner surface.

- (1) Repeat the procedure in Paragraph 4.E./REPAIR 7 and Paragraph 4.F./REPAIR 7 to make and cut the repair and sanding plies for the inner surface.

NOTE: See Paragraph 4.A.(3)/REPAIR 7 for the applicable number of repair plies.

L. Install the repair and sanding plies on the inner surface.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES OR PIECES OF GRAPHITE OR FIBERGLASS FABRIC. THIS PREVENTS CONTAMINATION.

- (1) Clean the area between the pieces of teflon tape. Use a clean, lint free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry. If not, disbond can occur between the skin and the repair plies later.

WARNING: USE EA9390 IN A WELL-VENTILATED AREA. USE APPROVED RESPIRATORY PROTECTION IF MECHANICAL VENTILATION IS NOT AVAILABLE. THE VAPORS FROM THESE MATERIALS ARE HARMFUL AND FLAMMABLE. USE EYE PROTECTION AND WEAR PROTECTIVE CLOTHING WHEN YOU WORK WITH EA9390. THE USE OF NEOPRENE OR POLYVINYL CHLORIDE GLOVES IS RECOMMENDED. IF UNCURED EA9390 TOUCHES YOUR SKIN, WASH IMMEDIATELY. THESE MATERIALS CAN CAUSE SKIN IRRITATION. DO NOT MIX QUANTITIES GREATER THAN 250 GRAMS. THE RESULT CAN BE A DANGEROUS BUILDUP OF HEAT AND TOXIC FUMES. INJURY TO PERSONS CAN BE THE RESULT.

- (2) Use the manufacturer's instructions to mix the EA9390 resin.
- (3) Apply a thin layer of the resin mixture to the area between the pieces of teflon tape.
- (4) Remove the bottom sheet of the non-porous parting film from the first repair ply. Put the repair ply into position above the cured filler plies. Press the repair ply against the filler plies and the skin to remove the wrinkles. Use the roller if necessary. Lightly tap the ply from the center outward in all directions to remove the trapped air pockets. Remove the top sheet of non-porous parting film from the installed ply.
- (5) Repeat the above steps for the remaining plies for the inner surface.

NOTE: 1. Make sure all air pockets are removed from under each installed ply before you install the next ply. Trapped air pockets can cause delamination between plies.

2. Make sure you remove the non-porous parting films from the plies when you install them.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (6) Remove the excess resin from the repair area before it cures. Use a clean, lint-free cloth moistened with Turco 6646 solvent. Do not let the solvent go between the plies. Wipe the surface clean before the solvent becomes dry.
- M. Bag and cure the repair on the inner surface.
- (1) Install bagging material on the inner surface repair plies and cure. Use the same procedure that was used to bag and cure the outer surface repair, but use two plies of fiberglass fabric above the porous parting film to serve as the bleeder cloth.
- N. Examine the repair.
- (1) Examine the repair area on the two surfaces to make sure all the requirements of this repair are done. Do a tap test to examine for disbonds and delaminations. Repeat the applicable steps, if necessary.

STRUCTURAL REPAIR MANUAL

O. Apply the surface finish.

- (1) Apply the surface finish and external paint to the repair area. Refer to REPAIR 8, Surface Finish Restoration

Table 201: Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet or plate	Any heat treated designation 0.032-0.20 inch (0.81-5.08 mm) thick	Commercially Available
Blanket, Heat	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Release (Alternative for Tooltec)	Toolcoat 805A	Richmond Aircraft Products 13503 Pumice Street Norwalk, CA 90749
Cloth, Release (Alternative for Toolcoat)	Tooltec A005	Airtech International 2542 East Del Amo Blvd P.O. Box 6207 Carson, CA 90749
Cloth, Wiper	Cotton, lint-free	Commercially Available
Fabric, Fiberglass	RC3000-10 (Breather cloth)	Richmond Technology, Inc. Colton & Opal Street P.O. Box 1129 Redlands, CA 92373
Fabric, Fiberglass	Type 181 (Bleeder cloth)	Commercially Available
Fabric, Graphite	A193-P (Plain weave)	Hexcel Fabrics 16320 Bloomfield Avenue Cerritos, CA 90703
Film, Bagging	3 Mil, Nylon	Commercially Available
Film, Parting	Nonporous	Commercially Available
Film, Parting	Porous	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Resin	EA9390	Dexter Hysol Aerospace The Dexter Corp. 2850 Willow Pass Road P.O. Box 312 Pittsburg, CA 94565-0031

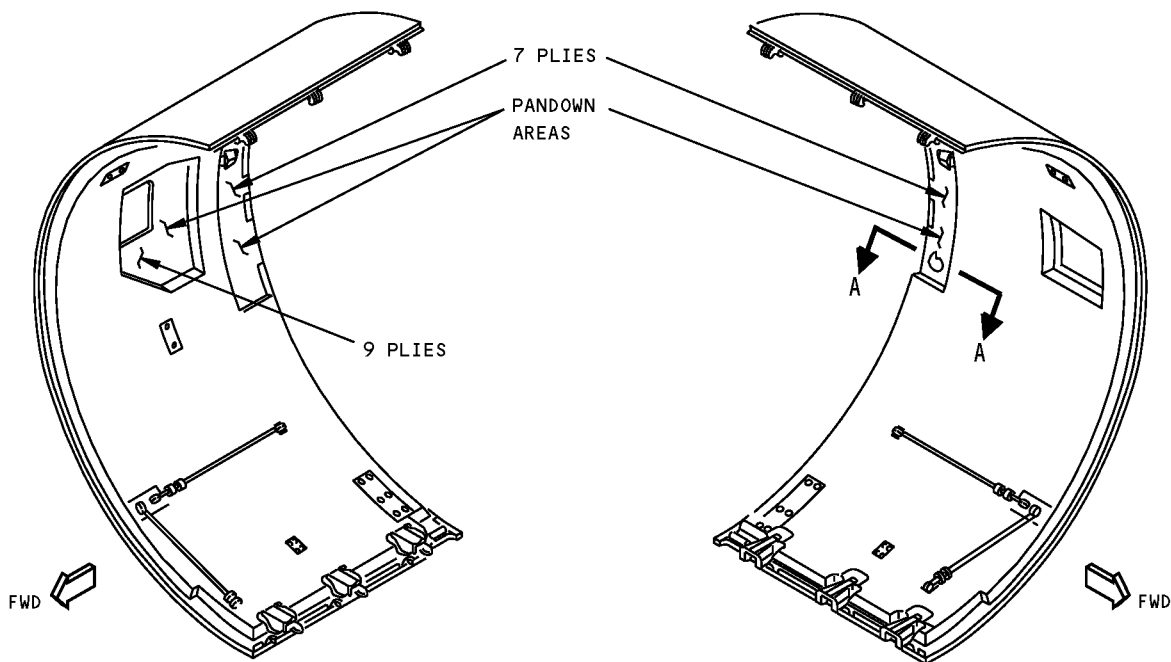
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STRUCTURAL REPAIR MANUAL

Table 201: Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Sealant, Bag	Tacky tape	Schnee-Morehead Chemicals 111 North Nursery P.O. Box 1305 Irving, TX 76060
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

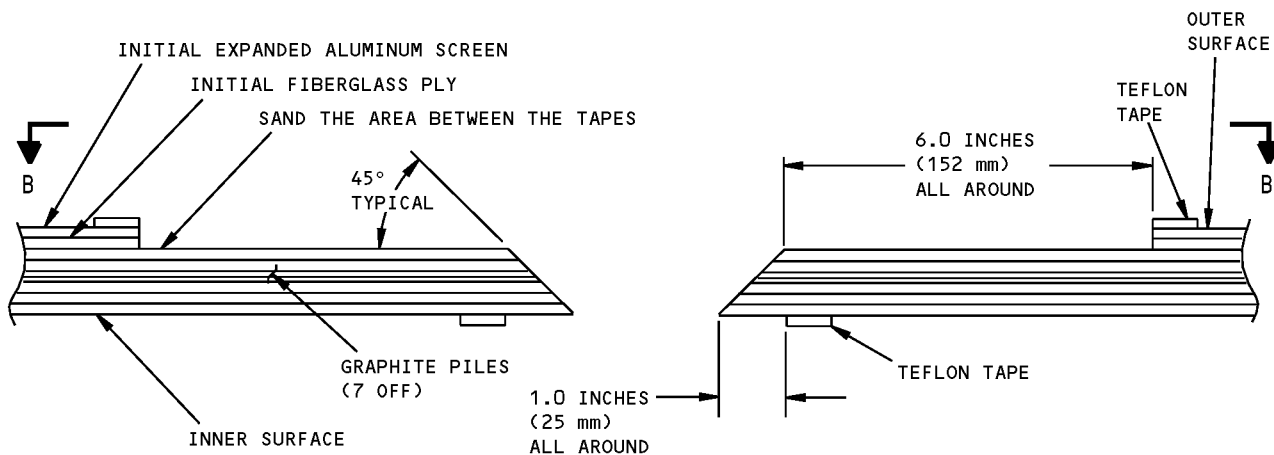
*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL



RIGHT FAN COWL ASSEMBLY

LEFT FAN COWL ASSEMBLY



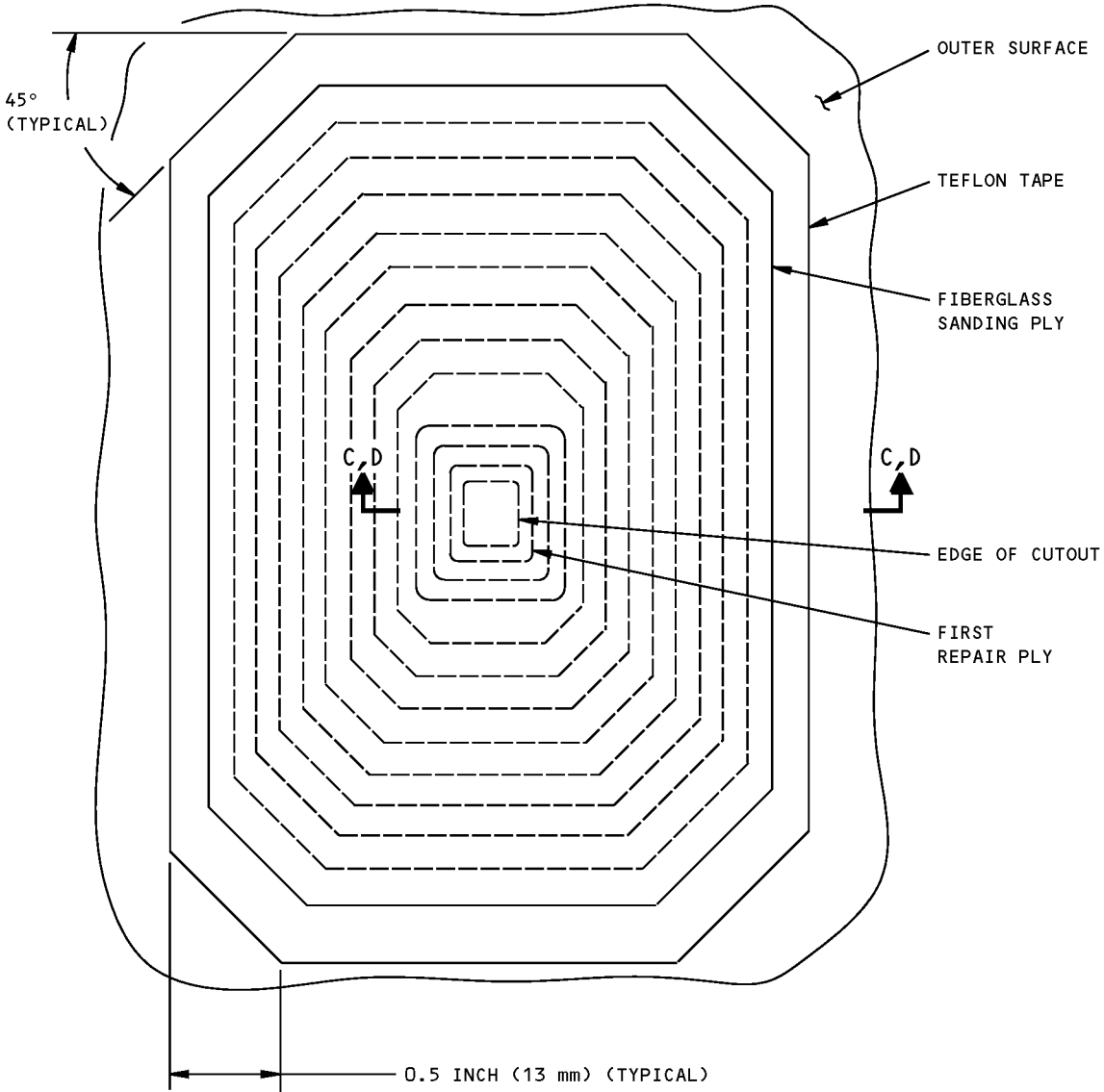
TYPICAL SECTION THROUGH THE DAMAGED AREA
AFTER DAMAGE REMOVAL

SECTION A-A

GRS293-01

Fan Cowl Pandown Area Full Penetration Repair with Access to the Backside - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)

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STRUCTURAL REPAIR MANUAL**

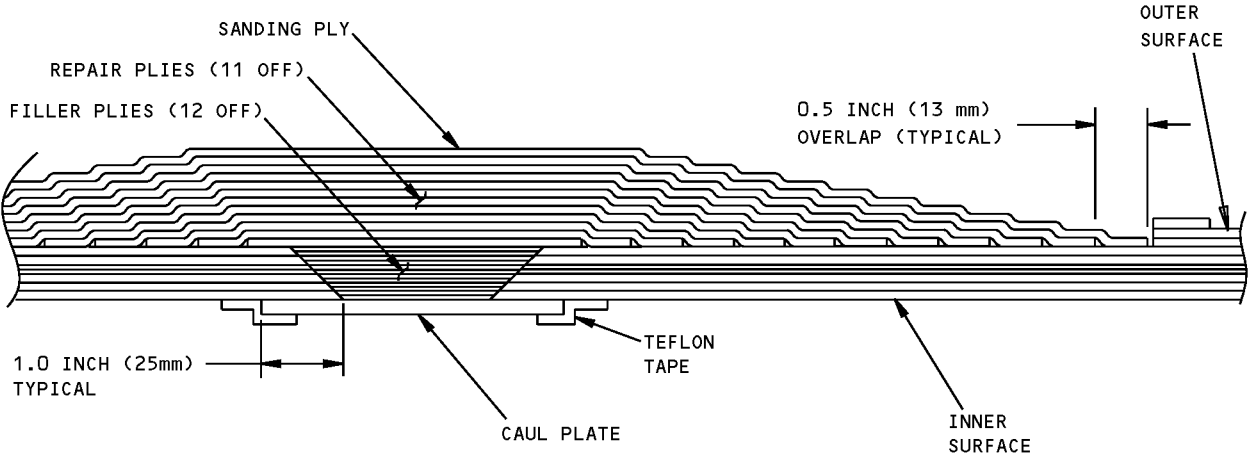


TYPICAL VIEW OF REPAIR
ON THE OUTER SURFACE
SECTION B-B

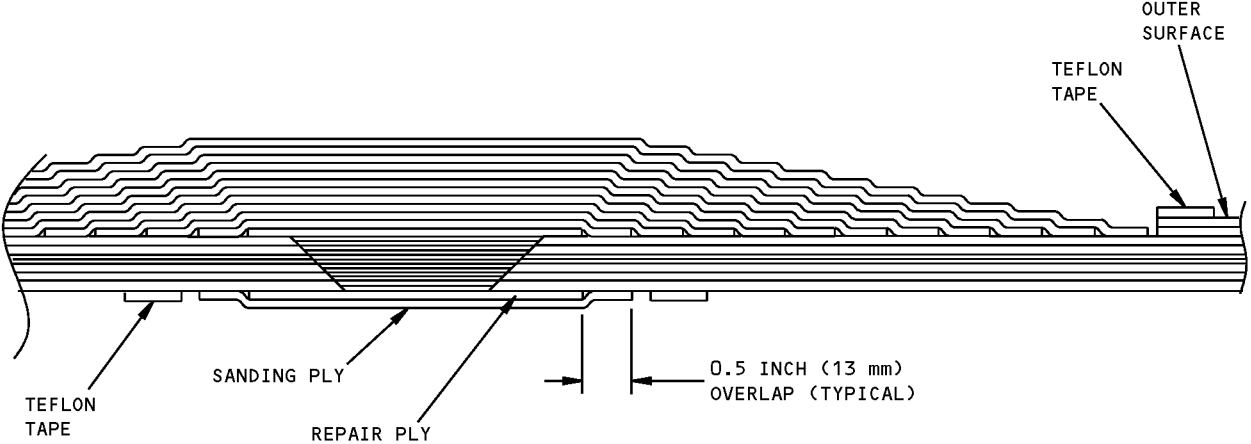
GRS293-02

Fan Cowl Pandown Area Full Penetration Repair with Access to the Backside - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

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STRUCTURAL REPAIR MANUAL



SECTION THROUGH THE REPAIR
FOR THE OUTER SURFACE
SECTION C-C

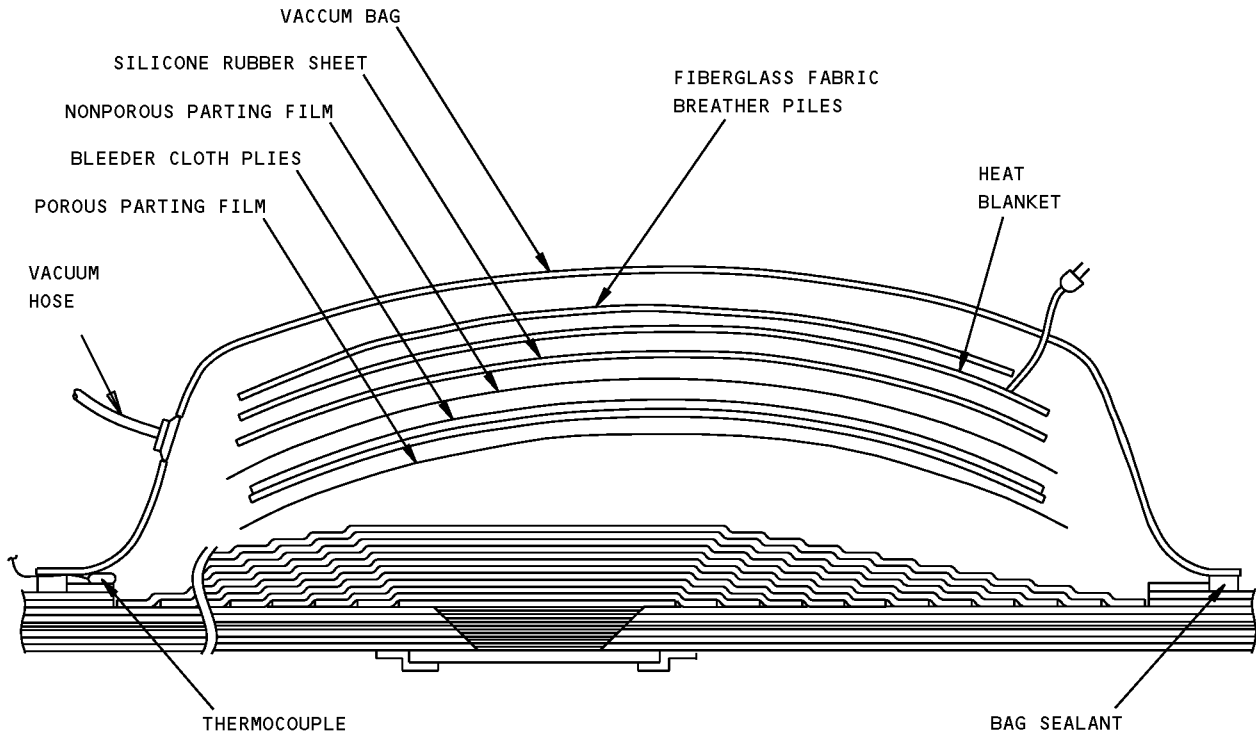


SECTION THROUGH THE COMPLETED REPAIR
(INSTALLED ALUMINUM SCREEN NOT SHOWN)
SECTION D-D

GRS293-03

Fan Cowl Pandown Area Full Penetration Repair with Access to the Backside - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)

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STRUCTURAL REPAIR MANUAL**



OUTER SURFACE REPAIR SHOWN,
INNER SURFACE REPAIR SIMILAR
TYPICAL BAGGING

GRS293-04

**Fan Cowl Pandown Area Full Penetration Repair with Access to the Backside - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 8 - FAN COWL SURFACE FINISH RESTORATION REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This subject is applicable only to Fan Cowls with a serial number 3373001 and on. Refer to SRM 54-22-01 for Fan Cowls with a serial number prior to 3373001.
- B. This repair is not applicable if the expanded aluminum screen or the skin plies are damaged.

2. General

- A. This repair is used to replace the surface finish on the fan cowl assembly.
- B. This type of damage is repaired by application of primer to the surface.
- C. If the damage is on the outer surface, it can be necessary to apply filler material to the existing expanded aluminum screen. Refer to REPAIR 6 for the applicable limits and for necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE

4. Repair Instructions

- A. Examine the damage area. Refer to Table 201/REPAIR 8 for the list of repair materials.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Determine the extent of damage. Make a mark of the damage area.
- (3) Apply pieces of teflon tape around the area to be repaired. Apply the tape a minimum of 0.5 in. (13 mm) beyond the edge of the damage all around.

- B. Repair the surface finish damage on the outer barrel composite inner or outer surface.

WARNING: WHEN FINISHED SURFACES ARE SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: 1. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

2. WHEN YOU ABRABE THE SURFACE, DO NOT CUT INTO THE COMPOSITE FIBERS OR THE EXPANDED ALUMINUM SCREEN.

- (1) Sand the surface in the area between the pieces of teflon tape to remove the surface finish. Feather the edges of the finish. Use 150 to 400 grit silicon carbide abrasive papers. Do not cut into the composite fibers. If the damage is on the outer surface, do not cut into the expanded aluminum screen.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (2) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.
- (3) The repair area must be a water break free surface. Do a water break free test of this area.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C). Let the repair area cool down to room temperature.
- (5) Apply the filler material, if applicable.

NOTE: Do this step only if the damage is on the outer surface, and if there are surface imperfections. When you do this step, you cover the existing expanded aluminum screen with filler material. Refer to REPAIR 6r 6, for the applicable limits.

WARNING: FILLER MATERIAL IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (a) Use the manufacturer's instructions to mix the filler material. Let the mixture stand per the manufacturer's instructions.

CAUTION: DO NOT APPLY THE FILLER MATERIAL TO FASTENER HEADS OR TO THE ADJACENT SURFACE. THE FILLER CAN CAUSE THE EXISTING PAINT TO PEEL.

- (b) Apply the filler to the applicable areas. Use a putty knife or clean lint-free cloth. Use a criss-cross method with the knife, or circular motion with the cloth, to press the filler material firmly into place. Remove the excess material before it cures.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (c) Cure the filler at room temperature for 15 minutes. Use explosion proof heat lamps and apply heat until the repair area reaches a temperature of 160°-180°F (71°-82°C). Cure the filler for 60 minutes at this temperature.

STRUCTURAL REPAIR MANUAL

- (d) Let the repair area cool down to room temperature. Use 240 or finer grit silicon carbide abrasive paper to remove the sharp edges and excess filler material. Do not cut into the expanded aluminum screen.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (e) Use dry air blast to remove the sanding particles. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surface clean before the solvent becomes dry.

- (6) Apply the primer.

WARNING: PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (a) Use the manufacturer's instructions to mix the Mil-PRF-23377, Class L, epoxy primer. Let the mixture stand per the manufacturer's instructions.

NOTE: Mil-PRF-23377 epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (b) Apply a thin layer of the primer mixture to the area between the masking tapes. The dried primer layer must be between 0.0006 in. (0.015 mm) and 0.0009 in. (0.023 mm) thick. Use a spray gun or brush.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (c) Cure for a minimum of 30 minutes at 75°F (24°C) before you reapply the primer. You can handle the parts after 4 hours at this temperature.

- (7) Apply the external paint.

NOTE: Do this step only if the damage is on the outer surface.

- (a) Use the airline specifications to select the external paint. Use the manufacturer's instructions to mix, apply, and cure the external paint.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Blanket, Heat (Alternative to the heat lamp)	0° to 250°F 10W/Square inch (-18° to 121°C) 10W/645 Square mm	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available

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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

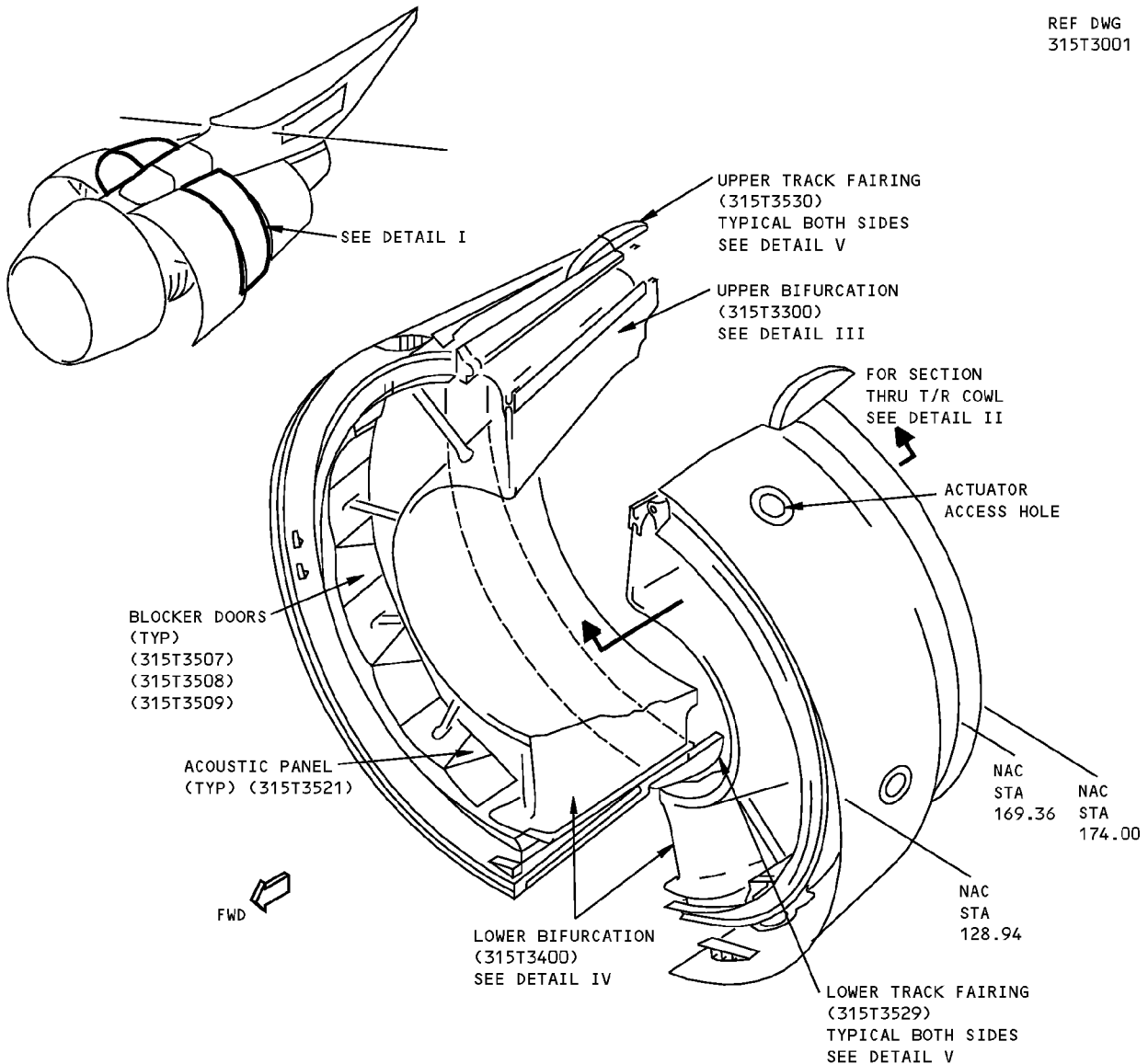
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Filler material	Base 467-9 Converter CA-41	Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Filler material (Alternative to above)	Base WLS 100-38 Converter WLS CA-69	WLS Coatings
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Knife	Putty	Commercially Available
Lamp, Heat Explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Silicon carbide	Commercially Available
Primer - Mil-PRF-23377, Class L	Base 513X395 Converter 910-710 Thinner 010-313	Courtauld Aerospace (Formerly DeSoto) P.O. Box 3704 Glendale, CA 91221-0704
Primer - Mil-PRF-23377, Class L	Base 10-P2-13 Converter EC-142 Thinner TR-55	Dexter Aerospace (Formerly Crown Metro) East Waters Street Waukegen, IL 60085-5652
Primer - Mil-PRF-23377, Class L	Base 463-7-32 Converter X-432 Thinner T074/TL164	Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600, Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Tape	Teflon, 2 inch (51 mm) wide	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - JT9D-7R4 ENGINE

REF DWG
315T3001



DETAIL I

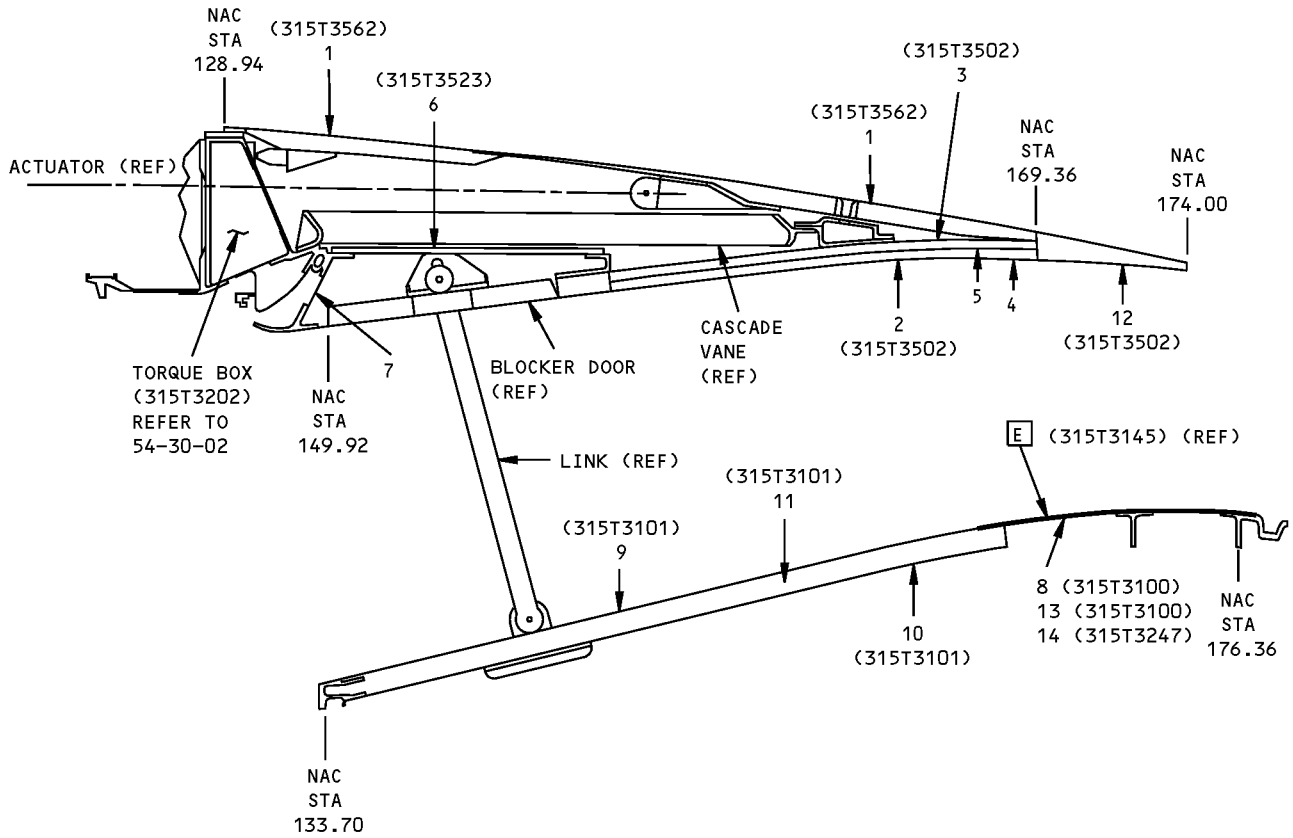
NOTES

- A** PLY ORIENTATION CONVENTION - DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- B** EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE
- C** EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE
- D** DENSE HONEYCOMB CORE LOCATED IN VICINITY OF FITTINGS, ACCESS HOLES AND PANEL EDGES. REFER TO BOEING DRAWINGS FOR EXACT SIZE AND LOCATION
- E** SEE BOEING DRAWINGS FOR LOCATION OF SKINS AND DOUBLERS

**Fan Duct Cowl and Thrust Reverser Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
315T3001
315T3100
315T3145
315T3002
315T3101



**SECTION THRU T/R COWL
DETAIL II**

LIST OF
MATL

**Fan Duct Cowl and Thrust Reverser Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 5)**

IDENTIFICATION 1
Page 2
Apr 01/2005

54-30-01

D634T210



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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER COWL SKIN CORE DENSE CORE D		GRAPHITE/ARAMID EPOXY HONEYCOMB SANDWICH SEE DETAIL VI NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 5.0 NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 9.0	
2	ACOUSTIC PANEL	0.032	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, TYPE 1B-32, GRADE 1A, CLASS 50-109	
3	OUTER SKIN	0.020	2024-T81	
4	CORE		HONEYCOMB-FLEXIBLE-ALUMINUM PER BMS 4-6, CLASS I, TYPE 5.7-37	
5	CORE		HONEYCOMB-ALUMINUM (5052) CX 22.1-1/8-60N	
6	PANEL INNER SKIN OUTER SKIN CORE	0.020 0.020	CLAD 2024-T81 CLAD 2024-T81 HONEYCOMB PER BMS 4-4, TYPE 6-30N, FORM B	
7	WEB	0.050	CLAD 2024-T81	
8	SKIN ASSY SKIN DOUBLER	0.040 0.032	CLAD 2024-T3 CLAD 2024-T3	E
9	ACOUSTIC SKIN	0.032	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, TYPE 1B-32, GRADE 1B, CLASS 50-109	
10	INNER SKIN	0.020	CLAD 2024-T81	
11	CORE DENSE CORE D		ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40 CLASS N, FORM B ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 3-60N, GRADE II, FORM F-20 OPTIONAL: HONEYCOMB-ALUMINUM (5052) CX 22.1-1/8-60N	
12	CORE		HONEYCOMB-FLEXIBLE-ALUMINUM PER BMS 4-6, CLASS I, TYPE 5.7-37	
13	RIVET BOND ASSY SKIN DOUBLER	0.040 0.032	15-5PH CRES HT-TR 125-145 KSI 15-5PH CRES HT-TR 125-145 KSI	E
14	DOUBLER	0.050	INCONEL 625	E

LIST OF MATERIALS FOR DETAIL II

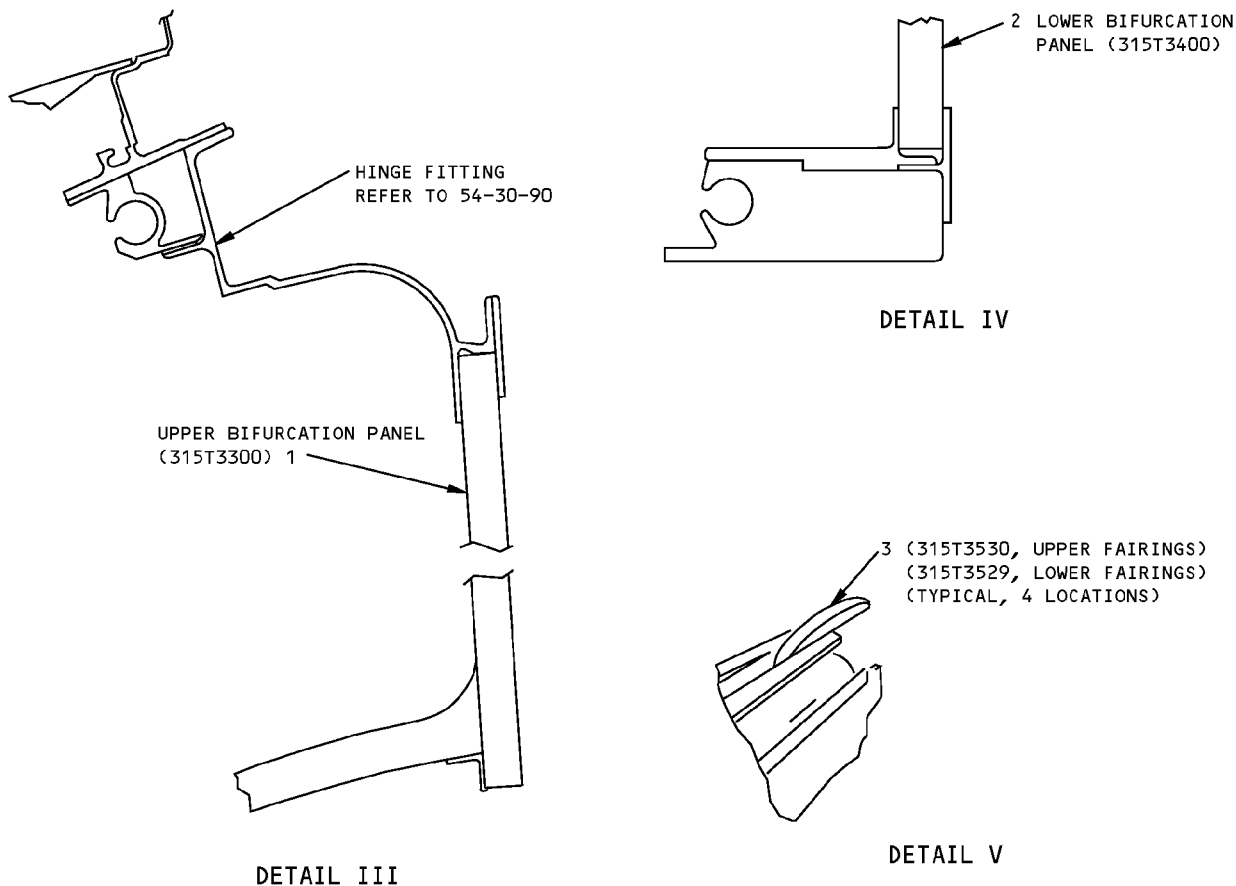
**Fan Duct Cowl and Thrust Reverser Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 5)**

IDENTIFICATION 1
Page 3
Apr 01/2005

54-30-01

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER PANEL ASSY SKIN UPR AND LWR CORE CENTER CORE DOUBLER	0.020	CLAD 2024-T81 HONEYCOMB - ALUMINUM (5052) CX 22.1-1/8-60N ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B SEE BOEING DRAWINGS FOR GAGE AND MATERIAL	
2	LOWER PANEL ASSY SKIN UPR AND LWR CORE CENTER CORE DOUBLER	0.020	CLAD 2024-T81 HONEYCOMB - ALUMINUM (5052) CX 22.1-1/8-60N ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B SEE BOEING DRAWINGS FOR GAGE AND MATERIAL	
3	TRACK FAIRING		FIBERGLASS LAMINATE	

LIST OF MATERIALS FOR DETAILS III, IV AND V

**Fan Duct Cowl and Thrust Reverser Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

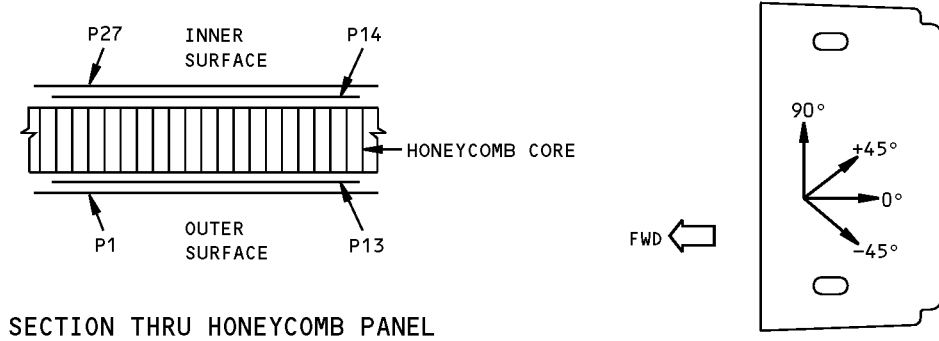


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION A
1 (DETAIL II)	P1	B	0° or 90°
	P13	C	±45°
	P14	C	±45°
	P27	B	0° or 90°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

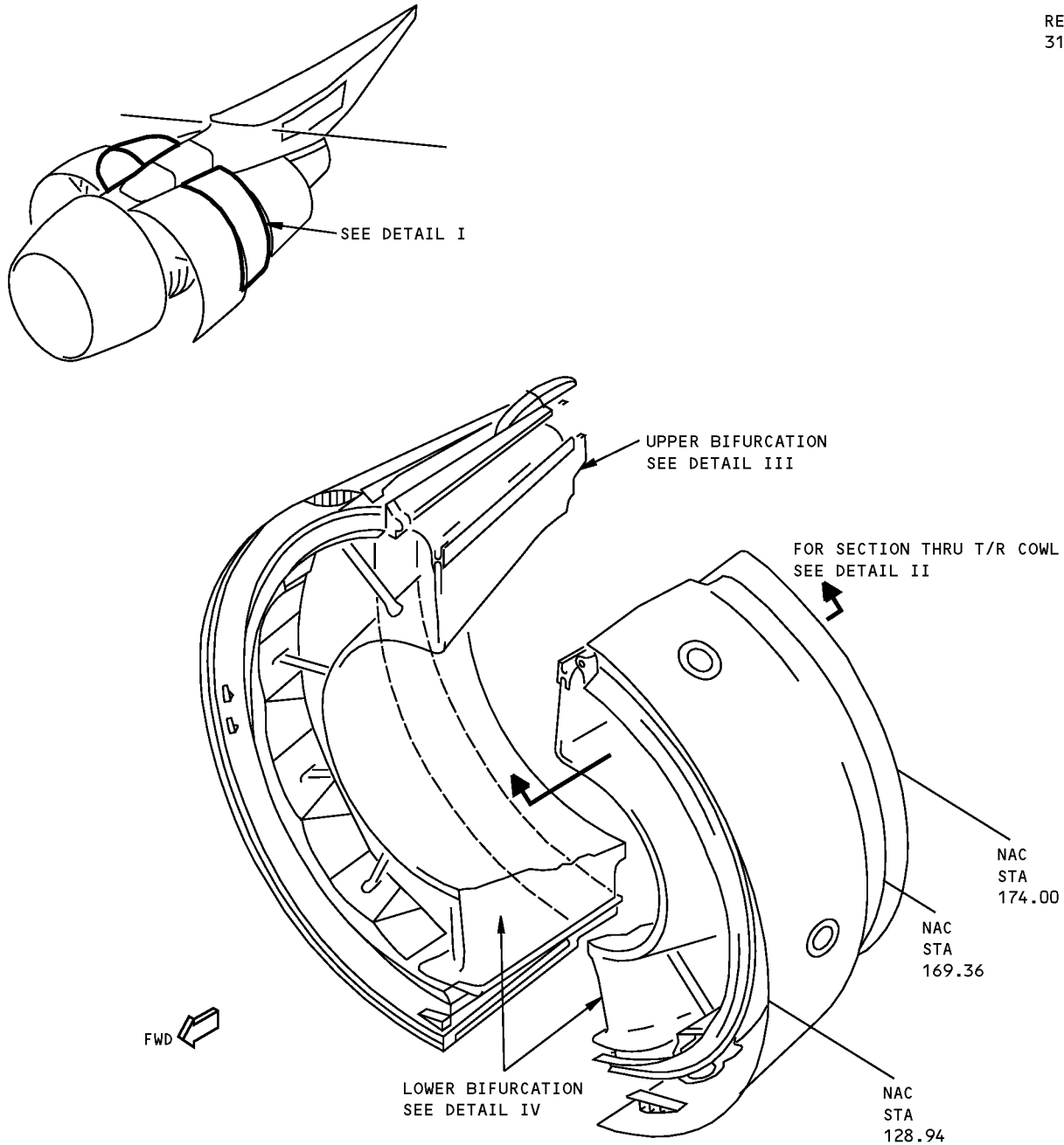
DETAIL VI

**Fan Duct Cowl and Thrust Reverser Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 5 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - JT9D-7R4 ENGINE

REF DWG
315T3001

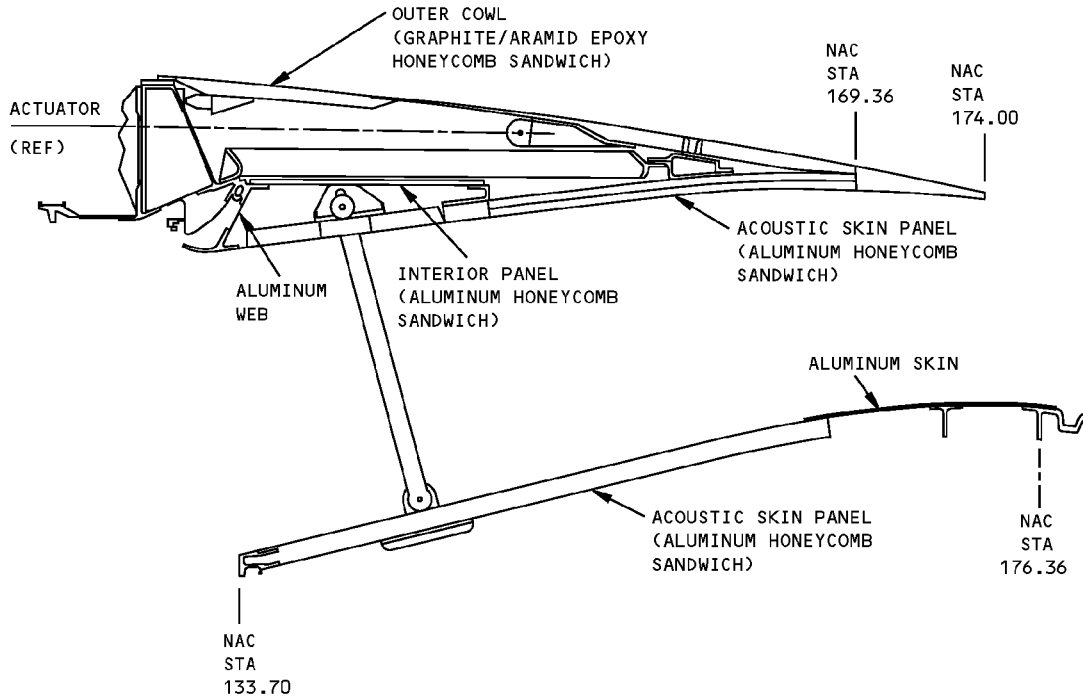


DETAIL I

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
315T3001
315T3100
315T3145
315T3002
315T3101

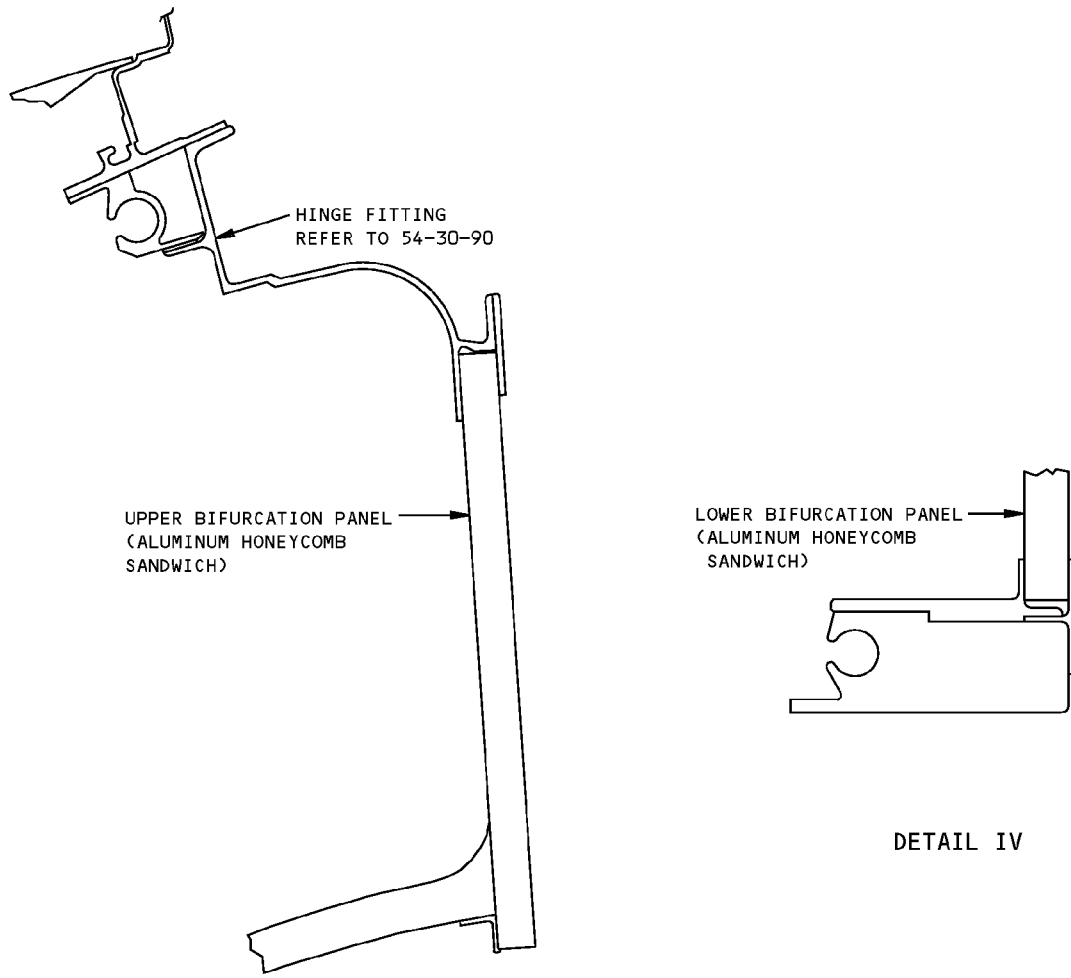


DETAIL II

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
OUTER COWL	G	H	I	J	K
INTERIOR PANEL	B	C	SEE DETAIL VII	D	—
ALUMINUM WEB	B	C	SEE DETAIL VII	NOT ALLOWED	—
ALUMINUM SKIN	B	C	SEE DETAIL VII	D	—
ACOUSTIC SKIN PANEL					
ACOUSTIC LINER	L	C	SEE DETAIL VII	M	F
OUTER SKIN	L	C	SEE DETAIL VII	M	F

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III

DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
UPPER PANEL	L	C	SEE DETAIL VII	E	F
LOWER PANEL	L	C	SEE DETAIL VII	E	F

**Allowable Damage - Fan Duct Cowling and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 6)**

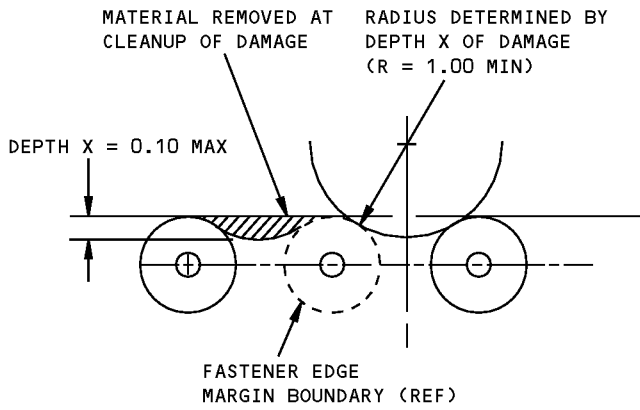
STRUCTURAL REPAIR MANUAL

NOTES

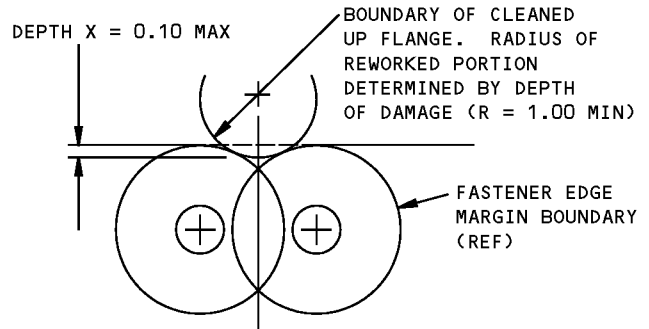
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-20 OF THE 767 MAINTENANCE MANUAL
 - RESTORE DAMAGED ALUMINUM FLAME SPRAY AND CONDUCTIVE COATINGS PER 51-70-14
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED
- A** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F [52°C]) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT AT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE (SPEED TAPE) IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN THE NEXT AIRPLANE "C" CHECK
 - B** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND IX
 - C** REMOVE DAMAGE PER DETAILS V, VI AND VIII
 - D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
 - E** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED **A**
 - F** DELAMINATION OF SKIN FROM HONEYCOMB UP TO 2.25 SQ. INCH (13 cm²) IS ALLOWED. A MAXIMUM OF 0.50 INCH (12 mm) DELAMINATION FROM EDGE IS ALLOWED
 - G** 2.0 INCHES (50 mm) MAX LENGTH PER SQUARE FOOT OF AREA IS ALLOWED IN HONEYCOMB AREA AND MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX **A**
 - H** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. CLEAN UP EDGE DAMAGE PER DETAILS V AND IX **A**
 - I** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.50 INCH (38 mm) DIA MAX ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT REFER TO APPLICABLE DAMAGE DATA IN TABLE
 - J** 1.20 INCH (35 mm) MAX DIA ALLOWED IN HONEYCOMB AREA ONLY PROVIDED DAMAGE IS MINIMUM OF 2.5 D FROM ANY OTHER DAMAGE, NEAREST HOLE OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR **A**
 - K** 4.0 INCH (100 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. PROTECT EDGE DAMAGE PER **A**. REPAIR DELAMINATION IN HONEYCOMB AREA PER 51-70 NO LATER THAN THE NEXT "C" CHECK
 - L** 2.0 INCH (50 mm) CRACKS IN HONEYCOMB AREA ALLOWED. CLEAN UP EDGE CRACKS PER DETAILS V AND VIII. CRACKS THROUGH 3 CONSECUTIVE HOLES OR FASTENERS THROUGH THE PANEL EDGE-BAND AREA ALLOWED
 - M** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) DIA MAX PROVIDED DAMAGE IS MINIMUM OF 3D FROM ANY OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

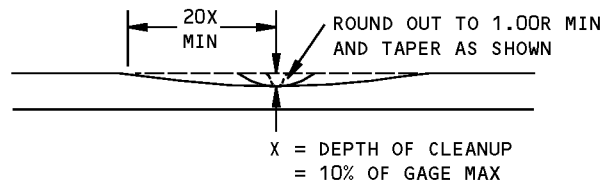
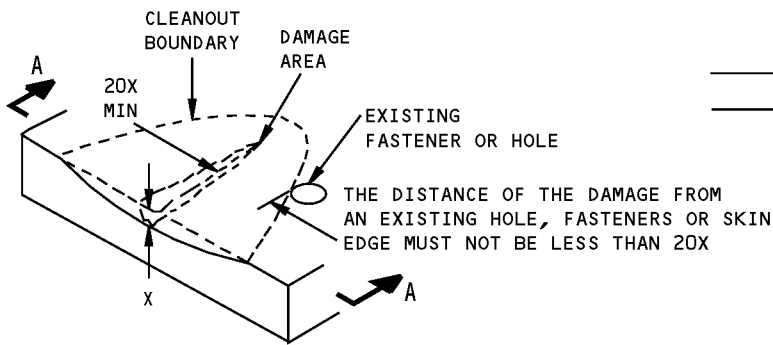


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP**



**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP**

DETAIL V

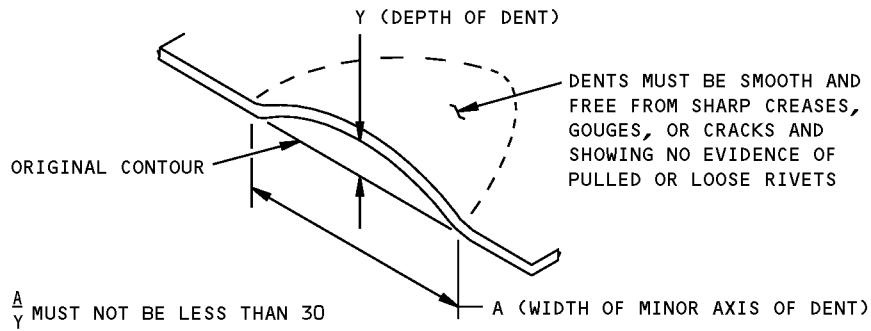


SECTION A-A

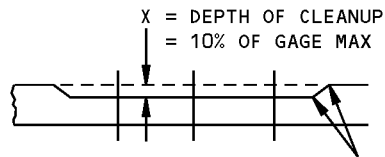
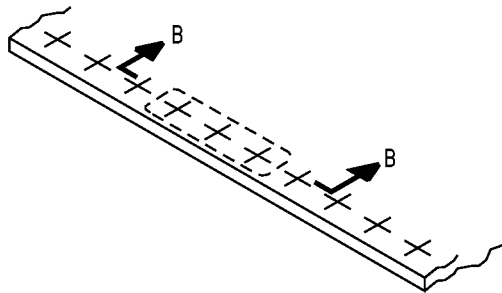
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



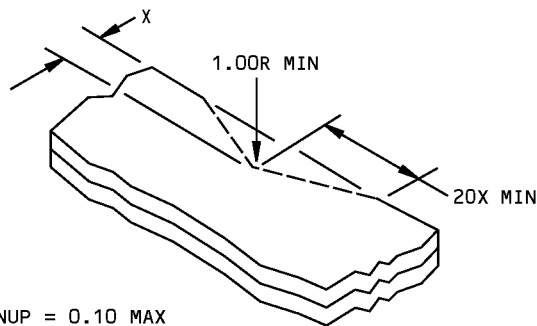
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL VIII**



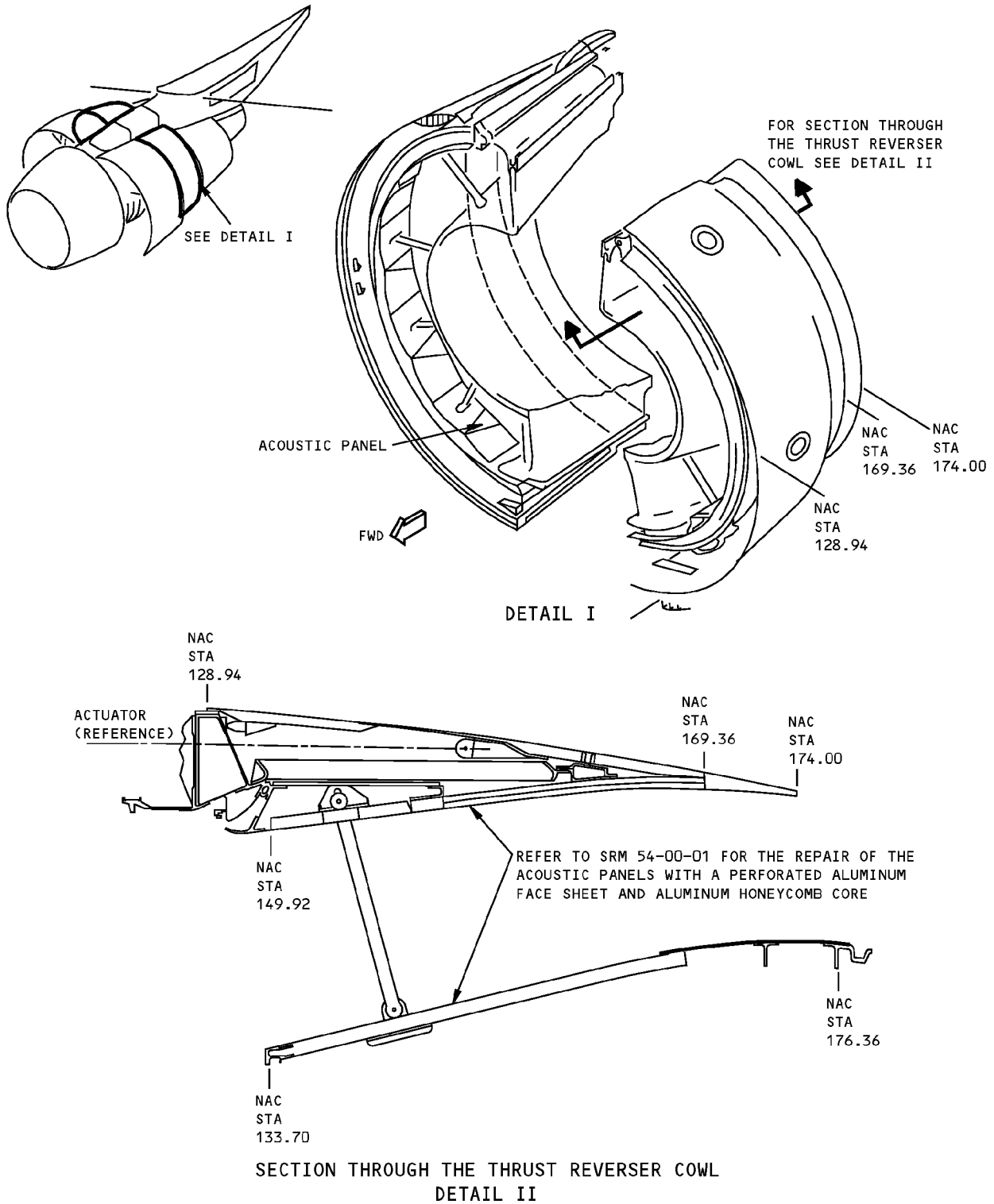
X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL IX

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

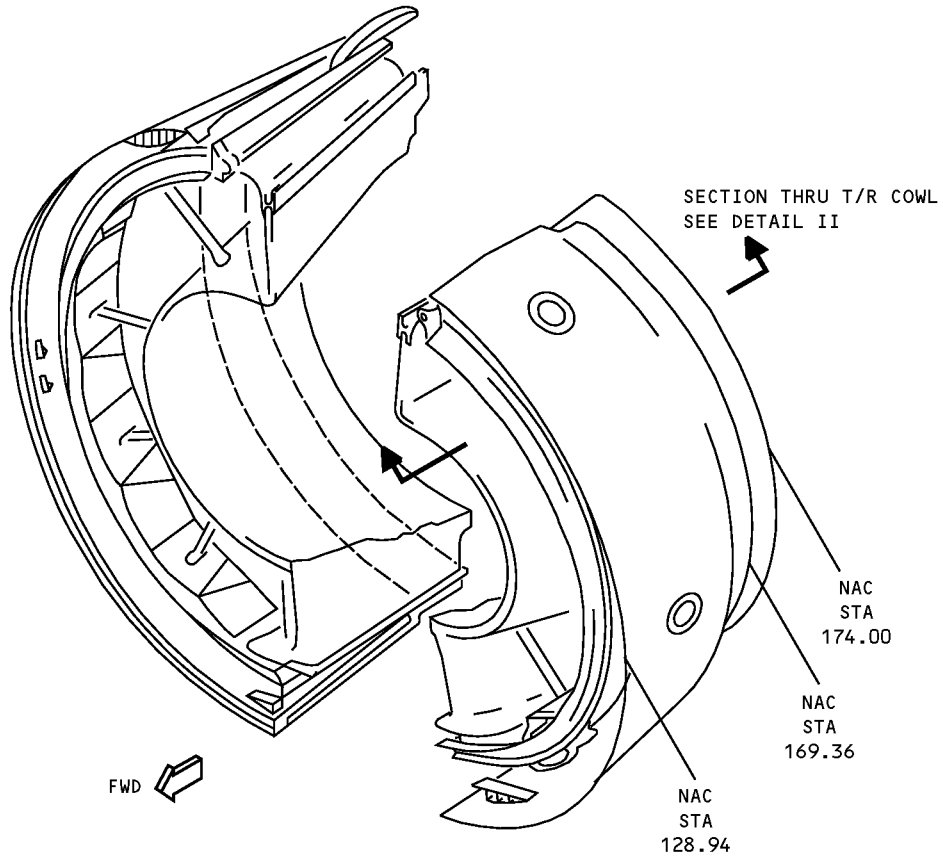
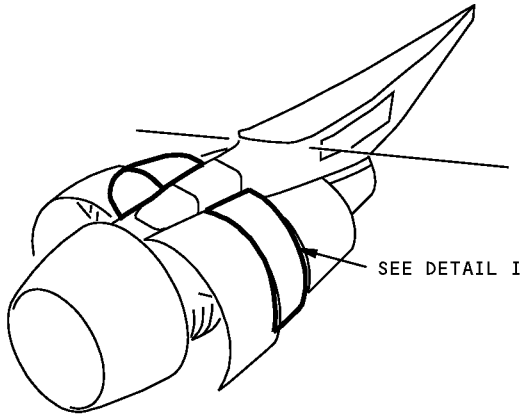
REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ACOUSTIC PANEL - JT9D-7R4 ENGINE



**Fan Duct Cowl and Thrust Reverser Acoustic Panel Repair - JT9D-7R4 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

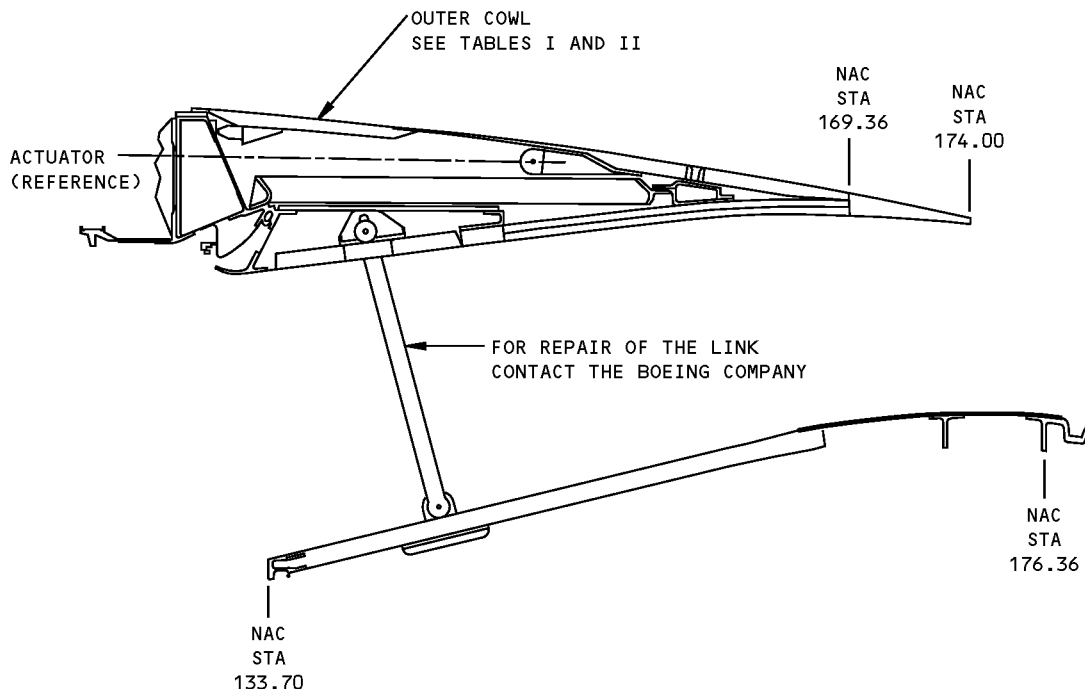
REPAIR 2 - FAN DUCT COWL AND THRUST REVERSER SKIN - JT9D-7R4 ENGINE



DETAIL I

**Fan Duct Cowl and Thrust Reverser Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

NOTES

- THIS FIGURE IS FOR THE REPAIR OF THE OUTER COWL. THE OUTER COWL IS A GRAPHITE/ARAMID EPOXY SANDWICH WITH A NON-METALLIC HONEYCOMB CORE
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.
 - RESTORE DAMAGED ALUMINUM FLAME SPRAY OR CONDUCTIVE COATING AS GIVEN IN SRM 51-70-14.
- [A]** MINIMUM OF 3.5 INCHES (89 mm) FROM PANEL EDGE
- [B]** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SKIN AND HONEYCOMB CORE
- [C]** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN THE NEXT "C" CHECK. **[G]**
- [D]** ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER REPAIR.
- [E]** FOR WET LAYUP REPAIRS, USE 1.0 INCH (25 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.5 INCH (12.7 mm) PER PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- [F]** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "2A" CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT **[G]**
- [G]** FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.J. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

**Fan Duct Cowl and Thrust Reverser Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 4)**



**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS [F] [A]	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200°F-230°F (93°C-110°C) CURE (SRM 51-70-17) [E]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [B]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. [D]	NO SIZE LIMIT
DELAMI- NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

REPAIR DATA FOR 350°F (177°C) CURE GRAPHITE/ARAMID HONEYCOMB PANELS
TABLE I

**Fan Duct Cowl and Thrust Reverser Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 4)**

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54-30-01

REPAIR 2
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STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C	PERMANENT REPAIRS	
		WET LAYUP 200°F-230°F (93°C-110°C) CURE (SRM 51-70-17) E	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.025 INCH (0.6 mm) DEEP IN EDGE BAND LAMINATE - MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.0 INCH (25 mm) DIA X 0.010 INCH (0.25 mm) DEEP IN EDGE BAND LAMINATE - MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.5 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.5 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.5 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.5 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.5 INCH (12.7 mm) MAX DIA HOLE THRU EDGE BAND MIN 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	FOR HOLES THAT ARE 0.5 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17, PAR. 4.H.	FOR HOLES THAT ARE 0.5 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03, PAR. 5.J. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17, PAR. 4.H.
DELAMINATION	2 SQ INCHES (13 sq cm) (2.0 INCHES (50 mm) MAX LENGTH) ALLOWED. MIN OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

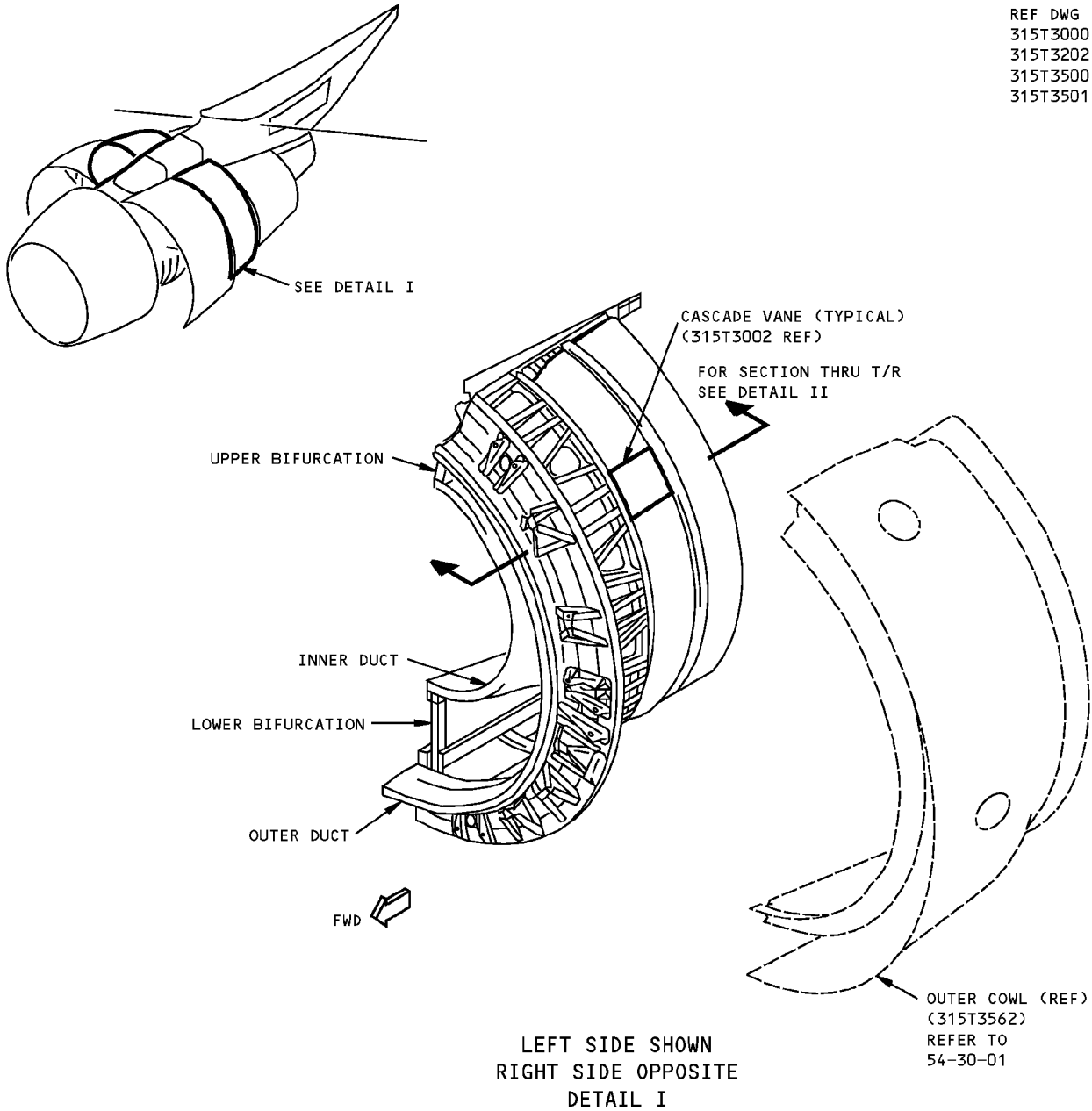
REPAIR DATA FOR 350°F (177°C) CURE EDGE BAND LAMINATES
TABLE II

Fan Duct Cowl and Thrust Reverser Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - JT9D-7R4 ENGINE

REF DWG
315T3000
315T3202
315T3500
315T3501



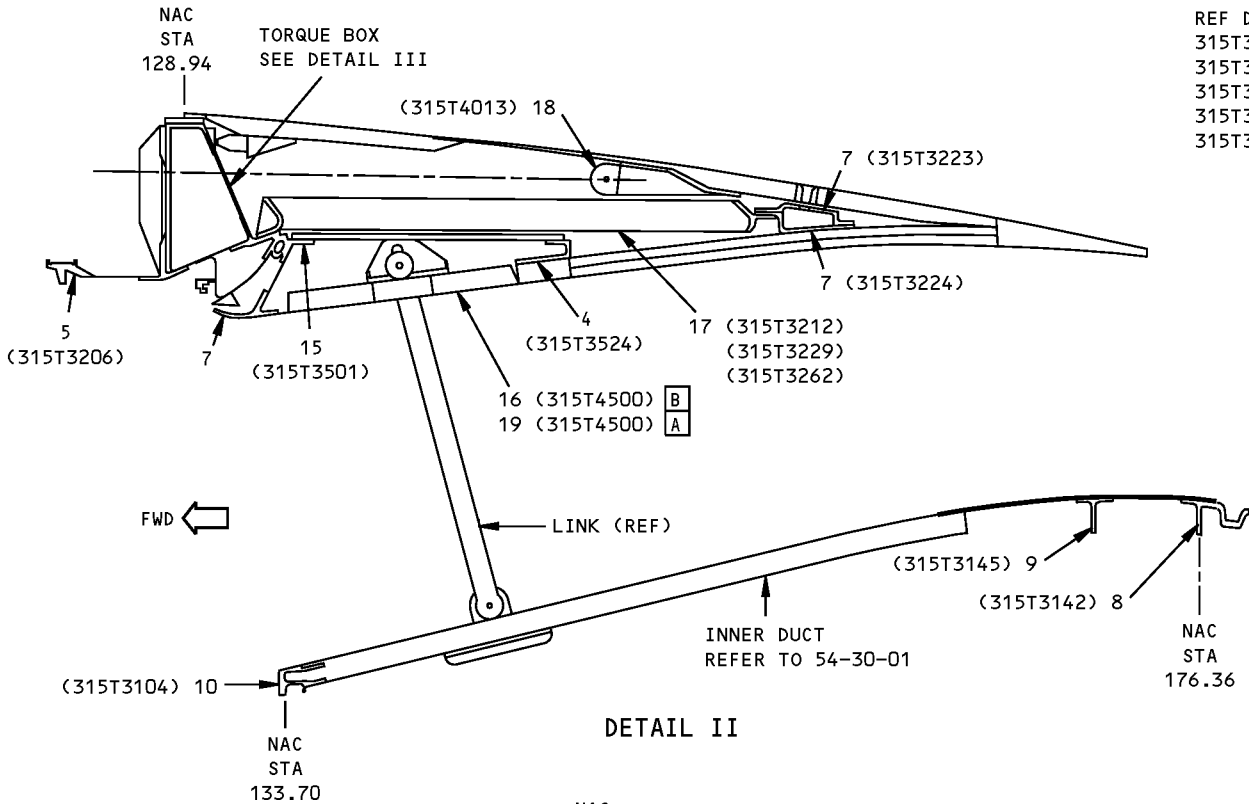
NOTES

- A** FOR CUM LINE NUMBERS:
327 AND ON
- B** FOR CUM LINE NUMBERS NOT LISTED IN **A**
- C** METAL BONDED BLOCKER DOORS ARE INTERCHANGE-
ABLE WITH COMPOSITE BLOCKER DOORS

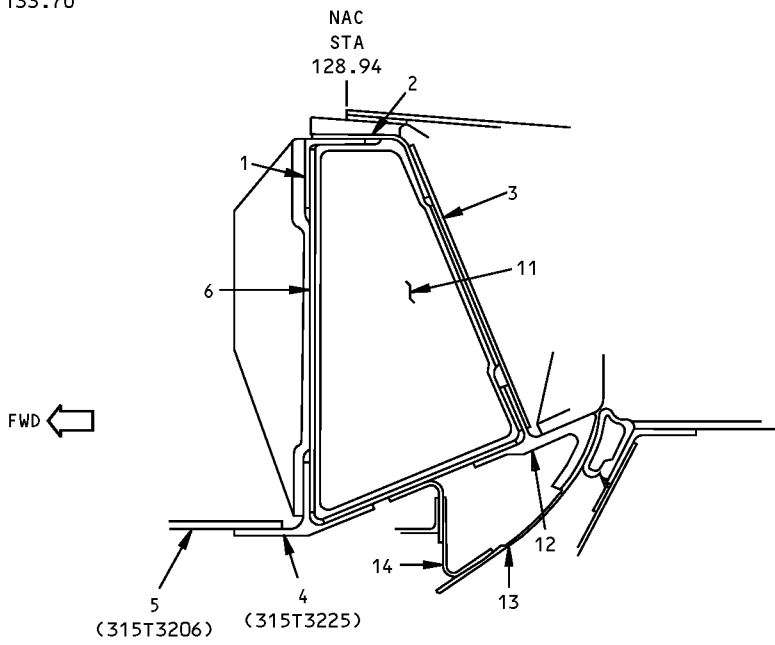
**Fan Duct Cowl and Thrust Reverser Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
315T3100
315T3101
315T3104
315T3142
315T3145



DETAIL II



**DETAIL OF TORQUE BOX
DETAIL III**

LIST OF
MATL

**Fan Duct Cowl and Thrust Reverser Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
Page 2
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54-30-02

D634T210



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER CHORD		BAC1514-13 2024-T42	
2	ANGLE	0.050	CLAD 2024-T42	
3	WEB	0.063	CLAD 2024-T3	
4	CHORD		FORGING 2014-T6 OPTIONAL: ROLLED 2024-T62	
5	V GROOVE FTG		FORGING 2014-T6 OPTIONAL: BAC1506-3113, 2024-T42 OR BAC1506-3518 7075-T73	
6	WEB	0.032	CLAD 2024-T81	
7	RING		FORGING 7075-T73	
8	FRAME	3.50	2219-T851	
9	FRAME		BAC1506-3569 2219-T62	
10	RING		FORGING 7075-T73	
11	FRAME		FORGING 7075-T73 OR BAR 7075-T73	
12	CHORD		FORGING 2014-T6 OPTIONAL: BAR 2024-T62	
13	BULLNOSE FAIRING	0.100	2024-T42	
14	ANGLE	0.050	CLAD 2024-T42	
15	CHORD		BAC1514-2502 2024-T42	
16	BLOCKER DOOR INNER SKIN	0.040	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, 1B-40, GRADE 1A, CLASS 50-125, POA 14.5	B
	CORE		HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B	
	OUTER SKIN	0.020	CLAD 2024-T81	
17	CASCADE VANE		MAGNESIUM ALLOY CASTING AZ92A-T6	
18	ACTUATOR FITTING		FORGING 7075-T73	
19	BLOCKER DOOR ASSY [C] INNER SKIN		GRAPHITE/EPOXY SANDWICH	A
	CORE		GRAPHITE FABRIC PER BMS 9-8, CLASS I, GRADE 3.0, 350°F (176.67°C) CURE (5 PLIES) NONMETALLIC HONEYCOMB W/BURIED SEPTUM (HONEYCOMB PER BMS 8-124, CLASS I, TYPE III, GRADE 6.0; SEPTUM PER BMS 5-114, GRADE 3.0)	
	OUTER SKIN		GRAPHITE FABRIC PER BMS 9-8, CLASS II, GRADE 3.0, 350°F (176.67°C) CURE (4 PLIES)	

LIST OF MATERIALS FOR DETAILS II AND III

**Fan Duct Cowl and Thrust Reverser Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 3)**

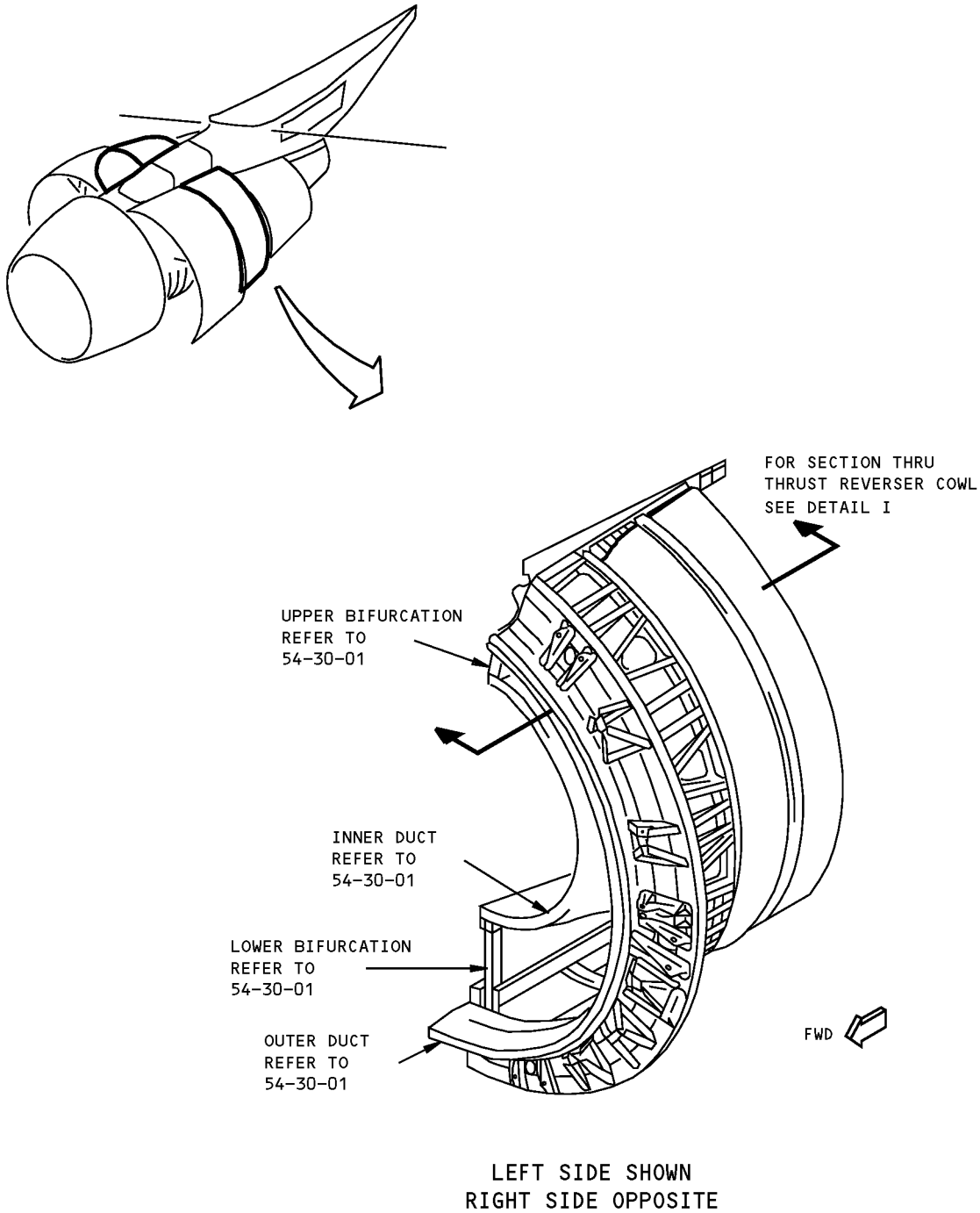
IDENTIFICATION 1
Page 3
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54-30-02

D634T210

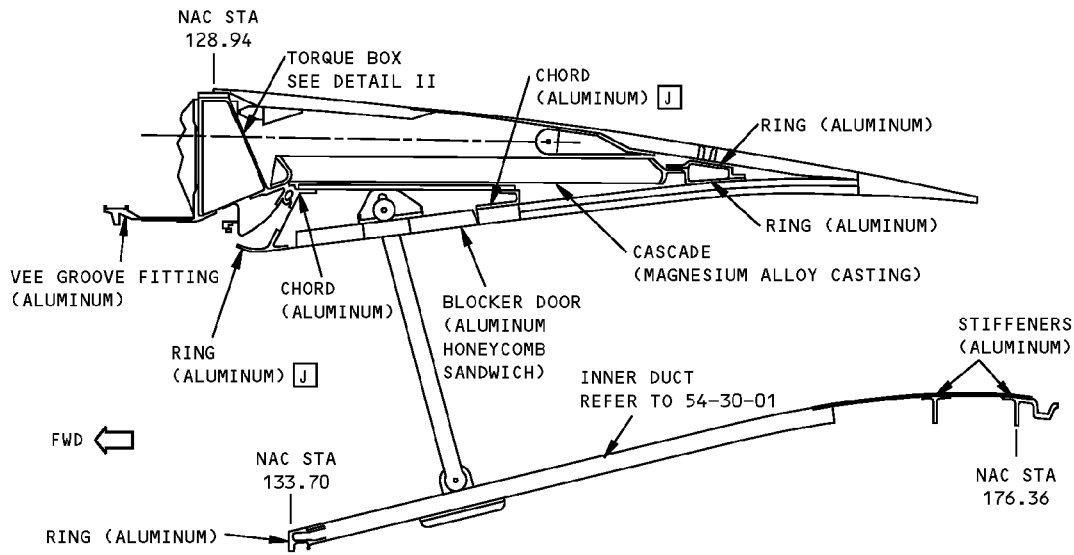
**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - JT9D-7R4 ENGINE

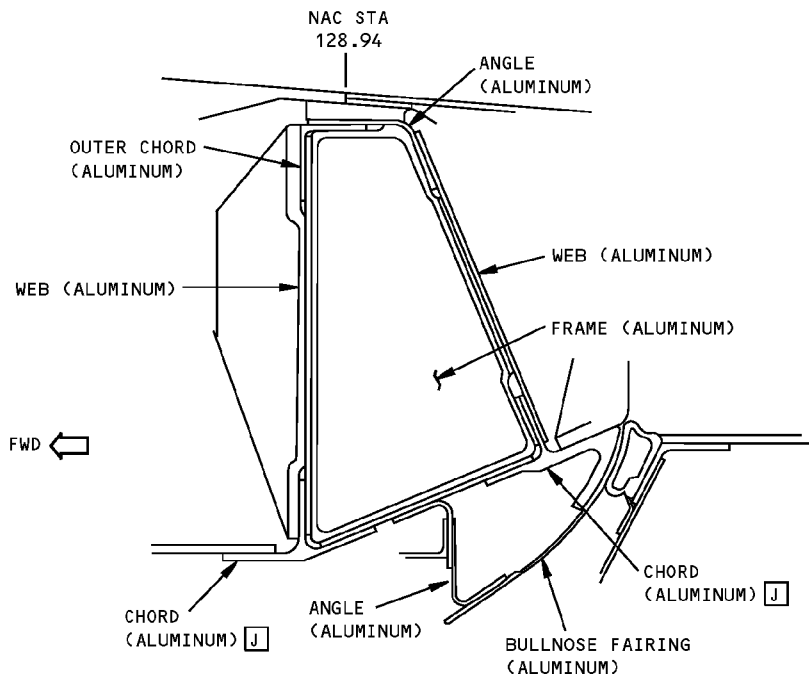


**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THRUST REVERSER COWL
DETAIL I**



DETAIL II

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 6)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
CASCADE [K]	[H]	[I]	NOT ALLOWED	NOT ALLOWED	---
BLOCKER DOOR	[D]	[C]	SEE DETAIL VI	NOT ALLOWED	[F]
CHORD	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
OUTER CHORD	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
ANGLE	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
WEB	[B]	[C]	SEE DETAIL VI	NOT ALLOWED	---
VEE GROOVE FITTING	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
STIFFENERS	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
RING	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
FRAME	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
BULLNOSE FAIRING	[B]	[C]	SEE DETAIL VI	[E]	---

NOTES

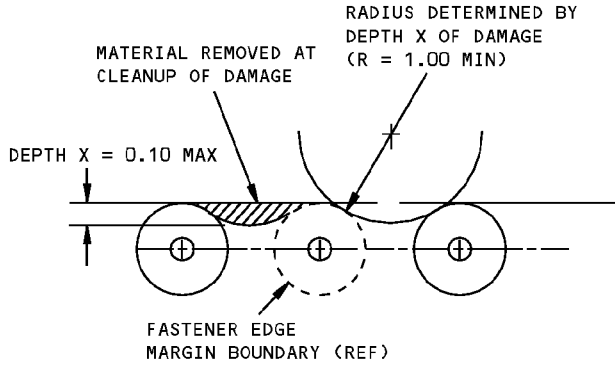
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL

- [A] REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
- [B] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS III AND VIII
- [C] REMOVE DAMAGE PER DETAILS III, IV, AND VI

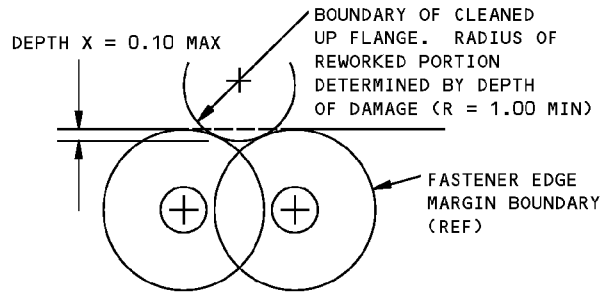
- [D] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS III AND VII
- [E] CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (12.7 mm) TO EXISTING HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- [F] 1.0 INCH (12.7 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE [A]
- [G] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS III AND VIII
- [H] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS III AND IX
- [I] REMOVE DAMAGE PER DETAILS III, VI, AND IX
- [J] SHOT PEEN REWORKED AREA PER 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK
- [K] SPECIAL PRECAUTIONS AND PROCEDURES ARE REQUIRED FOR REWORKING MAGNESIUM COMPONENTS. REFER TO 51-10-00 FOR CLEANUP OF DAMAGE AND FINISH REQUIREMENTS

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

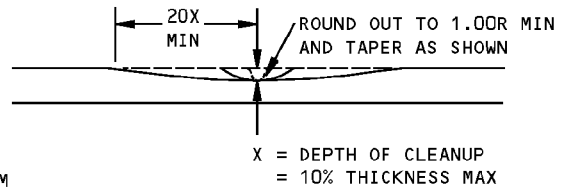
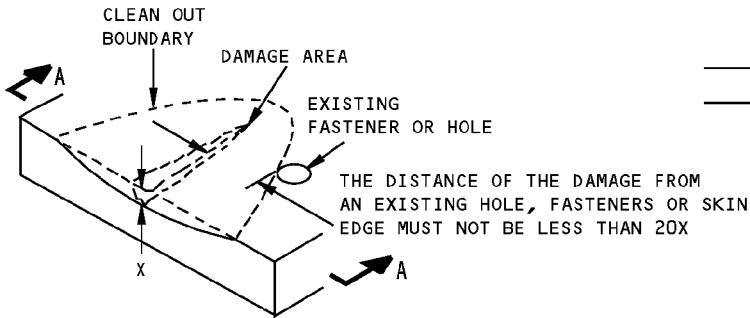


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL III

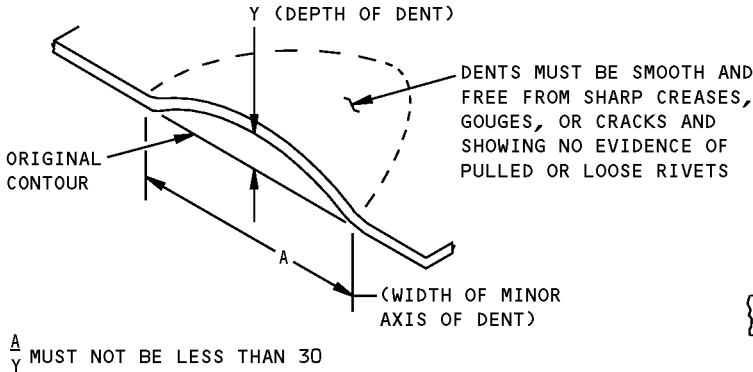


SECTION A-A

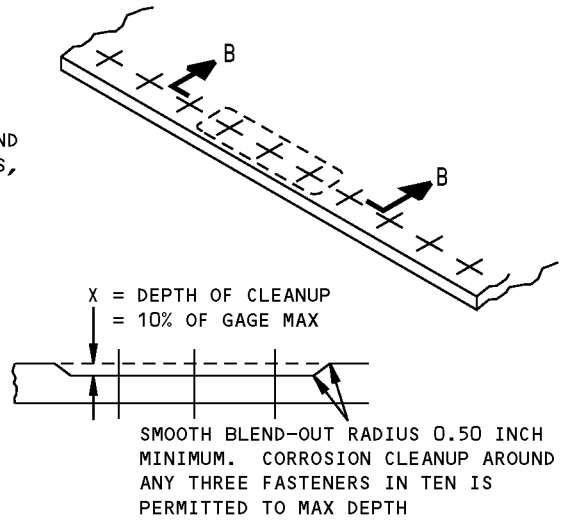
REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE
DETAIL IV

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 6)**

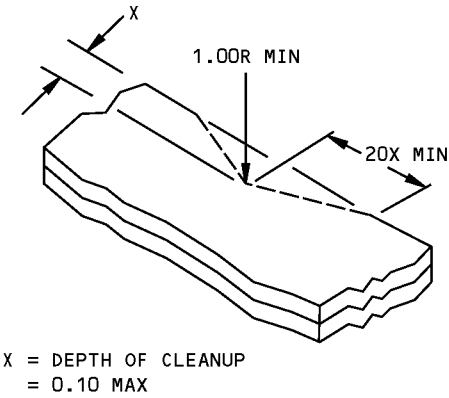
STRUCTURAL REPAIR MANUAL



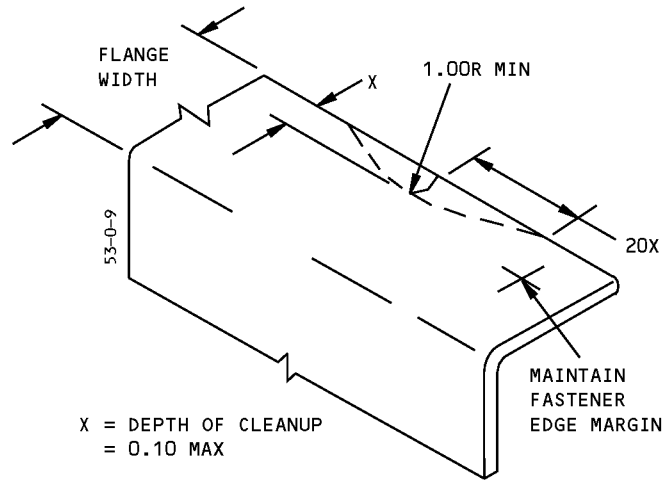
**ALLOWABLE DAMAGE FOR DENT
DETAIL V**



**SECTION B-B
CORROSION CLEANUP
DETAIL VI**



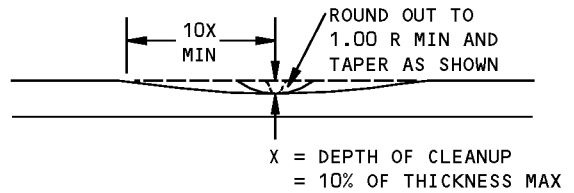
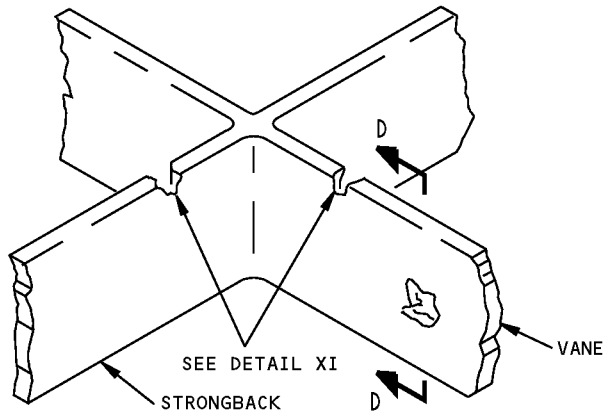
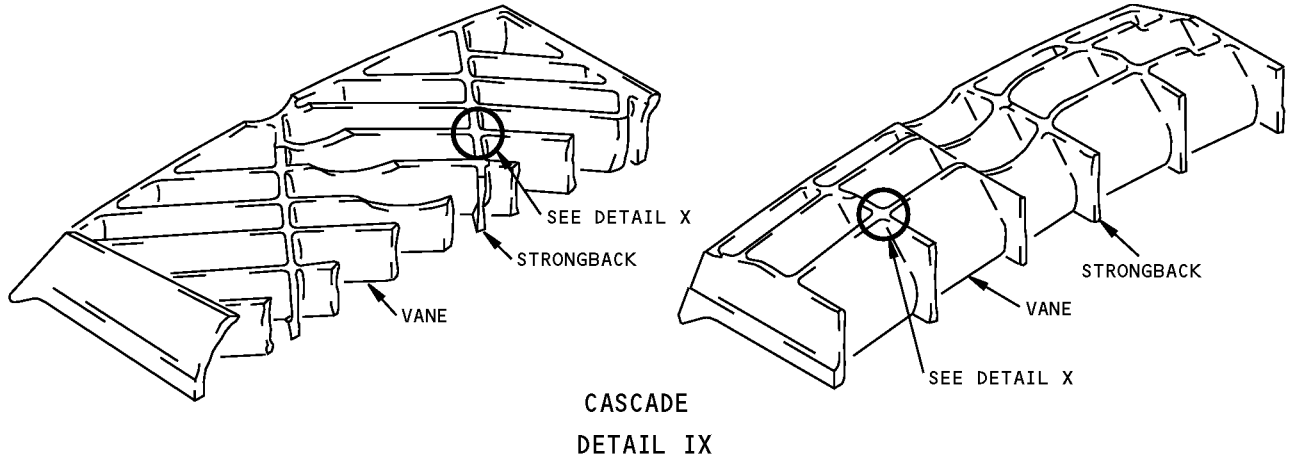
DETAIL VII



**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL VIII**

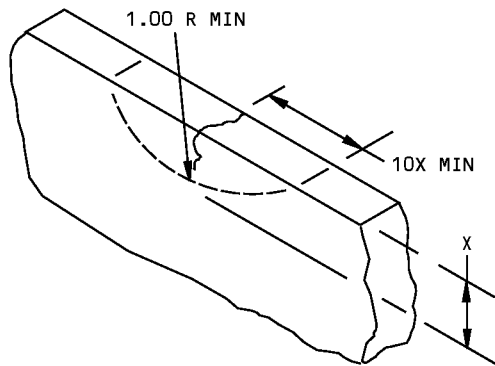
**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION D-D

**CLEANUP OF SURFACE DAMAGE ON VANE OR STRONGBACK
DETAIL X**



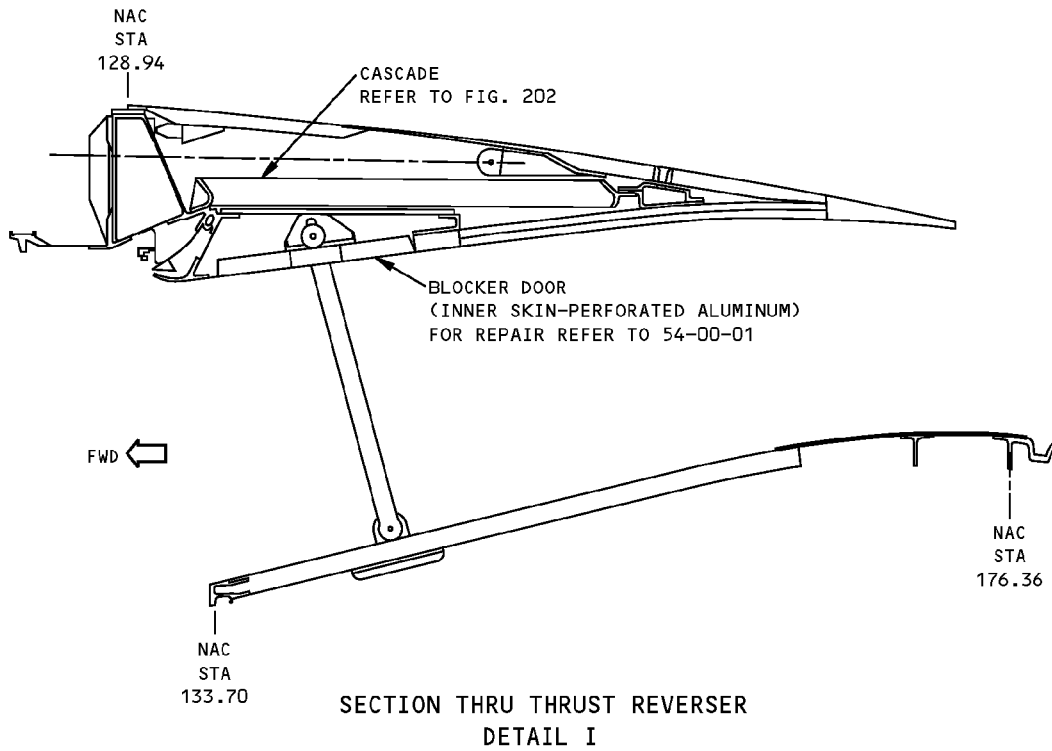
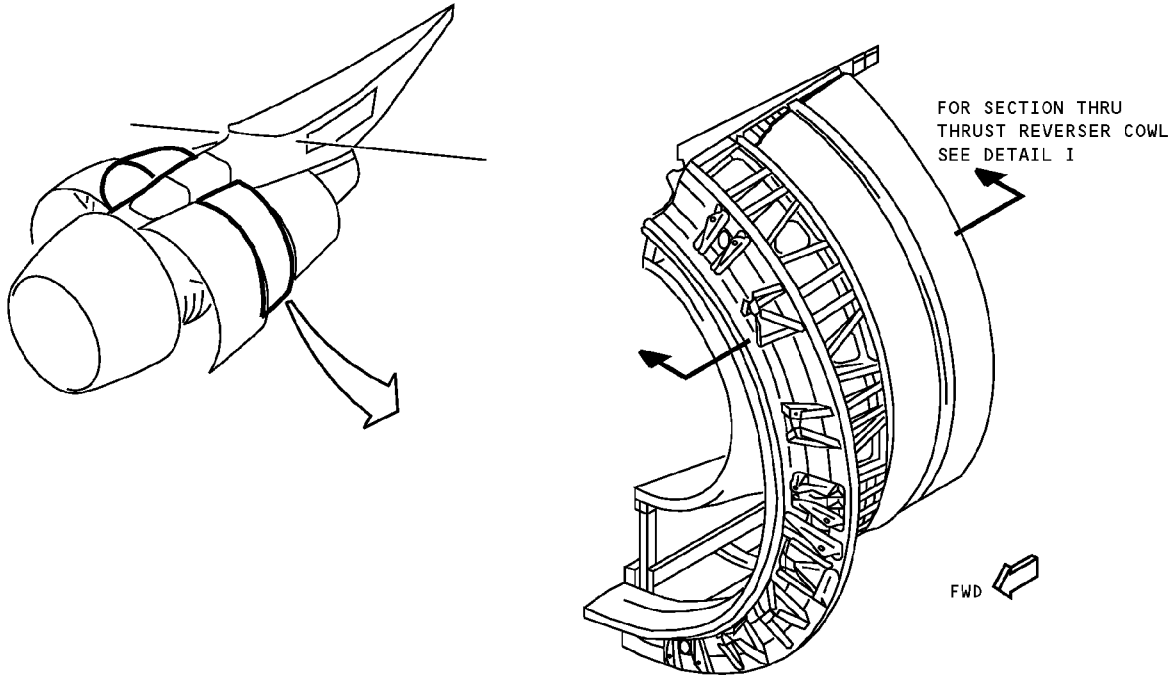
X = DEPTH OF CLEANUP
= 0.50 MAX FOR VANE
= 0.05 MAX FOR STRONGBACK

**CLEANUP OF DAMAGE ON AN EDGE
DETAIL XI**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - BLOCKER DOOR ACOUSTIC PANEL - JT9D-7R4 ENGINE



**Blocker Door Acoustic Panel Repair - JT9D-7R4 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

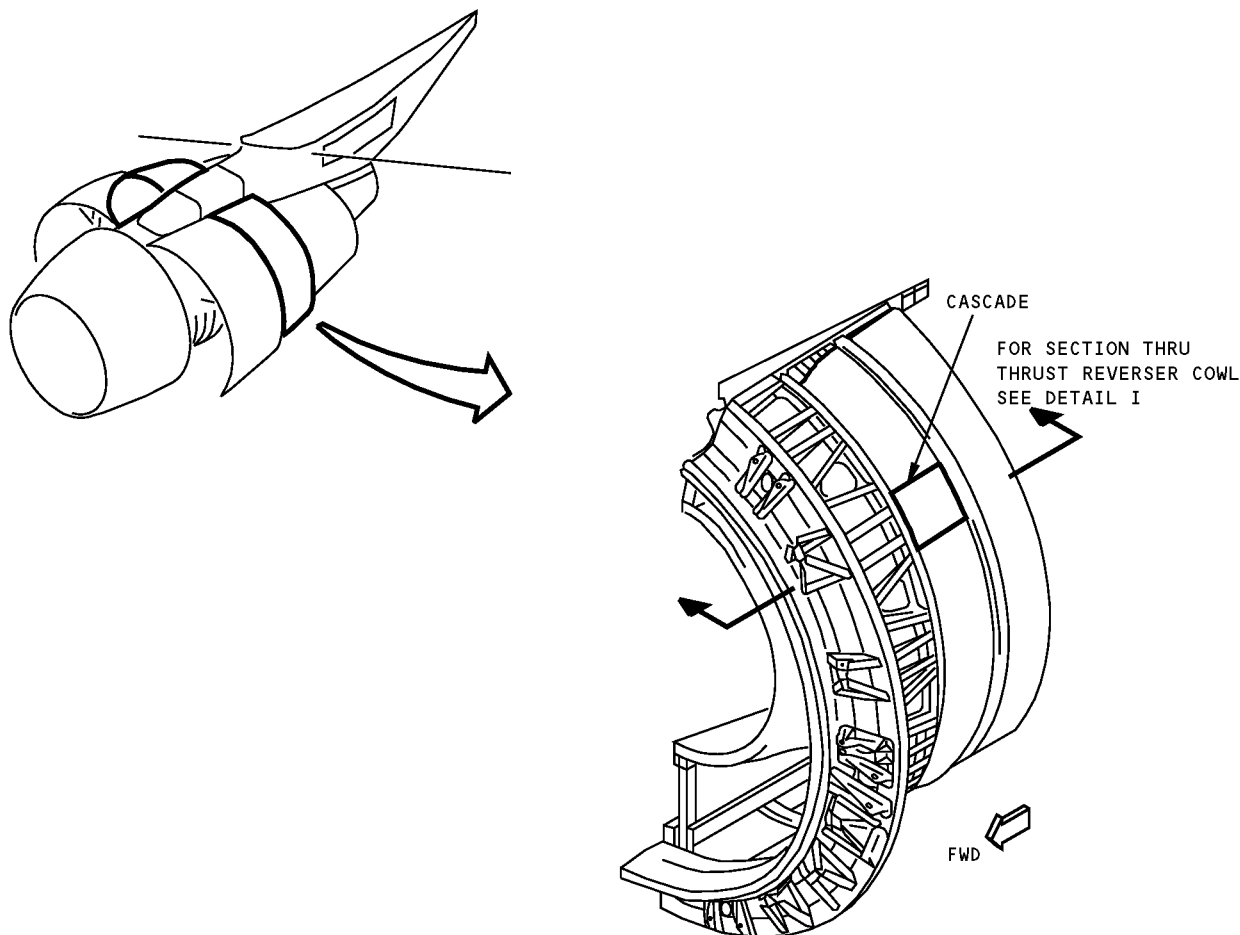
REPAIR 2 - THRUST REVERSER CASCADE ASSEMBLY NUTPLATE - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Remove cascade where nutplate is broken or missing
2. Drill 0.50 access hole thru bullnose fairing, in line with related bolt hole thru inner aft chord ring, using a drill bushing as a guide. See detail II
3. Break sharp edge on access hole 0.01-0.02R
4. Brush Dow 19 chromic acid over all reworked areas and apply two coats of BMS 10-11, type I primer. Refer to 51-10-00.
5. Remove broken nutplate and plug existing rivet holes with BACR15BA3AD rivet installed wet with BMS 5-63 sealant
6. Reinstall cascade. Align holes with chord ring and install cascade attachment fasteners with MIL-C-11796 Class 3 corrosion prevention compound on bolt shanks and under bolt heads. Do not apply to bolt threads.
7. Where nutplate is missing or damaged, install BACN10HY4AM nut and AN960PD416L aluminum washer.

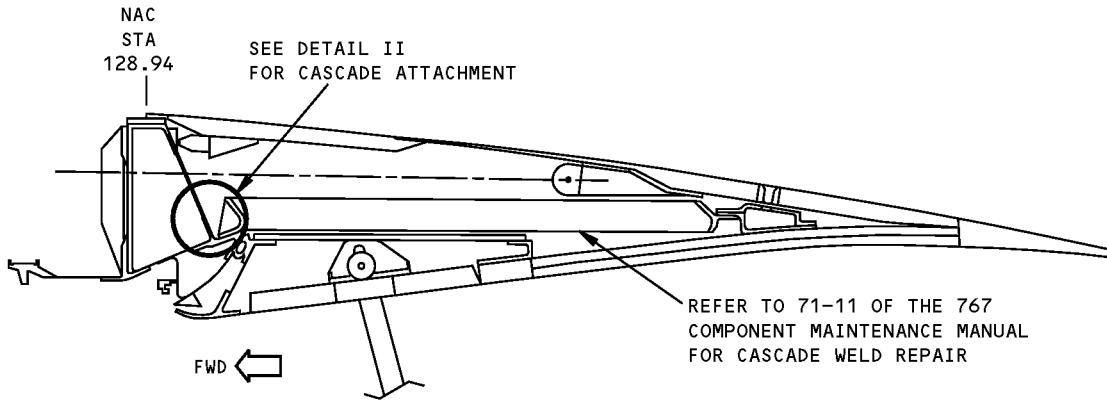
NOTES

- THIS REPAIR APPLIES WHERE NUTPLATES ARE BROKEN OR MISSING

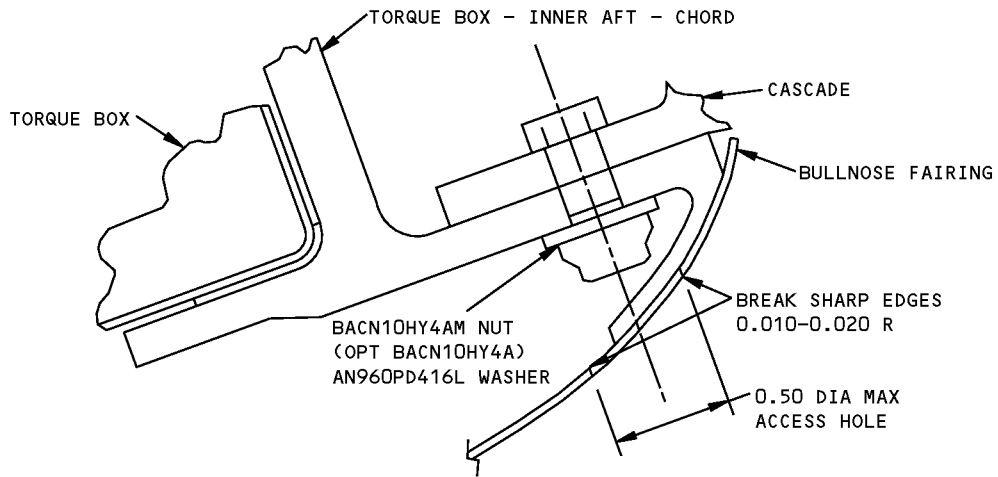


**Thrust Reverser Cascade Assembly Nutplate Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THRUST REVERSER COWL
DETAIL I**



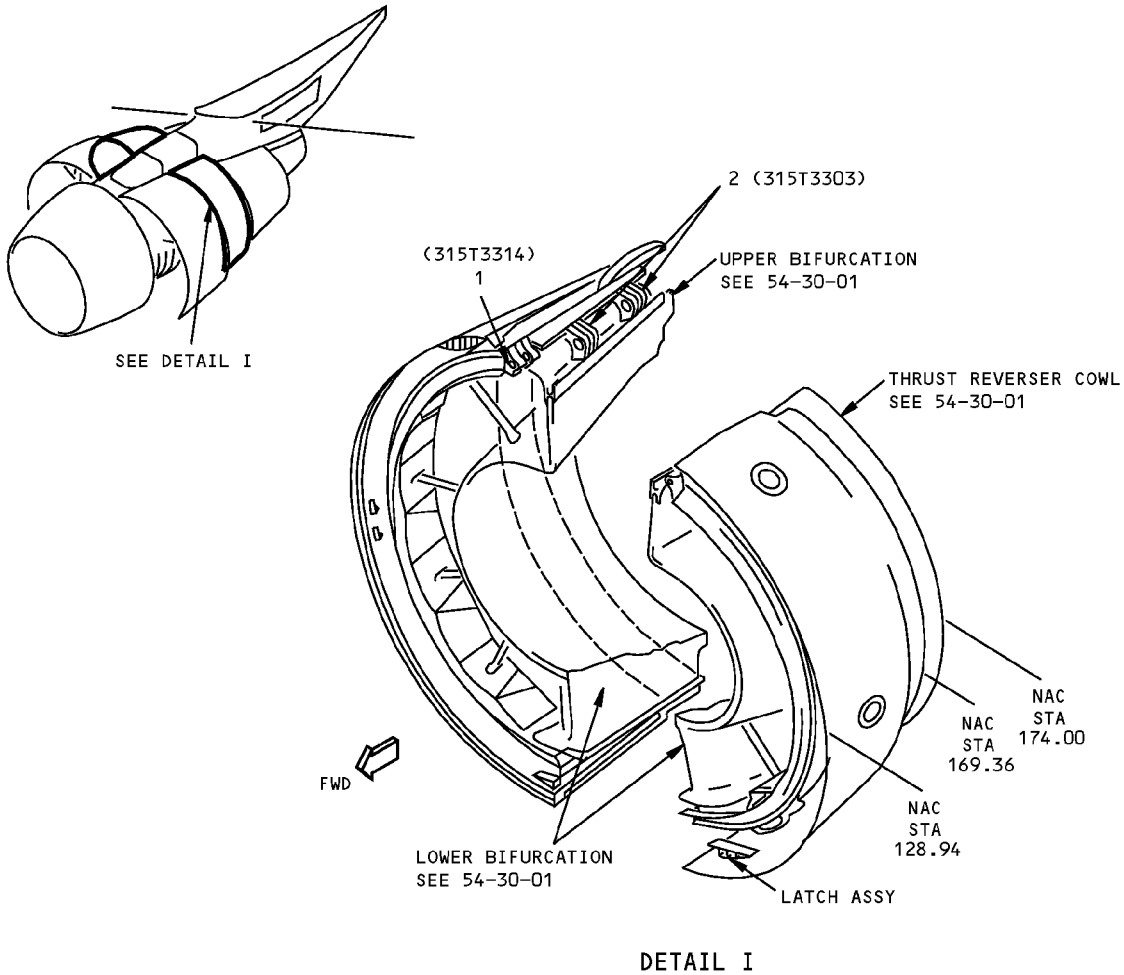
**CASCADE ATTACHMENT
DETAIL II**

**Thrust Reverser Cascade Assembly Nutplate Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - JT9D-7R4 ENGINE

REF DWG
315T3202
315T3300
315T3400



DETAIL I

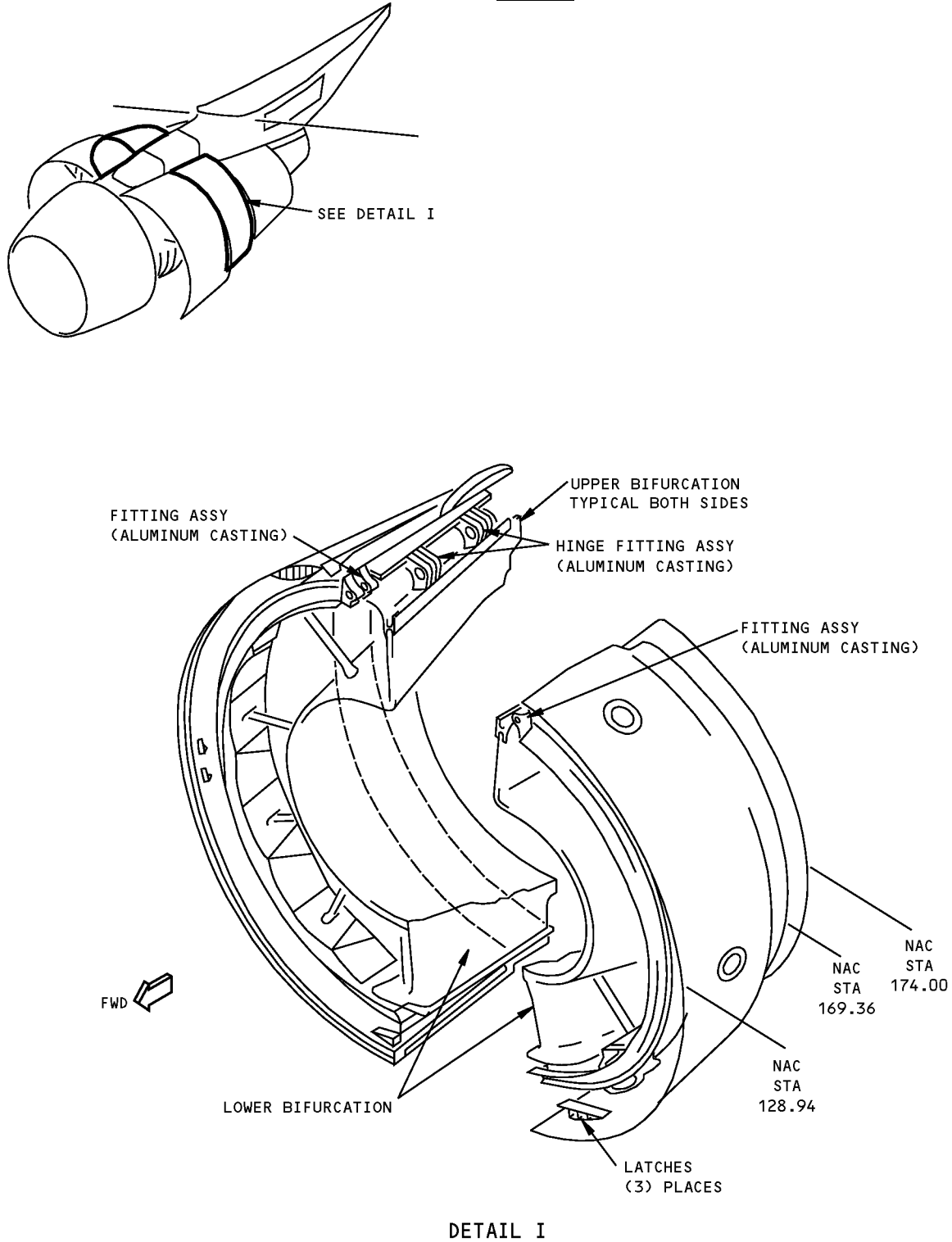
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FITTING ASSY FITTING		CASTING A357-T61	
2	HINGE FITTING ASSY FITTING		CASTING A357-T61	

LIST OF MATERIALS FOR DETAIL I

**Fan Duct Cowl and Thrust Reverser Attachment Fitting Identification - JT9D-7R4 - Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - JT9D-7R4
ENGINE**



**Fan Duct Cowl and Thrust Reverser Attachment Fitting Allowable Damage - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

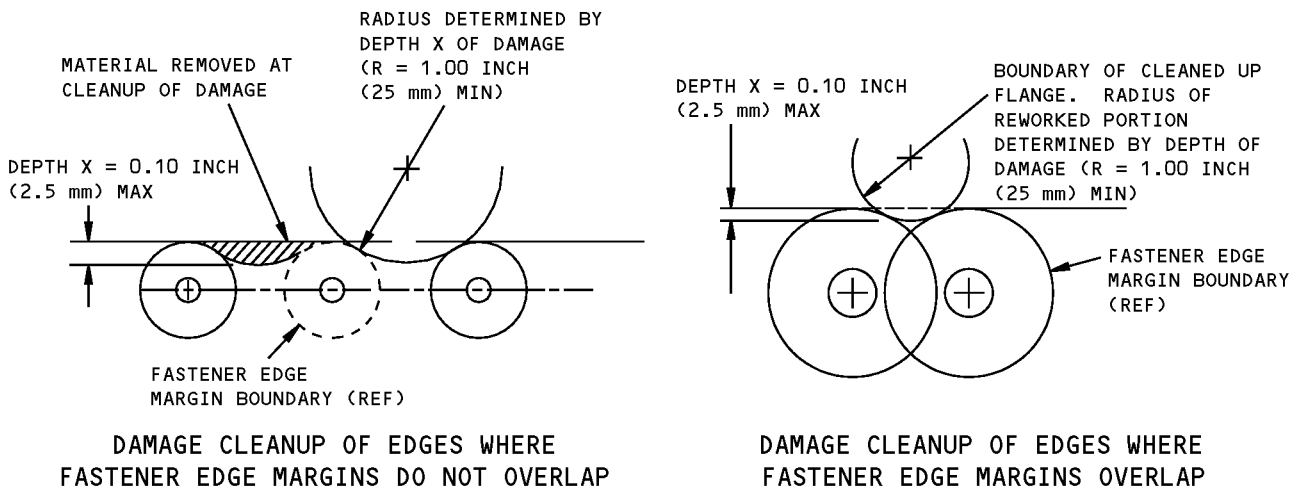
**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTING ASSY	A	B	NOT ALLOWED	NOT ALLOWED
FITTING ASSY	A	B	NOT ALLOWED	NOT ALLOWED

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-20 OF THE 767 MAINTENANCE MANUAL

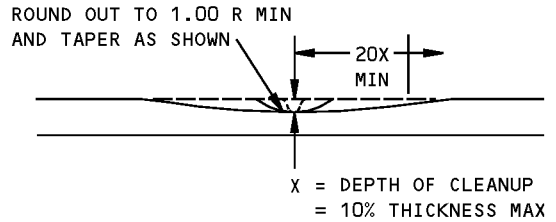
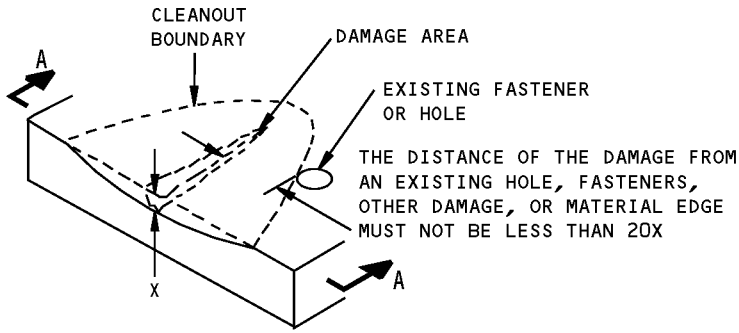
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAIL V
- B** FOR EDGE DAMAGE SEE DETAIL II. FOR LUG DAMAGE SEE DETAIL IV. FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS



DETAIL II

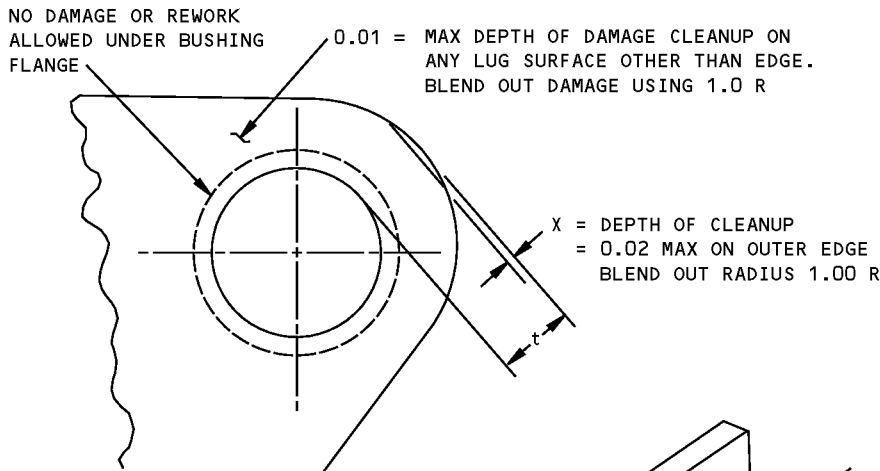
**Fan Duct Cowl and Thrust Reverser Attachment Fitting Allowable Damage - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

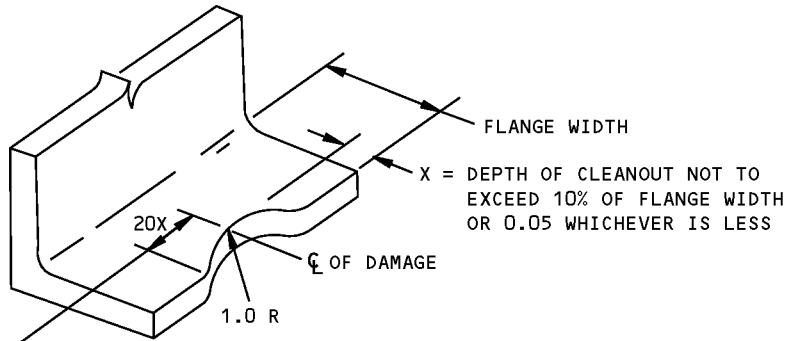


THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**

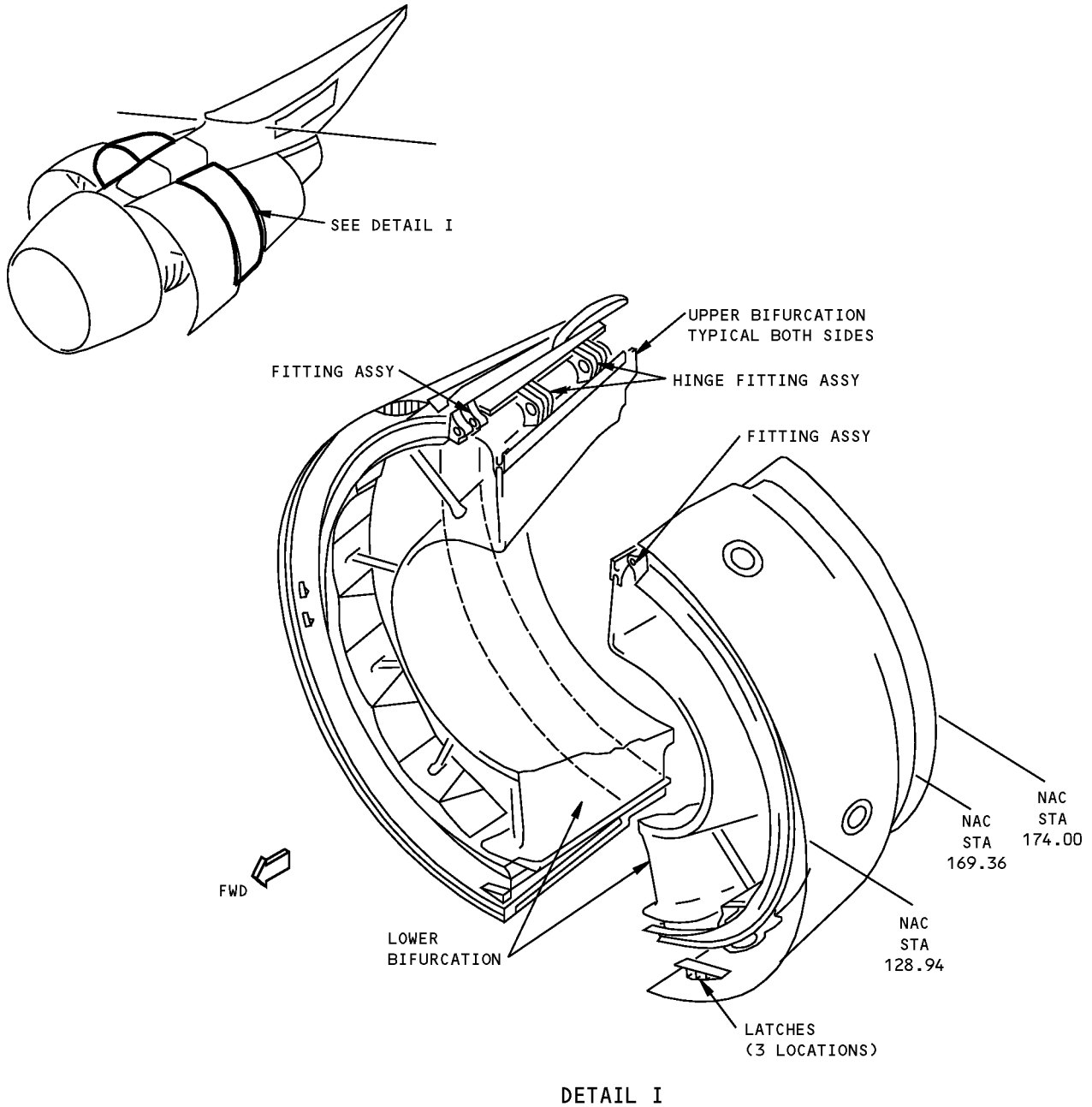


**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Fan Duct Cowl and Thrust Reverser Attachment Fitting Allowable Damage - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



NOTES

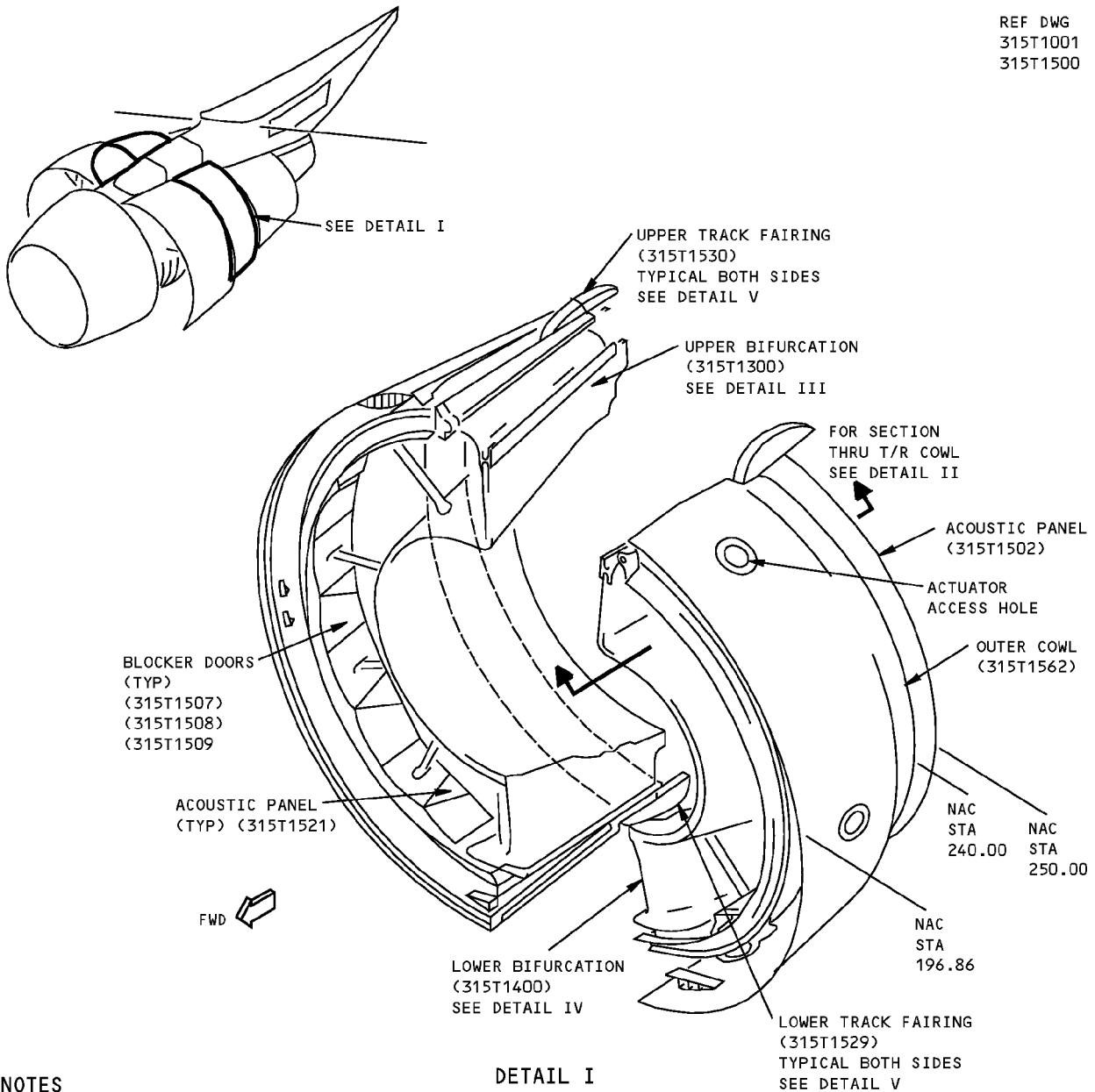
- NO TYPICAL REPAIR TO FITTINGS AVAILABLE.
SPECIFIC REPAIRS TO FITTINGS WILL BE
PROVIDED BASED ON SERVICE EXPERIENCE

**Fan Duct Cowl and Thrust Reverser Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - CF6-80A ENGINE

REF DWG
315T1001
315T1500



NOTES

- A** PLY ORIENTATION CONVENTION - 0 DEGREES IS PARALLEL TO THE FABRIC WARP DIRECTION
- B** EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE
- C** EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE

DETAIL I

- D** DENSE HONEYCOMB CORE LOCATED IN VICINITY OF FITTINGS, ACCESS HOLES AND PANEL EDGES. REFER TO BOEING DRAWINGS FOR EXACT SIZE AND LOCATION

**Fan Duct Cowl and Thrust Reverser Skin Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 5)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER COWL SKIN CORE DENSE CORE <input type="checkbox"/>		GRAPHITE/ARAMID EPOXY HONEYCOMB SANDWICH SEE DETAIL VI NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 5.0 NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 9.0	
2	ACOUSTIC SKIN	0.032	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209 TYPE 1B-32, GRADE 1A, CLASS 50-109	
3	SKIN	0.020	CLAD 2024-T81	
4	CORE		HONEYCOMB-FLEXIBLE-ALUMINUM PER BMS 4-6 CLASS I TYPE 5.7-37	
5	CORE		HONEYCOMB-ALUMINUM (5052) CX 22.1-1/8-60N	
6	PANEL BOND ASSY INNER SKIN OUTER	0.050 0.025	CLAD 2024-T81 CLAD 2024-T81	
7	SKIN	0.032	CLAD 2024-T81	
8	CORE DENSE CORE <input type="checkbox"/>		ALUMINUM HONEYCOMB PER BMS 4-4 TYPE 6-40N FORM B ALUMINUM HONEYCOMB PER BMS 4-4 TYPE 3-60N GRADE II, FORM F-20	

LIST OF MATERIALS FOR DETAIL II

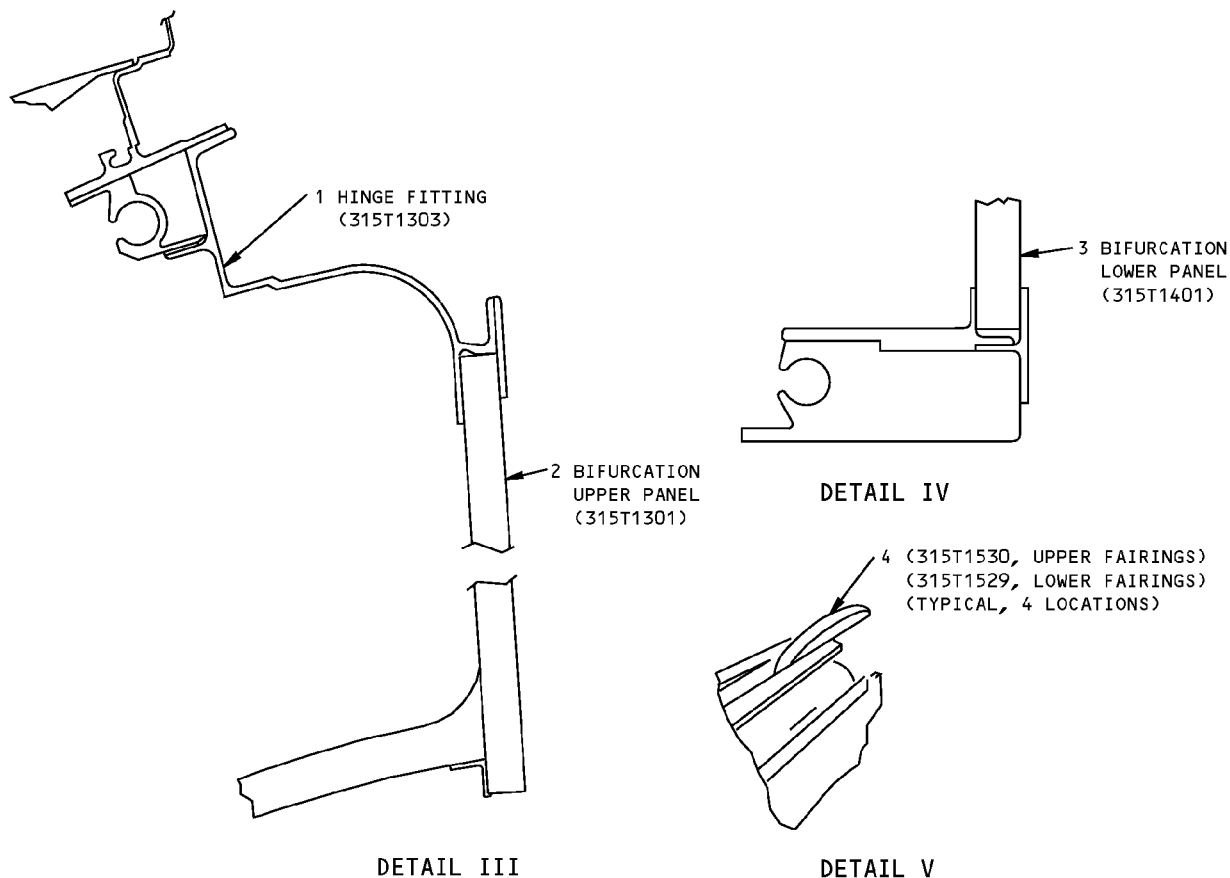
**Fan Duct Cowl and Thrust Reverser Skin Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 5)**

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STRUCTURAL REPAIR MANUAL**

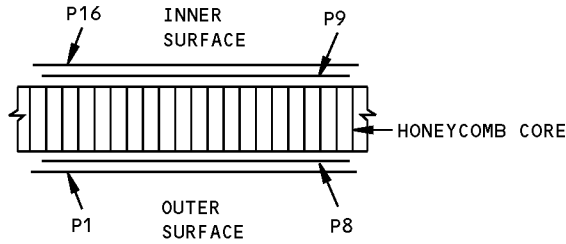


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FITTING		PRECISION CASTING A 357-T61	
2	UPPER PANEL ASSY INNER SKIN AND OUTER SKIN UPPER AND LOWER CORE CENTER CORE	0.025	CLAD 2024-T81 HONEYCOMB PER MIL-C-7438E 3/16-5062-006N-CR5 OPTIONAL: 22.1-1/8-60N-5052 HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B	
3	LOWER PANEL ASSY INNER SKIN AND OUTER SKIN UPPER AND LOWER CORE CENTER CORE	0.020	CLAD 2024-T81 HONEYCOMB CR5-3/16-5062 006N-R2-25 OPTIONAL CR111-3/16-5052-006N-R2 OR 22.1-1/8-60N-5052 PER MIL-C-7438E HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B	
4	TRACK FAIRING		FIBERGLASS LAMINATE	

LIST OF MATERIALS FOR DETAILS III, IV AND V

**Fan Duct Cowl and Thrust Reverser Skin Identification - CF6-80A Engine
Figure 1 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL

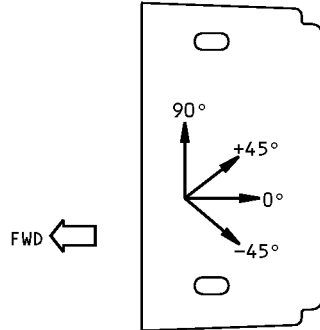


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY
ORIENTATION AND MATERIAL A

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION A
1 (DETAIL II)	P1, P16	B	0°, 90°
	P8, P9	C	+45°

MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

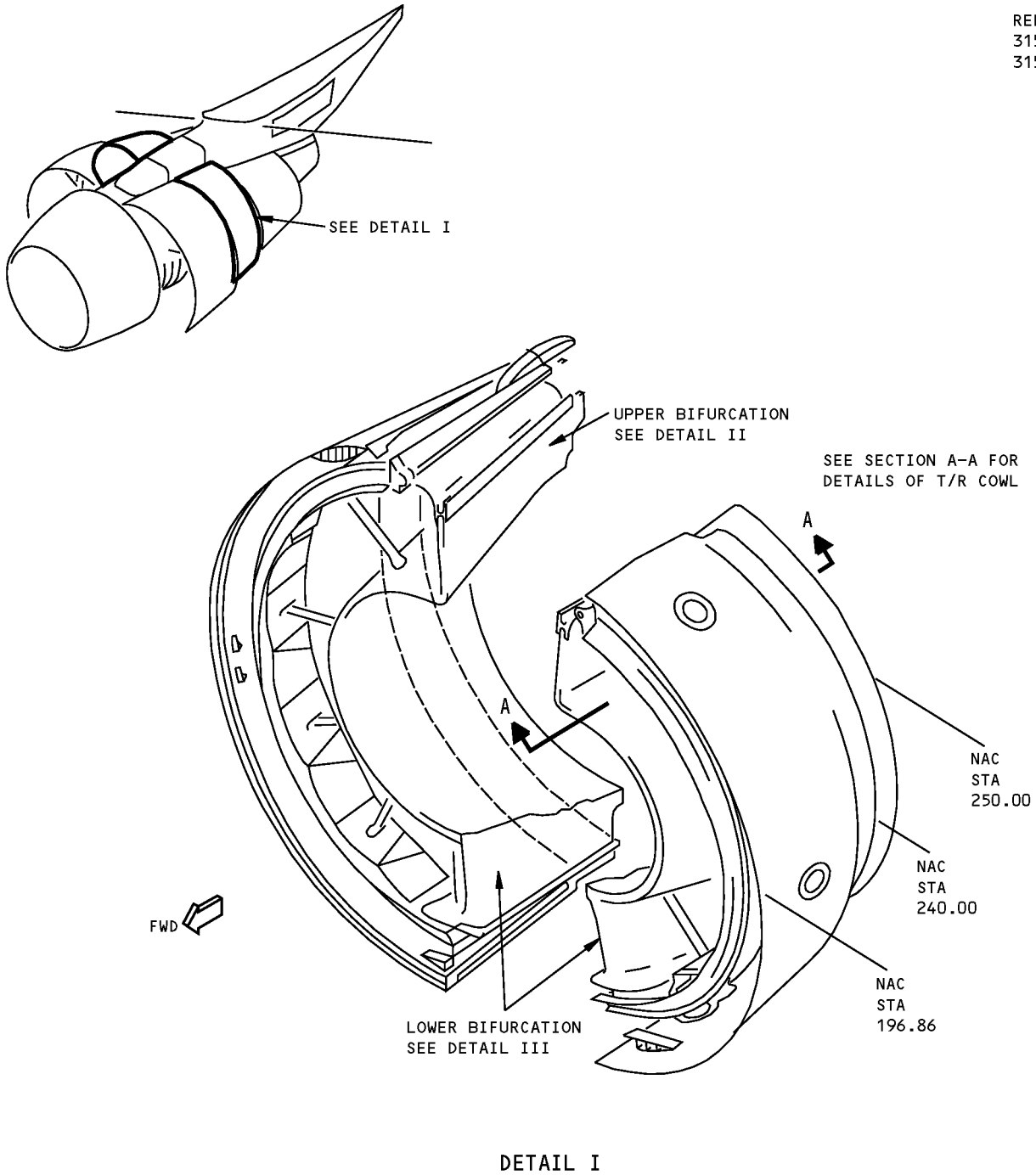
DETAIL VI

**Fan Duct Cowl and Thrust Reverser Skin Identification - CF6-80A Engine
Figure 1 (Sheet 5 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - CF6-80A ENGINE

REF DWG
315T1001
315T1500

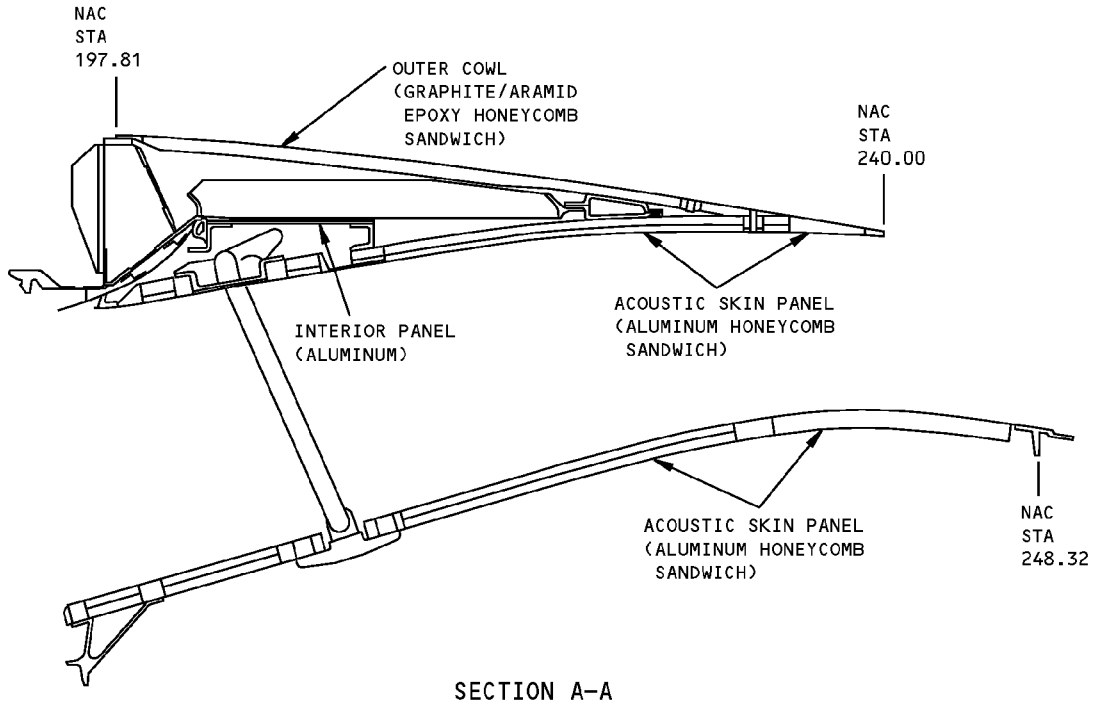


**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 1 of 6)**

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ALLOWABLE DAMAGE 1
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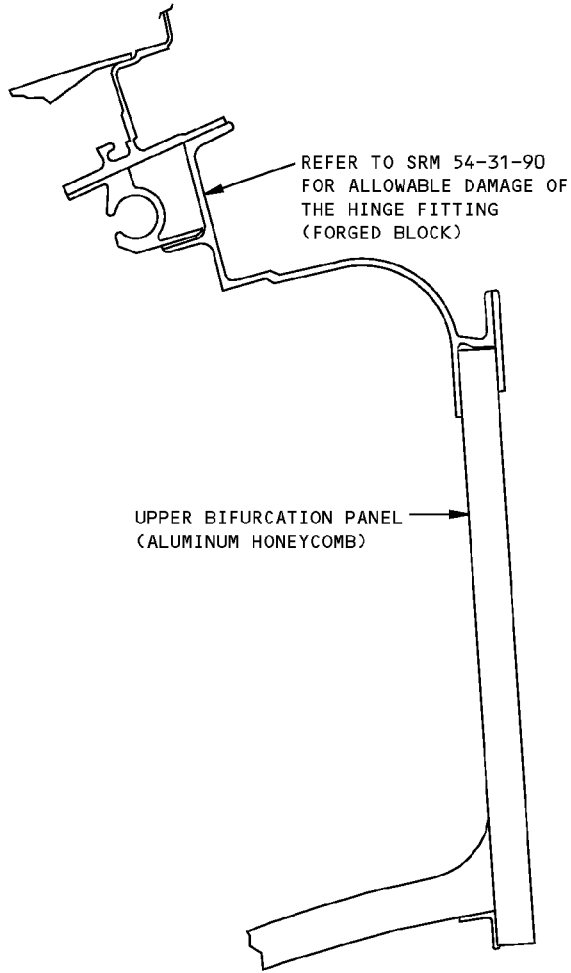
**767-300
STRUCTURAL REPAIR MANUAL**



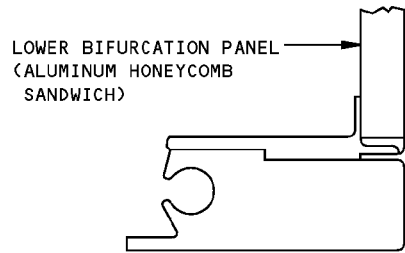
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
OUTER COWL	G	H	I	J	K
INTERIOR PANEL	B	C	SEE DETAIL VI	D	—
ACOUSTIC SKIN PANEL					
ACOUSTIC LINER	N	C	SEE DETAIL VI	O	F
OUTER SKIN	N	C	SEE DETAIL VI	O	F

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II



DETAIL III

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
UPPER PANEL	N	C	SEE DETAIL VI	E	F
LOWER PANEL	N	C	SEE DETAIL VI	E	F

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 3 of 6)**

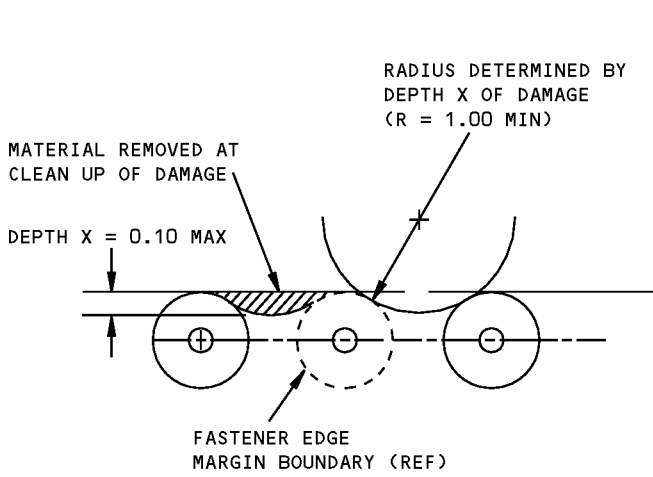
STRUCTURAL REPAIR MANUAL

NOTES

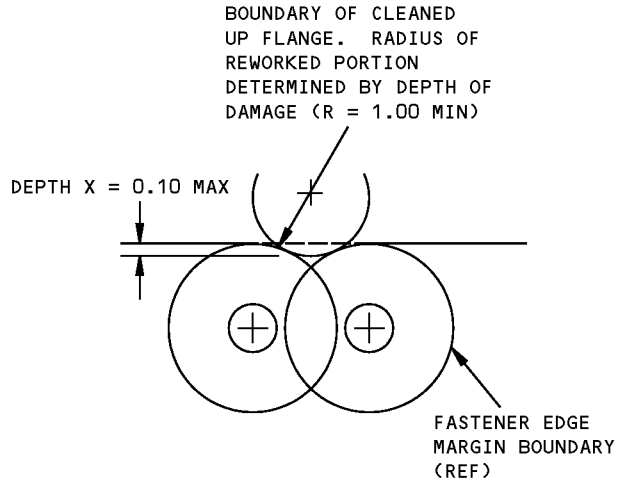
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS AS SHOWN IN AMM 51-20
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED
- A** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAXIMUM OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND EXAMINE THE TAPE AT 300 FLIGHT CYCLE INTERVALS. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR THE DAMAGE AT OR BEFORE 3,000 FLIGHT CYCLES.
- B** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAILS IV AND VIII
- C** REMOVE DAMAGE AS SHOWN IN DETAILS IV, V AND VII
- D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6.35 mm) MAXIMUM DIAMETER AND NOT CLOSER THAN 1.0 INCH (25.4 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- E** CLEAN OUT DAMAGE UP TO 0.25 INCH (6.35 mm) MAXIMUM DIAMETER AND NOT CLOSER THAN 1.0 INCH (25.4 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED **A**
- F** DELAMINATION OF SKIN FROM HONEYCOMB UP TO 2.25 SQUARE INCH IS PERMITTED A MAXIMUM OF 0.50 INCH (12.7 mm) DELAMINATION FROM EDGE IS PERMITTED
- G** 2.0 INCHES (50.8 mm) MAXIMUM LENGTH FOR EACH SQUARE FOOT OF AREA IS PERMITTED IN HONEYCOMB AREA AND MINIMUM OF 6.0 INCHES (152.4 mm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS AS SHOWN IN DETAILS IV AND VIII **A**
- H** DAMAGE IS PERMITTED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS IS NOT PERMITTED. CLEAN UP EDGE DAMAGE AS SHOWN IN DETAILS IV AND VIII **A**
- I** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.50 INCHES (38.1 mm) DIAMETER MAXIMUM ARE PERMITTED. ONE DENT PER SQUARE FOOT OF AREA PERMITTED WHICH MUST BE A MINIMUM OF 6 INCHES (152.4 mm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT REFER TO APPLICABLE DAMAGE DATA IN TABLE
- J** 1.00 INCH (25.4 mm) MAXIMUM DIAMETER PERMITTED IN HONEYCOMB AREA ONLY PROVIDED DAMAGE IS A MINIMUM OF 3D FROM ANY OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR
- K** 0.50 INCH (12.7 mm) MAXIMUM DIAMETER IS PERMITTED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.8 mm) DELAMINATION FROM EDGE IS PERMITTED. PROTECT EDGE DAMAGE AS GIVEN IN **A**. REPAIR DELAMINATION IN HONEYCOMB AREA AS SHOWN IN SRM 51-70 AT OR BEFORE 3,000 FLIGHT CYCLES. **A**
- L** DELETED
- M** DELETED
- N** 2.0 INCH (50.8 mm) CRACKS IN HONEYCOMB AREA ARE PERMITTED. CLEAN UP EDGE CRACKS AS SHOWN IN DETAILS IV AND VII. CRACKS THROUGH 3 CONSECUTIVE HOLES OR FASTENERS THROUGH THE PANEL EDGE-BAND ARE PERMITTED
- O** CLEAN OUT OF DAMAGE UP TO 0.19 INCH (4.8 mm) DIAMETER MAXIMUM IS PERMITTED PROVIDED THE DAMAGE IS A MINIMUM OF 3D FROM ANY OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE

Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 4 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

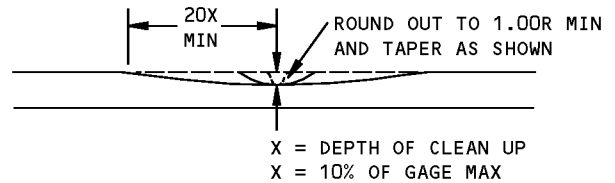
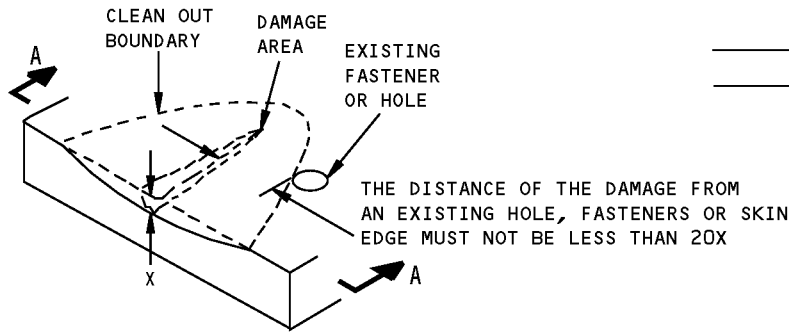


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL IV

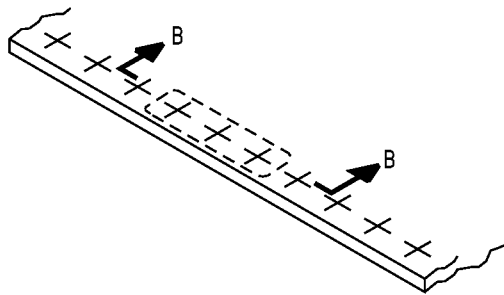
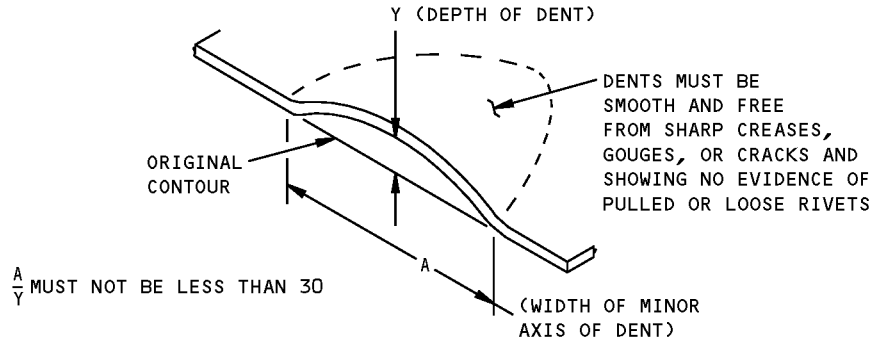


SECTION A-A

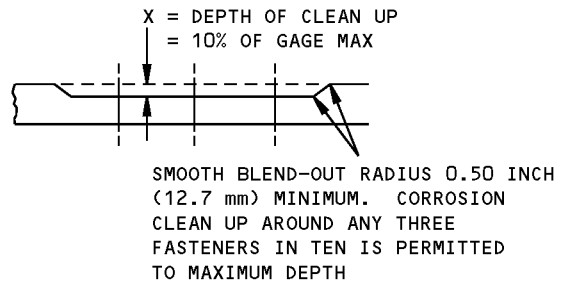
REMOVAL OF NICK OR GOUGE
DAMAGE ON A SURFACE
DETAIL V

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

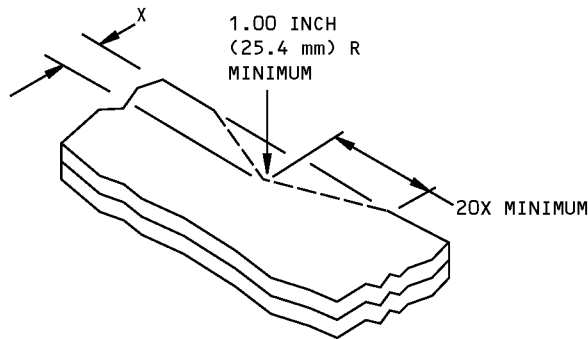
**767-300
STRUCTURAL REPAIR MANUAL**



**CORROSION CLEANUP
DETAIL VII**



SECTION B-B



X = DEPTH OF CLEANUP = 0.10 INCH (2.5 mm) MAXIMUM

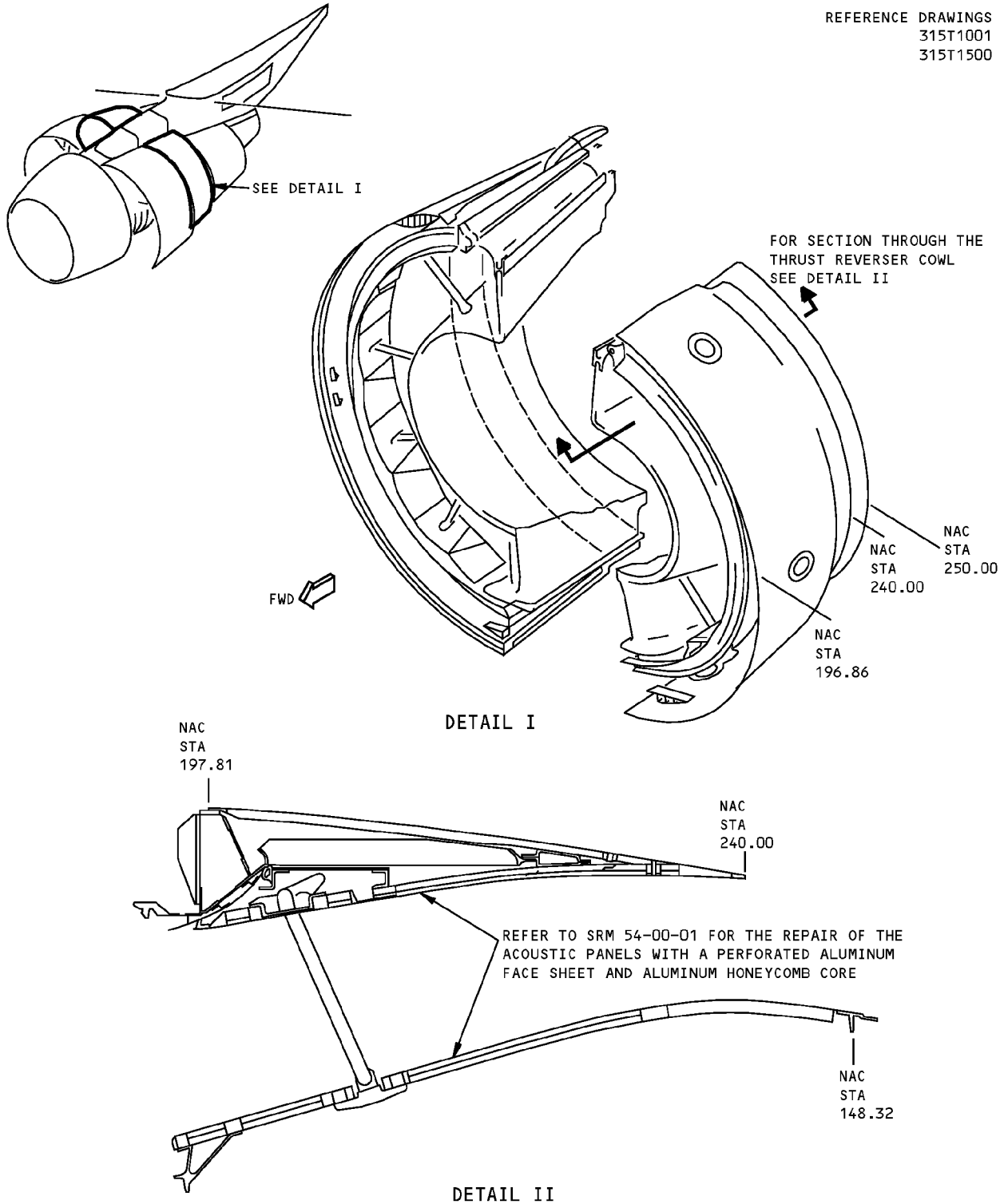
DETAIL VIII

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - CF6-80A Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ACOUSTIC PANEL - CF6-80A ENGINE

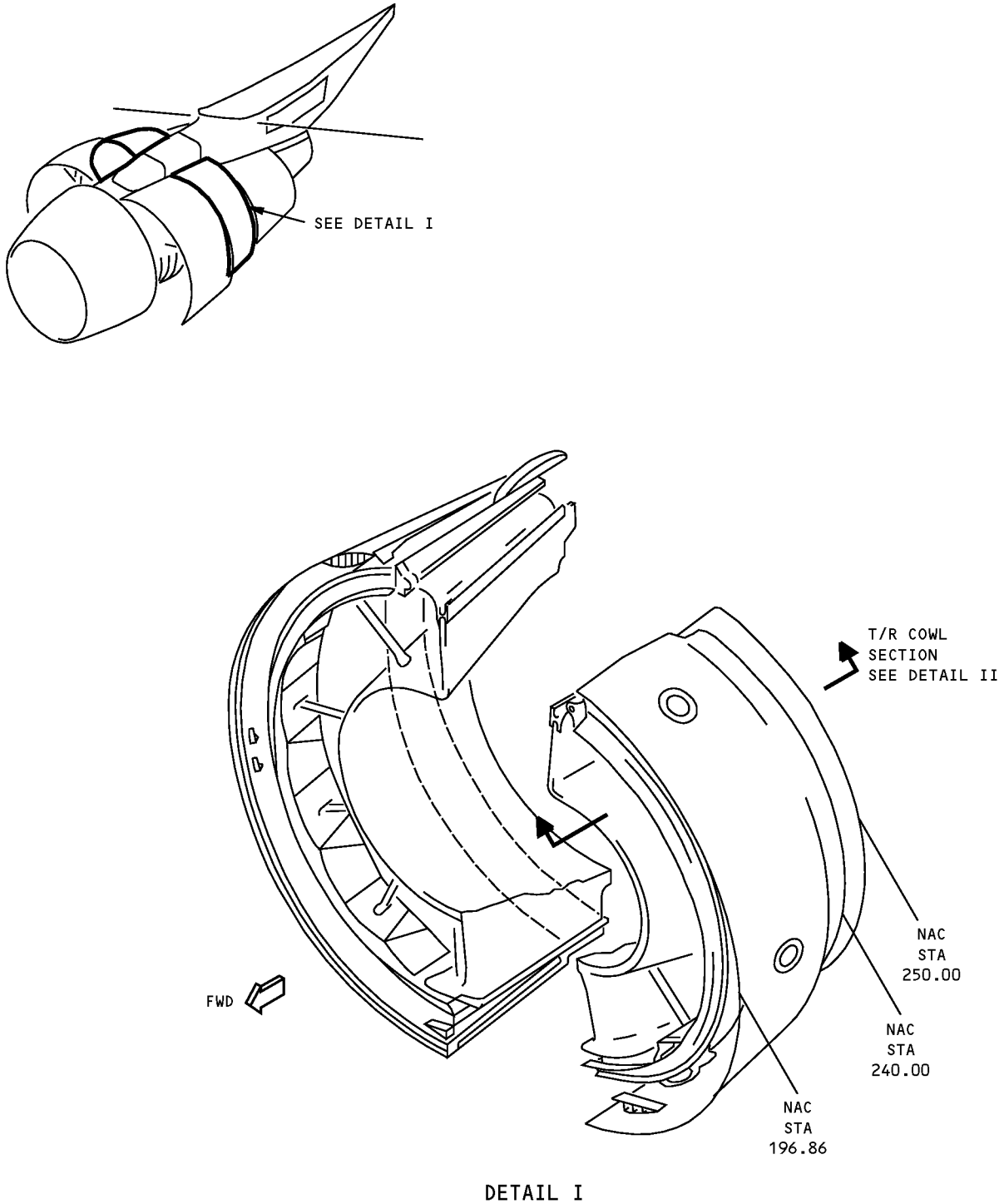
REFERENCE DRAWINGS
315T1001
315T1500



**Fan Duct Cowl and Thrust Reverser Acoustic Panel Repair - CF6-80A Engine
Figure 201**

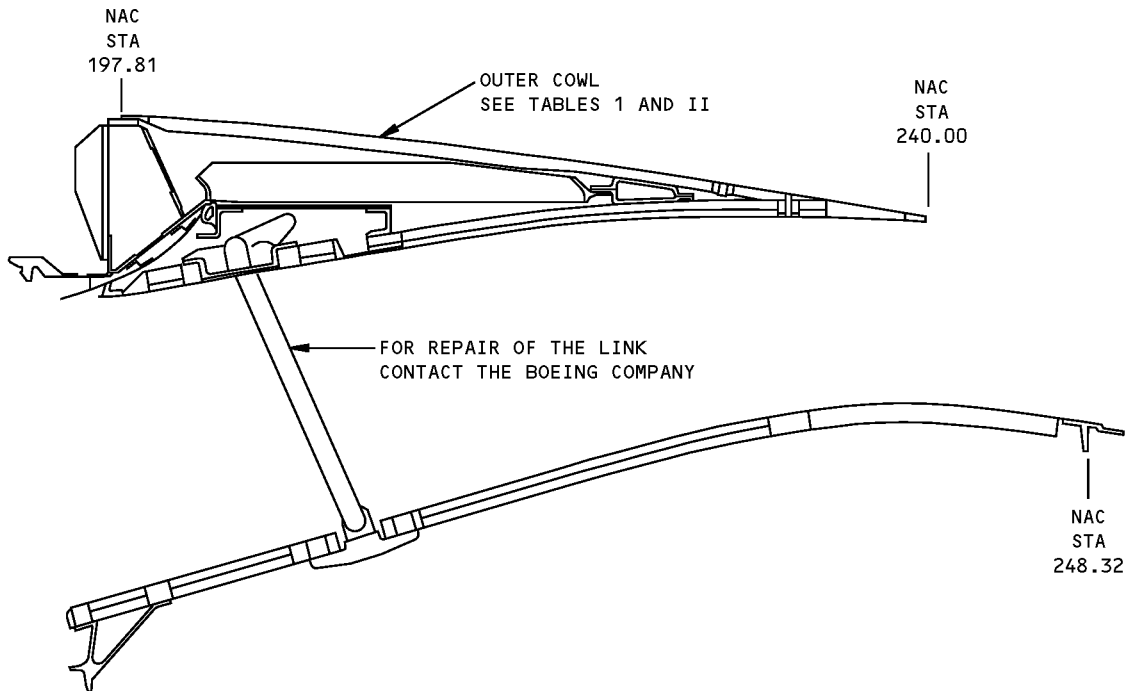
**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - FAN DUCT COWL AND THRUST REVERSER SKIN - CF6-80A ENGINE



**Fan Duct Cowl and Thrust Reverser Skin Repairs - CF6-80A Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

NOTES

- THIS REPAIR IS FOR THE OUTER COWL. THE OUTER COWL IS A GRAPHITE/ARAMID EPOXY SANDWICH WITH A NON-METALLIC HONEYCOMB CORE
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.

- A** MINIMUM OF 3.50 INCHES (88 mm) FROM THE PANEL EDGE.
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SKIN AND HONEYCOMB CORE.
- C** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR 'TAP' TEST EVERY AIRPLANE 'A' CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN THE NEXT 'C' CHECK. **G**
- D** ONE REPAIR IS PERMITTED FOR EACH SQUARE FOOT OF AREA AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER REPAIR.

E FOR WET LAYUP REPAIRS, USE 1.00 INCH (25 mm) FOR EACH PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) FOR EACH PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.

F INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR 'TAP' TEST EVERY AIRPLANE '2A' CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. **G**

G FOR 'TAP' TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.K. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

**Fan Duct Cowl and Thrust Reverser Skin Repairs - CF6-80A Engine
Figure 201 (Sheet 2 of 4)**



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STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS [F] [A]	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17) [E]	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [B]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF THE SMALLEST DIMENSION OF THE HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 1-70-03. [B]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF THE SMALLEST DIMENSION OF THE HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. [D]	NO SIZE LIMIT
DELAMI- NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [D] OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

REPAIR CRITERIA FOR HONEYCOMB PANEL
TABLE I

Fan Duct Cowl and Thrust Reverser Skin Repairs - CF6-80A Engine
Figure 201 (Sheet 3 of 4)

D634T210

54-31-01

REPAIR 2
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STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C	PERMANENT REPAIRS	
		WET LAYUP 200°F-230°F (93°C-110°C) CURE (51-70-17) E	350°F (177°C) CURE (51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE PERMITTED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH FOR EACH SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE)	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.025 INCH (0.6 mm) DEEP IN EDGE BAND LAMINATE A MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. 0.10 INCH DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE PERMITTED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE PERMITTED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 INCH (0.25 mm) DEEP IN EDGE BAND LAMINATE - A MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (13 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH (13 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (13 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (13 mm) MAX DIA HOLE THRU EDGE BAND. MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	FOR HOLES THAT ARE 0.50 INCH (13 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03 PARAGRAPH 5.K. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17 PARAGRAPH 4.I.	FOR HOLES THAT ARE 0.50 INCH (13 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03 PARAGRAPH 5.K. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17 PARAGRAPH 4.I.
DELAMINATION	2 SQUARE INCHES (13 SQUARE cm) (2.0 INCHES (50 mm) MAX LENGTH) PERMITTED. MINIMUM OF 6.0 INCHES (150 mm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

REPAIR CRITERIA FOR EDGE BAND LAMINATE
TABLE II

Fan Duct Cowl and Thrust Reverser Skin Repairs - CF6-80A Engine
Figure 201 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL

REPAIR 3 - THRUST REVERSER UPPER BIFURCATION PANEL INNER SKIN CHAFING DAMAGE - CF6-80A

ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CHAFING WEAR DAMAGE THAT IS A MAXIMUM OF 1.35 INCHES IN LENGTH, 0.140 INCH IN DEPTH AND 0.125 INCH IN WIDTH.

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
 2. Measure the depth, width, and length of the wear damage on the bifurcation panel inner skin, doubler, and closeout. The maximum wear damage limit is 1.35 inches in length by 0.140 inch in depth by 0.125 inch in width. Contact Boeing if the panel wear damage is greater than these limits.
 3. Blend out the wear damage the minimum amount required to remove all the damage. The width of the blend out should be between 4 and 5 times the depth.
- NOTE:** For a blended depth of 0.099 inch or less, use Repair A. For a blended depth greater than 0.100 inch and less than 0.140 inch, use Repair B. Refer to Detail III for Repair A. Refer to Detail IV for Repair B.

- REPAIR A:** For a blended depth of 0.099 inch or less. See Detail III
4. Drill a 0.156 inch diameter hole through the panel. The repair hole is located 1.09 inches from the edge of the panel. Refer to Detail III.
 5. At the hole location, make a 0.625 inch diameter spotface to a depth of 0.100 inch from the skin surface.
 6. Do a penetrant inspection of the damaged area to make sure there are no cracks. Refer to SOPM 20-20-02.
 7. Make the repair part. See Table I.
 8. Apply a chemical conversion coating to the part 1 washer and to the bare surfaces of the panel. Refer to SRM 51-20-01.
 9. Apply one layer of BMS 10-11, Type I primer to the part 1 washer and to the bare surfaces of the panel. Refer to SOPM 20-41-02.
 10. Install the part 1 washer with an aluminum rivet as shown.
 11. Fill the remaining work area with BMS 5-28, Type 6, potting compound, sand smooth and flush with surface.

12. Apply the initial finish to the repair area. Refer to AMM 51-20.
13. Trim the pylon mounted channel bracket as shown in Detail V.
14. Apply brush-on-cadmium plating as given in SOPM 20-42-10 and then apply BMS 10-11, Type I primer to the cut part of the channel bracket. If cadmium plating is not available you can apply two coats of BMS 10-11, Type I primer. Refer to SOPM 20-41-02.

REPAIR B: For a blended depth greater than 0.100 inch and less than or equal to 0.140 inch. See Detail IV

4. Drill 0.156 inch diameter holes through the panel at two places. The repair holes are located 1.09 inches and 0.31 inch from the edge of the panel. Refer to Detail IV.
5. At the hole locations, make 0.625 inch diameter spotfaces to a depth of 0.100 inch from the skin surface.
6. Do a penetrant inspection of the damaged area to make sure there are no cracks. Refer to SOPM 20-20-02.
7. Make the repair parts. See Table I.
8. Apply a chemical conversion coating to the part 1 washer and to the bare surfaces of the panel. Refer to SRM 51-20-01.
9. Apply one layer of BMS 10-11, Type I primer to the part 1 washer and to the bare surfaces of the panel. Refer to SOPM 20-41-02.
10. Install the part 1 washers without rivets. Fill the remaining work area with BMS 5-28, Type 6 potting compound, sand smooth and flush with surface.
11. Install the part 2 bracket with monel rivets as shown in Detail IV.
12. Apply the initial finish to the repair area. Refer to AMM 51-20.
13. Trim the pylon mounted channel bracket as shown in Detail V.
14. Apply brush-on-cadmium plating as given in SOPM 20-42-10 and then apply BMS 10-11, Type I primer to the cut part of the channel bracket. If cadmium plating is not available, you can apply two coats of BMS 10-11, Type I primer. Refer to SOPM 20-41-02.

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SOPM 20-42-10 FOR BRUSH ON STYLUS CADMIUM PLATING
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALIC AND GRAPHITE MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.

REPAIR MATERIAL			
PART NO.	PART	QTY	MATERIAL
1	WASHER	AS REQ'D	7075-T73 WASHER 0.50 INCH DIAMETER. THICKNESS TO BE FLUSH WITH PANEL SURFACE.
2	BRACKET	1	0.040 INCH NICKEL ALLOY 625 SHEET PER AMS 5599

TABLE I

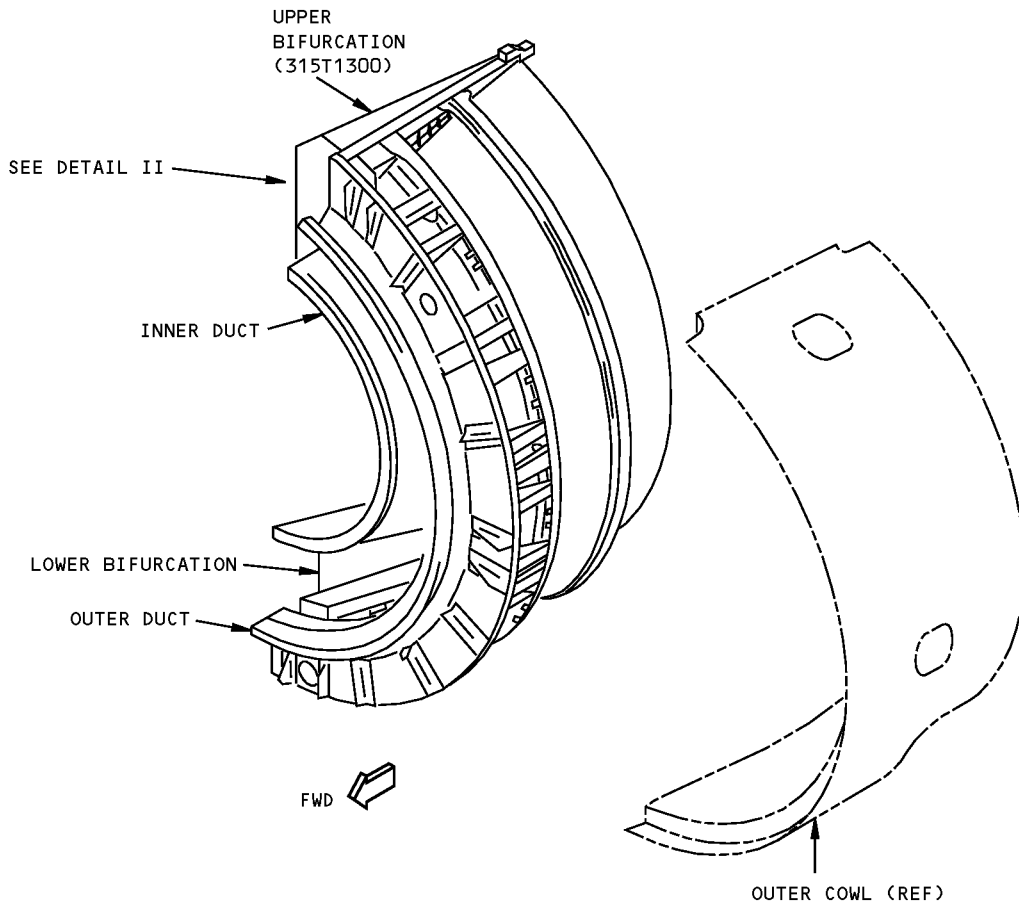
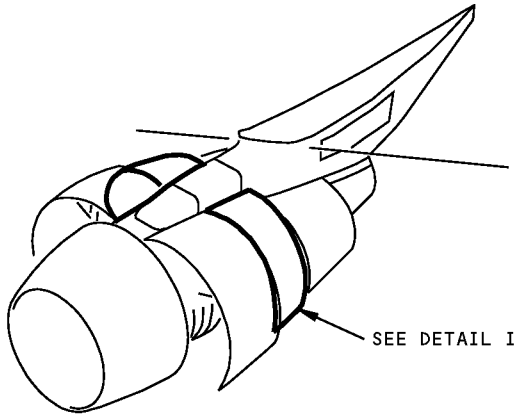
FASTENER SYMBOLS

- ⊙ REFERENCE FASTENER LOCATION
- ⊕ INITIAL FASTENER LOCATION. INSTALL BACR15CE5M() RIVET (UP TO 1/32 INCH DIAMETER OVERSIZE).
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15CE3M() RIVET (UP TO 1/32 INCH DIAMETER OVERSIZE).
- ⬤ REPAIR RIVET LOCATION. INSTALL A BACR15CE5M() RIVET.
- ⬤ REPAIR RIVET LOCATION. INSTALL A BACR15CE5KE() RIVET.

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
315T1001
315T1500

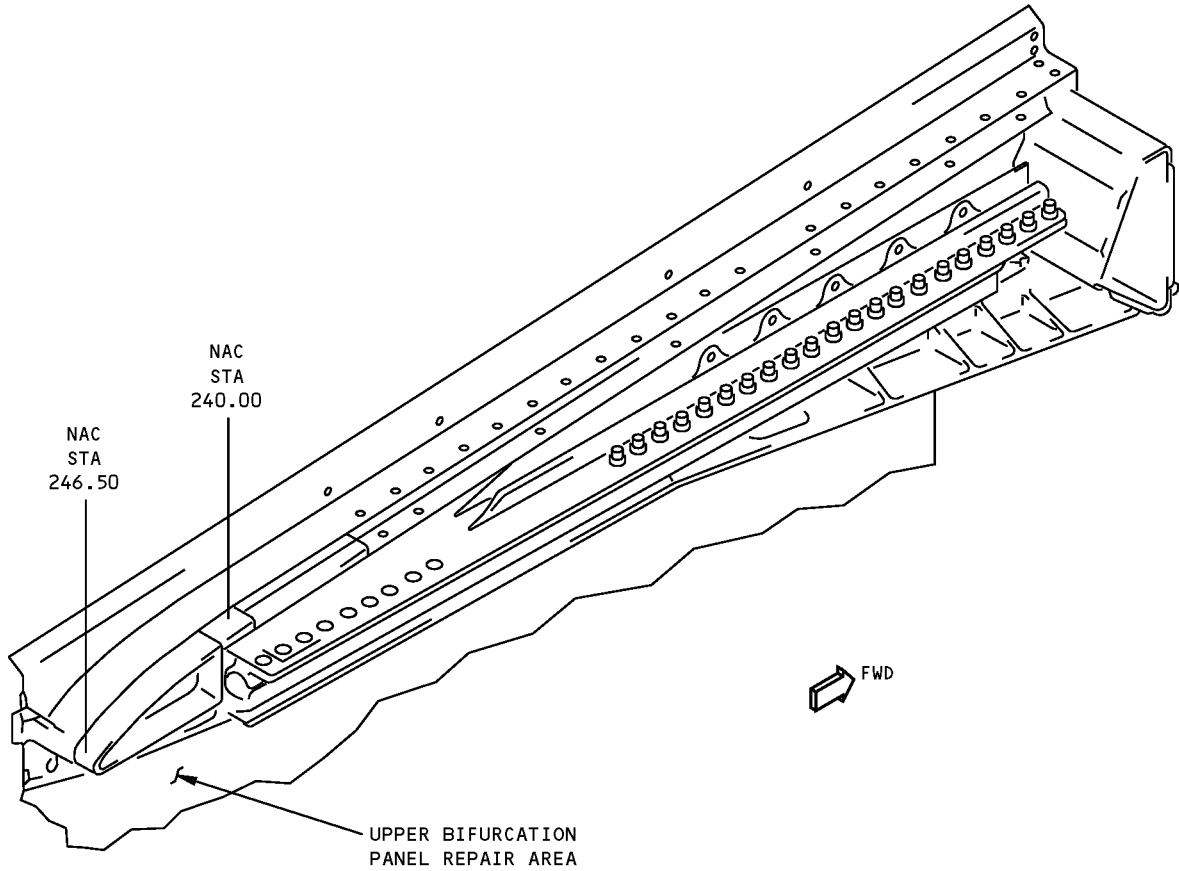


LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

DETAIL I

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 7)**

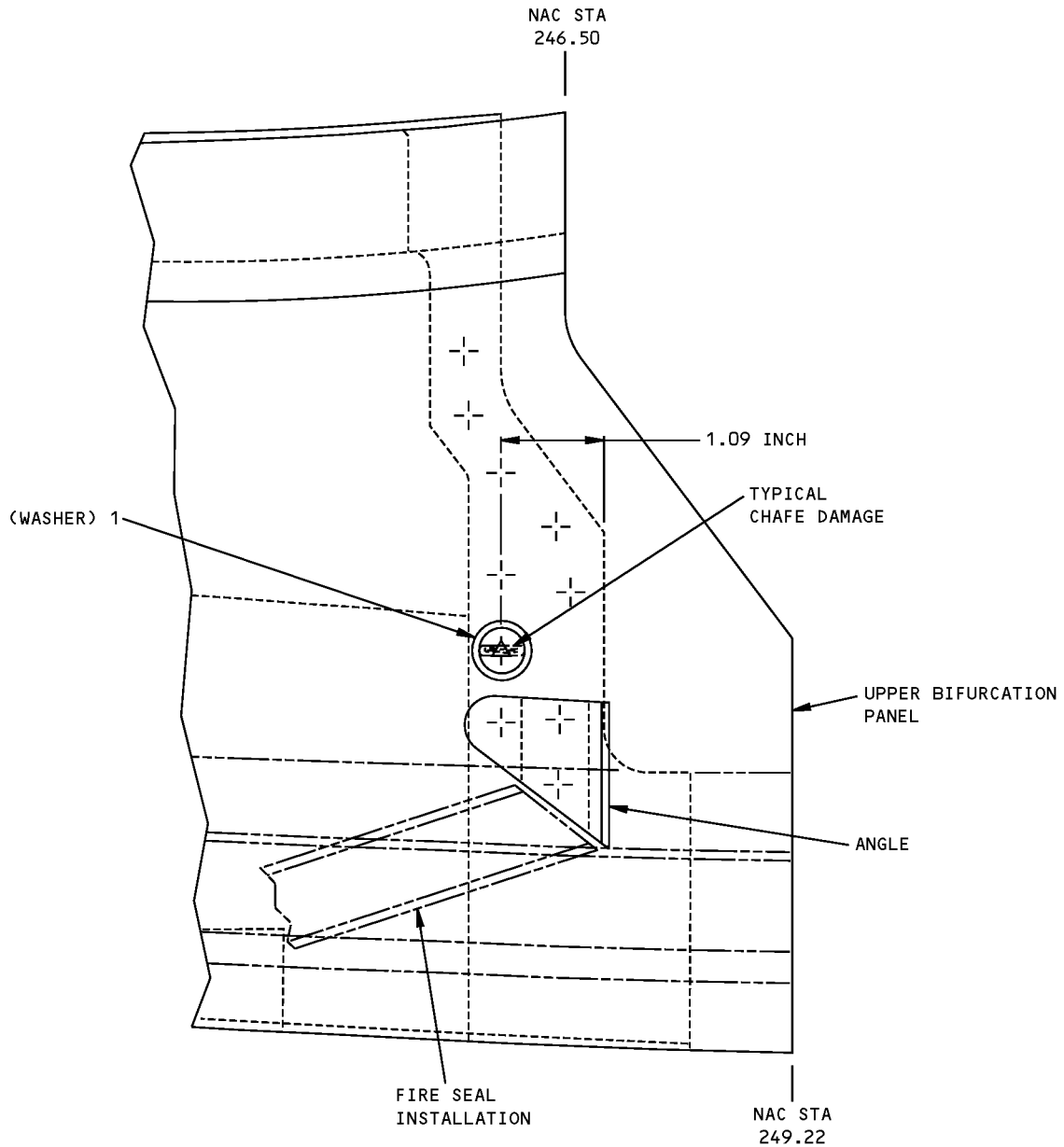
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 7)**

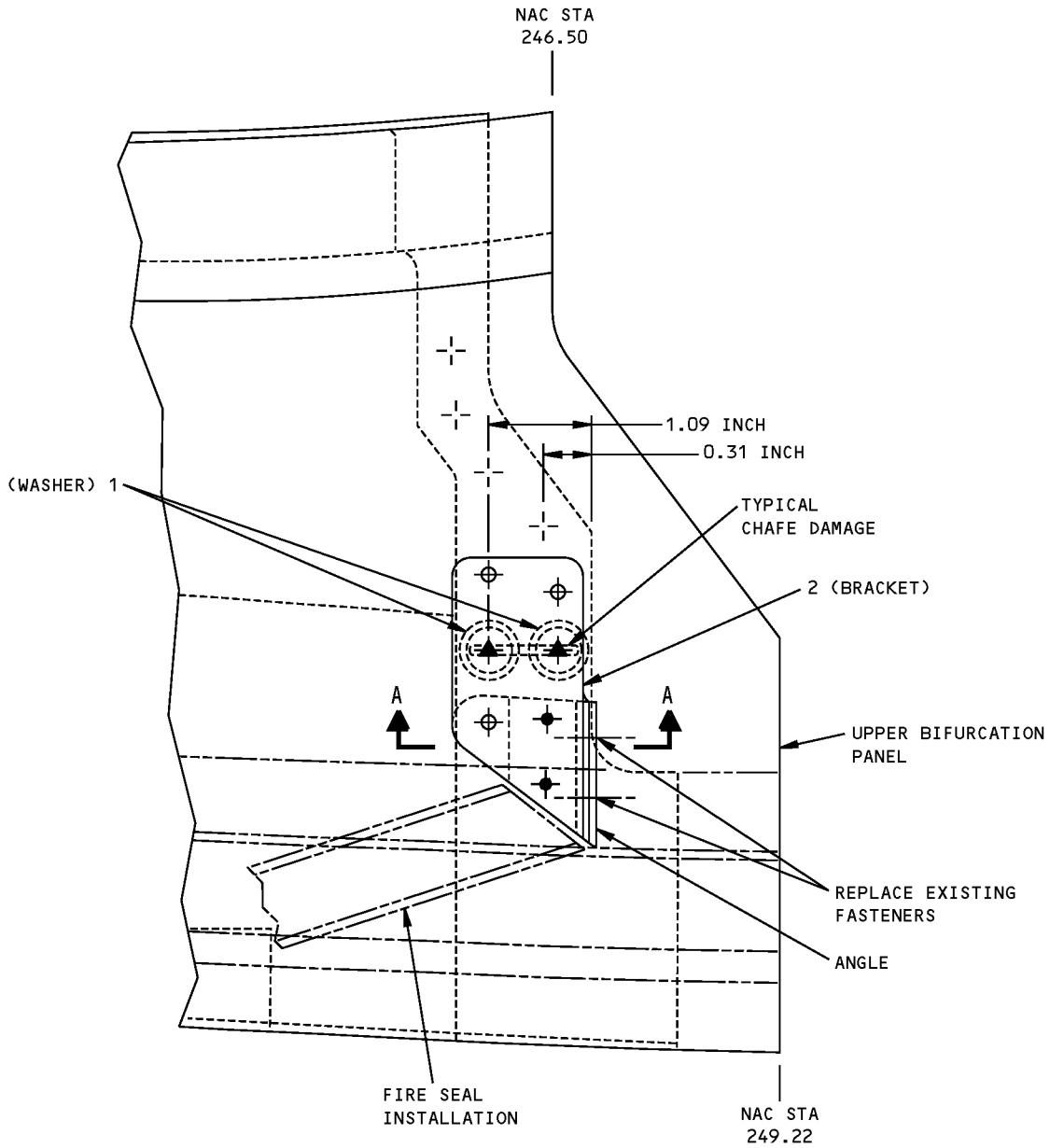
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR A
DETAIL III**

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 5 of 7)**

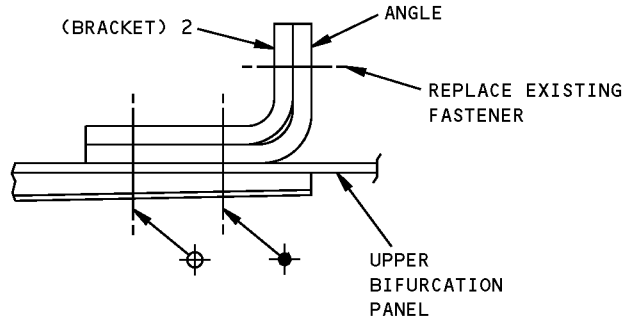
**767-300
STRUCTURAL REPAIR MANUAL**



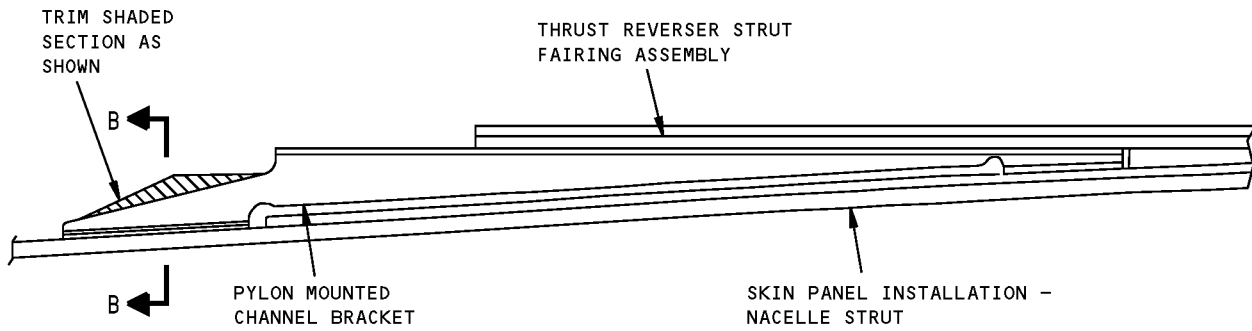
**REPAIR B
DETAIL IV**

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 6 of 7)**

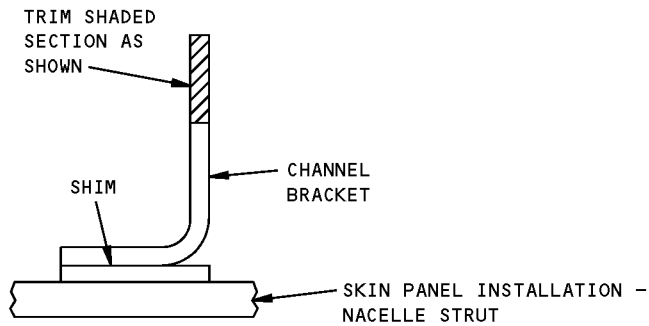
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



**PYLON MOUNTED CHANNEL TRIMMING
DETAIL V**



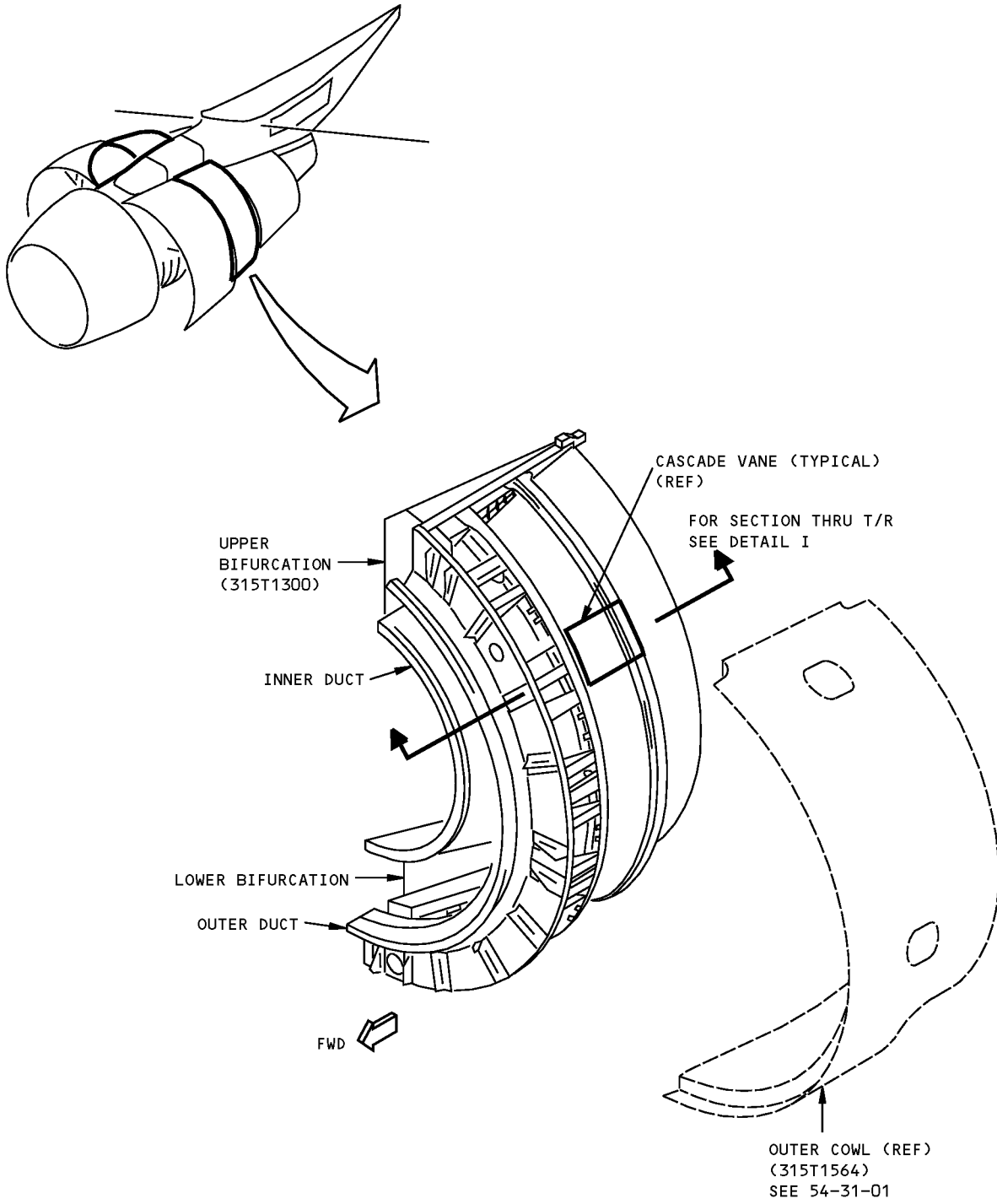
SECTION B-B

**Thrust Reverser Upper Bifurcation Panel Inner Skin Chafing Damage Repair - CF6-80A Engine
Figure 201 (Sheet 7 of 7)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - CF6-80A ENGINE

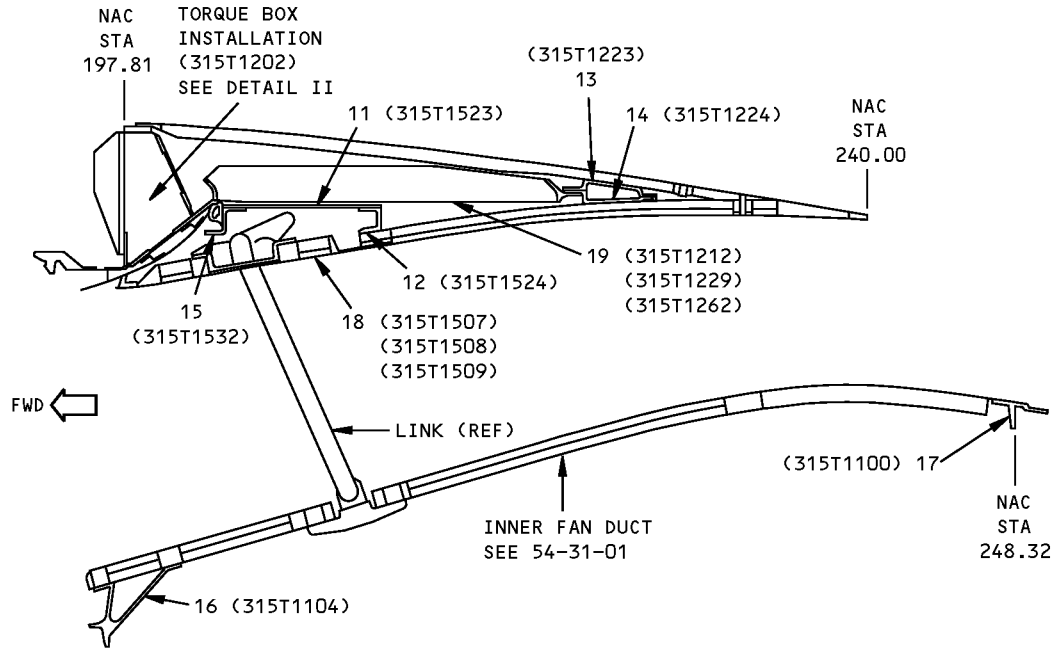
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315T1001
315T1500



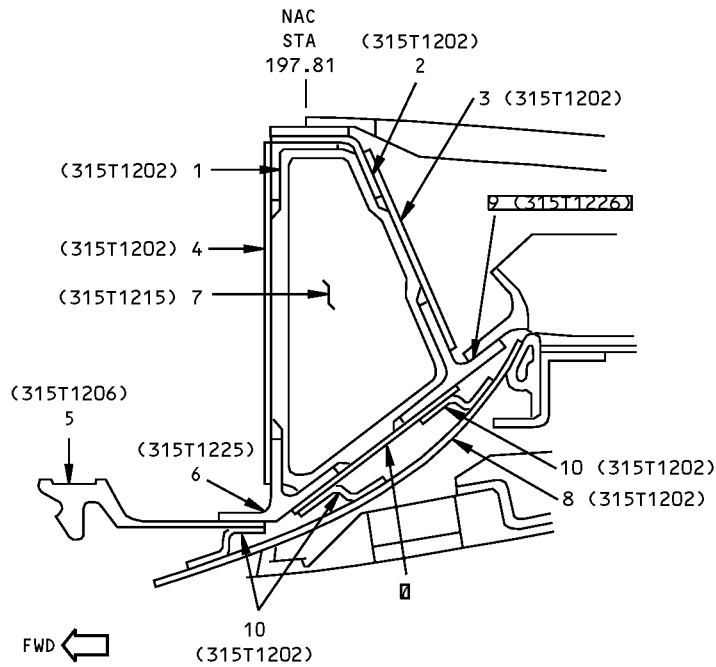
LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE

**Fan Duct Cowl and Thrust Reverser Structure Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



**DETAIL OF TORQUE BOX
DETAIL II**

LIST OF
MATL

**Fan Duct Cowl and Thrust Reverser Structure Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
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54-31-02

D634T210



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1503-100325 2024-T42	
2	ANGLE	0.071	CLAD 2024-T42	
3	WEB ASSY WEB DOUBLER	0.032 0.020	CLAD 2024-T81 CLAD 2024-T81	
4	WEB ASSY WEB DOUBLER	0.020 0.025	CLAD 2024-T81 CLAD 2024-T81	
5	V GROOVE		BAC1520-2282 7075-T73 OPTIONAL: FORGING 7075-T411	
6	CHORD		BAC1506-3375 2024-T3511	
7	RIB		DIE FORGING 7075-T73 OR FORGED BLOCK 7075-T73	
8	FAIRING	0.10	CLAD 2024-T42	
9	CHORD		BAC1506-3379 2024-T3511	
10	ANGLE	0.080	CLAD 2024-T42	
11	PANEL BOND ASSY INNER SKIN OUTER SKIN	0.050 0.025	CLAD 2024-T81 CLAD 2024-T81	
12	SUPPORT RING		BAC1510-1086 7075-T73	
13	RING		BAC1510-1084 2024-T3511	
14	RING		BAC1510-1085 2024-T3511	
15	RING		BAC1517-2277 7075-T73	
16	RING		BAC1520-2308 7075-T73 OR FORGING 7075-T73	
17	RING		BAC1506-3333 2219-T62	
18	BLOCKER DOOR INNER SKIN CORE OUTER SKIN	0.050 0.020	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, 1B-50, GRADE 1-B, CLASS 50-125, POA 14.5 HONEYCOMB BMS 4-4, TYPE 6-40N, FORM B CLAD 2024-T81	
19	CASCADE VANE		MAGNESIUM ALLOY CASTING AZ92A-T6	

LIST OF MATERIALS FOR DETAILS I AND II

**Fan Duct Cowl and Thrust Reverser Structure Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 3)**

IDENTIFICATION 1
Page 3
Apr 01/2005

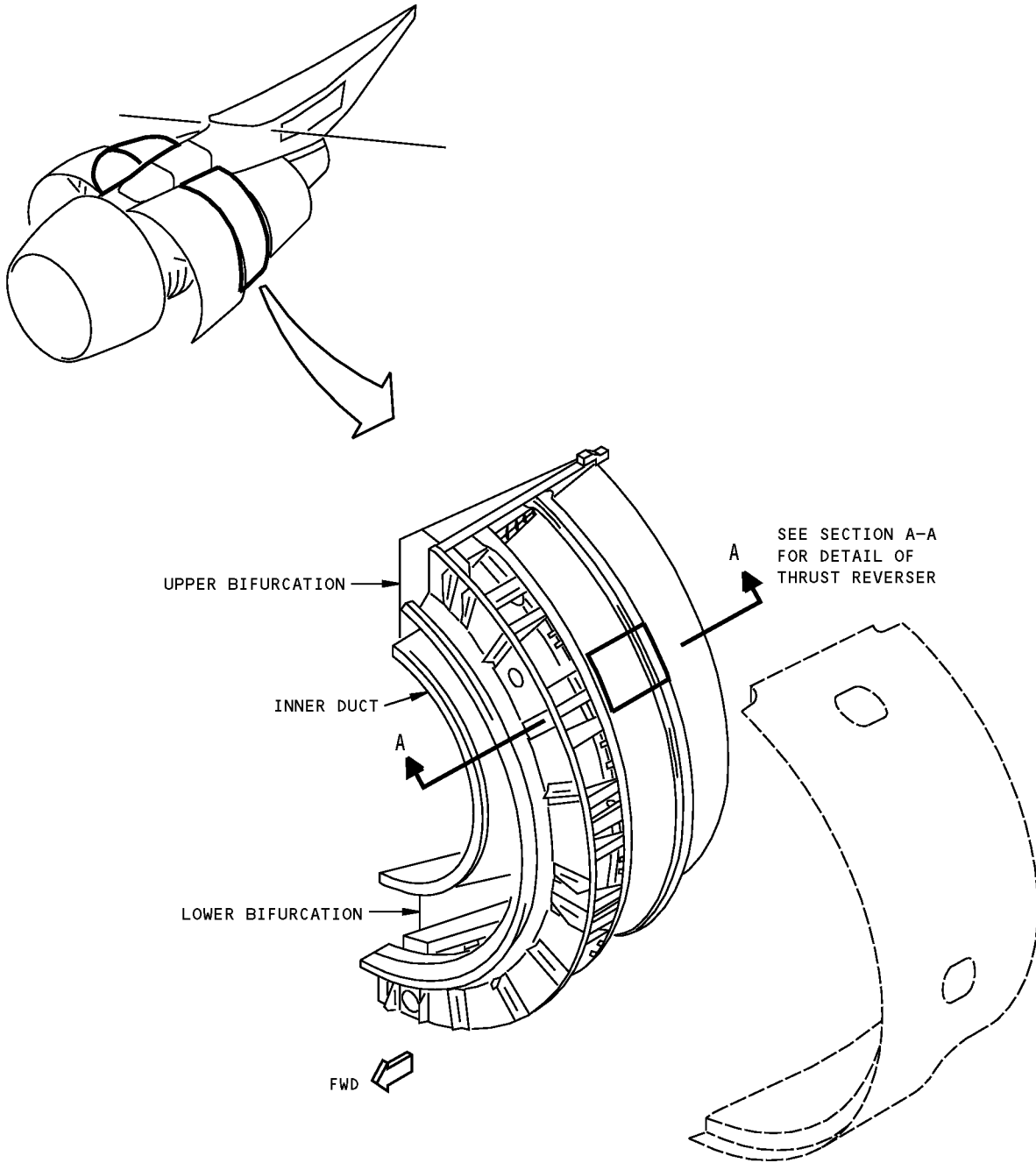
54-31-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - CF6-80A ENGINE

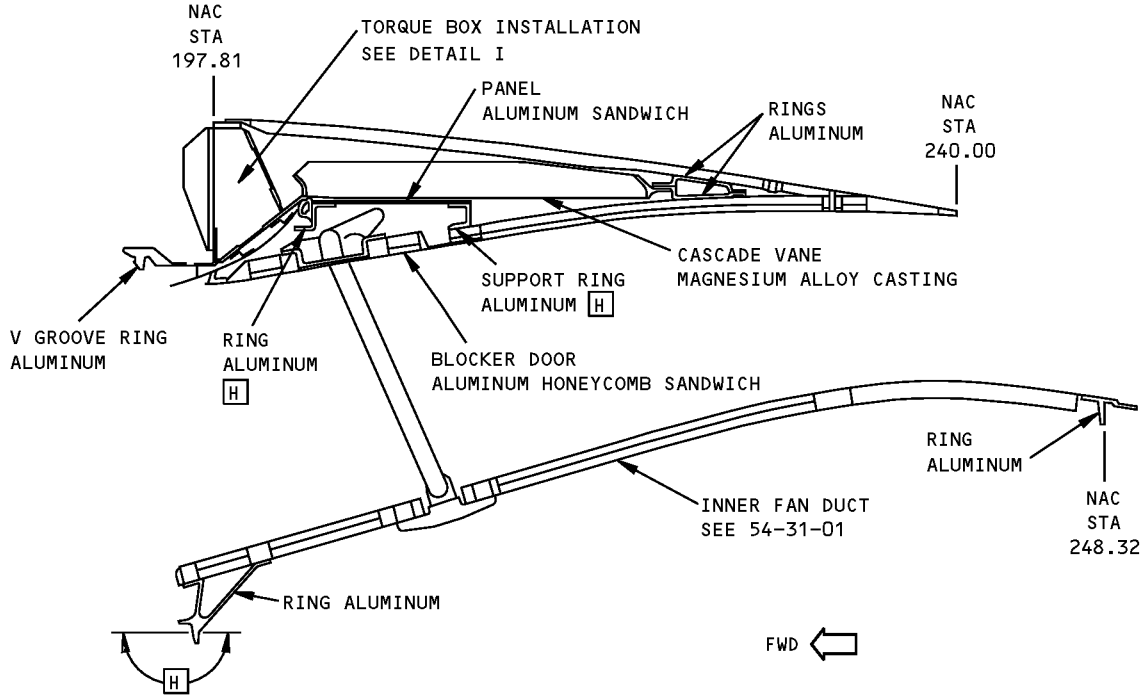
REF DWG
315T1001
315T1500



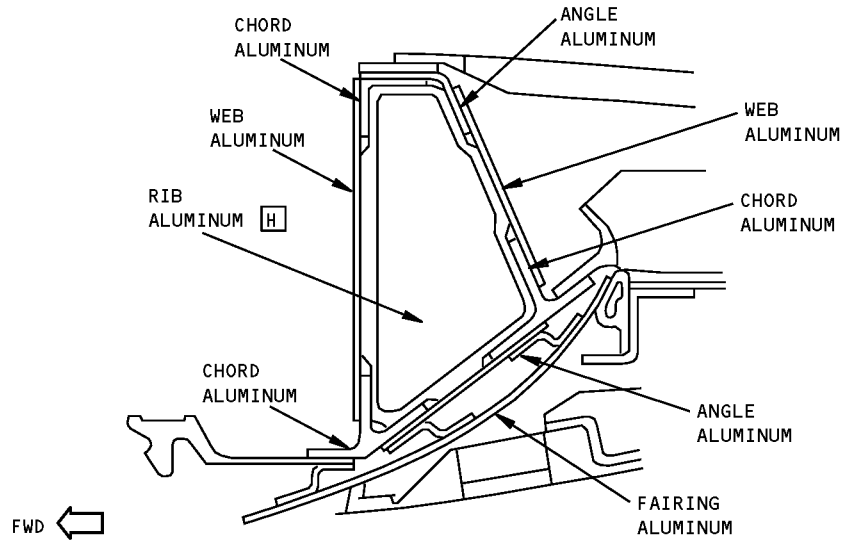
LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



DETAIL OF TORQUE BOX
DETAIL I

**Allowable Damage - Fan Duct Cowling and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 2 of 6)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
CHORDS	[B]	[C]	NOT PERMITTED	NOT PERMITTED	---
ANGLES	[B]	[C]	NOT PERMITTED	NOT PERMITTED	---
WEBS	[D]	[C]	SEE DETAIL IV	NOT PERMITTED	---
BLOCKER DOOR	[E]	[C]	SEE DETAIL IV	NOT PERMITTED	[F]
CASCADE [K]	[I]	[J]	NOT PERMITTED	NOT PERMITTED	---
PANEL	[G]	[C]	SEE DETAIL IV	[A]	---
V GROOVE RING	[E]	[C]	NOT PERMITTED	NOT PERMITTED	---
SUPPORT RING	[E]	[C]	NOT PERMITTED	NOT PERMITTED	---
RING	[E]	[C]	NOT PERMITTED	NOT PERMITTED	---
RIB	[E]	[C]	NOT PERMITTED	NOT PERMITTED	---
FAIRING	[D]	[C]	SEE DETAIL IV	[A]	---

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN

- REFER TO 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED

- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21

[A] CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED

[B] CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VII

[C] REMOVE DAMAGE AS GIVEN IN DETAILS II, III AND V

[D] CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAIL II

[E] CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI

[F] 1.0 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE [L]

[G] CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI MAINTAIN EDGE MARGIN SHOWN

[H] SHOT PEEN REWORKED AREA AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK

[I] CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VIII

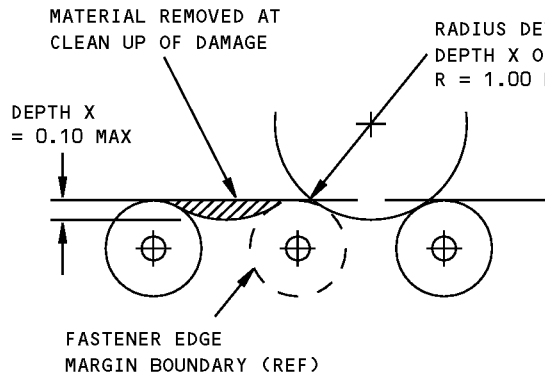
[J] REMOVE DAMAGE AS GIVEN IN DETAILS II, V AND VIII

[K] SPECIAL PRECAUTIONS AND PROCEDURES ARE REQUIRED FOR REWORKING MAGNESIUM COMPONENTS. REFER TO SRM 51-10-02 FOR CLEANUP OF DAMAGE AND FINISH REQUIREMENTS

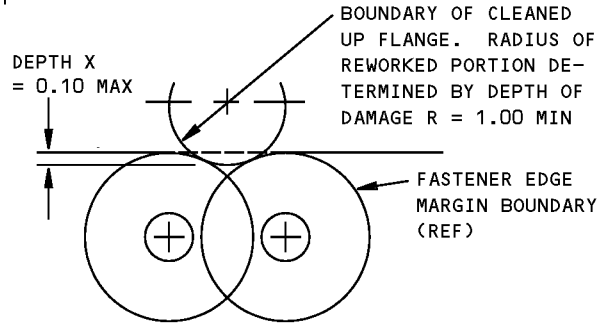
[L] REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

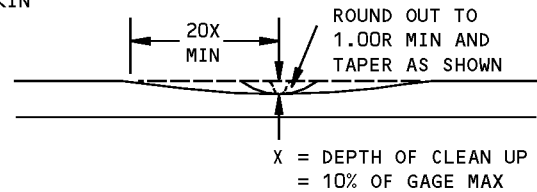
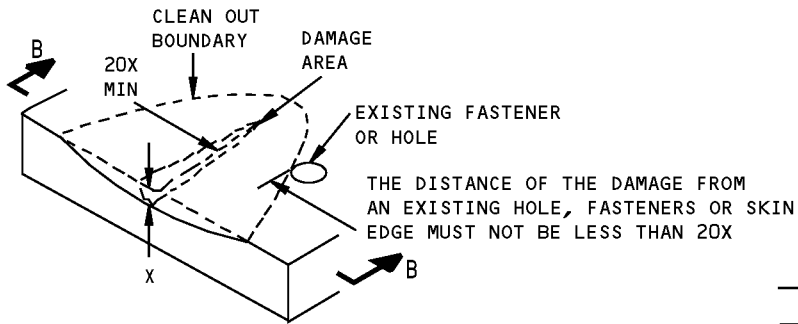


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II

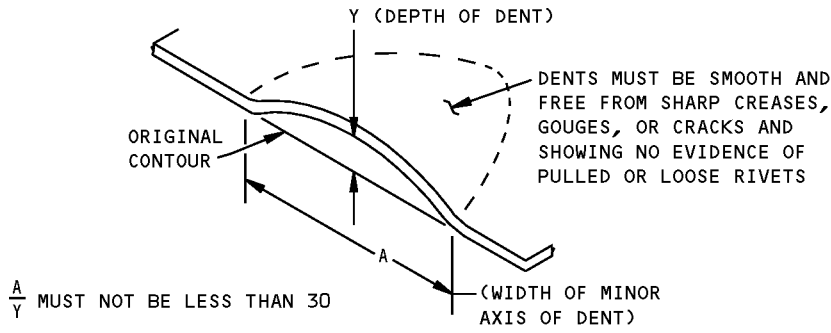


SECTION B-B

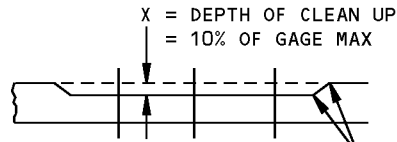
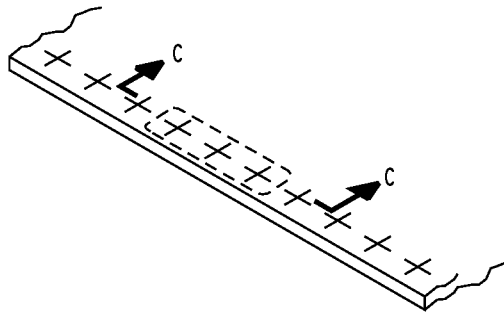
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



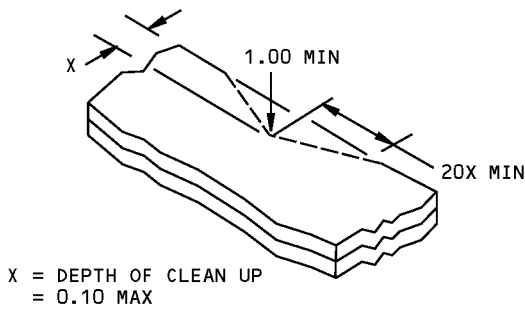
**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



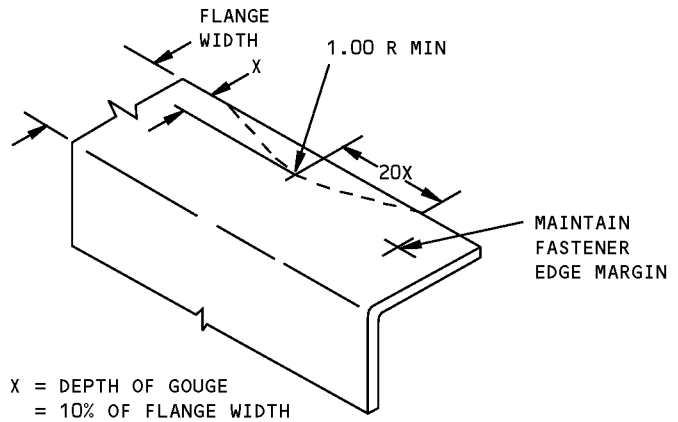
SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEAN UP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

**CORROSION CLEAN UP
DETAIL V**



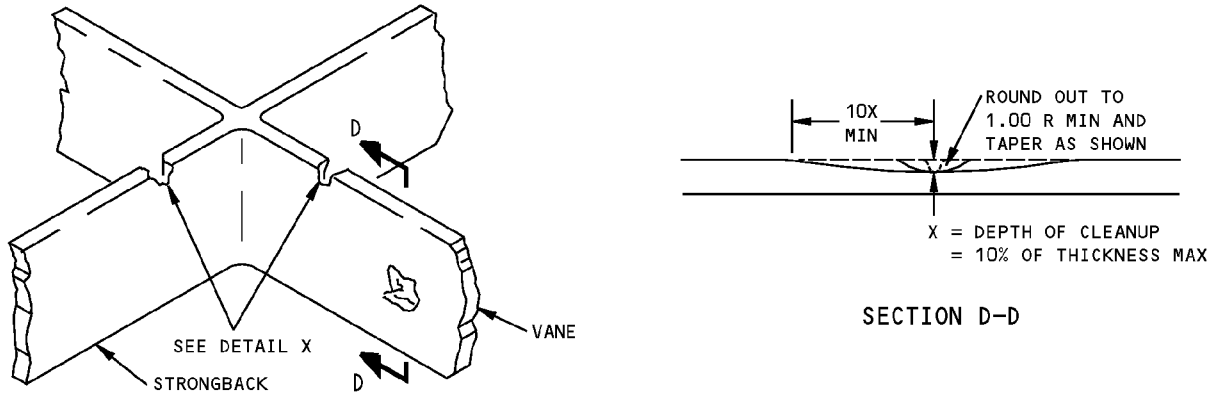
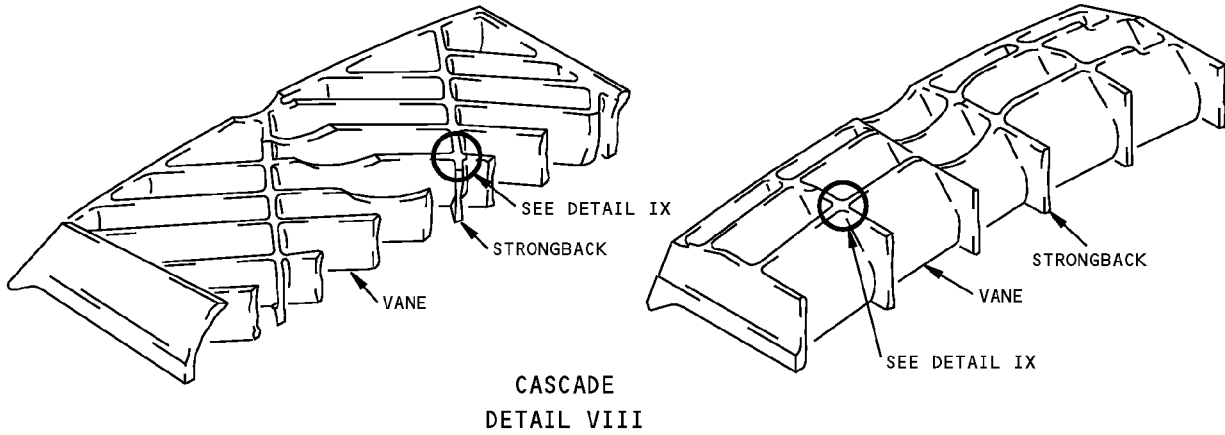
DETAIL VI



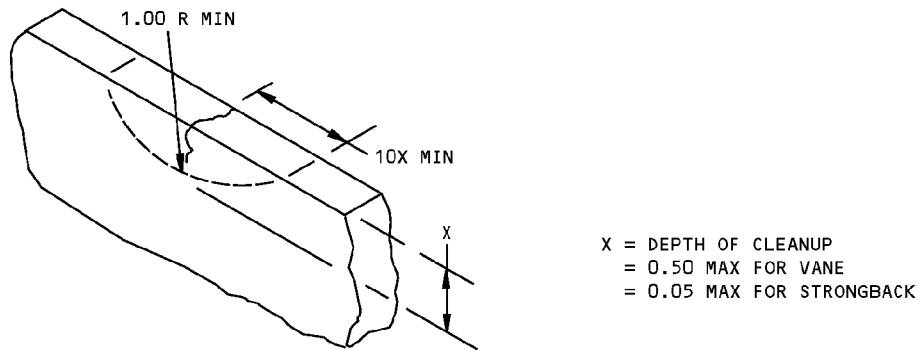
**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VII**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**CLEANUP OF SURFACE DAMAGE ON VANE OR STRONGBACK
DETAIL IX**



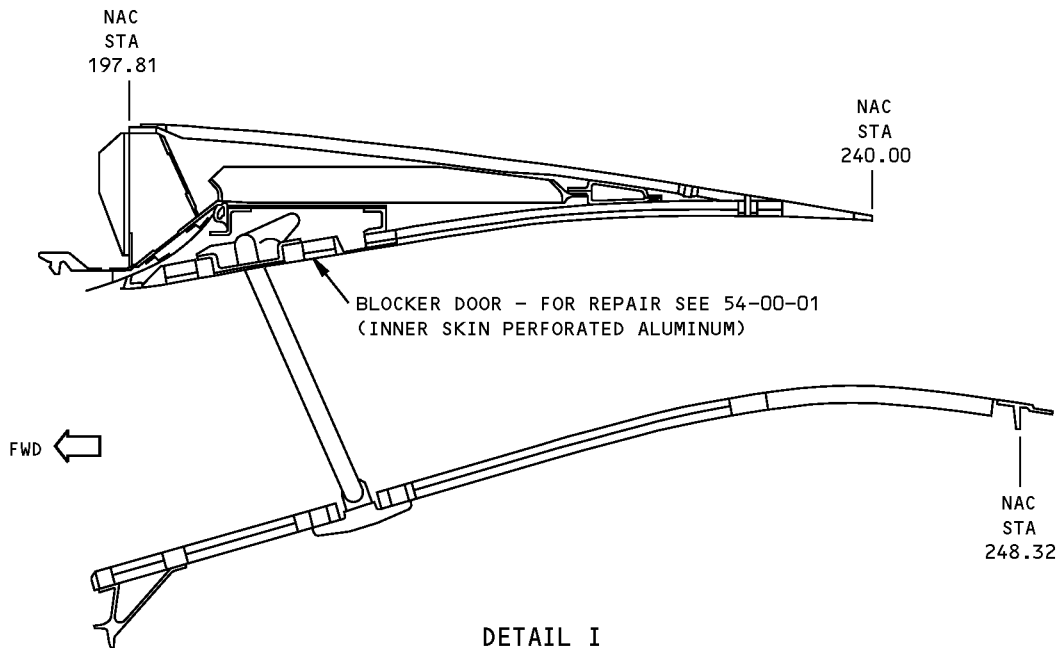
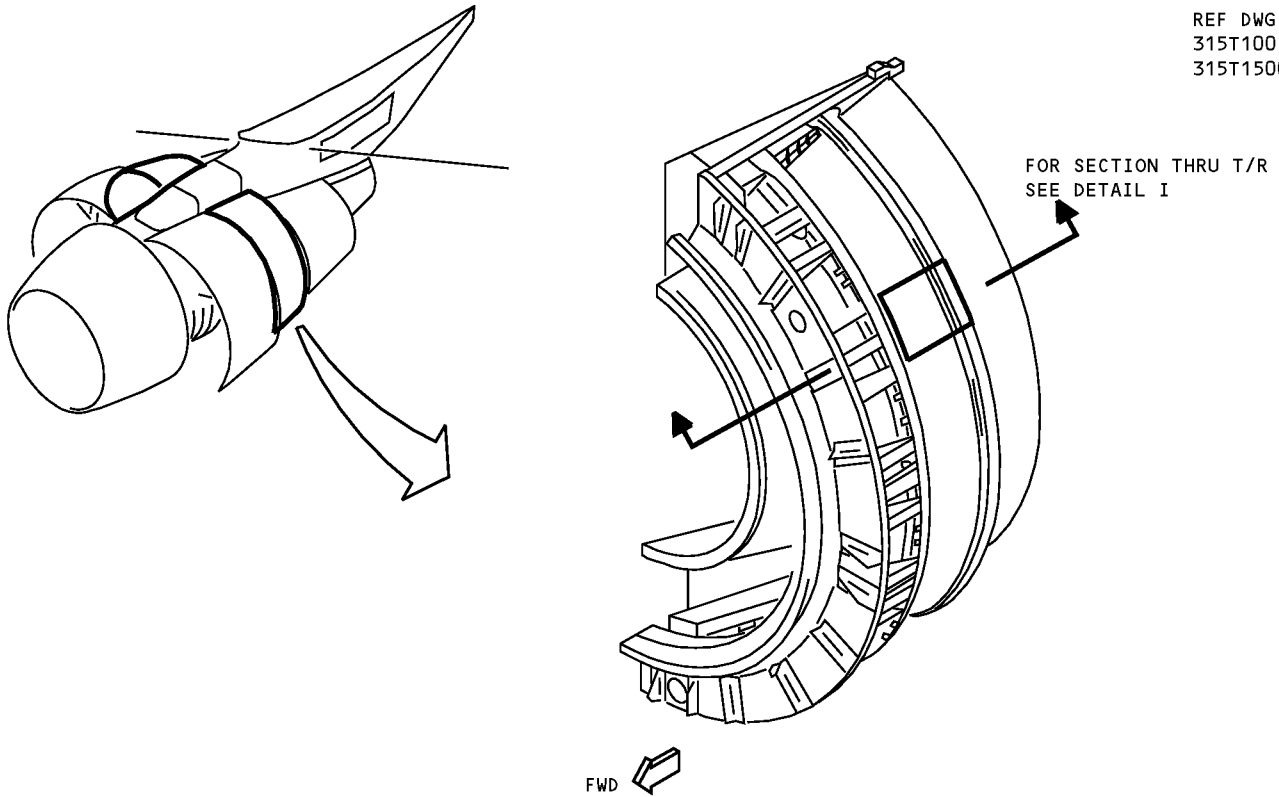
**CLEANUP OF DAMAGE ON AN EDGE
DETAIL X**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - CF6-80A Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - BLOCKER DOOR ACOUSTIC PANEL - CF6-80A ENGINE

REF DWG
315T1001
315T1500

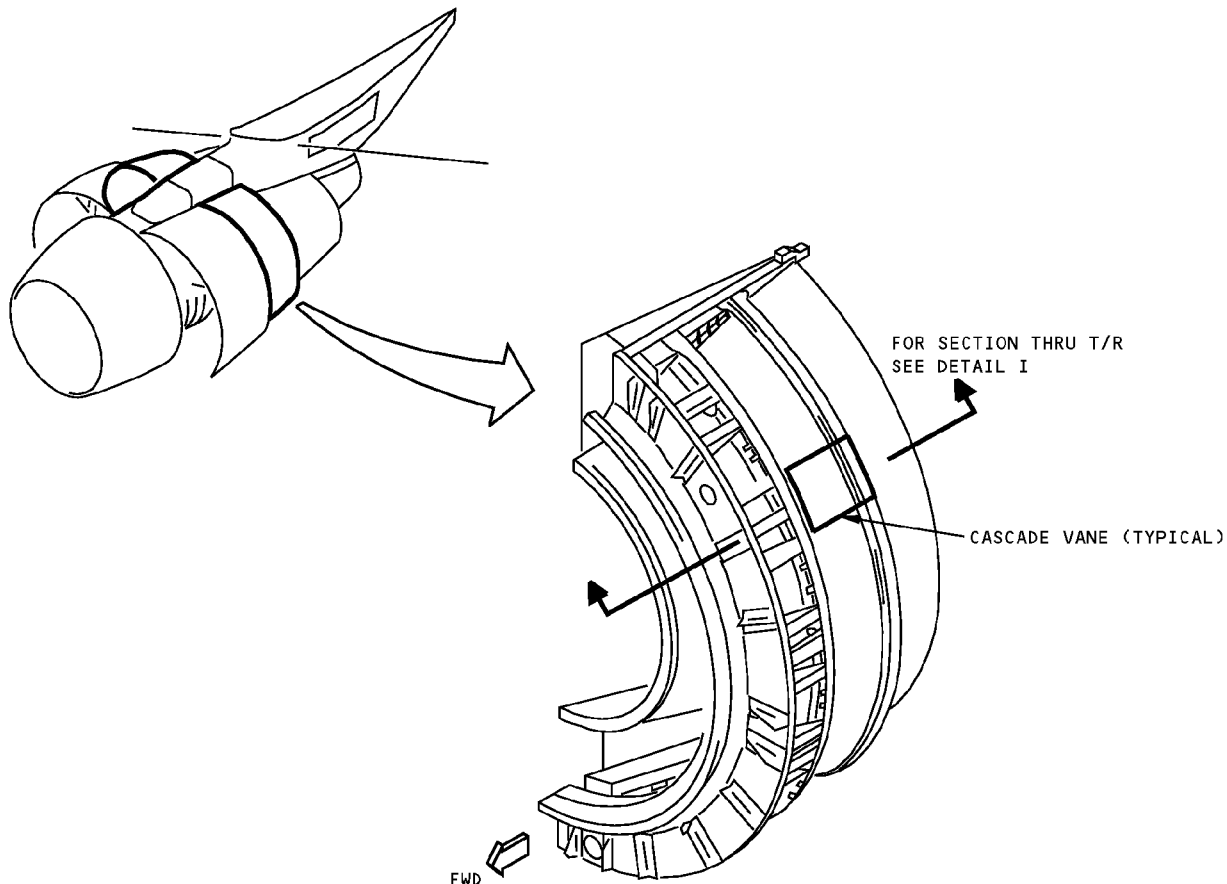


**Blocker Door Acoustic Panel Repair - CF6-80A Engine
Figure 201**

REPAIR 2 - THRUST REVERSER CASCADE ASSEMBLY NUTPLATE - CF6-80A ENGINE

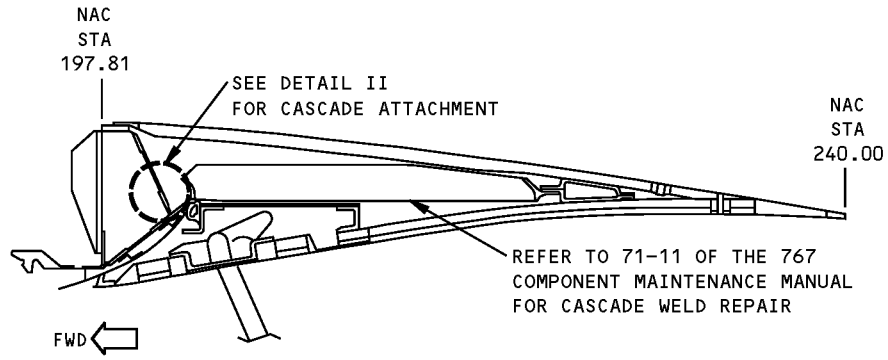
REPAIR INSTRUCTIONS

1. Remove cascade where nutplate is damaged
2. Trim adjacent edge of bullnose fairing, minimum amount required to allow removal of damaged nutplate and installation of new nutplate as shown in detail II. Do not trim zee support
3. Break sharp edge on trim area 0.01-0.02R.
4. Remove damaged nutplate per 51-40-02. If rivet holes are damaged double flush plug existing 3/32 rivet holes with BACR15DR3 rivets, installed wet with BMS 5-63 sealant. If rivet holes are not damaged proceed to step 7
5. Center BACN10KE4A nutplate and rotate 1-1/2 rivet dia from plugged rivet holes, maintaining proper edge margin on chord ring
6. Clamp nutplate and drill 0.098-0.103 dia attaching rivet holes. Countersink for flush rivet near side (surface next to cascade).
7. Install new BACN10KE4A nutplate with MS20605MP3W4, blind rivet per 51-40-02. Install rivets with wet sealant BMS 5-63
8. Brush Dow 19 chromic acid over all reworked areas and apply two coats of BMS 10-11 type 1 primer. Refer to 51-10-00.
9. Reinstall cascade. Align holes with chord ring and install cascade attachment fasteners with MIL-C-11796 class 3 corrosion prevention compound on bolt shanks and under bolt heads. Do not apply to bolt threads.

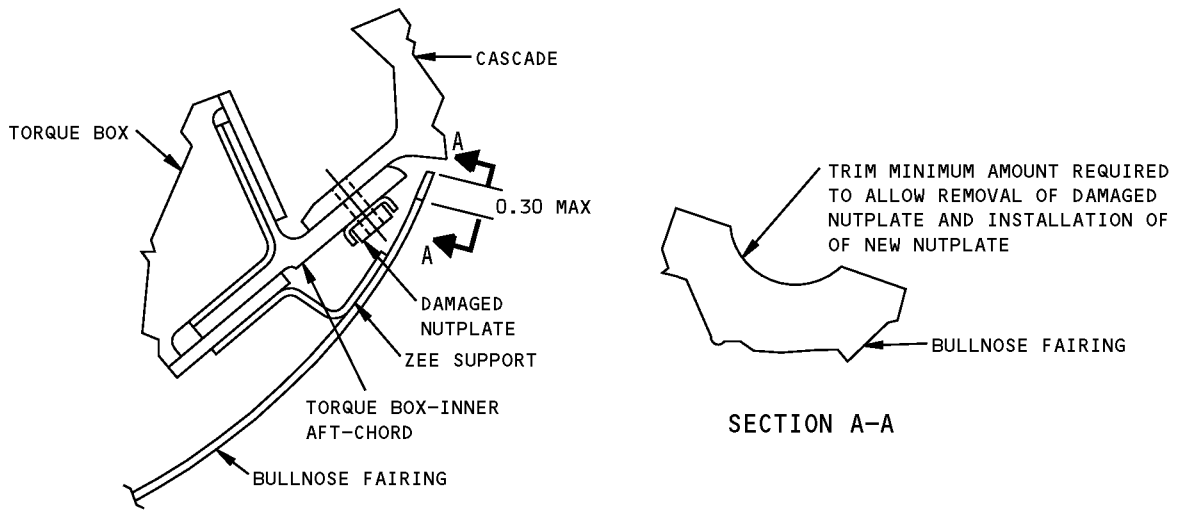


Thrust Reverser Cascade Assembly Nutplate Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

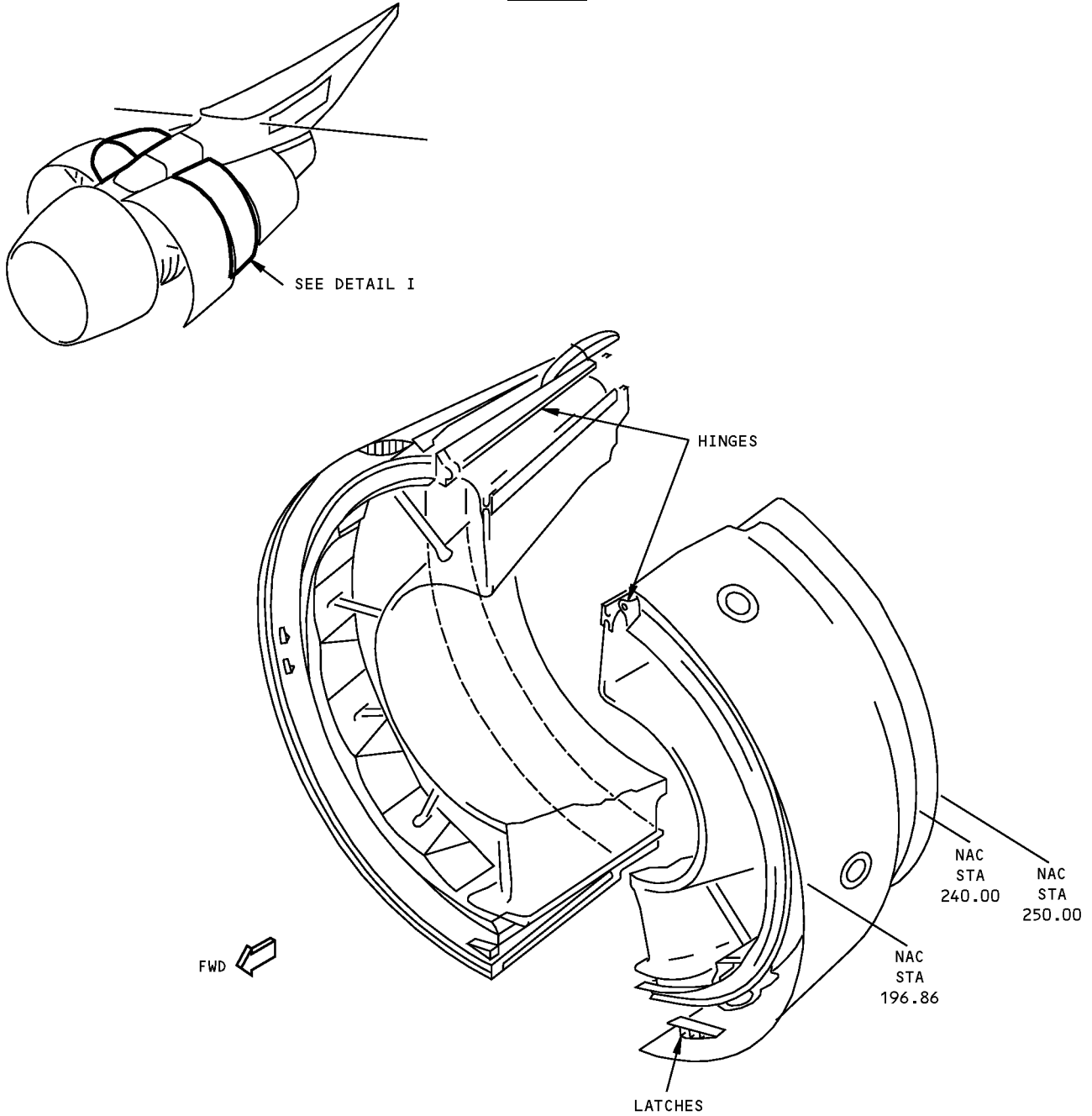


DETAIL II

**Thrust Reverser Cascade Assembly Nutplate Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - CF6-80A
ENGINE**



DETAIL I

**Fan Duct Cowl and Thrust Reverser Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT PERMITTED	NOT PERMITTED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

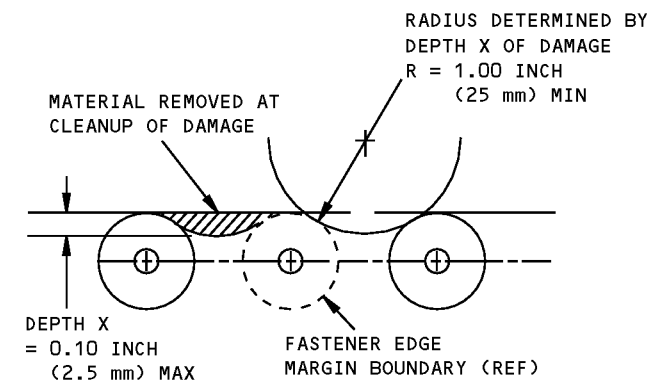
NOTES

- REFINISH REWORKED AREAS AS GIVEN IN 51-20
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

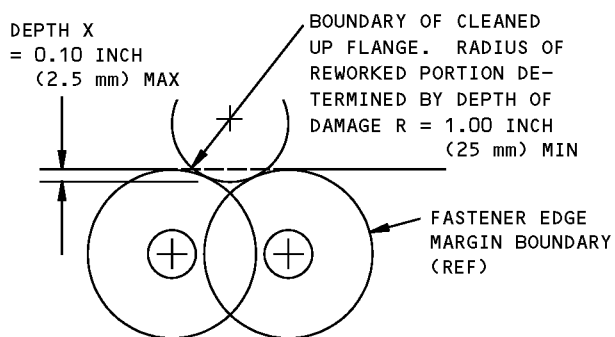
[A] CLEANUP EDGE CRACKS AS GIVEN IN DETAILS II AND V. OTHER CRACKS ARE NOT PERMITTED

[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV, FOR OTHER DAMAGE SEE DETAIL III. DAMAGE IS NOT PERMITTED IN VICINITY OF BUSHINGS

[C] SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

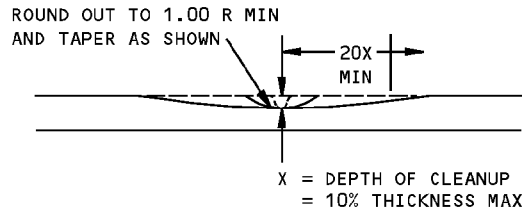
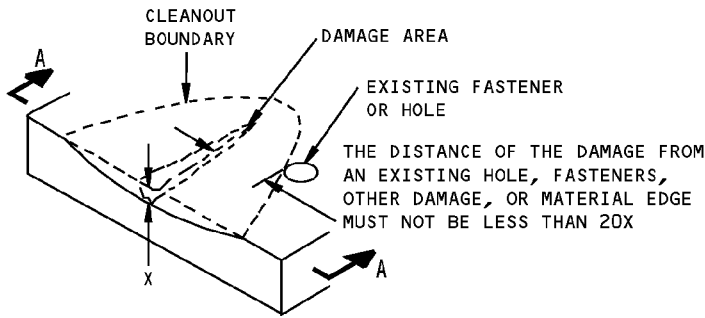


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II

**Fan Duct Cowl and Thrust Reverser Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 3)**

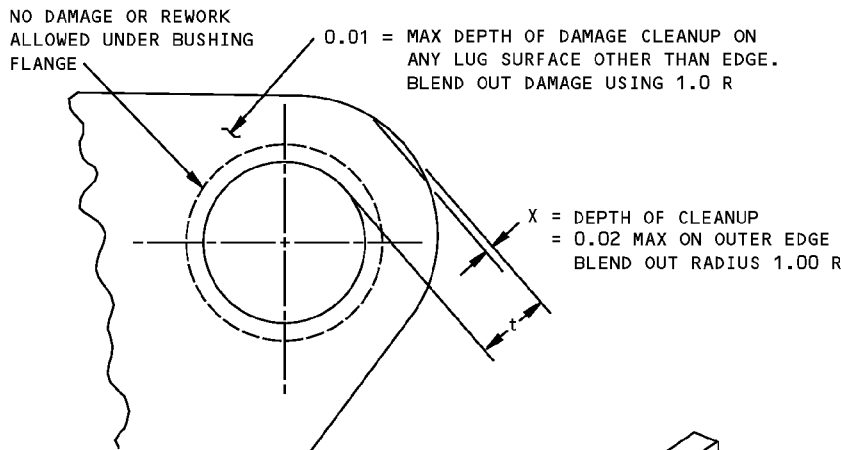
**767-300
STRUCTURAL REPAIR MANUAL**



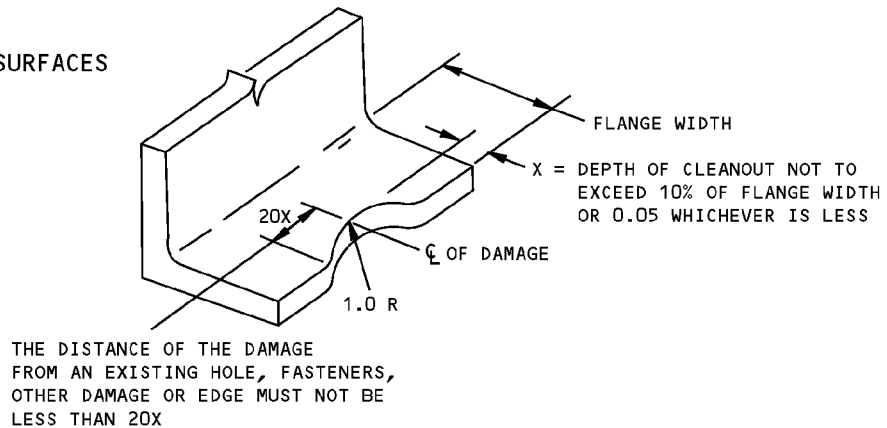
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**

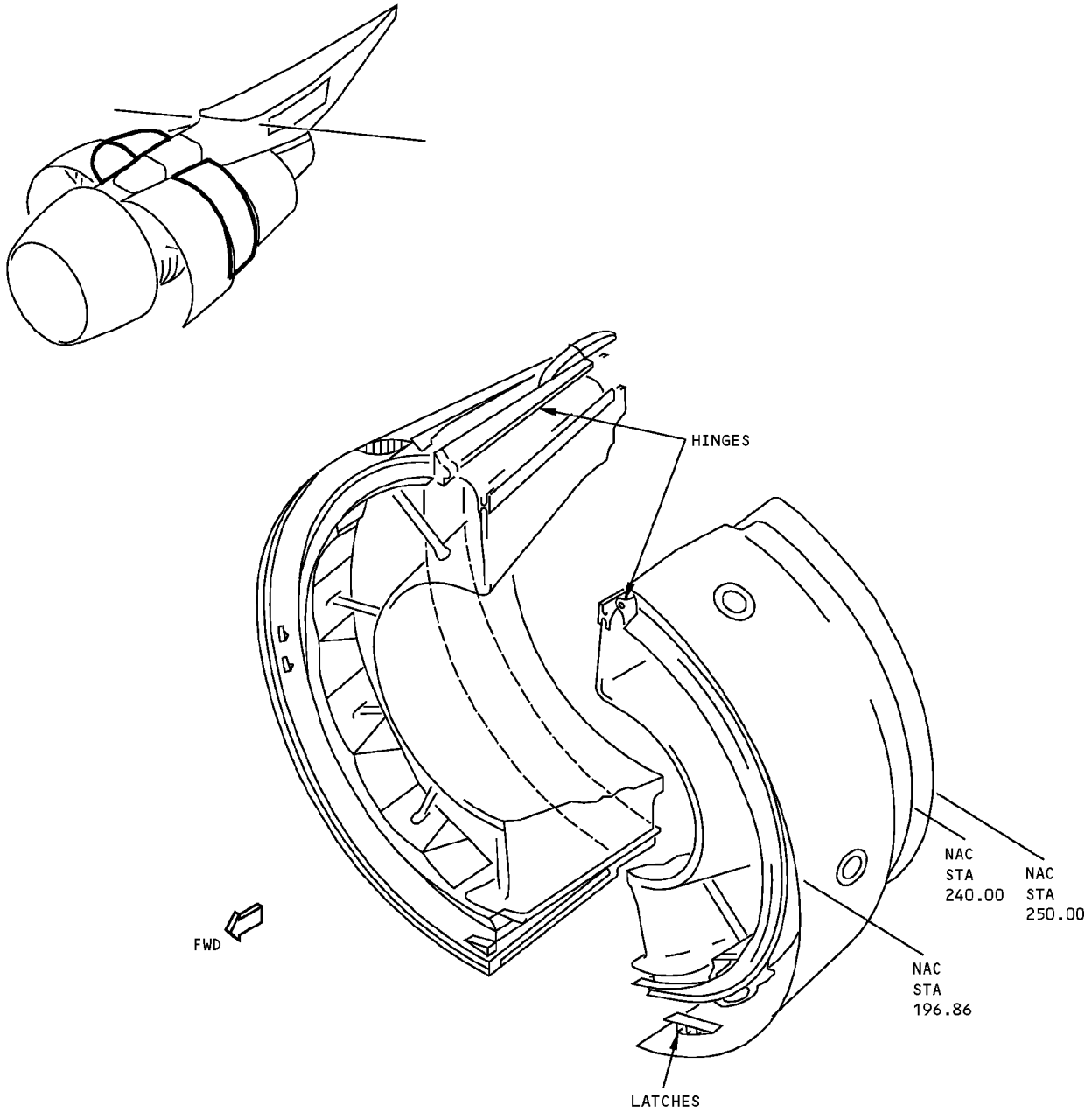


**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Fan Duct Cowl and Thrust Reverser Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - CF6-80A ENGINE



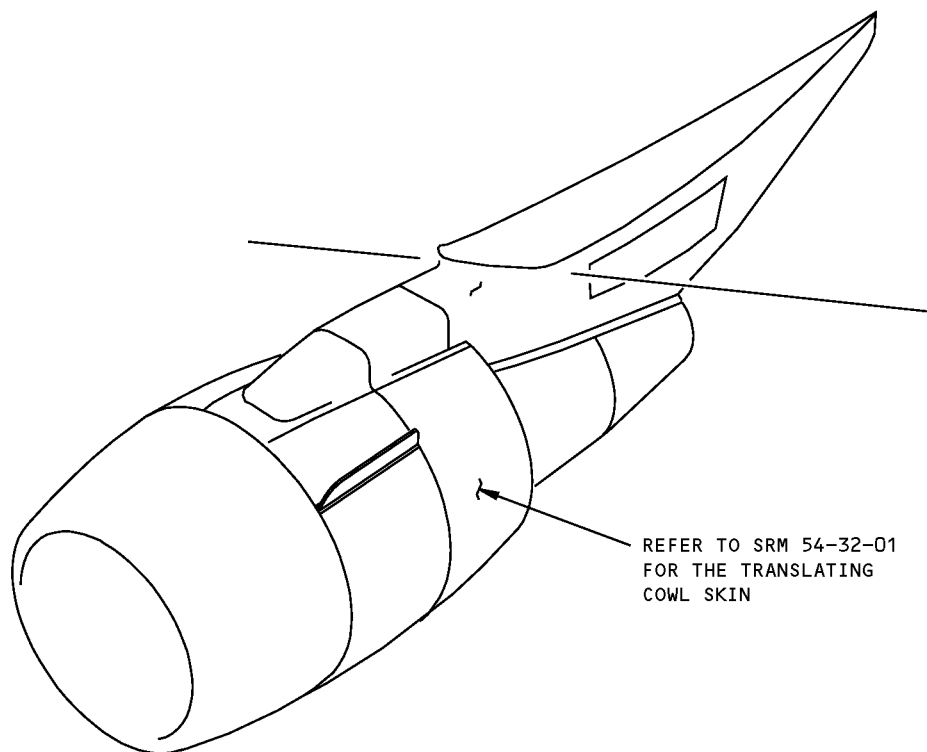
NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE. SPECIFIC REPAIRS TO FITTINGS WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- SEE 54-31-01 AND 54-31-02 FOR IDENTIFICATION

**Fan Duct Cowl and Thrust Reverser Attachment Fitting Repair - CF6-80A Engine
Figure 201**

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STRUCTURAL REPAIR MANUAL

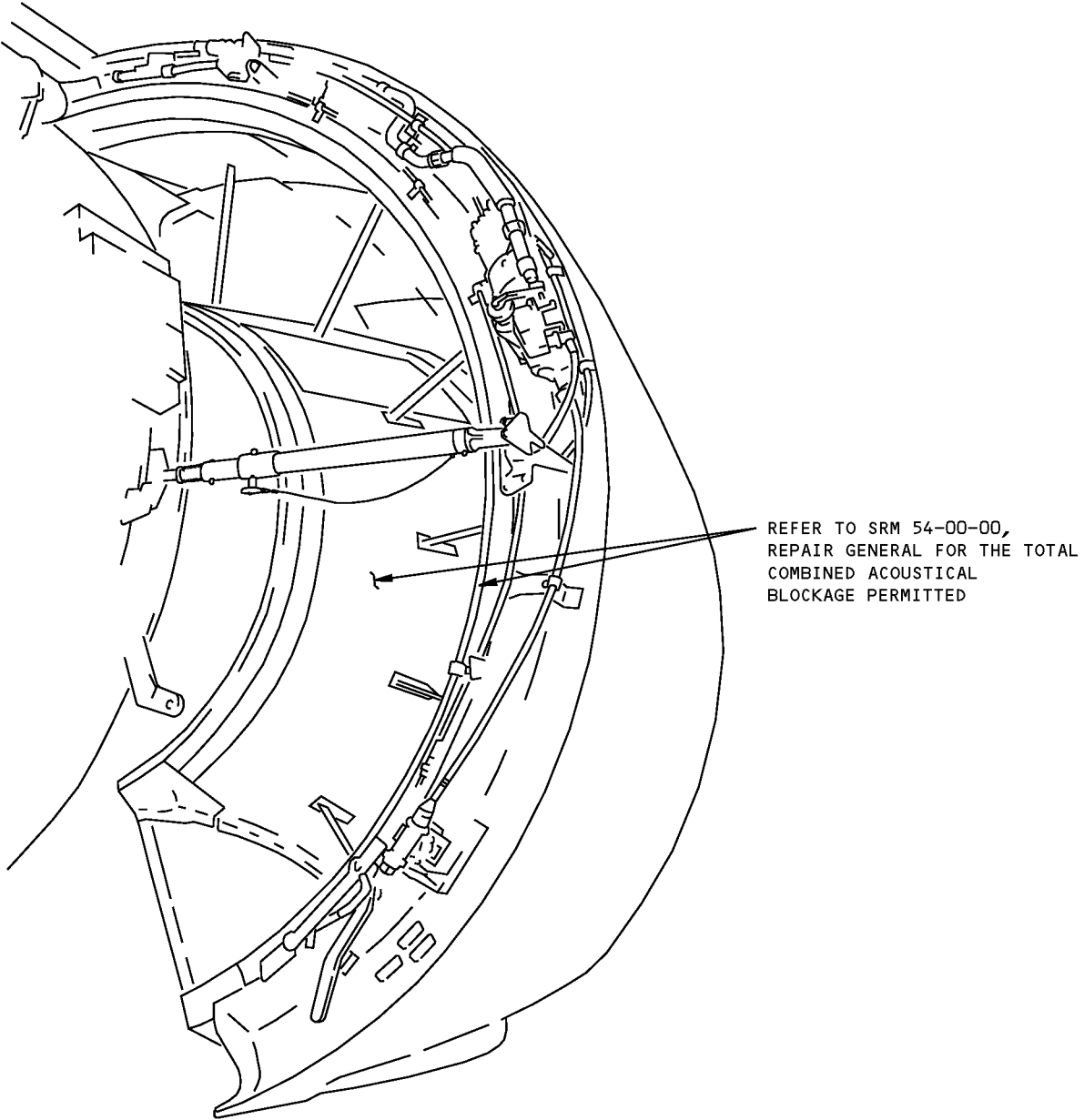
GENERAL - FAN DUCT COWL AND THRUST REVERSER STRUCTURE DIAGRAM - CF6-80C2 ENGINE



Fan Duct Cowl and Thrust Reverser Structure Diagram - CF6-80C2 Engine
Figure 1

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - TRANSLATING COWL SKIN - CF6-80C2 ENGINE



**Translating Cowl Skin Repairs - CF6-80C2 Engine
Figure 201**

D634T210

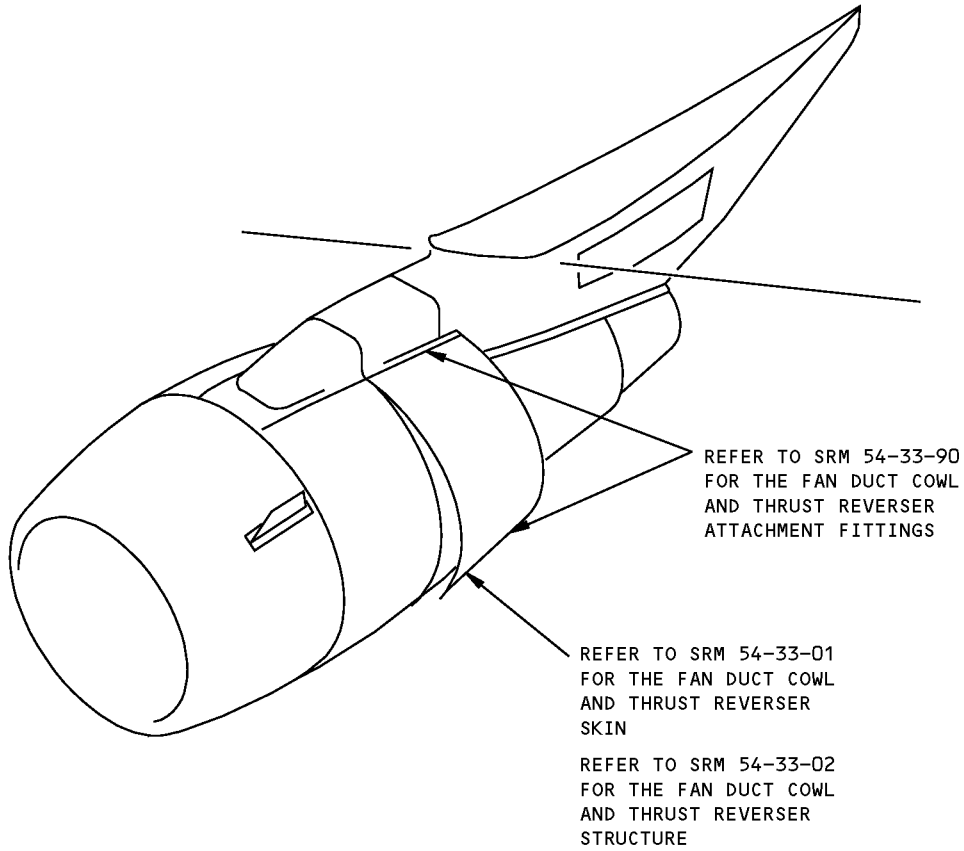
54-32-01

REPAIR 1
Page 201
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STRUCTURAL REPAIR MANUAL

GENERAL - FAN DUCT COWL AND THRUST REVERSER STRUCTURE DIAGRAM - PW4000 ENGINE



Fan Duct Cowl and Thrust Reverser Structure Diagram - PW4000 Engine
Figure 1

D634T210

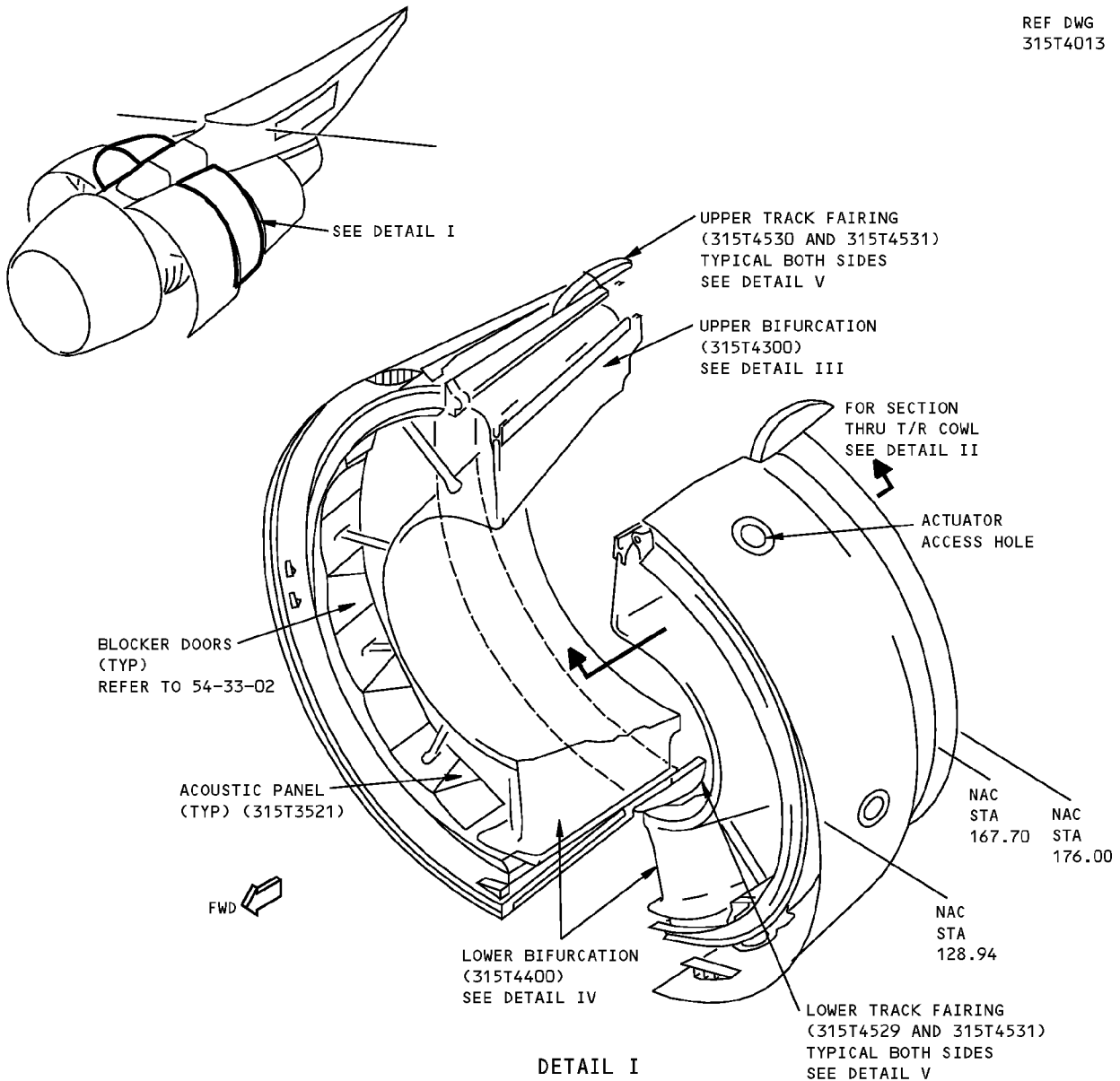
54-33-00

GENERAL
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - PW4000 ENGINE

REF DWG
315T4013



DETAIL I

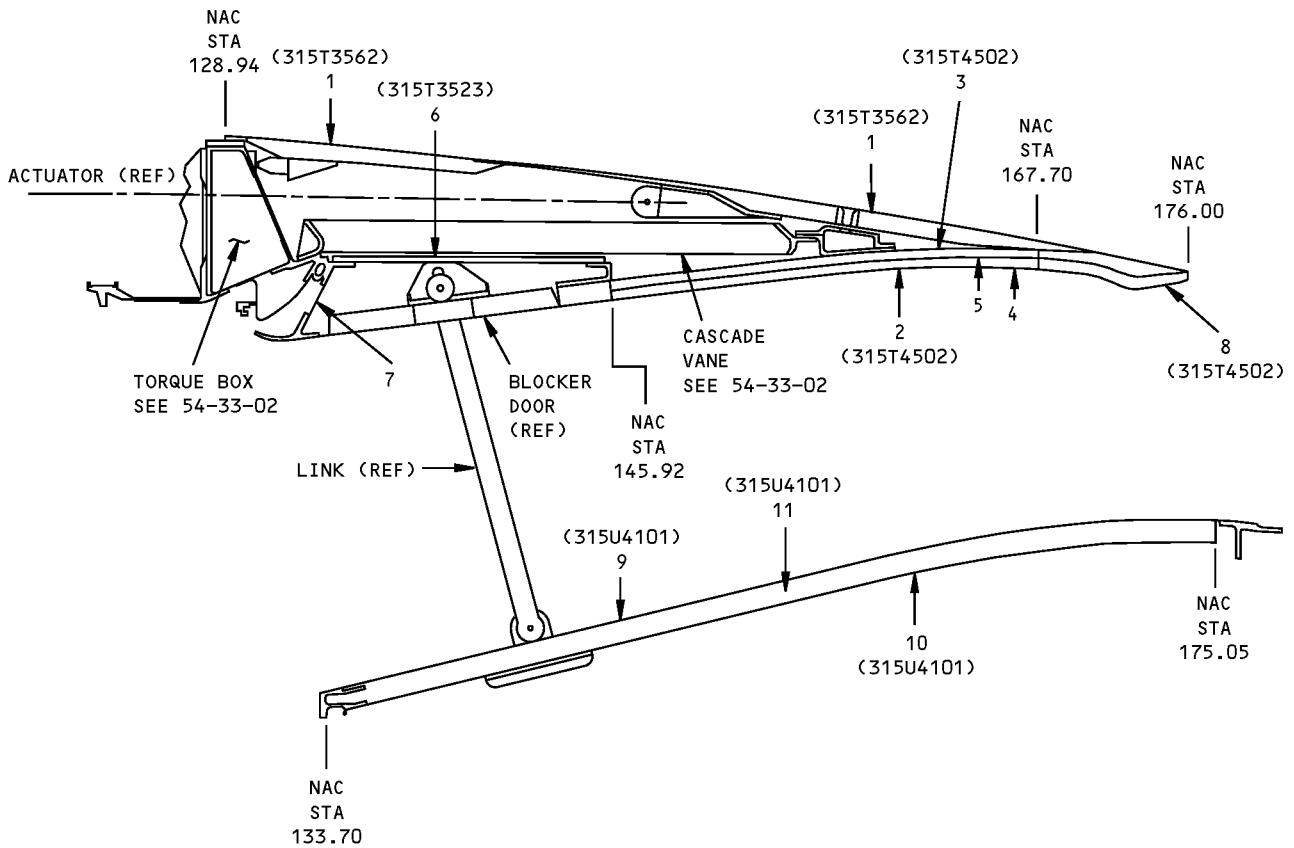
NOTES

- [A]** PLY ORIENTATION CONVENTION - DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION.
- [B]** EPOXY IMPREGNATED GRAPHITE FABRIC PER BMS 8-212, TYPE III, CLASS 2, STYLE 3K-135-8H, 350°F (177°C) CURE.
- [C]** EPOXY IMPREGNATED ARAMID FABRIC PER BMS 8-218, STYLE 120, 350°F (177°C) CURE.
- [D]** DENSE HONEYCOMB CORE LOCATED IN VICINITY OF FITTINGS, ACCESS HOLES AND PANEL EDGES. REFER TO BOEING DRAWINGS FOR EXACT SIZE AND LOCATION.
- [E]** FOR CUM LINE NUMBERS: 380 AND ON
- [F]** FOR CUM LINE NUMBERS NOT IN **[E]**

**Fan Duct Cowl and Thrust Reverser Skin Identification - PW4000 Engine
Figure 1 (Sheet 1 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
315T4013



**SECTION THRU THRUST REVERSER COWL
DETAIL II**

LIST OF
MATL

**Fan Duct Cowl and Thrust Reverser Skin Identification - PW4000 Engine
Figure 1 (Sheet 2 of 5)**

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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER COWL SKIN CORE DENSE CORE D		GRAPHITE/ARAMID EPOXY HONEYCOMB SANDWICH SEE DETAIL VII NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 5.0 NON-METALLIC HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 9.0	
2	ACOUSTIC PANEL	0.032	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, TYPE 1B-32, GRADE 1B, CLASS 39-96	
3	OUTER SKIN	0.020	2024-T81	
4	CORE		HONEYCOMB-ALUMINUM PER BMS 4-4, TYPE 6-30N	
5	CORE		HONEYCOMB-ALUMINUM (5052) CX 22.1-1/8-60N	
6	PANEL INNER SKIN OUTER SKIN CORE	0.020 0.020	CLAD 2024-T81 CLAD 2024-T81 HONEYCOMB PER BMS 4-4, TYPE 6-30N, FORM B	
7	WEB	0.050	CLAD 2024-T81	
8	WEDGE OUTER SKIN CORE	0.032	2024-T81 HONEYCOMB-FLEXIBLE-ALUMINUM PER BMS 4-6, CLASS I, TYPE 5.7-37	
9	ACOUSTIC SKIN DOUBLERS	0.032 0.040	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, TYPE 1B-32, GRADE 1B, CLASS 39-96 CLAD 2024-T81	
10	INNER SKIN	0.071	CLAD 2024-T81	
11	CORE DENSE CORE D		ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40 CLASS N, FORM B ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 3-60N, GRADE II, FORM F-20 OPTIONAL: HONEYCOMB-ALUMINUM (5052) CX 22.1-1/8-60N	

LIST OF MATERIALS FOR DETAIL II

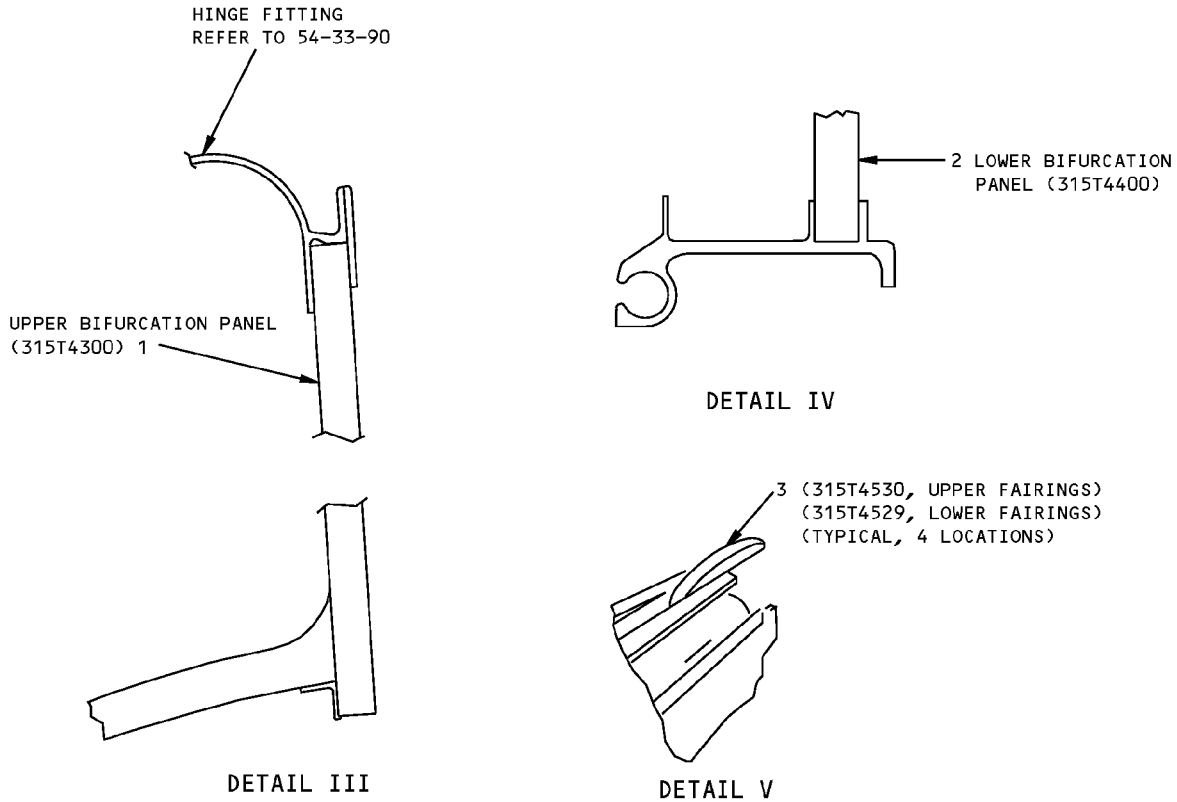
**Fan Duct Cowl and Thrust Reverser Skin Identification - PW4000 Engine
Figure 1 (Sheet 3 of 5)**

IDENTIFICATION 1
Page 3
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54-33-01

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**767-300
STRUCTURAL REPAIR MANUAL**



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER PANEL ASSY ACOUSTIC SKIN UPR AND LWR CORE CENTER CORE DOUBLERS BACKSHEET	0.032 0.020	CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 3-60N, GRADE II, FORM F-20 ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B SEE BOEING DRAWINGS FOR GAGE AND MATERIAL	
2	LOWER PANEL ASSY ACOUSTIC SKIN UPR AND LWR CORE CENTER CORE DOUBLERS SKIN	0.032 0.020	CLAD 2024-T81 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 3-60N, GRADE II, FORM F-20 ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B SEE BOEING DRAWINGS FOR GAGE AND MATERIAL	
3	TRACK FAIRING		FIBERGLASS LAMINATE	F
4	TRACK FAIRING		LYTEX - COMPRESSION MOLDED PLASTIC	E

LIST OF MATERIALS FOR DETAILS III, IV, AND V

**Fan Duct Cowl and Thrust Reverser Skin Identification - PW4000 Engine
Figure 1 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

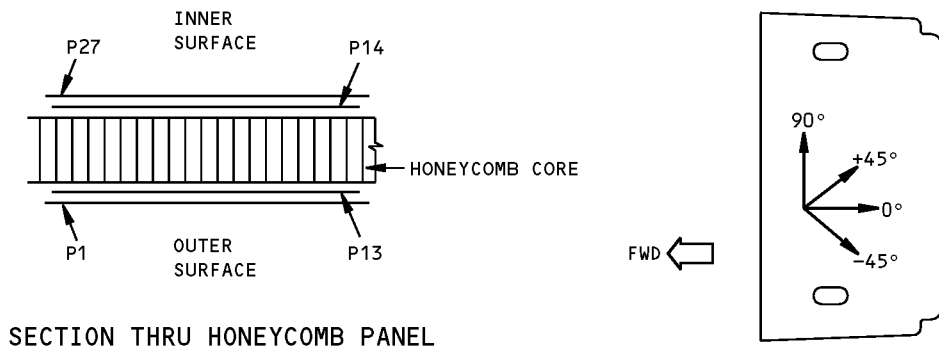


DIAGRAM OF PLY ORIENTATION,
SEE TABLE FOR PLY ORIENTATION
AND MATERIAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION A
1 (DETAIL II)	P1	B	0° or 90°
	P13	C	±45°
	P14	C	±45°
	P27	B	0° or 90°

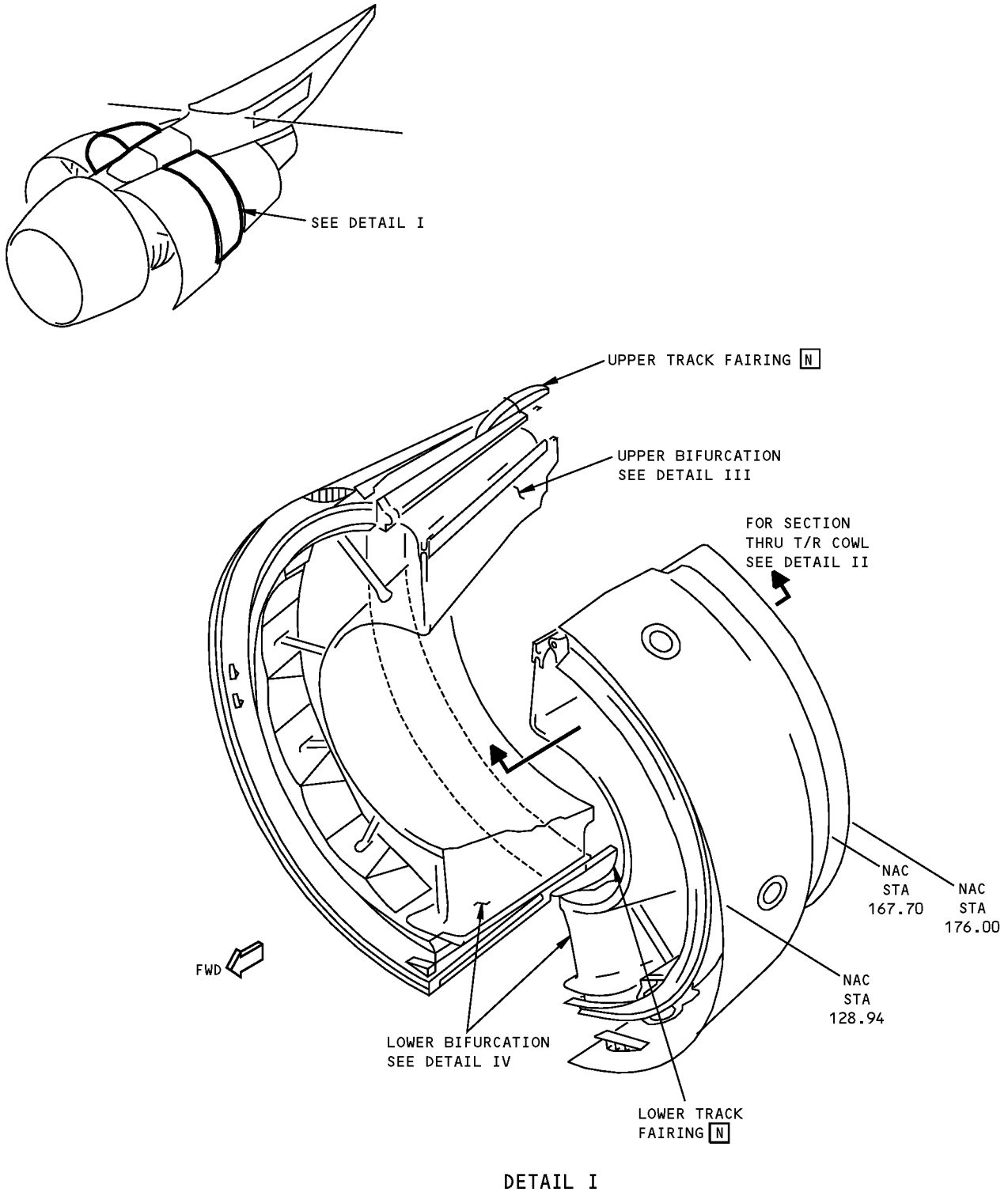
MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY.
SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS

DETAIL VII

**Fan Duct Cowl and Thrust Reverser Skin Identification - PW4000 Engine
Figure 1 (Sheet 5 of 5)**

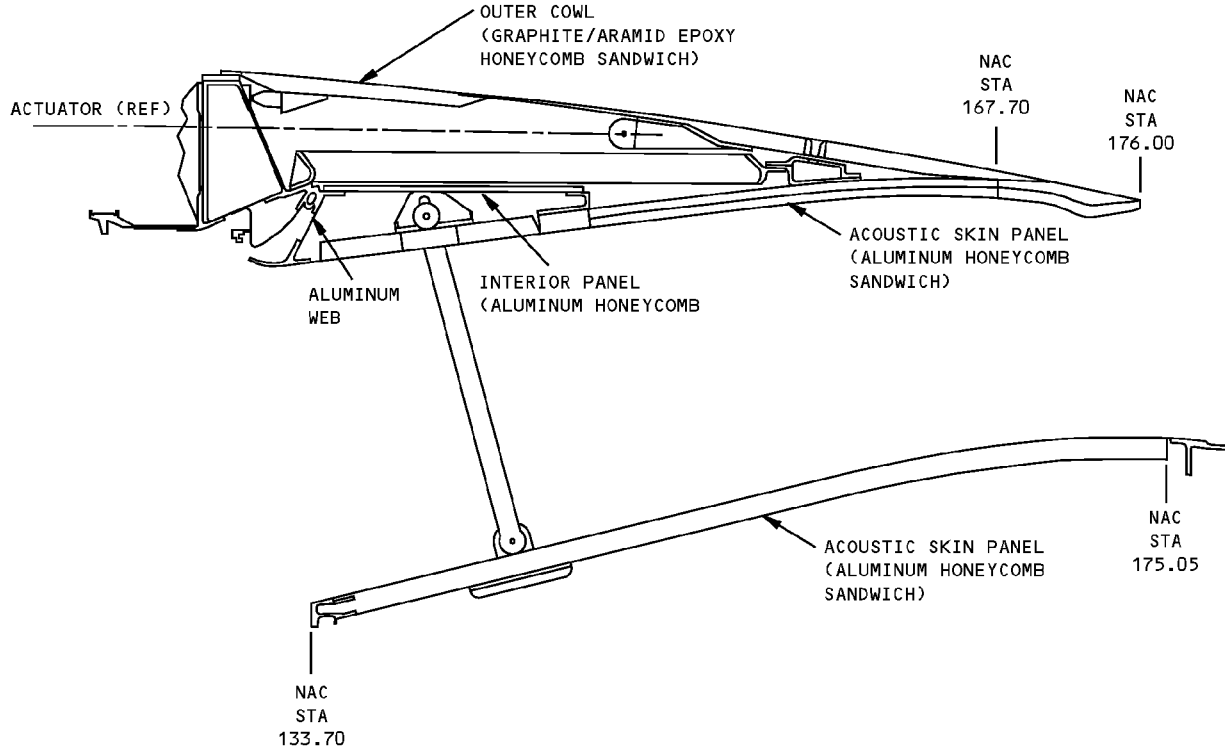
**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER SKIN - PW4000 ENGINE



**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

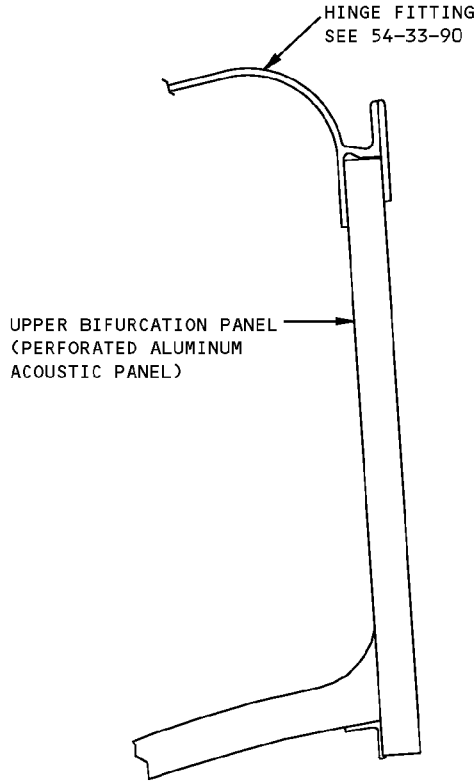


**SECTION THRU THRUST REVERSER COWL
DETAIL II**

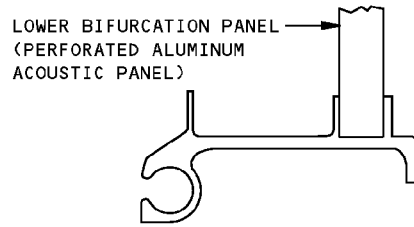
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
OUTER COWL	G	H	I	J	K
INTERIOR PANEL	B	C	SEE DETAIL VII	D	—
ALUMINUM WEB			SEE DETAIL VII	NOT ALLOWED	—
ACOUSTIC SKIN PANEL					
ACOUSTIC LINER	L	C	SEE DETAIL VII	M	F
OUTER SKIN	L	C	SEE DETAIL VII	M	F

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
UPPER PANEL	L	C	SEE DETAIL VII	E	F
LOWER PANEL	L	C	SEE DETAIL VII	E	F

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 3 of 6)**

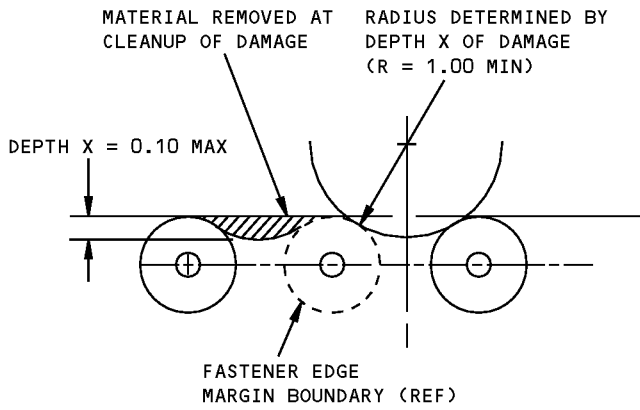
STRUCTURAL REPAIR MANUAL

NOTES

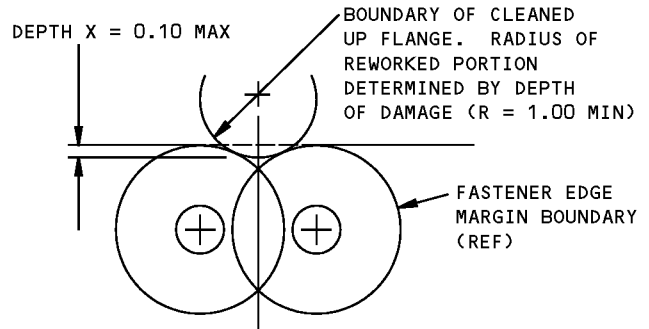
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL.
 - DAMAGE TO PANEL EDGES MAY BE CONFINED TO DELAMINATION OR MAY TAKE A FORM WHICH RESULTS IN DAMAGE TO FIBERS AND A LOSS OF EFFECTIVE CROSS-SECTIONAL AREA. THIS TYPE OF DAMAGE SHOULD BE REMOVED AND THE LIMITATIONS GIVEN FOR CRACKS APPLIED.
- A** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK.
 - B** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED PER DETAILS V AND IX.
 - C** REMOVE DAMAGE PER DETAILS V, VI AND VIII.
 - D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25.4 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED.
 - E** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25.4 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED **A**.
 - F** DELAMINATION OF SKIN FROM HONEYCOMB UP TO 2.25 SQ IN. (16 mm²) IS ALLOWED. A MAXIMUM OF 0.50 INCH (12.7 mm) DELAMINATION FROM EDGE IS ALLOWED.
 - G** THE PERMITTED SUM OF ALL CRACK LENGTHS IN A SQUARE FOOT OF HONEYCOMB AREA IS 2.0 INCHES (50 mm) MAX AND ALL CRACKS MUST BE 6.0 INCHES (15 cm) MINIMUM FROM OTHER CRACKS. CLEAN UP EDGE CRACKS PER DETAILS V AND IX **A**.
 - H** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. CLEAN UP EDGE DAMAGE PER DETAILS V AND IX **A**.
 - I** DENTS GENERALLY RESULT IN FIBER DAMAGE OR DELAMINATION. HOWEVER, PROVIDED THAT THERE IS NO FIBER DAMAGE OR DELAMINATION, DENTS UP TO 1.50 INCHES (38 mm) DIA MAX ARE ALLOWED. ONE DENT PER SQUARE FOOT OF AREA ALLOWED WHICH MUST BE A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR PANEL EDGE. IF FIBER DAMAGE OR DELAMINATION IS PRESENT REFER TO TO APPLICABLE DAMAGE DATA IN TABLE.
 - J** 1.20 INCHES (31 mm) MAX DIA ALLOWED IN HONEYCOMB AREA ONLY PROVIDED DAMAGE IS MINIMUM OF 2.5 D FROM ANY OTHER DAMAGE, NEAREST HOLE OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR **A**.
 - K** 4.0 INCHES (100 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. PROTECT EDGE DAMAGE PER **A**. REPAIR DELAMINATION IN HONEYCOMB AREA PER 51-70 NO LATER THAN THE NEXT "C" CHECK.
 - L** 2.0 INCHES (50 mm) CRACKS IN HONEYCOMB AREA ALLOWED. CLEAN UP EDGE CRACKS PER DETAILS V AND VIII. CRACKS THROUGH 3 CONSECUTIVE HOLES OR FASTENERS THROUGH THE PANEL EDGE-BAND ARE ALLOWED.
 - M** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) DIA MAX PROVIDED DAMAGE IS MINIMUM OF 3D FROM ANY OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE.
 - N** RESTORE DAMAGED ALUMINUM FLAME SPRAY OR CONDUCTIVE COATING PER 51-70-14.

Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 4 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

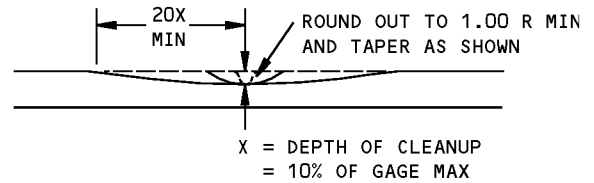
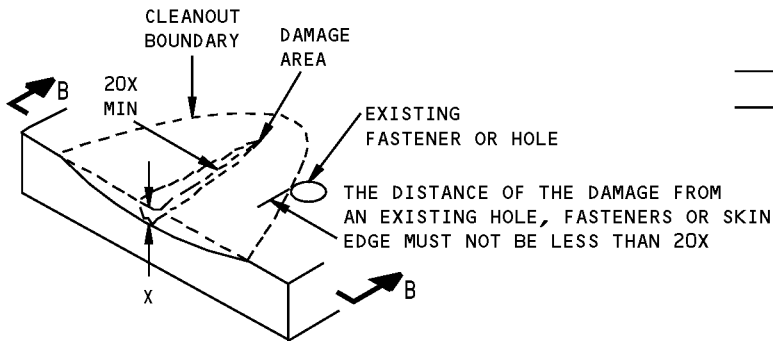


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP**



**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP**

DETAIL V

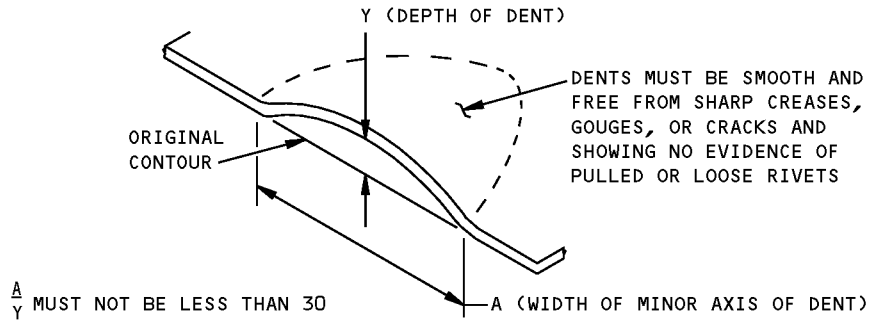


SECTION B-B

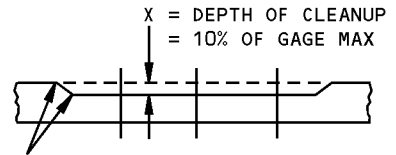
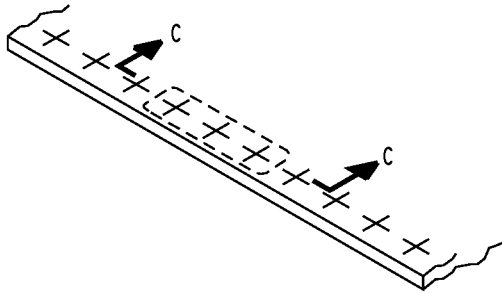
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



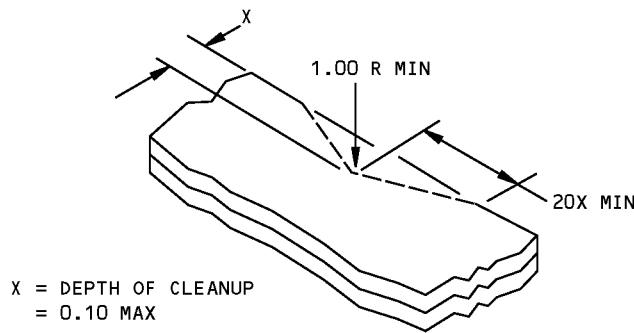
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAX DEPTH

SECTION C-C

**CORROSION CLEANUP
DETAIL VIII**

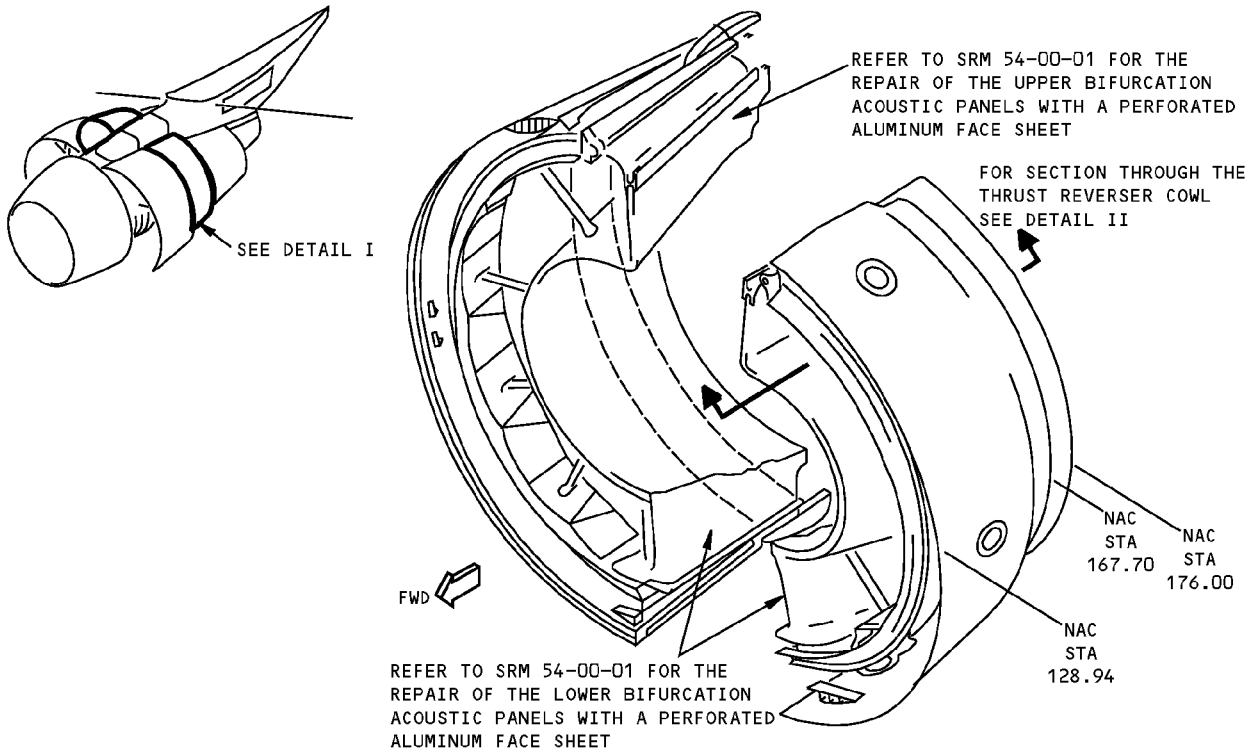


DETAIL IX

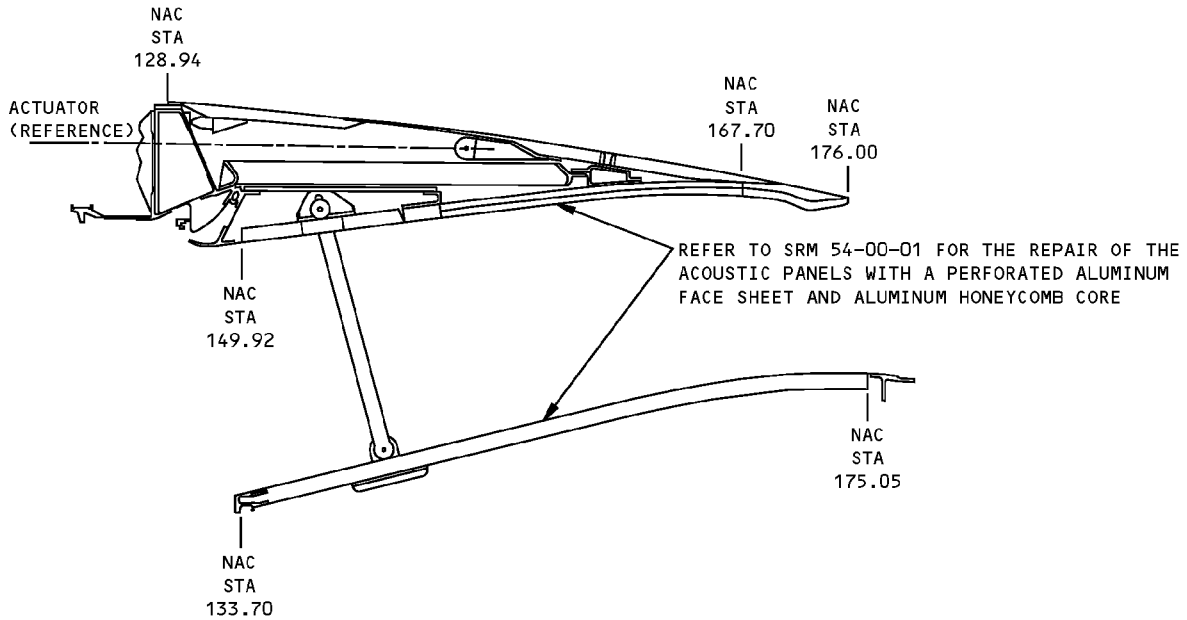
**Allowable Damage - Fan Duct Cowl and Thrust Reverser Skin - PW4000 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ACOUSTIC PANEL - PW4000 ENGINE



DETAIL I

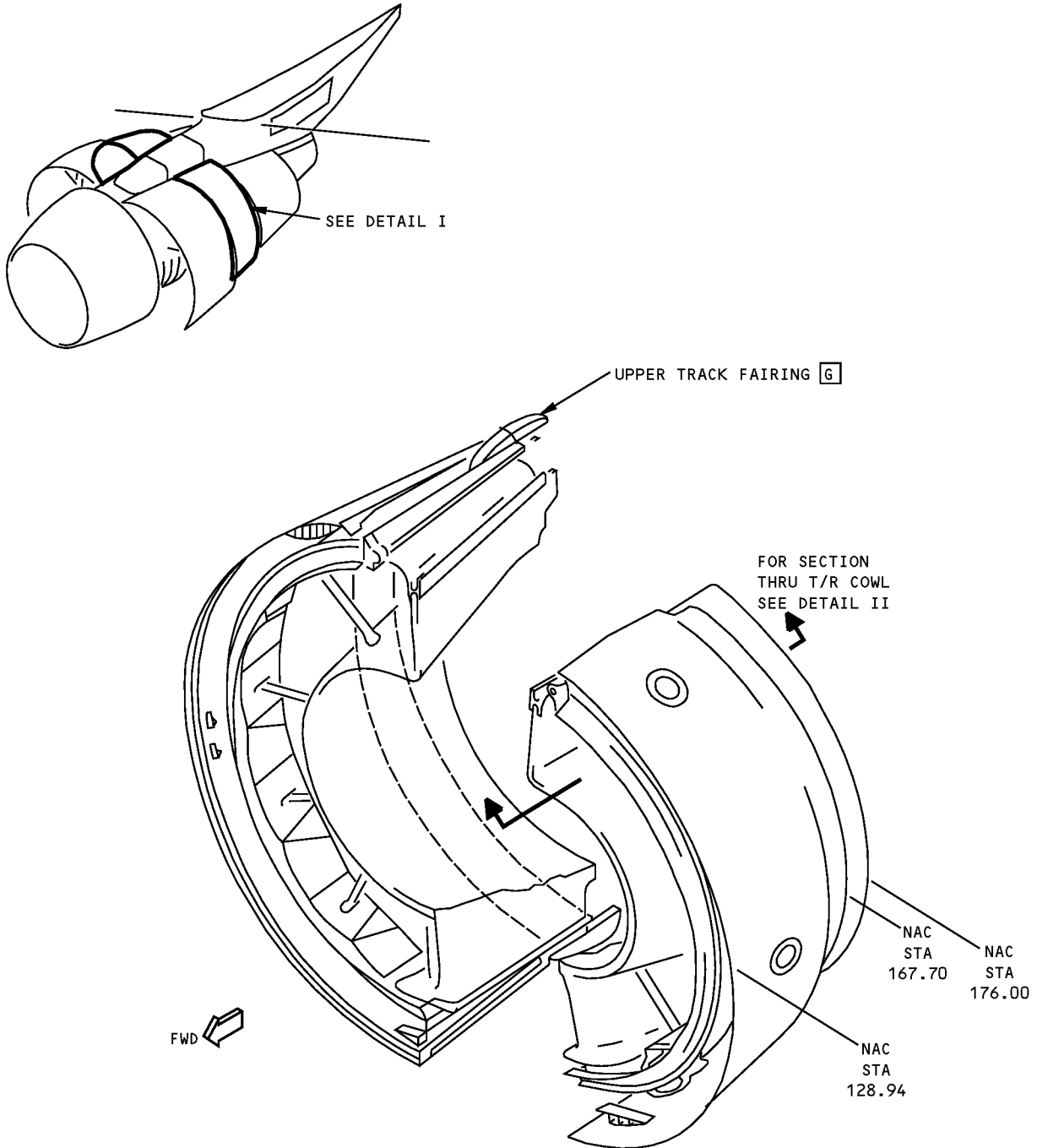


**SECTION THROUGH THE THRUST REVERSER COWL
DETAIL II**

**Fan Duct Cowl and Thrust Reverser Acoustic Panel Repair - PW4000 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

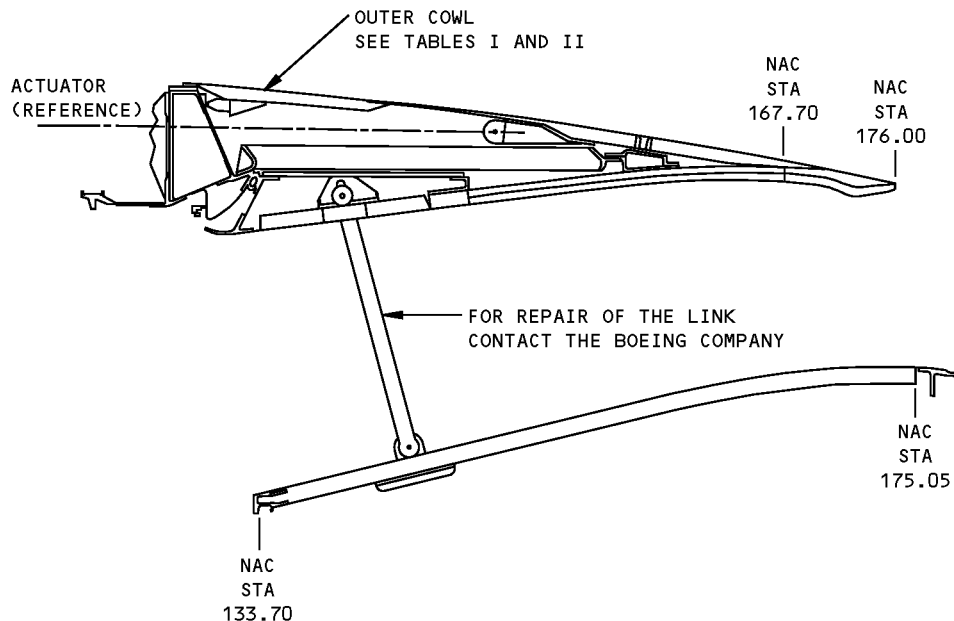
REPAIR 2 - FAN DUCT COWL AND THRUST REVERSER SKIN - PW4000 ENGINE



DETAIL I

Fan Duct Cowl and Thrust Reverser Skin Repair - PW4000 Engine
Figure 201 (Sheet 1 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

NOTES

- THIS FIGURE IS FOR THE REPAIR OF THE OUTER COWL. THE OUTER COWL IS A GRAPHITE/ARAMID EPOXY SANDWICH WITH A NON-METALLIC HONEYCOMB CORE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - FINISH REWORKED AREAS PER AMM 51-21.
- A** MINIMUM OF 3.50 INCHES (89 mm) FROM THE PANEL EDGE.
- B** LIMITED TO REPAIR OF DAMAGE TO ONE FACE SKIN AND HONEYCOMB CORE.
- C** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR 'TAP' TEST EVERY AIRPLANE 'A' CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT BUT NO LATER THAN THE NEXT 'C' CHECK. **H**
- D** ONE REPAIR ALLOWED PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER REPAIR.
- E** FOR WET LAYUP REPAIRS, USE 1.00 INCH (25 mm) PER PLY OVERLAP AND 230°F (110°C) CURE. FOR REPAIR TO OUTER SKIN ONLY, 0.50 INCH (12.7 mm) PER PLY OVERLAP AND 200°F (93°C) CURE CYCLE MAY BE USED.
- F** INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR 'TAP' TEST EVERY AIRPLANE '2A' CHECK. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. **H**
- G** RESTORE DAMAGED ALUMINUM FLAME SPRAY OR CONDUCTIVE COATING AS GIVEN IN SRM 51-70-14.
- H** FOR 'TAP' TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. REFER TO SRM 51-70-03, PAR. 4.J. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

**Fan Duct Cowl and Thrust Reverser Skin Repair - PW4000 Engine
Figure 201 (Sheet 2 of 4)**



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STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS F A	PERMANENT REPAIRS	
	WET LAYUP 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93°C-110°C) CURE (SRM 51-70-17) E	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. B	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF THE SMALLEST DIMENSION OF THE HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. B	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF THE SMALLEST DIMENSION OF THE HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACE-SHEET REPAIRED. D	NO SIZE LIMIT
DELAMI-NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 2.0 INCHES (50 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. D OVER 2.0 INCHES (50 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

REPAIR DATA FOR 350°F CURE GRAPHITE/ARAMID HONEYCOMB PANELS
TABLE I

Fan Duct Cowl and Thrust Reverser Skin Repair - PW4000 Engine
Figure 201 (Sheet 3 of 4)

D634T210

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REPAIR 2
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STRUCTURAL REPAIR MANUAL

DAMAGE	TIME LIMITED REPAIRS PANEL EDGE BAND LAMINATE C	PERMANENT REPAIRS	
		WET LAYUP 200°F-230°F (93°C-110°C) CURE (SRM 51-70-17) E	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	CRACKS THROUGH CONSECUTIVE FASTENERS OR THROUGH THE PANEL EDGE BAND ARE ALLOWED IF DAMAGE DOES NOT EXCEED 10% OF EDGE BAND LENGTH PER SIDE. FILL CRACK WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE)	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
NICKS AND GOUGES	4.0 INCHES (100 mm) MAX LENGTH X 0.25 INCH (6 mm) DEEP IN EDGE BAND LAMINATE - A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. 0.10 INCH (2.5 mm) DEEP MAX EDGE DAMAGE. FILL DAMAGE AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.	NO DAMAGE ALLOWED TO FIBERS. IF FIBERS ARE DAMAGED, CLEAN UP AND REPAIR AS A HOLE. IF NO FIBERS ARE DAMAGED, REFER TO ROOM TEMP CURE REPAIR AS GIVEN IN SRM 51-70-03.
DENTS	1.00 INCH (25 mm) DIA X 0.010 INCH (2.5 mm) DEEP IN EDGE BAND LAMINATE - A MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER SURFACE. FILL DAMAGED AREA WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	0.50 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.	0.50 INCH (12.7 mm) MAX DIA WITH NO FIBER DAMAGE OR DELAMINATION. OVER 0.50 INCH (12.7 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.
HOLES	0.50 INCH (12.7 mm) MAX DIA HOLE THRU EDGE BAND. MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL HOLE WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	FOR HOLES THAT ARE 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03 PARAGRAPH 5.J. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17 PARAGRAPH 4.H.	FOR HOLES THAT ARE 0.50 INCH (12.7 mm) DIA OR SMALLER, 4 X DIA FROM FASTENER HOLE, AND 0.25 INCH (6 mm) FROM EDGE OF PANEL, REPAIR AS GIVEN IN SRM 51-70-03 PARAGRAPH 5.J. FOR ALL OTHER DAMAGE, REPAIR AS GIVEN IN SRM 51-70-17 PARAGRAPH 4.H.
DELAMINATION	2 SQ IN. (16 sq mm) (2.00 INCH (50 mm) MAX LENGTH) ALLOWED. MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER DAMAGE. FILL WITH BMS 5-95 SEALANT AND COVER WITH ALUMINUM FOIL TAPE 3M-Y436 OR EQUIVALENT (SPEED TAPE).	CUT OUT AND REPAIR AS A HOLE.	CUT OUT AND REPAIR AS A HOLE.

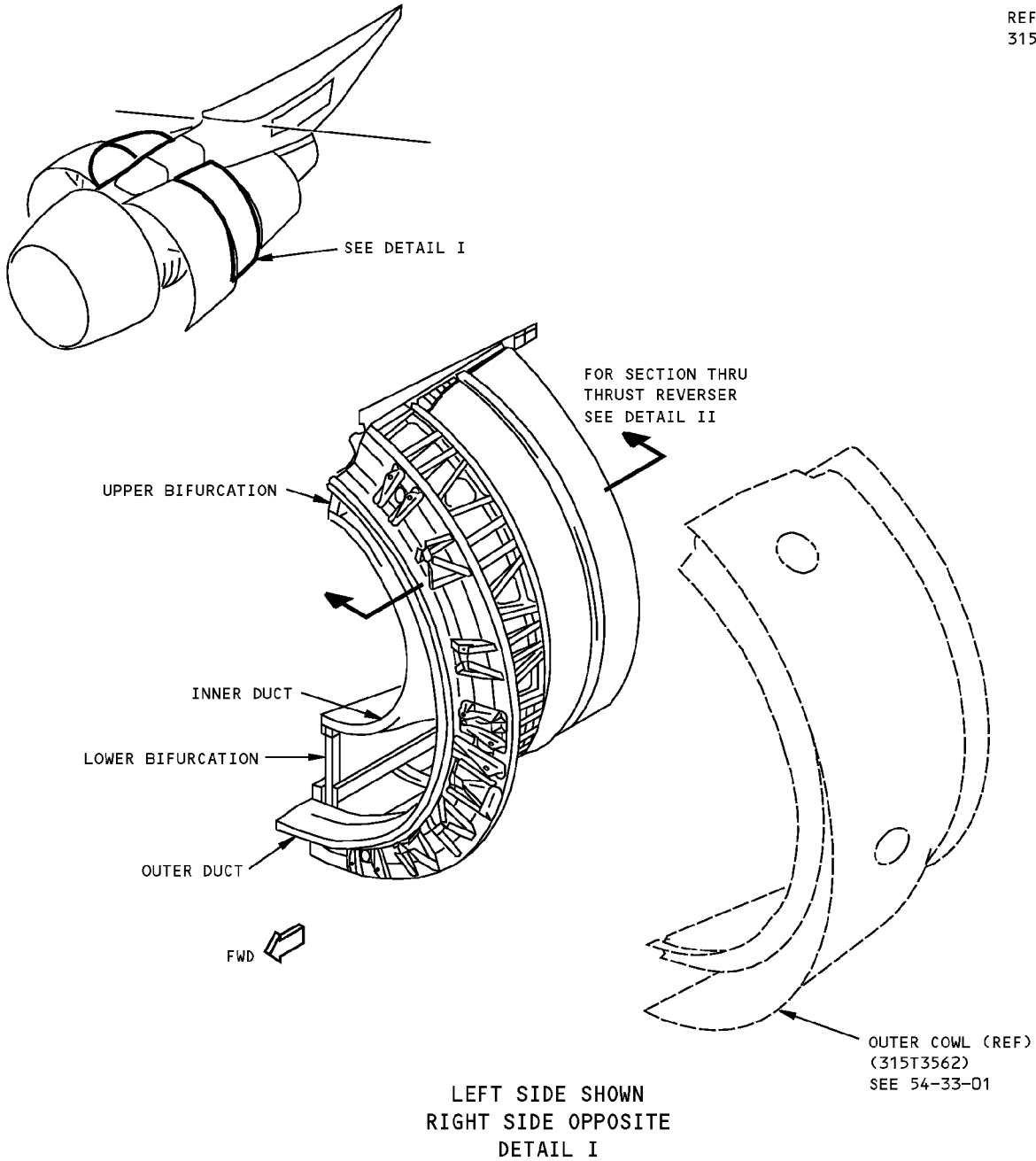
REPAIR CRITERIA FOR EDGE BAND LAMINATE
TABLE II

Fan Duct Cowl and Thrust Reverser Skin Repair - PW4000 Engine
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - PW4000 ENGINE

REF DWG
315T4013



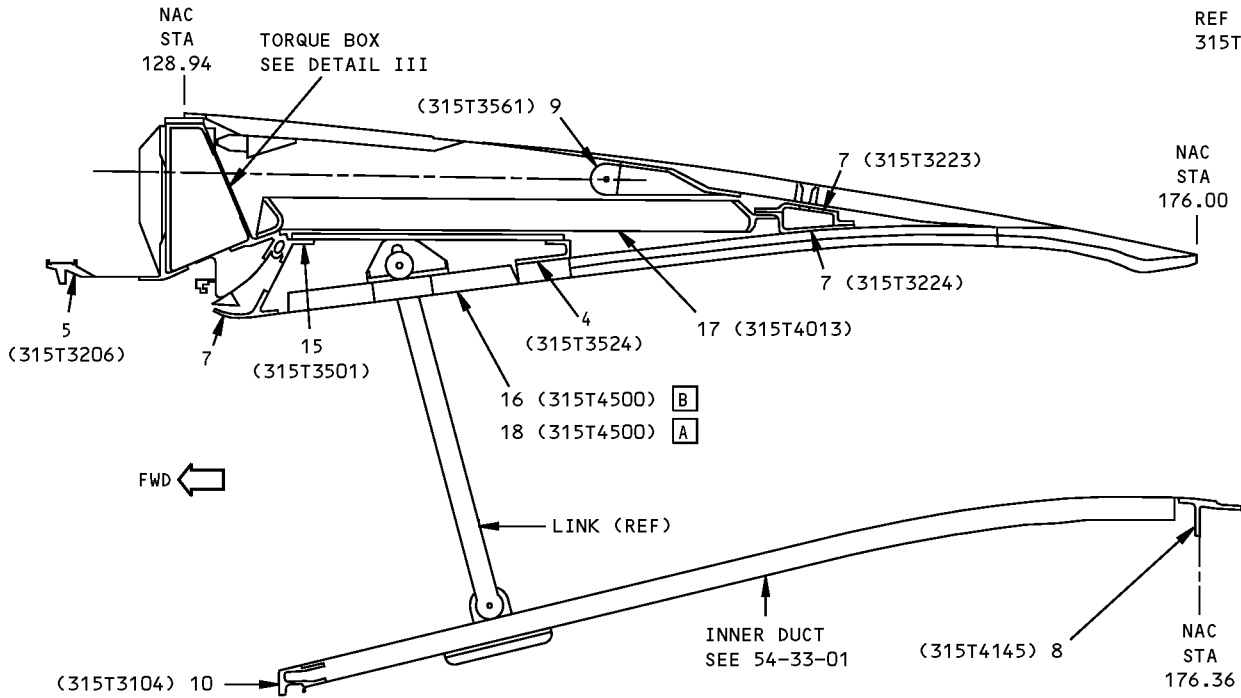
NOTES

- A** FOR CUM LINE NUMBERS:
301 AND ON
COMPOSITE BLOCKER DOORS ARE INTERCHANGEABLE
WITH METAL BONDED BLOCKER DOORS
- B** FOR CUM LINE NUMBERS NOT LISTED IN **A**

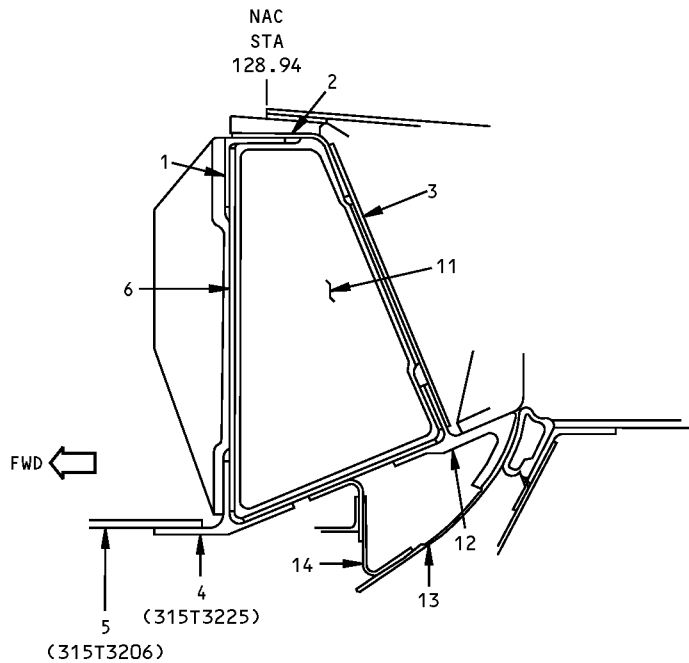
**Fan Duct Cowl and Thrust Reverser Structure Identification - PW4000 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
315T4013



DETAIL II



**DETAIL OF TORQUE BOX
DETAIL III**

LIST OF
MATL

**Fan Duct Cowl and Thrust Reverser Structure Identification - PW4000 Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
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54-33-02

D634T210



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER CHORD		BAC1514-13 2024-T42	
2	ANGLE	0.050	CLAD 2024-T42	
3	WEB	0.063	CLAD 2024-T3	
4	CHORD		FORGING 2014-T6 OPTIONAL: ROLLED 2024-T62	
5	V GROOVE FTG		BAC1506-3518 7075-T73	
6	WEB	0.032	CLAD 2024-T81	
7	RING		FORGING 7075-T73	
8	FRAME		BAC1506-3279 2219-T62	
9	ACTUATOR FITTING		FORGING 7075-T73	
10	RING		FORGING 7075-T73	
11	FRAME		FORGING 7075-T73 OR BAR 7075-T73	
12	CHORD		FORGING 2014-T6 OPTIONAL: BAR 2024-T62	
13	BULLNOSE FAIRING	0.100	2024-T42	
14	ANGLE	0.050	CLAD 2024-T42	
15	CHORD		BAC1514-2502 2024-T42	
16	BLOCKER DOOR ASSY INNER SKIN	0.050	PERFORATED SHEET CLAD 2024-T62 PER BMS 7-209, 1B-40, GRADE 1A, CLASS 50-125, POA 14.5 HONEYCOMB PER BMS 4-4, TYPE 6-40N, FORM B	B
	CORE OUTER SKIN	0.020	CLAD 2024-T81	
17	CASCADE VANE		MAGNESIUM ALLOY CASTING AZ92A-T6	
18	BLOCKER DOOR ASSY INNER SKIN		GRAPHITE/EPOXY SANDWICH GRAPHITE FABRIC PER BMS 9-8, CLASS I, GRADE 3.0, 350°F (176.67°C) CURE (5 PLIES)	A
	CORE		NONMETALLIC HONEYCOMB W/BURIED SEPTUM (HONEYCOMB PER BMS 8-124, CLASS I, TYPE III, GRADE 6.0; SEPTUM PER BMS 5-114, GRADE 30)	
	OUTER SKIN		GRAPHITE FABRIC PER BMS 9-8, CLASS II, GRADE 3.0, 350°F (176.67°C) CURE (4 PLIES)	

LIST OF MATERIALS FOR DETAILS II AND III

**Fan Duct Cowl and Thrust Reverser Structure Identification - PW4000 Engine
Figure 1 (Sheet 3 of 3)**

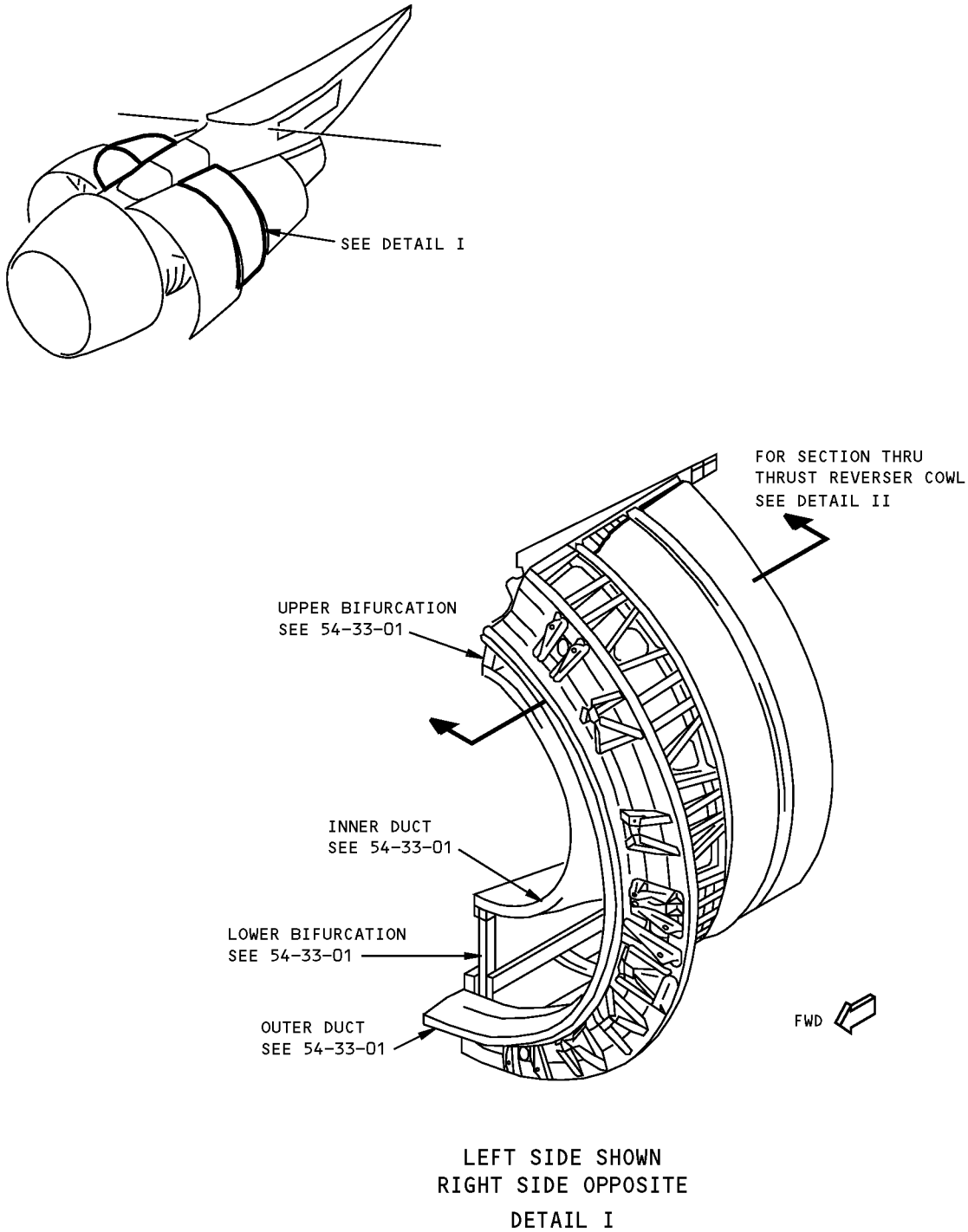
IDENTIFICATION 1
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Apr 01/2005

54-33-02

D634T210

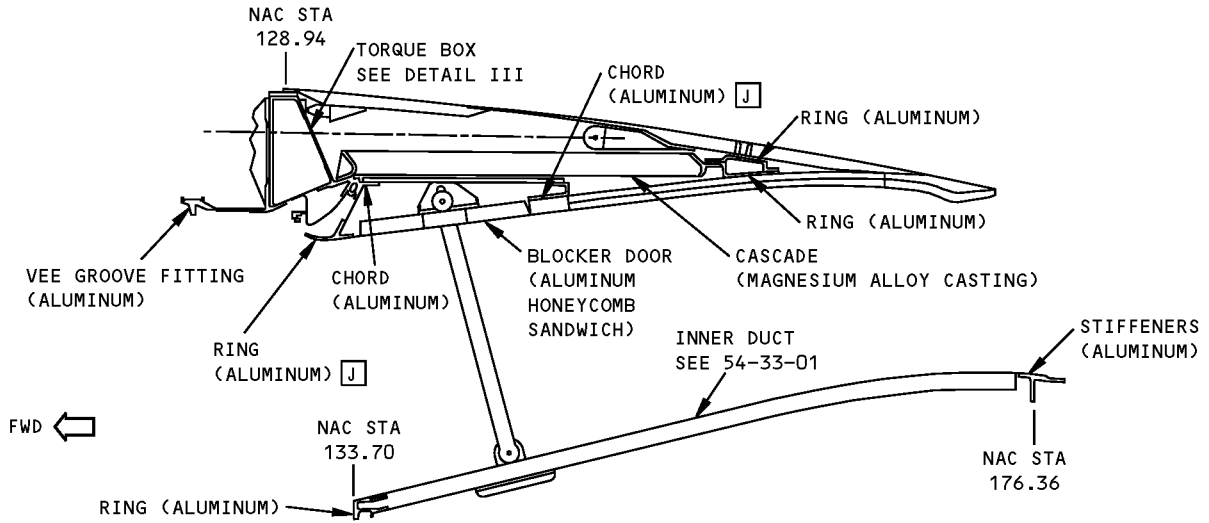
**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER STRUCTURE - PW4000 ENGINE

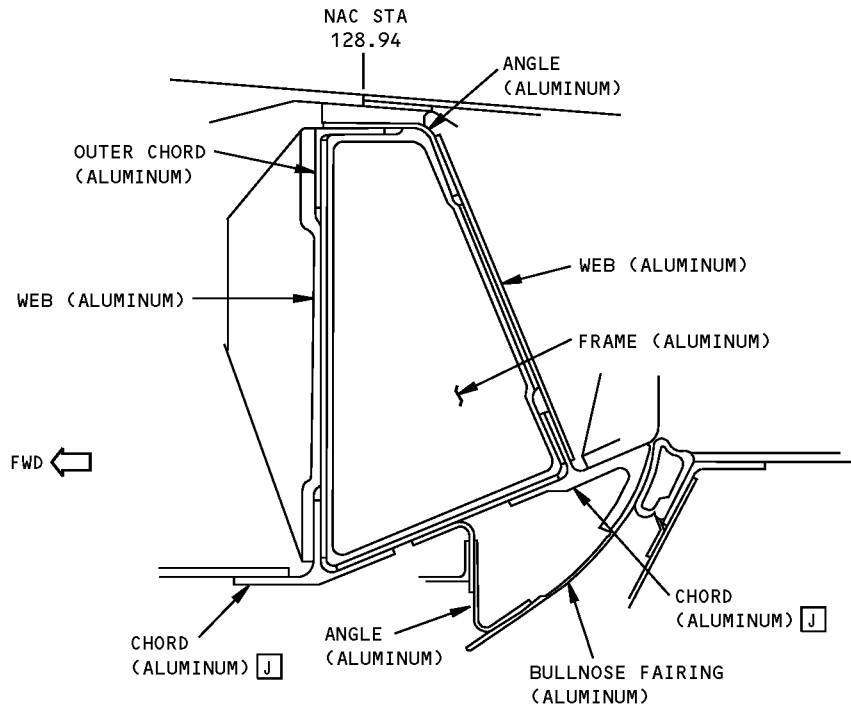


**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THRUST REVERSER COWL
DETAIL II**



DETAIL III

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 2 of 6)**

STRUCTURAL REPAIR MANUAL

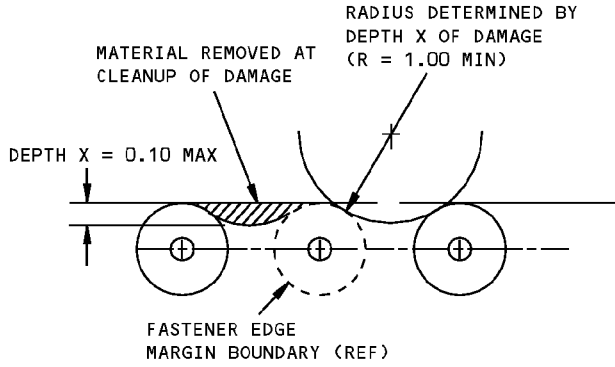
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
CASCADE [L]	[H]	[I]	NOT ALLOWED	NOT ALLOWED	---
BLOCKER DOOR	[D]	[C]	SEE DETAIL VI	NOT ALLOWED	[F]
CHORD	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
OUTER CHORD	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
ANGLE	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
WEB	[B]	[C]	SEE DETAIL VI	NOT ALLOWED	---
VEE GROOVE FITTING	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
STIFFENERS	[G]	[C]	NOT ALLOWED	NOT ALLOWED	---
RING	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
FRAME	[D]	[C]	NOT ALLOWED	NOT ALLOWED	---
BULLNOSE FAIRING	[B]	[C]	SEE DETAIL VI	[E]	---

NOTES

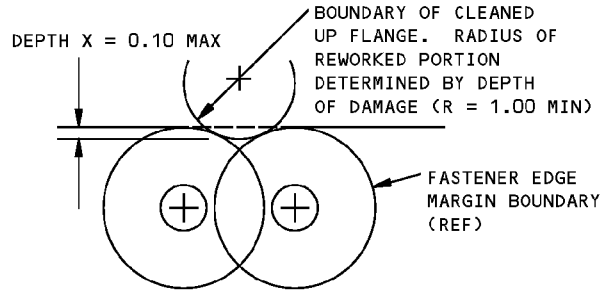
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- [A] REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
- [B] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS IV AND IX
- [C] REMOVE DAMAGE PER DETAILS IV, V, AND VII
- [D] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS IV AND VIII
- [E] CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO EXISTING HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- [F] 1.0 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE [A]
- [G] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS IV AND IX
- [H] CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS IV AND X
- [I] REMOVE DAMAGE PER DETAILS IV, VII, AND X
- [J] SHOT PEEN REWORKED AREA PER 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK
- [K] FOR ENGINES WITH LOAD SHARING NACELLE
- [L] SPECIAL PRECAUTIONS AND PROCEDURES ARE REQUIRED FOR REWORKING MAGNESIUM COMPONENTS. REFER TO SRM 51-10-02 FOR CLEANUP OF DAMAGE AND FINISH REQUIREMENTS

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

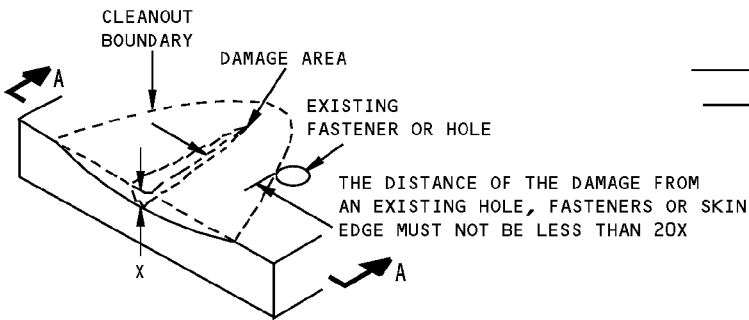


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP**

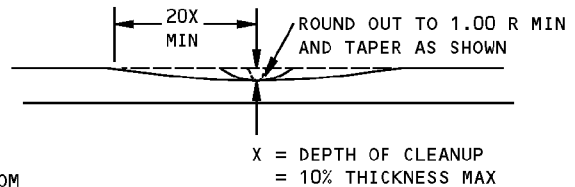


**DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP**

DETAIL IV



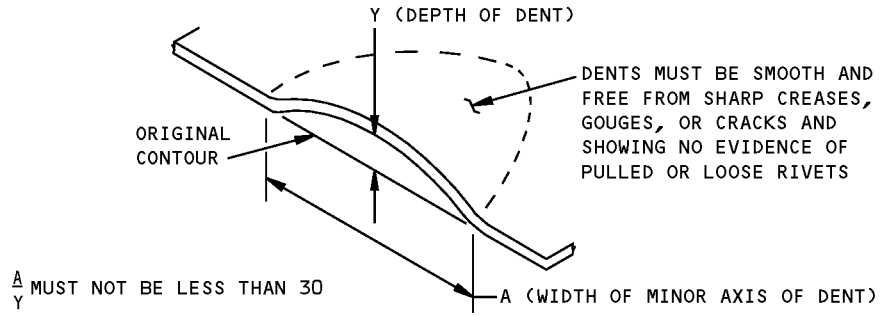
**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE
DETAIL V**



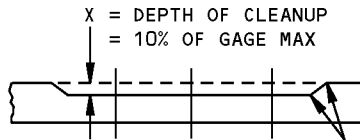
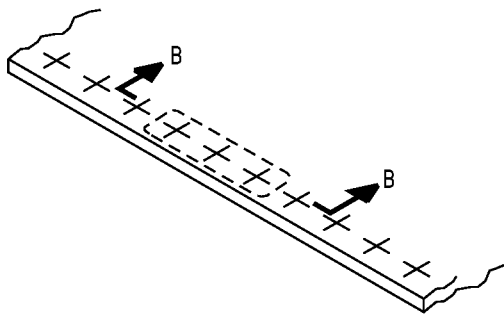
SECTION A-A

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 4 of 6)**

STRUCTURAL REPAIR MANUAL



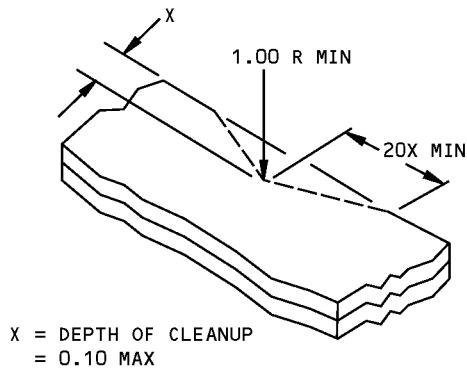
**ALLOWABLE DAMAGE FOR DENT
DETAIL VI**



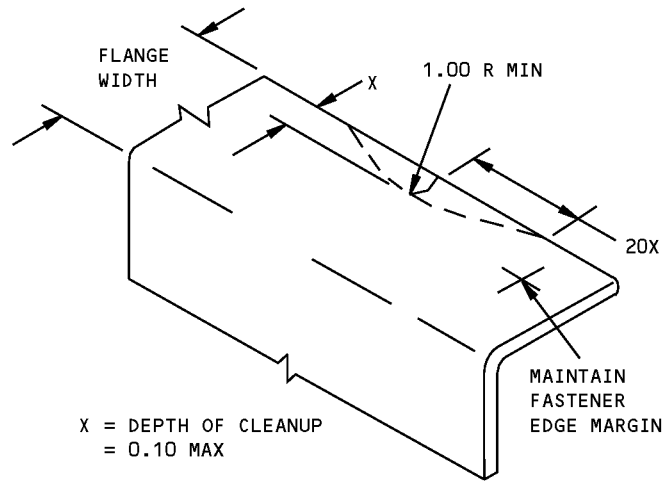
SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL VII**



DETAIL VIII

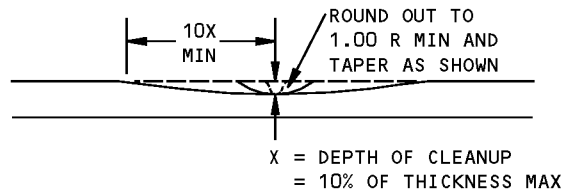
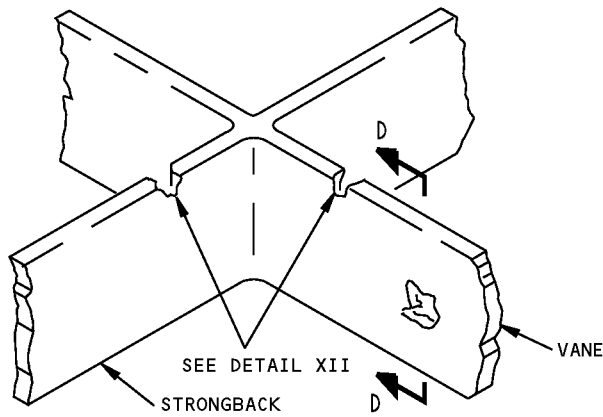
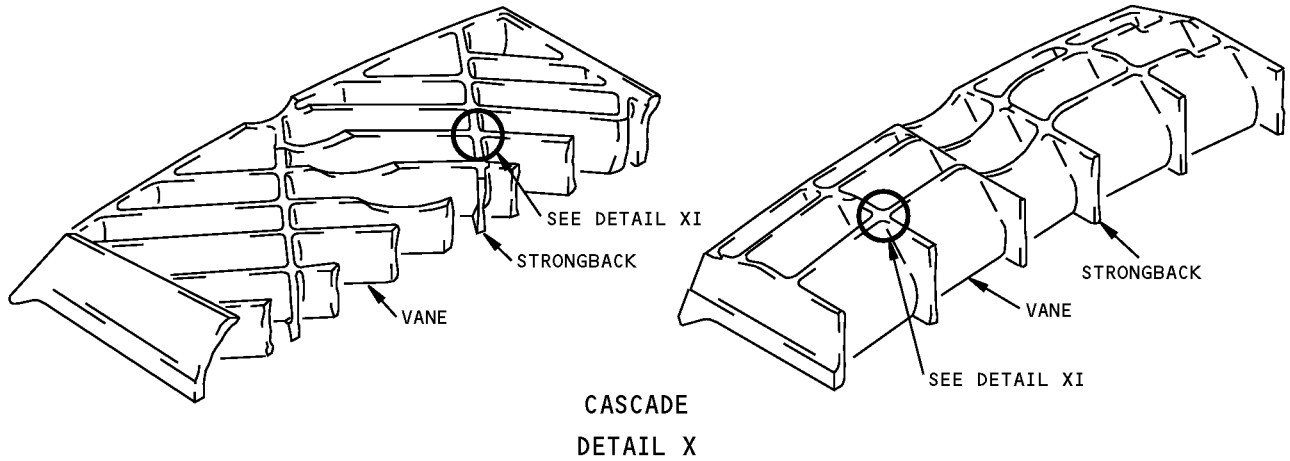


**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE**

DETAIL IX

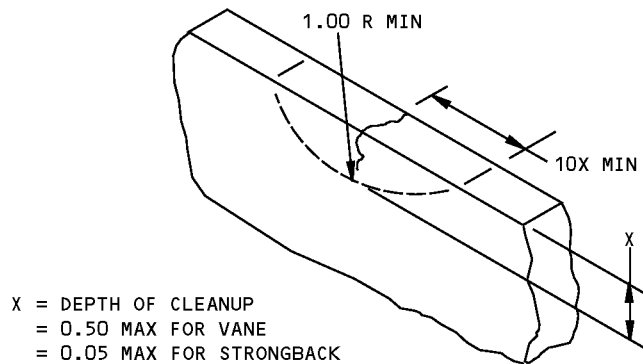
**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION D-D

**CLEANUP OF SURFACE DAMAGE ON VANE OR STRONGBACK
DETAIL XI**

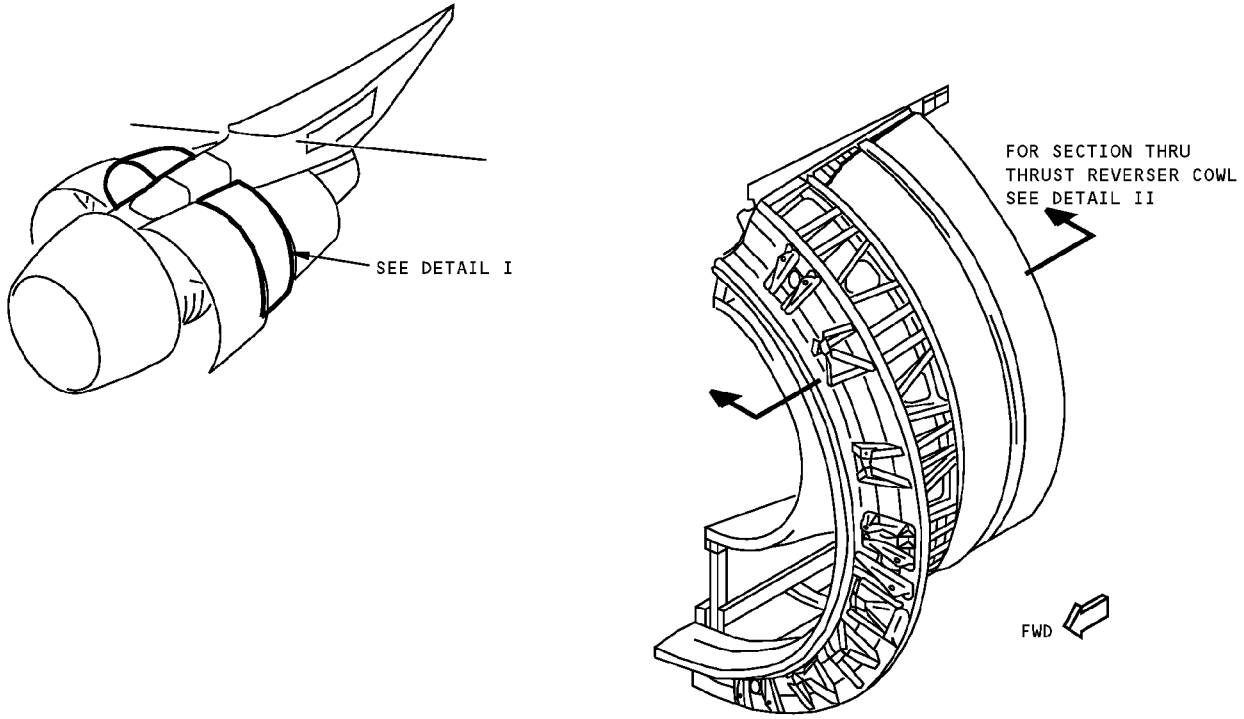


**CLEANUP OF DAMAGE ON AN EDGE
DETAIL XII**

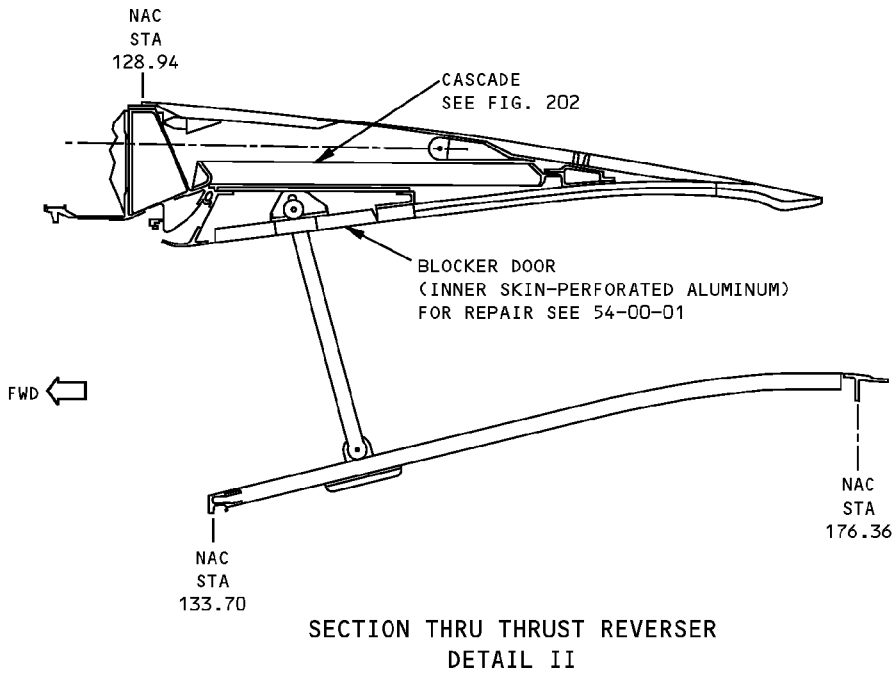
**Allowable Damage - Fan Duct Cowl and Thrust Reverser Structure - PW4000 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - BLOCKER DOOR ACOUSTIC PANEL - PW4000 ENGINE



DETAIL I



**SECTION THRU THRUST REVERSER
DETAIL II**

**Blocker Door Acoustic Panel Repair - PW4000 Engine
Figure 201**

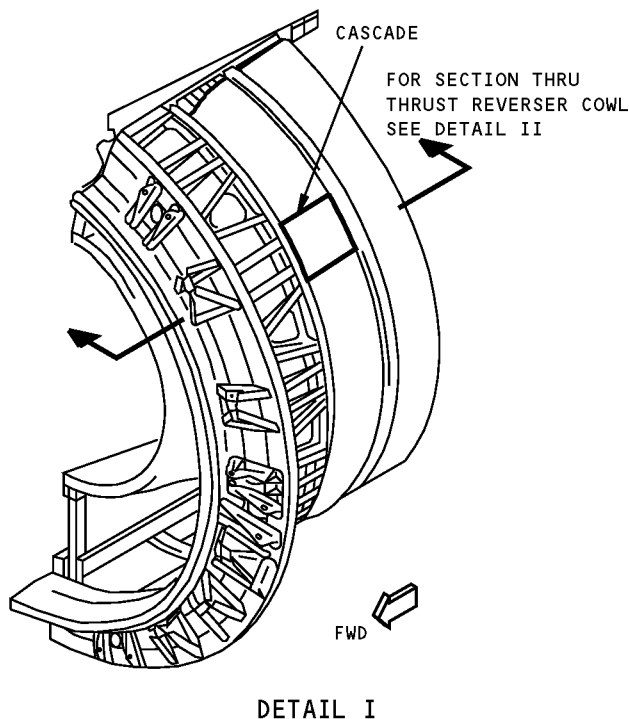
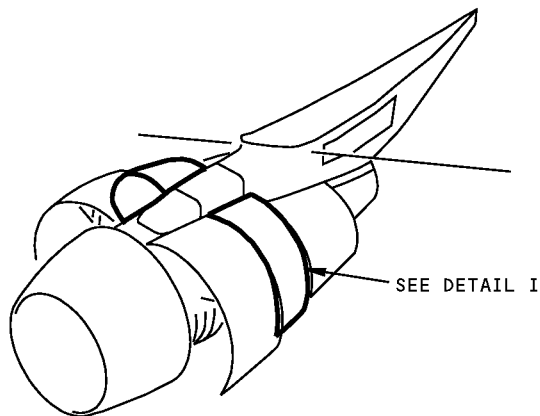
REPAIR 2 - THRUST REVERSER CASCADE ASSEMBLY NUTPLATE - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Remove cascade where nutplate is broken or missing
2. Drill 0.50 access hole thru bullnose fairing, in line with related bolt hole thru inner aft chord ring, using a drill bushing as a guide. See detail II
3. Break sharp edge on access hole 0.01-0.02R
4. Brush Dow 19 chromic acid over all reworked areas and apply two coats of BMS 10-11, type I primer. Refer to 51-10-00.
5. Remove broken nutplate and plug existing rivet holes with BACR15BA3AD rivet installed wet with BMS 5-63 sealant
6. Reinstall cascade. Align holes with chord ring and install cascade attachment fasteners with MIL-C-11796 Class 3 corrosion prevention compound on bolt shanks and under bolt heads. Do not apply to bolt threads.
7. Where nutplate is missing or damaged, install BACN10HY4AM nut and AN960PD416L aluminum washer.

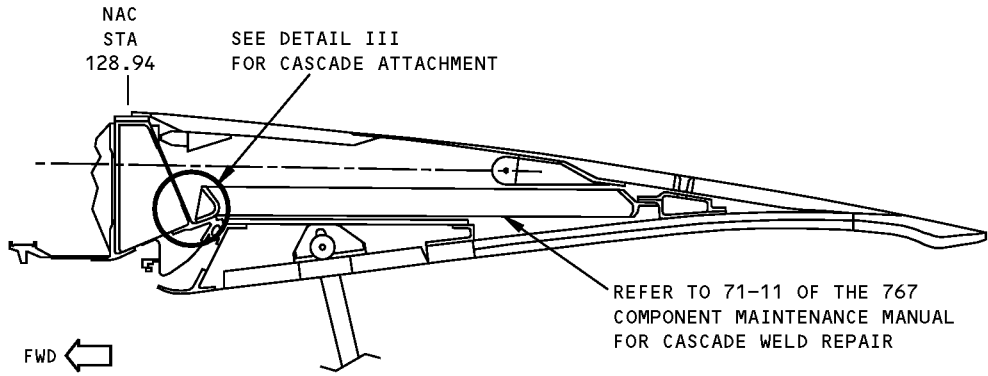
NOTES

- THIS REPAIR APPLIES WHERE NUTPLATES ARE BROKEN OR MISSING

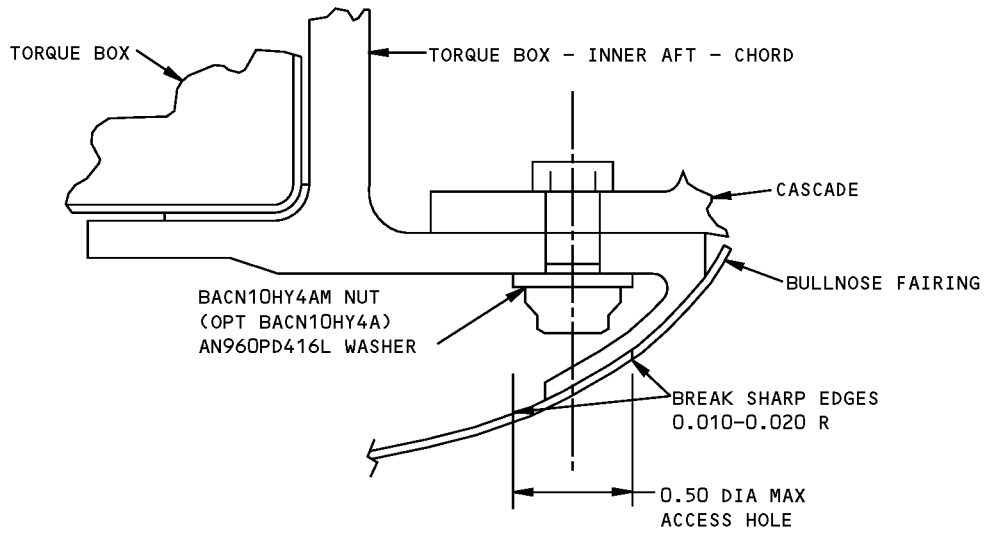


**Thrust Reverser Cascade Assembly Nutplate Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THRUST REVERSER COWL
DETAIL II**



**CASCADE ATTACHMENT
DETAIL III**

**Thrust Reverser Cascade Assembly Nutplate Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - THRUST REVERSER TRANSLATING SLEEVE INTERCOSTAL - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Cut a slot 1.50 inches maximum width in the intercostal to remove the cracks. The slot must be a maximum of 0.75 inch on the left and right side of the center line. Refer to Detail II.





NOTE: If the cracks can not be fully removed when the slot is cut, replace the intercostal.

3. Remove the burrs, and sharp edges from the intercostal.
4. Do a dye penetrant or eddy current inspection to make sure that all the cracks were removed. Refer to SOPM 20-20-02 or NDT Part 6, 51-00-00, as applicable.
5. Make the repair part 1 doubler and part 2 filler. Refer to Table I for the alternative materials.
6. Temporarily assemble the repair parts and drill the fastener holes.
7. Disassemble the repair parts.
8. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the intercostal.
9. Prepare the repair parts and the cut edges of the intercostal. Refer to SRM 51-20-01.
 - a) For aluminum material apply a chemical conversion coating.
 - b) For CRES material, clean and grit blast.
10. Apply one layer of BMS 10-11, Type I epoxy primer to the repair parts and to the cut edges of the intercostal. Refer to SOPM 20-41-02.

- SOPM 20-41-02 FOR APPLICATION OF CHEMICAL AND SOLVENT RESISTANT FINISHES
- SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- SRM 51-20-00 FOR THE FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS
- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
- SRM 51-20-05 FOR REPAIR SEALING

A ADJUST THE THICKNESS OF THE SILICONE PAD(S) (315T3557-4, -5). REMOVE MATERIAL EQUAL TO THE THICKNESS OF THE PART 1 DOUBLER.

FASTENER SYMBOLS

-  INITIAL FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30FM5AK() HI-LOK WITH A BACC30AB5S COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15BA5AD RIVET OR EQUIVALENT.
-  INITIAL NUTPLATE ATTACH LOCATION. INSTALL A BACR15BA3AD RIVET OR EQUIVALENT

11. Assemble the repair parts. Use BMS 5-26 sealant between the mating surfaces. Refer to SRM 51-20-05.
12. Install the fasteners.
13. Apply one BMS 10-60, Type II finish to the primed surfaces of the repair area. Refer to AMM 51-24-11.

NOTES

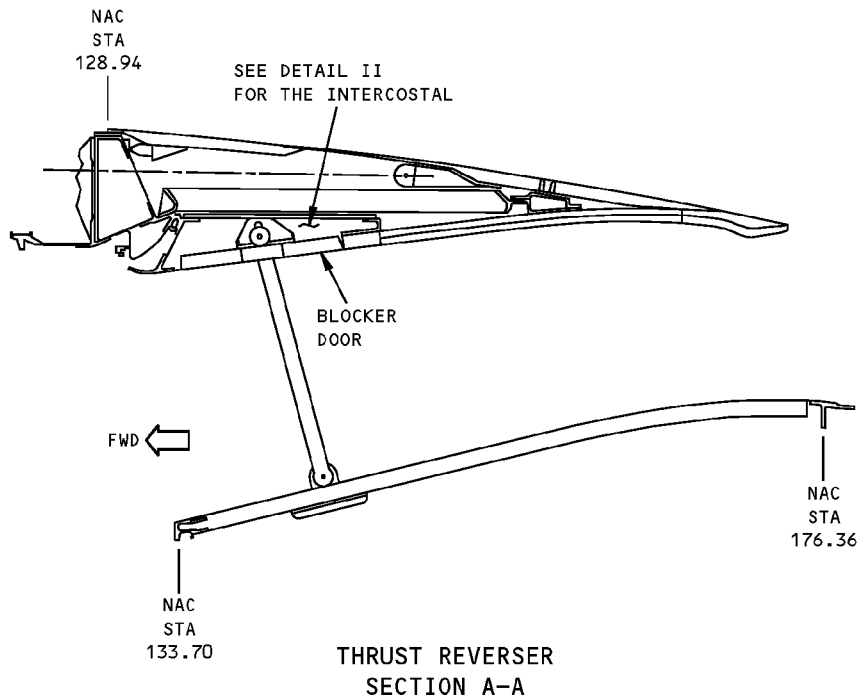
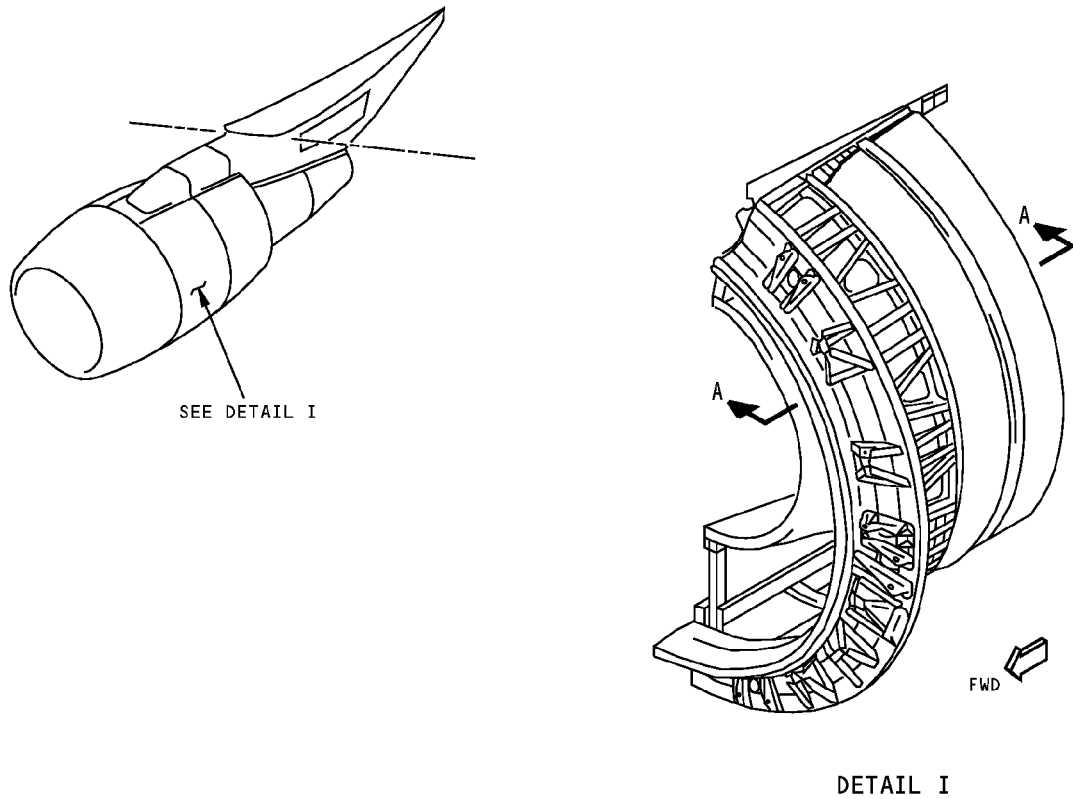
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-24-11 FOR DECORATIVE PAINT SYSTEM - CLEANING/PAINTING
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 2024-T62 OR CRES (MIN 120 KSI)
2	FILLER	1	0.040 INCH, 2024-T62 OR CRES (MIN 120 KSI)

TABLE I

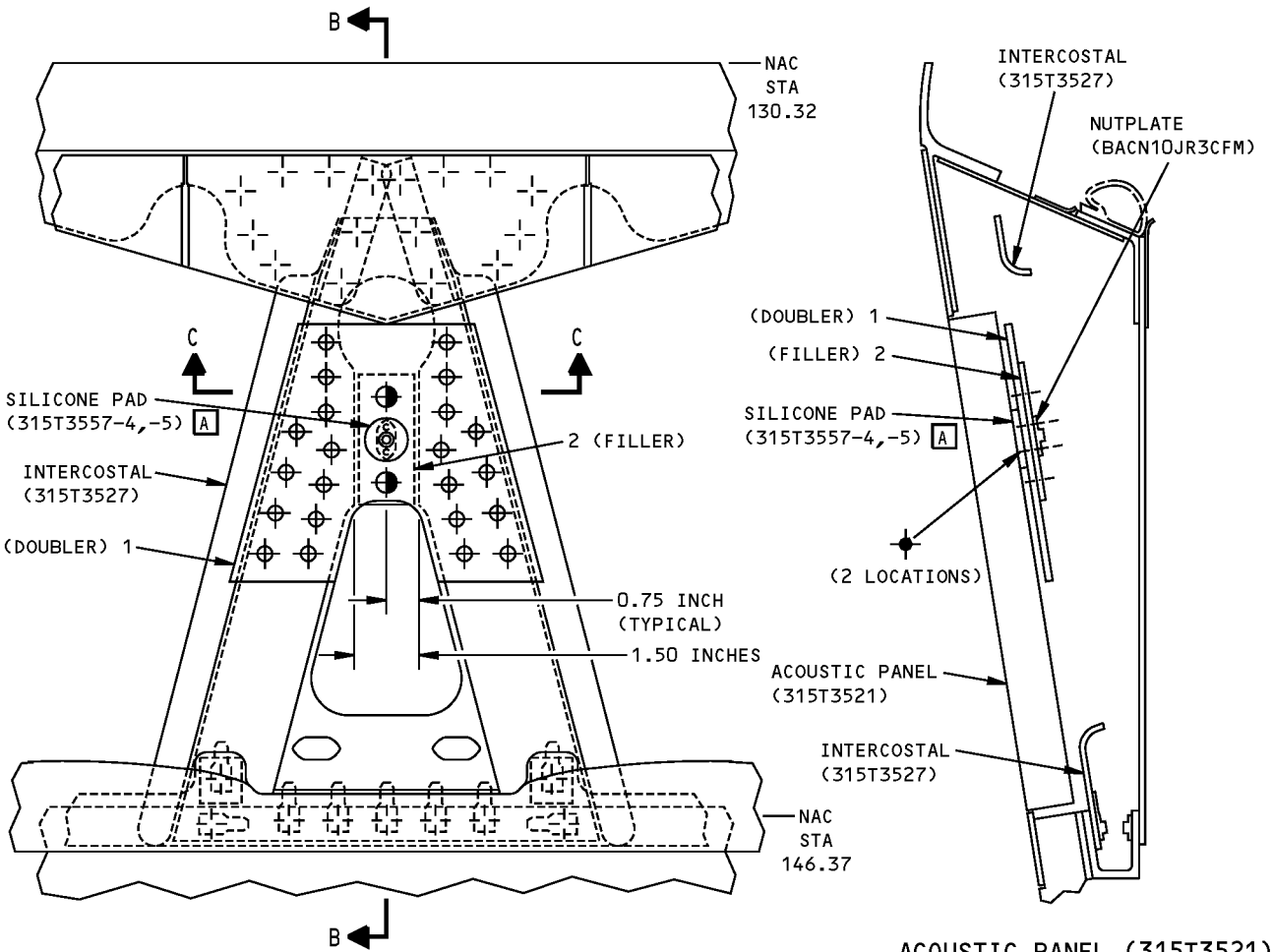
**Intercostal Repair - Thrust Reverser Translating Sleeve - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Intercostal Repair - Thrust Reverser Translating Sleeve - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

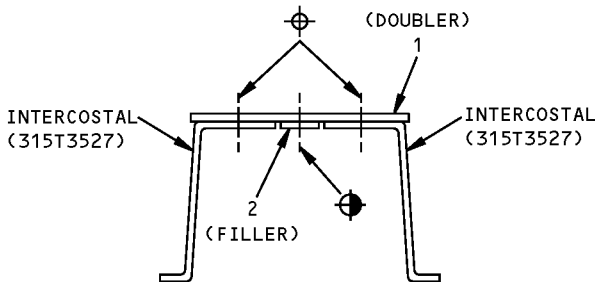
**767-300
STRUCTURAL REPAIR MANUAL**



ACOUSTIC PANEL (315T3521)
IS NOT SHOWN FOR CLARITY

ACOUSTIC PANEL (315T3521)
IS SHOWN HERE
SECTION B-B

DETAIL II



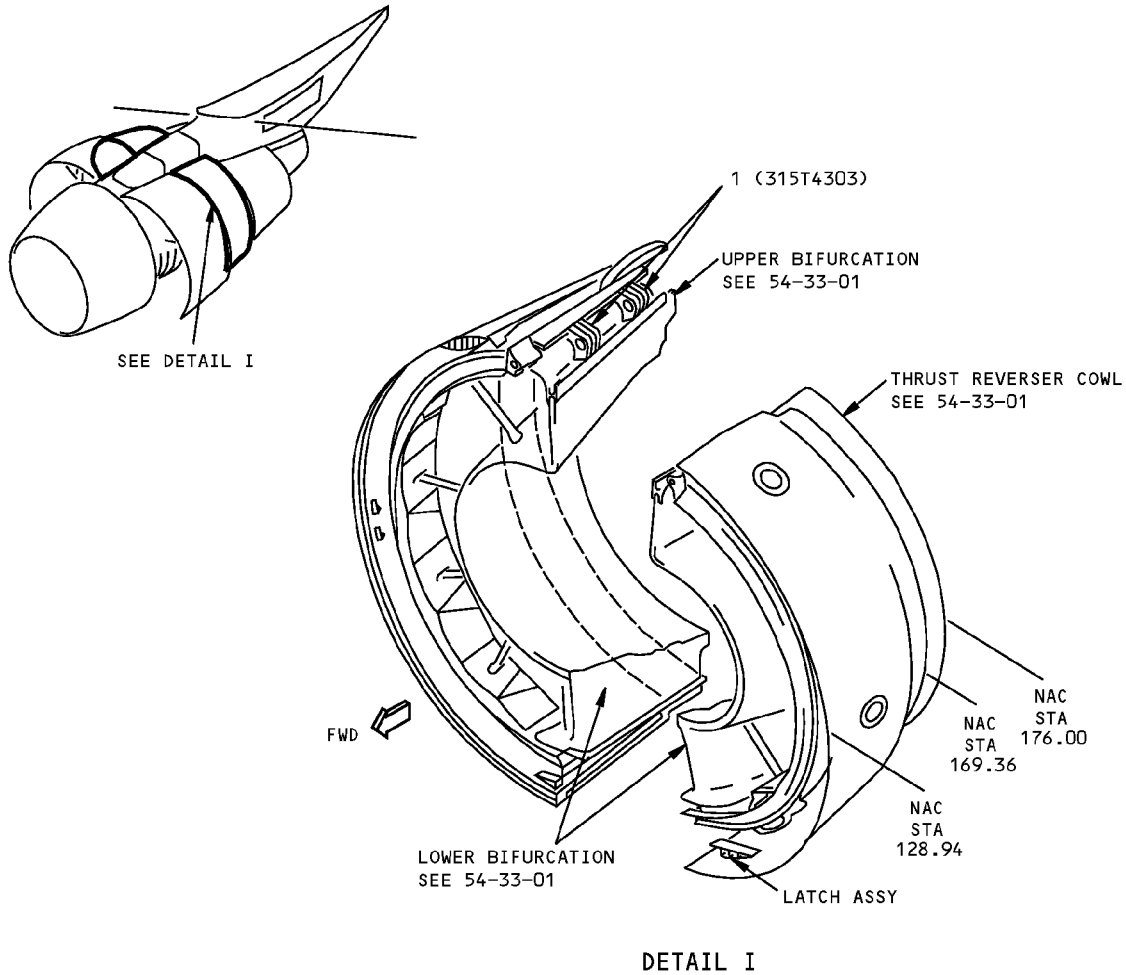
SECTION C-C

**Intercostal Repair - Thrust Reverser Translating Sleeve - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - PW4000 ENGINE

REF DWG
315T4300
315T4400



DETAIL I

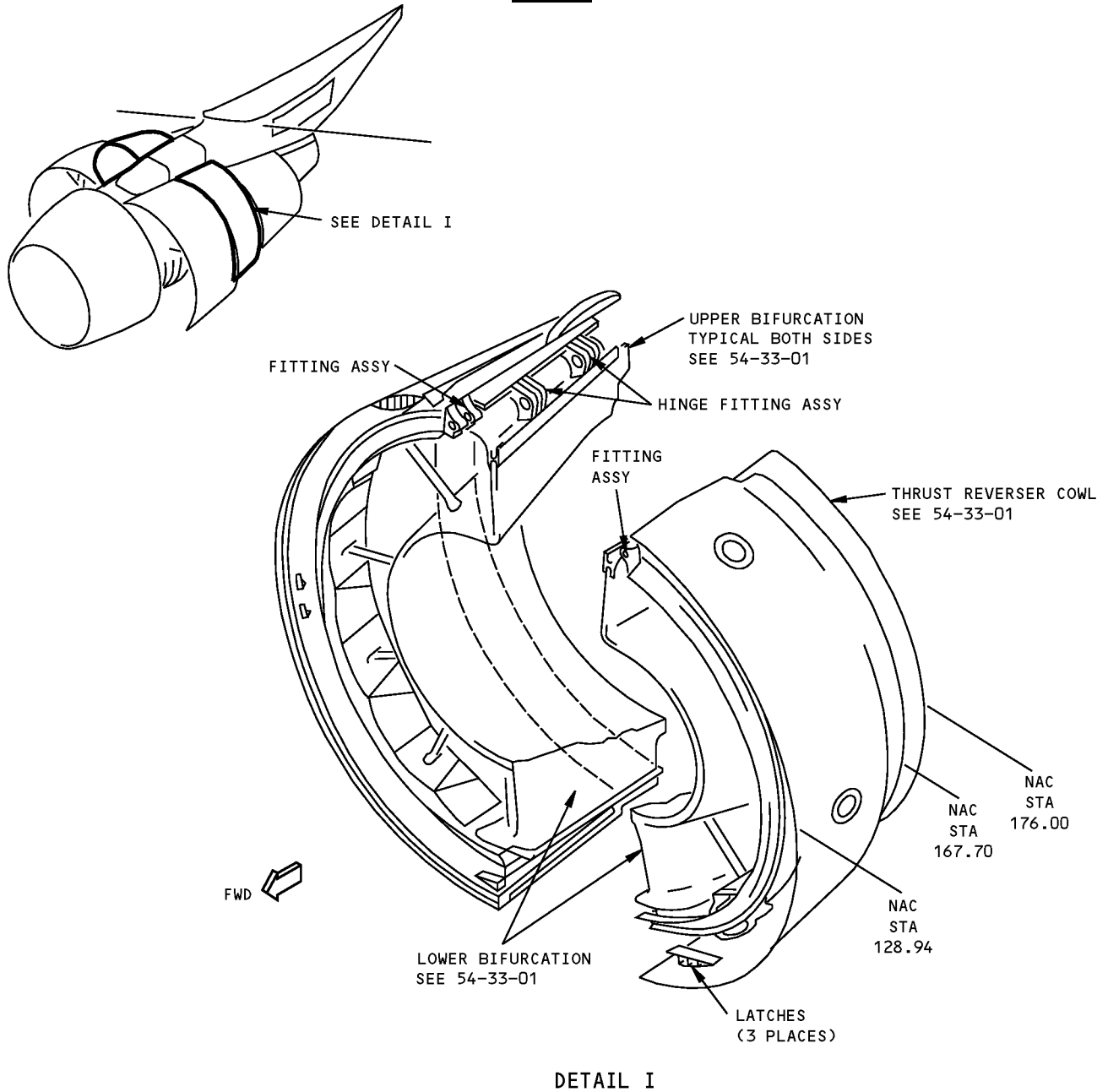
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FITTING ASSY FITTING		CASTING A357-T61 OPTIONAL: CASTING A357-T62	

LIST OF MATERIALS FOR DETAIL I

**Fan Duct Cowl and Thrust Reverser Attachment Fitting Identification - PW4000 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - PW4000
ENGINE**



**Allowable Damage - Fan Duct Cowl and Thrust Reverser Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

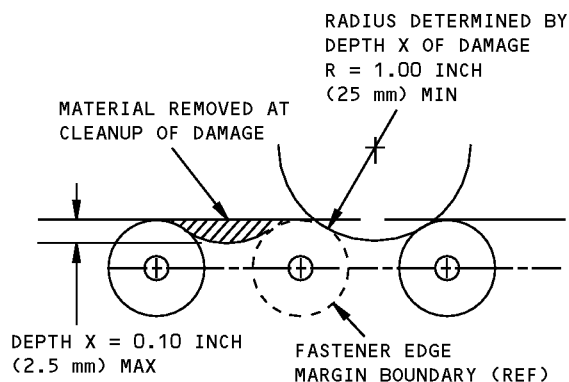
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INSPECTION AND REMOVAL OF DAMAGE REFER TO SRM 51-10-02

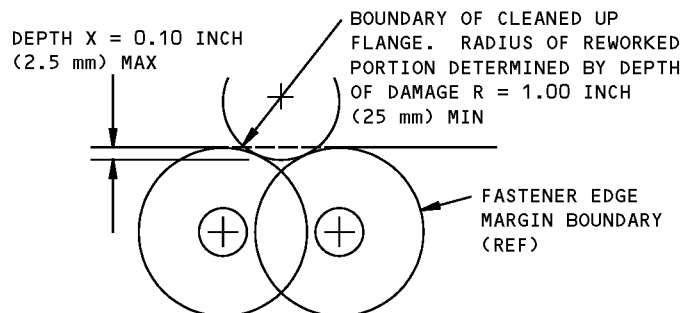
[A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS NOT ALLOWED

[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[C] SHOT PEEN REWORKED AREAS PER SRM 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

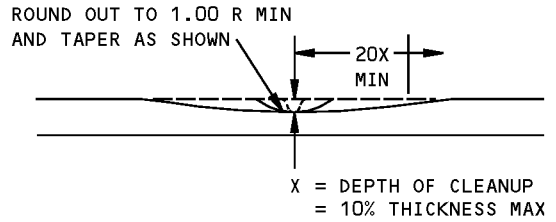
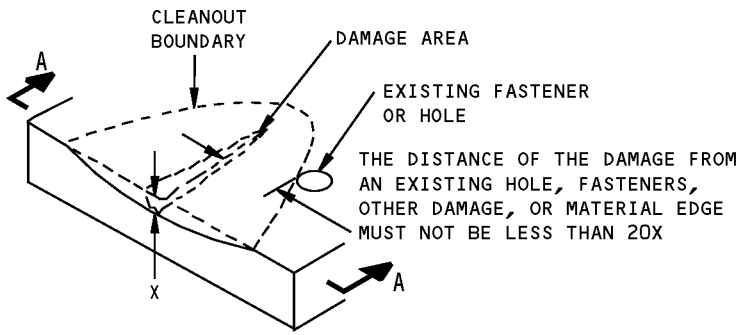


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 2 of 3)**

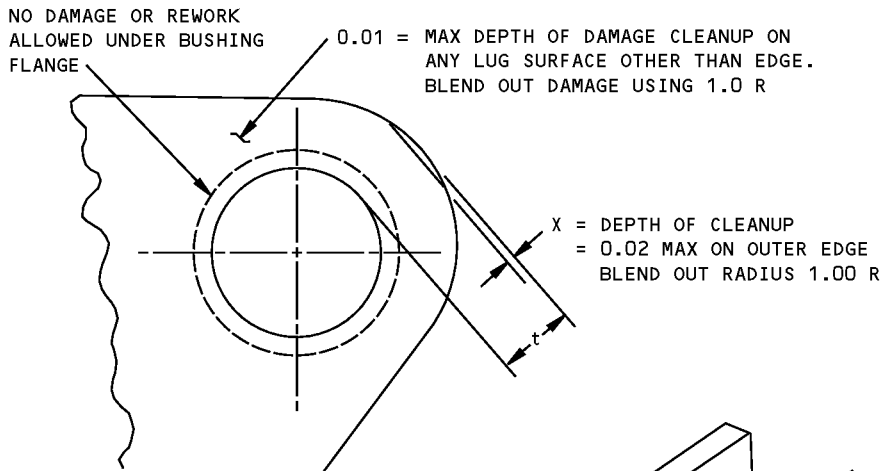
**767-300
STRUCTURAL REPAIR MANUAL**



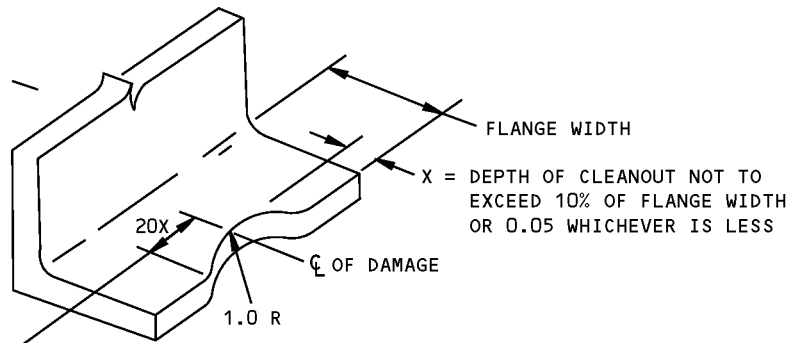
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**

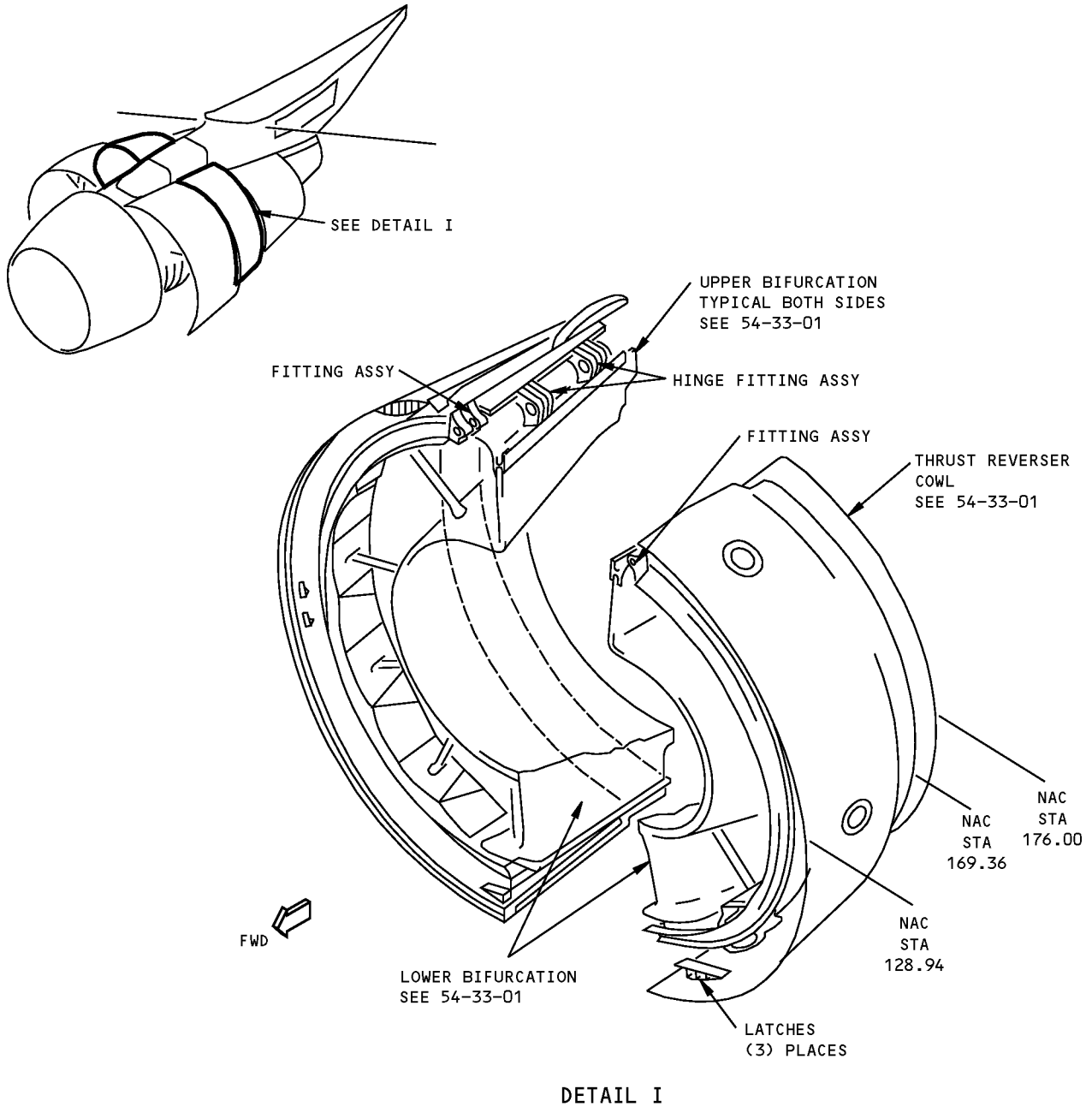


**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Fan Duct Cowl and Thrust Reverser Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

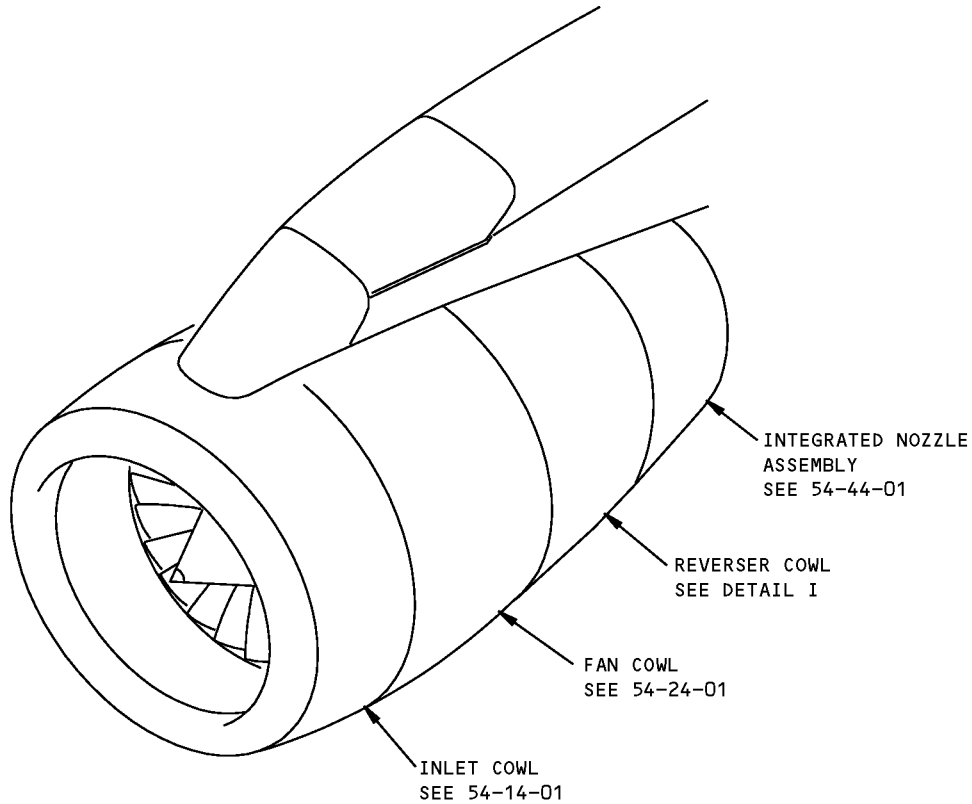
REPAIR 1 - FAN DUCT COWL AND THRUST REVERSER ATTACHMENT FITTINGS - PW4000 ENGINE



NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE.
SPECIFIC REPAIRS TO FITTINGS WILL BE
PROVIDED BASED ON SERVICE EXPERIENCE

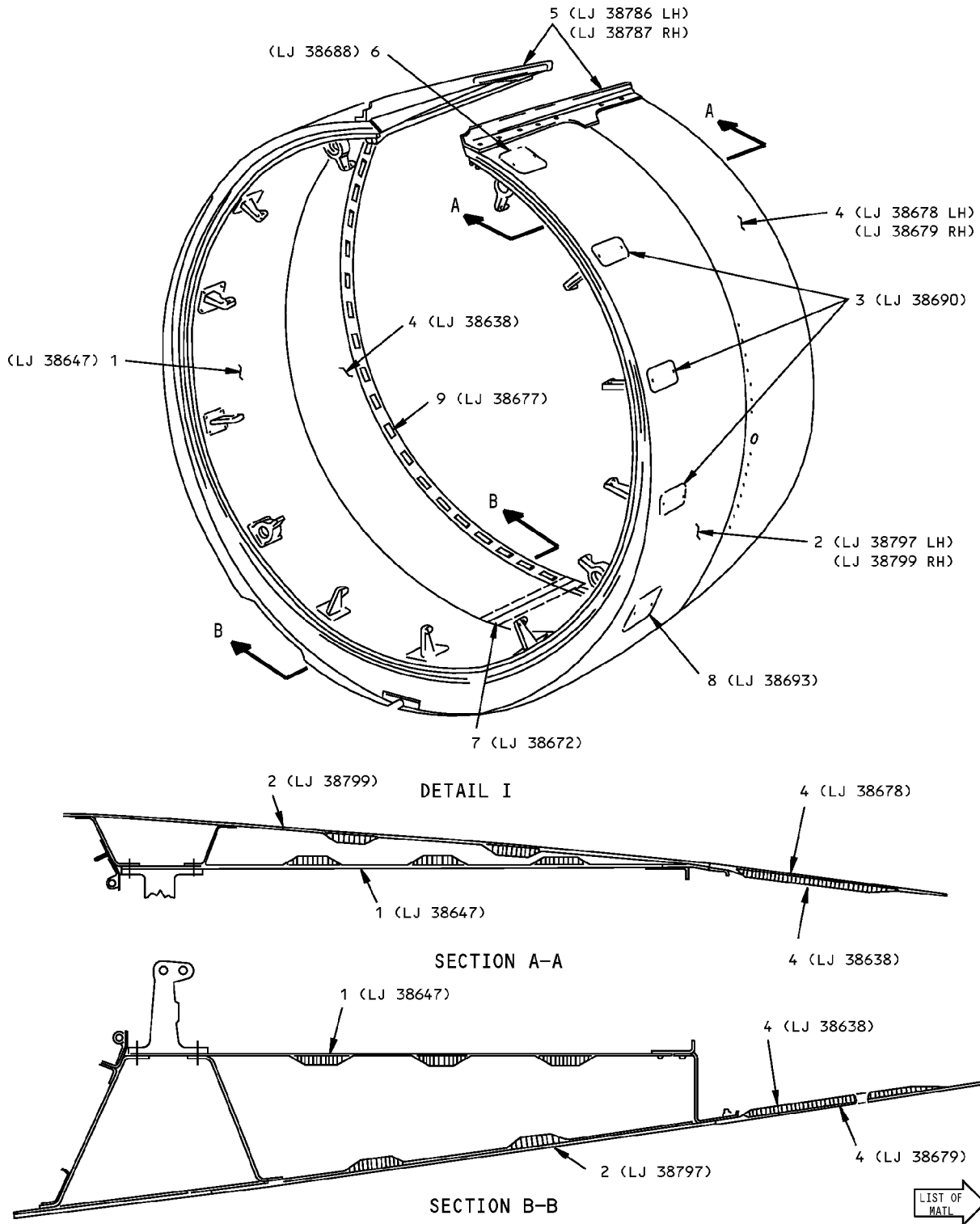
**Fan Duct Cowl and Thrust Reverser Attachment Fitting Repair - PW4000 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL****IDENTIFICATION 1 - THRUST REVERSER COWL SKIN - RB211-524 ENGINE****NOTES**

- A** PLY ORIENTATION CONVENTION:
DEGREES INDICATED IS PARALLEL TO THE FABRIC
WARP DIRECTION.
- B** FIBREDUX CARBON FIBRE PRE-PREG 914C-703-40

**Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 8)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 8)**

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INNER SKIN PANEL SKIN CORE		HONEYCOMB SANDWICH FIBREDUX PREPPREG CARBON FIBRE 914C-XAS-5-34 NOMEX HONEYCOMB - 1/8 INCH CELL, 4 LBS/CU FT	
2	OUTER SKIN PANEL SKIN CORE		HONEYCOMB SANDWICH SEE DETAIL II NOMEX HONEYCOMB - 1/8 INCH CELL, 4 LBS/CU FT	
3	FINGER BRACKET ACCESS PANEL		FIBREDUX 914C-703-40 CARBON FIBRE PRE-PREG	
4	DETACHABLE FAIRING SKIN CORE		HONEYCOMB SANDWICH SEE DETAIL III NOMEX HONEYCOMB - 1/8 INCH CELL, 4 LBS/CU FT	
5	TRANSLATING FAIRING	0.048	MSRR 8004 L 77 ALCLAD	
6	PANEL ACCESS UPPER		FIBREDUX 914C-703-40 CARBON FIBRE PRE-PREG	
7	DETACHABLE FAIRING BUTT STRAP		L 164 HEAT TREAT T62	
8	COUPLING ACCESS PANEL		FIBREDUX 914C-703-40 CARBON FIBRE PRE-PREG	
9	RUBBING BLOCK		PTFE (VAU 9031)	

LIST OF MATERIALS FOR DETAIL I

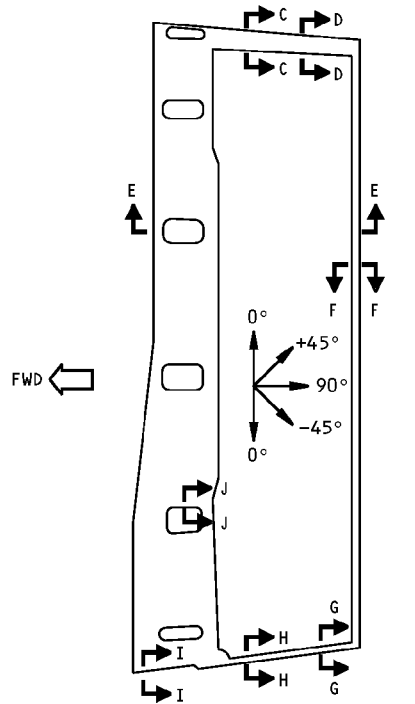
Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 8)

D634T210

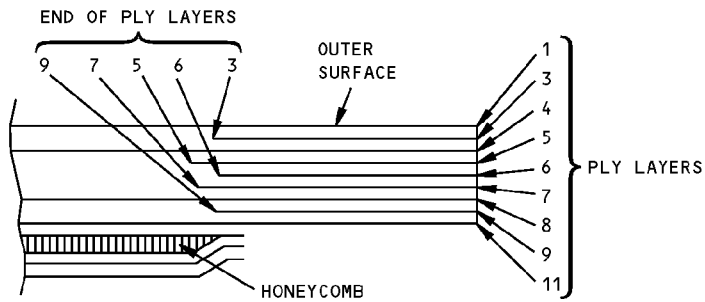
54-34-01

IDENTIFICATION 1
Page 3
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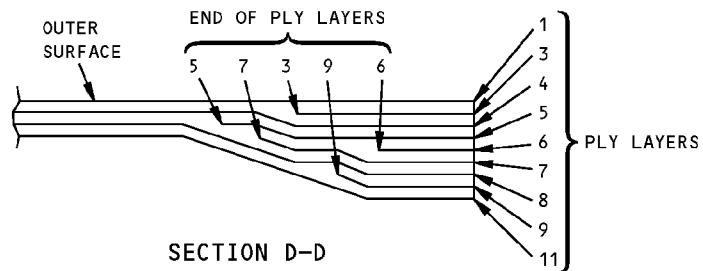
767-300
STRUCTURAL REPAIR MANUAL



RIGHT SIDE OUTER SKIN
VIEWED FROM INSIDE



SECTION C-C



SECTION D-D
DETAIL II (CONT)

A9312

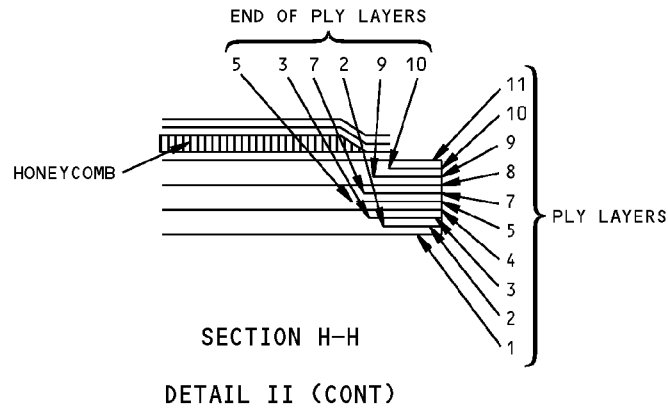
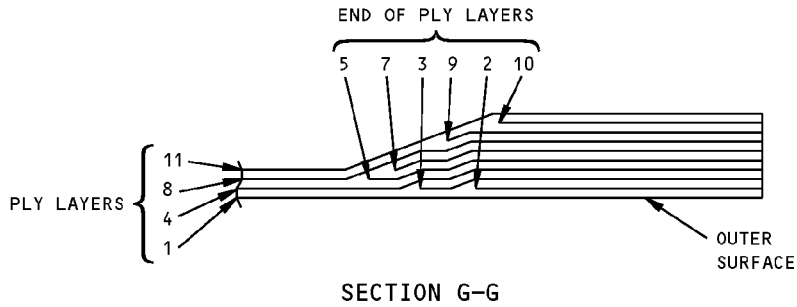
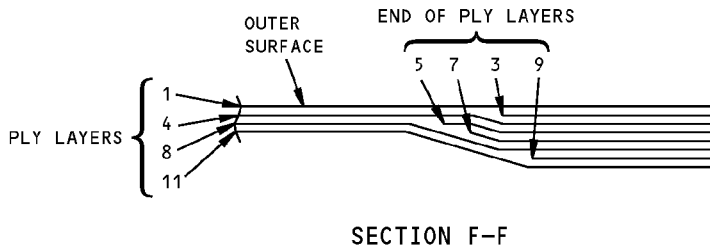
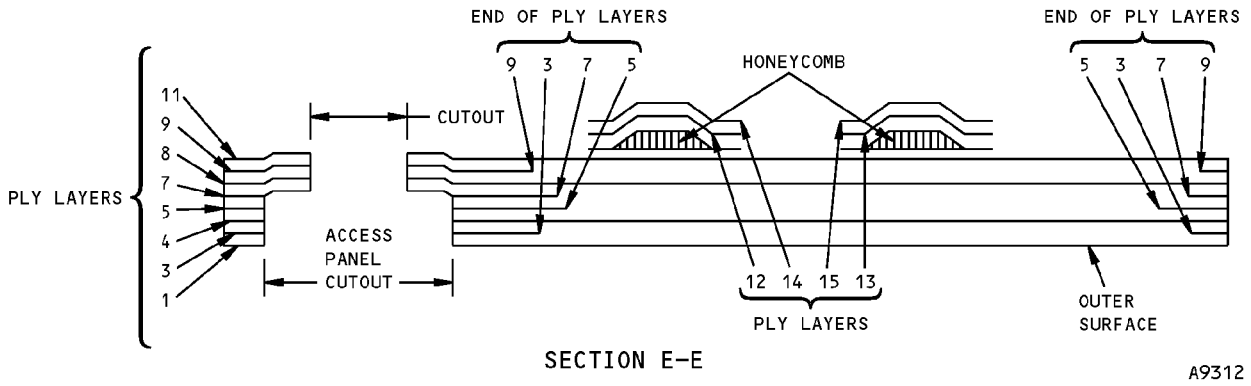
Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 8)

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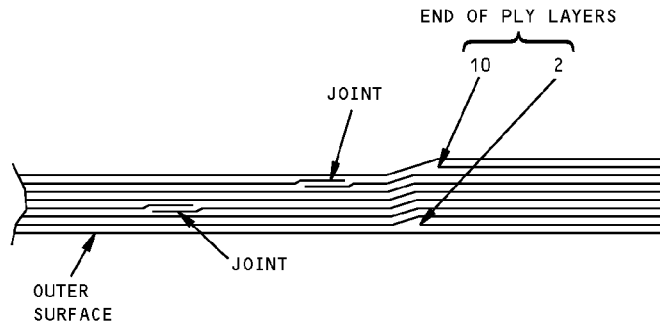
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STRUCTURAL REPAIR MANUAL**

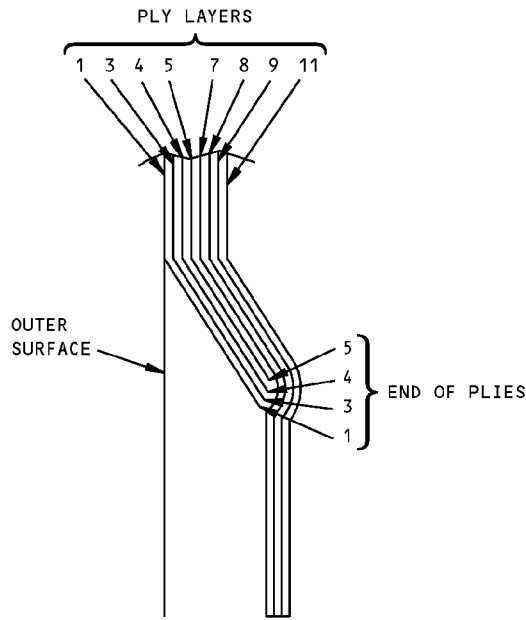


**Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 8)**

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STRUCTURAL REPAIR MANUAL



SECTION I-I



SECTION J-J

PLY NO.	MATERIAL	PLY ORIENTATION ^A
1, 5, 6, 7, 11	^B	-45°
2, 3, 4, 8, 9, 10, 12, 13, 14, 15	^B	0°

DETAIL II

A9313

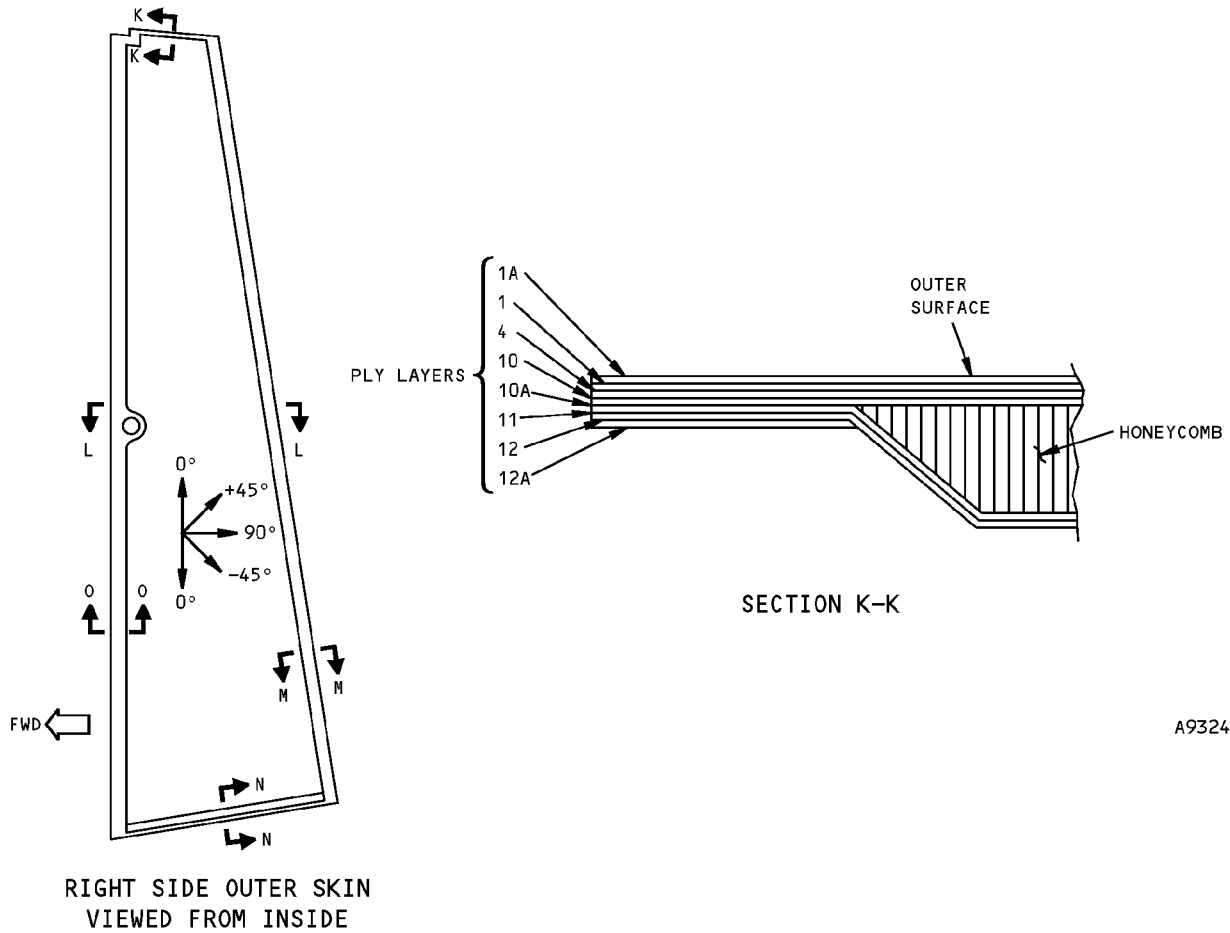
Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 8)

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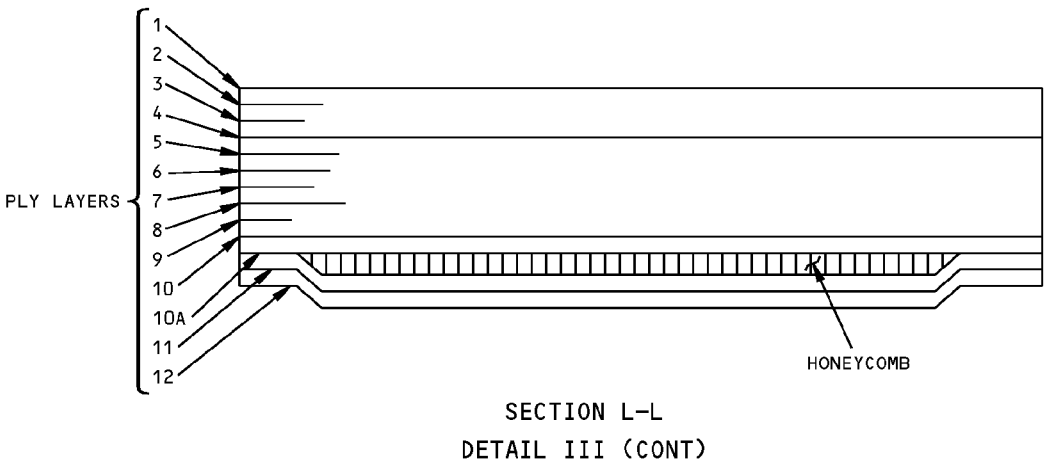
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A9324



A9342

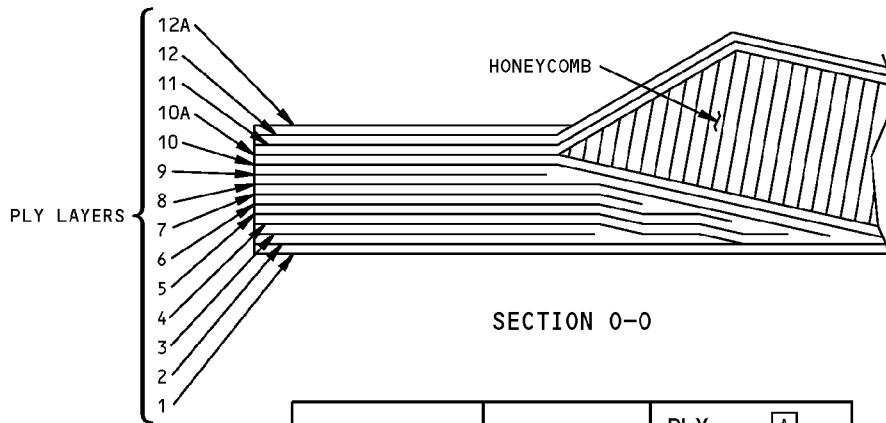
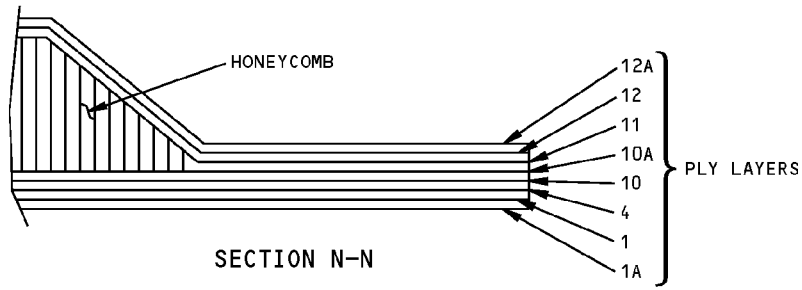
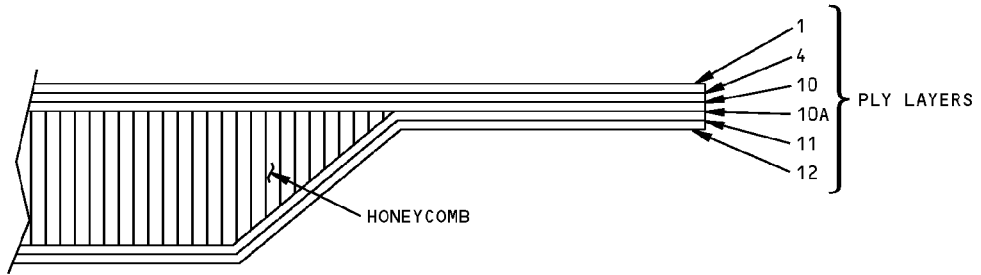
Thrust Reverser Cowl Skin Identification - RB211-524 Engine
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PLY NO.	MATERIAL	PLY ORIENTATION ^A
1, 3, 5, 6, 8, 10 AND 12	^B	0°
2, 4, 7, 9 AND 11	^B	+45°

DETAIL III

A9344

Thrust Reverser Cowl Skin Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 8)

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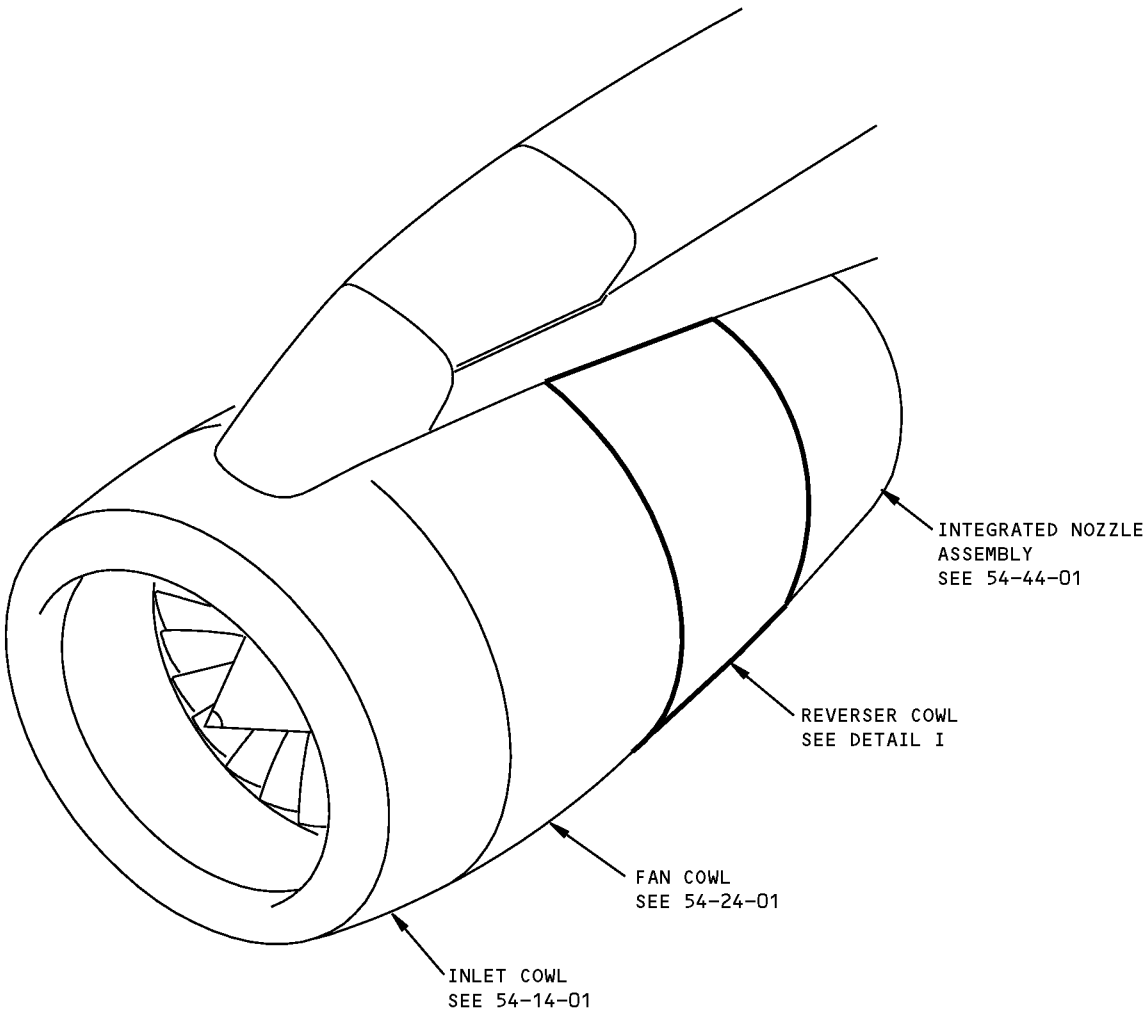
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STRUCTURAL REPAIR MANUAL**ALLOWABLE DAMAGE 1 - THRUST REVERSER COWL - RB211-524 ENGINE****1. Damage Classification**

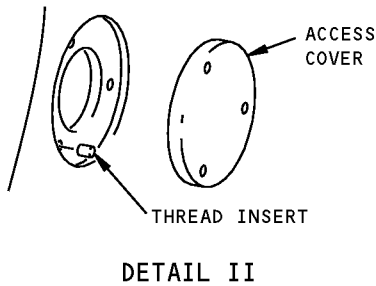
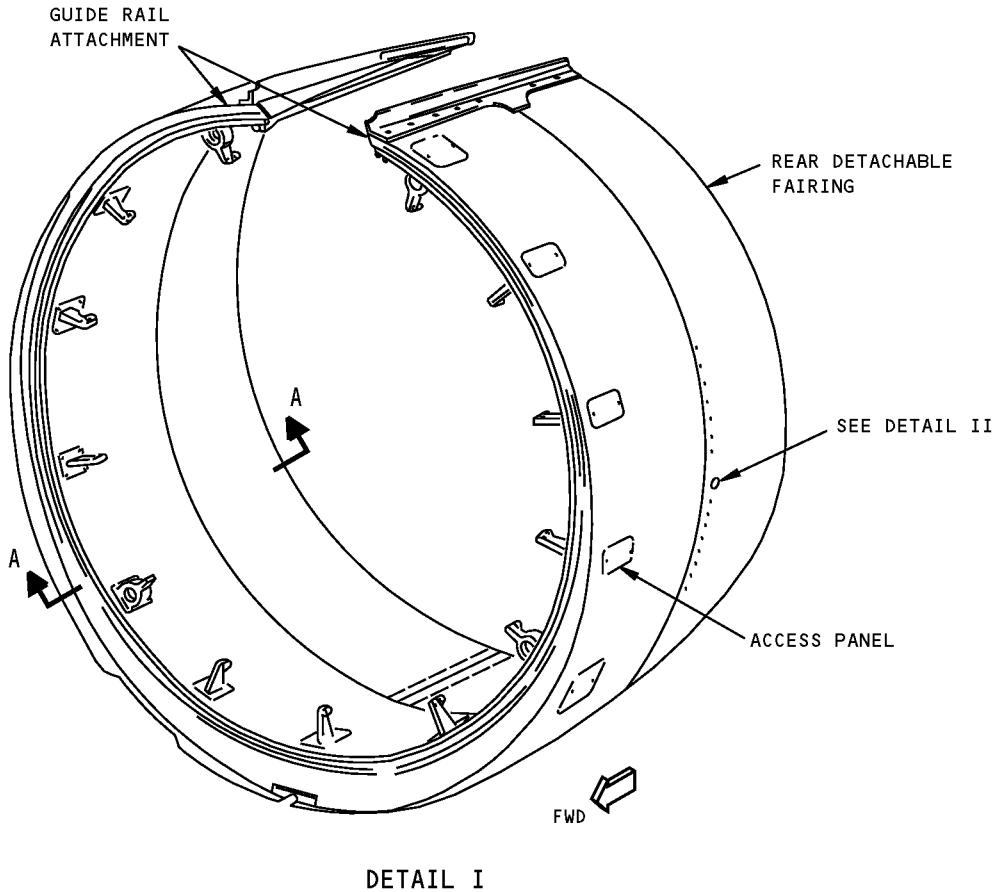
- A. Damage sustained by the reverser cowl can be divided into three categories, which are defined as follows:
- (1) Allowable Damage
 - (a) Minor damage which has no significant effect on the structural integrity or operational capability of the reverser cowl. In some instances, minimal rework such as cleanup and application of surface protection may be necessary before the aircraft is returned to service. The damage may be subject to subsequent inspection, and ultimately, repair. See Figure 101/ALLOWABLE DAMAGE 1.
 - (2) Repairable Damage
 - (a) Serious damage requiring immediate repair before the aircraft is returned to service. If it is necessary to fly the aircraft to a repair facility, it may be permissible to disable (lock out) the thrust reverser system. If needed, perform temporary repairs to make the reverser cowl safe for flight.
 - (b) Repairs for this category of damage would normally necessitate removal of the reverser cowl from the engine.
 - (3) Non-Repairable Damage
 - (a) Major damage, detrimental to the structural integrity of the reverser cowl. This category of damage requires specialized repair/rebuild facilities available only to the manufacturer.

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STRUCTURAL REPAIR MANUAL



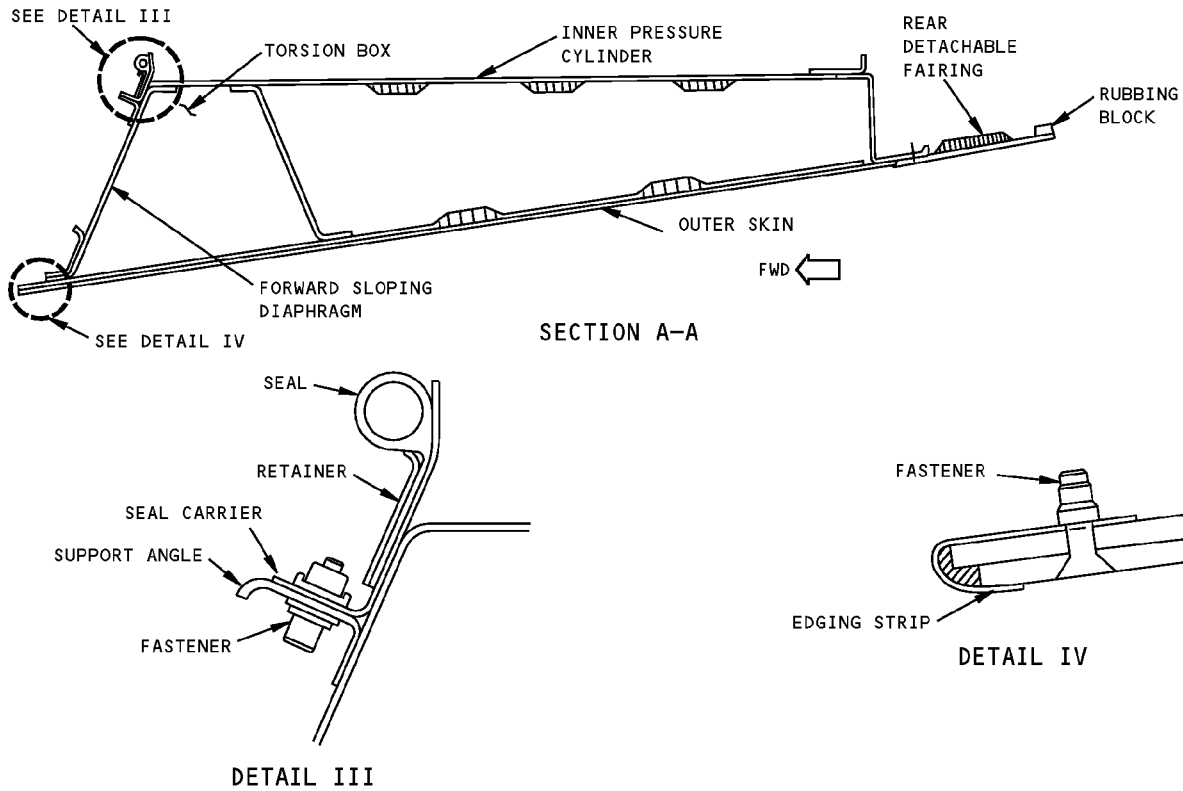
Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 1 of 8)

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STRUCTURAL REPAIR MANUAL



Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 2 of 8)

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STRUCTURAL REPAIR MANUAL

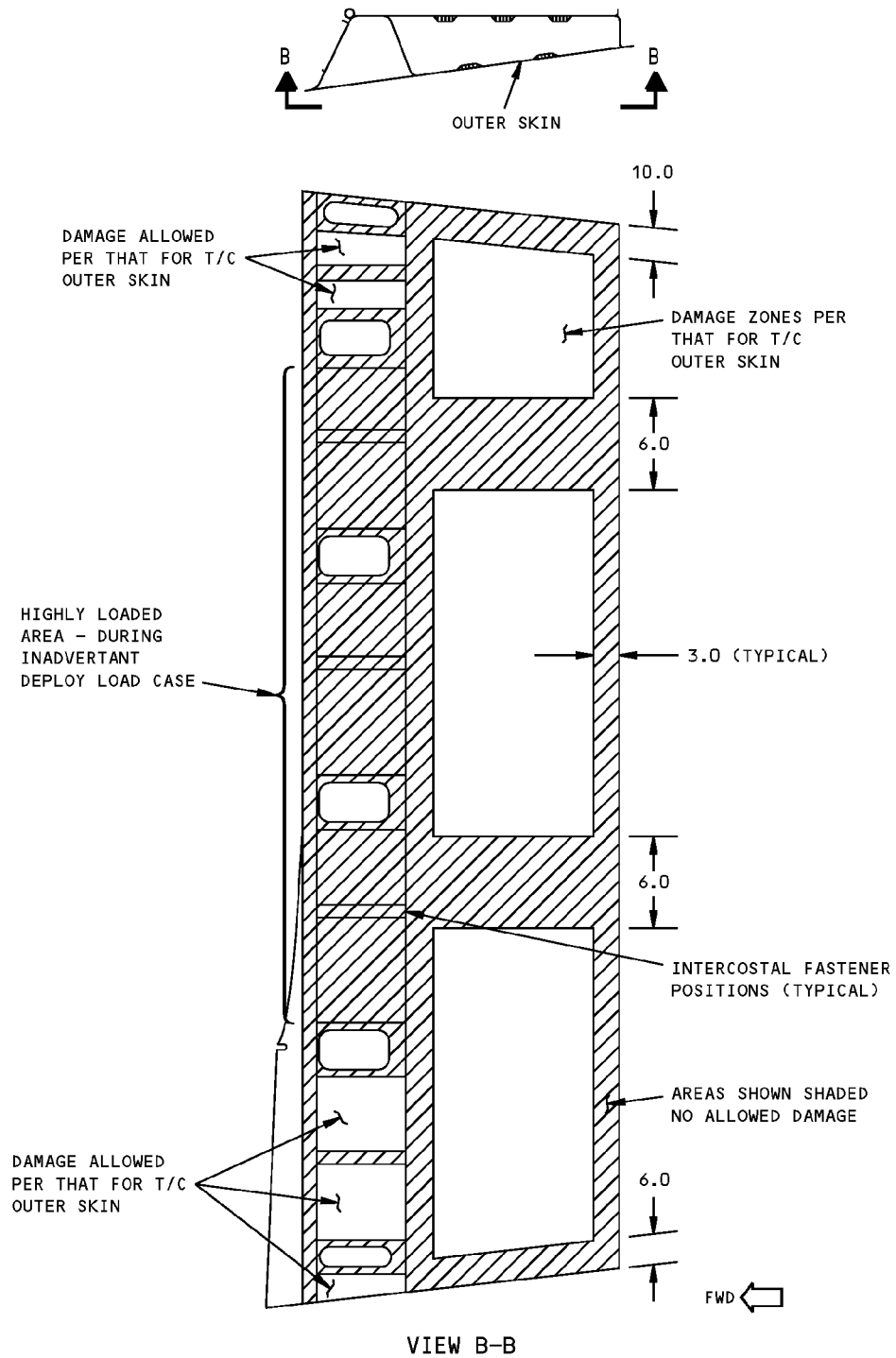


DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES, WEAR, AND EROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION	FASTENER FAILURE
OUTER SKIN (EXCLUDING AREA OF TORSION BOX AND GUIDE RAIL ATTACHMENT) AL	A	H	E	J	K	M
LEADING EDGE STRIP	B	F	F	-----	-----	N
ACCESS PANELS AND COVERS	C	H	G	C	L	P
REAR DETACHABLE FAIRING AM	D	H	E	W	K	Q
SEAL ASSEMBLIES AND SUPPORT ANGLES	R	U	T	-----	-----	Y
TORSION BOX FORWARD SLOPING DIAPHRAGM	NOT ALLOWED	V	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED	NOT ALLOWED
TORSION BOX OUTER SKIN AL	AJ	V	E	J	AK	NOT ALLOWED
RUBBING BLOCK	S	X	-----	-----	-----	Z

TABLE I

Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 3 of 8)

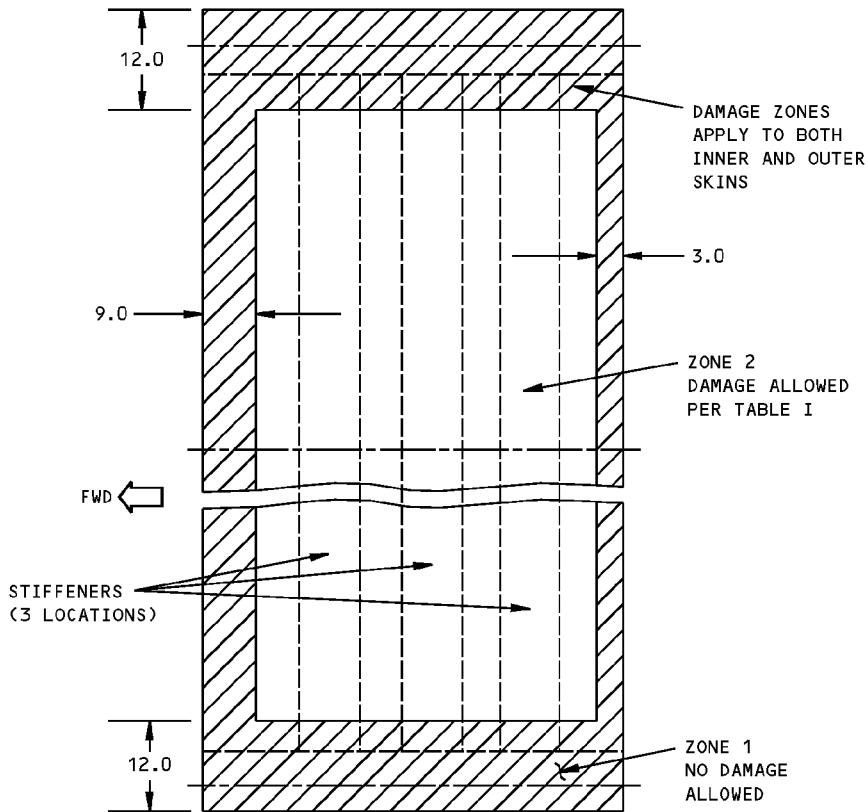
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**Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 4 of 8)**

c2806

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STRUCTURAL REPAIR MANUAL



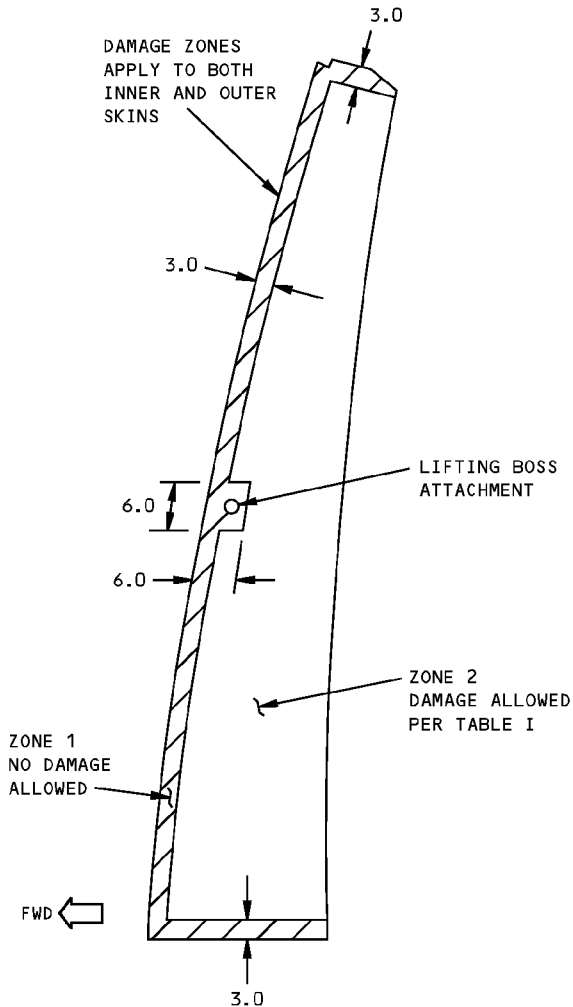
DEVELOPED VIEW ON INSIDE OF INNER PRESSURE CYLINDER

ZONE	DESCRIPTION
1	FLANGES
2	ALL OTHER AREAS

c2812

Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 5 of 8)

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ZONE	DESCRIPTION
1	FLANGES
2	ALL OTHER AREAS

c2811

Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 6 of 8)

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NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:

- REFINISH REWORKED AREAS AS SHOWN IN AMM 51-22
- AMM 78-31-02 FOR REPLACEMENT OF THE FORWARD SEAL ASSEMBLIES AND RUBBING BLOCKS
- SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- SRM 51-12-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
- SRM 51-70-03 FOR REPAIRS TO GRAPHITE/ARAMID EPOXY LAMINATES (WET LAYUP) **[AH]**

- [A]** MAXIMUM CRACK LENGTH 2.0 AND A MINIMUM DISTANCE OF 3.0 FROM THE EDGE BAND, FASTENER, OR OTHER DAMAGE. **[AA]**
- [B]** CUT AWAY THE DAMAGED PORTION TO THE NEAREST FASTENER. PROTECT IT WITH SCOTCH 425 TAPE. **[AF]**
- [C]** PROTECT THE DAMAGE WITH SCOTCH 425 TAPE. **[AF]**
- [D]** MAXIMUM CRACK LENGTH 2.0 AND A MINIMUM DISTANCE OF 3.0 FROM THE EDGE BAND, FASTENER, OR OTHER DAMAGE. CRACKING AROUND 1 IN 3 FASTENERS IS ALLOWED IF NO TWO ADJACENT FASTENERS ARE AFFECTED. **[AA]**
- [E]** MAXIMUM DIAMETER 2.0 IF THERE IS NO FIBER DAMAGE OR DELAMINATION. IF THE FIBERS ARE DAMAGED, TREAT IT AS A CRACK. DO NOT FILL THE DENT. **[AB]**
- [F]** MINOR DAMAGE IS ALLOWED IF THE COMPOSITE STRUCTURE IS UNDA MAGED. **[AC]**
- [G]** IF THERE IS NO FIBER DAMAGE, THEN ONE DENT PER PANEL IS ALLOWED. MAXIMUM DIAMETER 0.50 AND A MINIMUM DISTANCE OF 1.0 FROM FASTENER ON PANEL EDGE. DO NOT FILL THE DENT. IF FIBERS ARE DAMAGED, TREAT THE DAMAGE AS A CRACK.
- [H]** IF THERE IS NO FIBER DAMAGE, PROTECT THE DAMAGE WITH SCOTCH 425 TAPE. IF FIBERS ARE DAMAGED, TREAT THE DAMAGE AS A CRACK. **[AF]**
- [J]** MAXIMUM DIAMETER 1.0 AND A MINIMUM DISTANCE OF 1.0 FROM RIVETS, FASTENERS, PANEL EDGE, OR OTHER DAMAGE. **[AA]**

- [K]** MAXIMUM DIAMETER 4.0 AND EDGE DELAMINATION UP TO 0.10 MAXIMUM. IF FIBERS ARE DAMAGED, TREAT THE DAMAGE AS A CRACK. **[AB]**
- [L]** EDGE DELAMINATION UP TO 0.10 MAXIMUM. IF FIBERS ARE DAMAGED, TREAT THE DAMAGE AS A CRACK. **[AF]**
- [M]** FAILURE OF ONE IN FIVE FASTENERS SECURING THE REAR DETACHABLE FAIRING IS ALLOWED, BUT NOT TWO ADJACENT FASTENERS. **[AF]**
- [N]** CUT AWAY THE DAMAGED PORTION TO THE NEAREST RIVET. PROTECT WITH SCOTCH 425 TAPE. **[AF]**
- [P]** SECURE WITH SCOTCH 425 TAPE. **[AF]**
- [Q]** FAILURE OF ONE IN FIVE FASTENERS IS ALLOWED, BUT NOT TWO ADJACENT FASTENERS. FAILURE OF ONE IN THREE THREAD INSERTS AT LIFTING BOSS IS ALLOWED. SECURE WITH SCOTCH 425 TAPE. **[AF]**
- [R]** CRACKING AROUND ONE IN FIVE FASTENERS IS ALLOWED. CRACKING AT TWO ADJACENT FASTENERS IS NOT ALLOWED. **[AD]**
- [S]** IF CRACKED, REMOVE RUBBING BLOCK. SEE FASTENER FAILURE FOR LIMITATIONS. **[AI]**
- [T]** MAXIMUM DIAMETER 0.50 AND MAXIMUM DEPTH 0.02 INCHES. MAKE SURE THERE ARE NO CRACKS OR DAMAGED FASTENERS. **[AE]**
- [U]** MAXIMUM DEPTH 25 PERCENT OF SEAL CARRIER THICKNESS. IF GREATER THAN 25 PERCENT, TREAT DAMAGE AS A CRACK. **[AE]**
- [V]** MINOR DAMAGE ALLOWED. IF THERE IS NO FIBER DAMAGE, PROTECT WITH SCOTCH 425 TAPE. FIBER DAMAGE IS NOT ALLOWED. **[AF]**
- [W]** MAXIMUM DIAMETER 1.0 AND A MINIMUM DISTANCE OF 4 DIAMETERS FROM RIVETS, FASTENER, PANEL EDGE, OR OTHER DAMAGE. **[AA]**
- [X]** DEPTH OF MINOR DAMAGE TO 10 PERCENT OF RUBBING BLOCK THICKNESS IS ALLOWED. SEE FASTENER FAILURE FOR LIMITATIONS. **[AI]**
- [Y]** FAILURE OF ONE IN FIVE FASTENERS IS ALLOWED, BUT NOT TWO ADJACENT FASTENERS OR END FASTENERS. **[AG]**
- [Z]** LOSS OF ALTERNATE BLOCKS OR ALTERNATE PAIRS OF BLOCKS IS ALLOWED. LOSS OF TWO END BLOCKS AT THE TOP POSITION IS NOT ALLOWED. **[AI]**

Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 7 of 8)

ALLOWABLE DAMAGE 1

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NOTES (CONT)

- AA** CRACKS IN COMPOSITE MATERIALS OTHER THAN AROUND FASTENERS ARE OFTEN ACCOMPANIED BY SERIOUS DAMAGE. CHECK AROUND THE AREA OF THE CRACK FOR DELAMINATION HOLES OR DENTS. CLEAN UP ONLY THE MATERIAL PROTRUDING ABOVE THE SURFACE CONTOUR AND PROTECT WITH SCOTCH 425 TAPE. EXAMINE AT EACH 'A' CHECK AND REPLACE THE TAPE IF IT IS PEELING OR DETERIORATED. REPAIR THE DAMAGE NO LATER THAN THE NEXT 'C' CHECK.
- AB** REPAIR THE DAMAGE NO LATER THAN THE NEXT 'C' CHECK.
- AC** IF COMPOSITE STRUCTURE IS DAMAGED, REMOVE THE LEADING EDGE STRIP, REPAIR THE DAMAGE, AND FIT THE NEW STRIP. IF THE STRUCTURE IS UNDAMAGED, INSPECT THE LEADING EDGE STRIP FOR CRACKING OR DETACHMENT AT EACH 'A' CHECK.
- AD** EXAMINE THE DAMAGE AT EACH WEEKLY CHECK AND REPLACE THE DAMAGED PART NO LATER THAN THE NEXT 'A' CHECK.
- AE** EXAMINE THE PART FOR CRACKING OR DAMAGED FASTENERS AT EACH 'A' CHECK.
- AF** EXAMINE THE PART AT EACH 'A' CHECK AND REPLACE TAPE IF IT IS PEELING OR DETERIORATED. REPLACE THE PART OR REPAIR IT NO LATER THAN THE NEXT 'C' CHECK.
- AG** EXAMINE THE PART AT EACH WEEKLY CHECK AND REPAIR IT NO LATER THAN THE NEXT 'A' CHECK.
- AH** TYPICAL DAMAGE TO PANEL EDGES WOULD BE LIKELY TO CONSIST OF EROSION, DELAMINATION AND CRACKING. DELAMINATION UP TO 0.10 INCH FROM PANEL EDGE IS PERMISSABLE. DAMAGE AT FASTENER HOLES MAY CONSIST OF OVALIZATION, RADIAL CRACKING OR FASTENER PULL-THROUGH. IMPACT DAMAGE TO EXTERNAL SKIN PANELS WOULD BE LIKELY TO CAUSE DELAMINATION OF THE COMPOSITE MATERIAL, CRACKING, DENTING, OR HOLES.
- AI** EXAMINE THE PART EACH "A" CHECK. REPLACE THE PART NO LATER THAN THE NEXT "C" CHECK.
- AJ** MAXIMUM CRACK LENGTH 2.0 INCHES AND A MINIMUM DISTANCE OF 2.0 INCHES FROM FASTENERS OR OTHER DAMAGE **AA**.
- AK** MAXIMUM DIAMETER 2.0 INCHES. IF FIBRES ARE DAMAGED TREAT AS A CRACK **AA**.
- AL** SEE SHEET 3 FOR ALLOWABLE DAMAGE ZONES.
- AM** SEE SHEET 5 FOR ALLOWABLE DAMAGE ZONES.

Allowable Damage - Reverser Cowl - RB211-524 Engine
Figure 101 (Sheet 8 of 8)

ALLOWABLE DAMAGE 1

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**REPAIR 1 - REPAIR OF CARBON FIBRE/EPOXY LAMINATE AND NONMETALLIC HONEYCOMB STRUCTURES
THRUST REVERSER TRANSLATING COWL RB211-524 G & H ROOM TEMPERATURE 158°F (70°C) CURE WET
LAYUP TECHNIQUES**

1. Scope

- A. Repairs called up in this specification using wet layup techniques will not return the structure to its design strength or durability. The size and limits of the repairs are defined in Figure 203/REPAIR 2. The wet layup repairs described are all room temperature but the application of heat up to 158°F (70°C) will accelerate the cure of the materials as well as maximising the properties.

WARNING: MATERIALS CALLED UP IN THIS SPECIFICATION SHOULD BE HANDLED AS PRESCRIBED BY THE SUPPLIERS HEALTH AND SAFETY DATA SHEETS.

WARNING: WHEN CUTTING OR GRINDING CARBON FIBRE LAMINATES, PRECAUTIONS SHOULD BE TAKEN TO MINIMISE INHALATION OF THE DUST GENERATED, AND TO MINIMISE THE POSSIBILITY OF THE DUST DEPOSITING IN ELECTRICAL SWITCHGEAR, ETC. THE USE OF A LOCALISED EXTRACTION SYSTEM IS RECOMMENDED.

CAUTION: ALWAYS REFER TO THE SPECIFIC STRUCTURAL COMPONENT REPAIR TO ENSURE THE CORRECT MATERIALS ARE BEING UTILISED AND THAT THE PRESCRIBED LIMITS FOR THE REPAIR ARE NOT BEING EXCEEDED.

CAUTION: ONLY SPECIFIED FASTENERS SHOULD BE USED ON CARBON COMPOSITE COMPONENTS.

CAUTION: WHERE ALUMINUM FITMENTS COME INTO CONTACT WITH CARBON COMPOSITE MATERIAL, ENSURE THE ALUMINUM HAS RETAINED ITS ORIGINAL CORROSION PROTECTION TREATMENT. IF IN DOUBT, RE-TREAT WITH A CHROMATE CONVERSION TREATMENT AS A MINIMUM REQUIREMENT.

CARRY OUT THE REPAIRS IN A CLEAN ENVIRONMENT FREE FROM OIL MIST, RAIN, SOOT, EXHAUST GASES, DUST, ETC.

MAINTAIN CLEANED/ABRADED SURFACES FREE FROM CONTAMINATION. DO NOT HANDLE WITH BARE HANDS, USE CLEAN GLOVES.

ALWAYS ENSURE THAT ANY "LIFED" MATERIAL BEING USED IS IN LIFE AND HAS BEEN STORED CORRECTLY AS REQUIRED BY THE RELEVANT SPECIFICATION AND OR SUPPLIERS LITERATURE.

ENSURE A GOOD SUPPORT/HOLDING FIXTURE IS USED FOR LARGE REPAIRS TO ENSURE NO DISTORTION OCCURS.

- B. Refer to Table 201/REPAIR 1 for the Table of Contents

Table 201: Contents

Paragraph	Subject
2.	General
3.	Repair Procedures
3.A.	Determine Damage

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(Continued)

Paragraph	Subject
3.B.	Remove Water and Dry Out Damaged Area
3.C.	Repair Honeycomb Sandwich Panels
3.D.	Remove Damaged Area
3.E.	Prepare Surface
3.E.1.	Laminates
3.F.	Repair Honeycomb Sandwich Panel
3.F.1.	Replace Core Plug
3.F.2.	Replace Filter
3.F.3.	Prepare Repair Ply - Wet Layup
3.G.	Impregnation, Layup & Repair - Wet Techniques
3.G.1.	Impregnation
3.G.2.	Layup of Repair Plies
3.G.3.	Bagging Procedure
3.G.4.	Curing
3.G.5.	Inspection and Blending

2. General

- A. The resins, adhesives and fabrics used are listed in Table 202/REPAIR 1 thru Table 206/REPAIR 1 of this section . Alternative materials and techniques may be used provided these are agreed on between the relevant Quality and Design/Materials authorities.
- B. The permissible damage repair limits for each component of the assembly are given in Figure 203/REPAIR 2.
- C. It is particularly important to assess the extent of any damaged area thoroughly, visible damage, particularly "impact damage", can result in internal delaminations around and extending away from the visible damage zone.
- D. It is essential before applying any adhesive, resin, filler, etc., that the area being repaired has been thoroughly dried out. This should involve removing any liquid water by suction or blowing-off with clean dry air, followed by the application of heat from heater blankets or hot air blowers to obtain a temperature of 95°C on the repair area for a minimum of 2 hours.
- E. Any drilling or machining of the composite parts should be carried out as detailed in 51-32-03, GENERAL.
- F. If honeycomb forming is required, this should be carried out as detailed in 51-32-03, GENERAL.

3. References

Reference	Title
51-32-03, GENERAL	Nonmetallic Materials - RB211-524 Engine Nacelle
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

4. Repair Procedures

- A. Determine Damage
 - (1) Visually examine the component/assembly to determine extent of damage.

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- (2) Check panel for contamination with water, oil, fuel, etc. In particular, check damaged honeycomb sandwich constructions for penetration of contaminant through damaged area.
- (3) Remove the contaminant by solvent wiping, or if water, use techniques described in Paragraph 4.B./REPAIR 1.
- (4) Use N.D.T. or tap test techniques to determine extent of any nonvisible delaminations, etc., around the damaged area.
- (5) Mark out extent of damage.

B. Remove Water and Dry Out Damaged Area

- (1) Remove free-standing water using vacuum and oil-free compressed air and remove the damaged plies.
- (2) Apply heat to the area using hot air, infrared heaters, heating pad, etc., to obtain a temperature of 95°C for 2 hours minimum. Monitor the temperature using thermocouples attached to each face of the component being dried out as near to the damaged area as possible.

NOTE: For honeycomb sandwich panels, remove the damaged plies and remove any water as above, that may be trapped in the honeycomb cells.

C. Repair Honeycomb Sandwich Panels

- (1) Dress off any adhesive on core cell edges, removal of the adhesive fillet is not required.
- (2) Apply a fibreglass or metallic fine mesh screen over the exposed cells.
- (3) Attach a thermocouple to the centre of the screen.
- (4) Apply a layer of glass fabric bleeder, or synthetic bleeder fabric, or a breather cloth over the screen and allow it to overlap sufficient to allow a vacuum takeoff point to be fitted under the vacuum bag on top of the overlap.
- (5) Where the opposite face is accessible, attach a thermocouple on opposite side of panel.
- (6) Where opposite face is accessible, apply heating blanket to this face of the honeycomb panel and, if required, to the other face.

When applied to the other face, attach a thermocouple to the centre of the bleeder cloth under the heating blanket.
- (7) Apply sealing putty around the whole area and bag the entire area, and insert a suitable vacuum takeoff point in the bag. Ensure all the seals are satisfactory by evacuating to a minimum of 22 inches mercury vacuum.
- (8) Heat the area for a minimum of 2 hours at 95°C (203°F) maintaining the 22 inches mercury minimum vacuum.
- (9) Remove bagging and other materials and proceed with repair.

NOTE: (1) A typical arrangement for the honeycomb panel drying out operation is shown in Figure 201/REPAIR 2.

(2) Where the component shape/complexity does not allow adequate bagging, etc., radiant heat and/or hot air blowers may be used, but care must be taken in monitoring the temperature attained. 95°C (203°F) should be used as a maximum, and 2 hours time extended if lower temperatures are used.

D. Remove Damaged Area

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- (1) Cut out the damaged area carefully, to a smooth shape with rounded corners, or to a round or oval shape, avoiding damage to the surrounding "good" areas. Damaged core should have the damaged part of the core removed and exposed core should have any remaining adhesive cleaned off carefully, excluding the fillet. Where the damaged part of the core has been removed, this should extend at least 0.125 inch under the remaining edge of the "good" laminate around the damaged area.

E. Prepare Surface

- (1) See Figure 202/REPAIR 2 for laminates.
 - (a) Ascertain number and orientation of plies of damaged area from the relevant identification pages.
 - (b) Allowing 1.00-inch overlap for each ply, plus 1.00-inch overlap for any additional plies, mask off the area around the cleaned up damage zone.
 - (c) Remove paint finishes, etc., using 180-grit abrasive paper or, local dry blasting equipment using low pressure and 220/330-grit size.

NOTE: Care should be taken to ensure no damage occurs to the remaining laminate fibres. The use of paint removers is strictly prohibited.

- (d) Where required, taper sand each ply around the damage area allowing a minimum of 1.0 inch per ply (Figure 202/REPAIR 2). For small thickness laminate fibres 2 to 3 ply face sheets, the damage area may be filled with filler plies, or if a honeycomb sandwich panel, the damage cell area filled with EC3524 (ref Table 202/REPAIR 1) allowed to cure off and carefully abraded back to the surface and the repair plies installed directly on this surface. (Note in this instance "taper sanding" is not required and after paint removal the lightly sanded surface remaining should be satisfactory.)
- (e) Abrade surfaces around the repair carefully using 180-grit (or finer) abrasive paper.
- (f) Remove all debris using a vacuum cleaner or oil-free compressed air.
- (g) Wipe the surface clean with a clean cheesecloth/lint-free cloth moistened with solvent, Series 99 (AMM/ SOPM 20-30-99).

F. Repair Honeycomb Sandwich Panel

- (1) Replace Core Plug
 - (a) Fabricate a core plug from correct honeycomb type, as defined in the identification pages ensuring the correct ribbon direction. This may involve forming the honeycomb to the correct "curvature" shape before cutting the plug. The forming can be carried out according to the instructions given in 51-32-03, GENERAL.
 - 1) Plug core depth, where possible, should take into account any extra plug thickness and adhesive thickness between core plug and undamaged laminate skin.
 - (b) Clean the cut core plug by immersing in 1.1.1.trichloroethane for a maximum of 1 minute, alternatively it can be vapour degreased in 1.1.1.trichloroethane for two immersions of maximum length 1 minute.
 - (c) Allow all solvent to evaporate before commencing installation of the repair.
- (2) Replace Filler
 - (a) Solvent wipe cleaned out damaged area.
 - (b) Allow all solvent to evaporate before commencing application of filler.
- (3) Prepare Repair Ply - Wet Layup

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- (a) Prepare a sufficient area/quantity of carbon fabric from the relevant material detailed in Table 202/REPAIR 1 and Table 203/REPAIR 1.

NOTE: (1) Where no extra plies are called out, one extra ply is always used and is laid up as the top outer ply and should have the same orientation as the original outer ply of the laminate damaged area.

(2) When applying over honeycomb core, a filler ply the size of the cutout is required to minimise surface depression effects.

G. Impregnation, Layup and Repair - Wet Techniques**(1) Impregnation**

- (a) Cut two pieces of release film (ref Table 206/REPAIR 1) each approximately 3 inches larger all-around than the fabric size.
- (b) Tape one piece of release film onto a clean flat surface and lay the fabric on it.
- (c) Using the resin, ref Table 202/REPAIR 1. Apply sufficient resin evenly, to give the required impregnated resin content (45% by wt).
- (d) Place the second piece of release film on top of the fabric.
- (e) Using a roller/squeegee work the resin through the fabric to impregnate it and remove entrapped air.
- (f) Work excess resin to the edges of the fabric with the fabric weave being barely visible.
- (g) With the release film in position, cut out the required sizes and number of plies.

NOTE: The orientation of the ply weave for each ply must be as detailed in the specific component repair section, or unless otherwise noted will be the same as the original ply orientation with the extra plies only detailed in the repair section.

Normally the last repair ply would always have the same orientation as the original surface ply even though it may be additional.

(2) Layup of Repair Plies

NOTE: To ensure no distortion, some form of backing tool conforming to the component contour on the reverse side from the repair side is required to enable the repair plies to be laid up to give the correct profile, etc.

- (a) Coat prepared area with resin (as Table 202/REPAIR 1).
- (b) Remove release film from one side of the smallest repair ply, and with the correct orientation, place the exposed face against the repair area in the central position.
- (c) Use a roller or squeegee over the release film to remove any wrinkles and entrapped air. Use only light pressure.

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- (d) Remove the release film from the ply surface and proceed as in (b) and (c) with the next ply and continue with succeeding plies as in (d).

NOTE: (1) If the repair is a core replacement repair, the first plies at the bottom of the repair are applied first and then the core plug. Light roller pressure is applied to firmly seat this in place, and the filler ply then applied on top followed by the remaining plies as (a) to (d) above (see sec G.2.). The edges of the core plug are spliced to the "good" honeycomb remaining by filling the adjoining cell with EC3524.

(2) If the repair is to a damaged core repaired with filler (EC3524 ref Table 204/REPAIR 1, allow the filler material to cure for 4 hours at room temperature.

(3) Bagging Procedure

- (a) Cut a piece of perforated release film (Table 206/REPAIR 1) allowing 3 inches excess around the edges, and lay over the repair plies.
- (b) Secure three thermocouples, evenly spaced around the repair, using heat-resistant adhesive tape (Table 206/REPAIR 1).
- (c) Place a layer of style glass cloth (Table 206/REPAIR 1) to act as a surface bleeder, cut to overlap the edges of the perforated release film by 2 inches, over the perforated release film.
- (d) Overlay with a piece of non-perforated release film (Table 206/REPAIR 1) cut to the same size as the perforated release film.
- (e) If using a heating blanket, place this in position over the release film.

NOTE: Use sufficient materials (a) to (d), to ensure that no resin can come into contact with the heater blanket.

- (f) Overlap the heating blanket with 3 or 4 layers of breather fabric to act as breather and insulate from heat losses. Extend the breather fabric to ensure that it covers and contacts the surface bleeder material (c).
- (g) Put a strip of sealant putty, on the component, around the repair.
- (h) Cut a suitable sized piece of bagging film and bag over the repair, inserting a vacuum takeoff fitting in a suitable position on the breather fabric.
- (i) Apply vacuum to the bag and check for leaks, a minimum of 22 inches mercury vacuum should be attained and held.

NOTE: (1) If other forms of heating are to be used, only use one layer of breather fabric for (f).

(2) The heater blanket can be applied to the opposite face of the laminate (on top of a suitable release film) and taped in position with insulating material covering it. It need not form part of the vacuum bag, but a sealed component surface is required to ensure vacuum can be obtained on the repair face.

(3) Other forms of heating such as infrared heaters or hot air blowers can also be applied to the reverse side, in which case additional insulation can be used on the repair face, either inside or outside the vacuum bag.

(4) Curing

- (a) If curing at room temperature, maintain vacuum at 22 inches mercury for the required period of cure.

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- (b) If heat-curing the layup, follow the cure schedule given in Table 202/REPAIR 1. In all cases allow a 15 to 20-minute consolidation period under vacuum before commencing the heat-up phase.
- (c) Raise the temperature slowly, not greater than 2°C per minute, to the required cure temperature and hold at this for the specified time. Monitor the temperature continuously using the three thermocouples and if necessary make adjustments to the insulation in order to maintain an even spread of temperature 59°F (15°C) differential across the repair.
- (5) Inspection and Blending
- (a) De-bag the repair carefully.
- (b) Visually inspect the repair for freedom from starved areas, blisters, pits, excess resin areas.
- (c) Carefully, lightly abrade the edge of the topmost repair ply to fair the edge into the surrounding surface.
- (d) Lightly abrade the surface of the repair, with 180-grit or finer paper, to produce a suitable finish for the application of the required paint scheme, etc. Care should be taken to avoid damaging the fibres.
- (e) Carry out N.D.T. examination of the repair area, plus adjacent 2-3 inches around the repair area for delamination, dis-bond and voidage. If the repair is unsatisfactory, re-submit for a re-repair.

Table 202: Cure Data - Matrix Resin

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	CURE	NOTES
MATRIX RESIN FOR COMPOSITE REPAIR	REDUX 501	CIBA-GEIGY	2 HOURS AT 70°C	

Table 203: Carbon Fibre

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	NOTES
CARBON FIBRE CLOTH	G6703	CIBA-GEIGY	

Table 204: Cure Data - Epoxy Filler

DESCRIPTION	SPECIFICATION	MANUFACTURE	CURE	NOTES
EPOXY FILLER	EC 3524 (402/309)	3M	48 HOURS AT 23°C	EQUIVALENT MATERIALS
EPOXY FILLER	E 5358 (402/309)	BOSTIK	48 HOURS AT 23°C	

Table 205: Cure Data - Adhesive

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	CURE	NOTES
ADHESIVE PASTE	EA 934NA (402/193)	CIBA-GEIGY	24 HOURS AT 20°C OR 2 HOURS AT 60°C	

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Table 206: Materials Data

DESCRIPTION	SPECIFICATION	MANUFACTURE
MOULD TOOL RELEASE	FREKOTE 44	HYSOL GRAFIL
PEEL PLY FABRIC	60 B/R	FOTHERGILL & HARVEY
POROUS RELEASE FILM	RF 260 WP	FOTHERGILL & HARVEY
NON-POROUS RELEASE FILM	RF 260 W	FOTHERGILL & HARVEY
RESIN BLEEDER	NW 150 F	FOTHERGILL & HARVEY
RESIN BLEEDER	P6/22	FOTHERGILL & HARVEY
AIR BREATHER	NEEDLEFELT 49035	LANTOR
VACUUM BAG FILM	NBF 205 C	FOTHERGILL & HARVEY
BAG SEALANT TAPE	SM 5144	AEROVAC SYSTEMS
ADHESIVE TAPE	PS 025	FOTHERGILL & HARVEY
SOLVENT	1.1.1.TRICHLOROETHANE	I.C.I.
SOLVENT	BUTANONE M.E.K.	B.D.H.
SOLVENT	ACETONE	B.D.H.

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REPAIR 2 - REPAIR OF CARBON FIBRE/EPOXY LAMINATE AND NONMETALLIC HONEYCOMB STRUCTURES THRUST REVERSER TRANSLATING COWL RB211-524 G & H HIGH TEMPERATURE 347°F (175°C) PRE- IMPREGNATED TECHNIQUES

1. Scope

A. Repairs in this specification, using pre-impregnated plies, are 347°F (175°C) and require the use of a controlled heat source. The size and limits of the repairs are defined in Figure 203/REPAIR 2.

WARNING: MATERIALS CALLED UP IN THIS SPECIFICATION SHOULD BE HANDLED AS PRESCRIBED BY THE SUPPLIERS HEALTH AND SAFETY DATA SHEETS.

WARNING: WHEN CUTTING OR GRINDING, CARBON FIBRE LAMINATES PRECAUTIONS SHOULD BE TAKEN TO MINIMISE INHALATION OF THE DUST GENERATED, AND TO MINIMISE THE POSSIBILITY OF THE DUST DEPOSITING IN ELECTRICAL SWITCHGEAR, ETC. THE USE OF A LOCALISED EXTRACTION SYSTEM IS RECOMMENDED.

CAUTION: ALWAYS REFER TO THE SPECIFIC STRUCTURAL COMPONENT REPAIR TO ENSURE THE CORRECT MATERIALS ARE BEING UTILISED AND THAT THE PRESCRIBED LIMITS FOR THE REPAIR ARE NOT BEING EXCEEDED.

CAUTION: ONLY SPECIFIED FASTENERS SHOULD BE USED ON CARBON COMPOSITE COMPONENTS.

CAUTION: WHERE ALUMINUM FITMENTS COME INTO CONTACT WITH CARBON COMPOSITE MATERIAL, ENSURE THE ALUMINUM HAS RETAINED ITS ORIGINAL CORROSION PROTECTION TREATMENT. IF IN DOUBT, RE-TREAT WITH A CHROMATE CONVERSION TREATMENT AS A MINIMUM REQUIREMENT.

CARRY OUT THE REPAIRS IN A CLEAN ENVIRONMENT FREE FROM OIL MIST, RAIN, SOOT, EXHAUST GASES, DUST, ETC.

MAINTAIN CLEANED/ABRADED SURFACES FREE FROM CONTAMINATION. DO NOT HANDLE WITH BARE HANDS, USE CLEAN GLOVES.

ALWAYS ENSURE THAT ANY "LIFED" MATERIAL BEING USED IS IN LIFE AND HAS BEEN STORED CORRECTLY AS REQUIRED BY THE RELEVANT SPECIFICATION AND OR SUPPLIERS LITERATURE.

ENSURE A GOOD SUPPORT/HOLDING FIXTURE IS USED FOR LARGE REPAIRS TO ENSURE NO DISTORTION OCCURS.

B. See Table 201/REPAIR 2 for the Table of Contents

Table 201: Contents

Paragraph	Subject
2.	General
3.	Repair Procedures
3.A.	Determine Damage
3.B.	Remove Water and Dry Out Damaged Area

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(Continued)

Paragraph	Subject
3.C.	Repair Honeycomb Sandwich Panels
3.D.	Remove Damaged Area (Laminates)
3.E.	Prepare Surface
3.F.	Repair Honeycomb Sandwich Panel
3.F.1.	Replace Core Plug
3.F.2.	Replace Filler
3.G.	Ply Preparation
3.G.1.	Pre-Impregnate Techniques (175°C Cure)
3.H.	Layup and Repair
3.H.1.	Pre-Impregnate Techniques (175°C Cure)
3.H.2.	Bagging
3.H.3.	Curing
3.H.4.	Inspection

2. General

- A. The resins, adhesives and fabrics used are listed in Table 202/REPAIR 2 thru Table 205/REPAIR 2 of this section. Alternative materials and techniques may be used provided these are agreed on between the relevant Quality and Design/Materials authorities.
- B. The permissible damage repair limits for each component of the assembly are given in Figure 203/REPAIR 2.
- C. It is particularly important to assess the extent of any damaged area thoroughly, visible damage, particularly "impact damage", can result in internal delaminations around and extending away from the visible damage zone.
- D. It is essential before applying any adhesive, resin, filler, etc., that the area being repaired has been thoroughly dried out. This should involve removing any liquid water by suction or blowing-off with clean dry air, followed by the application of heat from heater blankets or hot air blowers to obtain a temperature of 95°C on the repair area for a minimum of 2 hours.
- E. Any drilling or machining of the composite parts should be carried out as detailed in 51-32-03, GENERAL.
- F. If honeycomb forming is required, this should be carried out as detailed in 51-32-03, GENERAL.

3. References

Reference	Title
51-32-03, GENERAL	Nonmetallic Materials - RB211-524 Engine Nacelle
SOPM 20-30-99	Solvents For Final Cleaning of Composites Before Structural Bonding (Series 99)

4. Repair Procedures

- A. Determine Damage
 - (1) Visually examine the component/assembly to determine extent of damage.
 - (2) Check panel for contamination with water, oil, fuel, etc. In particular, check damaged honeycomb sandwich constructions for penetration of contaminant through damaged area.

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- (3) Remove the contaminant by solvent wiping, or if water, use techniques described in 3.B.
- (4) Use N.D.T. or tap test techniques to determine extent of any nonvisible delaminations, etc., around the damaged area.
- (5) Mark out extent of damage.

B. Remove Water and Dry Out Damaged Area

- (1) Remove free-standing water using vacuum and oil-free compressed air and remove the damaged plies.
- (2) Apply heat to the area using hot air, infrared heaters, heating pad, etc., to obtain a temperature of 95°C for 2 hours minimum. Monitor the temperature using thermocouples attached to each face of the component being dried out as near to the damaged area as possible.

NOTE: For honeycomb sandwich panels, remove the damaged plies and remove any water as above, that may be trapped in the honeycomb cells.

C. Repair Honeycomb Sandwich Panels

- (1) Dress off any adhesive on core cell edges, removal of the adhesive fillet is not required.
- (2) Apply a fiberglass or metallic fine mesh screen over the exposed cells.
- (3) Attach a thermocouple to the centre of the screen.
- (4) Apply a layer of glass fabric bleeder, or synthetic bleeder fabric, or a breather cloth over the screen and allow it to overlay sufficient to allow a vacuum takeoff point to be fitted under the vacuum bag on top of the overlap.
- (5) Where the opposite face is accessible, attach a thermocouple on opposite side of panel.
- (6) Where opposite face is accessible, apply heating blanket to this face of the honeycomb panel and, if required, to the other face. When applied to the other face, attach a thermocouple to the centre of the bleeder cloth under the heating blanket.
- (7) Apply sealing putty around the whole area and bag the entire area, and insert a suitable vacuum takeoff point in the bag. Ensure all the seals are satisfactory by evacuating to a minimum of 22 inches mercury vacuum.
- (8) Heat the area for a minimum of 2 hours at 95°C (203°F) maintaining the 22 inches mercury minimum vacuum.
- (9) Remove bagging and other materials and proceed with repair.
- (10) A typical arrangement for the honeycomb panel drying out operation is shown in Figure 201/REPAIR 2.
- (11) Where the component shape/complexity does not allow adequate bagging, etc., radiant heat and/or hot air blowers may be used, but care must be taken in monitoring the temperature attained. 95°C (203°F) should be used as a maximum, and 2 hours time extended if lower temperatures are used.

D. Remove Damaged Area

- (1) Cut out the damaged area carefully, to a smooth shape with rounded corners, or to a round or oval shape, avoiding damage to the surrounding "good" areas. Damaged core should have the damaged part of the core removed and exposed core should have any remaining adhesive cleaned off carefully, excluding the fillet. Where the damaged part of the core has been removed, this should extend at least 0.125 inch under the remaining edge of the "good" laminate around the damaged area.

E. Prepare Surface

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- (1) See Figure 202/REPAIR 2 for laminates.
 - (a) Ascertain number and orientation of plies of damaged area from the relevant identification pages.
 - (b) Allowing 1.00-inch overlap for each ply, plus 1.00-inch overlap for any additional plies, mask off the area around the cleaned up damage zone.
 - (c) Remove paint finishes, etc., using 180-grit abrasive paper or, local dry blasting equipment using low pressure and 220/330-grit size.

NOTE: Care should be taken to ensure no damage occurs to the remaining laminate fibres. The use of paint removers is strictly prohibited.

- (d) Where required, taper sand each ply around the damage area allowing a minimum of 1.0 inch per ply (Figure 202/REPAIR 2). For small thickness laminate fibres 2 to 3 ply face sheets, the damage area may be filled with filler plies, or if a honeycomb sandwich panel, the damage cell area filled with EC3524 (ref Table 203/REPAIR 2) allowed to cure off and carefully abraded back to the surface and the repair plies installed directly on this surface. (Note in this instance "taper sanding" is not required and after paint removal the lightly sanded surface remaining should be satisfactory.)
- (e) Abrade surfaces around the repair carefully using 180-grit (or finer) abrasive paper.
- (f) Remove all debris using a vacuum cleaner or oil-free compressed air.
- (g) Wipe the surface clean with a clean cheesecloth/lint-free cloth moistened with solvent, Series 99 (AMM/ SOPM 20-30-99).

F. Repair Honeycomb Sandwich Panel**(1) Replace Core Plug**

- (a) Fabricate a core plug from correct honeycomb type, ensuring the correct ribbon direction. This may involve forming the honeycomb to the correct "curvature" shape before cutting the plug. The forming can be carried out according to the instructions given in 51-32-03, GENERAL.
 - 1) Plug core depth, where possible, should take into account any extra plug thickness and adhesive thickness between core plug and undamaged laminate skin.
- (b) Clean the cut core plug by immersing in 1.1.1.trichloroethane for a maximum of 1 minute, alternatively it can be vapour degreased in 1.1.1.trichloroethane for two immersions of maximum length 1 minute.
- (c) Allow all solvent to evaporate before commencing installation of the repair.

(2) Replace Filler

- (a) Solvent wipe cleaned out damaged area.
- (b) Allow all solvent to evaporate before commencing application of filler.

G. Ply Preparation**(1) Pre-Impregnate Techniques (175°C Cure)**

- (a) Using carbon fibre pre-impregnate, and where necessary glass fibre pre-preg, Table 202/REPAIR 2 with the backing sheets in position, cut sufficient plies, including any extra requirement, allow the extra inch overlap on each succeeding ply. Normally, an extra two plies overlaying the whole repair are required.
- (b) Cut one ply of film adhesive, B.S.L.319 (ref Table 202/REPAIR 2) to cover the whole repair area including the final overlap area.

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- 1) If a honeycomb core plug replacement is being used, cut a piece of B.S.L.319/A adhesive the same size as the plug for fitment at the lower skin end. Also, for the repair skin end of the core, cut out a piece of B.S.L.319/A and a piece of carbon fibre pre-impregnate the same size as the core plug to ensure no sagging takes place. Also, cut out sufficient core splice adhesive FM410 to fit around periphery of honeycomb plug.

NOTE: (1) All pre-impregnate must be cut to the correct orientation as detailed in the specific component repair section, and layed up to that orientation.

(2) Where a filler has been used for repair of damaged core, no pre-impregnate ply for covering the core area is required and the plies required are as in (a) plus the film adhesive.

(3) Surface preparation is as detailed in previous section.

H. Layup and Repair**(1) Pre-Impregnate Techniques (175°C Cure)**

NOTE: A suitable backing/mould tool will be necessary to minimise distortion, conforming to contours/profile of the component to enable the repair plies to be laid up correctly to the profile.

- (a) Remove the backing sheets from the adhesive and place in position over the repair area. Smooth out any wrinkles.
- (b) Remove backing sheets from the carbon fibre pre-impregnate plies successively laying them into position at the same time. Smooth out any wrinkles and every 3rd ply leave backing sheet in place and using a roller work any wrinkles and air out of the layup. Remove the backing sheet, then apply the next plies.
- (c) Place a layer of peel ply (ref Table 202/REPAIR 2) over the last ply to overlap by 1 to 2 inches.

NOTE: (1) If a replacement honeycomb coreplug is being bonded in at the same time, place the coreplug adhesive on the bottom skin and then insert the plug plus the core splice adhesive FM410 between the insert and the existing core. Ensure good contact with both honeycombs and the adhesive film (ref sec F.). Apply the adhesive and filler ply and with the backing sheet still on the top face, lightly roller the ply to settle the core, etc., in place. Continue with the layup as above.

(2) If the core plug is being bonded in at the same time as the repair plies are being cured, the use of a heating blanket on both sides of the repair or other techniques for heating the core adhesive repair may be required.

(2) Bagging Procedures

- (a) Put a layer of perforated release film over the repair overlapping by at least 2 inches.
- (b) Secure three thermocouples, evenly spaced, at the edge of the repair area. (Note - to ensure they do not adhere to the repair area, they can be wrapped in non-perforated release film.)
- (c) Place a layer of peel ply (Table 205/REPAIR 2 on to the perforated release film.
- (d) Cover the layup with one layer of release film, leaving about 0.5 inch of the peel ply layer uncovered all around the edges.

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- (e) Place the heating blanket in position over the patch (the heating blanket should extend beyond the edges of the patch to a minimum of 2 inches and care should be taken to avoid contamination of the blanket with resin).

NOTE: If the heater blanket is longer than 12 inches on any side, or if two or more blankets are being used, an aluminum pressure plate should be used to minimise local heating effects.

- (f) Place four or more layers of breather fabric material (Table 205/REPAIR 2 (to act as insulant as well as a breather) over the heat blanket and ensure the edges overlap the edges of the peel ply (c).
- (g) Place a bead of sealing putty around the repaired area on the component laminate face.
- (h) Cut a suitably sized piece of bagging film and lay over the repair area.
- (i) Select a position and insert a vacuum takeoff point and seal the bag to the edge sealant putty, using pleats where necessary.
- (j) Apply a vacuum and check for leaks. The bag should be capable of holding 22 inches vacuum for the duration of the cure cycle.
- (k) Allow to stand under vacuum for 30 minutes prior to commencing the cure cycle.

(3) Curing

- (a) Maintain vacuum at 22 inches throughout the cure.
- (b) Apply heat, using the heating blanket, temperature to rise at a rate of approximately 1-5°C per minute. Monitor the temperature using the three thermocouples and, if necessary, adjust the insulation to maintain a temperature spread of not greater than 10°C.
- (c) When the temperature reaches 120°C + 5°C, hold for 30 minutes, then raise the temperature at approximately 1 to 5°C per minute to 175°C + 5°C and hold for 1 hour.
- (d) Without cooling the component, raise the temperature to 190°C + 5°C and hold for a further 4 hours.
- (e) Allow to cool down to below 60°C and release vacuum and de-bag.

(4) Inspection

- (a) Inspect the completed repairs for visual defects such as dry areas, voids, delaminations and general surface condition.
- (b) Carry out N.D.T. inspection for voidage, disbond area, etc., to include the immediate surrounding area to the repair to a distance of at least 2 inches.

NOTE: The use of a "tap" test is permissible in situations where the use of N.D.T. instrumentation is not possible, to be followed as soon as possible by a confirmatory N.D.T. assessment.

Table 202: Cure Data - Prepreg

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	CURE	NOTES
CARBON PRE-PREG	914C-703-40 (402/121)	CIBA-GEIGY	1 HOUR AT 175°C	
GLASS PRE-PREG	914G-120-45 (402/121)	CIBA-GEIGY	1 HOUR AT 175°C	

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Table 203: Cure Data - Epoxy Filler

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	CURE	NOTES
EPOXY FILLER	EC3524 (402/309)	3M	48 HOURS AT 23°C	EQUIVALENT MATERIALS
EPOXY FILLER	E5358 (402/309)	BOSTIK	48 HOURS AT 23°C	

Table 204: Cure Data - Adhesive

DESCRIPTION	SPECIFICATION (HUREL DUBOIS U.K. LTD)	MANUFACTURE	CURE	NOTES
EPOXY PASTE ADHESIVE	EA934 NA (402/193)	CIBA-GEIGY	24 HOURS AT 20°C 1 HOUR AT 90°C	
EPOXY FILM ADHESIVE	REDUX 319 (402/301)	CIBA-GEIGY	1 HOUR AT 175°C	
EPOXY FILM ADHESIVE (WITH CARRIER)	REDUX 319 A (402/302)	CIBA-GEIGY	1 HOUR AT 175°C	
FOAMING ADHESIVE	FM410 (402/305)	CYANAMID	1 HOUR AT 175°C	

Table 205: Materials Data

DESCRIPTION	SPECIFICATION	MANUFACTURE
MOULD TOOL RELEASE	FREKOTE 44	HYSOL GRAFIL
PEEL PLY FABRIC	60 B/R	FOTHERGILL & HARVEY
POROUS RELEASE FILM	RF 260 WP	FOTHERGILL & HARVEY
NON-POROUS RELEASE FILM	RF 260 W	FOTHERGILL & HARVEY
AIR BREATHER	NEEDLEFELT 49035	LANTOR
VACUUM BAG FILM	NBF 205C	FOTHERGILL & HARVEY
BAG SEALANT TAPE	SM 5144	AEROVAC SYSTEMS
ADHESIVE TAPE	PS 025	FOTHERGILL & HARVEY
SOLVENT	1.1.1.TRICHLOROETHANE	I.C.I.
SOLVENT	BUTANONE M.E.K.	B.D.H.
SOLVENT	ACETONE	B.D.H.

PRE-CURED PATCH REPAIR - ROOM TEMPERATURE BOND FASTENERS:

NOTE: This repair requires a pre-cured laminate patch with the correct orientation and component contour being available or manufactured as a separate item.

5. Surface and Patch Preparation

- A. As detailed.
- B. Cut a suitable patch from a laminate of the correct ply orientation and profile. The size of the patch should be such that it overlaps the edges of the damaged area by 3 inches all around.

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- C. Clamp the patch in place over the "cleaned up" damage area and drill fastener holes through the patch and component using correct drill size for the specific rivet/fastener. (It is preferable to "spot drill" through with a small size drill followed by opening up the hole with the correct size drill - refer to 51-32-03. Countersink holes in the patch to correct angle, etc., for the fastener head.
- D. Lightly abrade the mating face of the patch using 180-grit abrasive paper (a very light pressure grit block using 220-grit size can be used as an alternative).

6. Attach Repair Patch

- A. Swab clean the mating surfaces of the component and patch using a lint-free cloth moistened with 1.1.1.trichlorethane or other suitable solvent and allow them to dry off until all traces of the solvent have gone.
- B. Mix adhesive EA934NA, ref Table 204/REPAIR 2 and apply a thin even coating to the abraded repair area of the component.
- C. Apply a thin even coating to the abraded surface of the patch.

NOTE: In applying the adhesive, to (b) and (c), care should be taken to minimise any adhesive lodging in the fastener/rivet holes as this could affect the insertion of the rivet/fastener and its satisfactory operation.

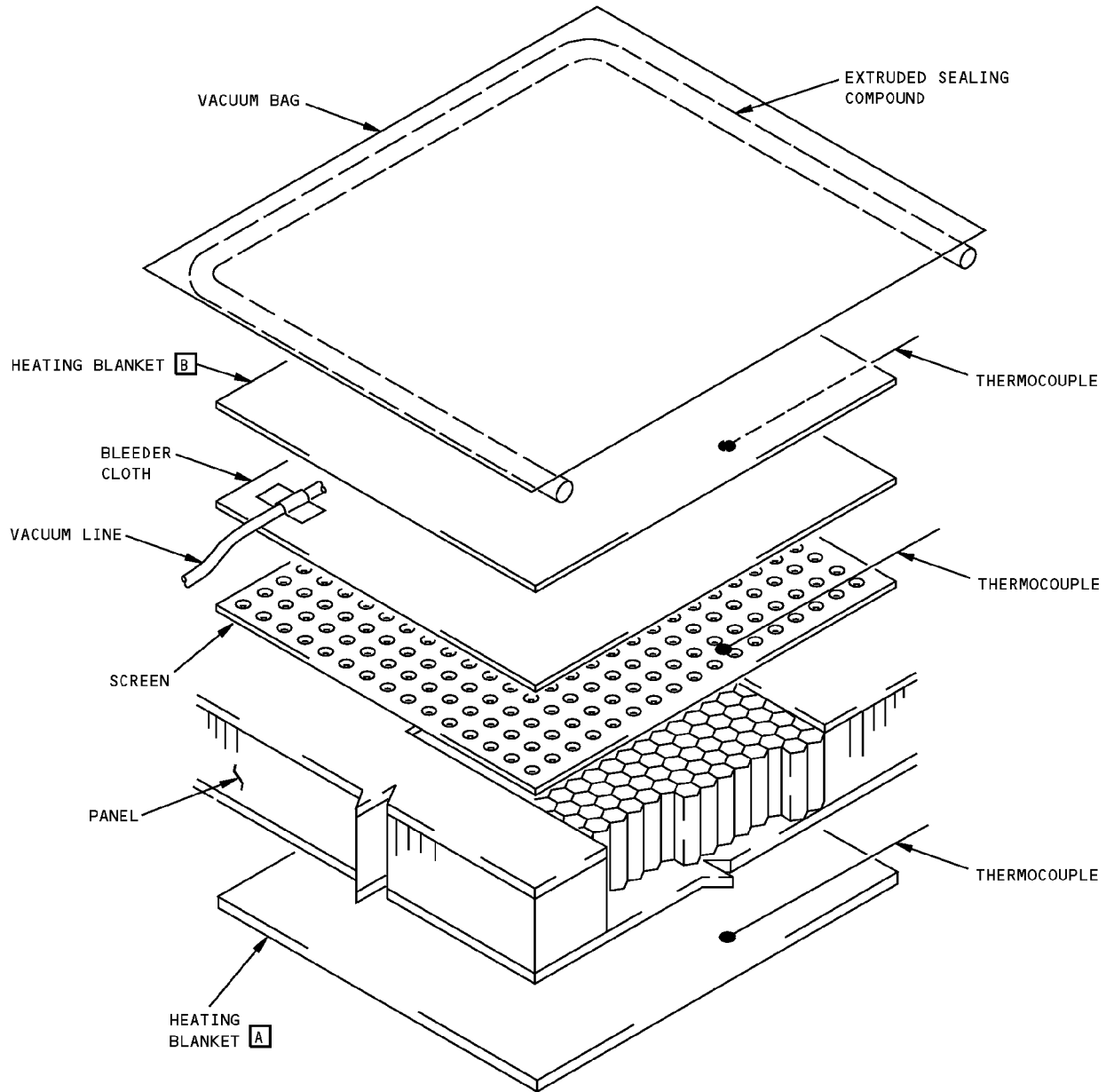
- D. Clamp the patch in place and install the rivet/fasteners.
- E. Wipe away excess adhesive around edges of the patch to leave a small fillet, using a lint-free cloth moistened with M.E.K., acetone or other suitable solvent.
- F. Allow to cure at room temperature. Heat can be applied using an infra-red heater, hot air blower or a heat blanket, to accelerate the cure. Table 204/REPAIR 2.

7. Inspection

- A. Inspect the cured patch visually for correct rivet/fastener installation.
- B. Carry out N.D.T. inspection of the bond.

NOTE: If the reverse side of the component can easily be reached, the damage hole on that side can cosmetically be filled with EC3524 (Table 203/REPAIR 2 and dressed back to profile and protective finish applied.

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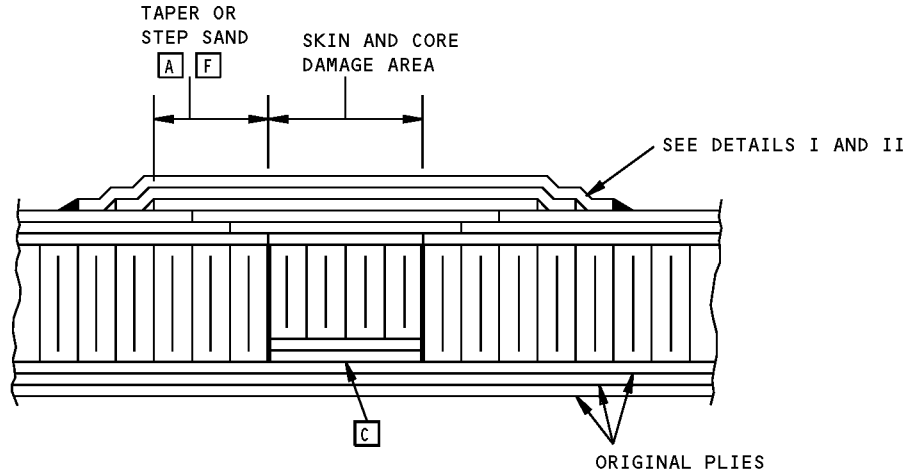
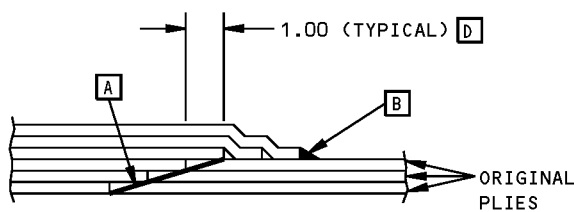
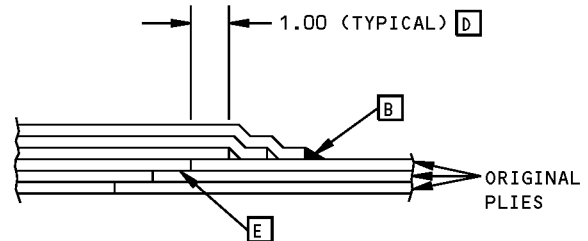


NOTES

- A** PREFERRED LOCATION OF HEATING BLANKET WHEN OPPOSITE FACE IS ACCESSIBLE.
- B** ALTERNATE LOCATION OF HEATING BLANKET WHEN OPPOSITE SIDE IS INACCESSIBLE. THIS LOCATION MAY BE USED FOR AN ADDITIONAL HEATING BLANKET TO ACCELERATE WATER REMOVAL.

Water Removal from Honeycomb Sandwich
Figure 201

STRUCTURAL REPAIR MANUAL

SECTION THROUGH TYPICAL REPAIR
(WET LAYUP ONLY)TAPER SANDED SKIN
DETAIL ISTEP SANDED SKIN
DETAIL II

NOTES

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A TAPER SAND OR STEP SAND EXISTING PLYS AROUND REPAIR AREA A MINIMUM OF 1.00 INCH FOR EACH EXISTING PLY</p> <p>B DO NOT EXPOSE OR DAMAGE FILAMENTS IN UNTAPERED AREA WHEN SANDING</p> <p>C SANDING MUST NOT EXPOSE OR DAMAGE THE FILAMENTS IN BOND PLY (PLY BONDED TO CORE)</p> | <p>D EACH PLY MUST OVERLAP AT LEAST 1.00 INCH PAST EDGE OF PRECEDING PLY</p> <p>E REMOVE DAMAGED PLYS IN STEPS</p> <p>F TAPER SAND SURFACES IN AREAS OF CRITICAL AERODYNAMIC SMOOTHNESS. REFER TO 51-10-01</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Sanding and Overlap Requirements
Figure 202

767-300
STRUCTURAL REPAIR MANUAL

DESCRIPTION	OUTER SKIN A	INNER PRESSURE CYLINDER	REAR DETACHABLE FAIRING	TORSION BOX B
CRACKS	MAXIMUM LENGTH IS 4.0. MINIMUM 3.0 FROM FASTENERS OR OTHER DAMAGE. DAMAGE MUST BE WITHIN ZONES. C	MAXIMUM LENGTH IS 2.0. MINIMUM 3.0 FROM FASTENERS OR OTHER DAMAGE. D	MAXIMUM LENGTH IS 4.0. MINIMUM 3.0 FROM FASTENERS OR EDGE BAND.	NOT ALLOWED
DENTS	MAXIMUM DIAMETER 2.0 IF NO FIBRE DAMAGE OR DELAMINATION. IF FIBRES DAMAGED, TREAT AS A CRACK. DO NOT FILL DENT.	MAXIMUM DIAMETER IS 2.0. TREAT AS A CRACK.	MAXIMUM DIAMETER IS 2.0 IF NO FIBRE DAMAGE OR DELAMINATION. IF FIBRE DAMAGED, TREAT AS A CRACK. DO NOT FILL DENT.	NOT ALLOWED
NICKS, GOUGES, SCRATCHES, WEAR, AND EROSION	IF NO FIBRE DAMAGE, PROTECT WITH SCOTCH 425 TAPE. IF FIBRES DAMAGED, TREAT AS A CRACK.	ONLY MINOR DAMAGE ALLOWED. IF NO FIBRE DAMAGE, PROTECT WITH SCOTCH TAPE. IF FIBRES DAMAGED, TREAT AS A CRACK.	MINOR DAMAGE ALLOWED. IF NO FIBRE DAMAGE, PROTECT WITH SCOTCH 425 TAPE. IF FIBRES DAMAGED, TREAT AS A CRACK.	MINOR DAMAGE ALLOWED. IF NO FIBRE DAMAGE, PROTECT WITH SCOTCH 425 TAPE. IF FIBRES DAMAGED, TREAT AS A CRACK.
HOLES/PUNCTURES	MAXIMUM DIAMETER IS 2.0. MINIMUM 2X HOLE DIAMETER FROM RIVETS OR OTHER DAMAGE. DAMAGE MUST FALL WITHIN ALLOWABLE ZONES. C	MAXIMUM DIAMETER IS 1.0. MINIMUM 2X HOLE DIAMETER FROM RIVETS, FASTENERS, OR OTHER DAMAGE. D	MAXIMUM DIAMETER IS 3.0. MINIMUM 2X HOLE DIAMETER FROM RIVETS, FASTENERS, OR OTHER DAMAGE. MINIMUM 3.0 FROM EDGE BAND.	NOT ALLOWED
DELAMINATION	MAXIMUM DIAMETER IS 4.0. EDGE DELAMINATION UP TO 0.10 MAXIMUM. IF FIBRE DAMAGED, TREAT AS A CRACK.	MAXIMUM DIAMETER IS 2.0. EDGE DELAMINATION UP TO 0.10 MAXIMUM. IF FIBRES DAMAGED TREAT AS A CRACK.	MAXIMUM DIAMETER IS 4.0. EDGE DELAMINATION UP TO 0.10 MAXIMUM. IF FIBRES DAMAGED, TREAT AS A CRACK.	NOT ALLOWED

NOTES

- ALL DIMENSIONS ARE IN INCHES

- A** EXCLUDING AREA OF TORSION BOX AND GUIDE RAIL ATTACHMENT REFER TO FIG. 101
- B** FORWARD SLOPING DIAPHRAGM AND OUTER SKIN ONLY
- C** REFER TO FIG. 101 FOR MINIMUM EDGE BAND DISTANCES AND ZONES.
- D** REFER TO FIG. 101 FOR MINIMUM EDGE BAND DISTANCES.

Repairable Damage
Figure 203

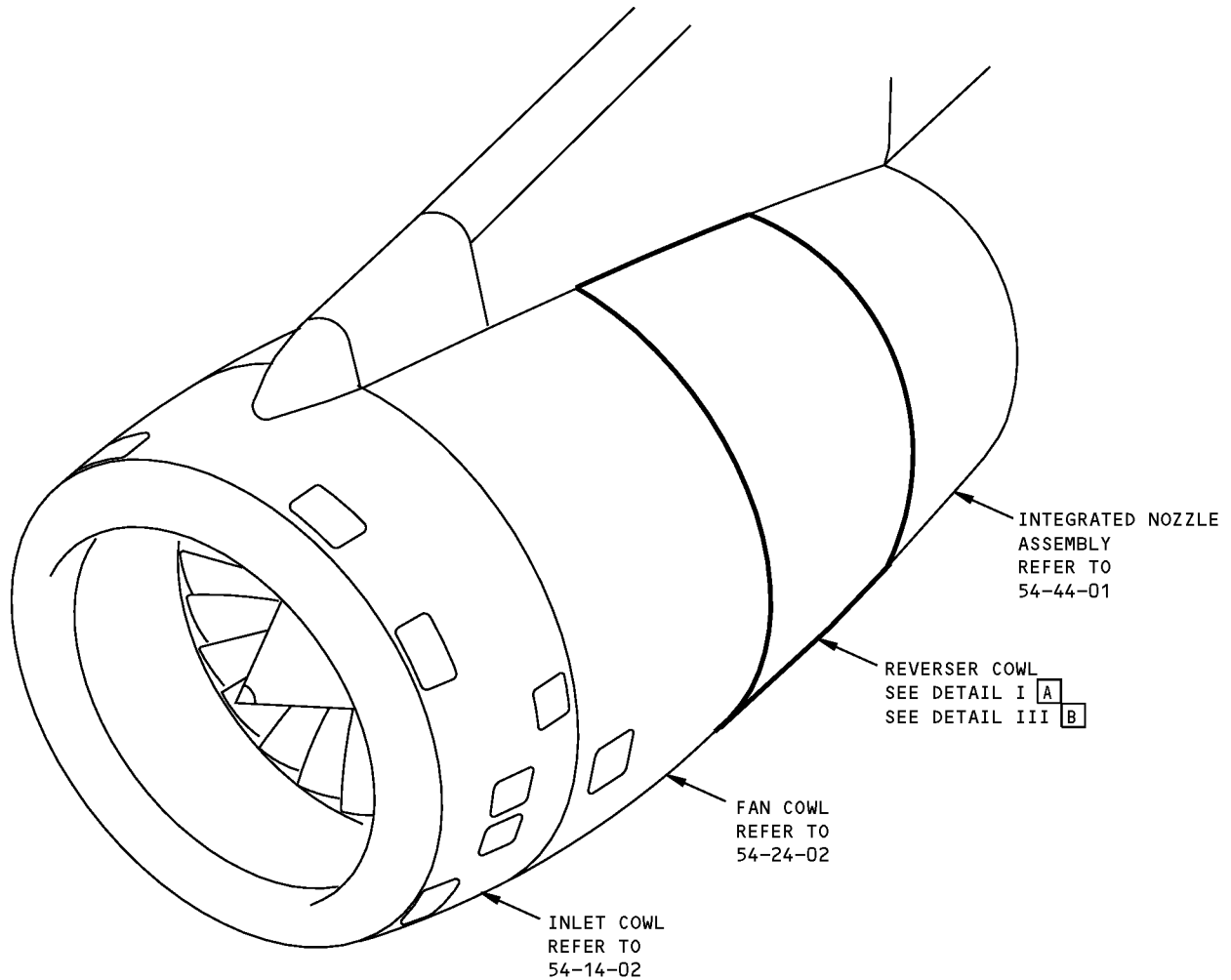
D634T210

54-34-01

REPAIR 2
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767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - THRUST REVERSER COWL STRUCTURE - RB211-524 ENGINE



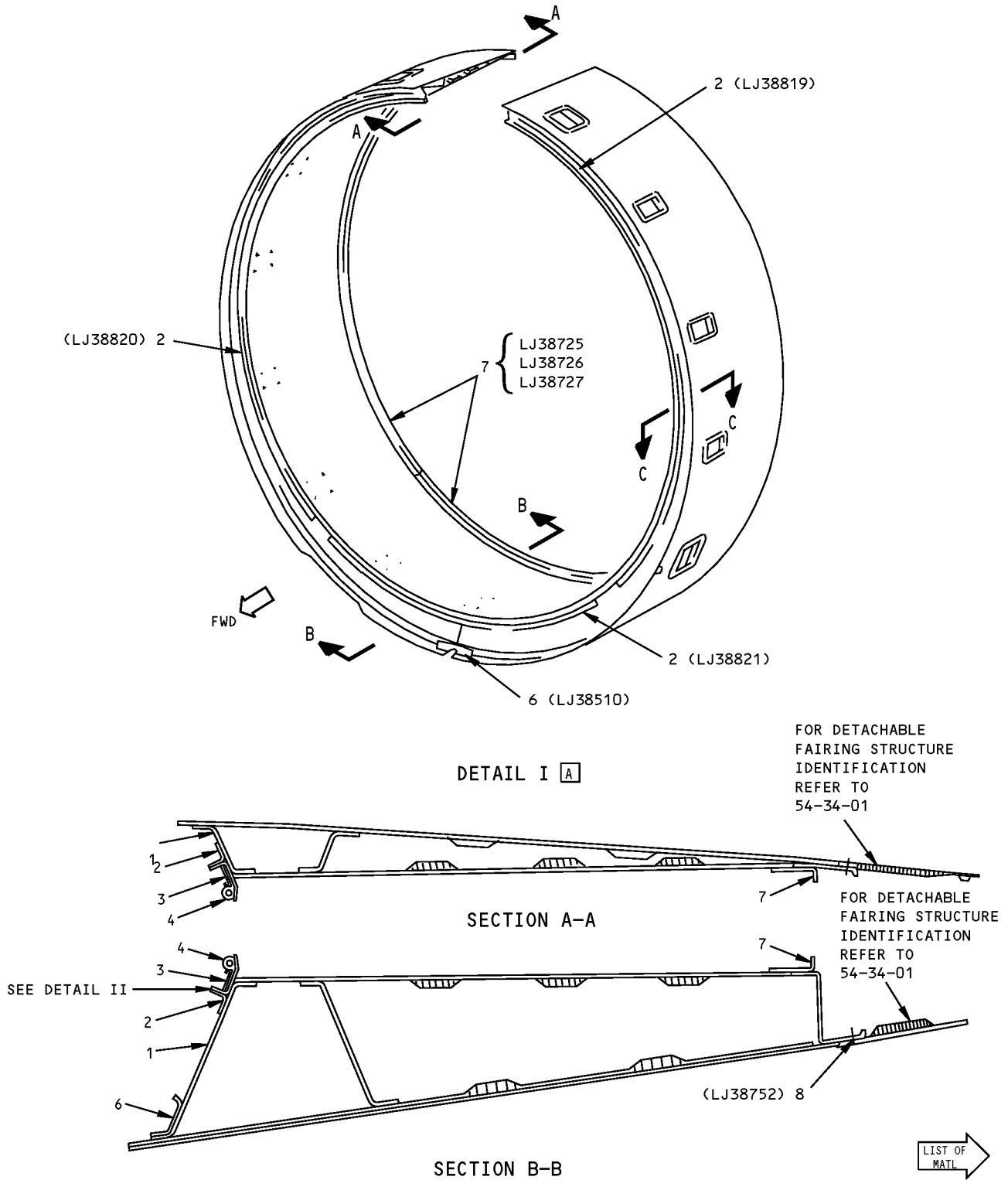
NOTES

A FOR AIRPLANES WITHOUT SB 71-9032 INCORPORATED

B FOR AIRPLANES WITH SB 71-9032 INCORPORATED

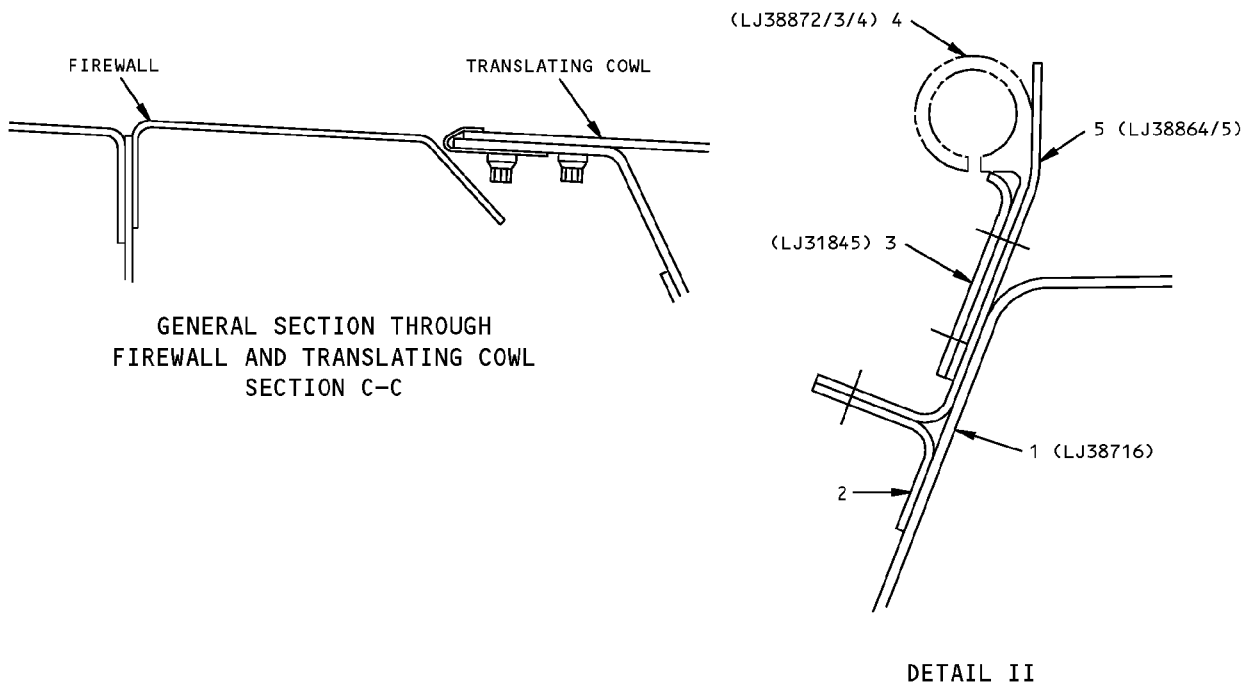
Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 6)

767-300
STRUCTURAL REPAIR MANUAL



Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 6)

767-300
STRUCTURAL REPAIR MANUAL

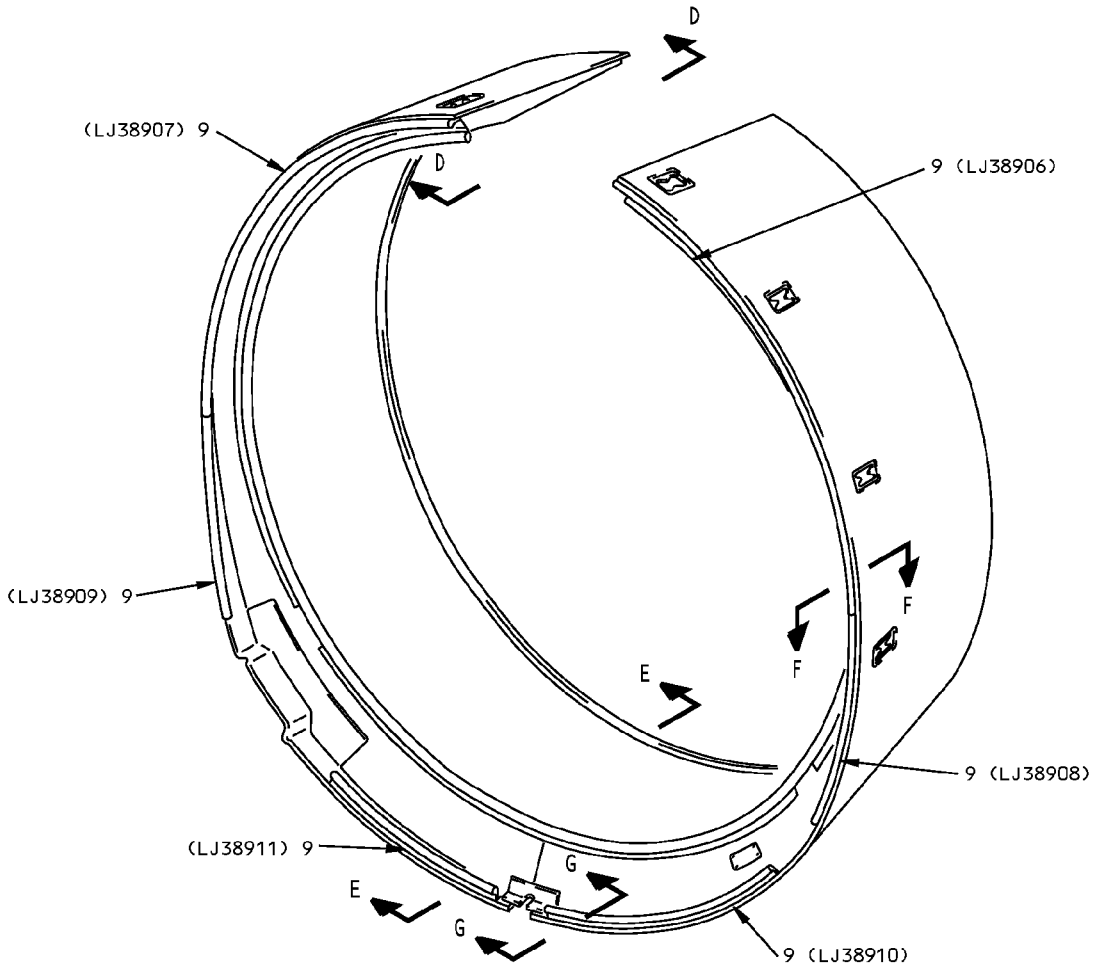


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD SLOPING DIAPHRAGM		CARBON FIBRE COMPOSITE	
2	FORWARD DIAPHRAGM ANGLE SEAL SUPPORT	0.064	AL ALLOY ALCLAD M.S.R.R. 8028	
3	SEAL RETAINER	0.048	L72. ALCLAD M.S.R.R. 8004	
4	FORWARD REVERSER SEAL		ARM 949	
5	SEAL CARRIER	0.064	AL ALLOY ALCLAD M.S.R.R. 8028	
6	FORWARD DIAPHRAGM FRAME STIFFENER		CARBON FIBRE COMPOSITE 4 PLIES	
7	AFT DIAPHRAGM STIFFENER	0.078	TA 21	
8	REAR FRAME		FIBREDUX 914C-833-40 6 PLIES	

LIST OF MATERIALS FOR DETAILS I A AND II

Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III **B**

LIST OF
MATERIAL

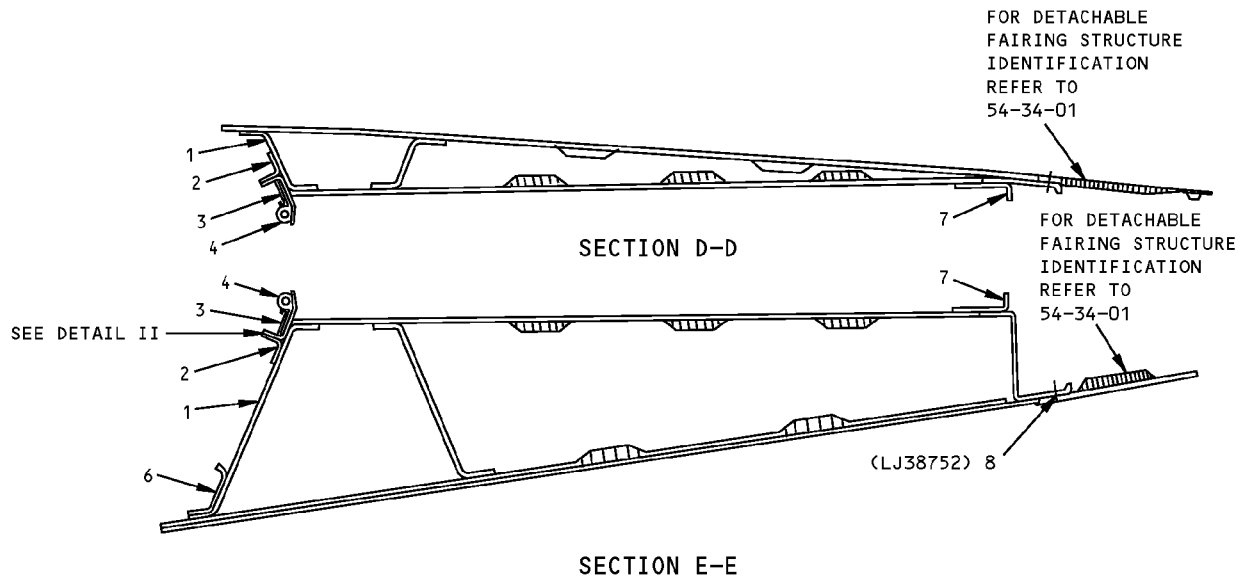
**Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 6)**

IDENTIFICATION 1
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D634T210

767-300
STRUCTURAL REPAIR MANUAL

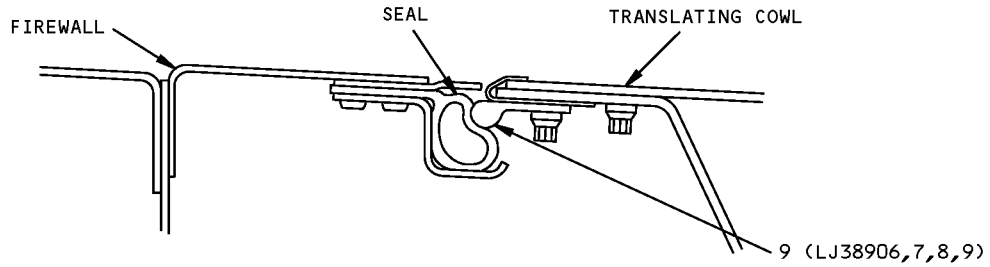


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD SLOPING DIAPHRAGM		CARBON FIBRE COMPOSITE	
2	FORWARD DIAPHRAGM ANGLE SEAL SUPPORT	0.064	AL ALLOY ALCLAD M.S.R.R. 8028	
3	SEAL RETAINER	0.048	L72. ALCLAD M.S.R.R. 8004	
4	FORWARD REVERSER SEAL		ARM 949	
5	SEAL CARRIER	0.064	AL ALLOY ALCLAD M.S.R.R. 8028	
6	FORWARD DIAPHRAGM FRAME STIFFENER		CARBON FIBRE COMPOSITE 4 PLYS	
7	AFT DIAPHRAGM STIFFENER	0.078	TA 21	
8	REAR FRAME		FIBREDUX 914C-833-40 6 PLYS	
9	ABUTMENT STRIP		EXTRUDED LIGHT ALLOY 2024-T351	B

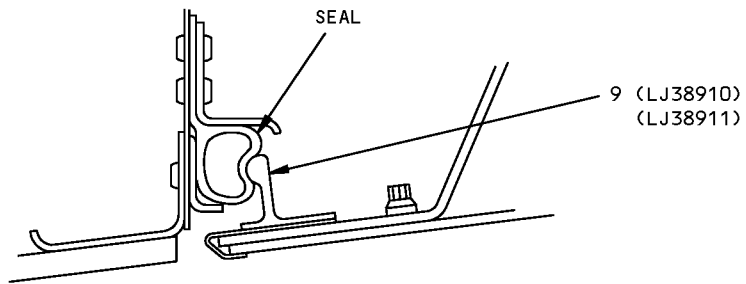
LIST OF MATERIALS FOR DETAIL III B

Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 6)

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STRUCTURAL REPAIR MANUAL



SECTION F-F

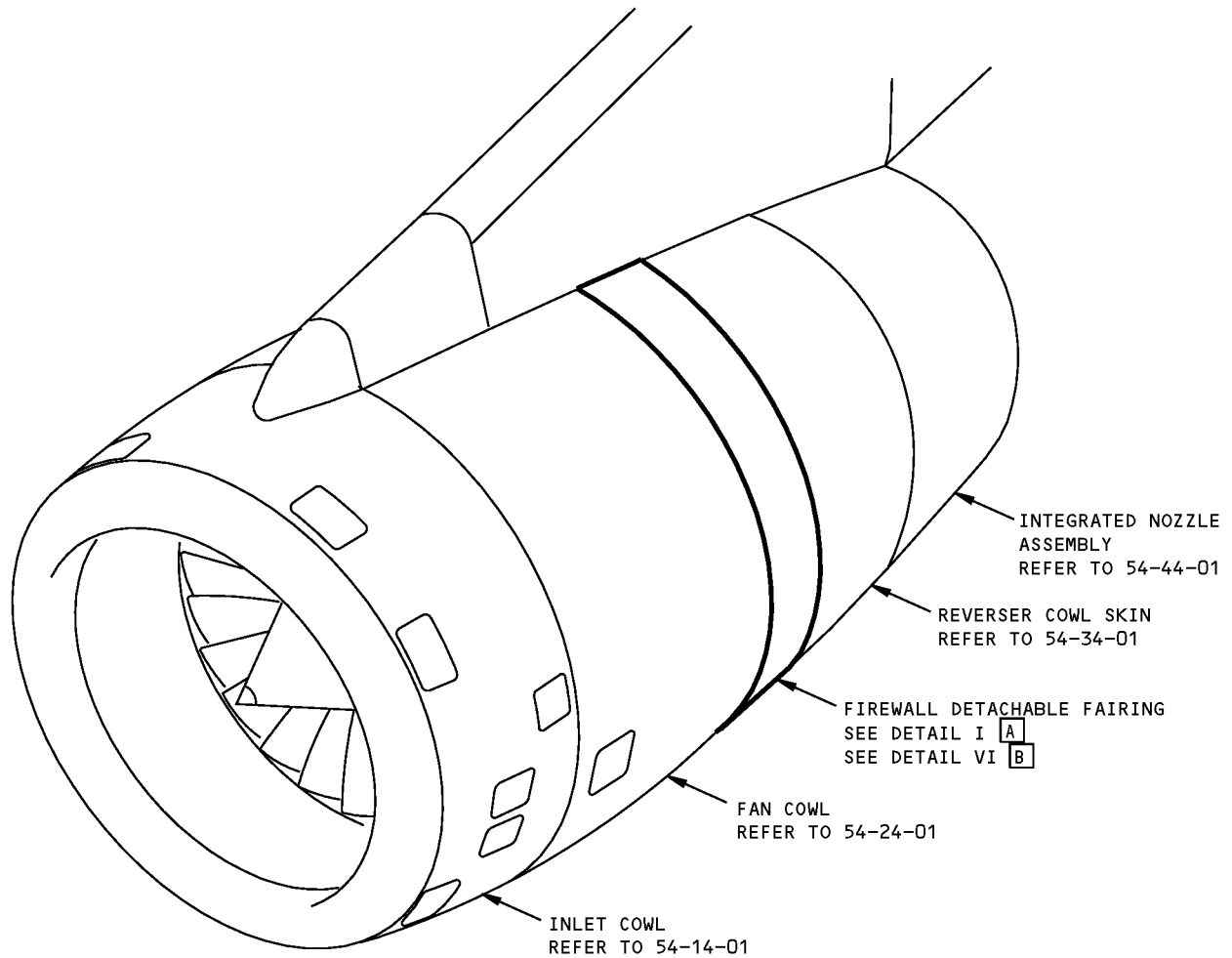


SECTION G-G

Reverser Cowl Structure Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 6)

767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - FIREWALL DETACHABLE FAIRING - RB211-524 ENGINES



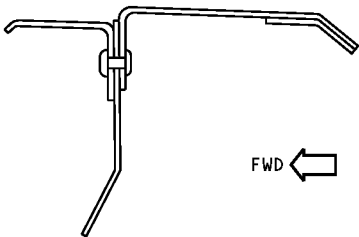
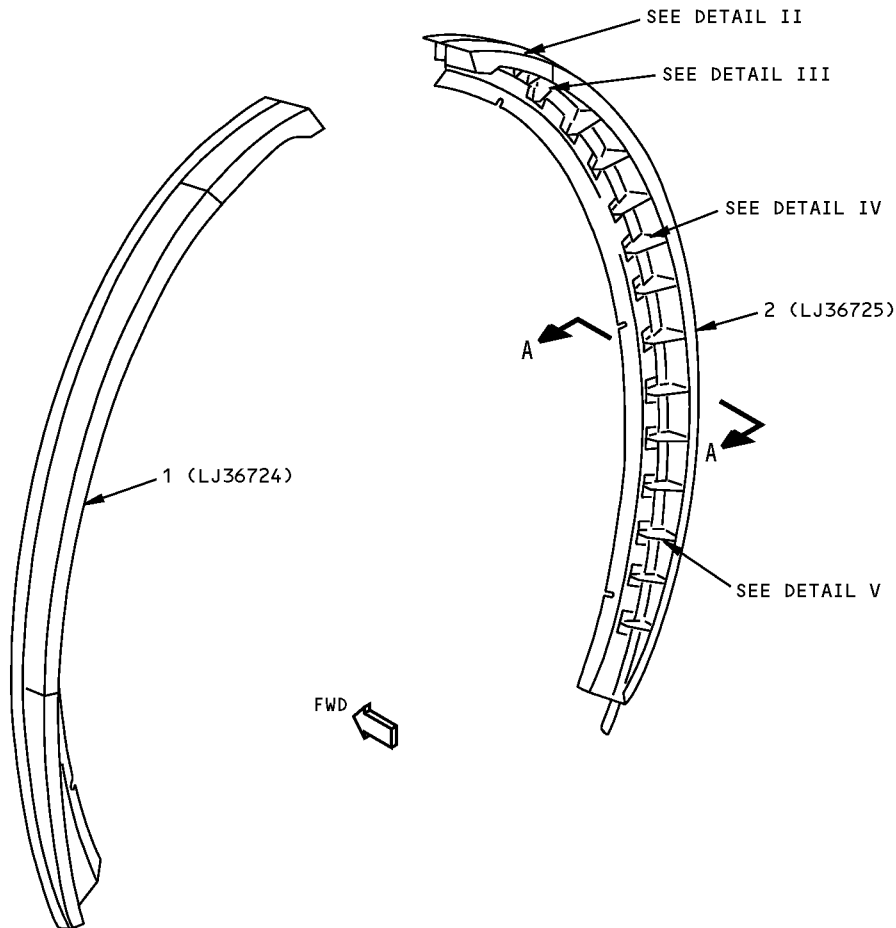
NOTES

A FOR ENGINES WITHOUT SB 71-9032.

B FOR ENGINES WITH SB 71-9032.

**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**



TYPICAL SECTION THROUGH
DETACHABLE FIREWALL FAIRING
SECTION A-A

ENGINES WITHOUT SB 71-9032
DETAIL I

C2374

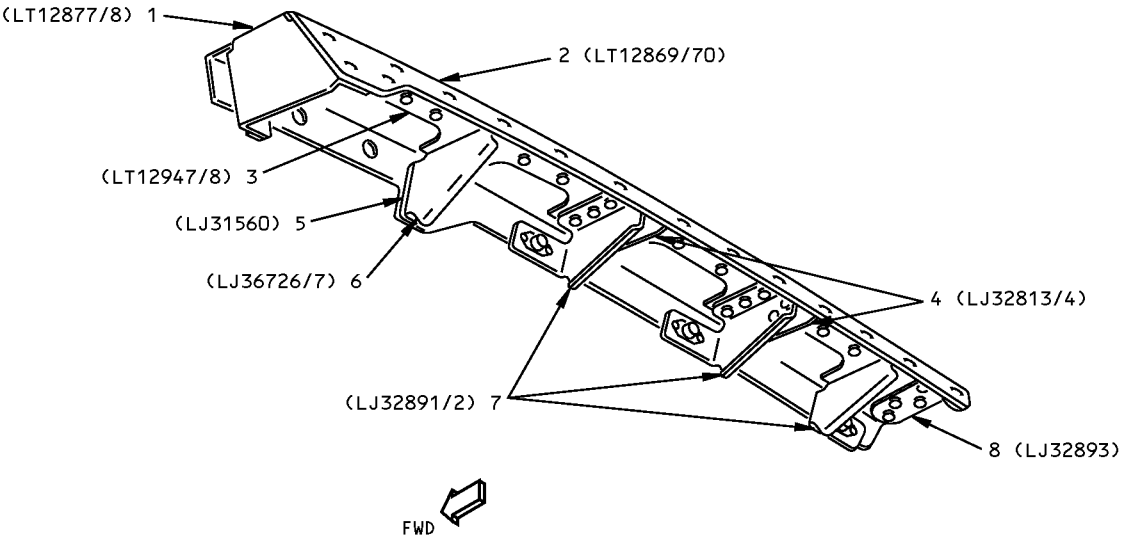
**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 11)**

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**767-300
STRUCTURAL REPAIR MANUAL**



ENGINES WITHOUT SB 71-9032
RIGHT SIDE SHOWN (LJ36723)
LEFT SIDE SIMILAR (LJ36722)
DETAIL II

c2375



**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 11)**

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	DIAPHRAGM	20SWG	L72	
2	FAIRING OUTER FIREWALL	20SWG	L72	
3	ANGLE REINFORCING	20SWG	L72	
4	ANGLE CLEAT - UPPER	18SWG	L72	
5	SPACER SHORT	22SWG	L72	
6	BRACKET SUPPORT	18SWG	STAINLESS 18/8	
7	BRACKET SUPPORT	18SWG	STAINLESS 18/8	
8	PACKING	18SWG	L72	

LIST OF MATERIALS FOR DETAILS I AND II

ENGINES WITHOUT SB 71-9032

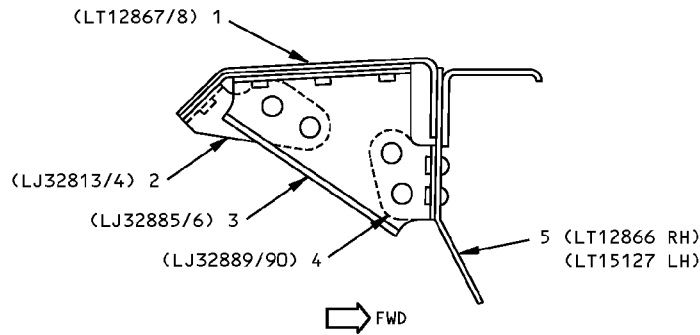
**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 11)**

D634T210

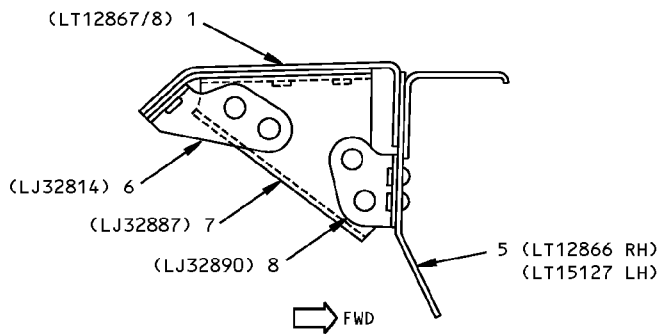
54-34-70

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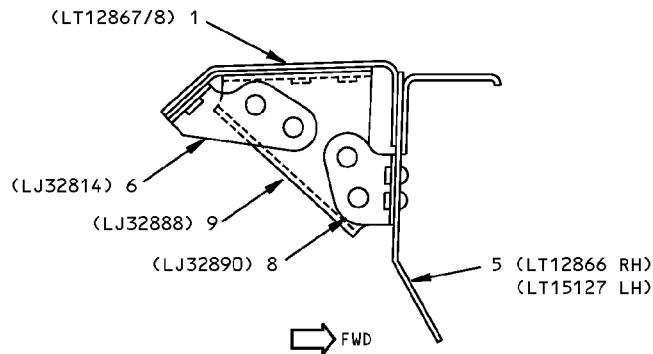
**767-300
STRUCTURAL REPAIR MANUAL**



TYPICAL 1 POSITION
DETAIL III A



TYPICAL 9 POSITIONS
DETAIL IV A



TYPICAL 1 POSITION
DETAIL V A

C2376



**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 11)**

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FAIRING OUTER - FIREWALL	20SWG	L72	
2	ANGLE CLEAT - UPPER	18SWG	L72	
3	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
4	ANGLE CLEAT - LOWER	18SWG	STAINLESS 18/8	
5	SEGMENT	18SWG	TITANIUM 155	
6	ANGLE CLEAT	18SWG	L72	
7	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
8	ANGLE CLEAT	18SWG	STAINLESS 18/8	
9	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	

LIST OF MATERIALS FOR DETAILS III, IV, AND V

ENGINES WITHOUT SB 71-9032

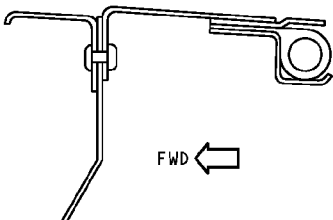
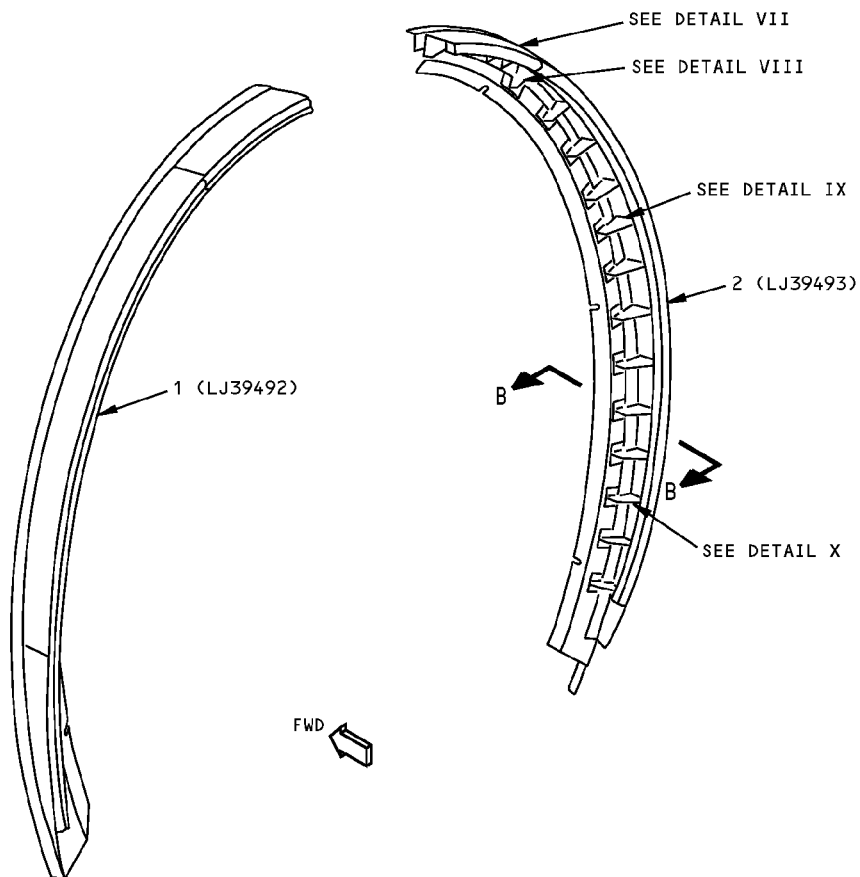
Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 11)

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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**



TYPICAL SECTION THROUGH
DETACHABLE FIREWALL FAIRING
SECTION B-B

ENGINES WITH SB 71-9032
DETAIL VI

c2377

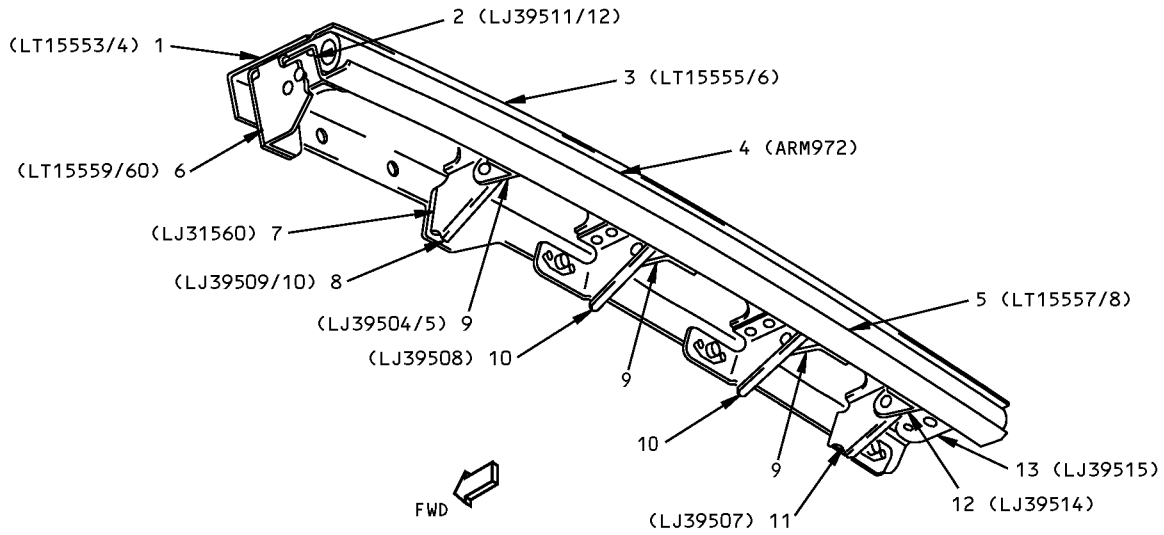
**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 7 of 11)**

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STRUCTURAL REPAIR MANUAL



ENGINES WITH SB 71-9032
RIGHT SIDE SHOWN (LJ39495)
LEFT SIDE SIMILAR (LJ39494)
DETAIL VII

C2378



Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 11)

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FAIRING OUTER	18SWG	L72	
2	CLEAT ANGLED	18SWG	STAINLESS 18/8	
3	SKIN FAIRING REINFORCING	18SWG	L72	
4	"P" SEAL	----	DTD5582 GRADE 50	
5	RETAINER SEAL	18SWG	L72	
6	DIAPHRAGM	20SWG	L72	
7	SPACER SHORT	22SWG	L72	
8	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
9	CLEAT ANGLED	18SWG	STAINLESS 18/8	
10	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
11	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
12	CLEAT ANGLED	18SWG	STAINLESS 18/8	
13	SPACER	18SWG	L72	

LIST OF MATERIALS FOR DETAILS VI AND VII

ENGINES WITH SB 71-9032

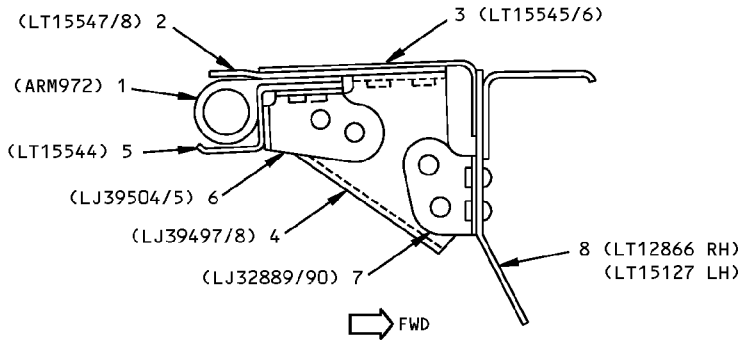
**Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 9 of 11)**

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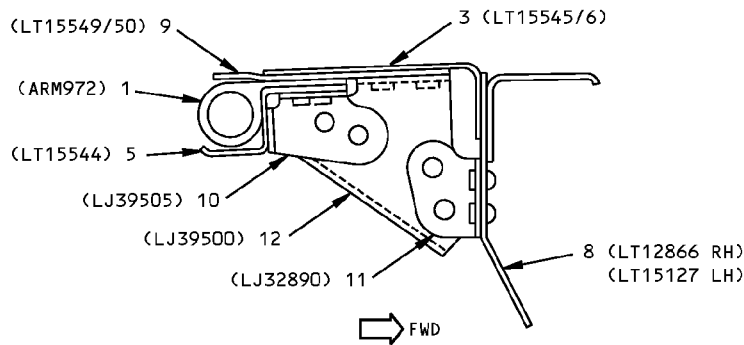
54-34-70

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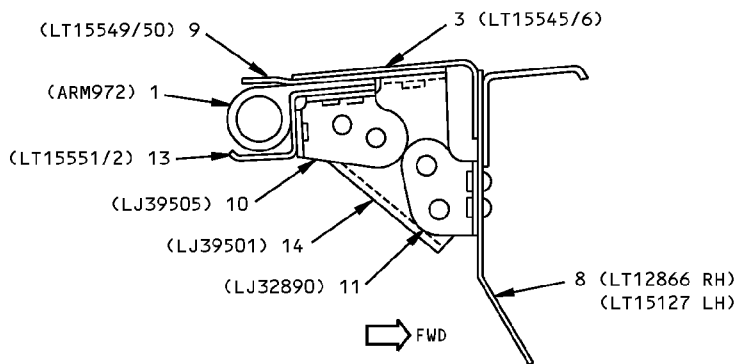
767-300
STRUCTURAL REPAIR MANUAL



TYPICAL 1 POSITION
DETAIL VIII **B**



TYPICAL 9 POSITIONS
DETAIL IX **B**



TYPICAL 1 POSITION
DETAIL X **B**

C2379



Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 10 of 11)

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	"P" SEAL	----	DTD5582 GRADE 50	
2	SKIN FAIRING REINFORCING	18SWG	L72	
3	FAIRING OUTER	18SWG	L72	
4	BRACKET FAIRING - SUPPORT	18SWG	L72	
5	RETAINER SEAL - UPPER	18SWG	L72	
6	CLEAT ANGLED - REAR	18SWG	L72	
7	CLEAT ANGLED - LOWER	18SWG	STAINLESS 18/8	
8	SEGMENT	18SWG	TITANIUM 155	
9	REINFORCING SKIN	18SWG	L72	
10	CLEAT ANGLED - REAR	18SWG	STAINLESS 18/8	
11	CLEAT ANGLED - LOWER	18SWG	STAINLESS 18/8	
12	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	
13	RETAINER SEAL - LOWER	18SWG	L72	
14	BRACKET FAIRING - SUPPORT	18SWG	STAINLESS 18/8	

LIST OF MATERIALS FOR DETAILS VII, IX AND X

ENGINES WITH SB 71-9032

Firewall Detachable Fairing Identification - RB211-524 Engine
Figure 1 (Sheet 11 of 11)

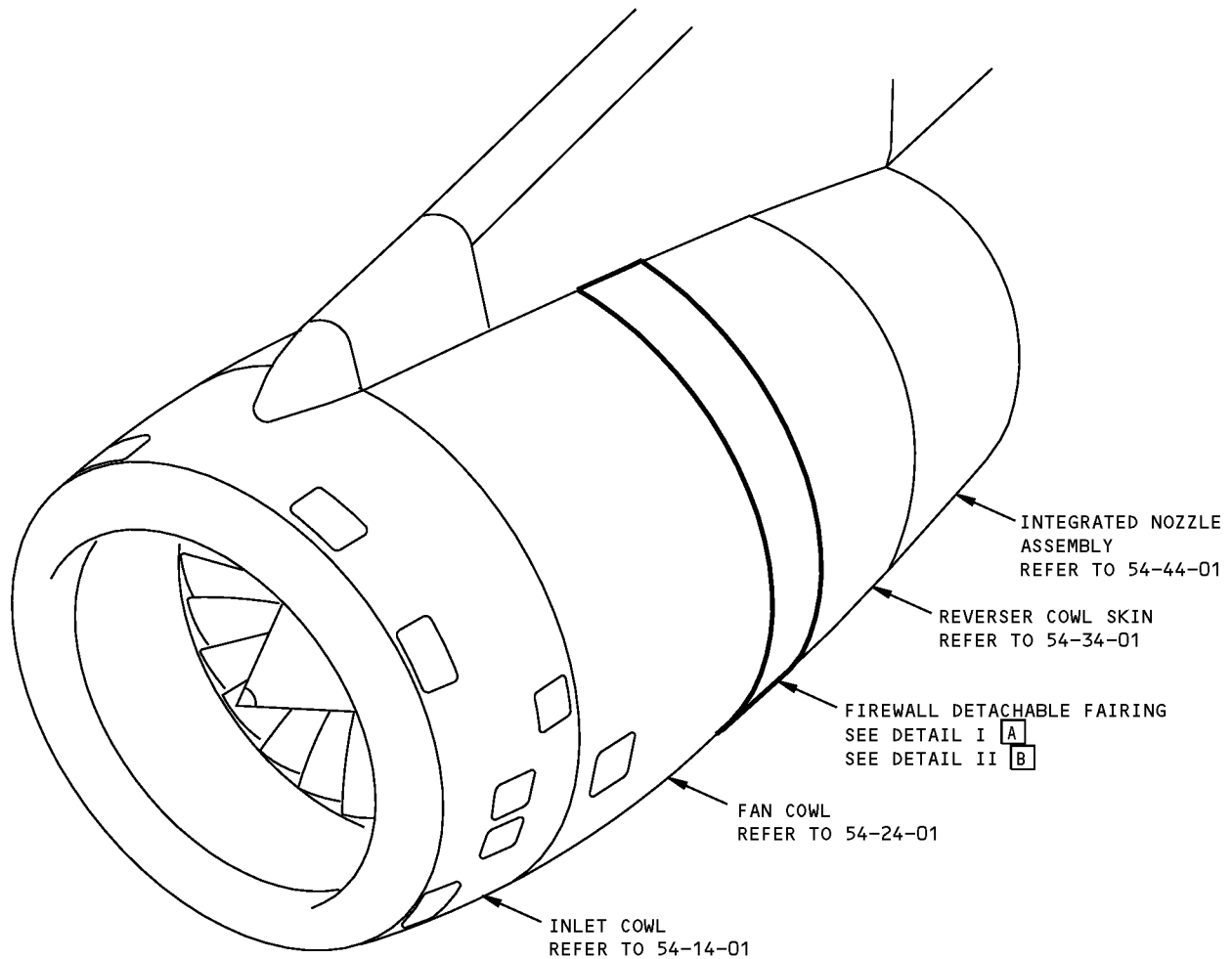
D634T210

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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - FIREWALL DETACHABLE FAIRING - RB211-524 ENGINE



NOTES

- UPON COMPLETION OF REPAIR CLEANUP, REPROTECT IN ACCORDANCE WITH 51-22-01.

A FOR ENGINES WITHOUT SB 71-9032.

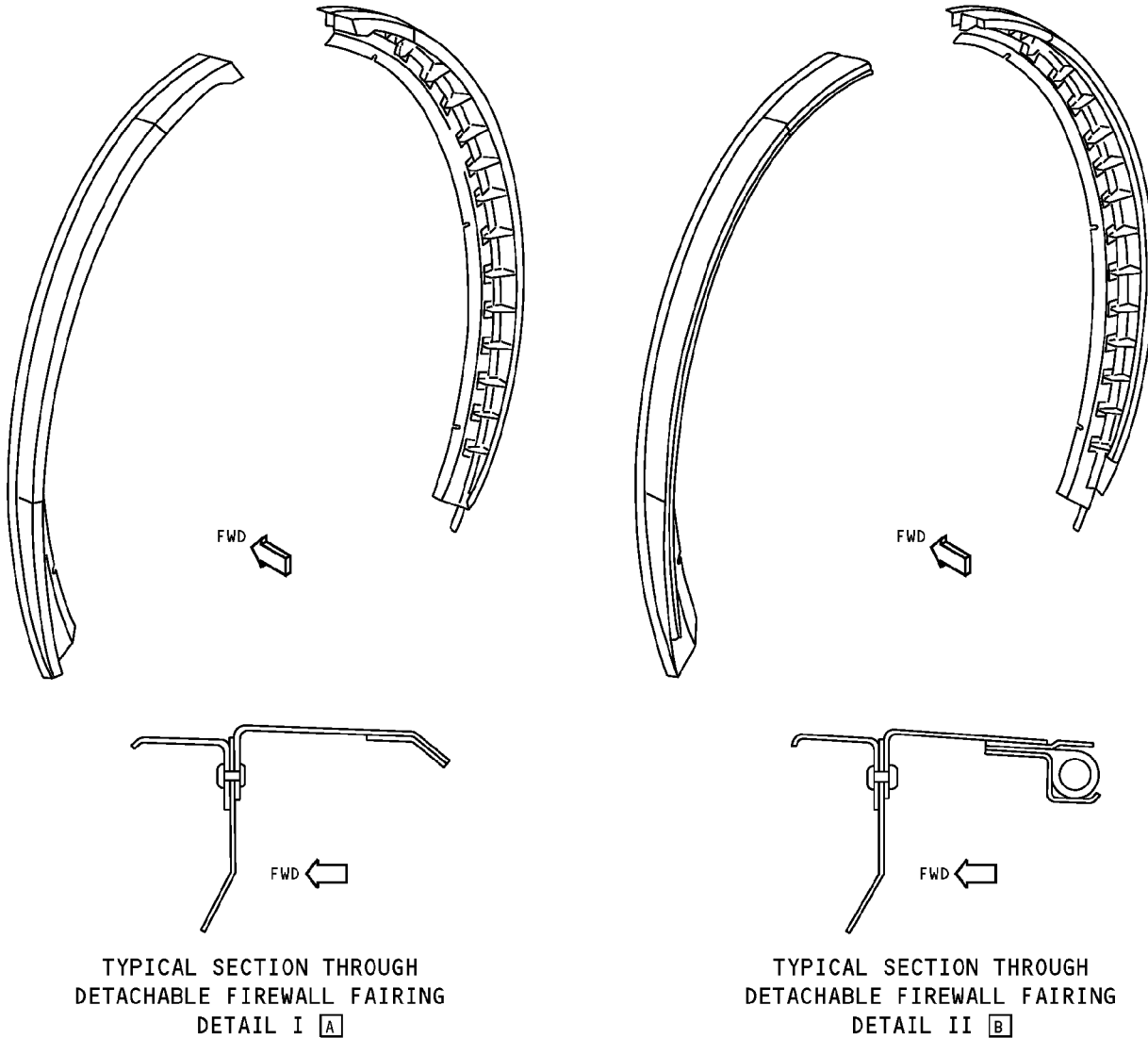
B FOR ENGINES WITH SB 71-9032.

C CRACKS TO A MAXIMUM OF 1.00 ARE ACCEPTABLE. CLEAN OUT CRACKS TO A SMOOTH ROUND HOLE AND COVER WITH SCOTCH BRAND 425 TAPE.

D DAMAGE IS ALLOWABLE UP TO 25 PERCENT OF MATERIAL THICKNESS IN DEPTH AND 2.00 IN LENGTH. REMOVE DAMAGE.

Firewall Detachable Fairing - Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 1 of 3)

767-300
STRUCTURAL REPAIR MANUAL

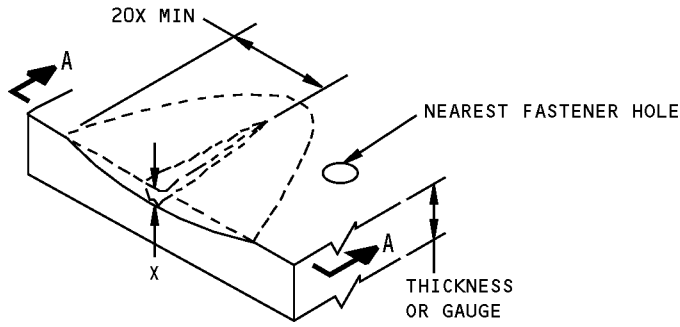


DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES
FIREWALL DETACHABLE FAIRING	[C]	[D] AND DETAIL III	SEE DETAIL IV	HOLES ARE NOT ACCEPTABLE

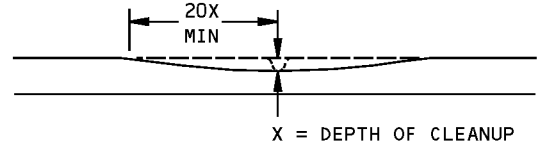
C2374
C2377

Firewall Detachable Fairing - Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 2 of 3)

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STRUCTURAL REPAIR MANUAL

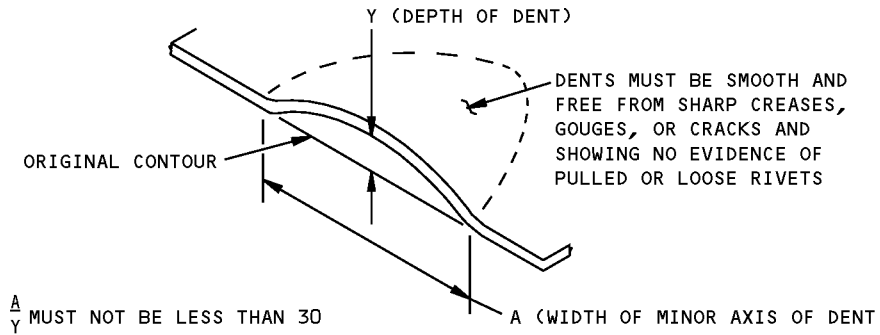


DOTTED LINE INCICATES CLEANUP AREA



BLEND OUT DAMAGE TO A SMOOTH CONTOUR
SECTION A-A

DETAIL III



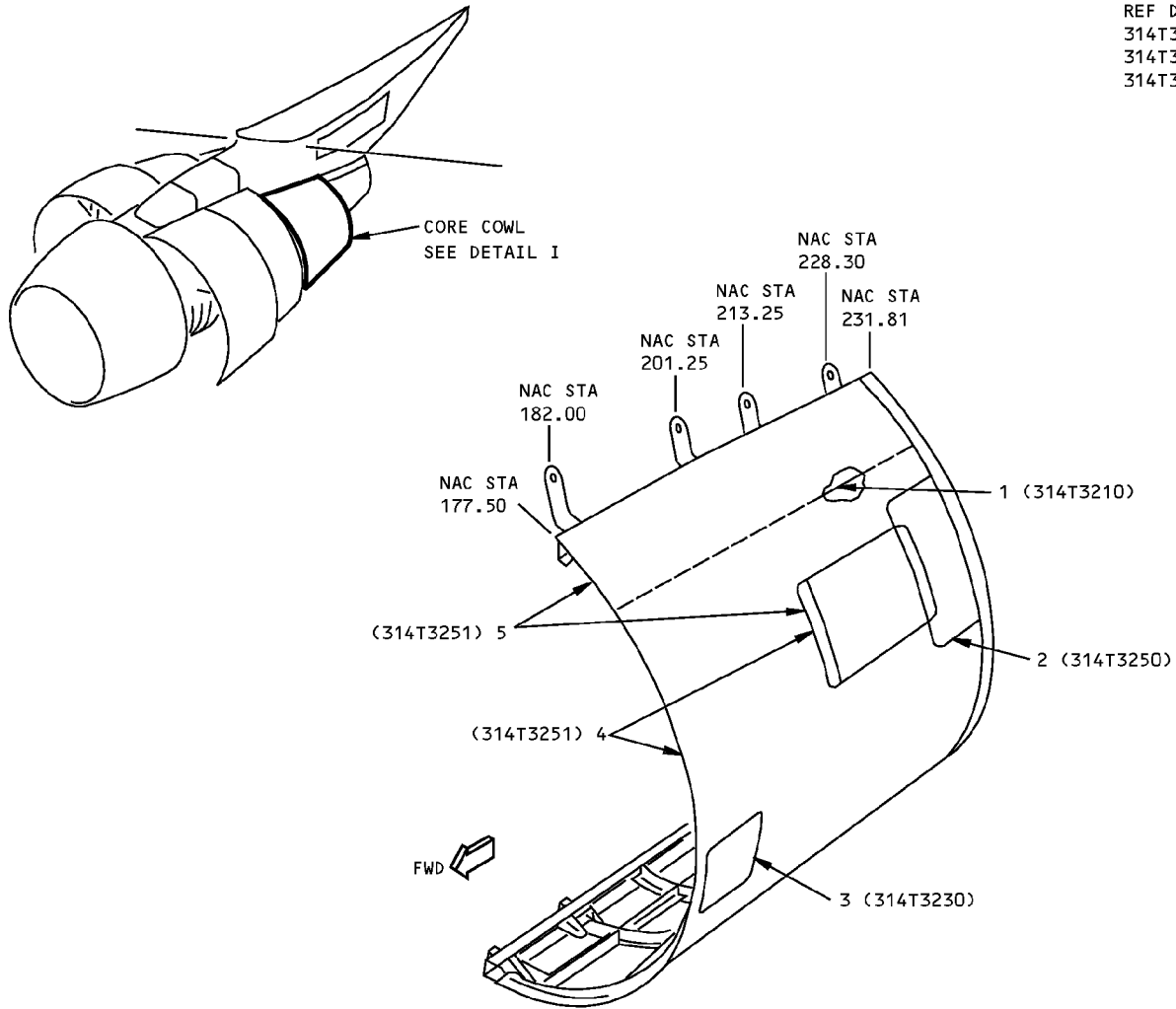
ALLOWABLE DAMAGE FOR DENT
DETAIL IV

Firewall Detachable Fairing - Allowable Damage - RB211-524 Engine
Figure 101 (Sheet 3 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL SKIN - JT9D-7R4 ENGINE

REF DWG
314T3210
314T3250
314T3251



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR

DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FIRESHIELD	0.005	304 CRES, ANNEALED, SURFACE CONDITION 2D	
2	PANEL	0.040	17-7 PH CRES COND A	
3	DOOR PANEL	0.25	CLAD 2024-T351	
4	DOUBLER	0.032	2024-T81	
5	SKIN	0.040	CLAD 2024-T81	

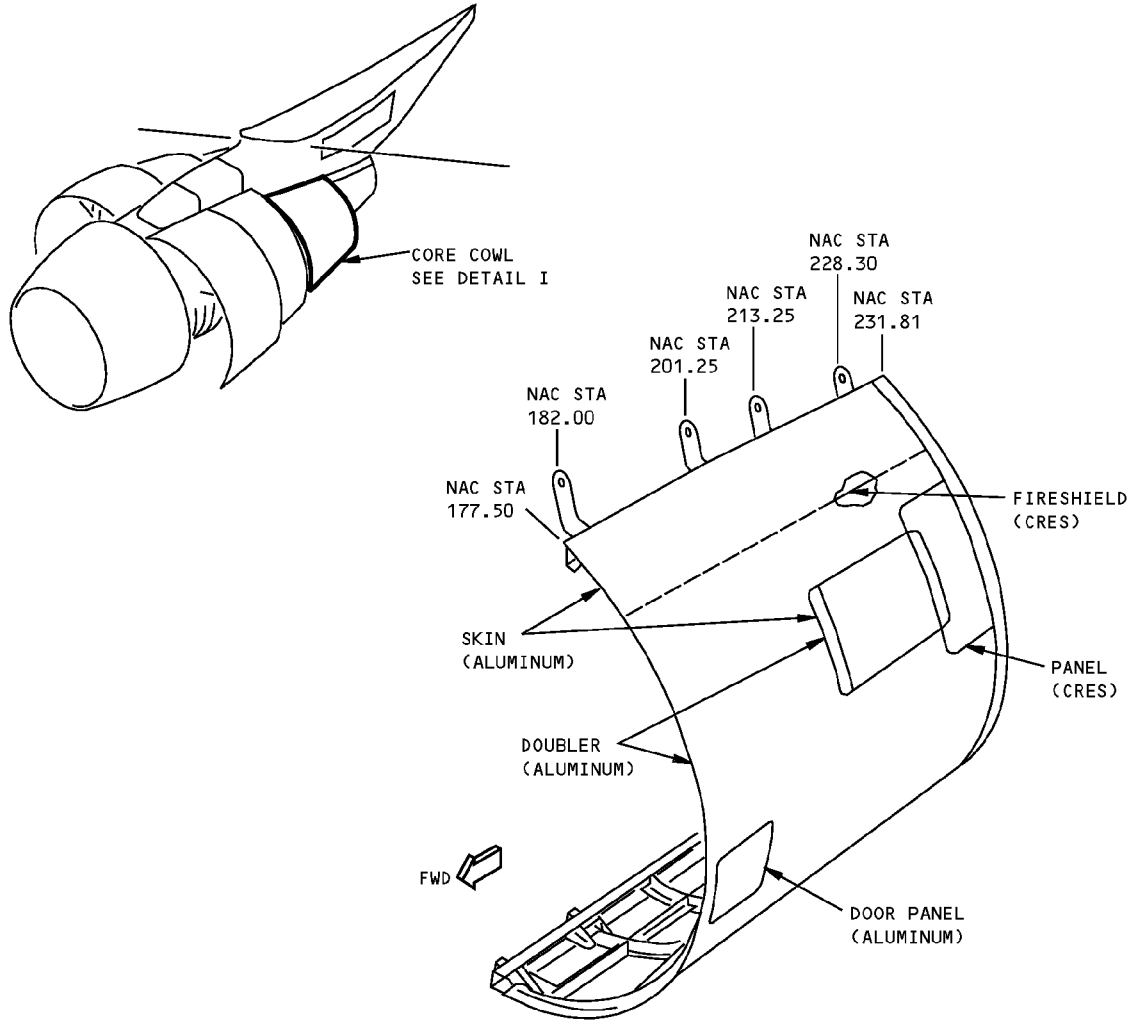
LIST OF MATERIALS FOR DETAIL I

**Core Cowl Skin Identification - JT9D-7R4 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL SKIN - JT9D-7R4 ENGINE

REF DWG
314T3210
314T3211



LEFT SIDE SHOWN
RIGHT SIDE EQUIVALENT

DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FIRESHIELD (CRES)	A	B	SEE DETAIL IV	C
PANEL (CRES)	A	B	SEE DETAIL IV	C
DOOR PANEL (ALUMINUM)	E	B	SEE DETAIL IV	D
DOUBLER (ALUMINUM)	A	B	SEE DETAIL IV	D
SKIN (ALUMINUM)	E	B	SEE DETAIL IV	D

**Allowable Damage - Core Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

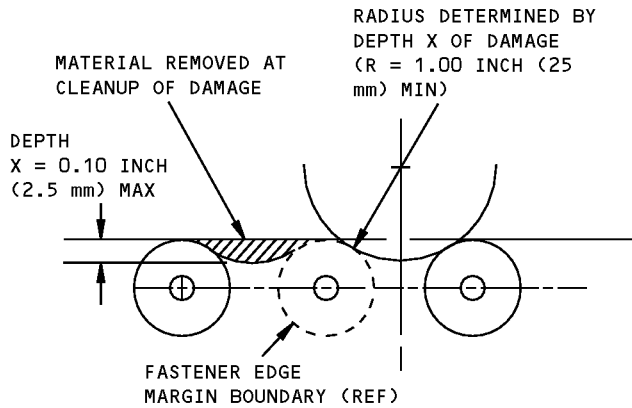
STRUCTURAL REPAIR MANUAL

NOTES

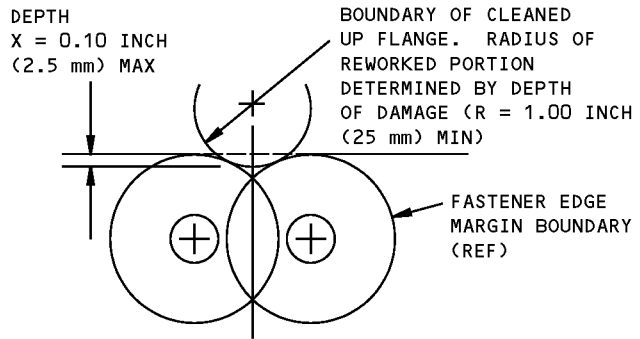
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL

- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III, V AND VI
- C** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH MONEL RIVET INSTALLED DRY

- D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED
- E** 1.00 INCH (25 mm) MAX LENGTH CRACK ALLOWED PROVIDED CRACK IS MIN. 6.00 INCHES (15 cm) FROM HINGE OR LATCH FITTINGS AND MIN. 3.00 INCHES (76 mm) FROM PANEL EDGE OR ADJACENT CRACK. DRILL 0.19 INCH (5 mm) STOP HOLES AT END OF CRACK AND REPAIR AT NEXT AIRPLANE "A" CHECK. REMOVE EDGE CRACKS PER DETAILS II AND VI



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

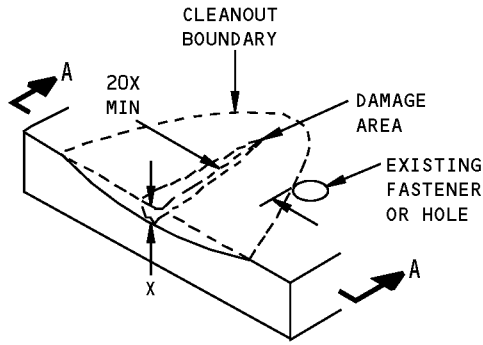


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

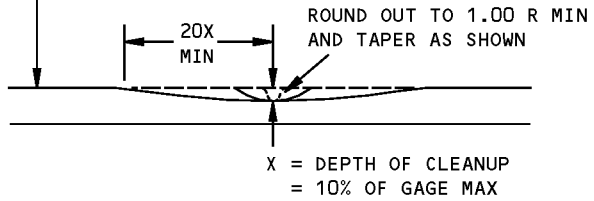
DETAIL II

Allowable Damage - Core Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

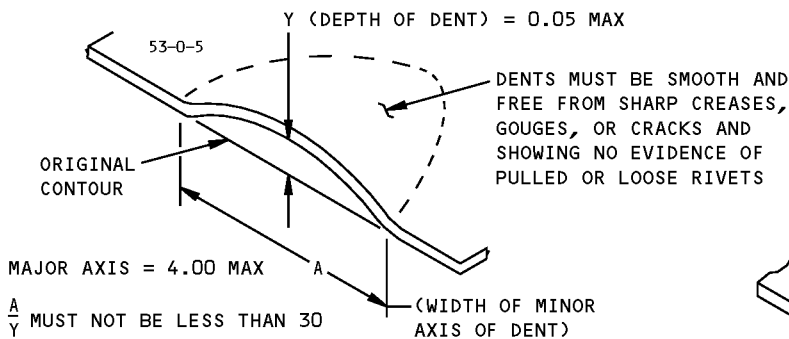


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



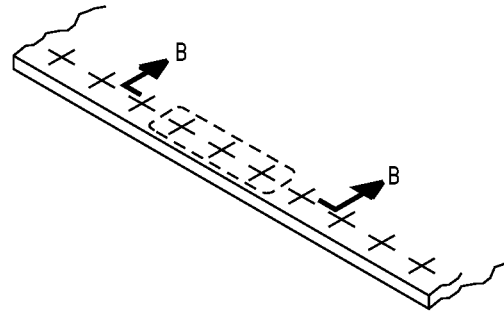
SECTION A-A

DETAIL III



DENTS MUST BE SMOOTH AND FREE FROM SHARP CREASES, GOUGES, OR CRACKS AND SHOWING NO EVIDENCE OF PULLED OR LOOSE RIVETS

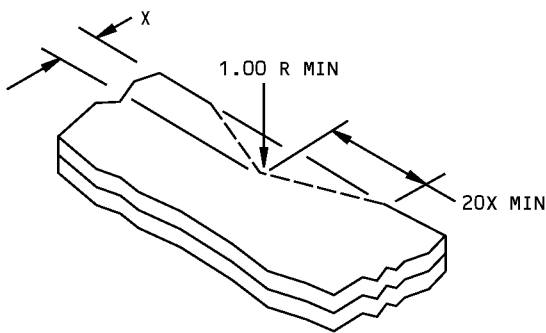
**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

**SECTION B-B
CORROSION CLEANUP**

DETAIL V



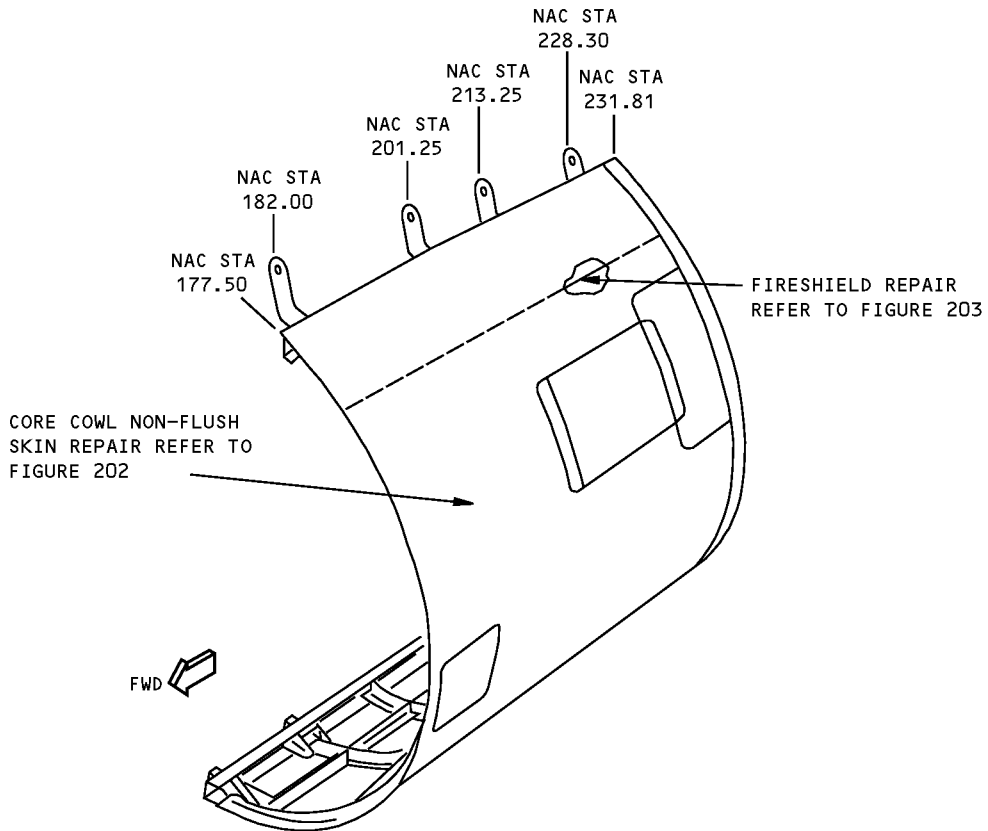
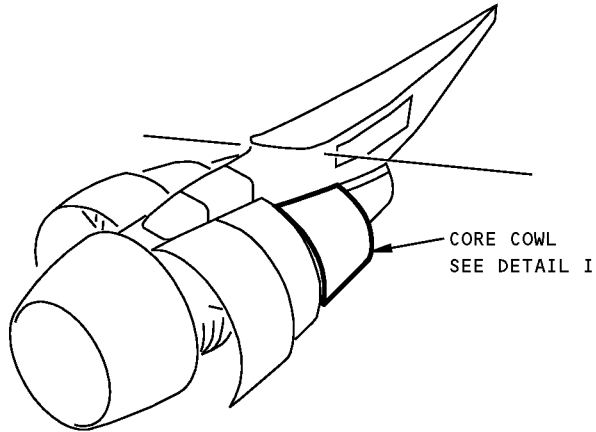
X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL VI

**Allowable Damage - Core Cowl Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL SKIN - JT9D-7R4 ENGINE



LEFT SIDE SHOWN
RIGHT SIDE EQUIVALENT

DETAIL I

**Core Cowl Skin Repair - JT9D-7R4 Engine
Figure 201**



767-300

STRUCTURAL REPAIR MANUAL

REPAIR 2 - CORE COWL NON-FLUSH REPAIR - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

NOTE: THIS REPAIR IS FOR ALUMINUM SKIN PORTION OF CORE COWL

1. Cut out the damaged skin to a regular shape, taking special care not to remove any of the CRES fireshield. (See detail I)
2. Make the repair parts. Form the repair plate to required contour.
3. Locate, drill and countersink fastener holes.
4. Remove all nicks, scratches, burrs, and sharp edges from initial and repair parts.
5. Alodine treat and apply one coat of BAC5710, Type 51 (DeSoto Hi-Temp) primer to all repair parts, raw edges and reworked surfaces of skin panels. Allow to dry.
6. Apply a second coat of Hi-Temp primer to faying surfaces of repair parts and skin panel. Install repair parts while primer is wet.
7. Install BACR15CE5KE rivets wet with Hi-Temp primer.
8. Wipe off excess primer from exterior surface with solvent.
9. Restore finish.

NOTES

- DAMAGE LOCATION IS IN CRITICAL SONIC ENVIRONMENT. IF CRACKING OR DETERIORATION OF REPAIR IS EVIDENT, CONTACT THE BOEING COMPANY.
- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS.

SYMBOLS

- ✚ ORIGINAL FASTENER LOCATION
- ⊕ REPAIR FASTENER IN EXISTING LOCATION. INSTALL BACR15CE6KE RIVET
- ⦿ REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15CE5KE RIVET

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	REPAIR PLATE	1	0.071 CLAD 2024-T3
2	STIFFENER	2	0.071 CLAD 2024-T3,T4 OR T62
3	SHIM	AS REQD	AS REQD CLAD 2024-T3,T4 OR T62
4	TAPERED SHIM	AS REQD	AS REQD CLAD 2024-T3,T4 OR T62

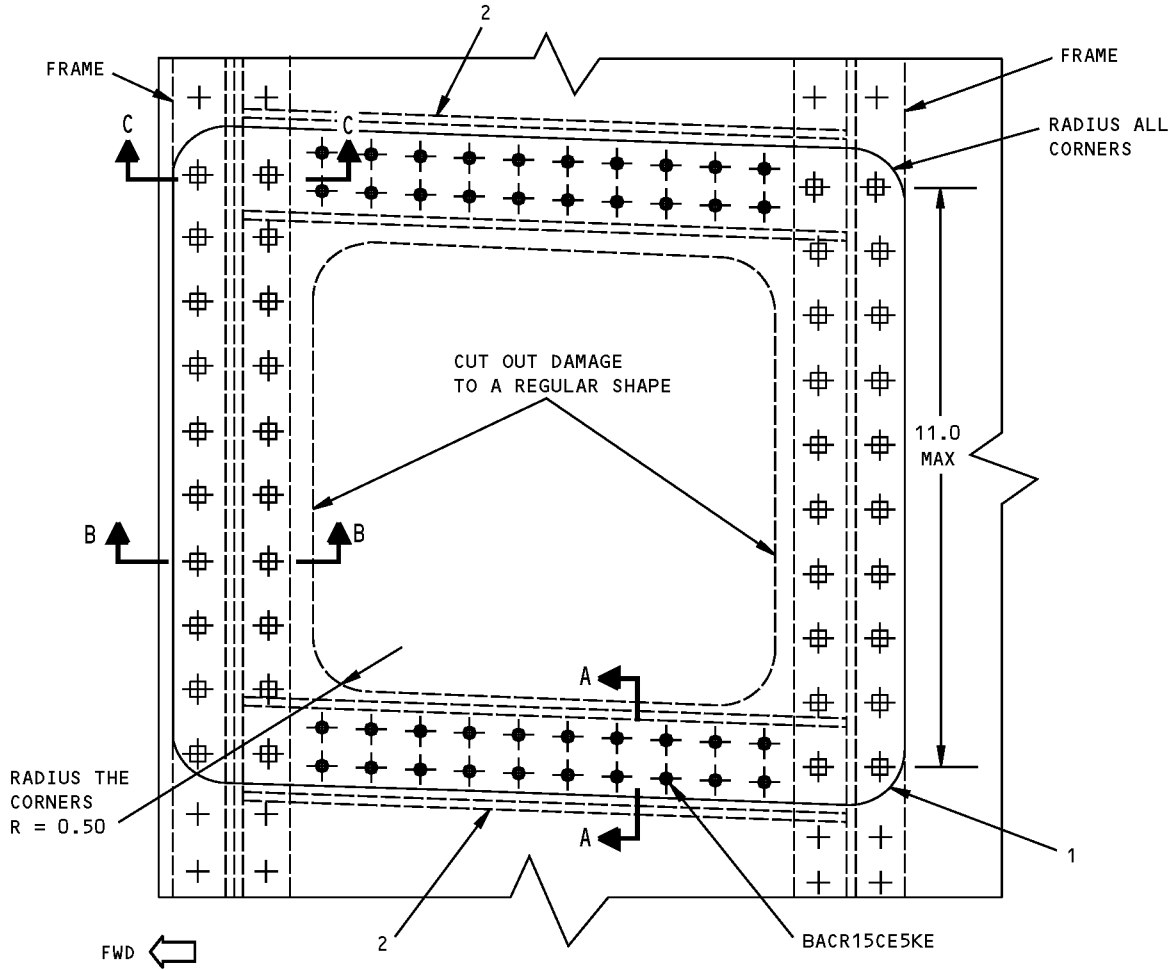
Core Cowl Non-Flush Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)

D634T210

54-40-01

REPAIR 2
Page 201
Apr 01/2005

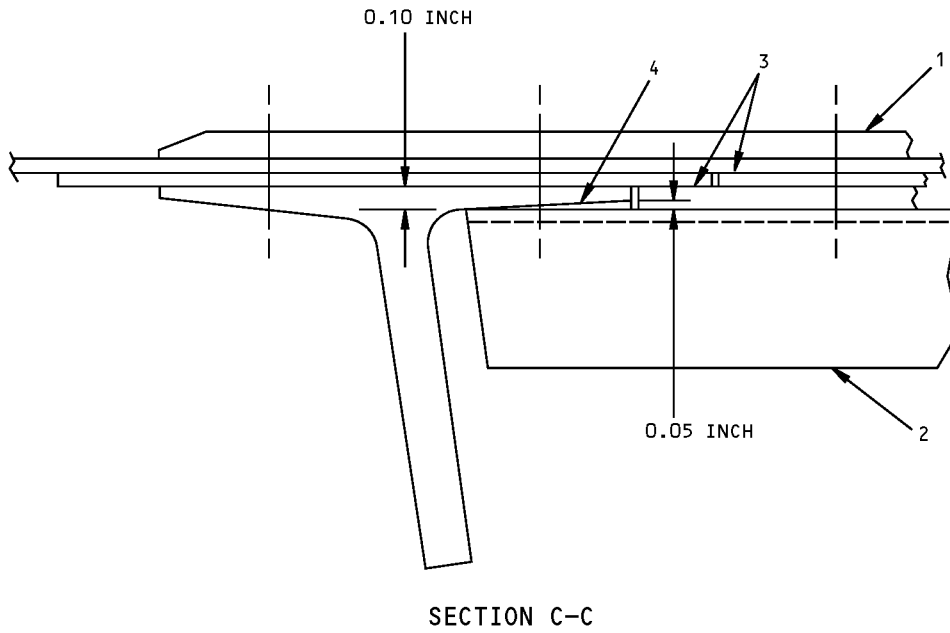
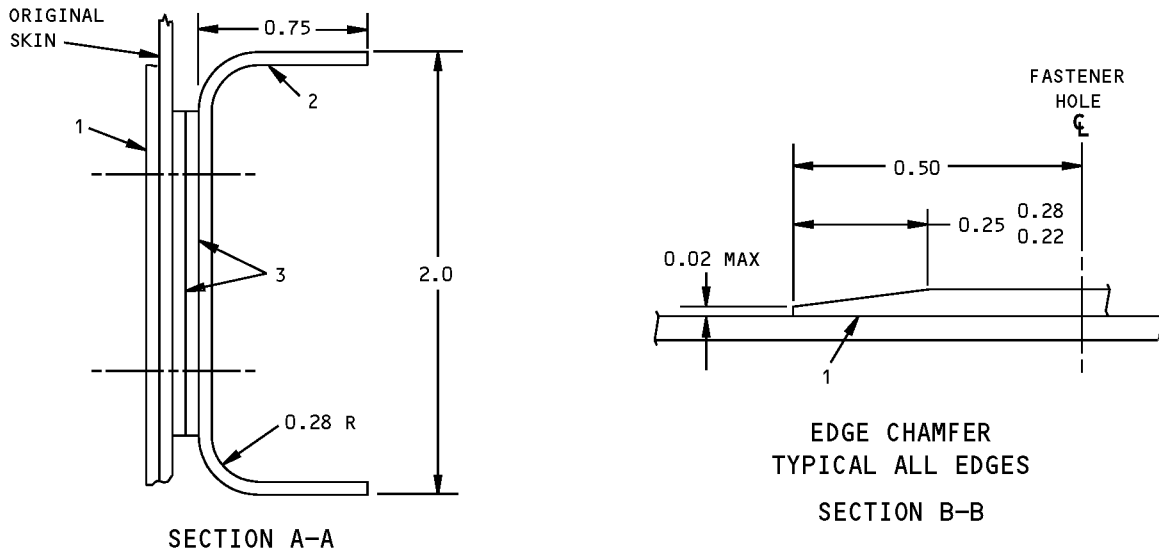
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF DAMAGE IN SKIN WITHOUT POCKET
DETAIL II**

**Core Cowl Non-Flush Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Core Cowl Non-Flush Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)**

767-300 STRUCTURAL REPAIR MANUAL

REPAIR 3 - FIRESHIELD DELAMINATION - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and corners from original and repair parts.
4. Alodine treat and apply one coat of BAC 5710, Type 51 (DeSoto Hi-Temp) Primer to repair part. Allow to dry.
5. Apply second coat of Hi-Temp primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
6. Install BACR15CE5M rivets with wet Hi-Temp primer.

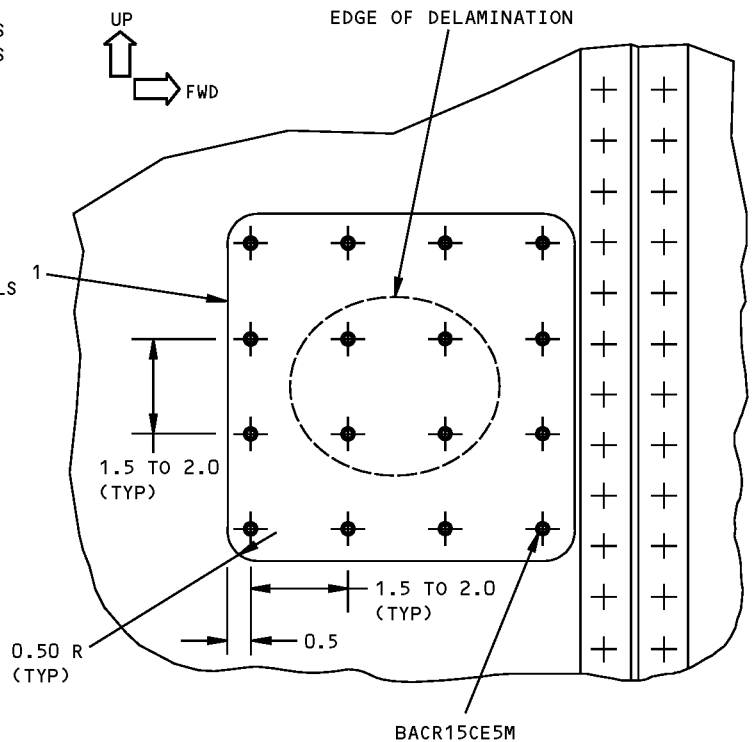
SYMBOLS

REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN USING THESE REPAIRS:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS



**Fireshield Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL

ALTERNATE REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and sharp edges from initial and repair parts.
4. Apply coat of BAC 5710, Type 51 (DeSoto Hi-Temp) primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
5. Install BACR15CE5M rivets with wet Hi-Temp primer.

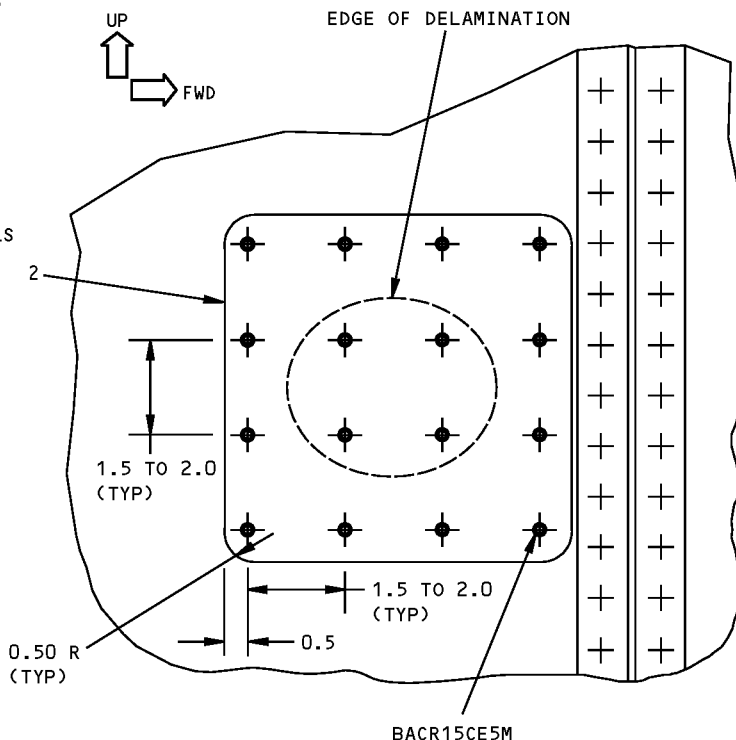
SYMBOLS

✦ REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
2	DOUBLER	1	0.020 301 CRES 1/2 HARD

NOTES

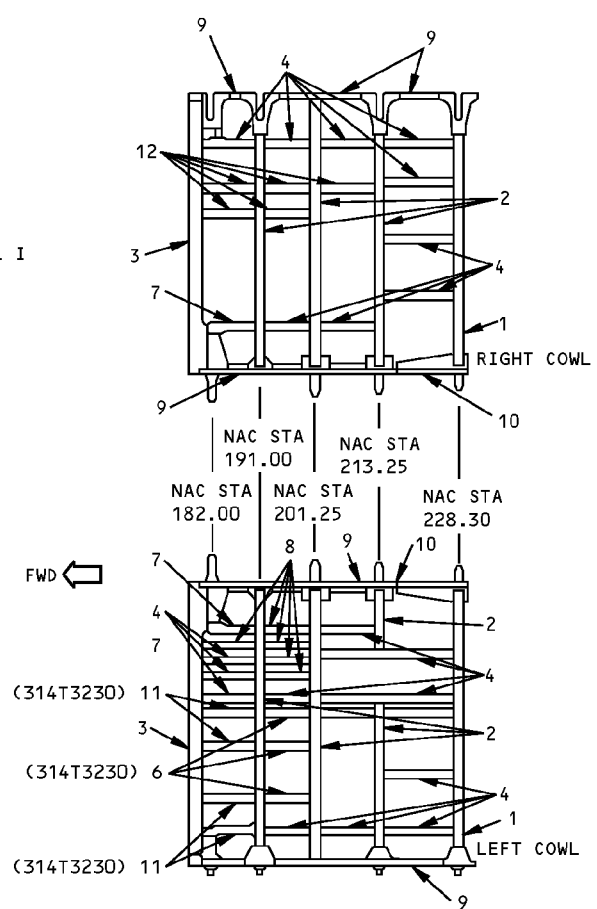
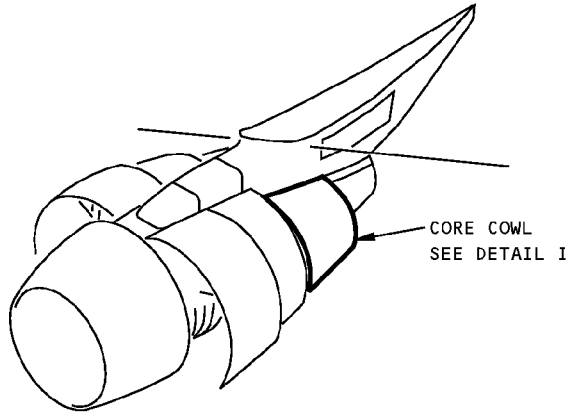
- REFER TO THE FOLLOWING WHEN USING THESE REPAIRS:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS



**Fireshield Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL STRUCTURE - JT9D-7R4 ENGINE



REF DWG
314T3210
314T3230
314T3250

DETAIL I

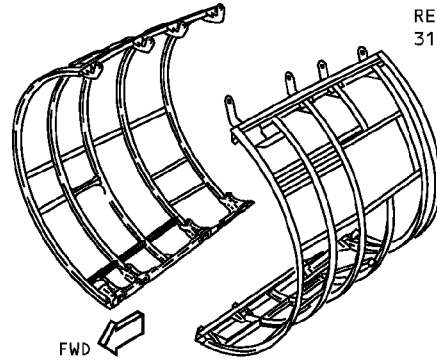
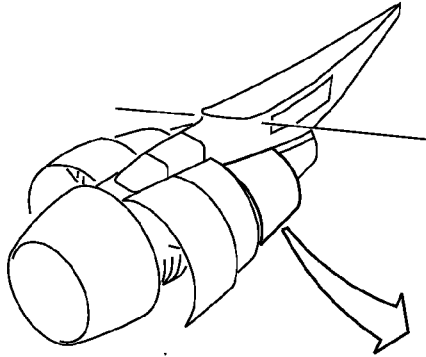
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FRAME		FORGED RING A286 CRES	
2	FRAME		BAC1506-3569 2219-T62	
3	FRAME		FORGED RING 2219-T852	
4	INTERCOSTAL		AND 10136-2407 2219-T62	
5	INTERCOSTAL		BAC 1506-2173 2024-T42	
6	INTERCOSTAL		BAC 1506-2173 2024-T62	
7	INTERCOSTAL		BAC 1505-100547 2219-T62	
8	INTERCOSTAL		FORGING 2219-T6	
9	LONGERON	0.071	CLAD 2219-T62	
10	LONGERON		FORGING 15-5 PH CRES	
11	LONGERON		BAC 1506-2173 2024-T42	
12	INTERCOSTAL		BAC 1505-100351 2219-T62	

LIST OF MATERIALS FOR DETAIL I

**Core Cowl Structure Identification - JT9D-7R4 Engine
Figure 1**

STRUCTURAL REPAIR MANUAL

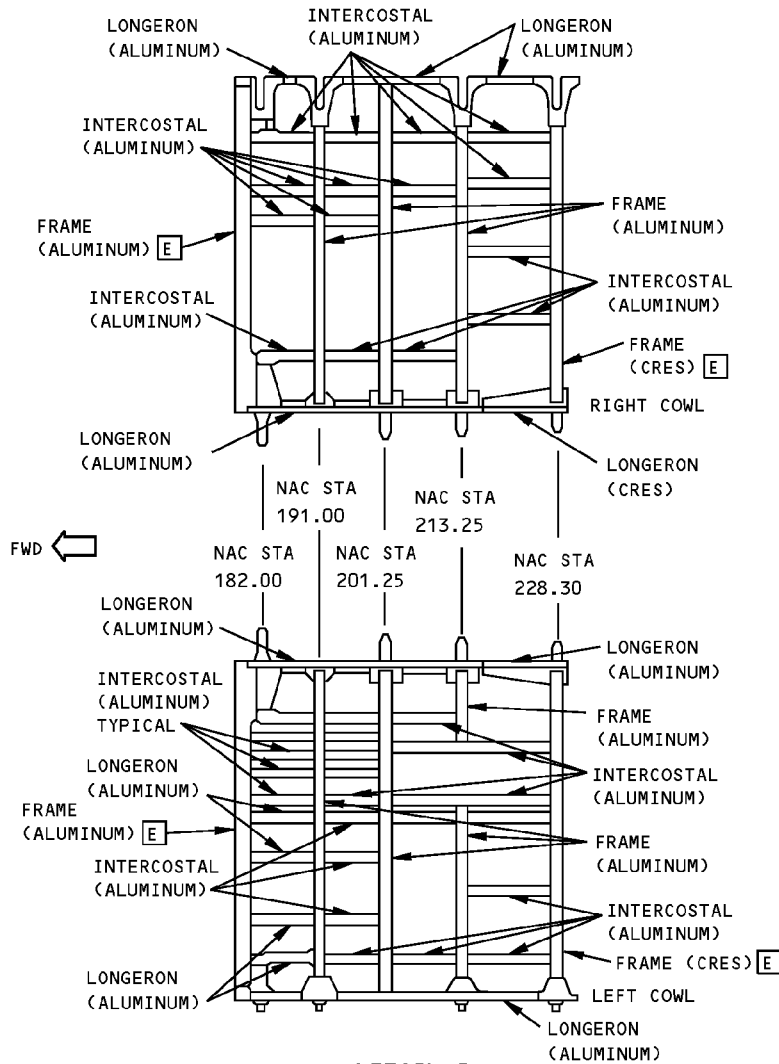
ALLOWABLE DAMAGE 1 - CORE COWL STRUCTURE - JT9D-7R4 ENGINE



REF DWG
314T3210

FWD

SEE DETAIL I FOR FLAT
PATTERN - COWL STRUCTURE



DETAIL I

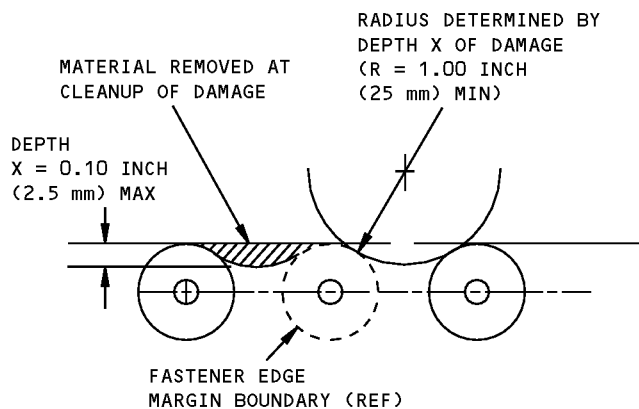
**Allowable Damage - Core Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

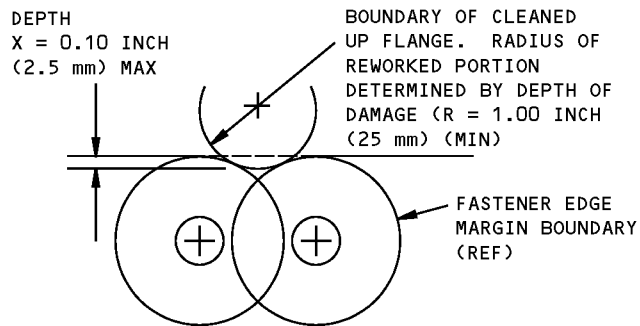
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FRAMES	A	B	C E	D E
LONGERONS	A	B	C	NOT ALLOWED
INTERCOSTALS	A	B	C	D

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI.
- B** REMOVE DAMAGE PER DETAILS II, IV, V AND VI.
- C** DENTS ARE ALLOWED ON FREE FLANGE AND WEB ONLY. SEE DETAIL III.
- D** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 4D TO FASTENER HOLE, OR 2D +0.05 TO MATERIAL EDGE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED. DAMAGE ALLOWED ON FREE FLANGE AND WEB ONLY.
- E** DENTS, HOLES, AND PUNCTURES ARE NOT ALLOWED FOR FRAMES AT NAC. STA 180.0 AND NAC. STA. 228.3.



DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP

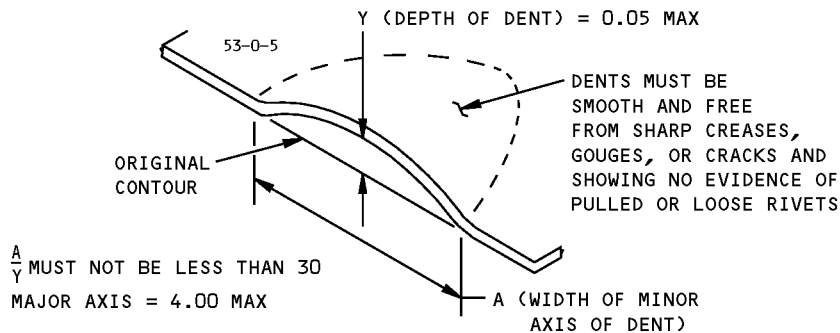


DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP

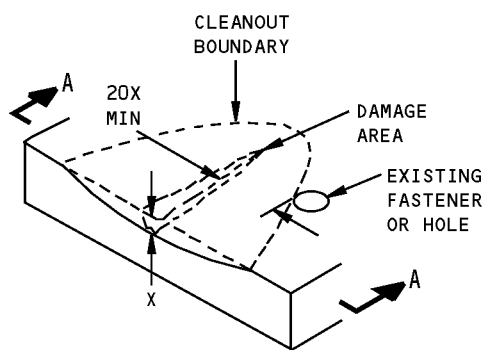
DETAIL II

**Allowable Damage - Core Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)**

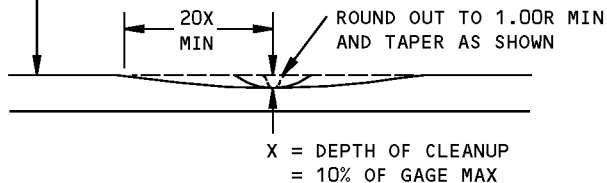
STRUCTURAL REPAIR MANUAL



**ALLOWABLE DAMAGE FOR DENT
DETAIL III**

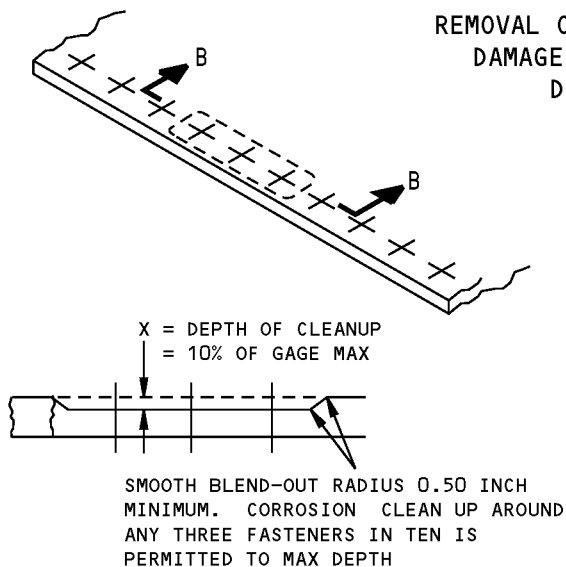


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

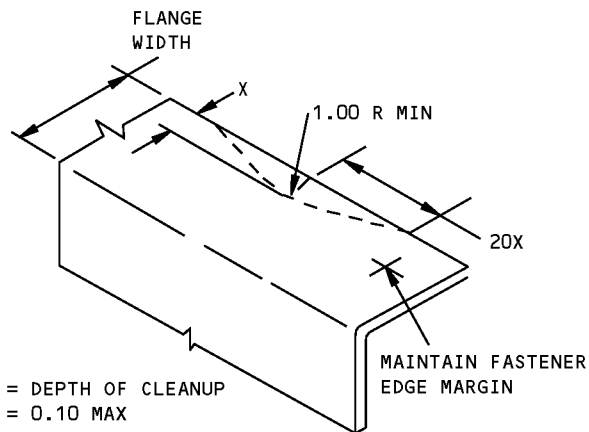


SECTION A-A

**REMOVAL OF NICK OR GOUGE
DAMAGE ON A SURFACE
DETAIL IV**



**SECTION B-B
CORROSION CLEANUP
DETAIL V**



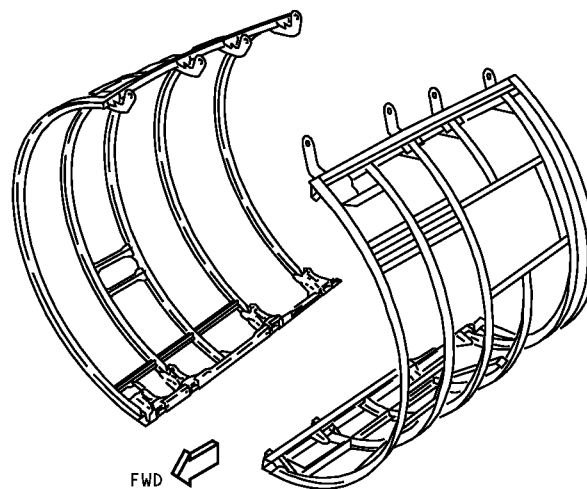
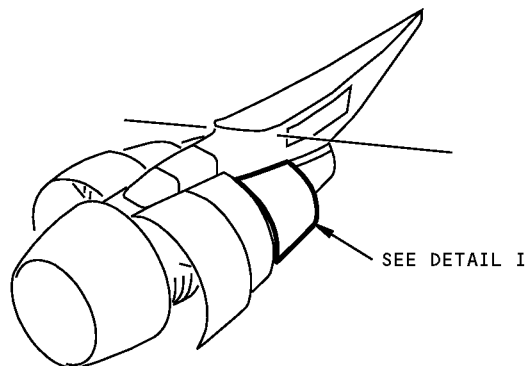
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL VI**

**Allowable Damage - Core Cowl Structure - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL STRUCTURE - JT9D-7R4 ENGINE

REF DWG
314T3210



SEE DETAIL II FOR REPAIRS TO LOAD SHARING NACELLES

DETAIL I

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL

- A** SEE 51-70-12 FOR EXTRUDED SECTION REPAIR
- B** NO REPAIRS APPLICABLE. REPAIRS WILL BE BASED ON SERVICE EXPERIENCE

Core Cowl Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)

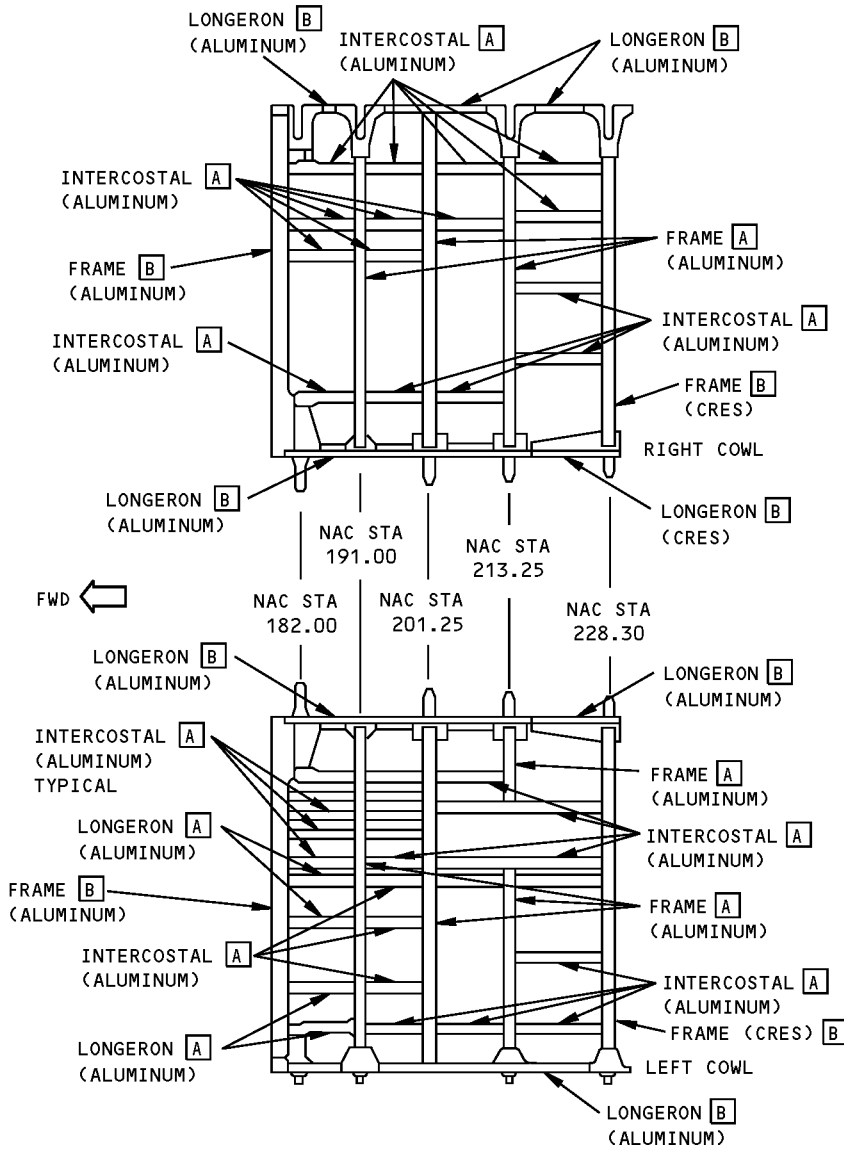
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REPAIR 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
314T3210



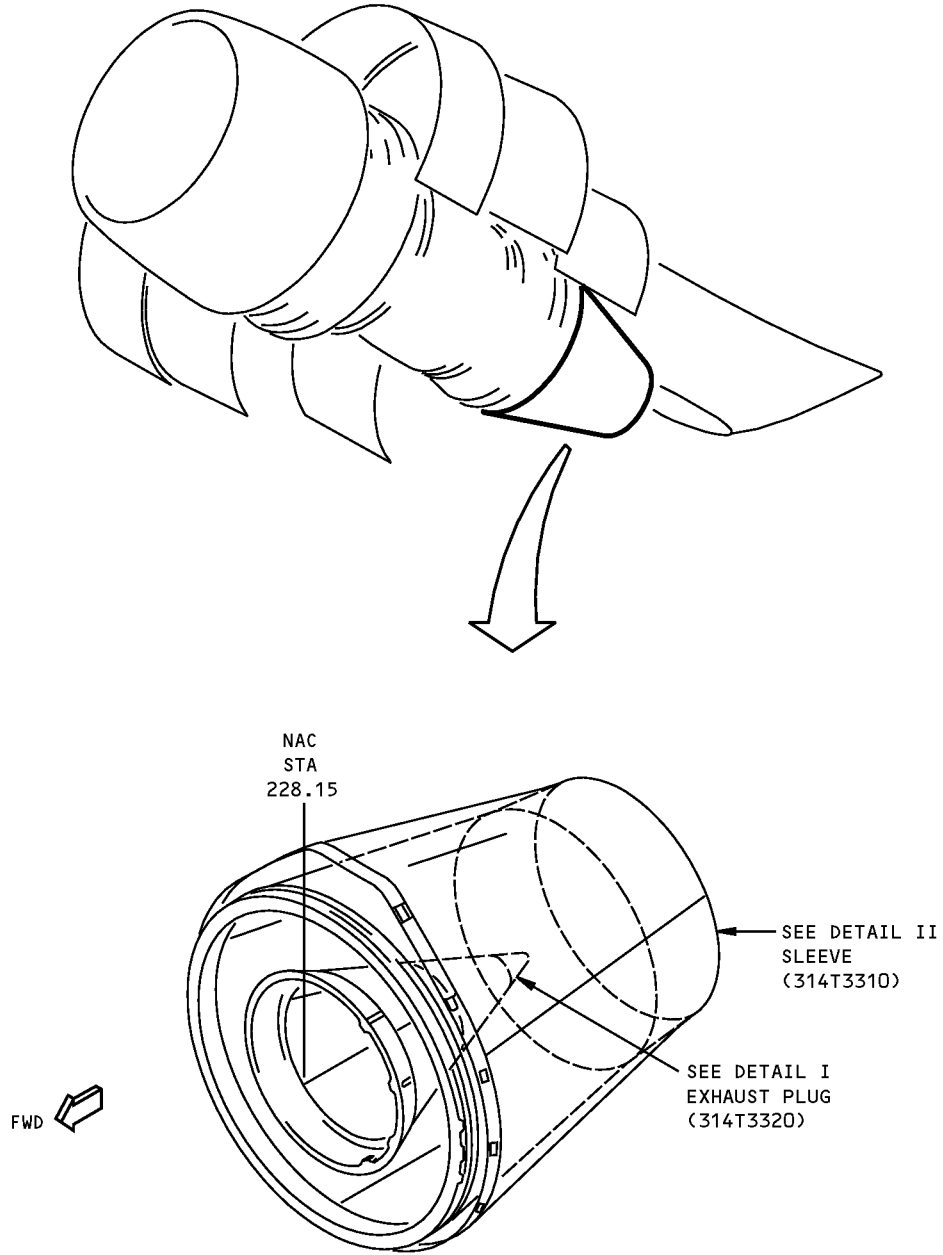
DETAIL II

**Core Cowl Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - PRIMARY EXHAUST - JT9D-7R4 ENGINE

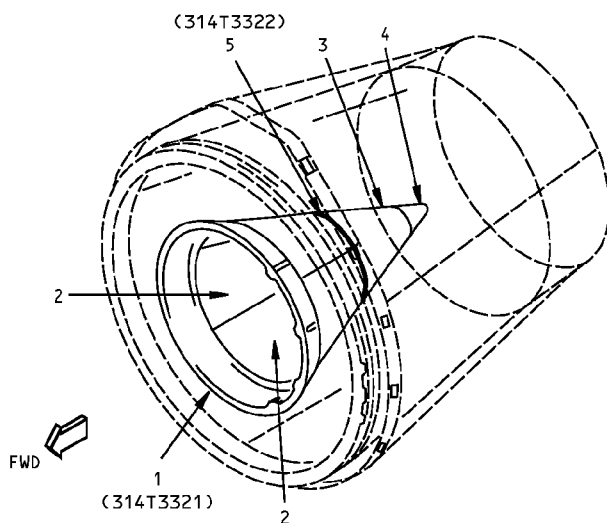
REF DWG
333T3000



**Primary Exhaust Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T3320



**EXHAUST PLUG
DETAIL I**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FWD RING		EXTRUSION PH15-7MO CRES PER AMS 5657 COND A	
2	PANEL		PH15-7 CRES HONEYCOMB TRE3300-1A-3/8C-15-7/15-7PX 2020-15-7/150/041	
3	CONE	0.050	PH15-7MO CRES PER AMS 5657 COND A	
4	END CAP	0.050	PH15-7MO CRES PER AMS 5657 COND A	
5	AFT RING		BAR STOCK PH15-7MO CRES PER AMS 5657 COND A	

LIST OF MATERIALS FOR DETAIL I

**Primary Exhaust Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 3)**

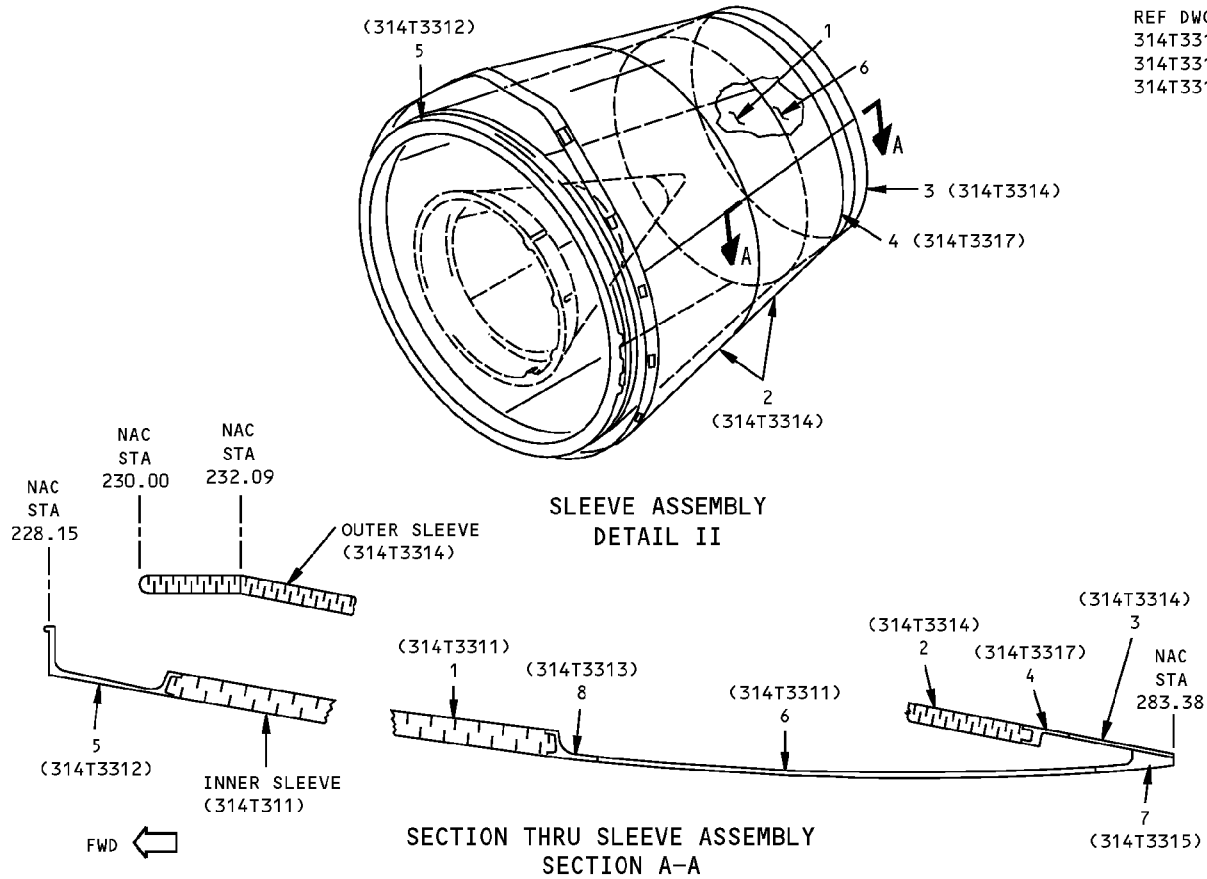
IDENTIFICATION 1
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54-40-30

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T3310
314T3311
314T3314



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL		TRE3300-1A-3/8C-15-7/15 -7PX/2020-15-7/50/041	
2	PANEL		TRE3200-1A-3/8C-15-7/15 -7/1818-15-7/30/025 OPTIONAL: TRE3200-1A-3/8C-15-7/15 -7/1212-15-7/30/025	
3	AFT SKIN	0.063 OPT. 0.075	PH15-7MO CRES COND A PER AMS 5520	
4	AFT RING	0.375	BAR PH15-7MO CRES COND A PER AMS 5657	
5	FWD RING		EXTRUSION PH15-7MO CRES COND A PER AMS 5657	
6	NOZZLE	0.050	PH15-7MO CRES COND A PER AMS 5520	
7	ATTACHMENT MEMBER	0.375	PH15-7MO CRES COND A PER AMS 5657	
8	AFT RING	0.500	PH15-7MO CRES COND A PER AMS 5657	

LIST OF MATERIALS FOR DETAIL II

**Primary Exhaust Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 3)**

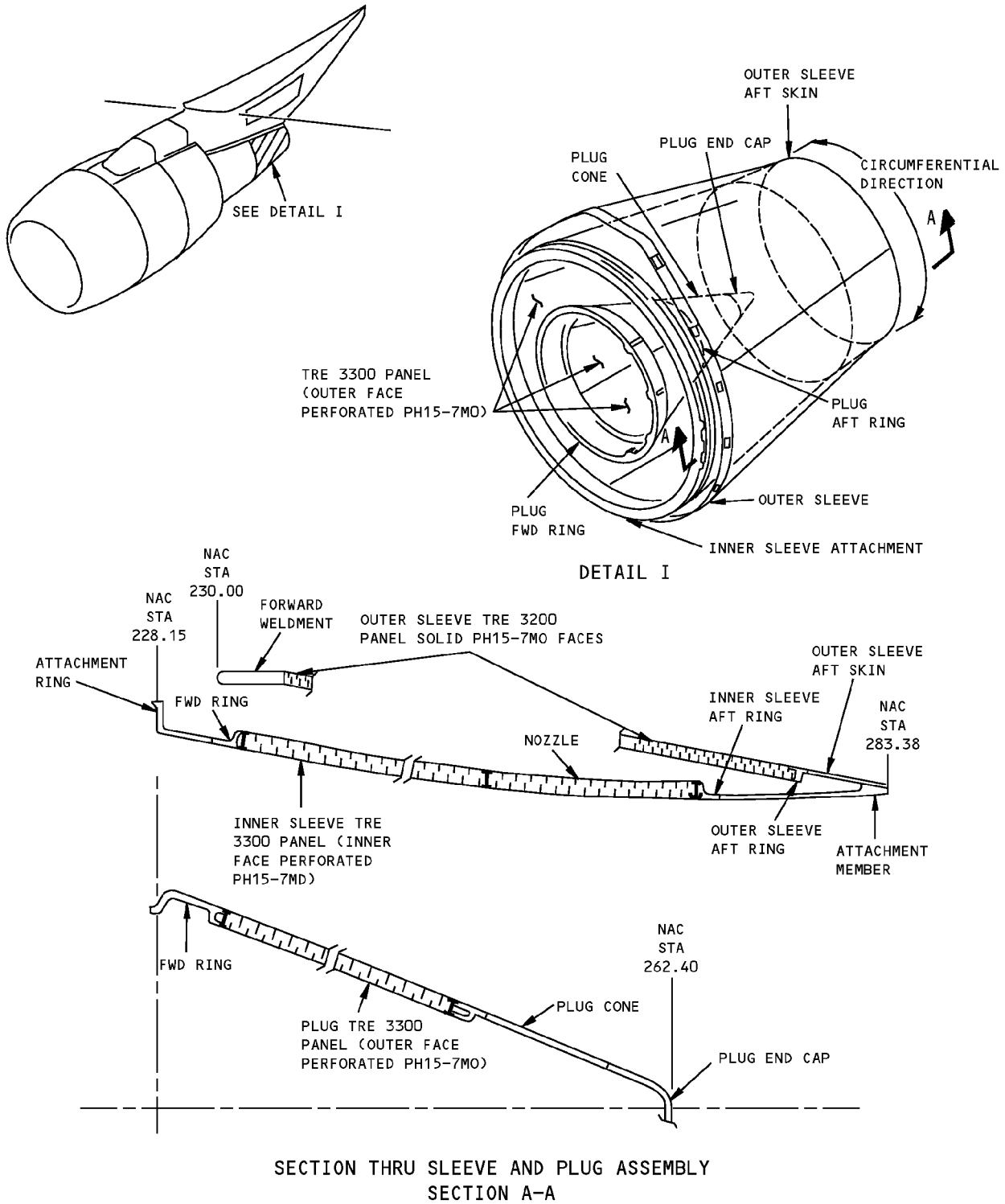
IDENTIFICATION 1
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54-40-30

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - PRIMARY EXHAUST - JT9D-7R4 ENGINE



**Allowable Damage - Primary Exhaust - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PLUG FWD RING	A	B	NOT PERMITTED	NOT PERMITTED	---
PLUG AFT RING	A	B	NOT PERMITTED	NOT PERMITTED	---
PLUG CONE	NOT PERMITTED	G	C	E	---
PLUG END CAP	NOT PERMITTED	G	C	E	---
INNER SLEEVE NOZZLE	NOT PERMITTED	G	C	E	---
INNER SLEEVE ATTACHMENT MEMBER	A	B	C	E	---
INNER SLEEVE AFT RING	NOT PERMITTED	B	NOT PERMITTED	NOT PERMITTED	---
INNER SLEEVE FWD RING	A	B	NOT PERMITTED	NOT PERMITTED	---
OUTER SLEEVE AFT SKIN	NOT PERMITTED	G	C	E	---
OUTER SLEEVE AFT RING	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	---
TRE3300, PH15-7MO PERFORATED/SOLID FACE SANDWICH PANEL	NOT PERMITTED	NOT PERMITTED	C	E	F
TRE3200, PH15-7MO SOLID FACE SANDWICH PANEL	D H	J	I	E	F

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN

- A CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAILS II AND IV.
- B NICKS AND GOUGES ON THE EDGES MUST BE REMOVED AS SHOWN IN DETAILS III AND IV.
- C DENTS ARE PERMITTED IF:
 - NOT DEEPER THAN 0.05 INCH (1.3 mm)
 - DENT WIDTH IS AT LEAST 10 TIMES THE DENT DEPTH, BUT NOT MORE THAN ONE INCH IN ANY DIRECTION
 - NOT CLOSER THAN 2.00 INCHES (50 mm) TO ANY PANEL EDGE
 - THERE ARE NOT ANY CRACKS, SHARP CREASES, OR WRINKLES CAUSED BY A DENT
 - DELAMINATION AND HOLES ARE NOT MORE THAN THE LIMITS SPECIFIED IN THE ALLOWABLE DAMAGE TABLE.
- D EDGE CRACKS ARE PERMITTED AS SHOWN IN DETAILS II AND IV.

E HOLES AND PUNCTURES WHICH DO NOT PENETRATE THROUGH MORE THAN ONE SKIN OF A HONEYCOMB PANEL ARE PERMITTED UP TO 0.25 INCH (6 mm) DIAMETER MAXIMUM. INSPECT DAMAGE EVERY "A" CHECK. SHARP OR JAGGED EDGES AROUND THE HOLES SHOULD BE SMOOTHED OUT AND ANY SLIT TYPE PUNCTURES SHOULD BE MADE ROUND OR OVAL. THE NUMBER OF UNREPAIRED HOLES AND PUNCTURES MUST NOT BE MORE THAN FIVE IN ANY SINGLE HONEYCOMB PANEL. MINIMUM DISTANCE PERMITTED BETWEEN AN UNREPAIRED HOLE OR PUNCTURE AND ANOTHER HOLE OR PANEL EDGE IS 2.00 INCHES (50 mm).

F INNER OR OUTER SKIN-TO-CORE DELAMINATIONS (OR VOIDS) WHICH ARE CONTAINED WITHIN A CIRCLE NOT LARGER THAN 1.00 INCH (25 mm) IN DIAMETER MAY REMAIN, PROVIDED THAT THERE IS A MINIMUM OF 1.00 INCH (25 mm) OF ACCEPTABLE CORE TO THE NEXT DEFECT OR EDGE MEMBER AND THAT THERE ARE NO INCLUDED CRACKS OR THERMAL BUCKLES.

G SURFACE NICKS AND GOUGES UP TO 0.10 INCH (1.3 mm) IN LENGTH OR DIAMETER ARE PERMITTED. CLEAN UP DAMAGE AS SHOWN IN DETAIL III.

Allowable Damage - Primary Exhaust - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 5)

STRUCTURAL REPAIR MANUAL

NOTES

H CRACKS ARE PERMITTED IF:

- THE MAXIMUM LENGTH OF EACH CRACK IS 6.0 INCHES.
 - CRACKS LONGER THAN 6.0 INCHES AND LESS THAN 8.0 INCHES ARE PERMITTED FOR A MAXIMUM OF 300 FLIGHT HOURS.
 - CRACKS LONGER THAN 8.0 INCHES AND LESS THAN 10.0 INCHES ARE PERMITTED FOR A MAXIMUM OF 150 FLIGHT HOURS.
- THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IS LESS THAN 24.0 INCHES.
- THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IN THE CIRCUMFERENTIAL DIRECTION IS LESS THAN 3.5 INCHES FOR EACH QUADRANT.
- THE DISTANCE BETWEEN A CRACK AND AN EDGE IS A MINIMUM OF ONE HALF THE LENGTH OF THE LONGEST CRACK BUT A MINIMUM OF 1.0 INCH.
 - CRACKS ALONG THE FORWARD EDGE ARE PERMITTED AS SHOWN IN DETAIL V. MAKE AN INSPECTION OF THE DAMAGE EACH 10 FLIGHT CYCLES.
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON ONE OF THE TWO FACESHEETS IS A MINIMUM OF TWO TIMES THE LENGTH OF THE LONGEST CRACK. THIS MINIMUM DISTANCE MUST BE 1.0 INCH OR MORE.

STOP DRILL THE ENDS OF THE CRACK TO A DIAMETER OF 0.125 INCH AS GIVEN IN SRM 51-10-00. REPAIR THE DAMAGE ON OR BEFORE THE SECOND "A" CHECK.

I • DENTS THAT ARE WITHIN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED IF:

- THERE ARE NO SKIN WRINKLES OR SKIN THAT IS PUSHED IN BECAUSE OF HEAT
- THERE ARE NO SHARP EDGES BECAUSE OF SKIN WAVINESS
- THEY ARE A MINIMUM OF 2 INCHES AWAY FROM THE PANEL EDGE
- DENTS ARE NO MORE THAN 0.10 INCH DEEP.

• DENTS THAT ARE MORE THAN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED FOR CONTINUED OPERATION IF:

- THE DENTS HAVE NO DISBONDS, CRACKS, SHARP EDGES OR WRINKLES.
- THE DENTS ARE NO MORE THAN 0.1 INCH DEEP ($Y \leq 0.1$)
- NO DENT IS CLOSER THAN ONE DENT LENGTH TO THE EDGE OF THE PANEL.
- THE DISTANCE BETWEEN ANY DENT AND ANY OTHER DAMAGE IS A MINIMUM OF TWO TIMES THE LENGTH OF THE DENT. THIS MINIMUM DISTANCE MUST BE 1.0 INCH OR MORE.
- THE DENTS ARE INSPECTED AS SPECIFIED BELOW:

FOR DENTS WITH AN A/Y RATIO BETWEEN 6 AND 10 ($10 \geq A/Y \geq 6$), EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "C" CHECK.

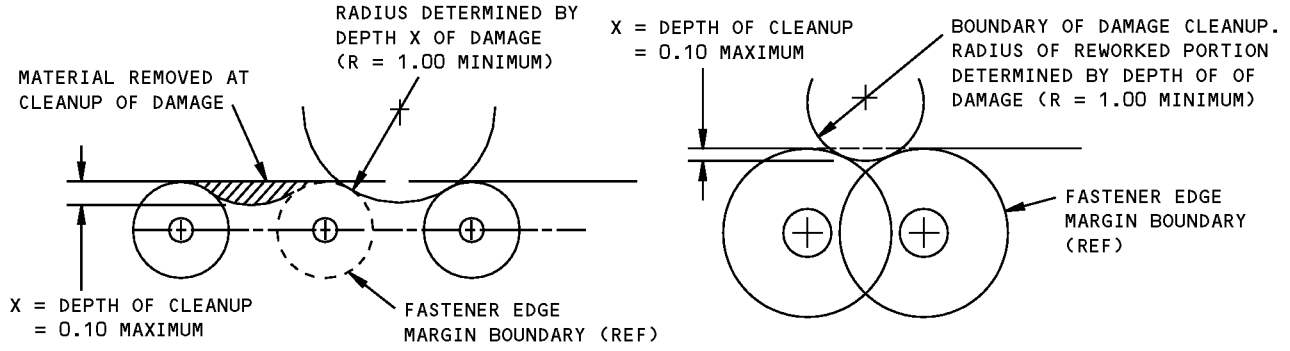
FOR DENTS WITH AN A/Y RATIO LESS THAN 6 ($A/Y \leq 6$), EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "2A" CHECK.

- IF THE DENT HAS A CRACK, USE THE LIMITS FOR CRACKS
- IF THE DENT HAS A HOLE OR PUNCTURE, USE THE LIMITS FOR HOLES AND PUNCTURES

J REMOVE DAMAGE FROM NICKS, GOUGES AND SCRATCHES AS SHOWN IN DETAIL III.

Allowable Damage - Primary Exhaust - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 5)

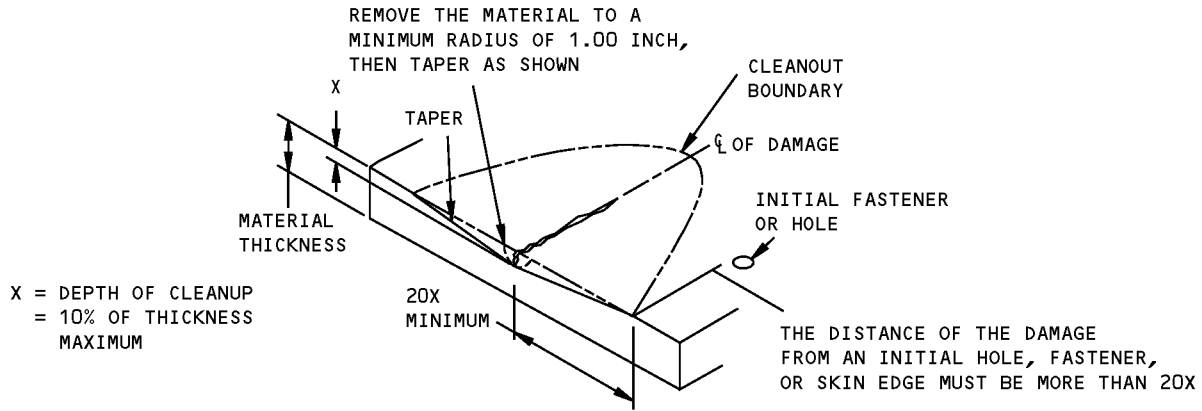
STRUCTURAL REPAIR MANUAL



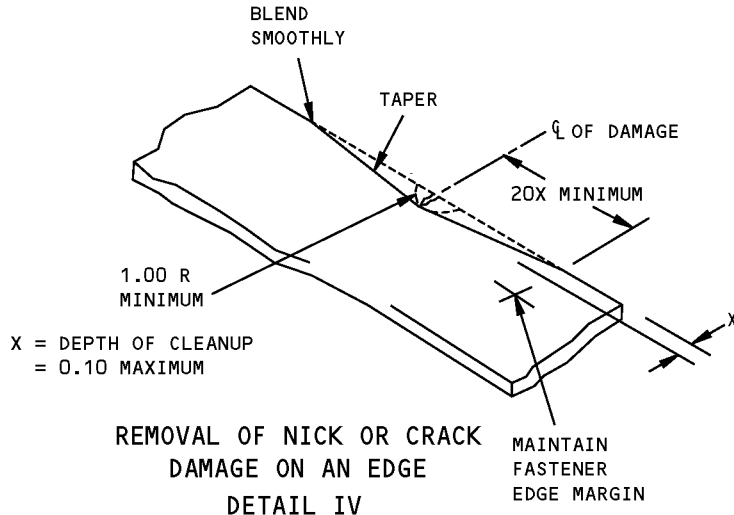
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

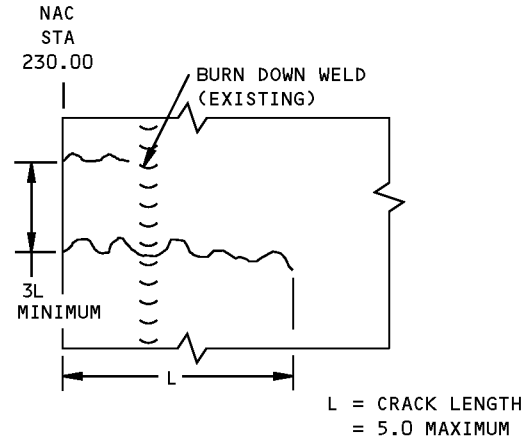
DETAIL II



REMOVAL OF NICK, GOUGE, AND SCRATCH DAMAGE ON A SURFACE
DETAIL III



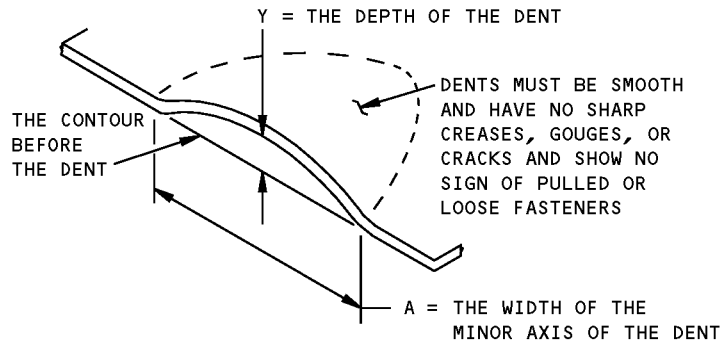
REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL IV



DETAIL V

Allowable Damage - Primary Exhaust - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 5)

767-300
STRUCTURAL REPAIR MANUAL



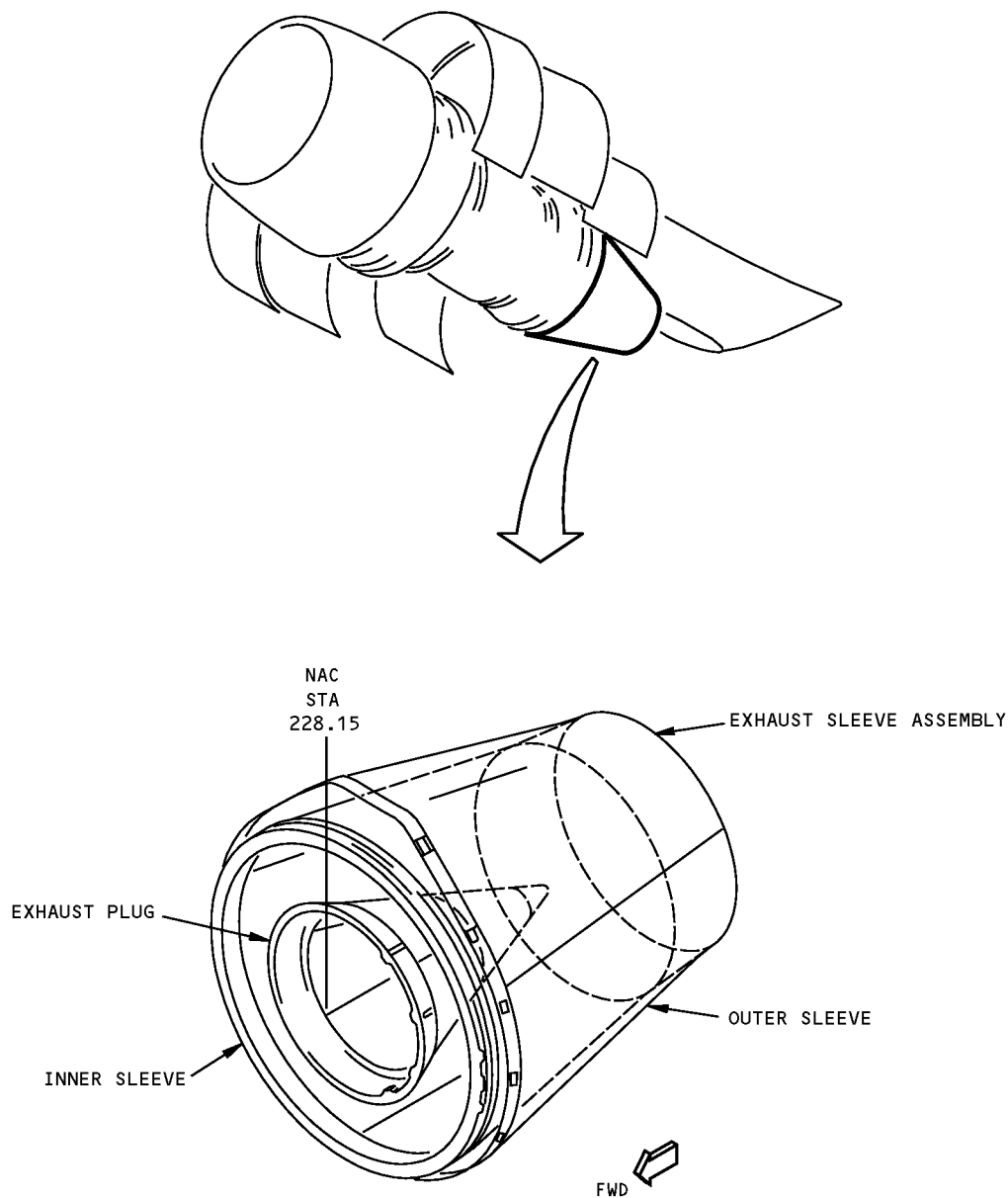
$\frac{A}{Y}$ MUST BE 10 OR MORE
Y = 0.10 INCH MAX

DENT DAMAGE PERMITTED
DETAIL VI

Allowable Damage - Primary Exhaust - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 5)

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - PRIMARY EXHAUST SKIN - JT9D-7R4 ENGINE



NOTES

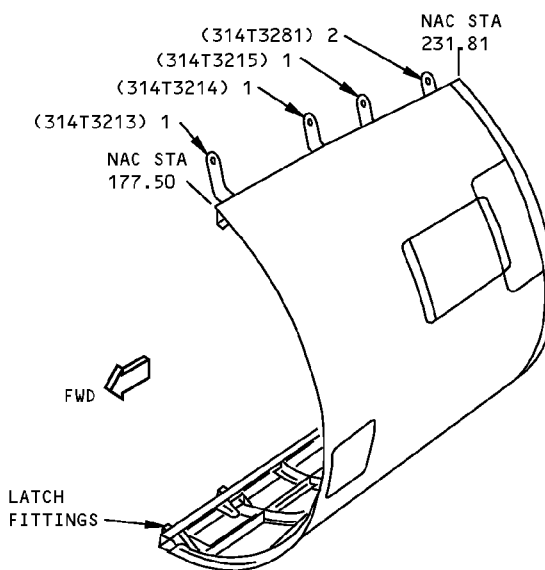
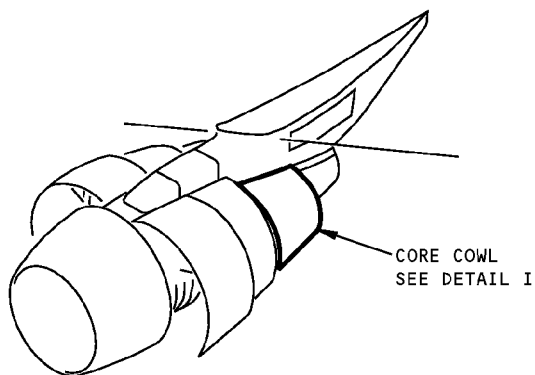
- REFER TO THE 767 COMPONENT MAINTENANCE MANUAL FOR THE FOLLOWING WELD REPAIRS:
78-11-06 FOR SLEEVE
78-11-16 FOR EXHAUST PLUG

Primary Exhaust Skin Repair - JT9D-7R4 Engine
Figure 201

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE

REF DWG
314T3210
314T3250



LEFT SIDE SHOWN
RIGHT SIDE EQUIVALENT
DETAIL I

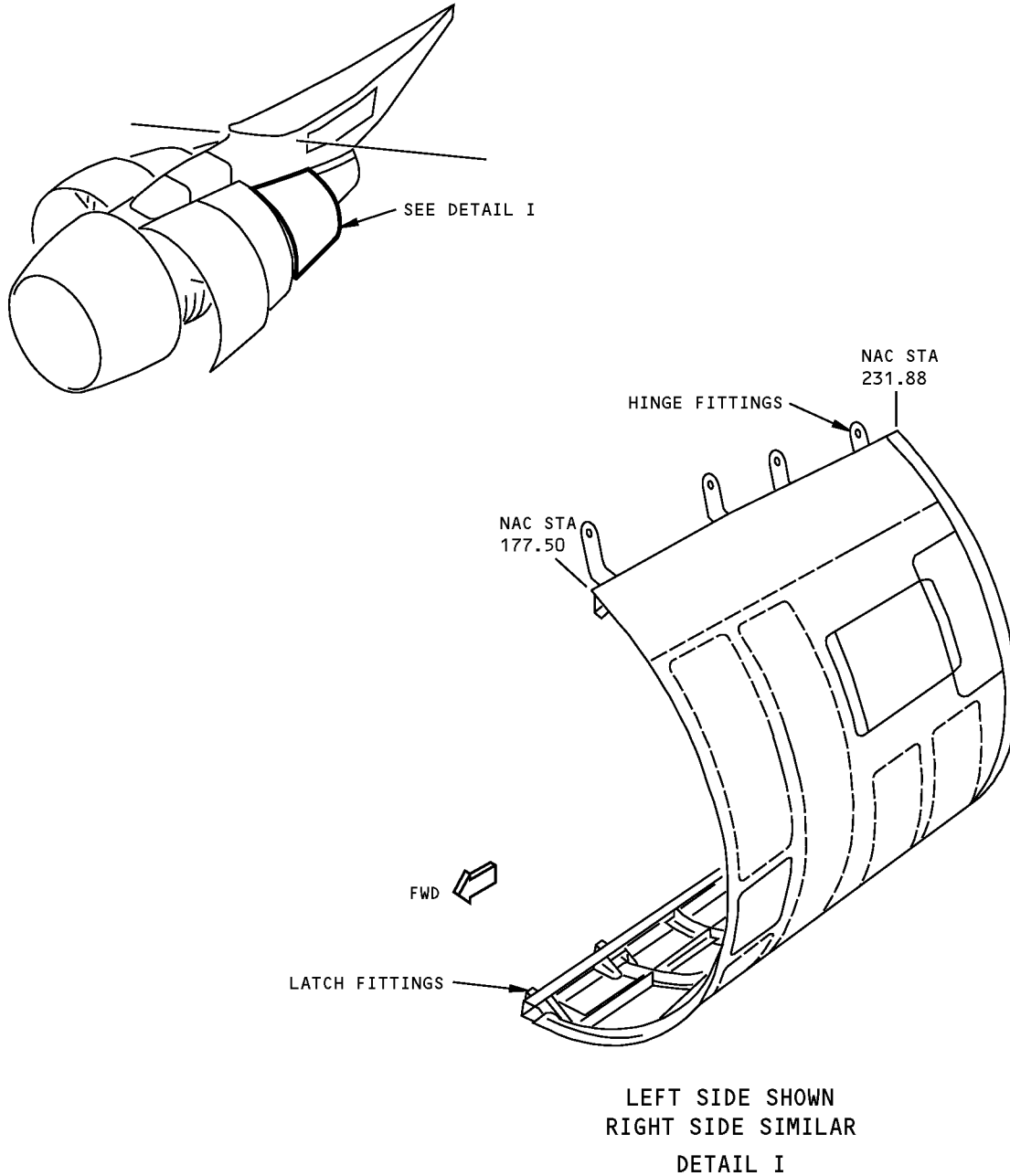
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE ASSY FITTING		FORGING 6AL-4V TITANIUM	
2	FITTING ASSY FITTING		FORGING 15-5PH CRES	

LIST OF MATERIALS FOR DETAIL I

**Core Cowl Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



**Allowable Damage - Core Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

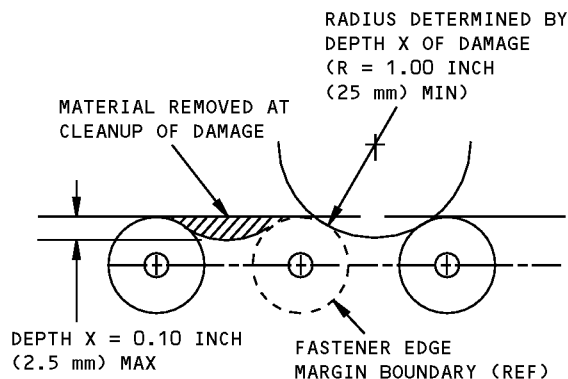
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INSPECTION AND REMOVAL OF DAMAGE, REFER TO SRM 51-10-02

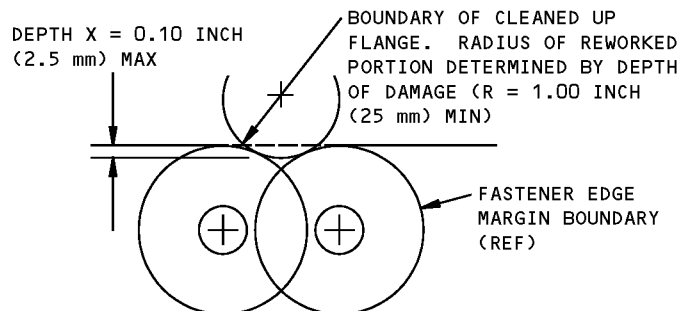
[A] CLEANUP EDGE CRACKS PER DETAILS II AND IV. OTHER CRACKS NOT ALLOWED

[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[C] SHOT PEEN REWORKED AREAS PER SRM 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

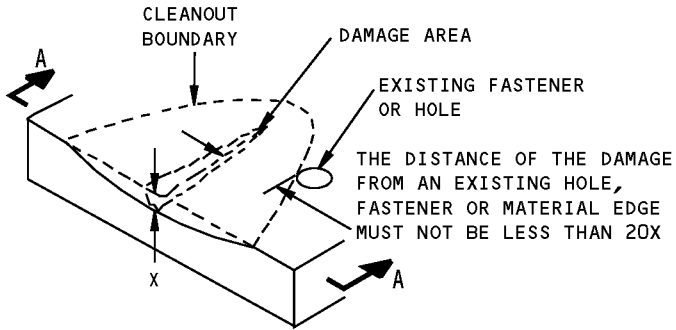


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

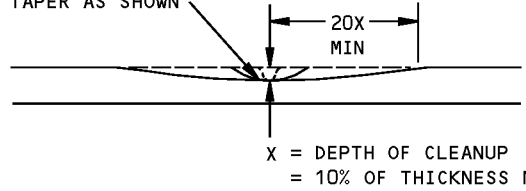
DETAIL II

**Allowable Damage - Core Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



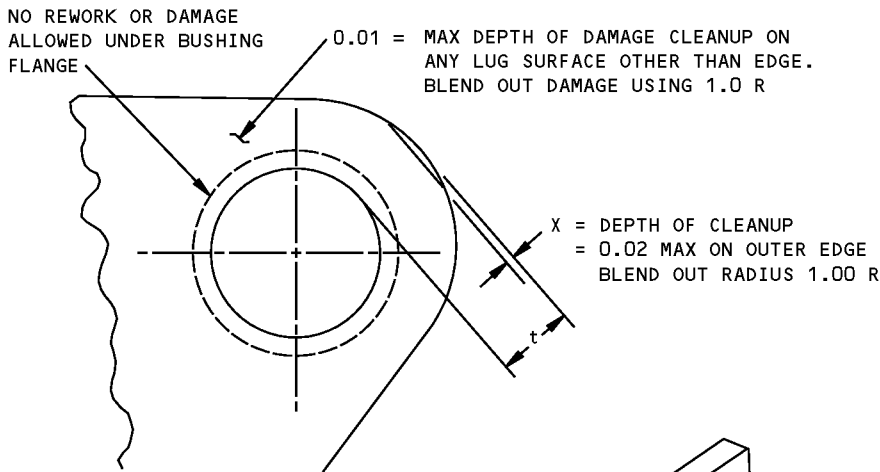
ROUND OUT TO 1.00 R MIN
AND TAPER AS SHOWN



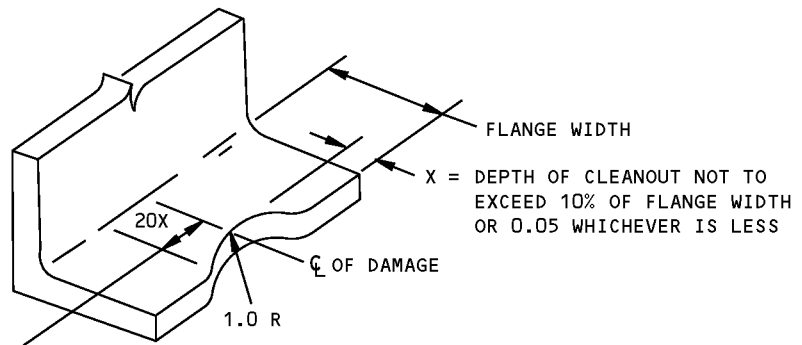
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION, AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**



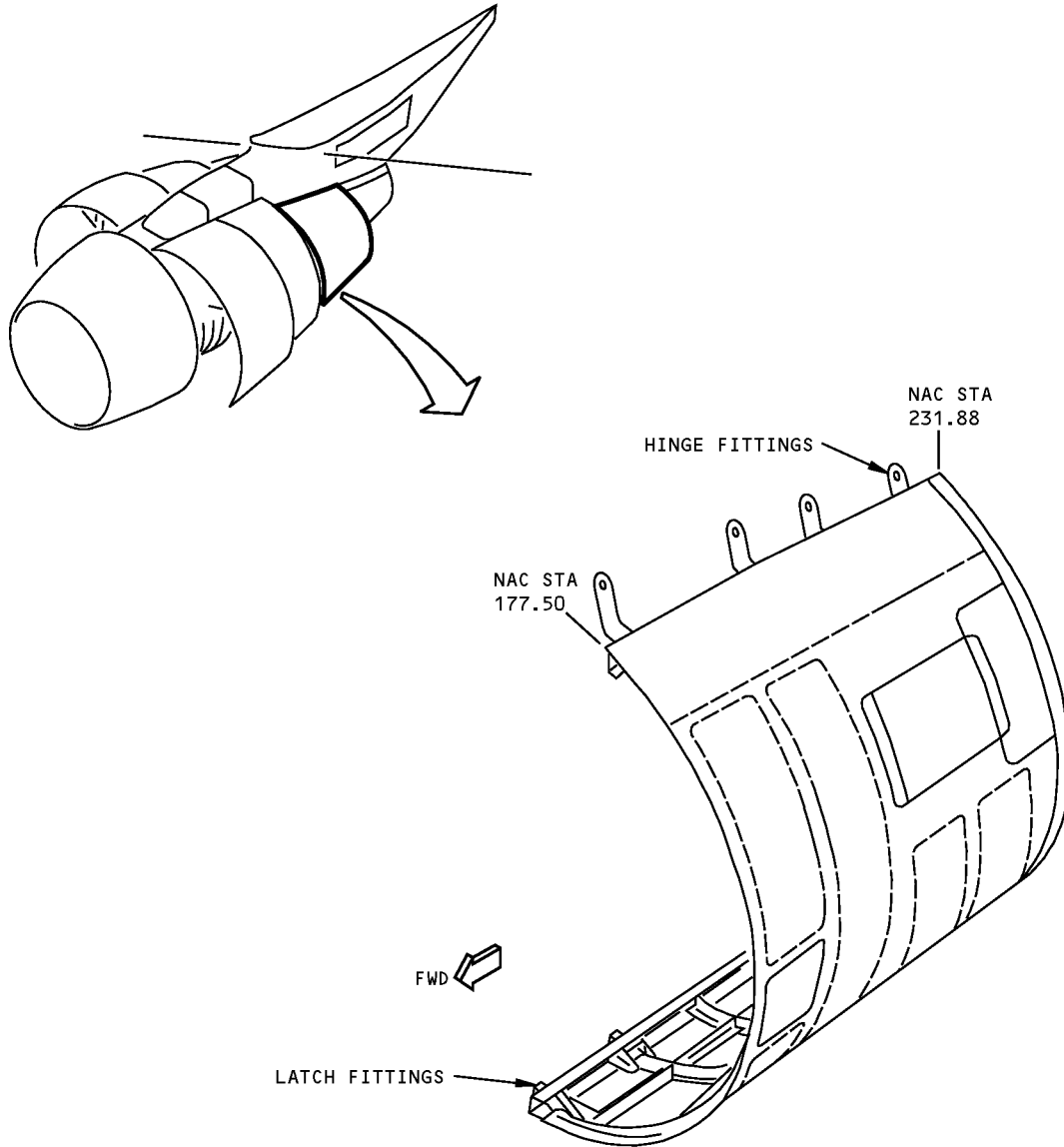
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS, OTHER DAMAGE OR EDGE MUST NOT BE LESS THAN 20X

**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Core Cowl Attachment Fittings - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR

NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE.
SPECIFIC REPAIRS TO FITTINGS WILL BE
PROVIDED BASED ON SERVICE EXPERIENCE

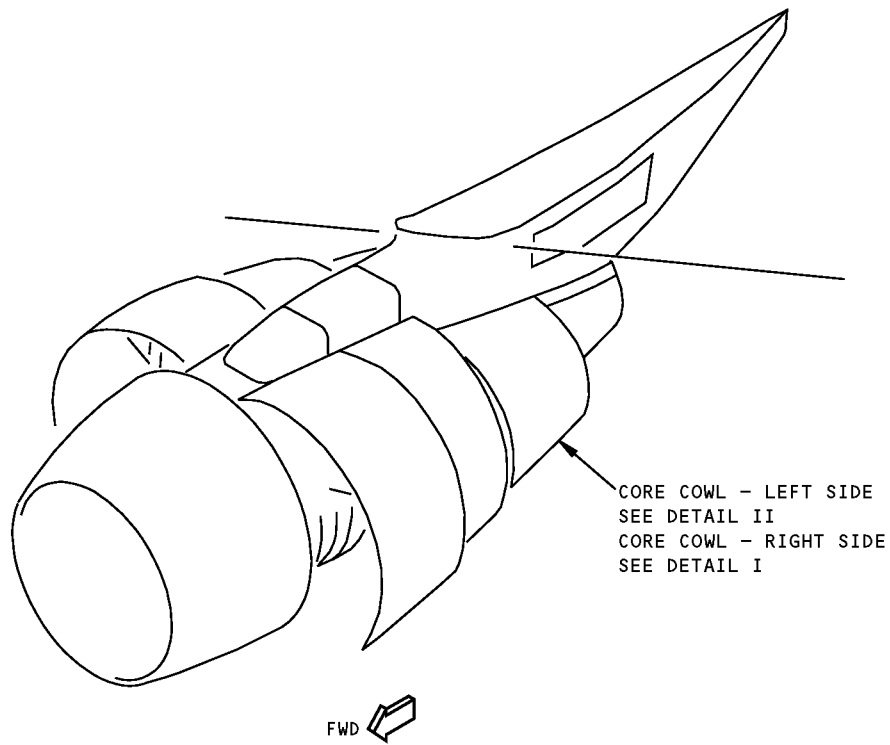
**Core Cowl Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201**



767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - CORE COWL SKIN PANEL - CF6-80A ENGINE

REF DWG
314T1210
314T1211



Core Cowl Skin Panel Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 2)

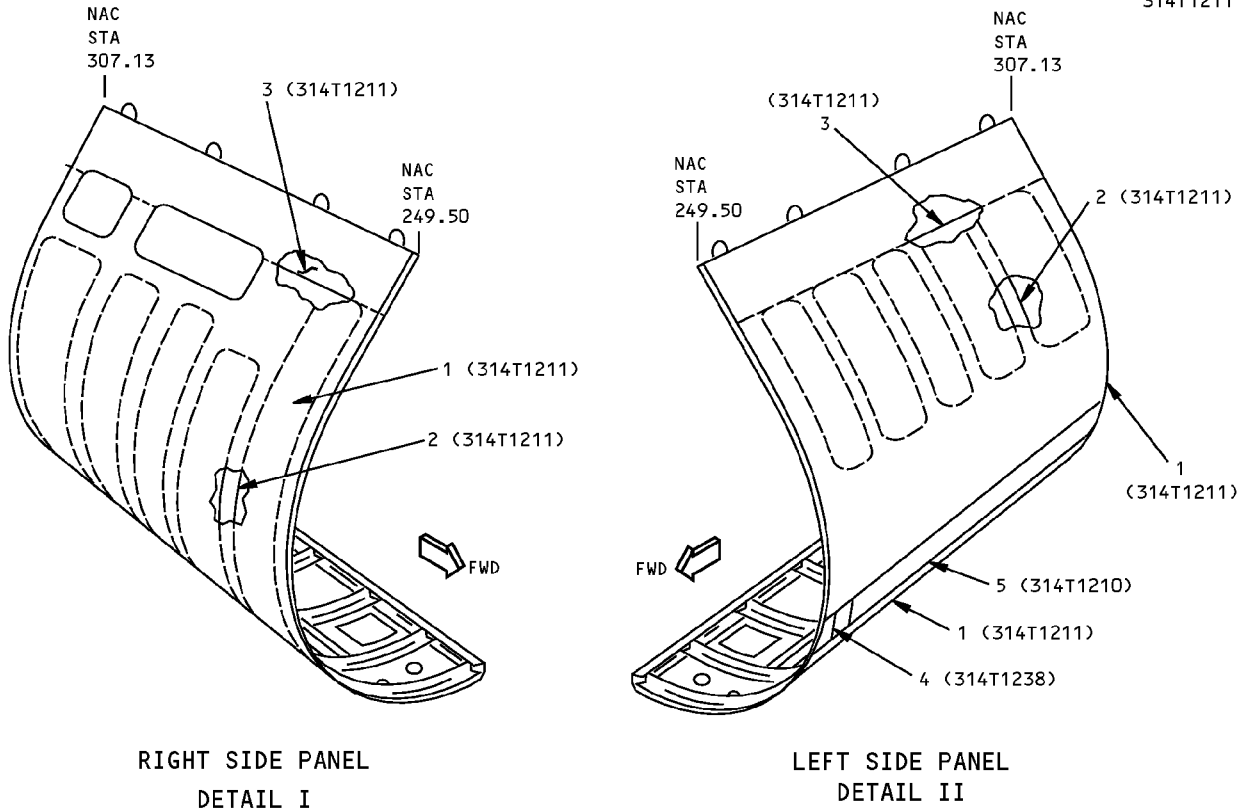
D634T210

54-41-01

IDENTIFICATION 1
Page 1
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1210
314T1211



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.040	CLAD 2024-T81	
2	DOUBLER	0.032	CLAD 2024-T81 (POCKETS CHEM-MILLED TO SKIN BOND LINE)	
3	FIRESHIELD	0.005	304 CRES ANNEALED SURFACE COND 2D	
4	EXIT PAN	0.040	INCONEL 625 ANNEALED	
5	PANEL	0.071	17-7PH CRES SURFACE COND A HT TR 180-200 KSI	

LIST OF MATERIALS FOR DETAILS I AND II

**Core Cowl Skin Panel Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 2)**

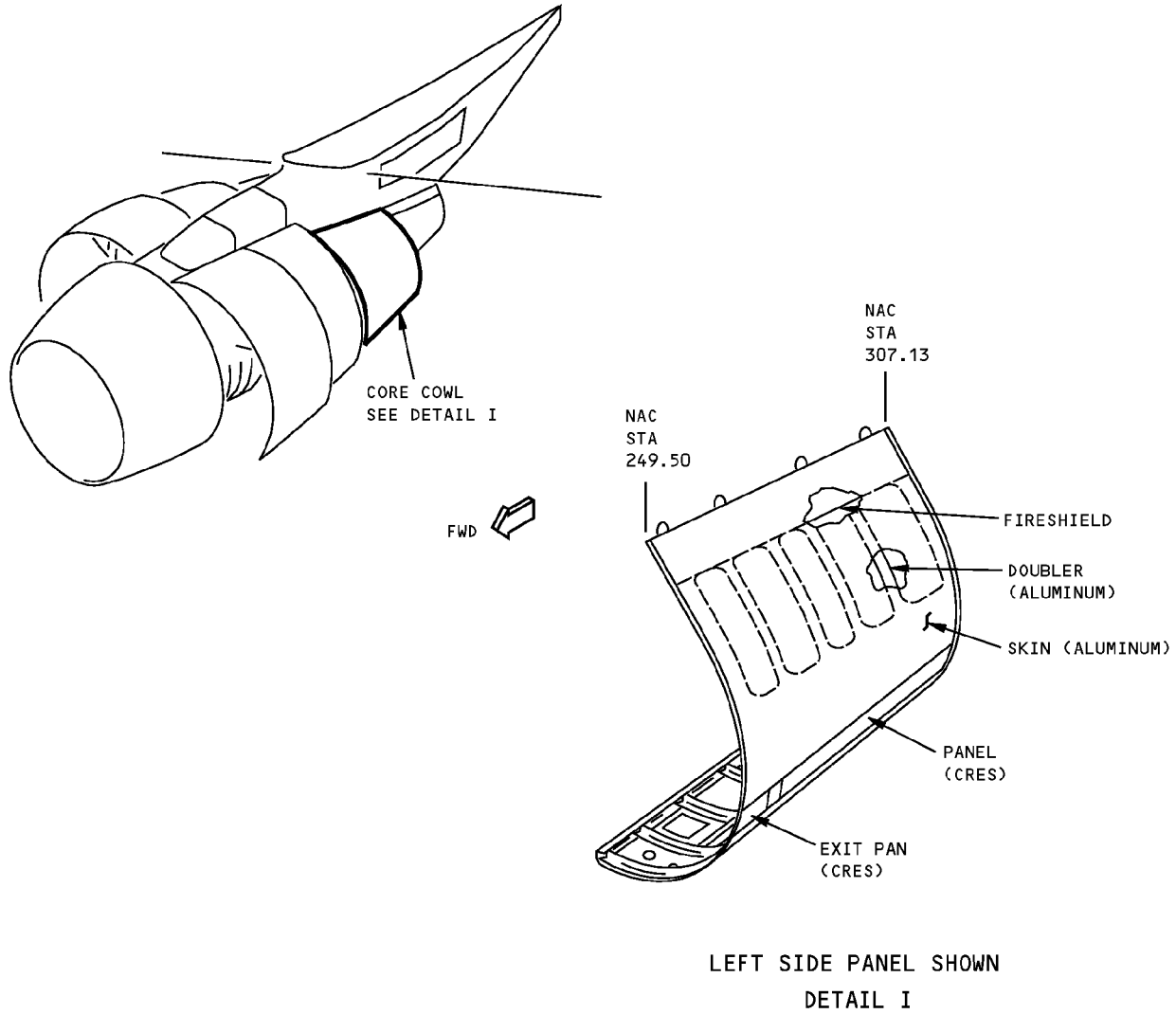
IDENTIFICATION 1
Page 2
Apr 01/2005

54-41-01

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL SKIN - CF6-80A ENGINE



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
SKIN	A	B	SEE DETAIL IV	C
DOUBLER	NOT ALLOWED	B	SEE DETAIL IV	C
FIRESHIELD	NOT ALLOWED	B	SEE DETAIL IV	D
PANEL	NOT ALLOWED	B	SEE DETAIL IV	D
EXIT PAN	NOT ALLOWED	B	SEE DETAIL IV	D

**Core Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

NOTES

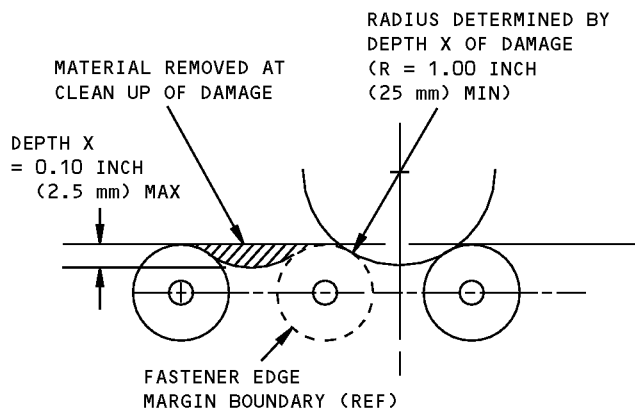
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.

A 1.00 INCH (25 mm) MAX LENGTH CRACK ALLOWED PROVIDED CRACK IS 6.00 INCHES (150 mm) FROM HINGE OR LATCH FITTINGS AND 3.00 INCHES (75 mm) FROM PANEL EDGE OR ADJACENT CRACK. DRILL 0.19 INCH (4.8 mm) STOP HOLES AT ENDS OF CRACK AND REPAIR AT NEXT AIRPLANE "A" CHECK

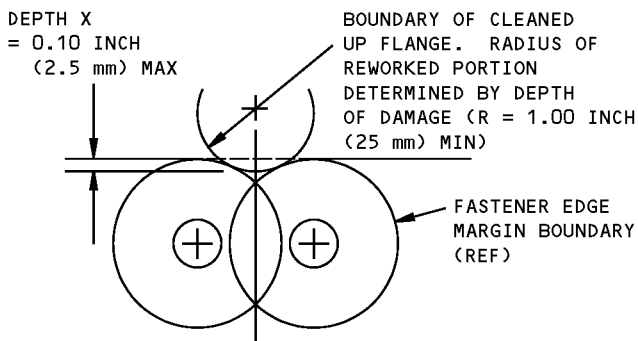
B REMOVE DAMAGE AS GIVEN IN DETAILS II, III, V AND VI.

C CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 1 (DE-SOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED.

D CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) DIA MAX, AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE MATERIAL EDGE OR OTHER DAMAGE. FILL HOLE WITH MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED.



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

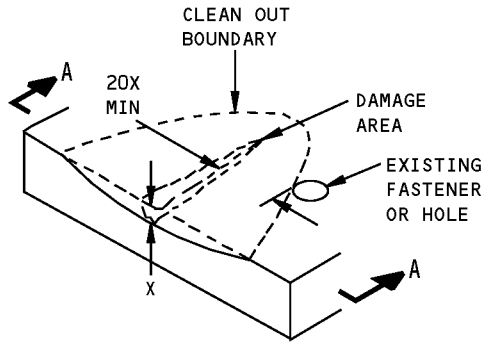


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

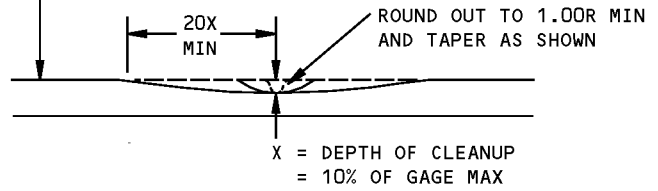
DETAIL II

Core Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

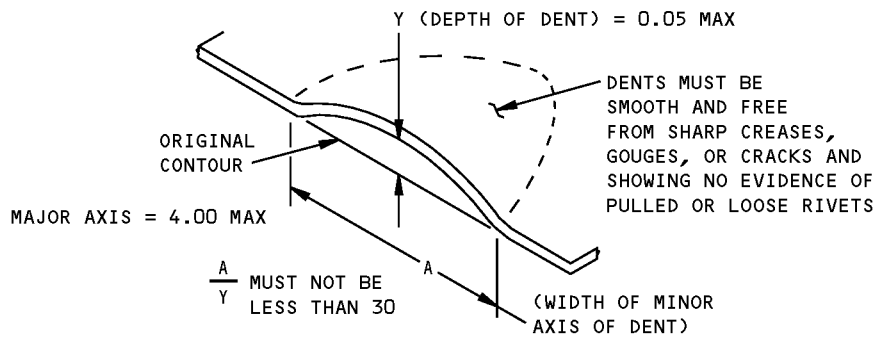


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

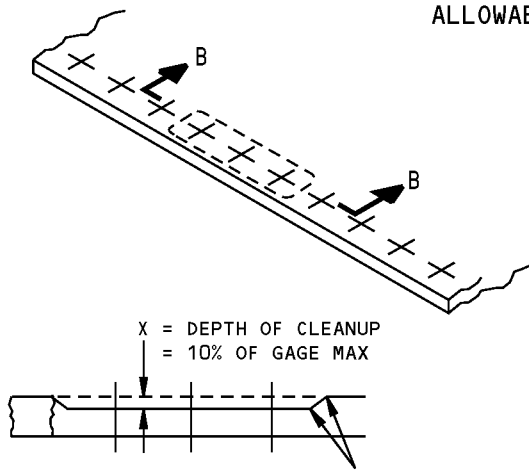


SECTION A-A

DETAIL III



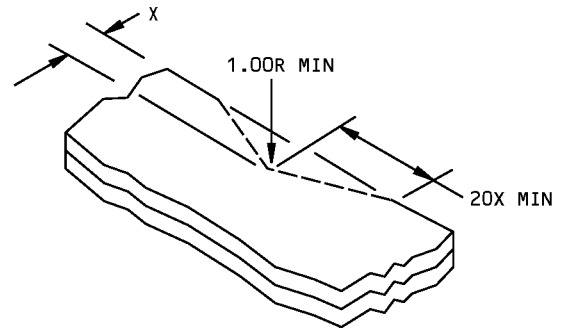
ALLOWABLE DAMAGE FOR DENT
DETAIL IV



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B
CORROSION CLEANUP

DETAIL V

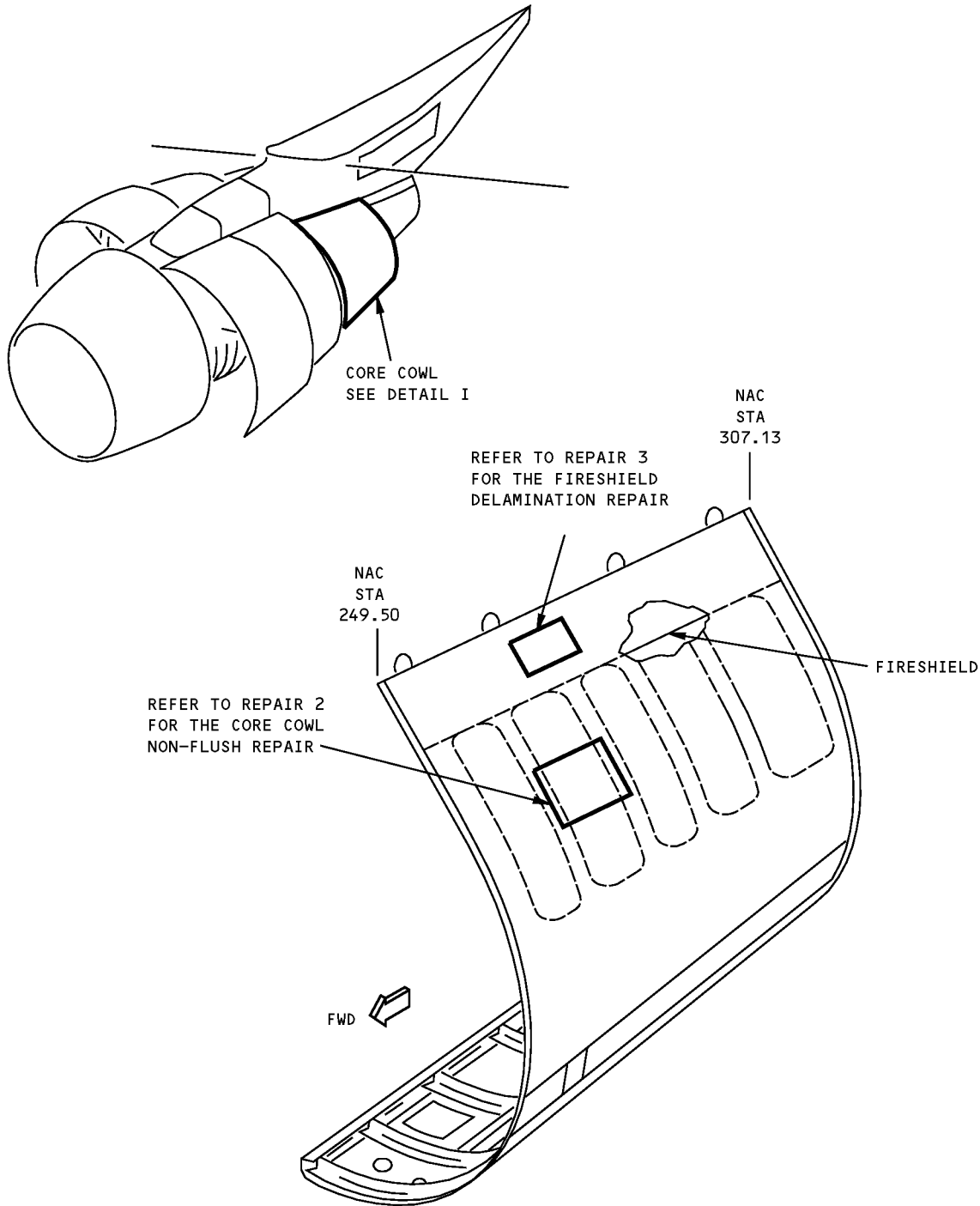


DETAIL VI

**Core Cowl Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL SKIN - CF6-80A ENGINE



LEFT SIDE PANEL SHOWN
DETAIL I

**Core Cowl Skin Repair - CF6-80A Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - CORE COWL NON-FLUSH REPAIR - CF6-80A ENGINE

REPAIR INSTRUCTIONS

NOTE: THIS REPAIR IS FOR ALUMINUM SKIN PORTION OF CORE COWL NON-FLUSH REPAIR

1. Cut out the damaged skin to a regular shape, taking special care not to remove any of the CRES fireshield. (See details I and II)
2. Make the repair parts. Form the repair plate to required contour.
3. Break all sharp edges of initial and repair parts 0.015 to 0.030 inch (0.38 to 0.76 mm). Chamfer edges of repair plate per section B-B.
4. Locate, drill and countersink fastener holes.
5. Remove all nicks, scratches, burrs, and corners from initial and repair parts.
6. Alodine treat and apply one coat of BAC5710, Type 51 (DeSoto Hi-Temp) primer to all repair parts, raw edges and reworked surfaces of skin panels. Allow to dry.
7. Apply a second coat of Hi-Temp primer to faying surfaces of repair parts and skin panel. Install repair parts while primer is wet.
8. Install BACR15CE5KE rivets wet with Hi-Temp primer.
9. Wipe off excess primer from exterior surface with solvent.
10. Restore finish.

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS.

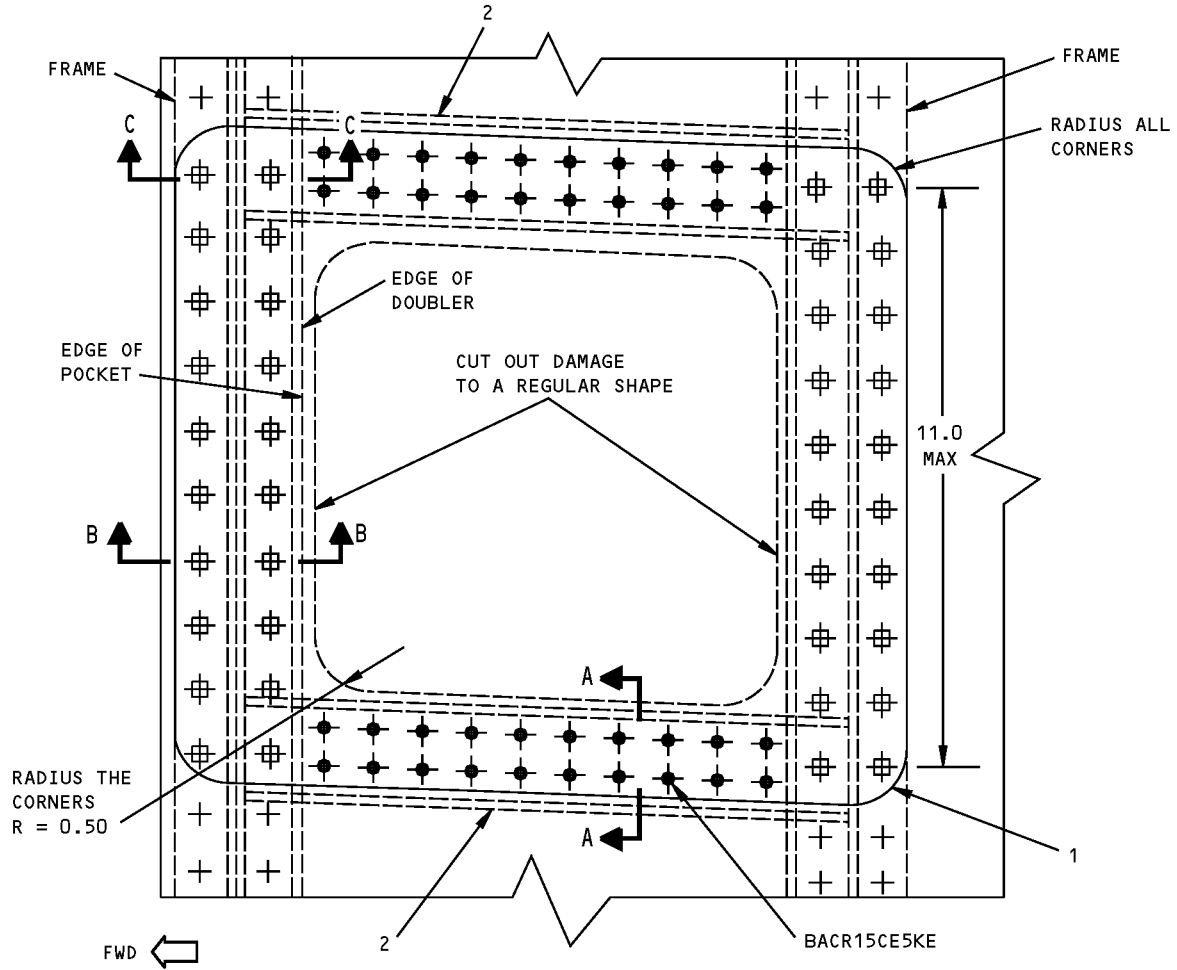
FASTENER SYMBOLS

- + INITIAL FASTENER LOCATION
- ⊕ REPAIR FASTENER IN EXISTING LOCATION. INSTALL BACR15CE6KE RIVET
- ⊕ REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15CE5KE RIVET

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR PLATE	1	0.071 CLAD 2024-T3
2	STIFFENER	2	0.071 CLAD 2024-T3, T4 OR T62
3	SHIM	AS REQD	AS REQD CLAD 2024-T3, T4 OR T62

**Core Cowl Non-Flush Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 4)**

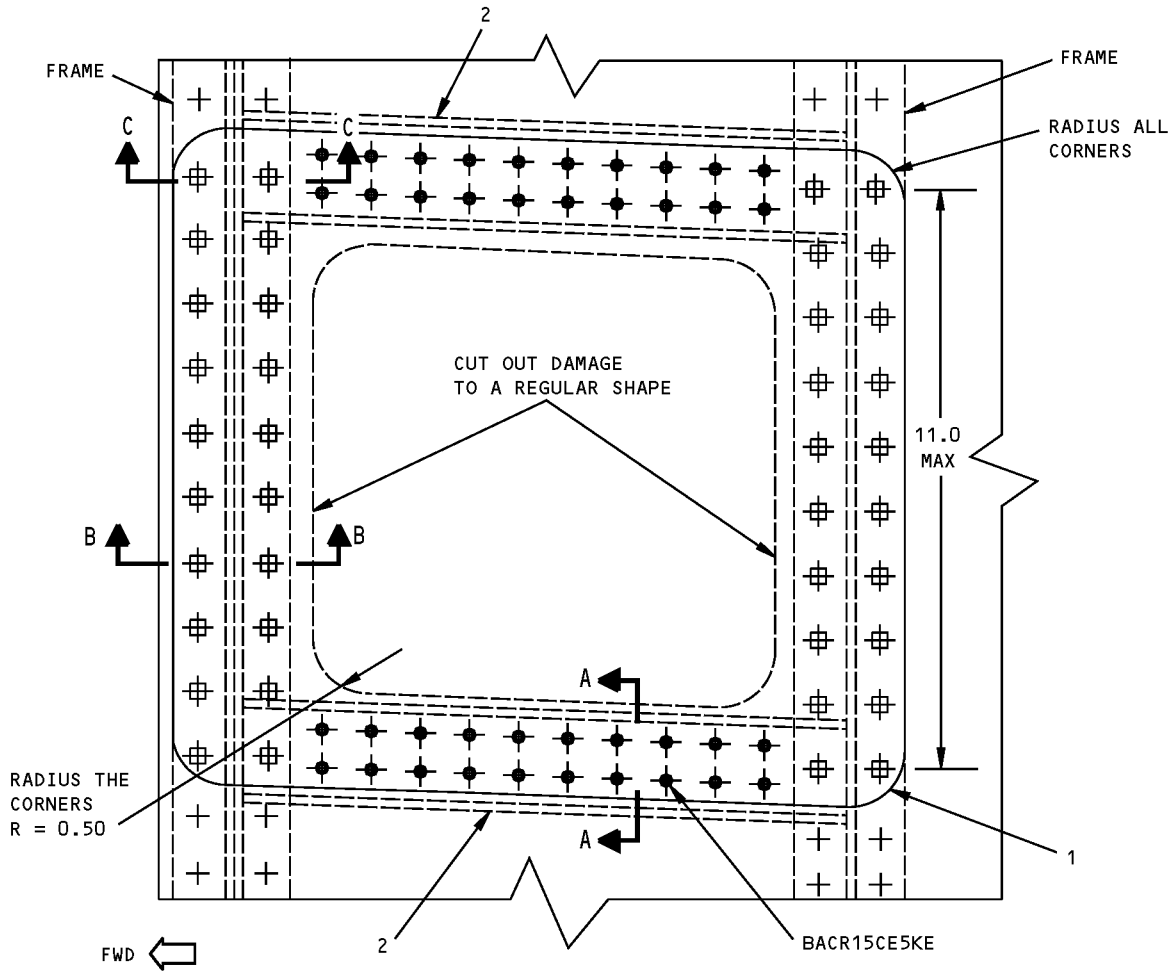
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF DAMAGE IN SKIN WITH POCKET
DETAIL I**

**Core Cowl Non-Flush Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 4)**

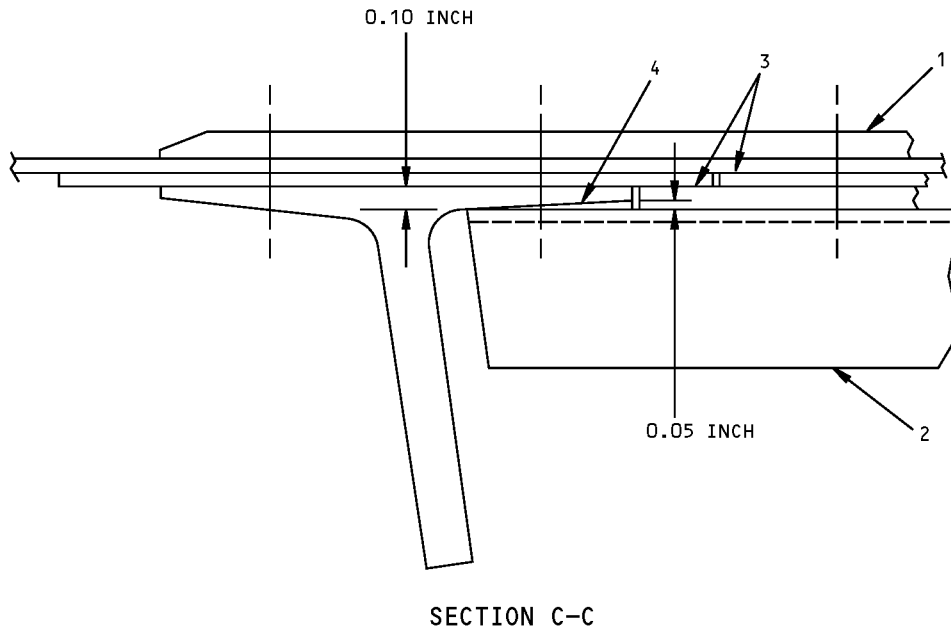
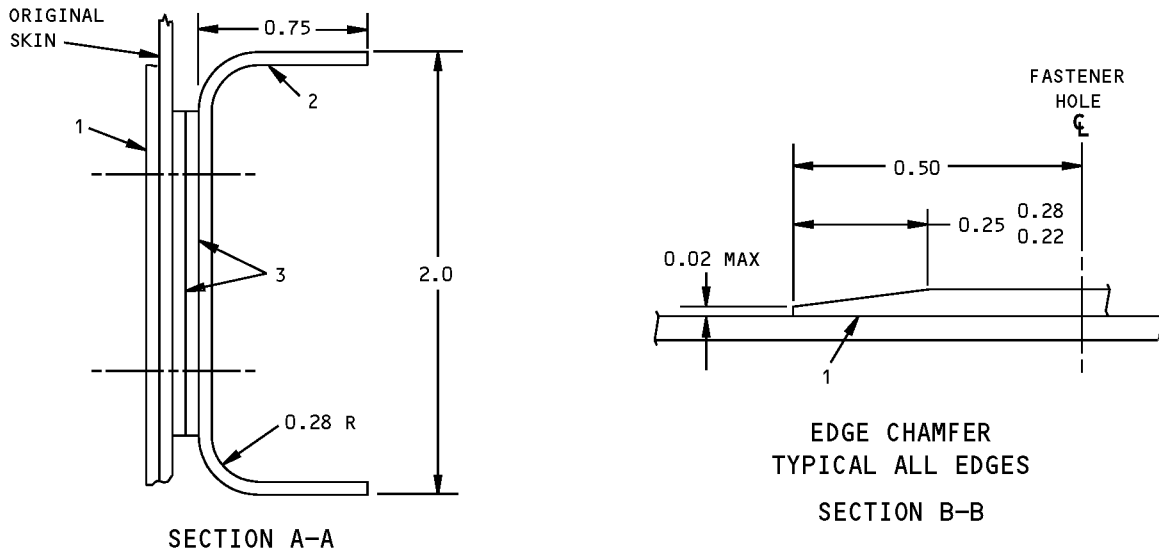
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF DAMAGE IN SKIN WITHOUT POCKET
DETAIL II**

**Core Cowl Non-Flush Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Core Cowl Non-Flush Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 4)**

767-300 STRUCTURAL REPAIR MANUAL

REPAIR 3 - FIRESHIELD DELAMINATION - CF6-80A ENGINE

REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and corners from original and repair parts.
4. Alodine treat and apply one coat of BAC 5710, Type 51 (DeSoto Hi-Temp) Primer to repair part. Allow to dry.
5. Apply second coat of Hi-Temp primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
6. Install BACR15CE5M rivets with wet Hi-Temp primer.

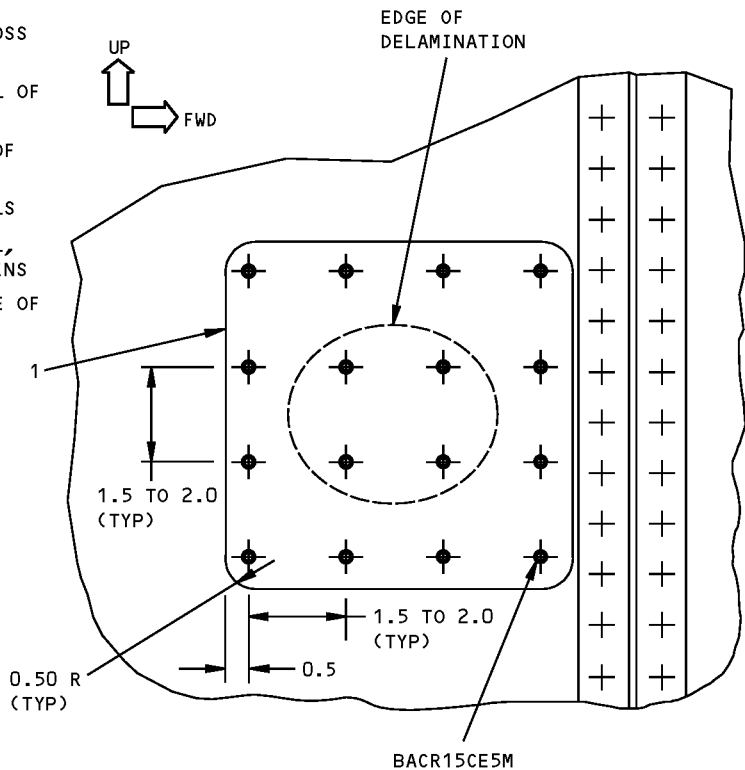
FASTENER SYMBOLS

REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS



**Fireshield Delamination Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

767-300 STRUCTURAL REPAIR MANUAL

ALTERNATE REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and corners from original and repair parts.
4. Apply coat of BAC 5710, Type 51 (DeSoto Hi-Temp) primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
5. Install BACR15CE5M rivets with wet Hi-Temp primer.

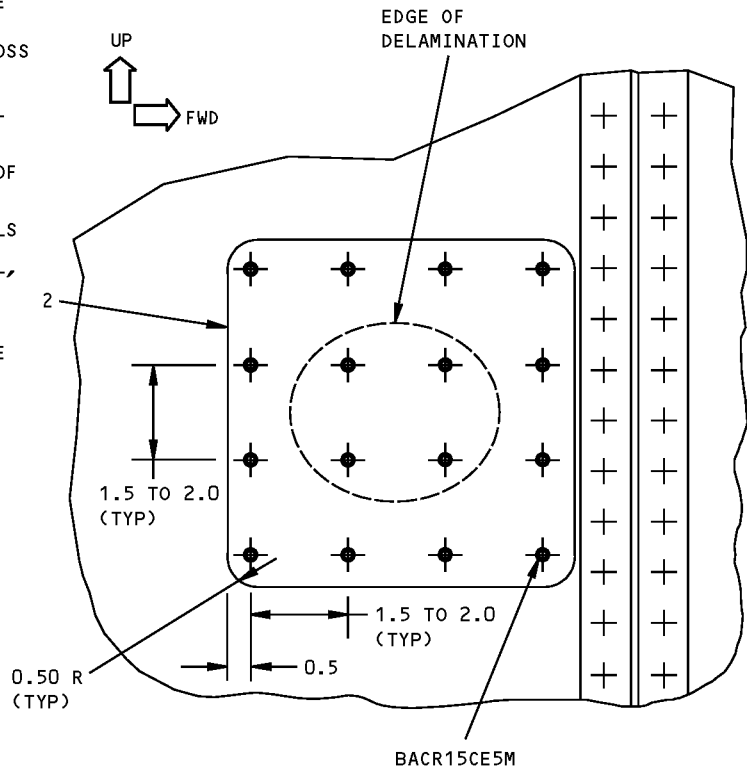
FASTENER SYMBOLS

REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
2	DOUBLER	1	0.020 301 CRES 1/2 HARD

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS

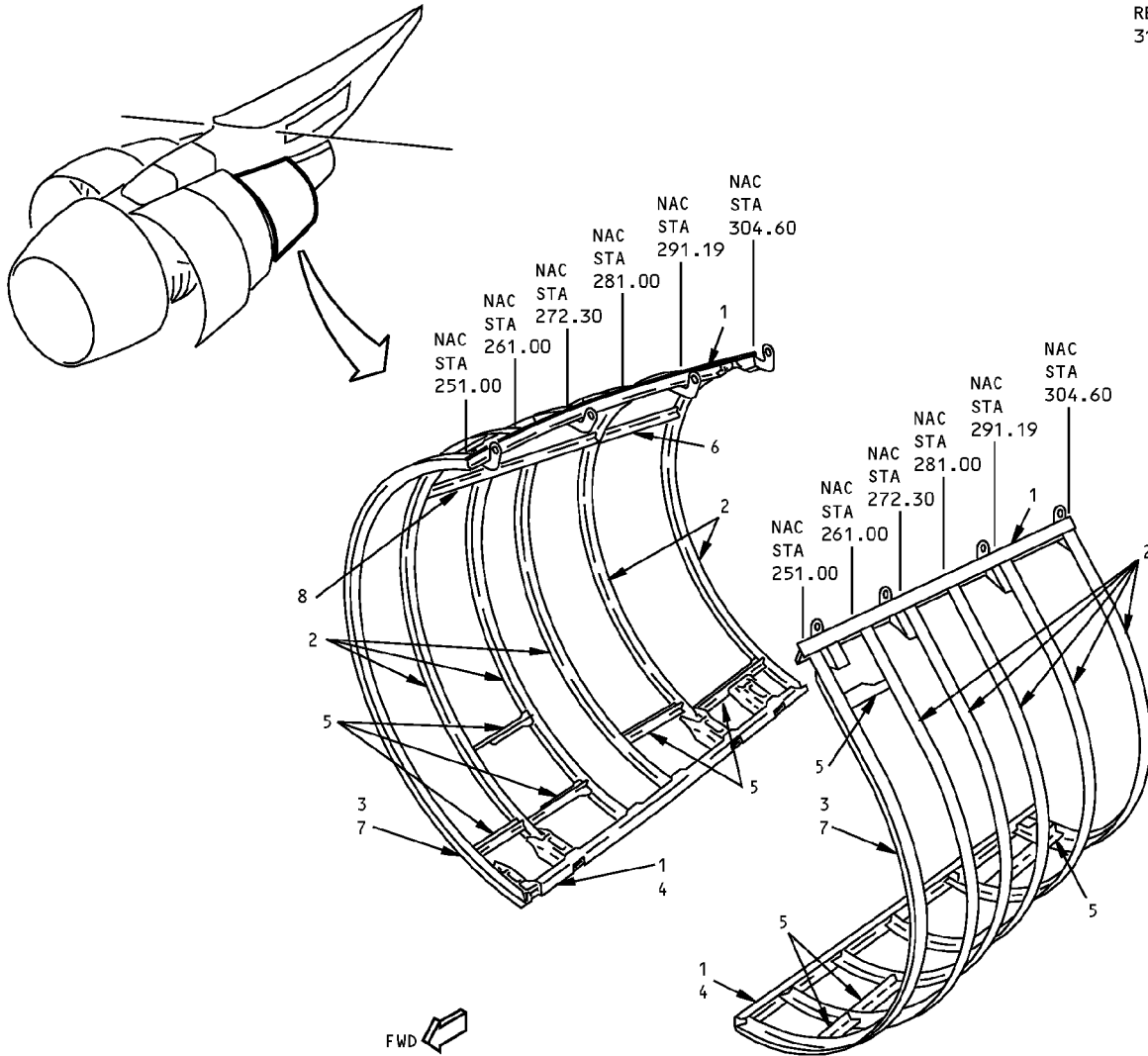


**Fireshield Delamination Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL STRUCTURE - CF6-80A ENGINE

REF DWG
314T1210



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	LONGERON	0.071	CLAD 2219-T62	
2	FRAME		BAC1506-2782 2219-T62	
3	FRAME		BAC1505-101016 2219-T62	
4	RUB STRIP	0.020	304 CRES, COND 2D	
5	INTERCOSTAL		BAC1505-100351 2219-T62	
6	INTERCOSTAL		BAC1506-964 2219-T62	
7	FIRESHIELD	0.032	CRES 17-7PH, COND A	
8	INTERCOSTAL		BAC1506-2782 2219-T62	

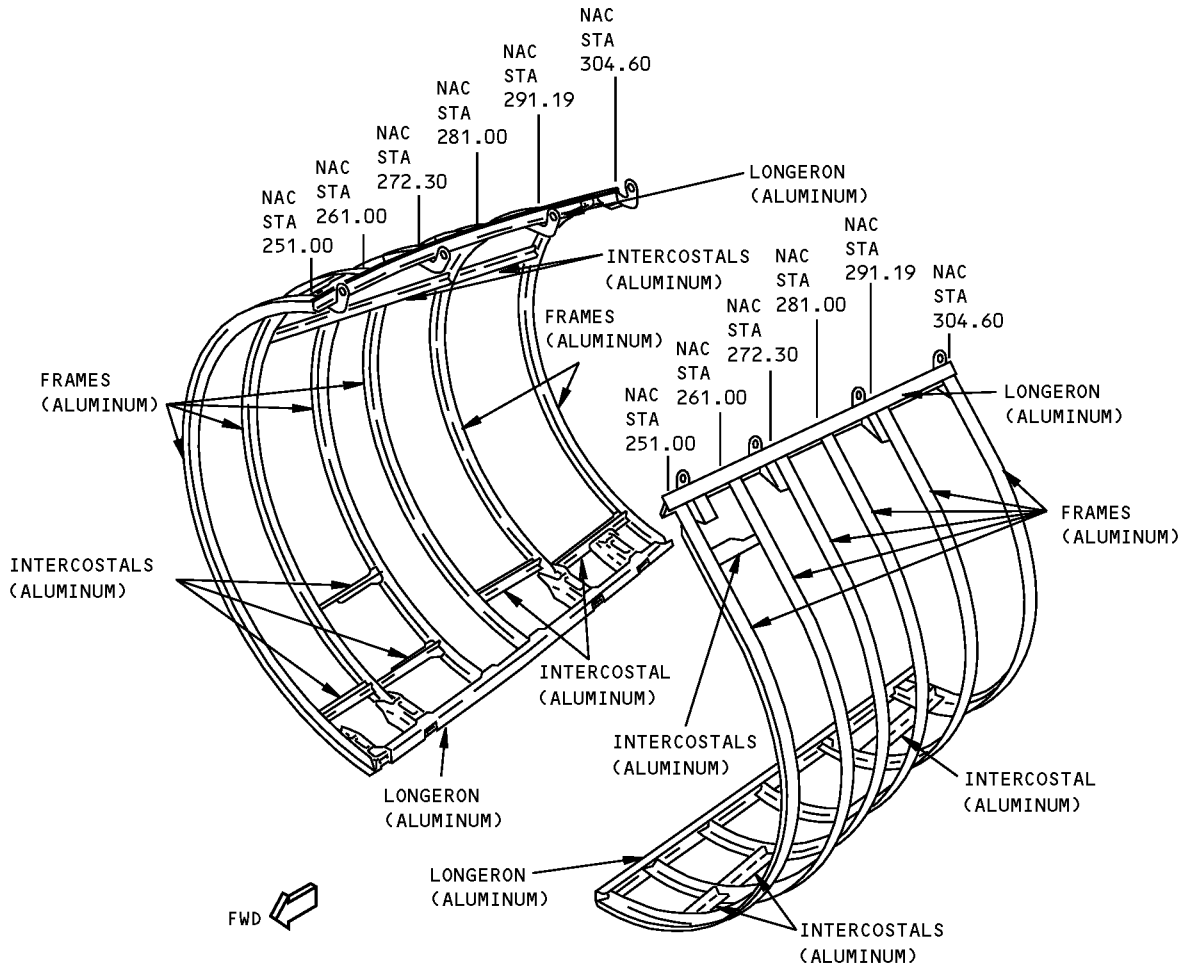
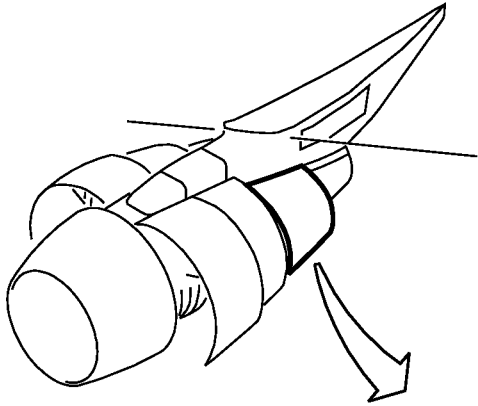
LIST OF MATERIALS

**Core Cowl Structure Identification - CF6-80A Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL STRUCTURE - CF6-80A ENGINE

REF DWG
314T1210



**Core Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

ALLOWABLE DAMAGE 1
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STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
LONGERONS	A	B	NOT ALLOWED	NOT ALLOWED
FRAMES	A	B	C	D
INTERCOSTALS	A	B	C	D

NOTES

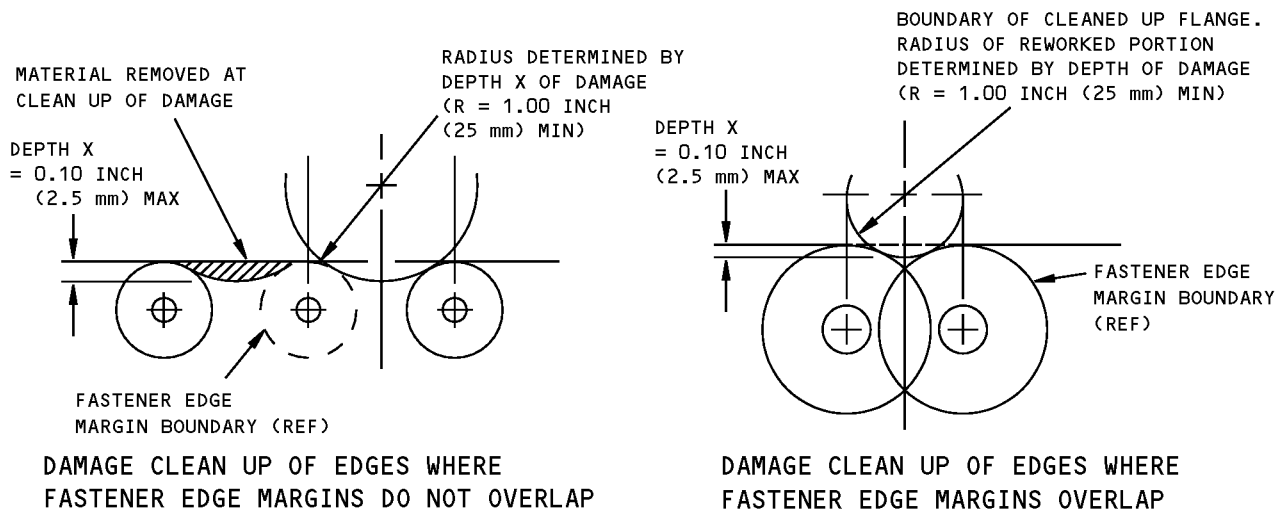
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

A CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS I AND IV

B REMOVE DAMAGE AS GIVEN IN DETAILS I, II, AND III

C DENTS ARE PERMITTED ON WEBS AND FREE FLANGES ONLY. SEE DETAIL V

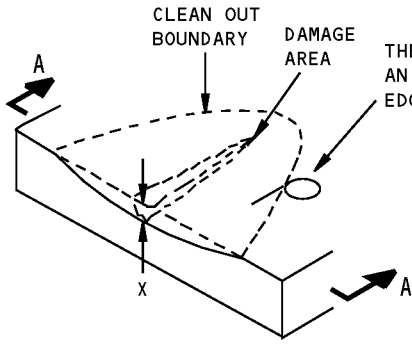
D HOLES ARE PERMITTED ON WEBS AND FREE FLANGES ONLY. CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 4D TO FASTENER HOLE, OR 2D + 0.05 TO MATERIAL EDGE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED



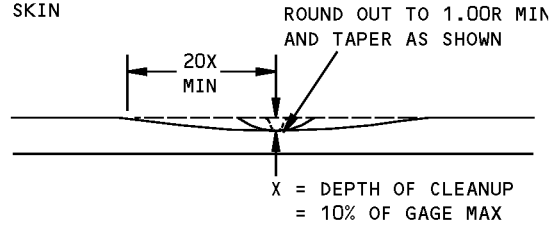
DETAIL I

Core Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 3)

STRUCTURAL REPAIR MANUAL

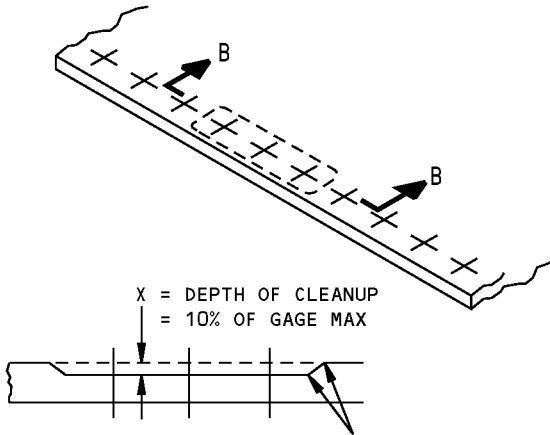


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



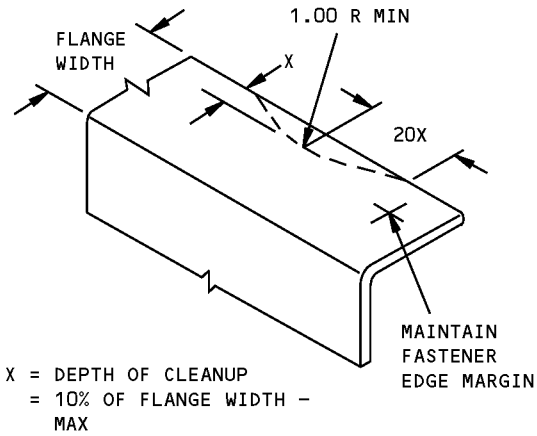
SECTION A-A

**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL II**

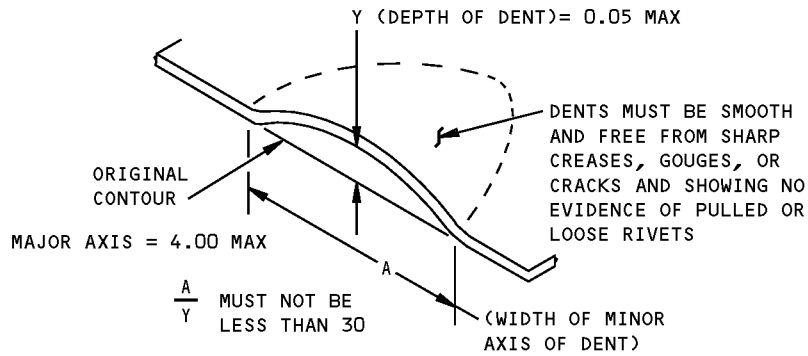


SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEAN UP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

**SECTION B-B
CORROSION CLEANUP
DETAIL III**



**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL IV**



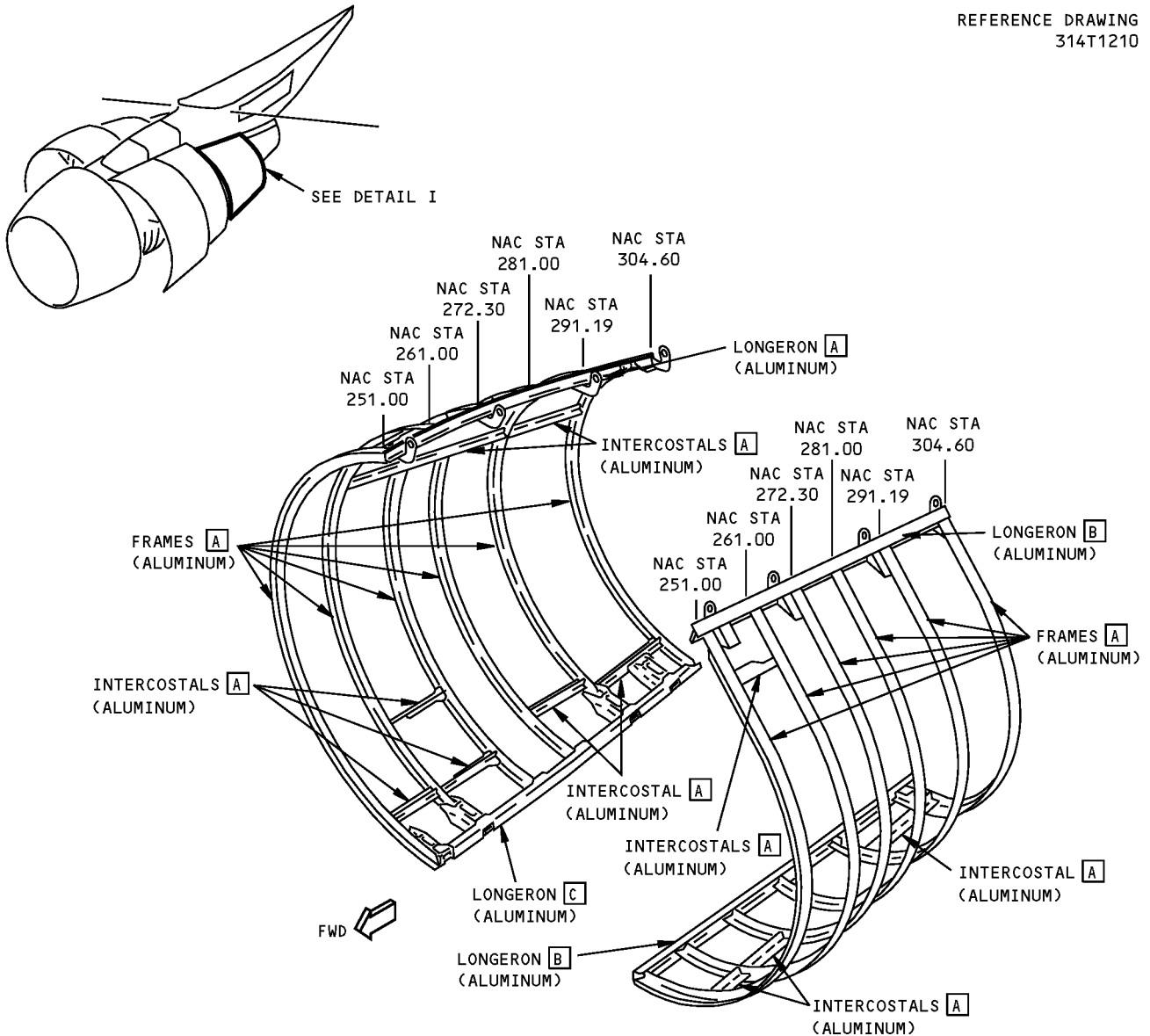
**ALLOWABLE DAMAGE FOR DENT
DETAIL V**

**Core Cowl Structure Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL STRUCTURE - CF6-80A ENGINE

REFERENCE DRAWING
314T1210



DETAIL I

NOTES

- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

- A** REFER TO 51-70-12 FOR EXTRUDED SECTION REPAIR.
- B** NO REPAIRS APPLICABLE. REPAIRS WILL BE BASED ON SERVICE EXPERIENCE.
- C** REFER TO REPAIR 2.

**Core Cowl Structure Repair - CF6-80A Engine
Figure 201**

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REPAIR 1
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STRUCTURAL REPAIR MANUAL

REPAIR 2 - CORE COWL LONGERON CRACK - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Drill a 0.25 inch (6 mm) diameter crack stop hole at the end of the crack.
3. Make the repair parts. Refer to Table I.
4. Place the repair angle in position and drill the fastener holes. Make sure there is sufficient edge margin between the fastener holes and the edge of the part, other fastener holes and damage cleanup.
5. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair angle and the longeron.
6. Apply a chemical conversion coating to the repair part and to the bare surfaces of the aluminum longeron, bearing pad and shim. Refer to SRM 51-20-01. Cadmium plate the repair angle. Refer to SOPM 20-42-01 D6-51702.
7. Apply two layers of Desoto high temperature polyurethane (BAC5710, Type 51) primer to the repair parts and to the bare surfaces of the longeron.
8. Install the repair angle with BMS 5-63 sealant between the faying surfaces. Make sure any gap caused by damage removal from the longeron is filled with sealant. Install the fasteners wet and fillet seal the collars with BMS 5-63 sealant.
9. Make sure the core cowl latches are properly adjusted after the repair is completed. Refer to AMM 71-11-07 page 501.

FASTENER SYMBOLS

- REFERENCE FASTENER LOCATION
- INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K(XX) HEX-DRIVE BOLT WITH A BACC30X6S COLLAR.
- INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K(XX) HEX-DRIVE BOLT WITH A BACN10JC3CD NUT AND AN96OPD10 WASHER.
- REPAIR FASTENER IN A NEW LOCATION OR WHERE THERE WAS A RIVET. INSTALL A BACB30NX6K(XX) HEX-DRIVE BOLT WITH A BACC30X6S COLLAR.
- INITIAL FASTENER LOCATION. INSTALL A BACB30NN3K BOLT WITH A BACN10GW3AS NUT.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	ANGLE	1	0.080 301 CRES, 1/2 HARD, SURFACE CONDITION 2D
2	BEARING PAD	2	0.100 CLAD 2024-T3
3	SHIM	2	BACS40R08D18F OR EQUIVALENT LAMINATED SHIM A

TABLE I

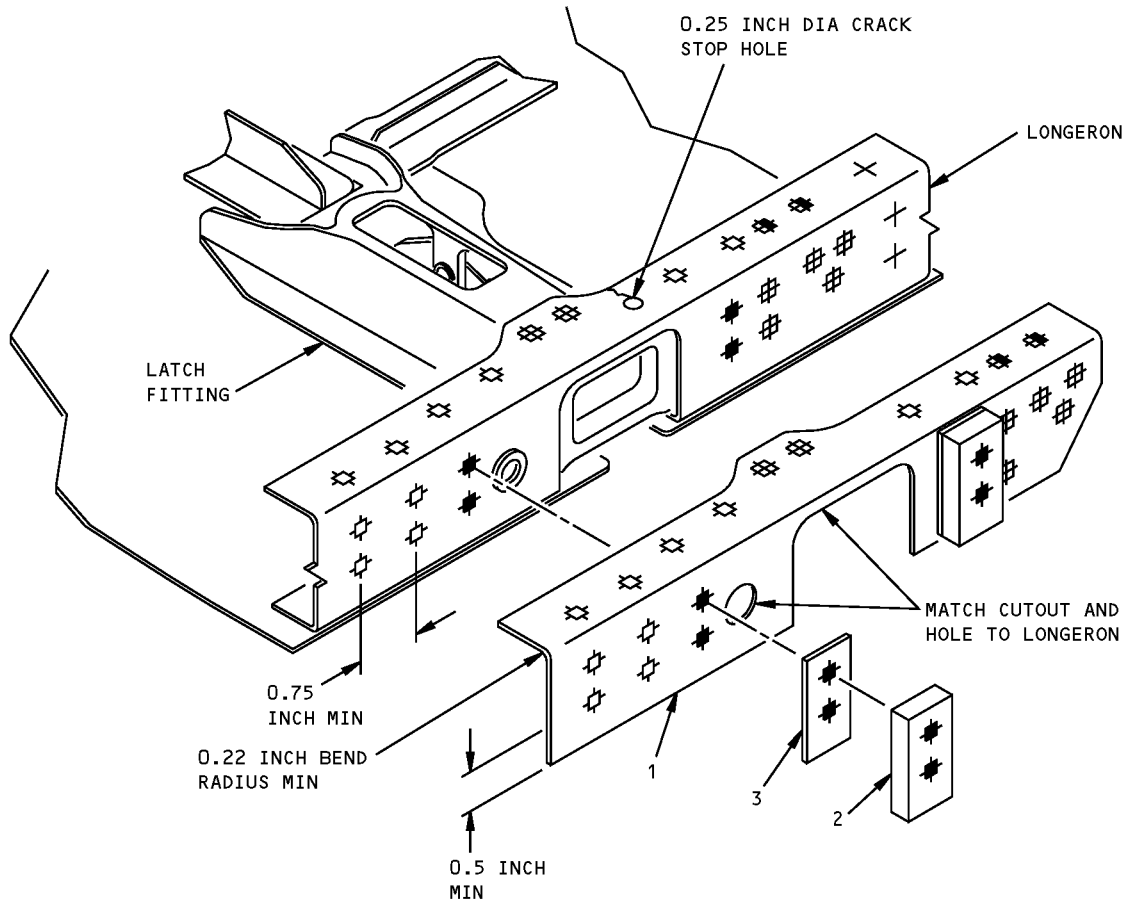
NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES.
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A IF THE SHIM LAMINATIONS ARE REMOVED FOR COWL LATCH ADJUSTMENT IN STEP 9, APPLY THE CHEMICAL CONVERSION COATING AND THE PRIMER TO THE BARE SURFACES.

**Core Cowl Longeron Crack Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



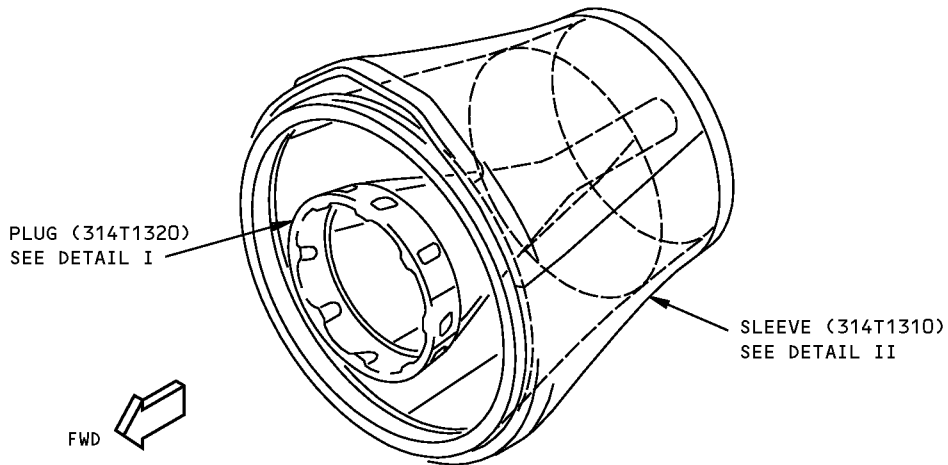
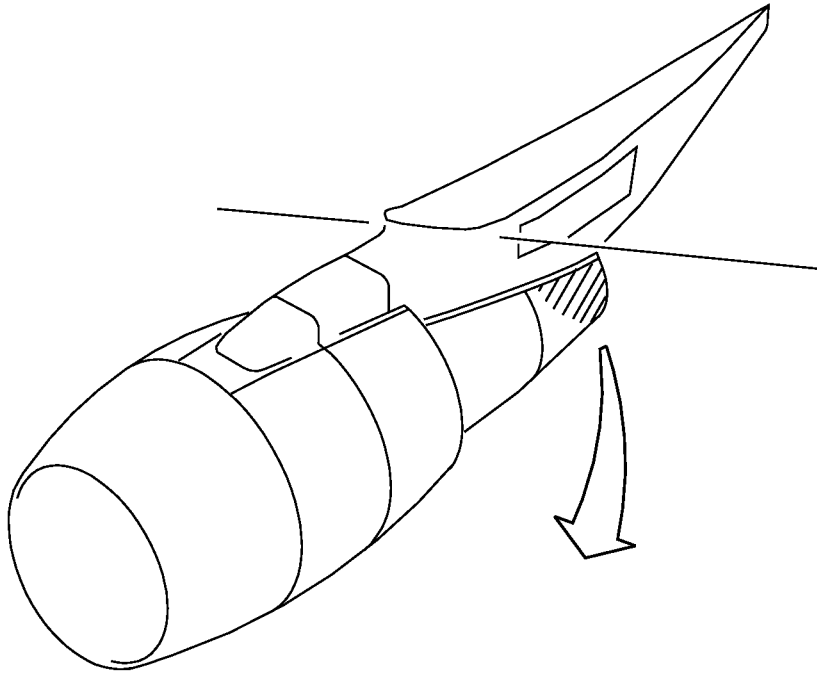
**LONGERON REPAIR
DETAIL I**

**Core Cowl Longeron Crack Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - PRIMARY EXHAUST SKIN - CF6-80A ENGINE

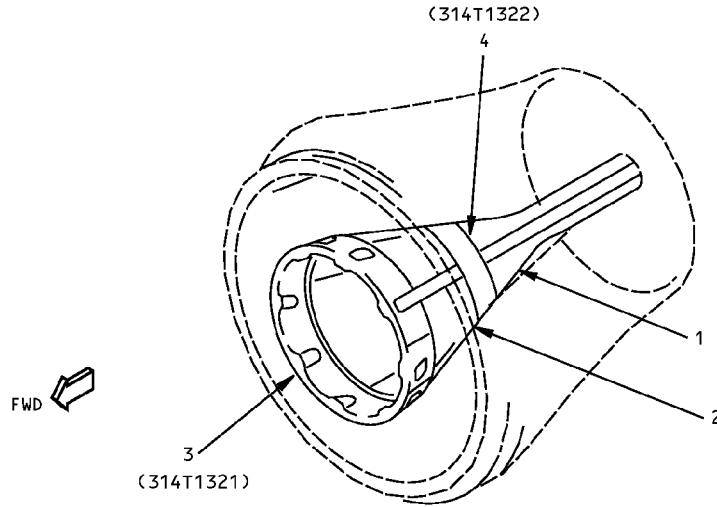
REF DWG
333T1000



**Primary Exhaust Skin Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1320



**PLUG
DETAIL I**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CONE	0.050	PH15-7MO CRES PER AMS 5520, COND A	
2	PANEL		PH15-7 CRES HONEYCOMB. TRE 33001A, 3/8-15-7/15-7PX/2020-15-7/50/041	
3	FWD RING		EXTRUSION PH15-7MO CRES PER AMS 5657, COND A	
4	AFT RING		BAR STOCK PH15-7MO CRES PER AMS 5657, COND A	

LIST OF MATERIAL FOR DETAIL I

**Primary Exhaust Skin Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 3)**

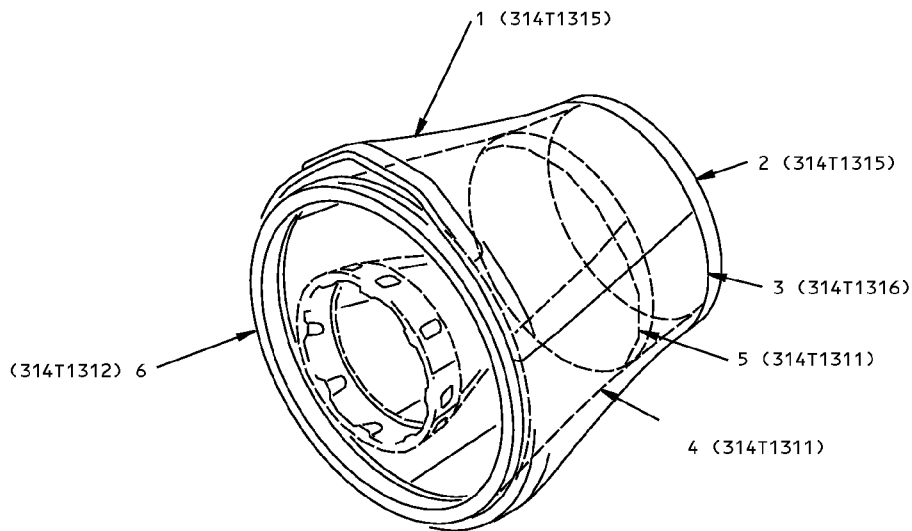
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IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T1310



**SLEEVE ASSEMBLY
DETAIL II**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL OUTER SLEEVE		PH15-7 CRES HONEYCOMB. TRE 3200 1A 3/8C-15-7/15-7/1212-15-7/30/025 OPTIONAL MATERIAL: TRE 3200-1A-3/8C-15-7/15-7/1818-15-7/30-025	
2	AFT SKIN	0.062 0.075	PH15-7MO CRES PER AMS 5520 COND A OPTIONAL MATERIAL: PH15-7MO CRES PER AMS 5520 COND A	
3	AFT RING	0.050	PH15-7MO CRES PER AMS 5657 COND A	
4	PANEL INNER SLEEVE		PH15-7 CRES HONEYCOMB. TRE 33001A 3/8C-15-7/15-7PX/1720-15-7/50/041	
5	AFT SKIN	0.050	PH 15-7MO CRES PER AMS 5520 COND A	
6	FWD RING		BAR STOCK PH15-7MO CRES PER AMS 5657 COND A	

LIST OF MATERIAL FOR DETAIL II

**Primary Exhaust Skin Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 3)**

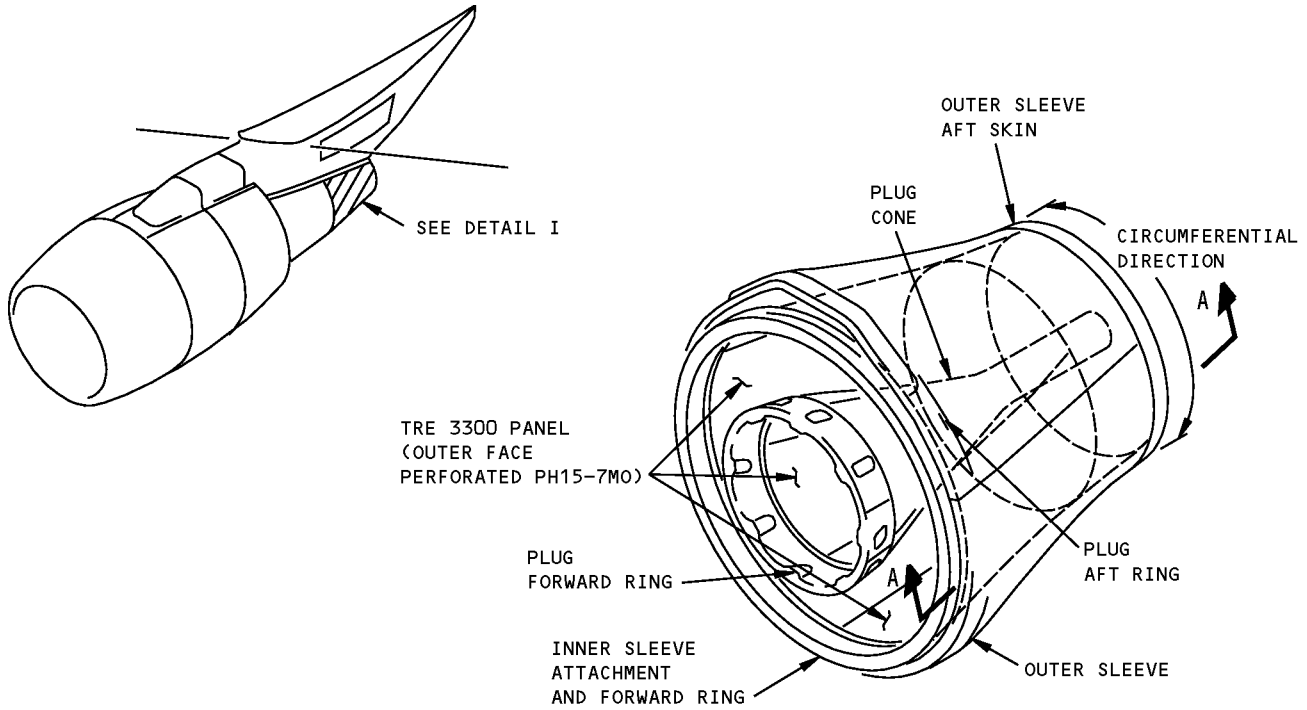
IDENTIFICATION 1
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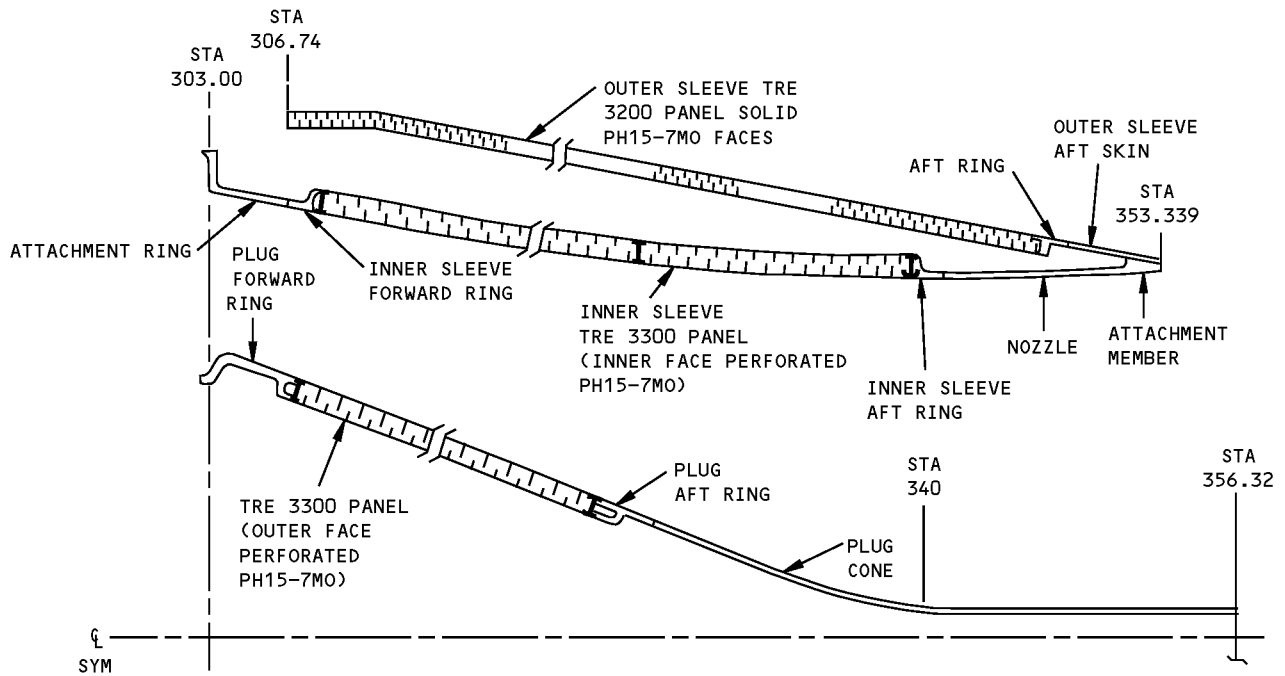
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - PRIMARY EXHAUST - CF6-80A ENGINE



DETAIL I



**SECTION THRU SLEEVE AND PLUG ASSEMBLY
SECTION A-A**

**Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PLUG FWD RING	A	C H	NOT PERMITTED	NOT PERMITTED	---
PLUG AFT RING	A	C H	NOT PERMITTED	NOT PERMITTED	---
PLUG CONE FWD OF NAC STA 340	M	C H	D	NOT PERMITTED	---
PLUG CONE AFT OF NAC STA 340	B	C H	D	NOT PERMITTED	---
PLUG TRE3300, PH15-7MO PERFORATED/SOLID FACE SANDWICH PANEL	I	H	D	F	G
INNER SLEEVE NOZZLE	L	C H	D	NOT PERMITTED	---
INNER SLEEVE ATTACHMENT MEMBER	A	C H	D	NOT PERMITTED	---
ATTACHMENT RING	A	C H	D	NOT PERMITTED	---
INNER SLEEVE AFT RING	A	C H	NOT PERMITTED	NOT PERMITTED	---
INNER SLEEVE FWD RING	A	C H	NOT PERMITTED	NOT PERMITTED	---
INNER SLEEVE TRE3300, PH15-7MO PERFORATED/SOLID FACE SANDWICH PANEL	K	H	D	F	G
OUTER SLEEVE AFT SKIN	A	C H	D	NOT PERMITTED	---
OUTER SLEEVE AFT RING	A	C H	NOT PERMITTED	NOT PERMITTED	---
OUTER SLEEVE TRE3200, PH15-7MO SOLID FACE SANDWICH PANEL	E I	O	N	F	G

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- A** CRACKS UP TO 0.10 INCHES IN LENGTH ARE PERMITTED IF:
- THE SUM OF ALL OF THE CRACKS LENGTHS IS NOT MORE THAN 2.0 INCHES
 - THE MINIMUM SEPARATION BETWEEN A CRACK AND AN EDGE OR OTHER DAMAGE IS 1.0 INCH.
- DRILL OUT THE CRACK WITH A 0.125 INCH HOLE. REPAIR THE DAMAGE AT THE NEXT "A" CHECK. REMOVE EDGE CRACKS AS SHOWN IN DETAILS II AND IV.

- B** CRACKS ARE PERMITTED IF:
- THE SUM OF ALL OF THE CRACK LENGTHS IS LESS THAN 3.0 INCHES AND IS NOT MORE THAN 2.0 INCHES IN THE CIRCUMFERENTIAL DIRECTION OF PLUG CONE. SEE DETAIL I.
 - THE MINIMUM SEPARATION BETWEEN A CRACK AND AN EDGE OR OTHER DAMAGE IS TWO TIMES THE LENGTH OF THE LONGEST CRACK.
- DRILL OUT THE CRACK ENDS WITH A 0.098 INCH HOLE. REPAIR THE DAMAGE AT THE NEXT "A" CHECK. REMOVE EDGE CRACKS AS SHOWN IN DETAILS I AND IV.
- C** NICKS AND GOUGES ON THE EDGES MUST BE REMOVED AS SHOWN IN DETAILS III AND IV.

Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 6)

STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

- D** DENTS ARE PERMITTED IF:
 - THE DENT IS NOT DEEPER THAN 0.05 INCH (1.3 mm)
 - DENT WIDTH IS AT LEAST 10 TIMES THE DENT DEPTH, BUT NOT MORE THAN 1.0 INCH (25 mm) IN ANY DIRECTION
 - THE DENT IS NOT CLOSER THAN 2.00 INCHES (50 mm) TO ANY PANEL EDGE.
 - THERE ARE NOT ANY CRACKS, SHARP CREASES, OR WRINKLES CAUSED BY A DENT
 - DELAMINATION AND HOLES ARE NOT MORE THAN THE LIMITS SPECIFIED IN THE ALLOWABLE DAMAGE TABLE
- E** EDGE CRACKS ARE PERMITTED AS SHOWN IN DETAIL V. INSPECT DAMAGE EVERY 10 FLIGHT CYCLES.
- F** HOLES AND PUNCTURES UP TO 0.25 INCHES (6 mm) IN DIAMETER ARE PERMITTED IF:
 - THEY DO NOT PENETRATE THROUGH MORE THAN ONE SKIN OF A HONEYCOMB PANEL
 - THE DAMAGE IS MADE ROUND AND SMOOTH
 - THERE ARE NO MORE THAN FIVE UNREPAIRED HOLES OR PUNCTURES ARE PERMITTED IN A PANEL
 - THERE IS AT LEAST 2.0 INCHES (50 mm) SEPARATION FROM ANY EDGE OR OTHER DAMAGE.

INSPECT THE DAMAGE EVERY "A" CHECK
- G** DELAMINATIONS AND VOIDS BETWEEN THE CORE AND SKIN ARE PERMITTED IF:
 - THEY ARE NOT LARGER THAN 1.0 INCH (25 mm) IN DIAMETER
 - THERE MUST BE AT LEAST 1.0 INCH (25 mm) SEPARATION FROM ANY EDGE OR OTHER DAMAGE
 - THERE ARE NO INCLUDED CRACKS OR BUCKLES.
- H** SURFACE NICKS AND GOUGES UP TO 0.10 INCH (2.5 mm) IN LENGTH OR DIAMETER ARE PERMITTED. CLEAN UP DAMAGE AS SHOWN IN DETAIL III.
- I** CRACKS ARE PERMITTED IF:
 - THE MAXIMUM LENGTH OF EACH CRACK IS 6.0 INCHES (150 mm).
 - CRACKS LONGER THAN 6.0 INCHES (150 mm) AND LESS THAN 8.0 INCHES (200 mm) ARE PERMITTED FOR A MAXIMUM OF 300 FLIGHT HOURS.
 - CRACKS LONGER THAN 8.0 INCHES (200 mm) AND LESS THAN 10.0 INCHES (250 mm) ARE PERMITTED FOR A MAXIMUM OF 150 FLIGHT HOURS.
 - THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IS LESS THAN 24.0 (600 mm) INCHES.

- THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IN THE CIRCUMFERENTIAL DIRECTION IS LESS THAN 3.5 INCHES (88 mm) FOR EACH QUADRANT.
- THE DISTANCE BETWEEN A CRACK AND AN EDGE IS A MINIMUM OF ONE HALF THE LENGTH OF THE LONGEST CRACK BUT A MINIMUM OF 1.0 INCH (25 mm).
 - CRACKS ALONG THE FORWARD EDGE ARE PERMITTED AS SHOWN IN DETAIL V. MAKE AN INSPECTION OF THE DAMAGE EACH 10 FLIGHT CYCLES.
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON ONE OF THE TWO FACESHEETS IS A MINIMUM OF TWO TIMES THE LENGTH OF THE LONGEST CRACK. THIS MINIMUM DISTANCE MUST BE 1.0 INCH (25 mm) OR MORE.

STOP DRILL THE ENDS OF THE CRACK TO A DIAMETER OF 0.125 INCH (3 mm) AS GIVEN IN SRM 51-10-02. REPAIR THE DAMAGE ON OR BEFORE THE SECOND "A" CHECK.

- K** CRACKS UP TO 3.0 INCHES (75 mm) IN LENGTH ARE PERMITTED IF:
 - THE SUM OF ALL OF THE CRACKS LENGTHS OF BOTH THE INNER AND OUTER FACE SHEETS IS LESS THAN 3.0 INCHES (75 mm)
 - THE MINIMUM SEPARATION BETWEEN A CRACK AND AN EDGE OR OTHER DAMAGE IS TWO TIMES THE LENGTH OF THE LONGEST CRACK.

DRILL OUT THE CRACK ENDS WITH A 0.125 INCH (3 mm) HOLE. REPAIR THE DAMAGE AT THE NEXT "A" CHECK. REMOVE EDGE CRACKS AS SHOWN IN DETAILS II AND IV.

- L** CRACKS UP TO 0.10 INCH (2.5 mm) ARE PERMITTED IF:
 - THE SUM OF ALL OF THE CRACKS IS LESS THAN 2.0 INCHES (50 mm).
 - THE MINIMUM SEPARATION BETWEEN A CRACK AND AN EDGE, OR OTHER DAMAGE IS TWO TIMES THE LENGTH OF THE LONGEST CRACK.

DRILL OUT THE CRACK WITH A 0.125 INCH (3 mm) HOLE. REPAIR THE DAMAGE AT THE NEXT "A" CHECK. REMOVE EDGE CRACKS AS SHOWN IN DETAILS II AND IV.

**Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

M CRACKS ARE PERMITTED IF:

- THE SUM OF ALL OF THE CRACKS LENGTHS IS LESS THAN 6.0 INCHES (150 mm) AND IS NOT MORE THAN 3.5 INCHES (88 mm) IN THE CIRCUMFERENTIAL DIRECTION OF INNER SLEEVE. SEE DETAIL I. THE MINIMUM SEPARATION BETWEEN A CRACK AND AN EDGE OR OTHER DAMAGE IS TWO TIMES THE LENGTH OF THE LONGEST CRACK.

DRILL OUT THE CRACK ENDS WITH A 0.098 INCH (2.5 mm) HOLE. REPAIR THE DAMAGE AT THE NEXT "A" CHECK. REMOVE EDGE CRACKS AS SHOWN IN DETAILS II AND IV.

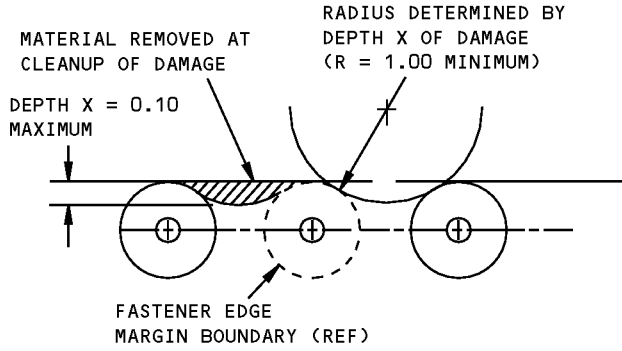
N DENTS THAT ARE WITHIN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED IF:

- THERE ARE NO SKIN WRINKLES OR SKIN THAT IS PUSHED IN BECAUSE OF HEAT
 - THERE ARE NO SHARP EDGES BECAUSE OF SKIN WAVINESS.
 - THEY ARE A MINIMUM OF 2.0 INCHES (50 mm) AWAY FROM THE PANEL EDGE.
 - DENTS ARE NO MORE THAN 0.10 INCH (2.5 mm) DEEP
- DENTS THAT ARE MORE THAN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED FOR CONTINUED OPERATION IF:
 - THE DENTS HAVE NO DISBONDS, CRACKS, SHARP EDGES OR WRINKLES.
 - THE DENTS ARE NO MORE THAN 0.1 INCH (2.5 mm) DEEP ($Y \leq 0.1$).
 - NO DENT IS CLOSER THAN ONE DENT LENGTH TO THE EDGE OF THE PANEL.
 - THE DISTANCE BETWEEN ANY DENT AND ANY OTHER DAMAGE IS A MINIMUM OF TWO TIMES THE LENGTH OF THE DENT. THIS MINIMUM DISTANCE MUST BE 1.0 INCH (25 mm) OR MORE.
 - THE DENTS ARE INSPECTED AS SPECIFIED BELOW:
 - FOR DENTS WITH AN A/Y RATIO BETWEEN 6 AND 10 ($10 \geq A/Y \geq 6$), EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "C" CHECK.
 - FOR DENTS WITH AN A/Y RATIO LESS THAN 6 ($A/Y \leq 6$), EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "2A" CHECK.
 - IF THE DENT HAS A CRACK, USE THE LIMITS FOR CRACKS.
 - IF THE DENT HAS A HOLE OR PUNCTURE, USE THE LIMITS FOR HOLES AND PUNCTURES

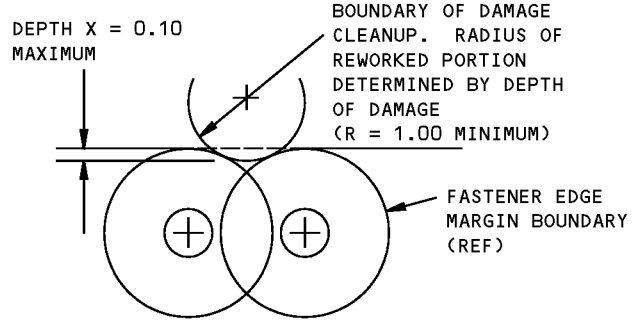
- O** NICKS, GOUGES, AND SCRATCHES TO A MAXIMUM LENGTH OR DIAMETER OF 2.0 INCHES (50 mm) AFTER CLEANUP ARE PERMITTED. REMOVE THE DAMAGE AS SHOWN IN DETAIL III.

Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 4 of 6)

STRUCTURAL REPAIR MANUAL

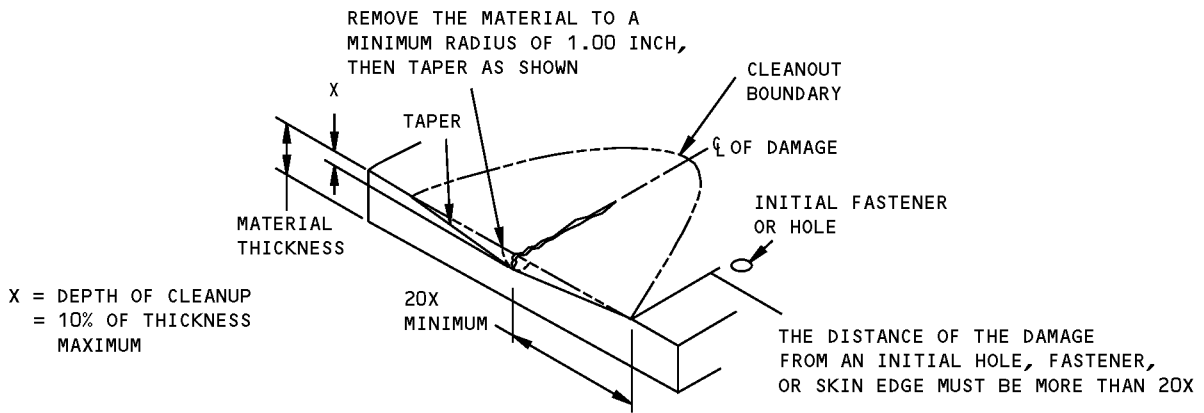


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

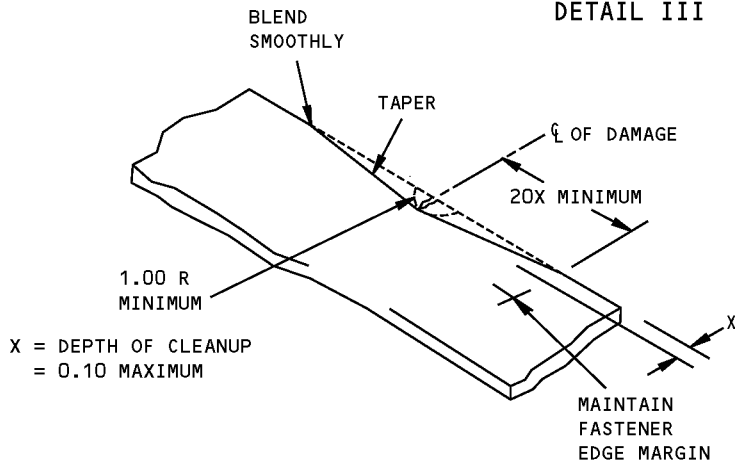


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

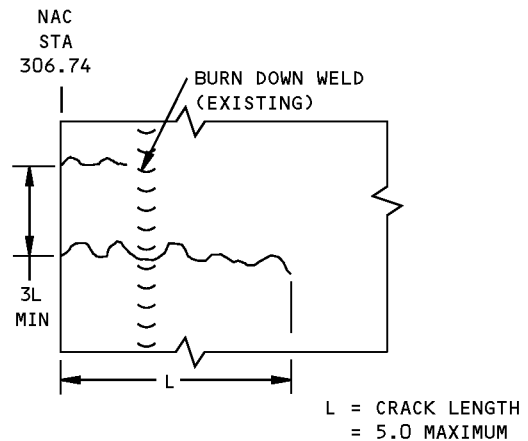
DETAIL II



**REMOVAL OF DAMAGE ON A SURFACE
DETAIL III**



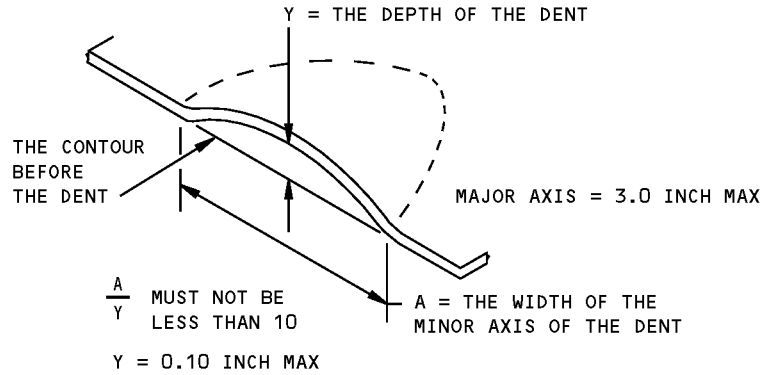
**REMOVAL OF DAMAGE ON AN EDGE
DETAIL IV**



**ALLOWABLE EDGE CRACKS
DETAIL V**

**Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

767-300
STRUCTURAL REPAIR MANUAL

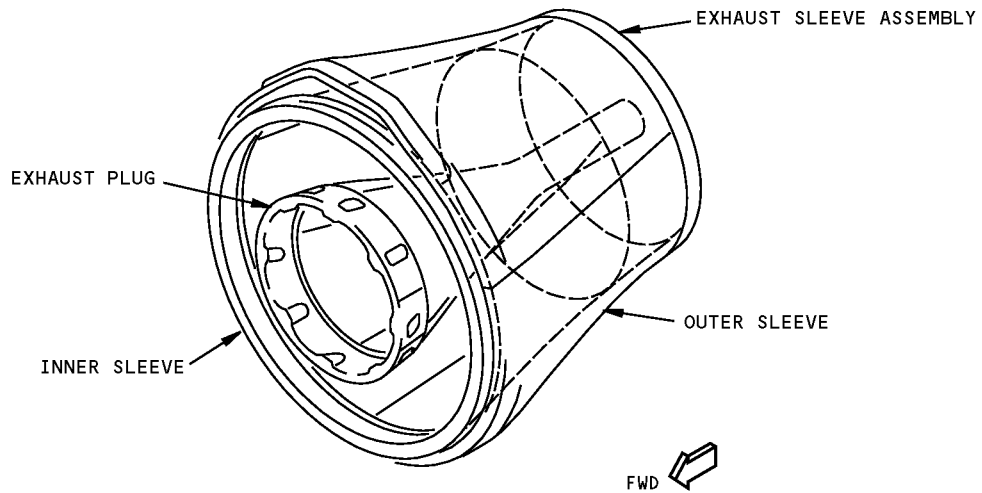
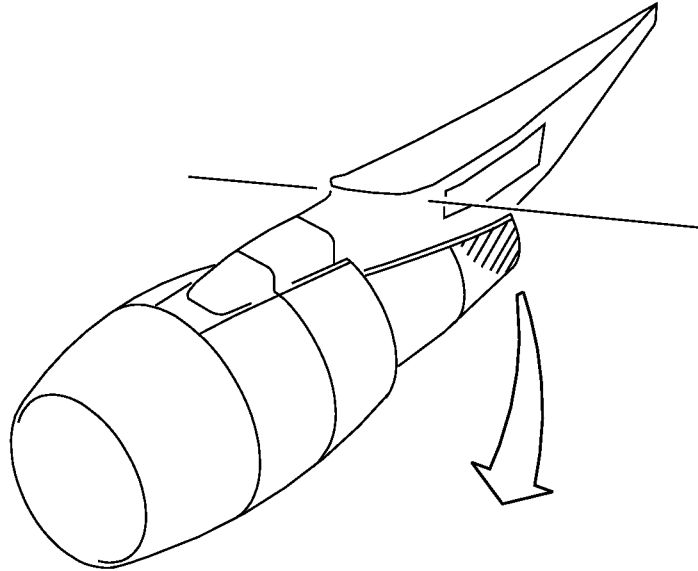


DENT DAMAGE PERMITTED
DETAIL VI

Primary Exhaust Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 6 of 6)

767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - PRIMARY EXHAUST - CF6-80A ENGINE



NOTES

- REFER TO THE 767 COMPONENT MAINTENANCE MANUAL FOR THE FOLLOWING WELD REPAIRS:
78-11-06 FOR SLEEVE
78-11-16 FOR EXHAUST PLUG

Primary Exhaust Skin Repair - CF6-80A Engine
Figure 201

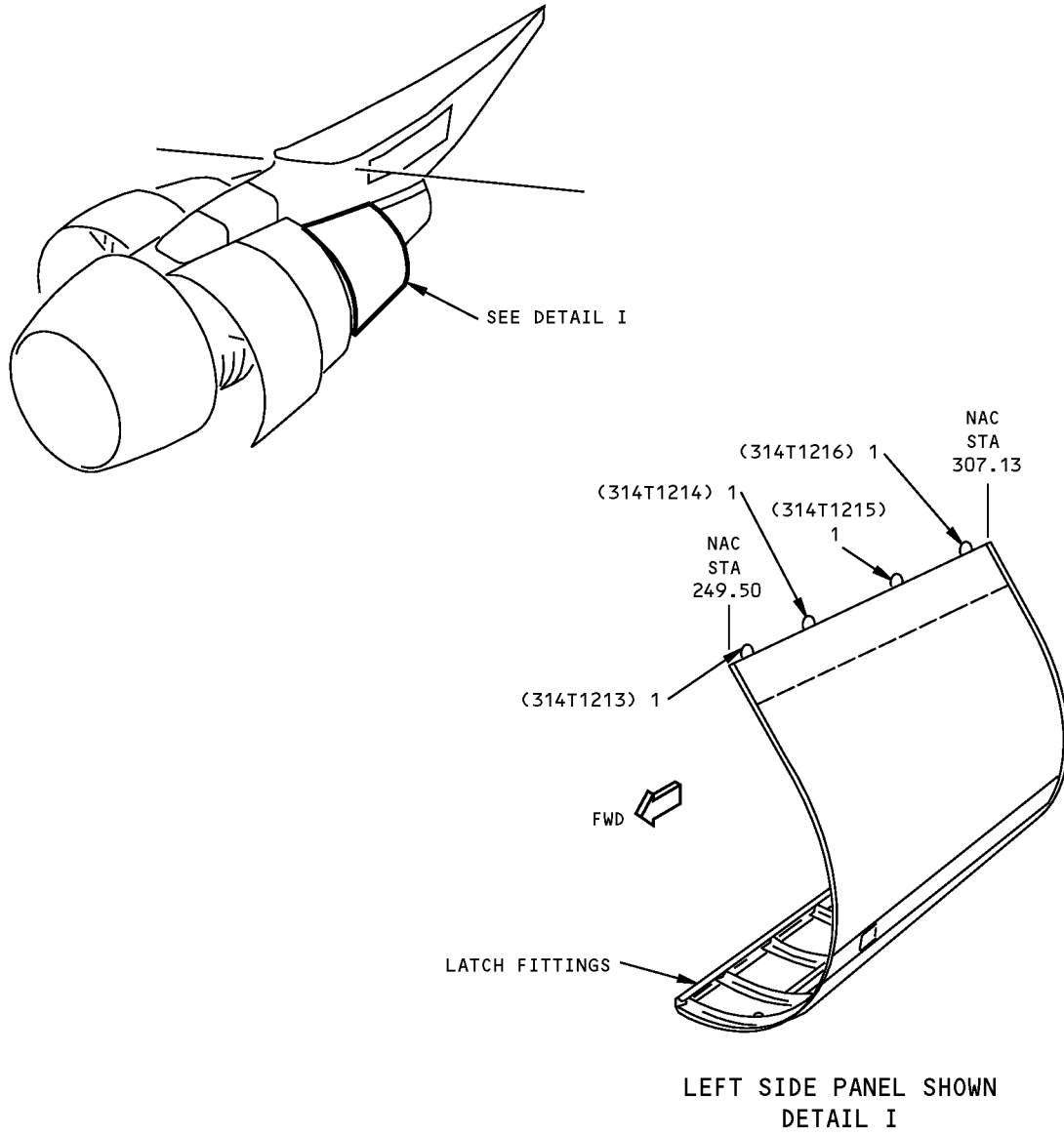
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54-41-30

REPAIR GENERAL
Page 201
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL ATTACHMENT FITTING - CF6-80A ENGINE



LEFT SIDE PANEL SHOWN
DETAIL I

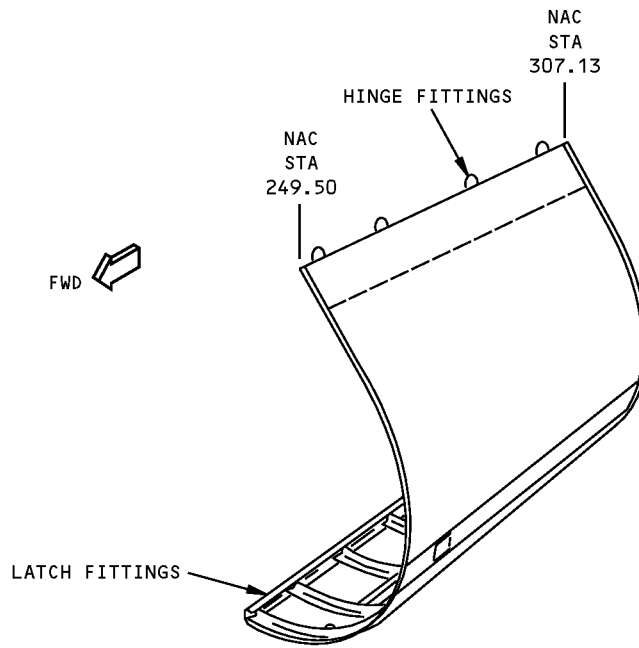
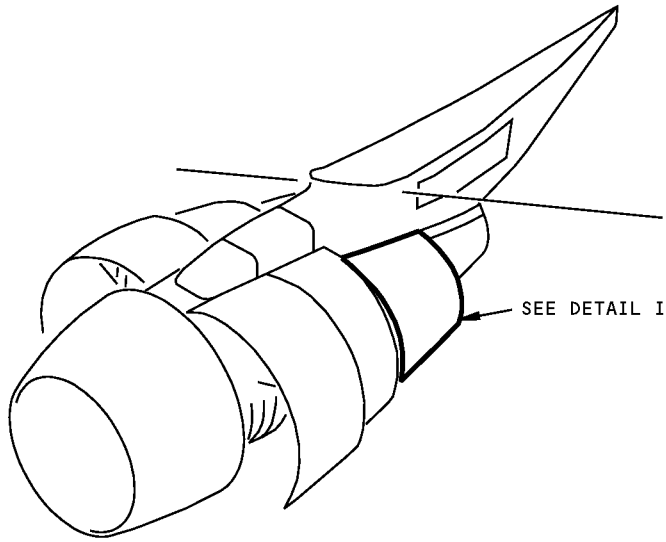
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE ASSY FITTING		6AL-4V TITANIUM FORGING	

LIST OF MATERIAL FOR DETAIL I

**Core Cowl Attachment Fitting Identification - CF6-80A Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL ATTACHMENT FITTINGS - CF6-80A ENGINE



LEFT SIDE PANEL SHOWN
DETAIL I

**Core Cowl Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

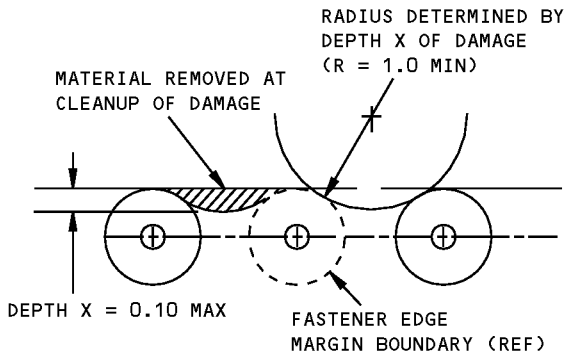
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INVESTIGATION AND CLEANUP OF DAMAGE REFER TO 51-10

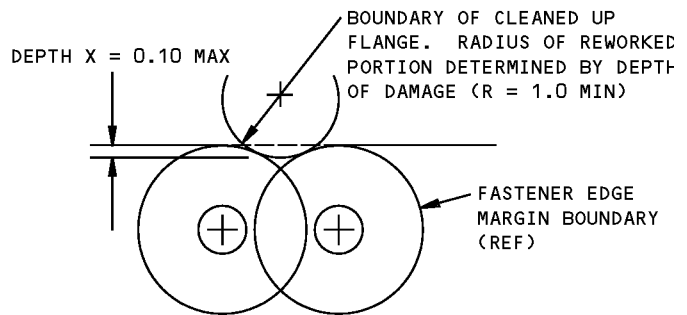
[A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS NOT ALLOWED

[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[C] SHOT PEEN REWORKED AREAS PER 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

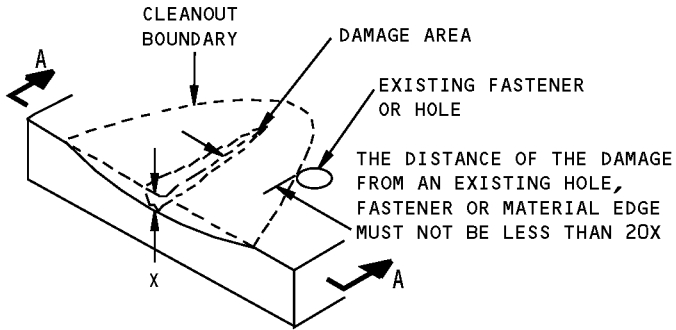


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

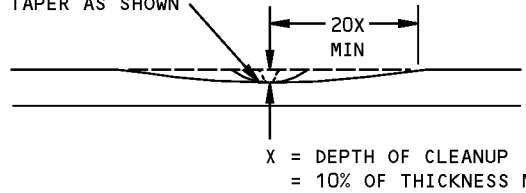
DETAIL II

**Core Cowl Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



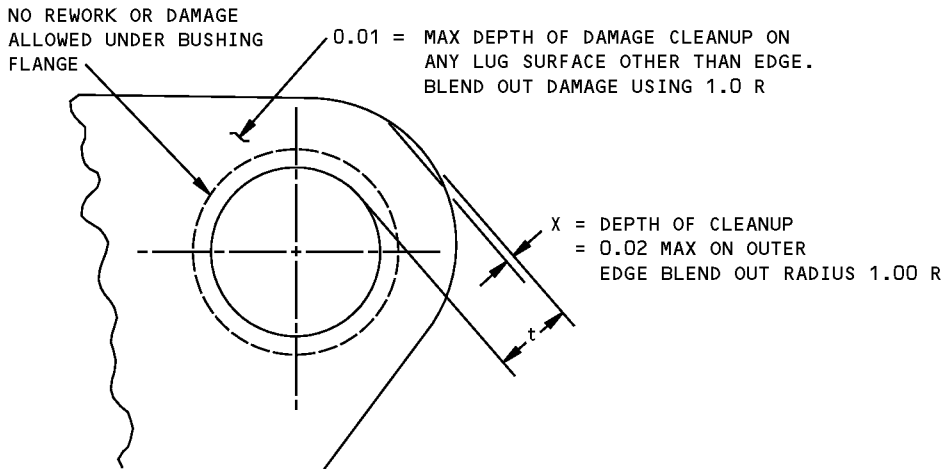
ROUND OUT TO 1.00 R MIN
AND TAPER AS SHOWN



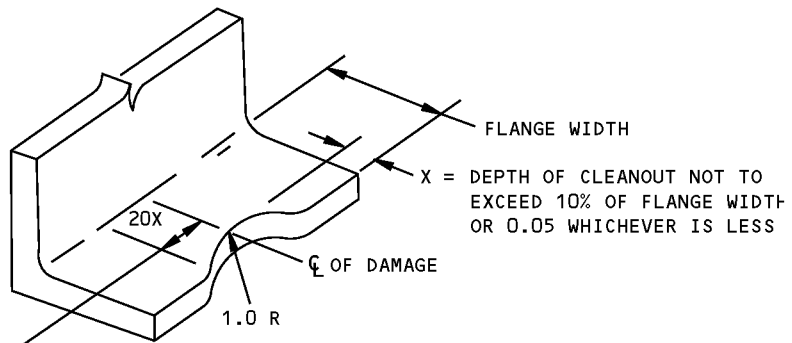
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION, AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**



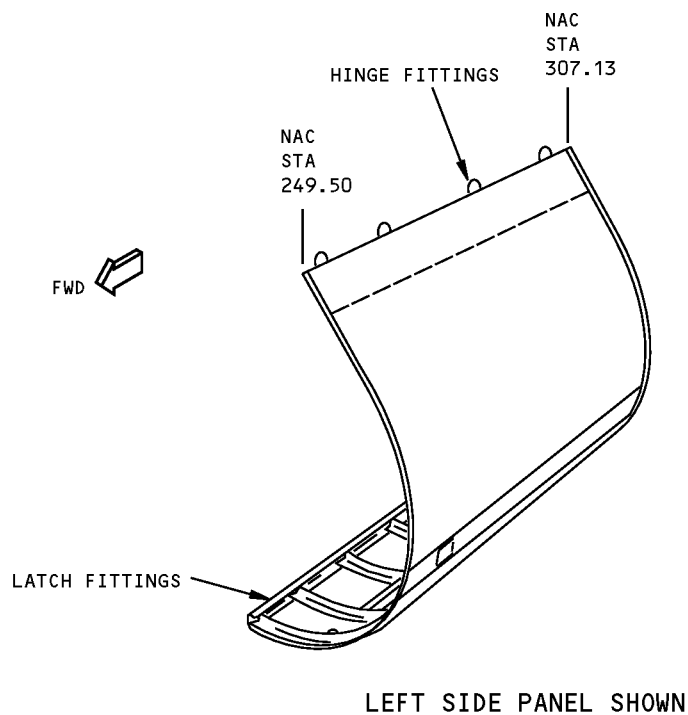
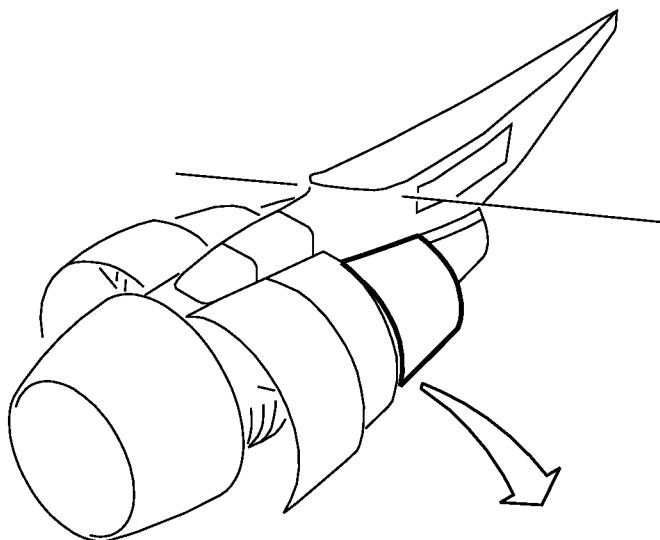
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS, OTHER DAMAGE OR EDGE MUST NOT BE LESS THAN 20X

**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Core Cowl Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL ATTACHMENT FITTING - CF6-80A ENGINE



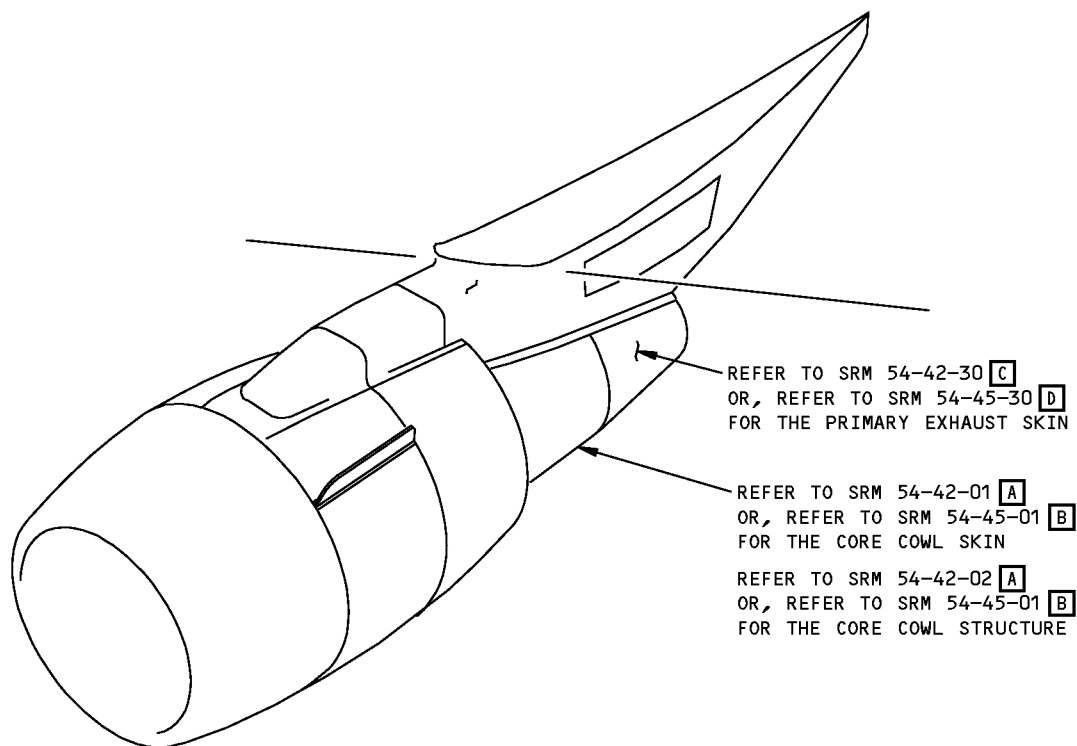
NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE. SPECIFIC REPAIRS TO FITTINGS WILL BE PROVIDED BASED ON SERVICE EXPERIENCE
- SEE 54-41-01 AND 54-41-02 FOR IDENTIFICATION

Core Cowl Attachment Fitting Repair - CF6-80A Engine
Figure 201

767-300
STRUCTURAL REPAIR MANUAL

GENERAL - CORE COWL STRUCTURE DIAGRAM - CF6-80C2 ENGINE



NOTES

- A** FOR CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A).
- B** FOR CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.
- C** FOR PRIMARY EXHAUSTS WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.012 INCH OUTER FACE SHEET.
- D** FOR PRIMARY EXHAUSTS WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.015 INCH OUTER FACE SHEET.

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Core Cowl Structure Diagram - CF6-80C2 Engine
Figure 1

D634T210

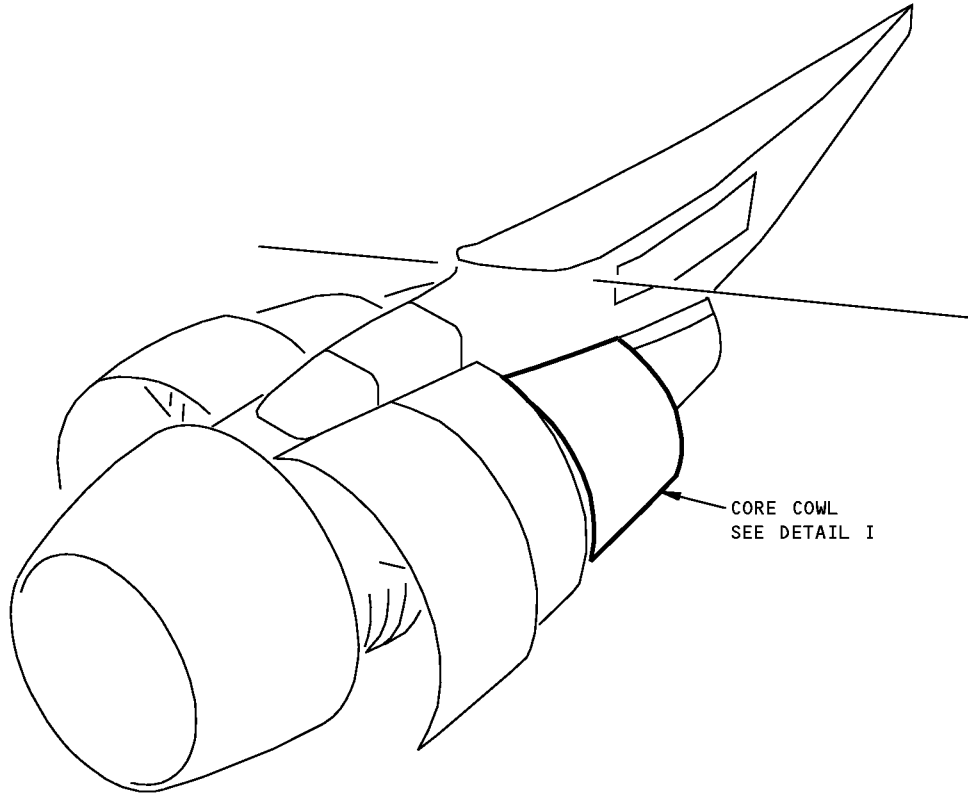
54-42-00

GENERAL
Page 1
Dec 15/2007

767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - CORE COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.



252416 S0006827522_V4

Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 3)

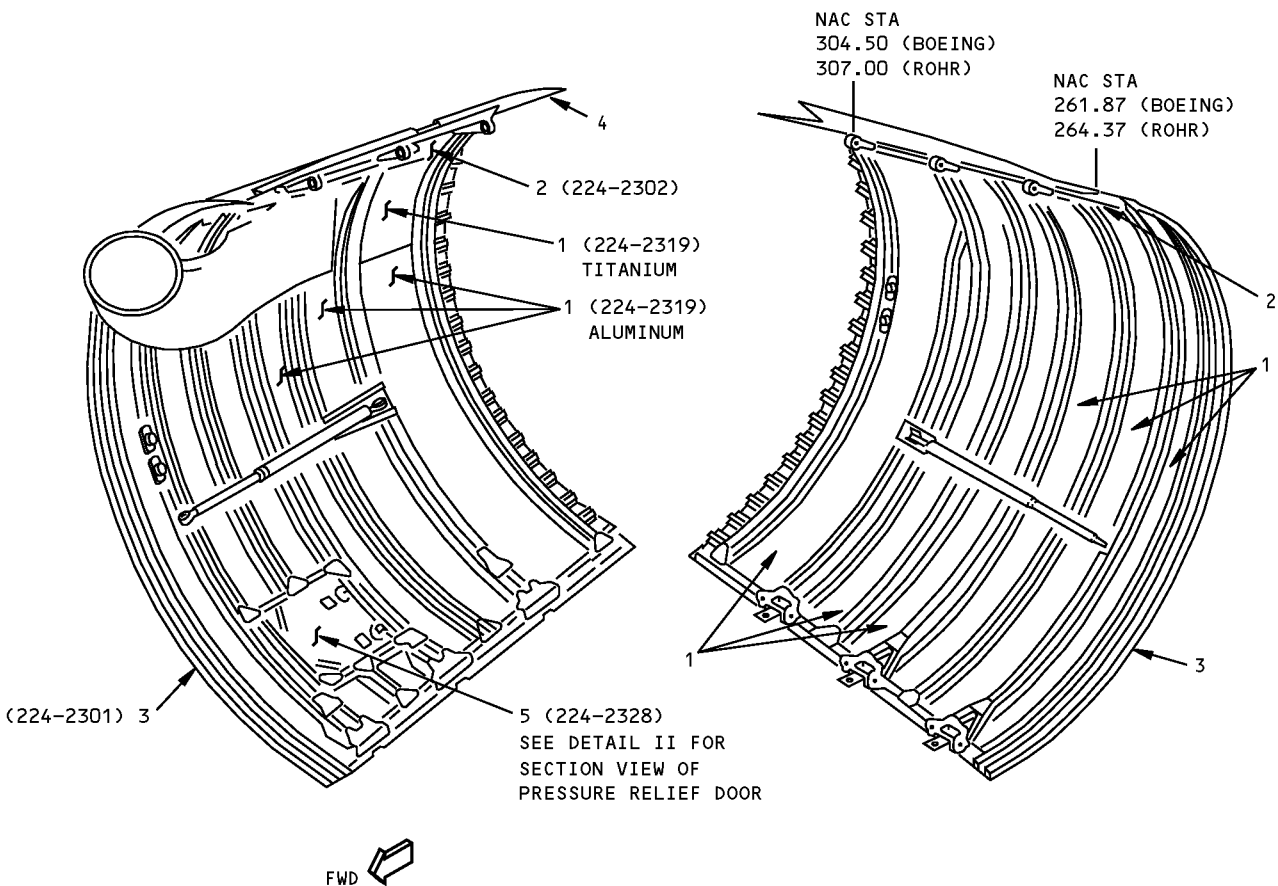
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54-42-01

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ROHR REF DWG
224-2301
224-2302



DETAIL I

LIST OF
MATL

**Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 3)**

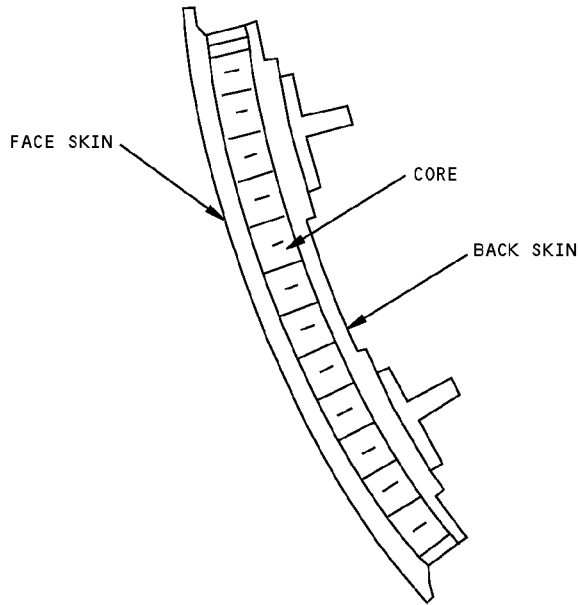
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ROHR REF DWG
224-2301
224-2318



SECTION VIEW OF
PRESSURE RELIEF DOOR
DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN ALUMINUM	0.063	CLAD AL 2219-T31 AMS4095 (CHEM MILLED TO 0.040 MIN)	
	TITANIUM	0.063	TI SH 6AL 4V AMS4911 (CHEM MILLED TO 0.040 MIN)	
2	FIRESHIELD (BONDED)	0.005	321 CRES SH, MIL-S-6721 TYPE 1, ANNEALED	
3	WEARSTRIP	0.063	CLAD AL 2024-T3, QQ-A-250/5	
4	SKIN, FAIRING (FIREWALL)	0.040	CP TITANIUM SH, AMS4091	
5	PANEL			
	FACE SKIN	0.125	2219-T31 CL AL SH	
	CORE	1/8 X 0.003	5052 ALUM ALLOY, NONPERFORATED	
	BACK SKIN	0.080	2219-T31 CL AL SH	

LIST OF MATERIALS FOR DETAILS I AND II

**Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 3)**

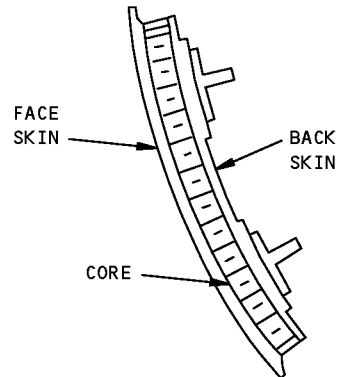
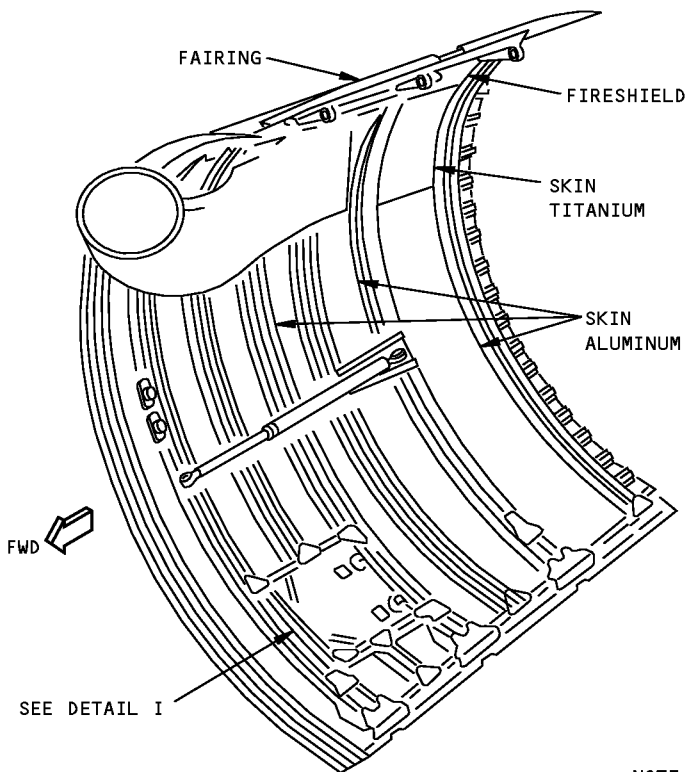
IDENTIFICATION 1
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767-300
STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - CORE COWL SKIN - CF6-80C2



SECTION VIEW OF
PRESSURE RELIEF DOOR
DETAIL I

RIGHT SIDE IS SHOWN
LEFT SIDE IS SIMILAR

NOTE: THIS SUBJECT IS ONLY APPLICABLE TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
SKIN:				
ALUMINUM	A	B	D	C
TITANIUM	NOT PERMITTED	B	D	NOT PERMITTED
FAIRING (FIREWALL)	NOT PERMITTED	B	D	NOT PERMITTED
FIRESHIELD	NOT PERMITTED	E F	E	NOT PERMITTED
PRESSURE RELIEF DOOR:				
FACE SKIN	A	B	D	C
CORE	NOT PERMITTED	B	D	C
BACK SKIN	A	B	D	C

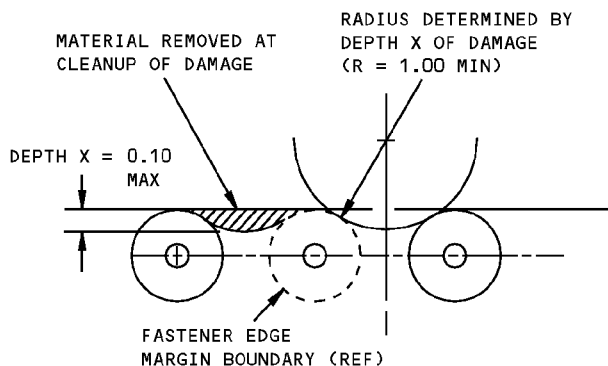
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Core Cowl Skin Allowable Damage - CF6-80C2
Figure 101 (Sheet 1 of 4)

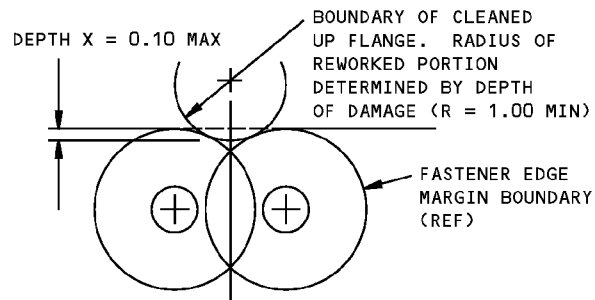
STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO SRM 51-11-00 FOR INVESTIGATION AND CLEANUP OF DAMAGE
 - SEE SRM 51-11-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-11-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS AS GIVEN IN SRM 51-21-01
 - ALL DIMENSIONS ARE IN INCHES
- A** MAXIMUM LENGTH OF CRACK ALLOWED IS 1.0 PROVIDED THE CRACK IS AT LEAST 6.0 FROM ANY HINGE OR LATCH FITTINGS, AND IS AT LEAST 6.0 FROM PANEL EDGE OR ANY OTHER DAMAGE. DRILL 0.19 STOP HOLES AT EACH END OF CRACK AND REPAIR AT NEXT AIRPLANE "A" CHECK.
- B** REMOVE DAMAGE AS SHOWN IN DETAILS II, III, V AND VI.
- C** ALLOWABLE IF DAMAGE IS LESS THAN 0.25 DIA, NOT CLOSER THAN 1.0 TO ANY FASTENER HOLE, NOT CLOSER THAN 1.6 FROM ANY PANEL SUPPORT MEMBERS, AND NOT LESS 10.0 FROM ANY OTHER ALLOWABLE DAMAGE. CLEAN OUT DAMAGE UP TO 0.25 MAX DIA. FILL HOLE WITH A 2117-T3 OR T4 RIVET, INSTALLED WET WITH 395-009 DESOTO HI-TEMP PRIMER. ALL OTHER HOLES TO BE REPAIRED.
- D** SEE DETAIL IV FOR ALLOWABLE DENT DIMENSIONS.
- E** THE FIRESHIELD IS NON-STRUCTURAL AND IS MADE FROM 0.005 INCH THICK CRES FOIL, BONDED TO THE SKIN WITH A 0.010 INCH THICK LAYER OF ADHESIVE. ANY DAMAGE THAT HAS NO SHARP EDGES AND DOES NOT PENETRATE THROUGH THE FIRESHIELD IS ACCEPTABLE. A CHANGE IN CURVATURE WHERE THE RADIUS-TO-THICKNESS RATIO (R/T) IS LESS THAN 1.0, IS CONSIDERED A SHARP EDGE. DENTS ARE PERMITTED IF THEY MEET THE PRECEDING REQUIREMENTS AND THERE IS NO DAMAGE TO THE STRUCTURAL SKIN OF THE COWL. IT IS NOT PERMITTED TO FILL DENTS, AND THE DENTS MAY SHOW NO EVIDENCE OF PULLED OR LOOSE RIVETS.
- F** REMOVE SHARP EDGE DAMAGE AS GIVEN IN DETAIL VII.



DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP

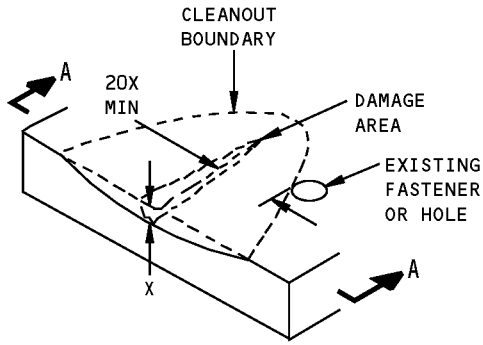


DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP

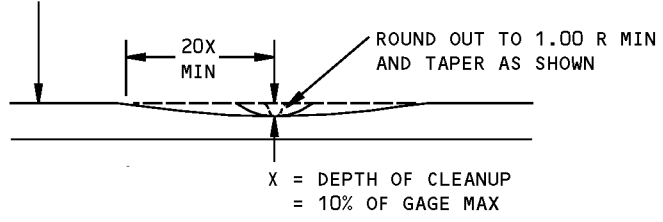
DETAIL II

Core Cowl Skin Allowable Damage - CF6-80C2
Figure 101 (Sheet 2 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

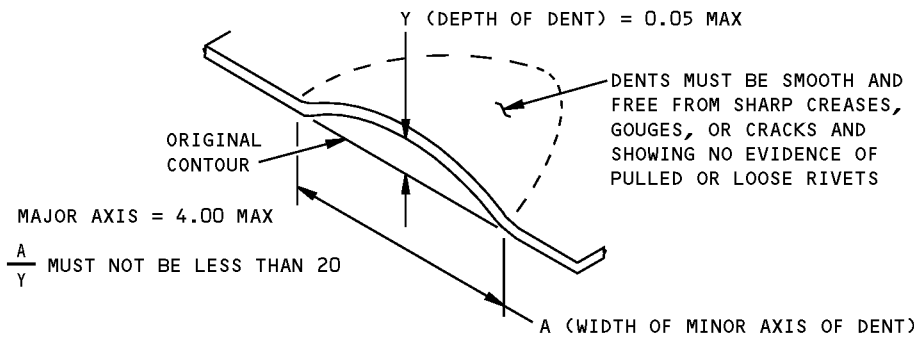


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

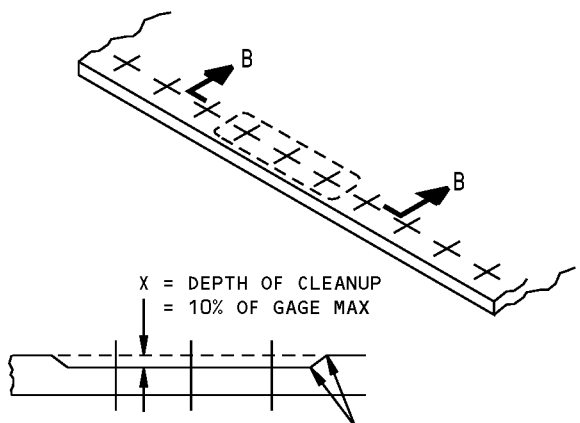


SECTION A-A

DETAIL III

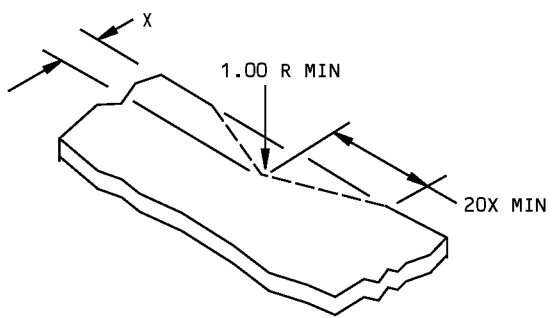


**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



SECTION B-B

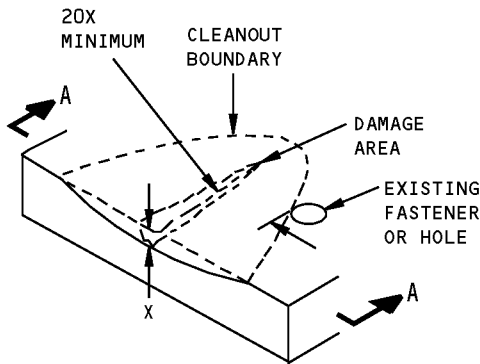
**CORROSION CLEANUP
DETAIL V**



DETAIL VI

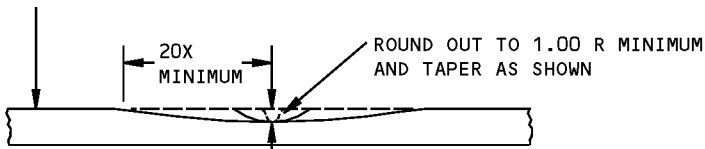
**Core Cowl Skin Allowable Damage - CF6-80C2
Figure 101 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**FIRESHIELD ONLY
DETAIL VII**

THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



X = DEPTH OF CLEANUP
= MINIMUM AMOUNT TO REMOVE SHARP EDGE AND DOES NOT PENETRATE THROUGH THE FIRESHIELD

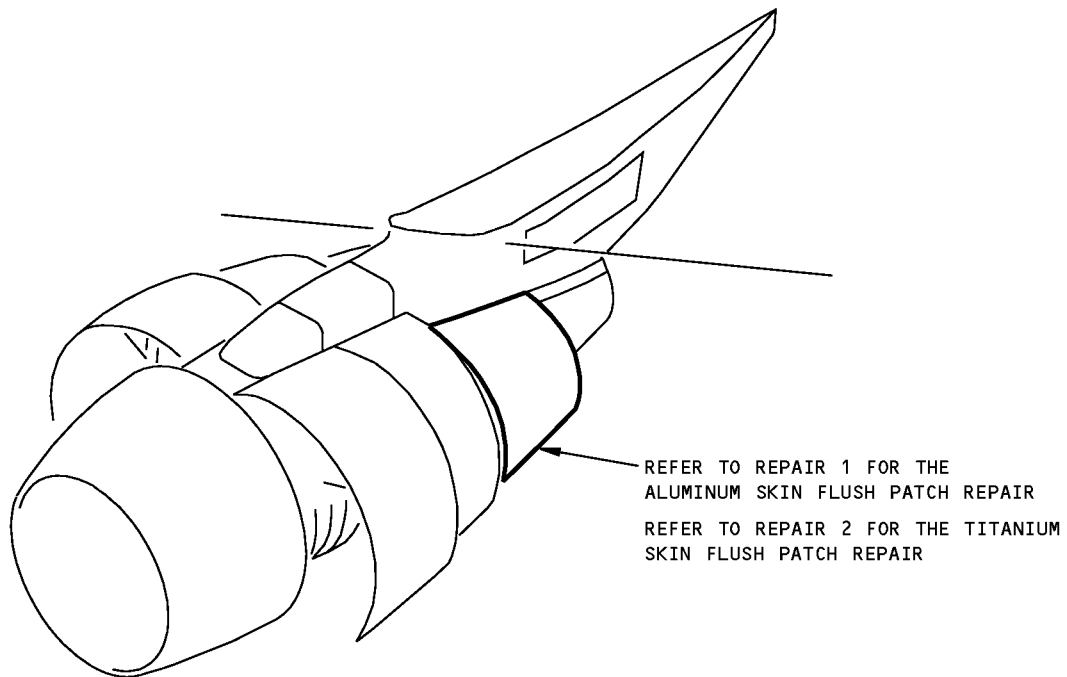
SECTION A-A

**Core Cowl Skin Allowable Damage - CF6-80C2
Figure 101 (Sheet 4 of 4)**

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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - CORE COWL SKIN REPAIR INDEX - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.



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Core Cowl Skin Repair Index - CF6-80C2 Engine
Figure 201

D634T210

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL ALUMINUM SKIN FLUSH PATCH REPAIR - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS FOR CRACKS IN THE CORE COWL. THIS REPAIR IS APPLICABLE ONLY FOR CORE COWLS WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR CORE COWLS WITH A SERIAL NUMBER 30004001 AND ON.

REPAIR INSTRUCTIONS FOR DETAIL I CORE COWL ALUMINUM SKIN FLUSH PATCH

1. Drill 0.25 diameter stop holes at ends of cracks in damaged area of aluminum core cowl skin. Extreme edge of stop hole must be a minimum of 1.0 from fittings or frame members. Do not damage CRES fireshield.
2. Cut out damaged skin, taking special care not to remove any CRES fireshield. Maintain minimum corner radius of 1.0 and maintain a minimum of 1.0 distance between fittings or frame members and edge of cutout.
3. Fabricate patch and doubler from 2219-0 or 2219-T31 clad aluminum. If patch is less than 2.0 across, hole in doubler may be deleted and additional rivets installed. Form repair parts to required contour. Doubler must not overlap adjacent fittings or frame members.
4. Clamp doubler in position on skin and pilot-drill 0.125 diameter rivet holes through doubler and skin. Install temporary fasteners.
5. Position patch on doubler and pilot-drill 0.125 diameter rivet holes through doubler and patch. Install temporary fasteners.
6. Ream rivet holes to between 0.159 and 0.171 diameter in skin, doubler, and patch.
7. Disassemble parts. Remove all burrs and sharp edges from repair parts and edge of cutout.
8. Heat-treat 2219-T31 patch and doubler to T81 condition. Alternatively, heat-treat 2219-0 patch and doubler to T62 condition.
9. Coat all faying surfaces of patch, doubler, and raw edges of skin with Alodine 1200. Refer to SRM 51-21-01. Apply DeSoto 825-009 (DeSoto Chemical Co. Berkeley, CA 94710) primer to faying surfaces as given in 51-21-01.
10. Install doubler on skin with NAS1097AD5 or optional MS20426AD5 rivets. Wet install rivets with DeSoto 825-009 primer.

11. Install patch on doubler with NAS1097AD5 or optional MS20426AD5 rivets. Wet install rivets with DeSoto 825-009 primer.

WARNING:

- AVOID PROLONGED OR REPEATED CONTACT WITH DC1200 PRIMER. USE ONLY IN WELL VENTILATED AREAS. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM ANY IGNITION SOURCE.
 - USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.
12. Fillet seal interior and exterior with DC1200 primer and DC93-006 sealant, using procedures referenced in SRM 51-21-05.

NOTES

- USE 0.040 THICK PATCH AND 0.050 THICK DOUBLER FOR CHEMICAL-MILLED SECTIONS OF SKIN. FOR NON-CHEMICAL-MILLED SKIN, USE 0.063 THICK PATCH AND 0.063 THICK DOUBLER
- IF 1.0-INCH DISTANCE BETWEEN FITTINGS OR FRAME MEMBERS AND EDGE OF CUTOUT CANNOT BE MAINTAINED, CONTACT THE BOEING COMPANY
- SEE SRM 51-11-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE LIMITS SHOWN IN SRM 51-11-01 ARE EXCEEDED, CONSIDERATION SHOULD BE GIVEN TO PERFORMANCE LOSS INVOLVED
- TO AVOID KNIFE-EDGING OF SKIN, DO NOT COUNTERSINK DEEPER THAN 0.030 MICROSHAVE HEAD WITH ZT507C DUAL-ROTATING MICROSHAVER (ZEPHYR MFG. CO., INGLEWOOD, CA)

REPAIR MATERIAL

PART		QTY	MATERIAL
1	PATCH	1	2219-0 HT-TR T62 OR 2219-T31 0.040 OR 0.063 GAGE CLAD ALUMINUM SHEET
2	DOUBLER	1	2219-0 HT-TR T62 OR 2219-T31 0.050 OR 0.063 GAGE CLAD ALUMINUM SHEET

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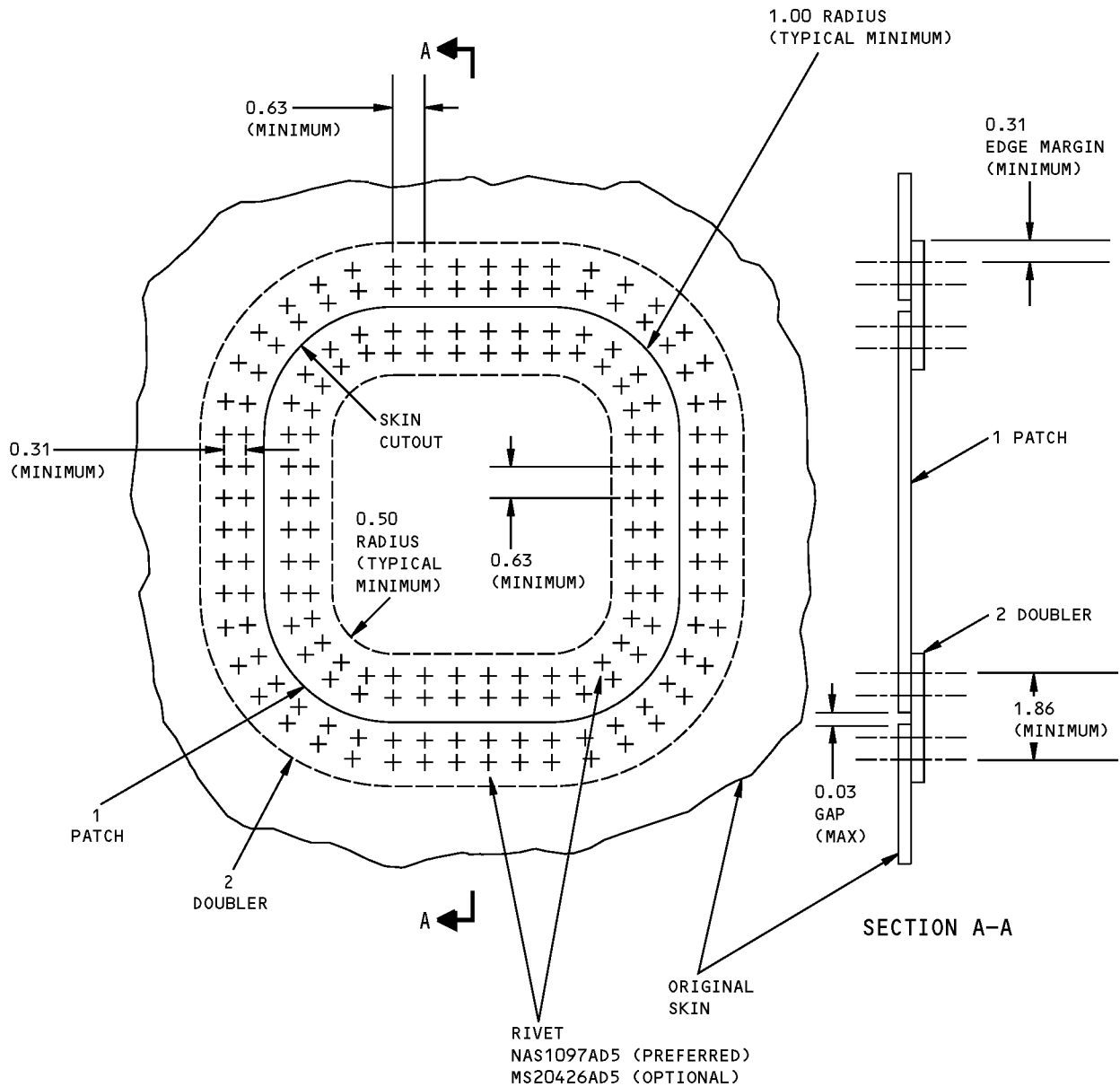
Core Cowl Aluminum Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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REPAIR 1
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STRUCTURAL REPAIR MANUAL**



**CORE COWL ALUMINUM SKIN FLUSH PATCH
DETAIL I**

**Core Cowl Aluminum Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - CORE COWL TITANIUM FAIRING SKIN FLUSH PATCH REPAIR - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS FOR CRACKS IN THE CORE COWL TITANIUM FAIRING. THIS REPAIR IS APPLICABLE ONLY FOR CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.

REPAIR INSTRUCTIONS FOR DETAIL I CORE COWL TITANIUM FAIRING SKIN FLUSH PATCH

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO SRM 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

1. Drill 0.25 diameter stop holes at ends of cracks in damaged area of titanium core cowl skin. Extreme edge of stop hole must be a minimum of 1.0 from fittings or frame members.
2. Cut out damaged titanium skin. Maintain minimum corner radius of 1.0 and maintain a minimum of 1.0 distance between fittings or frame members and edge of cutout.
3. Fabricate patch and doubler from commercially pure (CP) or 6AL-4V titanium. If patch is less than 2.0 across, hole in doubler may be deleted and additional rivets installed. Form repair parts to required contour. Doubler must not overlap adjacent fittings or frame members.
4. Clamp doubler in position on skin and pilot-drill 0.125 diameter rivet holes through doubler and skin. Install temporary fasteners.
5. Position patch on doubler and pilot-drill 0.125 diameter rivet holes through doubler and patch. Install temporary fasteners.
6. Ream rivet holes to between 0.159 and 0.171 diameter in skin, doubler, and patch.
7. Disassemble parts. Remove all burrs and sharp edges from repair parts and edge of cutout.
8. Install doubler on skin with NAS1200M5 or optional MS20427M5 rivets.

9. Install patch on doubler with NAS1200M5 or optional MS20427M5 rivets.

WARNING:

- AVOID PROLONGED OR REPEATED CONTACT WITH DC1200 PRIMER. USE ONLY IN WELL VENTILATED AREAS. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM ANY IGNITION SOURCE.
 - USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.
10. Fillet seal exterior with DC1200 primer and DC93-006 sealant using procedures referenced in SRM 51-21-05.

NOTES

- IF 1.0 DISTANCE BETWEEN FITTINGS OR FRAME MEMBERS AND EDGE OF CUTOUT CANNOT BE MAINTAINED, CONTACT THE BOEING COMPANY
- SEE SRM 51-11-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE LIMITS SHOWN IN SRM 51-11-01 ARE EXCEEDED, CONSIDERATION SHOULD BE GIVEN TO PERFORMANCE LOSS INVOLVED
- TO AVOID KNIFE-EDGING OF SKIN, DO NOT COUNTERSINK DEEPER THAN 0.030 MICROSHAVE HEAD WITH ZT507C DUAL-ROTATING MICROSHAVER (ZEPHYR MFG. CO., INGLEWOOD, CA)

REPAIR MATERIAL

PART		QTY	MATERIAL
1	PATCH	1	CP OR 6AL-4V TITANIUM 0.050 GAGE
2	DOUBLER	1	CP OR 6AL-4V TITANIUM 0.050 GAGE

620865 S0006827536_V2

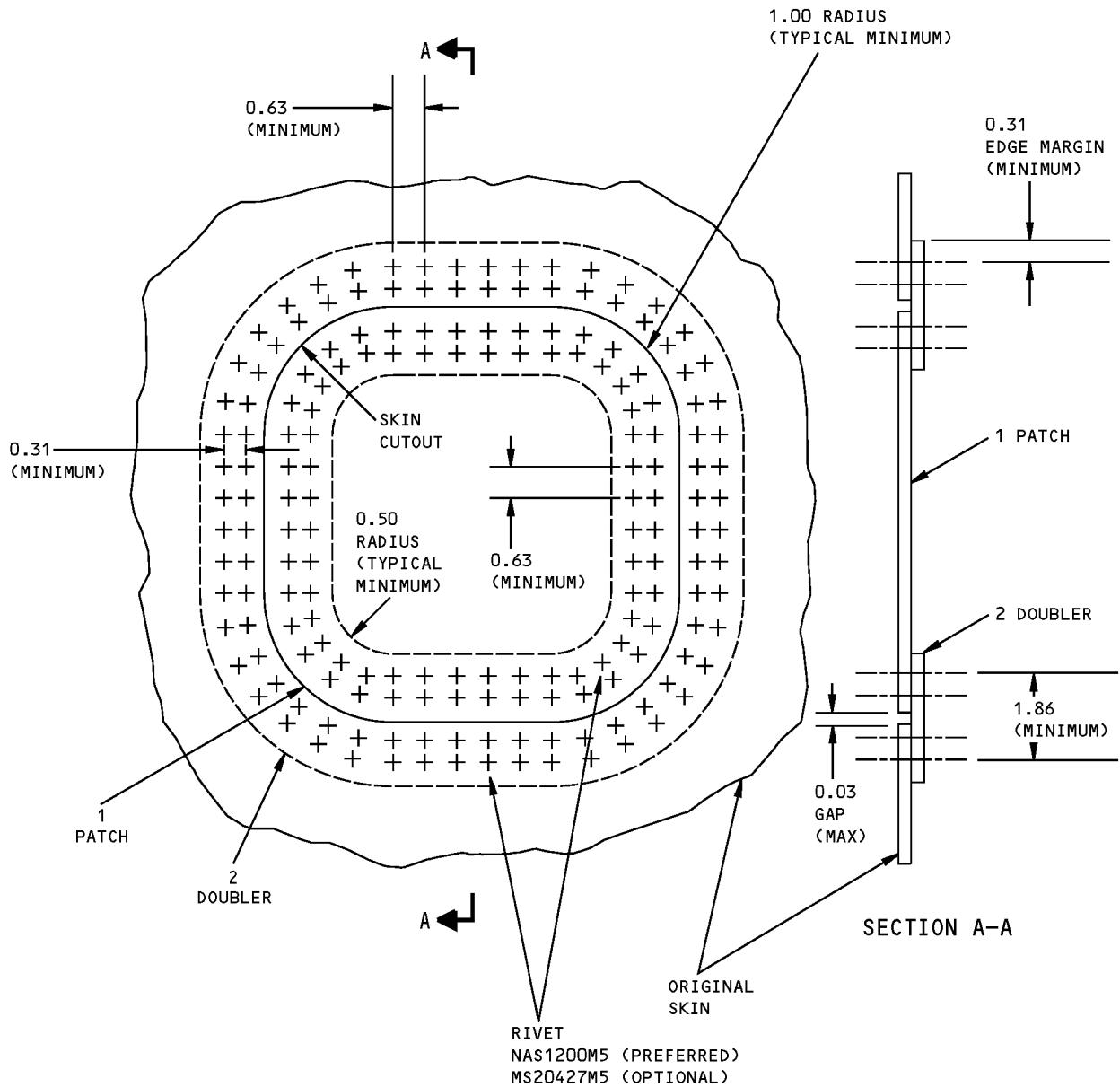
Core Cowl Titanium Fairing Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



**CORE COWL TITANIUM FAIRING SKIN FLUSH PATCH
DETAIL I**

**Core Cowl Titanium Fairing Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - RIGHT HAND PRECOOLER EXTERNAL DOUBLER REPAIR - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS APPLICABLE TO CRACK DAMAGE THAT OCCURS TO THE RIGHT HAND CORE COWL SKIN AT THE FASTENER ROW LOCATION BELOW THE PRECOOLER OPENING.

THIS REPAIR IS NOT APPLICABLE IF THE DAMAGE IS NOT IN THE PERMITTED AREA AS SHOWN IN DETAIL II.

THIS TYPE OF DAMAGE IS REPAIRED BY INSTALLATION OF AN EXTERNAL DOUBLER AT THE LOWER PRECOOLER LOCATION.

THIS REPAIR IS APPLICABLE ONLY FOR CORE COWLS WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.

REPAIR INSTRUCTIONS

1. Examine the damage area.

- a. Remove the surface finish at least 3 inches (76.2 mm) from the repair area if necessary.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- b. Clean the repair area. Use a brush with Turco 6646 solvent or equivalent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- c. Find the extent of the damage. If necessary, do a penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for penetrant inspection procedures. Make a mark of the crack ends.

2. Prepare the damage area for the repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- a. Make a mark of the damaged area to be removed. The edge of the cut out must be a minimum of 0.10 inch (2.54 mm) to 0.25 inch (6.35 mm) away from the end of the crack and be the smallest size possible that removes the damage completely. The cutout must have a minimum radius of 0.50 inch (12.7 mm) at the corners. The minimum distance between a crack and an edge of the non-damaged fastener hole is 2D (D = fastener diameter). Make sure there is no other structure damaged during removal.
- b. Remove the fasteners in the repair area as necessary. Refer to SRM 51-40-02 for fastener installation and removal.

CAUTION: BE CAREFUL NOT TO DAMAGE THE ADJACENT STRUCTURE WHEN YOU CUT OR DRILL. A THIN SHEET OF METAL CAN BE PUT BETWEEN THE SKIN AND THE STRUCTURE TO PREVENT DAMAGE.

- c. Cut and remove the damaged area of the skin as marked.
- d. Do a visual inspection of the cutout area to make sure all of the crack has been removed. Use a magnifying glass with a minimum 10X magnification. If you think there is a crack, do a penetrant inspection of the area. Repeat the previous steps as necessary until the crack has been removed.
- e. Remove the sharp edges and burrs. Keep a radius of 0.01 - 0.03 inch (0.3 - 0.8 mm) on the cut edges.

3. Make the repair parts. See Table I for a list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- a. If necessary, make the part 2 filler to fit inside the cutout. See Section A-A. Form the filler to match the contour of the skin in the repair area. The minimum distance between a fastener and the edge of the filler is 1D (D = fastener diameter).
- b. Make the part 1 external doubler. Form the external doubler to match the contour of the skin. The corners must have a minimum radius of 0.50 inch (12.7 mm).

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Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
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REPAIR INSTRUCTIONS (CONTINUED)

- c. Plug the initial countersinks in the repair area with countersink repair washers. Refer to SRM 51-40-08 for instructions to make the countersink repair washers.
- d. Make a mark of the rivet holes on the repair doubler. Drill pilot holes as marked. Place the external doubler and the filler (if necessary) into position. Shims up to 0.03 inch (0.76 mm) are permitted if necessary. Refer to SRM 51-20-08. Back drill pilot holes from the initial structure through the repair parts. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the repair parts in place. Make sure all holes are aligned. Countersink holes on the external doubler.
- e. Disassemble the repair parts. Remove burrs and sharp edges.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- f. Use dry air blast and suction cleaners to remove the drilling and sanding particles from the repair area and the repair parts. Clean surface with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- g. Apply a protective treatment to the surfaces and all the cut edges. Refer to SRM 51-21-01

WARNING: DC 1200 PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: TO PREVENT CONTAMINATION, USE LINT-FREE GLOVES WHEN TOUCHING THE CLEANED OR PREPARED SURFACES.

CAUTION: TO PREVENT CONTAMINATION, USE LINT-FREE GLOVES WHEN TOUCHING THE CLEANED OR PREPARED SURFACES.

- h. Use the manufacturer's instructions to mix the DC 1200 primer. Apply a thin layer of the primer mixture to the mating surfaces of the skin and the external doubler. Use a brush and follow the manufacturer's instructions for application.

CAUTION: IF THE REPAIR PARTS ARE NOT INSTALLED WITHIN 24 HOURS, THE SEALANT ADHESION MAY BE UNSATISFACTORY. TO MAKE SURE THERE IS SUFFICIENT SEALANT ADHESION, CLEAN THE AREA AGAIN AS SHOWN IN PARAGRAPH 3.F. APPLY THE DC 1200 PRIMER AS SHOWN IN PARAGRAPH 3.H. CURE AND INSPECT THE DC 1200 PRIMER FOR CHALKY RESIDUE (WHITE POWDER RESIDUE RESEMBLING CHALK) AS SHOWN IN PARAGRAPH 3.I.

- i. Cure DC 1200 primer at room temperature for one hour. If a chalky residue (white powder residue resembling chalk) is shown, remove the residue by rubbing the surface with a clean, lint-free cloth. Install the repair parts with DC 93-006 sealant within 24 hours as given in Paragraph 4.a.

- 4. Install the repair parts.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- a. Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces of the skin and the external doubler. Place the external doubler (and filler, if used) into position. Align the rivet holes. Use temporary fasteners as necessary to keep the holes aligned. Install the rivets wet with the sealant.
- b. Apply more of the sealant to the edges of the external doubler all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth. Refer to SRM 51-21-05 for repair sealing.

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**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
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STRUCTURAL REPAIR MANUAL****REPAIR INSTRUCTIONS (CONTINUED)**

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- c. Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).
5. Examine the area.
- a. Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.
 - b. Apply a finish to the repair area as necessary. Refer to the applicable Maintenance Manual.

1465102 S0000267377_V1

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 7)**

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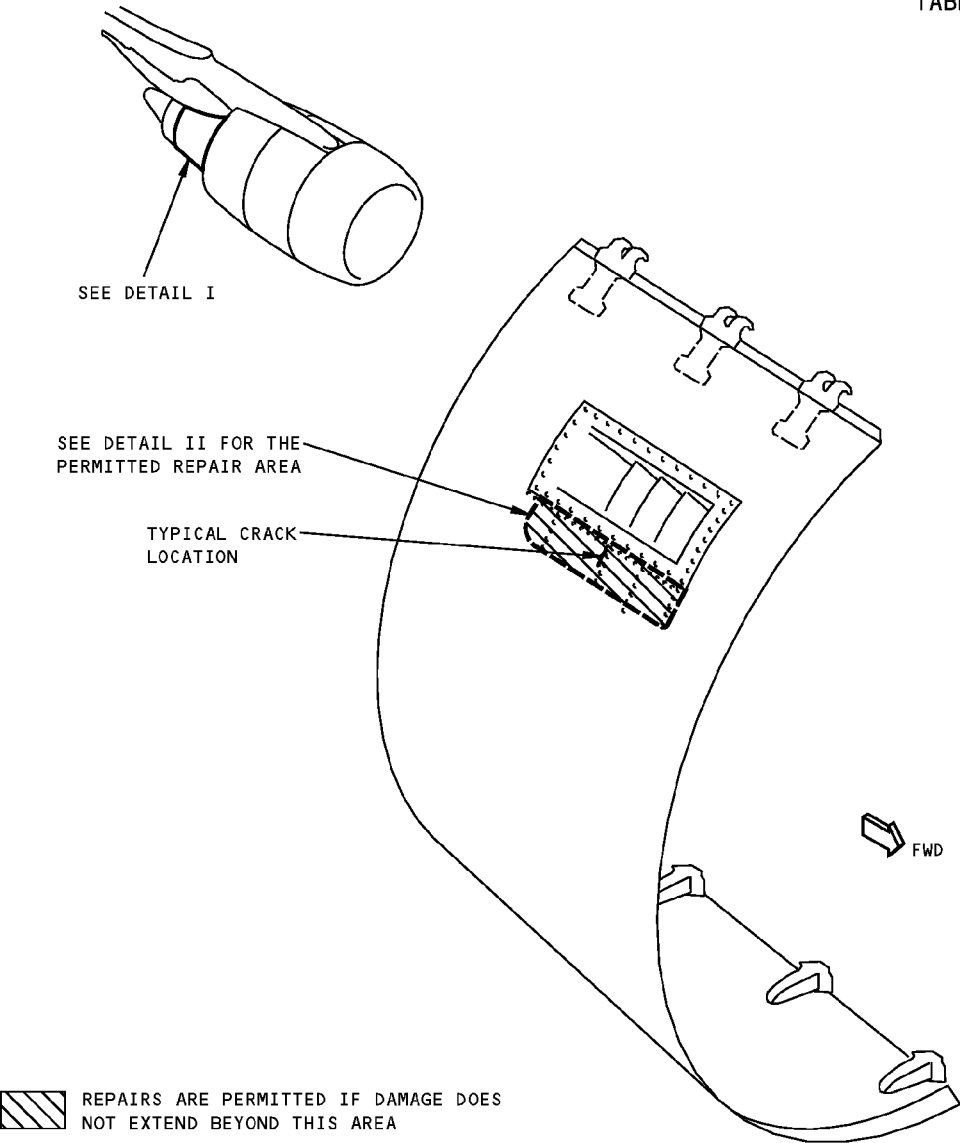
**767-300
STRUCTURAL REPAIR MANUAL**

FASTENER SYMBOLS

- +— REFERENCE FASTENER LOCATION
- + NASM20427M5-()C()
- △ NAS1200M5-()P

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	EXTERNAL DOUBLER	1	0.063 INCH (1.60 mm) 2219-T81 CLAD, (BMS 7-110)
2	FILLER	1	0.063 INCH (1.60 mm) 2219-T81 CLAD, (BMS 7-110)

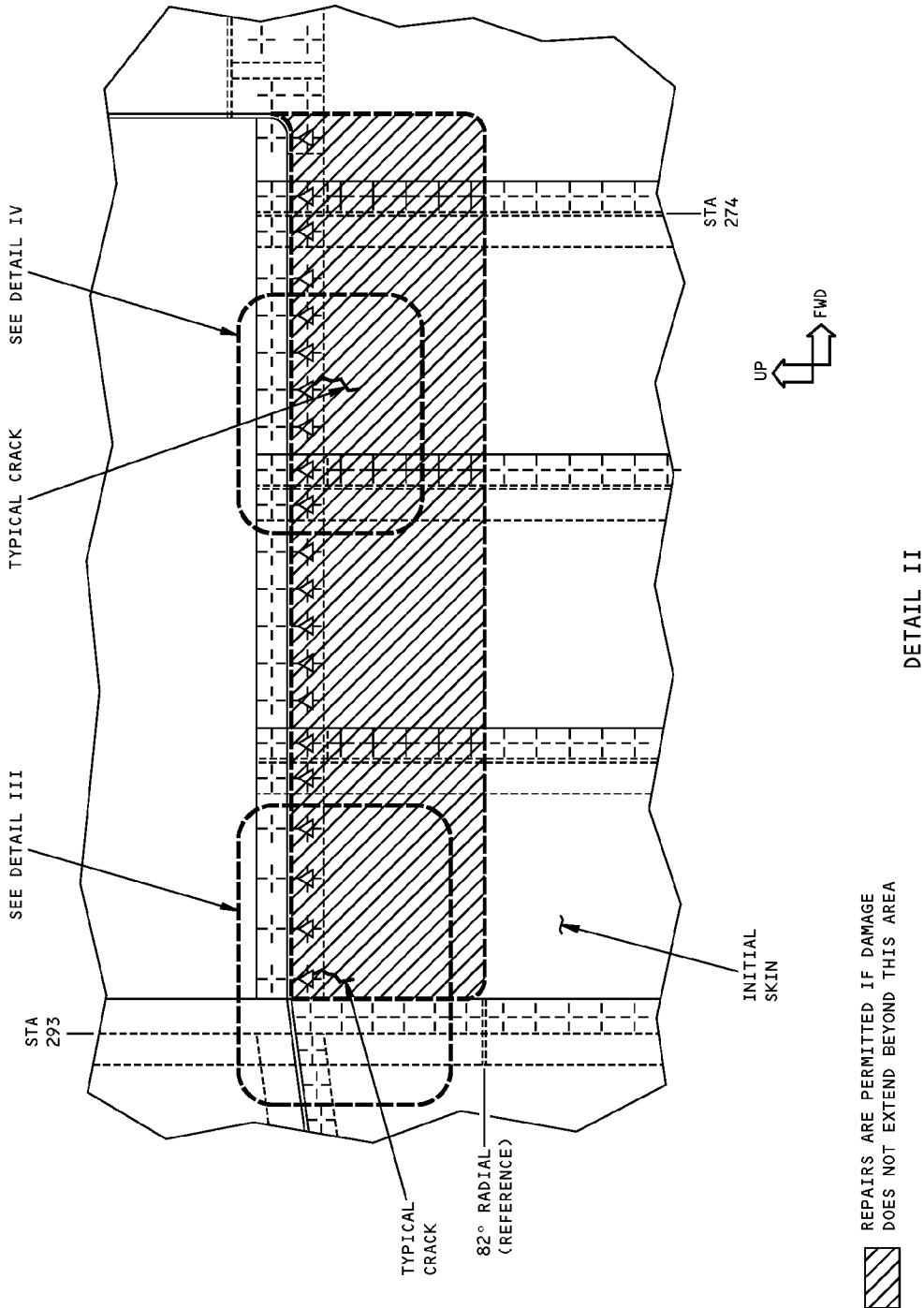
TABLE I



DETAIL I

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 7)**

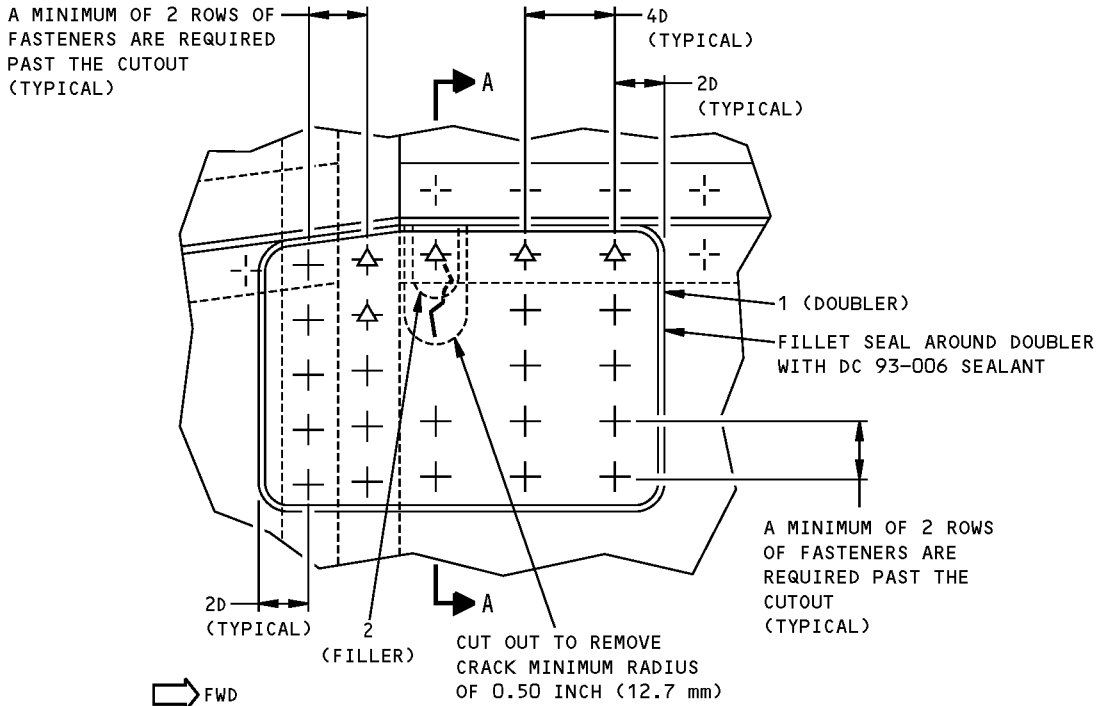
767-300
STRUCTURAL REPAIR MANUAL



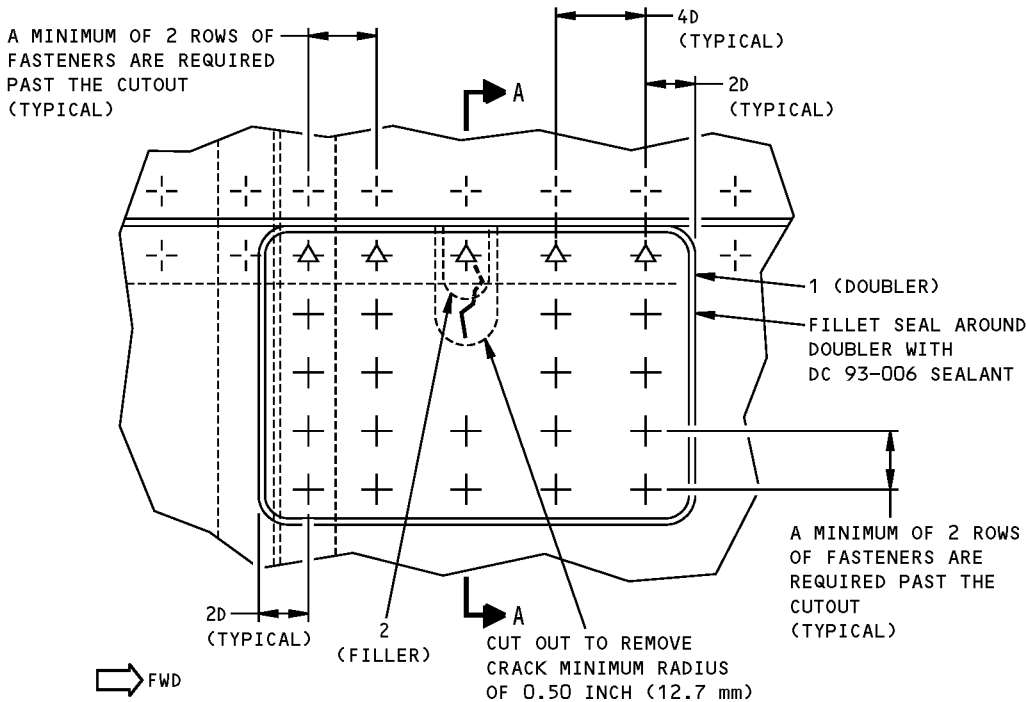
Right Hand Pre-cooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 7)

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STRUCTURAL REPAIR MANUAL



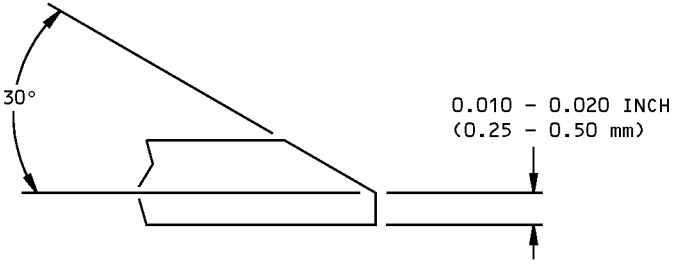
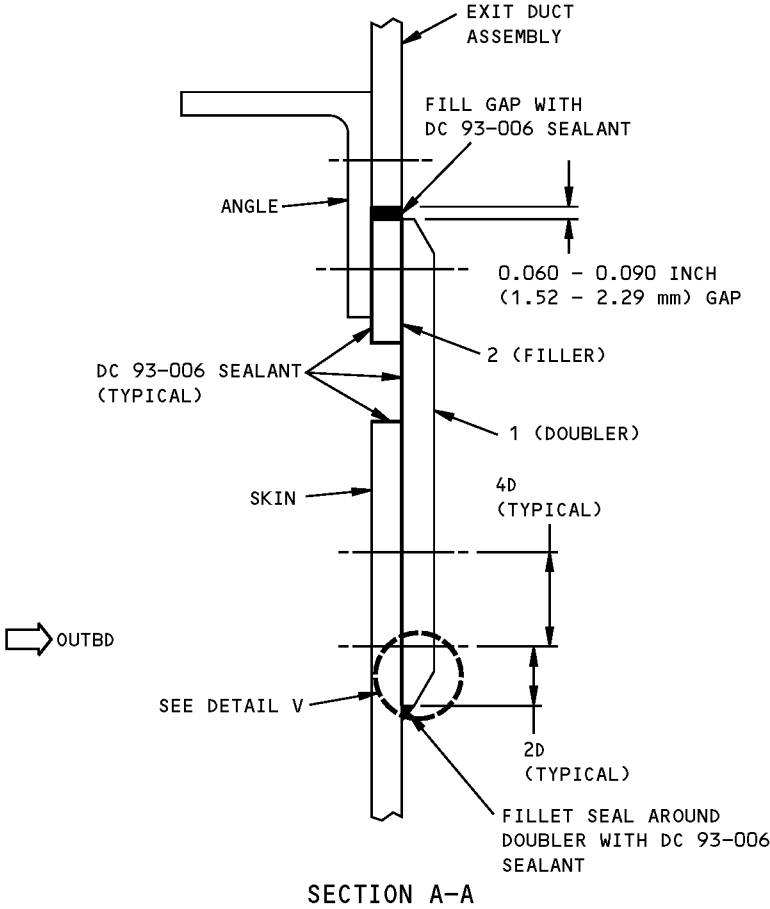
DETAIL III



DETAIL IV

Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
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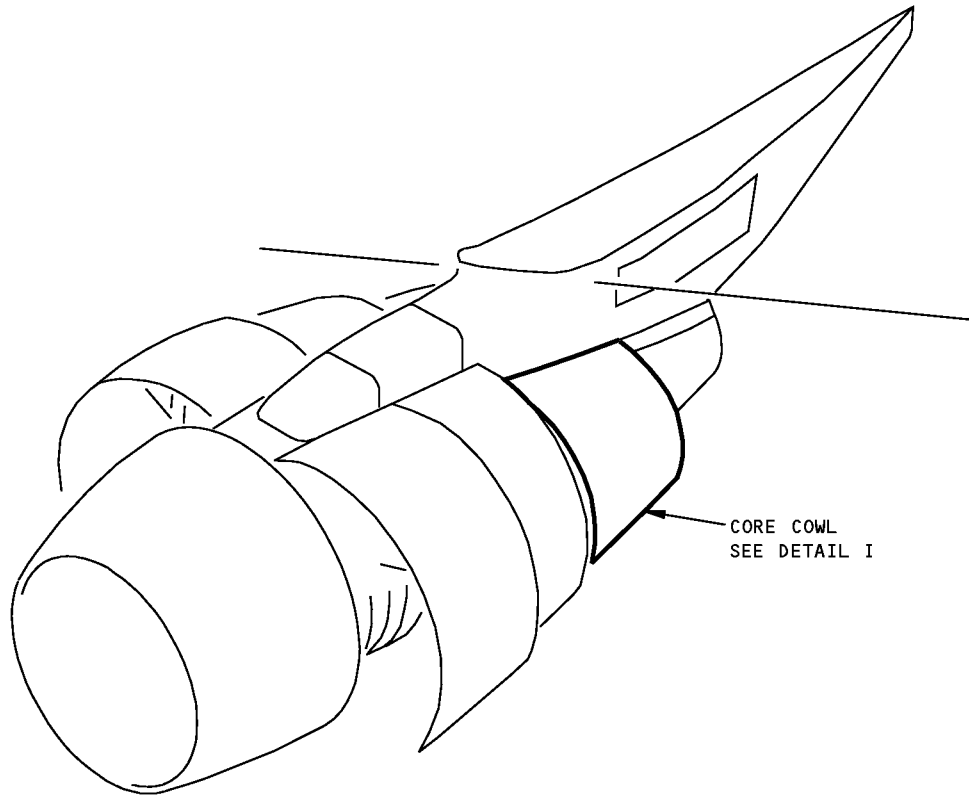
ROTATED 90° COUNTER CLOCKWISE
CHAMFER AROUND EDGE DOUBLER (TYPICAL)
DETAIL V

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 7 of 7)**

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STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - CORE COWL STRUCTURE - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.



318634 S0006827547_V3

**Core Cowl Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 2)**

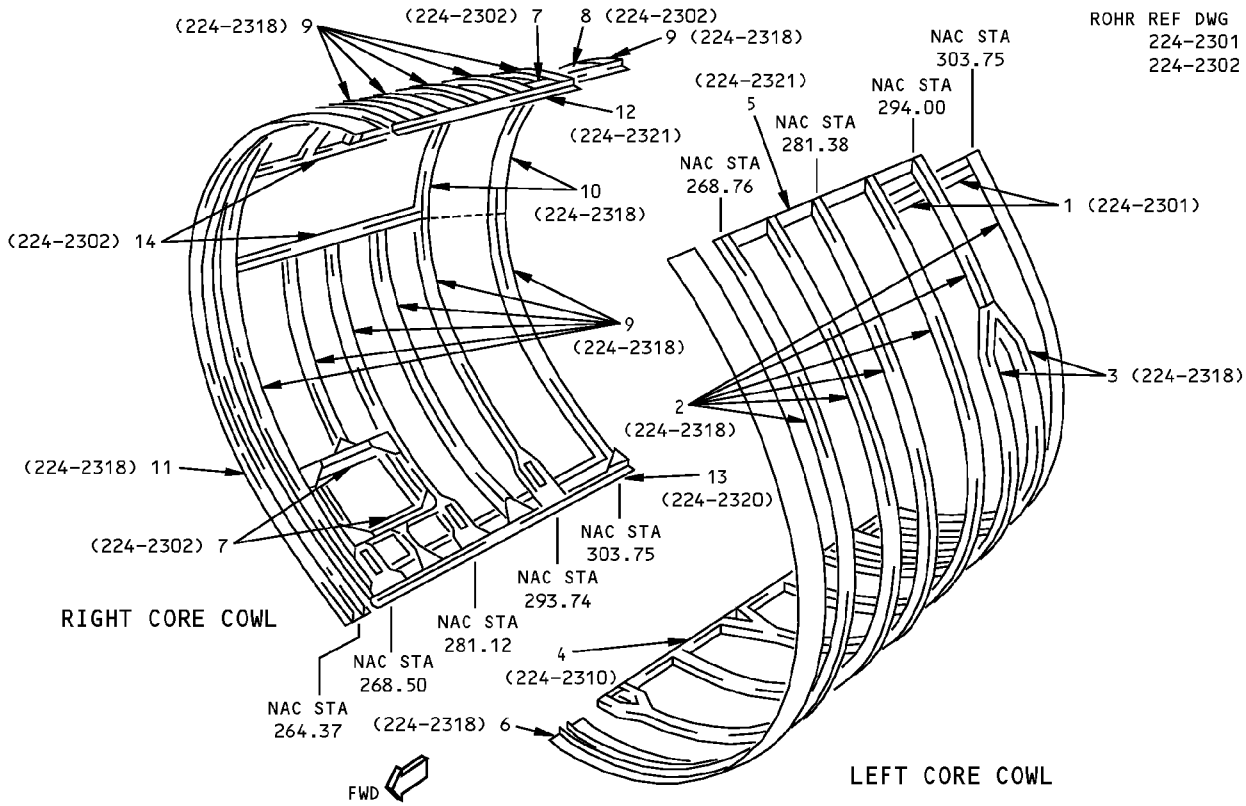
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

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224-2301
224-2302



DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INTERCOSTAL	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
2	FRAME	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
3	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
4	LOWER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
5	UPPER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
6	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
7	INTERCOSTAL	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
8	INTERCOSTAL	0.063	INCONEL 625 SH ANLD AMS5599	
9	FRAME	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
10	FRAME	0.032 TO 0.050	INCONEL 625 SH ANLD AMS5599	
11	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
12	UPPER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
13	LOWER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
14	ANGLE	0.063 TO 0.080	TITANIUM TI-6AL-4V ANLD SH AMS4911	

LIST OF MATERIALS FOR DETAIL I

**Core Cowl Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 2)**

IDENTIFICATION 1
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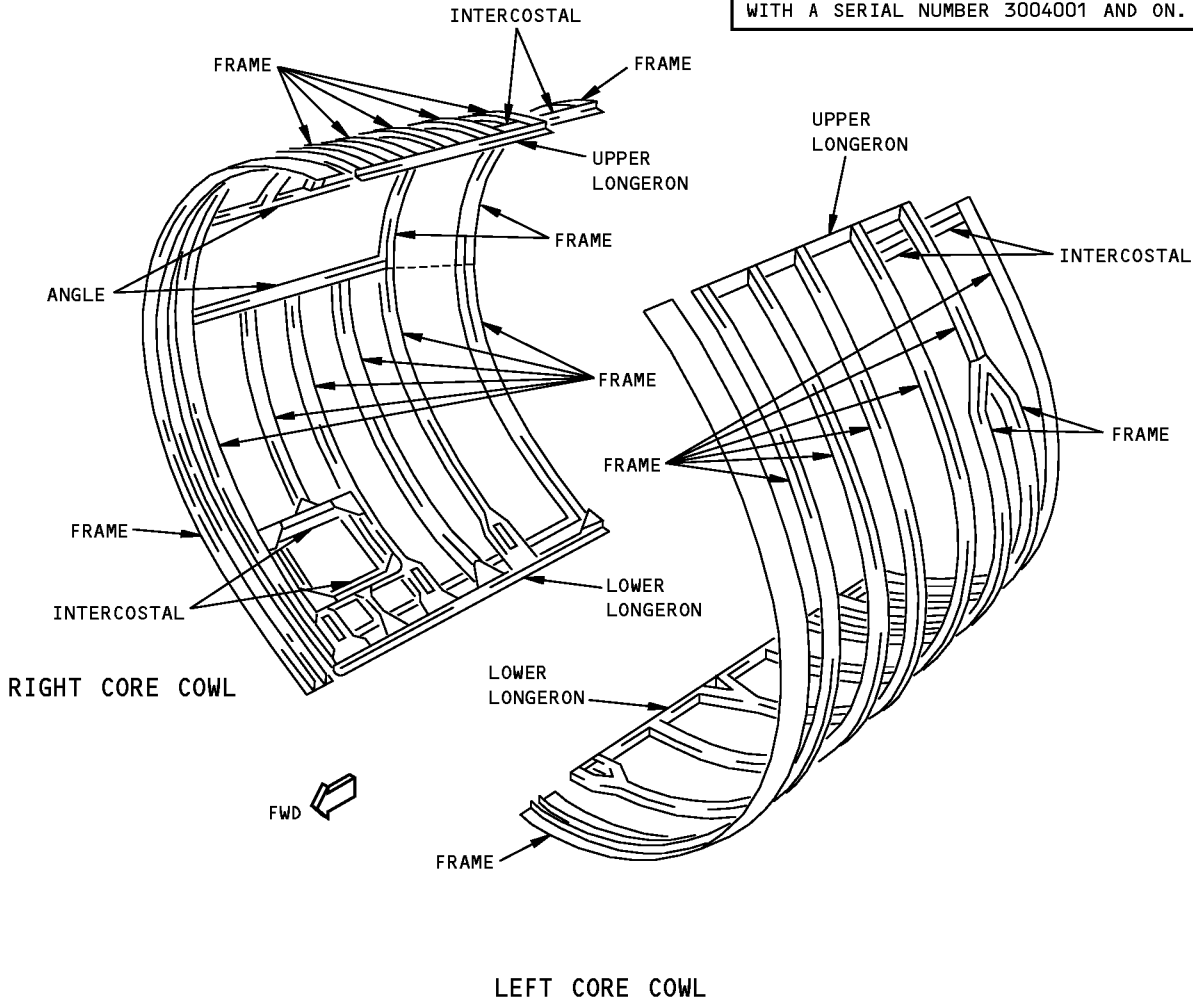
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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL STRUCTURE - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.



DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
LONGERONS	A	B	NOT ALLOWED	NOT ALLOWED
FRAMES	A	B	NOT ALLOWED	NOT ALLOWED
INTERCOSTALS	A	B	C	D
ANGLES	A	B	C	D

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**Core Cowl Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 3)**

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ALLOWABLE DAMAGE 1
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STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO SRM 51-11-00 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS AS GIVEN IN SRM 51-21-01

- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS I AND V
- B** REMOVE DAMAGE AS GIVEN IN DETAILS I, II, IV, AND V
- C** DENTS ARE PERMITTED ON WEBS ONLY, SEE DETAIL III

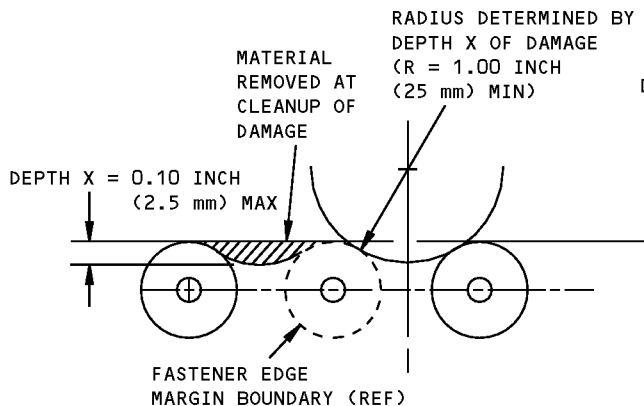
- D** HOLES ARE PERMITTED ON WEBS AND FREE FLANGES ONLY. CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA, SUCH THAT IT IS NOT CLOSER THAN 4D TO ANOTHER FASTENER HOLE (MEASURED EDGE TO EDGE), OR 2D +0.05 TO MATERIAL EDGE OR OTHER DAMAGE

FOR ALUMINUM AREAS:

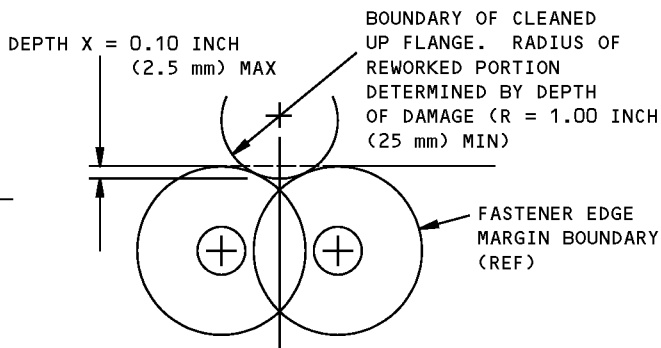
FILL HOLE WITH A 2117-T3 OR -T4 RIVET, INSTALLED WET WITH 395-009 DESOTO HI-TEMP PRIMER. ALL OTHER HOLES TO BE REPAIRED

FOR INCONEL AREA:

FILL HOLES WITH A MONEL NAS1738M OR MS20615-M RIVET. ALL OTHER HOLES TO BE REPAIRED



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

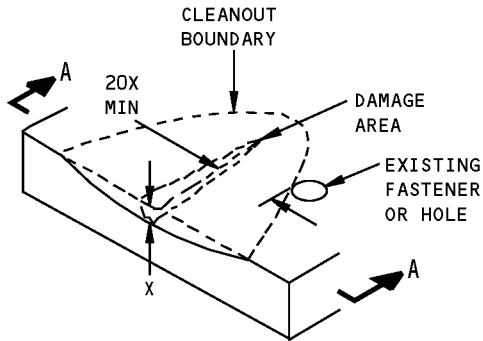


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

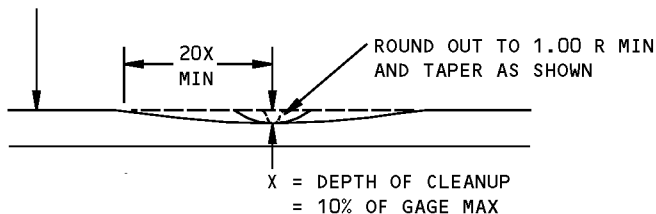
DETAIL I

Core Cowl Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

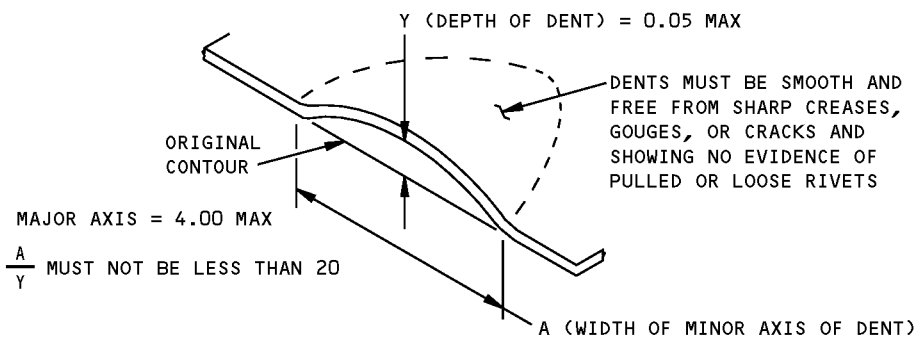


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

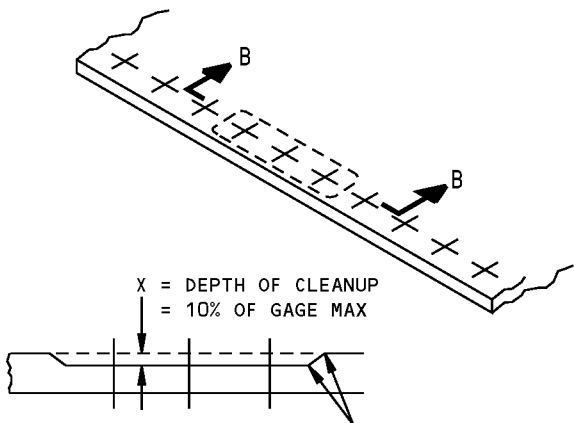


SECTION A-A

DETAIL II



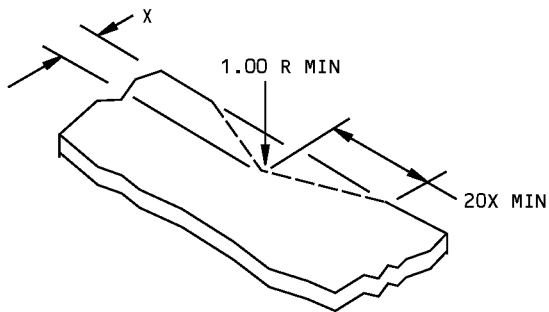
ALLOWABLE DAMAGE FOR DENT
DETAIL III



SMOOTH BLENDOUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

CORROSION CLEANUP
DETAIL IV



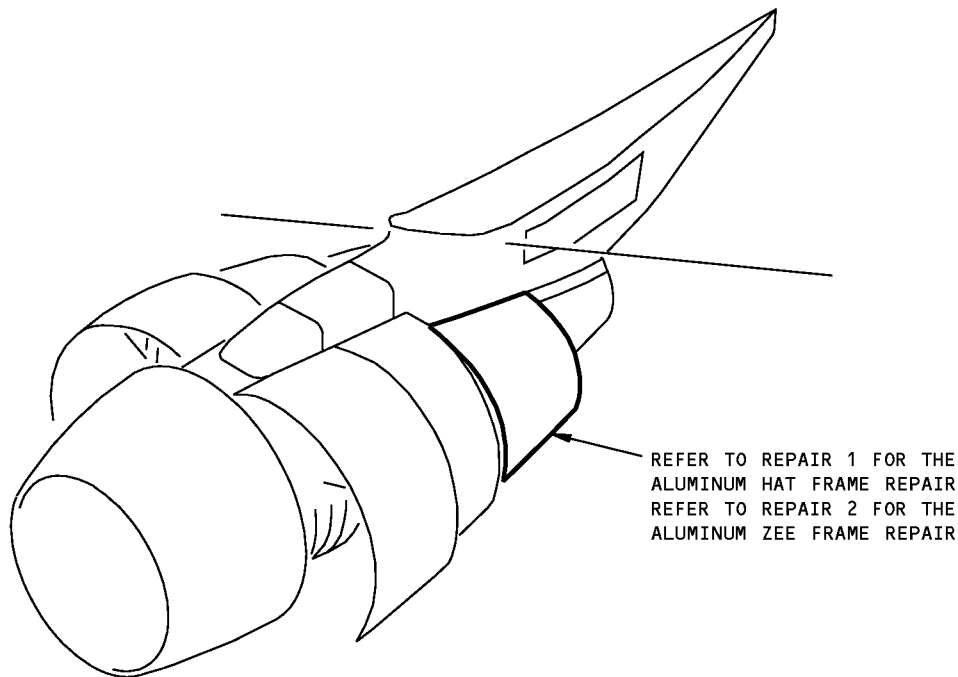
DETAIL V

**Core Cowl Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - CORE COWL STRUCTURE REPAIR INDEX - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR THE CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.



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Core Cowl Structure Repair Index - CF6-80C2 Engine
Figure 201

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL ALUMINUM HAT FRAME - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS FOR CRACKS IN THE ALUMINUM HAT FRAME. THIS REPAIR IS APPLICABLE ONLY FOR CORE COWLS WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR COWLS WITH A SERIAL NUMBER 3004001 AND ON.

REPAIR INSTRUCTIONS FOR DETAIL I CORE COWL ALUMINUM HAT FRAME

1. Drill 0.25 diameter stop holes at ends of cracks in damaged area of frame. Extreme edge of stop hole must be a minimum of 1.0 from fittings or other attachments.
2. Cut out damage, maintaining a minimum corner radius of 0.25. Maintain a minimum of 1.0 distance between fittings or other attachments and edge of cutout. Round off edges of cutout.
3. Fabricate angle patch from either 2219-0 or 2219-T31 clad aluminum. Form angle patch to required contour. Angle patch must not overlap adjacent fittings or other attachments.
4. Clamp angle patch in position on frame and pilot-drill 0.125 diameter rivet holes through frame and angle patch. Install temporary fasteners.
5. Ream rivet holes to between 0.176 and 0.180 diameter.
6. Disassemble parts. Remove all burrs and sharp edges from angle patch and edge of cutout.
7. Heat-treat 2219-0 angle patch to T62 condition. Alternatively, heat-treat 2219-T31 angle patch to T81 condition.
8. Coat all faying surfaces of angle patch and raw edges of frame with Alodine 1200. Apply DeSoto 825-009 (DeSoto Chemical Co., Berkeley, CA 94710) primer to faying surfaces as given in SRM 51-21-01.
9. Install angle patch on frame with NAS1738MW5 blind rivets. Wet install rivets with DeSoto 825-009 primer.

WARNING:

- AVOID PROLONGED OR REPEATED CONTACT WITH DC1200 PRIMER. USE ONLY IN WELL VENTILATED AREAS. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM ANY IGNITION SOURCE.
- USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.

10. Fillet seal with DC1200 primer and DC93-006 sealant using procedures. Refer to SRM 51-21-05.

NOTES

- IF 1.0 DISTANCE BETWEEN FITTINGS OR OTHER ATTACHMENTS AND EDGE OF CUTOUT CANNOT BE MAINTAINED, CONTACT THE BOEING COMPANY
 - CUTOUT MUST NOT EXCEED 25 PERCENT OF WEB CROSS-SECTIONAL AREA
- A** FRAME THICKNESS IS 0.050 (SEE STRUCTURE IDENTIFICATION)
- B** EDGE MARGIN FOR ALL FASTENERS TO BE 0.40 MINIMUM

REPAIR MATERIAL

PART		QTY	MATERIAL
1	ANGLE PATCH	1	2219-0 HT-TR T62 OR 2219-T31 CLAD ALUMINUM SHEET 0.071 GAGE

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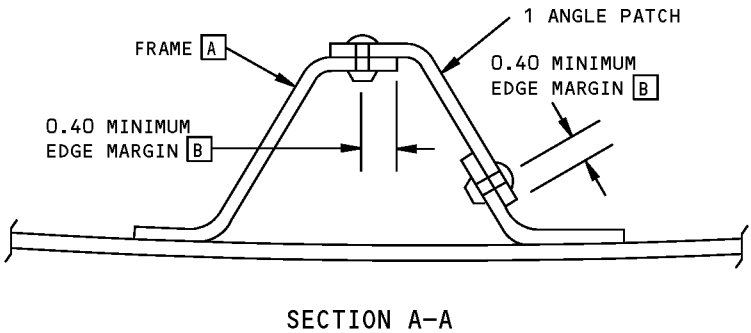
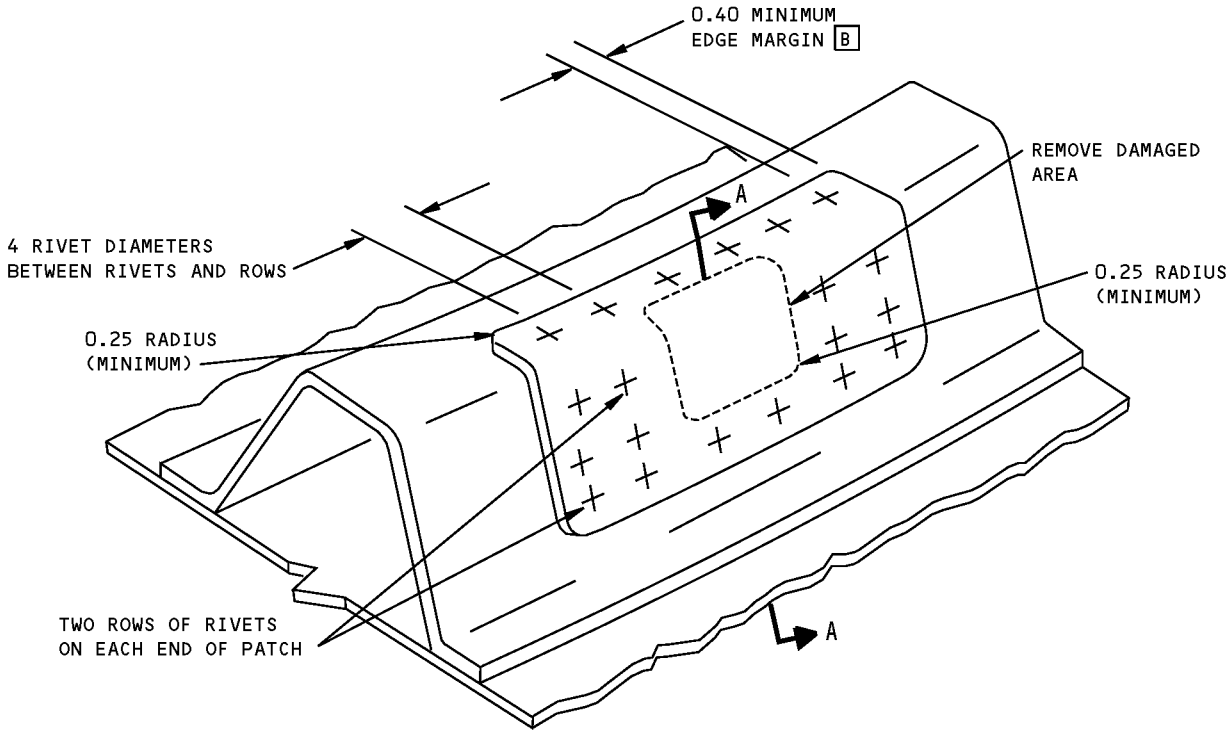
Core Cowl Aluminum Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**



CORE COWL ALUMINUM HAT FRAME
DETAIL I

**Core Cowl Aluminum Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - CORE COWL FRAME ZEE SECTION - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS FOR CRACKS IN THE ALUMINUM ZEE FRAME. THIS REPAIR IS APPLICABLE ONLY FOR CORE COWLS WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A). REFER TO SRM 54-45-01 FOR CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON.

REPAIR INSTRUCTIONS FOR DETAIL I CORE COWL ALUMINUM ZEE FRAME

1. Drill 0.25 diameter stop holes at ends of cracks in damaged area of frame. Extreme edge of stop hole must be a minimum of 1.0 from fittings or other attachments.
2. Cut out damage, maintaining minimum corner radius of 0.25. Maintain a minimum of 1.0 distance between fittings or other attachments and edge of cutout. Round off edges of cutout.
3. Fabricate angle filler and repair patch doubler from either 2219-0 or 2219-T31 clad aluminum. Form repair parts to required contour. Repair angle doubler must not overlap adjacent fittings or other attachments.
4. Clamp repair angle doubler on frame and pilot-drill 0.125 diameter rivet holes through frame and repair angle doubler. Install temporary fasteners.
5. Position angle filler on repair angle doubler and pilot drill 0.125 rivet holes through repair angle doubler and angle filler. Install temporary fasteners.
6. Ream rivet holes to between 0.159 and 0.171 diameter.
7. Disassemble parts. Remove all burrs and sharp edges from repair parts and edge of cutout.
8. Heat-treat 2219-0 angle filler and repair angle doubler to T62 condition. Alternatively, heat treat 2219-T31 angle filler and repair angle doubler to T81 condition.
9. Coat all faying surfaces of angle filler, repair angle doubler, and raw edges of frame with Alodine 1200. Apply DeSoto 825-009 (DeSoto Chemical Co., Berkeley, CA 94170) primer to faying surfaces as given in SRM 51-21-01.

10. Install repair angle doubler on frame and angle filler on repair angle doubler with MS20470AD5 protruding head rivets. Wet install rivets with DeSoto 825-009 primer.

WARNING:

- AVOID PROLONGED OR REPEATED CONTACT WITH DC1200 PRIMER. USE ONLY IN WELL VENTILATED AREAS. DC1200 PRIMER IS VERY FLAMMABLE, KEEP AWAY FROM ANY IGNITION SOURCE.
 - USE DC93-006 SEALANT ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTION TO PREVENT SEALANT FROM COMING IN CONTACT WITH SKIN.
11. Fillet seal with DC1200 primer and DC93-006 sealant using procedures. Refer to SRM 51-21-05.

NOTES

- IF 1.0 DISTANCE BETWEEN FITTINGS OR OTHER ATTACHMENTS AND EDGE OF CUTOUT CANNOT BE MAINTAINED, CONTACT THE BOEING COMPANY
 - CUTOUT MUST NOT EXCEED 50 PERCENT OF WEB CROSS-SECTIONAL AREA
- A** BEND RADIUS ON ANGLE FILLER TO MATCH FRAME. BEND RADIUS ON REPAIR ANGLE DOUBLER TO NEST WITH FRAME AND ANGLE FILLER

REPAIR MATERIAL

PART		QTY	MATERIAL
1	ANGLE FILLER	1	2219-0 HT-TR T62 OR 2219-T31 CLAD ALUMINUM SHEET 0.063 GAGE
2	REPAIR ANGLE DOUBLER	1	2219-0 HT-TR T62 OR 2219-T31 CLAD ALUMINUM SHEET 0.071 GAGE

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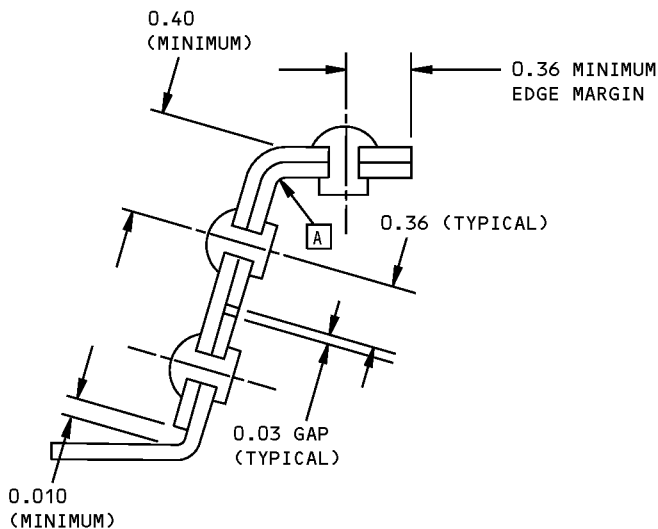
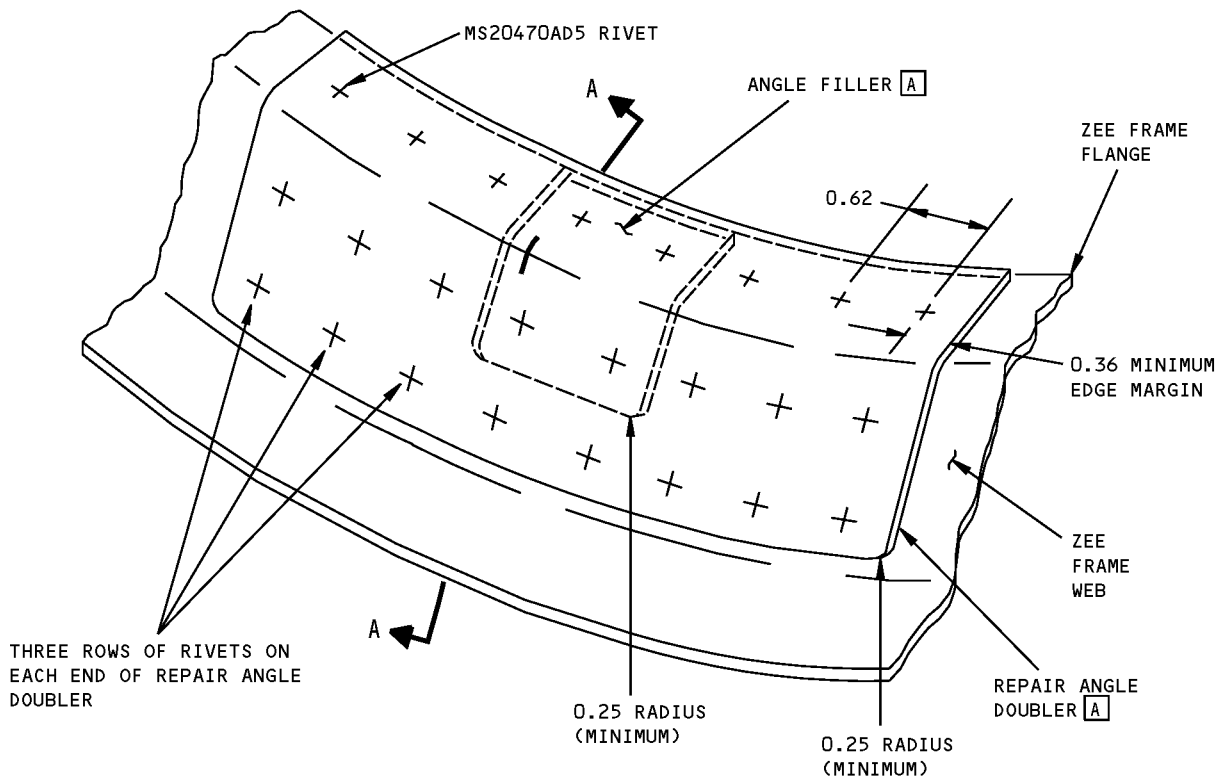
Core Cowl Frame Zee Section Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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REPAIR 2
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STRUCTURAL REPAIR MANUAL**



SECTION A-A

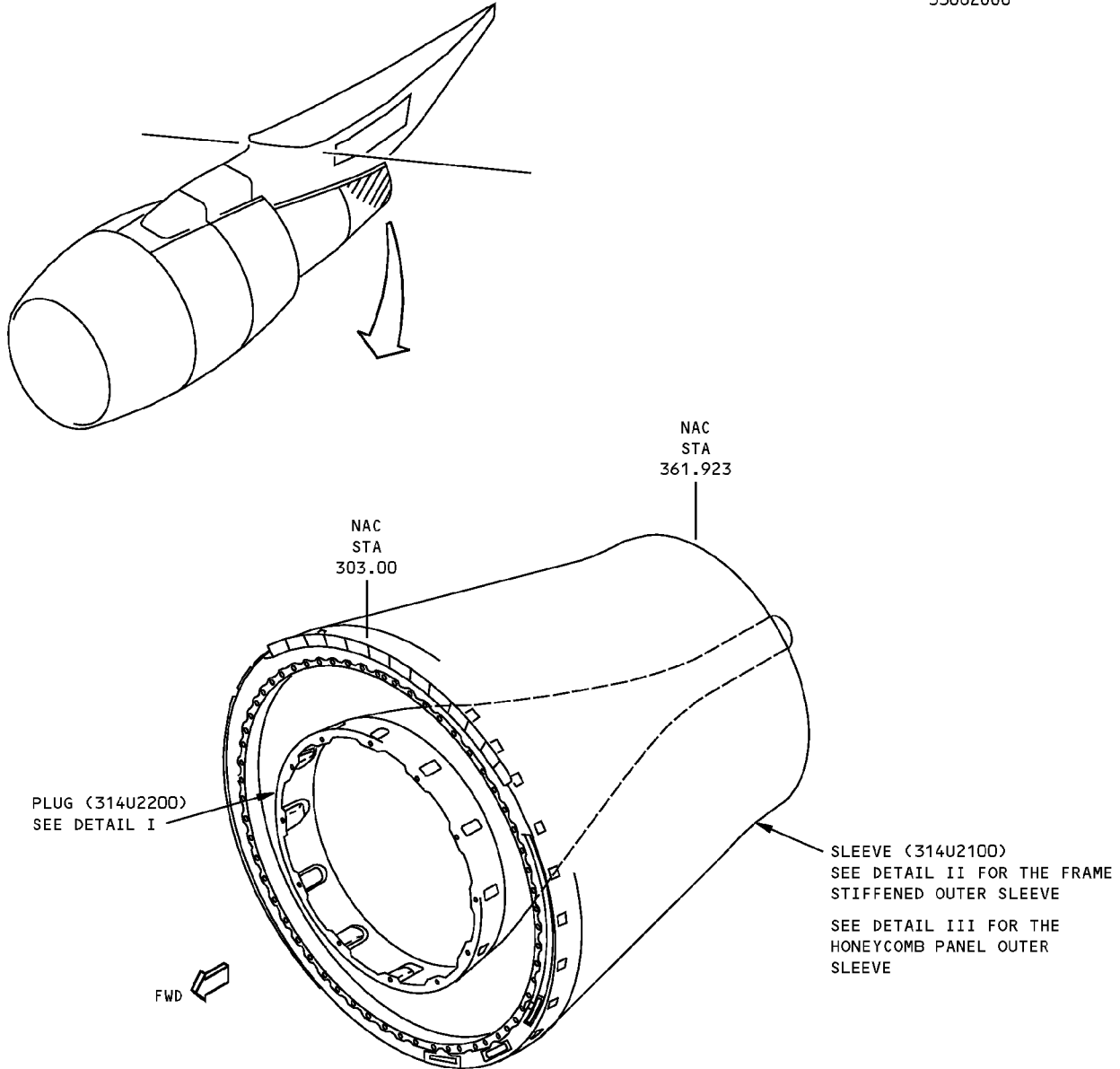
CORE COWL ALUMINUM ZEE FRAME
DETAIL I

Core Cowl Frame Zee Section Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE

REFERENCE DRAWING
330U2000

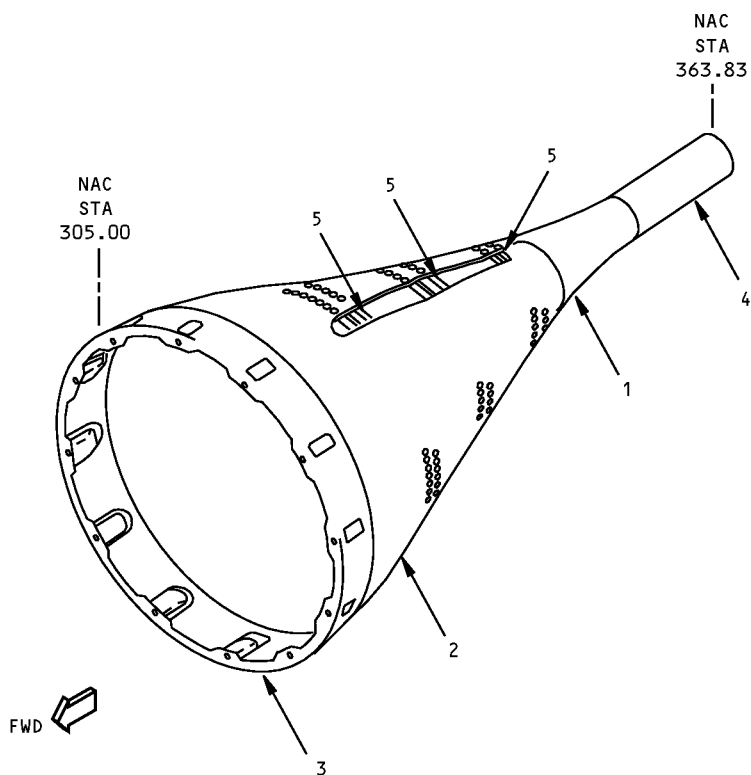


NOTE: THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A FRAME STIFFENED ASSEMBLY AND FOR HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET. REFER TO SRM 54-45-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.015 INCH OUTER FACE SHEET.

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 5)**

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STRUCTURAL REPAIR MANUAL**

REF DWG
314U2200



PLUG
DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	AFT CONE	0.032	INCONEL 625	
2	FWD CONE	0.050	INCONEL 625 (CHEM-MILLED TO 0.032 MIN)	
3	FWD RING		BAR INCONEL 625	
4	TAIL RING	0.050	INCONEL 625 (CHEM-MILLED TO 0.032 MIN)	
5	STIFFINER	0.040	INCONEL 625	

LIST OF MATERIALS FOR DETAIL I

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 5)**

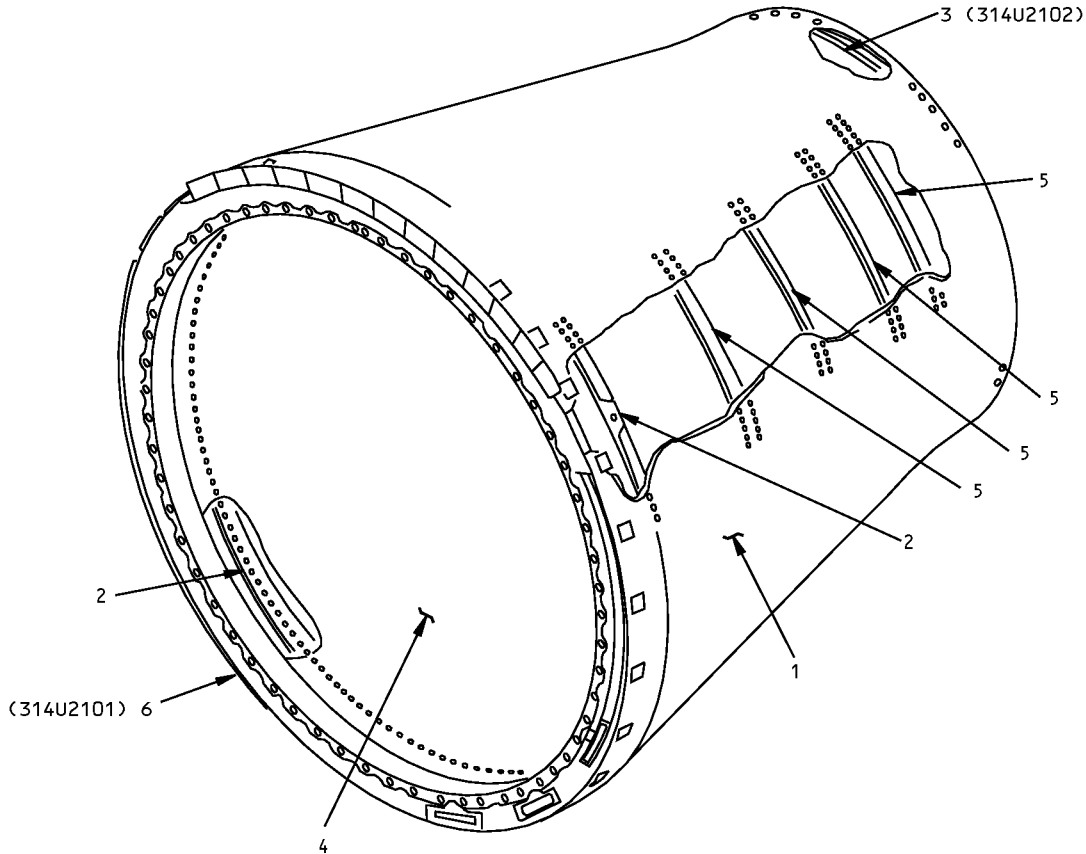
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
314U2100



**SLEEVE ASSEMBLY
DETAIL II**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	OUTER SLEEVE	0.050	INCONEL 625 (CHEM-MILLED TO 0.032 MIN)	
2	BULKHEAD ASSY			
	INNER BHD	0.025	INCONEL 625	
	OUTER BHD	0.028	INCONEL 625	
3	AFT RING		BAR INCONEL 625	
4	INNER SLEEVE	0.050	INCONEL 625 (CHEM-MILLED TO 0.035 MIN)	
5	STIFFENER	0.040	INCONEL 625	
6	FWD RING		BAR INCONEL 625	

LIST OF MATERIALS FOR DETAIL II

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 5)**

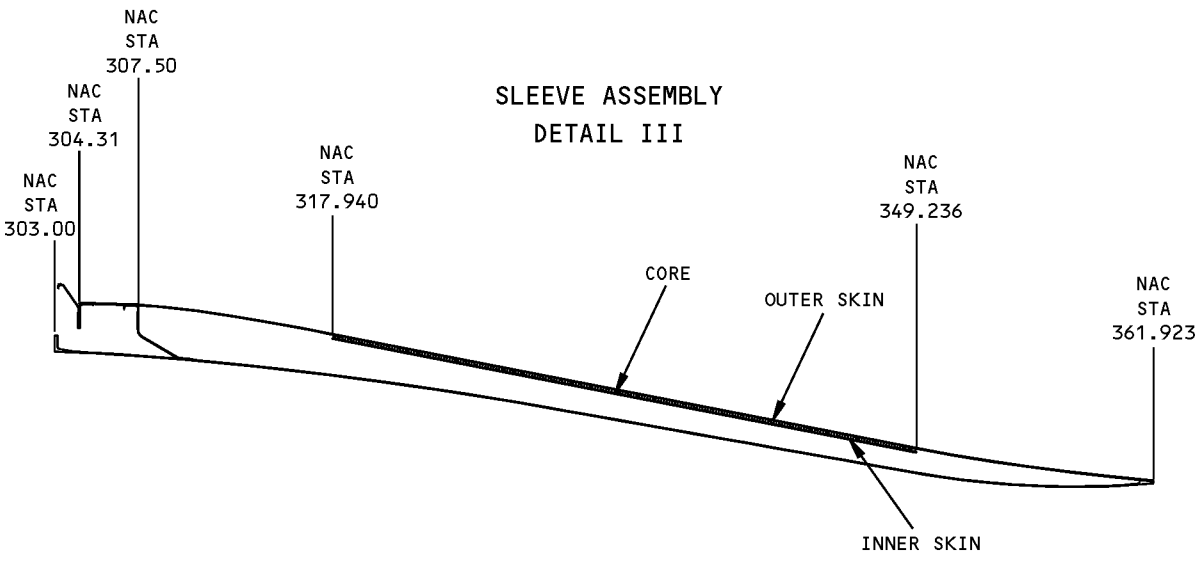
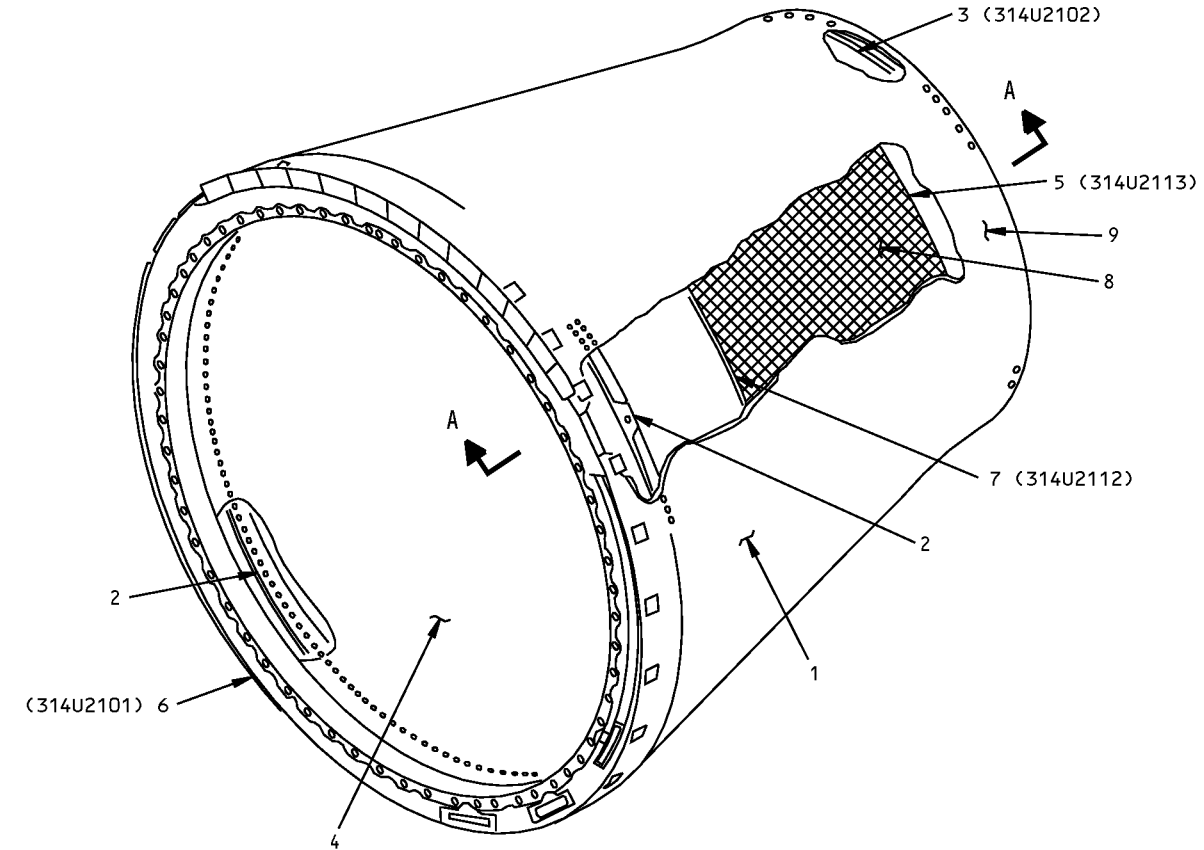
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
314U2100



**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD OUTER SKIN	0.050	NICKEL ALLOY 625	
2	BULKHEAD ASSEMBLY			
	INNER BULKHEAD	0.025	NICKEL ALLOY 625	
	OUTER BULKHEAD	0.028	NICKEL ALLOY 625	
3	AFT RING		BAR NICKEL ALLOY 625	
4	INNER SLEEVE	0.050	NICKEL ALLOY 625 (CHEM-MILLED TO 0.032 MIN)	
5	HONEYCOMB PANEL AFT RING		BAR NICKEL ALLOY 625	
6	FORWARD RING		BAR NICKEL ALLOY 625	
7	HONEYCOMB PANEL FORWARD RING		BAR NICKEL ALLOY 625	
8	HONEYCOMB PANEL ASSEMBLY			
	OUTER FACE SHEET	0.012	NICKEL ALLOY 625	
	CORE	0.223	NICKEL ALLOY 625, C6-25P PER BMS 4-15	
	INNER FACE SHEET	0.015	NICKEL ALLOY 625, TYPE III A, PERFORATED SHEET PER BMS 7-209, CLASS 50-162, GRADE 1-B	
9	AFT OUTER SKIN	0.050	NICKEL ALLOY 625	

LIST OF MATERIALS FOR DETAIL III

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 5)**

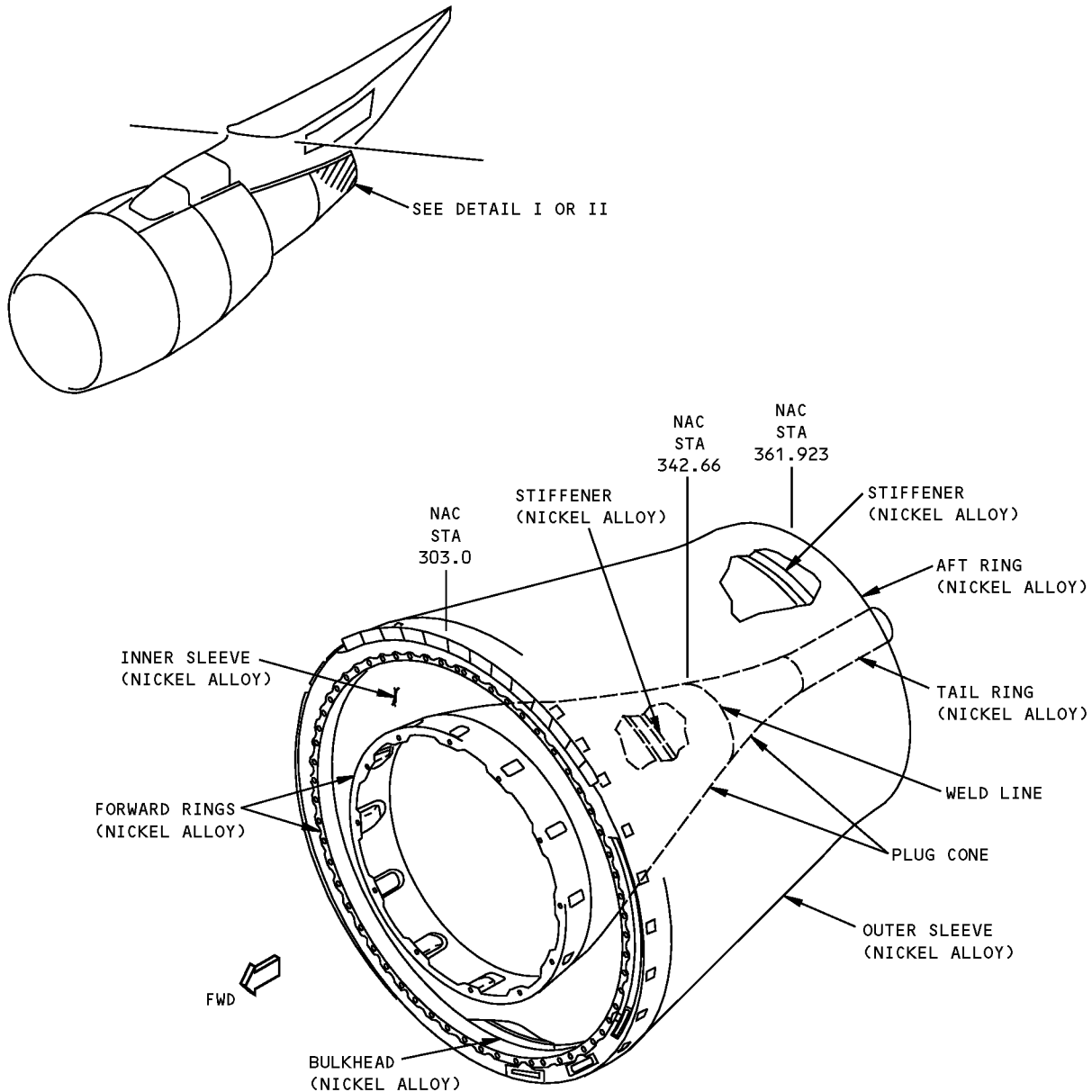
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - PRIMARY EXHAUST - CF6-80C2 ENGINE



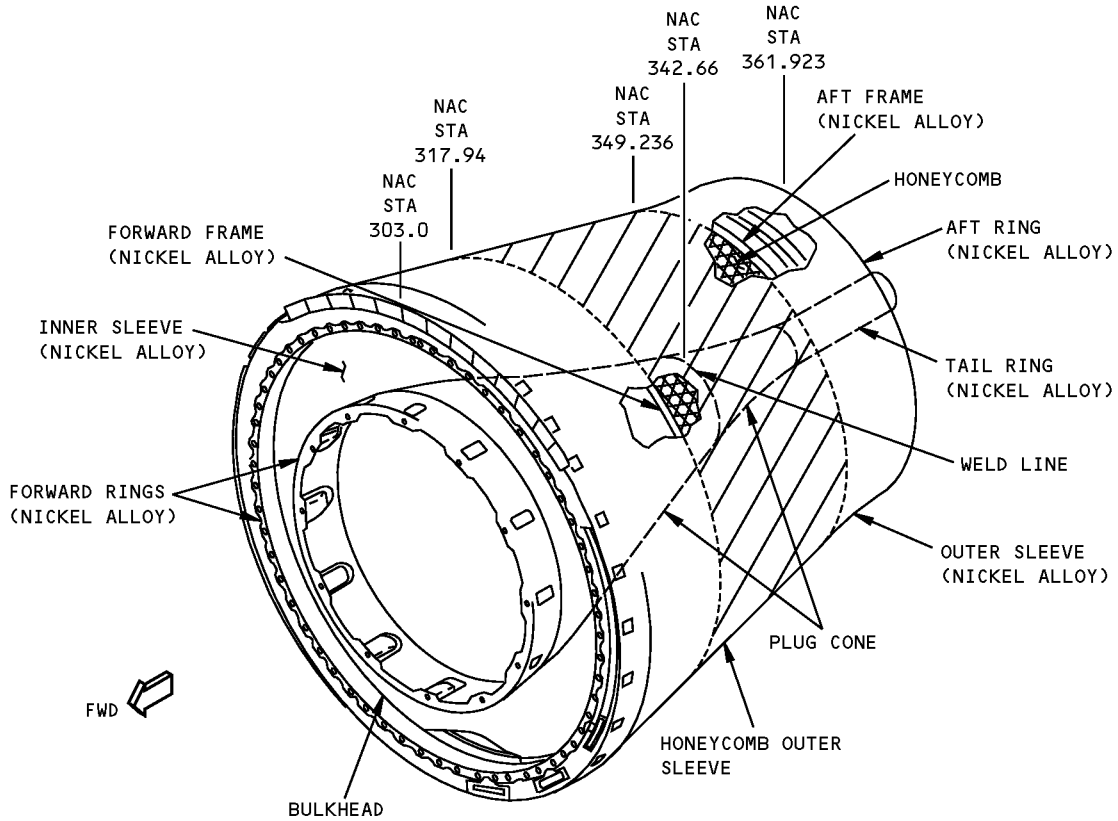
NOTE: THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A FRAME STIFFENED ASSEMBLY AND FOR HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET. REFER TO SRM 54-45-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.015 INCH OUTER FACE SHEET.

FRAME STIFFENED OUTER SLEEVE SKIN

DETAIL I

**Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



**HONEYCOMB STIFFENED OUTER SLEEVE SKIN
DETAIL II**

**Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 2 of 7)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES	DENTS AND WRINKLES	PUNCTURES	DELAMINATION
PLUG FORWARD RING	F	K	NOT PERMITTED	NOT PERMITTED	DOES NOT APPLY ↓
OUTER SLEEVE FORWARD RING	A	K	NOT PERMITTED	NOT PERMITTED	
PLUG CONE FORWARD OF NAC STA 342.66	G	B	D	E	
PLUG CONE AFT OF NAC STA 342.66	I	B	D	E	
FRAME STIFFENED OUTER SLEEVE SKIN - SEE DETAIL I HONEYCOMB STIFFENED OUTER SLEEVE SKIN FORWARD OF NAC STA 317.94 AND AFT OF NAC STA 349.236 - SEE DETAIL II	G	B	D	E	
INNER SLEEVE SKIN	H	B	D	E	
PLUG STIFFENERS	C	K	C	NOT PERMITTED	
SLEEVE STIFFENERS	C	K	C	NOT PERMITTED	
TAIL RING	I	B	D	NOT PERMITTED	
BULKHEAD	C	B	D	NOT PERMITTED	
AFT RING	A	B	NOT PERMITTED	NOT PERMITTED	
HONEYCOMB OUTER SLEEVE ZONE 1 SEE DETAIL VII ZONE 2 SEE DETAIL VII	L M	P P	N N	Q Q	O O

NOTES

- D = THE MAXIMUM DAMAGE LENGTH
- ALL DIMENSIONS ARE IN INCHES UNLESS GIVEN DIFFERENTLY.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.

- A** CRACKS UP TO 0.10 INCH (2.5 mm) IN LENGTH ARE PERMITTED, PROVIDED THERE IS A MINIMUM OF 1.0 INCH (25 mm) SEPARATION FROM THE EDGE OR OTHER DAMAGE. THE SUM OF ALL CRACKS MUST BE LESS THAN 2.0 INCHES (50 mm). DRILL OUT THE CRACKS WITH A 0.098 INCH DIAMETER HOLE. REPAIR THE DAMAGE AT THE NEXT 'A' CHECK. REMOVE EDGE CRACKS PER DETAILS III AND V.
- B** REMOVE NICKS, GOUGES, AND SCRATCHES AS SHOWN IN DETAIL IV.
- C** CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE INFORMATION.
- D** DENTS, SKIN WRINKLES, HEAT DEPRESSIONS AND SKIN WAVINESS ARE PERMITTED AS GIVEN IN DETAIL VI. DENTS ARE NOT PERMITTED CLOSER THAN 2.0 INCHES (50 mm) TO PANEL EDGE. DENTS WITH CRACKS, SHARP CREASES OR HOLES ARE NOT PERMITTED.
- E** HOLES ARE NOT PERMITTED. MAKE WELD REPAIR AS GIVEN IN REPAIR 1.

- F** NO DAMAGE PERMITTED EXCEPT FOR EDGE DAMAGE WHICH MUST BE REMOVED AS GIVEN IN DETAILS III AND V.
- G** CRACKS UP TO 4.0 INCHES (100 mm) IN LENGTH ARE PERMITTED, PROVIDED THERE IS A MINIMUM OF 2 TIMES THE CRACK LENGTH SEPARATION FROM THE EDGE OR OTHER DAMAGE. THE SUM OF ALL CRACKS MUST BE LESS THAN 4.0 INCHES (100 mm). STOP DRILL THE ENDS OF ALL CRACKS WITH A 0.098 INCH DIAMETER HOLE. REPAIR THE DAMAGE AT THE NEXT 'A' CHECK. REMOVE EDGE CRACKS AS GIVEN IN DETAILS III AND V. **J**
- H** CRACKS ARE PERMITTED IN THE INNER SLEEVE SKIN IF:
 - THE DAMAGE IS NOT LESS THAN 2D (END TO END) FROM OTHER DAMAGE
 - THE END OF THE DAMAGE IS NOT LESS THAN 1/2D FROM AN ADJACENT HOLE OR MATERIAL EDGE
 - YOU EXAMINE AND REPAIR THE DAMAGE AT THE SPECIFIED TIMES FOR THE CRACK LENGTHS WHICH FOLLOW:
 - FOR A LENGTH OF UP TO 1.00 INCH (25 mm), REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK.
 - FOR A LENGTH OF MORE THAN 1.00 INCH AND UP TO 3.00 INCHES (75 mm), EXAMINE THE CRACK EACH 15 FLIGHT CYCLES. REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK. FOR A LENGTH OF MORE THAN 3.00 INCHES (75 mm)
 - AND UP TO 5 INCHES (125 mm), EXAMINE THE CRACK EACH 5 CYCLES. REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK.

Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 3 of 7)

STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

STOP DRILL THE ENDS OF EACH CRACK TO A MAXIMUM DIAMETER OF 0.188 INCH.

REMOVE EDGE CRACKS AS SHOWN IN DETAILS III AND V.

I CRACKS ARE PERMITTED IF:

- THE CRACK LENGTH IN THE CIRCUMFERENTIAL DIRECTION IS NOT MORE THAN 2.0 INCHES (50 mm)
- THE CRACK LENGTH IN THE LONGITUDINAL DIRECTION IS NOT MORE THAN 3.0 INCHES (75 mm)
- THE DISTANCE BETWEEN A CRACK AND THE EDGE OR OTHER DAMAGE IS TWO TIMES THE CRACK LENGTH OR MORE
- THE SUM OF ALL CRACKS ARE LESS THAN 2.0 INCHES (50 mm) IN THE CIRCUMFERENTIAL DIRECTION AND 3.0 INCHES (75 mm) IN THE LONGITUDINAL DIRECTION
- THE ENDS OF THE CRACKS ARE STOP-DRILLED WITH A 0.098 INCH DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT THE NEXT "A" CHECK
- EDGE CRACKS ARE REMOVED AS GIVEN IN DETAILS III AND V. **J**

J CRACKS ARE NOT PERMITTED TO EXTEND ACROSS A STIFFENER.

K NICKS, GOUGES, AND SCRATCHES UP TO 0.50 INCH (13 mm) IN LENGTH OR DIAMETER AFTER CLEANUP ARE PERMITTED. REMOVE NICKS, SCRATCHES, AND GOUGES AS SHOWN IN DETAIL IV.

L CRACKS ARE PERMITTED IN ZONE 1 IF:

- THE TOTAL LENGTH OF ALL CRACKS IN THE CIRCUMFERENTIAL OR LONGITUDINAL DIRECTIONS PER EACH 180° SEGMENT IS NOT MORE THAN 4.0 INCHES (10 cm)
- THE DISTANCE TO THE EDGE OF THE HONEYCOMB PANEL IS A MINIMUM OF HALF THE CRACK LENGTH
- THE TOTAL LENGTH OF ALL CRACKS IN EACH FACE SHEET, INNER AND OUTER, IN ZONE 1 IS LESS THAN 8.0 INCHES (20 cm)
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON EITHER OF THE TWO FACE SHEETS IS AT LEAST TWO TIMES THE LENGTH OF THE LONGEST CRACK WITH A MINIMUM ALLOWABLE DISTANCE OF 1.0 INCH (25 mm)
- THE ENDS OF THE CRACKS ARE STOP DRILLED WITH A 0.125 INCH (3 mm) DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT OR BEFORE THE NEXT "C" CHECK.

M CRACKS ARE PERMITTED IN ZONE 2 IF:

- THE TOTAL CRACK LENGTH IN THE CIRCUMFERENTIAL OR LONGITUDINAL DIRECTION PER QUADRANT IS NOT MORE THAN 5.0 INCHES (12.5 cm)
- THE TOTAL LENGTH OF ALL CRACKS IN EACH OF THE INNER AND OUTER FACE SHEETS OF ZONE 2 IS LESS THAN 20 INCHES (50 cm)
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON EITHER OF THE INNER OR OUTER FACE SHEETS IS A MINIMUM OF TWO TIMES THE LONGEST CRACK LENGTH WITH A MINIMUM ALLOWABLE DISTANCE OF 1.0 INCH (25 mm)
- THE ENDS OF THE CRACKS ARE STOP DRILLED WITH A 0.125 INCH (3 mm) DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT OR BEFORE THE NEXT "C" CHECK.

N DENTS ARE PERMITTED IF:

- THE DENT IS MORE THAN 2.0 INCHES (50 mm) FROM THE PANEL EDGE
- THERE ARE NO CRACKS, SHARP CREASES, WRINKLES, DELAMINATIONS OR HOLES OTHER THAN MANUFACTURED PERFORATIONS ON THE INNER FACE SHEET
- DENTS ARE NO MORE THAN 0.08 INCH (2 mm) DEEP
- THE TOTAL SURFACE AREA OF ALL DENTS IS LESS THAN 7.1 SQUARE INCHES (45 SQUARE cm). SEE DETAIL VIII.

O OUTER SKIN-TO-CORE DELAMINATIONS OR VOIDS ARE PERMITTED IF:

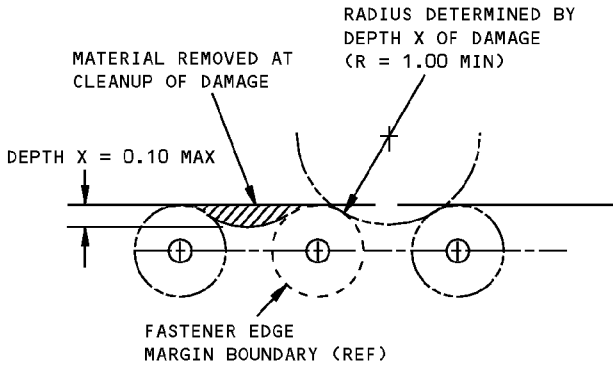
- THE DAMAGE IS CONTAINED WITHIN A CIRCLE NOT LARGER THAN 1.50 INCHES (38 mm) IN DIAMETER
- THE DAMAGE IS A MINIMUM OF 1.0 INCH (25 mm) FROM ANY OTHER DAMAGE
- THERE ARE NO CRACKS.

P NICKS, GOUGES AND SCRATCHES UP TO A DEPTH OF 10% OF THE THICKNESS ARE PERMITTED. CLEAN UP DAMAGE AS GIVEN IN DETAIL VII.

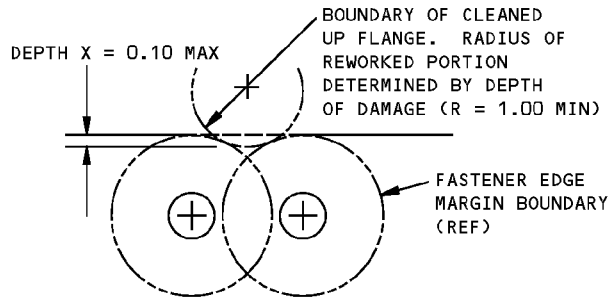
Q HOLES AND PUNCTURES WHICH DO NOT PENETRATE THROUGH MORE THAN ONE FACE SHEET SKIN OF A HONEYCOMB PANEL ARE PERMITTED UP TO 0.25 INCH (6 mm) IN DIAMETER. INSPECT DAMAGE EVERY "A" CHECK. SHARP OR JAGGED EDGES AROUND THE HOLES SHOULD BE SMOOTHED OUT AND SLIT TYPE PUNCTURES SHOULD BE ROUND OR OVAL. THE NUMBER OF UNREPAIRED HOLES AND PUNCTURES SHALL NOT BE MORE THAN FIVE FOR EACH ZONE IN THE HONEYCOMB PANEL. THE MINIMUM SPACING PERMITTED BETWEEN AN UNREPAIRED HOLE, PUNCTURE, OR THE PANEL EDGE IS 2.00 INCHES (50 mm).

Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 4 of 7)

STRUCTURAL REPAIR MANUAL

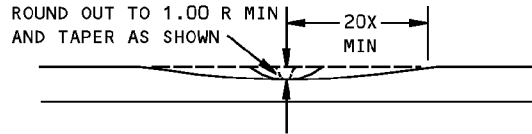
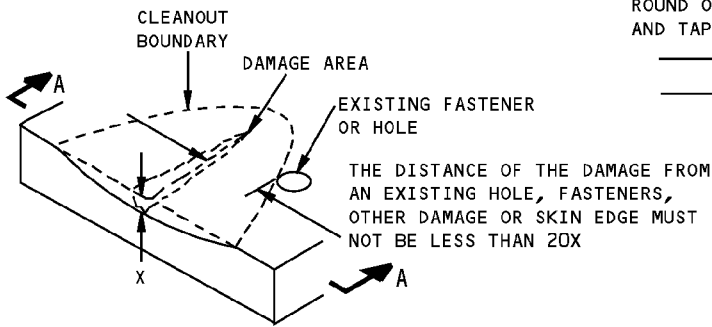


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL III

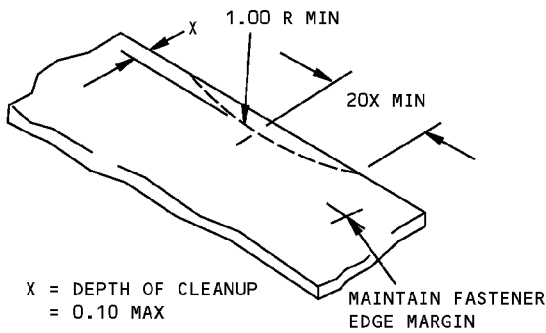


X = THE DEPTH OF THE CLEANUP
 = 10% THICKNESS MAX EXCEPT ON THE PLUG AND THE OUTER SLEEVE FORWARD RINGS
 = 5% THICKNESS MAX ON THE PLUG AND THE OUTER SLEEVE FORWARD RINGS

SECTION A-A

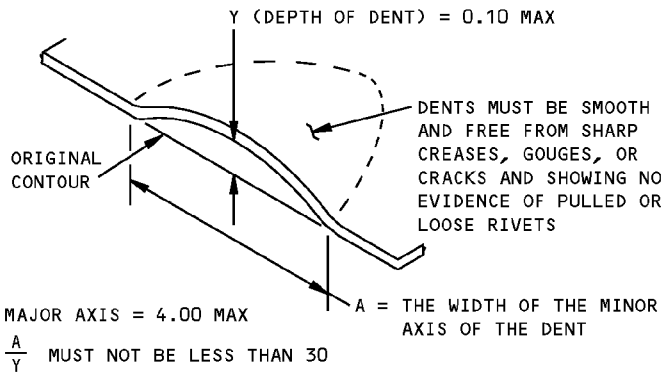
REMOVAL OF NICK, GOUGE OR SCRATCH DAMAGE ON A SURFACE

DETAIL IV



REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE

DETAIL V

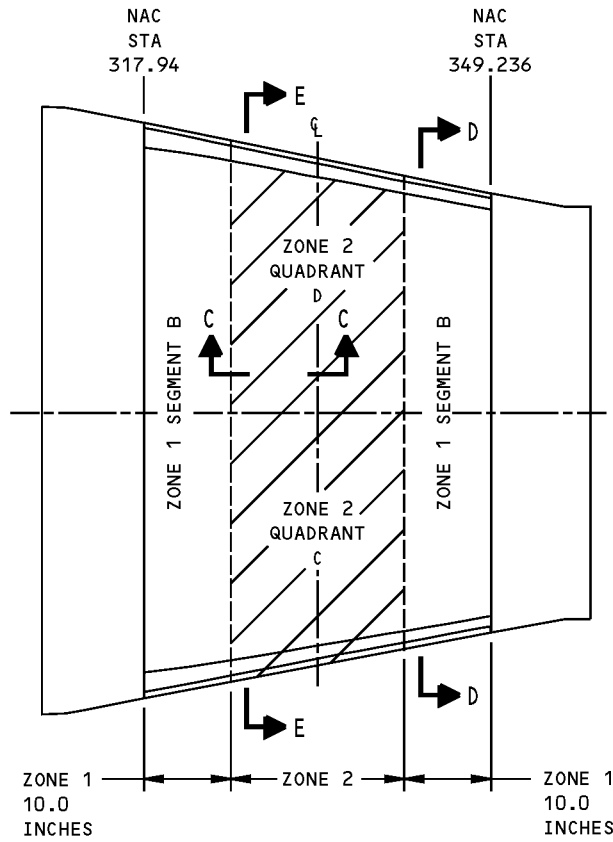


ALLOWABLE DAMAGE FOR DENT

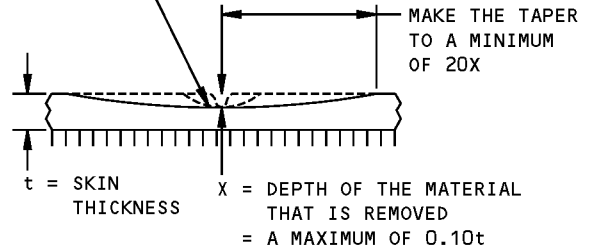
DETAIL VI

**Allowable Damage - Primary Exhaust - CF6-80C2 Engine
 Figure 101 (Sheet 5 of 7)**

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STRUCTURAL REPAIR MANUAL**

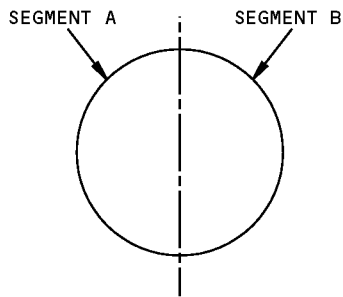


REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

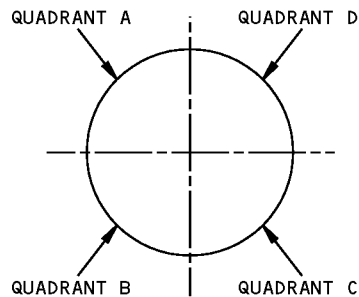


SECTION C-C

DETAIL VII



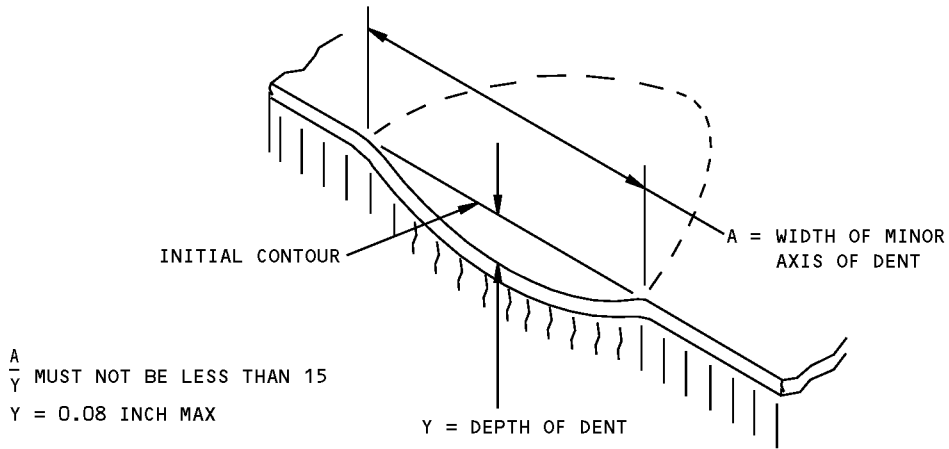
ZONE 1
SECTION D-D



ZONE 2
SECTION E-E

**Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 6 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

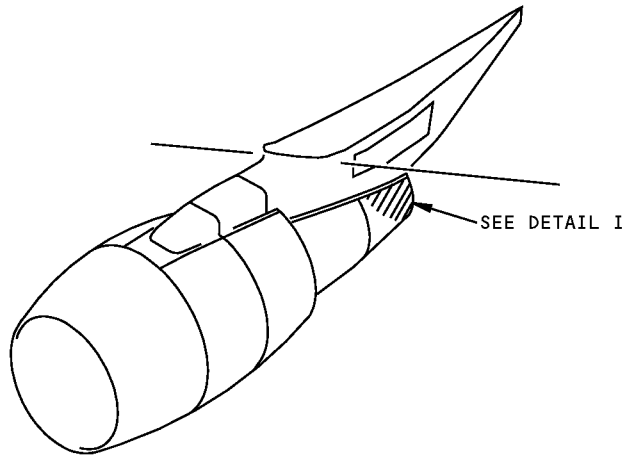


**ALLOWABLE DAMAGE FOR DENT IN HONEYCOMB PANEL
DETAIL VIII**

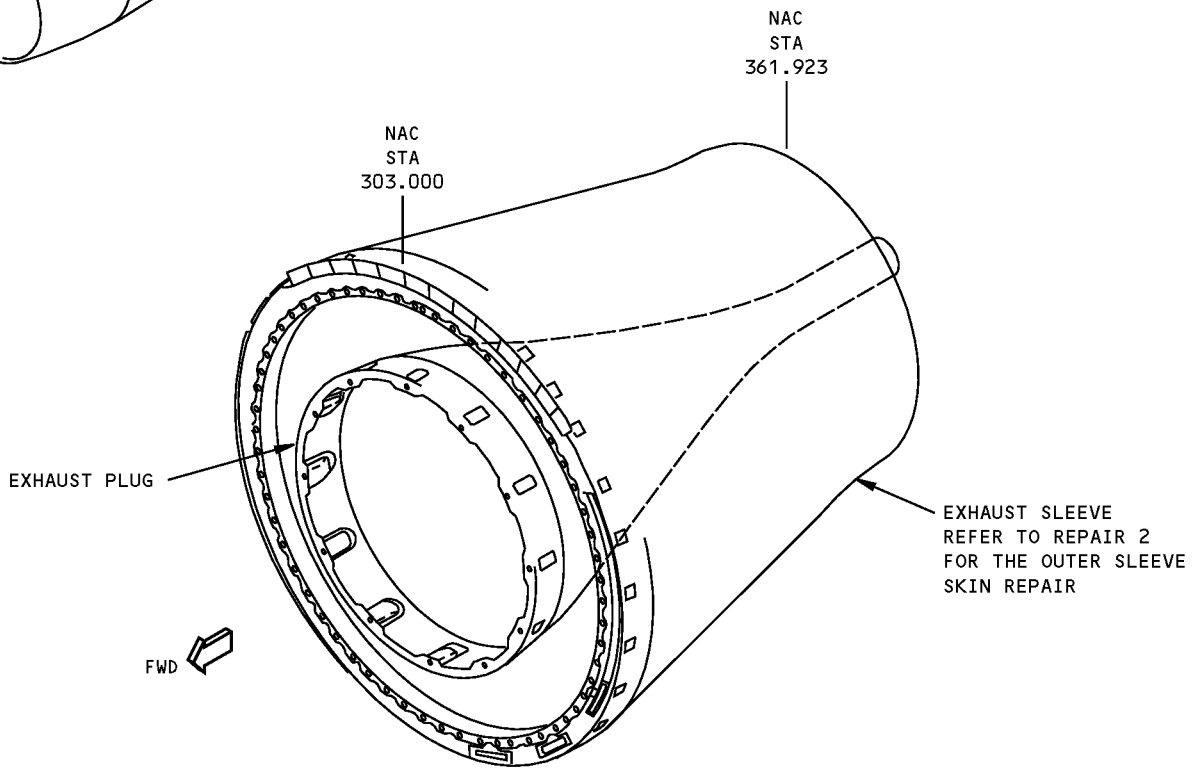
**Allowable Damage - Primary Exhaust - CF6-80C2 Engine
Figure 101 (Sheet 7 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE



THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A FRAME STIFFENED ASSEMBLY AND FOR HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH (0.3 mm) OUTER FACE SHEET. REFER TO SRM 54-45-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.015 INCH (0.38 mm) OUTER FACE SHEET.



DETAIL I

NOTES

- REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE FOLLOWING WELD REPAIRS:
78-11-14 FOR SLEEVE
78-11-15 FOR EXHAUST PLUG

**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE

APPLICABILITY
THIS IS AN INTERIM REPAIR. THIS REPAIR IS APPLICABLE TO CRACKS IN THE PRIMARY-EXHAUST-NOZZLE OUTER SKIN. A B C

REPAIR INSTRUCTIONS

- Penetrant inspect the damaged area to find the ends of the crack.
- Make a circular or oval cutout to remove the damage in the limits shown in Detail II. The minimum radius is 1.0 inch. See Detail III.
- Break the edges of the cutout to a radius of 0.01-0.02.
- Make the repair plate. Chamfer the edges of the repair plate 0.03 x 0.20. Form the repair plate to match the surface contour. See Detail IV.
- Position and drill pilot holes in the repair plate. For sleeves with welded stiffeners, space the rivet holes at 0.8 to 1.0 inches and position circumferential rivets over the weld center-line. For riveted stiffeners position the repair rivets at the existing rivet locations. Space all other rivets at 0.8-1.0 inches. See Detail IV.
- Position the repair plate on the outer sleeve. Drill and deburr the fastener holes.
- Clean the repair plate and the outer sleeve.
- Prime the faying surfaces with DC-1200 primer (available from Dow Corning). Allow the primer to cure at least 30 minutes at room temperature.

Apply RTV 60 (available from General Electric) to the faying surfaces. Mix the components per the manufacturers instructions. The RTV must be applied within 2 hours of surface priming.

NOTE: This is recommended for better SONIC fatigue performance, but not REQUIRED.
- Assemble the repair with NAS1398C6 rivets. Optional rivet: NAS1738C6

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - 20-20-02 OF THE STANDARD OVERHAUL PRACTICES MANUAL, D6-51702, FOR PENETRANT INSPECTION
 - 51-10-00 FOR INVESTIGATION AND CLEANUP OF DAMAGE
 - 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.
- A** YOU MUST INSPECT THIS REPAIR AT THE FIRST AIRPLANE A CHECK, THE NEXT 2A CHECK, AND AT ALL SUBSEQUENT C CHECKS.
- B** THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.
- C** SEE DETAIL I FOR A TYPICAL REPAIR LAYOUT. SEE DETAIL II FOR THE MAXIMUM SIZE OF THE CRACK. FOR LARGER DAMAGE CONTACT THE BOEING COMPANY.

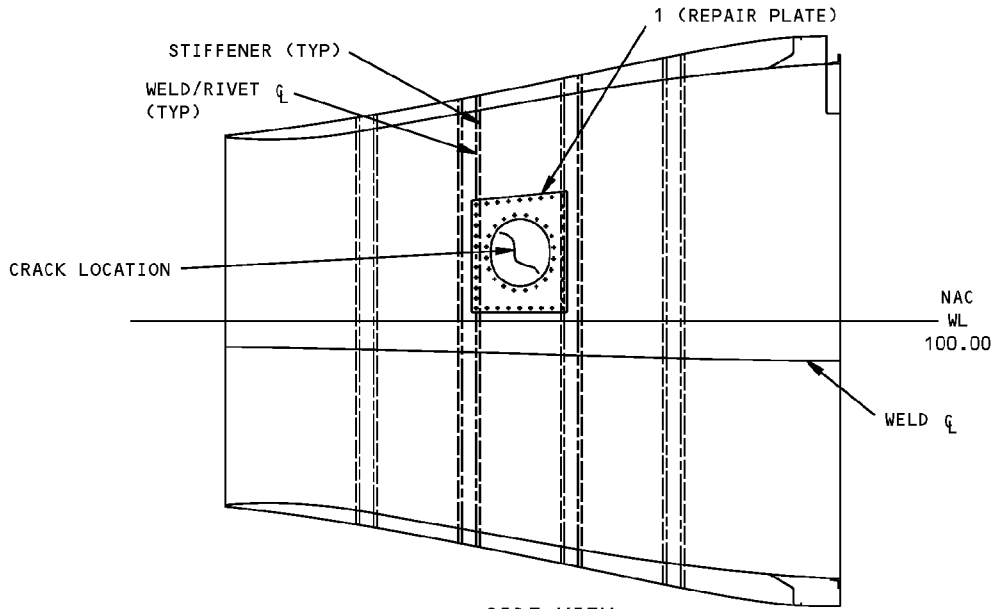
FASTENER SYMBOLS

✚ REPAIR FASTENER LOCATION. INSTALL A NAS1398C6 RIVET. OPTIONAL RIVET: NAS1738C6

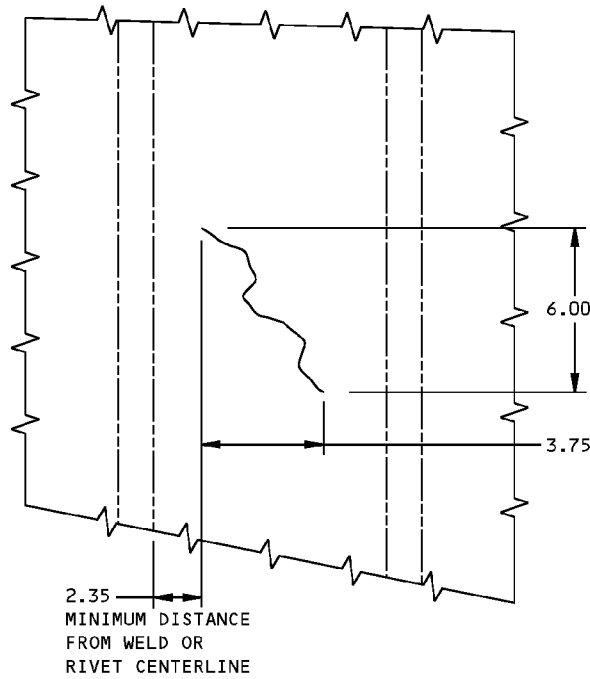
REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	REPAIR PLATE	1	0.050 INCONEL 625

**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



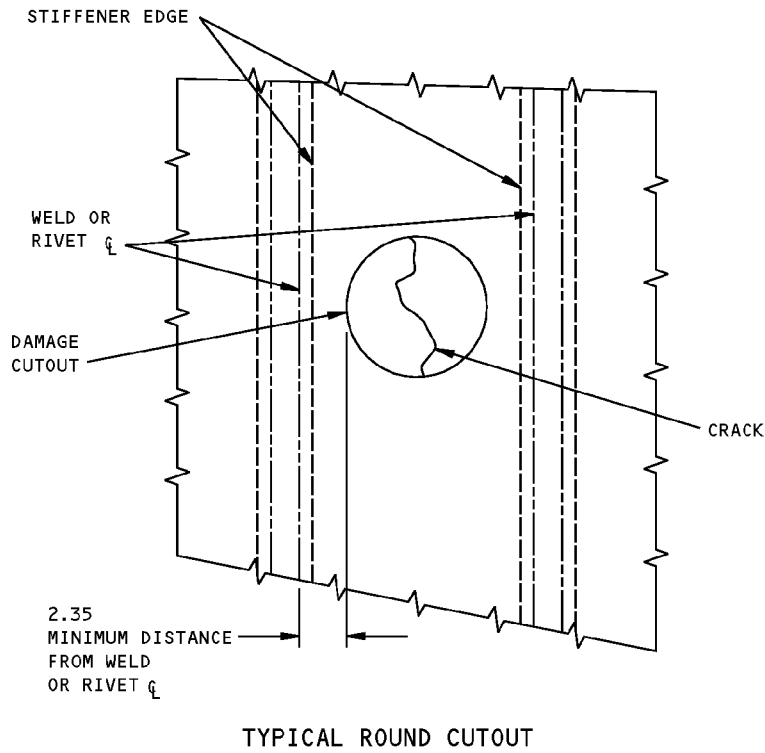
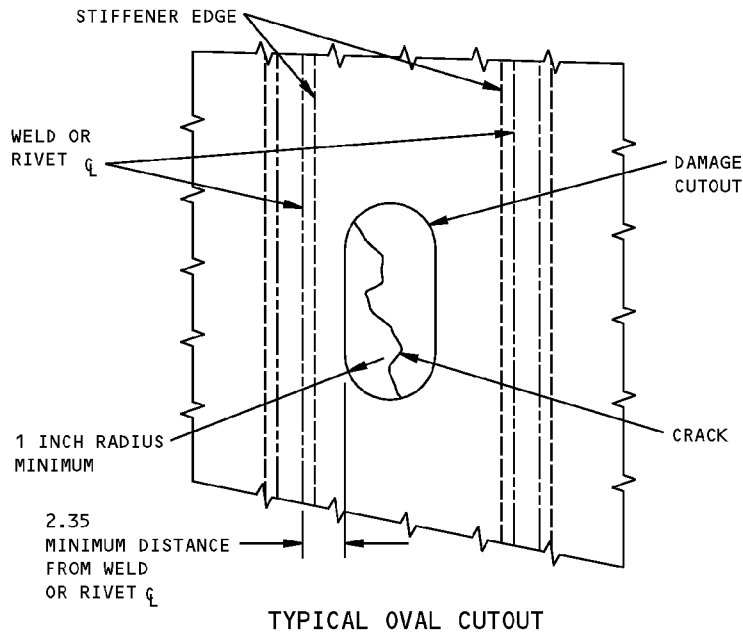
**SIDE VIEW
TYPICAL REPAIR
DETAIL I**



**MAXIMUM CRACK SIZE
DETAIL II**

**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

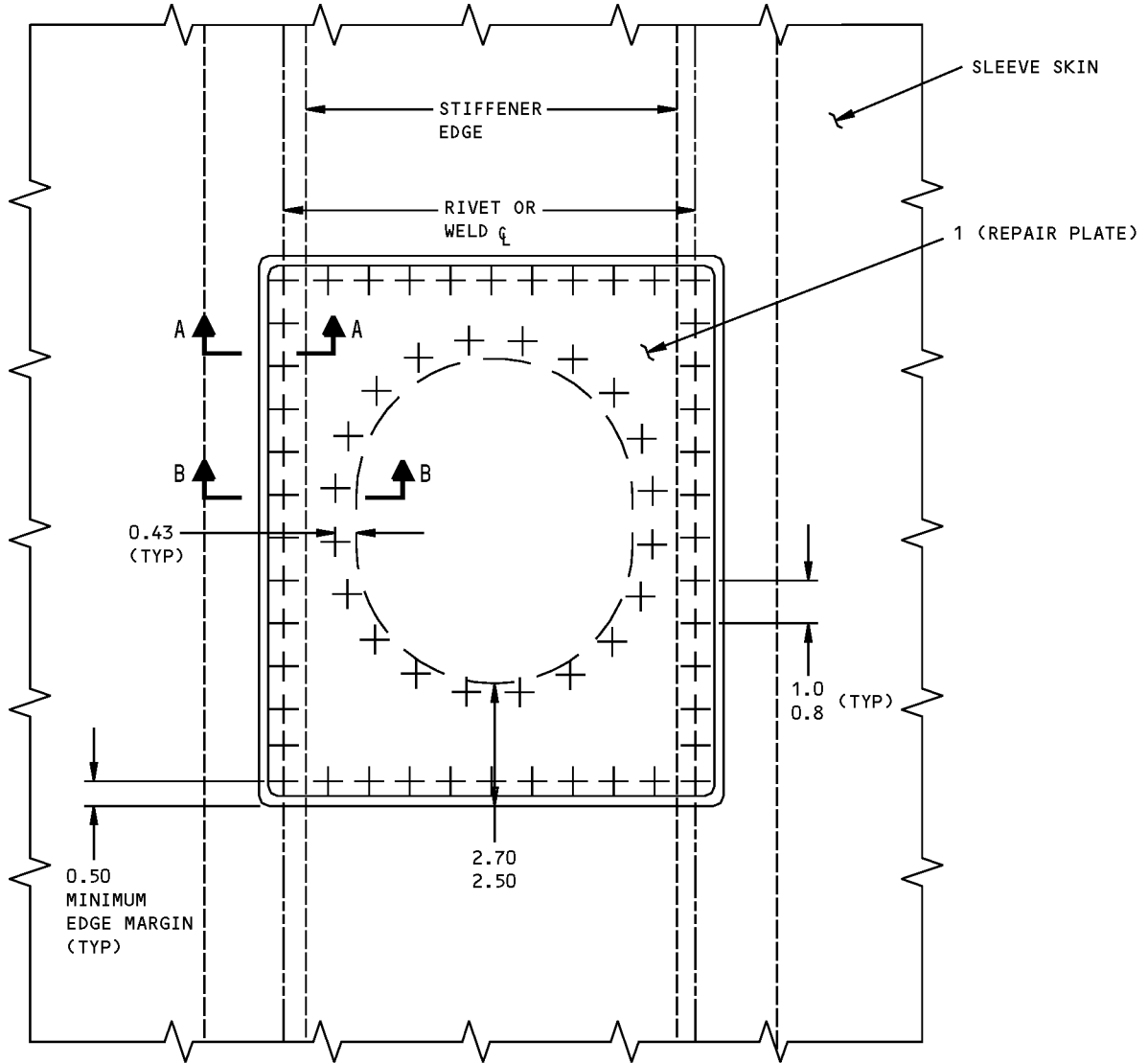
**767-300
STRUCTURAL REPAIR MANUAL**



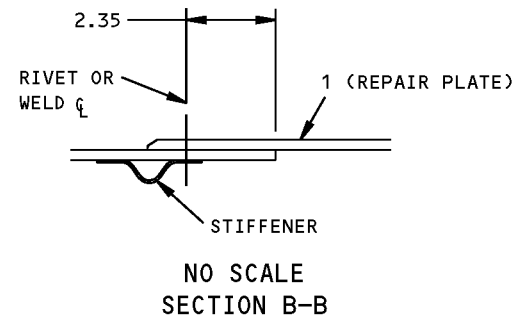
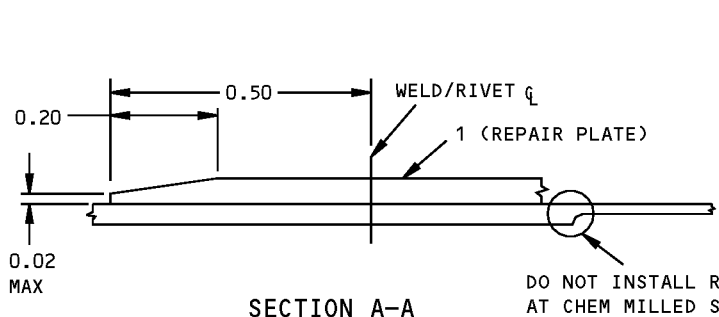
DETAIL III

**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



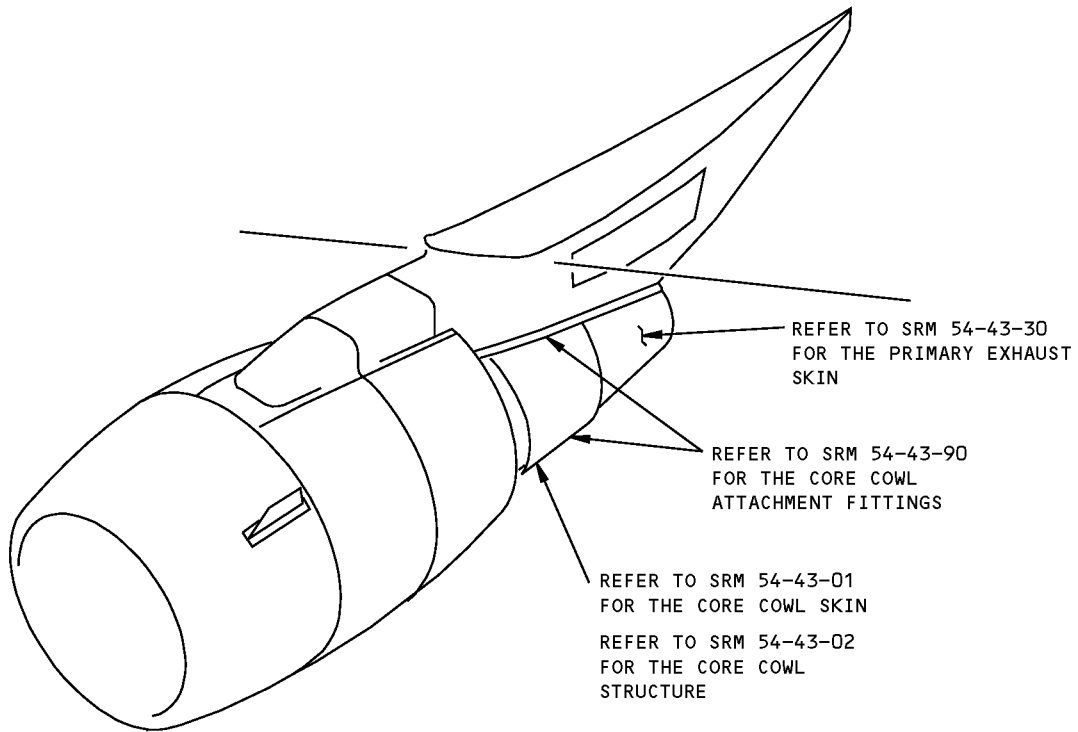
**TYPICAL REPAIR PLATE
DETAIL IV**



**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

767-300
STRUCTURAL REPAIR MANUAL

GENERAL - CORE COWL STRUCTURE DIAGRAM - PW4000 ENGINE



Core Cowl Structure Diagram - PW4000 Engine
Figure 1

D634T210

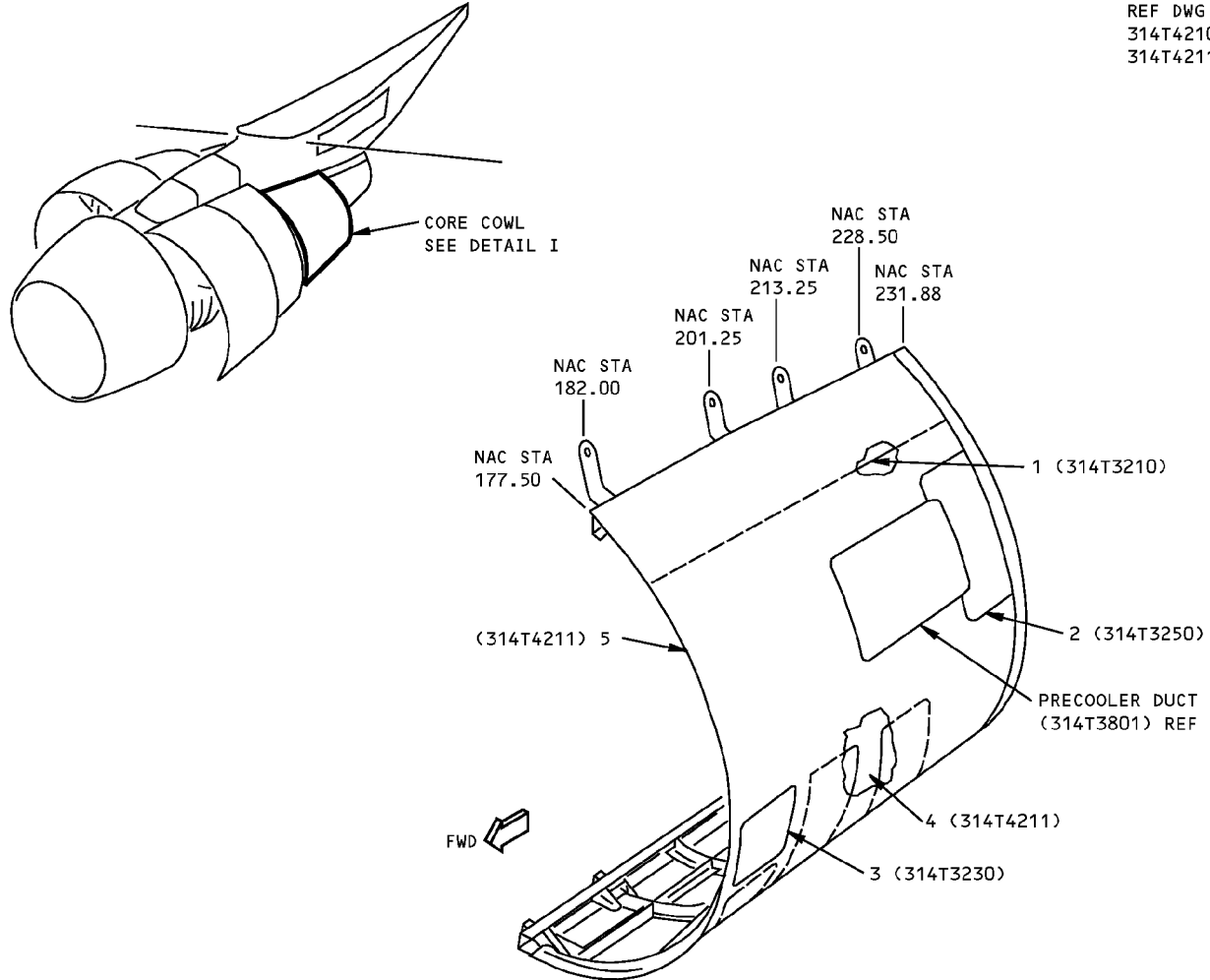
54-43-00

GENERAL
Page 1
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL SKIN - PW4000 ENGINE

REF DWG
314T4210
314T4211



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR
DETAIL I

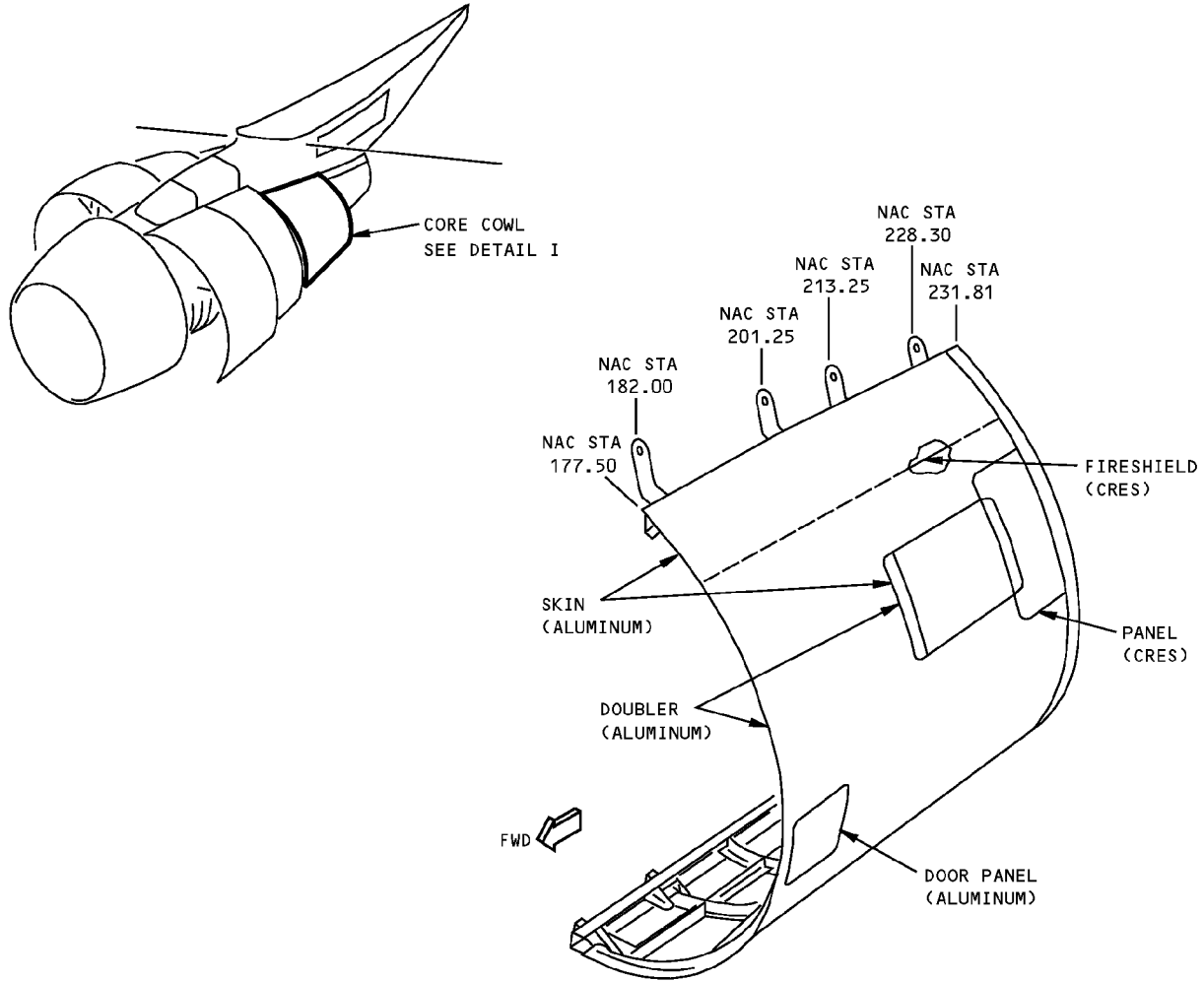
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FIRESHIELD	0.005	304 CRES, ANNEALED, SURFACE CONDITION 2D	
2	PANEL	0.040	17-7 PH CRES COND A HT TR 180-200 KSI	
3	DOOR PANEL	0.250	CLAD 2024-T851 (CHEM-MILLED TO 0.045/0.035 MIN)	
4	DOUBLER	0.032	2024-T81	
5	SKIN	0.040	CLAD 2024-T81	

LIST OF MATERIALS FOR DETAIL I

**Core Cowl Skin Identification - PW4000 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL SKIN - PW4000 ENGINE



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR

DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FIRESHIELD (CRES)	A	B	SEE DETAIL IV	C
PANEL (CRES)	A	B	SEE DETAIL IV	C
DOOR PANEL (ALUMINUM)	E	B	SEE DETAIL IV	D
DOUBLER (ALUMINUM)	A	B	SEE DETAIL IV	D
SKIN (ALUMINUM)	E	B	SEE DETAIL IV	D

**Allowable Damage - Core Cowl Skin - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

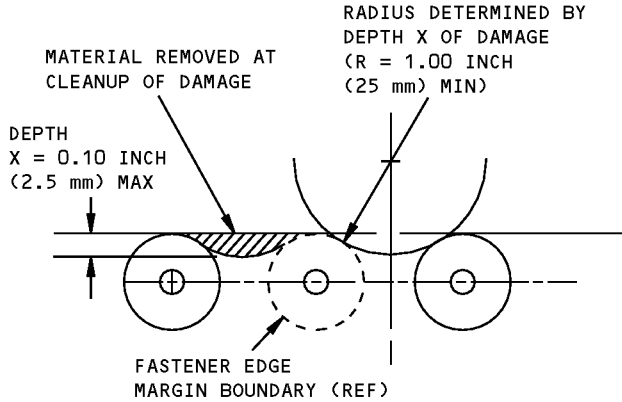
STRUCTURAL REPAIR MANUAL

NOTES

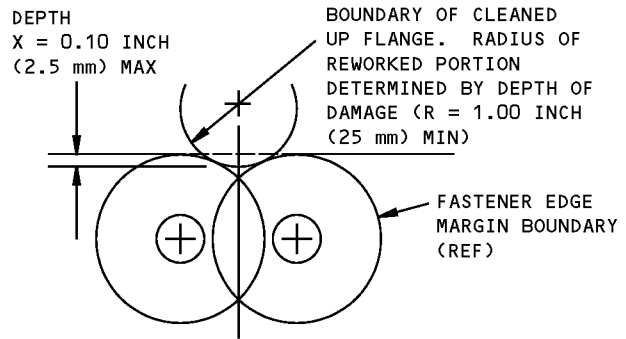
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL

- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III, V AND VI
- C** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH MONEL RIVET INSTALLED DRY

- D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED
- E** 1.00 INCH (25 mm) MAX LENGTH CRACK ALLOWED PROVIDED CRACK IS MIN. 6.00 INCHES (15 cm) FROM HINGE OR LATCH FITTINGS AND MIN. 3.00 INCHES (76 mm) FROM PANEL EDGE OR ADJACENT DRILL 0.19 INCH (5 mm) STOP HOLES AT ENDS OF CRACK AND REPAIR AT NEXT AIRPLANE "A" CHECK. REMOVE EDGE CRACKS PER DETAILS II AND VI



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

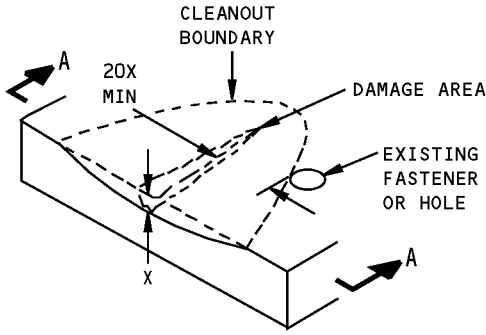


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

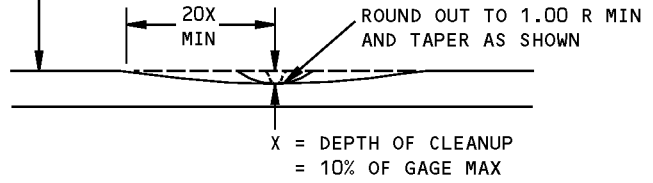
DETAIL II

Allowable Damage - Core Cowl Skin - PW4000 Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

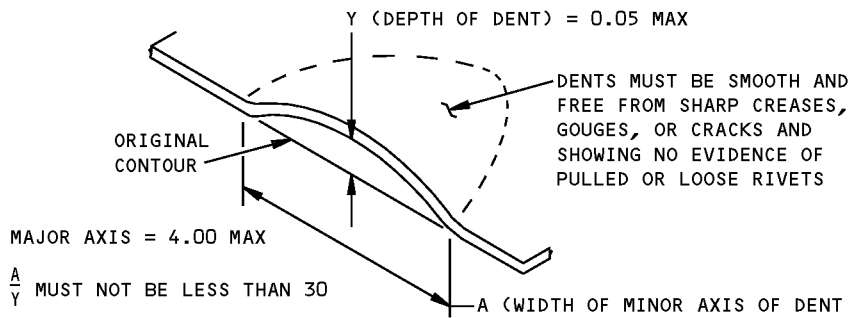


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

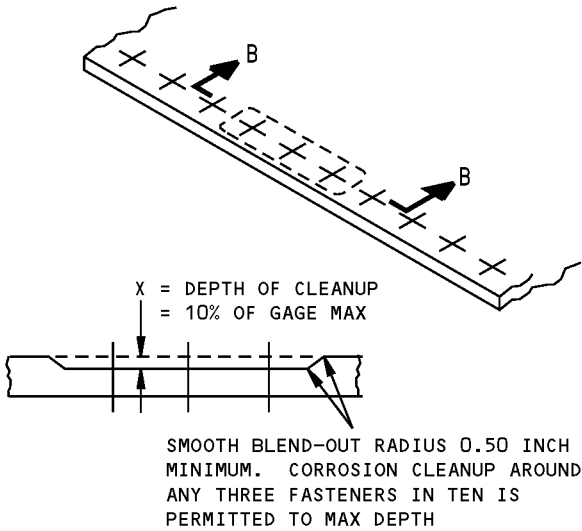


SECTION A-A

DETAIL III

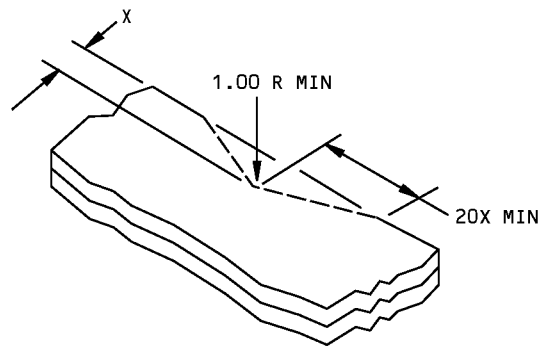


**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



SECTION B-B

**CORROSION CLEANUP
DETAIL V**

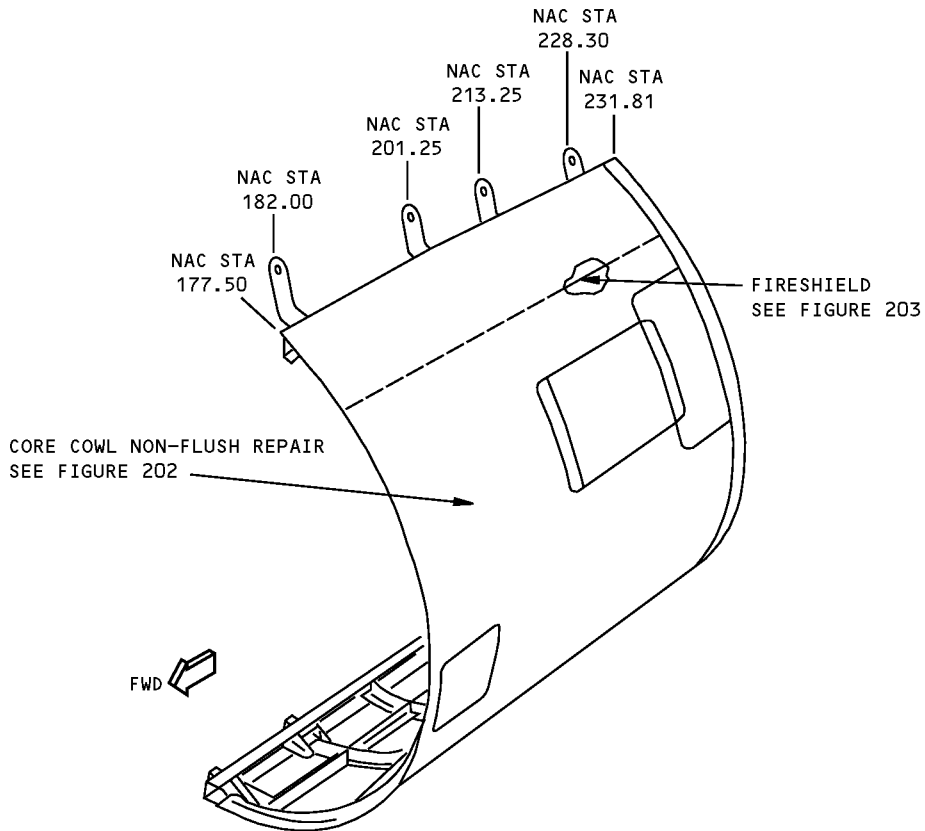
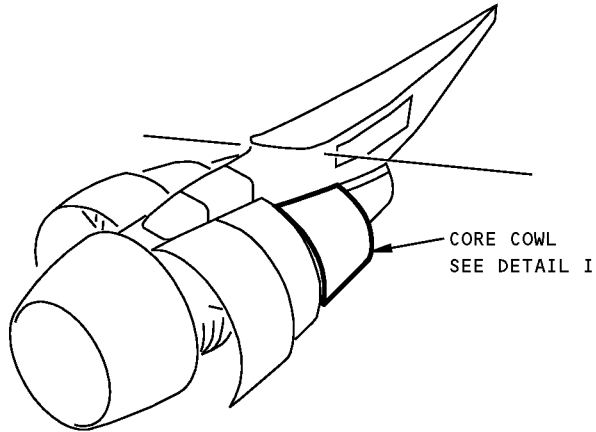


DETAIL VI

**Allowable Damage - Core Cowl Skin - PW4000 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL SKIN - PW4000 ENGINE



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR

DETAIL I

**Core Cowl Skin Repair - PW4000 Engine
Figure 201**



767-300

STRUCTURAL REPAIR MANUAL

REPAIR 2 - CORE COWL NON-FLUSH REPAIR - PW4000 ENGINE

REPAIR INSTRUCTIONS




NOTE: THIS REPAIR IS FOR ALUMINUM SKIN PORTION OF CORE COWL

1. Cut out the damaged skin to a regular shape, taking special care not to remove any of the CRES fireshield. (See details I and II)
2. Make the repair parts. Form the repair plate to required contour.
3. Locate, drill and countersink fastener holes.
4. Remove all nicks, scratches, burrs, and sharp edges from initial and repair parts.
5. Alodine treat and apply one coat of BAC5710, Type 51 (DeSoto Hi-Temp) primer to all repair parts, raw edges and reworked surfaces of skin panels. Allow to dry.
6. Apply a second coat of Hi-Temp primer to faying surfaces of repair parts and skin panel. Install repair parts while primer is wet.
7. Install BACR15CE5KE rivets wet with Hi-Temp primer.
8. Wipe off excess primer from exterior surface with solvent.
9. Restore finish.

NOTES

- DAMAGE LOCATION IS IN CRITICAL SONIC ENVIRONMENT. IF CRACKING OR DETERIORATION OF REPAIR IS EVIDENT, CONTACT THE BOEING COMPANY.
- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS.

FASTENER SYMBOLS

-  ORIGINAL FASTENER LOCATION
-  REPAIR FASTENER IN EXISTING LOCATION. INSTALL BACR15CE6KE RIVET
-  REPAIR FASTENER IN NEW LOCATION. INSTALL BACR15CE5KE RIVET

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	REPAIR PLATE	1	0.071 CLAD 2024-T3
2	STIFFENER	2	0.071 CLAD 2024-T3,T4 OR T62
3	SHIM	AS REQD	AS REQD CLAD 2024-T3,T4 OR T62
4	TAPERED SHIM	AS REQD	AS REQD CLAD 2024-T3,T4 OR T62

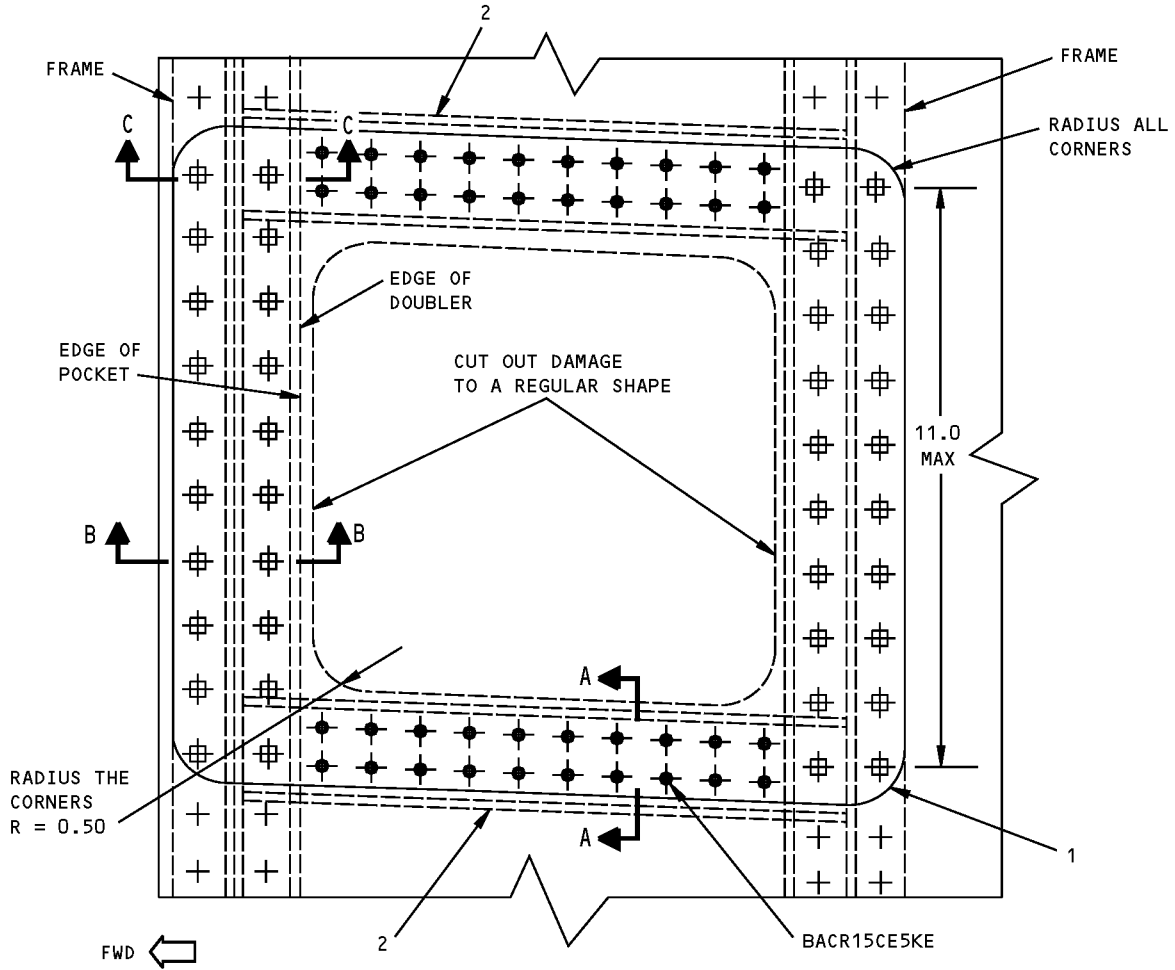
**Core Cowl Non-Flush Repair - PW4000 Engine
Figure 201 (Sheet 1 of 4)**

D634T210

54-43-01

REPAIR 2
Page 201
Apr 01/2005

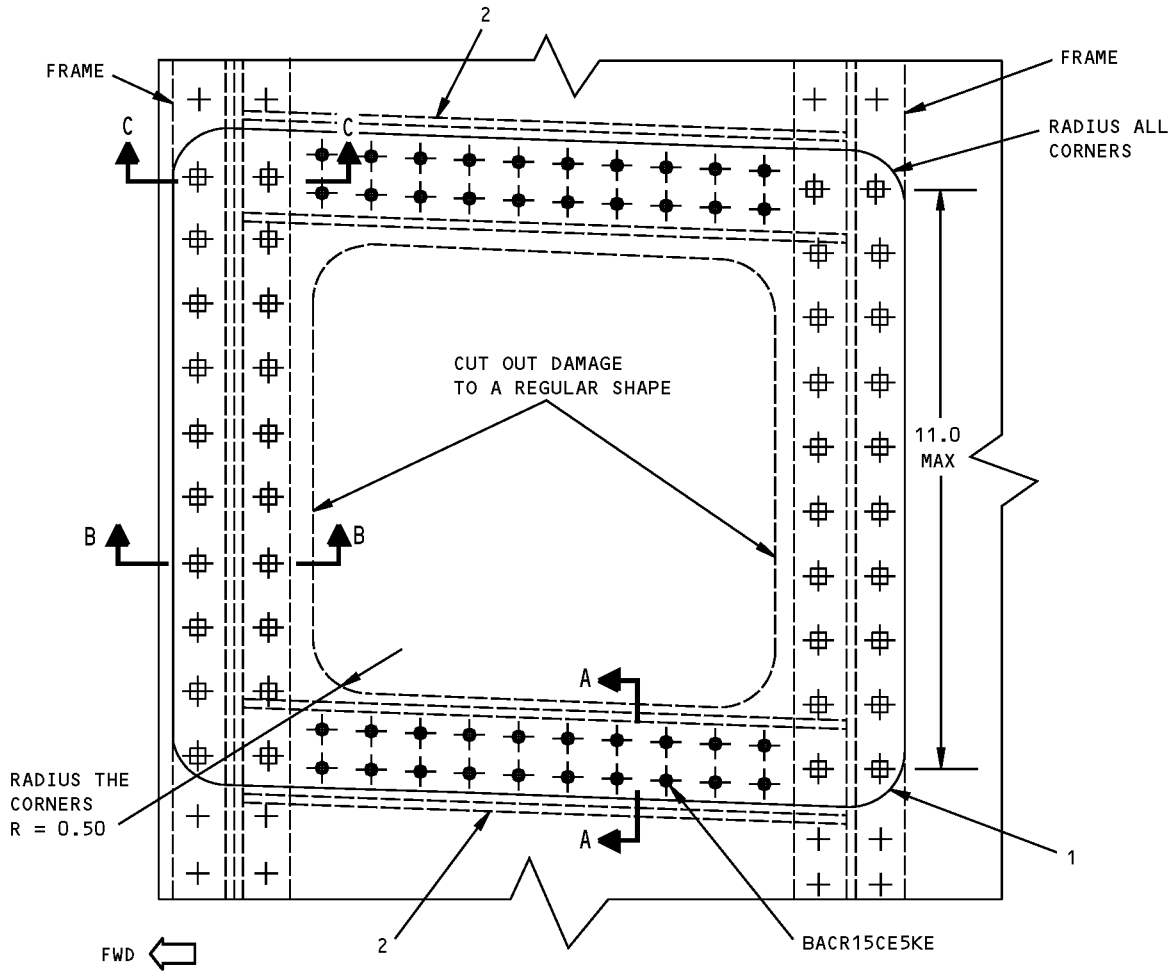
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF DAMAGE IN SKIN WITH POCKET
DETAIL I**

**Core Cowl Non-Flush Repair - PW4000 Engine
Figure 201 (Sheet 2 of 4)**

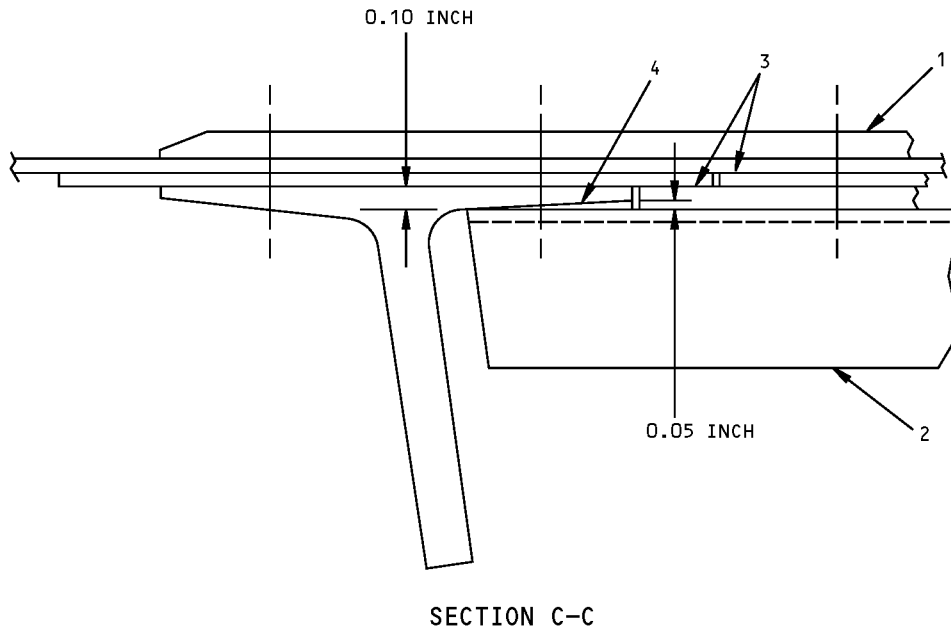
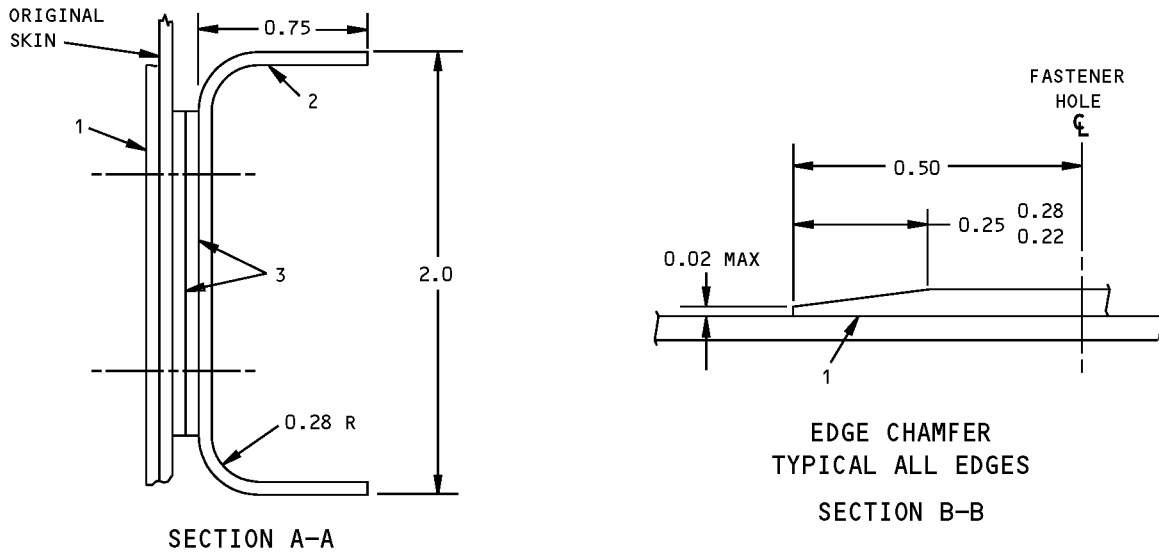
**767-300
STRUCTURAL REPAIR MANUAL**



**REPAIR OF DAMAGE IN SKIN WITHOUT POCKET
DETAIL II**

**Core Cowl Non-Flush Repair - PW4000 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Core Cowl Non-Flush Repair - PW4000 Engine
Figure 201 (Sheet 4 of 4)**

767-300 STRUCTURAL REPAIR MANUAL

REPAIR 3 - FIRESHIELD DELAMINATION - PW4000 ENGINE

REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and sharp edges from initial and repair parts.
4. Alodine treat and apply one coat of BAC 5710, Type 51 (DeSoto Hi-Temp) Primer to repair part. Allow to dry.
5. Apply second coat of Hi-Temp primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
6. Install BACR15CE5M rivets with wet Hi-Temp primer.

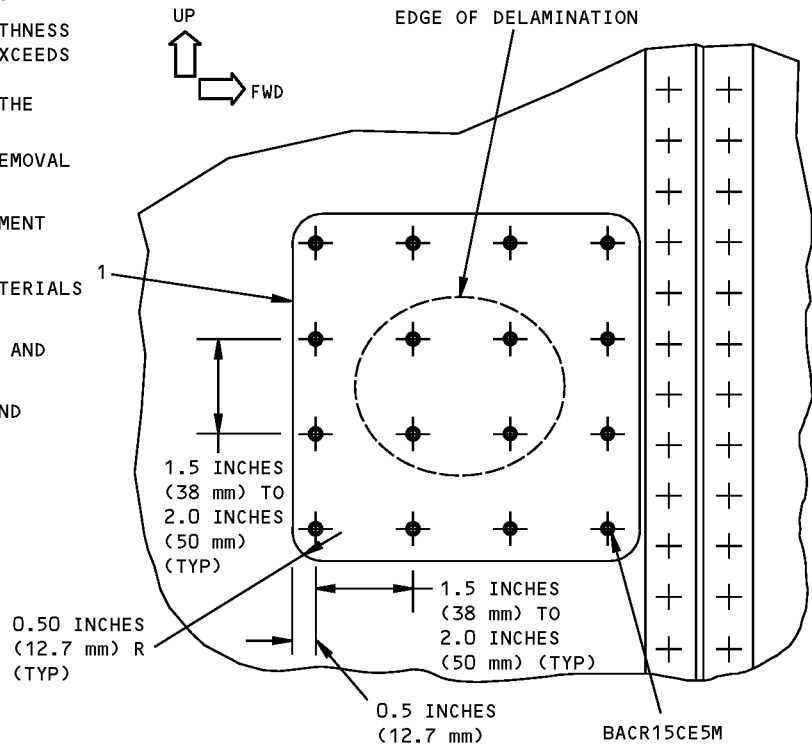
FASTENER SYMBOLS

REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN USING THESE REPAIRS:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS



**Fireshield Delamination Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL

ALTERNATE REPAIR INSTRUCTIONS

This repair is for delamination of CRES fireshield from core cowl skin.

1. Make repair part. Form repair doubler to fit required contour.
2. Locate, drill and countersink fastener holes.
3. Remove all nicks, scratches, burrs and sharp edges from initial and repair parts.
4. Apply coat of BAC 5710, Type 51 (DeSoto Hi-Temp) primer to faying surfaces of skin and repair doubler. Install doubler while primer is wet.
5. Install BACR15CE5M rivets with wet Hi-Temp primer.

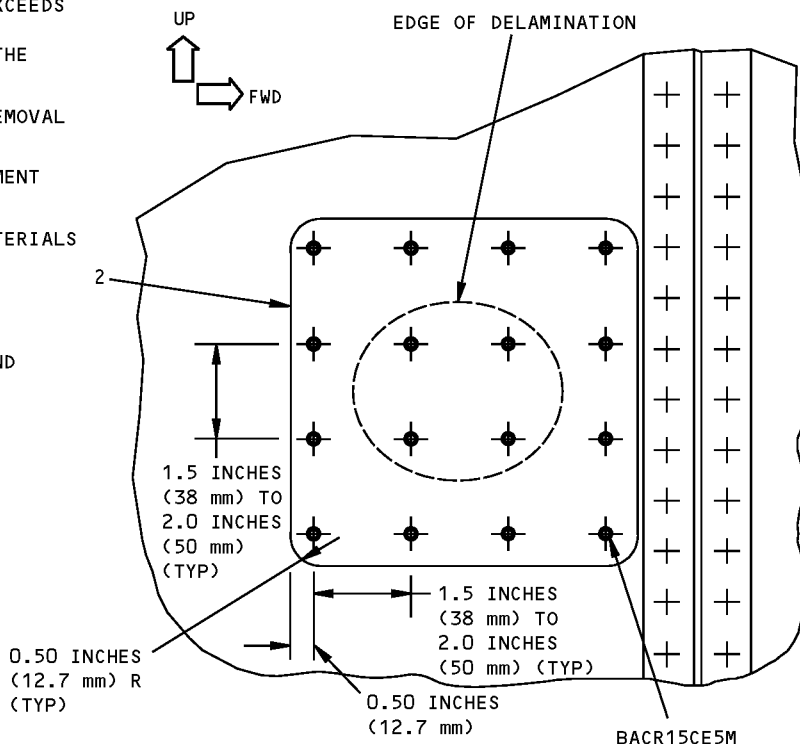
FASTENER SYMBOLS

REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
2	DOUBLER	1	0.020 301 CRES 1/2 HARD

NOTES

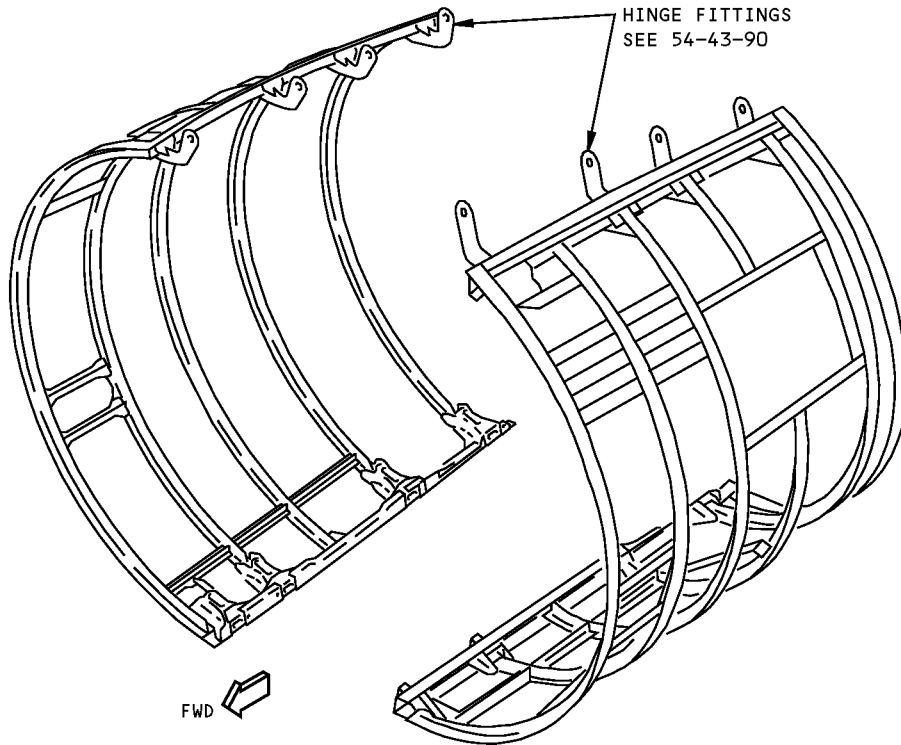
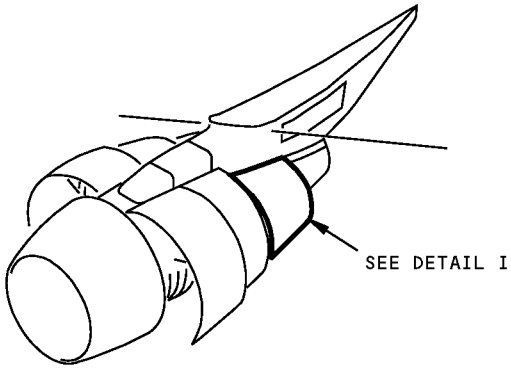
- REFER TO THE FOLLOWING WHEN USING THESE REPAIRS:
 - AMM 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30 FOR SOURCE OF REPAIR MATERIALS
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - SRM 51-40-08 FOR COUNTERSINKING AND USE OF COUNTERSINK REPAIR WASHERS



**Fireshield Delamination Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL STRUCTURE - PW4000 ENGINE



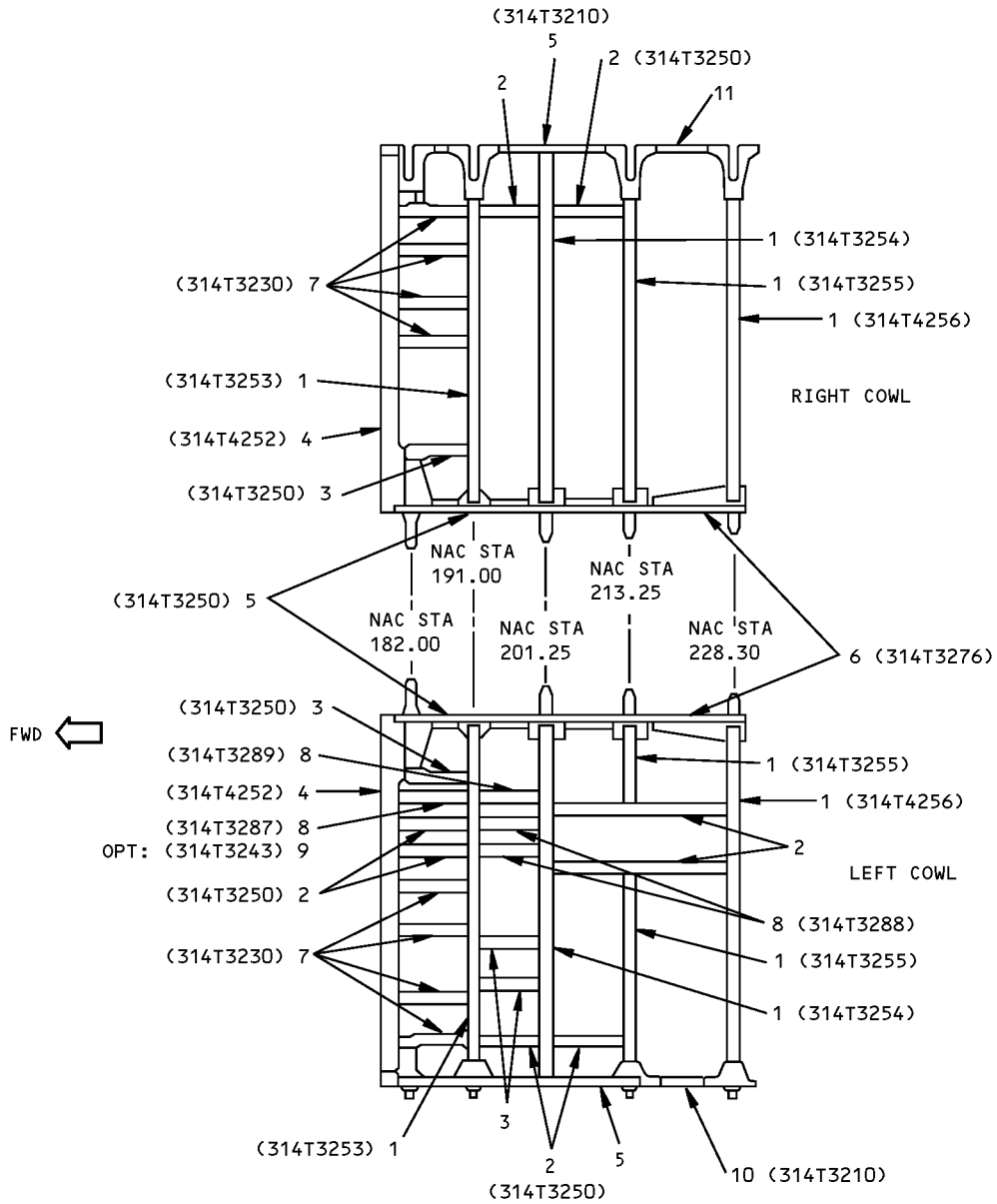
SEE DETAIL II FOR FLAT
PATTERN - COWL STRUCTURE

DETAIL I

**Core Cowl Structure Identification - PW4000 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T4210



DETAIL II

LIST OF
MATL

**Core Cowl Structure Identification - PW4000 Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
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767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FRAME		BAC1506-3569 2219-T62	
2	INTERCOSTAL		AND10136-2407 2219-T62	
3	INTERCOSTAL		BAC1505-100547 2219-T62	
4	FRAME		BAC1505-101016 2219-T62	
5	LONGERON	0.071	CLAD 2219-T62	
6	LONGERON		FORGING 15-5 PH CRES HT TR 150-170 KSI	
7	LONGERON		BAC1506-2173 2024-T42	
8	INTERCOSTAL		FORGING 2219-T6	
9	INTERCOSTAL		EXTRUDED BAR 2211-T8511	
10	DOUBLER	0.250	PLATE 2219-T62	
11	DOUBLER	0.375	PLATE 2219-T62	

LIST OF MATERIALS FOR DETAIL II

Core Cowl Structure Identification - PW4000 Engine
Figure 1 (Sheet 3 of 3)

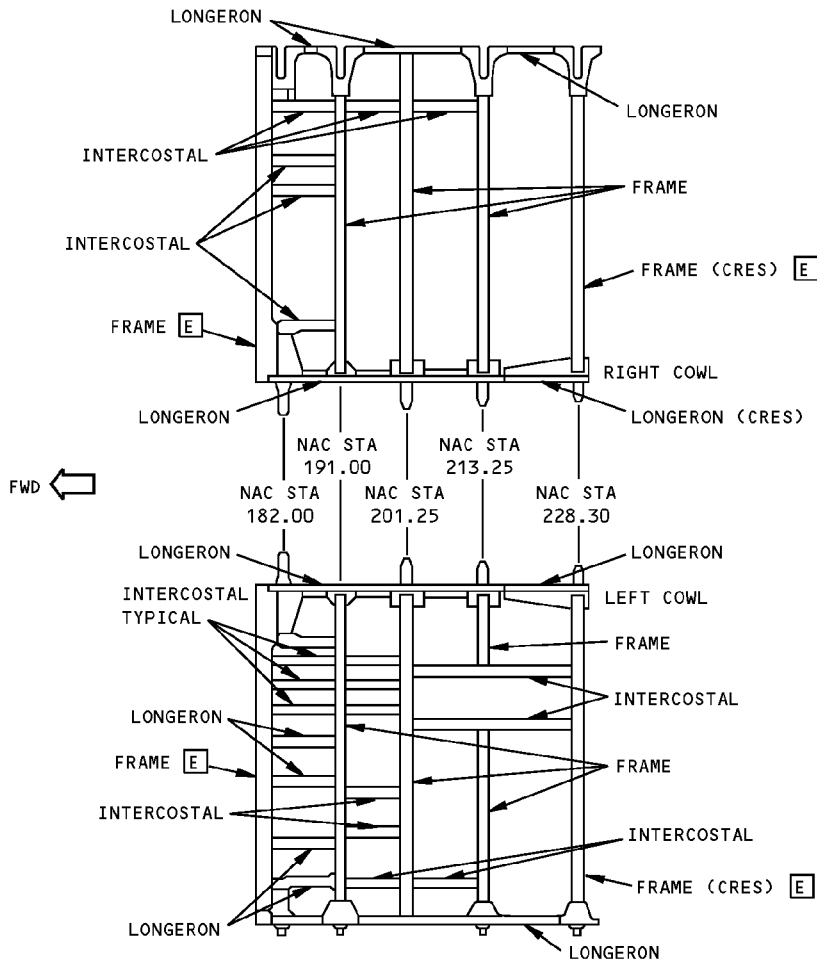
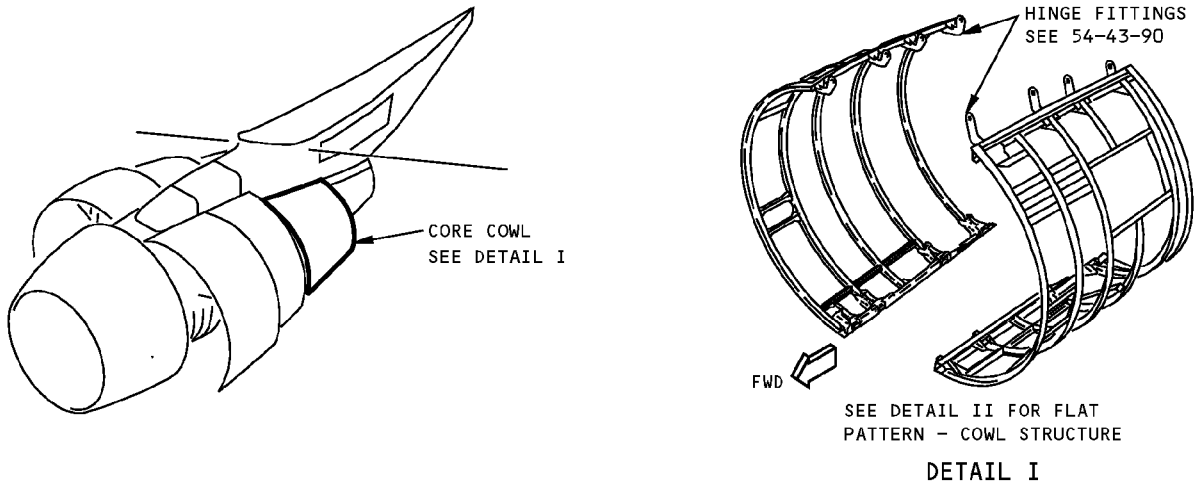
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54-43-02

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL STRUCTURE - PW4000 ENGINE



MATERIAL: ALUMINUM (EXCEPT AS NOTED)

DETAIL II

**Allowable Damage - Core Cowl Structure - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

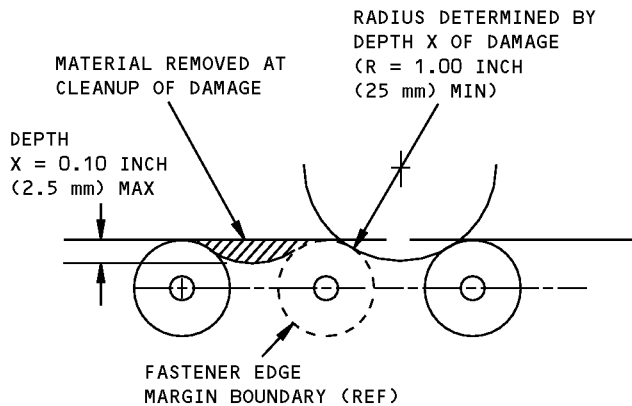
**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FRAMES	A	B	C E	D E
LONGERONS	A	B	C	NOT ALLOWED
INTERCOSTALS	A	B	C	D

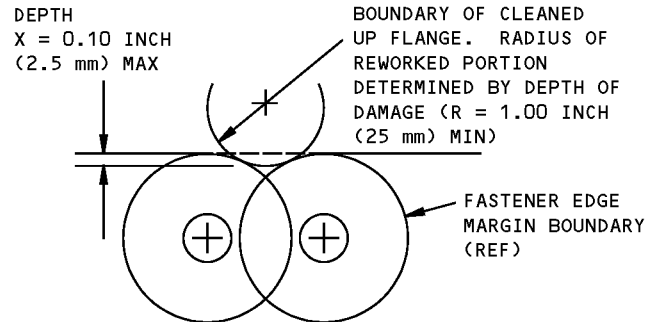
NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS III AND VII
- B** REMOVE DAMAGE PER DETAILS III,V,VI AND VII

- C** DENTS ARE ALLOWED ON FREE FLANGE AND WEB ONLY. SEE DETAIL IV
- D** CLEAN OUT DAMAGE UP TO 0.19 INCH (5 mm) MAX DIA AND NOT CLOSER THAN 4D TO FASTENER HOLE, OR 2D +0.05 TO MATERIAL EDGE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BAC5710, TYPE 51 (DESOTO HI-TEMP) PRIMER. ALL OTHER HOLES TO BE REPAIRED. DAMAGE ALLOWED ON FREE FLANGE AND WEB ONLY
- E** DENTS, HOLES, AND PUNCTURES ARE NOT ALLOWED FOR FRAMES AT NAC STA 182.0 AND NAC STA 228.3



DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS DO NOT OVERLAP

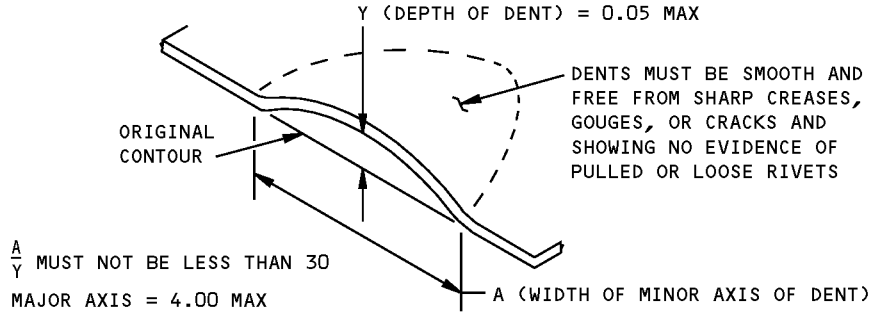


DAMAGE CLEANUP OF EDGES WHERE
FASTENER EDGE MARGINS OVERLAP

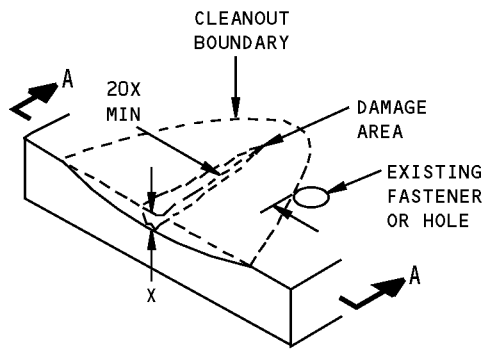
DETAIL III

**Allowable Damage - Core Cowl Structure - PW4000 Engine
Figure 101 (Sheet 2 of 3)**

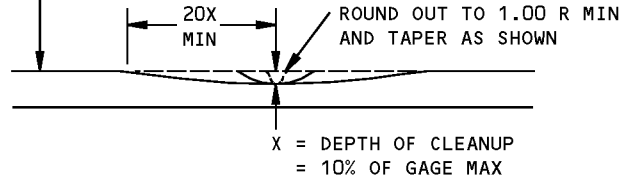
STRUCTURAL REPAIR MANUAL



**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**

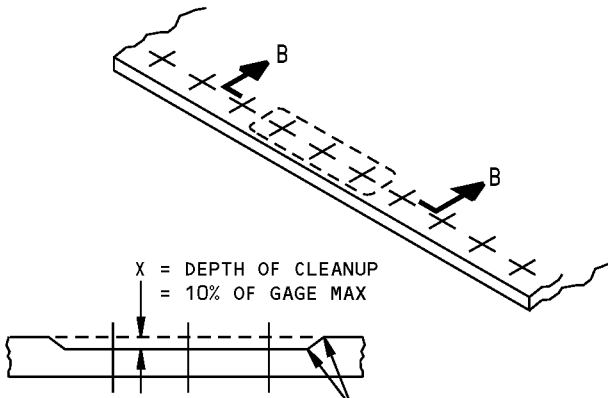


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



SECTION A-A

**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL V**

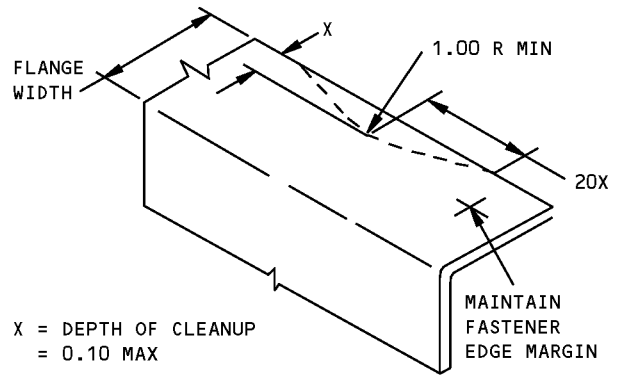


SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

CORROSION CLEANUP

DETAIL VI



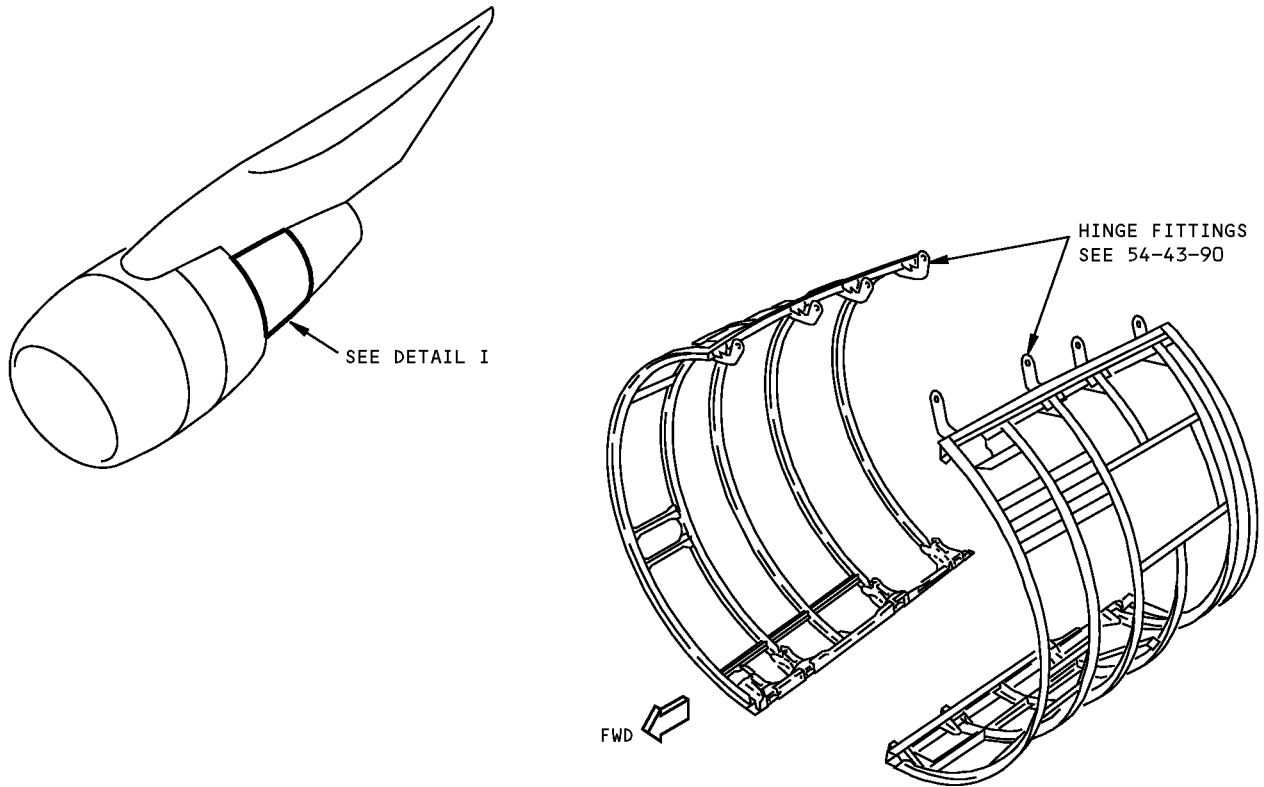
REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE

DETAIL VII

**Allowable Damage - Core Cowl Structure - PW4000 Engine
Figure 101 (Sheet 3 of 3)**

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL STRUCTURE - PW4000 ENGINE



SEE DETAIL II FOR FLAT PATTERN - COWL STRUCTURE
DETAIL I

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL

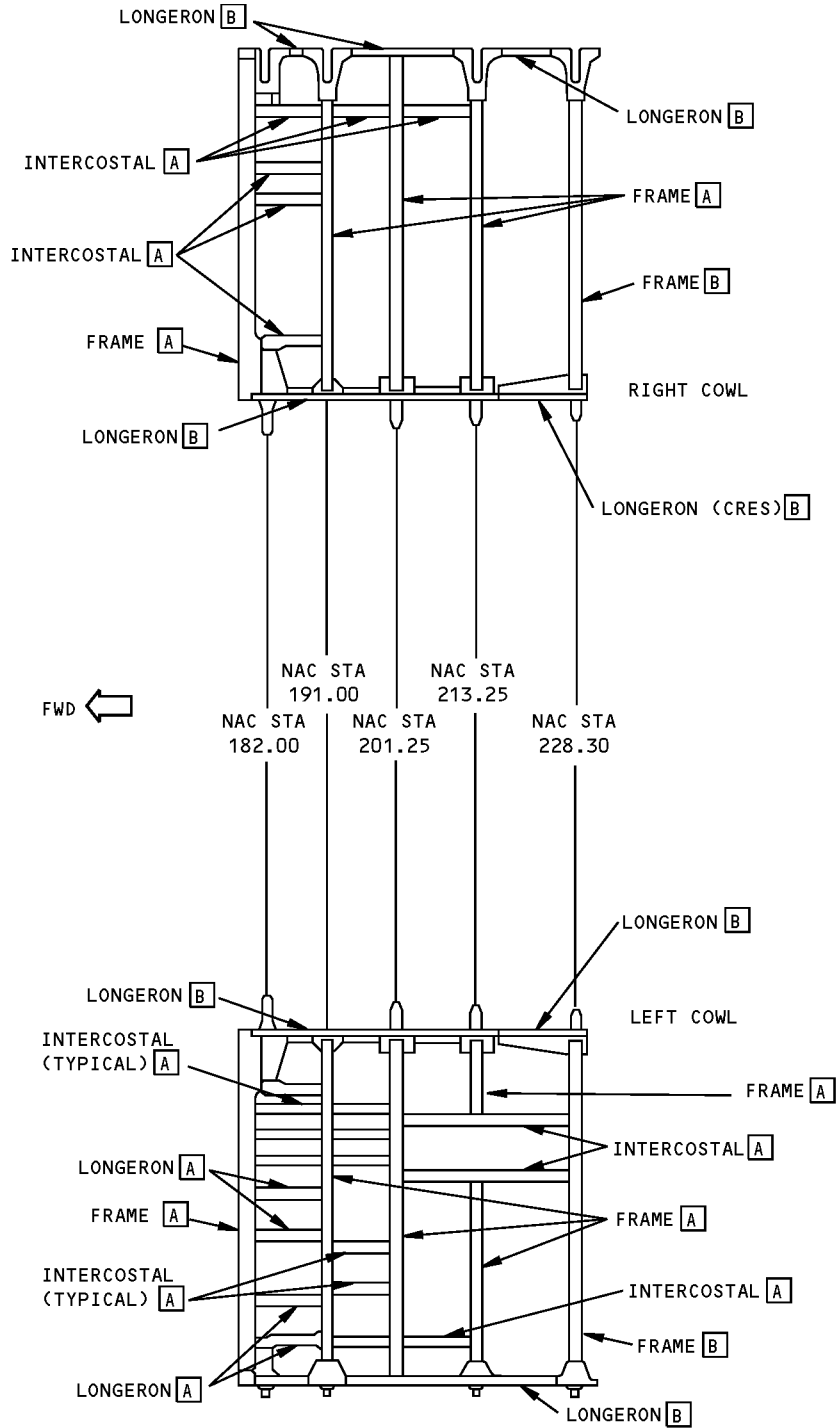
A USE 51-70-12 REPAIR PROCEDURES FOR EXTRUDED SECTION REPAIRS. SUBSTITUTE BAC 5710, TYPE 51 (DE SOTO HI-TEMP) PRIMER FOR THE FOLLOWING APPLICATIONS:

- PRIMING OF ALL REPAIR PARTS, RAW EDGES, AND REWORKED SURFACES OF ORIGINAL STRUCTURE
- FAY SURFACE SEALING
- WET INSTALLATION OF FASTENERS

B NO REPAIRS APPLICABLE. REPAIRS WILL BE BASED ON SERVICE EXPERIENCE.

Core Cowl Structure Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM (EXCEPT AS NOTED)

DETAIL II

**Core Cowl Structure Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

D634T210

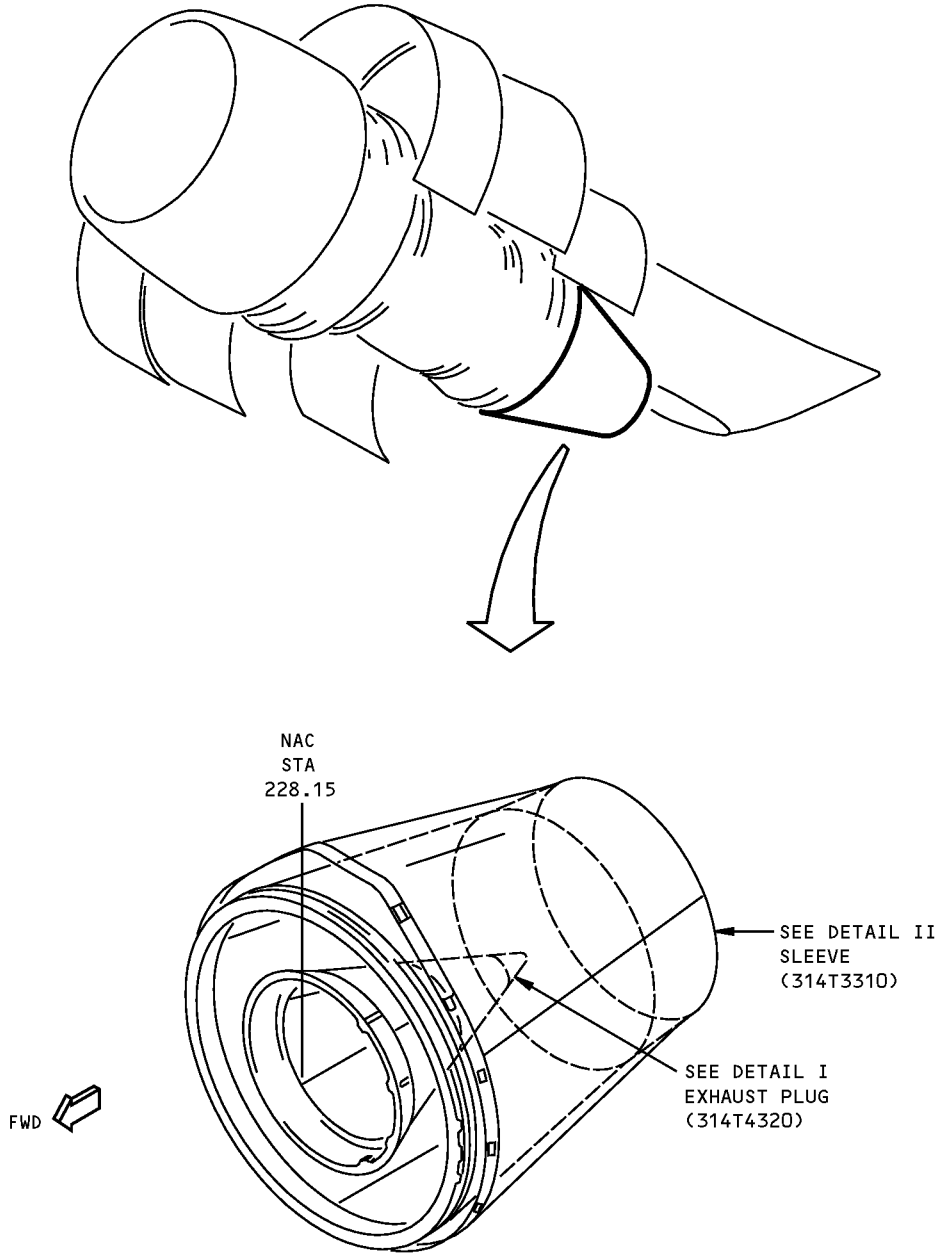
54-43-02

REPAIR 1
Page 202
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - PRIMARY EXHAUST - PW4000 ENGINE

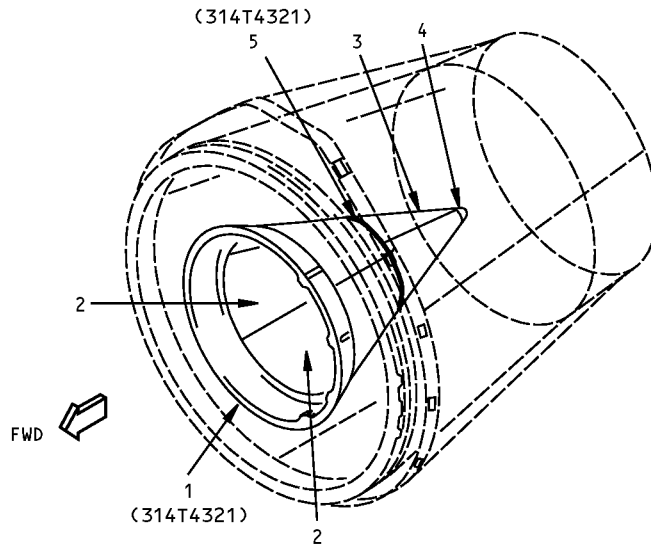
REF DWG
333T4000



**Primary Exhaust Identification - PW4000 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T4320



**EXHAUST PLUG
DETAIL I**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FWD RING		EXTRUSION OR BAR PH15-7MO CRES PER AMS 5657 COND A	
2	PANEL		PH15-7MO CRES HONEYCOMB TRE3300-1A-3/8C-15-7/15-7PX 2020-15-7/50/037	
3	CONE	0.050	PH15-7MO CRES PER AMS 5520 COND A	
4	END CAP	0.050	PH15-7MO CRES PER AMS 5520 COND A	
5	AFT RING		BAR STOCK PH15-7MO CRES PER AMS 5657 COND A	

LIST OF MATERIALS FOR DETAIL I

**Primary Exhaust Identification - PW4000 Engine
Figure 1 (Sheet 2 of 3)**

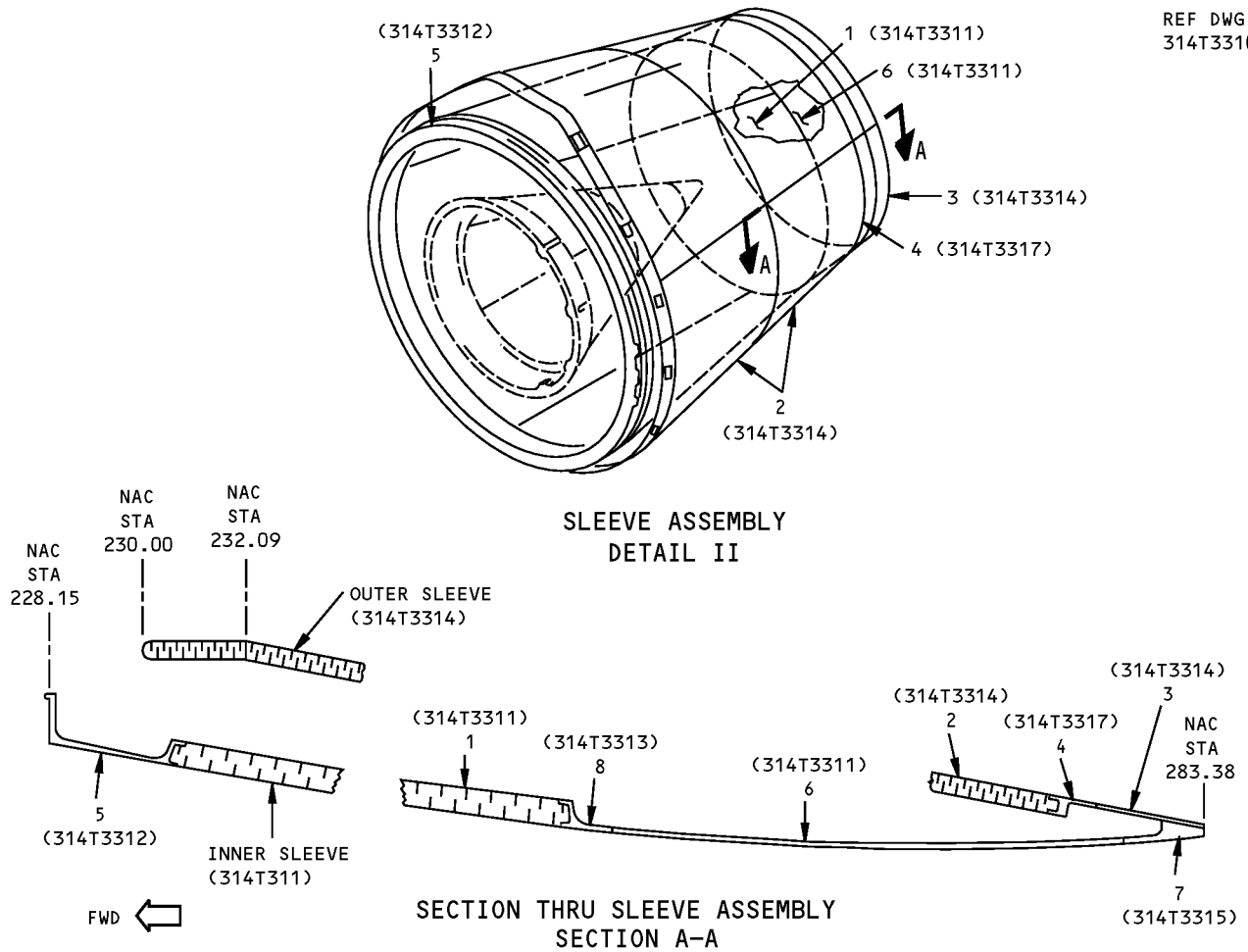
IDENTIFICATION 1
Page 2
Apr 01/2005

54-43-30

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
314T3310



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL		TRE3300-1A-3/8C-15-7/15 -7PX/2020-15-7/50/041	
2	PANEL		TRE3200-1A-3/8C-15-7/15 -7/1818-15-7/30/025	
3	AFT SKIN	0.075	PH15-7MO CRES COND A PER AMS 5520	
4	AFT RING	0.375	BAR PH15-7MO CRES COND A PER AMS 5657	
5	FWD RING		EXTRUSION PH15-7MO CRES COND A PER AMS 5657	
6	NOZZLE	0.050	PH15-7MO CRES COND A PER AMS 5520	
7	ATTACHMENT MEMBER	0.375	PH15-7MO CRES COND A PER AMS 5657	
8	AFT RING	0.500	PH15-7MO CRES COND A PER AMS 5657	

LIST OF MATERIALS FOR DETAIL II

**Primary Exhaust Identification - PW4000 Engine
Figure 1 (Sheet 3 of 3)**

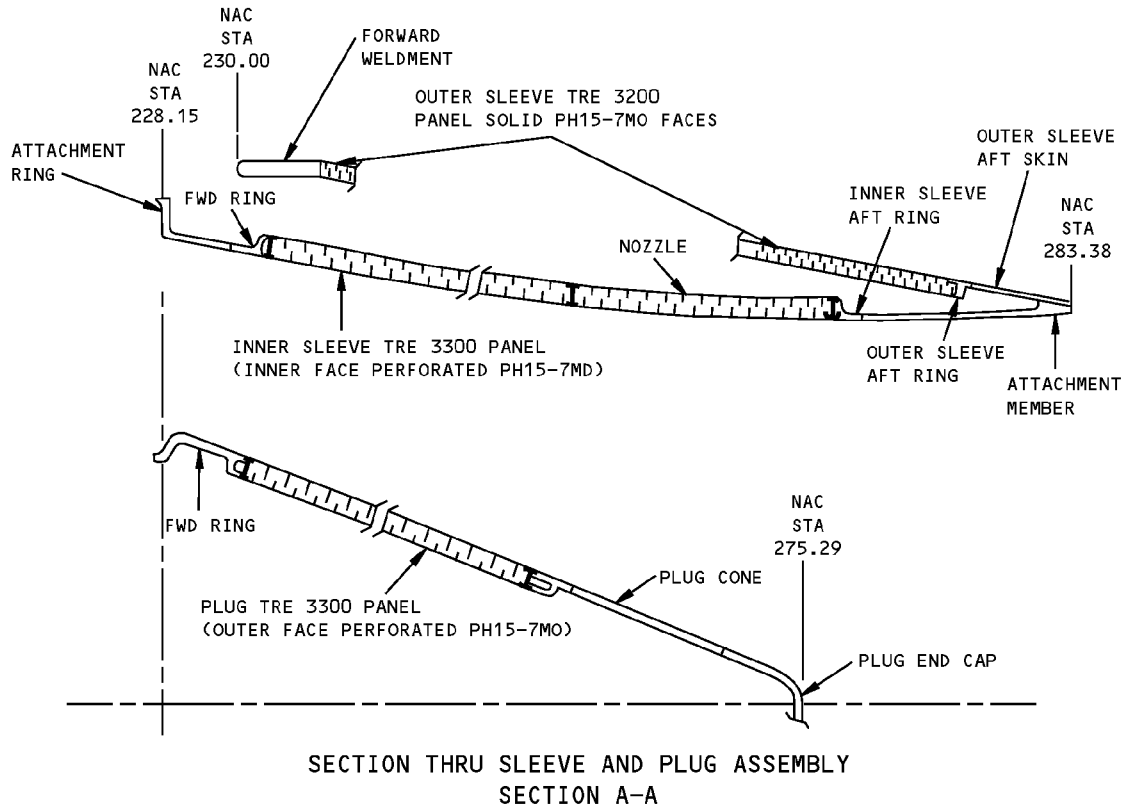
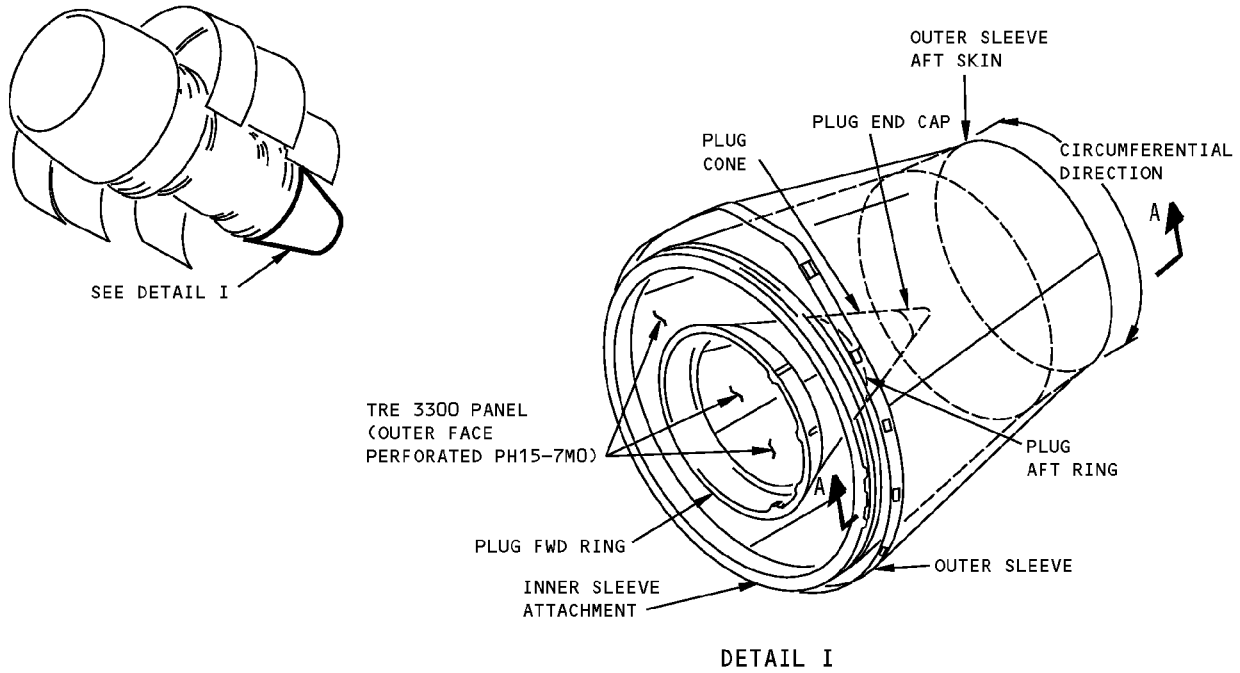
IDENTIFICATION 1
Page 3
Apr 01/2005

54-43-30

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - PRIMARY EXHAUST - PW4000 ENGINE



**Allowable Damage - Primary Exhaust - PW4000 Engine
Figure 101 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
PLUG FWD RING	A	B	NOT PERMITTED	NOT PERMITTED	---
PLUG AFT RING	A	B	NOT PERMITTED	NOT PERMITTED	---
PLUG CONE	NOT PERMITTED	G	C	E	---
PLUG END CAP	NOT PERMITTED	G	C	E	---
INNER SLEEVE NOZZLE	NOT PERMITTED	G	C	E	---
INNER SLEEVE ATTACHMENT MEMBER	A	B	C	E	---
INNER SLEEVE AFT RING	NOT PERMITTED	B	NOT PERMITTED	NOT PERMITTED	---
INNER SLEEVE FWD RING	A	B	NOT PERMITTED	NOT PERMITTED	---
OUTER SLEEVE AFT SKIN	NOT PERMITTED	G	C	E	---
OUTER SLEEVE AFT RING	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	NOT PERMITTED	---
TRE3300, PH15-7MO PERFORATED/SOLID FACE SANDWICH PANEL	NOT PERMITTED	NOT PERMITTED	C	E	F
TRE3200, PH15-7MO SOLID FACE SANDWICH PANEL	D H	J	I	E	F

NOTES

- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

- A CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAILS II AND IV.
- B NICKS AND GOUGES ON EDGES MUST BE REMOVED AS SHOWN IN DETAILS III AND IV.
- C DENTS ARE PERMITTED IF:
 - NOT DEEPER THAN 0.05 INCH
 - DENT WIDTH IS AT LEAST 10 TIMES THE DENT DEPTH, BUT NOT MORE THAN 1.0 INCH IN ANY DIRECTION
 - THE DENT IS NOT CLOSER THAN 2.00 INCHES TO ANY PANEL EDGE
 - THERE ARE NOT ANY CRACKS, SHARP CREASES, OR WRINKLES CAUSED BY A DENT
 - DELAMINATION AND HOLES ARE NOT MORE THAN THE LIMITS SPECIFIED IN THE ALLOWABLE DAMAGE TABLE

- D EDGE CRACKS ARE PERMITTED AS SHOWN IN DETAILS II AND IV.
- E HOLES AND PUNCTURES WHICH DO NOT PENETRATE THROUGH MORE THAN ONE SKIN OF A HONEYCOMB PANEL ARE PERMITTED UP TO 0.25 INCH DIAMETER MAXIMUM. INSPECT DAMAGE EVERY "A" CHECK. SHARP OR JAGGED EDGES AROUND THE HOLES SHOULD BE SMOOTHED OUT AND ANY SLIT TYPE PUNCTURES SHOULD BE MADE ROUND OR OVAL. THE NUMBER OF UNREPAIRED HOLES AND PUNCTURES MUST NOT BE MORE THAN FIVE IN ANY SINGLE HONEYCOMB PANEL. MINIMUM DISTANCE PERMITTED BETWEEN AN UNREPAIRED HOLE OR PUNCTURE AND ANOTHER HOLE OR PANEL EDGE IS 2.0 INCHES.
- F INNER OR OUTER SKIN-TO-CORE DELAMINATIONS (OR VOIDS) WHICH ARE CONTAINED WITHIN A CIRCLE NOT LARGER THAN 1.00 INCH IN DIAMETER MAY REMAIN, PROVIDED THAT THERE IS A MINIMUM OF 1.00 INCH OF ACCEPTABLE CORE TO THE NEXT DEFECT OR EDGE MEMBER AND THAT THERE ARE NO INCLUDED CRACKS OR THERMAL BUCKLES.
- G SURFACE NICKS AND GOUGES UP TO 0.10 INCH IN LENGTH OR DIAMETER ARE PERMITTED. CLEAN UP DAMAGE AS SHOWN IN DETAIL III.

Allowable Damage - Primary Exhaust - PW4000 Engine
Figure 101 (Sheet 2 of 5)

STRUCTURAL REPAIR MANUAL

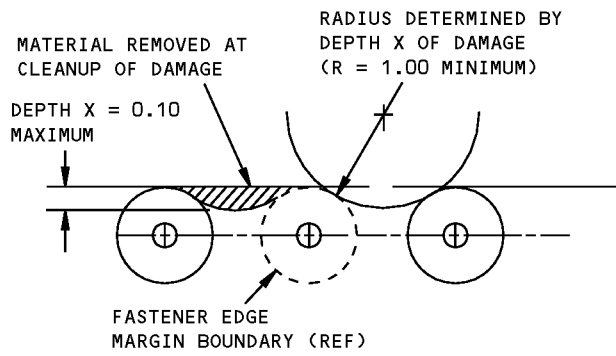
- H** CRACKS ARE PERMITTED IF:
- THE MAXIMUM LENGTH OF EACH CRACK IS 6.0 INCHES.
 - CRACKS LONGER THAN 6.0 INCHES AND LESS THAN 8.0 INCHES ARE PERMITTED FOR A MAXIMUM OF 300 FLIGHT HOURS.
 - CRACKS LONGER THAN 8.0 INCHES AND LESS THAN 10.0 INCHES ARE PERMITTED FOR A MAXIMUM OF 150 FLIGHT HOURS.
 - THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IS LESS THAN 24.0 INCHES.
 - THE TOTAL LENGTH OF ALL CRACKS IN EACH FACESHEET IN THE CIRCUMFERENTIAL DIRECTION IS LESS THAN 3.5 INCHES FOR EACH QUADRANT.
 - THE DISTANCE BETWEEN A CRACK AND AN EDGE IS A MINIMUM OF ONE HALF THE LENGTH OF THE LONGEST CRACK BUT A MINIMUM OF 1.0 INCH.
 - CRACKS ALONG THE FORWARD EDGE ARE PERMITTED AS SHOWN IN DETAIL V. MAKE AN INSPECTION OF THE DAMAGE EACH 10 FLIGHT CYCLES.
 - THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON ONE OF THE TWO FACESHEETS IS A MINIMUM OF TWO TIMES THE LENGTH OF THE LONGEST CRACK. THIS MINIMUM DISTANCE MUST BE 1.0 INCH OR MORE.

STOP DRILL THE ENDS OF THE CRACK TO A DIAMETER OF 0.125 INCH AS GIVEN IN SRM 51-10-00. REPAIR THE DAMAGE ON OR BEFORE THE SECOND "A" CHECK.

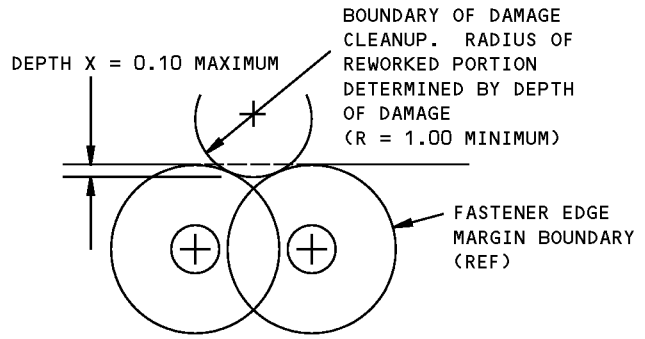
- I** DENTS THAT ARE WITHIN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED IF:
- THERE ARE NO SKIN WRINKLES OR SKIN THAT IS PUSHED IN BECAUSE OF HEAT
 - THERE ARE NO SHARP EDGES BECAUSE OF SKIN WAVINESS.
 - THEY ARE A MINIMUM OF 2.0 INCHES AWAY FROM THE PANEL EDGE.
 - DENTS ARE NO MORE THAN 0.10 INCH DEEP
- DENTS THAT ARE MORE THAN THE LIMITS GIVEN IN DETAIL VI ARE PERMITTED FOR CONTINUED OPERATION IF:
- THE DENTS HAVE NO DISBONDS, CRACKS, SHARP EDGES OR WRINKLES.
 - THE DENTS ARE NO MORE THAN 0.1 INCH DEEP ($Y \leq 0.1$)
 - NO DENTS ARE CLOSER THAN ONE DENT LENGTH TO THE EDGE OF THE PANEL.
 - THE DISTANCE BETWEEN ANY DENT AND ANY OTHER DAMAGE IS A MINIMUM OF TWO TIMES THE LENGTH OF THE DENT. THIS MINIMUM DISTANCE MUST BE 1.0 INCH OR MORE.
 - THE DENTS ARE INSPECTED AS SPECIFIED BELOW:
 - FOR DENTS WITH AN A/Y RATIO BETWEEN 6 AND 10 ($10 \geq A/Y \geq 6$) EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "C" CHECK.
 - FOR DENTS WITH AN A/Y RATIO LESS THAN 6 ($A/Y \leq 6$), EACH DENT MUST BE CHECKED FOR DISBOND AND VISUALLY INSPECTED EVERY "2A" CHECK.
- IF THE DENT HAS A CRACK, USE THE LIMITS FOR CRACKS
 - IF THE DENT HAS A HOLE OR PUNCTURE, USE THE LIMITS FOR HOLES AND PUNCTURES
- J** REMOVE DAMAGE FROM NICKS, GOUGES AND SCRATCHES AS SHOWN IN DETAIL III.

Allowable Damage - Primary Exhaust - PW4000 Engine
Figure 101 (Sheet 3 of 5)

STRUCTURAL REPAIR MANUAL

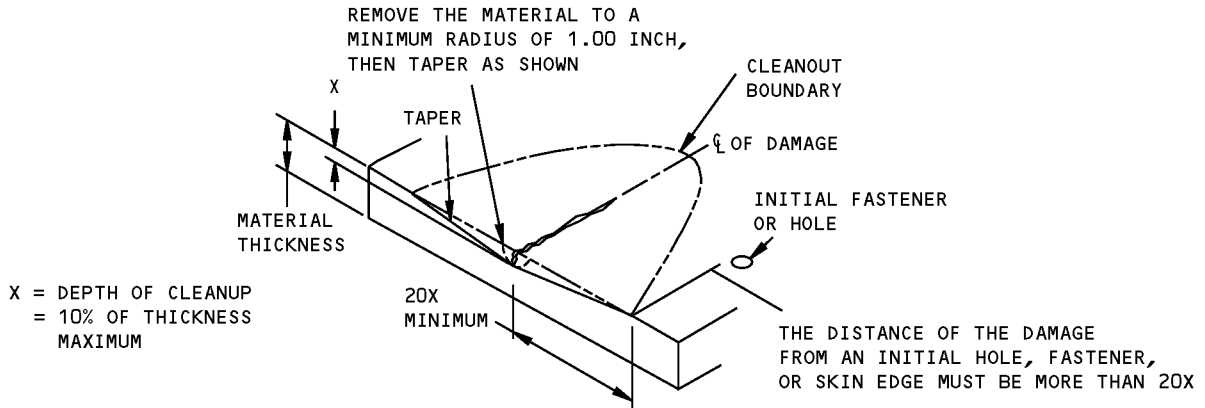


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

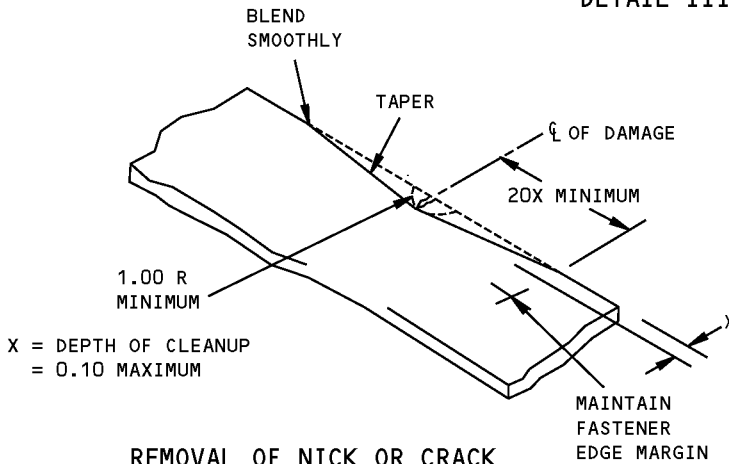


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

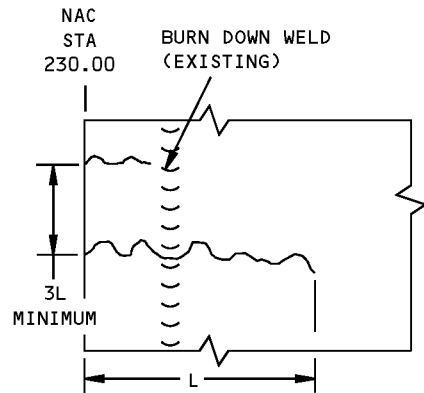
DETAIL II



REMOVAL OF NICK, GOUGE, AND SCRATCH DAMAGE ON A SURFACE
DETAIL III



REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL IV

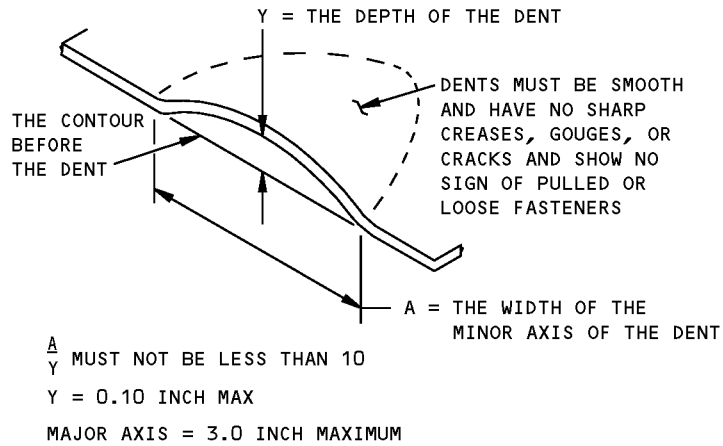


L = CRACK LENGTH = 5.0 MAXIMUM

DETAIL V

**Allowable Damage - Primary Exhaust - PW4000 Engine
Figure 101 (Sheet 4 of 5)**

767-300
STRUCTURAL REPAIR MANUAL

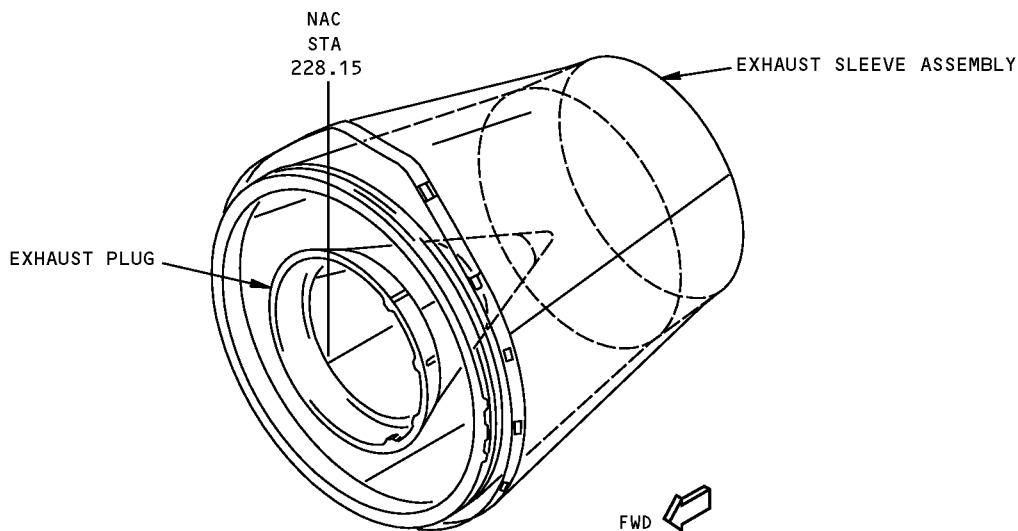
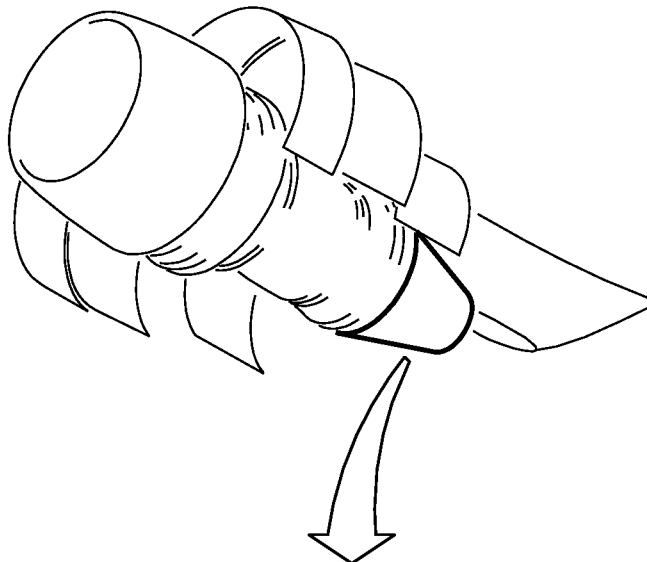


DENT DAMAGE PERMITTED
DETAIL VI

Allowable Damage - Primary Exhaust - PW4000 Engine
Figure 101 (Sheet 5 of 5)

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - PRIMARY EXHAUST SKIN - PW4000 ENGINE



NOTES

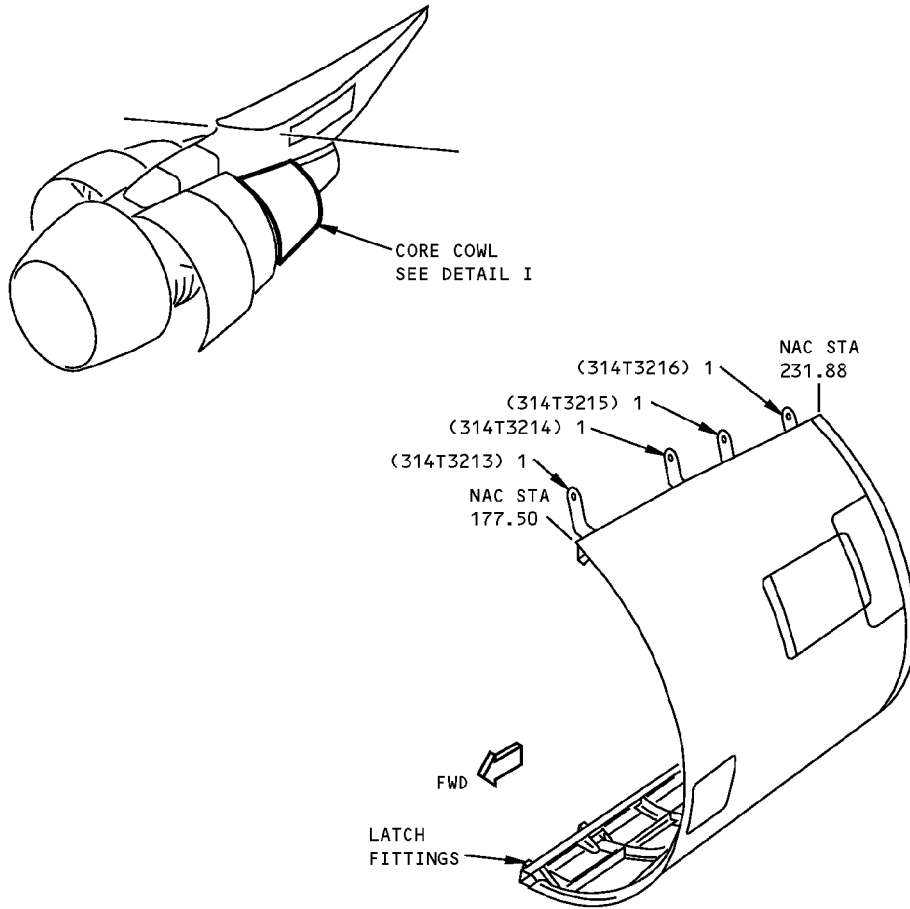
- REFER TO THE 767 COMPONENT MAINTENANCE MANUAL FOR THE FOLLOWING WELD REPAIRS:
78-11-06 FOR SLEEVE
78-11-15 FOR EXHAUST PLUG

Primary Exhaust Skin Repair - PW4000 Engine
Figure 201

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - CORE COWL ATTACHMENT FITTINGS - PW4000 ENGINE

REF DWG
314T4210



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR
DETAIL I

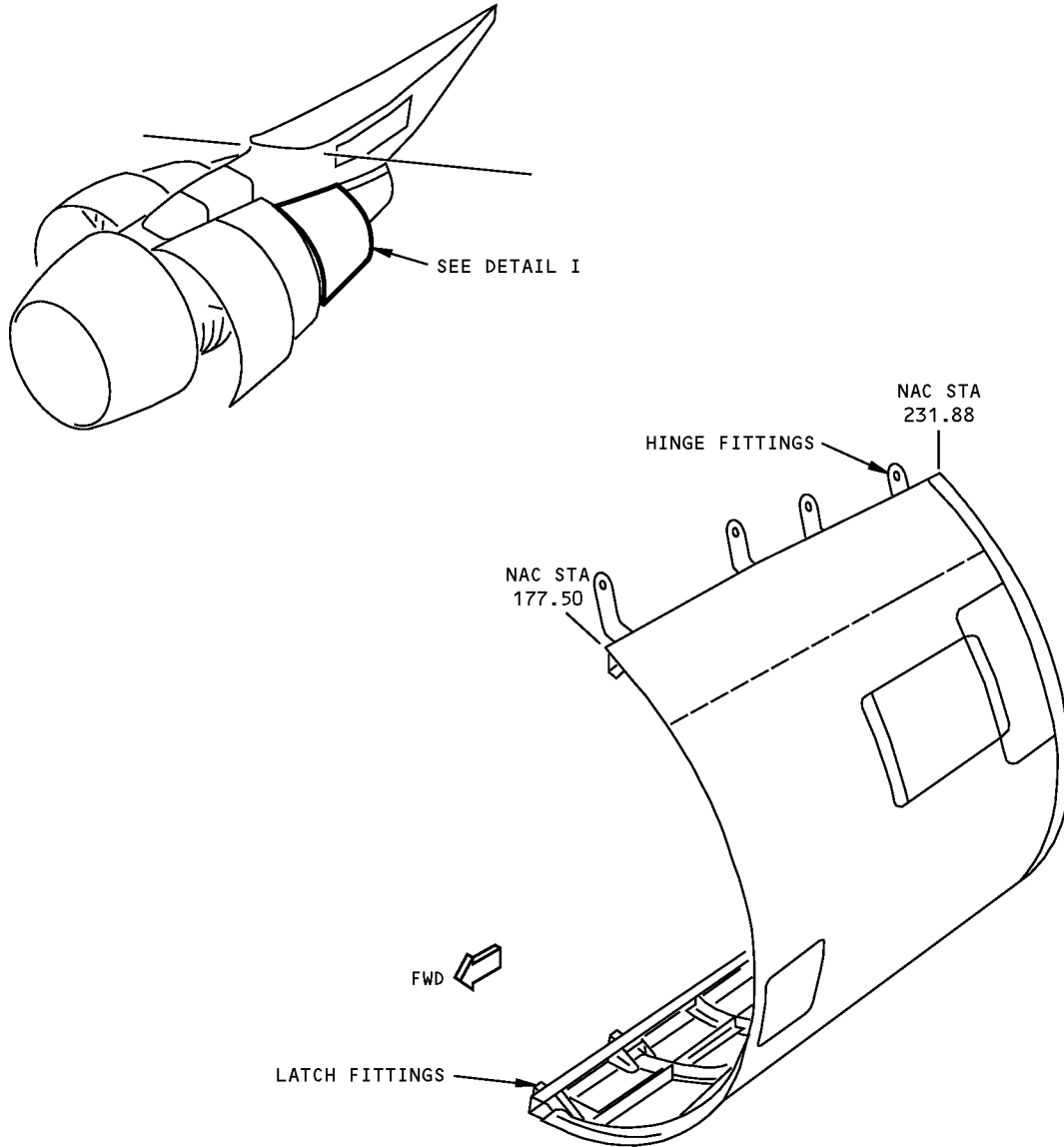
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE ASSY FITTING		6AL-4V TITANIUM FORGING	

LIST OF MATERIAL FOR DETAIL I

**Core Cowl Attachment Fitting Identification - PW4000 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - CORE COWL ATTACHMENT FITTINGS - PW4000 ENGINE



LEFT SIDE SHOWN
RIGHT SIDE SIMILAR

DETAIL I

**Allowable Damage - Core Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES
HINGE FITTINGS [C]	[A]	[B]	NOT ALLOWED	NOT ALLOWED
LATCH FITTINGS [C]	[A]	[B]		

ALLOWABLE DAMAGE

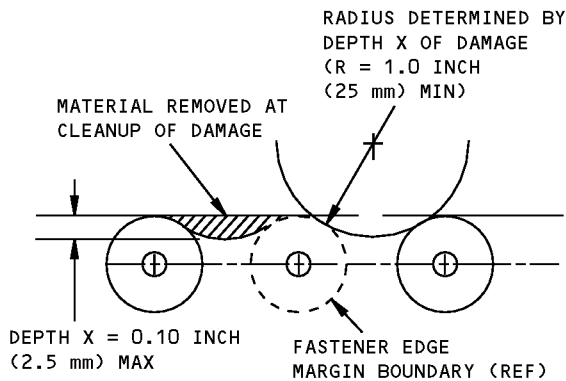
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- FOR INSPECTION AND REMOVAL OF DAMAGE, REFER TO SRM 51-10-02

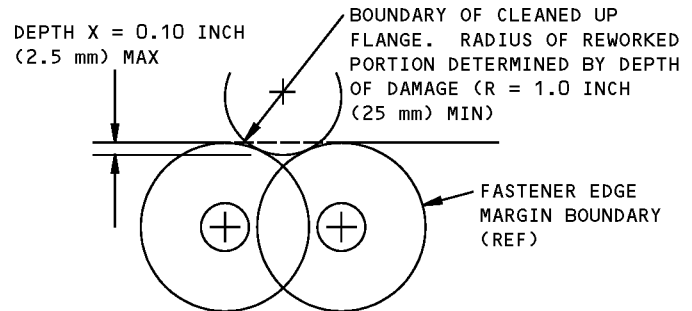
[B] FOR EDGE DAMAGE SEE DETAILS II AND V. FOR LUG DAMAGE SEE DETAIL IV FOR OTHER DAMAGE SEE DETAIL III. DAMAGE NOT ALLOWED IN VICINITY OF BUSHINGS

[A] CLEANUP EDGE CRACKS PER DETAILS II AND V. OTHER CRACKS NOT ALLOWED

[C] SHOT PEEN REWORKED AREAS PER 51-20-06



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

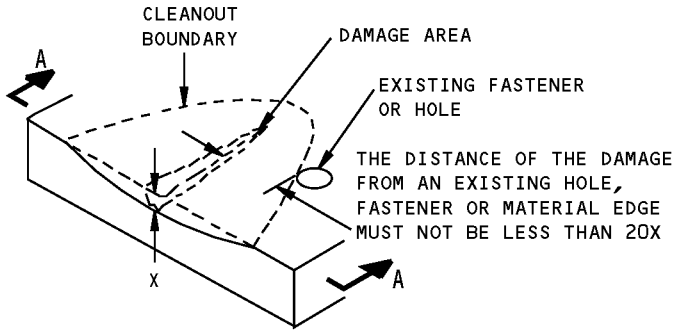


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

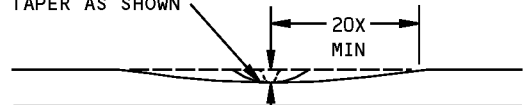
DETAIL II

**Allowable Damage - Core Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



ROUND OUT TO 1.00 R MIN
AND TAPER AS SHOWN



X = DEPTH OF CLEANUP
= 10% OF THICKNESS MAX

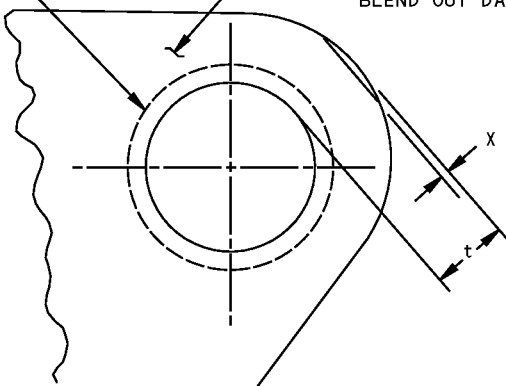
SECTION A-A

THE AREA REMOVED FOR CLEANUP MUST NOT EXCEED 10% OF THE CROSS SECTIONAL AREA

**REMOVAL OF NICK, GOUGE, CORROSION, AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**

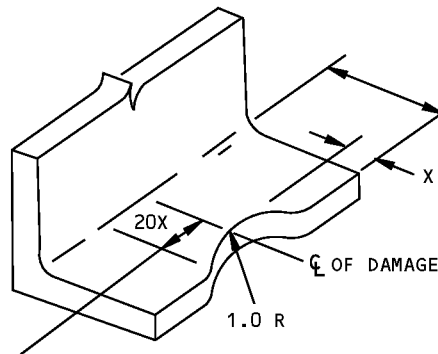
NO REWORK OR DAMAGE
ALLOWED UNDER BUSHING
FLANGE

0.01 = MAX DEPTH OF DAMAGE CLEANUP ON
ANY LUG SURFACE OTHER THAN EDGE.
BLEND OUT DAMAGE USING 1.0 R



X = DEPTH OF CLEANUP
= 0.02 MAX ON OUTER
EDGE BLEND OUT RADIUS 1.00 R

**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL IV**



FLANGE WIDTH

☉ OF DAMAGE

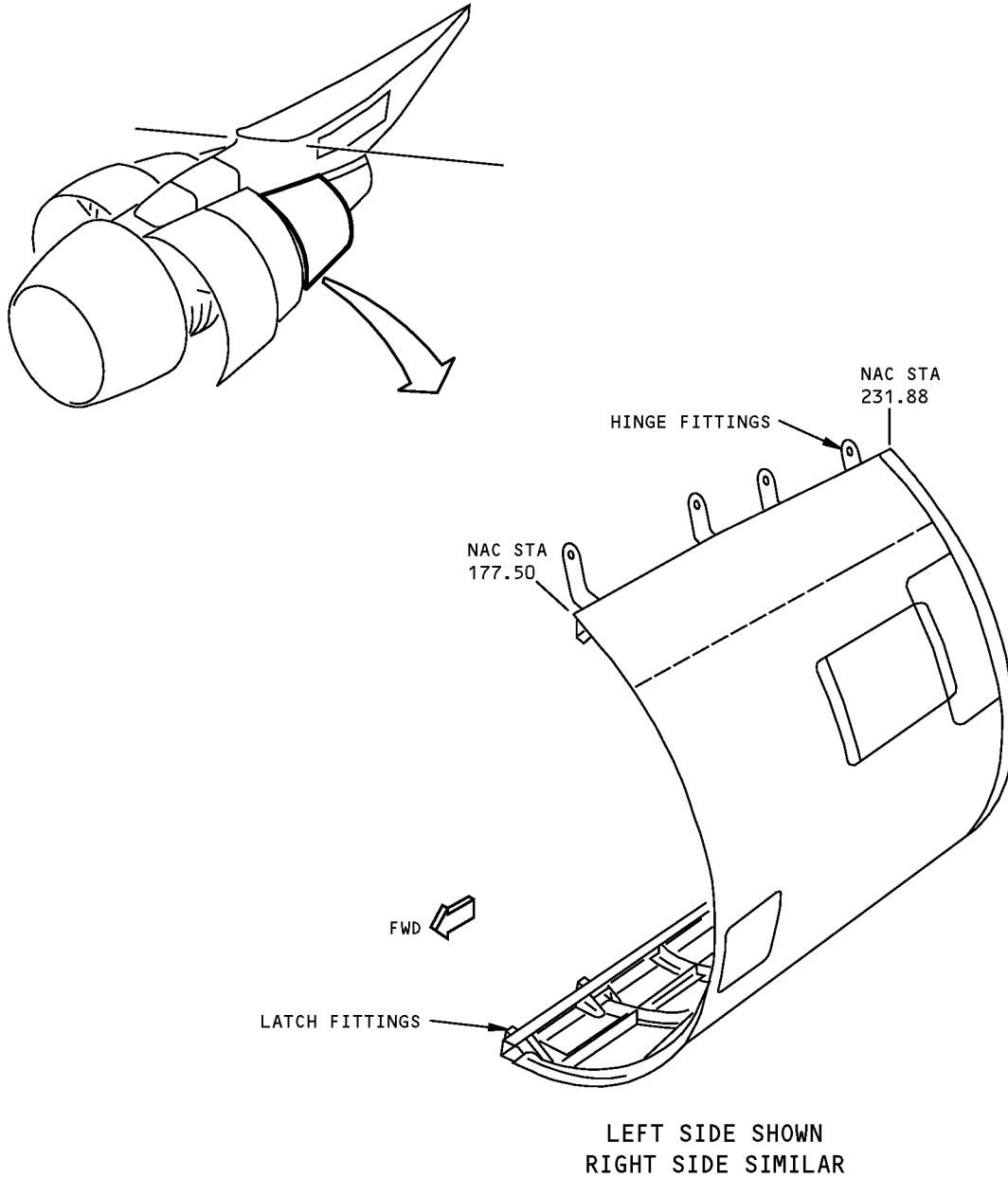
THE DISTANCE OF THE DAMAGE
FROM AN EXISTING HOLE, FASTENERS,
OTHER DAMAGE OR EDGE MUST NOT BE
LESS THAN 20X

**REMOVAL OF EDGE DAMAGE FROM
FREE FLANGE WITHOUT FASTENERS
DETAIL V**

**Allowable Damage - Core Cowl Attachment Fittings - PW4000 Engine
Figure 101 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - CORE COWL ATTACHMENT FITTINGS - PW4000 ENGINE



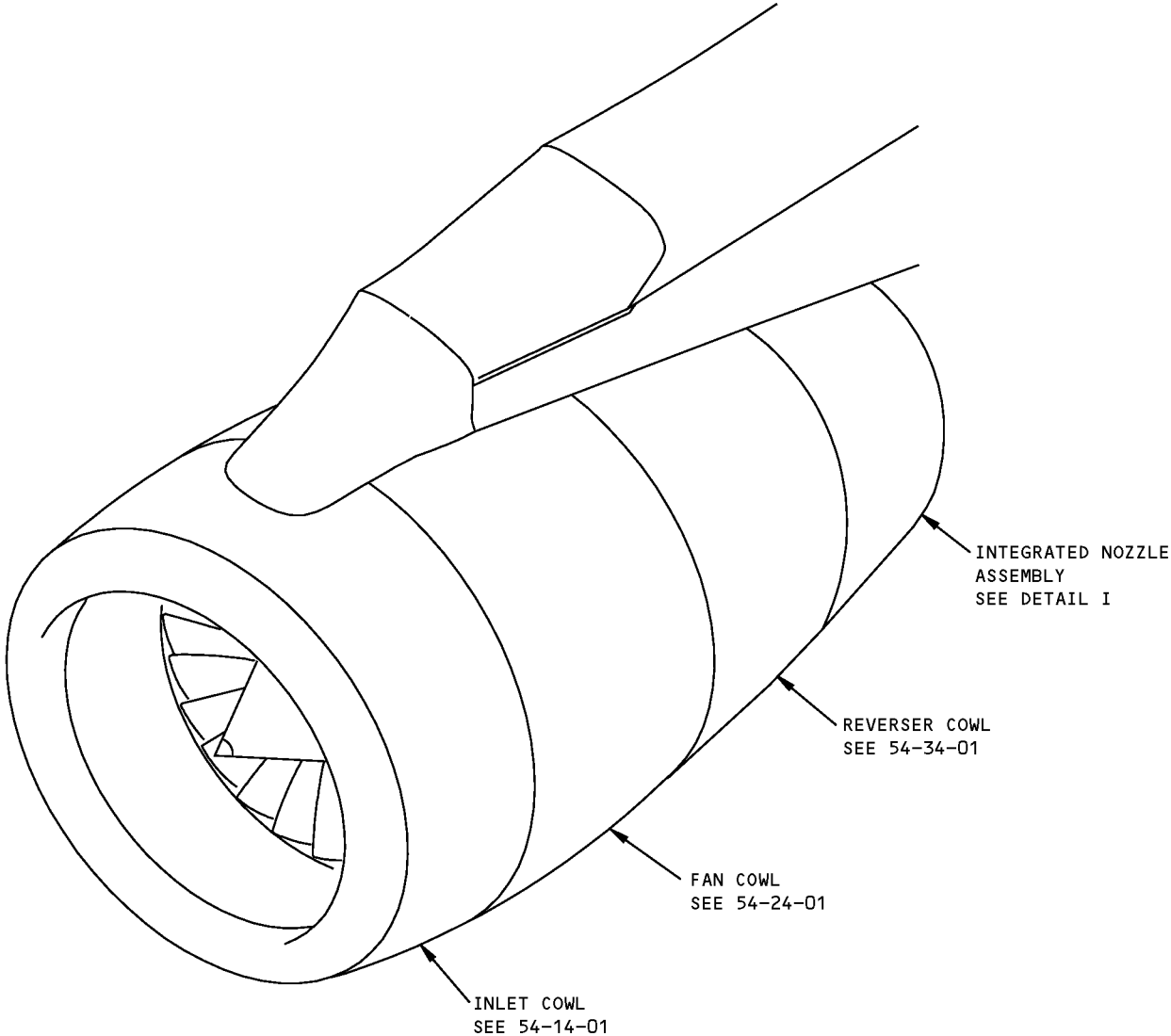
NOTES

- NO TYPICAL REPAIR TO FITTINGS AVAILABLE.
SPECIFIC REPAIRS TO FITTINGS WILL BE
PROVIDED BASED ON SERVICE EXPERIENCE

**Core Cowl Attachment Fitting Repair - PW4000 Engine
Figure 201**

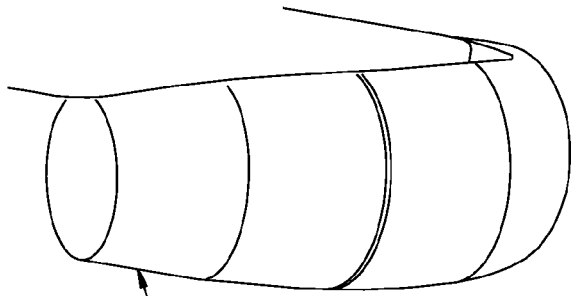
767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - INTEGRATED NOZZLE ASSEMBLY - RB211-524 ENGINE

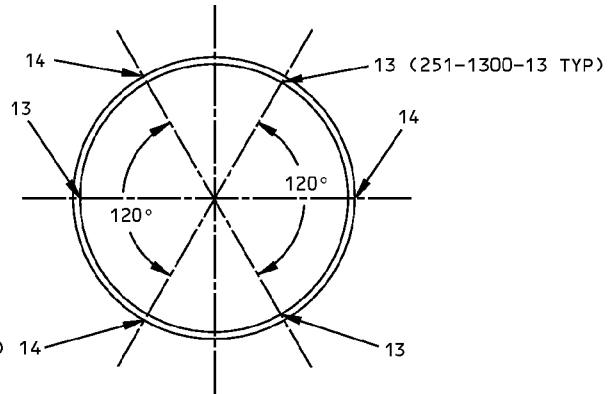


**Integrated Nozzle Assembly Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

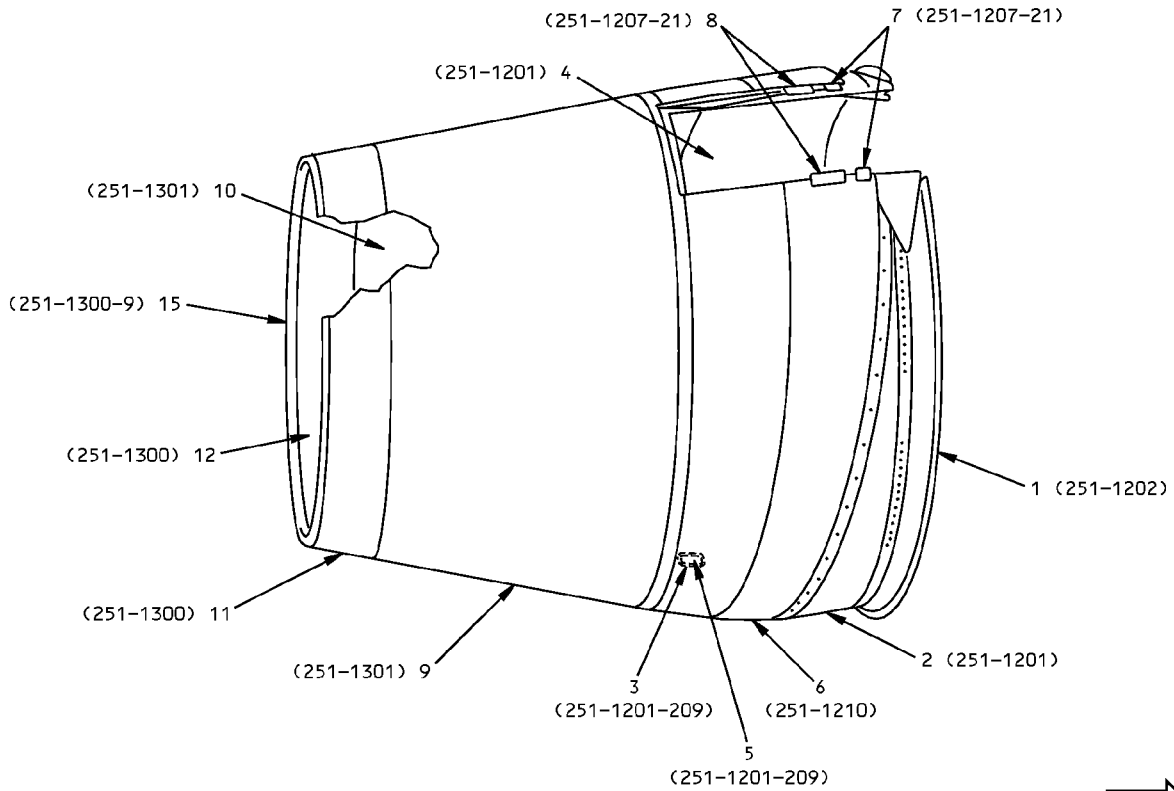


INTEGRATED
NOZZLE ASSEMBLY
SEE DETAIL I



⇒ FWD

REAR VIEW



DETAIL I



**Integrated Nozzle Assembly Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 3)**

767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD ATTACHMENT RING	0.080 THIN CROSS SECTION	2219-T1135 PER AMS 4163 ALUMINUM ALLOY EXTRUSION HEAT TREAT TO T8511	
2	FORWARD BOND PANEL (OUTER SKIN)	0.025	SHEET ALUMINUM ALLOY 2024-0 HEAT TREAT TO T42	
3	DOOR LAND (OUTER)	0.050	SHEET ALUMINUM ALLOY 2024-0	
4	FORWARD BOND PANEL (INNER SKIN)	0.028	PERFORATED SHEET ALUMINUM ALLOY 2024-0 HEAT TREAT TO T42	
5	DOOR LAND (INNER)	0.050	SHEET ALUMINUM ALLOY 2024-0	
6	RUB BLOCK FAIRING	0.050	ALUMINUM SHEET CLAD 2024-0 HEAT TREAT TO T42	
7	FORWARD SPLICE	0.050	ALUMINUM SHEET CLAD 2024-T3	
8	AFT SPLICE	0.050	ALUMINUM SHEET CLAD 2024-T3	
9	AFT LID BOND PANEL (OUTER SKIN)	0.020	Ti-6AL-4V	
10	AFT LID BOND PANEL (INNER SKIN)	0.020	PERFORATED Ti-6AL-4V	
11	EXIT NOZZLE (OUTER SKIN)	0.063	SHEET ALUMINUM ALLOY 2024-T3	
12	EXIT NOZZLE (INNER SKIN)	0.080	Ti-6AL-4V	
13	SPLICE INNER	0.050	SHEET ALUMINUM ALLOY 2024-T3	
14	SPLICE OUTER	0.050	Ti-6AL-4V	
15	EXIT NOZZLE TIP	0.150 THIN CROSS SECTION	2219-T3511 PER AMS 4163 ALUMINUM ALLOY EXTRUSION HEAT TREAT TO T8511	

LIST OF MATERIALS FOR DETAIL I

Integrated Nozzle Assembly Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 3)

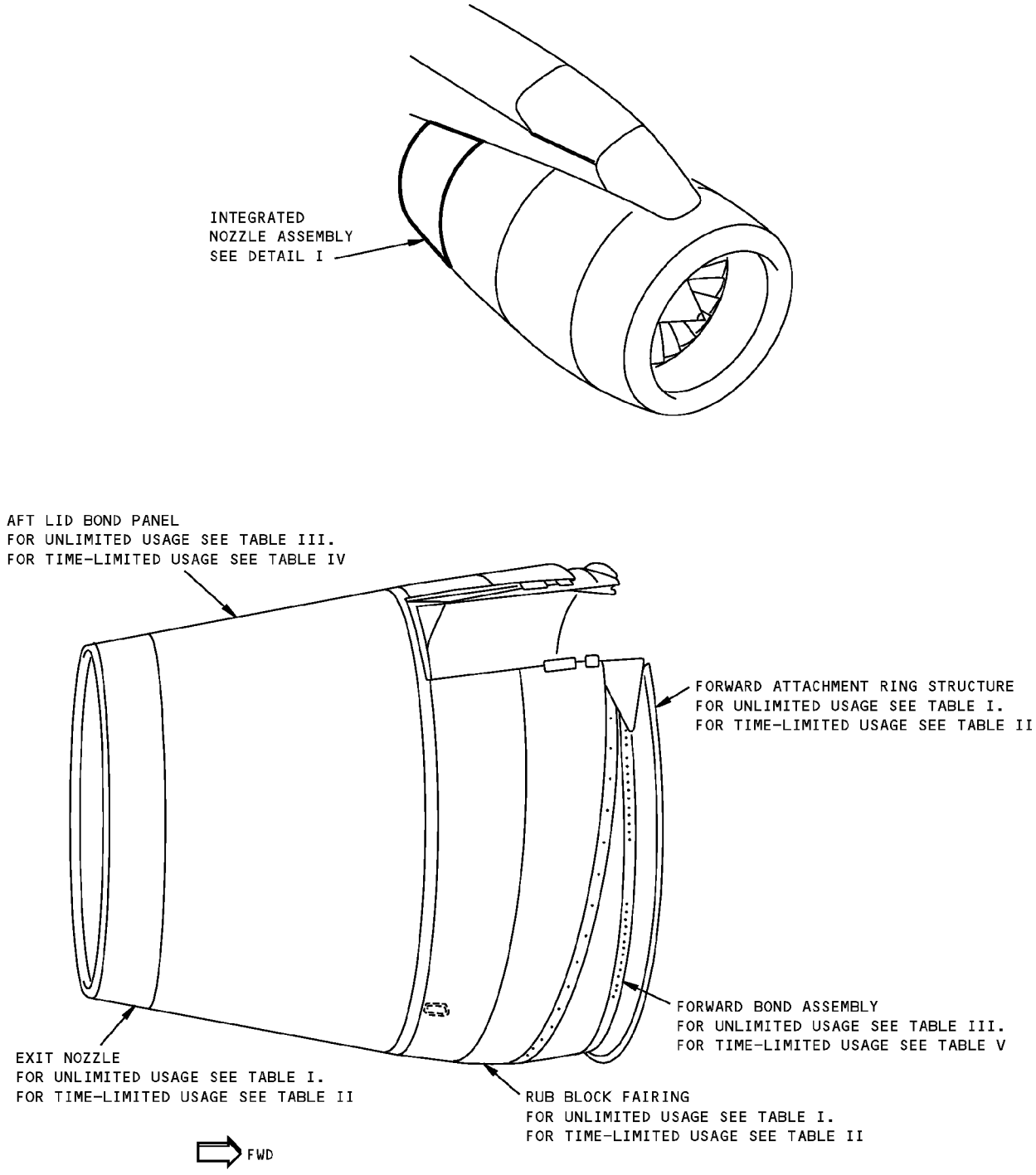
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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - INTEGRATED NOZZLE ASSEMBLY - RB211-524 ENGINES



DETAIL I

**Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 1 of 7)**

STRUCTURAL REPAIR MANUAL

NOTES

- ALL DIMENSIONS ARE GIVEN IN INCHES
- [A] GREATER THAN 25% MATERIAL THICKNESS REGARD AS CRACK
- [B] MUST BE STOP DRILLED BEFORE NEXT USE OR MUST END IN A HOLE
- [C] MUST BE MONITORED FOR GROWTH AT EACH 'A' CHECK UNTIL REPAIRED
- [D] MUST BE PERMANENTLY REPAIRED AT NEXT 'A' CHECK
- [E] HOLES IN FIRE BARRIER MUST BE REPAIRED BEFORE USE
- [F] HOLES MUST BE SEALED WITH SPEED TAPE OR EQUIVALENT
- [G] EXCEPT FOR NICKS
- [H] MINIMUM DISTANCE FROM REINFORCED AREA
- [I] TITANIUM 0.005 DEEP
- [J] OR 25% OF BASIC MATERIAL THICKNESS WHICHEVER IS GREATER
- [K] MAX DENT 25 SQ INS PER 1 SQ FT
- [L] NO HOLES OR CRACKS ALLOWED IN FORWARD ATTACHMENT RING
- [M] 1.0 FOR DENTS NOT MORE THAN THREE DENTS IN ANY ONE LINEAR 16 INCH DISTANCE
- [N] FOR DENTS: 1.5 TIMES THE LARGEST DENT DIAMETER
- [O] CRACK TERMINATES IN PERFORATION
- [P] HOLES NOT IN LINE THROUGH BOTH SKINS
- [Q] 4 TIMES MAXIMUM DIAMETER OF VOIDS
- [R] FOR A DENT WITH A TEAR:
 - IF THE WIDTH OF THE TEAR IS LESS THAN THE GIVEN LIMIT, USE THE LIMITS AND RELATED DATA GIVEN FOR A CRACK.
 - IF THE WIDTH OF THE TEAR GETS NEAR THE LIMIT GIVEN FOR ITS LENGTH, USE THE LIMITS AND RELATED DATA FOR A HOLE.
- [S] MUST BE STOP DRILLED OR END AT A HOLE
- [T] SHARP EDGES MUST BE BLENDED
- [U] ALUMINIUM FAYING SURFACES
15% AREA MAX FOR ANY ONE LINEAR INCH IN NON RIVETED JOINT. 0.12 MIN SOUND JOINT BETWEEN EDGES. 25% MAX AREA WITHIN TWO ADJACENT RIVETS IN RIVETED JOINT. DELAMINATION MUST NOT EXTEND FROM ONE EDGE TO THE OPPOSITE EDGE 1.50. [H] INSPECT DAMAGE AT EACH 'C' CHECK
- [V] TITANIUM FAYING SURFACES
15% AREA MAX FOR ANY ONE LINEAR INCH IN NON RIVETED JOINT. 0.12 MIN SOUND JOINT BETWEEN EDGES. 25% MAX AREA WITHIN TWO ADJACENT RIVETS IN RIVETED JOINT. DELAMINATION MUST NOT EXTEND FROM ONE EDGE TO THE OPPOSITE EDGE 1.50. [H] INSPECT DAMAGE AT EACH 'A' CHECK

**Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 2 of 7)**

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STRUCTURAL REPAIR MANUAL

PERMISSIBLE AREA	ALL STIFFENERS	ALL PANELS	SKIN AND STRUCTURE BETWEEN FASTENERS
NICK	0.010 DEEP I J 0.10 WIDE A	0.010 DEEP I J 0.10 WIDE. NO MINIMUM SEPARATION	0.010 DEEP I J 0.10 WIDE A
GOUGE/ SCRATCH	1.5 LONG 0.005 DEEP J A	10.0 LONG ANY DIRECTION 0.005 DEEP J A	0.005 DEEP J A 1.50 LONG
CRACKS A B L	NONE ALLOWED	NONE ALLOWED	TERMINATED BETWEEN 2 ADJACENT FASTENERS IN JOINT OF 10 OR MORE FASTENERS AND NOT WITHIN 5.0 OF STIFFENER TERMINATION POINTS
HOLES E F L	NONE ALLOWED	NONE ALLOWED	NONE ALLOWED
DENTS K	2.0 DIA MAX 0.120 DEEP MINIMUM RADIUS 0.25 1.0 H	5.0 DIA MAX 0.125 DEEP LOCATED 20 X SHEET THICKNESS FROM EDGE	NONE ALLOWED
DEFECTS G		MIN SEPARATON 2.0	MIN SEPARATION 10.0

UNLIMITED USAGE
TABLE I

Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 3 of 7)

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STRUCTURAL REPAIR MANUAL

PERMISSIBLE AREA	ALL PANELS	SKIN AND STRUCTURE BETWEEN FASTENERS	ALL STIFFENERS
CRACKS	LESS THAN 1.0 LONG <input type="checkbox"/> C BETWEEN 1.0 AND 3.0 <input type="checkbox"/> D	BETWEEN 3 ADJACENT FASTENERS IN JOINT OF 10 OR MORE FASTENERS	LESS THAN 1.0 IN BEND AREA LONG LESS THAN 25% OF FLANGE WIDTH
HOLES	1.0 DIA MAXIMUM WITHIN 20 X SHEET THICKNESS FROM REINFORCEMENT. 3.0 DIA OTHER AREAS <input type="checkbox"/> C	NONE ALLOWED	NONE ALLOWED
SEPARATION	10.0 MINIMUM	10.0 MINIMUM	NO DAMAGE PERMITTED WITHIN 5.0 OF STIFFENER TERMINATION POINT. 10.0 MINIMUM BETWEEN DAMAGE

TIME-LIMITED USAGE
TABLE II

Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 4 of 7)

STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE WITH NO LIMIT				
DAMAGE	ALUMINIUM		TITANIUM	
	INNER SKIN	OUTER SKIN	INNER SKIN	OUTER SKIN
DENT WITH NO TEAR	3.0 INCH DIA 0.06 INCH DEEP 0.25 INCH MIN RADIUS 2.0 INCH [H]	2.5 INCH DIA 0.08 INCH DEEP 0.25 INCH MIN RADIUS 1.0 INCH [H]	5.0 INCH DIA 0.25 INCH DEEP 0.25 INCH MIN RADIUS 2.0 INCH [H]	2.5 INCH DIA 0.1 INCH DEEP 0.25 INCH MIN RADIUS 1.0 INCH [H]
DENT WITH A TEAR	DENT: 0.5 X 0.5 INCH MAX TEAR: 0.5 INCH LONG 0.25 INCH WIDE MIN [R]	NOT ALLOWED	DENT: 0.5 X 0.5 INCH MAX TEAR: 0.5 INCH LONG 0.25 INCH WIDE MIN [R]	NOT ALLOWED
GOUGE	1.8 INCH LONG MAX 0.005 INCH DEEP 0.05 INCH WIDE 1.5 INCH [H]	1.8 INCH LONG MAX 0.005 INCH DEEP 0.05 INCH WIDE 1.5 INCH [H]	1.8 INCH LONG MAX 0.005 INCH DEEP 0.05 INCH WIDE 1.5 INCH [H]	1.8 INCH LONG MAX 0.005 INCH DEEP 0.05 INCH WIDE 1.5 INCH [H]
CRACKS	0.25 INCH LONG MAX 1.5 INCH [B][H][O]	NOT ALLOWED	0.25 INCH LONG MAX 1.5 INCH [B][H][O]	NOT ALLOWED
HOLE	5.0 INCH DIA 1.5 INCH [H][P]	NOT ALLOWED	5.0 INCH DIA 1.5 INCH [H][P]	NOT ALLOWED
UNBOND/DISBOND	<u>CORE TO FACE SHEET</u> 0.75 INCH DIA MAX	<u>CORE TO FACE SHEET</u> 0.75 INCH DIA MAX	<u>CORE TO FACE SHEET</u> 0.75 INCH DIA MAX	<u>CORE TO FACE SHEET</u> 0.75 INCH DIA MAX
DAMAGE SEPERATION	2.0 INCH [M][Q]	2.0 INCH [M][Q]	3.0 INCH [M][Q]	3.0 INCH [M][Q]

TABLE III

Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 5 of 7)

ALLOWABLE DAMAGE 1

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STRUCTURAL REPAIR MANUAL

TIME LIMITED ALLOWABLE DAMAGE				
TITANIUM				
DAMAGE	INNER SKIN		OUTER SKIN	
	'A' CHECK	125 HOUR	'A' CHECK	125 HOUR
DENT WITH NO TEAR	10.0 INCH LONG 2.0 INCH WIDE 0.12 INCH DEEP 0.25 INCH MIN RADIUS 2.0 INCH H	13.0 INCH LONG 5.0 INCH WIDE 0.16 INCH DEEP	5.0 INCH DIA 0.12 INCH DEEP 0.25 INCH MIN RADIUS 1.0 INCH H	8.0 INCH DIA 0.16 INCH DEEP 0.5 INCH H
DENT WITH A TEAR	DENT: 4.0 X 1.3 INCH MAX TEAR: 2.0 INCH LONG 0.5 INCH WIDE MIN R	DENT: 4.0 X 1.3 INCH MAX TEAR: 3.0 INCH LONG 0.75 INCH WIDE MIN R	NOT ALLOWED	NOT ALLOWED
GOUGE	1.8 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 3.0 INCH H	2.0 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 0.5 INCH H	1.8 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 3.0 INCH H	1.8 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 0.5 INCH H
CRACKS	1.0 INCH LONG MAX 1.5 INCH B H O	2.0 INCH LONG MAX 1.5 INCH B H	0.5 INCH LONG MAX 1.5 INCH B H	1.25 INCH LONG MAX 1.5 INCH B H
HOLE	2.0 INCH DIA 1.5 INCH H P	3.0 INCH DIA 1.5 INCH F H T	0.2 INCH DIA 1.5 INCH H P	1.25 INCH DIA 1.5 INCH F H T
UNBOND/DISBOND	<u>CORE TO FACE SHEET</u> 1.5 INCH DIA MAX 2.0 INCH H	<u>CORE TO FACE SHEET</u> 3.0 INCH DIA MAX 1.0 INCH H	<u>CORE TO FACE SHEET</u> 1.5 INCH DIA MAX 2.0 INCH H	<u>CORE TO FACE SHEET</u> 3.0 INCH DIA MAX 1.0 INCH H
DAMAGE SEPERATION	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q

TABLE IV

Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 6 of 7)

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STRUCTURAL REPAIR MANUAL

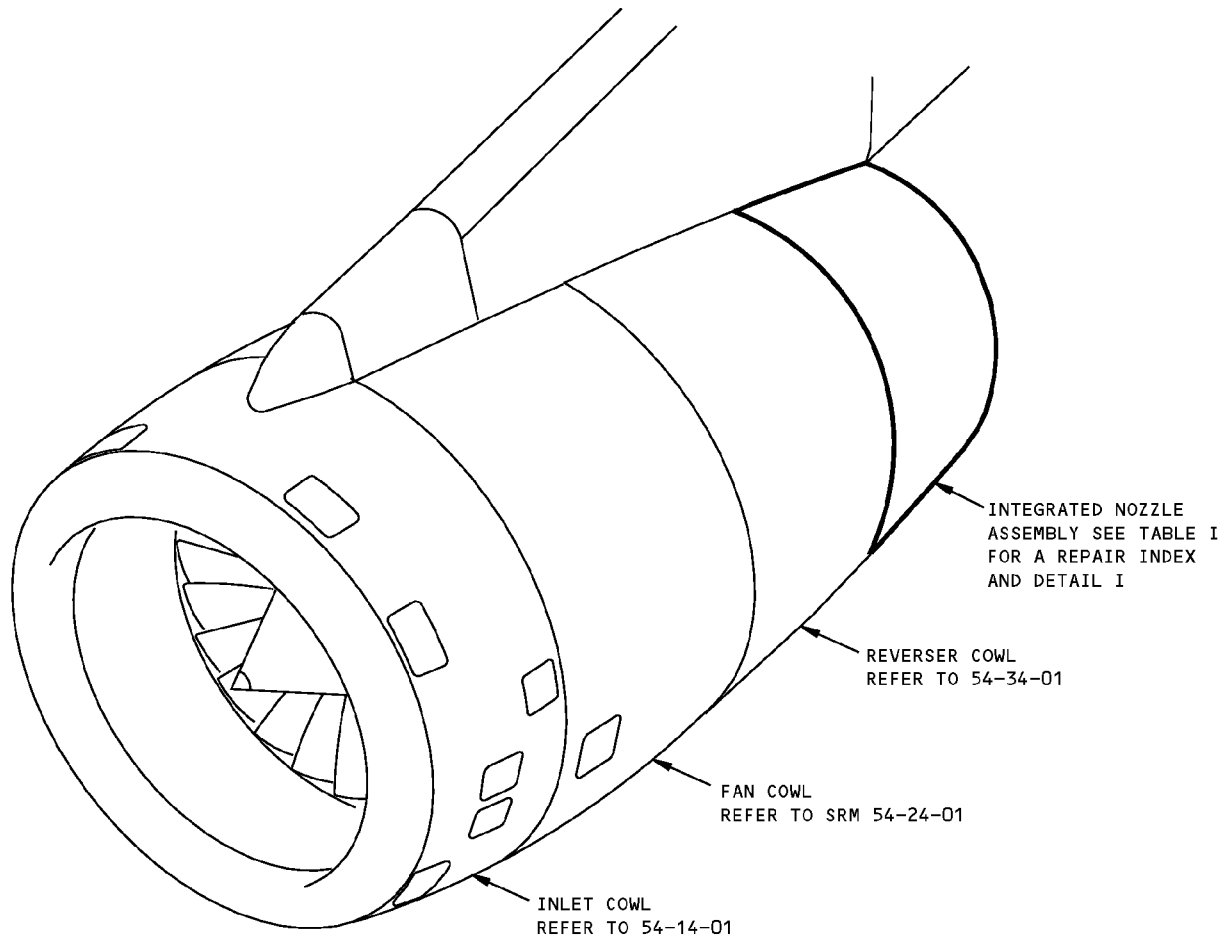
TIME LIMITED ALLOWABLE DAMAGE				
ALUMINUM				
DAMAGE	INNER SKIN		OUTER SKIN	
	'A' CHECK	125 HOUR	'A' CHECK	125 HOUR
DENT WITH NO TEAR	8.0 INCH LONG 2.5 INCH WIDE 0.12 INCH DEEP 0.25 INCH MIN RADIUS 2.0 INCH H	12.0 INCH LONG 4.0 INCH WIDE 0.16 INCH DEEP 2.0 INCH H	5.0 INCH DIA 0.12 INCH DEEP 0.25 INCH MIN RADIUS 1.0 INCH H	8.0 INCH DIA 0.16 INCH DEEP 0.5 INCH H
DENT WITH A TEAR	DENT: 4.0 X 2.0 INCH MAX TEAR: 1.5 INCH LONG 0.5 INCH WIDE MIN R	DENT: 4.0 X 2.0 INCH MAX TEAR: 1.75 INCH LONG 0.5 INCH WIDE MIN R	NOT ALLOWED	NOT ALLOWED
GOUGE	1.8 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 3.0 INCH H	2.0 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 0.5 INCH H	1.8 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 3.0 INCH H	2.0 INCH LONG MAX 0.01 INCH DEEP 0.1 INCH WIDE 0.5 INCH H
CRACKS	0.5 INCH LONG MAX 1.5 INCH B H O	1.25 INCH LONG MAX 1.5 INCH H S	0.5 INCH LONG MAX 1.5 INCH B H	1.25 INCH LONG MAX 1.5 INCH H S
HOLE	1.5 INCH DIA 1.5 INCH H P	1.75 INCH DIA 1.5 INCH F H T	0.2 INCH DIA 1.5 INCH H P	1.25 INCH DIA 1.5 INCH F H T
UNBOND/DISBOND	<u>CORE TO FACE SHEET</u> 1.5 INCH DIA MAX 2.0 INCH H	<u>CORE TO FACE SHEET</u> 3.0 INCH DIA MAX 1.0 INCH H	<u>CORE TO FACE SHEET</u> 1.5 INCH DIA MAX 2.0 INCH H	<u>CORE TO FACE SHEET</u> 3.0 INCH DIA MAX 1.0 INCH H
DAMAGE SEPERATION	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q	2 DEFECTS PER SQ.FT. 3.0 INCH N Q

TABLE V

Allowable Damage - Integrated Nozzle Assembly - RB211-524 Engines
Figure 101 (Sheet 7 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - INTEGRATED NOZZLE ASSEMBLY - RB211 ENGINES



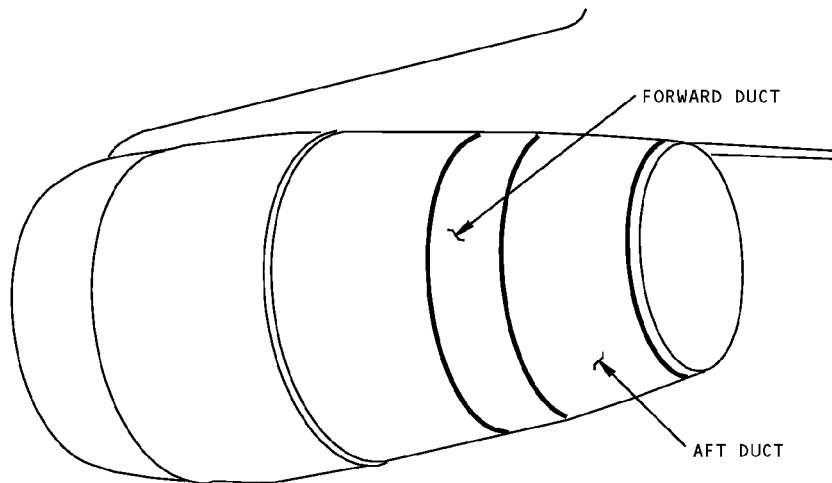
**Integrated Nozzle Assembly Repairs - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL

INTEGRATED NOZZLE ASSEMBLY REPAIRS FOR RB211-524 ENGINES

FIGURE	AFT DUCT REPAIRS
202	REPAIR FOR NICKS, SCRATCHES, DENTS, AND GOUGES
203	REPAIR FOR CRACKS LESS THAN 2.0 INCHES IN LENGTH
204	REPAIR FOR DEEP DENTS AND PARTIAL PENETRATIONS
205	REPAIR FOR SMALL DENTS, NICKS, AND SMALL PENETRATIONS
206	REPAIR FOR LARGE RADIUS DENTS IN INNER SKIN
207	REPAIR FOR LARGE RADIUS DENTS IN OUTER SKIN
208	REPAIR FOR SMALL FULL PENETRATIONS
209	REPAIR FOR FULL PENETRATIONS WITH UNEQUAL SKIN DAMAGE
FIGURE	FORWARD DUCT REPAIRS
210	REPAIR FOR DEEP GOUGES
211	REPAIR FOR CRACKS LESS THAN 2.0 INCHES IN LENGTH
212	REPAIR FOR SMALL DENTS
213	REPAIR FOR DAMAGE UP TO 5.0 INCHES IN DIAMETER - DEEP DENTS, GOUGES, AND PARTIAL PENETRATIONS
214	REPAIR FOR LARGE RADIUS DENTS IN INNER SKIN
215	REPAIR FOR LARGE RADIUS DENTS IN OUTER SKIN
216	REPAIR FOR SMALL FULL PENETRATIONS
217	REPAIR FOR FULL PENETRATIONS WITH UNEQUAL SKIN DAMAGE

REPAIR INDEX
TABLE I



DETAIL I

Integrated Nozzle Assembly Repairs - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

**REPAIR 1 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - NICKS, SCRATCHES, DENTS AND GOUGES -
RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR NICKS, SCRATCHES, DENTS AND GOUGES.

THIS REPAIR IS FOR NICKS, SCRATCHES, DENTS AND GOUGES.

REPAIR INSTRUCTIONS

- For shallow scratches not exceeding 0.007 inches depth and less than 1.0 inches long, burnish to a total width of 40-100 times the depth of the scratch. Do not increase the depth of the scratch.
- For deep scratches and gouges exceeding 0.007 inches of depth, mark out a doubler patch around the area that is greater than 0.007 inches deep.

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

- Fabricate patch using 0.020 inch thick titanium sheet. See Detail I.
- Burnish the entire scratch area, but blend the deep scratch width to 20 times the scratch depth within the confines of rivet pattern.
- Layout the rivet pattern. Pick up the existing perforation holes when repairing any perforated skins.
- Maintain 0.21 inch minimum distance between the edge of the blend and the rivet centerline.
- Drill and countersink for the C23555-A-1 blind rivets. Deburr the drill holes.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY FLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

- Clean the repair area with methylethylketone on a clean cotton cloth. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

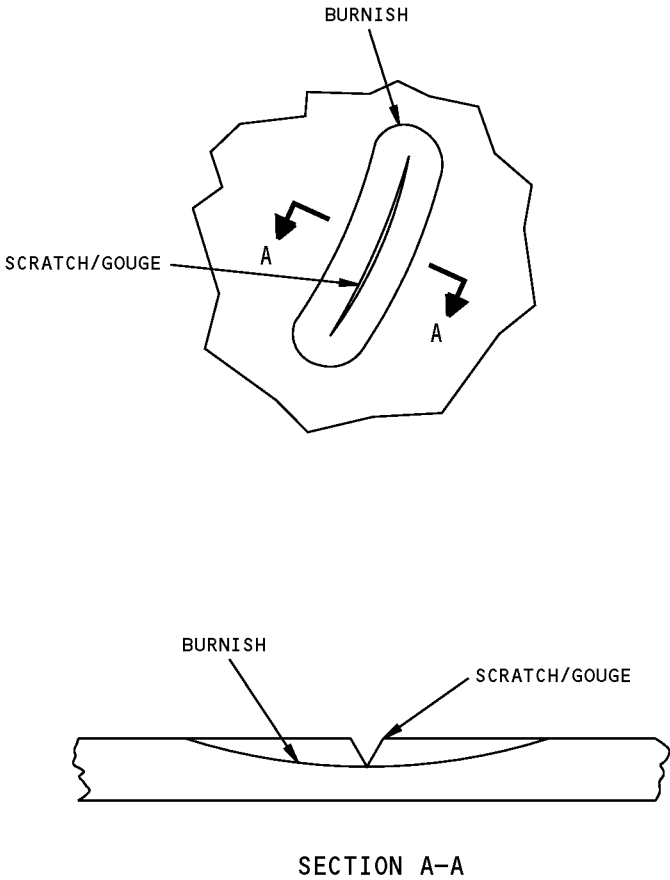
- Install doubler using EA934NA for wet rivet installation and faying surface adhesive.
- Remove any excessive adhesive using clean cotton cloth. Leave only sufficient amount for aerodynamic smoothness.
- Cure adhesive for 1 hour at 140°F (60°C) using heat lamps.
- Visually inspect the repair area.

NOTES

- THIS REPAIR MUST NOT BE LESS THAN 3.0 INCHES FROM OTHER DAMAGE ON THE SAME SKIN SURFACE.

**Integrated Nozzle Assembly Aft Duct - Repair for Nicks, Scratches, Dents and Gouges - RB211 Engines
Figure 201 (Sheet 1 of 2)**

767-300
STRUCTURAL REPAIR MANUAL



DETAIL I

Integrated Nozzle Assembly Aft Duct - Repair for Nicks, Scratches, Dents and Gouges - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

**REPAIR 2 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - CRACKS LESS THAN 2.0 INCHES IN LENGTH -
RB211 ENGINES**

APPLICABILITY

THIS REPAIR IS FOR CRACKS NOT EXCEEDING 2 INCHES IN LENGTH.

REPAIR INSTRUCTIONS

1. Determine the crack ends using dye penetrant.

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

2. Stop drill crack ends with 0.177-0.197 inch diameter drill.
3. See Detail I. Layout the doubler patch and rivet pattern.
4. Fabricate the patch from 0.020 inch titanium sheet.
5. Drill rivet holes to match perforation holes or cell voids as applicable. Maintain 0.60 inch fastener spacing and 0.40 inch edge distance.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

6. Deburr holes. Clean the area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

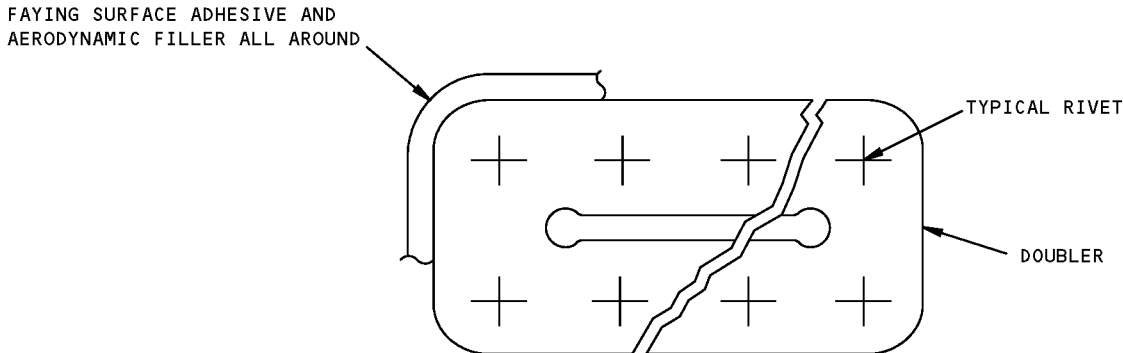
7. Using EA934NA adhesive applied to faying surface of doubler patch install doubler patch and wet rivet CR3555-4-1 in place.
8. Remove excess adhesive using clean cotton cloth. Leave sufficient adhesive to act as an aerodynamic fillet.
9. Cure the adhesive for 1 hour at 140°F (60°C) using heat lamps.
10. Visually inspect the repair area.

NOTES

- THE REPAIR MUST NOT BE LESS THAN 3.0 INCHES FROM OTHER DAMAGE ON THE SAME SKIN SURFACE.

**Integrated Nozzle Assembly Aft Duct - Repair for Cracks Less Than 2.0 Inches in Length - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

Integrated Nozzle Assembly Aft Duct - Repair for Cracks Less Than 2.0 Inches in Length - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

**REPAIR 3 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - DEEP DENTS AND PARTIAL PENETRATIONS -
RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR DEEP DENTS, AND PARTIAL PENETRATIONS.

THIS REPAIR IS FOR DEEP DENTS, AND PARTIAL PENETRATIONS.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. SEE 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

1. Prepare the damaged area by removing damaged skin with routing and sawing equipment. See Details I and II.

2. Measure the damage size and diameter.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO SKIN CONTACT.

3. For damage not exceeding 2.0 square inches repair by filling core with EA934NA adhesive/filler and adding a doubler patch. See Detail I.

4. For damage exceeding 2.0 square inches repair by removing damaged skin and core. Replace with new adhesive bonded core and skin. See Detail II.

5. Remove the core using cutters and grinding discs. Remove metal bond fillets to within 0.010 inch of opposite undamaged skin.

6. Fit the replacement core and cut to required shape.

7. Fit the skin patch cut from titanium sheet or perforated skin as required. Align the perforated skin to match perforations in existing inner skin.

8. Drill the fastener holes. For areas less than 2.0 square inches, use spacing of 0.56-0.68 inch. For areas exceeding 2.0 square inches, use spacing of 0.65 inch. Use an edge distance of 0.40 inch.

9. Layout the Hi-Lok honeycomb fastener hole pattern with spacing of 1.19-1.5 inches in field area of patch.

10. Drill the fastener holes to match the perforated skin and core voids. Use a triangular pattern for larger patches.

11. Use one row of fasteners where damage width exceeds 1.65 inches. Use 2 or 3 rows when damage width exceeds 2.8 to 4.0 inches.

12. Deburr drilled holes and dimple for Hi-lok fastener heads. See Detail II.

13. Re-assemble the repair skins, clamp one in position. Grind Hi-lok sleeve end as required to accomplish correct installation height. Dismantle the skins.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

14. Clean the repair area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH THE SKIN.

15. Apply adhesive EA934NA to core adjacent to perforated skin. Inject adhesive into core-to-core faying surfaces. Fill the damaged areas where new core is not installed, and apply to skin faying surface.

16. Install the patch and wet install fasteners CR3555-4-1 and HL56B-5-750, HC32-5-650 with HL597-5.

17. Wipe away excessive adhesive using clean cotton cloth.

18. Cure adhesive for 1 hour at 60°C (140°F) using heat lamps.

19. Visually inspect repair area.

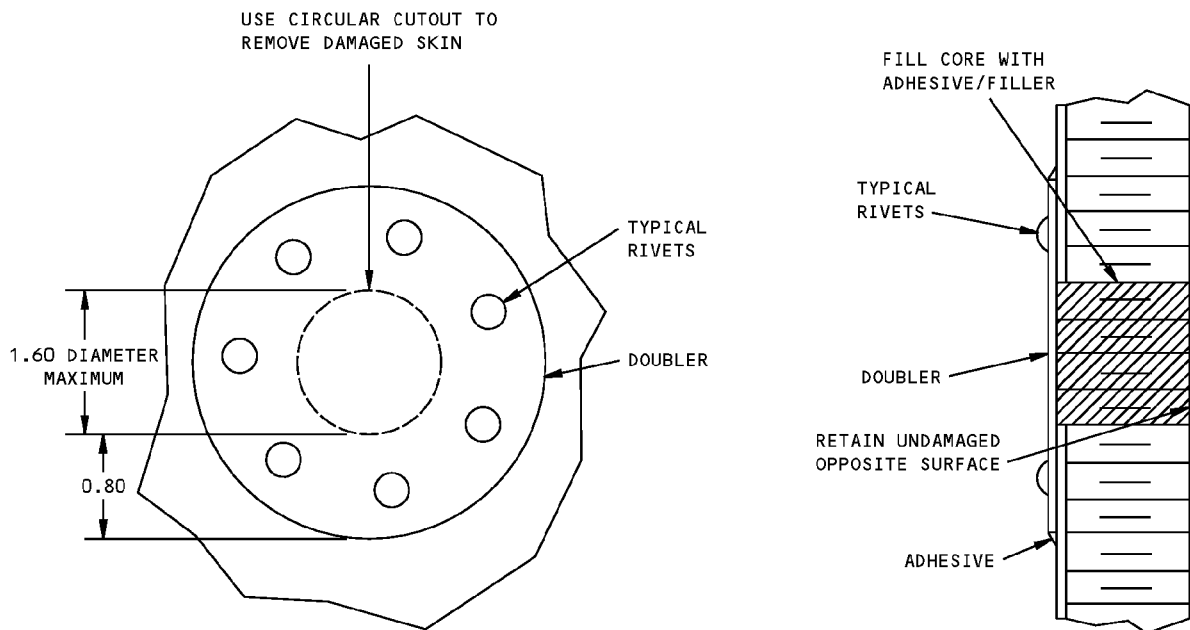
NOTES

- THIS REPAIR MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY 3.0 INCHES MINIMUM.

**Integrated Nozzle Assembly Aft Duct - Repair for Deep Dents and Partial Penetrations - RB211 Engines
Figure 201 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH (INTERNAL)	1	PERFORATED TITANIUM SHEET 0.020 Ti-6AL-4V
PATCH (EXTERNAL)	1	TITANIUM SHEET 0.020 Ti-6AL-4V
CORE PLUG	1	Ti-3AL-2.5V

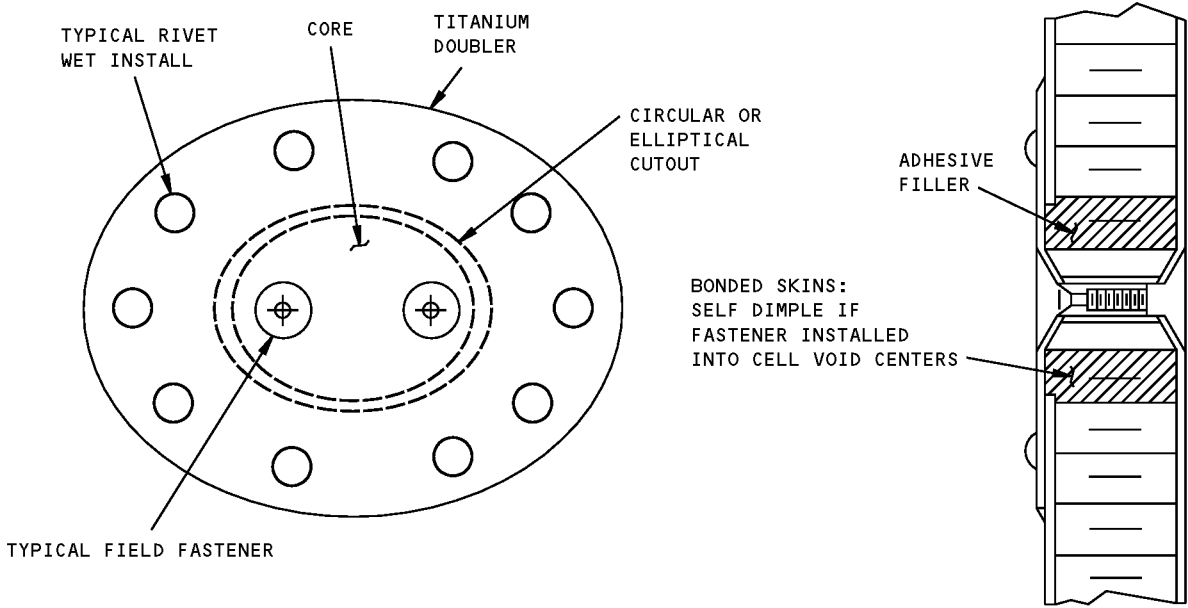


SMALL AREA REPAIRS
DETAIL I

A9349

**Integrated Nozzle Assembly Aft Duct - Repair for Deep Dents and Partial Penetrations - RB211 Engines
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**PARTIAL PENETRATION REPAIR
PERFORATED OR SOLID SURFACES**

DETAIL II

A9350A

**Integrated Nozzle Assembly Aft Duct - Repair for Deep Dents and Partial Penetrations - RB211 Engines
Figure 201 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL

REPAIR 4 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - SMALL DENTS NICKS AND SMALL PENETRATIONS - RB211 ENGINE

APPLICABILITY

THIS REPAIR IS FOR SMALL DENTS, NICKS AND SMALL PENETRATIONS.

REPAIR INSTRUCTIONS

1. Measure damaged area and determine suitable fastener. See Detail I.

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

2. Use drill size specified for fastener CR3555-4-1, CR3553-5-1, CR3523-4-1 or HL568-5-750, HC32-5-650, HL597-5.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE KEEP AWAY FROM IGNITION SOURCES.

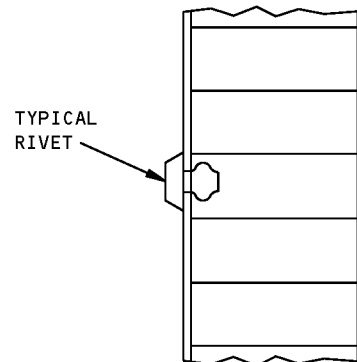
3. Deburr and then clean area using clean cotton cloth soaked in methylethylketone. Wipe the surface dry before solvent evaporates using a clean cotton cloth.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO CONTACT WITH SKIN.

4. Using EA934 adhesive, wet install the fastener.
5. Visually inspect the repair area.

NOTES

- This repair must not be less than 3.0 inches from other damage on the same skin surface.



DETAIL I

Integrated Nozzle Assembly Aft Duct - Repair for Small Dents Nicks and Small Penetrations - RB211 Engine
Figure 201

STRUCTURAL REPAIR MANUAL

**REPAIR 5 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - LARGE RADIUS DENTS IN INNER SKINS - RB211
 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR LARGE RADIUS DENTS IN PERFORATED SKINS.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

1. Clean the repair area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates. See Detail I.
2. See Detail I and inspect area to ensure that this part of repair is suitable for the damage incurred.
3. Cut patch material from a perforated skin.
4. Align the perforations with original skin and locate fastener positions in undamaged core and skin.
5. Form a doubler patch to fit the contour.
6. Drill and countersink edge fasteners 0.65-0.75 inch spacing matching perforation holes.
7. Mark and drill the patch interior with triangular pattern of fasteners with 1.19-1.5 inches spacing.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

8. Clean the area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO CONTACT WITH SKIN.

9. Using EA934NA adhesive fill the indentation to original contour.
10. Install the patch with EA934NA applied to faying surface and wet install CR3555-4-1 rivets.

11. Cure the adhesive for 1 hour at 60°C (140°F) using heat lamps.
12. After drilling through cured adhesive filler at predetermined positions, install intermediate fasteners. See Detail I.
13. Visually inspect the repair area.

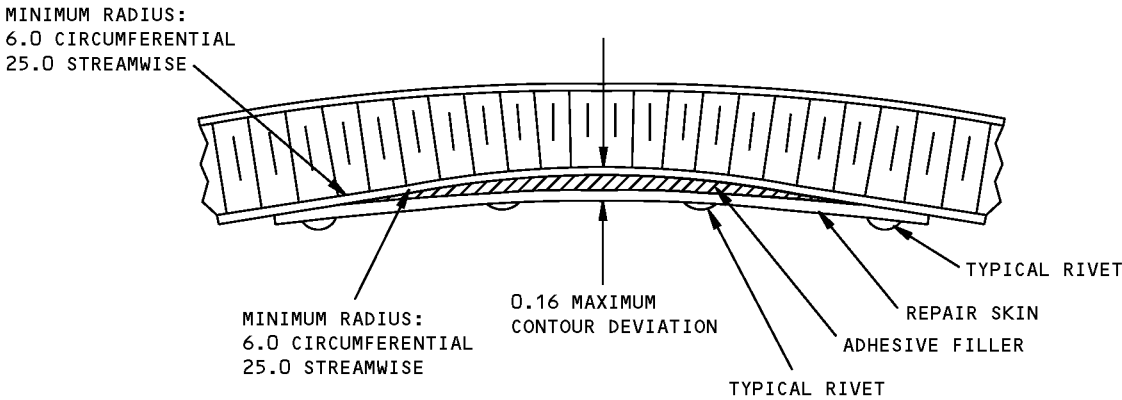
NOTES

- THIS REPAIR IS NOT SUITABLE IF DENTED AREA CONTAINS UNREPAIRED CRACKS, GOUGES, DISBONDING OR OTHER DAMAGE.
- THE TOTAL AREA FOR THIS REPAIR SHALL NOT EXCEED 50 SQUARE INCHES.
- THIS REPAIR MUST NOT BE LESS THAN 3.0 INCHES FROM OTHER DAMAGE ON THE SAME SKIN SURFACE.
- DENTS WHICH EXCEED THESE CRITERIA SHALL BE REPAIRED AS PARTIAL PENETRATION DAMAGE.

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH	1	PERFORATED TITANIUM SHEET 0.020 INCH Ti-6AL-4V

**Integrated Nozzle Assembly Aft Duct - Repair for Large Radius Dents in Inner Skins - RB211 Engines
 Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

A9351A

Integrated Nozzle Assembly Aft Duct - Repair for Large Radius Dents in Inner Skins - RB211 Engines
Figure 201 (Sheet 2 of 2)

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REPAIR 6 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - LARGE RADIUS DENTS IN OUTER SKINS - RB211

ENGINES

APPLICABILITY

THIS REPAIR IS FOR LARGE RADIUS DENTS IN SOLID OUTER SKINS.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

1. Clean the repair area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

2. Cut titanium (0.020 inch) sheet to circular or oval shape to cover dented area.
3. Drill and countersink fastener holes for rivets (0.65 to 0.75 inch) spacing. Locate in cell voids where possible. See Detail I.
4. Form the doubler to fit the contour of the skin.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

5. Deburr the patch and then clean using clean cotton cloth and methylethylketone. Wipe the patch dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO CONTACT WITH SKIN.

6. Apply adhesive filler EA934NA to faying surface and fill the dent to the original contour.

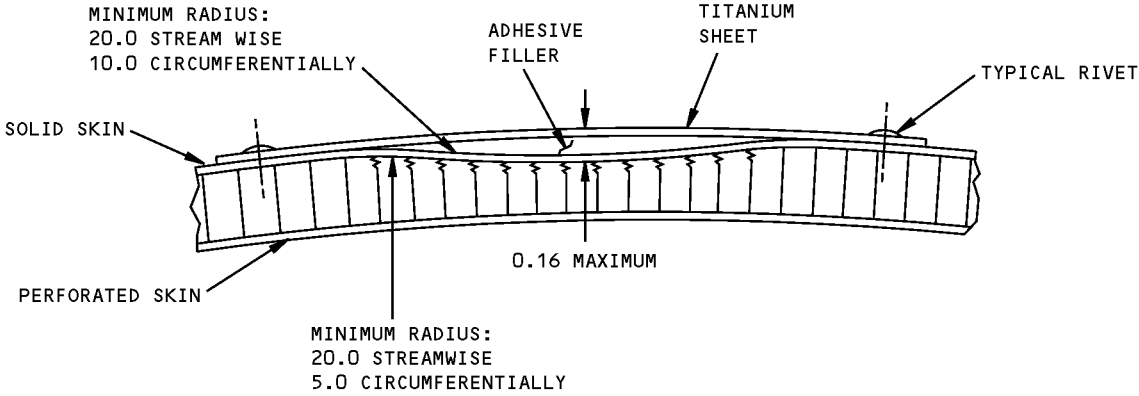
7. Fit the patch and wet install the rivets CR3555-4-1.
8. Clean away excess adhesive leaving an aerodynamic smoothing fillet.
9. Cure adhesive for 1 hour at 60°C (140°F) using heat lamps.
10. Visually inspect the repair area.

NOTES

- THIS REPAIR IS NOT SUITABLE IF THE DENTED AREA CONTAINS UNREPAIRED CRACKS, GOUGES, DISBONDING OR OTHER DAMAGE.
- THE TOTAL AREA FOR THIS REPAIR SHALL NOT EXCEED 50 SQUARE INCHES.
- THIS REPAIR MUST NOT BE LESS THAN 3.0 INCHES FROM OTHER DAMAGE ON THE SAME SKIN SURFACE.
- DENTS WHICH EXCEED COVERAGE BY THIS REPAIR MUST BE REPAIRED AS PARTIAL PENETRATION DAMAGE.

**Integrated Nozzle Assembly Aft Duct - Repair for Large Radius Dents in Outer Skins - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

A9352A

Integrated Nozzle Assembly Aft Duct - Repair for Large Radius Dents in Outer Skins - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 7 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - SMALL FULL PENETRATIONS - RB211 ENGINES

APPLICABILITY

THIS REPAIR IS FOR SMALL FULL PENETRATION.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. REFER TO 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

1. Remove the damaged skin and core. Check for surrounding delamination.
2. Cut the core to fit the cut-out and two layers of titanium filler. See Detail I.
3. Cut a skin patch from (0.020 inch) titanium sheet and another from perforated sheet 2.0 inches larger in dia. than the skin cut-out.
4. Drill and countersink for rivets CR3555-4-1 and clamp in place. Layout Hi-lok honeycomb fastener hole pattern in field of patch with 1.19-1.5 inches spacing. Drill to match perforated skin and core voids. Use triangular pattern for larger patches.
5. Use one row of fasteners where damage width exceeds 1.65 inches. Use 2 and 3 rows when damage width exceeds 2.8 and 4.0 inches respectively.
6. Remove the clamps and deburr the parts.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE KEEP AWAY FROM IGNITION SOURCES.

7. Clean the repair area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO CONTACT WITH SKIN.

8. Apply adhesive filler EA934NA to intercore faying surfaces, core-to-filler surfaces, and repair patch faying surfaces.

9. Wet assemble rivets and Hi-lok fasteners. Stake Hi-lok threads after collar shear-off.
10. Wipe away excess adhesive using cotton cloth.
11. Cure adhesive for 1 hour minimum at 60°C (140°F) using heat lamps.
12. Visually inspect the repair area.

NOTES

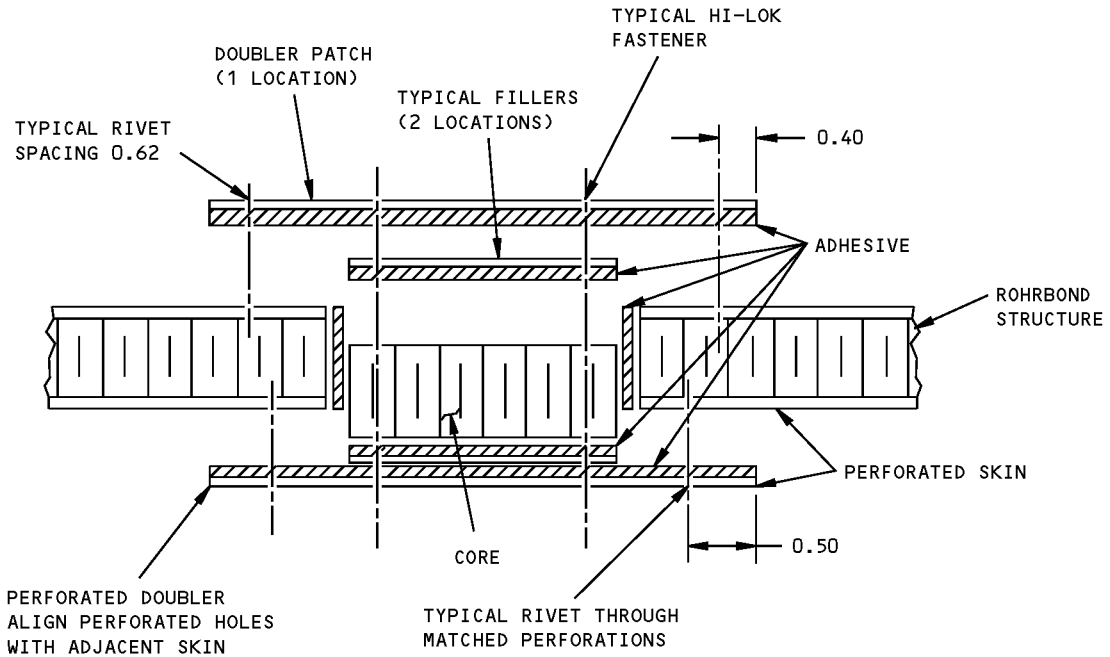
- THIS REPAIR IS LIMITED TO 20 SQUARE INCHES OF DAMAGE WHERE SIMILAR DEGREE OF DAMAGE IS EVIDENT ON INNER AND OUTER SKINS.
- THIS REPAIR MUST NOT BE LESS THAN 3.0 INCHES FROM OTHER DAMAGE ON THE SAME SKIN SURFACE.

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH (INTERNAL)	1	PERFORATED TITANIUM Ti-6AL-4V
PATCH (EXTERNAL)	1	TITANIUM SHEET 0.020 Ti-6AL-4V
CORE PLUG	1	Ti-3AL-2.5V

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH (INTERNAL)	1	PERFORATED TITANIUM Ti-6AL-4V
PATCH (EXTERNAL)	1	TITANIUM SHEET 0.020 Ti-6AL-4V
CORE PLUG	1	Ti-3AL-2.5V

**Integrated Nozzle Assembly Aft Duct - Repair for Small Full Penetrations - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

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Integrated Nozzle Assembly Aft Duct - Repair for Small Full Penetrations - RB211 Engines
Figure 201 (Sheet 2 of 2)

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STRUCTURAL REPAIR MANUAL

**REPAIR 8 - INTEGRATED NOZZLE ASSEMBLY AFT DUCT - FULL PENETRATION WITH UNEQUAL SKIN
DAMAGE - RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR FULL PENETRATION WITH UNEQUAL SKIN DAMAGE.

REPAIR INSTRUCTIONS

WARNING: THE MACHINING OF TITANIUM IS HAZARDOUS TO PERSONNEL AND CAN DAMAGE MATERIAL IF NOT WORKED PROPERLY. SEE 51-30-01 BEFORE ANY REWORKING OF TITANIUM.

1. Remove the damaged skin and core from major damage side to opposite skin.
2. Cut away the damaged skin on minor damage side, trim away skin to leave 1.0 inches overlap on larger dimension. See Detail I.
3. Clean away any core bonding remnants on this overlap distance using grinder and disc.
4. Cut a skin patch from (0.020 inch) titanium sheet and another from perforated sheet 2.0 inches larger in diameter than the skin cut-out.
5. On minor damage side, the skin patch will be placed on core side of original structure.
6. Cut the skin filler to fit in smaller size skin cut-out.
7. Cut the titanium core plug to fill cavity.
8. Use a drill to countersink and dimple sizes as required to cut Hi-lok fastener holes in field of patch with 1.19-1.5 inches spacing.
9. Use one row of fasteners where damage width exceeds 1.65 inches. Use 2 and 3 rows when width of damage exceeds 2.8 and 4.0 inches respectively.
10. On perforated skins drill a hole pattern to match perforations and core voids.
11. Deburr all fastener holes and dimple the skins for Hi-lok fasteners.
12. Re-assemble the patches and grind Hi-lok sleeves to correct length. Dis-assemble the patches.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

13. Clean repair area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH THE SKIN.

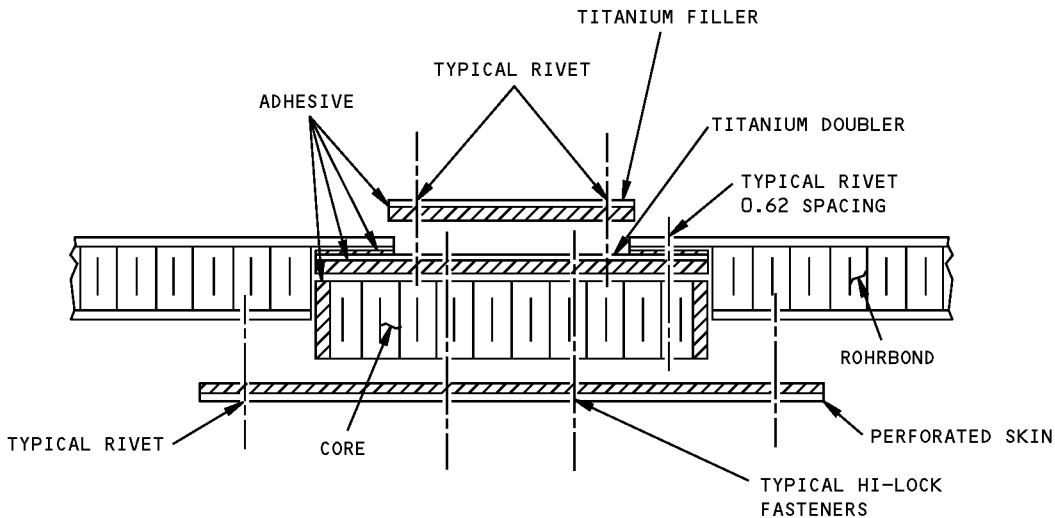
14. Apply EA934NA adhesive to all skin faying surfaces and to core adjacent to skin.
15. Install a small patch using rivets MS20615-4M4 and faying surface adhesive as required.
16. Install core wetted with adhesive adjacent to perforated skin.
17. Inject adhesive between core-to-core faying surfaces.
18. Install the outside patch and wet install rivets CR3555-4-1 using EA934NA adhesive.
19. Install pre-fitted Hi-Lok fasteners. Stake threads after collar shear-off.
20. Cure adhesive for 1 hour minimum at 140°F (60°C) using heat lamps.
21. Visually inspect the repair area.

NOTES

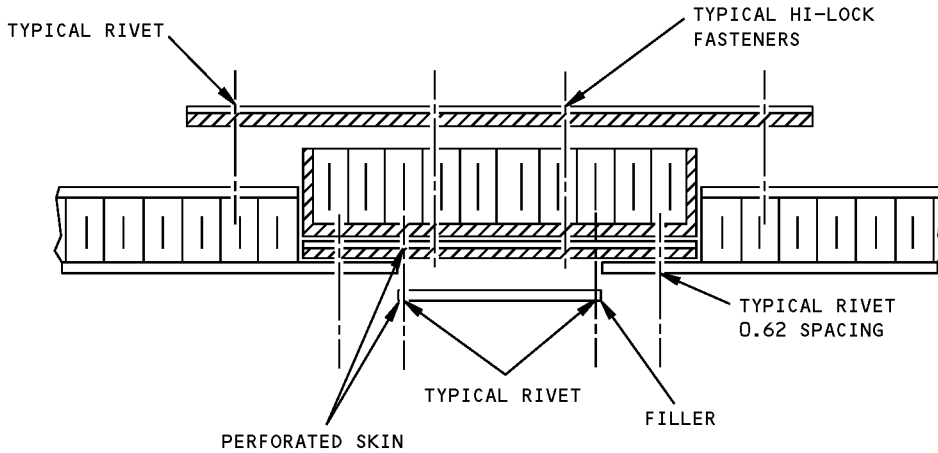
- THIS REPAIR LIMITED TO 20 SQUARE INCHES OF DAMAGE AREA.
- THIS REPAIR MUST NOT BE USED WITHIN 6.0 INCHES OF OTHER SIMILAR REPAIRS OR DAMAGE ON SAME SURFACE.

**Integrated Nozzle Assembly Aft Duct - Repair for Full Penetration with Unequal Skin Damage - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



MAJOR DAMAGE TO INSIDE PERFORATED SURFACE



MAJOR DAMAGE TO OUTER SOLID SKIN

A9354A

DETAIL I

Integrated Nozzle Assembly Aft Duct - Repair for Full Penetration with Unequal Skin Damage - RB211 Engines
Figure 201 (Sheet 2 of 2)

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STRUCTURAL REPAIR MANUAL

REPAIR 9 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - DEEP GOUGES - RB211 ENGINES

APPLICABILITY

THIS REPAIR IS FOR DEEP GOUGES.

REPAIR INSTRUCTIONS

1. Mark the portion of the gouge which exceeds 0.008 inch in depth. See Detail I.
2. Layout a doubler patch around this gouge using 0.032 inch sheet aluminium.
3. Burnish the entire gouge area and blend the deep gouge section to a width of 20 times the depth. See Detail I.
4. Layout a rivet pattern with 0.21 inch minimum between the edge of the blend and the rivet centerline. Use 0.60 inch spacing and 2 x diameter edge distance.
5. Drill and countersink for CR3255-4-1 rivets and deburr the holes.

WARNING: PROTECTIVE GLOVES SHOULD BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE, KEEP AWAY FROM IGNITION SOURCES.

6. Clean the repair area with methylethylketone on clean cotton cloth, wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL COMING INTO CONTACT WITH SKIN.

7. Install the doubler using EA934NA for wet installation of rivets and faying surface adhesive.
8. Remove excess adhesive using clean cotton cloth. Leave only enough for aerodynamic smoothness.
9. Cure the adhesive for 1 hour at 140°F (60°C) using heat lamps.
10. Visually inspect the repair area.

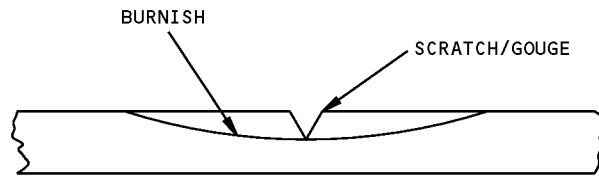
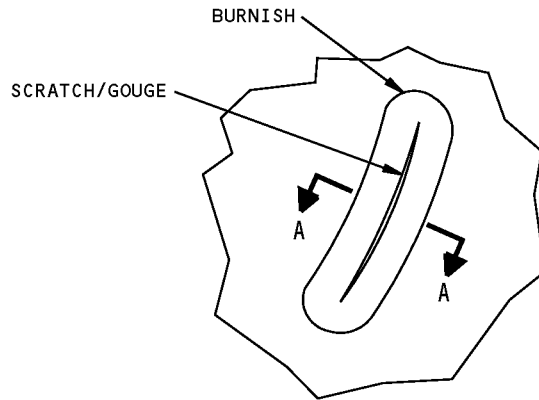
NOTES

- THIS DAMAGE MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY A MINIMUM OF 3.0 INCHES.

REPAIR MATERIAL		
PART	QTY	MATERIAL
REPAIR PATCH	1	ALUMINIUM ALLOY 2024-T3 0.032 SHEET BARE

**Integrated Nozzle Assembly Forward Duct - Repair for Deep Gouges - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



SECTION A-A

DETAIL I

Integrated Nozzle Assembly Forward Duct - Repair for Deep Gouges - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 10 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - CRACKS LESS THAN 2.0 INCHES IN LENGTH - RB211 ENGINES

APPLICABILITY
THIS REPAIR IS FOR CRACKS UP TO 2.0 INCHES LONG.

NOTES

- THIS DAMAGE MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN BY A MINIMUM OF 3.0 INCHES.

REPAIR INSTRUCTIONS

- Determine the end of crack using dye penetrant.
- Stop drill the end of the crack using 0.177-0.197 inch diameter drill. Rout the length of the crack.
- See Detail I and layout the doubler patch and rivet pattern on 0.032 inch aluminium sheet. Maintain 0.60 inch rivet spacing with 0.40 edge distance.

WARNING: PROTECTIVE GLOVES SHOULD BE WORN WHEN USING DEGREASERS. USE ONLY IN AREAS WITH GOOD VENTILATION. VERY FLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

- Clean the repair area with methylethylketone on clean cotton cloth, wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN AREAS WITH GOOD VENTILATION. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

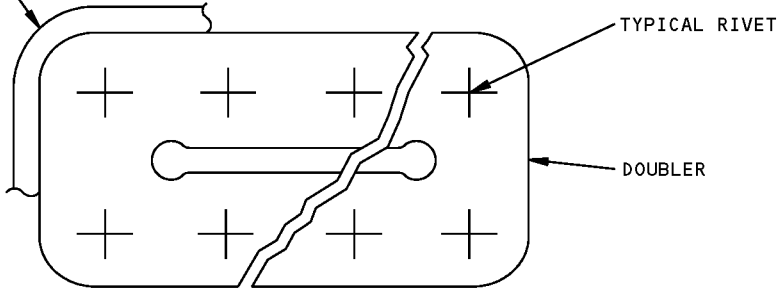
- Install the doubler using EA934NA for wet rivet installation and faying surface adhesive and CR3255-4-1 rivets.
- Remove any excess adhesive using clean cotton cloth. Leave only sufficient amount for an aerodynamic smoothness fillet.
- Cure the adhesive for 1 hour at 140°F (60°C) using heat lamps.
- Visually inspect the repair area.

REPAIR MATERIAL		
PART	QTY	MATERIAL
REPAIR PATCH	1	ALUMINIUM ALLOY SHEET 0.032 INCH 2024-T3

**Integrated Nozzle Assembly Forward Duct - Repair for Cracks Less Than 2.0 Inches in Length - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL

FAYING SURFACE ADHESIVE AND
AERODYNAMIC FILLER ALL AROUND



DETAIL I

Integrated Nozzle Assembly Forward Duct - Repair for Cracks Less Than 2.0 Inches in Length - RB211 Engines
Figure 201 (Sheet 2 of 2)

**767-300
STRUCTURAL REPAIR MANUAL****REPAIR 11 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - SMALL DENTS - RB211 ENGINES****APPLICABILITY**

THIS REPAIR IS FOR SMALL DENTS.

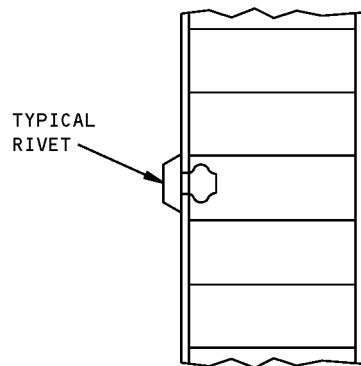
REPAIR INSTRUCTIONS

1. Measure the damage area to determine which fastener will remove the damage.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH THE SKIN.

2. Use suitable drill size for fastener and wet install fastener CR3255-4-1, CR3253-5-1, CR3223-4-1 or HL568-5-750, HC32-5-650, HL597-5 using EA934NA. See Detail I.
3. Visually inspect the repair area.

NOTE: This damage must be separated from other damage on the same skin by a minimum of 3.0 inches.



DETAIL I

**Integrated Nozzle Assembly Forward Duct - Repair for Small Dents - RB211 Engines
Figure 201**

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STRUCTURAL REPAIR MANUAL

**REPAIR 12 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - DAMAGE UP TO 5.0 INCHES IN DIAMETER
- DEEP DENTS, GOUGES, AND PARTIAL PENETRATIONS - RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR DAMAGE UP TO 5 INCHES DIA. DEEP DENTS, GOUGES AND PARTIAL PENETRATIONS.

REPAIR INSTRUCTIONS

1. Remove damaged skin using metal routing and sawing equipment. See Detail I.
2. Measure damage size diameter. For damage up to 2.0 square inches, repair by filling core using EA934NA adhesive filler and doubler patch.
3. For damage size exceeding 2.0 square inches, remove damaged core using cutters and grinding disc to within 0.010 inch of undamaged surface. See Detail II.
4. Cut new core material to fit the cut-away.
5. Using sheet aluminium 0.032 inch thick, cut out a cover patch.
6. Layout and drill the fastener holes. For smaller repairs use a rivet spacing 0.56-0.68 inch. For a larger patch exceeding 2.0 square inches, use a spacing of 0.65 inch. Use 0.40 inch edge spacing.
7. Layout the Hi-lok honeycomb fastener hole pattern in the field of the patch using 1.19-1.5 inches spacing. Use a triangular pattern for larger patches. Use one row of fasteners where damage width exceeds 1.65 inches. Use 2 or 3 rows when width exceeds 2.8 and 4.0 inches respectively.
8. Dis-assemble the repair skins and deburr fastener holes. Dimple the Hi-lok fastener holes.
9. Re-assemble the repair patch and trial fit the Hi-lok fasteners. Grind the sleeve end as required to obtain the correct installation height.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

10. Clean the area using clean cotton cloth and methylethylketone. Wipe dry before solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

11. Apply EA934NA adhesive to core faying surfaces and fit the core plug in aperture. Inject adhesive into core-to-core faying surfaces and fill the damaged areas where new core is not installed.
12. Apply adhesive to skin faying surface and wet install the patch and rivets CR3255-4-1. Also wet install Hi-lok fasteners HL568-5-750, HC32-5-650, and HL597-5.
13. Clean the area using a clean cotton cloth. Wipe away any excess adhesive.
14. Cure adhesive for 1 hour at 140°F (60°C) using heat lamps.
15. Visually inspect the repair area.

NOTE: THIS DAMAGE MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN BY A MINIMUM OF 3.0 INCHES.

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH (INTERNAL)	1	ALUMINIUM SHEET ALLOY
PATCH (EXTERNAL)	1	2024-T3-BARE
CORE PLUG	1	AL-5052 (LJ76238)

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Integrated Nozzle Assembly Forward Duct - Repair for Damage Up to 5.0 Inches in Diameter - Deep Dents, Gouges, and Partial Penetrations - RB211 Engines

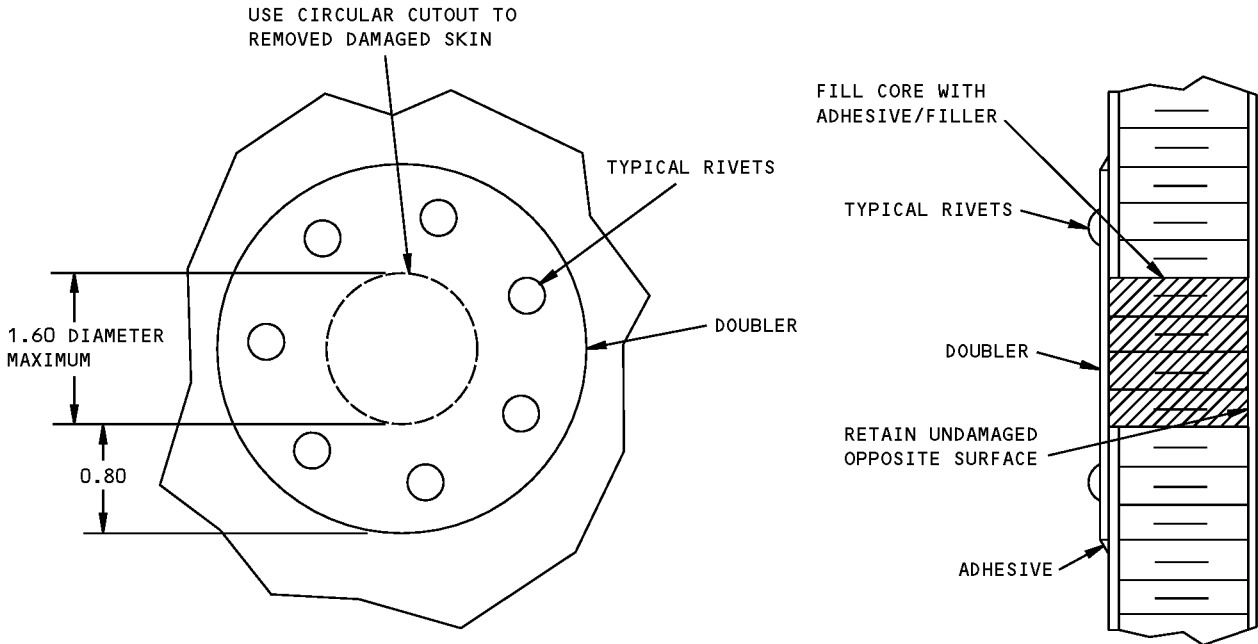
Figure 201 (Sheet 1 of 3)

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STRUCTURAL REPAIR MANUAL

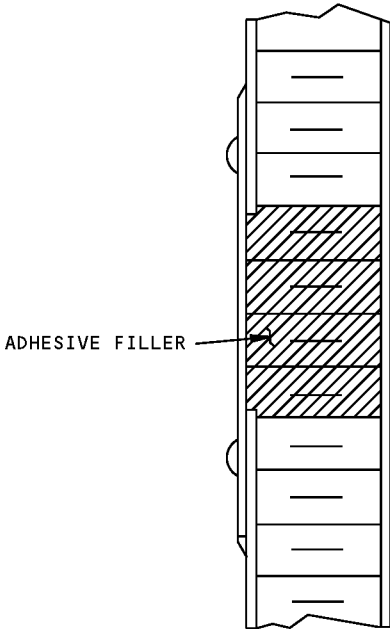
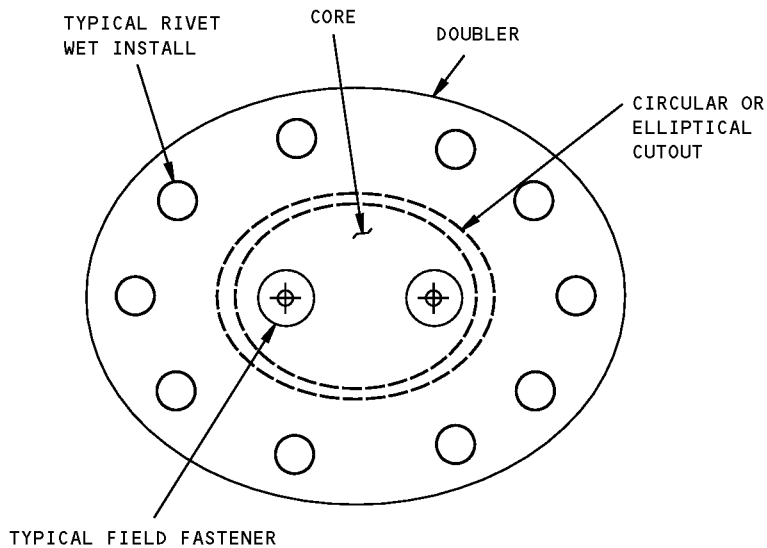


SMALL AREA REPAIRS
DETAIL I

A9349

Integrated Nozzle Assembly Forward Duct - Repair for Damage Up to 5.0 Inches in Diameter - Deep Dents, Gouges, and Partial Penetrations - RB211 Engines
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STRUCTURAL REPAIR MANUAL**



PARTIAL PENETRATION REPAIR
PERFORATED OR SOLID SURFACES

DETAIL II

A9433

**Integrated Nozzle Assembly Forward Duct - Repair for Damage Up to 5.0 Inches in Diameter - Deep Dents, Gouges, and Partial Penetrations - RB211 Engines
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

**REPAIR 13 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - LARGE RADIUS DENTS IN INNER SKINS -
RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR LARGE RADIUS DENTS ON INNER SURFACE SKINS.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

1. Clean the damage area using methylethylketone on clean cotton cloth. Wipe it dry before solvent evaporates.
2. Cut-out the cover patch from 0.032 inch sheet aluminum and form it to fit the contour of the skin. See Detail I.
3. Mark-out the fastener positions in the undamaged core and skin.
4. Drill and countersink the edge fasteners using a 0.65-0.75 inch spacing. Mark the field of the patch for a triangular pattern of fasteners with a 1.19-1.5 inches spacing.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

5. Clean the area using methylethylketone on clean cotton cloth. Wipe it dry before the solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

6. Mix and apply adhesive filler EA934NA to fill the depressed skin to its original contour.
7. Install the patch and wet install rivets CR3255-4-1 around the periphery.
8. Cure adhesive for 1 hour at 140°F (60°C) using heat lamps.
9. Drill through the cured adhesive filler and install rivets CR3255-4-2 and CR3255-4-3.
10. Visually inspect the repair area.

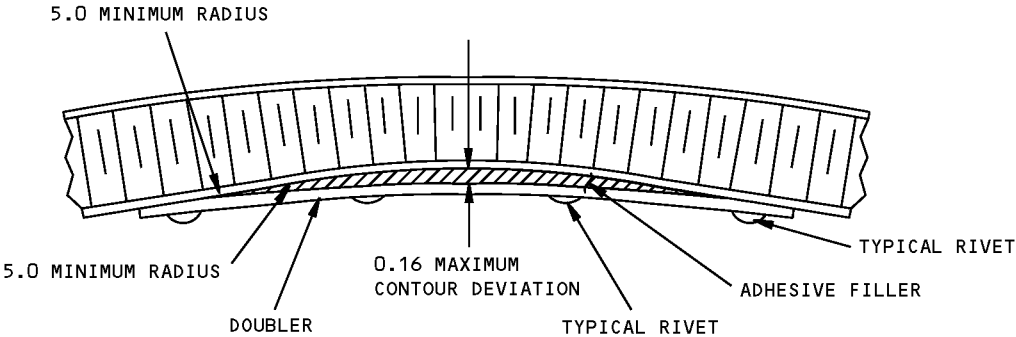
NOTES

- THE DENTED AREA MUST NOT CONTAIN UNREPAIRED CRACKS, GOUGES, DISBONDING OR OTHER DAMAGE.
- MAXIMUM AREA OF DENT MUST NOT BE LARGER THAN 50.0 SQUARE INCHES.
- THE MAXIMUM DIMENSION OF AN INDIVIDUAL REPAIR IS LIMITED TO 12.0 INCHES.
- THIS REPAIR MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY MINIMUM OF 3.0 INCHES.
- ALL DAMAGE SMALLER THAN 20.0 SQUARE INCHES WILL BE REPAIRED USING ALUMINUM SHEET, ALUMINUM CORE AND ADHESIVE.

REPAIR MATERIAL		
PART	QTY	MATERIAL
PATCH (INTERNAL)	1	ALUMINUM ALLOY SHEET 2024-T3 BARE (0.032 INCH) THICK

**Integrated Nozzle Assembly Forward Duct - Repair for Large Radius Dents in Inner Skins - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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DETAIL I

A9434A

Integrated Nozzle Assembly Forward Duct - Repair for Large Radius Dents in Inner Skins - RB211 Engines
Figure 201 (Sheet 2 of 2)

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STRUCTURAL REPAIR MANUAL

**REPAIR 14 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - LARGE RADIUS DENTS IN OUTER SKIN -
RB211 ENGINES**

APPLICABILITY
THIS REPAIR IS FOR LARGE RADIUS DENTS ON OUTER SKIN.

NOTES

- ALL DAMAGE SMALLER THAN 20 SQUARE INCHES WILL BE REPAIRED USING ALUMINUM SHEET, ALUMINUM CORE, AND ADHESIVE.
- THE MAXIMUM DIMENSION OF ANY INDIVIDUAL REPAIR IS LIMITED TO 12.0 INCHES.
- THIS REPAIR MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY MINIMUM 3.0 INCHES.
- THE DENTED AREA MUST NOT CONTAIN UNREPAIRED CRACKS, GOUGES, DISBONDING OF OTHER DAMAGE.
- MAXIMUM AREA OF DENT MUST NOT BE LARGER THAN 50.0 SQUARE INCHES.

REPAIR INSTRUCTIONS

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

1. Clean the damage area using methylethylketone on clean cotton cloth. Wipe it dry before solvent evaporates.
2. Cut cover patch from 0.032 inch 2024-T3 bare sheet. Cut to round or oval shape to cover area of dent. See Detail I.
3. Drill and countersink the fastener holes for CR3255-4-1 around periphery with 0.65-0.75 inch spacing. Locate in cell voids where possible.
4. Form the doubler to fit the contour of the skin.

WARNING: PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.

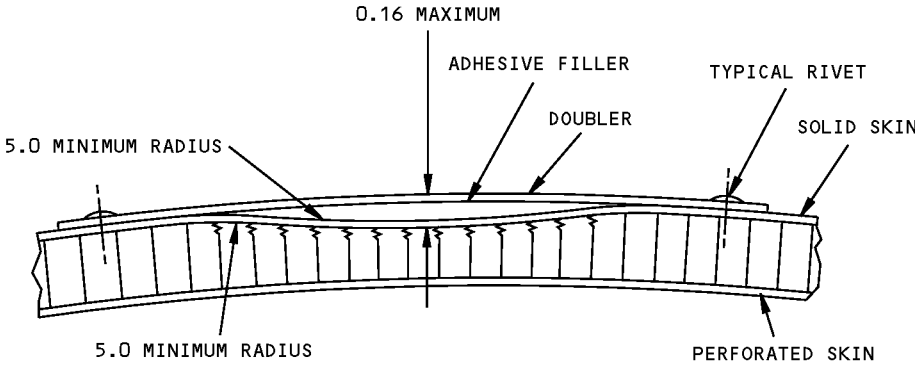
5. Deburr and clean the area using methylethylketone on clean cotton cloth. Wipe it dry before the solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT MATERIAL FROM COMING INTO CONTACT WITH SKIN.

6. Mix and apply adhesive filler EA934NA to fill the skin depression to its original contour.
7. Install the doubler patch using adhesive filler and wet install rivets CR3255-4-1.
8. Clean away excess adhesive using clean cotton cloth. Leave an aerodynamic fillet.
9. Cure the adhesive for 1 hour at 140°F (60°C) using heat lamps.
10. Visually inspect the repair area.

**Integrated Nozzle Assembly Forward Duct - Repair for Large Radius Dents in Outer Skin - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

A9435

Integrated Nozzle Assembly Forward Duct - Repair for Large Radius Dents in Outer Skin - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

**REPAIR 15 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - SMALL FULL PENETRATIONS - RB211
ENGINES**

APPLICABILITY

THIS REPAIR IS FOR SMALL FULL PENETRATION.

REPAIR INSTRUCTIONS

1. Remove the damaged skin and core and check for adjacent delamination. See Detail I.
 2. Cut the replacement core material to fit the aperture.
 3. Using 0.032 inch aluminum sheet, cut two doubler patches 2.0 inches dia. larger than the cut-out.
 4. Using 0.025 inch aluminum sheet cut the outer filler patch.
 5. Using 0.028 inch aluminum sheet, cut inner filler patch.
 6. Trial fit the repair parts. Drill and countersink for rivets CR3255-4-1 and clamp in place.
 7. Layout a Hi-Lok honeycomb fastener hole pattern in the field of the patch. Use 1.19-1.5 inches fastener spacing and a triangular pattern for larger patches. Use one row of fasteners where damage width exceeds 1.65 inches. Use 2 and 3 rows when width exceeds 2.8 and 4.0 inches respectively.
 8. Dis-assemble the repair parts and deburr them.
- WARNING:** PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.
9. Clean the repair area with methylethylketone on clean cotton cloth and wipe it dry before the solvent evaporates.
- WARNING:** USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH SKIN.
10. Install the core with adhesive filler EA934NA applied to faying surfaces and intercore faying surfaces.
 11. Install filler patches and doubler patches with adhesive filler applied to faying surfaces.
 12. Wet install rivets CR3255-4-1 and Hi-Lok fasteners HL568-5-750, HC32-5-650, HL597-5. Stake the Hi-Lok fastener threads after collar shear-off.

13. Wipe away any excess adhesive using clean cotton cloth.
14. Cure the repair adhesive for 1 hour at 140°F (60°C) using heat lamps.
15. Visually inspect the repair area.

NOTES

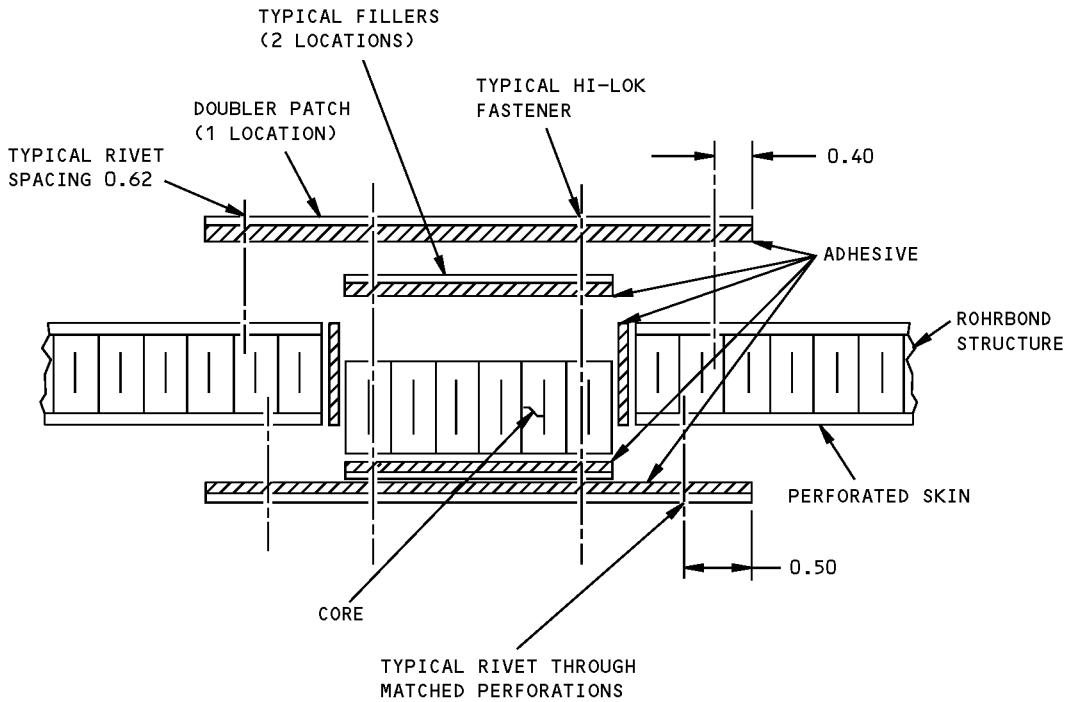
- ALL DAMAGE SMALLER THAN 20.0 SQUARE INCHES WILL BE REPAIRED USING ALUMINUM SHEET, ALUMINUM CORE AND ADHESIVE.
- THE MAXIMUM DIMENSION OF ANY INDIVIDUAL REPAIR IS LIMITED TO 12.0 INCHES.
- THIS REPAIR MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY MINIMUM 3.0 INCHES.
- THIS REPAIR MUST BE A MINIMUM OF 1.0 INCHES FROM ANY REINFORCED AREA.

A	ALUMINUM SHEET ALLOY 2024-T3 BARE
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REPAIR MATERIAL		
PART	GAUGE	MATERIAL
REPAIR PATCH	0.032	A
FILLER PATCH	0.025	A
FILLER PATCH	0.028	A
CORE PLUG		AL-5052 (LJ76238)

**Integrated Nozzle Assembly Forward Duct - Repair for Small Full Penetrations - RB211 Engines
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL I

Integrated Nozzle Assembly Forward Duct - Repair for Small Full Penetrations - RB211 Engines
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 16 - INTEGRATED NOZZLE ASSEMBLY FORWARD DUCT - FULL PENETRATION WITH UNEQUAL SKIN DAMAGE - RB211 ENGINES

APPLICABILITY
THIS REPAIR IS FOR FULL PENETRATION WITH UNEQUAL SKIN DAMAGE.

REPAIR INSTRUCTIONS

- Cut away the damaged skin and core on the major damage side down to the opposite skin. Cut away the damage in opposite skin to leave 1.0 inches overlap. See Detail I.
 - Remove the adhesive core fillets that remain on this overlap. Use a grinding disc.
 - Cut the repair patches using 0.032 inch aluminum sheet for the doublers. Make them 2.0 inches diameter larger than skin cut-out.
 - Cut the filler patch from 0.025 inch aluminum sheet for the outer skin.
 - Using 0.028 inch aluminum sheet, cut the inner filler patch.
 - Cut the replacement core from AL-5052 to fit the cut-out.
 - Assemble the repair parts markout and drill for MS20470AD4-4 rivets attach the filler to the doubler.
 - Layout the Hi-lok honeycomb fastener hole pattern in the field of patch with 1.19-1.5 inches spacing. Use a triangular pattern for larger patches. Use one row of fasteners where width exceeds 1.65 inches, and 2 and 3 rows when width exceeds 2.8 and 4.0 inches respectively.
 - Dis-assemble the repair. Deburr the holes and dimple the skins for Hi-Lok fasteners.
 - Re-assemble the patch and trial fit the Hi-Lok fasteners. Grind the sleeves to the correct length.
- WARNING:** PROTECTIVE GLOVES MUST BE WORN WHEN USING DEGREASERS. USE ONLY IN WELL VENTILATED AREAS. VERY INFLAMMABLE. KEEP AWAY FROM IGNITION SOURCES.
- Clean the repair area with methylethylketone on a clean cotton cloth. Wipe it dry before the solvent evaporates.

WARNING: USE EPOXY COMPOUNDS ONLY IN WELL VENTILATED AREAS. TAKE PRECAUTIONS TO PREVENT THE MATERIAL FROM COMING INTO CONTACT WITH SKIN.

- Mix and apply adhesive/filler EA934NA to doubler and filler faying surfaces. Rivet them together using MS20470AD4-4 rivets and position within cut-out using rivets CR3255-4-1).
- Apply adhesive/filler to core-to-core faying surface and all other faying surfaces. Position the core and secure the filler and doubler patches with wet installed rivets CR3255-4-1 and Hi-Lok HL568-5-750, HC32-5-650 and HL597-5. Stake the threads after collar shear-off.
- Wipe away any excess adhesive using clean cotton cloth.
- Cure the adhesive for 1 hour at 140°F (60°C) using heat lamps on both surfaces.
- Visually inspect the repair area.

NOTES

- ALL DAMAGE SMALLER THAN 20.0 SQUARE INCHES WILL BE REPAIRED USING ALUMINUM SHEET, ALUMINUM CORE AND ADHESIVE.
- THE MAXIMUM DIMENSION OF ANY INDIVIDUAL REPAIR IS LIMITED TO 12.0 INCHES.
- THIS REPAIR MUST BE SEPARATED FROM OTHER DAMAGE ON THE SAME SKIN SURFACE BY MINIMUM OF 6.0 INCHES.
- THIS REPAIR MUST BE 1.0 INCHES MINIMUM FROM ANY REINFORCED AREA.

REPAIR MATERIAL		
PART	GAUGE	MATERIAL
REPAIR PATCH	0.032	ALUMINUM SHEET 2024-T3 BARE
FILLER PATCH	0.025	ALUMINUM SHEET 2024-T3 BARE
FILLER PATCH	0.028	ALUMINUM SHEET 2024-T3 BARE
CORE PLUG		AL-5052 (LJ76238)

Integrated Nozzle Assembly Forward Duct - Repair for Full Penetration with Unequal Skin Damage - RB211 Engines

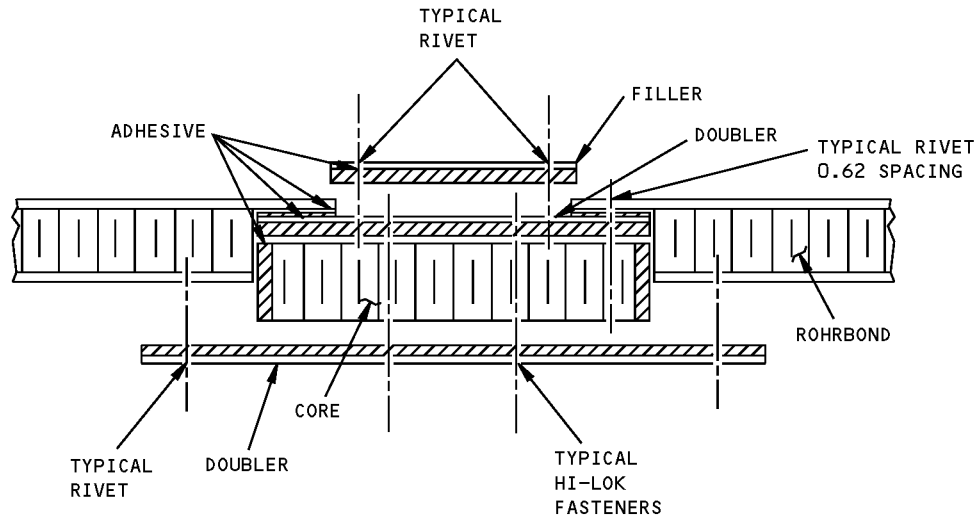
Figure 201 (Sheet 1 of 2)

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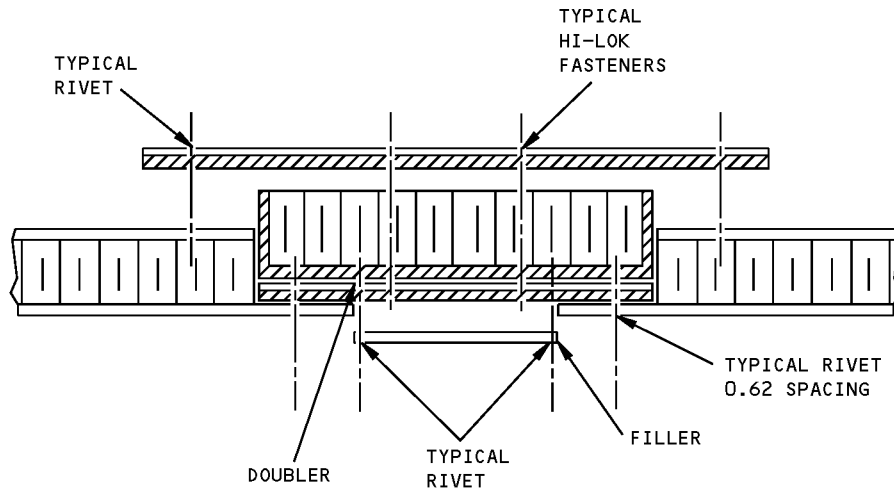
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MAJOR DAMAGE TO INSIDE PERFORATED SURFACE



MAJOR DAMAGE TO OUTER SOLID SKIN

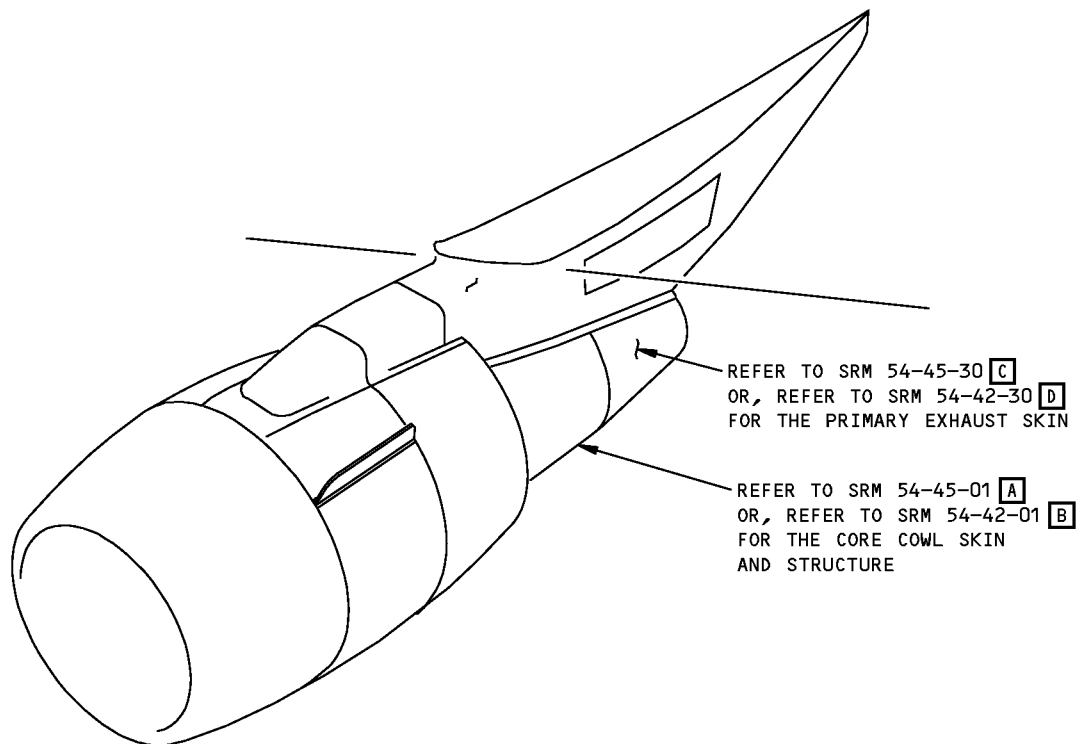
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DETAIL I

Integrated Nozzle Assembly Forward Duct - Repair for Full Penetration with Unequal Skin Damage - RB211 Engines
Figure 201 (Sheet 2 of 2)

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STRUCTURAL REPAIR MANUAL

GENERAL - CORE COWL STRUCTURE DIAGRAM - CF6-80C2 ENGINE



NOTES

- A** FOR CORE COWLS WITH A SERIAL NUMBER TO 3004001 AND ON.
- B** FOR CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A).

- C** FOR PRIMARY EXHAUSTS WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.015 INCH OUTER FACE SHEET.
- D** FOR PRIMARY EXHAUSTS WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.012 INCH OUTER FACE SHEET.

L76500 S0006827708_V2

Core Cowl Structure Diagram - CF6-80C2 Engine
Figure 1

D634T210

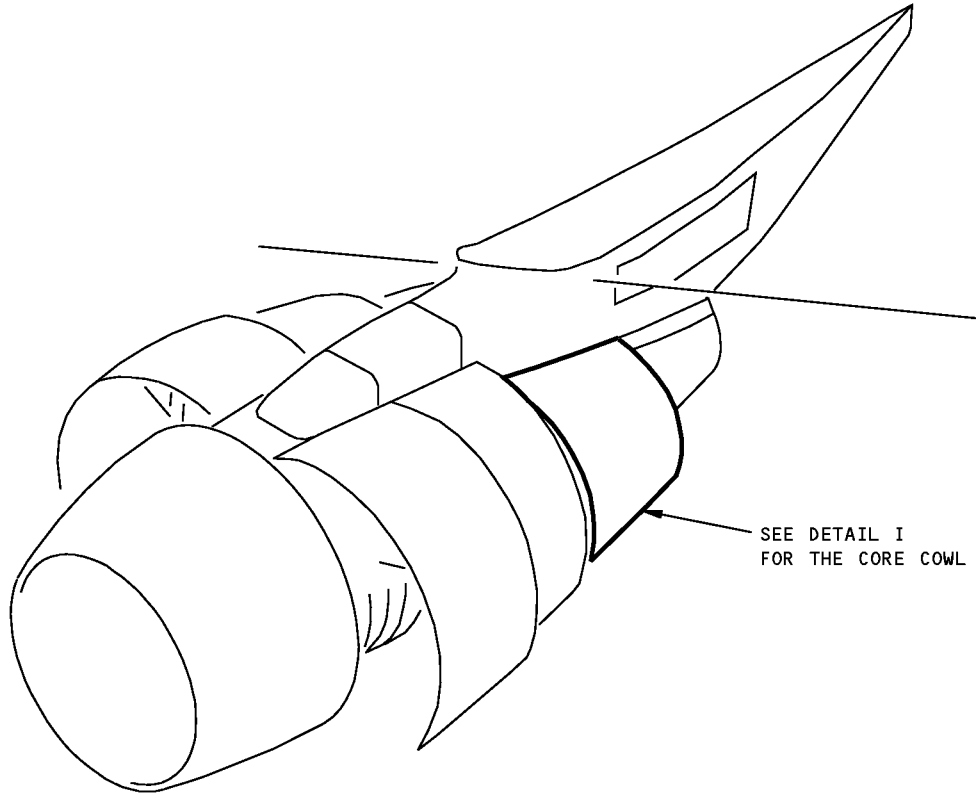
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GENERAL
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IDENTIFICATION 1 - CORE COWL SKIN - CF6-80C2 ENGINE

THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON. REFER TO SRM 54-42-01 FOR THE CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A).



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Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 4)

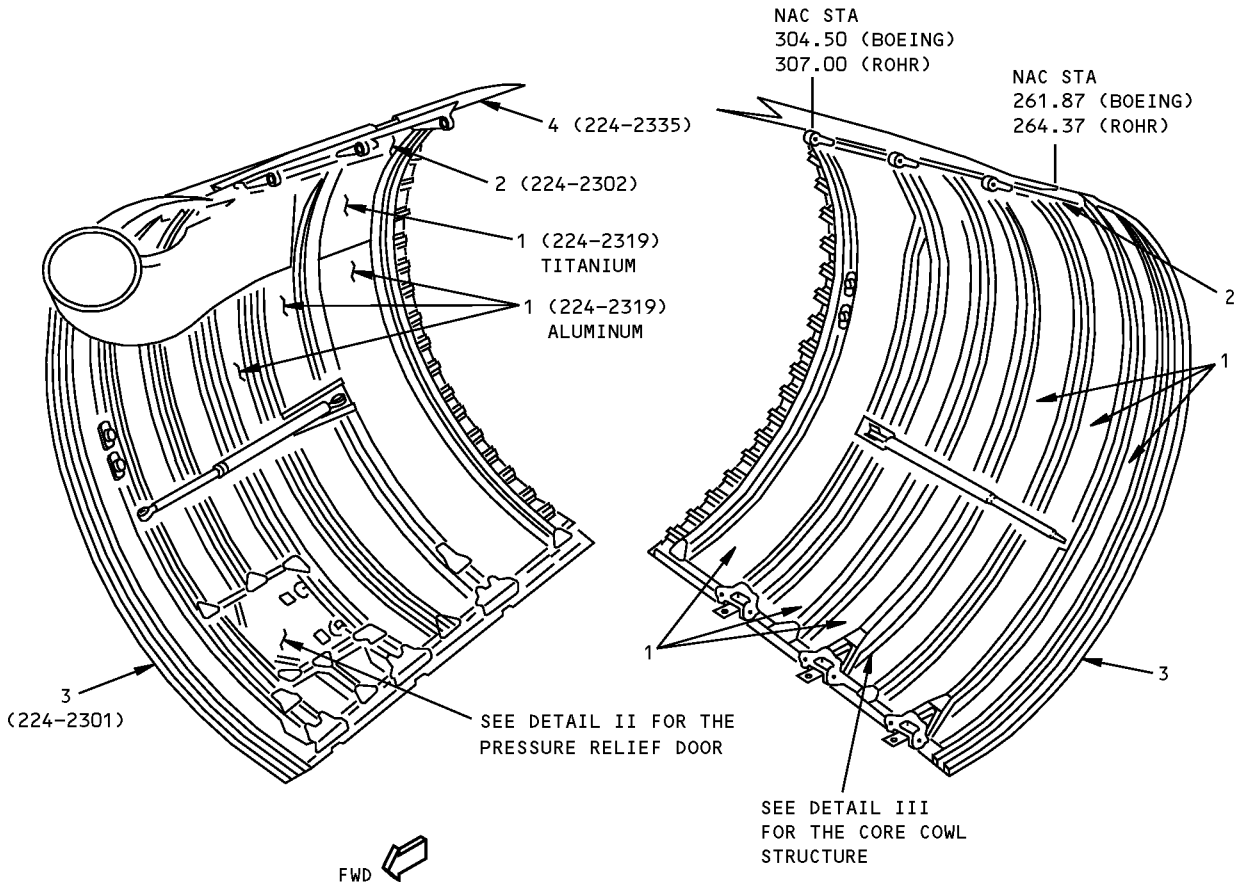
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ROHR REFERENCE DRAWINGS
224-2301
224-2302

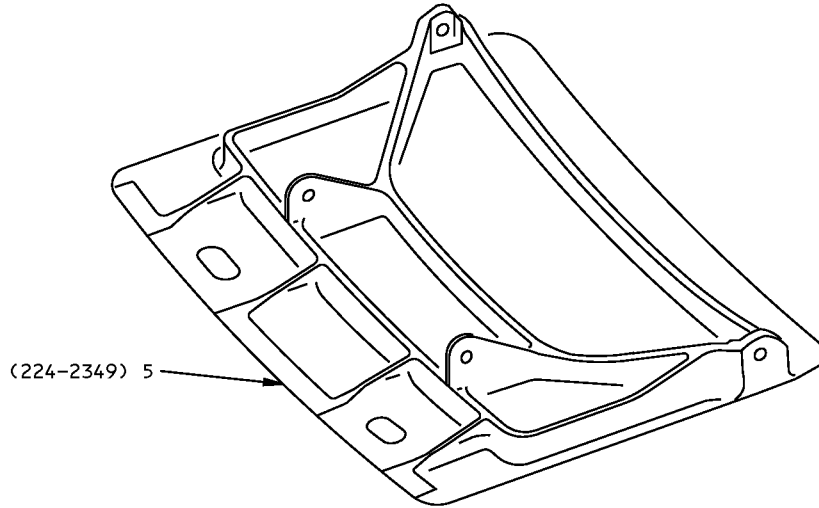


DETAIL I

**Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

ROHR REFERENCE DRAWINGS
224-2301
224-2318



**PRESSURE RELIEF DOOR
DETAIL II**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN ALUMINUM	0.063	CLAD AL 2219-T31 AMS4095 (CHEM MILLED TO 0.040 MINIMUM)	
	TITANIUM	0.063	TI SH 6AL 4V AMS4911 (CHEM MILLED TO 0.040 MINIMUM)	
2	FIRESHIELD (BONDED)	0.005	321 CRES SH, MIL-S-6721 TYPE 1, ANNEALED	
3	WEARSTRIP	0.063	CLAD AL 2024-T3, QQ-A-250/5	
4	SKIN, FAIRING (FIREWALL)	0.050	CP TITANIUM SH, AMS4091	
5	DOOR	0.080	6061-T651 AL PLATE MACHINING	

LIST OF MATERIALS FOR DETAILS I AND II

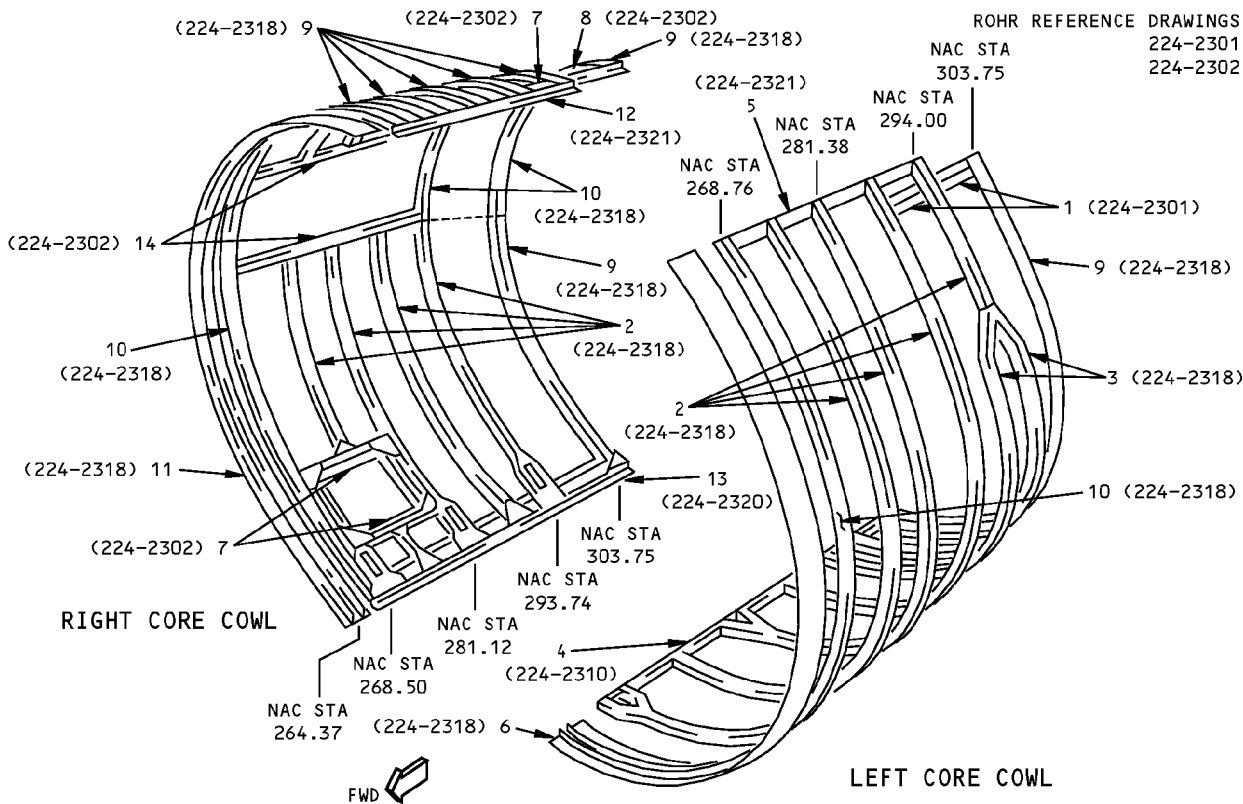
**Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 4)**

IDENTIFICATION 1
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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	INTERCOSTAL	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
2	FRAME	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
3	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
4	LOWER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
5	UPPER LONGERON	0.063	INCONEL 625 SH ANLD AMS5599	
6	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
7	INTERCOSTAL	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
8	INTERCOSTAL	0.063	INCONEL 625 SH ANLD AMS5599	
9	FRAME	0.050	ALUMINUM 2219-T62 CL AL SH AMS4096	
10	FRAME	0.032 T0 0.050	INCONEL 625 SH ANLD AMS5599	
11	FRAME	0.063	ALUMINUM 2024-T62 CL AL SH QQ-A-250/5	
12	UPPER LONGERON	0.063	INCONEL 625 SH ANLD AMS5599	
13	LOWER LONGERON	0.063	ALUMINUM 2219-T62 CL AL SH AMS4096	
14	ANGLE	0.063 T0 0.080	TITANIUM TI-6AL-4V ANLD SH AMS4911	

LIST OF MATERIALS FOR DETAIL III

Core Cowl Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL**ALLOWABLE DAMAGE 1 - CORE COWL SKIN - CF6-80C2 ENGINE****1. Applicability**

- A. This subject is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-01 for core cowls with a serial number prior to 3004001 or core cowls with a four digit serial number (For example 1293-A).

2. General

- A. Allowable damage data is to permit an operator to determine if a damaged core cowl can be returned to service without structural repair.
- (1) Damage permitted by these data will have no significant effect on the ultimate static strength or fatigue life of the structure, and will be capable of fulfilling its design function.
 - (2) It is assumed in these damage limits that exposed edges do not protrude from the skin contour. This type of damage must be reworked to remove or feather all protrusions. Holes and cracks in pressure boundaries must be sealed with appropriate tape.
- B. Allowable Damage Usage
- (1) Unlimited Usage
 - (a) Minor damage not affecting the structural integrity or functional capability of the component and requiring no repair over the aircraft design life.
 - (2) Time Limited Usage
 - (a) Minor damage not affecting the structural integrity of the component in normal operation, but could reduce design life of component. Therefore, damage must be permanently repaired not later than the next maintenance "C" check. The location and size of the damage must be noted and checked at each subsequent "A" check to ensure that the damage has not grown beyond the allowable damage limits.
- C. Damage Types
- (1) Core Cowl Sheet Metal Structure - The types of allowable damage for the core cowl are defined below. They apply only to the parent metal material and do not include damage to surface finish such as paint. See Detail I.
 - (a) Abrasion: Damage which results in a cross-sectional area change due to scuffing, rubbing, scraping, or other surface erosion.
 - (b) Buckle: Damage similar to a dent but is caused by overstress. A permanent bending, wrinkling, or folding of a sheet metal part.
 - (c) Crack: A partial fracture or complete break in the material.
 - (d) Dent: A surface area which has been depressed with respect to its normal contour. The area boundaries are smooth. There is no change in the cross-sectional area of the part.
 - (e) Gouge: Scooping out of material, usually caused by contact with a sharp object which produces a channel-like groove.
 - (f) Hole: A complete penetration of the sheet.
 - (g) Nick: A local gouge with sharp edges. Consider a series of nicks in a line as a gouge.
 - (h) Scratch: Light, narrow, shallow, mark or marks in the surface of a part. It is usually caused by contact with a very sharp object across the surface. Material is displaced, not removed.
- D. Damage Zones

STRUCTURAL REPAIR MANUAL

- (1) There are six damage zones for the core cowl. The allowable damage zones for the core cowl sheet metal and metal frame structure are identified by structural element. See Figure 101/ALLOWABLE DAMAGE 1 Detail VI.
- (a) Refer to Table 101/ALLOWABLE DAMAGE 1 for the following items:
- 1) Allowable damage types
 - 2) Damage zones
 - 3) Allowable damage limits
 - 4) Cleanup requirements
- (b) The allowable damage zones for the core cowl metal structural elements are:
- Zone CC1: Skin panel
 Zone CC2: Frame, longeron, mount, and intercostal
 Zone CC3: Fairing
 Zone CC4: Precooler duct
 Zone CC5: Fire shield
 Zone CC6: Hinges and latches

Table 101:

DESCRIPTION	CRACK	DENT/ BUCKLE	SCRATCH/ GOUGE	HOLE	NICK	CORROSION	DISBONDS
Zone CC1	A	C	D	E	F	H	–
Zone CC2	–	–	D	–	F	H	–
Zone CC3	B	C	D	–	F	H	–
Zone CC4	–	C	D	–	F	–	–
Zone CC5	–	G	G,I	–	G	G	J

CAUTION: ANY DAMAGE NOT DESCRIBED IN THE TABLE MUST BE REPAIRED BEFORE NEXT FLIGHT.

NOTES: See Structure Identification for material thickness.

A. One crack between fasteners in a joint of 10 consecutive fasteners. Must be at least 6.0 inches from hinges, latch fittings, or panel edges. Check at each "A" check. Repair at or before the next "C" check. Any two cracks up to 3.0 inches and away from the joint must be separated from each other and from other damage by more than 10.0 inches. Stop drill the cracks with a 0.25 inch diameter hole. Inspect crack within 5 flights. If crack has not extended beyond the stop drill hole, inspect at each "A" check.

B. Length must be less than 1.0 inch in a bend area and less than 25 percent of the stiffener flange width. Three inches allowed in other areas. Two cracks per fairing side. Stop drill the crack with a 0.25 inch diameter hole. Install a protruding head monel blind rivet (CR3523-6-1, or equivalent) in the stop drill hole. Inspect at each "A" check. Repair at or before the next "C" check.

C. Dent located minimum of 20 times sheet thickness from edge of panel. Dent maximum diameter 4.0 inches. Maximum depth 0.050 inch. The A/Y dimension must not be less than 20 as given in Detail III. Minimum 10.0 inches from other defects.

D. 10.0 inches long in any direction. If depth is greater than 10 percent of material thickness, regard as crack. Minimum 10-inch separation from other defects. Clean up as given in Detail II at or before the next "A" check.

E. Maximum 1.0 inch diameter within 3.0 inches of the panel support members. 3.0 inches maximum diameter other areas. Must be 10.0 inches away from other damage. Check at each "A" check. Repair at or before the next "C" check. Seal with speed tape.

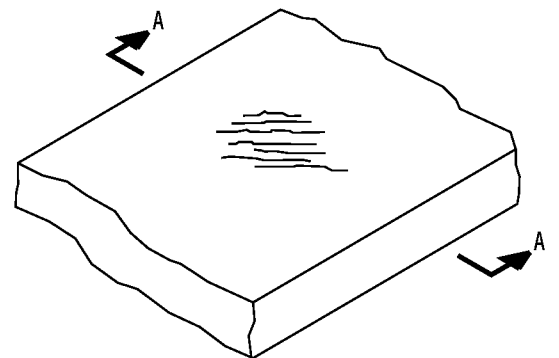
F. Ten percent of material thickness, 0.10 inch wide. Clean up as given in Detail IV at or before the next "A" check.

G. The fireshield is non-structural and is made from 0.005 inch thick cres foil, bonded to the skin with a 0.010 inch thick layer of adhesive. Any damage that has no sharp edges and does not penetrate through the fireshield is acceptable. A change in curvature where the radius-to-thickness ratio, R/T, is less than 1.0, is considered a sharp edge. Dents are permitted if they meet the preceding requirement and there is no damage to the structural skin of the cowl. It is not permitted to fill dents, and the dents may show no evidence of pulled or loose rivets.

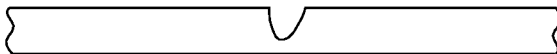
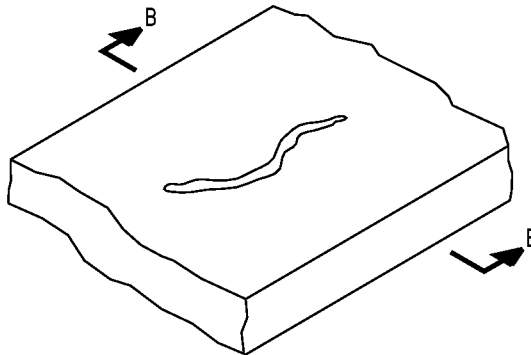
**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACK	DENT/ BUCKLE	SCRATCH/ GOUGE	HOLE	NICK	CORROSION	DISBONDS
H. Repair as given in Detail V.							
I. Remove damage as given in Detail VI.							
J. Maximum disbond between the cres fireshield and skin must not exceed 50 percent in each chem-milled area between frames. Maximum accumulated disbond area must not exceed 30 percent.							

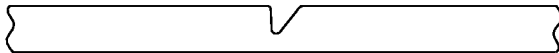
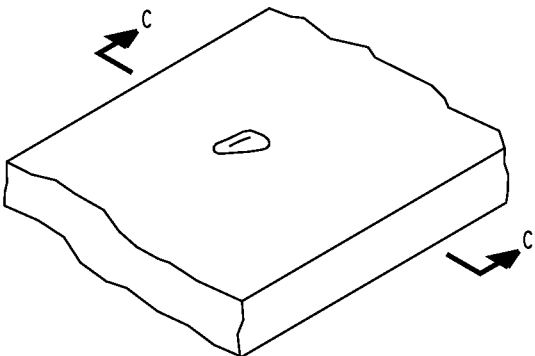
**767-300
STRUCTURAL REPAIR MANUAL**



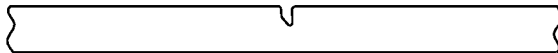
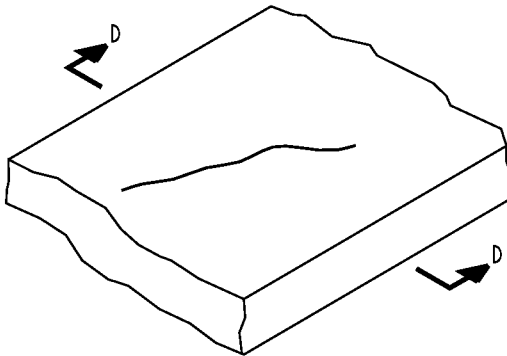
**SECTION A-A
ABRASION**



**SECTION B-B
GOUGE**



**SECTION C-C
NICK**



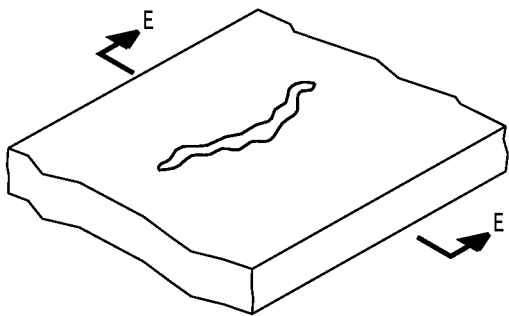
**SECTION D-D
SCRATCH**

**CORE COWL DAMAGE TYPES
DETAIL I**

S76S-070-00

**Allowable Damage - Core Cowl - CF6-80C2 Engine
Figure 101 (Sheet 1 of 5)**

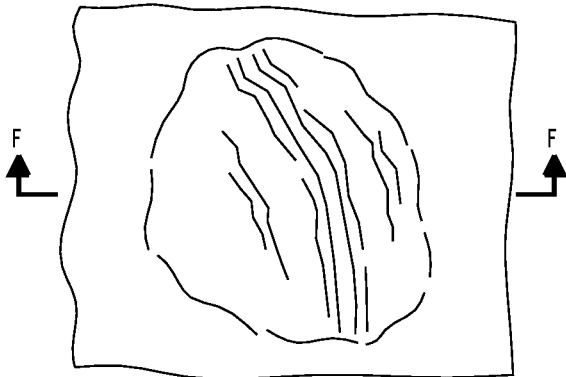
**767-300
STRUCTURAL REPAIR MANUAL**



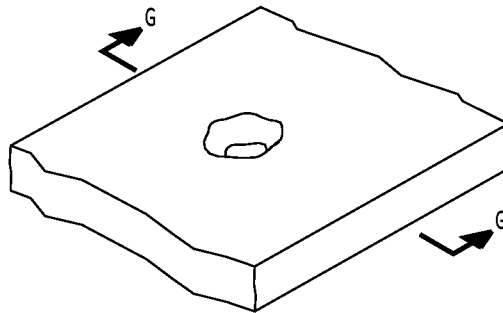
CRACK



SECTION E-E



SECTION F-F
BUCKLE



SECTION G-G
HOLE

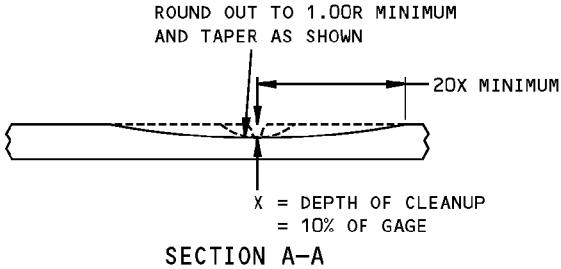
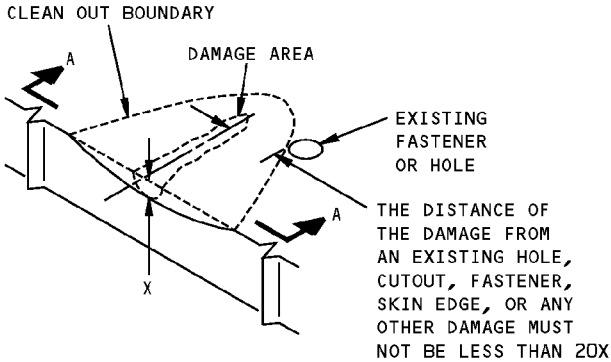


CORE COWL DAMAGE TYPES
DETAIL I (CONTINUED)

S76S-071-00

**Allowable Damage - Core Cowl - CF6-80C2 Engine
Figure 101 (Sheet 2 of 5)**

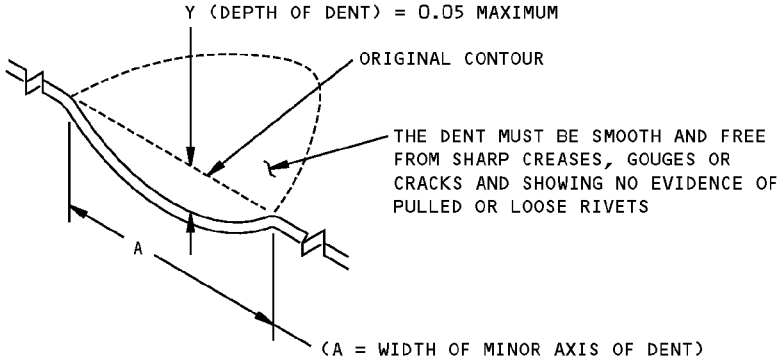
**767-300
STRUCTURAL REPAIR MANUAL**



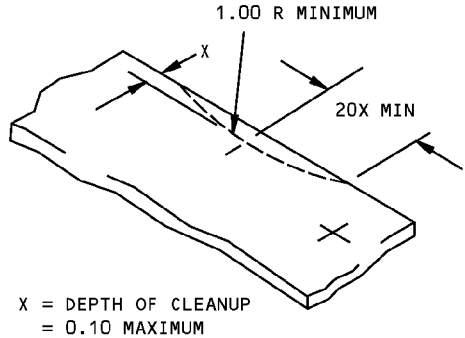
**ALLOWABLE NICK OR GOUGE
DAMAGE ON A SURFACE
DETAIL II**

CAUTION: DO NOT FILL DENTS
MAJOR AXIS - 4.00 MAXIMUM

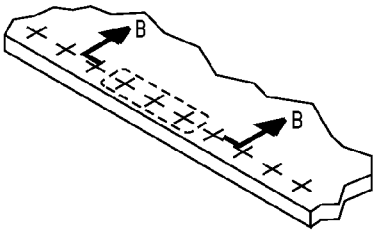
$\frac{A}{Y}$ MUST NOT BE LESS THAN 20



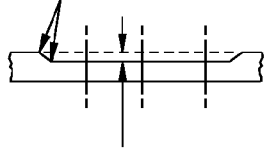
**ALLOWABLE DAMAGE FOR DENT
DETAIL III**



**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL IV**



SMOOTH BLEND-OUT RADIUS
0.50 INCH MINIMUM. CORROSION
CLEANUP AROUND ANY THREE
FASTENERS IN TEN IS PERMITTED
TO MAXIMUM DEPTH

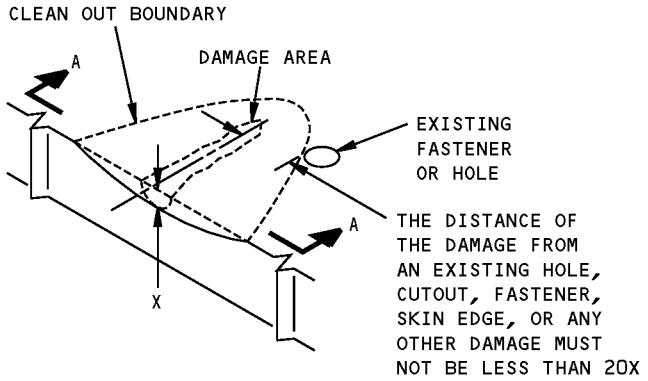


SECTION B-B

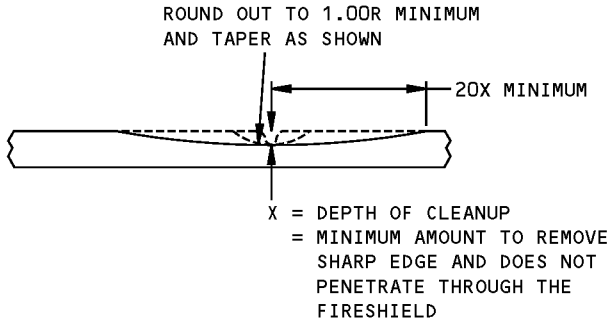
S76S-075-00

**Allowable Damage - Core Cowl - CF6-80C2 Engine
Figure 101 (Sheet 3 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



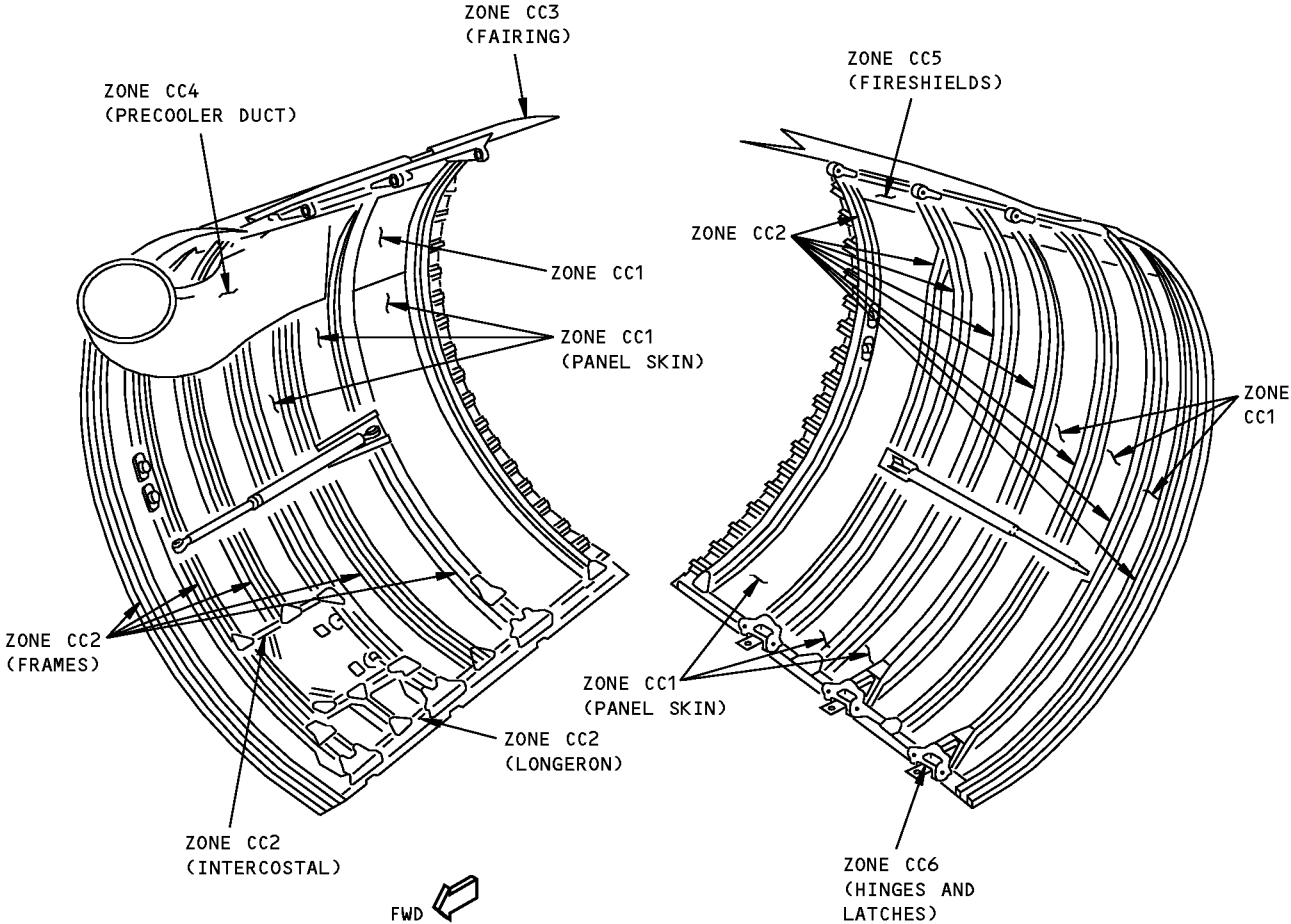
**FIRESHIELD ONLY
DETAIL VI**



SECTION A-A

**Allowable Damage - Core Cowl - CF6-80C2 Engine
Figure 101 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



**CORE COWL DAMAGE ZONES
DETAIL VII**

S76S-072-00

**Allowable Damage - Core Cowl - CF6-80C2 Engine
Figure 101 (Sheet 5 of 5)**

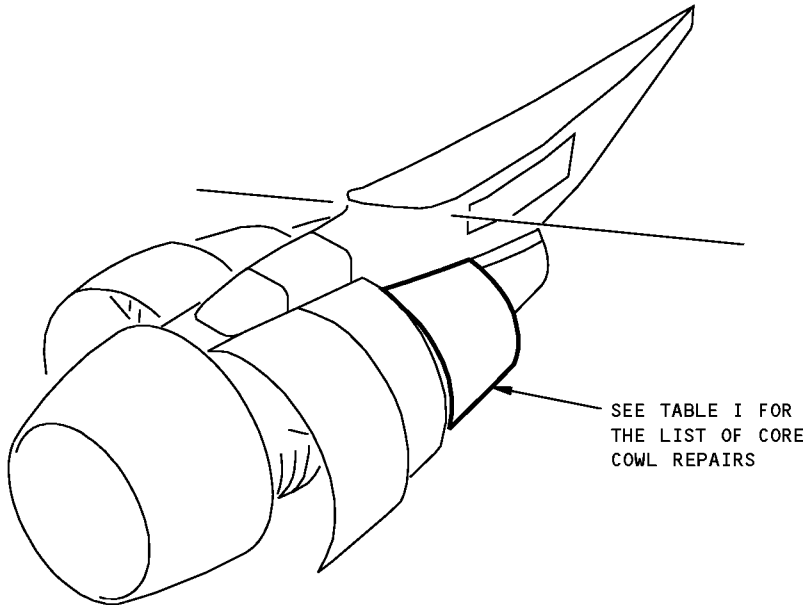
ALLOWABLE DAMAGE 1
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54-45-01

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - CORE COWL REPAIR - CF6-80C2 ENGINE



THIS SUBJECT IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON. REFER TO SRM 54-42-01 FOR THE CORE COWLS WITH A SERIAL NUMBER PRIOR TO 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A).

SEE TABLE I FOR
THE LIST OF CORE
COWL REPAIRS

REPAIR NUMBER	REPAIR DESCRIPTION
1	ALUMINUM SKIN FLUSH PATCH REPAIR (LEFT AND RIGHT CORE COWL ASSEMBLIES)
2	TITANIUM FAIRING FLUSH PATCH REPAIR (LEFT AND RIGHT CORE COWL ASSEMBLIES)
3	ALUMINUM ZEE FRAME REPAIR (LEFT AND RIGHT CORE COWL ASSEMBLIES)
4	ALUMINUM HAT FRAME REPAIR (LEFT AND RIGHT CORE COWL ASSEMBLIES)
5	INCONEL ZEE FRAME REPAIR (LEFT AND RIGHT CORE COWL ASSEMBLIES)
6	INCONEL HAT FRAME REPAIR (RIGHT CORE COWL ASSEMBLY)
7	FIRESHIELD PATCH REPAIR (CORE COWL ASSEMBLY)
8	RIGHT-HAND PERCOOLER EXTERNAL DOUBLER

**CORE COWL LIST OF REPAIRS
TABLE I**

L76507 S0006827730_V3

**Core Cowl Repair Index - CF6-80C2 Engine
Figure 201**

D634T210

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - CORE COWL ALUMINUM SKIN - CF6-80C2 ENGINE

1. Applicability

- A. This subject is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-01 for core cowls with a serial number prior to 3004001 or a core cowl with a four digit serial number (For example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, aluminum skins on the left and right core cowl assemblies. Refer to Figure 201/REPAIR 1.
- C. This repair is not applicable if the edge of the damage is less than 1.5 inch (38 mm) from fittings or other existing attachments, or if the damage is more than 6.0 inches (152 mm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by the installation of a flush patch and doubler on the skin.
- B. If the damage is in an area where the cres fireshield is installed (left core cowl assembly only), the damaged area of the fireshield will also be replaced. Refer to REPAIR 7 Fireshield Patch Repair, for the necessary preparation before you do this repair.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be removed. The cutout must have the smallest size possible that removes the damage completely. The cutout can be circular or rectangular. If rectangular, it must have a minimum radius of 1.0 inch (25 mm) at the corners.

- B. Prepare the damage area for repair.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the skin. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 inch (6.4 mm) and repeat the applicable steps, if necessary.

- (2) Cut and remove the damaged area of the skin as marked. Remove the burrs.

NOTE: 1. If the damage is in a fireshield area, remove the fireshield along with the skin as marked. Do not peel off or otherwise damage the remaining fireshield on the skin.
2. This repair is not applicable if, after material removal, the damage is more than the limits given in Paragraph 1.C./REPAIR 1.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (4) Remove the cutting, drilling, and sanding particles from the area. Use a clean, lint-free cloth.

- C. Make the repair parts. Refer to Table 201/REPAIR 1 for the list of repair materials.

NOTE: Make the patch and the doubler, and the filler, if applicable, from 2219-T31 aluminum alloy sheet. In chem milled areas, the patch must be 0.040 inch thick, and the doubler must be 0.050 inch thick. In non-chem milled areas, the patch and the doubler must be 0.063 inch thick. If the damage is partially in a chem milled area, the patch and the doubler must be 0.063 inch thick, and a 0.020 inch thick filler must be used as necessary.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a skin patch to fit inside the cutout. The space between the patch and the edge of the cutout must not be more than 0.03 inch (0.8 mm) all around. Remove the burrs.
- (2) Make a doubler to be installed on the inner surface of the skin in the damage area. The doubler must be large enough to install two rows of rivets on each side of the cutout. If the doubler is rectangular, it must have a minimum radius 0.5 inch (13 mm) at the corners. Remove the burrs.

NOTE: If the cutout is less than 2.0 inches (51 mm) in width or length, it is not necessary to have a cutout in the doubler.

If the damage is in a fireshield area, chamfer the edges of the doubler 0.020 inch (0.51 mm) by 45 degrees all around.

- (3) If applicable, make a filler to be installed between the skin and the doubler in the chem milled area. Remove the burrs.
- (4) If the damage is in a fireshield area, make a fireshield patch from 0.005 inch (0.13 mm) thick 321 CRES sheet. The patch must be larger than the doubler by 0.7 inch (18 mm) all around.
- (5) Form the repair parts as necessary to match the contour of the skin in the repair area. The repair parts must fit in place with light finger pressure.

- D. Heat treat the repair parts.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the aluminum repair parts with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- (2) Heat treat the aluminum repair parts to T81 condition per applicable standard procedures.

NOTE: If necessary, make a fixture to prevent the distortion of the parts during heat treatment. The heat treated parts must fit in place with light finger pressure.

E. Drill the holes.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a mark of two rows of rivet holes around the cutout on the skin. Make sure the holes are not at chem-milled edges. Drill pilot holes as marked. Put the doubler, and the filler if applicable, into position. Match drill the pilot holes through the doubler. Use clamps and temporary fasteners to keep the holes aligned. Do not damage the adjacent structure. Make a mark of two rows of rivet holes along the edges of the skin patch. Put the skin patch into position and match drill the pilot holes through the doubler. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm).

- (2) Examine the installation for correct fit. Use fillers or laminated shims, if necessary, to make the skin patch level with the existing skin on the outer surface.

CAUTION: THE FIRESHIELD PATCH IS MADE FROM VERY THIN MATERIAL AND CAN BE DAMAGED EASILY. WHEN YOU INSTALL THE FIRESHIELD PATCH, MAKE SURE YOU DO NOT CAUSE DAMAGE TO IT.

- (3) If a fireshield patch is used, put it into position. Center the fireshield patch on the doubler, then match drill all of the doubler holes in the fireshield patch. Do not tear or otherwise damage the fireshield patch.
- (4) Remove the parts. If the skin or patch is 0.063 inch (1.60 mm) thick, countersink the holes on the air wetted surfaces to accept the applicable flush head rivets. Remove the burrs.
- (5) Remove the sharp edges. Lightly sand the mating surfaces of the parts and the skin. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (6) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the repair parts and the repair area. Clean the repair parts and the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

F. Prepare the surfaces.

STRUCTURAL REPAIR MANUAL

- (1) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C).

WARNING: CHEMICAL CONVERSION COATING IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: 1. DAB THE SOLUTION ON THE SURFACE. DO NOT RUB.

2. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Apply conversion coating alodine 1000 to the bare aluminum surfaces. Use a nylon brush or a lint-free cloth. Do not let the solution dry on the surface. Keep the surfaces wet with fresh solution for 2 to 5 minutes.
- (4) Rinse the surfaces thoroughly with demineralized water. Air dry for 30 minutes. The surfaces must be colorless with no visible difference between parts.

NOTE: If the alternative conversion coating alodine 1200 is used the surfaces will have a golden color.

G. Apply the primer.

WARNING: EPOXY PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the epoxy primer. Let the mixture stand for a minimum of 30 minutes, but no more than 6 hours.

NOTE: Epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (2) Apply a thin layer of the epoxy primer mixture to the alodined surfaces.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

(3) Air dry for a minimum of 15 minutes at room temperature. Then cure for a minimum of 40 minutes at 140° to 180°F (60° to 82°C). Use explosion proof heat lamps.

H. Install the repair parts in areas without fireshield.

NOTE: If the repair is in a fireshield area, do not do this step. Go to Paragraph 4.I./REPAIR 1.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

(1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to all mating surfaces and to the edges of the skin and the repair parts. Use a brush and follow the manufacturer's instructions.

(2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

(3) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces. Use a spray gun or brush. Put the repair parts into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.

NOTE: If the skin or patch is 0.040 inch (1.02 mm) thick, install the protruding head rivets. If the skin or patch is 0.063 inch (1.60 mm) thick, install the flush head rivets.

(4) On the outer surface, fill the applicable spaces with the sealant. On the inner surface, apply the sealant to the skin and the doubler along the edges of the doubler all around.

(5) Remove the unwanted sealant before it fully cures. Use a clean, lint-free cloth.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

- (7) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.
(8) Use dry air blast and suction cleaners to remove the sanding particles from the repair area. Clean the repair area with a clean, lint-free cloth.
(9) Go to Paragraph 4.J./REPAIR 1.

- I. Install the repair parts in areas with fireshield.

NOTE: If the repair is not in a fireshield area, do not do this step. Go to Paragraph 4.H./REPAIR 1.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to all mating surfaces, including the fireshield patch and the inner surface of the skin patch, and to the edges of the skin and the repair parts.

Use a brush and follow the manufacturer's instructions.

- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: DC 90-006 AND DC 93-006 SEALANTS ARE CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THESE PRODUCTS SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THESE PRODUCTS, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use the manufacturer's instructions to mix the DC 90-006 sealant (red in color) and DC 93-006 sealant (grey in color) in separate containers.
(4) Apply a thin layer of the DC 90-006 sealant (red) to all mating surfaces. Use a spray gun or brush.
(5) Put the repair parts, but not the fireshield patch, into position. Align the rivet holes. Install temporary fasteners to keep the parts together.

STRUCTURAL REPAIR MANUAL

CAUTION: THE FIRESHIELD PATCH IS MADE FROM VERY THIN MATERIAL AND CAN BE DAMAGED EASILY. WHEN YOU INSTALL THE FIRESHIELD PATCH, MAKE SURE YOU DO NOT CAUSE DAMAGE TO IT.

- (6) Put the fireshield patch into position. Align the rivet holes. Trapped air pockets can cause disbonds later. Lightly tap the patch from the center outward in all directions to remove the trapped air pockets. Press the fireshield patch against the adjacent structure, including the doubler and the existing fireshield all around.
- (7) Wet install the rivets with the DC 90-006 sealant (red). Install each rivet with one AN960C5L washer under the formed head.

NOTE: 1. If the skin or patch is 0.040 inch (1.02 mm) thick, install the protruding head rivets. If the skin or patch is 0.063 inch (1.60 mm) thick, install the flush head rivets.

2. The washers are used to prevent damage to the thin patch during rivet installation. Make sure the washers are centered for correct installation, or use a rivet/washer combination with minimum clearance between the rivet and the washer. If necessary, do a few sample installations on a discarded part before you install the rivets.

- (8) On the outer surface, use the DC 93-006 (grey) sealant to fill the space between the skin and the skin patch all around.
- (9) On the inner surface, press the fireshield patch against the existing fireshield all around. Use the DC 90-006 sealant (red) to seal the edge of the fireshield patch all around.
- (10) Remove the unwanted sealant before it fully cures. Use a clean, lint-free cloth.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (11) Cure the sealants. Make sure the fireshield patch makes contact with the adjacent structure at all points during the cure cycle.

Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealants will be tack free in 1 to 2 hours. The DC 90-006 sealant (red) will be fully cured in 24 to 36 hours. The DC 93-006 sealant (grey) will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

- (12) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.
- (13) Use dry air blast and suction cleaners to remove the sanding particles from the repair area. Clean the repair area with a clean, lint-free cloth.
- (14) Install one row of blind rivets through the fireshield patch and the skin along the edge of the fireshield patch all around. Refer to REPAIR 7 Fireshield Patch Repair. Use the applicable instructions in that repair to drill the holes and install the rivets.

J. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment

*11		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.020 in. (0.51 mm), 0.040 in. (1.02 mm), 0.050 in. (1.27 mm), and 0.063 in. (1.60 mm) thick 2219-T31	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Laminated shim	Aluminum	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer, Sealant	DC 1200	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Primer, Epoxy	Base 44-GN-60 Converter 44-GN-60 Thinner DM water	Deft, Inc. 17451 Von Karman Avenue Irvine, CA 92714-6205
	Or: Base 463-6-78 Converter X-515 Thinner TL164 (Not for fastener installation)	Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Rivets, Blind, Protruding head	NAS1398C5-2 (Alternatives: CR2663-5-2, and CR2673-5-2)	Commercially Available
Rivet, Blind, Flush Shear head	CR2664-5-2 (Alternative: CR4624-5-2)	Commercially Available
Sealant	DC 90-006, and DC 93-006	Dow Corning
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available

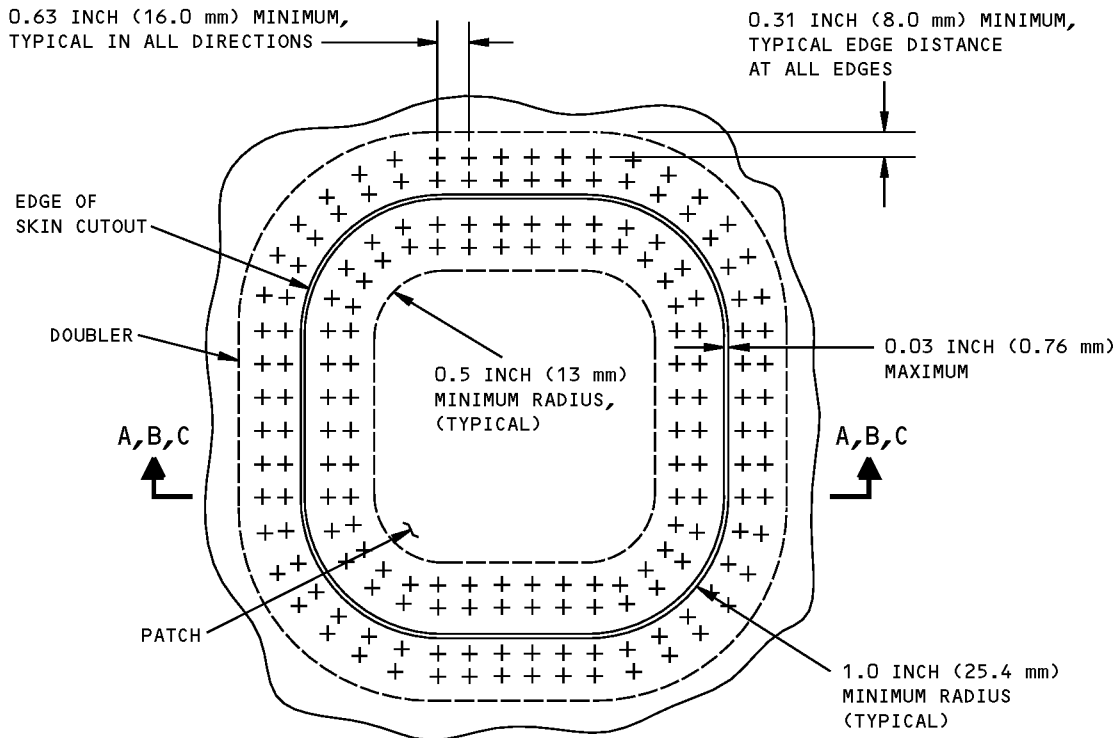
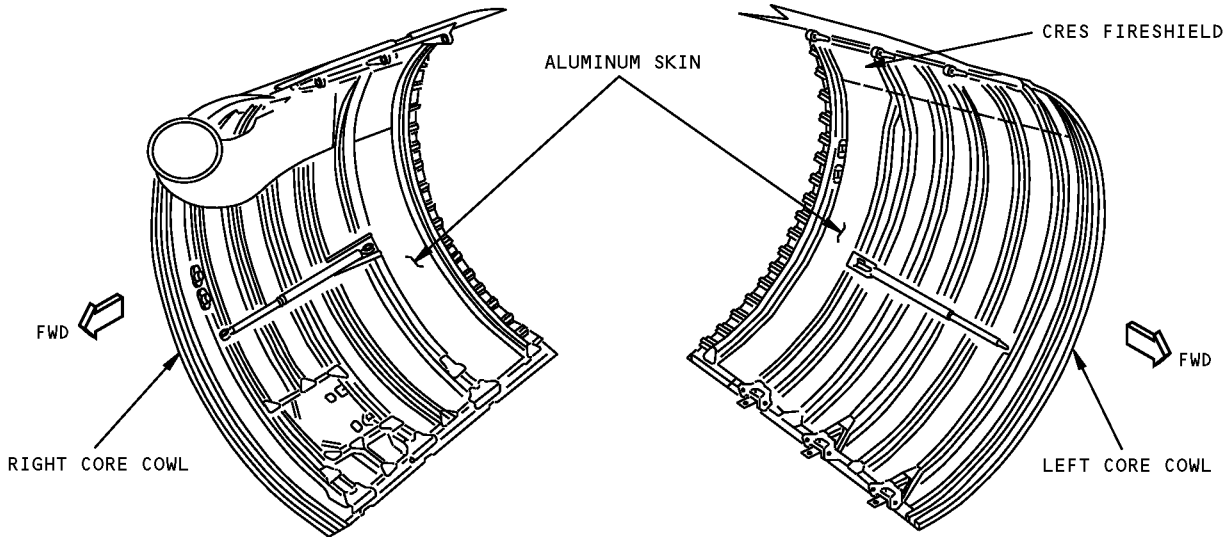
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Stainless steel sheet	0.005 in. (0.13 mm) thick 321 Cres, AMS 5510	Commercially Available
Washer	AN960C5L	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL





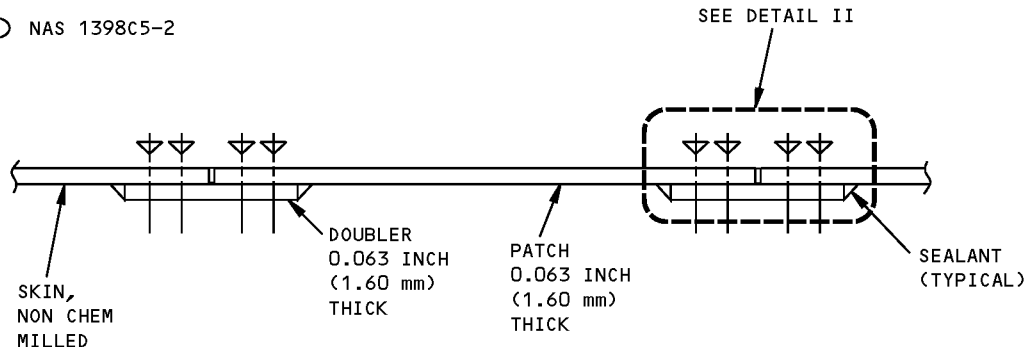
DETAIL I
TYPICAL REPAIR

GRS311-01

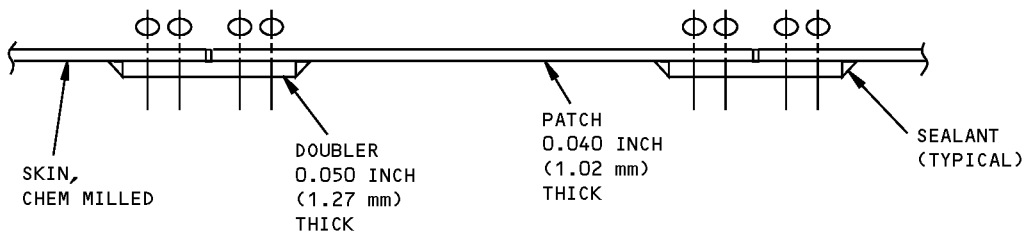
Aluminum Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

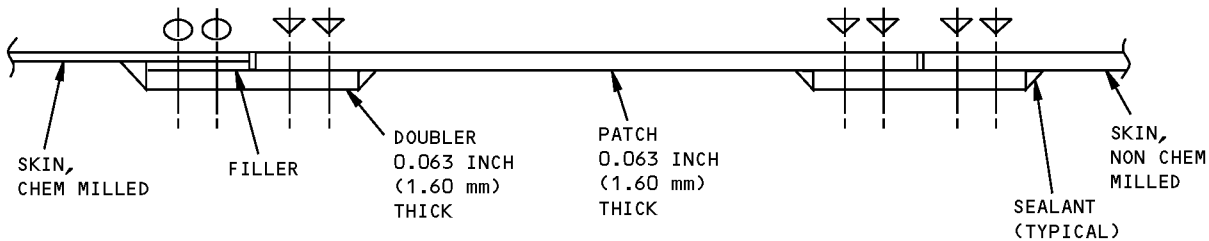
RIVETS:  CR 2664-5-2
 NAS 1398C5-2



**SECTION A-A
TYPICAL IF DAMAGED SKIN IS NOT CHEM MILLED**



**SECTION B-B
TYPICAL IF DAMAGED SKIN IS CHEM MILLED**

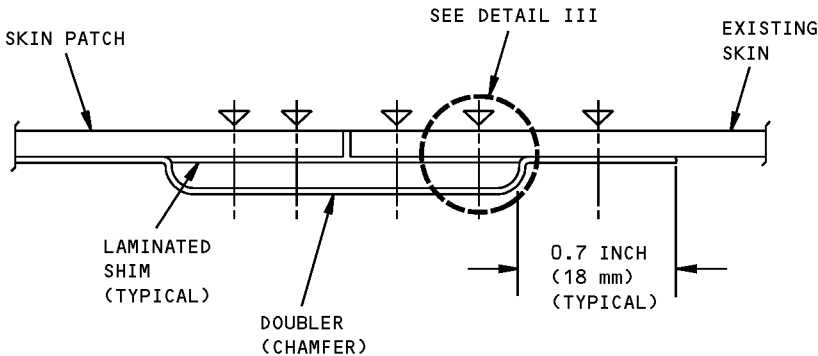


**SECTION C-C
TYPICAL IF DAMAGED SKIN IS PARTIALLY CHEM MILLED**

GRS311-02

**Aluminum Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

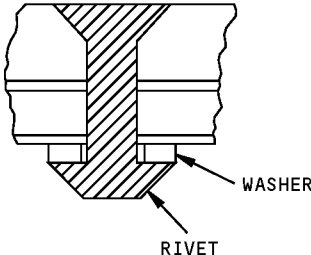
**767-300
STRUCTURAL REPAIR MANUAL**



GRS311-03

NOTE: NOT TO SCALE

DETAIL II
TYPICAL CROSS SECTION THROUGH A REPAIR
THAT INSTALLS A FRESH PATCH
(DETAIL SHOWN FOR SECTION A-A, BUT APPLICABLE TO B-B AND C-C)



DETAIL III

**Aluminum Skin Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - TITANIUM FAIRING FLUSH PATCH REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This procedure is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-01 for core cowls with a serial number before 3004001 or a core cowl with a four digit serial number (for example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, titanium skins of the fairings on the left and right core cowl assemblies. See Figure 201/REPAIR 2.
- C. This repair is not applicable if the edge of the damage is less than 1.5 inch (38 mm) from fittings or other existing attachments, or if the damage is more than 6.0 inches (152 mm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by the installation of a flush patch and doubler on the fairing skin.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be removed. The cutout must have the smallest size possible that removes the damage completely. The cutout can be circular or rectangular. If rectangular, it must have a minimum radius of 1.0 inch (25 mm) at the corners.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the skin. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 inch (6.4 mm) and repeat the applicable steps, if necessary.

STRUCTURAL REPAIR MANUAL

- (2) Cut and remove the damaged area of the skin as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Paragraph 1.C./REPAIR 2.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (4) Remove the cutting, drilling, and sanding particles from the area. Use a clean, lint-free cloth.

- C. Make the repair parts. Refer to Table 201/REPAIR 2 for the list of repair materials.

NOTE: Make the repair parts from 0.050 inch (1.27 mm) thick titanium alloy sheet.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a patch to fit inside the cutout. The space between the patch and the edge of the cutout must not be more than 0.03 inch (0.8 mm) all around. Remove the burrs.
- (2) Make a mark of two rows of rivet holes around the cutout on the skin. The doubler must be large enough to install a minimum of two rows of rivets on each side of the cutout. If the doubler is rectangular, it must have a minimum radius of 0.5 inch (13 mm) at the corners. Remove the burrs.

NOTE: If the cutout is less than 2.0 inches (51 mm) in width or length, it is not necessary to have a cutout in the doubler.

- (3) Form the repair parts as necessary to match the contour of the skin in the repair area. The repair parts must fit in place with light finger pressure.
- (4) Make a mark of the rivet holes on the skin. Drill the pilot holes as marked. Put the doubler into position. Match drill the pilot holes through the doubler. Use clamps and temporary fasteners to keep the holes aligned. Do not damage the adjacent structure. Make a mark of two rows of rivet holes along the edges of the patch. Put the patch into position and match drill the pilot holes through the doubler. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.161 to 0.165 inch (4.09 to 4.19 mm).

- (5) Remove the parts. Countersink the holes on the air wetted surfaces. Do not countersink more than 0.030 inch (0.76 mm) deep. Remove the burrs.
- (6) Remove the sharp edges. Lightly sand the mating surfaces of the parts and the skin. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (7) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the repair parts and the repair area. Clean the repair parts and the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- D. Install the repair parts.

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- (1) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C).

WARNING: DC 1200 PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Use the manufacturer's instructions to mix the DC 1200 sealant primer.
- (4) Apply a thin layer of the primer mixture to the mating surfaces and to the edges of the patch. Use a brush and follow the manufacturer's instructions.
- (5) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (6) Use the manufacturer's instructions to mix the DC 93-006 sealant.
- (7) Apply a thin layer of the sealant to the mating surfaces. Put the repair parts into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the NAS1200M5-5 rivets with the sealant.

NOTE: In the absence of the NAS1200M5-5 shear head rivets, it is acceptable to install the alternative MS20427M5-6 tension head rivets. In the two cases, however, the rivet heads will be above the adjacent surface, and must be microshaved later for aerodynamic smoothness.

- (8) On the outer surface, fill the space between the patch and the skin with the sealant all around. On the inner surface, apply the sealant to the edges of the doubler all around.
- (9) Remove the unwanted sealant before it fully cures. Use a clean, lint-free cloth.

STRUCTURAL REPAIR MANUAL

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (10) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

- E. Microshave the rivet heads.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: DO NOT CUT INTO THE SKIN OR THE PATCH WHEN YOU MICROSHAVE THE RIVET HEADS.

- (1) Use a dual rotating microshaver to trim the rivet heads. Do not damage the adjacent surface.

NOTE: The rivet heads must not be below the adjacent surface and must not be more than 0.005 inch (0.13 mm) above it.

- (2) Remove the sharp edges. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- (3) Use dry air blast to remove the sanding particles from the repair area. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- F. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available

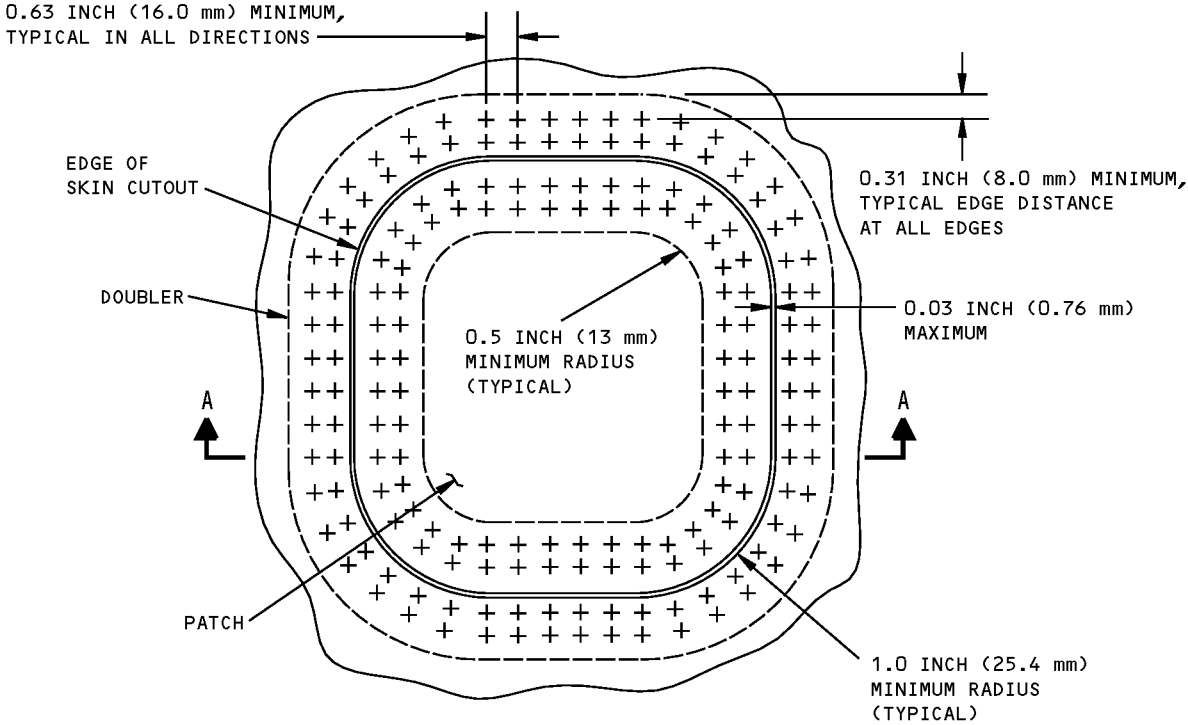
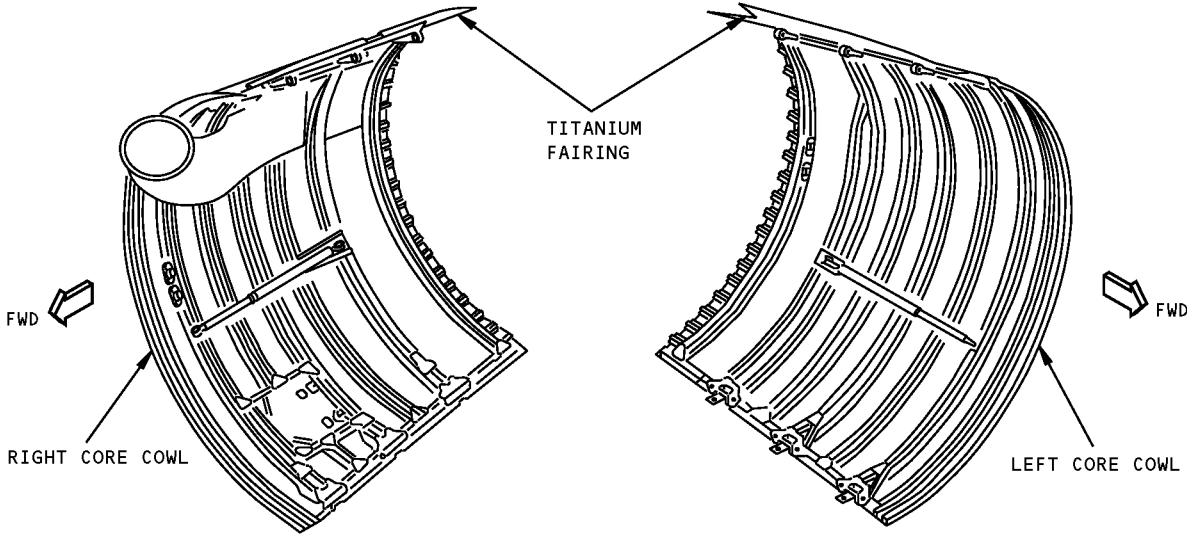
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, Explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer, Sealant	DC 1200	Commercially Available
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Solid	NAS1200M5-5 (Alternative: MS20427M5-6)	Commercially Available
Sealant	DC 93-006	Dow Corning
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Titanium alloy sheet	0.050 in. (1.27 mm) thick Commercially pure, per AMS 4901 (Alternative: 6A1-4V alloy per AMS 4911)	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03

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STRUCTURAL REPAIR MANUAL

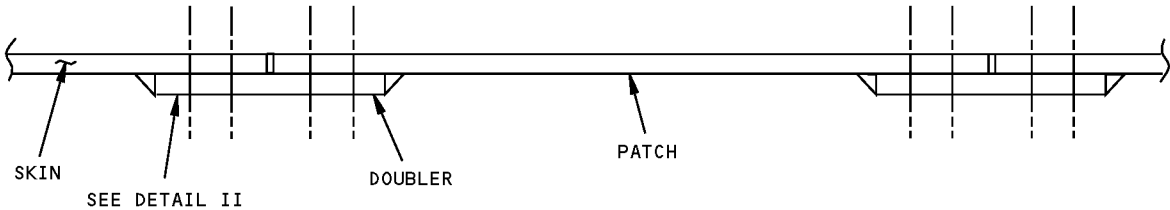


DETAIL I
TYPICAL REPAIR

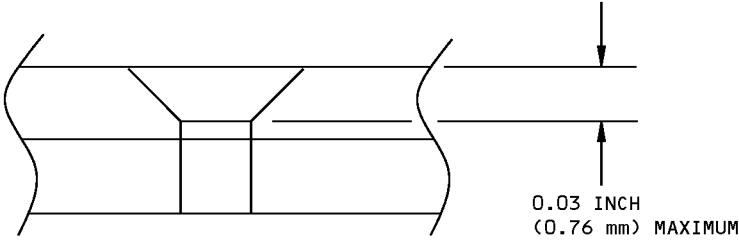
GRS312-01

Titanium Fairing Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



SECTION A-A



DETAIL II
TYPICAL COUNTERSINK DIMENSION
AT ALL HOLES

GRS312-02

**Titanium Fairing Flush Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - ALUMINUM ZEE FRAME REPAIR - CF6-80C2 ENGINE

1. Applicability

- A. This procedure is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-02 for core cowls with a serial number before 3004001 or a core cowl with a four digit serial number (for example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, aluminum zee frames on the left and right core cowl assemblies. Refer to Figure 201/REPAIR 3.
- C. This repair is not applicable if the edge of the damage is less than 2.0 inches (51 mm) from fittings or other existing attachments, or less than 0.65 inch (16.5 mm) from the radius of the frame mounting flange, or if the damage is more than 3.0 inches (76 mm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by installation of an external patch on the zee frame.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be removed. The cutout must have the smallest size possible that removes the damage completely, and must have a minimum radius of 0.25 inch (6.4 mm) at the corners.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the hat frame. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 inch (6.4 mm) and repeat the applicable steps, if necessary.

STRUCTURAL REPAIR MANUAL

- (2) Cut and remove the damaged area of the frame as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Paragraph 1.C./REPAIR 3.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(4) Remove the cutting, drilling, and sanding particles from the area. Use a clean, lint-free cloth.

- C. Make the repair patch. Refer to Table 201/REPAIR 3 for the list of repair materials.

NOTE: The damage can be repaired with an angle patch made in one piece, and formed at room temperature as necessary (this is the preferred method). As an alternative, however, the patch can be made from two pieces that are welded together. Stress relief after forming or welding is not required.

ALUMINUM ZEE FRAME REPAIR - CF6-80C2 ENGINE

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If you make the patch in one piece:

- (a) Make an angle patch from 0.071 inch thick 2219-0 aluminum alloy sheet.
(b) Form the patch as necessary to match the contour of the frame in the repair area. The patch must fit in place with light finger pressure.
(c) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(d) Go to Paragraph 4.D./REPAIR 3.

- (2) If you make a welded patch:

- (a) Make the flanges of the patch from 0.071 inch thick 2219-0 aluminum alloy sheet.
(b) Form the inboard flange as necessary to match the contour of the frame in the repair area.
(c) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(d) Make a welding fixture to be used during welding to prevent the distortion of the patch. The welded patch must fit in place with light finger pressure.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (e) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the flanges and the welding fixture.

Clean with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- (f) Put the flanges inside the welding fixture and use standard fusion welding procedures to weld them together. Use filler metal per QQ-R-566, Class 2319.
(g) Do a visual inspection of the weldments. Use a magnifying glass with a minimum 10X magnification. Repeat the applicable steps if necessary.

- D. Heat treat the patch.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the patch with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- (2) Heat treat the patch to T62 condition per applicable standard procedures.

NOTE: If necessary, make a fixture to prevent the distortion of the patch during heat treatment. The heat treated patch must fit in place with light finger pressure.

E. Drill the holes.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a mark of the rivet holes on the patch. Drill pilot holes as marked. Put the patch into position. Match drill the pilot holes through the frame. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the patch in place. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for NAS1398C5AB rivets.

- (2) Remove the patch. Remove the sharp edges. Lightly sand the mating surfaces of the patch and the frame. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the patch and from the repair area. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

F. Prepare the surfaces.

- (1) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C).

WARNING: USE CARE WHEN YOU WORK WITH THE CHEMICAL CONVERSION COATING. IT IS HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT USED CORRECTLY. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. READ THE APPLICABLE MATERIAL SAFETY DATA SHEET (MSDS) AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: 1. DAB THE SOLUTION ON THE SURFACE. DO NOT RUB.

2. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Apply conversion coating alodine 1000 to the tested surfaces. Use a nylon brush or a lint-free cloth. Do not let the solution dry on the surface. Keep the surfaces wet with fresh solution for 2 to 5 minutes.
- (4) Rinse the surfaces thoroughly with demineralized water. Air dry for 30 minutes. The surfaces must be colorless with no visible difference between parts.

NOTE: If the alternative conversion coating alodine 1200 is used the surfaces will have a golden color.

G. Install the patch.

WARNING: USE CARE WHEN YOU WORK WITH THE PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the epoxy primer. Let the mixture stand for a minimum of 30 minutes, but no more than 6 hours.

NOTE: Epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (2) Apply a thin layer of the epoxy primer mixture to the alodined surfaces. Use a spray gun or brush. Put the patch into position.

Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the epoxy primer.

- (3) Remove the unwanted primer before it fully cures. Use a clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Air dry for a minimum of 15 minutes at room temperature. Then cure for a minimum of 40 minutes at 140° to 180°F (60° to 82°C). Use explosion proof heat lamps.

H. Apply the sealant.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the frame and the patch along the edges of the patch all around. Use a brush and follow the manufacturer's instructions.
- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 93-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply the sealant to the frame and the patch along the edges of the patch all around.
- (4) Remove the unwanted sealant before it fully cures. Use a clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

I. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

*1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.071 in. (1.80 mm) thick 2219-0	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Filler Welding metal	QQ-R-566, Class 2319	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available

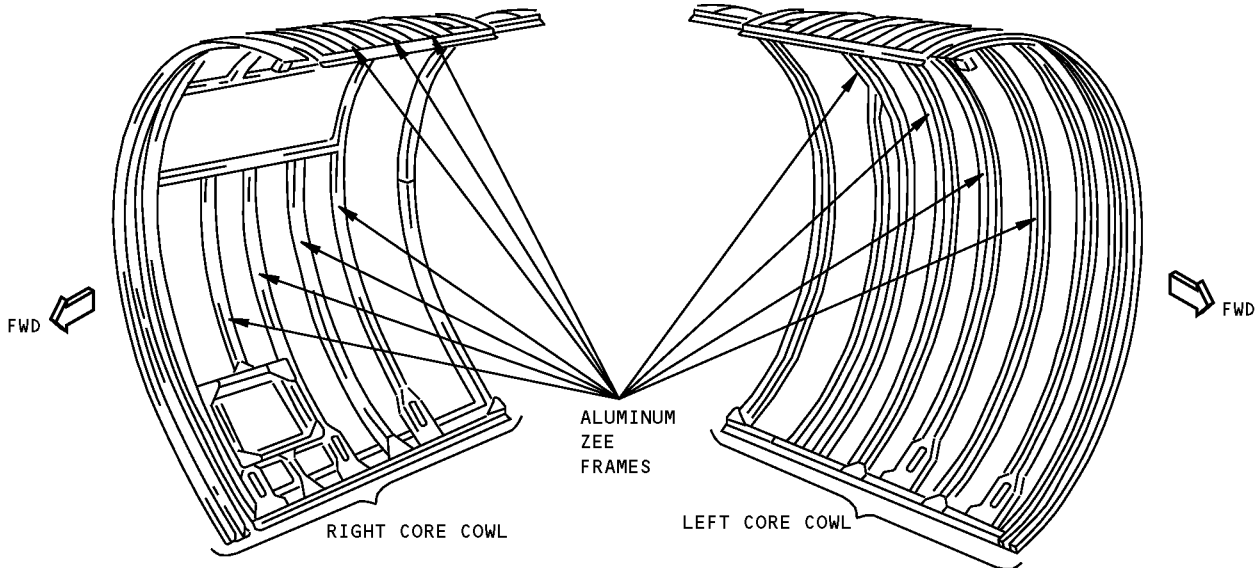
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

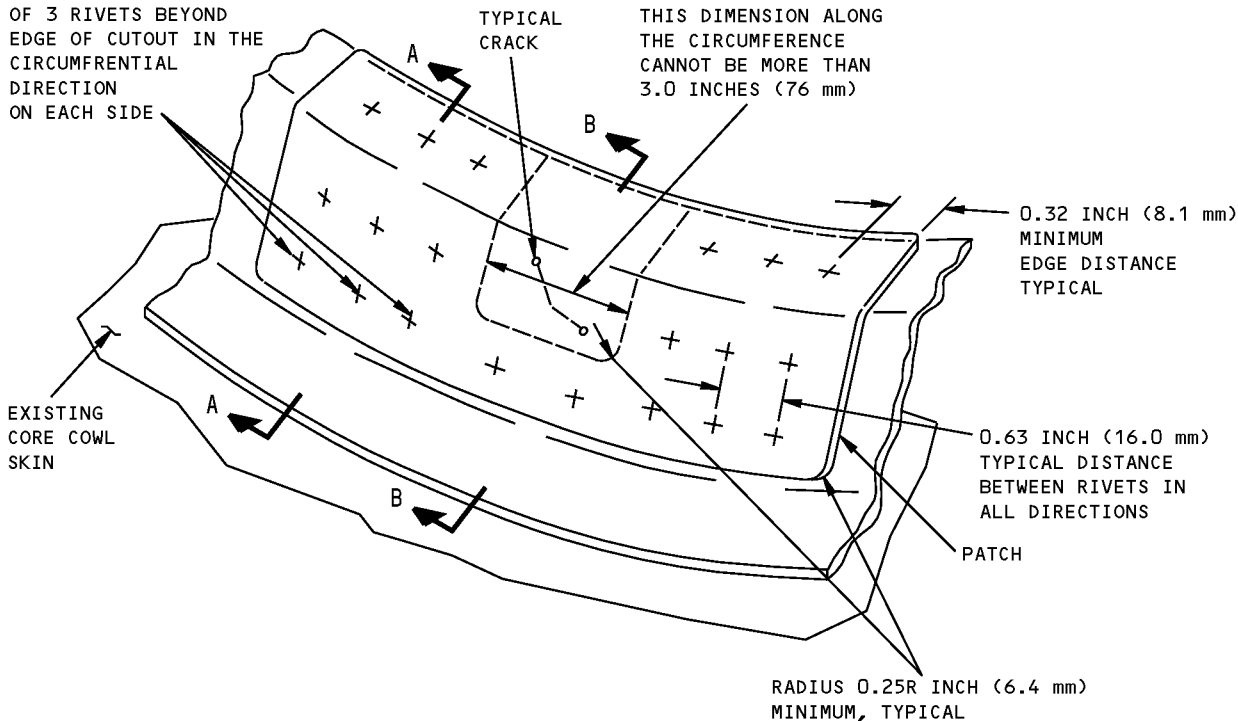
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning
Primer, Epoxy	Base 44-GN-60 Converter 44-GN-60 Thinner DM water Or: Base 463-6-78 Converter X-515 Thinner TL164 (Not for fastener installation)	Deft, Inc. 17451 Von Karman Avenue Irvine, CA 92714-6205 Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, blind	NAS1398C5AB-3 (Alternatives: CR4623-5-3, or CR2663-5-3)	Commercially Available
Sealant	DC 93-006 (color grey)	Dow Corning
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600, Carson, CA 90749
Spatula	Metal or plastic	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**



INSTALL A MINIMUM OF 3 RIVETS BEYOND EDGE OF CUTOUT IN THE CIRCUMFERENTIAL DIRECTION ON EACH SIDE

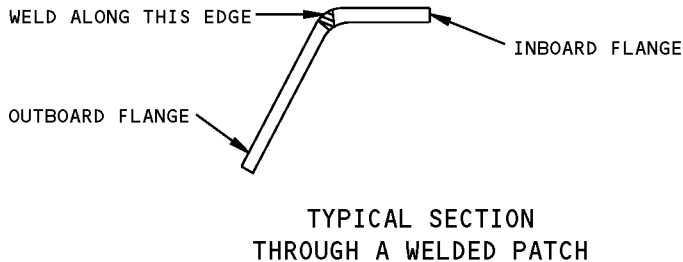
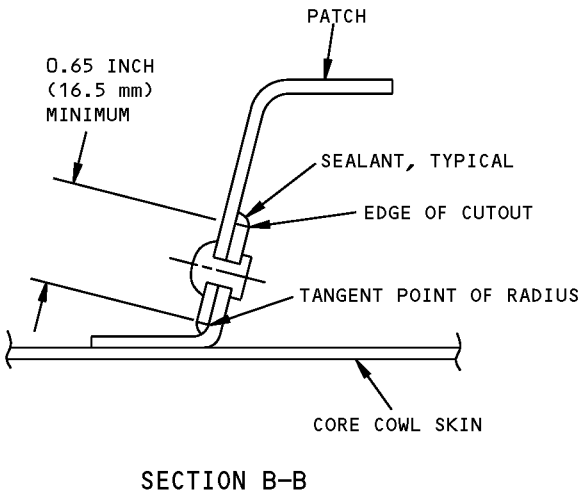
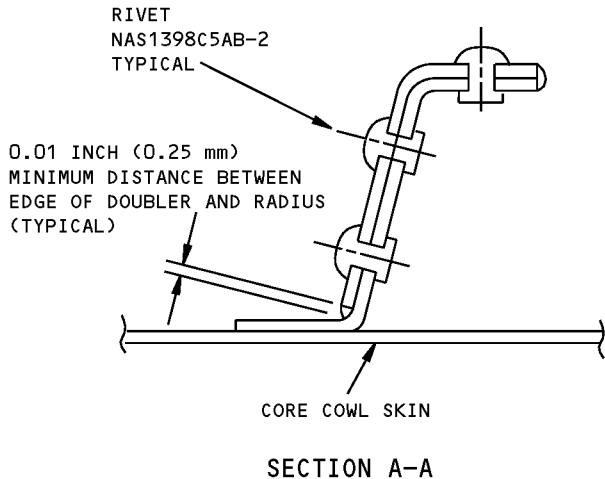


**DETAIL I
TYPICAL REPAIR**

GRS310-01

**Aluminum Zee Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL



GER310-02

**Aluminum Zee Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - ALUMINUM HAT FRAME REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This procedure is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-02 for core cowls with a serial number before 3004001 or a core cowl with a four digit serial number (for example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, aluminum hat frames on the left and right core cowl assemblies. Refer to fFigure 201/REPAIR 4.
- C. This repair is not applicable if the edge of the damage is less than 1.5 inches (38 mm) from fittings or other existing attachments, or less than 0.65 inch (16.5 mm) from the radius of the frame mounting flange, or if the damage is more than 3.0 inches (76 mm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by installation of an external patch on the frame.

3. References

Reference	Title
51-30-01	SHEET METAL MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be removed. The cutout must have the smallest size possible that removes the damage completely, and must have a minimum radius of 0.25 inch (6.4 mm) at the corners.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the hat frame. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 inch (6.4 mm) and repeat the applicable steps, if necessary.

STRUCTURAL REPAIR MANUAL

- (2) Cut and remove the damaged area of the frame as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Paragraph 1.C./REPAIR 4.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(4) Remove the cutting, drilling, and sanding particles from the area. Use a clean, lint-free cloth.

- C. Make the repair patch. Refer to Table 201/REPAIR 4 for the list of repair materials.

NOTE: The damage can be repaired with an angle or channel patch, made in one piece, and formed at room temperature as necessary. This is the preferred method. As an alternative, however, the patch can be made from two or more pieces that are welded together. Stress relief after forming or welding is not required.

ALUMINUM HAT FRAME REPAIR - CF6-80C2 ENGINE

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If you make the patch in one piece:

- (a) Make a patch from 0.071 inch thick 2219-0 aluminum alloy sheet.
(b) Form the patch as necessary to match the contour of the frame in the repair area. The patch must fit in place with light finger pressure.
(c) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(d) Go to Paragraph 4.D./REPAIR 4.

- (2) If you make a welded patch:

- (a) Make the flanges of the patch from 0.071 inch thick 2219-0 aluminum alloy sheet.
(b) Form the center flange as necessary to match the contour of the frame in the repair area.
(c) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
(d) Make a welding fixture to be used during welding to prevent the distortion of the patch. The welded patch must fit in place with light finger pressure.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (e) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the flanges and the welding fixture.

Clean with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- (f) Put the flanges inside the welding fixture and use standard fusion welding procedures to weld them together. Use filler metal per QQ-R-566, Class 2319.
(g) Do a visual inspection of the weldments. Use a magnifying glass with a minimum 10X magnification. Repeat the applicable steps if necessary.

- D. Heat treat the patch.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the patch with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- (2) Heat treat the patch to T62 condition per applicable standard procedures.

NOTE: If necessary, make a fixture to prevent the distortion of the patch during heat treatment. The heat treated patch must fit in place with light finger pressure.

E. Drill the holes.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a mark of the rivet holes on the patch. Drill pilot holes as marked. Put the patch into position. Match drill the pilot holes through the frame. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the patch in place. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for NAS1398C5AB rivets.

- (2) Remove the patch. Remove the sharp edges. Lightly sand the mating surfaces of the patch and the frame. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: REMOVE THE DRILLING PIECES FROM THE HAT FRAME CAVITY.

- (3) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the patch, the repair area, and from inside the hat frame cavity. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

F. Prepare the surfaces.

- (1) The repair surfaces must be water break free surfaces. Do a water break free test of these surfaces.

NOTE: A surface is water break free if a thin, unbroken film of water can stay on it for at least 30 seconds. If the water breaks, repeat the sanding and cleaning steps.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (2) Force air dry the repair area for a minimum of one hour at 180° to 200°F (82° to 93°C).

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH THE CHEMICAL CONVERSION COATING. IT IS HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT USED CORRECTLY. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. READ THE APPLICABLE MATERIAL SAFETY DATA SHEET (MSDS) AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: 1. DAB THE SOLUTION ON THE SURFACE. DO NOT RUB.

2. USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (3) Apply conversion coating alodine 1000 to the tested surfaces. Use a nylon brush or a lint-free cloth. Do not let the solution dry on the surface. Keep the surfaces wet with fresh solution for 2 to 5 minutes.
- (4) Rinse the surfaces thoroughly with demineralized water. Air dry for 30 minutes. The surfaces must be colorless with no visible difference between parts.

NOTE: If the alternative conversion coating alodine 1200 is used the surfaces will have a golden color.

G. Install the patch.

WARNING: USE CARE WHEN YOU WORK WITH THE PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the epoxy primer. Let the mixture stand for a minimum of 30 minutes, but no more than 6 hours.

NOTE: Epoxy primers are available from different suppliers. Do not mix together the components from different suppliers.

- (2) Apply a thin layer of the epoxy primer mixture to the alodined surfaces. Use a spray gun or brush. Put the patch into position.

Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the epoxy primer.

- (3) Remove the unwanted primer before it fully cures. Use a clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (4) Air dry for a minimum of 15 minutes at room temperature. Then cure for a minimum of 40 minutes at 140° to 180°F (60° to 82°C). Use explosion proof heat lamps.

H. Apply the sealant.

STRUCTURAL REPAIR MANUAL

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the frame and the patch along the edges of the patch all around. Use a brush and follow the manufacturer's instructions.
- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 93-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply the sealant to the frame and the patch along the edges of the patch all around.
- (4) Remove the unwanted sealant before it fully cures. Use a clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

I. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Aluminum alloy sheet	0.071 in. (1.80 mm) thick 2219-0	Commercially Available
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Filler Welding metal	QQ-R-566, Class 2319	Commercially Available
Glasses	Safety	Commercially Available

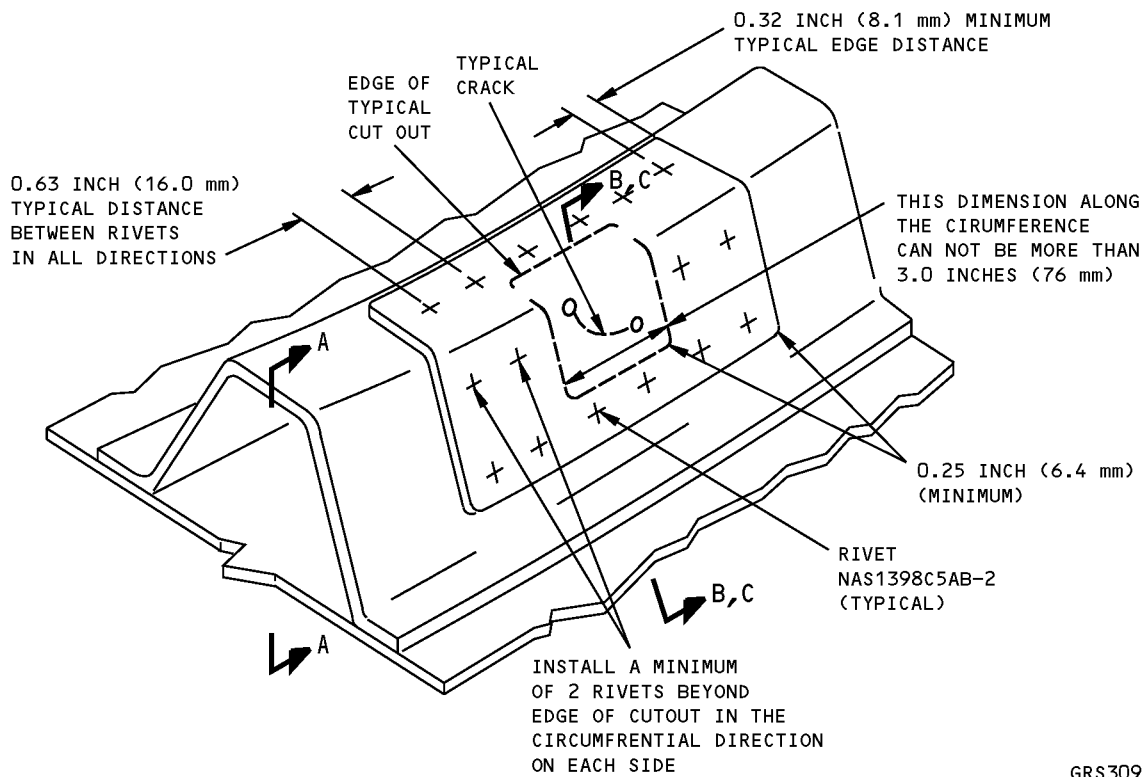
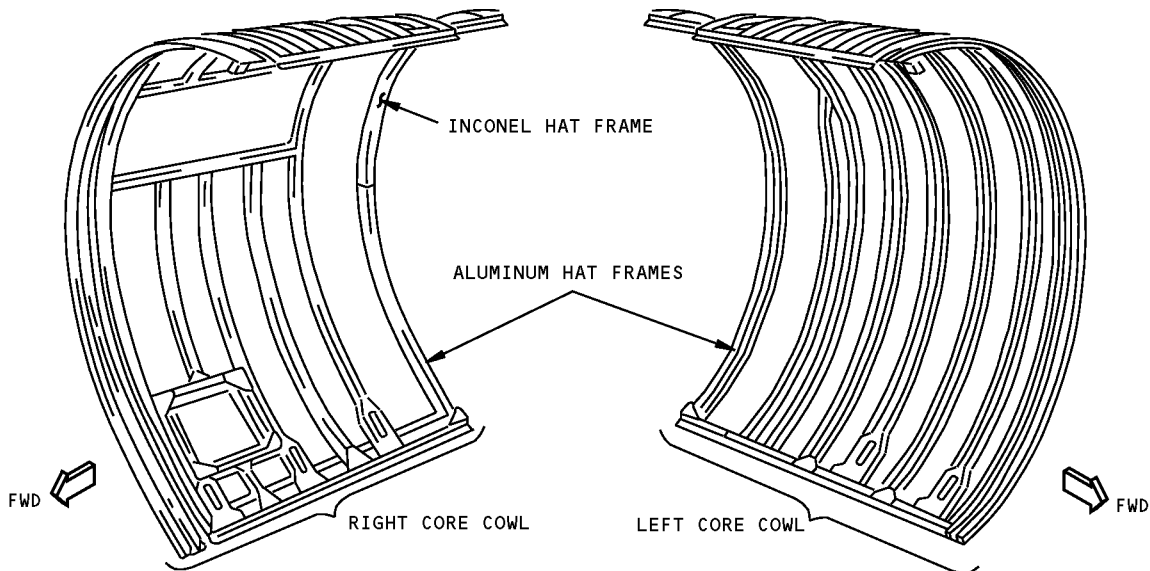
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning
Primer, Epoxy	Base 44-GN-60 Converter 44-GN-60 Thinner DM water Or Base 463-6-78 Converter X-515 Thinner TL164 (Not for fastener installation)	Deft, Inc. 17451 Von Karman Avenue Irvine, CA 92714-6205 Dexter Aerospace (Formerly Akzo Coatings) East Waters Street Waukegen, IL 60085-5652
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, Blind	NAS1398C5AB-2 (Alternatives: CR4623-5-2, or CR2663-5-2)	Commercially Available
Sealant	DC 93-006 (color grey)	Dow Corning
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South main Street, P.O. Box 2600, carson, CA 90749
Spatula	Metal or Plastic	Commercially Available

*[1] Alternative sources for these materials can be found in SHEET METAL MATERIALS, 51-30-01 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL

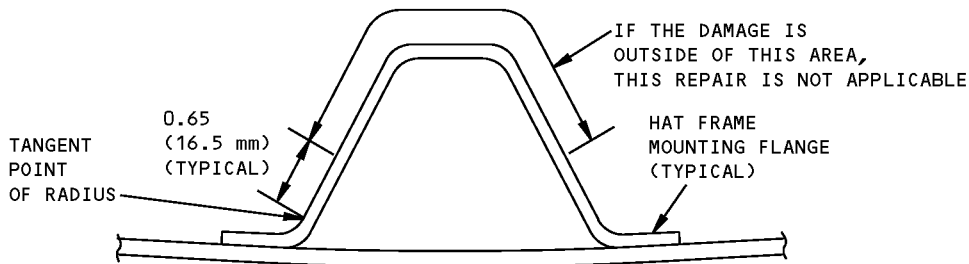


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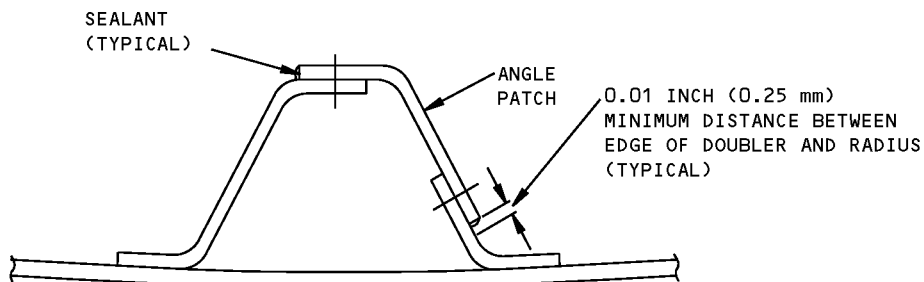
DETAIL I
ANGLE PATCH REPAIR SHOWN
CHANNEL PATCH REPAIR SIMILAR

Aluminum Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)

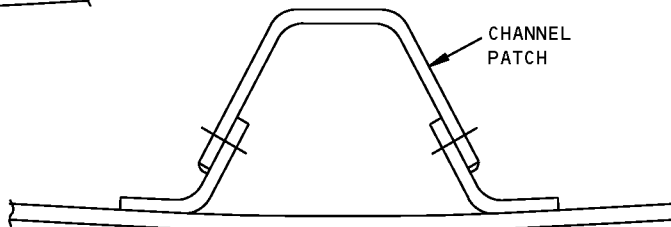
STRUCTURAL REPAIR MANUAL



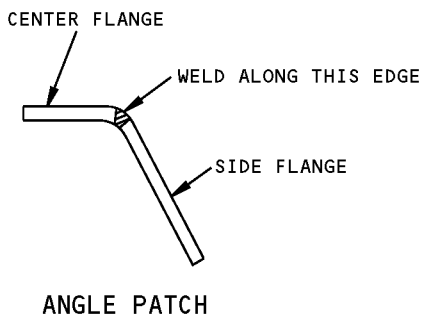
SECTION A-A
THROUGH THE UNDAMAGED FRAME



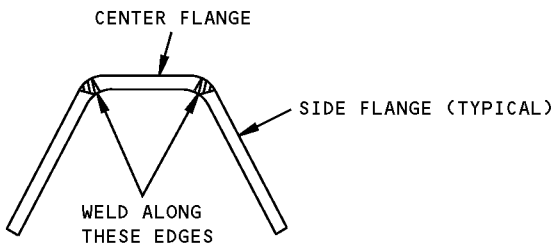
SECTION B-B
THROUGH AN INSTALLED ANGLE PATCH



SECTION C-C
THROUGH AN INSTALLED CHANNEL PATCH



ANGLE PATCH



CHANNEL PATCH
TYPICAL SECTIONS THROUGH
WELDED PATCHES

GRS309-02

**Aluminum Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - INCONEL ALLOY ZEE FRAME REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This subject is applicable only to core cowls with a serial number 3004001 and on. Refer to CORE COWL STRUCTURE - CF6-80C2 ENGINE (WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER, FOR EXAMPLE 1293-A) , 54-42-02 for core cowls with a serial number prior to 3004001 or core cowls with a four digit serial number (For example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, inconel zee frames on the left and right core cowl assemblies. Refer to Figure 201/REPAIR 5.
- C. This repair is not applicable if the edge of the damage is less than 2.0 in. (5.1 cm) from fittings or other initial attachments, or less than 0.65 in. (16.5 mm) from the radius of the frame mounting flange, or if the damage is more than 3.0 in. (7.6 cm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by the installation of an external patch on the frame.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
54-42-02	CORE COWL STRUCTURE - CF6-80C2 ENGINE (WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER, FOR EXAMPLE 1293-A)
SOPM 20-20-01	Magnetic Particle Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-01 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be cut out. The cutout must have the smallest size possible that removes the damage completely, and must have a minimum radius of 0.25 in. (6.4 mm) at the corners.

- B. Prepare the damage area for repair.

STRUCTURAL REPAIR MANUAL

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the zee frame. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 in. (6.4 mm) and repeat the applicable steps, if necessary.

- (2) Cut and remove the damaged area of the frame as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Section 1.C.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.

- C. Make the repair patch. Refer to Table 201/REPAIR 5 for the list of repair materials.

NOTE: The damage can be repaired with a repair angle patch, made in one piece, and formed at room temperature as necessary. As an alternative, however, the repair angle patch can be made from two pieces that are welded together. Stress relief after forming or welding is not required.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If you make the patch in one piece:

- (a) Make a patch from 0.050 inch thick annealed inconel 625 sheet, as marked.
- (b) Form the patch as necessary to match the contour of the zee frame in the repair area. The patch must fit in place with light finger pressure.
- (c) Do a fluorescent penetrant inspection of the formed surfaces. If there are cracks, reject the patch and repeat the applicable steps.
- (d) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers. Go to Paragraph 4.D./REPAIR 5.

- (2) If you make a welded patch:

- (a) Make the flanges of the patch from 0.050 inch thick annealed inconel 625 sheet, as marked.
- (b) Form the upper flange as necessary to match the contour of the zee frame in the repair area.
- (c) Do a fluorescent penetrant inspection of the formed surfaces. If there are cracks, reject the formed flange and repeat the applicable steps.
- (d) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (e) Make a welding fixture to be used during welding to prevent the distortion of the patch. The welded patch must fit in place with light finger pressure.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (f) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the flanges and the welding fixture.

STRUCTURAL REPAIR MANUAL

Clean with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- (g) Put the flanges inside the welding fixture and weld them together. Use standard TIG welding procedures and inconel 625 welding filler metal per AMS 5837.
- (h) Do a visual inspection of the weldments. Use a magnifying glass with a minimum 10X magnification. Repeat the applicable steps if necessary.

D. Drill the holes.

- (1) Make a mark of the rivet holes on the patch. Drill pilot holes as marked. Put the patch into position. Match drill the pilot holes through the frame. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the patch in place. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 to 0.164 inch (4.06 to 4.17 mm) for CR4623-5 or NAS1398C5AB rivets.

- (2) Remove the patch. Remove the sharp edges. Lightly sand the mating surfaces of the patch and the frame. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the patch and from the repair area. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

E. Install the patch.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the mating surfaces of the zee frame and the patch. Use a brush and follow the manufacturer's instructions.
- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 93-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces of the zee frame and the patch. Put the patch into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.

STRUCTURAL REPAIR MANUAL

- (4) Apply more of the sealant to the edges of the patch all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C). Remove the teflon tape before the sealant fully cures.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

F. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

* [1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Filler Welding metal	Inconel alloy 625, per AMS 5837	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Inconel alloy 625 sheet	Inconel alloy 625, annealed, AMS 5599 0.050 in. (1.27 mm) thick	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, blind	CR4623-5-2 NAS1398C5AB-2	Commercially Available

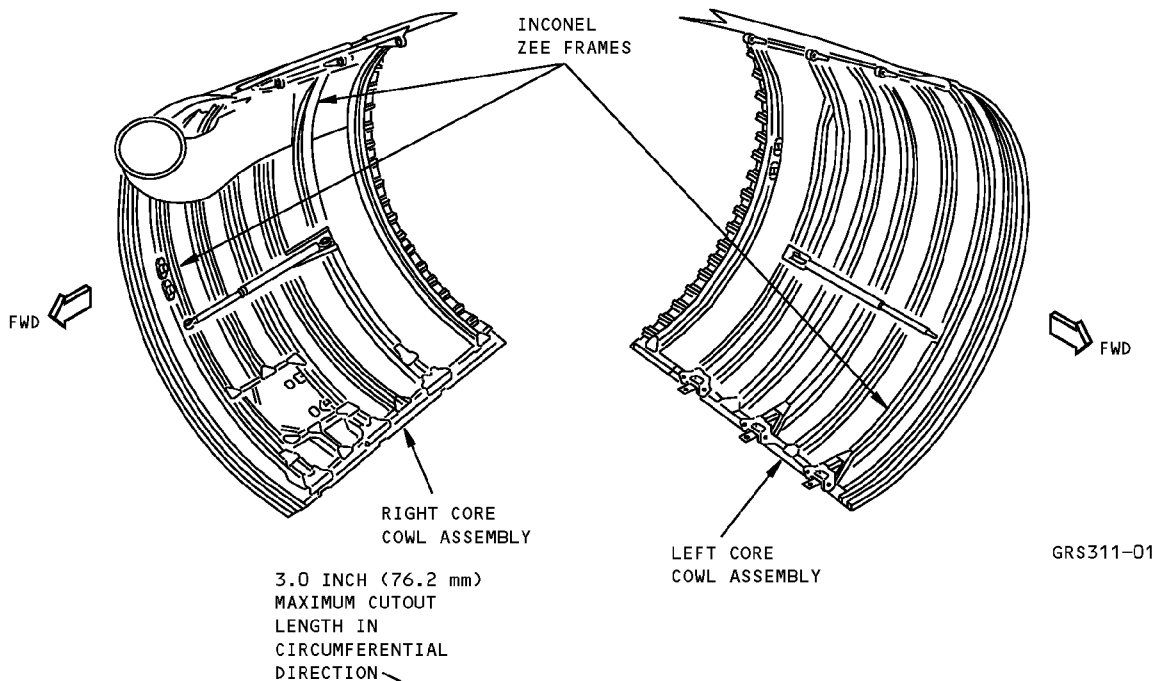
767-300
STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

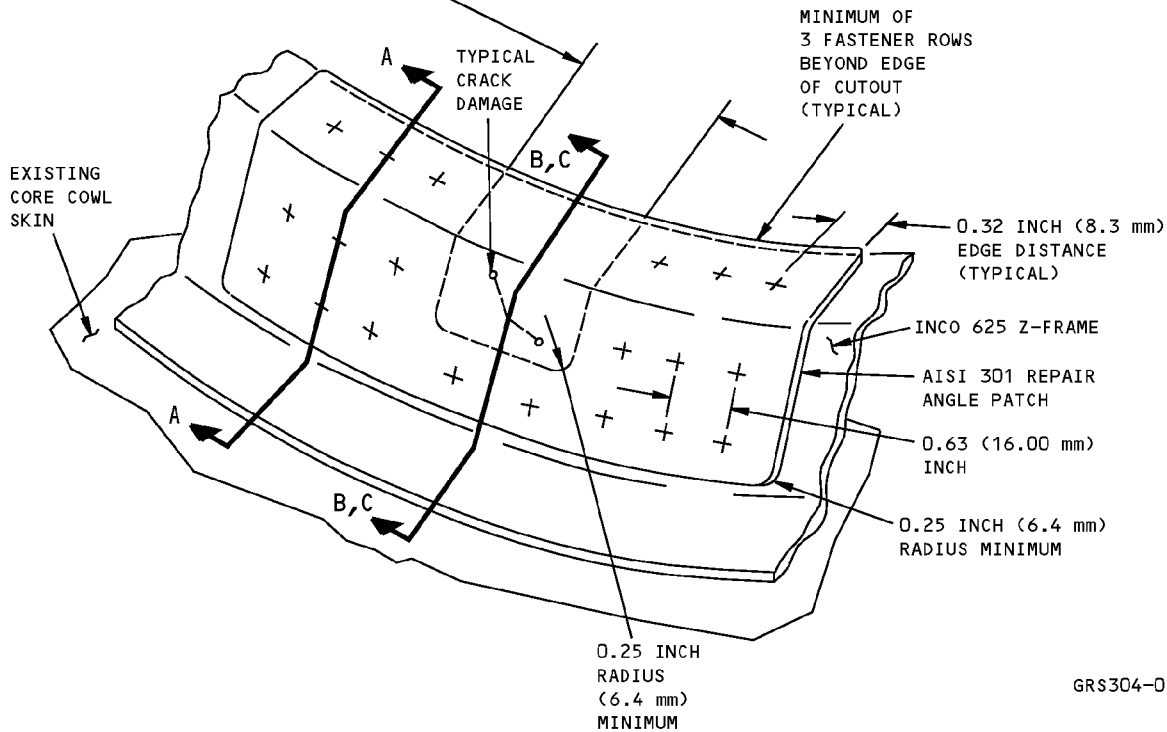
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Sealant	DC 93-006 (color grey)	Dow Corning
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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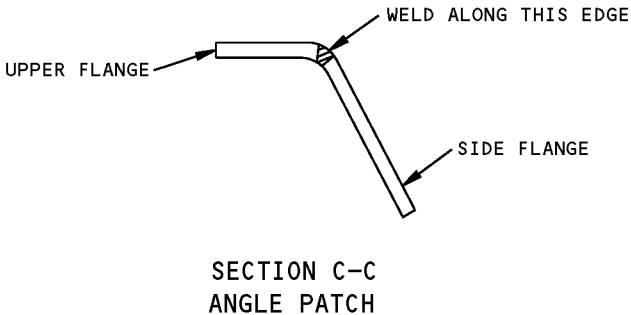
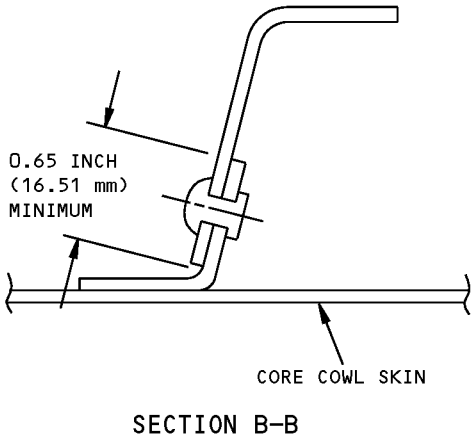
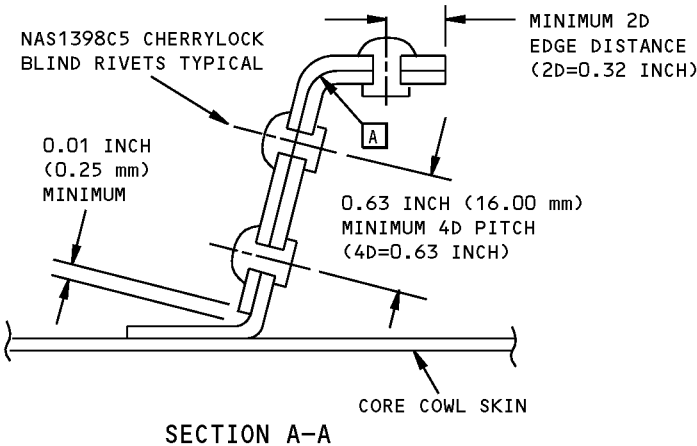


GRS304-01

DETAIL I

**Inconel Zee Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



NOTE:

A END RADIUS OF REPAIR ANGLE PATCH TO NEST WITH Z-FRAME

GRS304-02

**Inconel Zee Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - INCONEL ALLOY HAT FRAME REPAIR - CF6-80C2 ENGINE

1. Applicability

- A. This procedure is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-02 for core cowls with a serial number before 3004001 or a core cowl with a four digit serial number (for example 1293-A).
- B. This repair is applicable to the cracked, or otherwise damaged, inconel hat frame on the right core cowl assembly. Refer to Figure 201/REPAIR 6.
- C. This repair is not applicable if the edge of the damage is less than 1.5 inches (38 mm) from fittings or other existing attachments, or less than 0.65 inch (16.5 mm) from the radius of the frame mounting flange, or if the damage is more than 3.0 inches (76 mm) long in the circumferential direction.

2. General

- A. This type of damage is repaired by installation of an external patch on the frame.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Examine the damage area.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. If necessary, do a fluorescent penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends.
- (3) Make a mark of the damaged area to be removed. The cutout must have the smallest size possible that removes the damage completely. The cutout can be circular or rectangular. If rectangular, it must have a minimum radius of 0.25 in. (6.4 mm) at the corners.

- B. Prepare the damage area for repair.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If there are cracks, stop drill 0.25 inch (6.4 mm) diameter holes at the crack ends. Drill through the hat frame. Do not damage the adjacent structure. Remove the burrs.

NOTE: Do a fluorescent penetrant inspection to make sure the crack has been stop drilled. Increase the stop drill diameter to 0.25 in. (6.4 mm) and repeat the applicable steps, if necessary.

STRUCTURAL REPAIR MANUAL

- (2) Cut and remove the damaged area of the frame as marked. Remove the burrs.

NOTE: This repair is not applicable if, after material removal, the damage is more than the limits given in Section 1.C.

- (3) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.

- C. Make the repair patch. Refer to Table 201/REPAIR 6 for the list of repair materials.

NOTE: The damage can be repaired with an angle or channel patch, made in one piece, and formed at room temperature as necessary. As an alternative, however, the patch can be made from two or more pieces that are welded together. Stress relief after forming or welding is not required.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) If you make the patch in one piece:

- (a) Make a patch from 0.050 inch thick annealed inconel 625 sheet, as marked.
- (b) Form the patch as necessary to match the contour of the hat frame in the repair area. The patch must fit in place with light finger pressure.
- (c) Do a fluorescent penetrant inspection of the formed surfaces. If there are cracks, reject the patch and repeat the applicable steps.
- (d) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers. Go to Paragraph 4.D./REPAIR 6.

- (2) If you make a welded patch:

- (a) Make the flanges of the patch from 0.050 inch thick annealed inconel 625 sheet, as marked.
- (b) Form the center flange as necessary to match the contour of the hat frame in the repair area.
- (c) Do a fluorescent penetrant inspection of the formed surfaces. If there are cracks, reject the formed flange and repeat the applicable steps.
- (d) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (e) Make a welding fixture to be used to prevent the distortion of the patch during welding. The welded patch must fit in place with light finger pressure.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (f) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the flanges and the welding fixture.

Clean with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

- (g) Put the flanges inside the welding fixture and weld them together. Use standard TIG welding procedures and inconel 625 welding filler metal per AMS 5837. Stress relief after welding is not required.
- (h) Do a visual inspection of the weldments. Use a magnifying glass with a minimum 10X magnification. Repeat the applicable steps if necessary.

STRUCTURAL REPAIR MANUAL

D. Drill the holes.

- (1) Make a mark of the rivet holes on the patch. Drill pilot holes as marked. Put the patch into position. Match drill the pilot holes through the frame. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the patch in place. Make sure all holes are aligned, then drill the final size holes. Do not damage the holes. Remove the burrs.

NOTE: Final hole size is 0.160 in. (4.06 mm) to 0.164 in. (4.17 mm) for CR4623-5 or NAS1398C5AB rivets.

- (2) Remove the patch. Remove the sharp edges. Lightly sand the mating surfaces of the patch and the frame. Use 150-400 grit aluminum oxide abrasive paper.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: REMOVE THE DRILLING PIECES FROM THE HAT FRAME CAVITY.

- (3) Use dry air blast and suction cleaners to remove the drilling and sanding particles from the patch, the repair area, and from inside the hat frame cavity. Clean the repair area with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

E. Install the patch.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the mating surfaces of the hat frame and the patch. Use a brush and follow the manufacturer's instructions.
- (2) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 93-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (3) Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces of the hat frame and the patch. Put the patch into position. Align the rivet holes. Use temporary fasteners, if necessary, to keep the holes aligned. Wet install the rivets with the sealant.
- (4) Apply more of the sealant to the edges of the patch all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

STRUCTURAL REPAIR MANUAL

WARNING: WEAR PROTECTIVE GLOVES WHEN YOU TOUCH THE HOT PARTS. IF YOU DO NOT, REDDENING AND BLISTERING OF THE SKIN CAN BE THE RESULT IF YOUR HANDS ARE NOT PROTECTED. IF THIS OCCURS, PUT THE AFFECTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (5) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C). Remove the teflon tape before the sealant fully cures.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 10 to 15 hours. Higher temperature and relative humidity will accelerate the cure rate.

F. Examine the area.

- (1) Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

Table 201: Repair Materials and Equipment

*[*1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Filler Welding metal	Inconel alloy 625, per AMS 5837	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, explosion proof	180° to 200°F (83° to 93°C)	Commercially Available
Inconel alloy sheet	Inconel alloy 625, annealed, AMS 5599 0.050 in. (1.27 mm) thick	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet, blind	CR4623-5-2 NAS1398C5AB-2	Commercially Available
Sealant	DC 93-006 (color grey)	Dow Corning

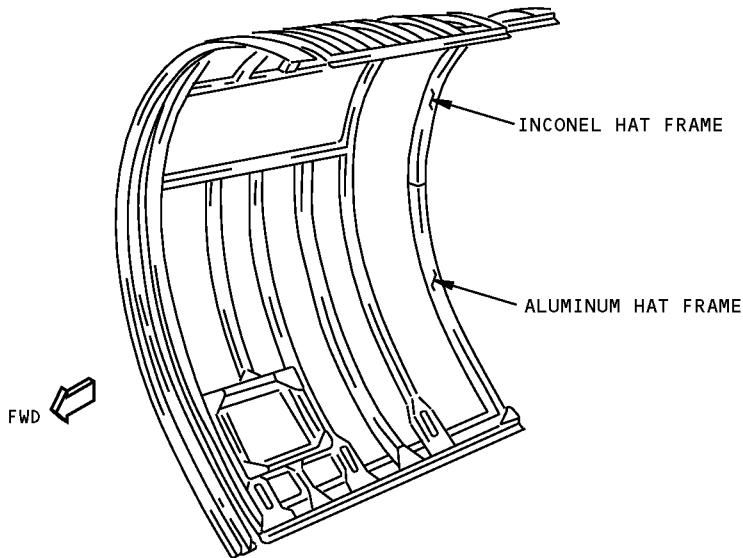
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STRUCTURAL REPAIR MANUAL

Table 201: Repair Materials and Equipment (Continued)

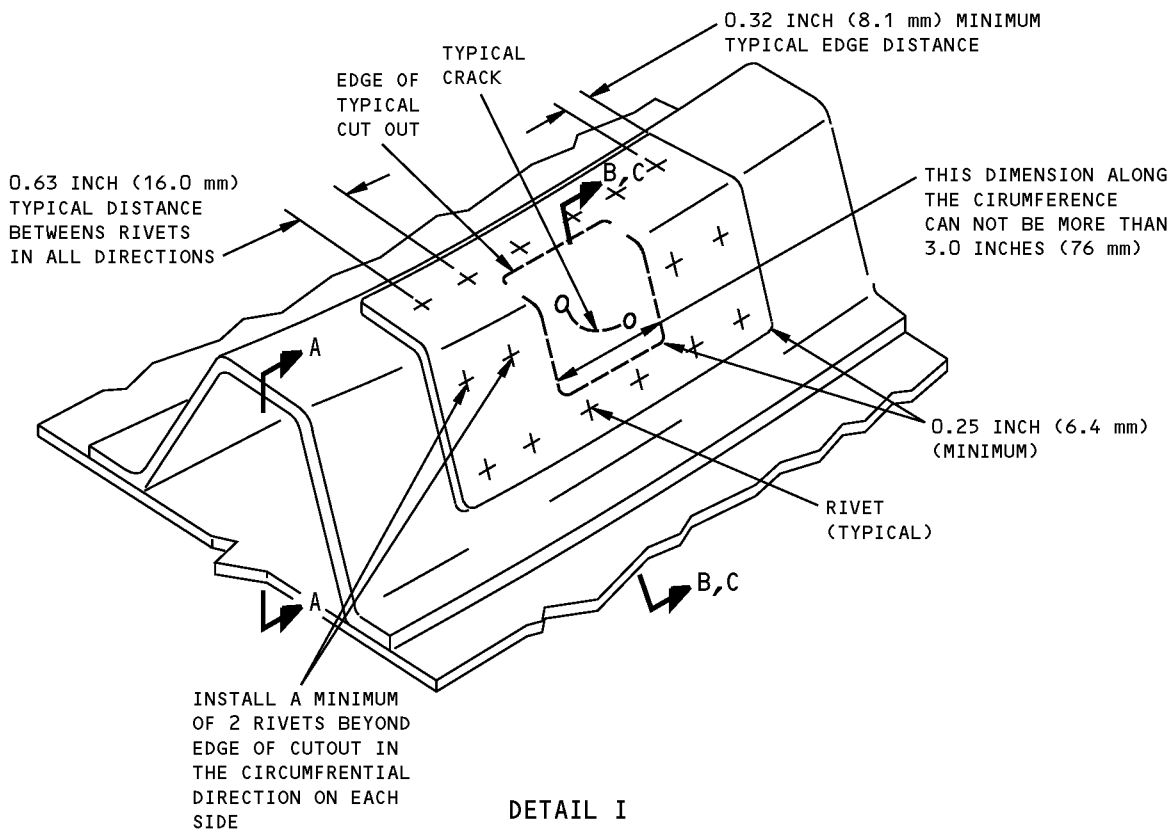
*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600, Carson, CA 90749
Spatula	Metal or plastic	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**



**RIGHT CORE COWL,
CORE COWL SKINS NOT SHOWN**

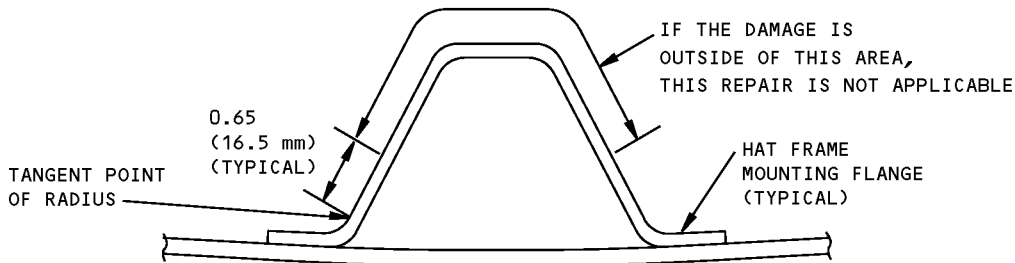


**DETAIL I
ANGLE PATCH REPAIR SHOWN,
CHANNEL PATCH REPAIR SIMILAR**

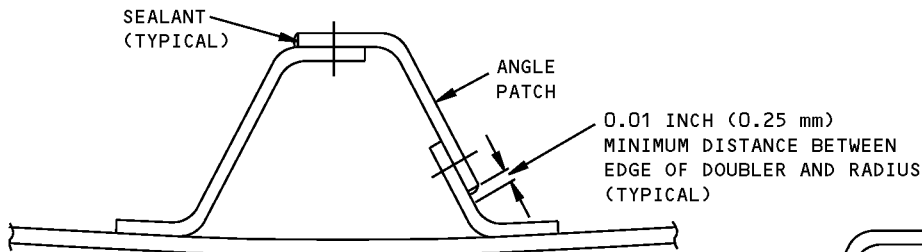
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**Inconel Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

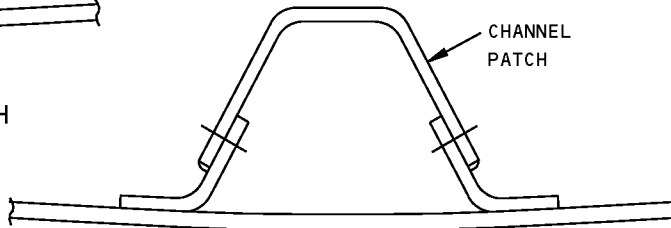
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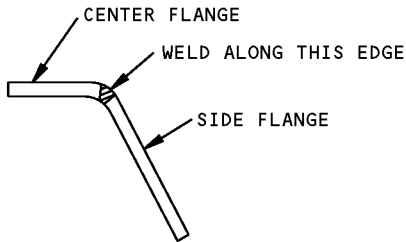
**SECTION A-A
THROUGH THE UNDAMAGED FRAME**



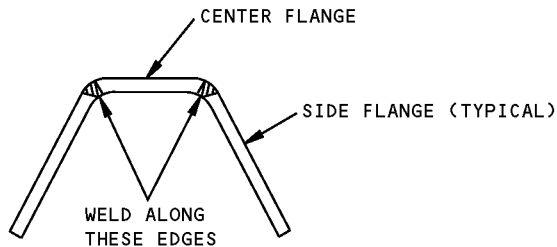
**SECTION B-B
THROUGH AN INSTALLED ANGLE PATCH**



**SECTION C-C
THROUGH AN INSTALLED CHANNEL PATCH**



ANGLE PATCH



**CHANNEL PATCH
TYPICAL SECTIONS THROUGH
WELDED PATCHES**

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**Inconel Hat Frame Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 7 - CORE COWL FIRESHIELD PATCH REPAIR - CF6-80C2 ENGINE**1. Applicability**

- A. This procedure is applicable only to core cowls with a serial number 3004001 and on. Refer to SRM 54-42-01 for core cowls with a serial number before 3004001 or a core cowl with a four digit serial number (for example 1293-A).
- B. This repair is applicable to the core cowl fireshields that are cracked or otherwise damaged. Refer to Figure 201/REPAIR 7.
- C. The damage can be of any size between frames. The edge of damage must be a minimum of 0.6 inch (15 mm) from the edge of the adjacent frame. One patch can be used to repair damage in two or more adjacent areas.

2. General

- A. This type of damage is repaired by installation of a patch on the fireshield.

3. References

Reference	Title
51-30-02	METALLIC MATERIALS
51-31-03	NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE
SOPM 20-20-02	Penetrant Methods of Inspection

4. Repair Instructions

- A. Find the extent of damage.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (1) Clean the repair area. Use a brush with Turco 6646 solvent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- (2) Find the extent of damage. Do a fluorescent penetrant inspection of the area, if necessary, to find cracks. Refer to SOPM 20-20-02 for the penetrant procedures. Make a mark of the crack ends, if any.

NOTE: If the fireshield is cracked, the adjacent skin can also be cracked. If so, you must repair the skin before you continue with this repair.

- (3) Make a mark of the damaged area to be removed, if applicable. The cutout must have the smallest size possible that removes the damage completely, and must be a minimum of 0.5 inch (13 mm) beyond the edge of damage all around. The cutout can be circular or rectangular.

NOTE: If the fireshield is cracked but not otherwise damaged, it is not necessary to cut it out.

- B. Prepare the damage area for repair.

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WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Cut and remove the fireshield as marked. Use a sharp scribe or knife. Do not damage the adjacent structure. Remove the burrs.

NOTE: If the fireshield is cracked but not otherwise damaged, use a sharp scribe or knife to remove the sharp edges at the crack ends, or stop drill the crack with a 0.19 inch (4.8 mm) diameter holes. It is not necessary to cut out the cracked area.

- (2) Make a mark of the patch on the initial fireshield. The patch must be a minimum of 0.6 inch (15 mm) larger than the damaged area, or the cutout, all around.

NOTE: The patch can be circular or rectangular, and can be large enough to cover damage in two or more adjacent areas. If rectangular, use a minimum radius of 0.5 inch (13 mm) at the corners.

- (3) Apply Teflon tape to the fireshield to mask off the repair area as marked.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (4) In the fireshield cutout area, remove the existing sealant from the skin. Remove the sharp edges. Lightly sand the skin and the fireshield in the area between the pieces of tape to make the surfaces rough. Use 150 to 400 grit aluminum oxide abrasive papers.

- C. Make the patch. Refer to Table 201/REPAIR 7 or the list of repair materials.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- (1) Make a patch from 0.005 inch (0.13 mm) thick 321 cres sheet as marked. Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.
- (2) Form the patch as necessary to match the contour of the fireshield in the repair area. The patch must fit in place with light finger pressure.

- D. Install the patch.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (1) Use dry air blast and suction cleaners to remove the cutting and sanding particles. Clean the repair area and the patch with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry. If not, disbonds can occur later.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (2) Use the manufacturer's instructions to mix the DC 1200 sealant primer. Apply a thin layer of the primer mixture to the mating surfaces. Use a brush and follow the manufacturer's instructions.

STRUCTURAL REPAIR MANUAL

- (3) Let the primer cure at room temperature for one hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 90-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (4) Use the manufacturer's instructions to mix the DC 90-006 sealant. Apply a thin layer of the sealant to the mating surfaces. Put the patch into position. Lightly tap the patch from the center outward in all directions to remove the trapped air pockets. Trapped air pockets can cause disbonds later. Make sure the patch makes contact with the fireshield at all points during the cure cycle.
- (5) Apply a fillet of sealant to the edges of the patch all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- (6) Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C). Remove the teflon tape before the sealant fully cures.

NOTE: At 77°F (25°C) and 50% relative humidity the surface of the sealant will be tack free in 1 to 2 hours. The sealant will be fully cured in 24 to 36 hours. Higher temperature and relative humidity will accelerate the cure rate.

E. Install the rivets.

- (1) Make a mark of the rivet holes on the patch. Use a typical minimum edge distance of 0.3 inch (8 mm). Make sure the holes are not at chem-milled edges.

NOTE: You must use a minimum of four rivets to install each patch. For larger patches, use a rivet spacing of 1.5 to 2.0 inches (38 to 51 mm) along the edges only. It is not necessary to install more rivets in other areas of the patch.

WARNING: WHEN METALS ARE CUT, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: THE PATCH IS MADE FROM VERY THIN MATERIAL AND CAN BE DAMAGED EASILY. WHEN YOU DRILL THE HOLES, MAKE SURE YOU DO NOT CAUSE DAMAGE TO THE PATCH.

- (2) Drill the holes as marked. Do not damage the patch when you drill the holes. Drill from the inner (patch) side. Remove the burrs.

NOTE: The hole size is 0.129 to 0.132 inch (3.28 to 3.35 mm) for the CR2664-4 rivets.

STRUCTURAL REPAIR MANUAL

CAUTION: THE SKIN IN CHEM-MILLED AREAS IS ONLY 0.040 INCH (1.02 MM) THICK. WHEN YOU COUNTERSINK THE HOLES, MAKE SURE YOU DO NOT CAUSE THE HOLES TO HAVE KNIFE EDGE CONDITION.

- (3) Countersink the rivet holes on the air wetted surface. The rivets cannot protrude above the surface and cannot be more than 0.004 inch (0.10 mm) below the surface. Remove the burrs.

NOTE: The countersink diameter is 0.189 to 0.195 inch (4.80 to 4.95 mm) for the CR2664-4 rivets.

- (4) Remove the sharp edges. Use 150 to 400 grit aluminum oxide abrasive papers.

WARNING: USE CARE WHEN YOU WORK WITH TURCO 6646. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

CAUTION: USE LINT-FREE GLOVES WHEN YOU TOUCH THE CLEANED OR PREPARED SURFACES. THIS PREVENTS CONTAMINATION.

- (5) Use dry air blast and suction cleaners to remove the cutting and sanding particles. Clean the repair area and the patch with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.

WARNING: USE CARE WHEN YOU WORK WITH DC 1200 PRIMER. IT IS A HAZARDOUS MATERIAL. READ AND OBEY THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT, INJURY TO PERSONS CAN BE THE RESULT.

- (6) Use the manufacturer's instructions to mix the DC 1200 sealant primer.
(7) Apply a thin layer of the primer mixture to the holes and bare edges. Use a brush and follow the manufacturer's instructions.
(8) Let the primer cure at room temperature for 1 hour. If a chalky residue is evident, remove with a piece of clean, lint-free cloth.

WARNING: USE CARE WHEN YOU WORK WITH DC 90-006. IT IS A HAZARDOUS MATERIAL. READ THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS FOUND IN THE MATERIAL SAFETY DATA SHEET (MSDS). IF YOU DO NOT OBEY, INJURY TO PERSONS CAN BE THE RESULT.

- (9) Use the manufacturer's instructions to mix the DC 90-006 sealant.
(10) Wet install the rivets with the sealant. Install each rivet with one AN960C4L washer under the formed head.

NOTE: The washers are used to prevent damage to the thin patch during rivet installation. Make sure the washers are centered for correct installation, or use a rivet/washer combination with minimum clearance between the rivet and the washer. If necessary, do a few sample installations on a discarded part before you install the rivets.

- (11) Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth.

F. Examine the area.

- (1) Examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.

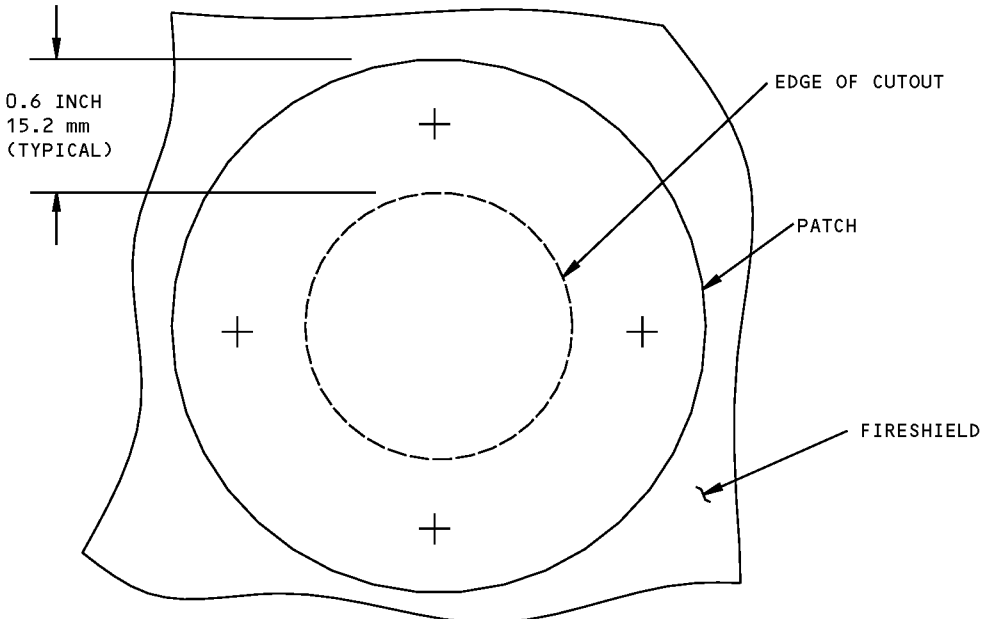
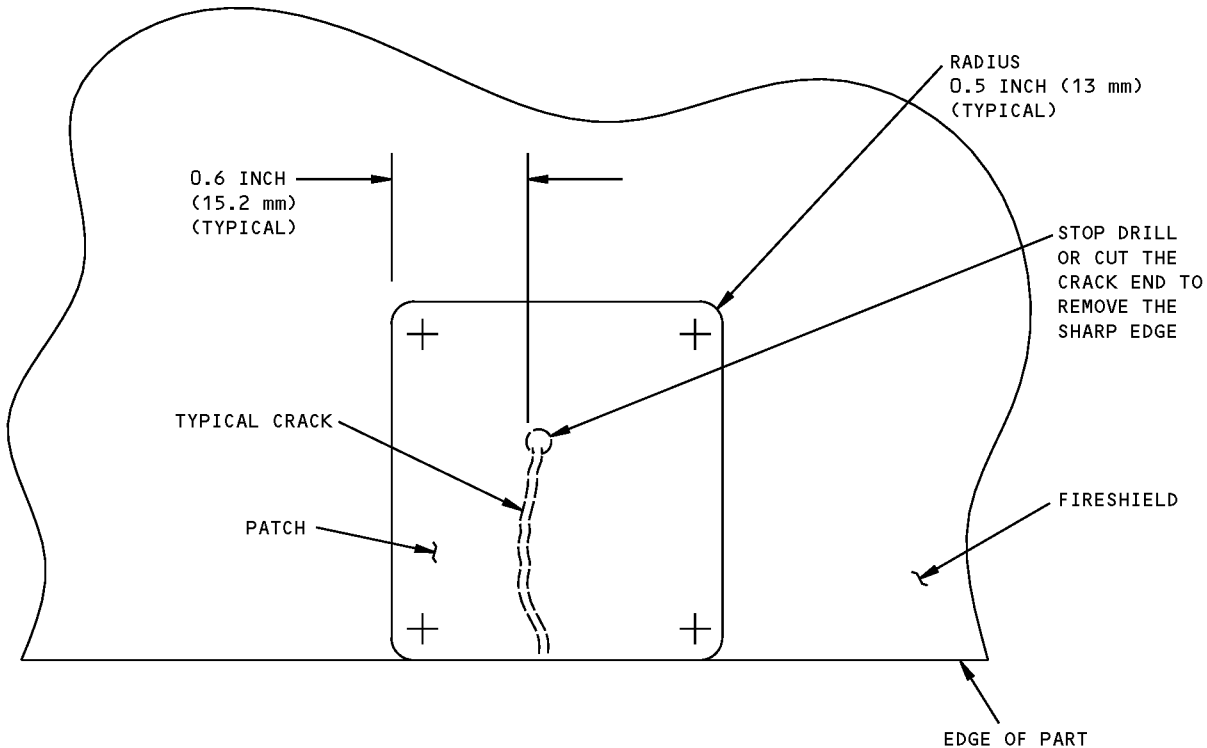
767-300

STRUCTURAL REPAIR MANUAL**Table 201:** Repair Materials and Equipment

*[1]		
DESCRIPTION	DESIGNATION	MANUFACTURER
Brush	Nylon	Commercially Available
Clothing	Protective	Commercially Available
Cloth, Wiper	Cotton, lint-free	Commercially Available
Container	Metal or plastic	Commercially Available
Glasses	Safety	Commercially Available
Gloves	Cotton, lint-free	Commercially Available
Gloves	Neoprene or Polyvinyl Chloride	Commercially Available
Heat lamp, explosion proof	180° to 210°F (83° to 99°C)	Commercially Available
Knife	Putty	Commercially Available
Knife	Utility	Commercially Available
Mask, Dust	Regulatory agency approved	Commercially Available
Paper, Abrasive	150 to 400 Grit, Aluminum oxide	Commercially Available
Primer	DC 1200	Dow Corning Corp. 220 West Salzburg Road P.O. Box 997 Midland, MI 48686-0997
Probe, temperature	0° to 250°F (-18° to 121°C)	Commercially Available
Rivet	CR2664-4-2	Commercially Available
Sealant	DC 90-006 (color red)	Dow Corning Corp.
	Or: GE RTV 88/9910 (color red, equivalent to DC 90-006)	General Electric Company 260 Hudson River Road Waterford, NY 12188
Solvent (Alternative for Turco 6646)	Methyl Ethyl Ketone (MEK)	Commercially Available
Solvent	Turco 6646	Turco Products, Inc. Subsidiary of Pennwalt Corporation 24600 South Main Street P.O. Box 2600 Carson, CA 90749
Spatula	Metal or plastic	Commercially Available
Stainless steel sheet	0.005 in. (0.13 mm) thick 321 Cres, AMS 5510	Commercially Available
Tape	Teflon, 2 in. (51 mm) wide	Commercially Available
Washer	AN960C4L	Commercially Available

*[1] Alternative sources for these materials can be found in METALLIC MATERIALS, 51-30-02 and NONMETALLIC MATERIALS - CF6-80C2 ENGINE NACELLE, 51-31-03.

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STRUCTURAL REPAIR MANUAL**

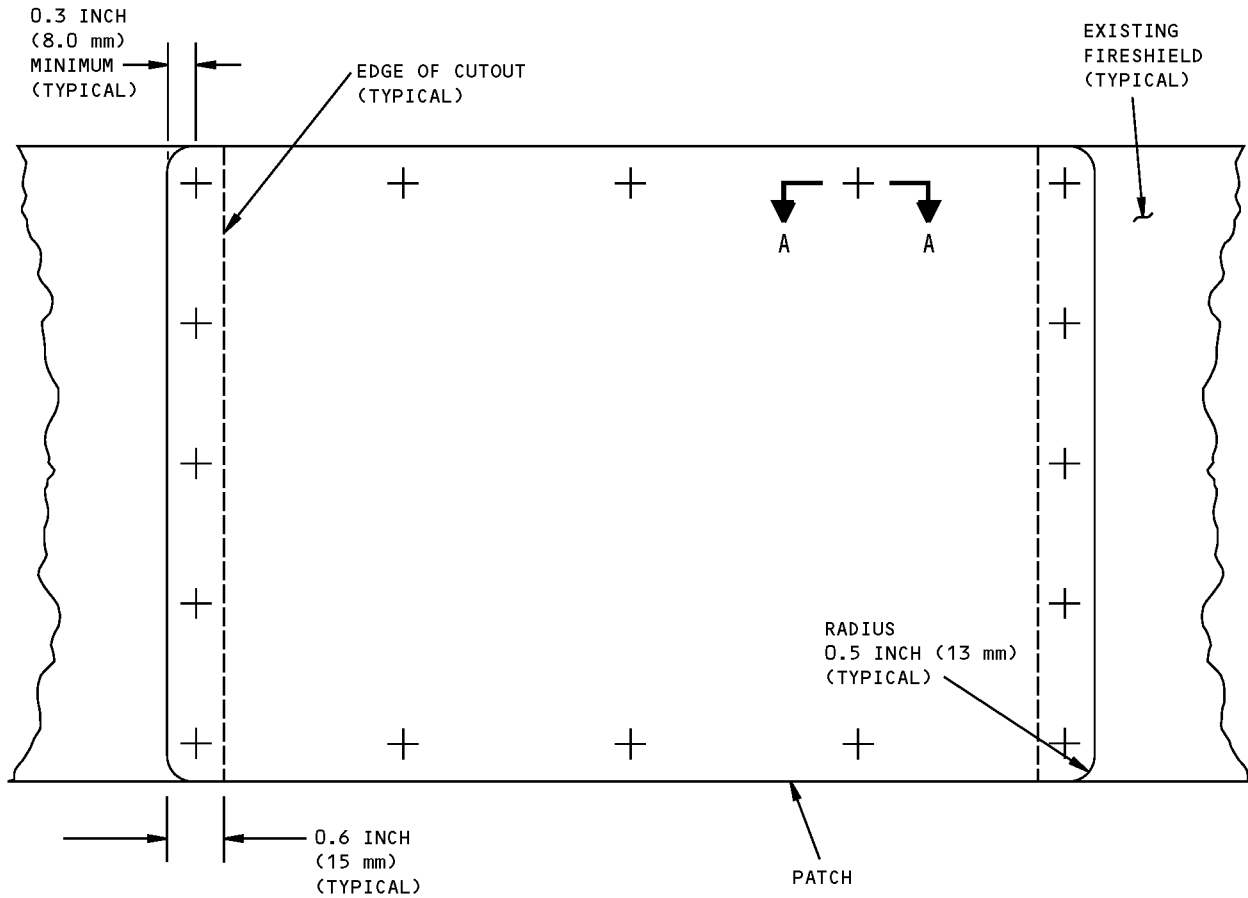


**DETAIL I
TYPICAL SMALL PATCHES**

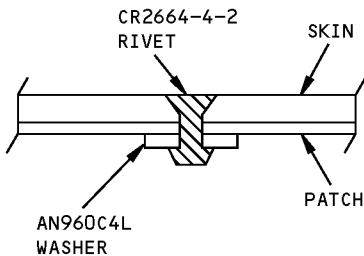
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**Fireshield Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



DETAIL II
TYPICAL VIEW OF A LARGE PATCH
THAT COVERS THE FULL WIDTH OF THE FIRESHIELD



SECTION A-A
(TYPICAL)

GRS301-02

Fireshield Patch Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)

STRUCTURAL REPAIR MANUAL

REPAIR 8 - RIGHT HAND PRECOOLER EXTERNAL DOUBLER - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR IS APPLICABLE TO CRACK DAMAGE THAT OCCURS TO THE RIGHT HAND CORE COWL SKIN AT THE FASTENER ROW LOCATION BELOW THE PRECOOLER OPENING.

THIS REPAIR IS NOT APPLICABLE IF THE DAMAGE IS NOT IN THE PERMITTED AREA AS SHOWN IN DETAIL II.

THIS TYPE OF DAMAGE IS REPAIRED BY INSTALLATION OF AN EXTERNAL DOUBLER AT THE LOWER PRECOOLER LOCATION.

THIS REPAIR IS APPLICABLE ONLY TO CORE COWLS WITH A SERIAL NUMBER 3004001 AND ON. REFER TO SRM 54-42-01 FOR CORE COWLS WITH A SERIAL NUMBER BEFORE 3004001 OR A CORE COWL WITH A FOUR DIGIT SERIAL NUMBER (FOR EXAMPLE 1293-A).

- a. Make a mark of the damaged area to be removed. The edge of the cut out must be a minimum of 0.10 inch (2.54 mm) to 0.25 inch (6.35 mm) away from the end of the crack and be the smallest size possible that removes the damage completely. The cutout must have a minimum radius of 0.50 inch (12.7 mm) at the corners. The minimum distance between a crack and an edge of the non-damaged fastener hole is 2D (D = fastener diameter). Make sure there is no other structure damaged during removal.
- b. Remove three fasteners in the repair area as necessary. Refer to SRM 51-40-02 for fastener installation and removal.

REPAIR INSTRUCTIONS

1. Examine the damage area.
 - a. Remove the surface finish at least 3 inches (76.2 mm) from the repair area if necessary.

WARNING: TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- b. Clean the repair area. Use a brush with Turco 6646 solvent or equivalent, and a clean, lint-free cloth moistened with the solvent. Wipe the surface clean before the solvent becomes dry.
- c. Find the extent of the damage. If necessary, do a penetrant inspection of the area to find cracks. Refer to SOPM 20-20-02 for penetrant inspection procedures. Make a mark of the crack ends.

2. Prepare the damage area for the repair.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

CAUTION: BE CAREFUL NOT TO DAMAGE THE ADJACENT STRUCTURE WHEN YOU CUT OR DRILL. A THIN SHEET OF METAL CAN BE PUT BETWEEN THE SKIN AND THE STRUCTURE TO PREVENT DAMAGE.

- c. Cut and remove the damaged area of the skin as marked.
 - d. Do a visual inspection of the cutout area to make sure all of the crack has been removed. Use a magnifying glass with a minimum 10X magnification. If you think there is a crack, do a penetrant inspection of the area. Repeat the previous steps as necessary until the crack has been removed.
 - e. Remove the sharp edges and burrs. Keep a radius of 0.01 - 0.03 inch (0.3 - 0.8 mm) on the cut edges.
3. Make the repair parts. See Table I for a list of repair materials.

WARNING: WHEN METALS ARE CUT, DRILLED, OR SANDED, DUST PARTICLES ARE MADE. THESE PARTICLES ARE POTENTIAL HEALTH HAZARDS. DO NOT BREATHE THE DUST PARTICLES.

- a. If necessary, make the part 2 filler to fit inside the cutout. See Section A-A. Form the filler to match the contour of the skin in the repair area. The minimum distance between a fastener and the edge of the filler is 1D (D = fastener diameter).
- b. Make the part 1 external doubler. Form the external doubler to match the contour of the skin. The corners must have a minimum radius of 0.50 inch (12.7 mm).

N90272 S0006827765_V2

Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 7)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONTINUED)

- c. Plug the initial countersinks in the repair area with countersink repair washers. Refer to SRM 51-40-08 for instructions to make the countersink repair washers.
- d. Make a mark of the rivet holes on the repair doubler. Drill pilot holes as marked. Place the external doubler and the filler (if necessary) into position. Shims up to 0.03 inch (0.76 mm) are permitted if necessary. Refer to SRM 51-20-08. Back drill pilot holes from the initial structure through the repair parts. Do not damage the adjacent structure. Use clamps and temporary fasteners to keep the repair parts in place. Make sure all holes are aligned. Countersink holes on the external doubler.
- e. Disassemble the repair parts. Remove burrs and sharp edges.
- WARNING:** TURCO 6646 IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.
- f. Use dry air blast and suction cleaners to remove the drilling and sanding particles from the repair area and the repair parts. Clean surface with a clean, lint-free cloth moistened with Turco 6646 solvent. Wipe the surfaces clean before the solvent becomes dry.
- g. Apply a protective treatment to the surfaces and all the cut edges. Refer to SRM 51-21-01

WARNING: DC 1200 PRIMER IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

CAUTION: TO PREVENT CONTAMINATION, USE LINT-FREE GLOVES WHEN TOUCHING THE CLEANED OR PREPARED SURFACES.

- h. Use the manufacturer's instructions to mix the DC 1200 primer. Apply a thin layer of the primer mixture to the mating surfaces of the skin and the external doubler. Use a brush and follow the manufacturer's instructions for application.

CAUTION: IF THE REPAIR PARTS ARE NOT INSTALLED WITHIN 24 HOURS, THE SEALANT ADHESION MAY BE UNSATISFACTORY. TO MAKE SURE THERE IS SUFFICIENT SEALANT ADHESION, CLEAN THE AREA AGAIN AS SHOWN IN PARAGRAPH 3.F. APPLY THE DC 1200 PRIMER AS SHOWN IN PARAGRAPH 3.H. CURE AND INSPECT THE DC 1200 PRIMER FOR CHALKY RESIDUE (WHITE POWDER RESIDUE RESEMBLING CHALK) AS SHOWN IN PARAGRAPH 3.I.

- i. Cure DC 1200 primer at room temperature for one hour. If a chalky residue (white powder residue resembling chalk) is shown, remove the residue by rubbing the surface with a clean, lint-free cloth. Install the repair parts with DC 93-006 sealant within 24 hours as given in Paragraph 4.a.

4. Install the repair parts.

WARNING: DC 93-006 SEALANT IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE MATERIAL SAFETY DATA SHEET AND FOLLOW ALL LISTED SAFETY AND HEALTH PRECAUTIONS.

- a. Use the manufacturer's instructions to mix the DC 93-006 sealant. Apply a thin layer of the sealant to the mating surfaces of the skin and the external doubler. Place the external doubler (and filler, if used) into position. Align the rivet holes. Use temporary fasteners as necessary to keep the holes aligned. Install the rivets wet with the sealant.
- b. Apply more of the sealant to the edges of the external doubler all around. Remove the excess sealant from the repair area before it cures. Use a clean, lint-free cloth. Refer to SRM 51-21-05 for repair sealing.

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**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 7)**

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STRUCTURAL REPAIR MANUAL****REPAIR INSTRUCTIONS**

WARNING: DO NOT TOUCH THE HOT PARTS WITHOUT PROTECTIVE GLOVES. HOT PARTS CAN CAUSE REDDENING AND BLISTERING OF THE SKIN IF THE HANDS ARE NOT PROTECTED. PUT THE CONTACTED AREA IN COLD WATER FOR 10 MINUTES IF THE SKIN IS BURNED. GET MEDICAL AID IF PAIN OR BLISTERING CONTINUES.

- c. Cure the sealant. Use explosion proof heat lamps, if necessary, to accelerate the cure. Do not raise the temperature above 190°F (88°C).
6. Examine the area.
- a. Visually examine the repair area to make sure the requirements of this repair have been met. Repeat the applicable steps if necessary.
 - b. Apply a finish to the repair area as necessary. Refer to the applicable Maintenance Manual.

1472956 S0000268170_V1

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 7)**

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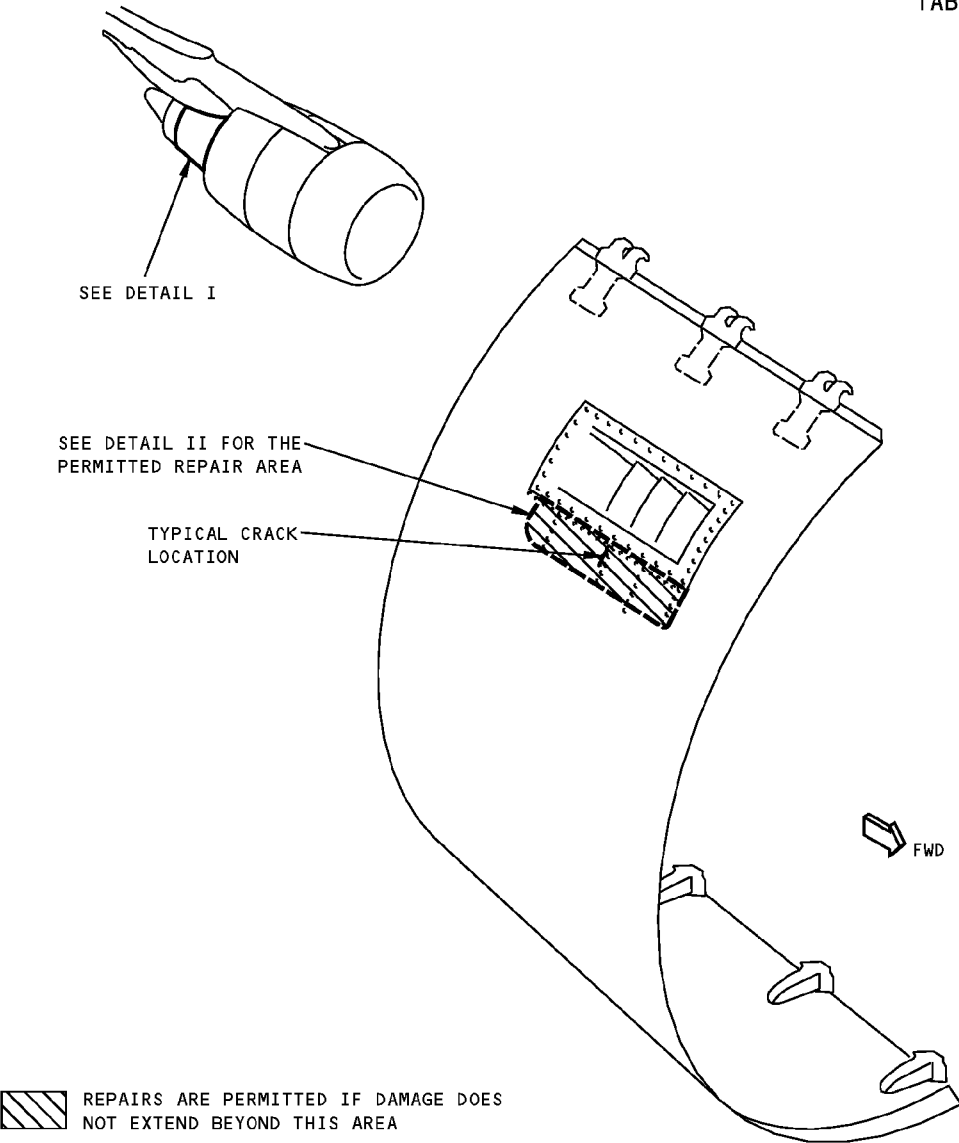
**767-300
STRUCTURAL REPAIR MANUAL**

FASTENER SYMBOLS

- +— REFERENCE FASTENER LOCATION
- + NASM20427M5-()C()
- △ NAS1200M5-()P

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	EXTERNAL DOUBLER	1	0.063 INCH (1.60 mm) 2219-T81 CLAD, (BMS 7-110)
2	FILLER	1	0.063 INCH (1.60 mm) 2219-T81 CLAD, (BMS 7-110)

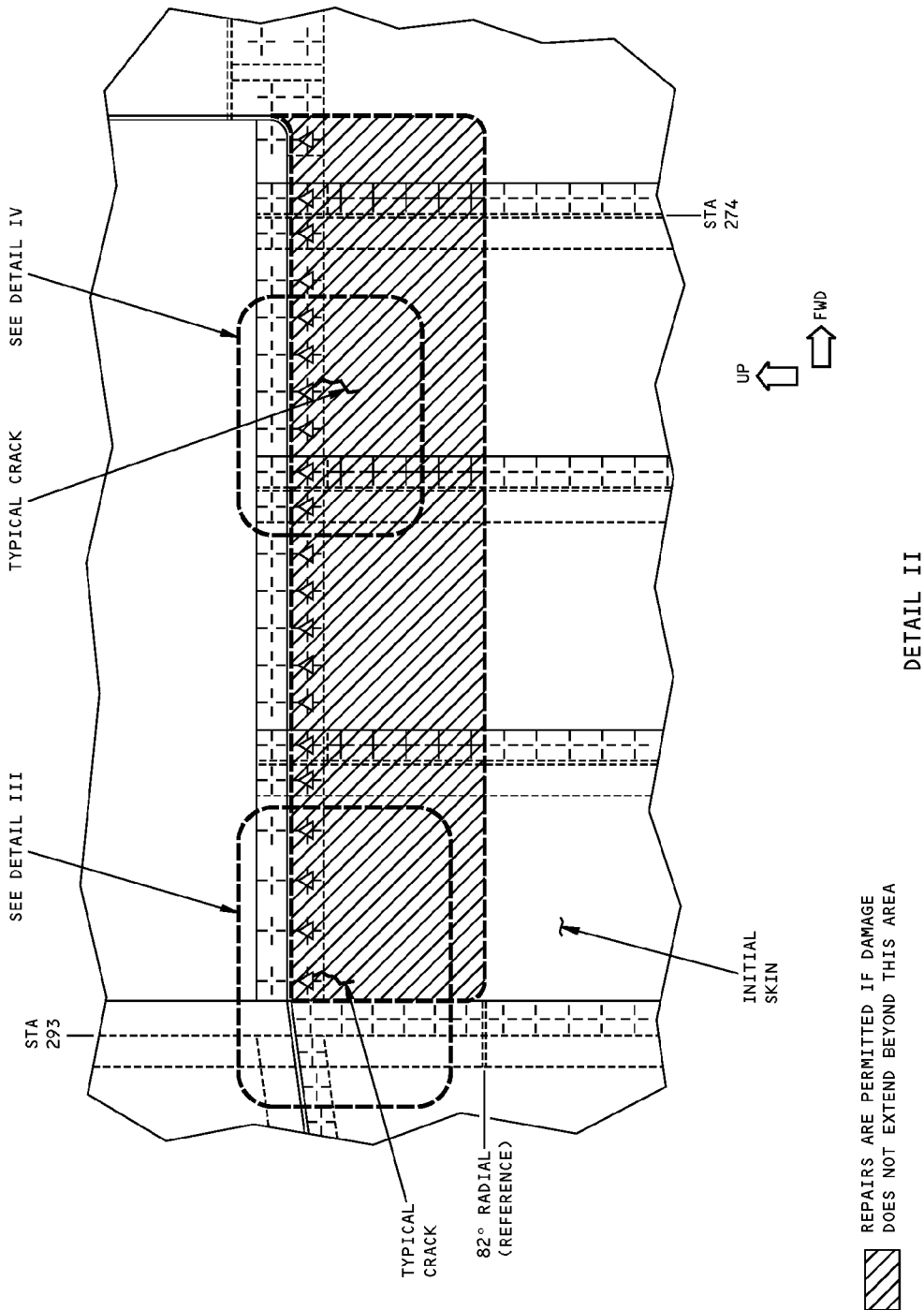
TABLE I



DETAIL I

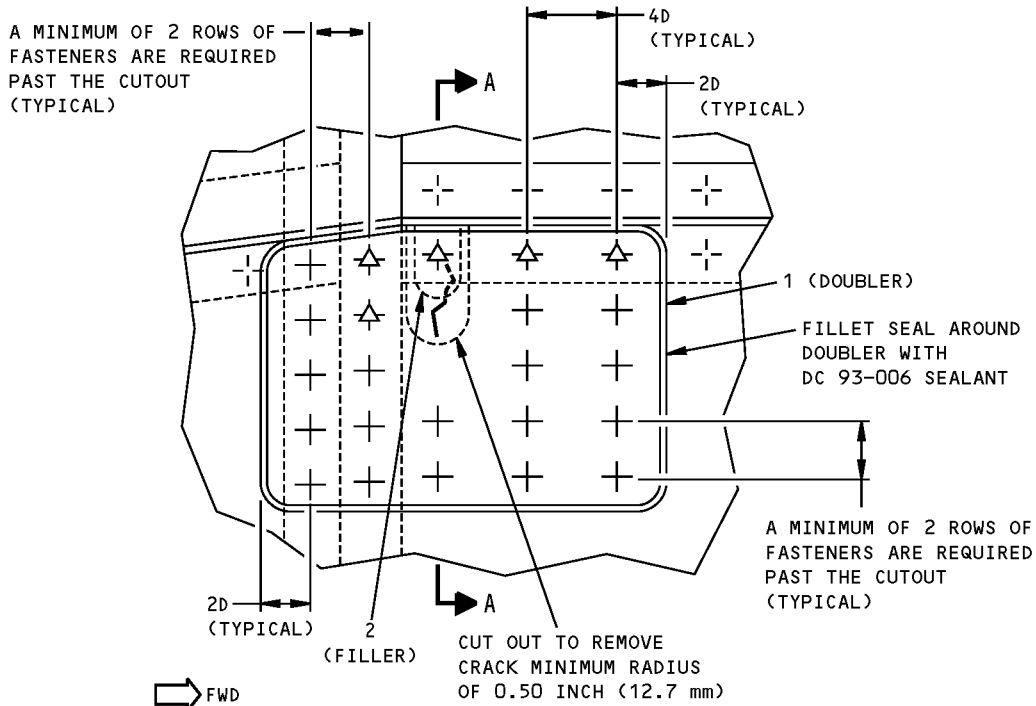
**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 7)**

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STRUCTURAL REPAIR MANUAL

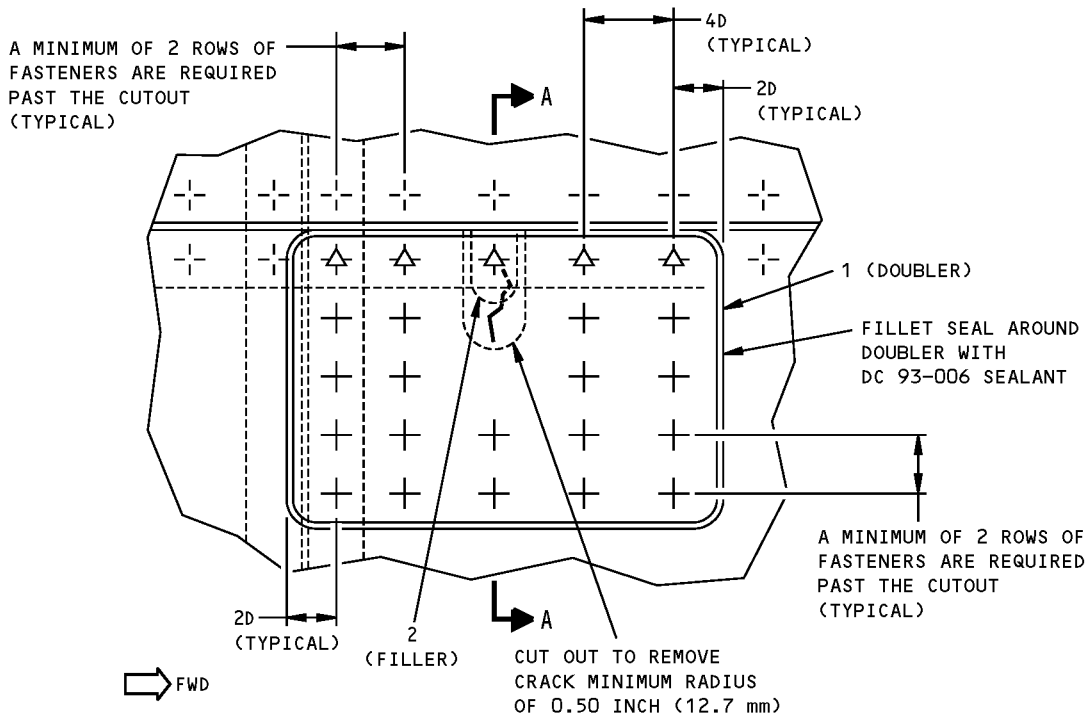


Right Hand Pre-cooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 7)

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STRUCTURAL REPAIR MANUAL**



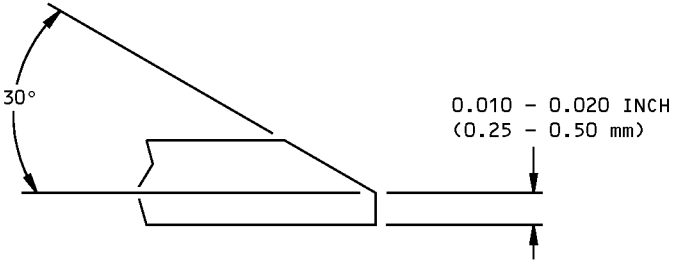
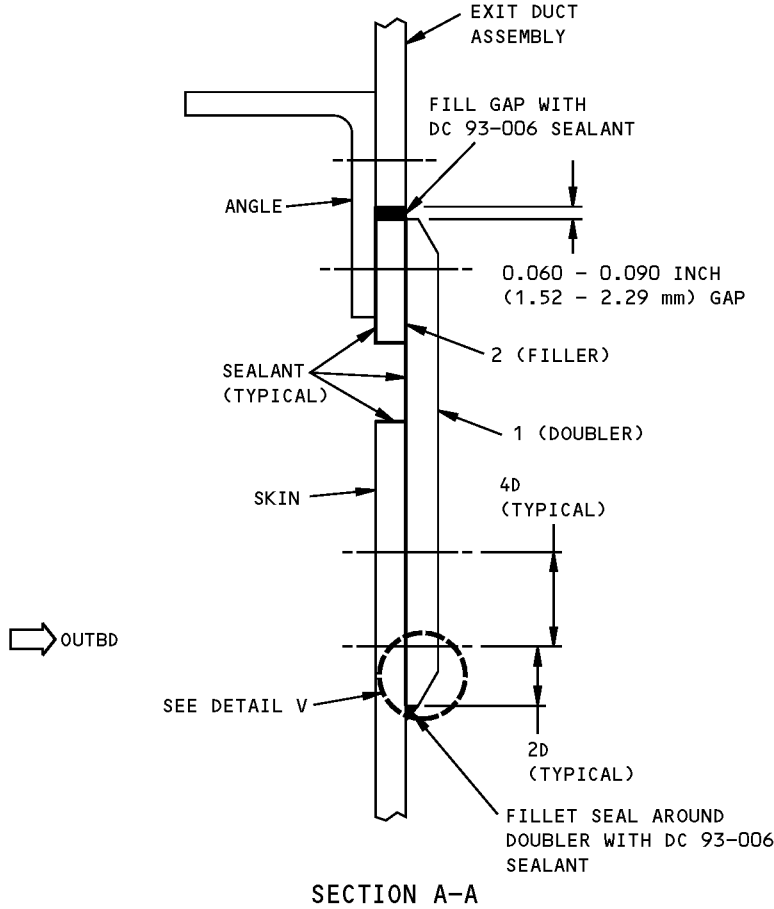
DETAIL III



DETAIL IV

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 7)**

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STRUCTURAL REPAIR MANUAL**



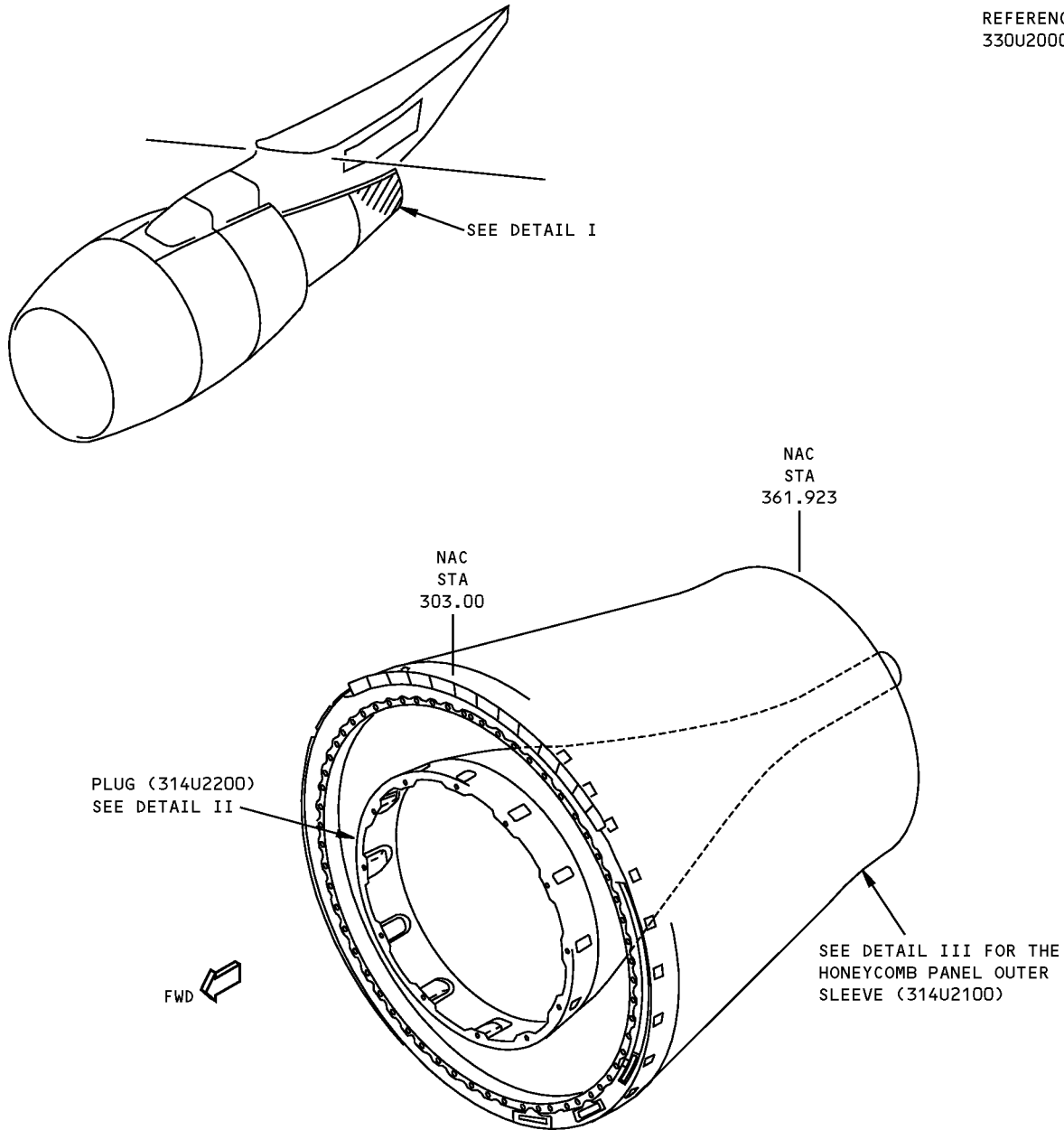
ROTATED 90° COUNTER CLOCKWISE
CHAMFER AROUND EDGE DOUBLER (TYPICAL)
DETAIL V

**Right Hand Precooler External Doubler Repair - CF6-80C2 Engine
Figure 201 (Sheet 7 of 7)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE

REFERENCE DRAWING
330U2000



NOTE: THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.015 INCH OUTER FACE SHEET. REFER TO SRM 54-42-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET.

OUTER SLEEVE
DETAIL I

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 4)**

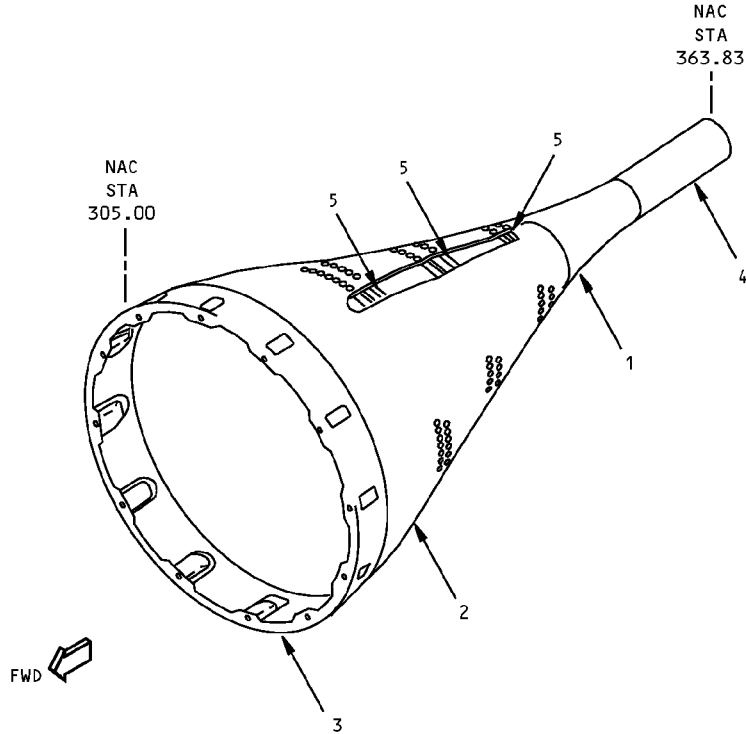
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
314U2200



PLUG
DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	AFT CONE	0.032	INCONEL 625	
2	FORWARD CONE	0.050	INCONEL 625 (CHEM-MILLED TO 0.032 MINIMUM)	
3	FORWARD RING		BAR INCONEL 625	
4	TAIL RING	0.050	INCONEL 625 (CHEM-MILLED TO 0.032 MINIMUM)	
5	STIFFINER	0.040	INCONEL 625	

LIST OF MATERIALS FOR DETAIL II

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 4)**

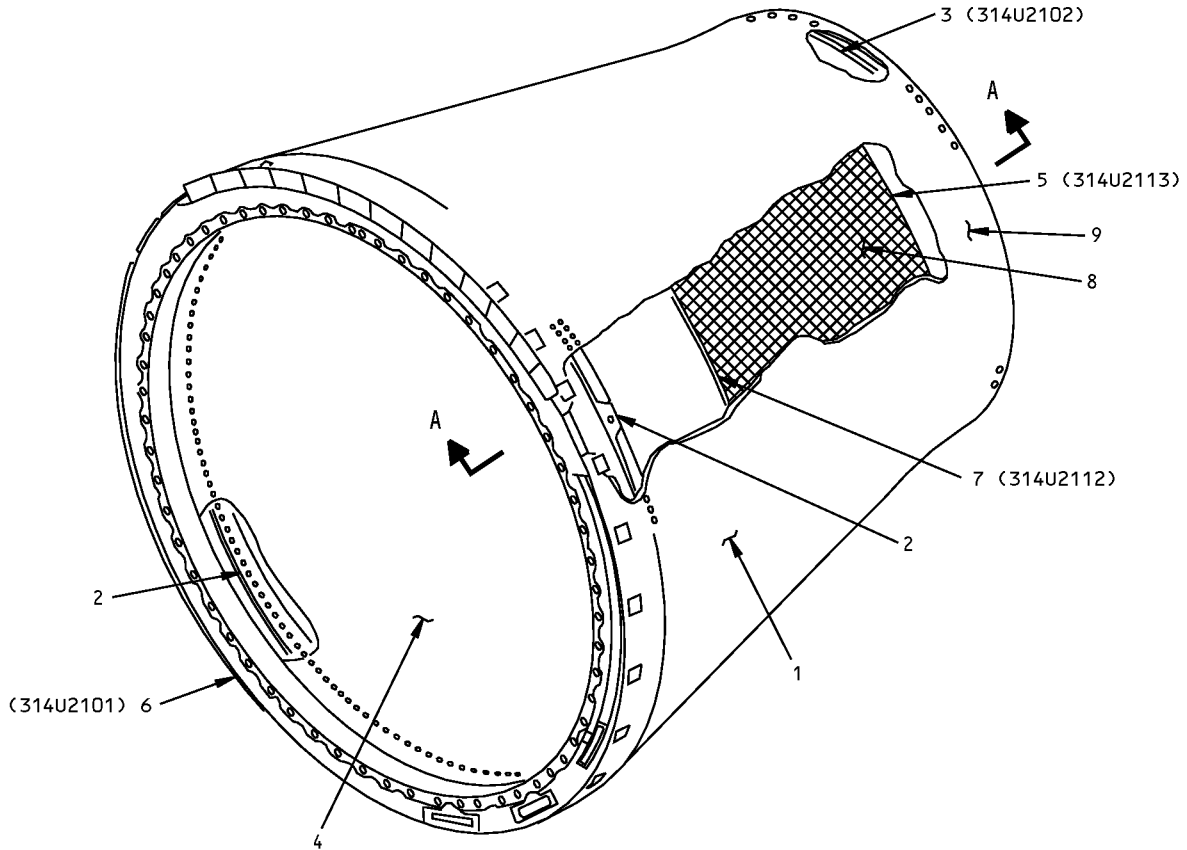
IDENTIFICATION 1
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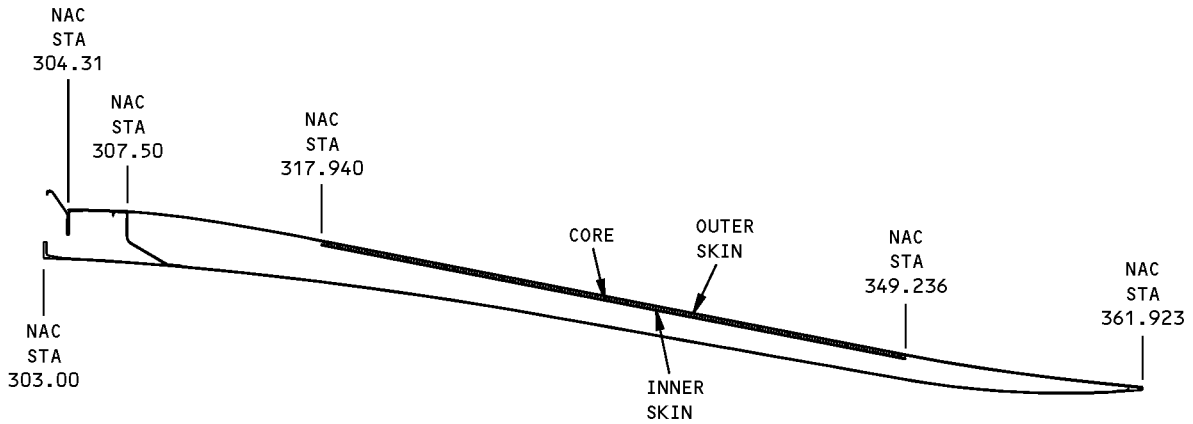
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
314U2100



**SLEEVE ASSEMBLY
DETAIL III**



SECTION A-A

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 4)**

IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD OUTER SKIN	0.050	NICKEL ALLOY 625	
2	BULKHEAD ASSEMBLY			
	INNER BULKHEAD	0.025	NICKEL ALLOY 625	
	OUTER BULKHEAD	0.028	NICKEL ALLOY 625	
3	AFT RING		BAR NICKEL ALLOY 625	
4	INNER SLEEVE	0.050	NICKEL ALLOY 625 (CHEM-MILLED TO 0.032 MINIMUM)	
5	HONEYCOMB PANEL AFT RING		BAR NICKEL ALLOY 625	
6	FORWARD RING		BAR NICKEL ALLOY 625	
7	HONEYCOMB PANEL FORWARD RING		BAR NICKEL ALLOY 625	
8	HONEYCOMB PANEL ASSEMBLY			
	OUTER FACE SHEET	0.015	NICKEL ALLOY 625	
	CORE	0.223	NICKEL ALLOY 625, C6-25P PER BMS 4-15	
	INNER FACE SHEET	0.015	NICKEL ALLOY 625, TYPE III A, PERFORATED SHEET PER BMS 7-209, CLASS 50-162, GRADE 1-B	
9	AFT OUTER SKIN	0.050	NICKEL ALLOY 625	

LIST OF MATERIALS FOR DETAIL III

**Primary Exhaust Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 4)**

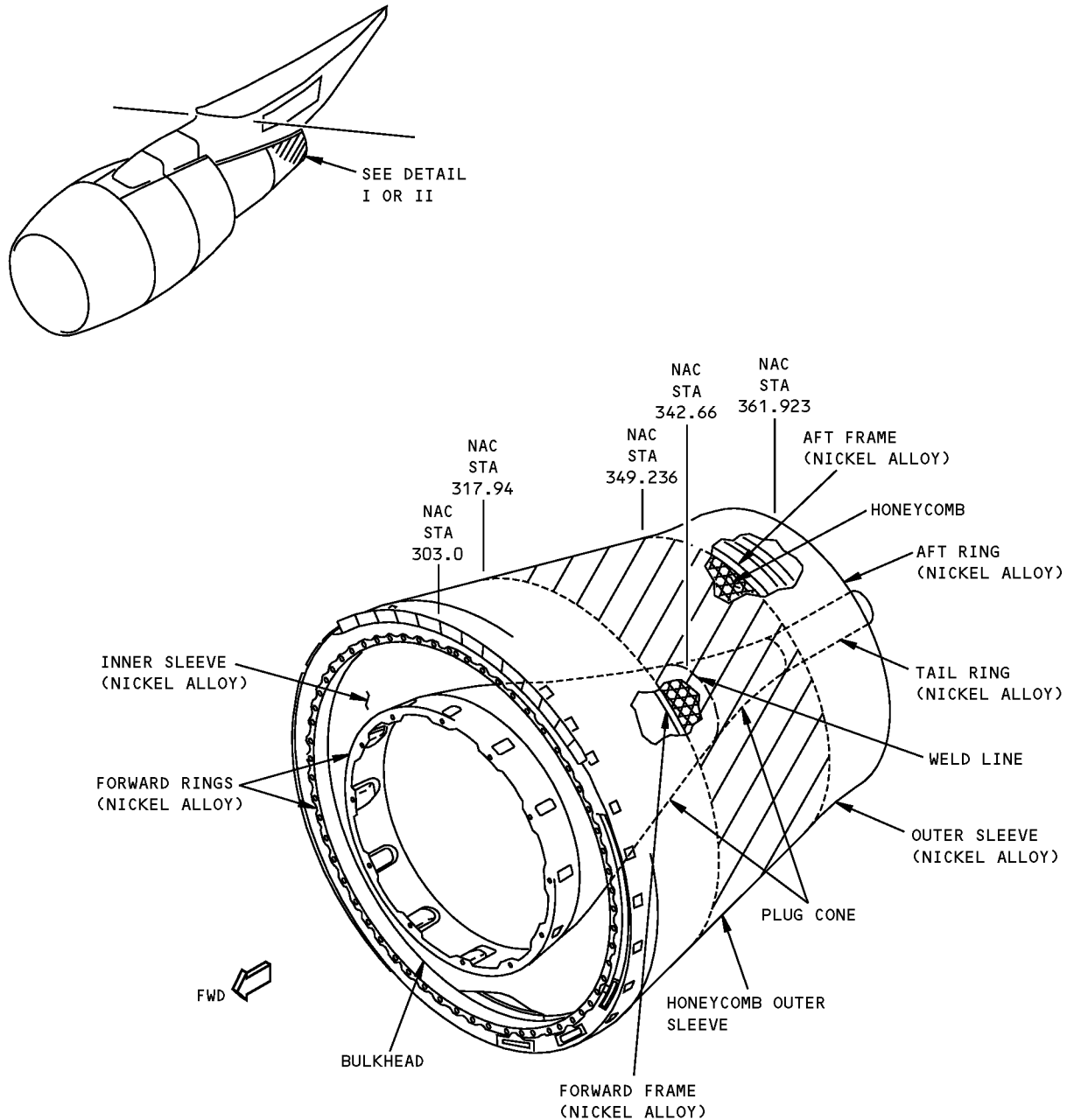
D634T210

54-45-30

IDENTIFICATION 1
Page 4
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE

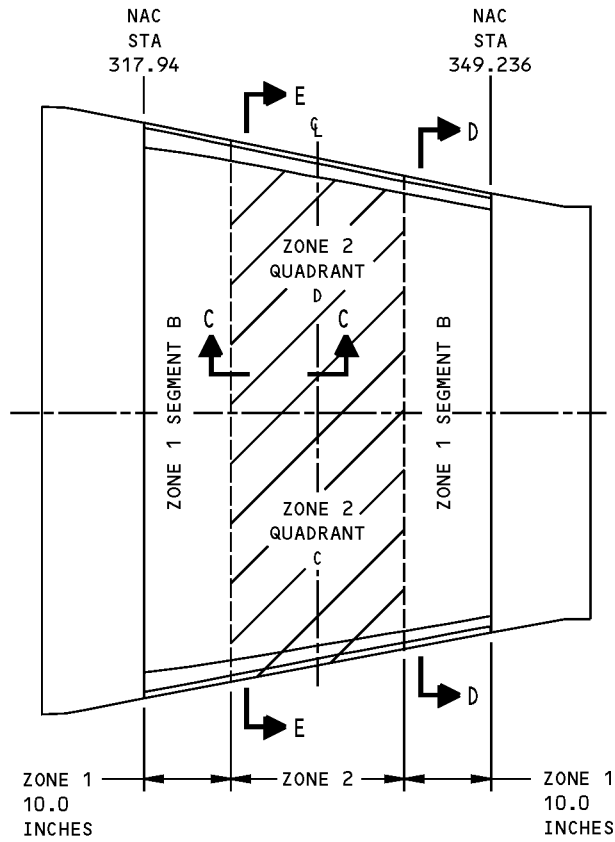


NOTE: THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.015 INCH OUTER FACE SHEET. REFER TO SRM 54-42-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET.

**HONEYCOMB STIFFENED OUTER SLEEVE SKIN
DETAIL I**

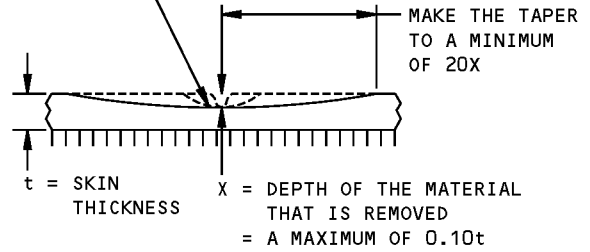
**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

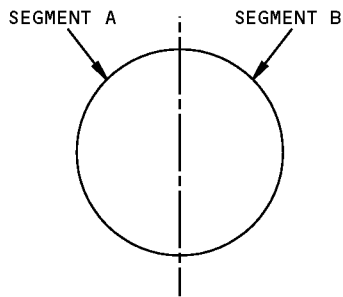


DETAIL II

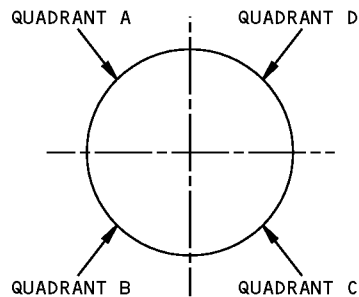
REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN



SECTION C-C



**ZONE 1
SECTION D-D**



**ZONE 2
SECTION E-E**

**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES	DENTS AND WRINKLES	PUNCTURES	DELAMINATION
PLUG FORWARD RING	F	K	NOT PERMITTED	NOT PERMITTED	DOES NOT APPLY ↓
OUTER SLEEVE FORWARD RING	A	K	NOT PERMITTED	NOT PERMITTED	
PLUG CONE FORWARD OF NAC STA 342.66	G	B	D	E	
PLUG CONE AFT OF NAC STA 342.66	I	B	D	E	
HONEYCOMB STIFFENED OUTER SLEEVE SKIN FORWARD OF NAC STA 317.94 AND AFT OF NAC STA 349.236 - SEE DETAIL I	G	B	D	E	
INNER SLEEVE SKIN	H	B	D	E	
PLUG STIFFENERS	C	K	C	NOT PERMITTED	
SLEEVE STIFFENERS	C	K	C	NOT PERMITTED	
TAIL RING	I	B	D	NOT PERMITTED	
BULKHEAD	C	B	D	NOT PERMITTED	
AFT RING	A	B	NOT PERMITTED	NOT PERMITTED	
HONEYCOMB OUTER SLEEVE ZONE 1 SEE DETAIL II ZONE 2 SEE DETAIL II	L M	P P	N N	Q Q	O O

NOTES

- D = THE MAXIMUM DAMAGE LENGTH
 - ALL DIMENSIONS ARE IN INCHES UNLESS GIVEN DIFFERENTLY.
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- A** CRACKS UP TO 0.10 INCH (2.5 mm) IN LENGTH ARE PERMITTED, PROVIDED THERE IS A MINIMUM OF 1.0 INCH (25 mm) SEPARATION FROM THE EDGE OR OTHER DAMAGE. THE SUM OF ALL CRACKS MUST BE LESS THAN 2.0 INCHES (50 mm). DRILL OUT THE CRACKS WITH A 0.098 INCH (2.5 mm) DIAMETER HOLE. REPAIR THE DAMAGE AT THE NEXT 'A' CHECK. REMOVE EDGE CRACKS AS GIVEN IN DETAILS III AND V.
- B** REMOVE NICKS, GOUGES, AND SCRATCHES AS SHOWN IN DETAIL IV.
- C** CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE INFORMATION.
- D** DENTS, SKIN WRINKLES, HEAT DEPRESSIONS AND SKIN WAVINESS ARE PERMITTED AS GIVEN IN DETAIL VI. DENTS ARE NOT PERMITTED CLOSER THAN 2.0 INCHES (50 mm) TO PANEL EDGE. DENTS WITH CRACKS, SHARP CREASES OR HOLES ARE NOT PERMITTED.
- E** HOLES ARE NOT PERMITTED. MAKE WELD REPAIR AS GIVEN IN REPAIR 1.
- F** NO DAMAGE PERMITTED EXCEPT FOR EDGE DAMAGE WHICH MUST BE REMOVED AS GIVEN IN DETAILS III AND V.
- G** CRACKS UP TO 4.0 INCHES (100 mm) IN LENGTH ARE PERMITTED, PROVIDED THERE IS A MINIMUM OF 2 TIMES THE CRACK LENGTH SEPARATION FROM THE EDGE OR OTHER DAMAGE. THE SUM OF ALL CRACKS MUST BE LESS THAN 4.0 INCHES (100 mm). STOP DRILL THE ENDS OF ALL CRACKS WITH A 0.098 INCH (2.5 mm) DIAMETER HOLE. REPAIR THE DAMAGE AT THE NEXT 'A' CHECK. REMOVE EDGE CRACKS AS GIVEN IN DETAILS III AND V. **J**
- H** CRACKS ARE PERMITTED IN THE INNER SLEEVE SKIN IF:
- THE DAMAGE IS NOT LESS THAN 2D (END TO END) FROM OTHER DAMAGE
 - THE END OF THE DAMAGE IS NOT LESS THAN 1/2D FROM AN ADJACENT HOLE OR MATERIAL EDGE
 - YOU EXAMINE AND REPAIR THE DAMAGE AT THE SPECIFIED TIMES FOR THE CRACK LENGTHS WHICH FOLLOW:
 - FOR A LENGTH OF UP TO 1.0 INCH (25 mm), REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK.
 - FOR A LENGTH OF MORE THAN 1.0 INCH (25 mm) UP TO 3.0 INCHES (75 mm), EXAMINE THE CRACK EACH 15 FLIGHT CYCLES. REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK.
 - FOR A LENGTH OF MORE THAN 3.0 INCHES (75 mm) AND UP TO 5.0 INCHES (125 mm), EXAMINE THE CRACK EACH 5 CYCLES. REPAIR THE CRACK BY THE SUBSEQUENT 'A' CHECK.

**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 3 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

STOP DRILL THE ENDS OF EACH CRACK TO A MAXIMUM DIAMETER OF 0.188 INCH (4.8 mm). REFER TO SRM 51-10-02.

REMOVE EDGE CRACKS AS SHOWN IN DETAILS III AND V.

I CRACKS ARE PERMITTED IF:

- THE CRACK LENGTH IN THE CIRCUMFERENTIAL DIRECTION IS NOT MORE THAN 2.0 INCHES (50 mm)
- THE CRACK LENGTH IN THE LONGITUDINAL DIRECTION IS NOT MORE THAN 3.0 INCHES (75 mm)
- THE DISTANCE BETWEEN A CRACK AND THE EDGE OR OTHER DAMAGE IS TWO TIMES THE CRACK LENGTH OR MORE
- THE SUM OF ALL CRACKS ARE LESS THAN 2.0 INCHES (50 mm) IN THE CIRCUMFERENTIAL DIRECTION AND 3.0 INCHES (75 mm) IN THE LONGITUDINAL DIRECTION
- THE ENDS OF THE CRACKS ARE STOP-DRILLED WITH A 0.098 INCH (2.5 mm) DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT THE NEXT "A" CHECK
- EDGE CRACKS ARE REMOVED AS GIVEN IN DETAILS III AND V. **J**

J CRACKS ARE NOT PERMITTED TO EXTEND ACROSS A STIFFENER.

K NICKS, GOUGES, AND SCRATCHES UP TO 0.50 INCH (13 mm) IN LENGTH OR DIAMETER AFTER CLEANUP ARE PERMITTED. REMOVE NICKS, SCRATCHES, AND GOUGES AS SHOWN IN DETAIL IV.

L CRACKS ARE PERMITTED IN ZONE 1 IF:

- THE TOTAL LENGTH OF ALL CRACKS IN THE CIRCUMFERENTIAL OR LONGITUDINAL DIRECTIONS PER EACH 180° SEGMENT IS NOT MORE THAN 4.0 INCHES (100 mm)
- THE DISTANCE TO THE EDGE OF THE HONEYCOMB PANEL IS A MINIMUM OF HALF THE CRACK LENGTH
- THE TOTAL LENGTH OF ALL CRACKS IN EACH FACE SHEET, INNER AND OUTER, IN ZONE 1 IS LESS THAN 8.0 INCHES (200 mm)
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON EITHER OF THE TWO FACE SHEETS IS AT LEAST TWO TIMES THE LENGTH OF THE LONGEST CRACK WITH A MINIMUM ALLOWABLE DISTANCE OF 1.0 INCH (25 mm)
- THE ENDS OF THE CRACKS ARE STOP DRILLED WITH A 0.125 INCH (3 mm) DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT OR BEFORE THE NEXT "C" CHECK

M CRACKS ARE PERMITTED IN ZONE 2 IF:

- THE TOTAL CRACK LENGTH IN THE CIRCUMFERENTIAL OR LONGITUDINAL DIRECTION FOR EACH QUADRANT IS NOT MORE THAN 5.0 INCHES (125 mm)
- THE TOTAL LENGTH OF ALL CRACKS IN EACH OF THE INNER AND OUTER FACE SHEETS OF ZONE 2 IS LESS THAN 20 INCHES (50 cm)
- THE DISTANCE BETWEEN A CRACK AND OTHER DAMAGE ON EITHER OF THE INNER OR OUTER FACE SHEETS IS A MINIMUM OF TWO TIMES THE LONGEST CRACK LENGTH WITH A MINIMUM ALLOWABLE DISTANCE OF 1.0 INCH (25 mm)
- THE ENDS OF THE CRACKS ARE STOP DRILLED WITH A 0.125 INCH (3 mm) DIAMETER HOLE
- THE DAMAGE IS REPAIRED AT OR BEFORE THE NEXT "C" CHECK.

N DENTS ARE PERMITTED IF:

- THE DENT IS MORE THAN 2.0 INCHES (50 mm) FROM THE PANEL EDGE
- THERE ARE NO CRACKS, SHARP CREASES, WRINKLES, DELAMINATIONS OR HOLES OTHER THAN MANUFACTURED PERFORATIONS ON THE INNER FACE SHEET
- DENTS ARE NO MORE THAN 0.08 INCH (2 mm) DEEP
- THE TOTAL SURFACE AREA OF ALL DENTS IS LESS THAN 7.1 SQUARE INCHES (45 SQUARE cm). SEE DETAIL VII.

O OUTER SKIN-TO-CORE DELAMINATIONS OR VOIDS ARE PERMITTED IF:

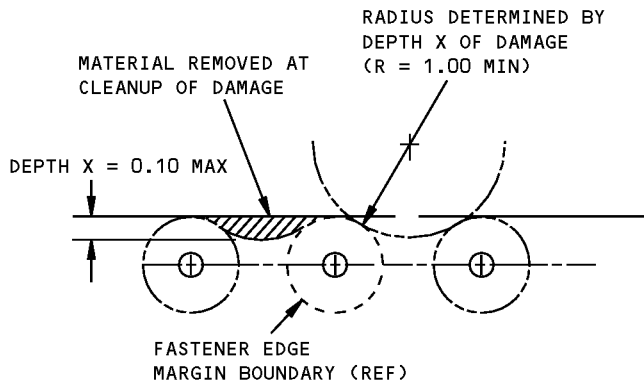
- THE DAMAGE IS CONTAINED WITHIN A CIRCLE NOT LARGER THAN 1.50 INCHES (38 mm) IN DIAMETER
- THE DAMAGE IS A MINIMUM OF 1.0 INCH (25 mm) FROM ANY OTHER DAMAGE
- THERE ARE NO CRACKS.

P NICKS, GOUGES AND SCRATCHES UP TO A DEPTH OF 10% OF THE THICKNESS ARE PERMITTED. CLEAN UP DAMAGE AS GIVEN IN DETAIL VII.

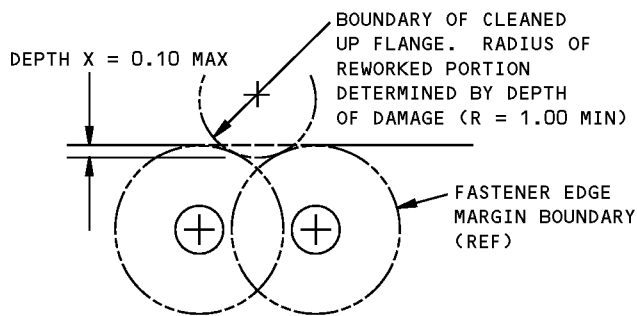
Q HOLES AND PUNCTURES WHICH DO NOT PENETRATE THROUGH MORE THAN ONE FACE SHEET SKIN OF A HONEYCOMB PANEL ARE PERMITTED UP TO 0.25 INCH (6 mm) IN DIAMETER. INSPECT DAMAGE EVERY "A" CHECK. SHARP OR JAGGED EDGES AROUND THE HOLES SHOULD BE SMOOTHED OUT AND SLIT TYPE PUNCTURES SHOULD BE ROUND OR OVAL. THE NUMBER OF UNREPAIRED HOLES AND PUNCTURES SHALL NOT BE MORE THAN FIVE FOR EACH ZONE IN THE HONEYCOMB PANEL. THE MINIMUM SPACING PERMITTED BETWEEN AN UNREPAIRED HOLE, PUNCTURE, OR THE PANEL EDGE IS 2.00 INCHES (50 mm).

**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 4 of 6)**

STRUCTURAL REPAIR MANUAL

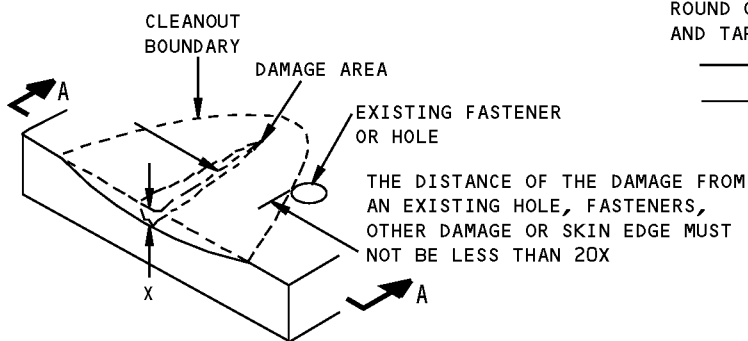


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

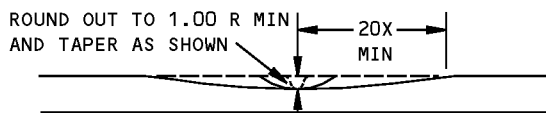


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL III

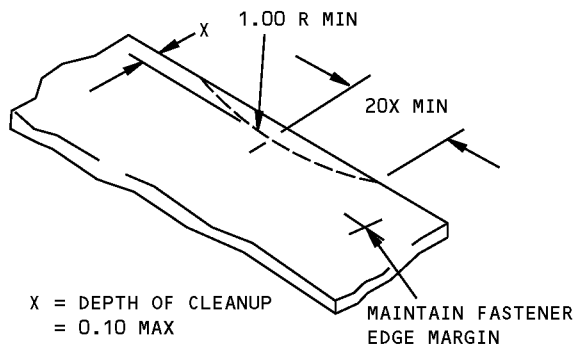


**REMOVAL OF NICK, GOUGE OR SCRATCH DAMAGE ON A SURFACE
DETAIL IV**

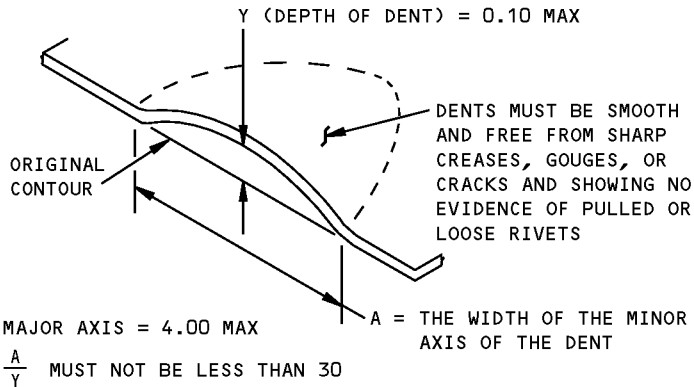


X = THE DEPTH OF THE CLEANUP
 = 10% THICKNESS MAX EXCEPT ON THE PLUG AND THE OUTER SLEEVE FORWARD RINGS
 = 5% THICKNESS MAX ON THE PLUG AND THE OUTER SLEEVE FORWARD RINGS

SECTION A-A



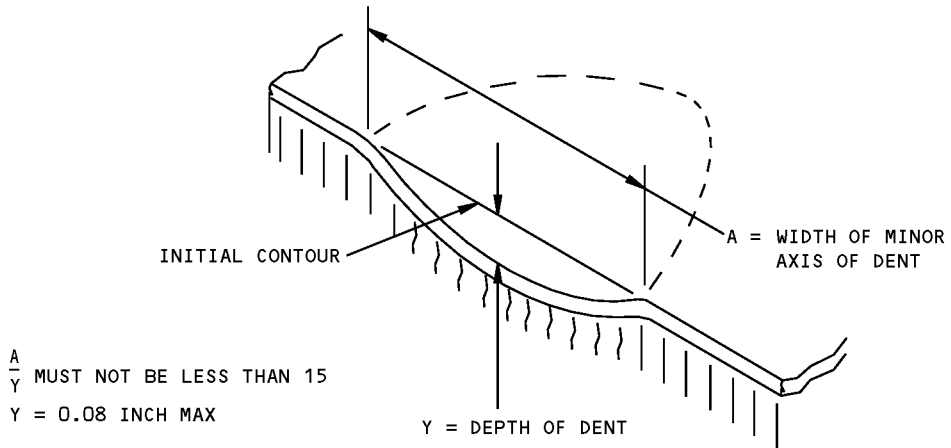
**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL V**



**ALLOWABLE DAMAGE FOR DENT
DETAIL VI**

**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

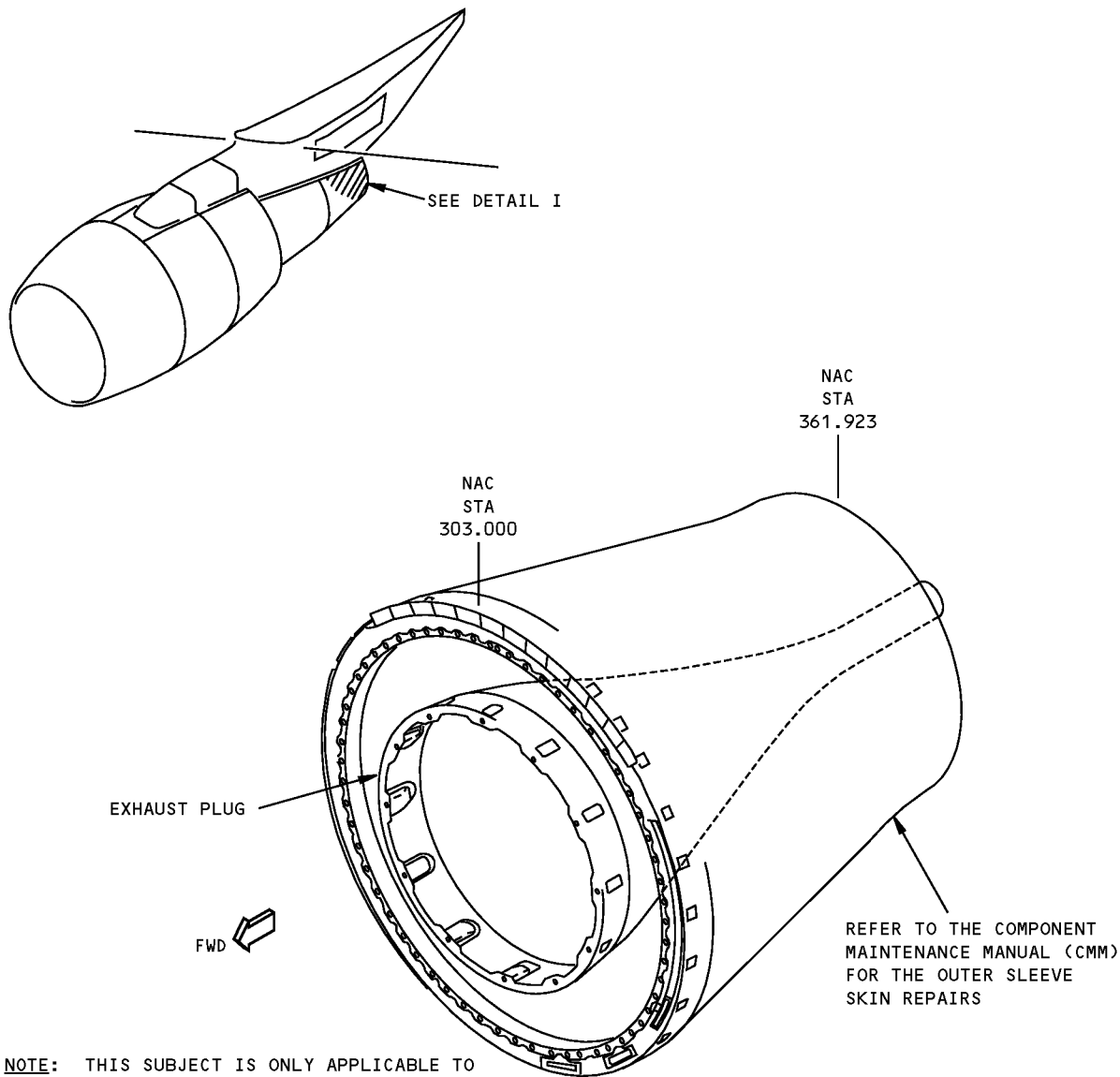


**ALLOWABLE DAMAGE FOR DENT IN HONEYCOMB PANEL
DETAIL VII**

**Allowable Damage - Primary Exhaust Skin - CF6-80C2 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - PRIMARY EXHAUST SKIN - CF6-80C2 ENGINE



NOTE: THIS SUBJECT IS ONLY APPLICABLE TO PRIMARY EXHAUST OUTER SLEEVES WITH A HONEYCOMB PANEL ASSEMBLY THAT HAS A 0.015 INCH OUTER FACE SHEET. REFER TO SRM 54-42-30 FOR THE HONEYCOMB PANEL ASSEMBLIES THAT HAVE A 0.012 INCH OUTER FACE SHEET.

DETAIL I

NOTES

- REFER TO THE COMPONENT MAINTENANCE MANUAL FOR THE FOLLOWING WELD REPAIRS:
CMM 78-11-14 FOR SLEEVE
CMM 78-11-15 FOR EXHAUST PLUG

**Primary Exhaust Skin Repair - CF6-80C2 Engine
Figure 201**

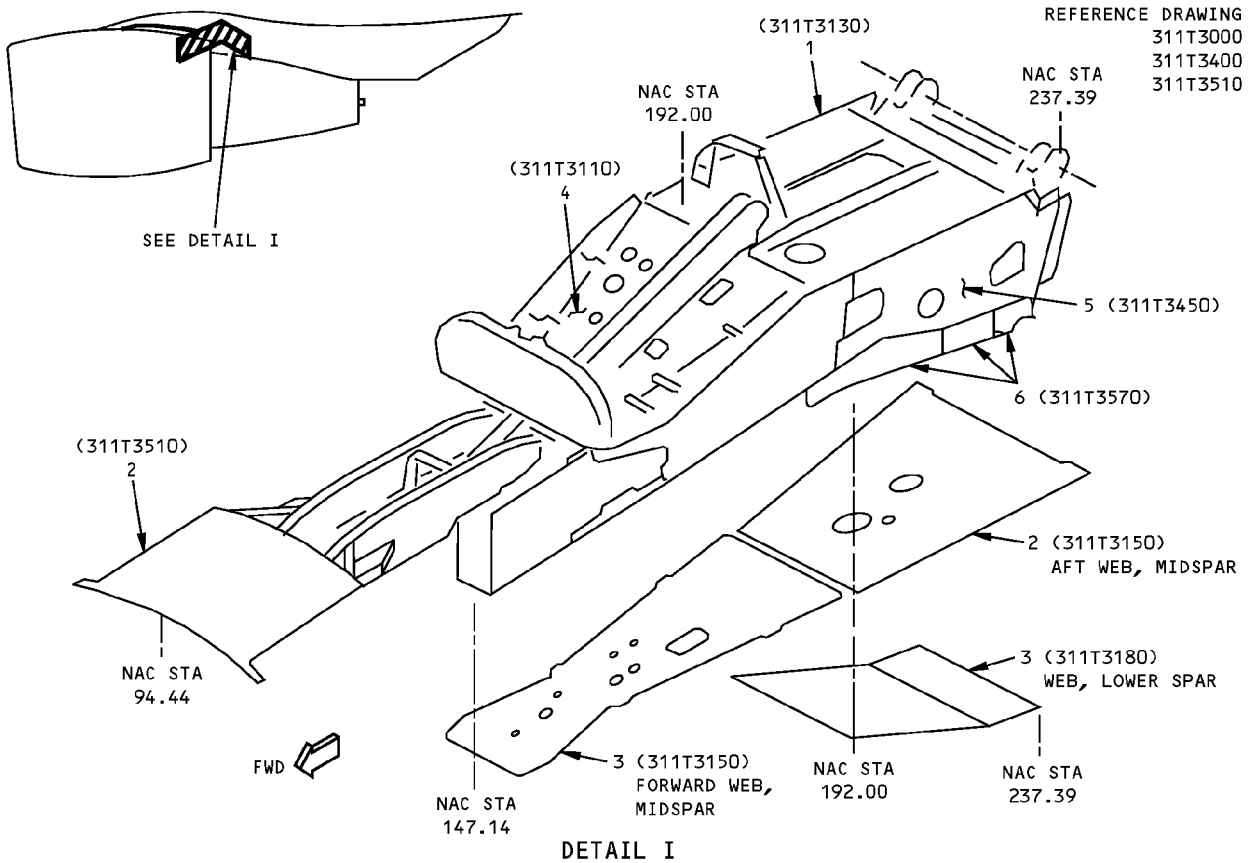
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REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT SKIN - JT9D-7R4 ENGINE



DETAIL I

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB, AFT UPPER SPAR	0.050	CLAD 2024-T3	<div style="border: 1px solid black; padding: 2px; display: inline-block;">A</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">B</div>
	WEB, AFT UPPER SPAR, PANEL BOND ASSEMBLY			
	WEB	0.032	CLAD 2024-T3	
	DOUBLER	0.025	CLAD 2024-T3	
2	WEB	0.063	CLAD 2024-T3	
	DOUBLER	0.025	CLAD 2024-T3	
	TRIPLER	0.063	CLAD 2024-T3	
3	WEB	0.100	15-5PH CRES HT TR 180-200 KSI	
4	WEB + DOUBLER, FWD UPR SPAR	0.080	CLAD 2024-T3	
		0.040	CLAD 2024-T3	
5	SKIN + DOUBLER	0.080	CLAD 2024-T3	
		0.080	CLAD 2024-T3 (CHEM-MILLED TO 0.040 MIN)	
6	CORE COWL SKIRT + DOUBLER	0.050	CLAD 2024-T3	
		0.032	CLAD 2024-T3	

NOTES

A FOR AIRPLANES WITHOUT SB 767-54-089 INCORPORATION

B FOR AIRPLANES WITH SB 767-54-089 INCORPORATED

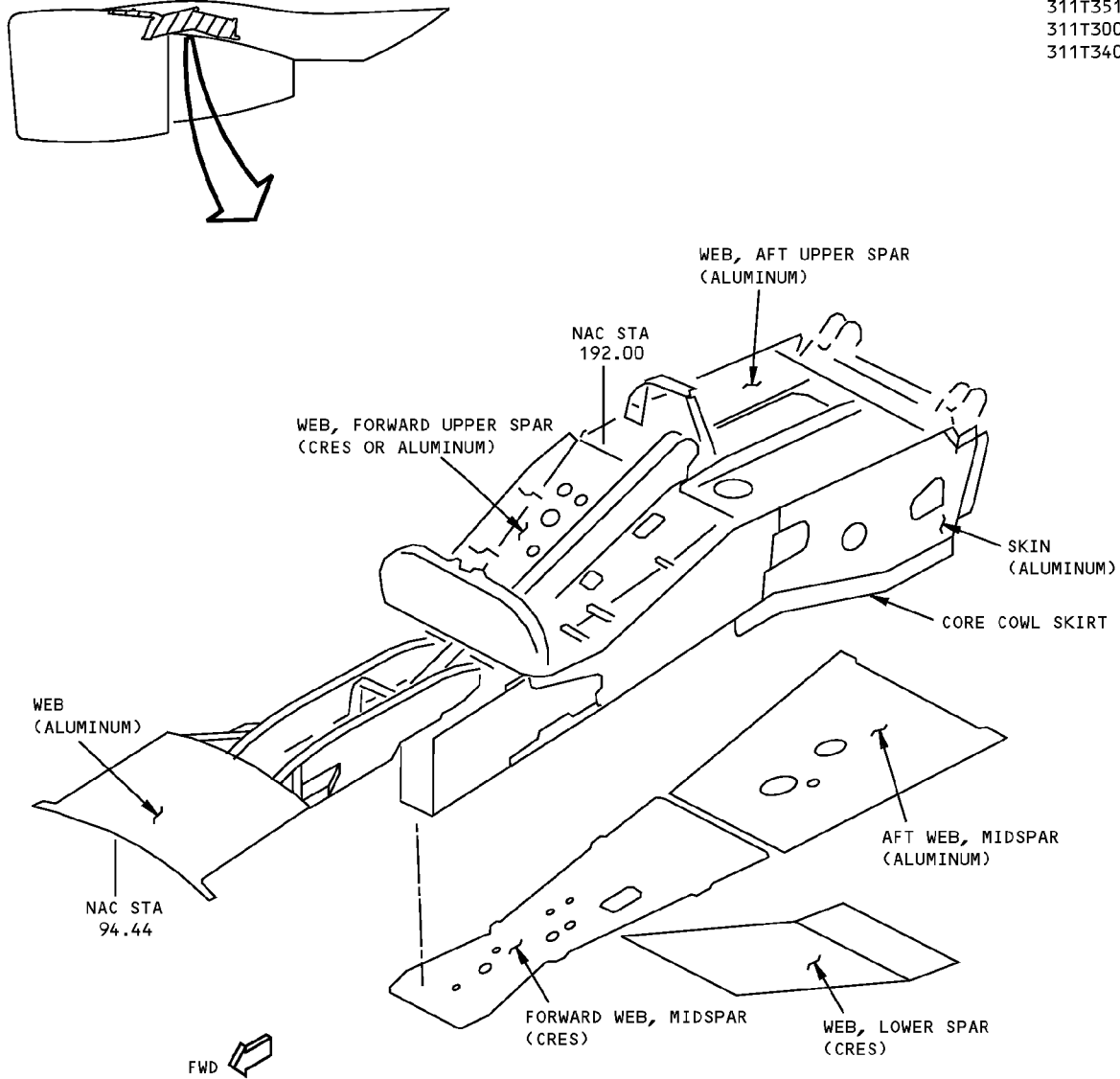
LIST OF MATERIALS FOR DETAIL I

**Strut Skin Identification - JT9D-7R4 Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT SKIN - JT9D-7R4 ENGINE

REF DWGS
311T3510
311T3000
311T3400



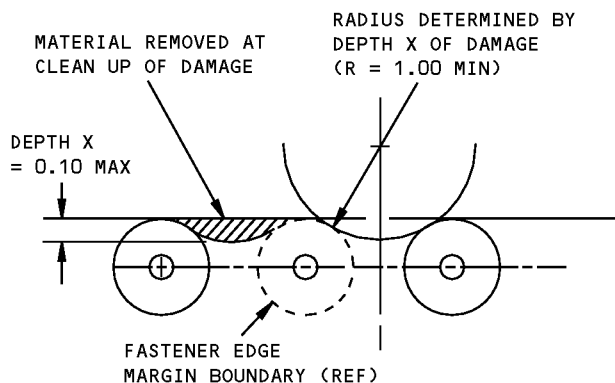
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
SKINS	A	B	SEE DETAIL III	C
WEBS	A	B	SEE DETAIL III	C

**Allowable Damage - Strut Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 3)**

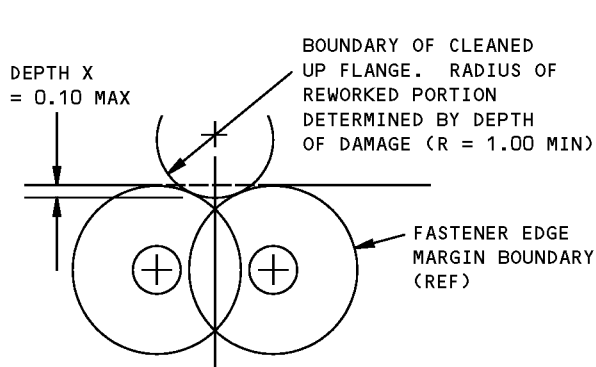
STRUCTURAL REPAIR MANUAL

NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS I AND V.
- B** REMOVE DAMAGE PER DETAILS I, II, AND IV.
- C** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, FOR OTHER DAMAGE. FILL HOLES IN ALUMINUM WEB OR SKIN WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. FILL HOLES IN STEEL SKIN OR WEB WITH MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED.

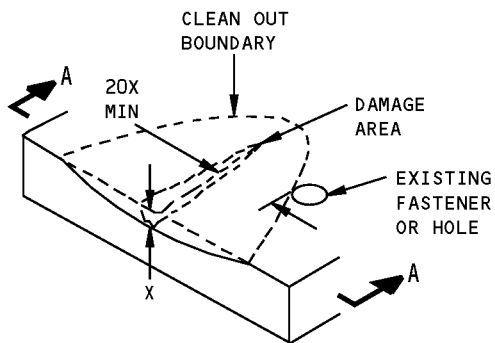


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

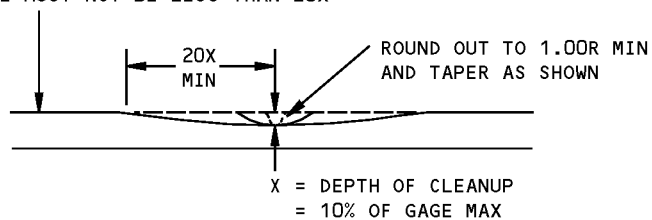


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL I



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

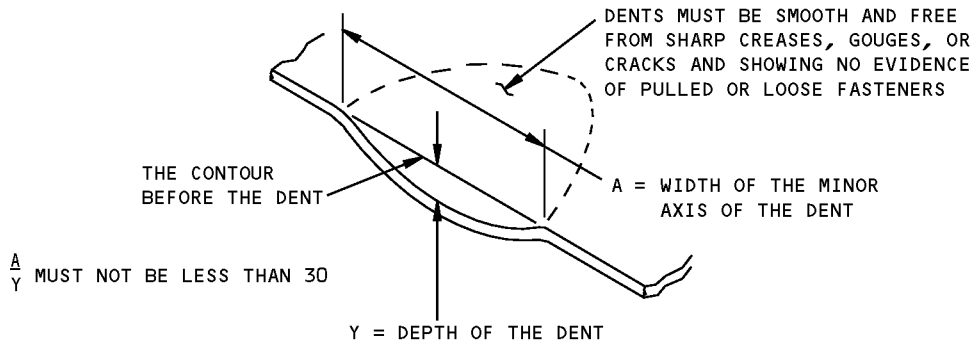


SECTION A-A

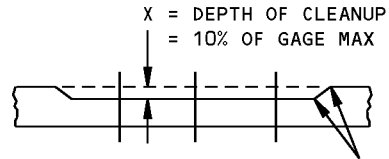
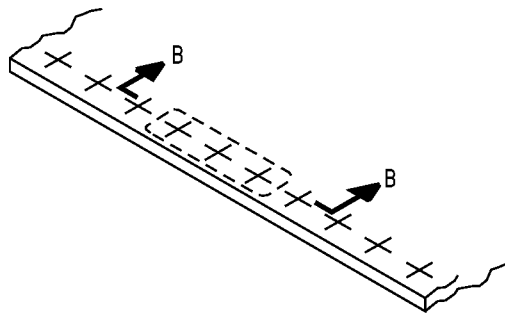
DETAIL II

Allowable Damage - Strut Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 3)

STRUCTURAL REPAIR MANUAL



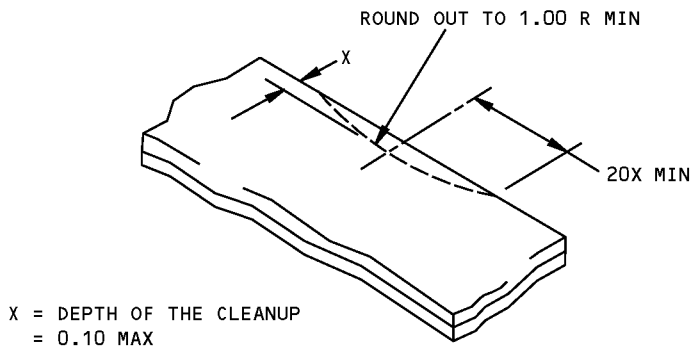
**ALLOWABLE DAMAGE FOR DENT
DETAIL III**



SMOOTH THE BLENDOUT RADIUS TO 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS IN
TEN IS PERMITTED TO THE MAXIMUM DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL IV**



**REMOVAL OF DAMAGE ON AN EDGE
DETAIL V**

**Allowable Damage - Strut Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 3)**




**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT SKINS - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Clean out damaged area to 1-inch max diameter circle.
2. Fabricate repair part 1.
3. Assemble repair part 1 and drill fastener holes.
4. Remove repair part 1.
5. Break sharp edges of original and repair part. 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of original part.
8. Apply one coat of BMS 10-11, type 1 primer to all of part 1 in accordance with 51-21 of the 767 Maintenance Manual.
9. Install repair part 1 making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
10. Restore finish.

FASTENER SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

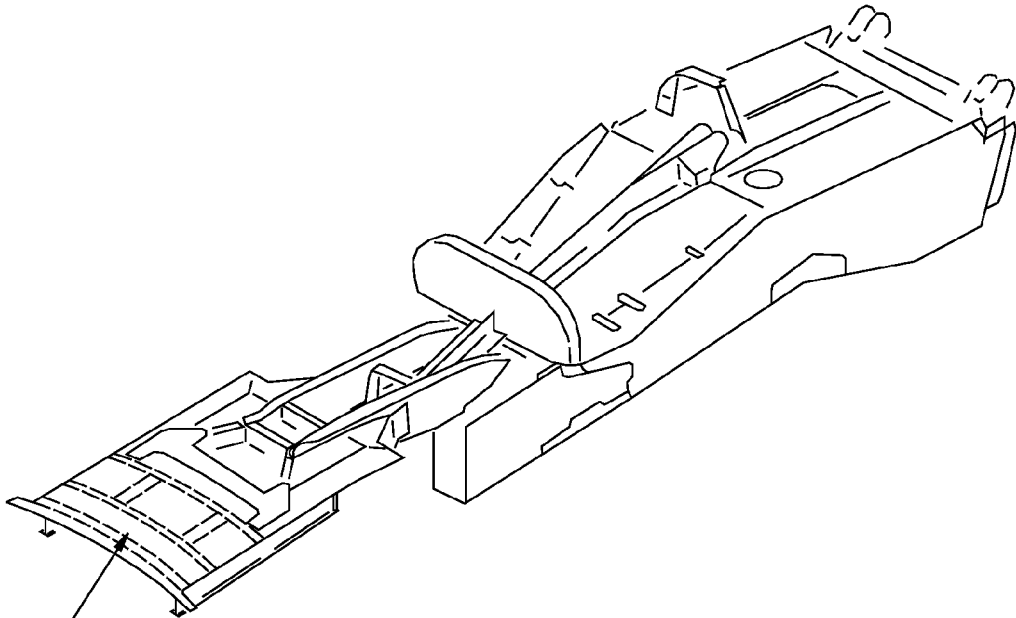
**Strut Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**

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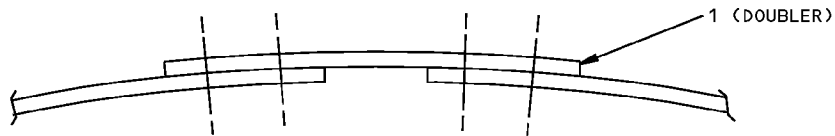
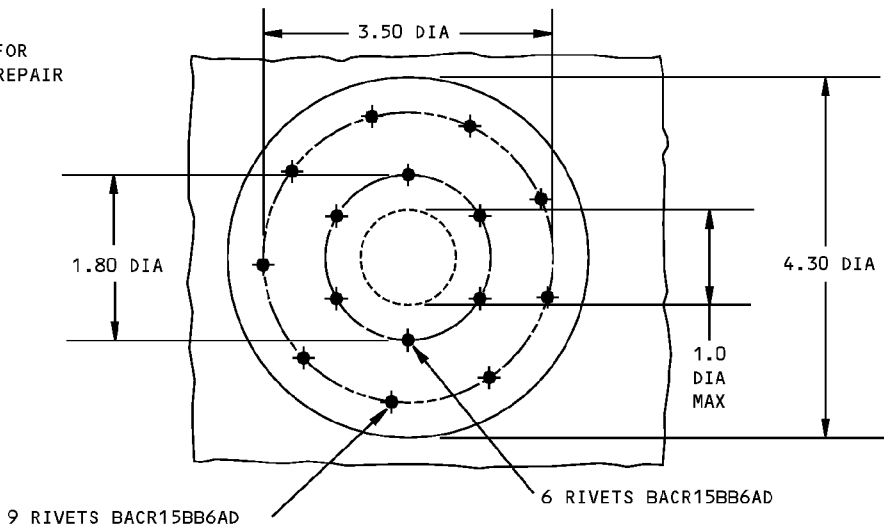
54-50-01

REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**



SEE DETAIL I FOR FORWARD SKIN REPAIR



**SMALL HOLE OR CRACK REPAIR
DETAIL I**

**Strut Skin Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 2 - STRUT SIDE SKIN PANELS - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Cut out cracked or damaged area to a regular shape. Maintain 1.0 min corner radius.
2. Make the repair plate.
3. Remove existing fasteners over the area to be covered by the repair plate.
4. Assemble the repair plate and drill fastener holes in new and existing locations.

CAUTION: WHEN ESTABLISHING ADDITIONAL RIVET POSITIONS, ENSURE THAT EDGE MARGINS ARE MAINTAINED ON THE INTERNAL DOUBLER, AND THAT SUFFICIENT CLEARANCE IS AVAILABLE FOR THE FORMATION OF RIVET HEADS ON THE UNDER STRUCTURE.

5. Remove the repair plate.
6. Break sharp edges of original and repair plate 0.015 to 0.030.
7. Remove all nicks, scratches, burrs and corners from original and repair plate.
8. Install countersink repair washers in existing countersinks in the skin according to 51-40-08.
9. Alodize the raw edges of existing and repair part according to 51-20-01.
10. Apply one coat of BMS 10-11 type 1 primer to faying surfaces of the repair plate, and to the strut skin according to 51-21 of the 767 Maintenance Manual.
11. Install the repair plate, making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
12. Restore original finishes according to 51-21 of the 767 Maintenance Manual.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
 - REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31-00 FOR SEALS AND SEALING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.
- A** INSIDE OF SKIN IS CHEM-MILLED. MAKE SURE RIVET HEAD CLEARS RADIUS

FASTENER SYMBOLS

- ✦ REPAIR FASTENER LOCATION
- ✚ ORIGINAL FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PLATE	1	0.10 CLAD 2024-T3

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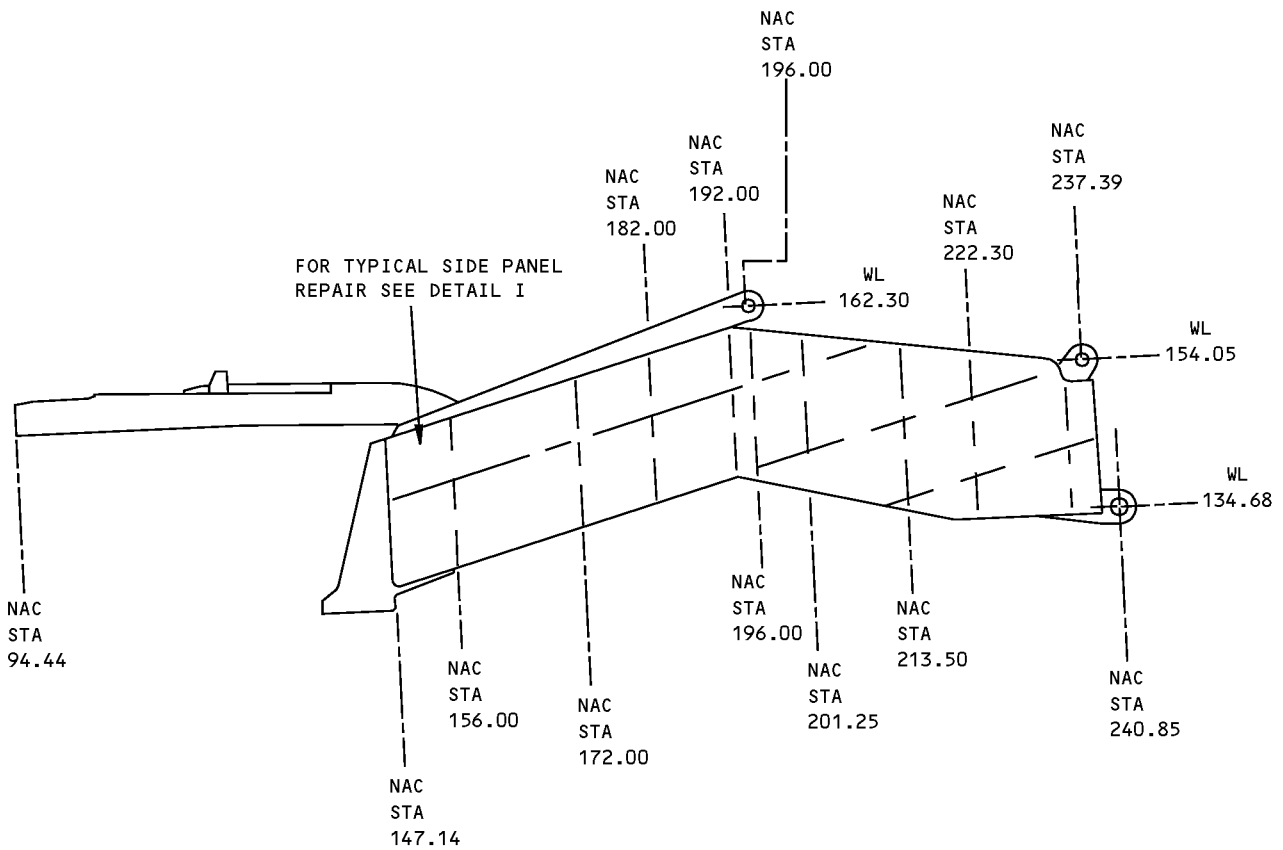
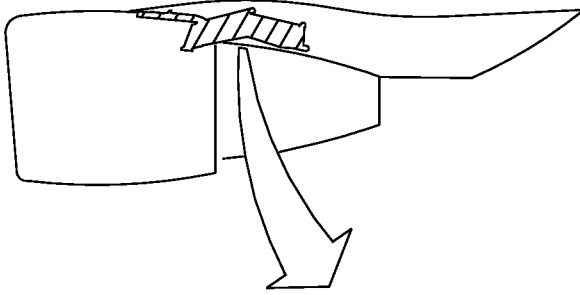
**Strut Side Skin Panel Repair - JT9D-7R4-Engine
Figure 201 (Sheet 1 of 3)**

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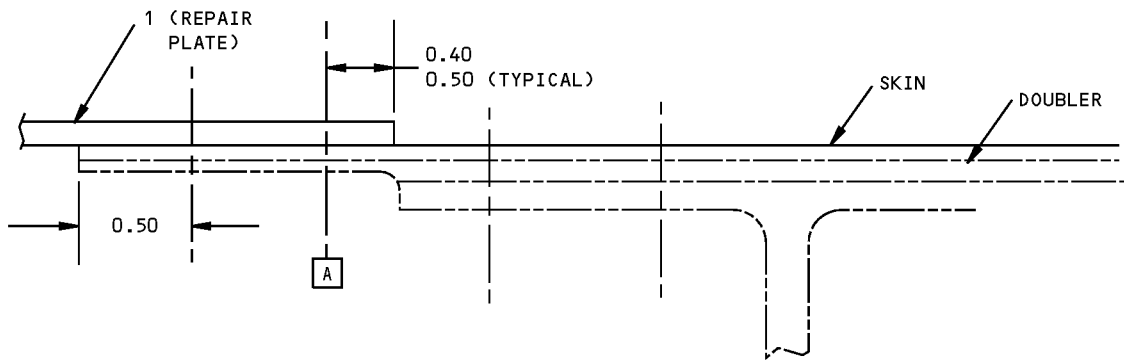
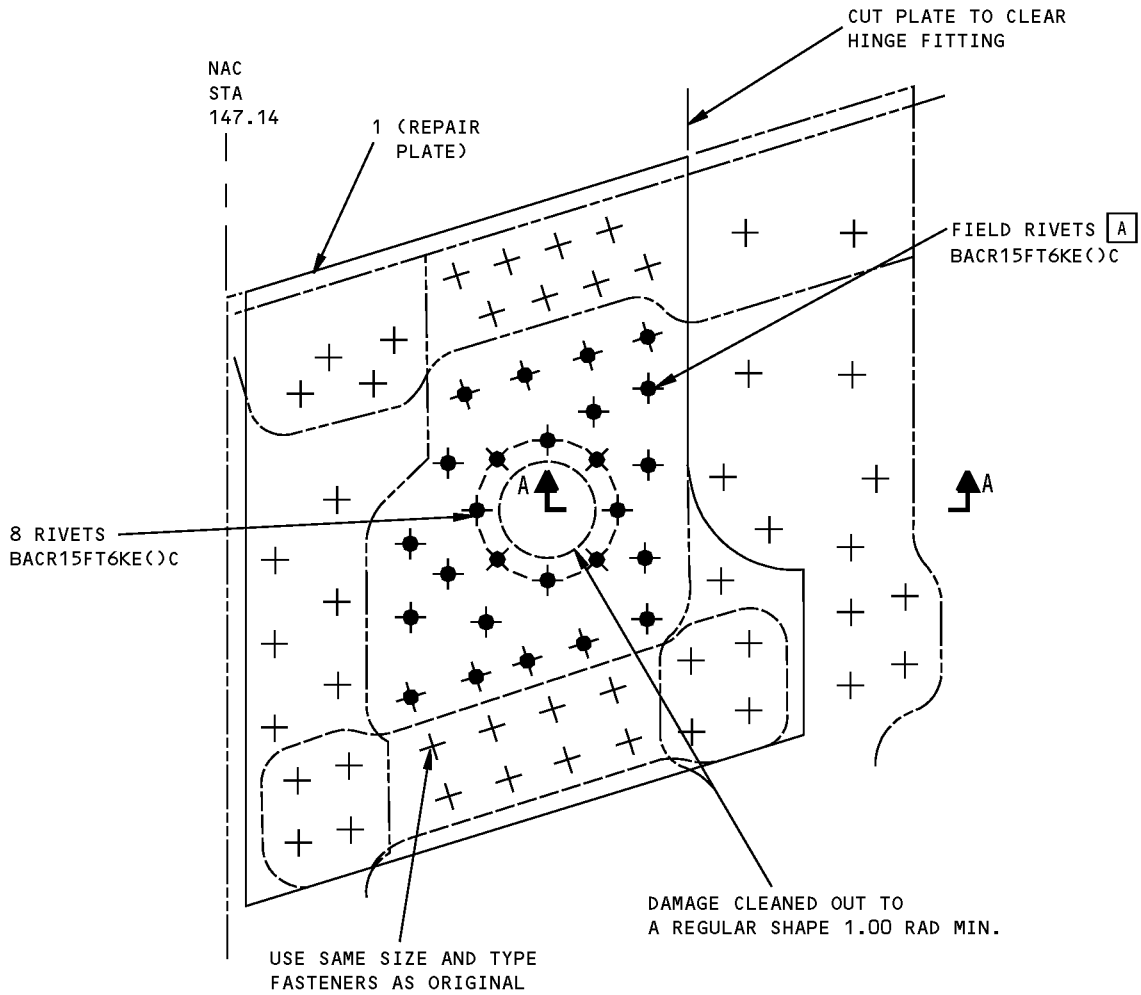
REPAIR 2
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**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Side Skin Panel Repair - JT9D-7R4-Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A
DETAIL I

**Strut Side Skin Panel Repair - JT9D-7R4-Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL






REPAIR 3 - STRUT, AFT UPPER SPAR WEB REPAIR - ADJACENT TO THE HYDRAULIC FITTING HOLE - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area. It may be necessary to remove additional fasteners to get clearance.
2. Do a high frequency eddy current (HFEC) inspection of the web to find the end of the crack. Refer to NDT Part 6, 51-00-00.
As an alternative, do a dye penetrant inspection of the web to find the end of the crack. Refer to SOPM 20-20-02.
3. Stop drill the end of the crack. Refer to SRM 51-10-00.
4. Make the repair parts. See Table I.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial web.
8. Cadmium plate the CRES doubler. Refer to SOPM 20-42-05.
9. Apply a chemical conversion coating to the aluminum repair part and to the bare surfaces of the initial web. Refer to SRM 51-20-01.
10. Apply two layers of BMS 10-11 primer to the repair parts and to the bare surfaces of the initial web. Refer to AMM 51-21-00.
11. Apply BMS 5-95 sealant to all of the mating surfaces.
12. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
13. Apply the finish to the repair area. Refer to AMM 51-21-00.
14. Apply BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - NDT PART 6 51-00-00, D6-7170 FOR EDDY CURRENT INSPECTION PROCEDURES.
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES.
 - SOPM 20-24-05 FOR CADMIUM PLATING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
AS AN ALTERNATIVE, INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACR15ET7DD() RIVET.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.05 15-5PH HT TR 180-200KSI
2	TAPERED FILLER	2	0.050 TO 0.010 INCHES, 7075-T6 OR 2024-T3.

TABLE I

1731544 S0000310566_V1

**Strut, Aft Upper Spar Web Repair - Adjacent to the Hydraulic Fitting Hole - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**

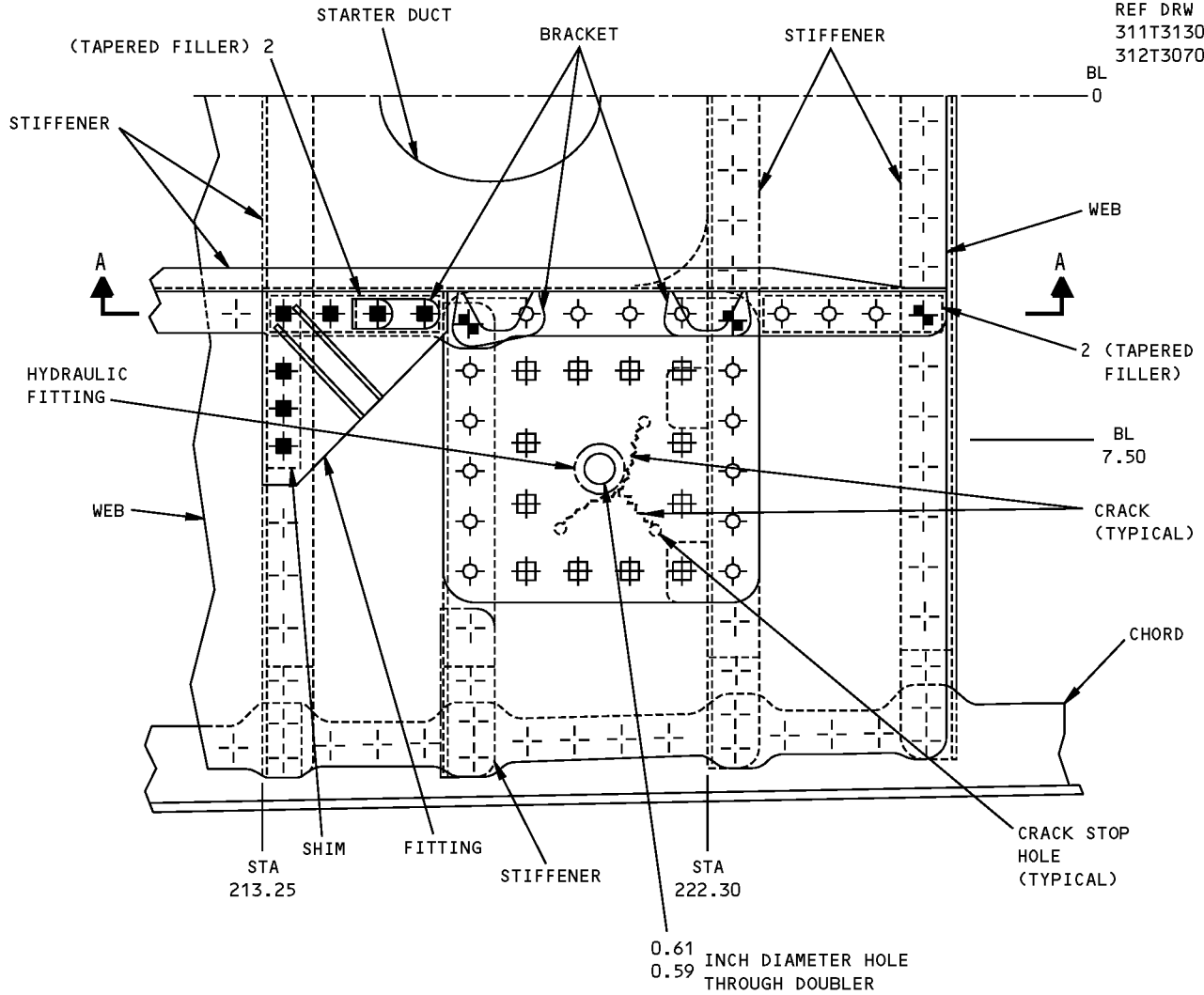
REPAIR 3
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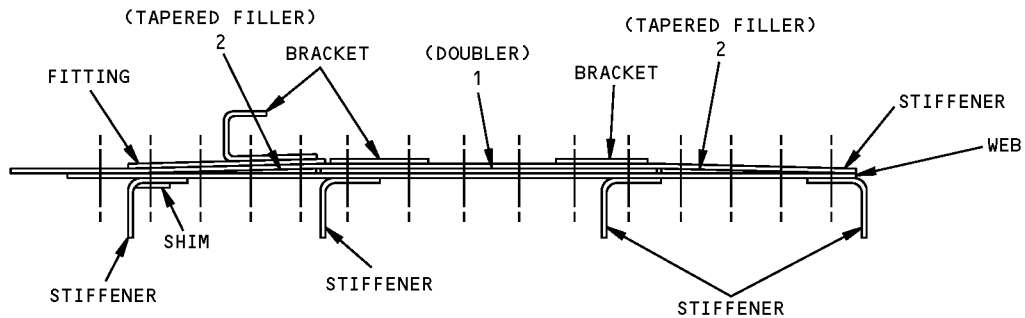
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STRUCTURAL REPAIR MANUAL**

REF DRW
311T3130
312T3070



DETAIL I



SECTION A-A

**Strut, Aft Upper Spar Web Repair - Adjacent to the Hydraulic Fitting Hole - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT, AFT UPPER SPAR WEB REPAIR - ADJACENT TO THE THERMAL ANTI-ICE DUCT - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THE CRACKS MUST BE FULLY INSIDE THE AREA ADJACENT TO THE THERMAL ANTI-ICE DUCT CUTOUT AND ON THE DUCT SIDE OF THE NEAREST STIFFENER AND SPAR CHORD EDGES. SEE DETAIL II.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR INSTRUCTIONS

1. Open the strut access doors. Refer to AMM 54-53-01.
2. Remove the access panels on the wing leading edge that are above the engine strut. Refer to AMM 06-44-00.
3. Remove the thermal anti-ice (TAI) duct that is installed through the web cutout.
4. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
5. Cut and remove the damaged part of the web.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the web.
7. Do the step 4 inspection again to make sure that all of the cracked web was removed.
8. Apply a chemical conversion coating to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
11. Put the airplane back in its usual condition and do a test for leaks at the TAI duct joints. Refer to AMM 71-00-00.

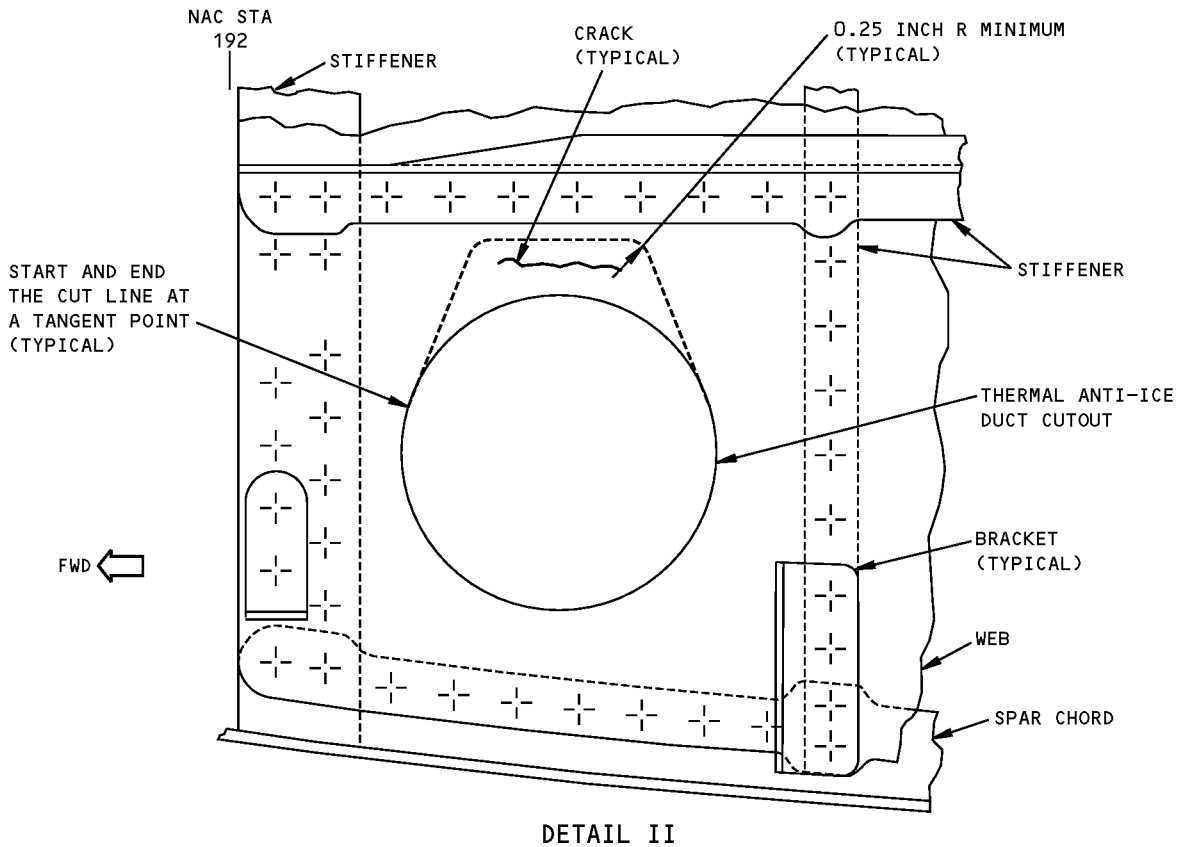
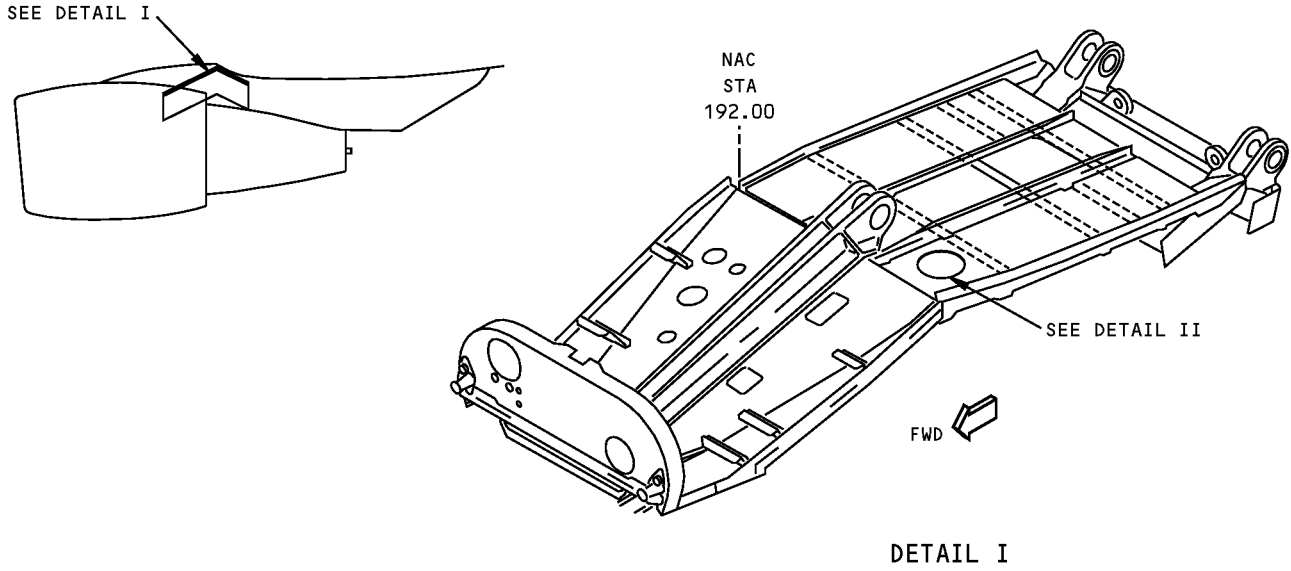
FASTENER SYMBOLS

 REFERENCE FASTENER LOCATION.

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**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - JT9D-7R4-Engine
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - JT9D-7R4-Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - STRUT, AFT UPPER SPAR WEB REPAIR - JT9D-7R4 ENGINE**APPLICABILITY**

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THIS REPAIR CAN BE USED AT LOCATIONS FORWARD OR AFT OF THAT GIVEN IN DETAIL II. ALSO, IT CAN BE USED ON THE RIGHT OR LEFT SIDE OF THE SPAR WEB. DO NOT USE THIS REPAIR IN THE AREAS THAT ARE SPECIFIED IN REPAIRS 3 AND 4.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-02. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Open the strut access doors. Refer to AMM 54-53-01.
3. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
4. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-02.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
8. Cut and remove the damaged part of the web.
9. Make the repair parts. See Table I and Detail II. Make the part 1 doubler with sufficient dimensions to attach the outer row of fasteners to a stiffener, chord or bulkhead in all directions.

NOTE: Save the fillers that are installed at each stiffener joggle under the web, for subsequent use.

10. Assemble the repair parts and drill the fastener holes.
 11. Disassemble the repair parts.
 12. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
 13. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
 14. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
 15. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
 16. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
- NOTE:** If the repair is done at a location different than the Detail II location, then replace initial fasteners with oversize fasteners of the same type.
17. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
 18. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Aft Upper Spar Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

A MAKE A NEW BRACKET THE SAME AS THE INITIAL BRACKET EXCEPT DRILL NEW FASTENER HOLES THAT ARE 0.050 INCH (12.7 mm) LOWER (DOUBLER THICKNESS) TO ALIGN WITH THE MATING FAIRING INSTALLATION.

THIS BRACKET IS ONLY INSTALLED ON THE OUTBOARD SIDE OF THE STRUT.

FASTENER SYMBOLS

- ⊖ REFERENCE FASTENER LOCATION.
- + REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT7KE()C RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH CRES, HT TR 180-200 KSI
2	FILLER	1	0.050 INCH, 2024-T3 OR 7075-T6
3	FILLER	1	2024-T3 OR 7075-T6 THICKNESS AS NECESSARY
4	TAPERED FILLER	2	0.050 INCH TO 0.010 INCH, 2024-T3 OR 7075-T6
5	FAIRING SUPPORT BRACKET	1	CLAD 2024-T3 OR -T42 A

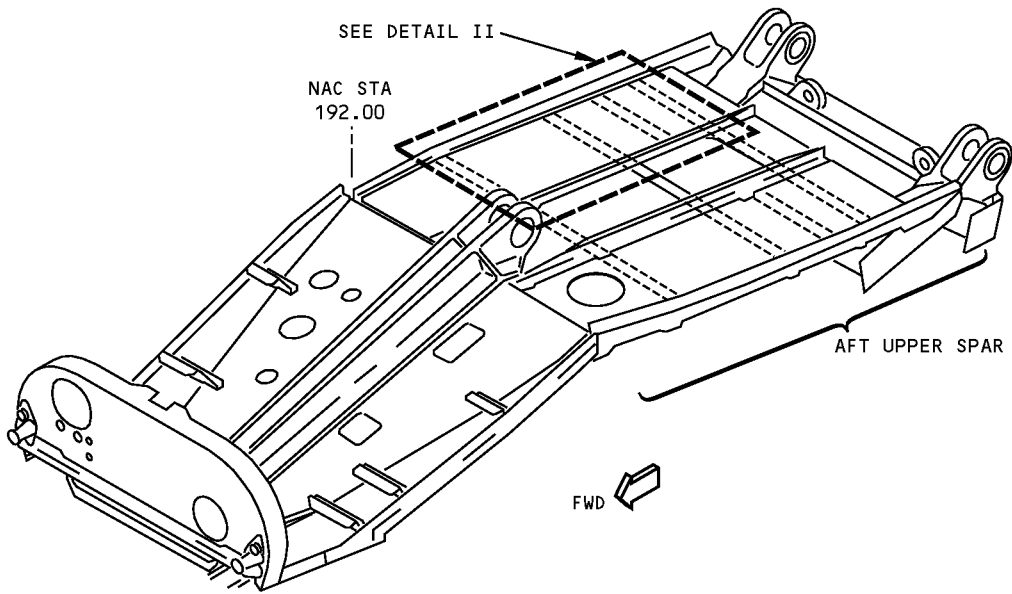
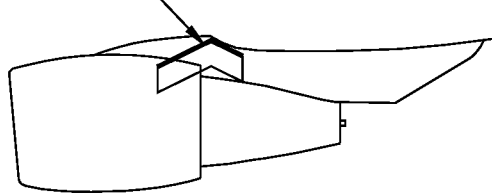
TABLE I

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**Strut, Aft Upper Spar Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 5)**

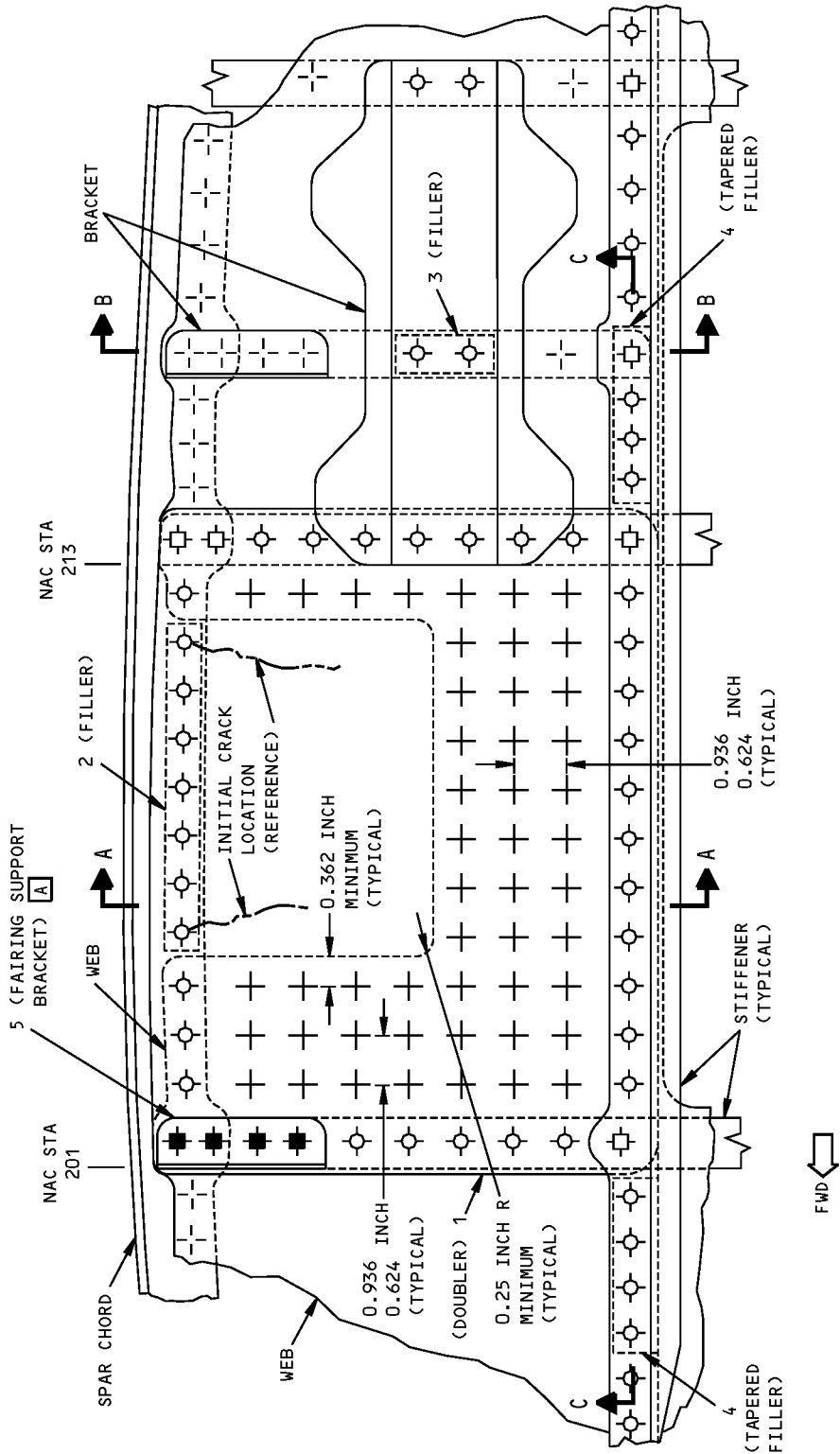
**767-300
STRUCTURAL REPAIR MANUAL**

SEE DETAIL I



DETAIL I

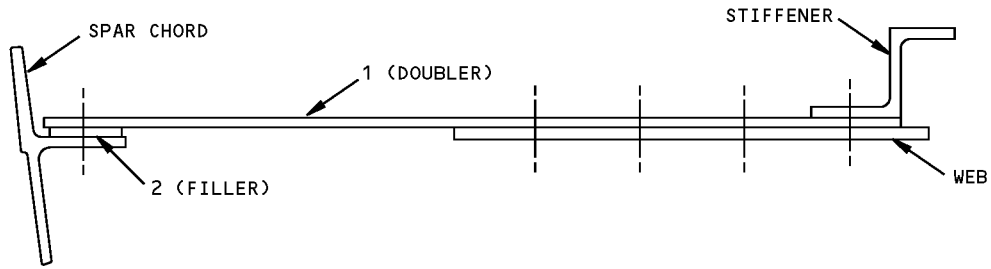
**Strut, Aft Upper Spar Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 5)**



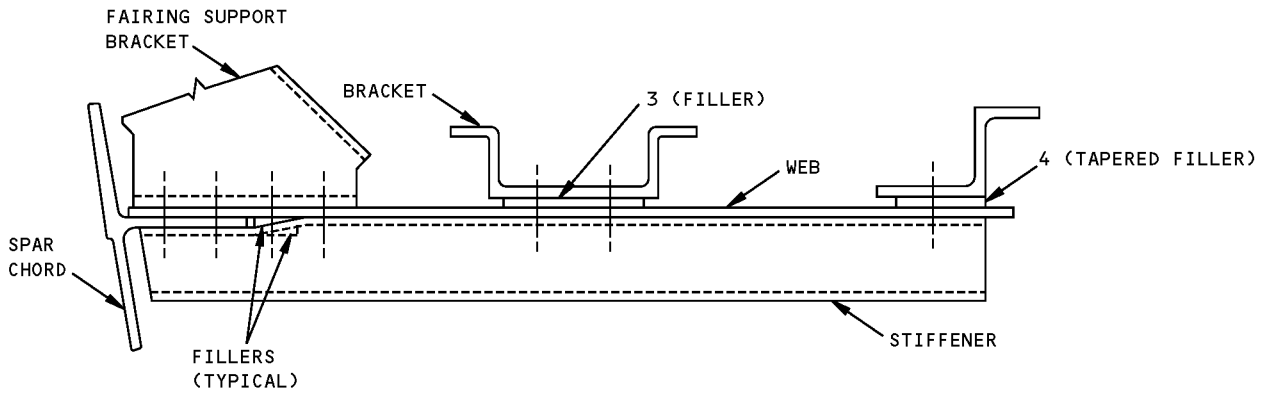
DETAIL II

Strut, Aft Upper Spar Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 5)

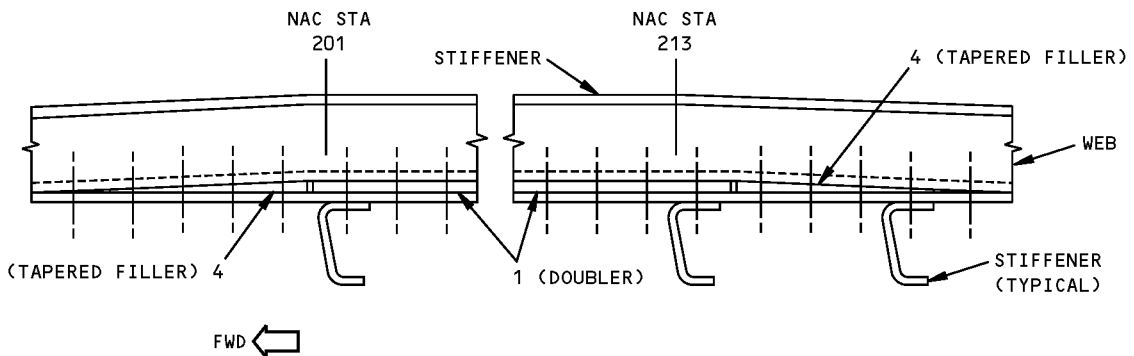
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION A-A



SECTION B-B



SECTION C-C

**Strut, Aft Upper Spar Web Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - STRUT SIDE SKIN PANEL REPAIR AT FORWARD TORQUE BOX ACCESS HOLE - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AREA OF THE FORWARD TORQUE BOX ACCESS HOLE (BETWEEN NAC STA 156.0 AND 172.0). TO USE THIS REPAIR, CRACKS THAT ARE FOUND MUST NOT BE IN ZONE 2, AS SHOWN IN DETAIL II.

REPAIR INSTRUCTIONS

1. Get access to the damaged area of the strut. Do the procedure to remove the thrust reverser half. Refer to AMM 78-31-01/401.
2. Remove the hinge fitting at Nac Sta 172.0. Do not discard the shim at this time.
3. Do a high frequency eddy current (HFEC) inspection of the skin panel to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a penetrant inspection can be done. Refer to SOPM 20-20-02.
4. Do one of the following operations to stop crack growth:

CAUTION: DO NOT DRILL INTO THE SUB STRUCTURE. STOP DRILL THE SKIN AND THE DOUBLER ONLY.

- a. Stop drill the end of the crack as given in SRM 51-10-00. Leave the hole open. Do an HFEC inspection to verify that there is no further cracking on the side of the hole opposite the crack.
- b. If the crack stops at an existing hole, enlarge hole by reaming to next oversize fastener diameter. Do an HFEC inspection to verify that there is no further cracking on the side of the hole opposite the crack.

CAUTION: DO NOT ENLARGE HOLE TO OVER 0.60 INCH (15 mm) DIAMETER. THE REMAINING DISTANCE FROM THE HOLE EDGE TO THE SKIN TRIM MUST NOT BE LESS THAN 0.60 INCH (15 mm) AFTER ENLARGING HOLE.

- c. If the crack stops very near an existing fastener hole, enlarge the hole to the minimum diameter required to include the tip of the crack. Make an aluminum sheet metal filler for the skin hole. Apply one layer of BMS 10-11 type I primer to the filler and bare surfaces. Install filler wet with BMS 5-63 sealant. Drill repair fastener size hole again at the original hole location.
5. Make the repair parts. See Table I and Details III, IV and V.

6. Assemble the repair parts and drill the fastener holes as shown in Detail III. Close ream the fastener holes in the repair parts and the skin panel as specified in SRM 51-40-02 and SRM 51-40-05. Make oversized fastener holes as necessary.
7. Disassemble the repair parts.
8. Remove the nicks, scratches, gouges, burrs and sharp edges from the repair parts and the skin panel.
9. Apply a chemical conversion coating to the bare surfaces of the skin panel. Refer to SRM 51-20-01.
10. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the skin panel. Refer to SOPM 20-41-02.
11. Apply two layers of BMS 10-11, Type I primer to the surfaces of the doubler. Refer to SOPM 20-41-02.
12. Install the Part 3 countersink repair washers with BMS 5-63 sealant in the initial fastener locations. Refer to SRM 51-30-08.
13. Install the repair parts with BMS 5-63 sealant between the mating surfaces.
14. Install the fasteners as shown in Detail III. Install all fasteners wet with BMS 5-95 sealant. Refer to SRM 51-20-05.
15. Fillet seal around the edges of the repair parts with BMS 5-95 sealant. Refer to SRM 51-20-05.
16. Rework the hinge fitting. A
17. Install the hinge fitting with BMS 5-95 sealant between the mating surfaces and on the fasteners. Refer to SRM 51-20-05.
18. Do the procedure to install the thrust reverser half. Refer to AMM 78-31-01/401.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 78-31-01/401 FOR REMOVAL AND INSTALLATION OF THE THRUST REVERSER
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES (CONT)

- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
- SRM 51-20-05 FOR REPAIR SEALING
- SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
- SRM 51-40-05 FOR FASTENER HOLE SIZES.

A USE ONE OF THE FOLLOWING TWO METHODS TO REWORK THE THRUST REVERSER HINGE FITTING.

CAUTION: THIS PROCEDURE INCLUDES THE REMOVAL OF A THRUST REVERSE HINGE. IT PUTS THE FITTING HINGE POINT BACK TO ITS INITIAL LOCATION, BUT MACHINING TOLERANCES MAY CHANGE THE INITIAL POSITION OF THE HINGE AXIS. USE OF MEASUREMENT TOOLING IS STRONGLY RECOMMENDED TO KEEP THE INITIAL LOCATION OF THE FITTING HINGE POINT WHILE YOU DO THIS REPAIR.

1. MEASURE THE INITIAL SHIM THICKNESS AND RECORD. DISCARD THE SHIM.

MACHINE THE MATING SURFACE OF THE FITTING PARALLEL TO ITS INITIAL SURFACE. REMOVE 0.040 INCH MINUS THE INITIAL SHIM THICKNESS UP TO 0.030 INCH.

EXAMPLE:

SHIM THICKNESS = 0.025

0.040 - 0.025 = 0.015

MACHINE OFF 0.015 FROM THE MATING SURFACE OF THE FITTING.

2. MACHINE THE MATING SURFACE OF THE FITTING PARALLEL TO ITS INITIAL SURFACE. REMOVE 0.040 INCH THICKNESS. KEEP SHIM AND USE IT AGAIN TO ASSEMBLE FITTING.

FASTENER SYMBOLS

- + REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K10 OR (IF NECESSARY) BACB30MY8K10X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K9 OR (IF NECESSARY) BACB30MY8K9X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K8 OR (IF NECESSARY) BACB30MY8K8X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K7 OR (IF NECESSARY) BACB30MY8K7X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.

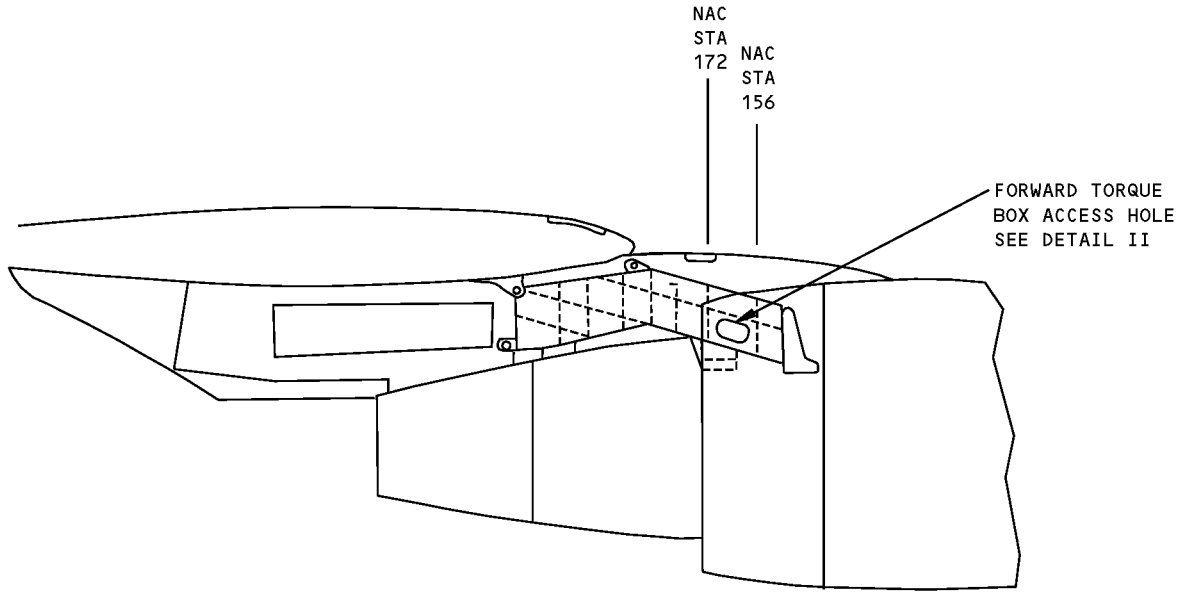
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K6 OR (IF NECESSARY) BACB30MY8K6X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K5 OR (IF NECESSARY) BACB30MY8K5X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K10 OR (IF NECESSARY) BACB30MY6K10X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K9 OR (IF NECESSARY) BACB30MY6K9X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K6 OR (IF NECESSARY) BACB30MY6K6X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K5 OR (IF NECESSARY) BACB30MY6K5X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K5 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K4 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K3 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.040 X 16.5 X 29.0 INCH TI-6AL-4V SHEET ANNEALED
2	DOUBLER	1	0.063 X 13.0 X 26.9 INCH TI-6AL-4V SHEET ANNEALED
3	COUNTERSINK REPAIR WASHERS	AS NECESSARY	REFER TO SRM 51-30-08

TABLE I

Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)

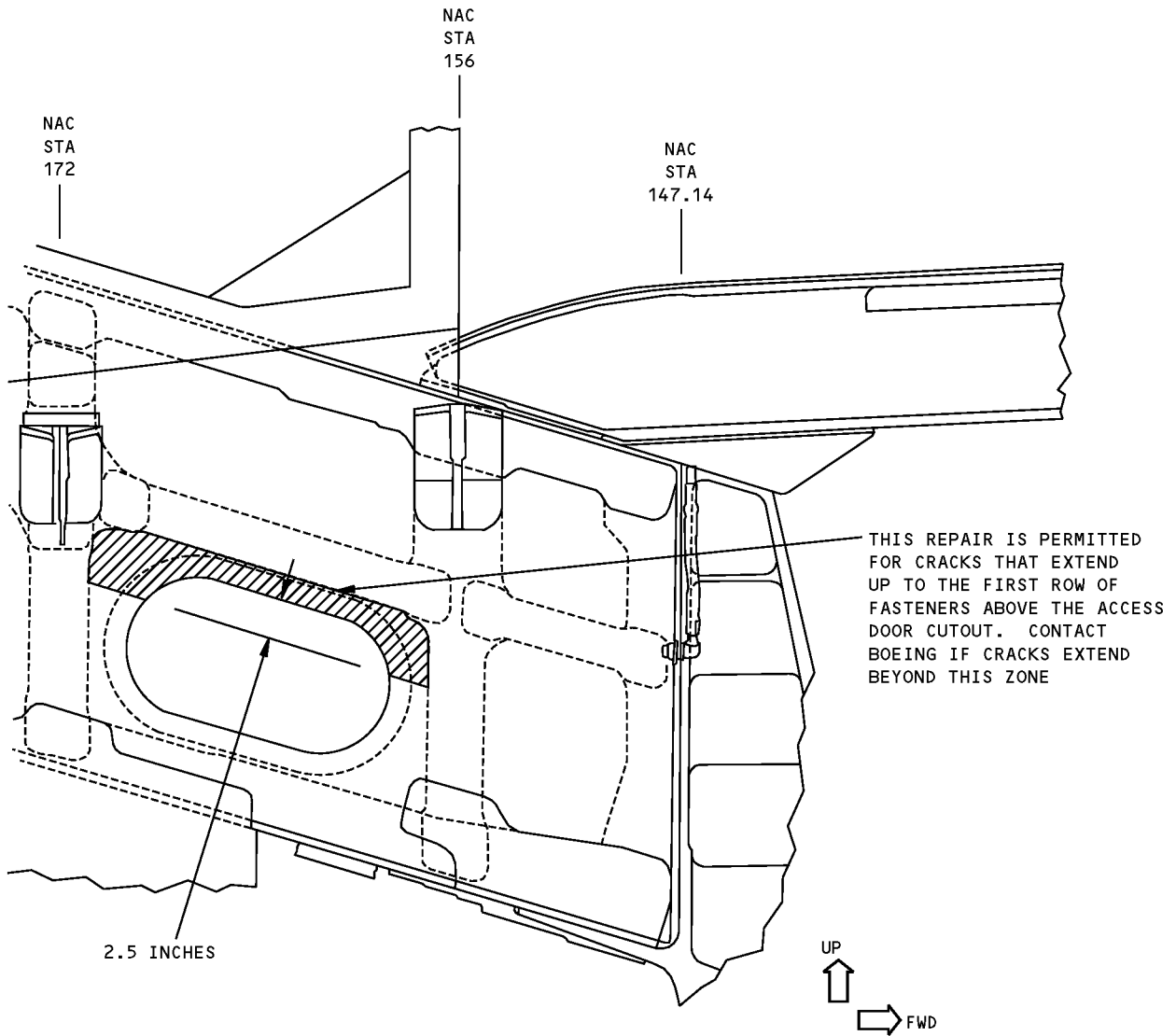
**767-300
STRUCTURAL REPAIR MANUAL**





DETAIL I

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

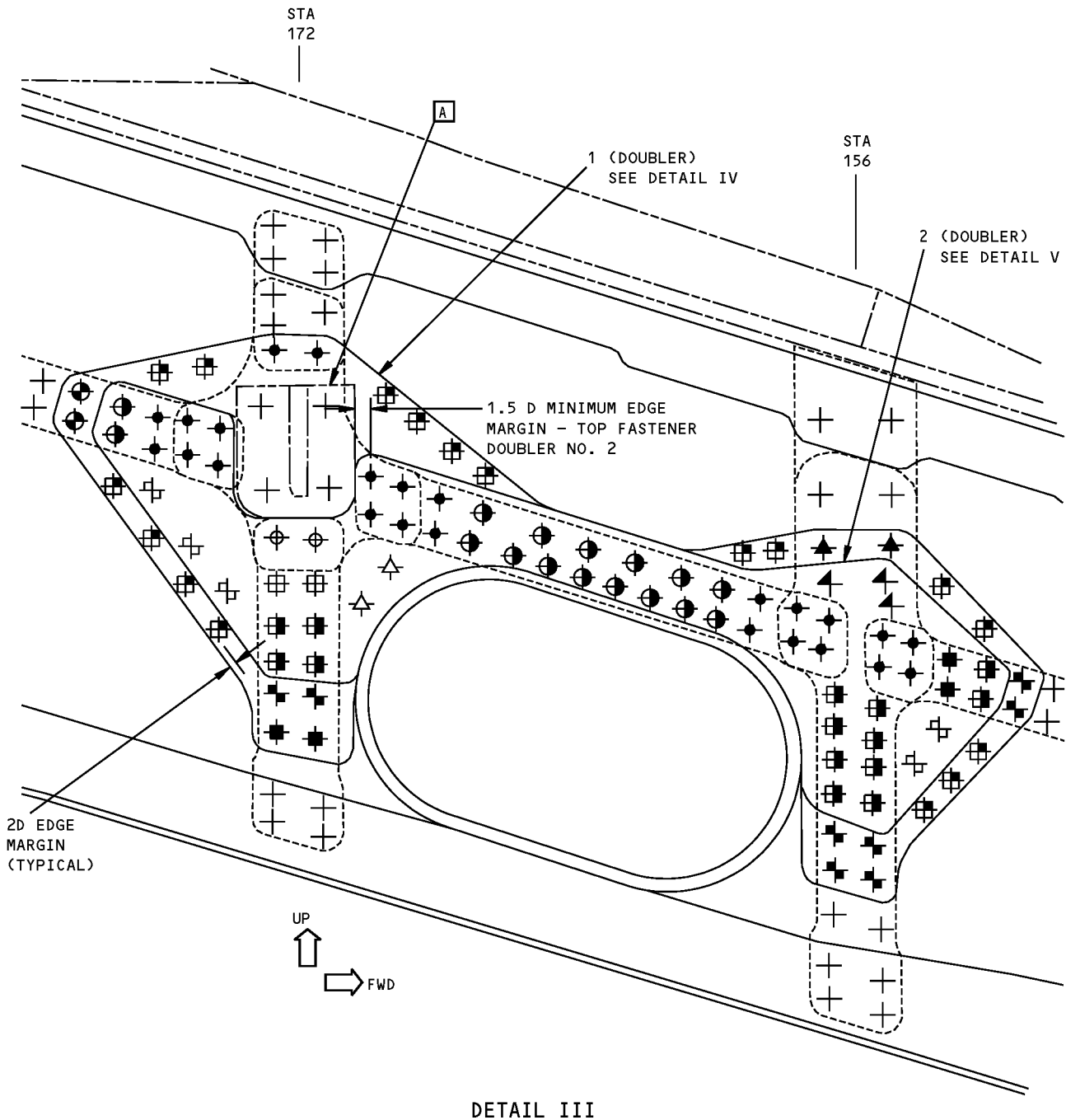


DETAIL II

- 
ZONE I - THIS REPAIR IS APPLICABLE TO ALL DAMAGE THAT IS FOUND IN THIS ZONE. SEE DETAIL III.
- 
ZONE II - THIS REPAIR IS NOT APPLICABLE FOR DAMAGE IN THIS ZONE.

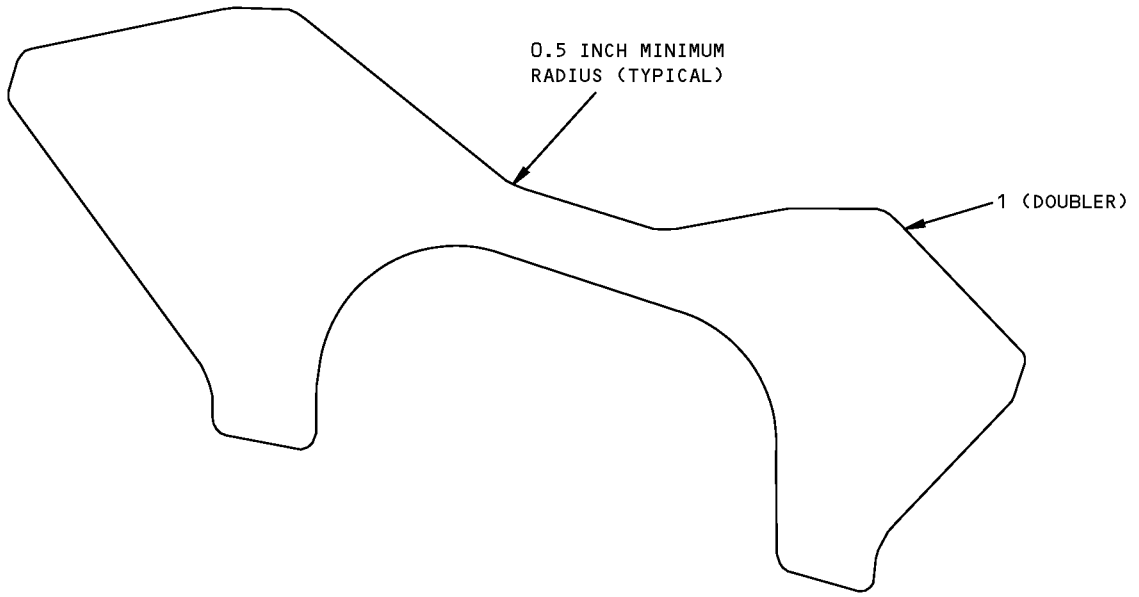
**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

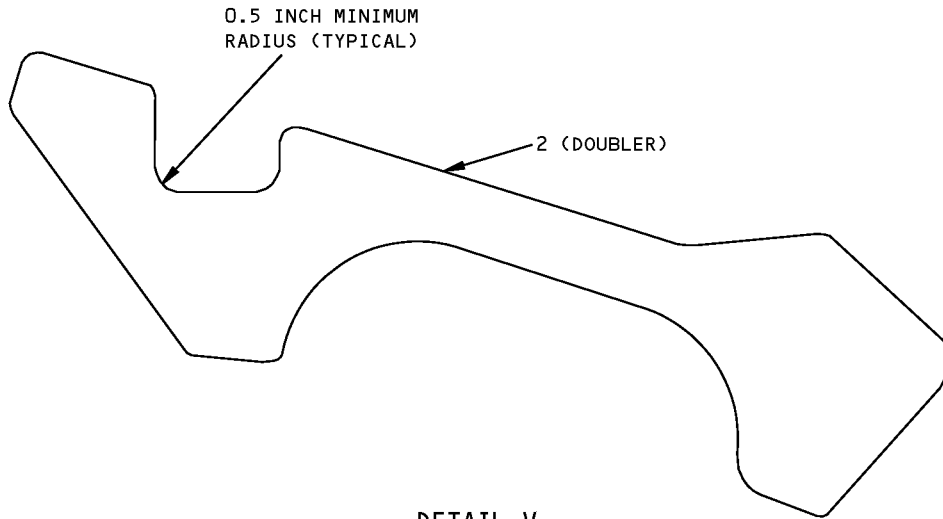


**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV



DETAIL V

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 7 - STRUT SIDE SKIN CUTOUT REPAIR AT AFT TRAPEZOIDAL ACCESS DOOR - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE CORNERS OF ACCESS PANELS 446L OR 446R CUTOUT.

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Use Detail I if the crack has not grown beyond the first row of fasteners in the upper corner of the access panel cutout. Use Detail II if the crack has grown beyond the first row of fasteners.
3. Do a high frequency eddy current (HFEC) inspection of the skin panel to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
4. Stop drill the crack ends using a 0.25 inch (6 mm) diameter drill. Leave the hole open. Refer to SRM 51-10-00.
5. Make the repair parts. See Table I.
6. Mark and cut away the cowl skirt to clear the repair doubler. Leave 0.050 inch (12.7 mm) gap between the new skirt edge and the repair doubler.
7. Assemble the repair parts and drill the fastener holes. **E**
8. Disassemble the repair parts.
9. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the nacelle skin.
10. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
11. Apply two layers of BMS 10-79, Type II primer to the bare surfaces of the skin cutout. Refer to SOPM 20-41-02.
12. Apply two layers of BMS 10-11, Type I primer on the CRES sheet doublers before assembly.
13. Install countersink repair washers into initial countersink holes. Refer to SRM 51-40-08.
14. Install the repair parts with BMS 5-26 sealant between the mating surfaces. As an alternative use BMS 5-95. Fill all gaps before final assembly.

15. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-26 or BMS 5-95 sealant.
16. Fillet seal around the edges of the repair parts with BMS 5-26 sealant. As an alternative use BMS 5-95 sealant. Refer to SRM 51-20-05.
17. Apply a layer of BMS 10-60, Type II enamel to the repair area.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

- A** USE DOUBLER 1 IF THE CRACK HAS NOT GROWN BEYOND THE FIRST ROW OF FASTENERS. USE DOUBLER 2 IF THE CRACK HAS GROWN BEYOND THE FIRST ROW OF FASTENERS.
- B** MS20427M5() RIVETS SECURE DOUBLER 3 TO THE SKIRT ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND THE DOUBLER(S).
- C** DRILL THROUGH REPAIR DOUBLER(S) ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND THE DOUBLER(S).
- D** AS AN ALTERNATIVE, USE 17-7PH CRES SHEET, MIL-S-25043. HEAT TREAT TO 180-200 KSI. **NOTE:** 15-5PH CRES IS RECOMMENDED DUE TO BETTER FATIGUE PROPERTIES.
- E** DO NOT DRILL DOUBLER 3 FOR THESE FASTENERS. THESE FASTENERS ATTACH DOUBLER 1 OR DOUBLER 2 TO THE STRUT SIDE SKIN ONLY. INSTALL THESE FASTENERS BEHIND DOUBLER 3.

**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

FASTENER SYMBOLS

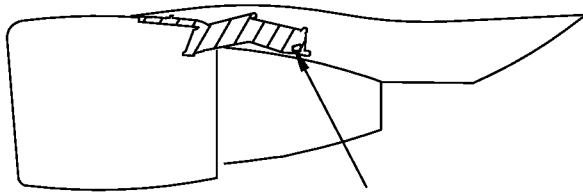
- ⊕ REFERENCE FASTENER LOCATION
- + INITIAL FASTENER LOCATION. INSTALL A BACB30NW8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30NW8K() HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30AB6S COLLAR. [E]
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACC30VF5K() BOLT. [C]
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF4K() BOLT. [C]
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30VU6() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT. [C]
- ⊕ REPAIR FASTENER LOCATION. INSTALL AN MS20427M5C() SOLID RIVET. THESE FASTENERS ATTACH THE DOUBLER AND THE SKIRT FAIRING ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND. FASTENERS MUST BE FLUSH ON BOTH SIDES (DOUBLE FLUSH). REFER TO SRM 51-40-08.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW10K()X HEX DRIVE BOLT WITH A BACC30M10 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR. [E]
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR. [E]

REPAIR MATERIAL		
PART	QTY	MATERIAL
1 DOUBLER	1	0.100 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. [A] [D]
2 DOUBLER	1	0.100 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. [A] [D]
3 DOUBLER	1	0.063 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. [A] [D]

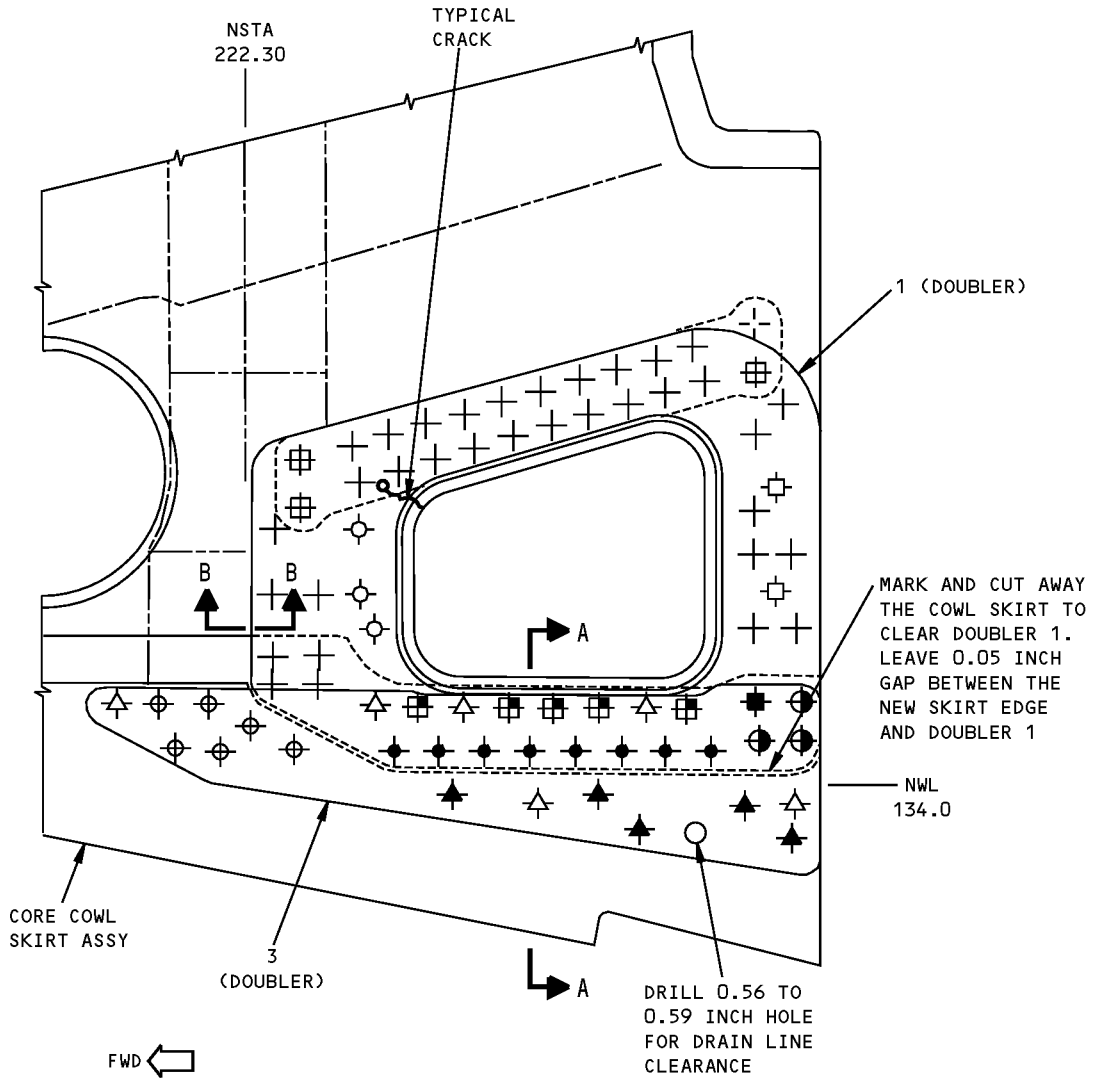
TABLE I

Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**



SEE DETAIL I OR II

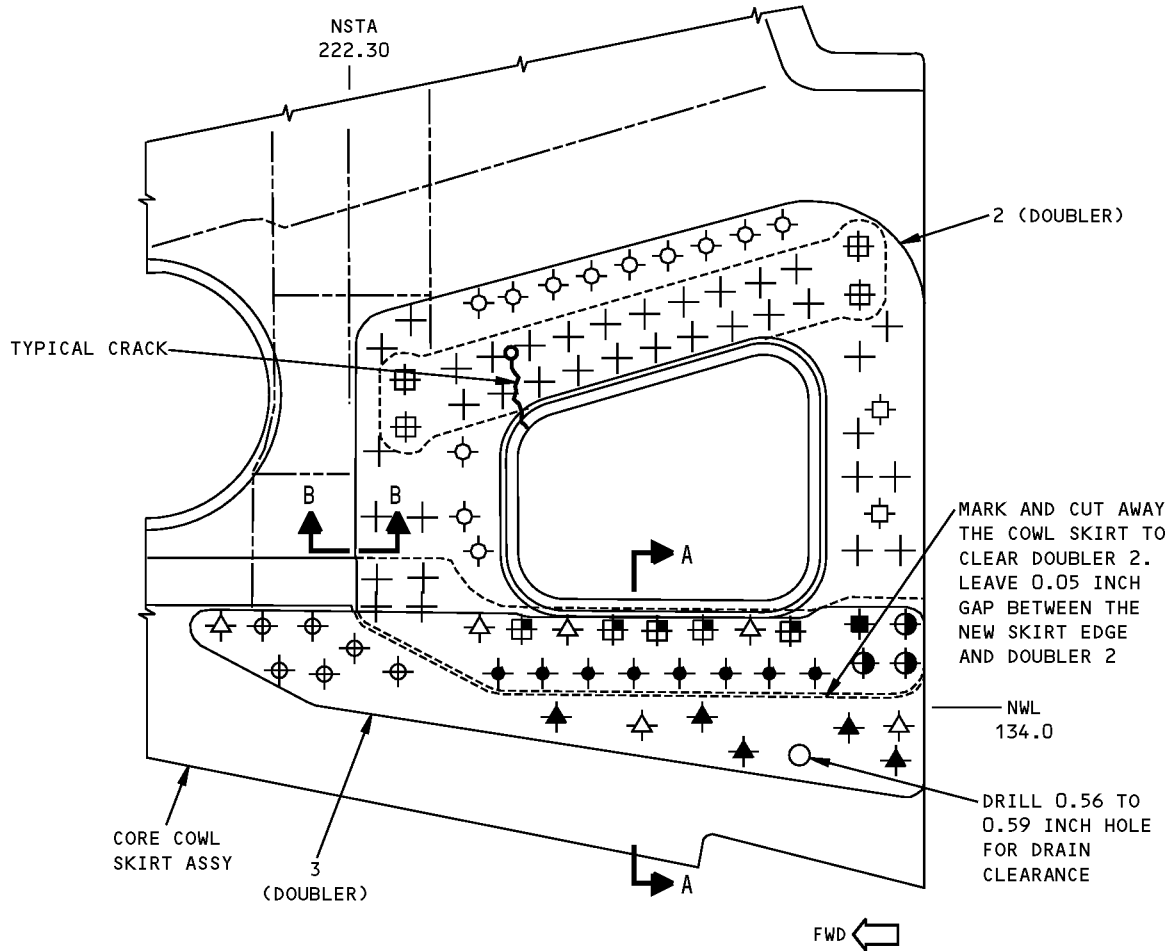


LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

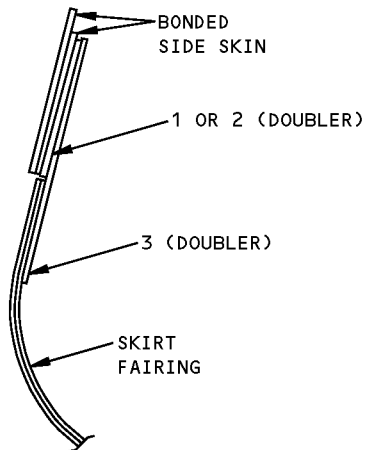
DETAIL I

**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 4)**

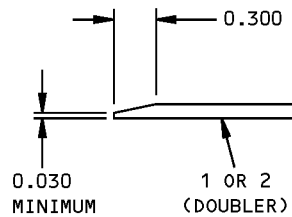
**767-300
STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
DETAIL II



SECTION A-A



SECTION B-B

**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL**REPAIR 8 - STRUT, MIDSPAR AFT WEB CRACK REPAIR AT NAC. STA. 230 - JT9D-7R4 ENGINE****REPAIR INSTRUCTIONS**

1. Remove fairing panels to gain access to the repair area. Refer to drawing 313T3200, sheet 1, and zone A8. Remove the upper link and/or the engine strut as necessary for access to the repair area. Refer to AMM 54-51-02 and AMM 54-51-01 respectively.
2. If necessary, disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
3. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
4. Remove and discard the initial 311T3080 bottom plate shown in Detail I, Section A-A. A repair filler will be installed in its place.
5. Remove and keep the (4) clips shown in Detail I, Section B-B for reinstallation after the repair parts are installed.
6. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
7. Cut and remove all damages to the web as shown in Section B-B.
8. Make the repair parts. See Table I, Sections B-B and C-C. Make all repair parts with sufficient dimensions to maintain 2 diameter minimum edge margin.
9. Assemble the repair parts and drill the fastener holes. Position repair filler flush against closeout angle.
10. Disassemble the repair parts.
11. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
12. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
13. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
14. Install the repair parts with DC93-006 sealant between the mating surface. Install the (4) clips that were removed in step 5.
15. Install the Fasteners. Fasteners that are not made of aluminum must be installed with DC93-006 sealant.
16. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
17. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATIION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	FILLER	1	2024-T3 OR 7075-T6 THICKNESS AS NECESSARY TO FILL THE STEP.
2	DOUBLER	1	0.063 INCH, 2024-T3 OR 7075-T6

TABLE I

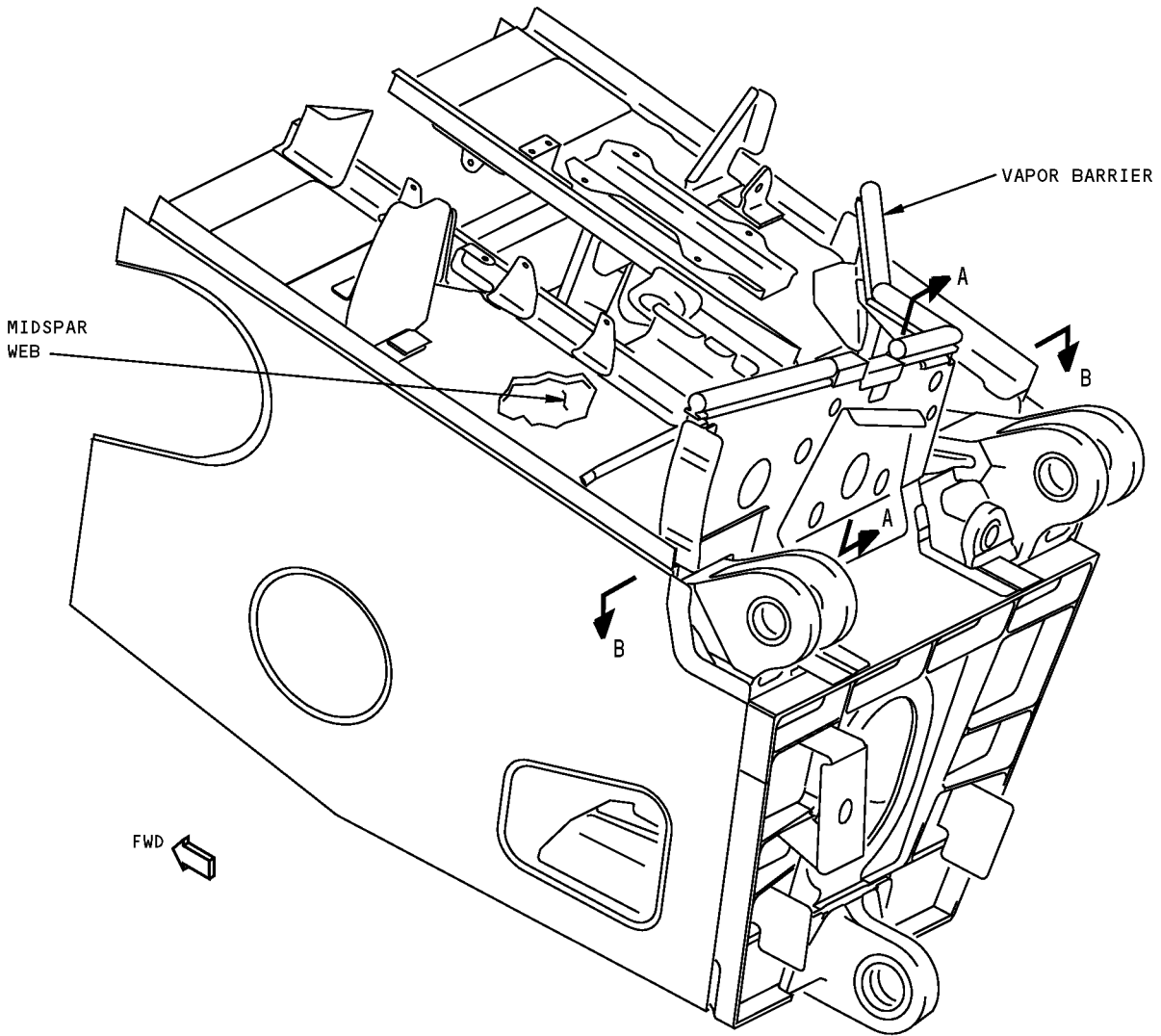
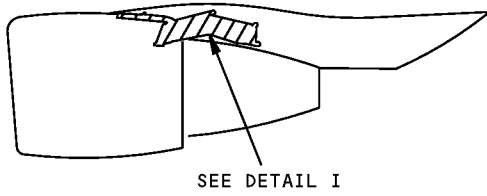
FASTENER SYMBOLS

- ┌— REFERENCE FASTENER LOCATION.
- + INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

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**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)**

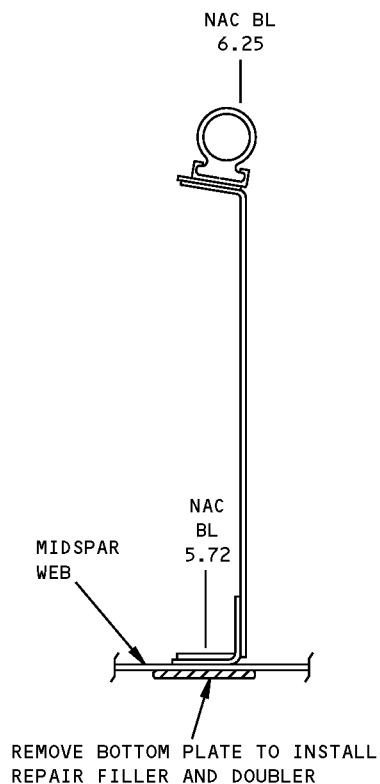
**767-300
STRUCTURAL REPAIR MANUAL**



**STRUT STRUCTURE
DETAIL I**

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

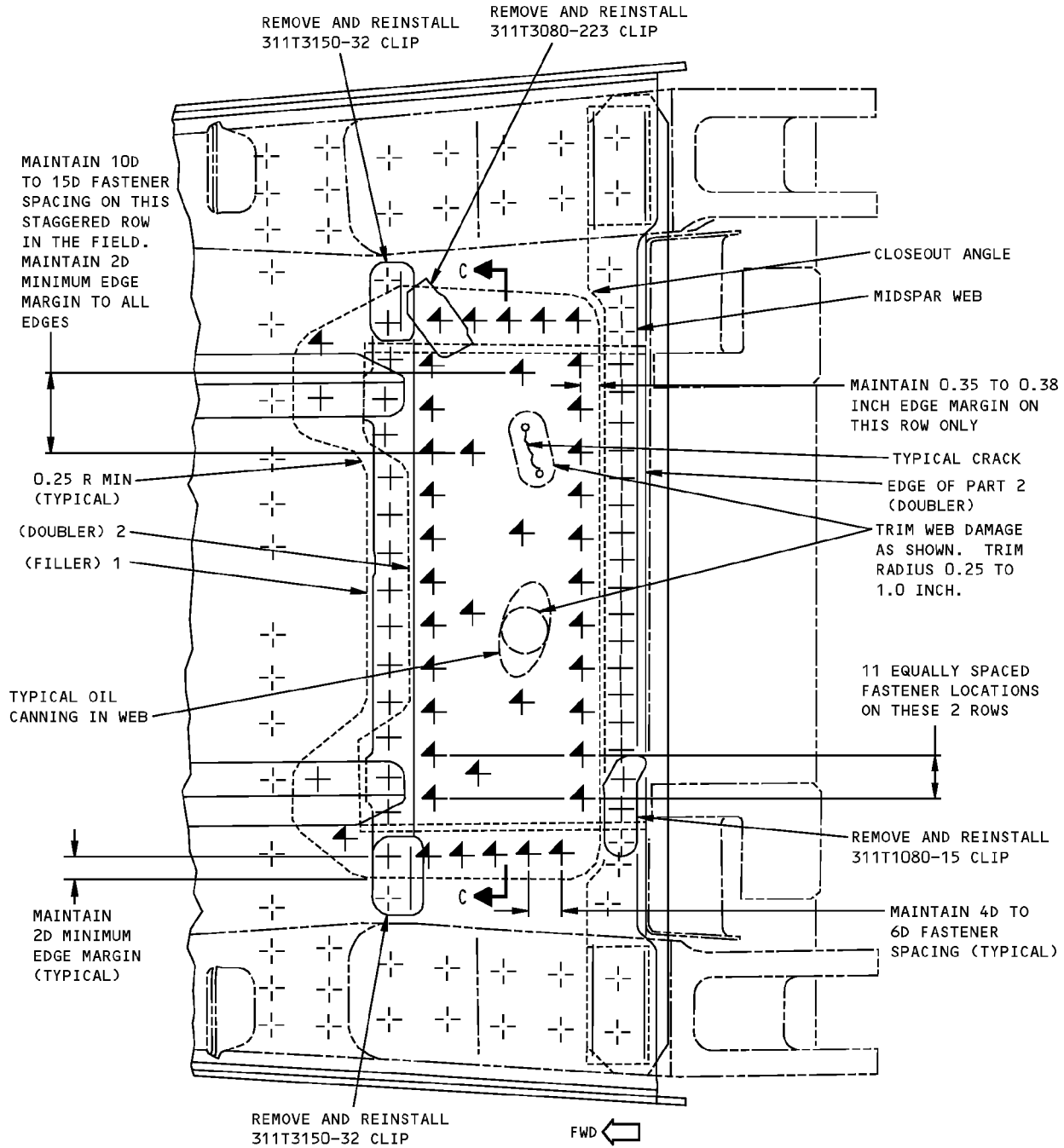
767-300
STRUCTURAL REPAIR MANUAL



VAPOR BARRIER ASSEMBLY
SECTION A-A

Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

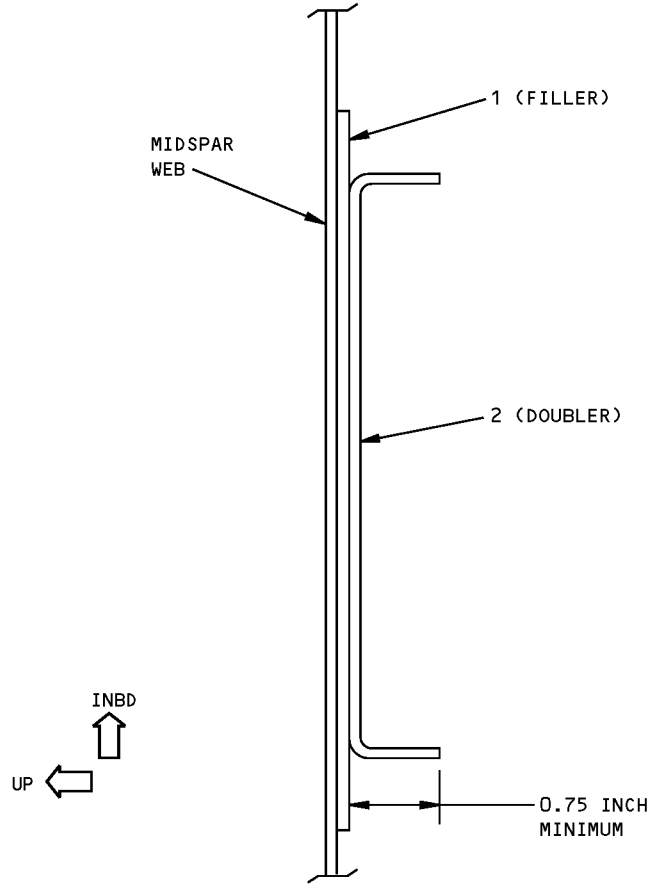


PLAN VIEW OF THE MIDSPAR WEB

SECTION B-B

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION C-C

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 9 - STRUT, AFT UPPER SPAR WEB CORNER CRACK REPAIR - JT9D-7R4 ENGINE**APPLICABILITY**

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT CORNERS OF THE WEB CUTOUT FOR THE STARTER DUCT.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-02. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
3. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-02.
4. Open the strut access doors. Refer to AMM 54-53-01.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain and plug any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Remove brackets and angle clips to get access to the repair area. Save all removed parts for subsequent use.
8. Remove sufficient fasteners common to the zee stiffeners to permit the installation of the part 1 and 2 doubler below the stiffeners.
9. Do a high frequency eddy current (HFEC) inspection of the web to find the full length and the end of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a penetrant inspection can be done. Refer to SOPM 20-20-02.
10. If the crack is less than 0.5 inch in length, cut and remove the material around the crack. Keep a 0.75 inch minimum radius on the inside corner and a 0.5 inch minimum radius on the outside corner. Keep 2D minimum edge margin to adjacent fasteners. See Detail III. Do the inspection as given in step 8 to make sure that the crack is removed completely.
11. If the crack is 0.5 inch or more in length, make a 0.25 inch diameter crack stop hole at the end of the crack. Refer to SRM 51-10-00.
12. Make the repair parts. See Table I and Detail II. Make the doubler with sufficient dimensions to extend to the aft end of the web.
13. Assemble the repair parts and drill the fastener holes.
14. Disassemble the repair parts.
15. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
16. Visually inspect the fastener holes to make sure that there are no scratches or gouges. Refer to SRM 51-00-06.
17. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
18. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
19. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
20. Install the fasteners wet with BMS 5-95 sealant.
21. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
22. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)

STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISH
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
2	DOUBLER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
3	STIFFENER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
4	FILLER	1	0.050 CLAD 2024-T3 OR 7075-T6. AS AN ALTERNATIVE, GET A BACF3F020G037NN FILLER FROM BOEING
5	TAPERED FILLER	AS REQUIRED	0.010 TO 0.050 INCH, CLAD 2024-T3 OR 7075-T6

TABLE I

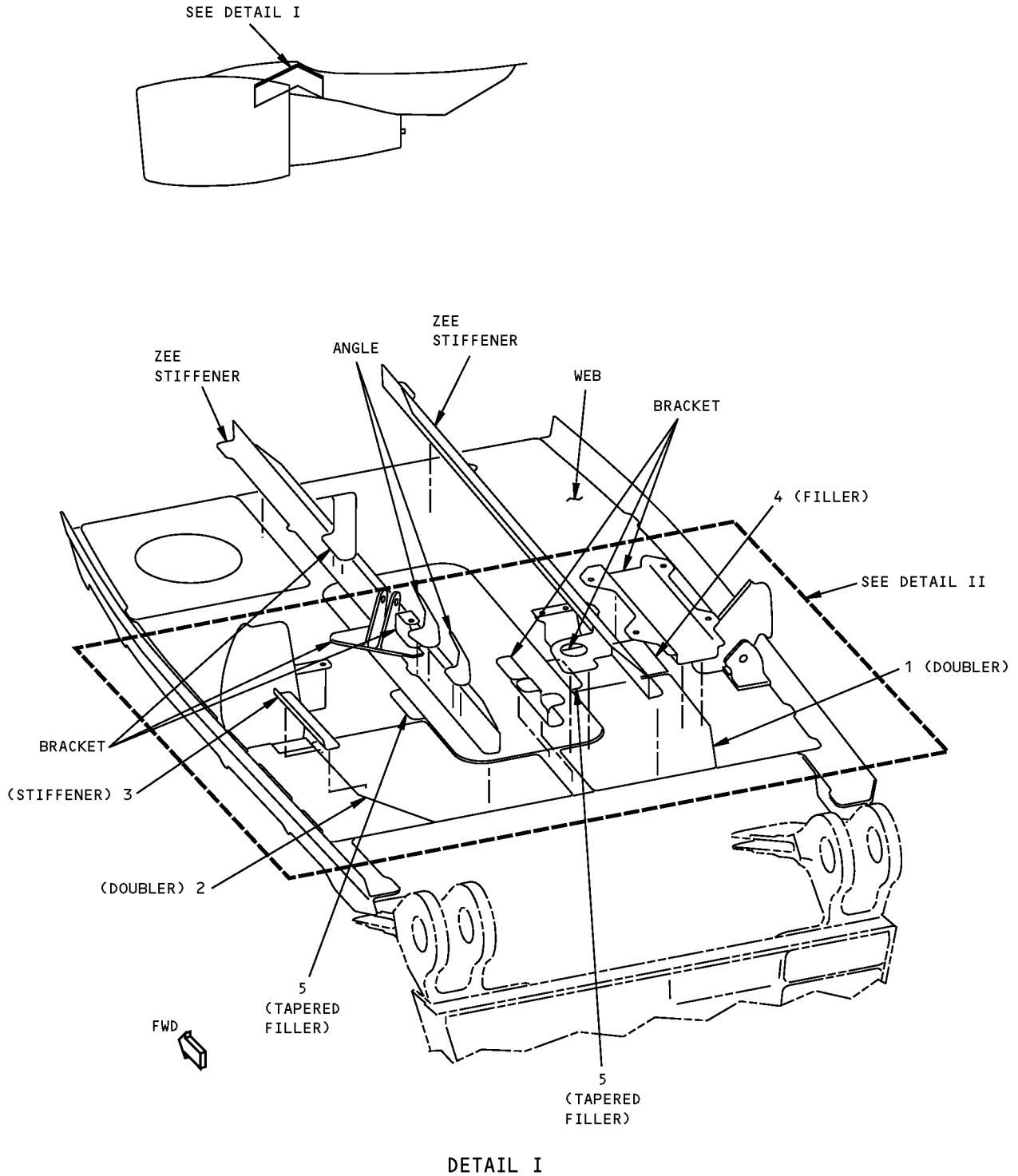
FASTENER SYMBOLS

- ⊖ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊗ REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

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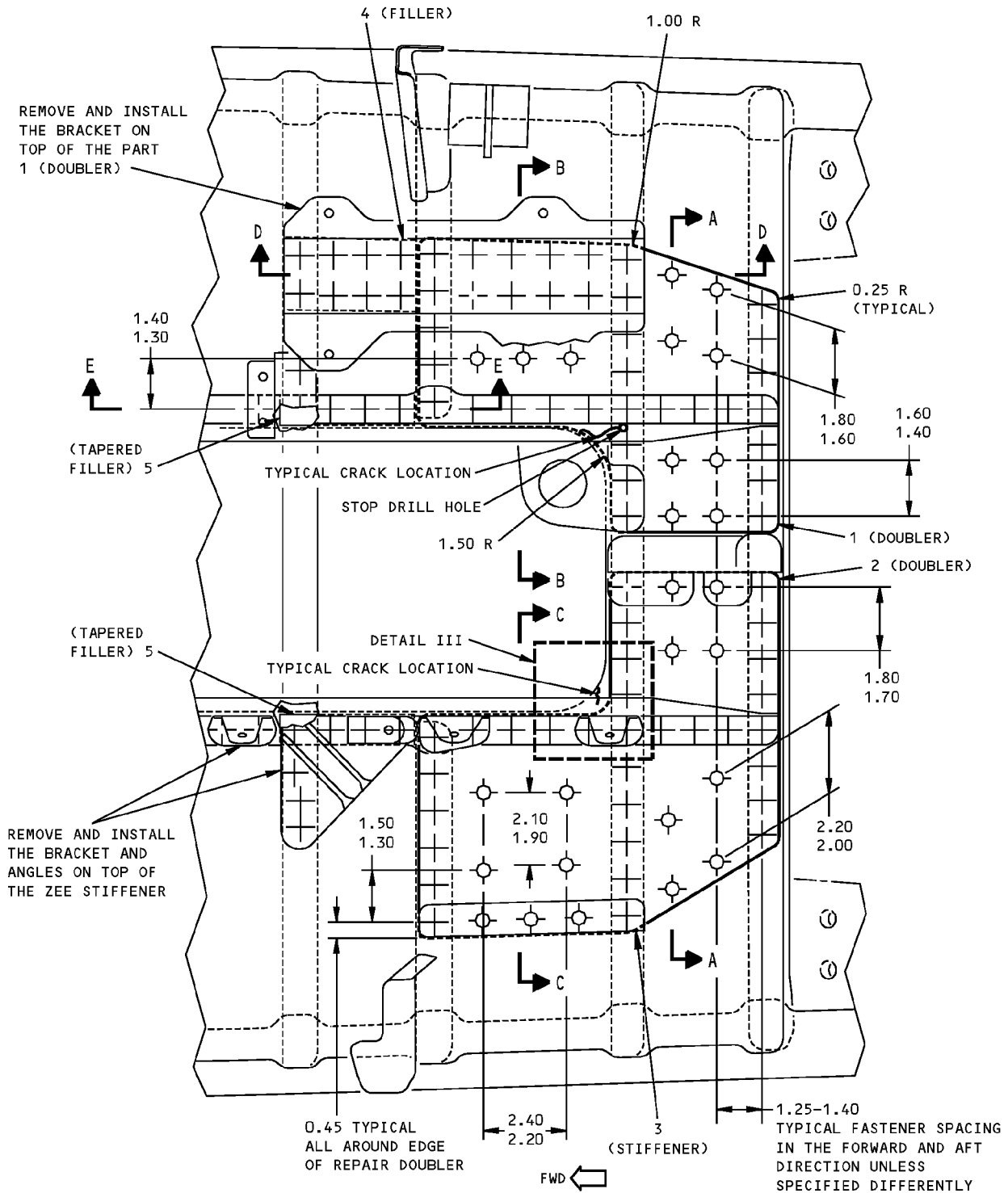
**Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

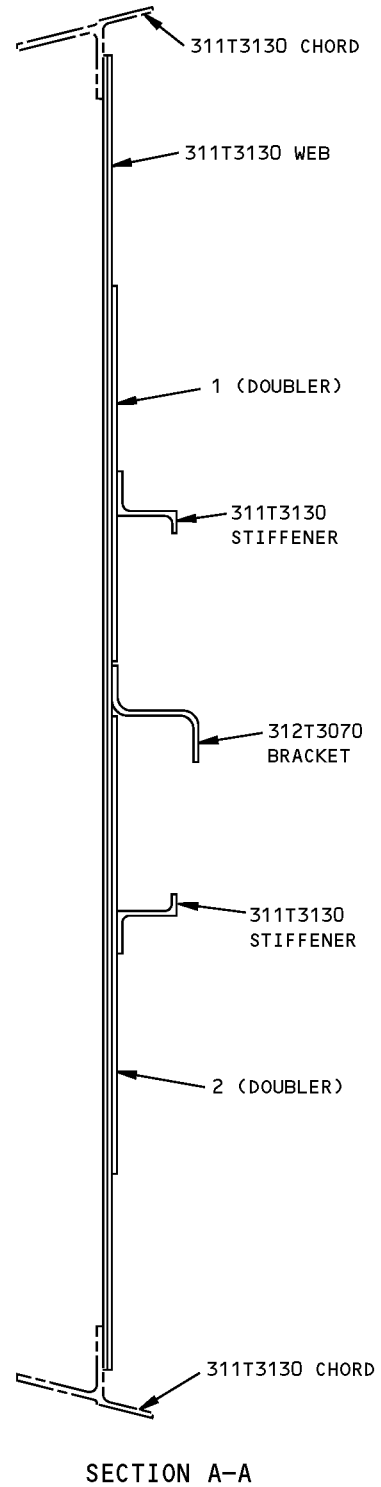
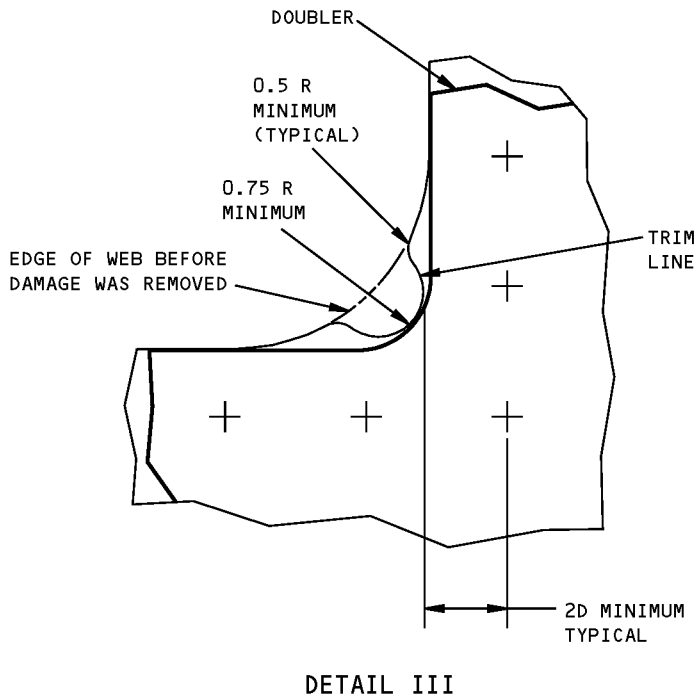
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

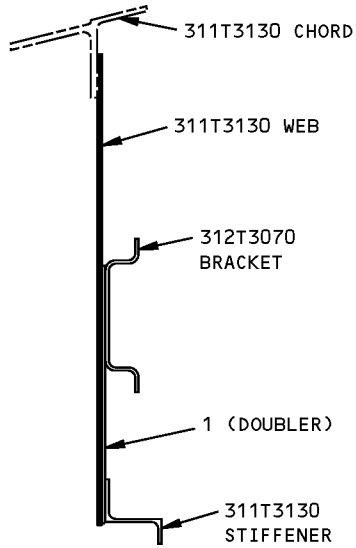
**Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

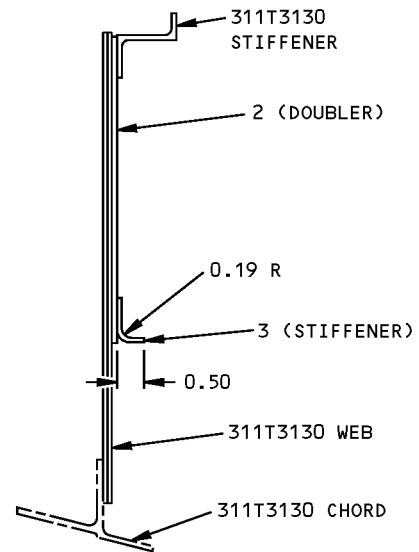


**Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

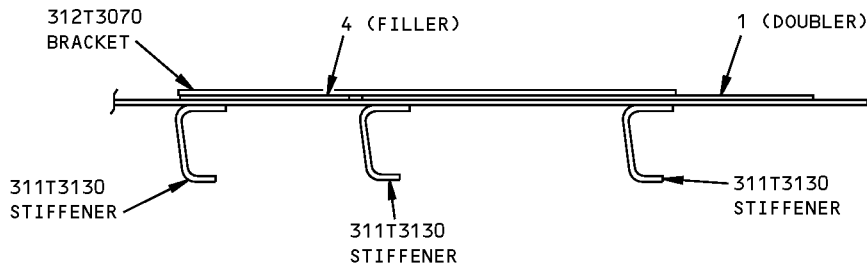
**767-300
STRUCTURAL REPAIR MANUAL**



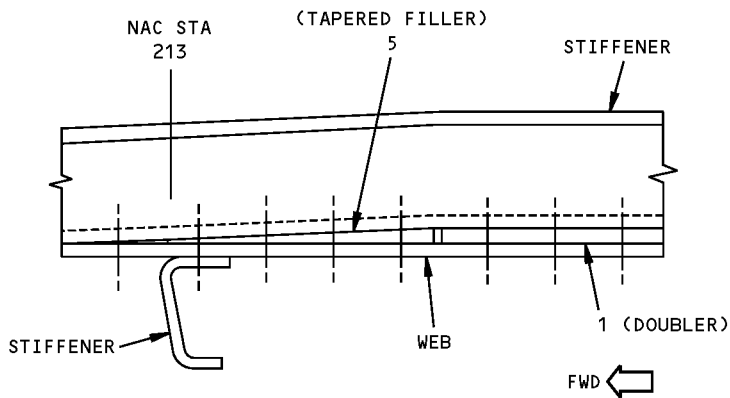
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E

**Strut, Aft Upper Spar Web Corner Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 10 - STRUT FORWARD UPPER SPAR WEB CRACK REPAIR AT NAC STA 156 DRAIN HOLES - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS WHICH START AT THE DRAIN HOLES NEAR NAC STA 156.0. A

REPAIR INSTRUCTIONS

1. Get access to the damaged area.

NOTE: Do one of the following repairs depending on the length of the crack.

REPAIR A: Crack length is small enough so that it can be removed when the hole is enlarged to a maximum of 0.4688 inch diameter.

CAUTION: Be careful when you enlarge the hole. Do not damage internal structure.

2. Enlarge the drain hole until crack is removed.
3. Do a high frequency eddy current inspection (HFEC) of the repair area to make sure that all of the damage is removed. Refer to NDT part 6, 51-00-13, for HFEC inspection procedures.
4. Oversize the drain hole an additional 1/64th inch.
5. Cold work the hole using the High Interference Cold Working Process. Refer to SRM 51-40-09. Point the split sleeve bushing in the fore-aft direction.
6. Final ream or hone the hole for a high quality finish.
7. Do a final high frequency eddy current inspection (HFEC) of the hole. Refer to NDT part 6, 51-00-13, for HFEC inspection procedures.
8. Apply a chemical conversion coating to the hole. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the hole. Refer to SOPM 20-41-02.
10. Cold work the drain hole on the opposite side of the strut as follows even if there is no crack found;
 - a) Ream hole to first oversize
 - b) Do steps 3 to 9.

REPAIR B: Crack length is less than 0.75 inch but can not be removed when the hole is enlarged to a maximum of 0.4688 inch diameter.

CAUTION: Be careful when you stop drill. Do not damage internal structure.

2. Stop drill or cut out the crack on the web to remove all damage. Use a 0.25 or 0.31 inch diameter cutter. Refer to SRM 51-10-00.

3. Make the repair parts. See Table I.
4. Cold work the drain hole on the opposite side of the strut as given in step 10 of Repair A. If crack has developed at both drain holes, install a second machined doubler opposite to part 1, and complete the repair as given in Repair B. **B**
5. Assemble the repair parts and drill the fastener holes. Install shims as necessary.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
11. Install the fasteners. Fasteners must be installed wet with BMS 5-95 sealant.
12. Apply one layer of BMS 10-11, Type 1 primer to the repair area. Refer to SOPM 20-41-02.

REPAIR C: Crack length is greater than 0.75 inch. **A**

CAUTION: Be careful when you stop drill. Do not damage internal structure.

2. Stop drill the ends of the crack. Refer to SRM 51-10-00.
3. Make the repair parts. See Table I.
4. Cold work the drain hole on the opposite side of the strut as given in step 10 of Repair A. If crack has developed at both drain holes, install a second machined doubler opposite to part 1, and complete the repair as given in Repair C. **B**
5. Assemble the repair parts and drill the fastener holes. Install shims as necessary.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the web. Refer to SRM 51-20-01.

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL





9. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
11. Install the fasteners. Fasteners must be installed wet with BMS 5-95 sealant.
12. Apply one layer of BMS 10-11, Type 1 primer to the repair area. Refer to SOPM 20-41-02.

NOTES

- D = FASTENER DIAMETER
- ALL DIMENSIONS ARE IN INCHES
- WHEN YOU USE THIS REPAIR REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-00 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALIC AND GRAPHITE MATERIALS.
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-20-06 FOR SHOT PEENING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.

- A** CONTACT BOEING IF THE CRACK IS UNDERNEATH THE UPPER SPAR FITTING, THE THRUST REVERSER HINGE BACKUP FITTING OR THE FORWARD UPPER SPAR CHORDS.
- B** IF CRACKS HAVE DEVELOPED ON BOTH THE DRAIN HOLES, TWO PARTS ARE NECESSARY. RIGHT HAND DOUBLER OPPOSITE TO LEFT HAND DOUBLER.
- C** CUT THE PART 1 DOUBLER AS NECESSARY TO MAKE SURE IT DOES NOT INTERFERE WITH THE RADIUS OF THE THRUST REVERSER HINGE BACK UP FITTING.
- D** SHOT PEEN DOUBLER AS GIVEN IN SRM 51-20-06.

FASTENER SYMBOLS

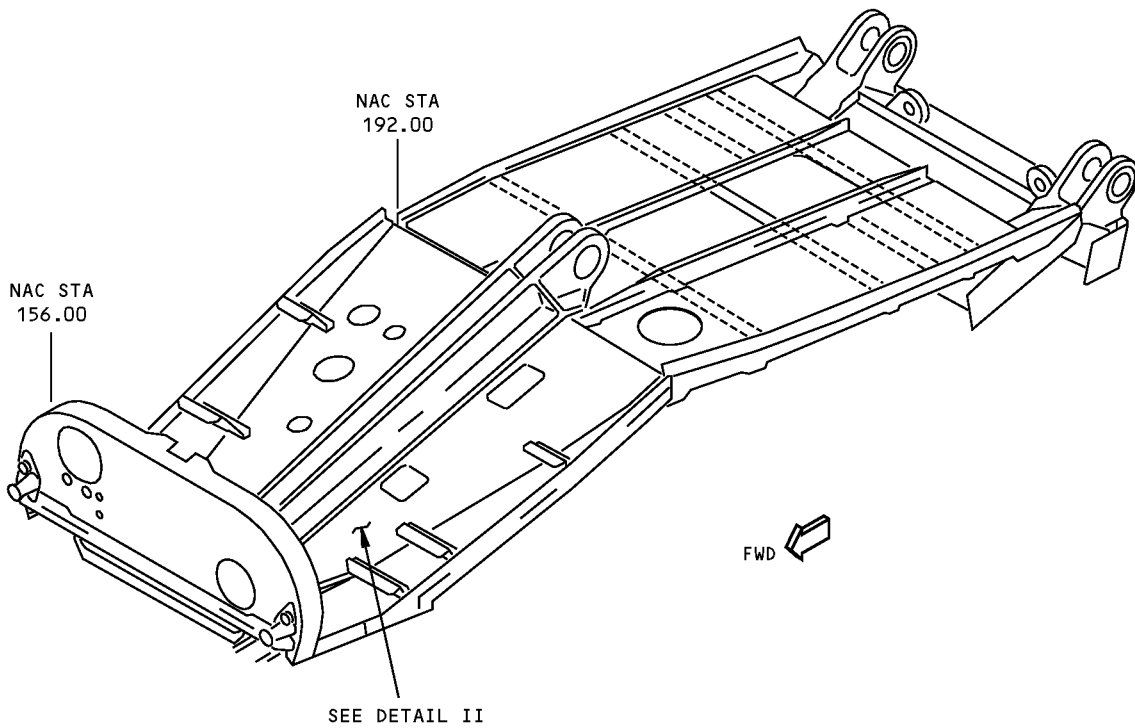
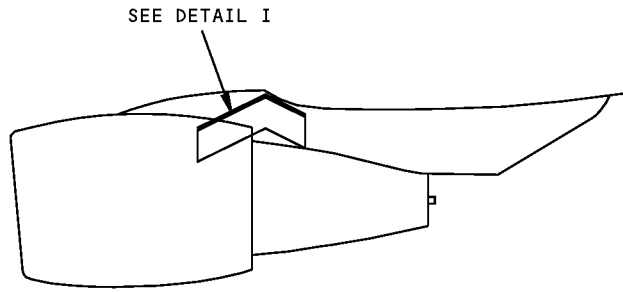
-  REFERENCE FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K () HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX8K()X HEX DRIVE BOLT WITH A BACC30X8 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1 B C	0.320, 2024-T351 PLATE D
2	FILLER	1	0.156, 2024-T3 SHEET
3	RADIUS FILLER	1 B	0.156, 2024-T3 OR 7075-T6 SHEET

TABLE I

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

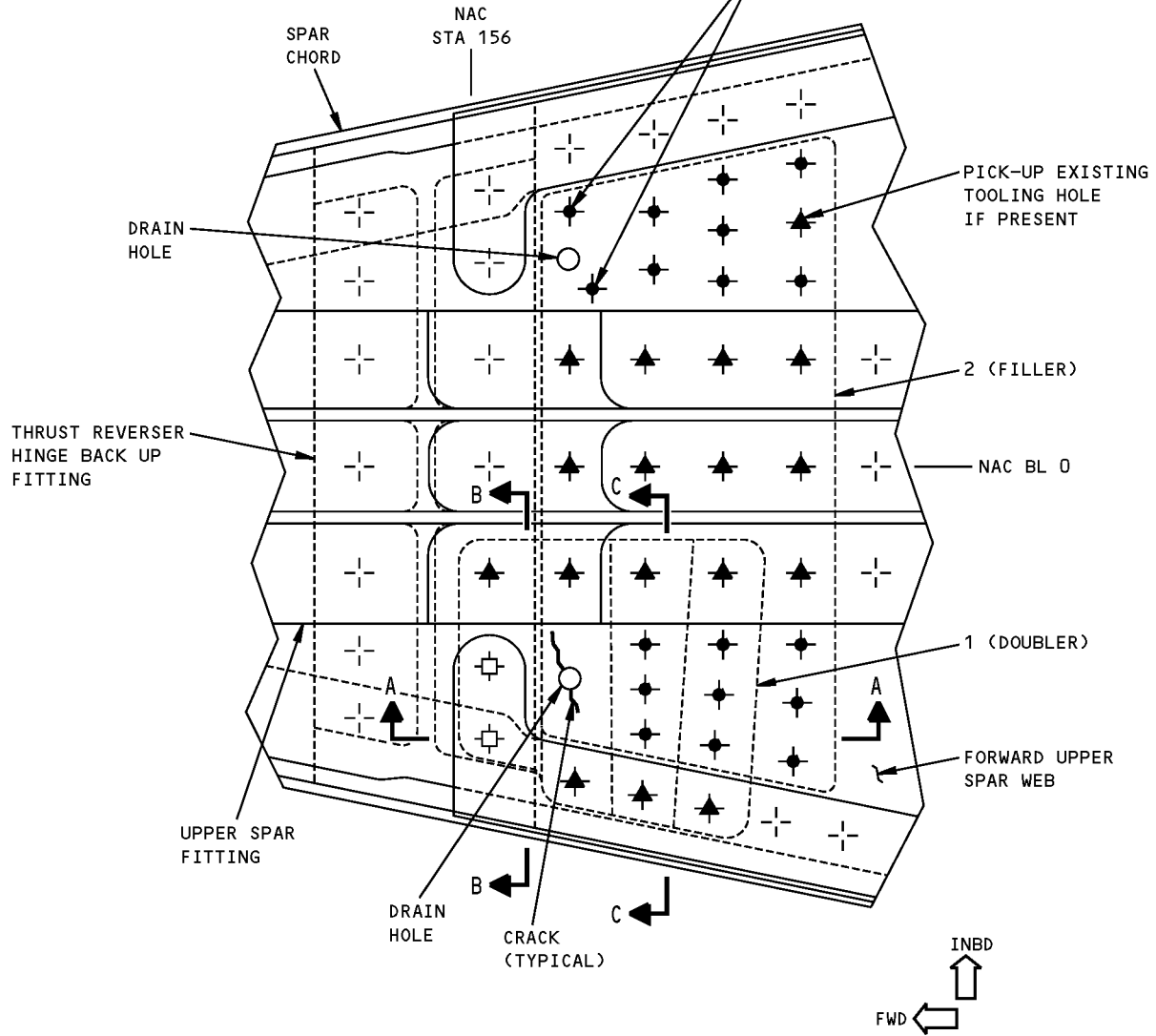


DETAIL I

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

DO NOT INSTALL THESE FASTENERS IF DRAIN HOLE IS CRACKED ON THIS SIDE. KEEP A 0.75 INCH MINIMUM PITCH BETWEEN DRAIN HOLE AND FASTENERS

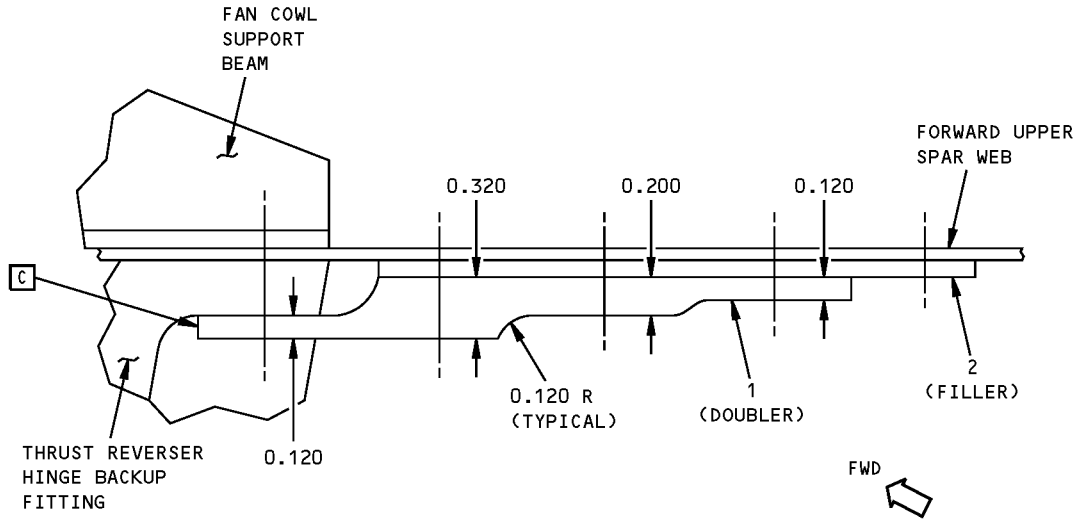


VIEW LOOKING DOWN
(SOME PARTS ARE NOT SHOWN FOR CLARITY)

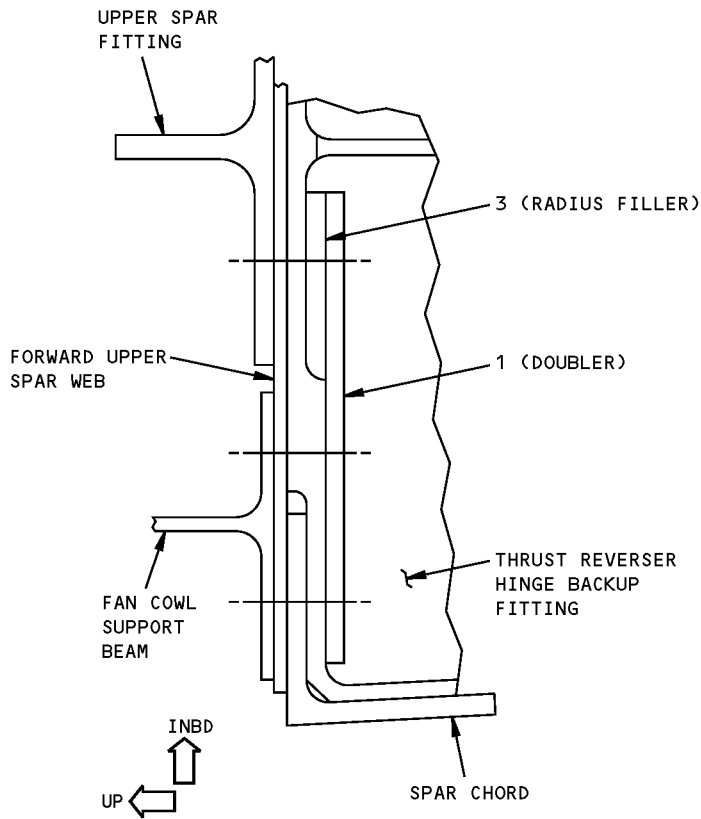
DETAIL II

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



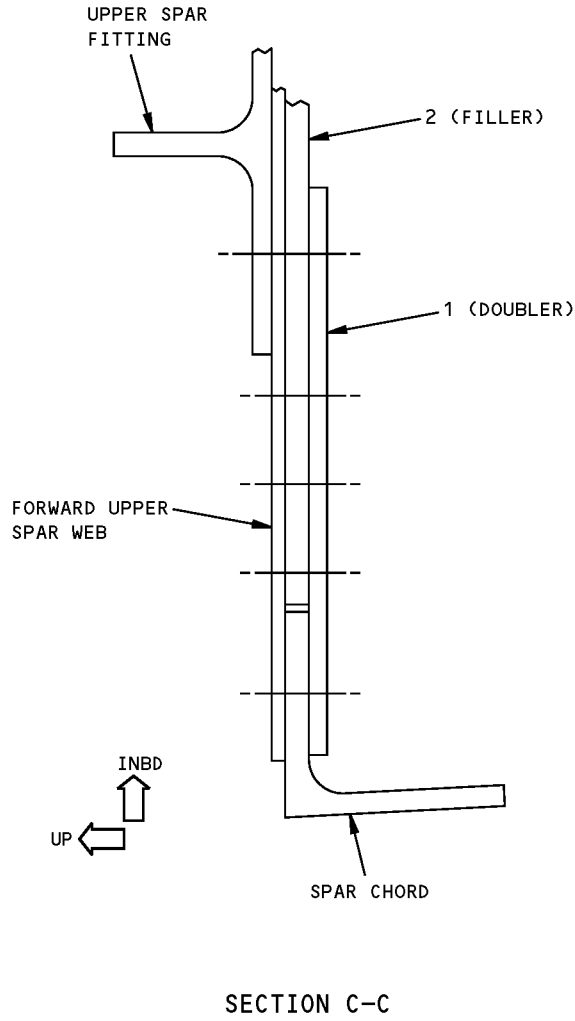
SECTION A-A



SECTION B-B

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

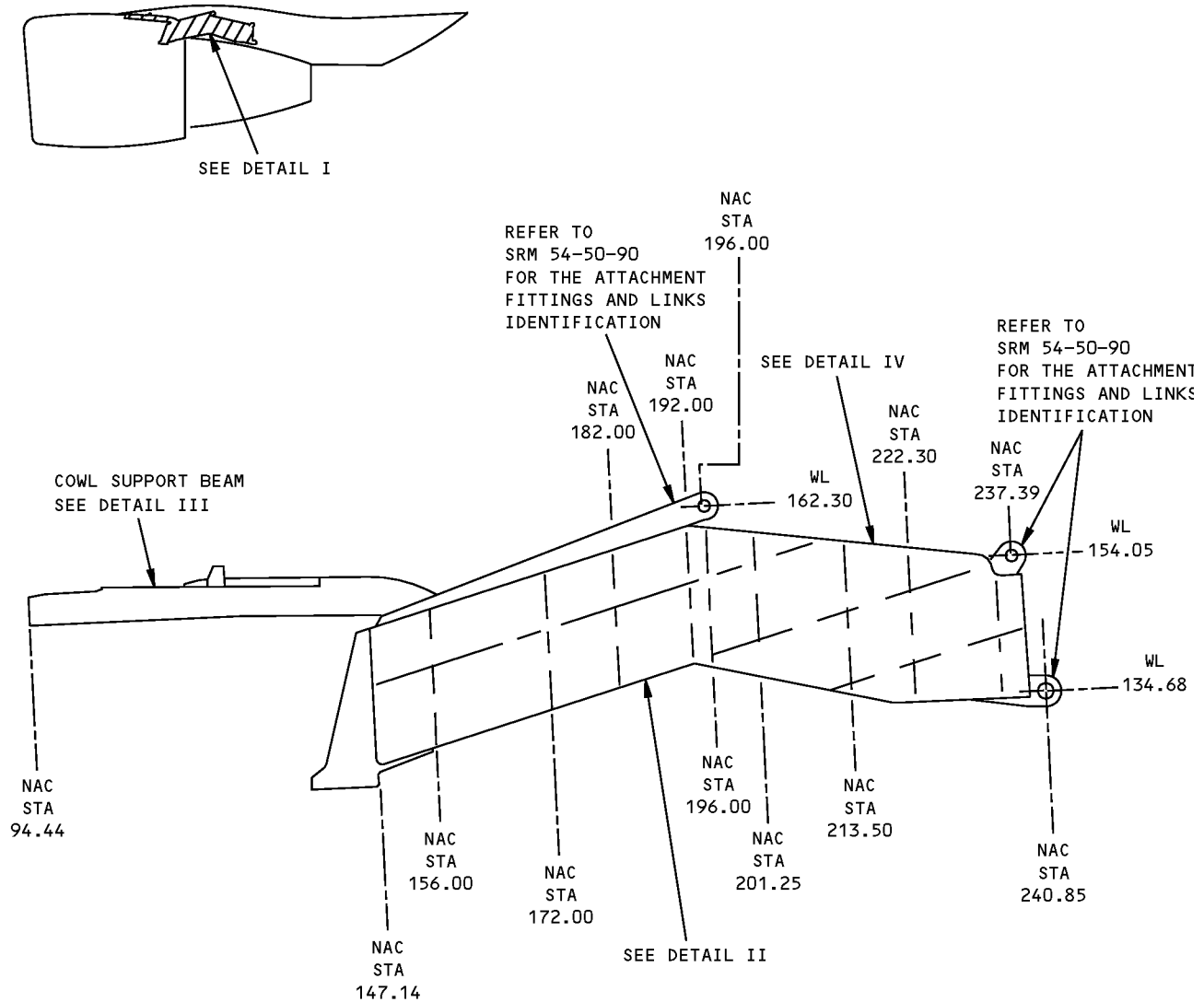
**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT STRUCTURE - JT9D-7R4 ENGINE



DETAIL I

NOTES

- A** FOR AIRPLANES WITH JT9D-7R4 ENGINES UP TO CUM LINE NUMBER 233
- B** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 234 AND ON
- C** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0080 INCORPORATION
- D** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 664 AND ON, AND FOR AIRPLANES WITH SB 767-54-0080 INCORPORATED

**Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD ENGINE MOUNT		FORGING 15-5PH CRES HT TR 180-200 KSI	
2	MID STRUT BULKHEAD		FORGING 7075-T73	A
3	STIFFENER		BAC1506-3173 7075-T73	
4	LOWER SPAR CHORD	0.160 0.187	15-5PH CRES HT TR 180-200 KSI OPTIONAL: 15-5PH CRES HT TR 180-200 KSI CHEM MILLED TO 0.160	
5	MIDSPAR CHORD		BAC1527-59 15-5PH CRES HT TR 180-200 KSI	
6	STIFFENER	0.090	15-5PH CRES HT TR 180-200 KSI	
7	FRAME	0.080	2024-T62	B
8	FRAME	0.080	7075-T6	A
9	BULKHEAD (AFT ENGINE MOUNT)		FORGING 2219-T852 FLANGES, RIBS. 2219-T6 WEB ONLY	
10	FRAME	0.071	CLAD 2024-T42	
11	STIFFENER		BAC1506-3172 7075-T73	
12	STIFFENER		BAC1506-2115 7075-T6	A
13	STIFFENER		BAC1506-2115 2024-T62	B
14	MID STRUT BULKHEAD		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL II

**Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 7)**

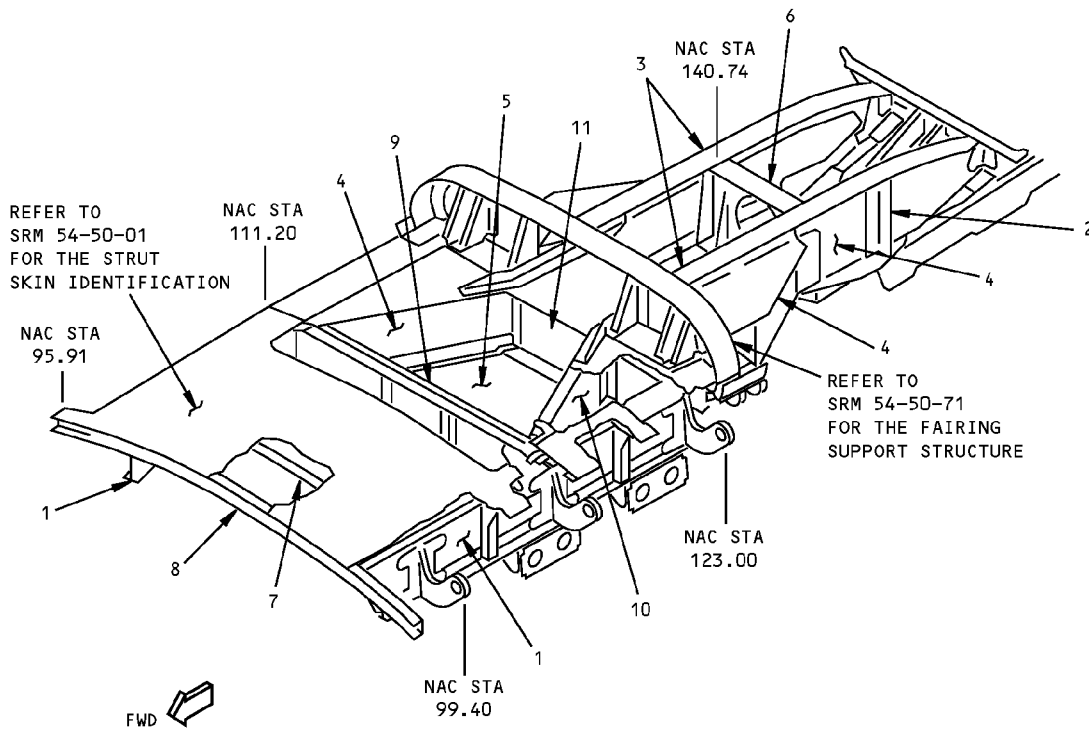
IDENTIFICATION 1
Page 3
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54-50-02

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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T3510



**COWL SUPPORT BEAM
DETAIL III**



**Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 4 of 7)**

IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	BEAM ASSEMBLY LOWER CHORD UPPER CHORD WEB	0.050	BAC1505-101159 2024-T8511 BAC1506-3195 2024-T42 2024-T3	
2	STIFFENER		AND10136-2401 2024-T8511	
3	UPPER CHORD		BAC1505-101202 2024-T8511	
4	BEAM ASSEMBLY WEB ANGLE	0.050 0.050	CLAD 2024-T42 CLAD 2024-T4	
5	LOWER SKIN	0.063	2024-T3	
6	BULKHEAD		FORGING 7075-T73	
7	CHORD	0.050	2024-T4	
8	CHANNEL	0.050	2024-T4	
9	BEAM ASSEMBLY CHORD WEB ANGLE	0.050 0.050 0.050	2024-T4 2024-T4 2024-T42	
10	BEAM	0.050	2024-T3	
11	BEAM ASSEMBLY WEB LOWER CHORD UPPER CHORD	0.070 0.070	2024-T4 BAC1505-100614 2024-T8511 2024-T4	

LIST OF MATERIALS FOR DETAIL III

**Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 5 of 7)**

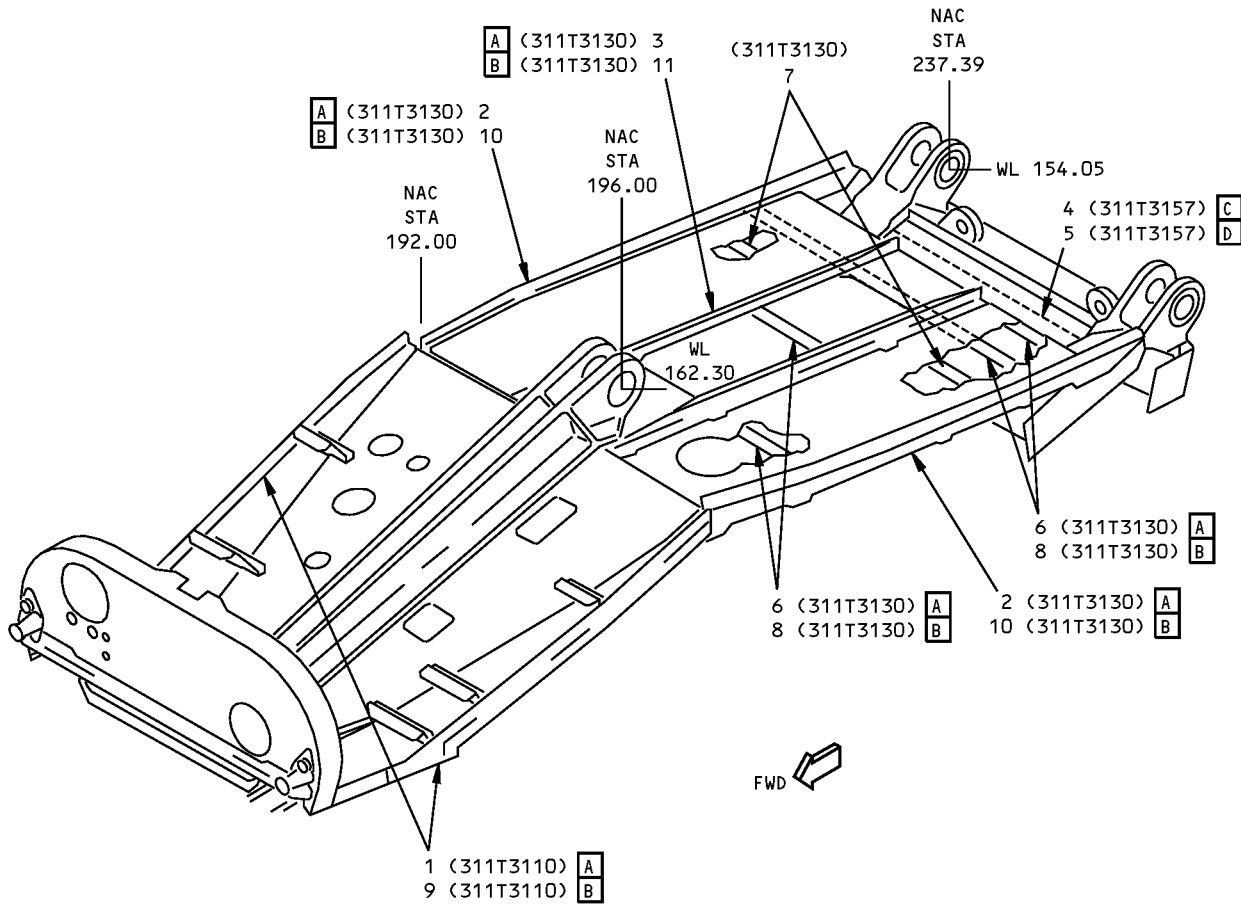
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL IV

LIST OF
MATL. →

**Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 6 of 7)**

IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1506-3120 7075-T73	A
2	CHORD		BAC1506-3278 7075-T62	A
3	STIFFENER		AND10139-1106 7075-T62	A
4	CLOSEOUT ANGLE		BAC1514-2595 7075-T73511 OPTIONAL: BAC1506-3181 7075-T73	C
5	CLOSEOUT ANGLE		7075-T73511 EXTRUDED BAR	D
6	STIFFENER	0.080	CLAD 7075-T62	A
7	ANGLE	0.080	CLAD 2024-T42	
8	STIFFENER	0.080	CLAD 2024-T62	B
9	CHORD		BAC1506-3120 2024-T62	B
10	CHORD		BAC1506-3278 2024-T62	B
11	STIFFENER		AND10139-1106 2024-T62	B

LIST OF MATERIALS FOR DETAIL IV

Strut Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 7 of 7)

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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

THE ATTACHMENT LINK IDENTIFICATION
IN FIGURE 2 WAS MOVED TO 54-50-90.

Attachment Linkage Identification - JT9D-7R4 Engine
Figure 2

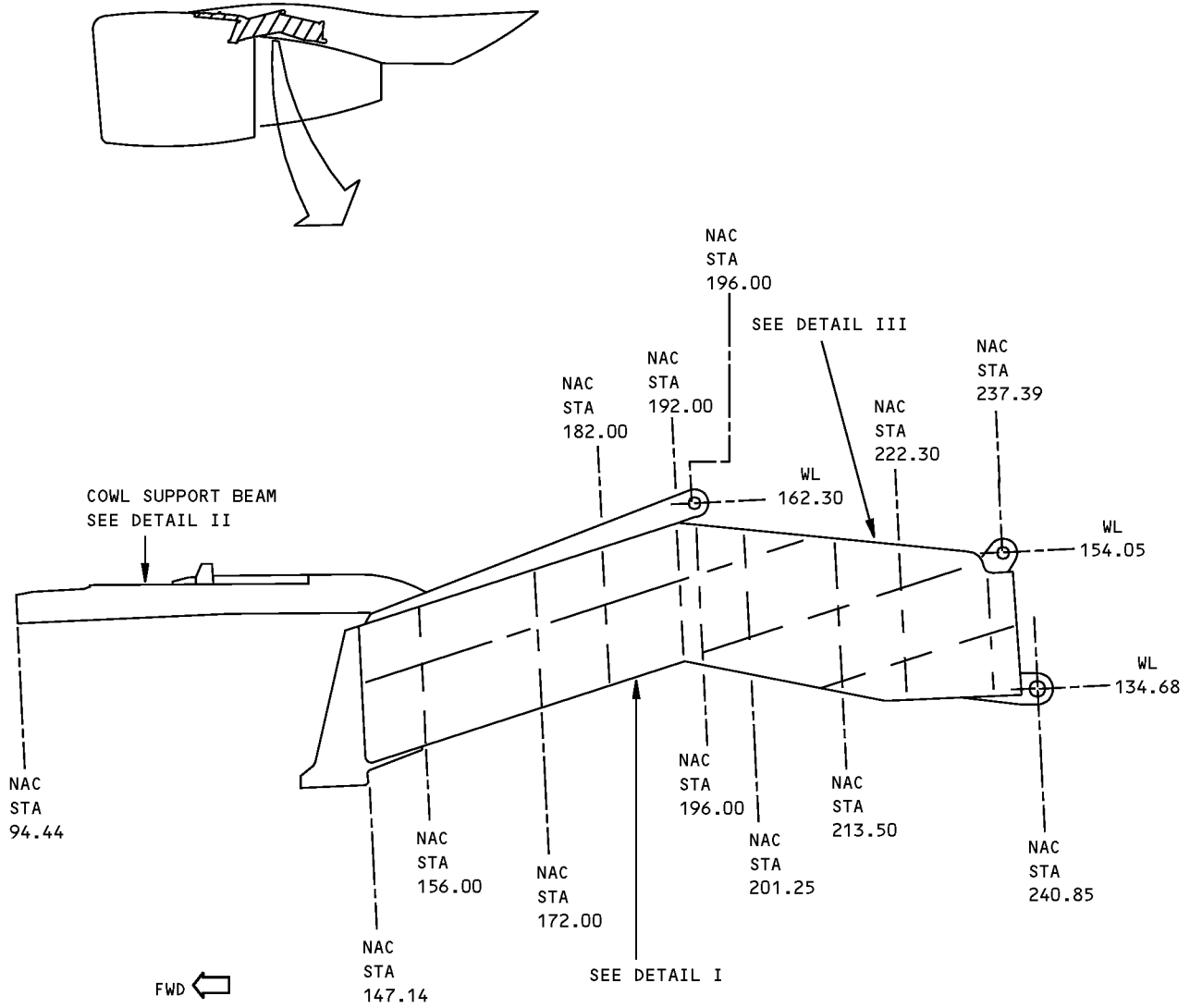
D634T210

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IDENTIFICATION 1
Page 8
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STRUCTURAL REPAIR MANUAL**

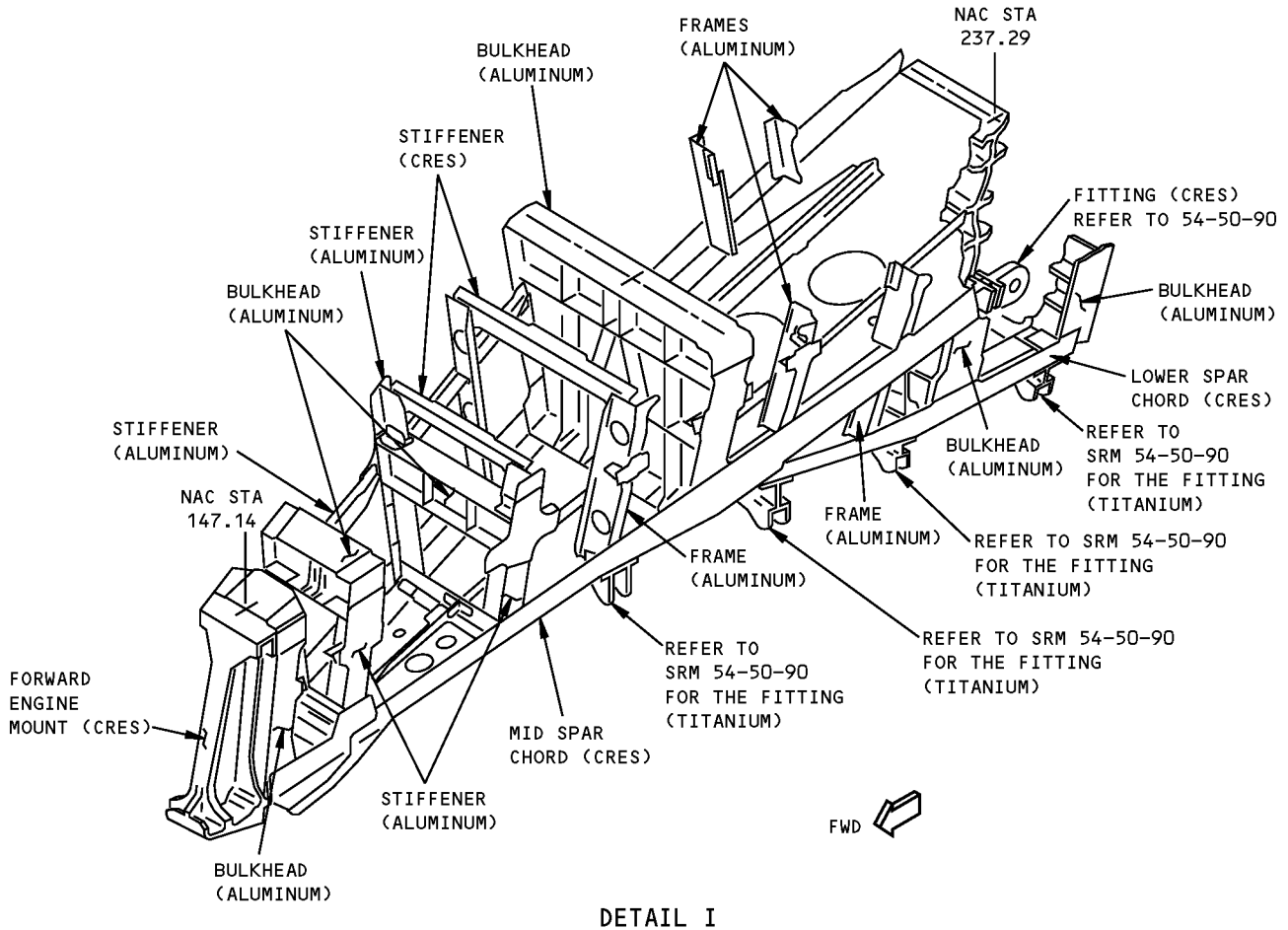
ALLOWABLE DAMAGE 1 - STRUT STRUCTURE - JT9D-7R4 ENGINE



**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 7)**

767-300 STRUCTURAL REPAIR MANUAL

REFERENCE DRAWINGS
311T3000
311T3130



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FORWARD ENGINE MOUNT D	A	B	NOT PERMITTED	NOT PERMITTED
BULKHEADS D	A	B	NOT PERMITTED	NOT PERMITTED
STIFFENERS	C	B	NOT PERMITTED	SEE DETAIL IX
CHORDS D	C	B	NOT PERMITTED	NOT PERMITTED
FRAMES	C	B	NOT PERMITTED	NOT PERMITTED

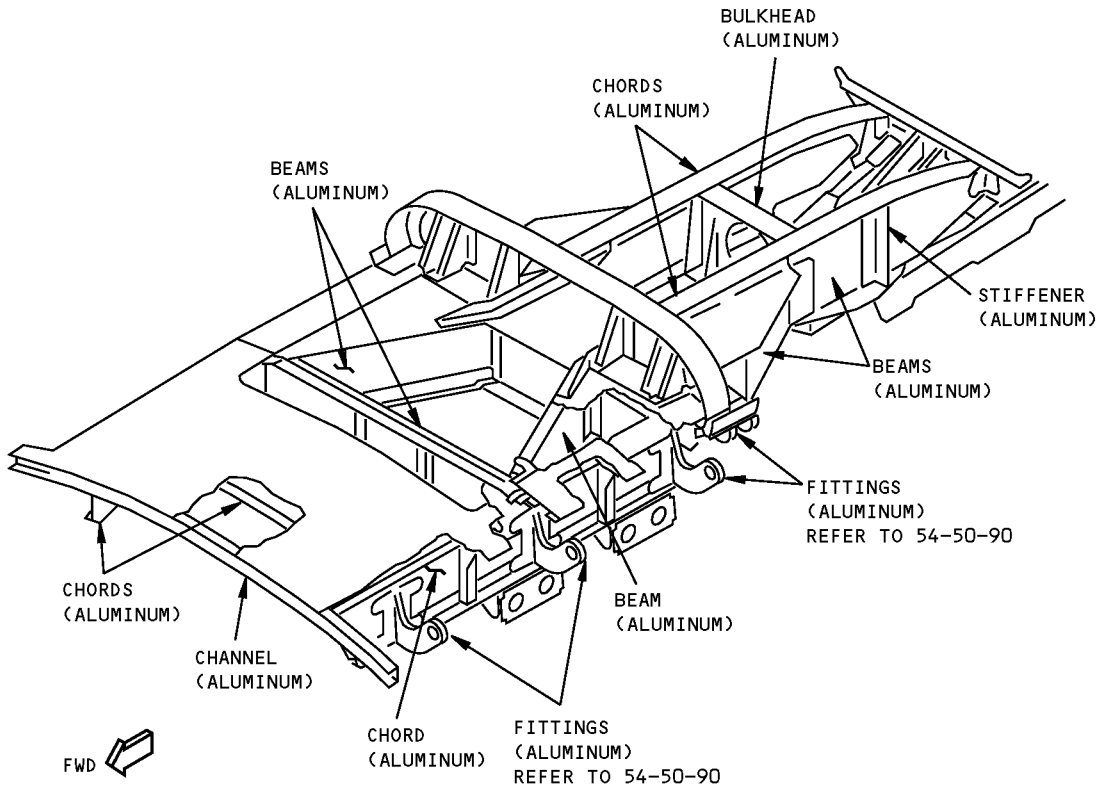
**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 7)**

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ALLOWABLE DAMAGE 1
54-50-02
Page 102
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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T5510



DETAIL II

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
BEAMS	A	B	SEE DETAIL VI	NOT PERMITTED
CHORDS	C	B	NOT PERMITTED	NOT PERMITTED
STIFFENER	C	B	NOT PERMITTED	SEE DETAIL IX
BULKHEAD	A	B	NOT PERMITTED	NOT PERMITTED
CHANNEL	C	B	NOT PERMITTED	NOT PERMITTED

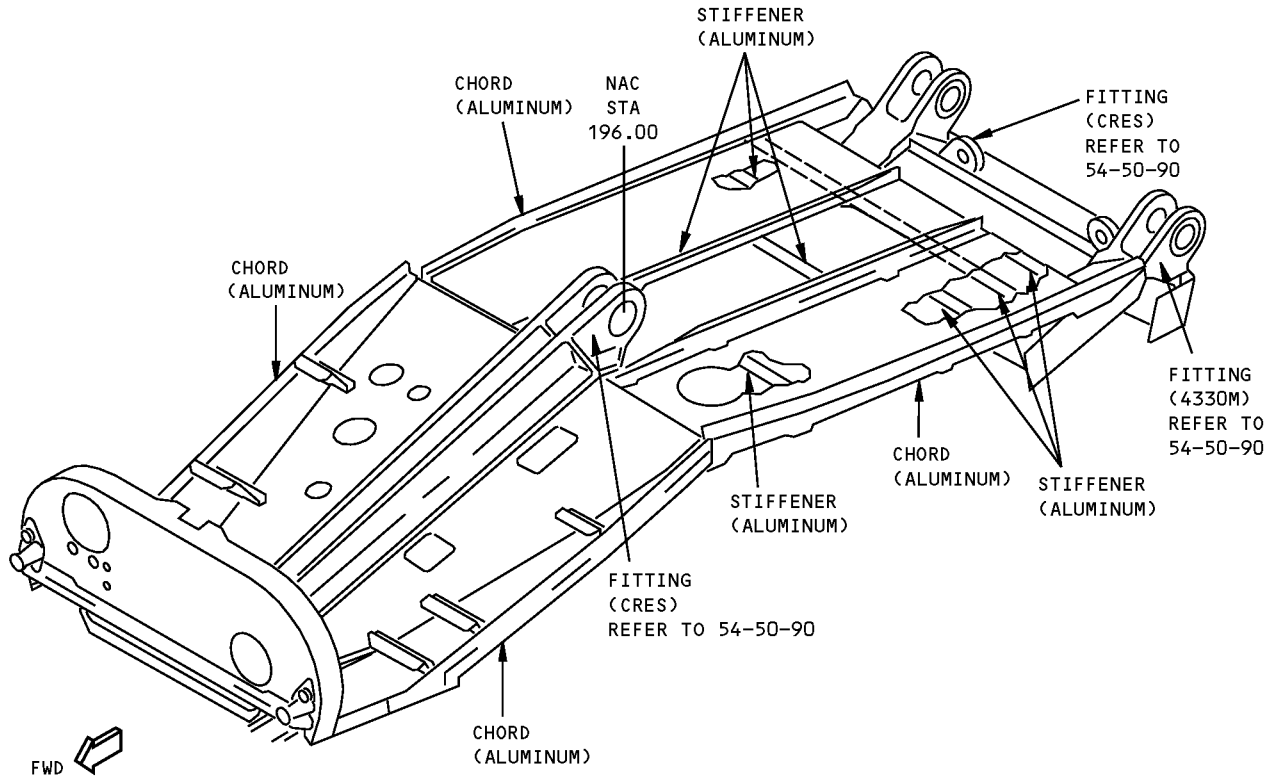
**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 7)**

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ALLOWABLE DAMAGE 1
Page 103
54-50-02
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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL III

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS	C	B	NOT PERMITTED	NOT PERMITTED
STIFFENERS	C	B	NOT PERMITTED	SEE DETAIL IX

**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 7)**

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ALLOWABLE DAMAGE 1
54-50-02
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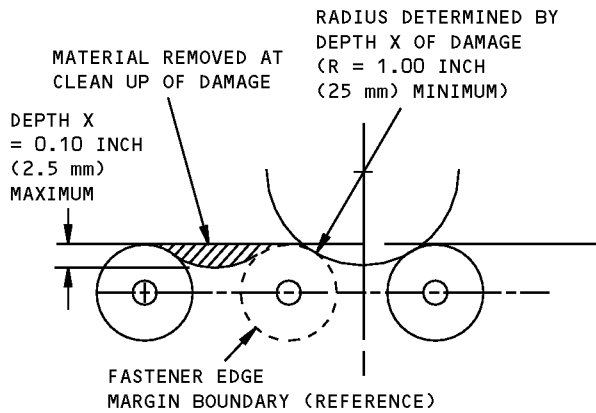
**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

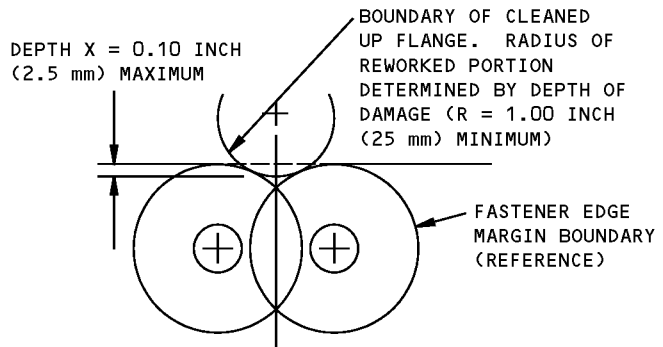
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-20.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.

- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAIL X.
- B** REMOVE DAMAGE AS SHOWN IN DETAILS IV, V AND VII.

- C** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAILS VIII AND IV.
- D** SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06.



DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

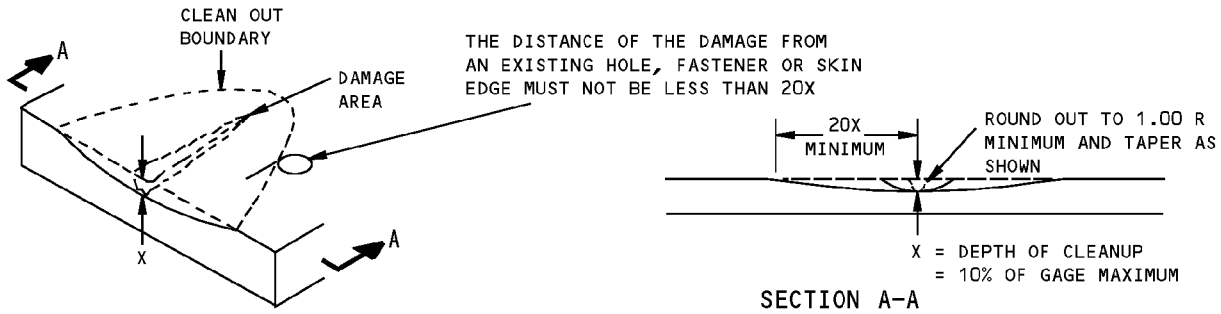


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

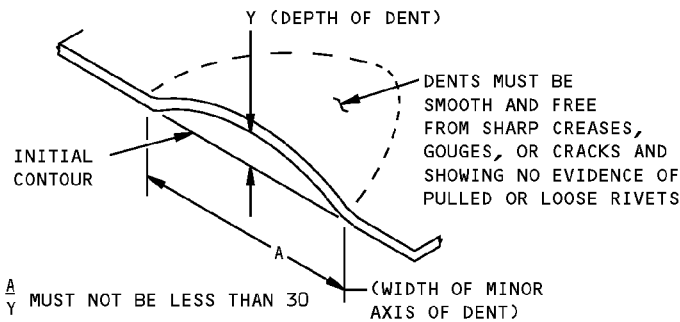
DETAIL IV

**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 7)**

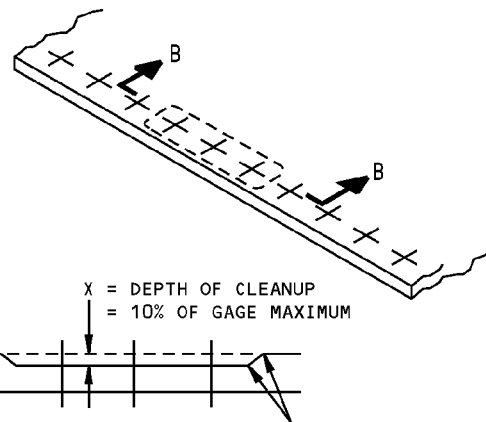
**767-300
STRUCTURAL REPAIR MANUAL**



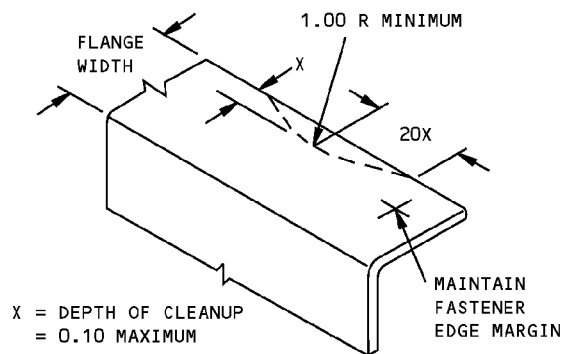
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL V**



**ALLOWABLE DAMAGE FOR DENT
DETAIL VI**



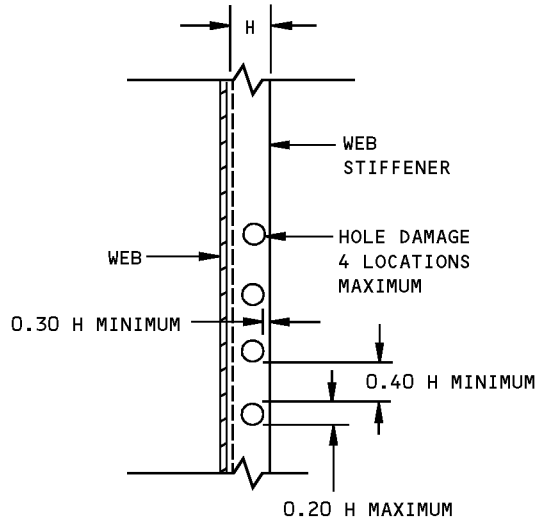
**CORROSION CLEANUP
DETAIL VII**



**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL VIII**

**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 7)**

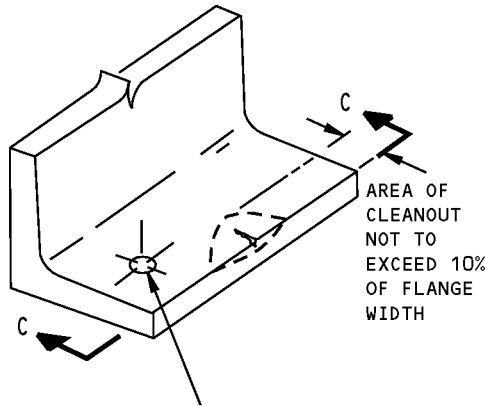
**767-300
STRUCTURAL REPAIR MANUAL**



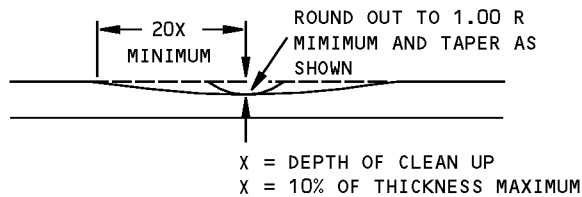
NOTE:
HOLE DAMAGE IS NOT PERMITTED IN THE STIFFENER FLANGE THAT IS FASTENED TO THE WEB. HOLE DAMAGE MUST NOT OCCUR IN MORE THAN 4 LOCATIONS. FILL ALL HOLES WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95 SEALANT.

H = WIDTH OF STIFFENER FLANGE

**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL IX**



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR EDGE MUST NOT BE LESS THAN 20X



SECTION C-C

**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL X**

**Allowable Damage - Strut Structure - JT9D-7R4 Engine
Figure 101 (Sheet 7 of 7)**



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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 2 - ATTACHMENT LINKAGE - JT9D-7R4 ENGINE

THE ATTACHMENT LINK ALLOWABLE DAMAGE
IN FIGURE 102 WAS MOVED TO 54-50-90.

Allowable Damage - Attachment Linkage JT9D-7R4 Engine
Figure 101

D634T210

ALLOWABLE DAMAGE 2
Page 101
54-50-02
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**767-300
STRUCTURAL REPAIR MANUAL**


REPAIR 1 - STRUT STRUCTURE - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

NOTE: This repair is for partially cracked member. If member is cracked completely through, replace member.

1. Stop drill end(s) of crack 0.25 dia.
2. Make the repair angle, form to contour of frame.
3. Assemble repair part and drill fastener holes.
4. Remove repair part.
5. Break sharp edges of repair part 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of the original part.
8. Apply one coat BMS 10-11, type 1 primer to all of the repair part in accordance with 51-27 of the 767 Maintenance Manual.
9. Install the repair parts making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.

FASTENER SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	ANGLE	1	0.063 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

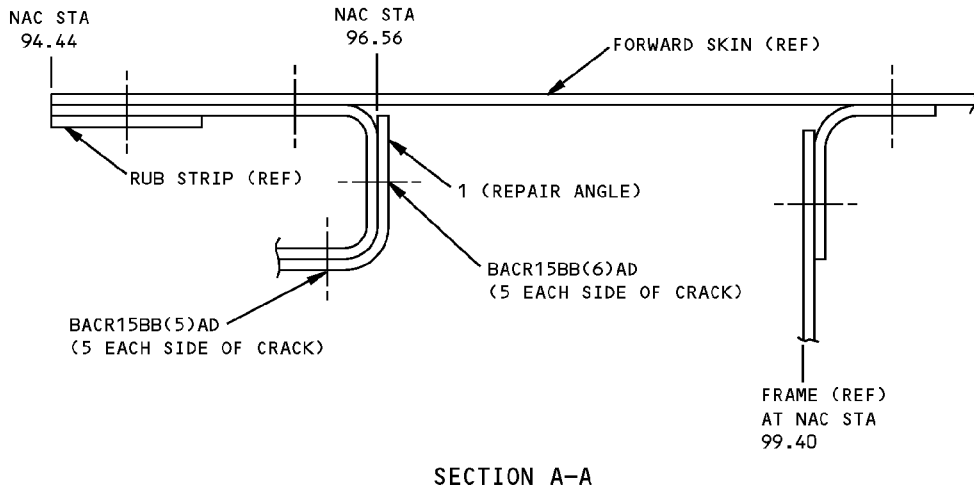
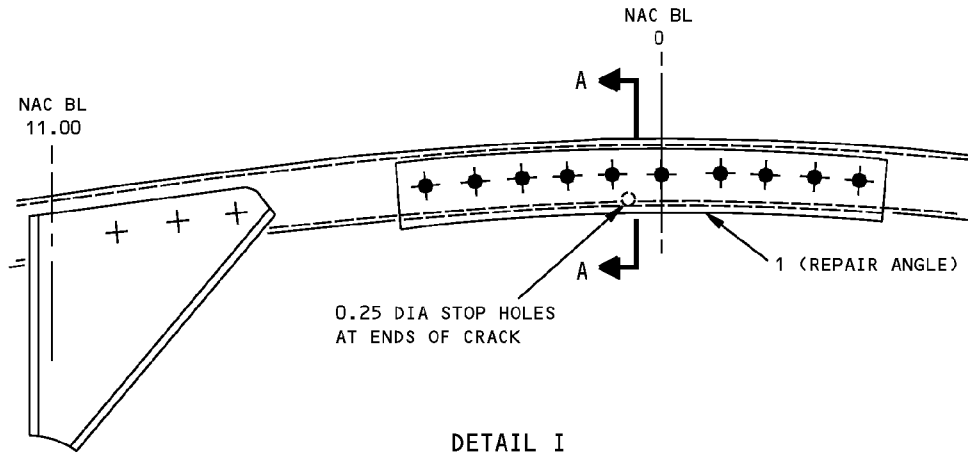
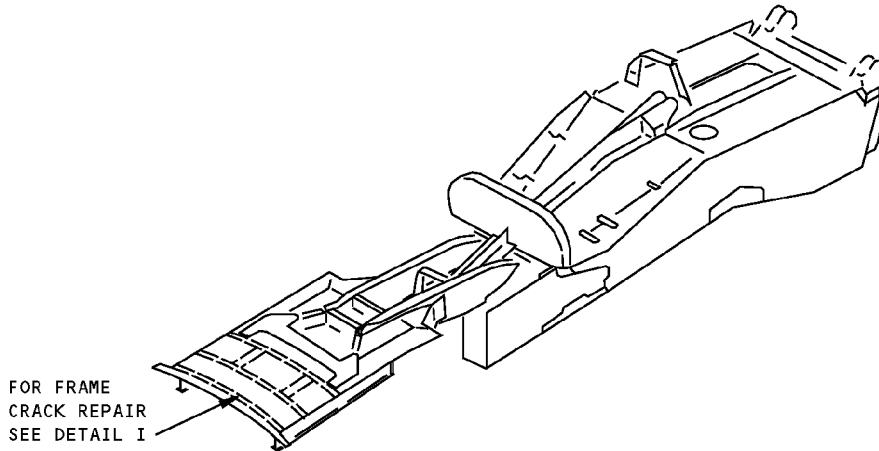
**Strut Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)**

D634T210

54-50-02

REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - STRUT FORWARD UPPER SPAR WEB CRACK REPAIR AT EQUIPMENT CUTOUTS - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO AIRPLANES WITH JT9D-7R4 ENGINES.
THIS REPAIR IS APPLICABLE TO BOTH CUTOUTS BETWEEN NACELLE STA 172.00 AND 192.00.

REPAIR INSTRUCTIONS

NOTE: Detail III is for the repair at the forward cutout for the IDG cables. Detail IV is for the repair at the aft cutout for other electrical harnesses.

CAUTION: BE CAREFUL WHEN YOU REMOVE THE POWER FEEDERS AND WIRE BUNDLES. THE EDGES OF BRACKETS AND ROUTING HOLES CAN CAUSE DAMAGE.

1. Refer to Drawing 312T4280 for instructions to get access to the damaged area.
2. Use a 0.25 inch (6 mm) diameter drill bit to stop drill cracks as necessary. Refer to SRM 51-10-00.
3. Make the repair parts.

NOTE: Refer to Table I when you do the repair for the forward cutout.

Refer to Table II when you do the repair for the aft cutout.









Refer to Detail III or Detail IV and Drawing 312T4280 to determine which parts are removed and used again.
4. Temporarily assemble the repair parts and drill the fastener holes. Maintain edge margins. See Detail III and Detail IV. **B**
5. Disassemble the repair parts.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts.
7. Apply a chemical conversion coating to the aluminum repair parts and to the bare surfaces of the repair area. Refer to SRM 51-20-01.
8. Apply two layers of BMS 10-11 Type I primer to the repair parts and to the bare surfaces of the repair area. Refer to SOPM 20-44-04.
9. Install parts with BMS 5-63 sealant. Fillet seal edges of the repair area.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Apply a layer of BMS 10-11, Type II finish to the repair area.
12. Apply a layer of BMS 3-23, Type 2 corrosion inhibiting compound followed by a layer of BMS 3-26 corrosion inhibiting compound to the outer surface of the repair area. As an alternative, apply a layer of BMS 3-29 corrosion inhibiting compound. Refer to SRM 51-10-02.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - DRAWING 312T4280 FOR INSTRUCTIONS TO GET ACCESS TO THE DAMAGED AREA.
 - SOPM 20-44-04 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS

- A** MAKE THE DIAMETER OF THE HOLE FOR THE POWER FEEDER WIRE BUNDLE IN THE PART 1 DOUBLER THE SAME AS THE WIDTH OF THE INITIAL SQUARE HOLE IN THE WEB.
- B** REMOVE THE INITIAL NUT PLATES. DOUBLE FLUSH PLUG THE NUT PLATE ATTACHMENT HOLES IN THE WEB. DRILL THE HOLES BETWEEN THE NUT PLATE ATTACHMENT HOLES TO 0.218 INCH (5.5 mm)/0.229 INCH (5.8 mm) DIAMETER.

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX8K()X HEX DRIVE BOLT WITH A BACC30X8 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15BA3AD FLUSH HEAD SOLID RIVET OR EQUIVALENT. SHAVE TO DOUBLE FLUSH PLUG HOLES.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MC6AK() HEX DEIVE BOLT WITH A BACC30X6 COLLAR. AS AN ALTERNATIVE, INSTALL A BACB30MC6A HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A NAS1801-3 BOLT WITH TWO NAS1149F0332P WASHERS AND A MS21043-3 OR EQUIVALENT NUT. (USE ONE WASHER ON THE HEAD SIDE AND THE OTHER ON THE NUT SIDE).

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 7)**

STRUCTURAL REPAIR MANUAL

REPAIR MATERIAL			
PART	QTY	MATERIAL	
1	DOUBLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
2	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
3	TAPERED FILLER	4	CUT LENGTH AS REQUIRED FROM 311T3180-18
4	STIFFENER	1	0.090 INCH, 15-5PH, HT TR 180-200 KSI OR ORDER BLANK STIFFENER 311T3110U14 (WITH NO PILOT HOLES)
5	FILLER	2	0.063 INCH, 15-5PH, HT TR 180-200 KSI
6	SHIM	2	CUT LENGTH AS REQUIRED FROM BACS40R012U013
7	SPLICE	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
8	SHIM	1	CUT LENGTH AS REQUIRED FROM BACS40R022W024
9	ANGLE	1	0.063 INCH, 15-5PH, HT TR 180-200 KSI (SEE DRAWING 015T1580-13)
10	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
11	SHIM	1	CUT LENGTH AS REQUIRED FROM BACS40R011T011

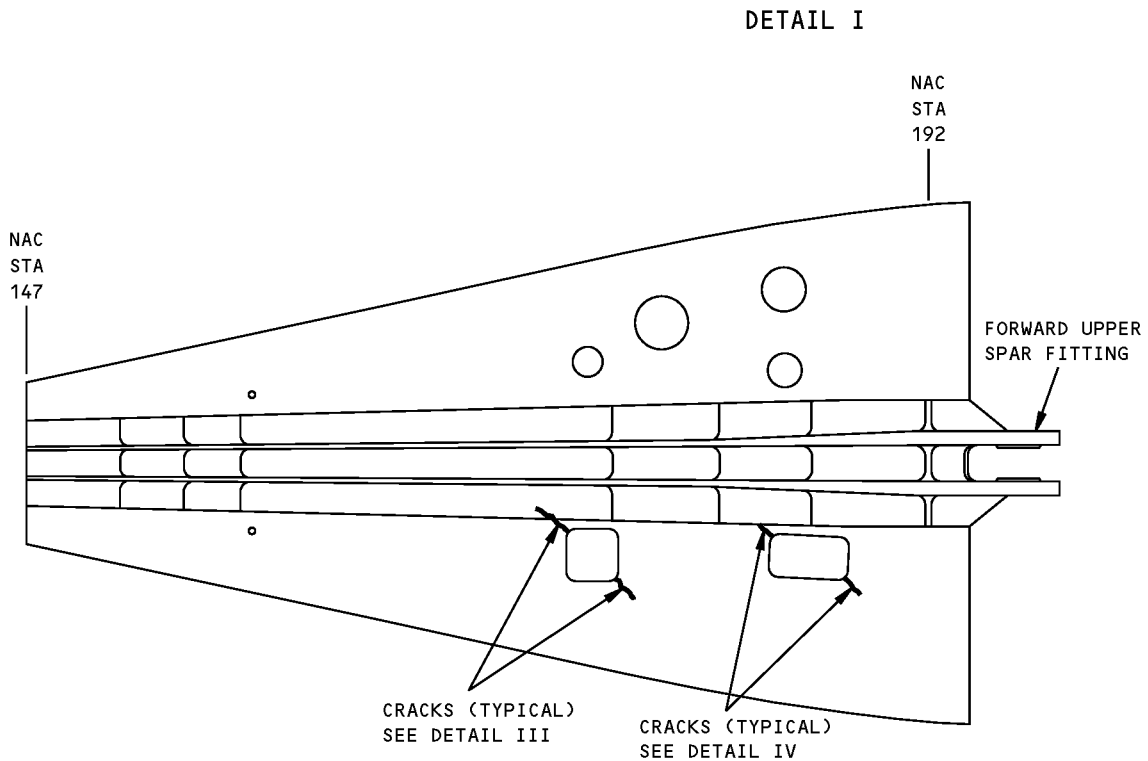
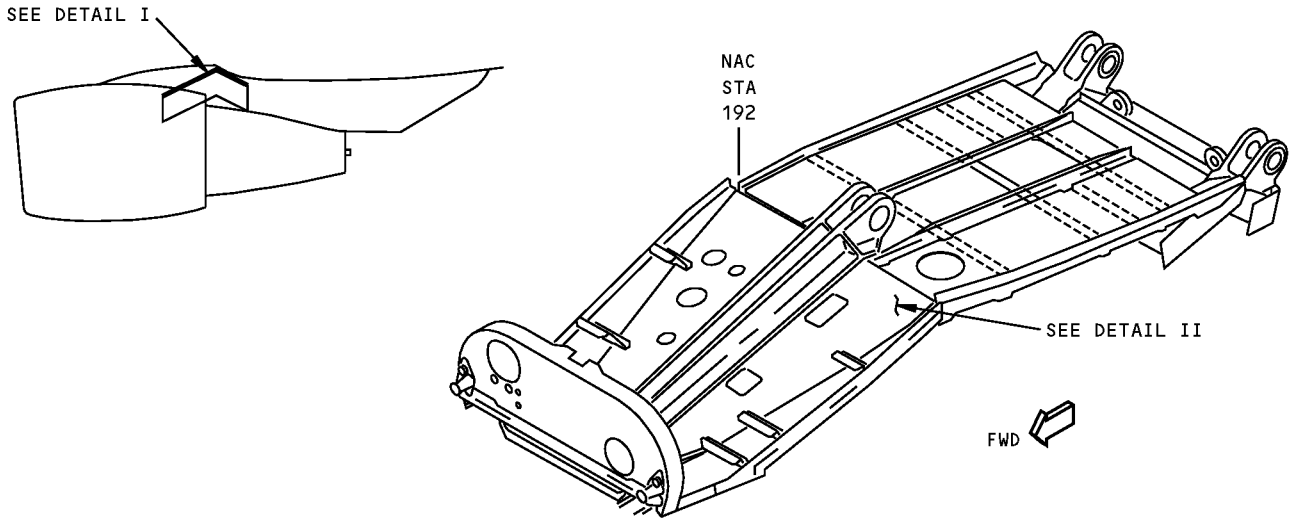
TABLE I

REPAIR MATERIAL			
PART	QTY	MATERIAL	
12	DOUBLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
13	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
14	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
15	FILLER	2	0.063 INCH, 15-5PH, HT TR 180-200 KSI
16	SHIM	2	CUT LENGTH AS REQUIRED FROM BACS40R012U013
17	TAPERED FILLER	4	CUT LENGTH AS REQUIRED FROM 311T3180-18
18	STIFFENER	1	0.090 INCH, 15-5PH, HT TR 180-200 KSI OR ORDER BLANK STIFFENER 311T3110U14 (WITH NO PILOT HOLES)

TABLE II

Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 7)

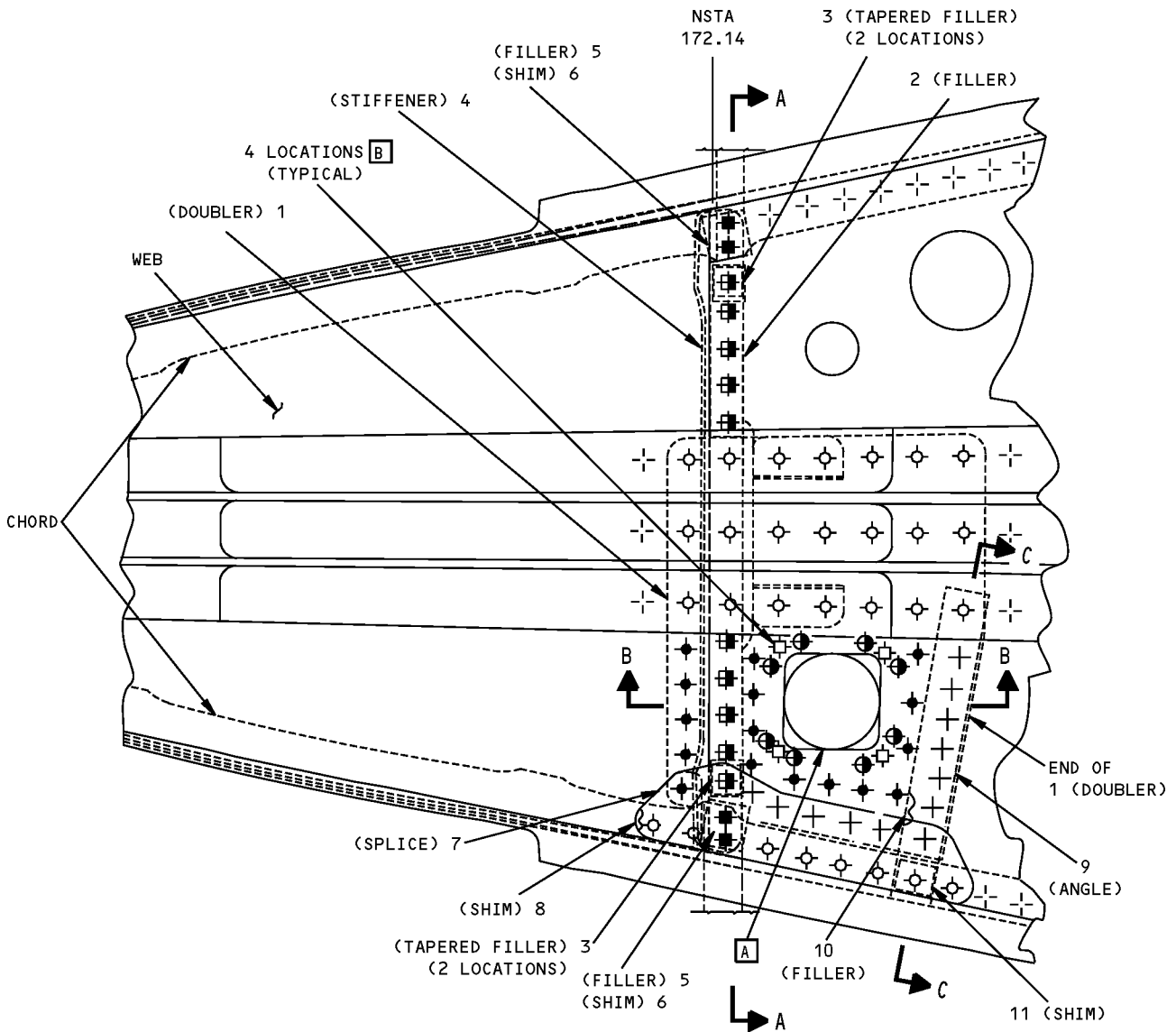
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 7)**

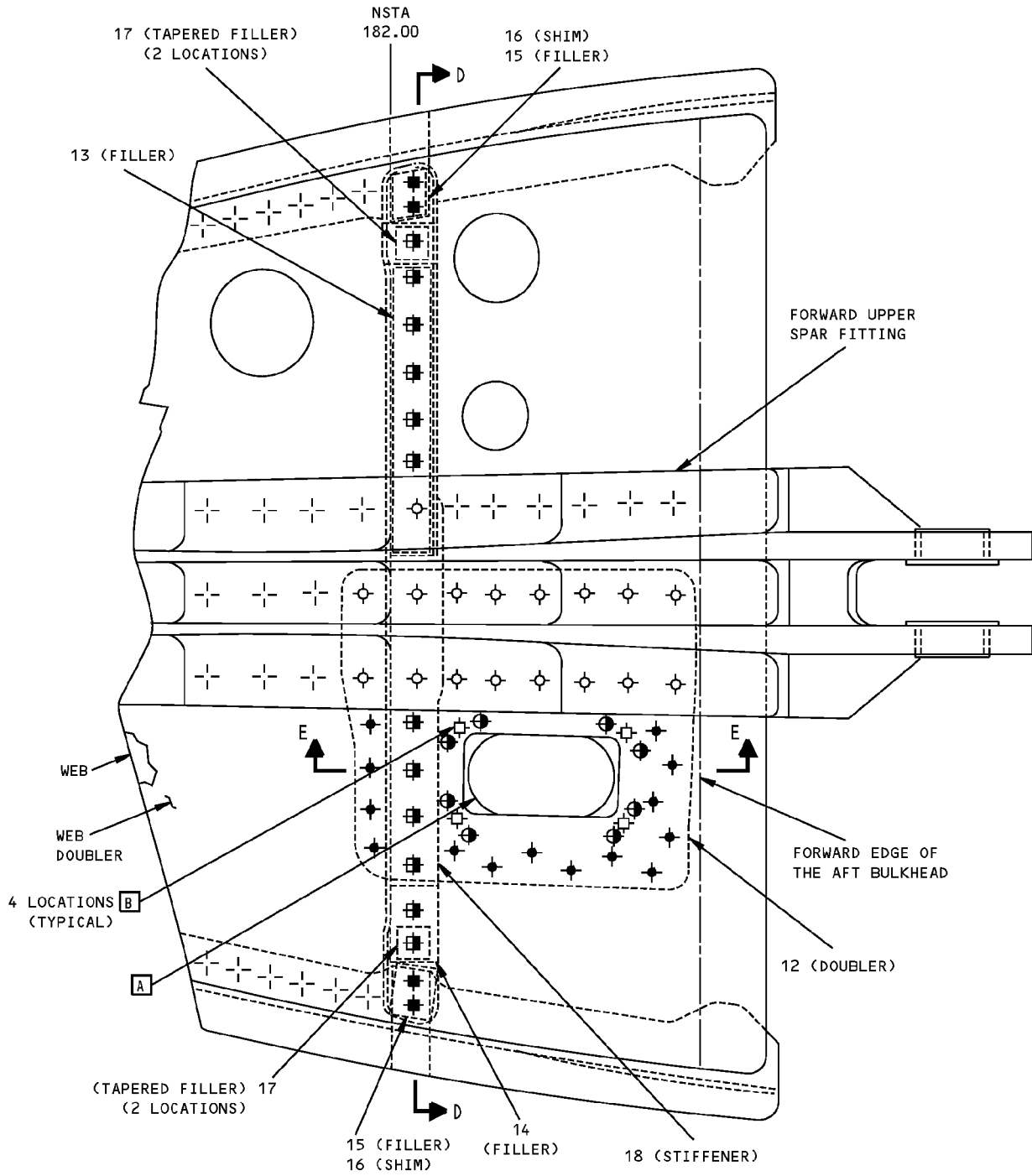
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 7)**

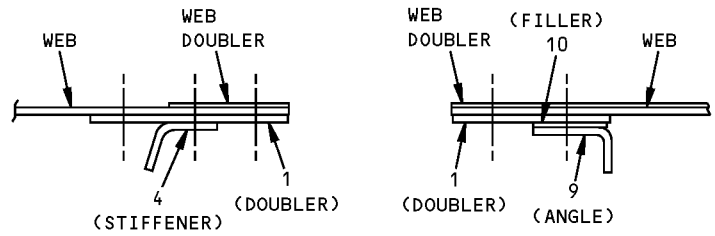
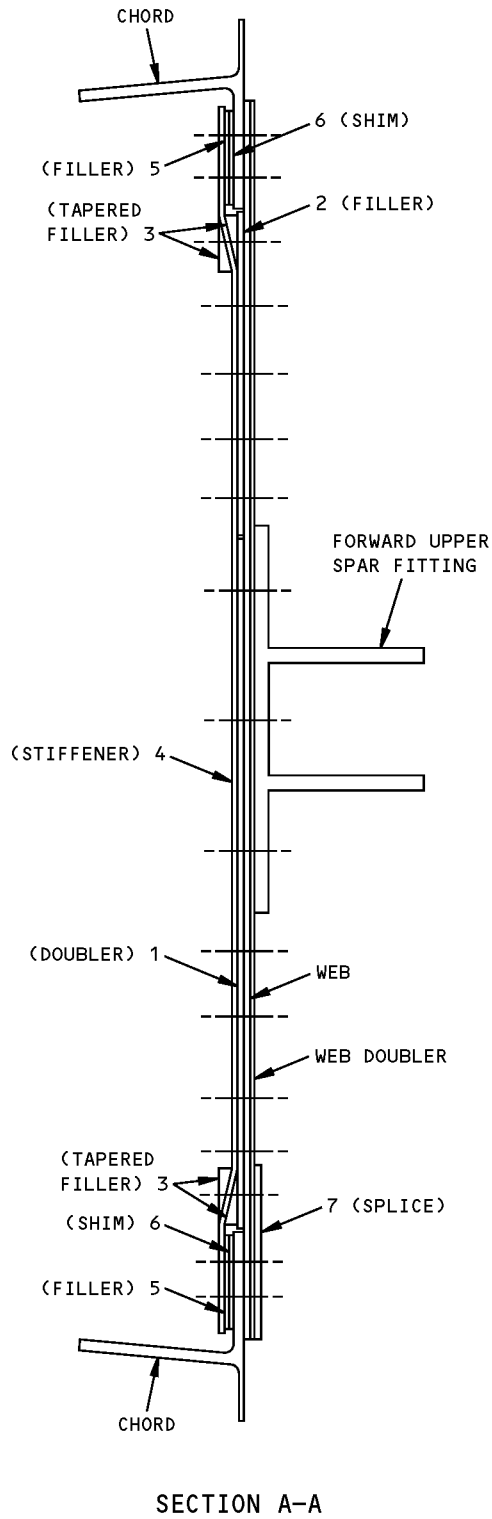
**767-300
STRUCTURAL REPAIR MANUAL**



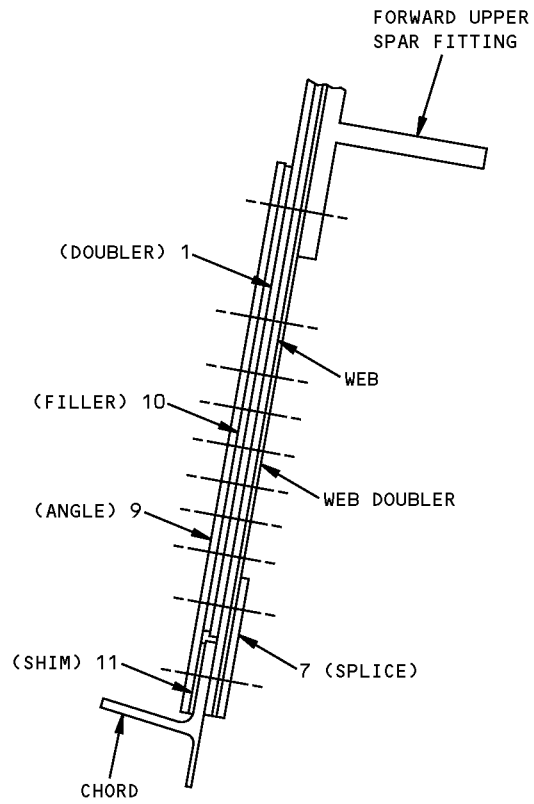
DETAIL IV

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



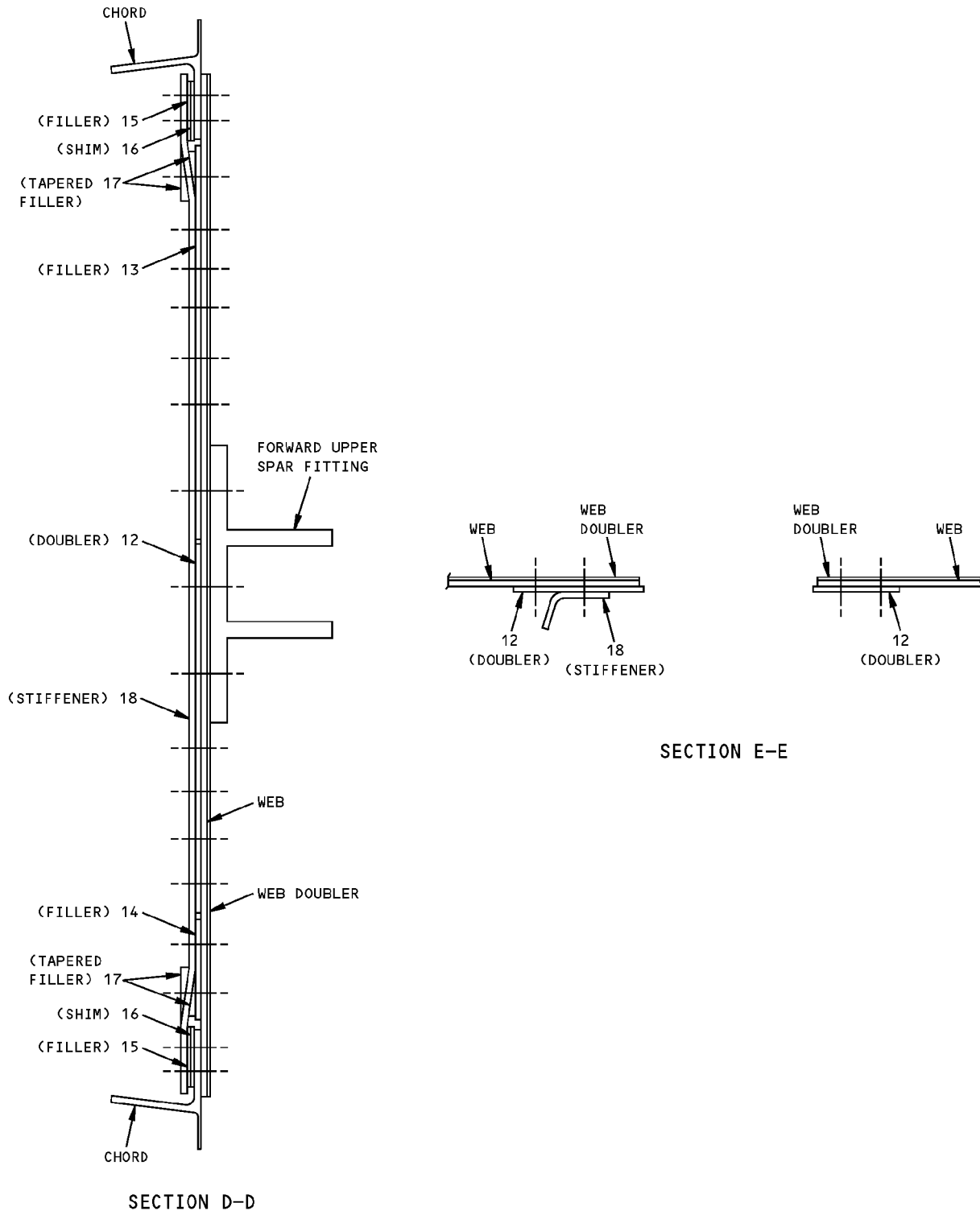
SECTION B-B



SECTION C-C

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 7)**

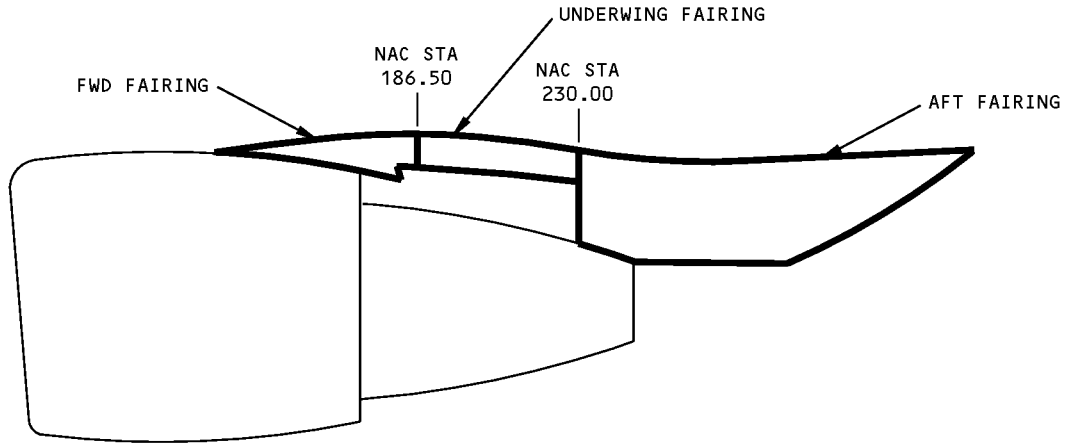
**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - JT9D-7R4 Engine
Figure 201 (Sheet 7 of 7)**

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STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - STRUT FAIRING SKIN - JT9D-7R4 ENGINE



SEE DETAIL I FOR FAIRING ASSEMBLY

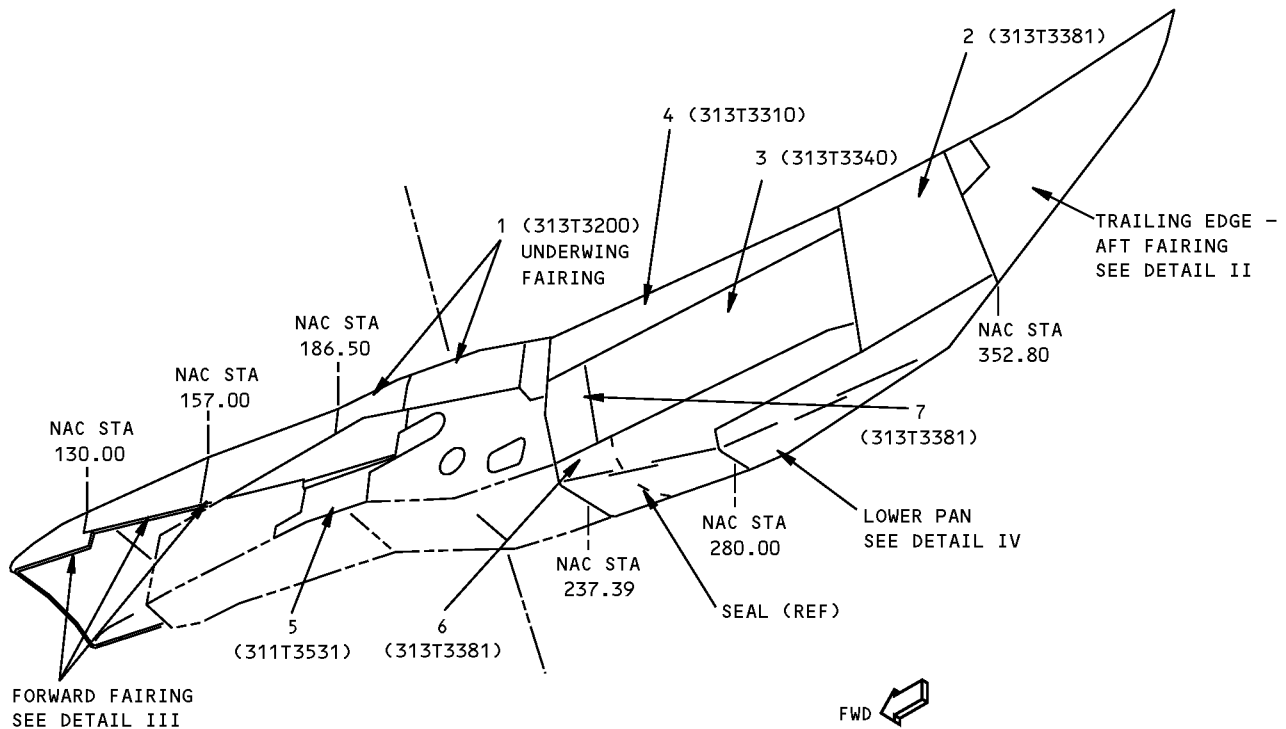
NOTES

- A** PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION
- B** MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS
- C** ARAMID/EPOXY FABRIC PER BMS 8-218, STYLE 285, 350°F (177°C) CURE
- D** FOR AIRPLANES NOT LISTED IN **E** OR **F**
- E** FOR CUM LINE NUMBERS: 229 AND ON
- F** FOR AIRPLANES INCORPORATING SB 767-54-0017

Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 8)

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWGS
313T3300
313T3100



**FAIRING ASSEMBLY
DETAIL I**

**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 8)**

LIST OF
MATL

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STRUCTURAL REPAIR MANUAL

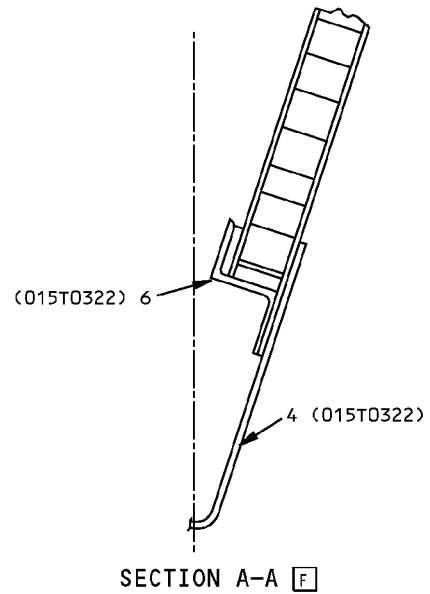
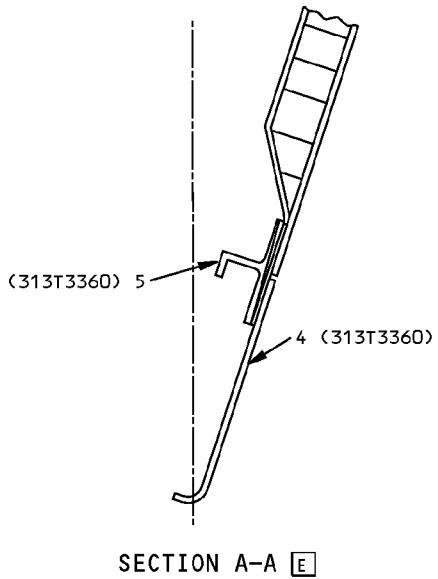
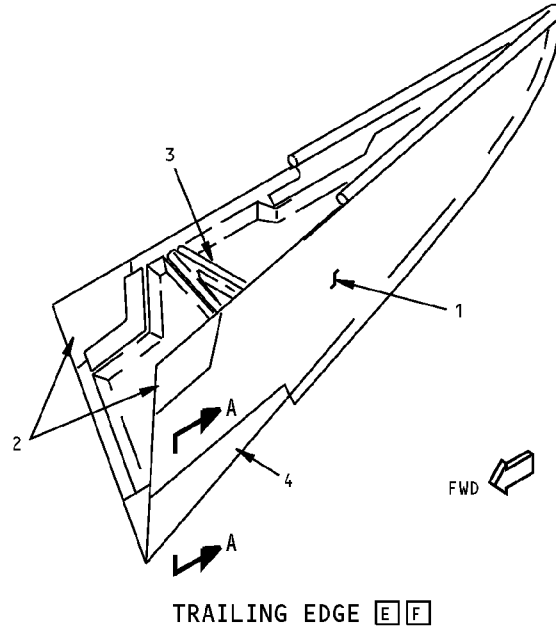
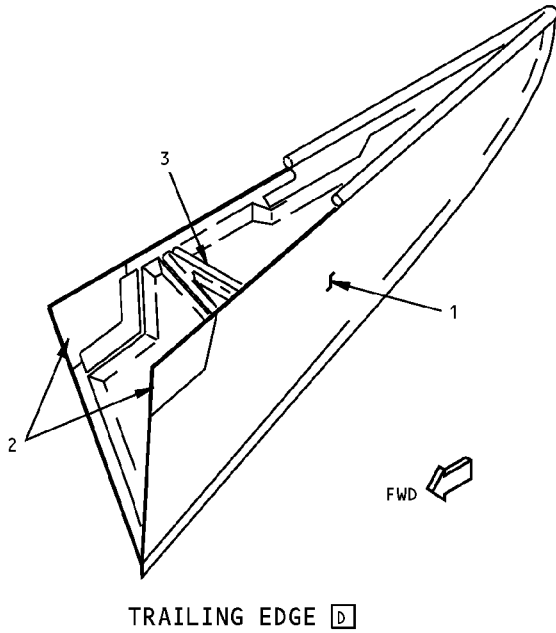
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL V HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	
2	PANEL SKIN - INNER SKIN - OUTER CORE	0.016 0.016	CLAD 2024-T3 CLAD 2024-T3 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N	
3	DOOR SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VI ALUMINUM FOIL 425-3M PER MIL-T-23397-B ON INTERIOR HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS I, TYPE I, GRADE 12.0	
4	SKIN BONDED	0.063 0.040	CLAD 2024-T3 2024-T3	
5	FAIRING SKIN CORE EXTERNAL FILLER		ARAMID FABRIC/EPOXY HONEYCOMB SANDWICH SEE DETAIL VII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, TYPE V, CLASS IV, GRADE 4.0 ARAMID FABRIC/EPOXY PER BMS 8-218, STYLE 285	
6	PANEL SKIN - INNER SKIN - OUTER DOUBLER DOUBLER CORE DENSE CORE	0.016 0.016 0.020 0.032	CLAD 2024-T3 CLAD 2024-T81 CLAD 2024-T81 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N ALUMINUM HONEYCOMB PER MIL-C-7438E 22-1 1/8-60N (5052)	
7	PANEL SKIN - INNER SKIN - OUTER DOUBLER	0.040 0.032 0.036	CLAD 2024-T81 CLAD 2024-T81 CLAD 2024-T81	

LIST OF MATERIALS FOR DETAIL I

Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 8)

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



**TRAILING EDGE - AFT FAIRING
DETAIL II**



**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 4 of 8)**

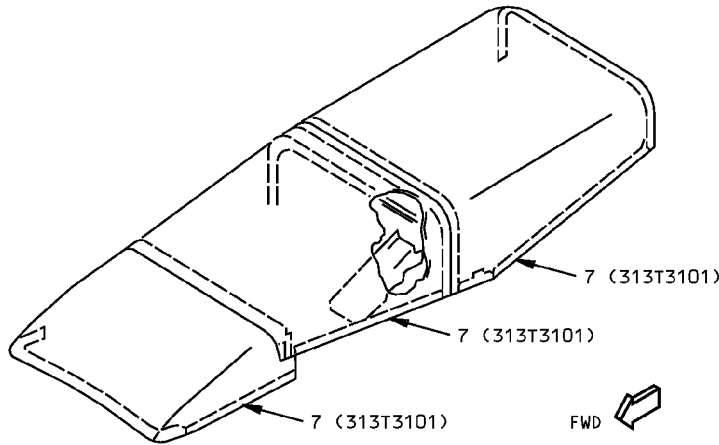
IDENTIFICATION 1
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54-50-70

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3100



**FORWARD FAIRING
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VIII ALUMINUM FOIL 425-3M PER MIL-T-23397B ON INTERIOR SURFACE HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0	
2	DOOR	0.063	CLAD 2024-T3	
3	BULKHEAD	0.063	2024-T42 OPTIONAL: CLAD 2024-T42	
4	SKIN	0.050	INCONEL 625	E F
5	TEE		BAC1506-1934 2024-T3511	E
6	ZEE		AND10138-0605 2024-T3511	F
7	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL IX NONMETALLIC (NOMEX) HONEYCOMB PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	

LIST OF MATERIALS FOR DETAILS II AND III

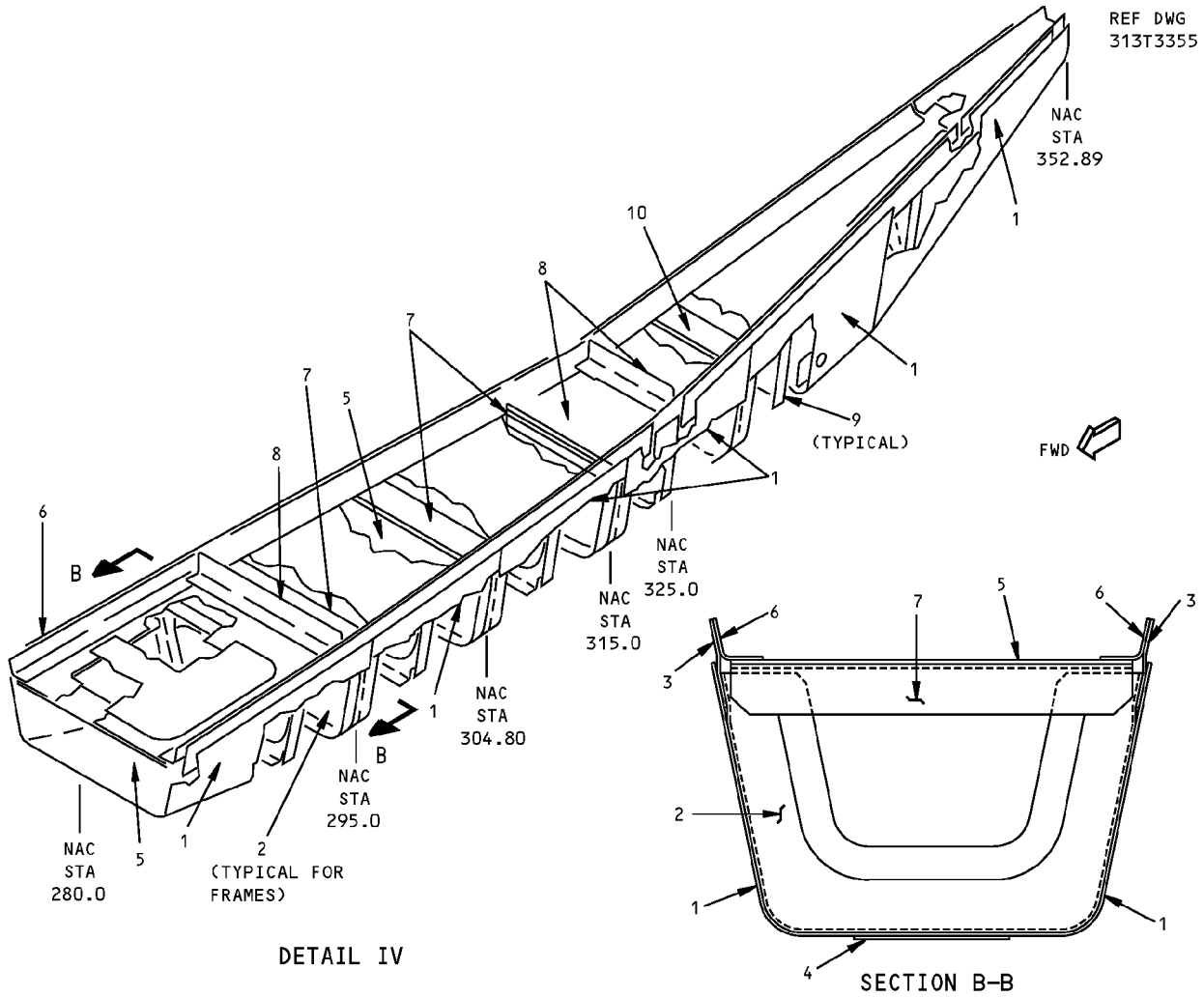
**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 5 of 8)**

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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV

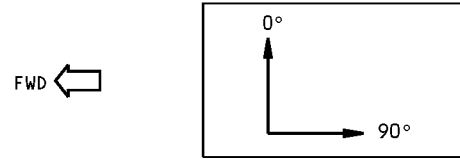
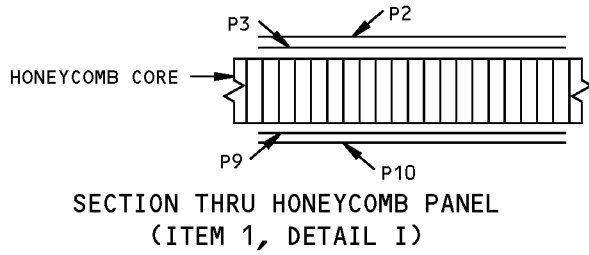
SECTION B-B

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.050	INCONEL 625	
2	FRAME	0.063	INCONEL 625	
3	SPLICE	0.063	2024-T42	
4	SPLICE	0.063	INCONEL 625	
5	WEB ASSY WEB (2)	0.025	2024-T3 (BONDED ASSY)	
6	ANGLE	0.063	2024-T42	
7	TEE		AND10136-2006 7075-T6511	
8	ANGLE	0.050	2024-T42	
9	RIB	0.050	INCONEL 625	
10	TEE		AND1506-928 7075-T73511	

LIST OF MATERIALS FOR DETAIL IV

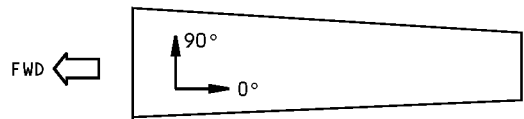
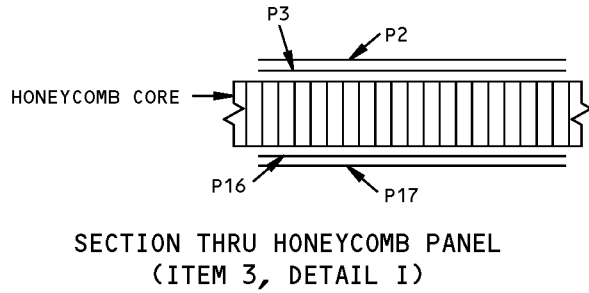
**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 6 of 8)**

**767-300
STRUCTURAL REPAIR MANUAL**



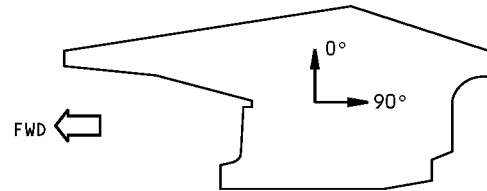
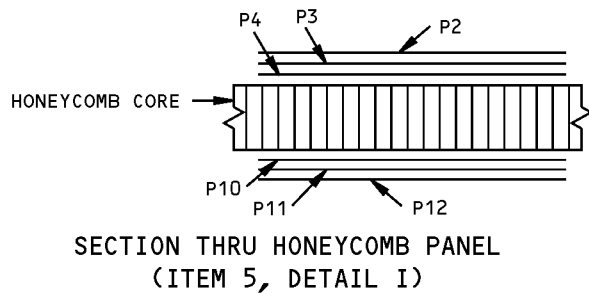
SEE TABLE I FOR PLY ORIENTATION AND MATERIAL
PLY ORIENTATION DIAGRAM

DETAIL V



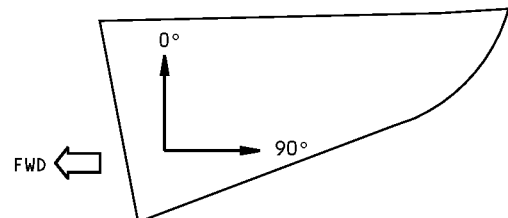
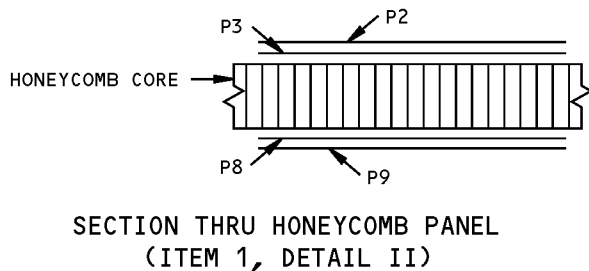
SEE TABLE I FOR PLY ORIENTATION AND MATERIAL
PLY ORIENTATION DIAGRAM

DETAIL VI



SEE TABLE I FOR PLY ORIENTATION AND MATERIAL
PLY ORIENTATION DIAGRAM

DETAIL VII

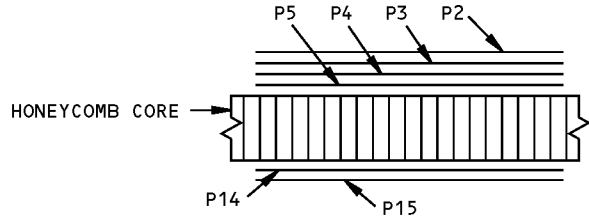


SEE TABLE I FOR PLY ORIENTATION AND MATERIAL
PLY ORIENTATION DIAGRAM

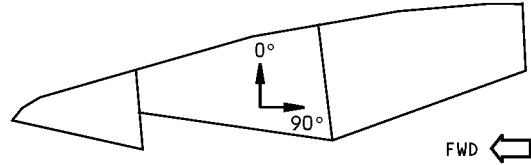
DETAIL VIII

**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 7 of 8)**

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STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL
(ITEM 7, DETAIL III)



SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM

DETAIL IX

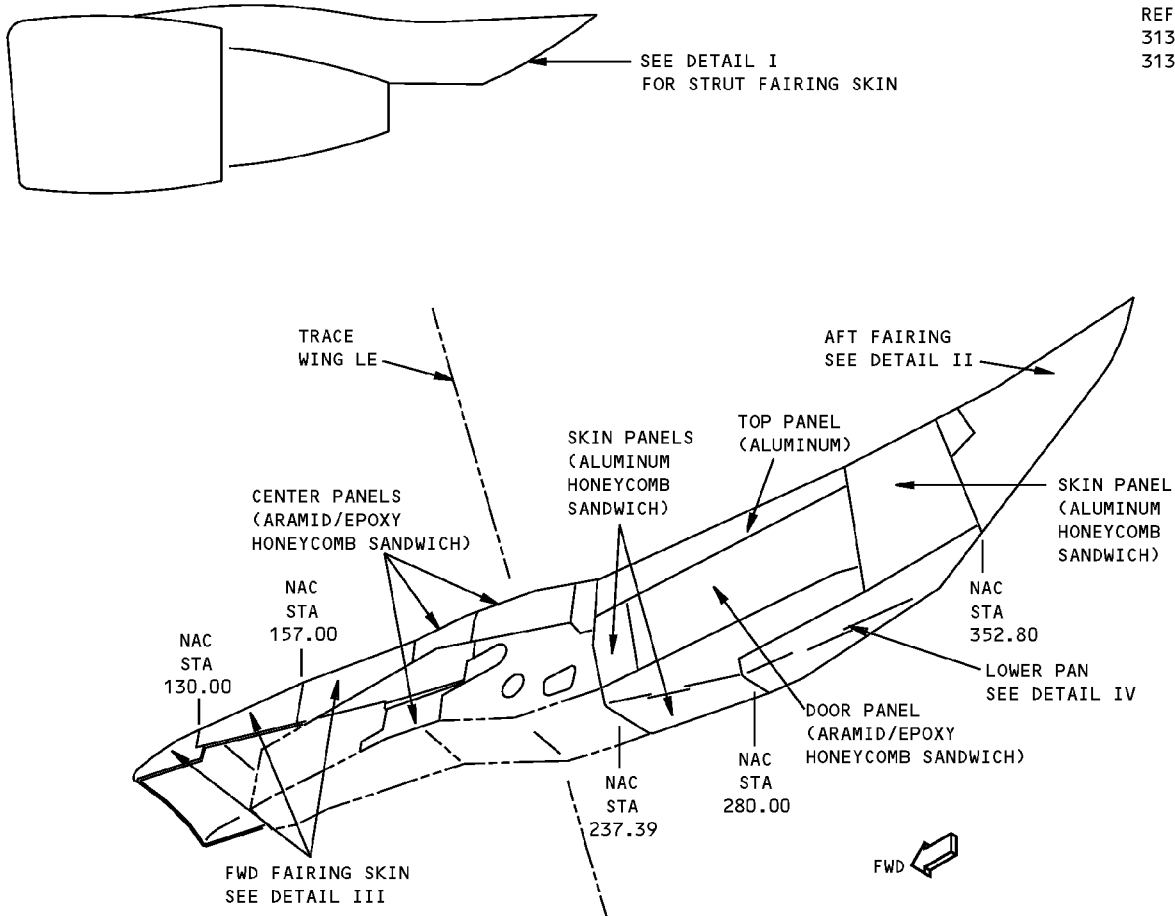
ITEM	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1 DETAIL I	P2,P3,P9, P10	C	0° OR 90° OPTIONAL
3 DETAIL I	P2,P3,P16, P17	C	0° OR 90° OPTIONAL
5 DETAIL I	P2,P3,P4, P10,P11,P12	C	0° OR 90° OPTIONAL
1 DETAIL II	P2,P3,P8, P9	C	0° OR 90° OPTIONAL
7 DETAIL III	P2,P3,P4,P5, P14,P15	C	0° OR 90° OPTIONAL

TABLE I ^B

**Strut Fairing Skin Identification - JT9D-7R4 Engine
Figure 1 (Sheet 8 of 8)**

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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING SKIN - JT9D-7R4 ENGINE



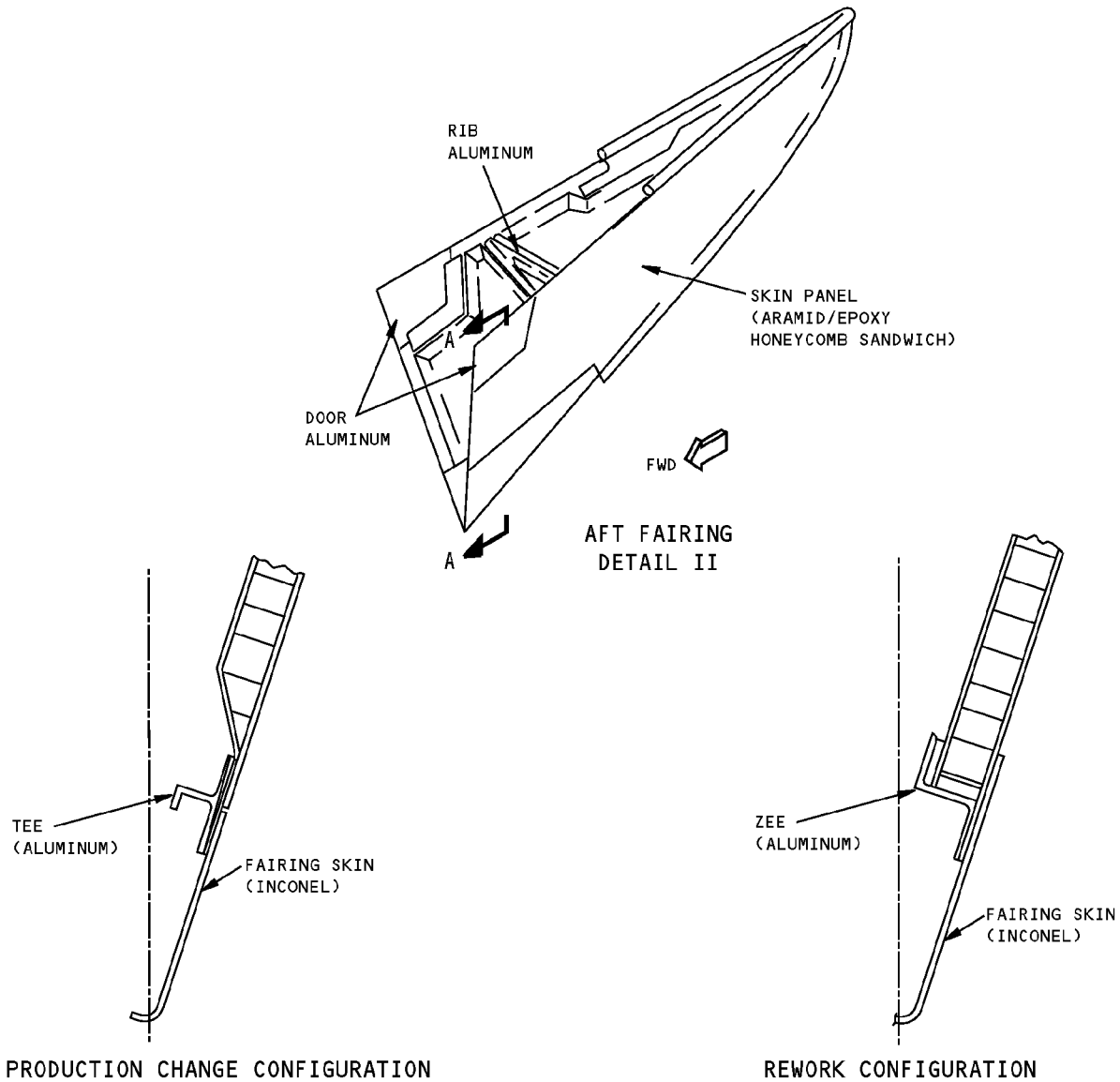
REF DWGS
313T3300
313T3100

DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANELS	F	B	J	D	E
TOP PANELS	A	B	SEE DETAIL VII	C	—
CENTER PANELS	N	G	H	I	E
DOOR PANEL L	N	G	H	I	E

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

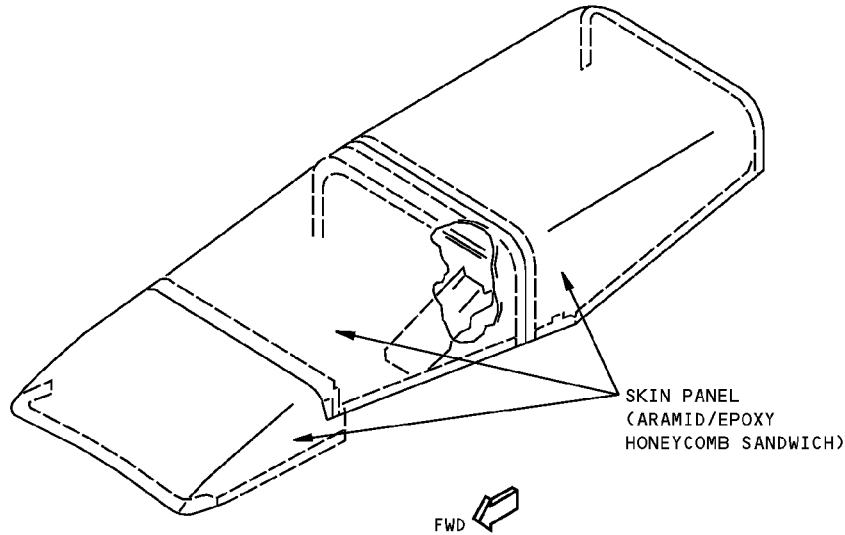


SECTION A-A

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E
DOOR	A	B	SEE DETAIL VII	C	---
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	---
TEE, ZEE	O	B	NOT ALLOWED	SEE DETAIL XI	---
FAIRING SKIN	A	B	SEE DETAIL VII	M	---

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

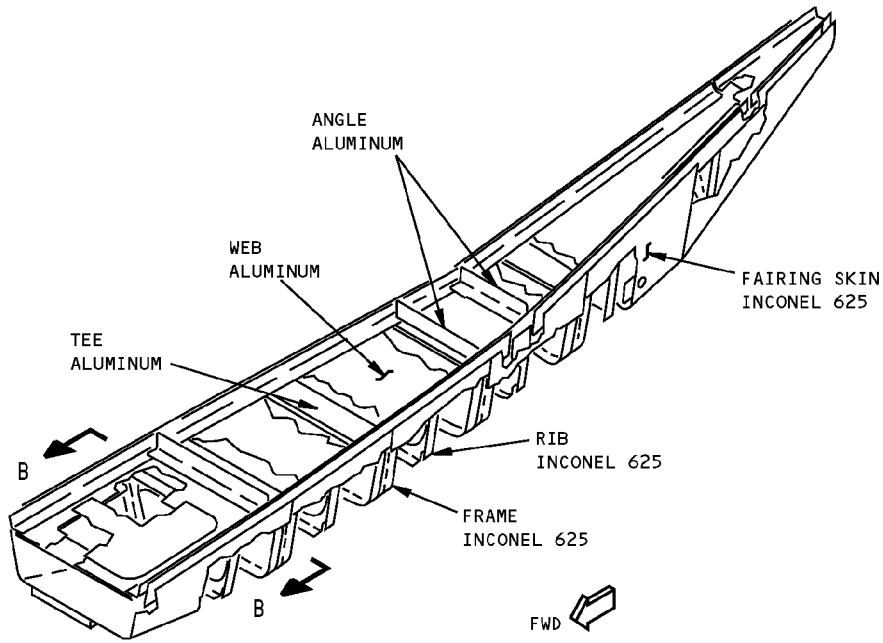


**FWD FAIRING
DETAIL III**

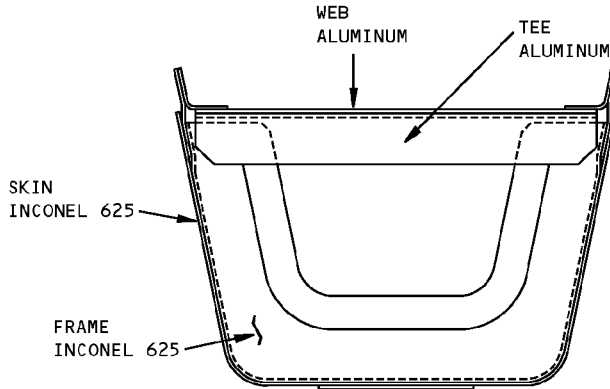
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV



SECTION B-B

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
FAIRING SKIN	A	B	SEE DETAIL VII	M	---
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	---
FRAME	K	B	NOT ALLOWED	SEE DETAIL XI	---
WEB	A	B	SEE DETAIL VII	C	---
ANGLE	K	B	NOT ALLOWED	SEE DETAIL XI	---
TEE	O	B	NOT ALLOWED	SEE DETAIL XI	---

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 7)**

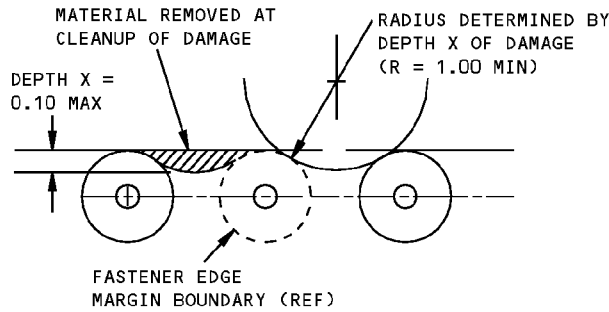
STRUCTURAL REPAIR MANUAL

NOTES

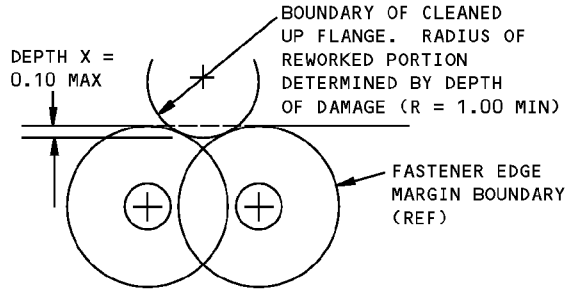
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFER TO 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND IX
 - B** REMOVE DAMAGE PER DETAILS V, VI AND VIII
 - C** CLEAN PUNCTURE OUT WITH 0.25 INCH (6 mm) MAX DIA HOLE AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
 - D** 1.00 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE. **P**
 - E** 2.00 INCHES (50 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.10 INCH (2.5 mm) DELAMINATION FROM EDGE IS ALLOWED. **P**
 - F** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT OF AREA AND MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER CRACK. DRILL 0.19 INCH (5 mm) DIA STOP HOLES AT END OF CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
 - G** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. CLEAN UP EDGE DAMAGE PER DETAILS V AND IX. **P**
 - H** 2.00 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION OR FIBER DAMAGE. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER DENT.
 - I** 1.00 INCH (25 mm) MAX DIA ALLOWED PROVIDED DAMAGE IS MIN OF 3 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **P**
 - J** 2.00 INCHES (50 mm) DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6.00 INCHES (15 cm) FROM ANY OTHER DENT
 - K** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND X
 - L** NO DAMAGE ALLOWED IN AN AREA 1.50 INCHES (38 mm) AROUND HINGE OR LATCH FITTINGS. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE
 - M** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER DAMAGE TO BE REPAIRED
 - N** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT AND MIN OF 6.00 INCHES (15 cm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
 - O** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND XII
 - P** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK

Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**

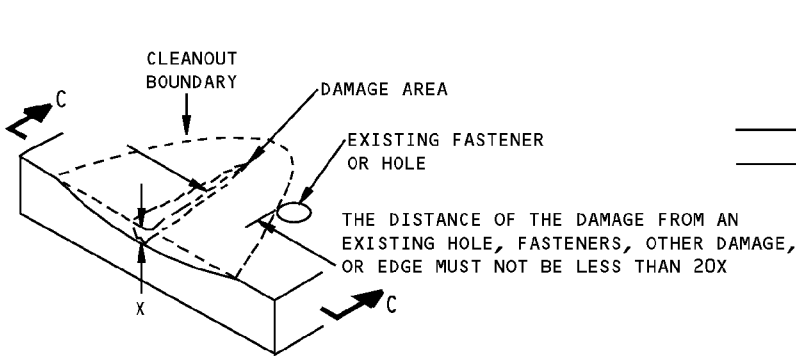


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



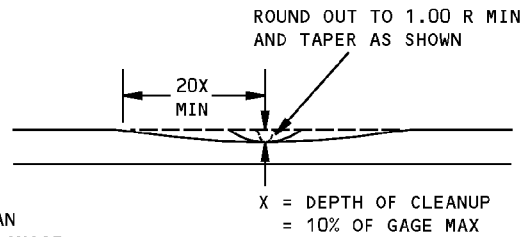
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL V

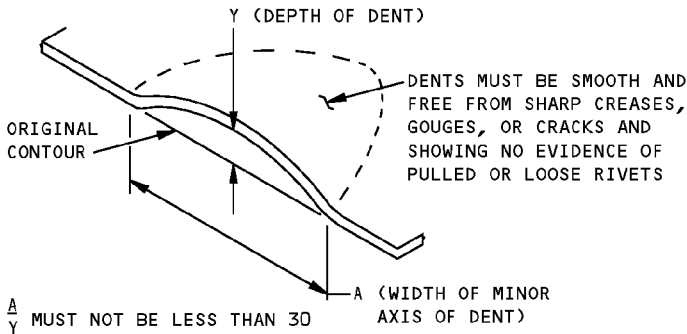


REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

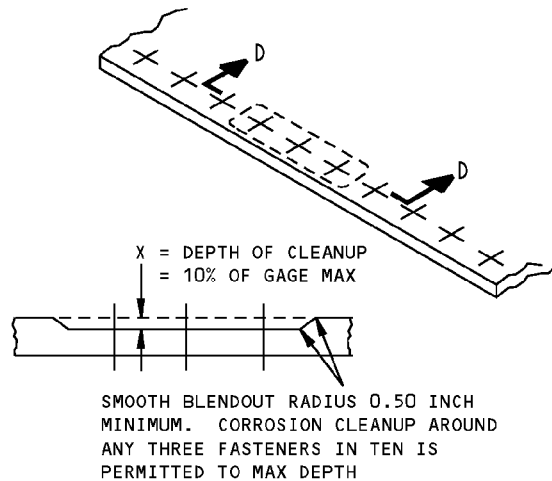
DETAIL VI



SECTION C-C



**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**

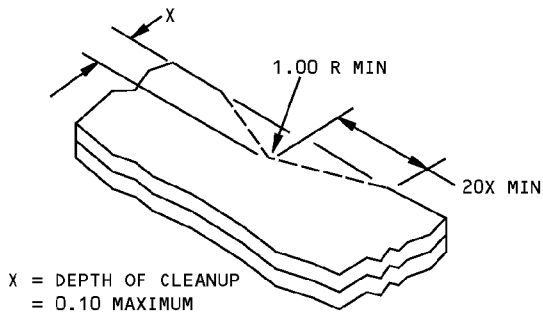


SECTION D-D

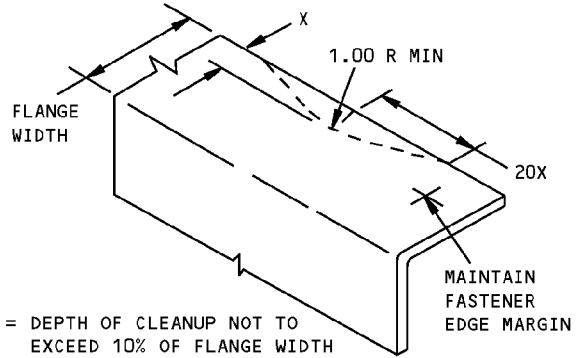
**CORROSION CLEANUP
DETAIL VIII**

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 7)**

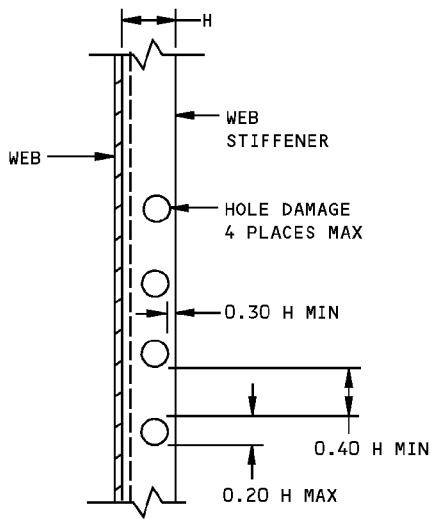
**767-300
STRUCTURAL REPAIR MANUAL**



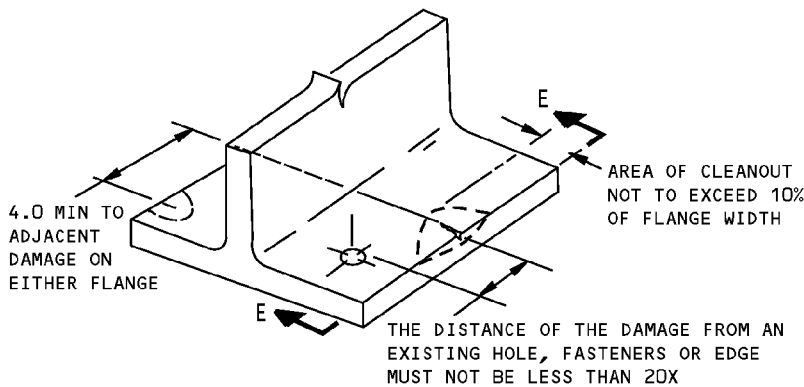
DETAIL IX



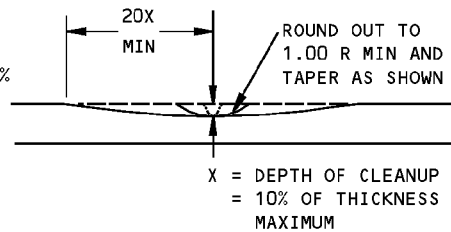
**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL X**



**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB AND FAIRING STIFFENERS
DETAIL XI**



**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL XII**



SECTION E-E

**Allowable Damage - Strut Fairing Skin - JT9D-7R4 Engine
Figure 101 (Sheet 7 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART - JT9D-7R4 ENGINE

SERVICE BULLETIN REPAIRS

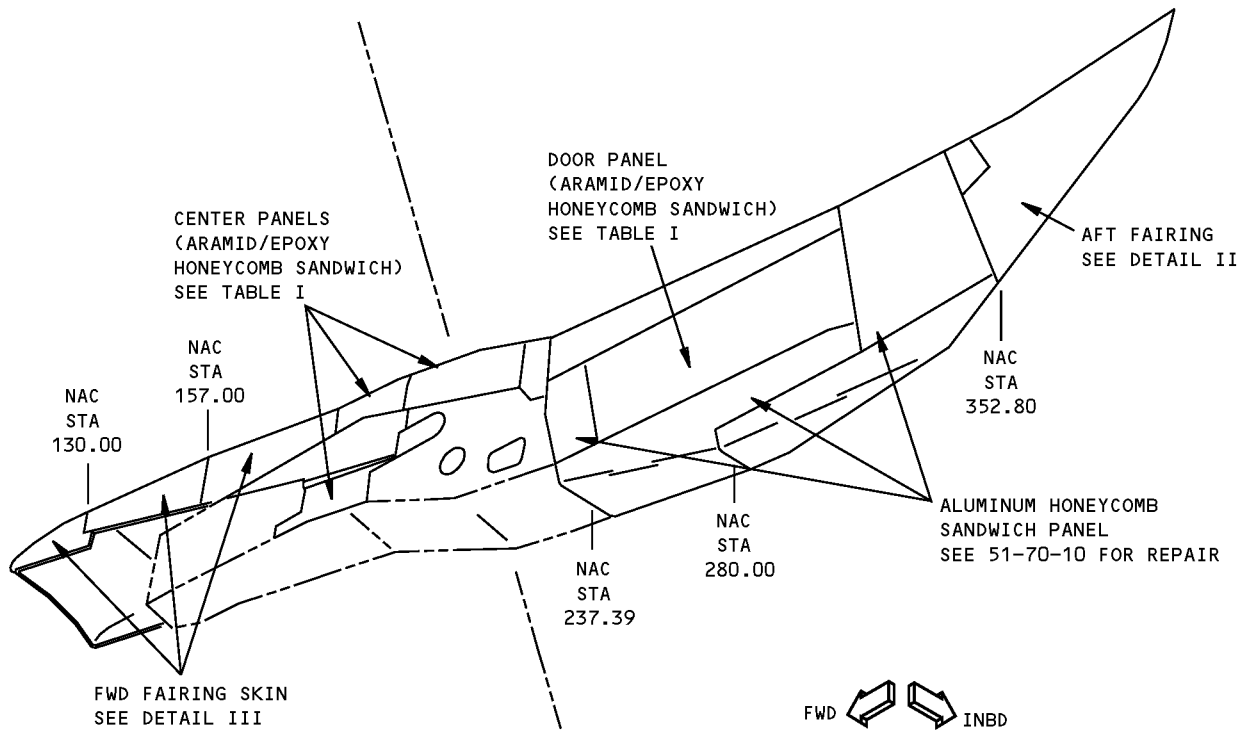
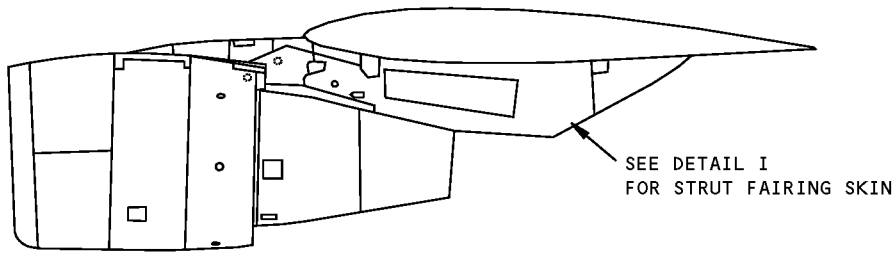
The following service bulletins contain repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
AFT TE PANEL	1 THRU 187	767-54-0017

**Service Bulletin Repair Chart
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

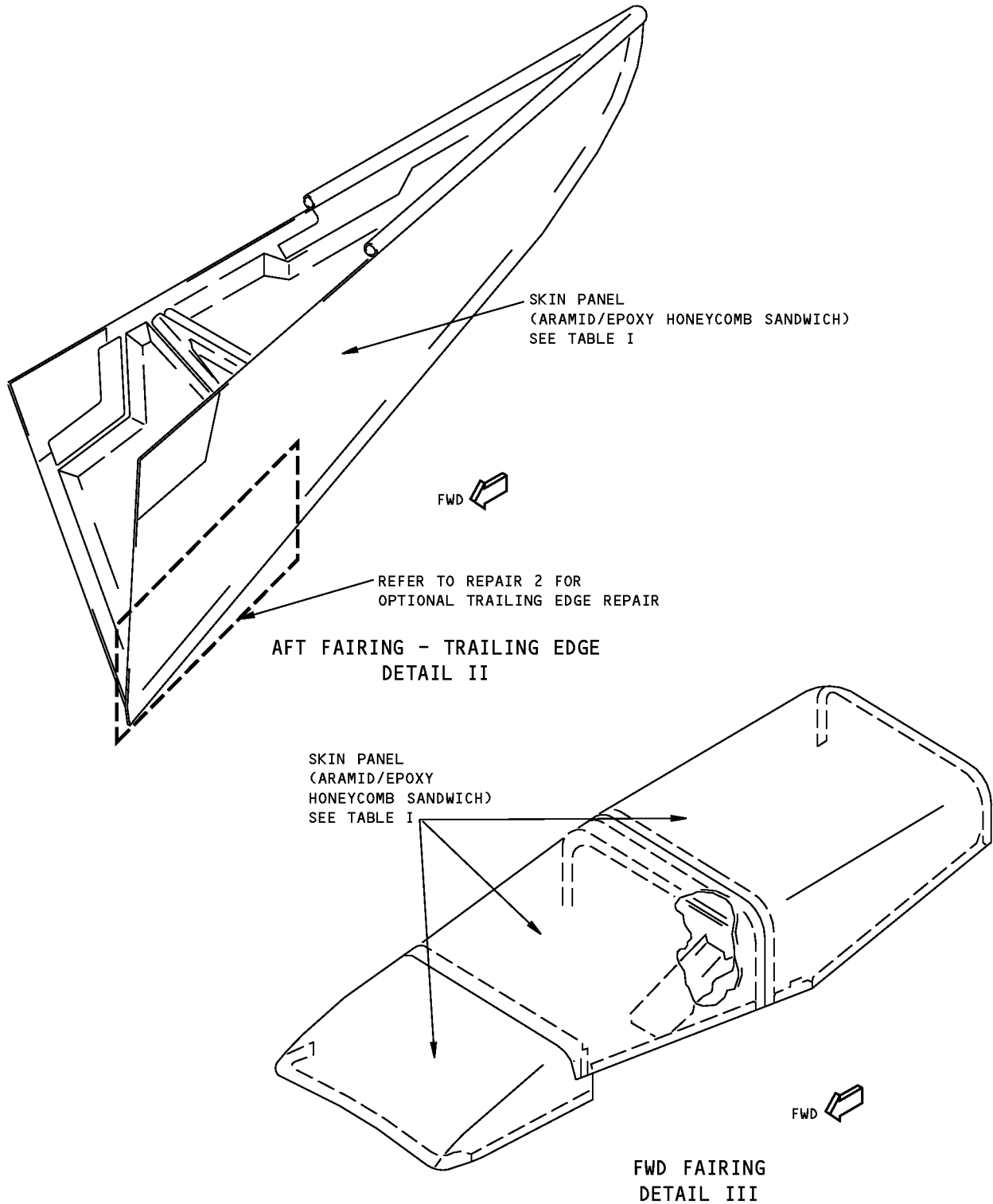
REPAIR 1 - STRUT FAIRING SKINS - JT9D-7R4 ENGINE



DETAIL I

**Strut Fairing Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

767-300
STRUCTURAL REPAIR MANUAL



Strut Fairing Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)

STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS [B]	PERMANENT REPAIRS		
	WET LAYUP ROOM TEMP/ 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93°C-110°C) CURE (SRM 51-70-17)	250°F (121°C) CURE (SRM 51-70-05)	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [A]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [A]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	6.0 INCHES (15 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	NO SIZE LIMIT
DELAMI-NATION	CUT OUT AND REPAIR AS A HOLE.			
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			
DENTS	UP TO 3.0 INCHES (75 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. OVER 3.0 INCHES (75 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			

REPAIR DATA FOR 350°F (177°C) CURE ARAMID HONEYCOMB PANELS
TABLE I

NOTES

- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.

[A] LIMITED TO REPAIR OF DAMAGE TO ONE FACE-SHEET SKIN AND HONEYCOMB CORE. ONE REPAIR PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (15 cm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

[B] INSPECT INTERIM REPAIR USING INSTRUMENTED NDT METHODS OR "TAP" TEST EVERY AIRPLANE "C" CHECK. FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. REFER TO SRM 51-70-03, PAR. 4.I. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

[C] ONE REPAIR PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (15 cm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

Strut Fairing Skin Repairs - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 2 - AFT PYLON FAIRING - TRAILING EDGE - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Remove 313T3360 aft fairing, trailing edge assembly from pylon.
2. Cut and remove the damaged skin panel as given in Detail I.
3. Seal the panel core edges as shown in Section B-B to a depth of one half cell minimum. Cure the potting compound as specified in Table II.
4. Make the repair parts. See Details I thru VI, and Table I.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the cut edges of the panel.
8. Apply a chemical conversion coating to the bare aluminum surfaces of the repair parts and panel.
9. Apply primer as follows:
 - (a) Apply two coats of BMS 10-11, Type 1 to all of the nickel alloy to aluminum faying surfaces of part 1.
 - (b) Apply one coat of BMS 10-11, Type 1 to parts 2, 3, 7 and 8.
 - (c) Apply two coats of BMS 10-11, Type 1 to parts 4, 5 and 6.
10. Install the fasteners. Fastener that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Restore the initial finish per AMM 51-20.
12. Install 313T3360 aft fairing, trailing edge assembly.

NOTES









- DAMAGE LOCATION IS IN CRITICAL SONIC ENVIRONMENT. IF THE REPAIR SHOWS SIGNS OF CRACKING OR DETERIORATION, CONTACT THE BOEING COMPANY.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL

- SRM 51-30-01 FOR BENDING AND MACHINING OF THE SHEET METAL MATERIALS

- SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS

- A** AS AN ALTERNATIVE, USE TWO SHEETS OF 0.125 2024-T3
- B** AS AN ALTERNATIVE, USE ONE SHEET OF 0.100 AND ONE SHEET OF 0.063 2024-T3
- C** DRILL A 0.127-0.131 INCH (3.2-3.3 mm) DIAMETER HOLE THRU OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE AND ROTATE 360 DEGREES TO BREAK THE HONEYCOMB CELL WALLS 0.75-1.00 INCH (19-25 mm) DIAMETER AROUND THE DRILLED HOLE. VACUUM DEBRIS FROM THE HOLE AFTER BREAKING HONEYCOMB CELL WALLS. POT THE 0.75-1.00 INCH (19-25 mm) DIAMETER CAVITY WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. CURE THE POTTING COMPOUND AS SPECIFIED IN TABLE II
- D** MIX RESIN AND HARDENER ACCORDING TO PROPORTIONS IN MANUFACTURER'S INSTRUCTIONS
- E** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY(K) HEX-DRIVE BOLT WITH A BACC30M(C) COLLAR.
- F** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY(K)X HEX-DRIVE BOLT WITH A BACC30M(C) COLLAR.

FASTENER SYMBOLS

-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K4X BOLT WITH A BACC30M6 COLLAR. **F**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K4 BOLT. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K14 BOLT WITH A BACC30M6 COLLAR. **C E**
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15AD4 RIVETS. INSTALL A BACB30VF3K5 BOLT.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K5 BOLT WITH A BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K4 BOLT WITH A BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K2 BOLT WITH A BACC30M6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15AD4 RIVETS. INSTALL A BACB30MR3K2 BOLT.

**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	SKIN	1	0.050 24.0 X 24.0 INCONEL 625 SHEET
2	ZEE	1	AND10138-0605 2024-T3511
3	ZEE	1	AND10138-0605 2024-T3511
4	FILLER	2	0.160 2024-T3 B
5	FILLER	2	0.250 2024-T3 A
6	FILLER	2	0.100 2024-T3
7	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3
8	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)
BMS 5-28 TYPE 25	EPOCAST 1625A RESIN EPOCAST 1625B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)**

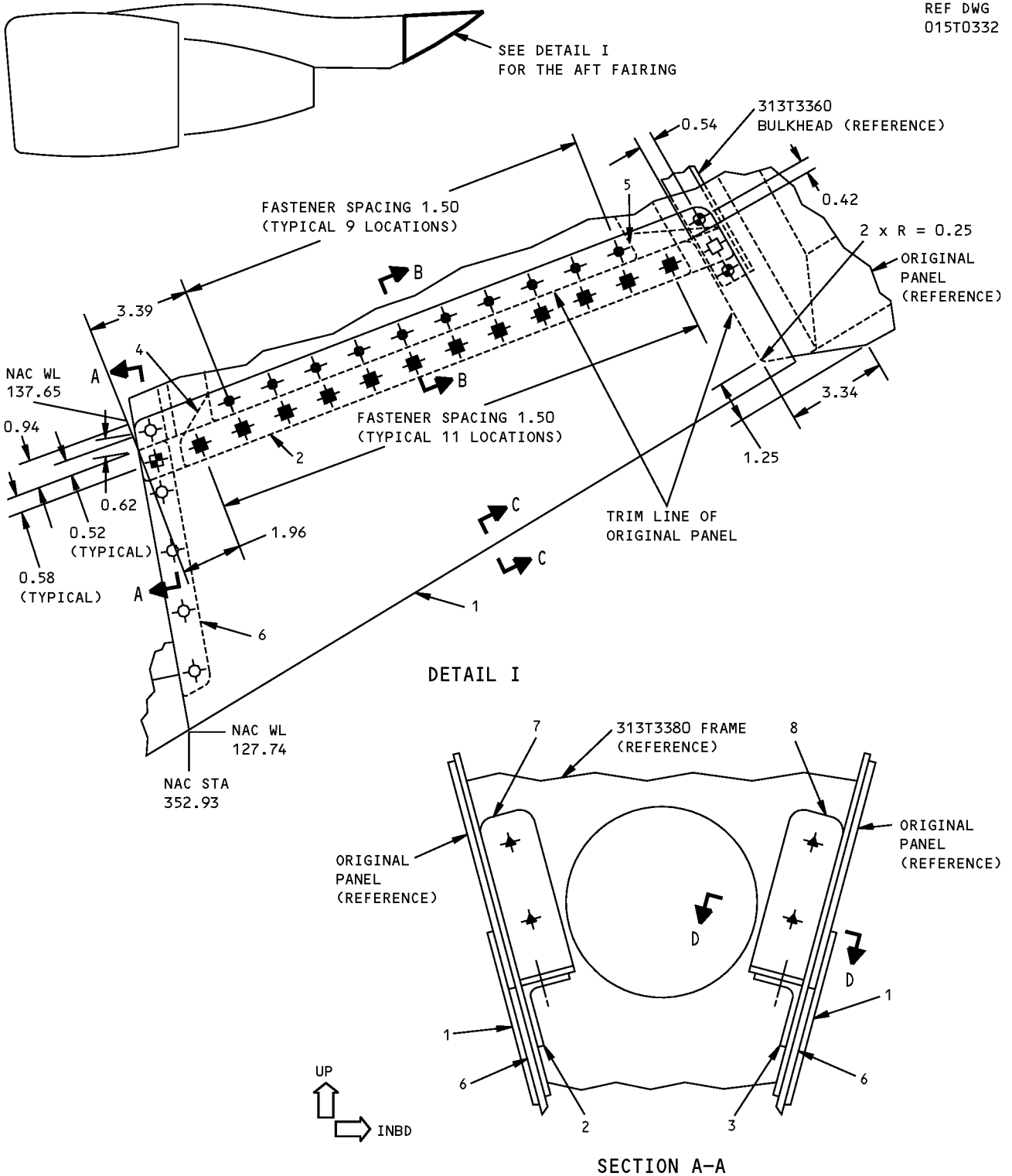
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REPAIR 2
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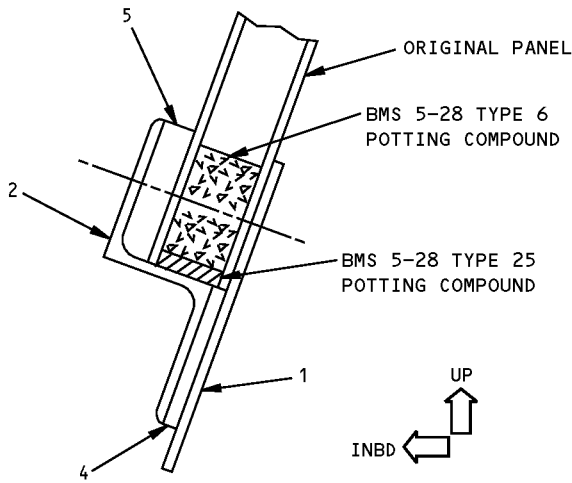
**767-300
STRUCTURAL REPAIR MANUAL**

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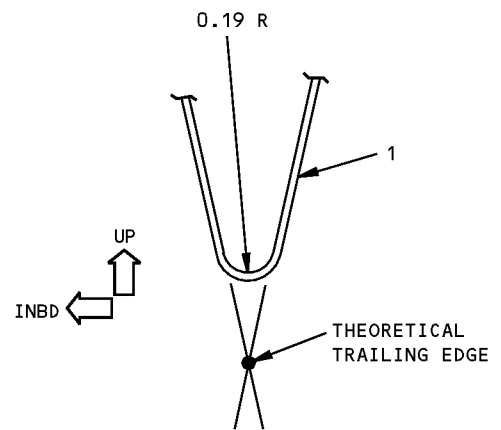


**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

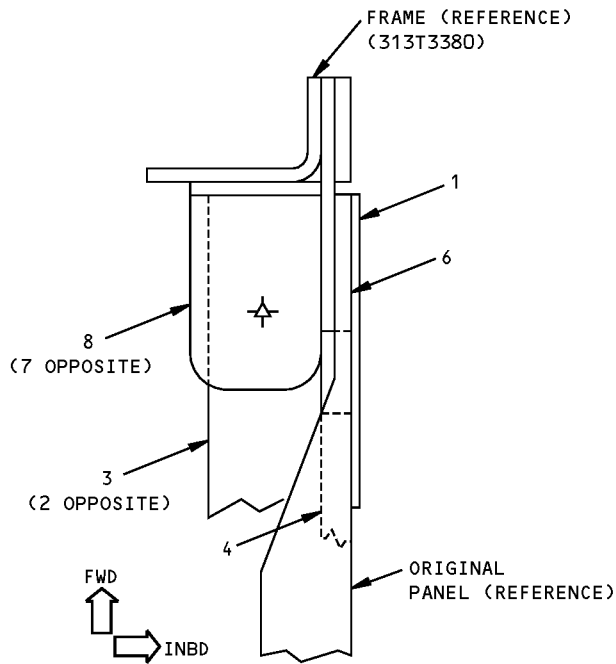
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B



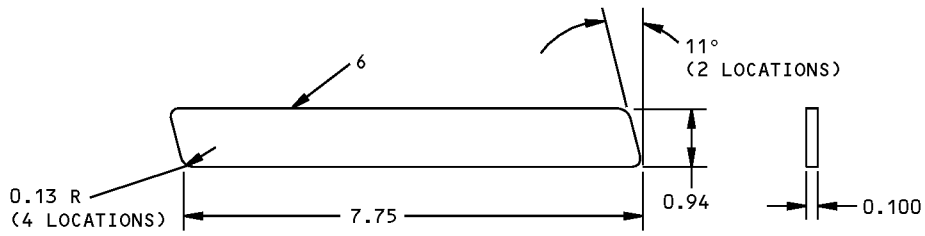
SECTION C-C



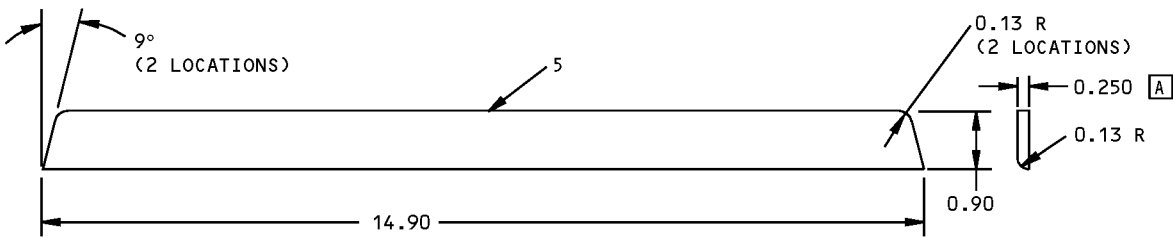
SECTION D-D

**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

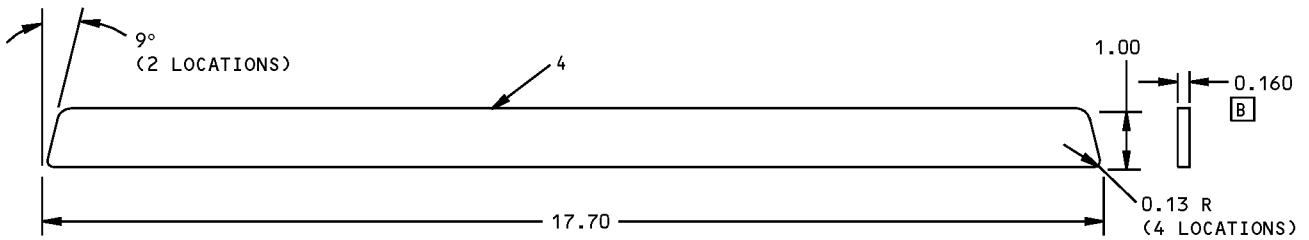
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II



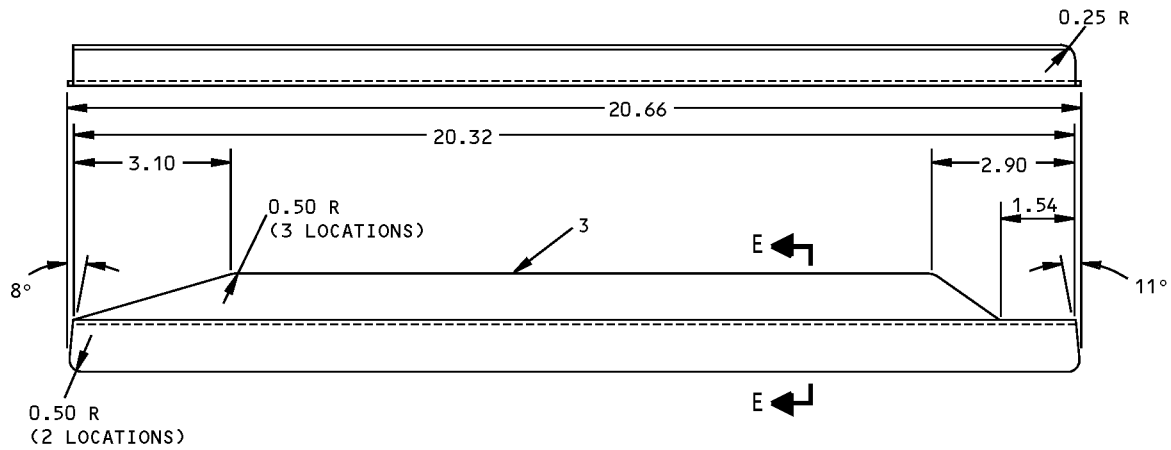
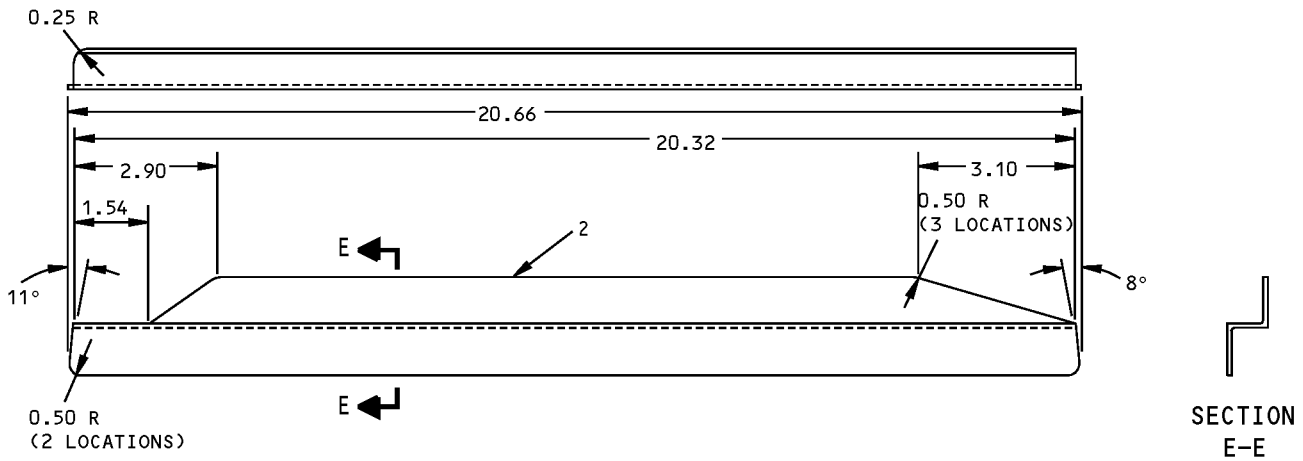
DETAIL III



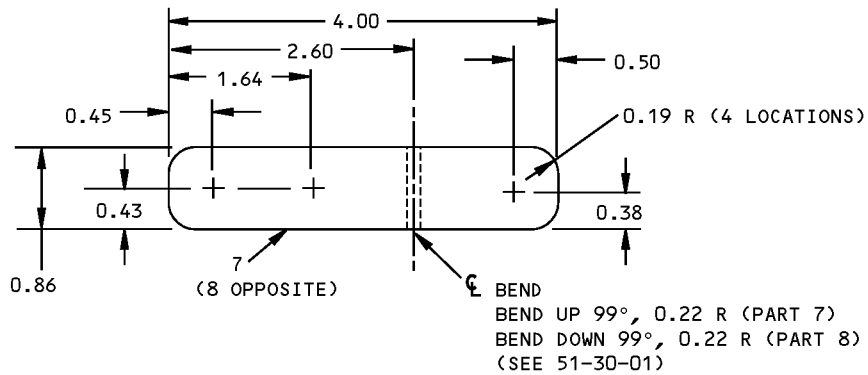
DETAIL IV

**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V



DETAIL VI

**Aft Pylon Fairing - Trailing Edge Repair - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT AFT PYLON FAIRING TRAILING EDGE BULKHEAD CRACK - JT9D-7R4 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE BULKHEAD SIDE FLANGES.

REPAIR INSTRUCTIONS

1. Get access to the damaged aft fairing trailing edge bulkhead. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Do a high frequency eddy current (HFEC) inspection of the bulkhead flanges to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
3. Cut and remove the cracked bulkhead side flanges along the bend line. Keep the minimum corner radii of 0.25 inch (6 mm).
4. Make the repair parts. See Table I and Details II, III, and IV.

NOTE: As an alternative, the initial web of the bulkhead can be used in lieu of the part 3 bulkhead web if there is a 2D minimum edge margin on the web after the cracks are removed and the initial hole locations are not damaged.

5. Assemble the repair parts and drill the fastener holes. **A**
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Install the aft fairing trailing edge and panel assemblies.





NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

A THE INITIAL WEB AND STIFFENERS MAY BE USED AS A TEMPLATE TO FIND INITIAL FASTENER LOCATIONS

B FOUR EVENLY SPACED FASTENER LOCATIONS ON EACH FLANGE. SEE DETAIL I, VIEW A-A. KEEP A 2D MINIMUM EDGE MARGIN AND 4D - 6D FASTENER SPACING ON EACH ROW.

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION.
-  INITIAL FASTENER LOCATION. INSTALL A BACR15FT6KE()C RIVET OR INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NY6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15FT5KE()C RIVET OR INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **B**

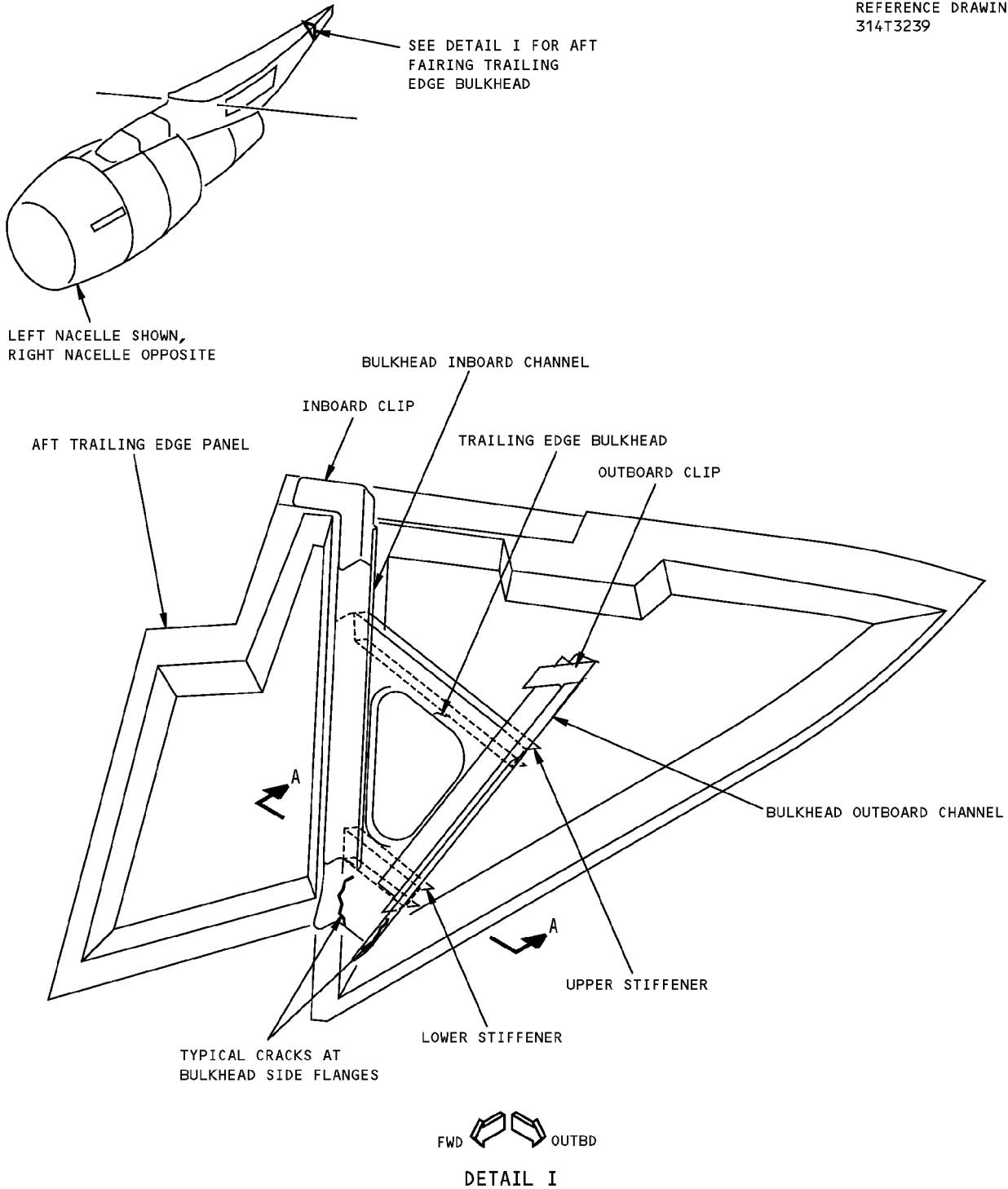
REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	OUTBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
2	INBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
3	BULKHEAD WEB	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
4	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6
5	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6

TABLE I

**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

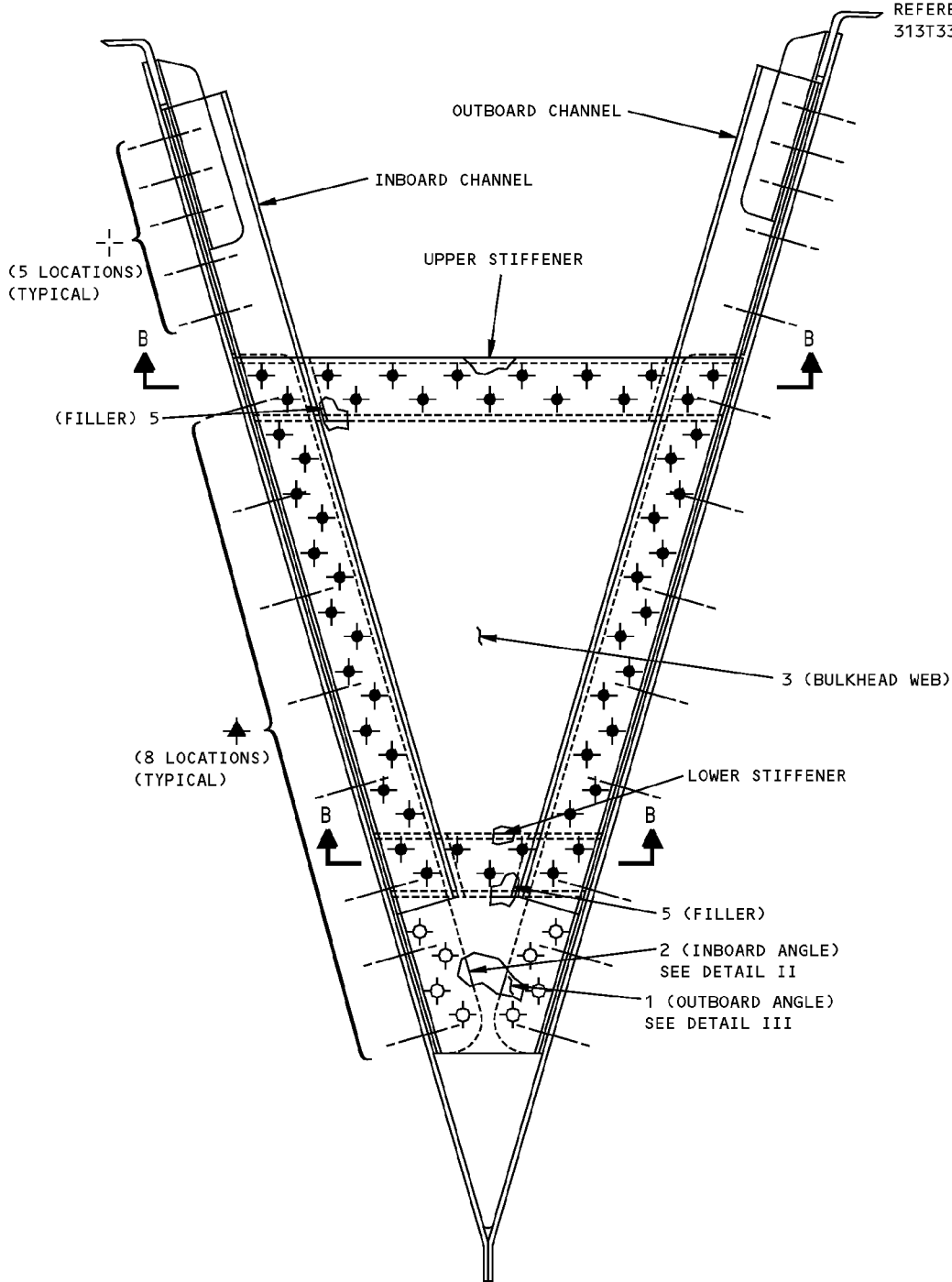
REFERENCE DRAWING
314T3239



**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

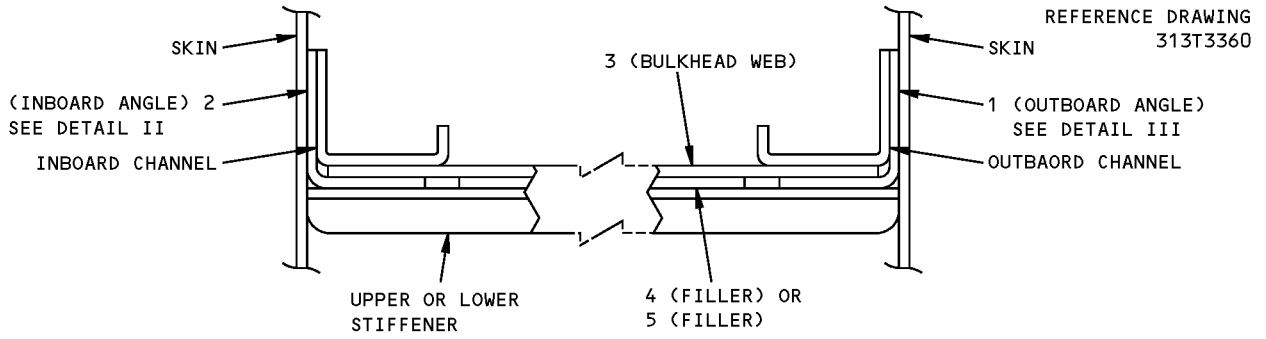
REFERENCE DRAWING
313T3360



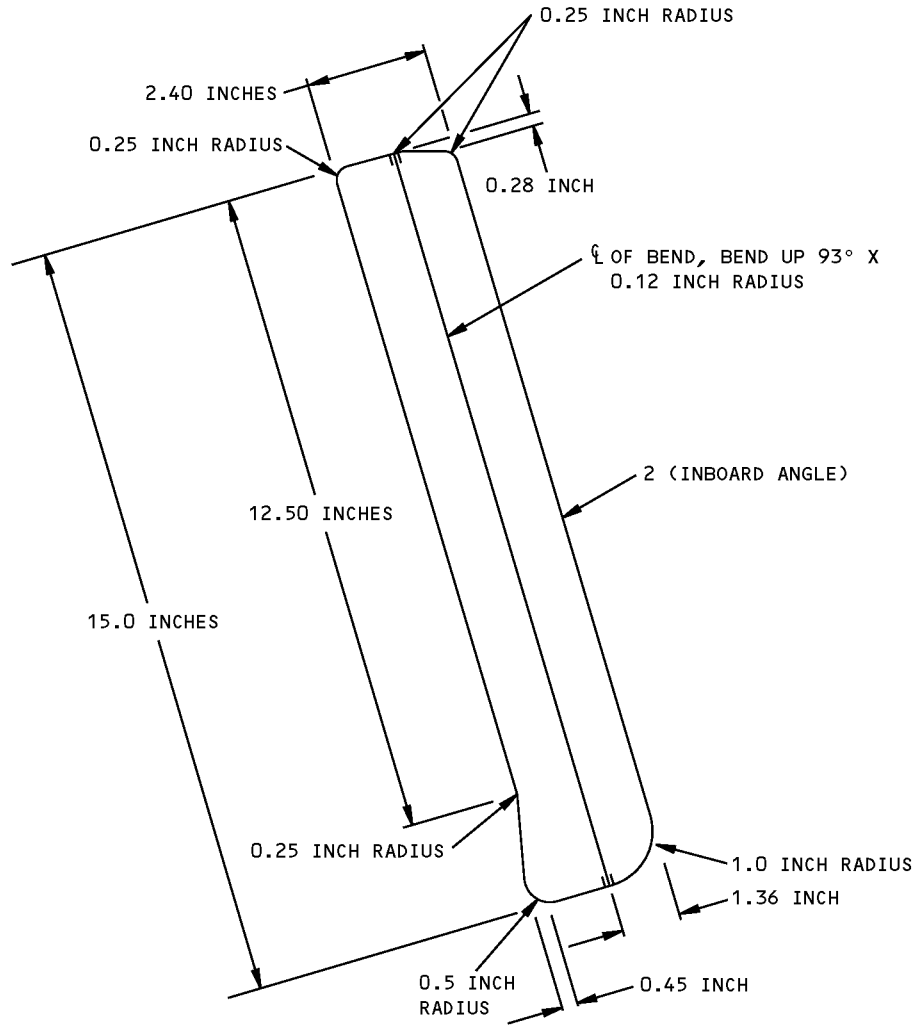
VIEW LOOKING AFT
VIEW A-A

**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION B-B
(TYPICAL)**

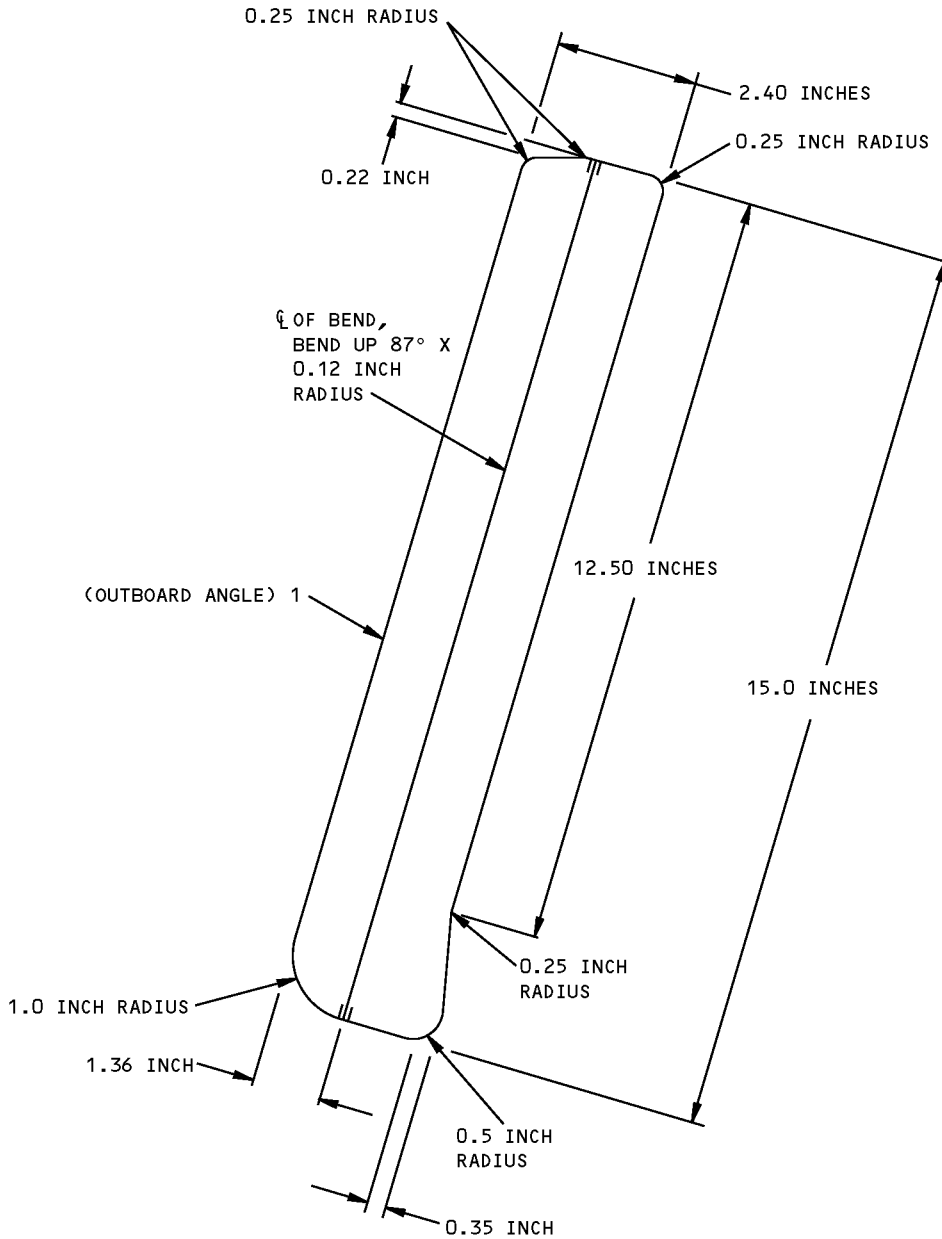


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
DETAIL II

**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



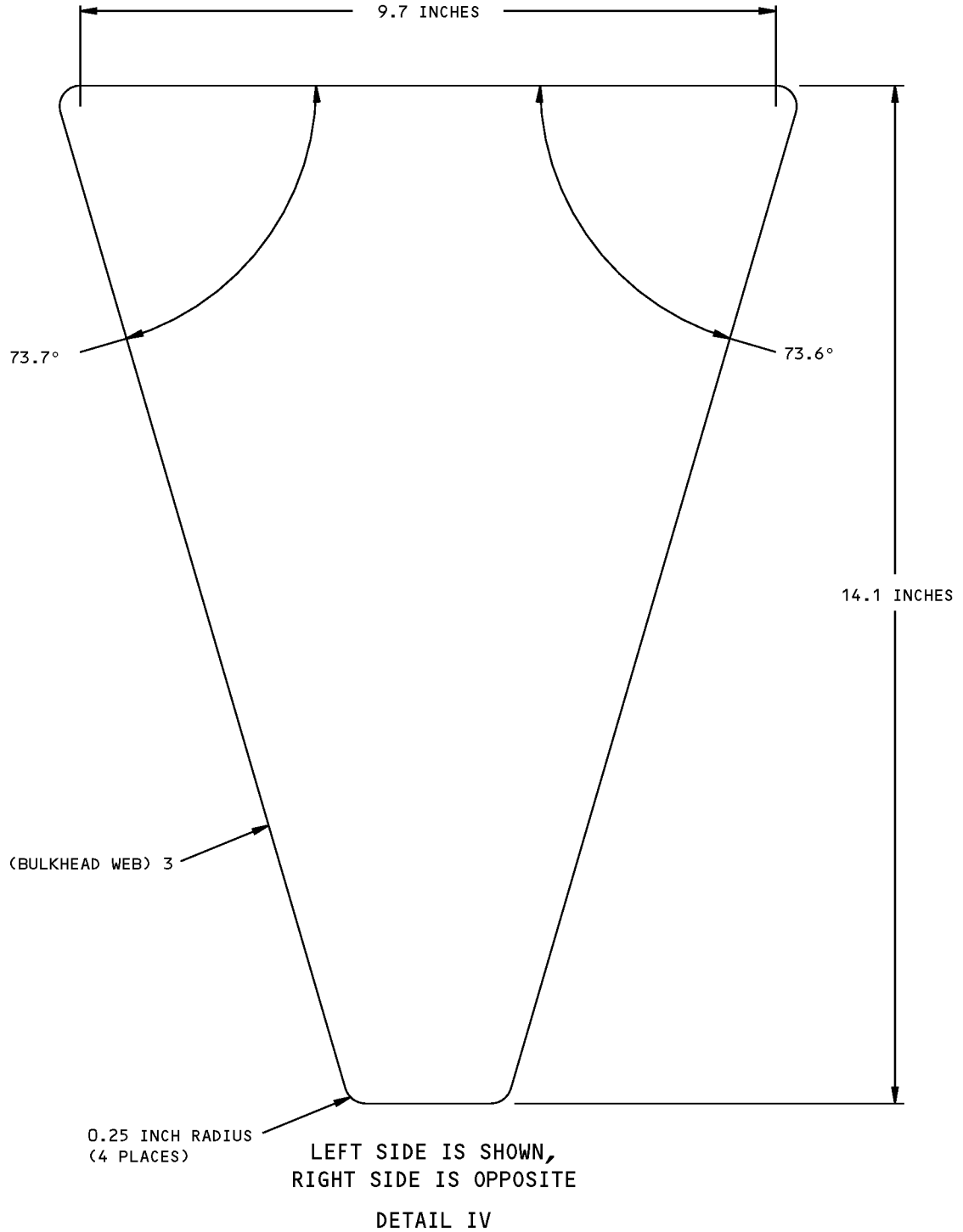
LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

DETAIL III

**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



**Strut Aft Pylon Fairing Trailing Edge Bulkhead Crack Repair - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - AFT PYLON FAIRING DELAMINATION - JT9D-7R4 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Repair the trailing edge and panel assemblies. Refer to SRM 51-70-10 for repairs to the aluminum-honeycomb structure. Refer to Fig. 201 for repairs to the pylon aft fairing trailing edge.
3. Make the repair parts. See Table I.
4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the doublers and the panel assemblies.
7. Apply a chemical conversion coating to the panel assemblies. Refer to SRM 51-20-01.
8. Apply two layers of BMS 10-79, Type III primer to the doublers. Refer to SOPM 20-44-04.
9. Bond the part 4 shims to the doubler with Dow Corning 93-006. Refer to SRM 51-20-05.
Bond the separation sheets to the doublers with Dow Corning 93-006. Refer to SRM 51-20-05.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 10-79, Type III primer.
11. Reinstall the trailing edge and panel assemblies.

NOTES

- THE DAMAGE IS IN A CRITICAL SONIC ENVIRONMENT. EXAMINE THE REPAIR AT 3000 FLIGHT HOUR INTERVALS. IF A CRACK OR DETERIORATION OF THE REPAIR OCCURS, CONTACT BOEING.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.

- WHEN YOU USE THIS REPAIR REFER TO:
 - SOPM 20-30-30 FOR GENERAL CLEANING PROCEDURES
 - SOPM 20-44-04 FOR THE APPLICATION OF FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS
 - SRM 51-70-10 FOR ALUMINUM HONEYCOMB STRUCTURE REPAIRS.

- A** FOR CUM LINE NUMBERS 1 THRU 225, MODIFIED AS GIVEN IN SB 767-54-0017 OR REPAIRED AS GIVEN IN SRM 54-50-70, REPAIR 2.
- B** FOR CUM LINE NUMBERS 1 THRU 225.
- C** FOR CUM LINE NUMBERS 229 THRU 329.
- D** THE REPAIR CAN BE EXTENDED AS NECESSARY TO COVER THE DAMAGED AREAS.
- E** DRILL A 0.10 INCH (2.5 mm) DIAMETER HOLE THROUGH THE OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE. USE A DRILL TO QUICKLY TURN THE ALLEN WRENCH TO BREAK THE HONEYCOMB CELL WALLS TO A 1.00 INCH (25 mm) DIAMETER HOLE AROUND THE DRILLED HOLE. DRILL A 0.062 INCH (1.6 mm) DIAMETER VENT HOLE THROUGH THE INNER SKIN ONLY. VACUUM TO REMOVE THE DEBRIS FROM THE HOLE.
- F** POT THE 1.00 INCH (25 mm) DIAMETER HOLE WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. SEE TABLE III FOR THE CURING INFORMATION.
- G** OBEY THE MANUFACTURERS INSTRUCTIONS WHEN YOU MIX THE RESIN AND HARDENER.
- H** REMOVE AND DISCARD THE REPAIR PARTS INSTALLED AS GIVEN IN SB 767-54-0017 OR SRM 54-50-70, REPAIR 2.
- I** MAKE ALL THE REPAIR DOUBLERS FROM ONE OF THE MATERIALS LISTED IN TABLE II.
- J** THE SUPPLIER'S ADDRESS IS AS FOLLOWS:
FABRI COTE, INC.
724 E. 60TH STREET
LOS ANGELES, CA 90001
U.S.A.

Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 11)

STRUCTURAL REPAIR MANUAL

FASTENER SYMBOLS

- ⊕ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. FILL THE INITIAL FASTENER HOLE WITH DOW CORNING 93-006 SEALANT PER SRM 51-20-05.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH BACR15BA3AD() RIVETS. INSTALL A BACB30VF3K() BOLT.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A NAS1149D0332H WASHER UNDER A BACC30M6 COLLAR. [E]
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR. [E]

REPAIR MATERIAL		
PART	QTY	MATERIAL
1 DOUBLER	1	0.063 25.0 X 24.0 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3360-135 (LEFT) -136 (RIGHT)
2 DOUBLER	2	0.050 35.0 X 11.00 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3381-291 (LEFT) -192 (RIGHT)
3 DOUBLER	2	0.050 33.00 X 8.25 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3381-288 (LEFT) -289 (RIGHT)
4 SHIM	2	BACS40R010E074F OR EQUIVALENT TO BOEING PART NUMBER 313T3360-165 OPTIONAL: USE KAPTON SHIM BACS40V010E074
5 SEPARATION SHEET	2	0.010 35.0 X 11.00 FABRI COTE [J] 112/38 INCH S/2S 7212 RED 0.003/0.003 CURED
6 SEPARATION SHEET		0.010 33.0 X 8.25 FABRI COTE [J] 112/38 INCH S/2S 7212 RED 0.003/0.003 CURED

TABLE I

DOUBLER MATERIAL	
MATERIAL SPECIFICATION	METHOD TO CLEAN THE SURFACE
Ti-6-4 SHEET PER MIL-T-9046, CODE AB-1, CONDITION A	BAC5753, METHOD 2, REFER TO SOPM 20-30-30
NICKEL ALLOY 625 SHEET PER AMS 5599, ANNEALED	BAC5748, REFER TO SOPM 20-30-30
15-5PH CRES PER BMS 7-240, TYPE I, SOLUTION TREATED	BAC5625, METHOD 3, REFER TO SOPM 20-30-30
301 CRES SHEET PER MIL-S-5069, ANNEALED	BAC5625, METHOD 3, REFER TO SOPM 20-30-30

TABLE II

Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 11)



**767-300
STRUCTURAL REPAIR MANUAL**

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

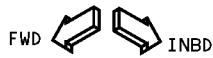
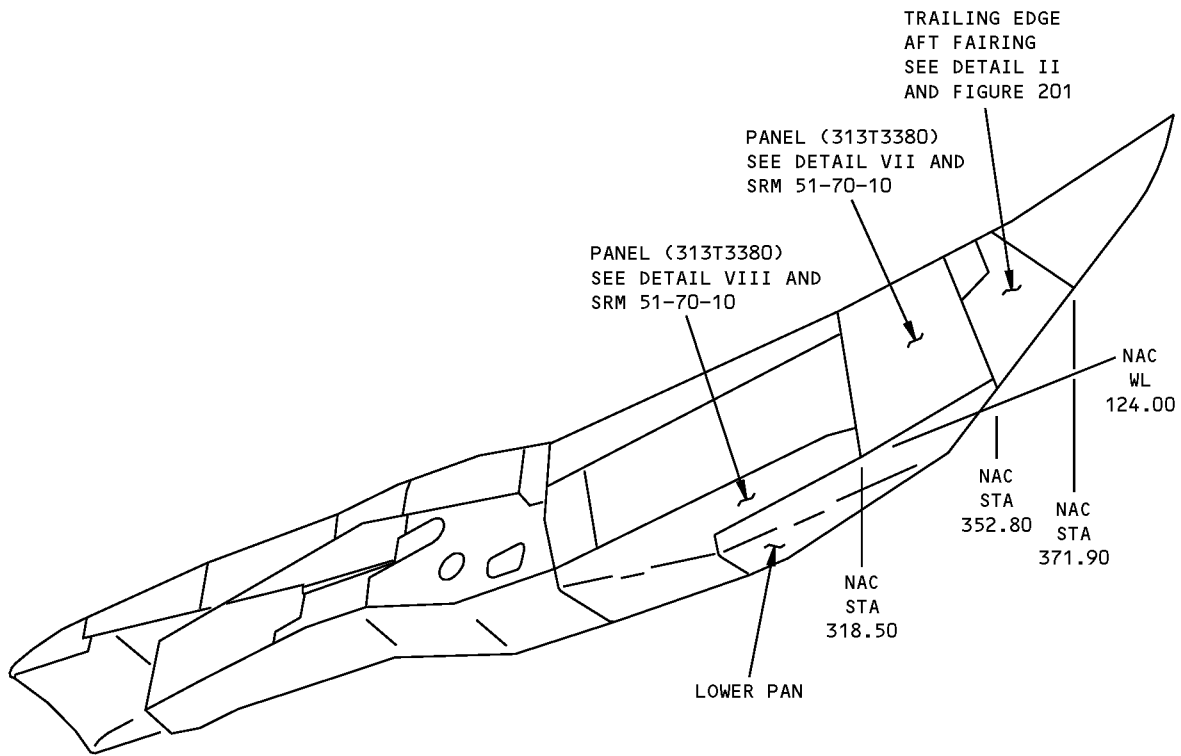
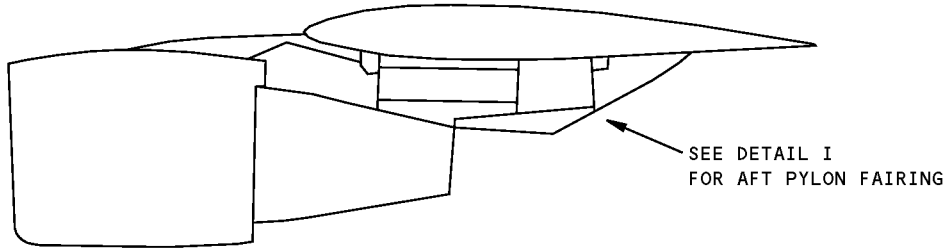
RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	6	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

NOTE: THE MATERIAL CAN BE HEATED AT A MAXIMUM RATE OF 5 TO 7°F (2.8 TO 3.9°C) PER MINUTE, THEN HELD AT THE CURE TEMPERATURE FOR THE INDICATED TIME.

TABLE III

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

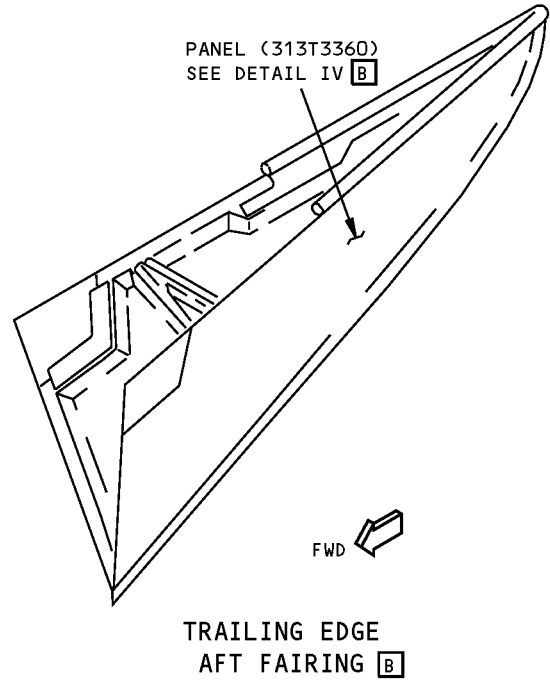
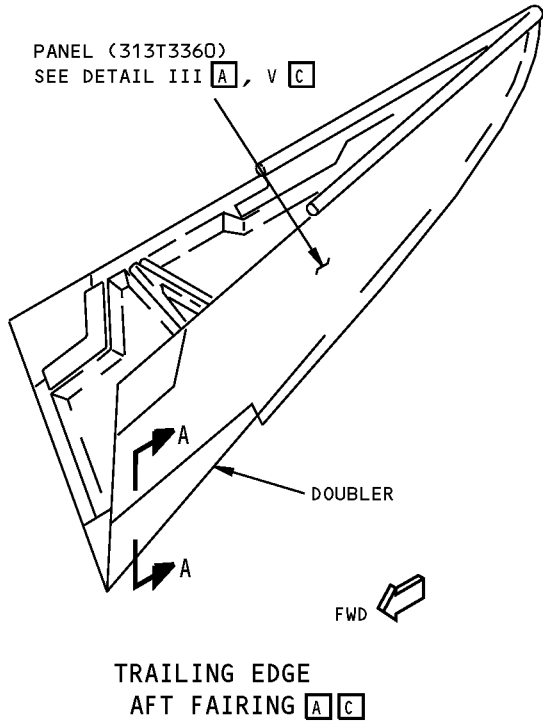


DETAIL I

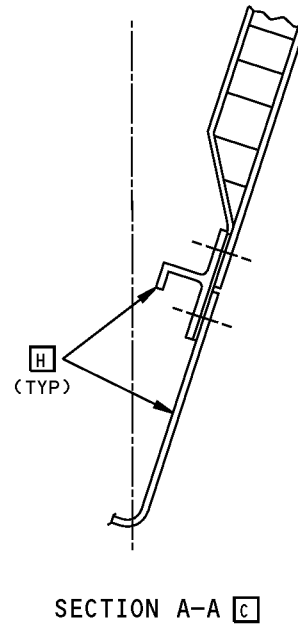
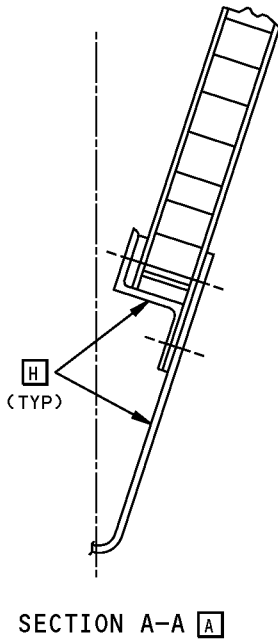
**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360
015T0322



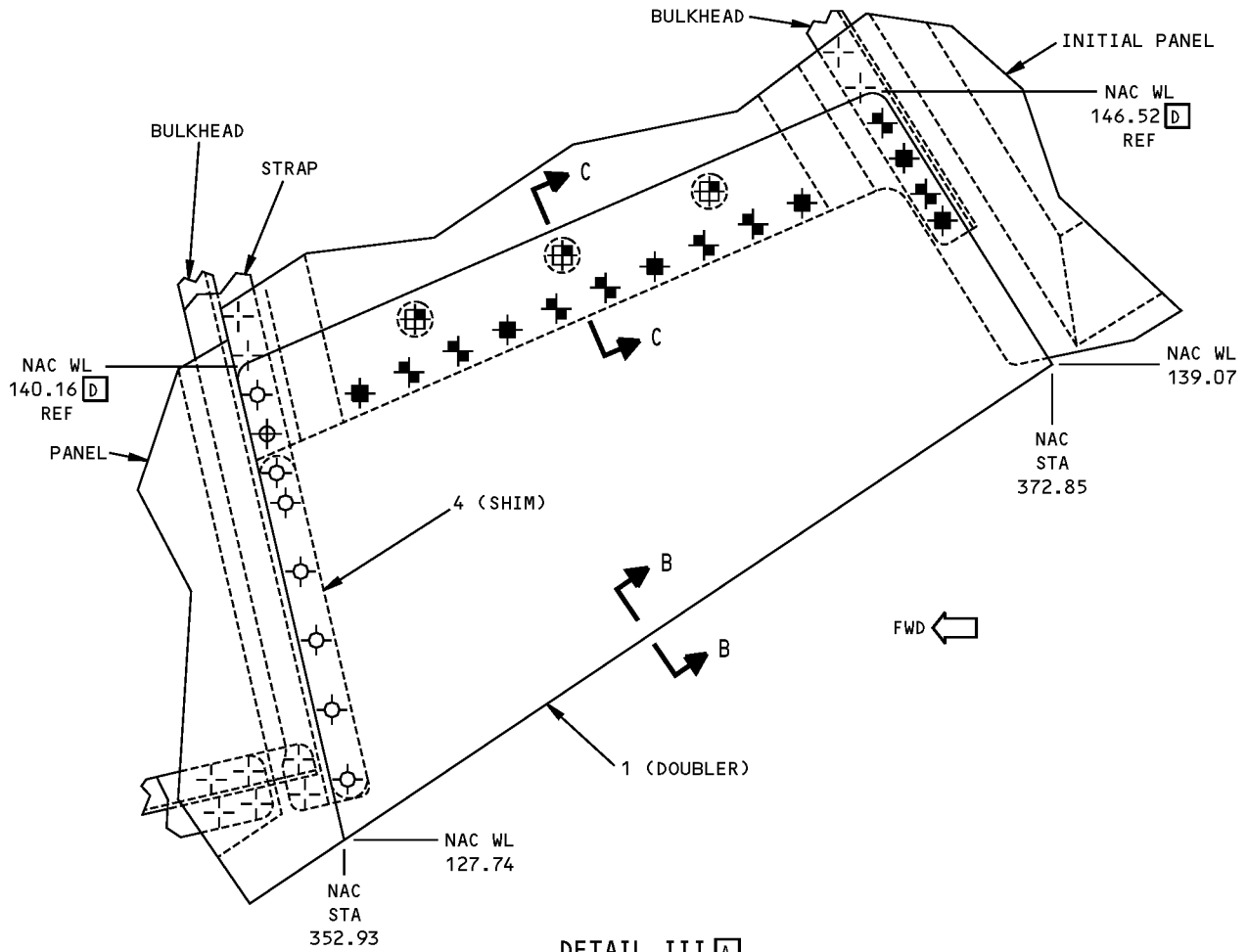
**TRAILING EDGE - AFT FAIRING
DETAIL II**



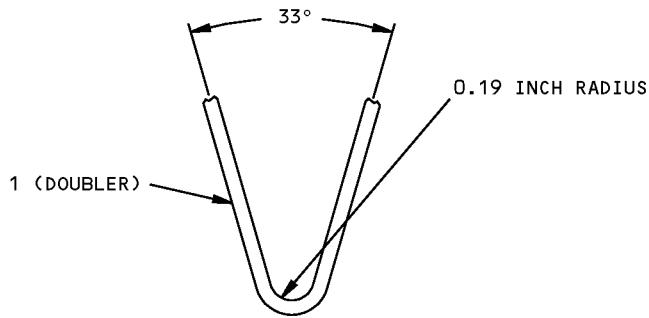
**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360
015T0322



DETAIL III A



SECTION B-B

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 11)**

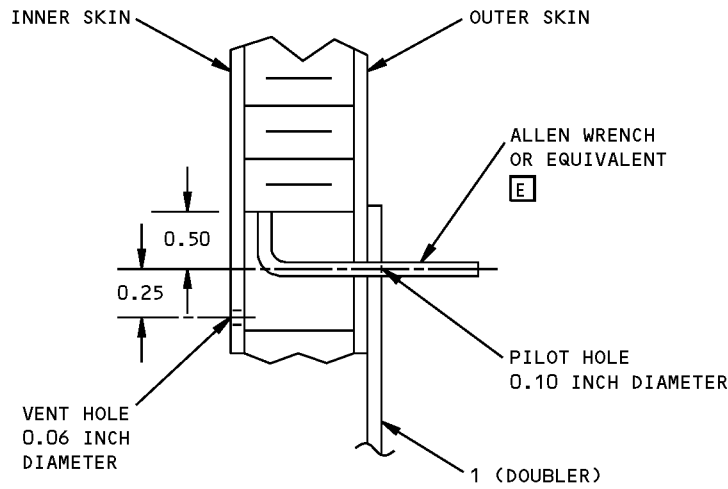
REPAIR 4
Page 206
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54-50-70

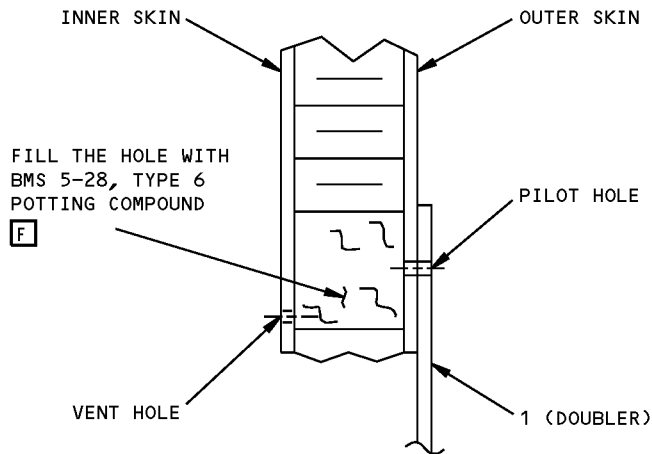
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360
015T0322



**REMOVE HONEYCOMB CORE MATERIAL
AT NEW FASTENER LOCATIONS**



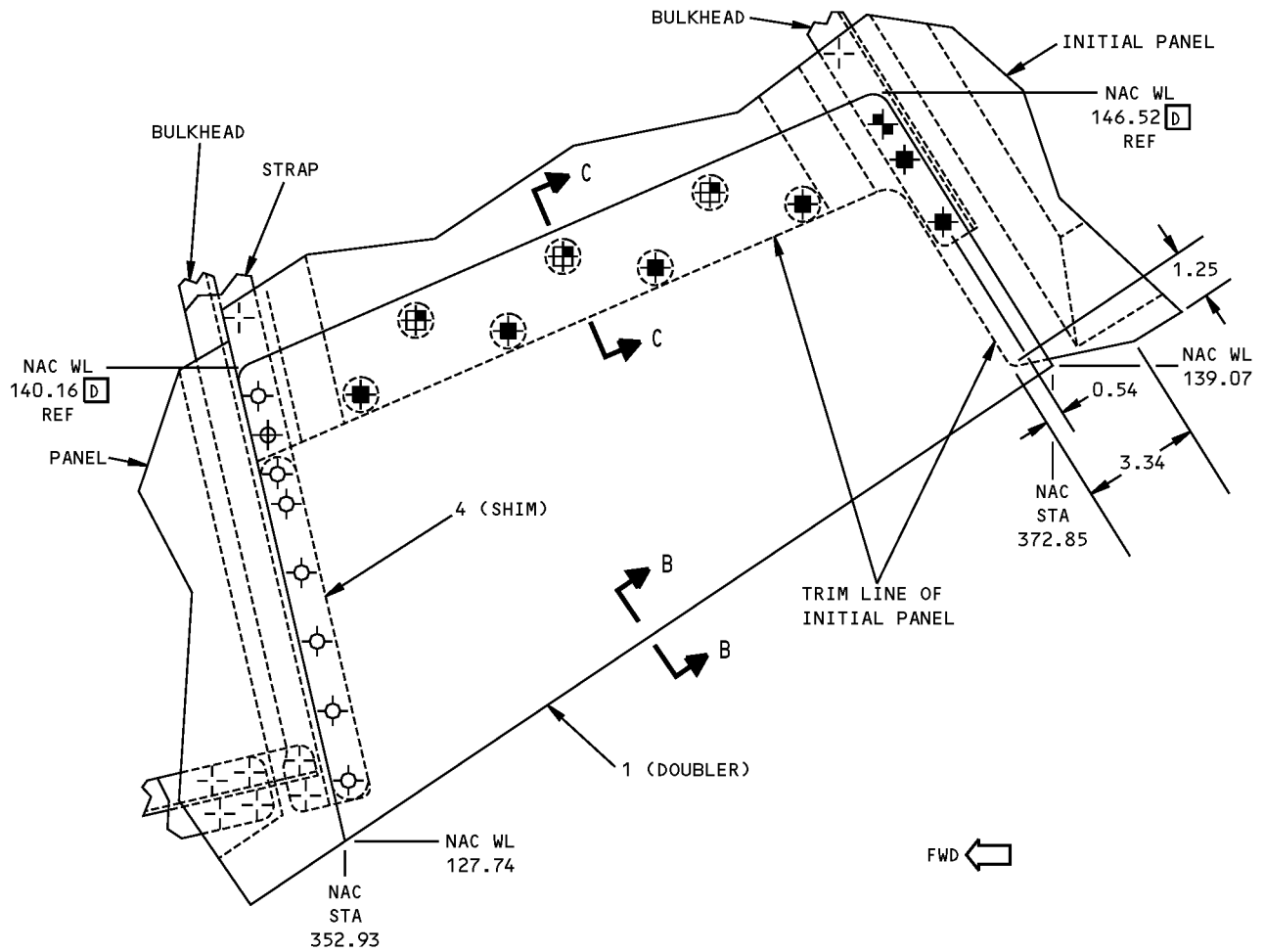
**POT FASTENER HOLES AT NEW
FASTENER LOCATIONS**

SECTION C-C

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 7 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360

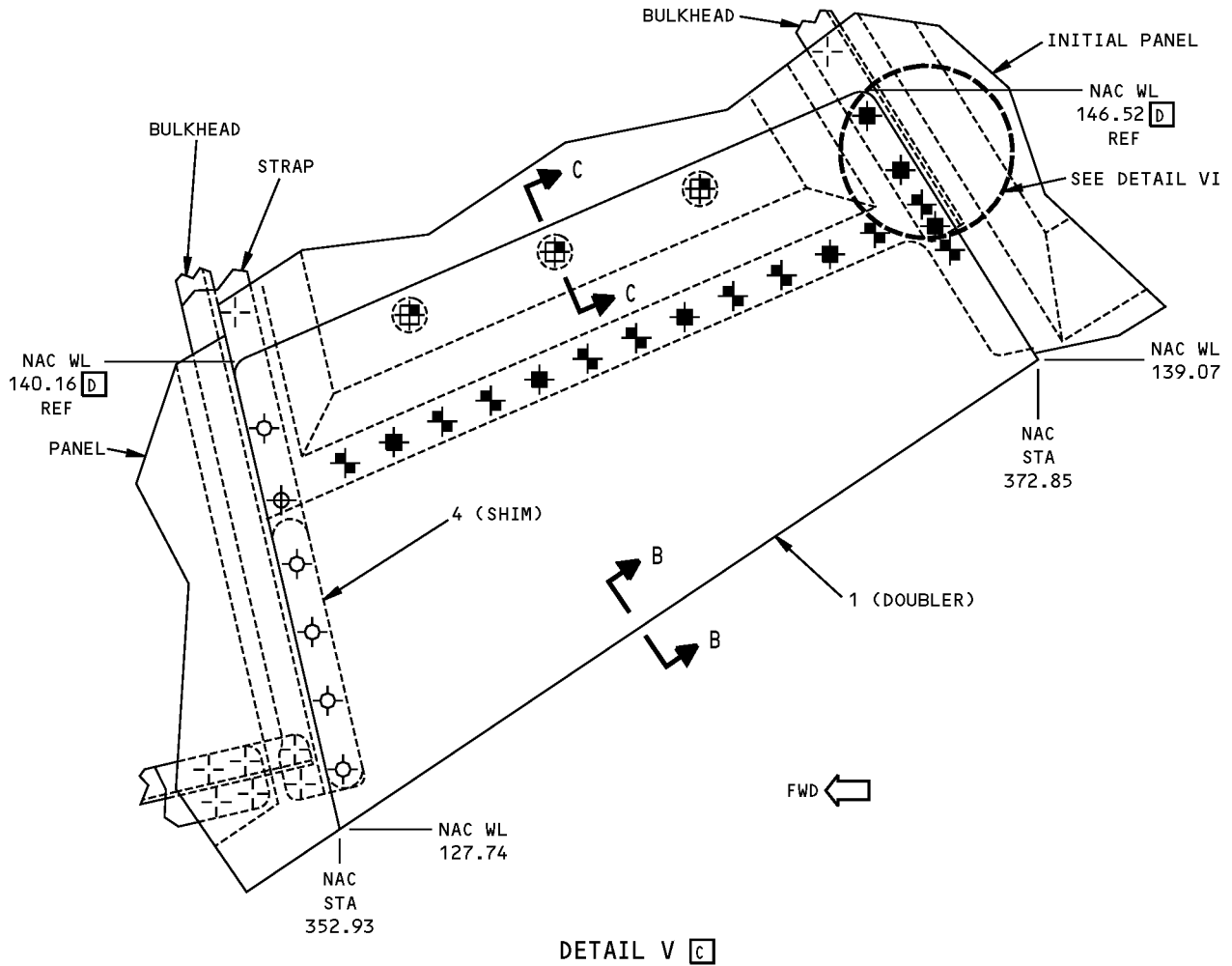


DETAIL IV **B**

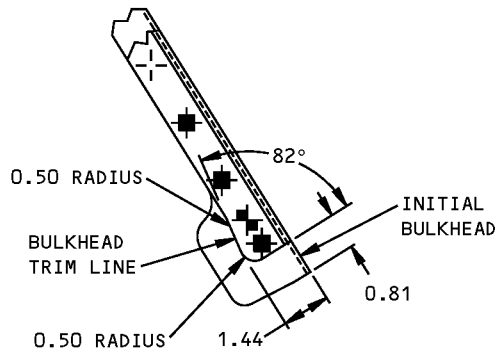
**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 8 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



DETAIL V **D**



DETAIL VI

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 9 of 11)**

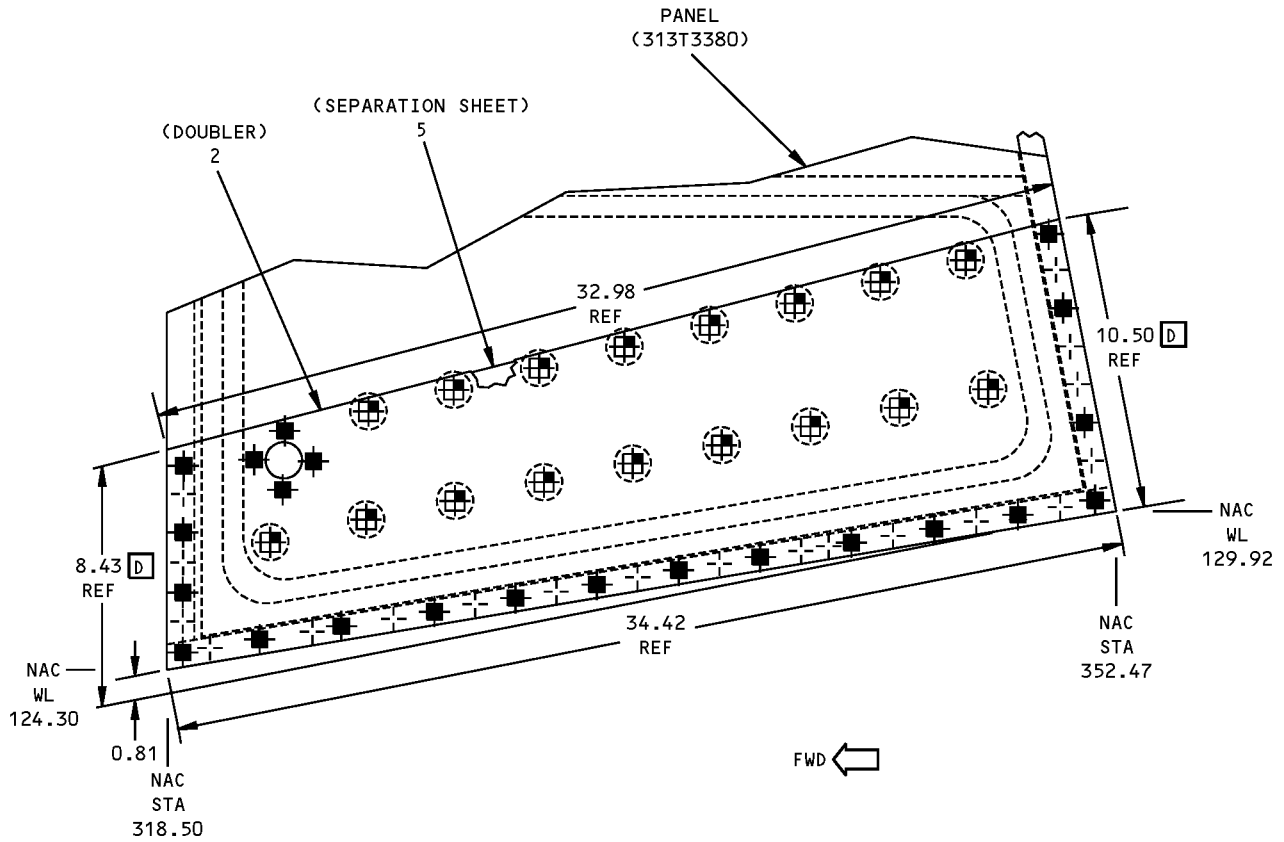
REPAIR 4
Page 209
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54-50-70

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



DETAIL VII

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 10 of 11)**

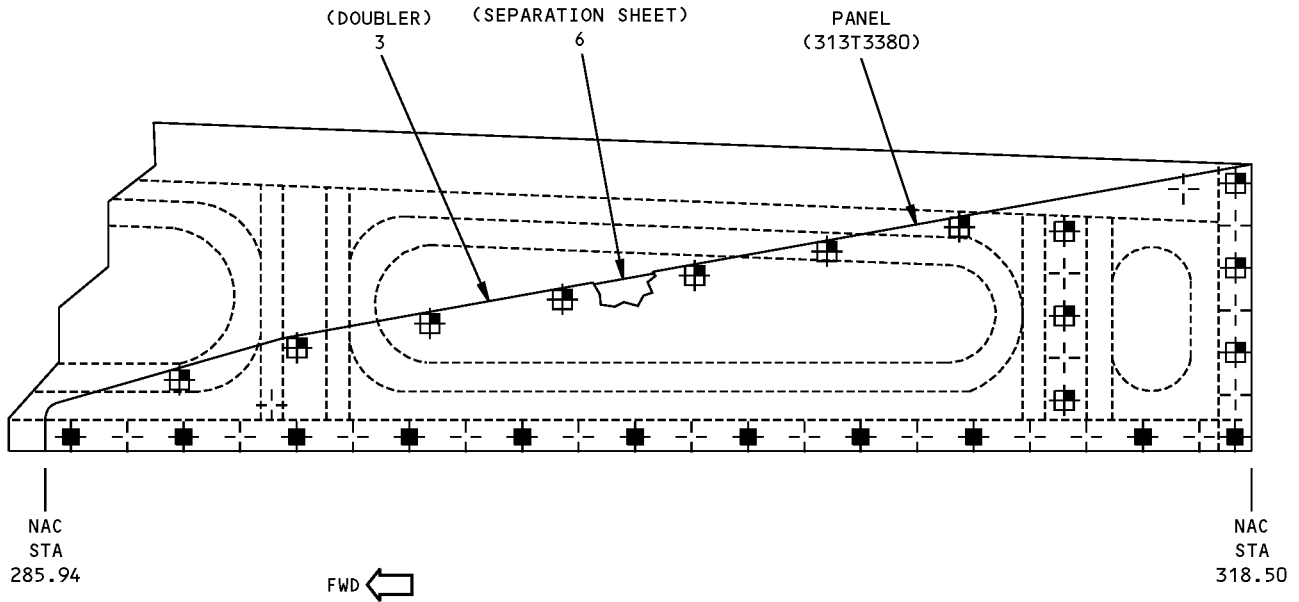
D634T210

54-50-70

REPAIR 4
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



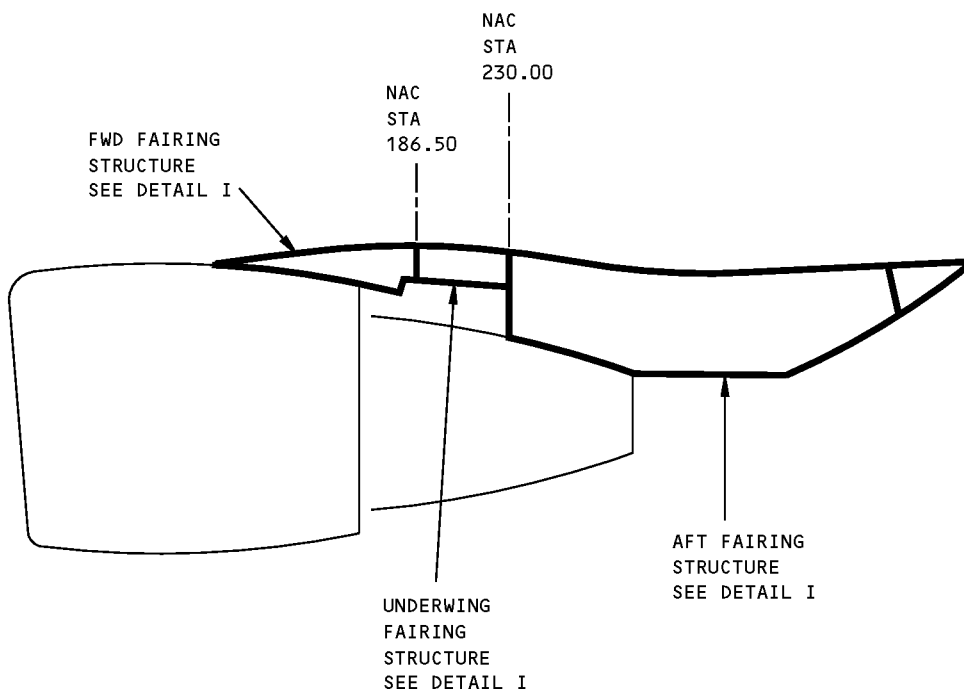
DETAIL VIII

**Aft Pylon Fairing Delamination Repair - JT9D-7R4 Engine
Figure 201 (Sheet 11 of 11)**

767-300
STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - STRUT FAIRING STRUCTURE - JT9D-7R4 ENGINE

REG DWGS
313T3380
313T3310
313T3200
313T3100
311T3510



NOTES

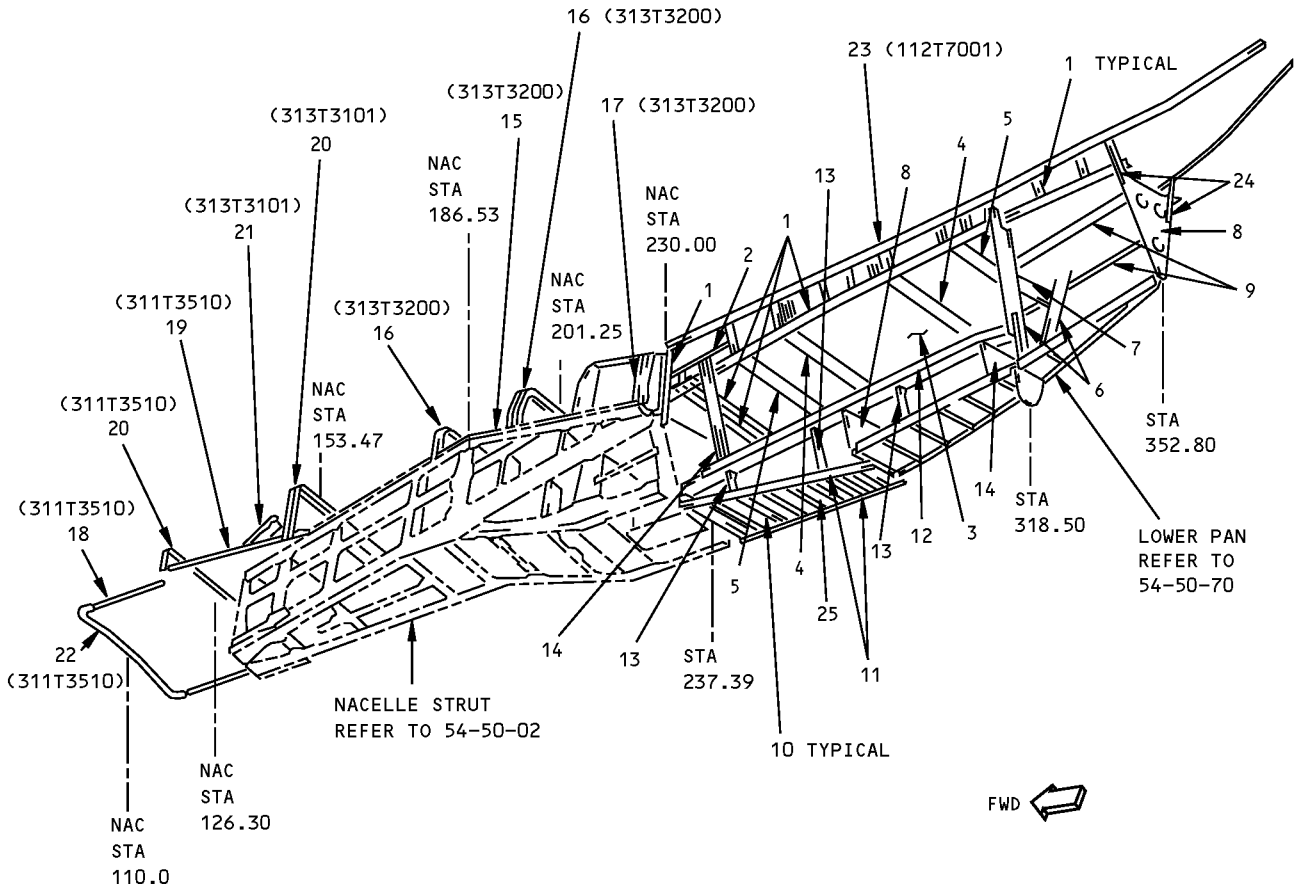
A FOR AFT 7 INCHES OF SKATE ANGLE FOR AIRPLANES WITH CUM LINE NUMBERS: 132 THRU 243 WITH SB 767-0023 INCORPORATED

B FOR AIRPLANES WITH CUM LINE NUMBERS: 244 AND ON

Strut Fairing Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3310



DETAIL I

LIST OF
MATERIAL

**Strut Fairing Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
Page 2
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54-50-71

D634T210



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ANGLE	0.10	7075-T62	
2	ANGLE	0.090	7075-T62	
3	SKIN	0.063	CLAD 2024-T3	
4	HAT SECTION (EXTRUSION)		BAC1509-100318 7075-T6511	
5	HAT SECTION (FORMED)		BAC1498-145 7075-T6	
6	ZEE	0.080	7075-T6	
7	CHANNEL	0.090	7075-T6	
8	FRAME	0.063	2024-T62	
9	ANGLE	0.080	7075-T6	
10	STIFFENER		BAC1506-2115 7075-T6	
11	CHORD		BAC1514-1102 2024-T3511	
12	BEAM	0.080	7075-T6	
13	WEB	0.063	2024-T63	
14	ZEE	0.040	2024-T62	
15	CHORD	0.063	CLAD 2024-T42	
16	TEE		AND10136-2005 2024-T42	
17	TEE		AND10136-2002 2024-T42	
18	CHORD		BAC1506-3195 2024-T8511	
19	LONGERON	0.050	2024-T42	
20	FRAME	0.050	2024-T42	
21	DIAGONAL BRACE	0.050	2024-T42	
22	NOSE FILLER	0.050	2024-T42	
23	ANGLE - SKATE	0.125	7075-T6	
		0.125	15-5PH CRES	A B
24	CHANNEL	0.063	2024-T42	
25	WEB ASSY WEB (2)	0.025	2024-T3 (BONDED ASSY)	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Structure Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 3)**

IDENTIFICATION 1
Page 3
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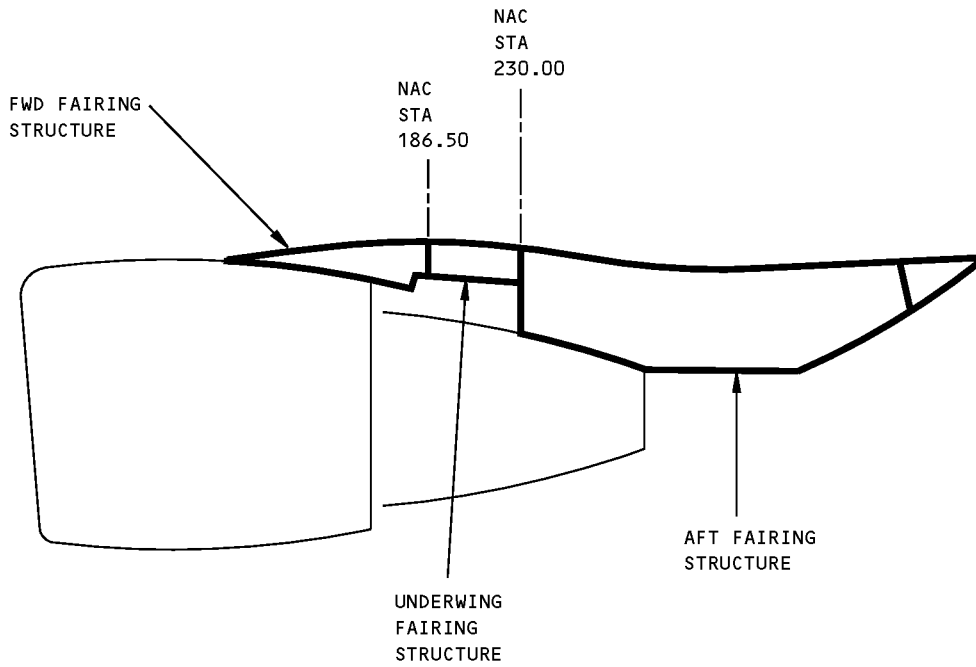
54-50-71

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

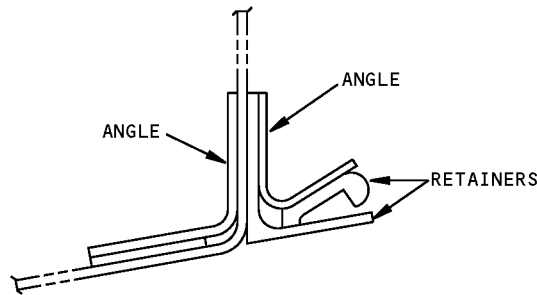
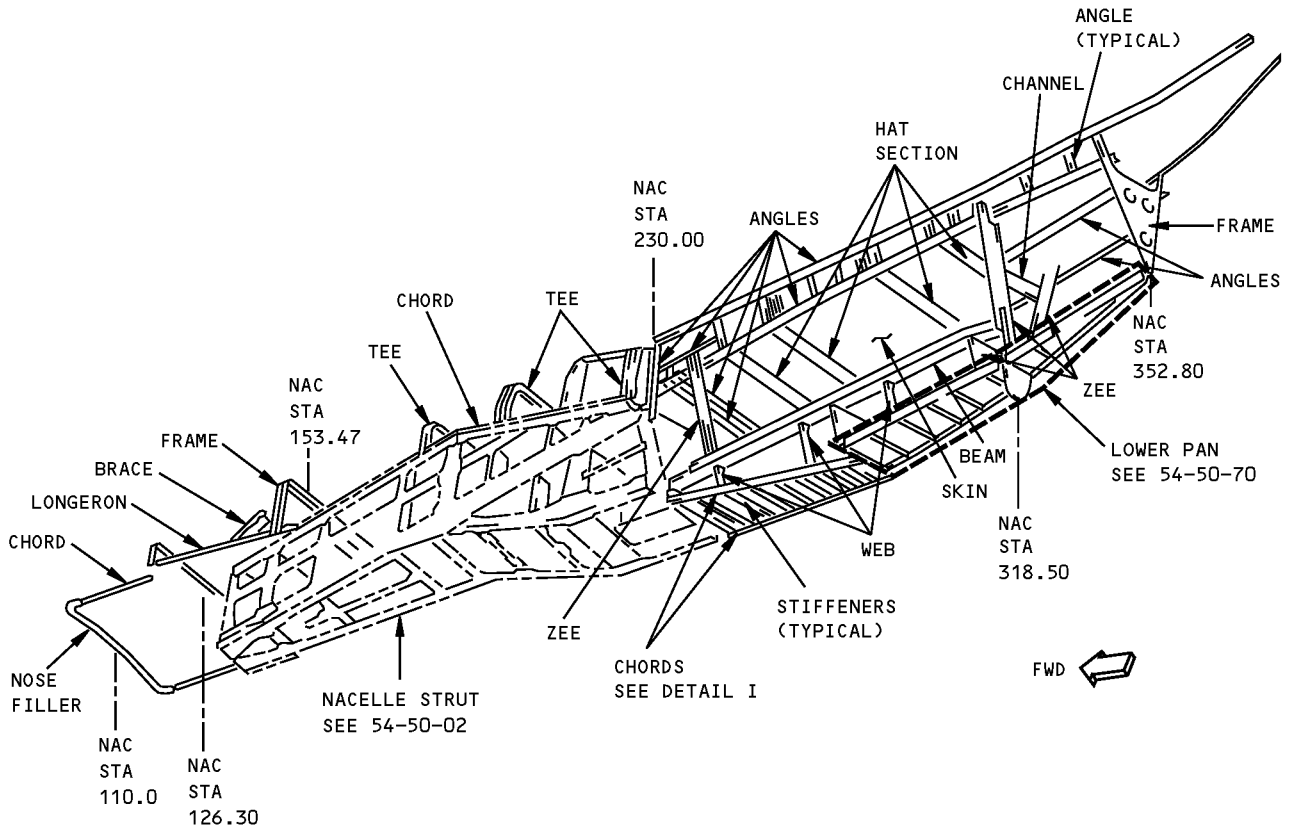
ALLOWABLE DAMAGE 1 - STRUT FAIRING STRUCTURE - JT9D-7R4 ENGINE

REG DWG
313T3310



**Allowable Damage - Strut Fairing Structure - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM

**Allowable Damage - Strut Fairing Structure - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 5)**

D634T210

54-50-71
ALLOWABLE DAMAGE 1
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**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED	—
SKIN	C	B	SEE DETAIL IV	D	—
HAT SECTION	A	B	NOT ALLOWED	NOT ALLOWED	—
ZEE	A	B	NOT ALLOWED	NOT ALLOWED	—
CHANNEL	A	B	NOT ALLOWED	NOT ALLOWED	—
FRAME	A	B	NOT ALLOWED	NOT ALLOWED	—
WEBS	A	B	SEE DETAIL IV	NOT ALLOWED	—
RETAINERS	A	B	NOT ALLOWED	NOT ALLOWED	—
STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL VIII	—
BEAM	A	B	NOT ALLOWED	NOT ALLOWED	—
CHORD	A	B	NOT ALLOWED	NOT ALLOWED	—
TEE	A	B	NOT ALLOWED	NOT ALLOWED	—
LONGERON	A	B	NOT ALLOWED	NOT ALLOWED	—
BRACE	A	B	NOT ALLOWED	NOT ALLOWED	—
NOSE FILLER	A	B	NOT ALLOWED	NOT ALLOWED	—

NOTES

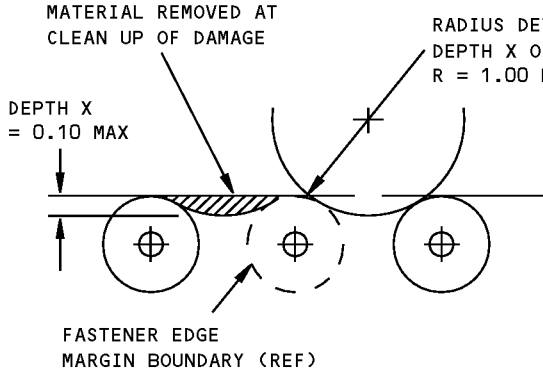
- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL.
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VII.
- B** REMOVE DAMAGE PER DETAILS II, III AND V.
- C** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI.
- D** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED.

**Allowable Damage - Strut Fairing Structure - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 5)**

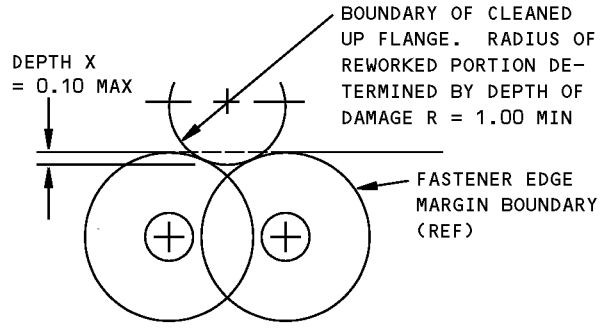
D634T210

ALLOWABLE DAMAGE 1
54-50-71
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STRUCTURAL REPAIR MANUAL

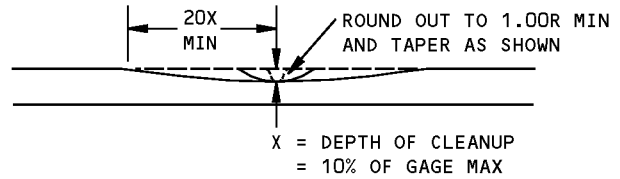
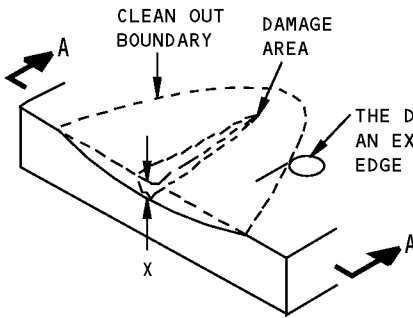


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

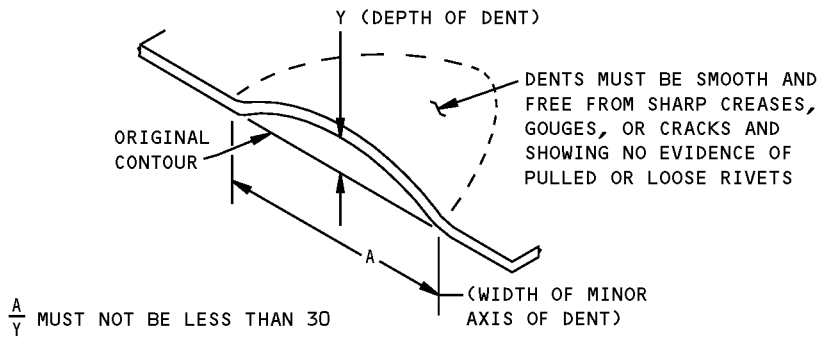
DETAIL II



SECTION A-A

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

DETAIL III

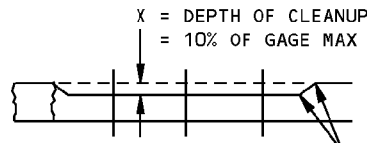
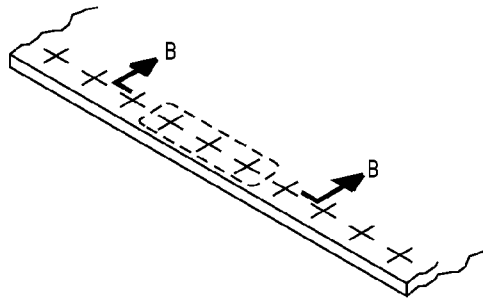


ALLOWABLE DAMAGE FOR DENT

DETAIL IV

**Allowable Damage - Strut Fairing Structure - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

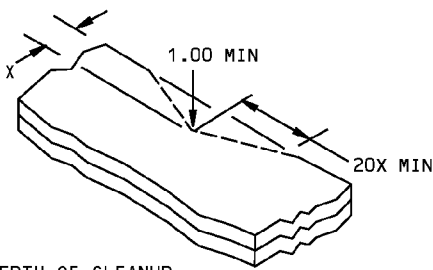


X = DEPTH OF CLEANUP
= 10% OF GAGE MAX

SMOOTH BLEND-OUT RADIUS 0.50 INCH
MINIMUM. CORROSION CLEAN UP AROUND
ANY THREE FASTENERS IN TEN IS
PERMITTED TO MAX DEPTH

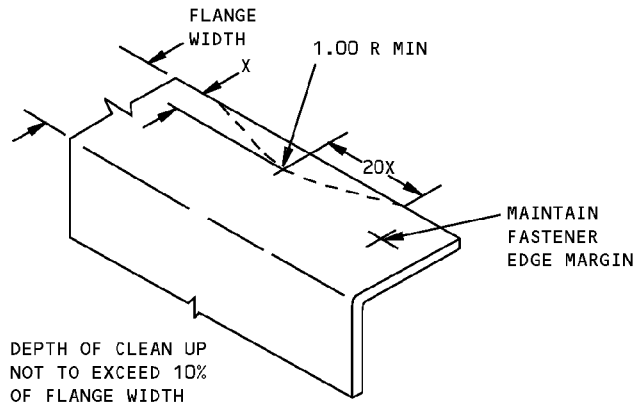
SECTION B-B

CORROSION CLEAN UP
DETAIL V



X = DEPTH OF CLEANUP
= 0.10 MAXIMUM

DETAIL VI



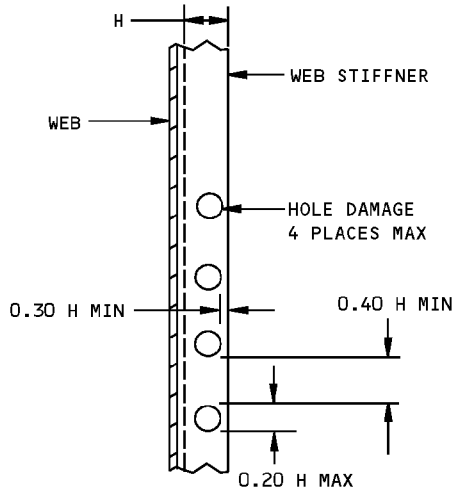
X = DEPTH OF CLEAN UP
NOT TO EXCEED 10%
OF FLANGE WIDTH

REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VII

NOTE:

NO HOLE DAMAGE ALLOWED IN
STIFFENER FLANGES FASTENED
TO WEB. HOLE DAMAGE NOT TO
EXCEED 4 PLACES. FILL ALL
HOLES WITH 2117-T3 OR T4
RIVETS INSTALLED WET WITH
BMS 5-95.

H = WIDTH OF STIFFNER FLANGE



ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL VIII

**Allowable Damage - Strut Fairing Structure - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 5)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART - JT9D-7R4 ENGINE

SERVICE BULLETIN REPAIRS

The following service bulletins contain strut fairing structure repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY <input type="checkbox"/> A	SB NUMBER
NACELLE STRUT AFT FAIRING ATTACHMENT - OUTBOARD SKATE ANGLE	1 THRU 244	767-57-0023

A FOR AIRPLANES ON WHICH PREVENTIVE MODIFICATION HAS NOT BEEN ACCOMPLISHED

**Service Bulletin Repair Chart
Figure 201**

D634T210

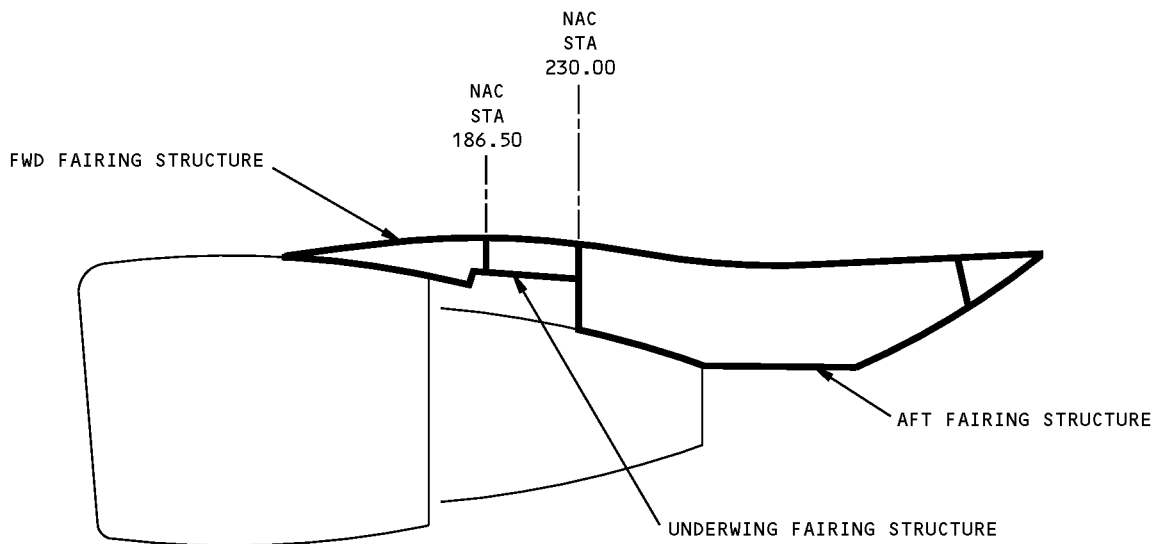
54-50-71

REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - STRUT FAIRING STRUCTURE - JT9D-7R4 ENGINE

REG DWG
313T3310
313T3350
313T3200
313T3100
311T3510



NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- A** SEE 51-70-11 FOR FORMED SECTION REPAIR
- B** SEE 51-70-12 FOR EXTRUDED SECTION REPAIR
- C** SEE 51-70-13 FOR WEB REPAIR
- D** NO TYPICAL REPAIRS APPLICABLE. REFER TO THE LIST OF SERVICE BULLETIN REPAIRS

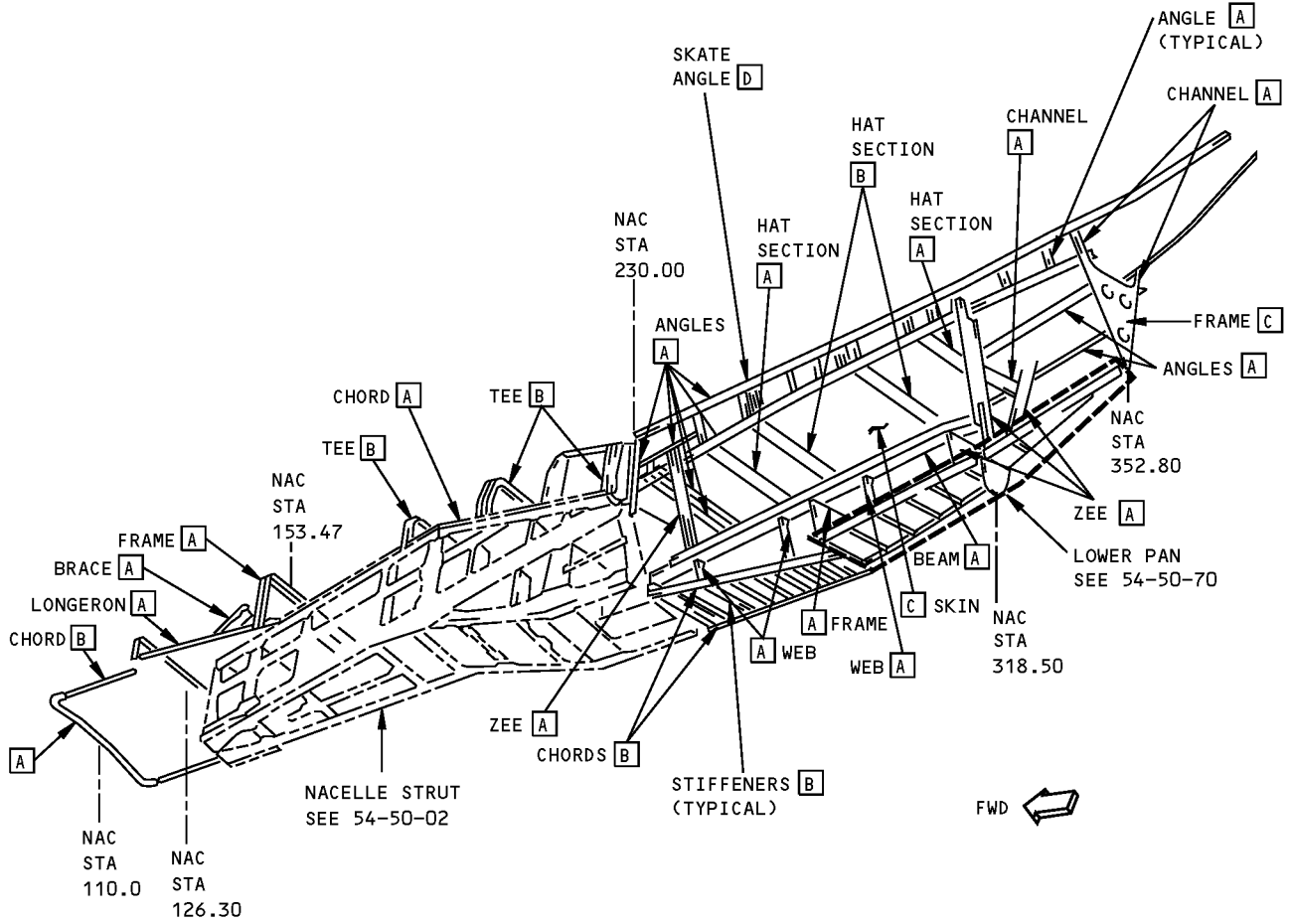
Strut Fairing Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 2)

D634T210

54-50-71

REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**

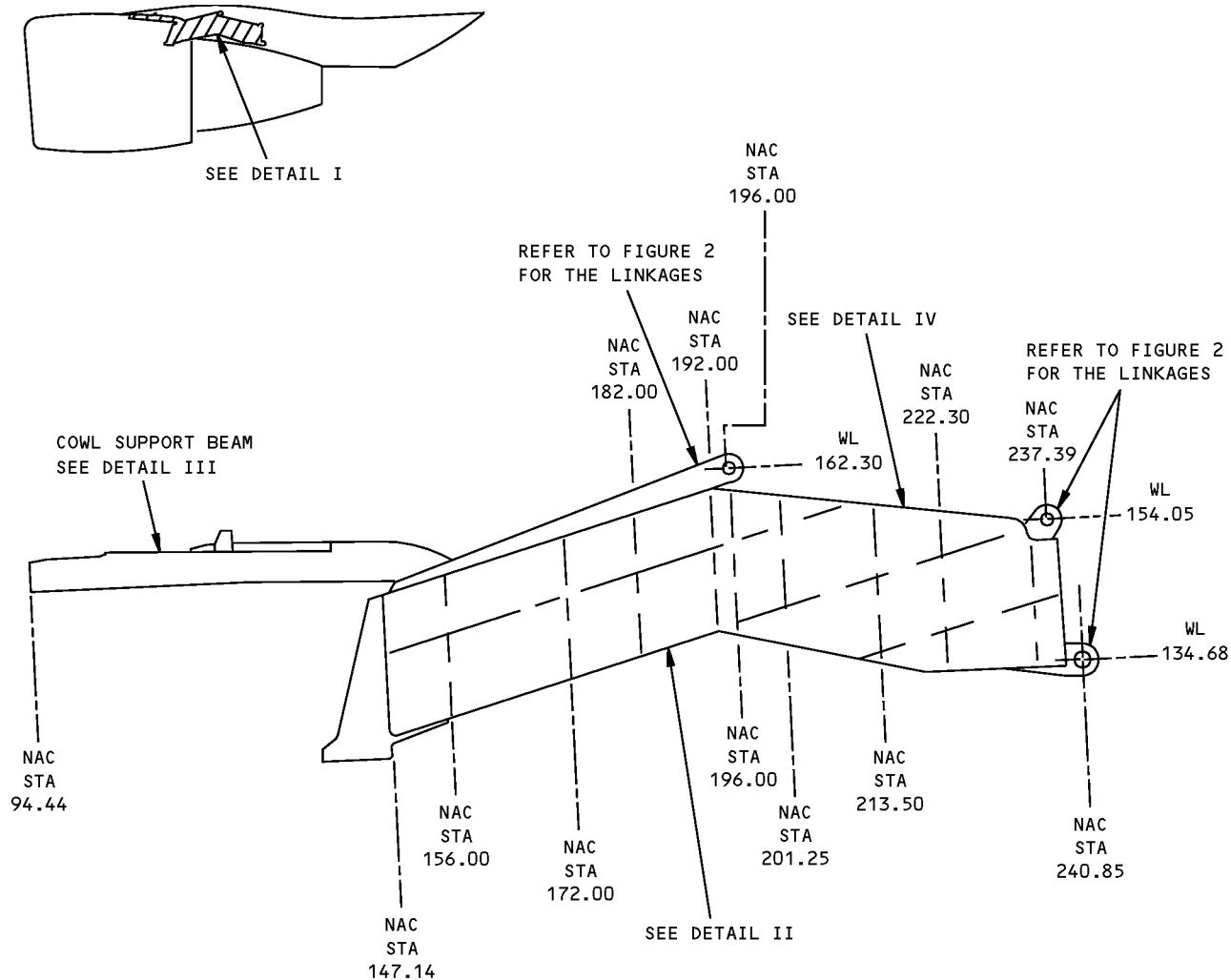


MATERIAL: ALUMINUM

**Strut Fairing Structure Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 2)**

767-300 STRUCTURAL REPAIR MANUAL

IDENTIFICATION 1 - STRUT ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



DETAIL I

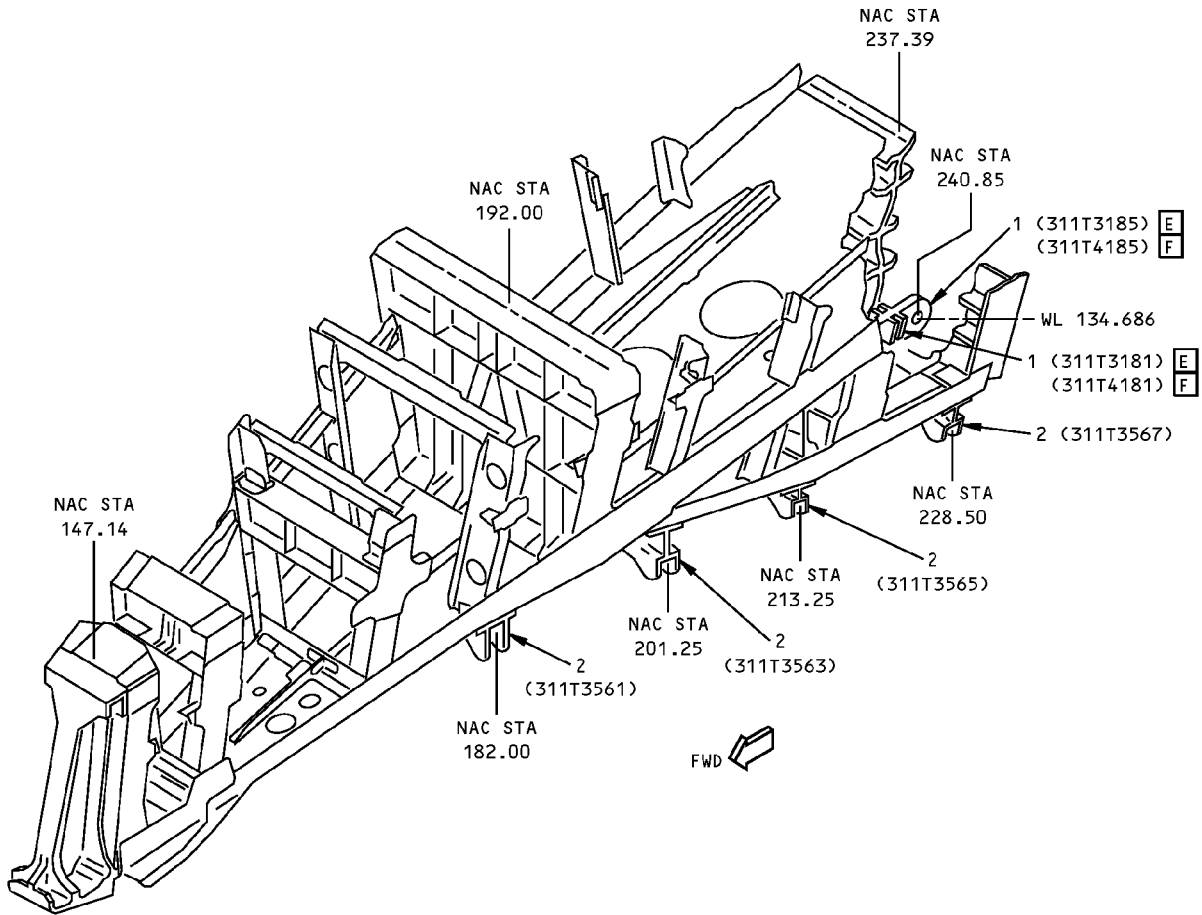
NOTES

- A** FOR AIRPLANES WITH JT9D-7R4 ENGINES UP TO CUM LINE NUMBER 233
- B** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 234 AND ON
- C** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0080 INCORPORATION
- D** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER 664 AND ON, AND FOR AIRPLANES WITH SB 767-54-0080 INCORPORATED
- E** FOR AIRPLANES WITH LOAD SHARING NACELLES UP TO CUM LINE NUMBER 225.
- F** FOR AIRPLANES WITH LOAD SHARING NACELLES CUM LINE NUMBER 277, 327, AND 329.

**Strut Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3000
311T3130



DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	LOWER SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	E F
2	HINGE FITTING		FORGING TITANIUM 6AL-4V	

LIST OF MATERIALS FOR DETAIL II

**Strut Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 4)**

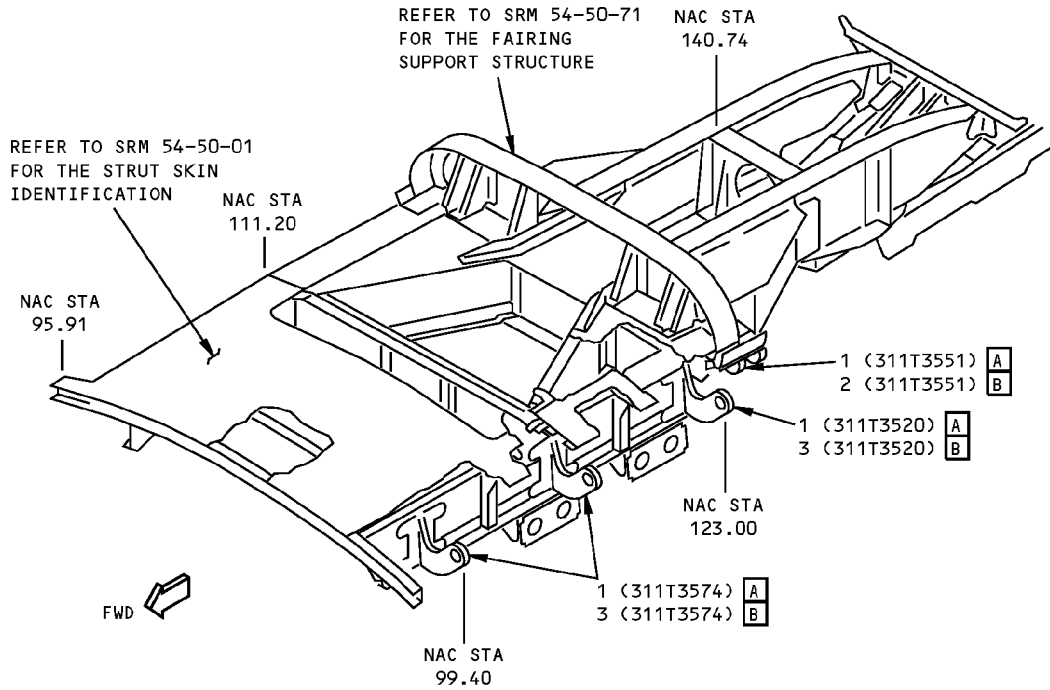
IDENTIFICATION 1
Page 2
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54-50-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T3510



**COWL SUPPORT BEAM
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FITTING		FORGING 7075-T73	A
2	HINGE FITTING	2.75	PLATE 2219-T851	B
3	HINGE FITTING		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL III

**Strut Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1 (Sheet 3 of 4)**

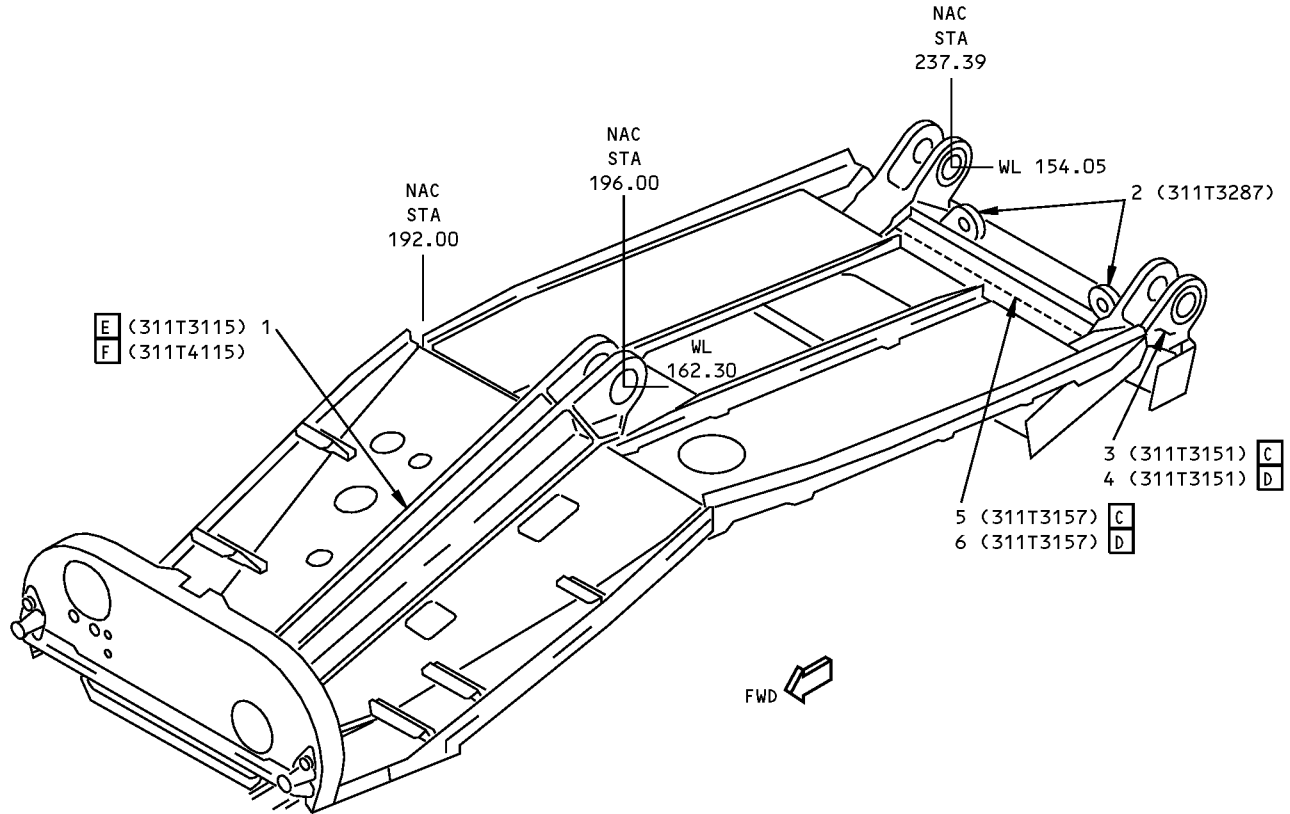
IDENTIFICATION 1
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54-50-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER SPAR		FORGING 15-5PH CRES HT TR 180-200 KSI	E F
2	SIDE LOAD FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
3	MID SPAR FITTING		FORGING 4330M ALLOY STEEL HT TR 220-240 KSI	C
4	MID SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	D
5	CLOSEOUT ANGLE		BAC1514-2595 7075-T73511 OPTIONAL: BAC1506-3181 7075-T73	C
6	CLOSEOUT ANGLE		7075-T73511 EXTRUDED BAR	D

LIST OF MATERIALS FOR DETAIL IV

**Strut Attachment Fitting Identification - JT9D-7R4 Engine
Figure 1 (Sheet 4 of 4)**

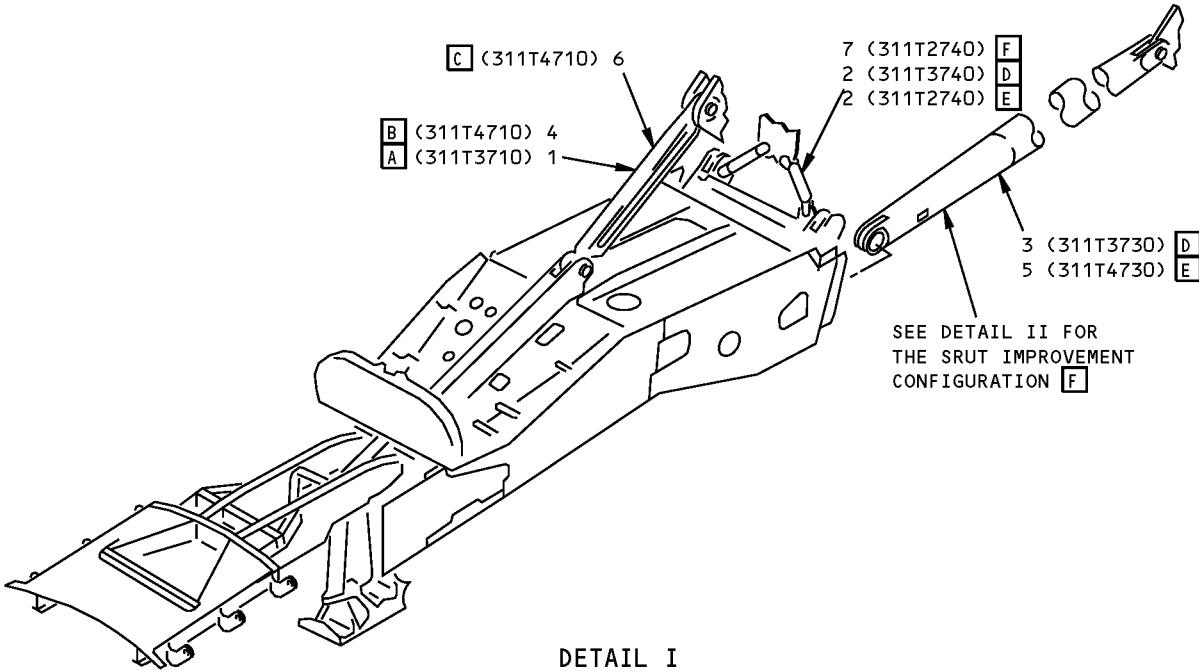
IDENTIFICATION 1
Page 4
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54-50-90

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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - ATTACHMENT LINKAGE - JT9D-7R4 ENGINE



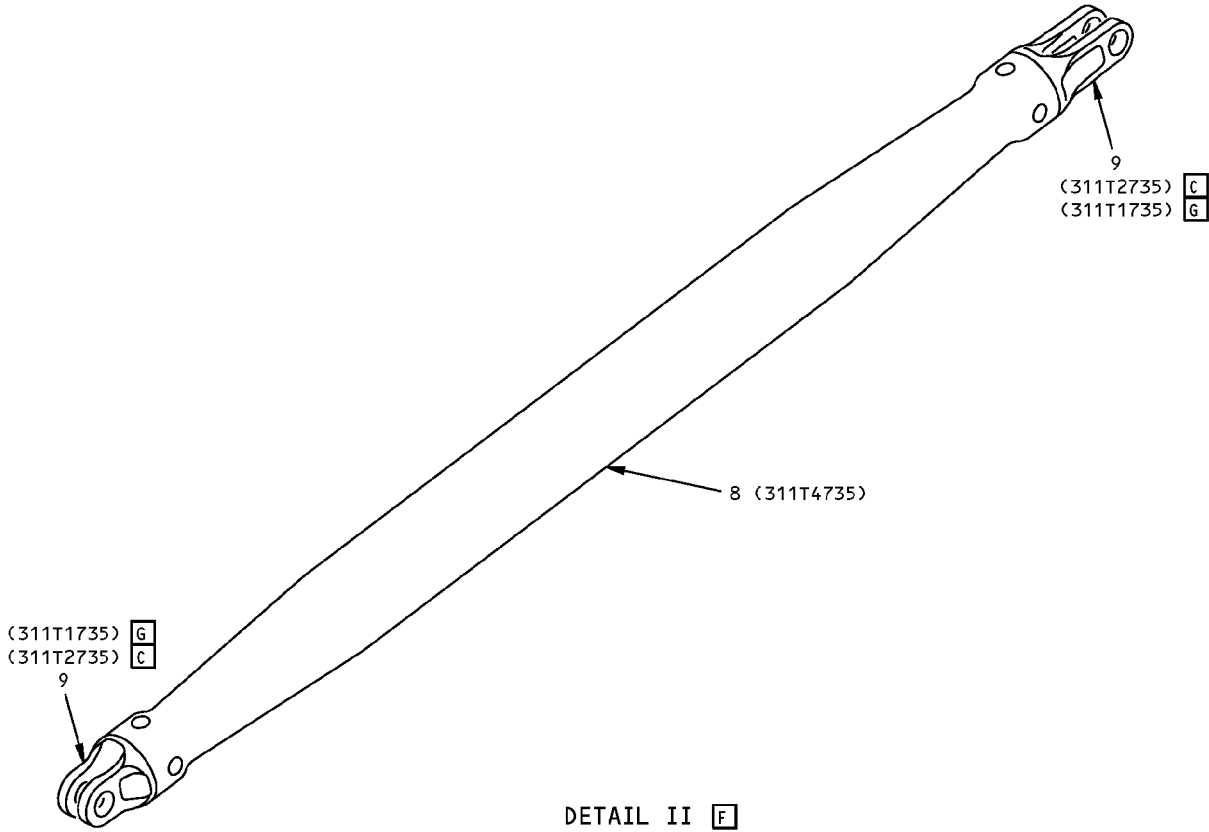
NOTES

- A** FOR AIRPLANES WITH JD9D-7R4 ENGINES CUM LINE NUMBER:
 - 1 THRU 254
- B** FOR AIRPLANES WITH CUM LINE NUMBER:
 - 277,327 AND 329 WITHOUT SB 767-54-0083 INCORPORATION
- C** FOR AIRPLANES WITH CUM LINE NUMBER:
 - 277,327 AND 329 WITH SB 767-54-0083 INCORPORATION
- D** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER:
 - 1 THRU 254 WITHOUT SB 767-54-0080 INCORPORATION
- E** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER:
 - 277,327 AND 329 WITHOUT SB 767-54-0080 INCORPORATION
- F** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER:
 - 1 THRU 329 WITH SB 767-54-0080 INCORPORATED
- G** FOR AIRPLANES WITH JT9D-7R4 ENGINES CUM LINE NUMBER:
 - 1 THRU 254 WITH SB 767-54-0080 INCORPORATED



**Attachment Linkage Identification - JT9D-7R4 Engine
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



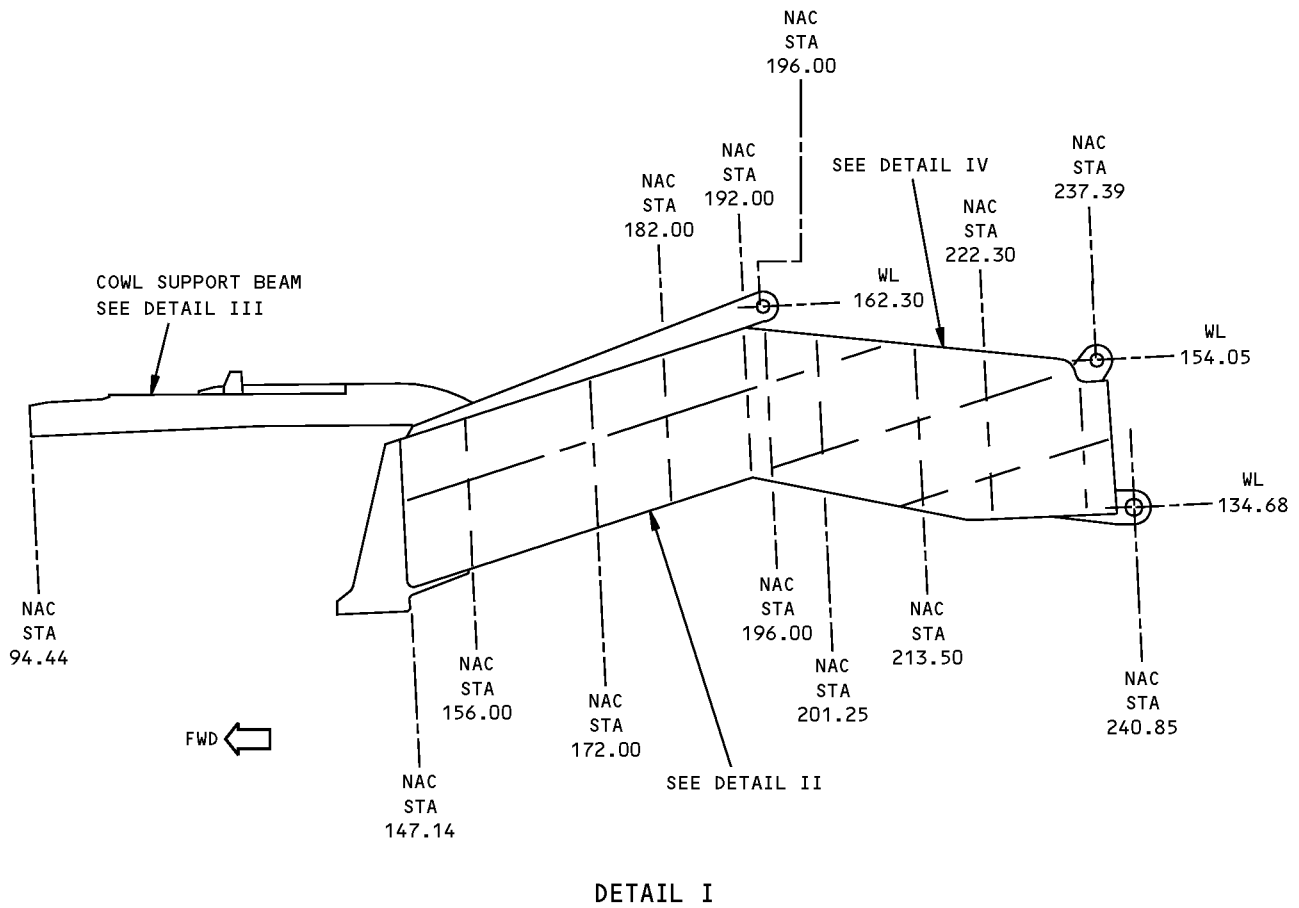
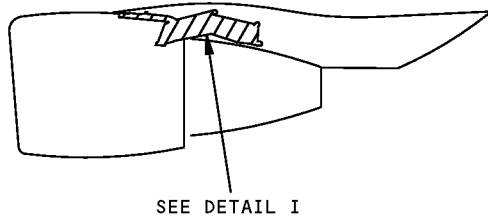
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER LINK		15-5PH CRES FORGING HT TR 180-200 KSI	A
2	SIDE LINK		15-5PH CRES BAR HT TR 180-200 KSI	D E
3	DIAGONAL BRACE		TUBE OR EXTRUDED BAR 7075-T6	D
4	UPPER LINK		4330M FORGING HT-TR 220-240 KSI	B
5	DIAGONAL BRACE		7075-T76 TUBE OR 7075-T6 EXTRUDED BAR	E
6	UPPER LINK		15-5PH CRES FORGED BLOCK OR BAR HT TR 180-200 KSI	C
7	SIDE LINK	0.625	15-5PH CRES PLATE OR BAR HT TR 180-200 KSI	F
8	DIAGONAL BRACE TUBE		7075-T73 TUBE OR BAR	F
9	END FITTING		TI-6AL-4V BAR OR FORGED BLOCK ANNEALED	F

LIST OF MATERIALS FOR DETAILS I AND II

**Attachment Linkage Identification - JT9D-7R4 Engine
Figure 1 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

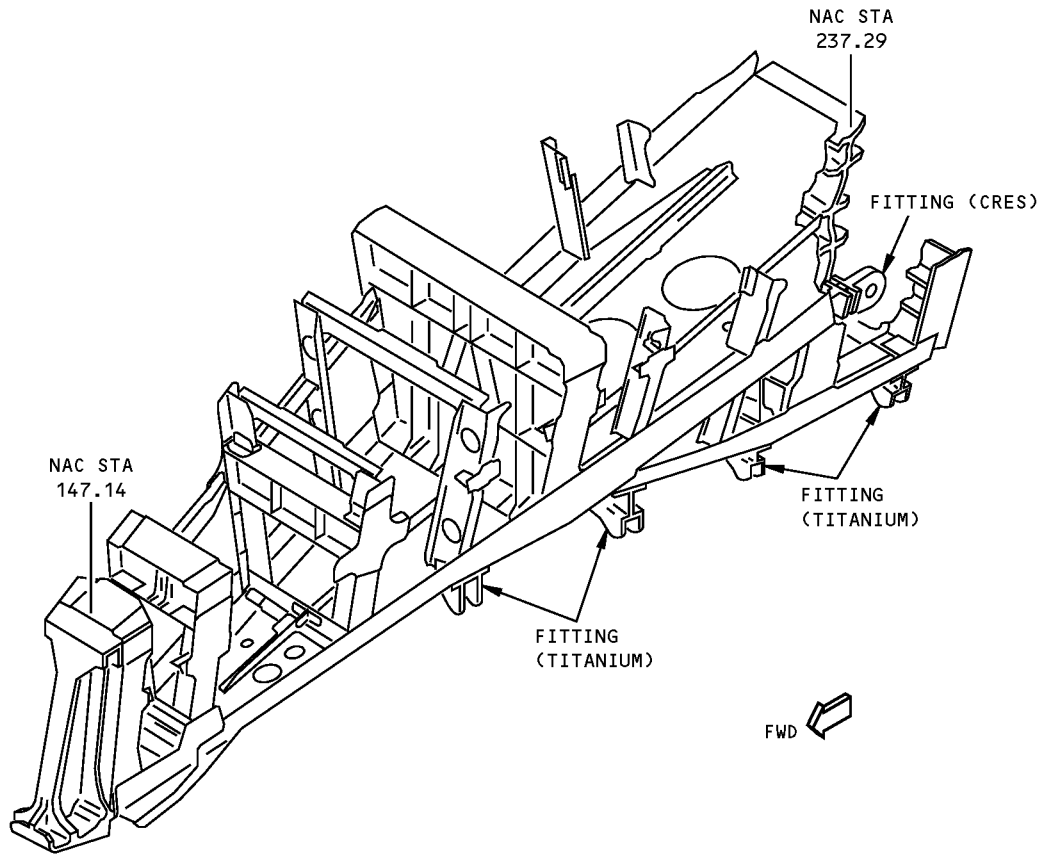
ALLOWABLE DAMAGE 1 - STRUT ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3000
311T3130



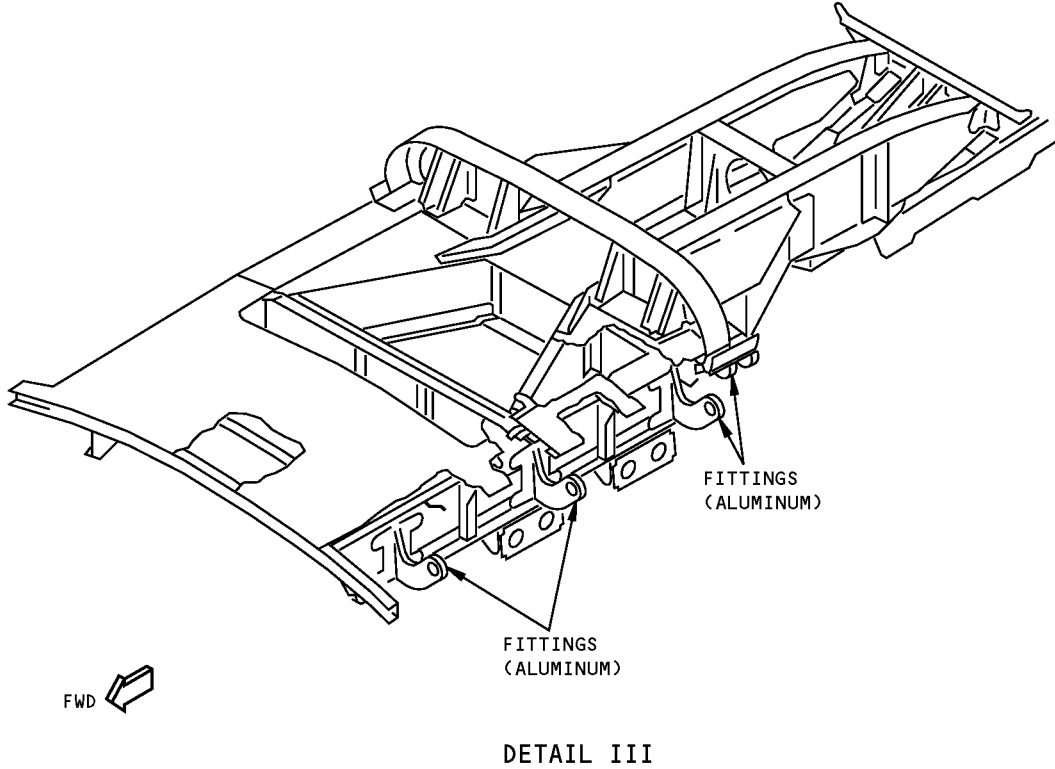
DETAIL II

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T5510

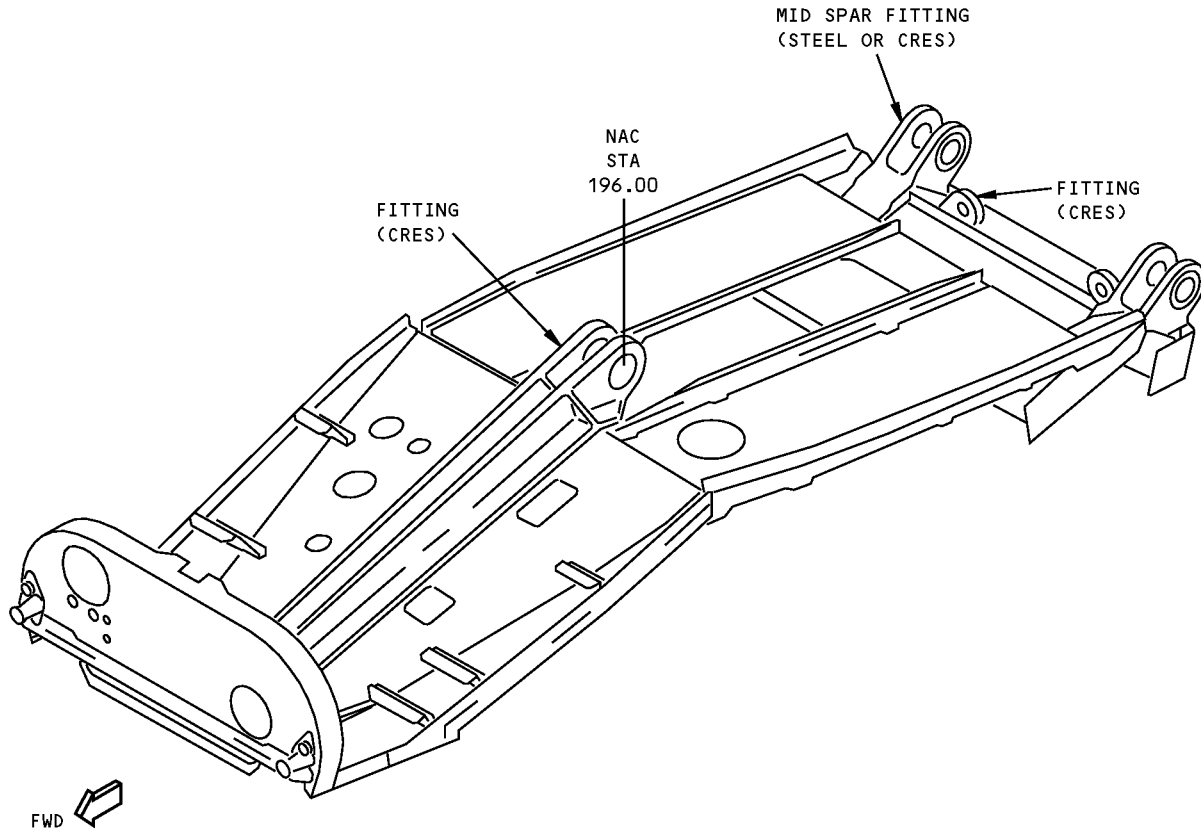


DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTING	A	A	NOT PERMITTED	NOT PERMITTED
STEEL MID SPAR FITTING	A	A	NOT PERMITTED	NOT PERMITTED
CRES MID SPAR FITTING	A	B C	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 6)**

D634T210

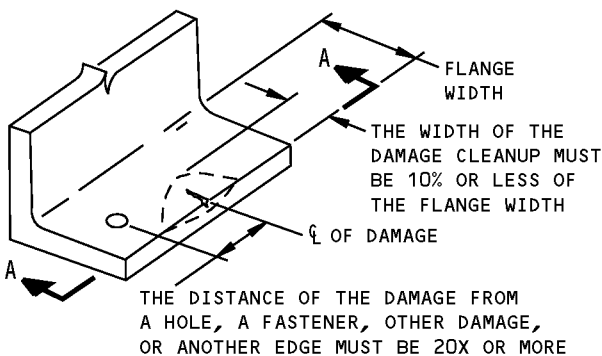
ALLOWABLE DAMAGE 1
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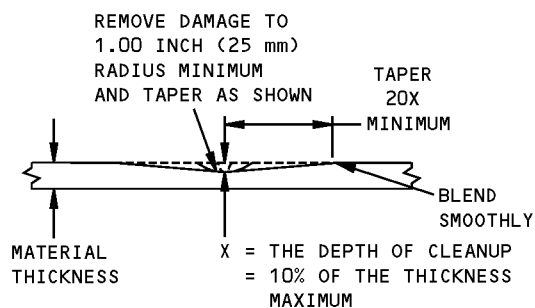
NOTES

- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5 PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM FITTINGS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES FITTINGS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR TITANIUM FITTINGS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURE.
- REFER TO SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES FITTINGS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII. DAMAGE IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHINGS.
- B** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII.
- C** TO MAKE SURE THE MID SPAR FITTING BORE IS ALIGNED CORRECTLY, SEE DETAIL VIII FOR THE DEPTH OF REMOVAL PERMITTED UNDER THE BUSHING FLANGE. THE MATERIAL REMOVAL ON THE FACE OF THE LUG UNDER THE BUSHING FLANGE MUST BE PERPENDICULAR TO THE BORE. AS THE RESULT OF THE SPOTFACE, CUT 0.01 TO 0.02 INCH (0.2 TO 0.5 mm) FROM THE NON-FLANGED END OF THE BUSHING BEFORE BUSHING INSTALLATION.
- D** DAMAGE OR REWORK IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHING EXCEPT AS NOTED IN **C**.



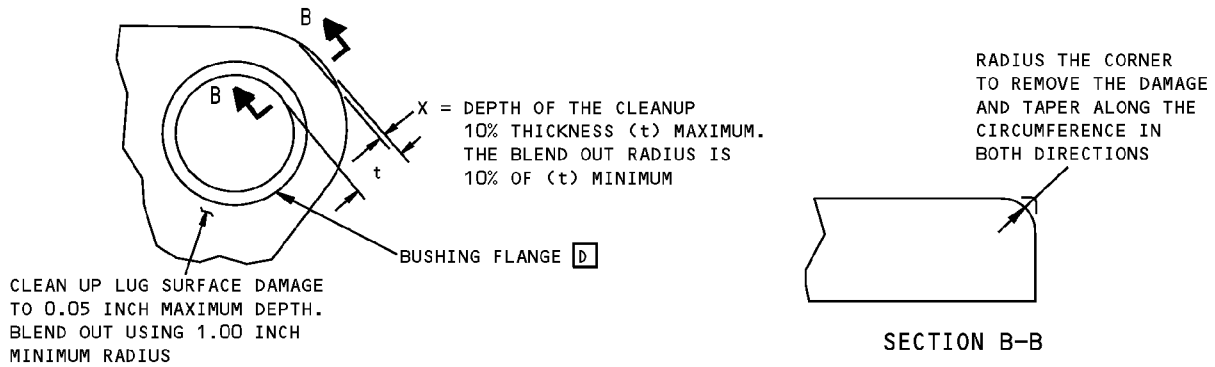
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE AT AN EDGE
DETAIL V**



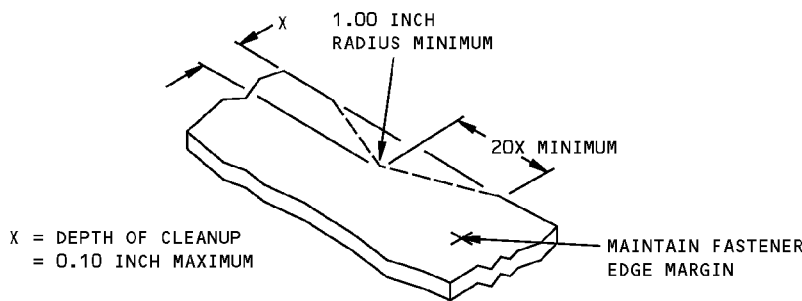
SECTION A-A

**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 6)**

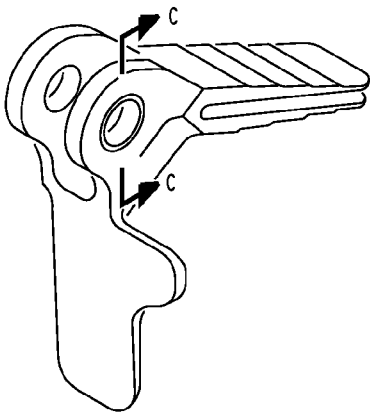
**767-300
STRUCTURAL REPAIR MANUAL**



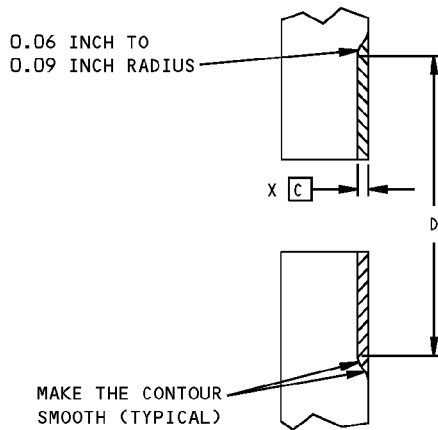
**DAMAGE CLEANUP FOR SURFACES OF LUG
DETAIL VI**



**REMOVAL OF CRACK DAMAGE ON THE EDGE
DETAIL VII**



**REMOVAL OF MATERIAL ON THE LUG FACE
UNDER THE FLANGE OF THE BUSHING
DETAIL VIII**



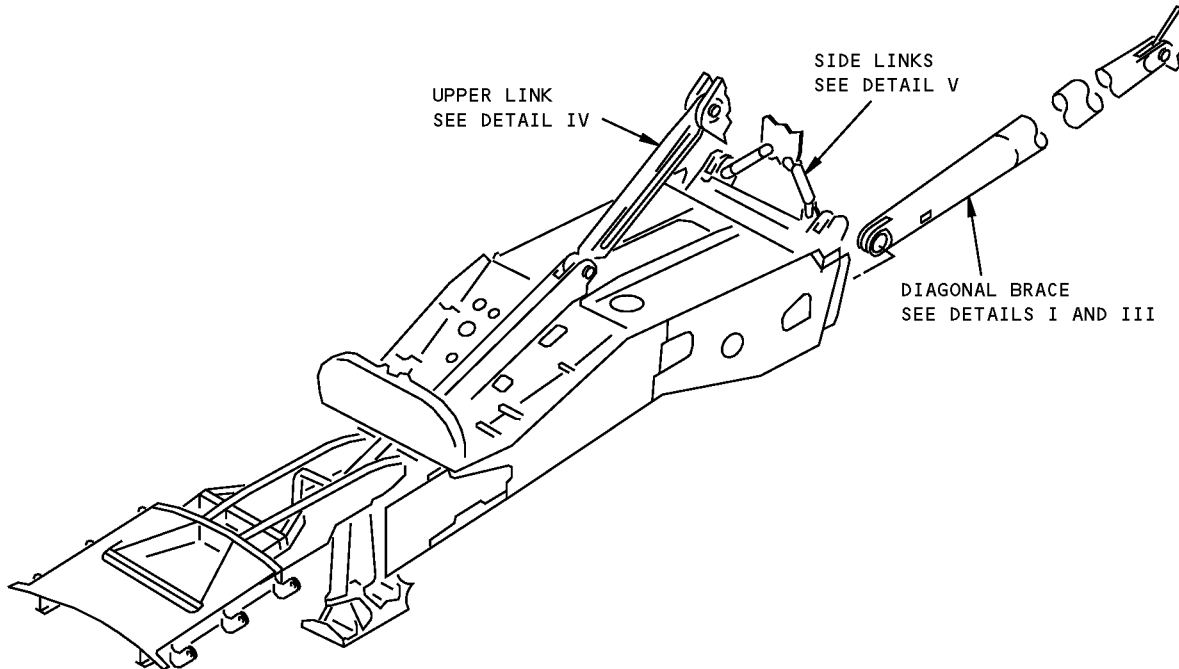
X = 0.010 INCH MAXIMUM
 MAX D = BUSHING FLANGE DIAMETER +0.5 INCH
 MIN D = BUSHING FLANGE DIAMETER +0.01 INCH
 SHADED AREA SHOWS WHERE MATERIAL HAS BEEN REMOVED.

**TYPICAL SPOTFACE ON ONE LUG IS SHOWN
SECTION C-C**

**Allowable Damage - Strut Attachment Fitting - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 2 - STRUT ATTACHMENT LINKS - JT9D-7R4 ENGINE



NOTES

- DENTS HOLES OR PUNCTURES ARE NOT PERMITTED.
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM COMPONENTS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES COMPONENTS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL FOR TITANIUM AND ALUMINUM COMPONENTS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES COMPONENTS AS GIVEN IN SRM 51-20-06 AFTER YOU DO THE NON-DESTRUCTIVE INSPECTION. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** NOT MORE THAN ONE AREA OF CLEANED OUT DAMAGE PERMITTED PER 2 INCHES (50 mm) OF LENGTH. **E**
- B** NOT MORE THAN THREE AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES (25 cm) OF LENGTH. **F**
- C** NOT MORE THAN TWO AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES (25 cm) OF LENGTH. **F**
- D** 0.010 INCH (2.5 mm) MAXIMUM DEPTH REWORK PERMITTED UNDER BUSHING FLANGE. SEE SECTION CUT VIEW.
- E** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 63 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- F** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 125 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- G** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VIII OR XIII. FOR OTHER DAMAGE, SEE DETAIL VII.
- H** EDGE DAMAGE AND SURFACE DAMAGE ARE NOT PERMITTED TOGETHER ON THE SAME LUG. IF THEY ARE ON THE SAME LUG, SEND A REPORT TO BOEING FOR REPAIR INSTRUCTIONS.

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 1 of 7)**

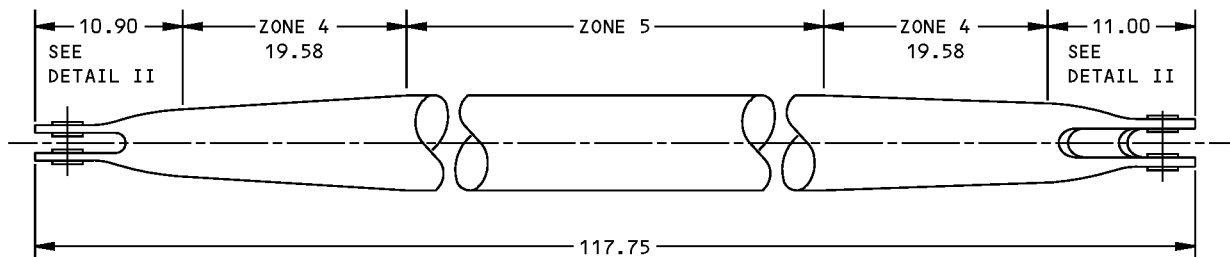
ALLOWABLE DAMAGE 2

54-50-90

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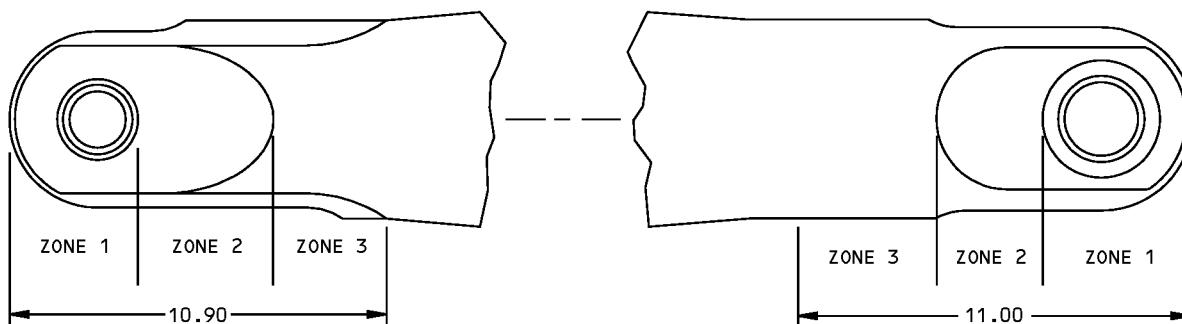
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM TUBING OR
EXTRUDED BAR

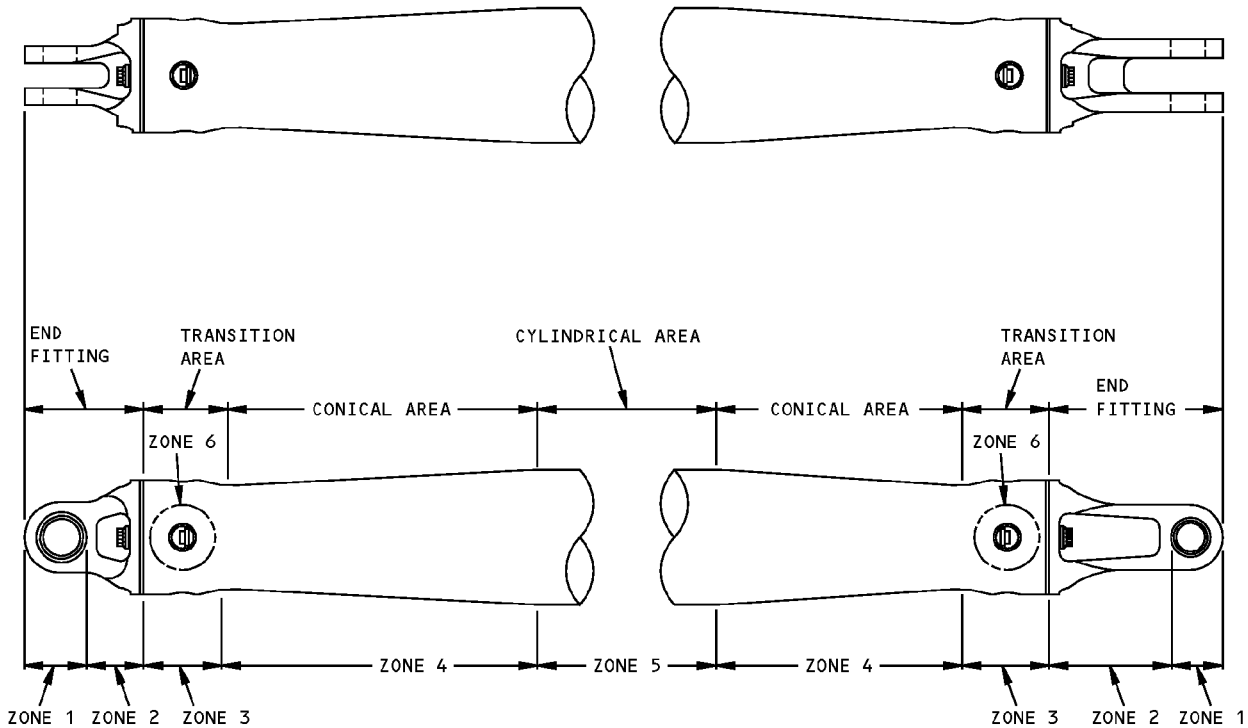


DETAIL II

ZONE	DAMAGE LIMITS
1	SEE DETAIL VI. [A]
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND TUBULAR AREA. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAILS VI AND IX. [A]
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. [A]
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. [B]
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. [C]

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



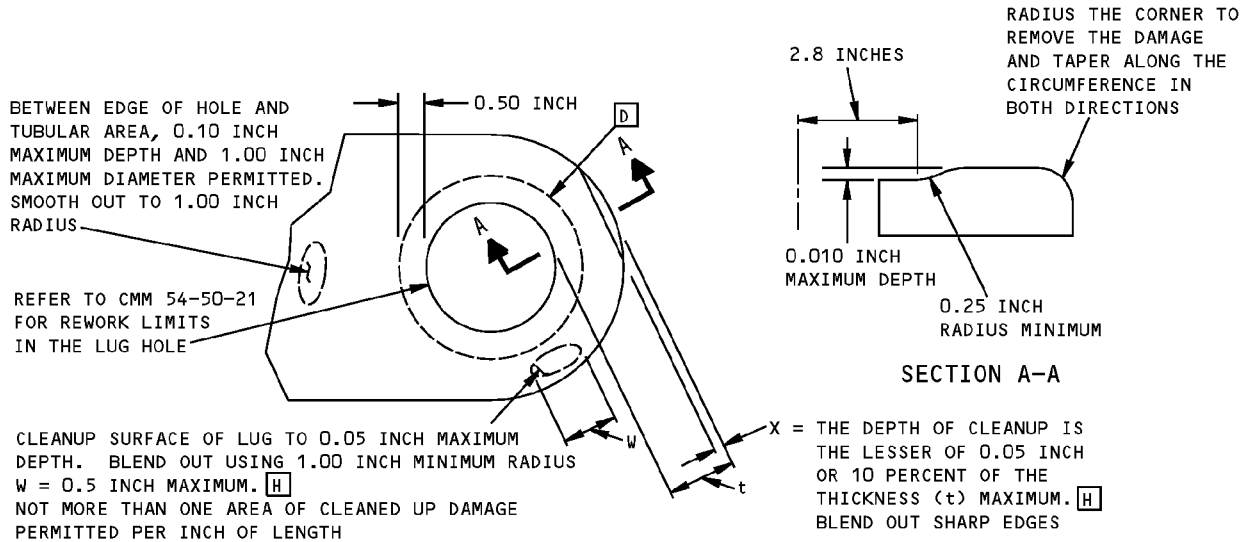
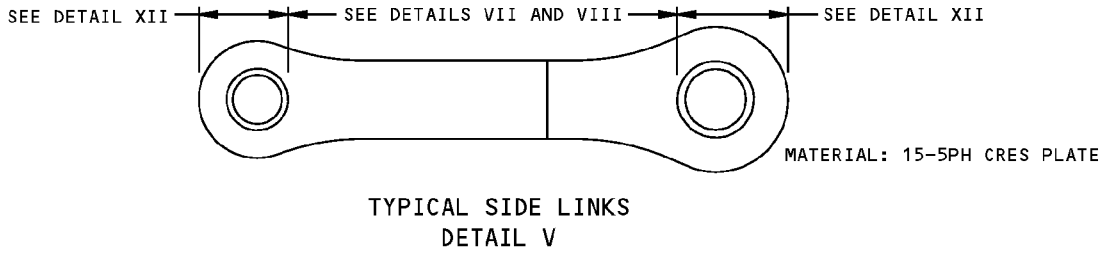
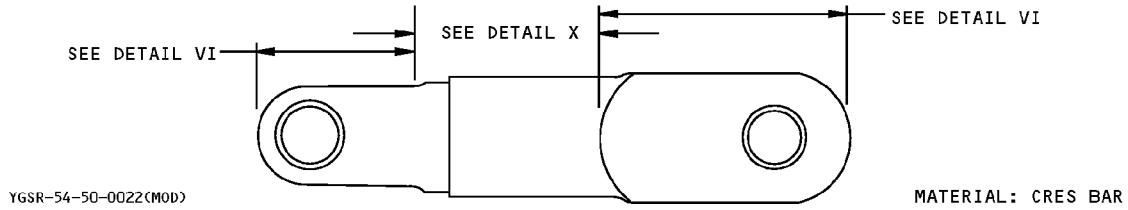
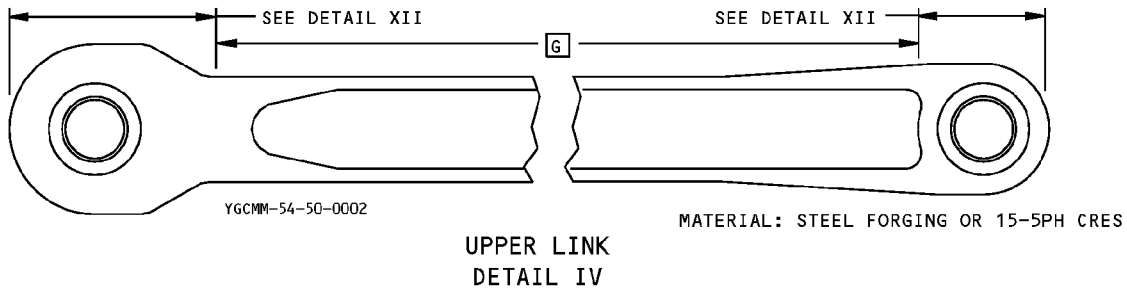
MATERIAL: ALUMINUM TUBING AND
TITANIUM END FITTINGS

DETAIL III

ZONE	DAMAGE LIMITS
1	SEE DETAIL XII. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND BASE OF END FITTING. SEE DETAILS VII AND VIII. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. C
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C
6	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XIV. A

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 3 of 7)**

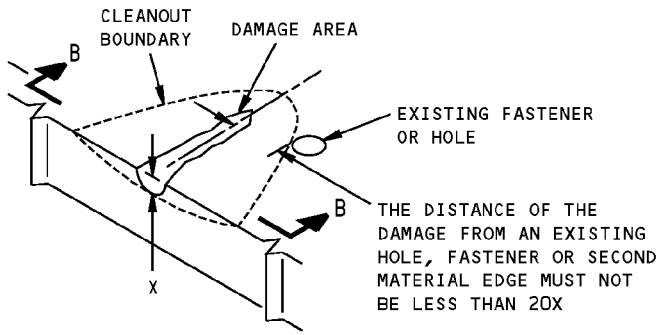
**767-300
STRUCTURAL REPAIR MANUAL**



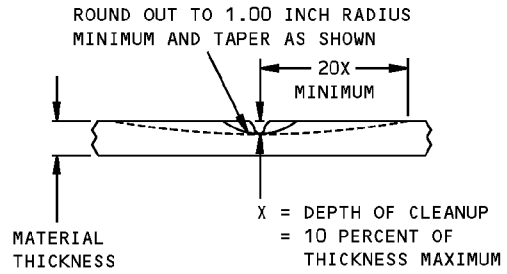
**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL VI**

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 4 of 7)**

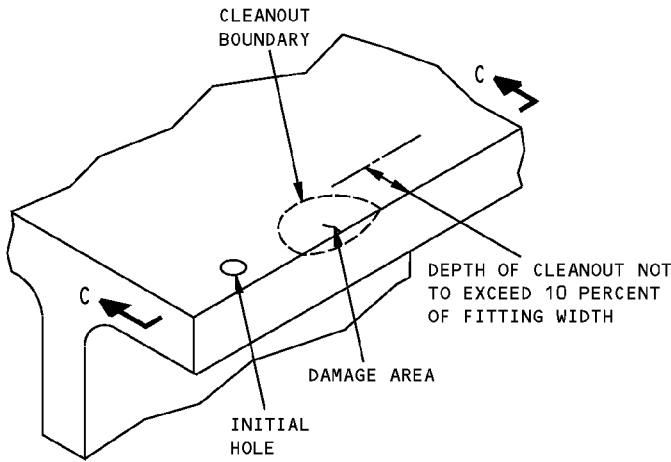
STRUCTURAL REPAIR MANUAL



**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE THAT IS NOT ON A LUG
DETAIL VII**

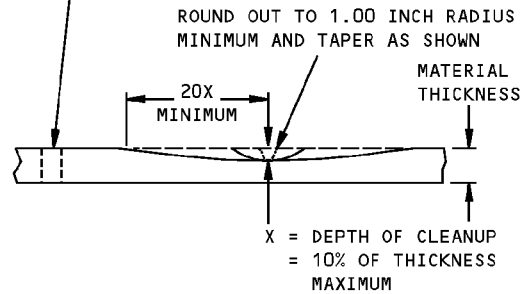


SECTION B-B

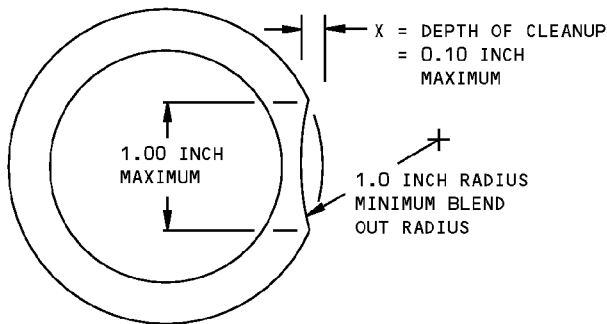


**REMOVAL OF DAMAGE ON AN EDGE
DETAIL VIII**

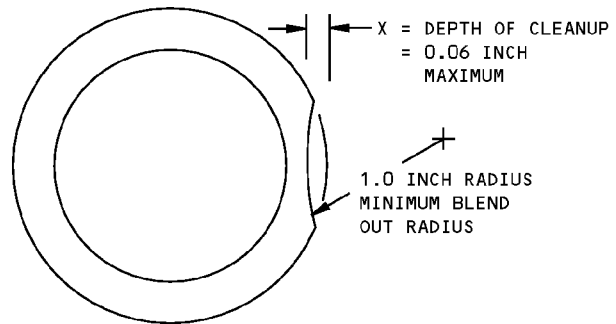
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR SECOND MATERIAL EDGE MUST NOT BE LESS THAN 20X.



SECTION C-C



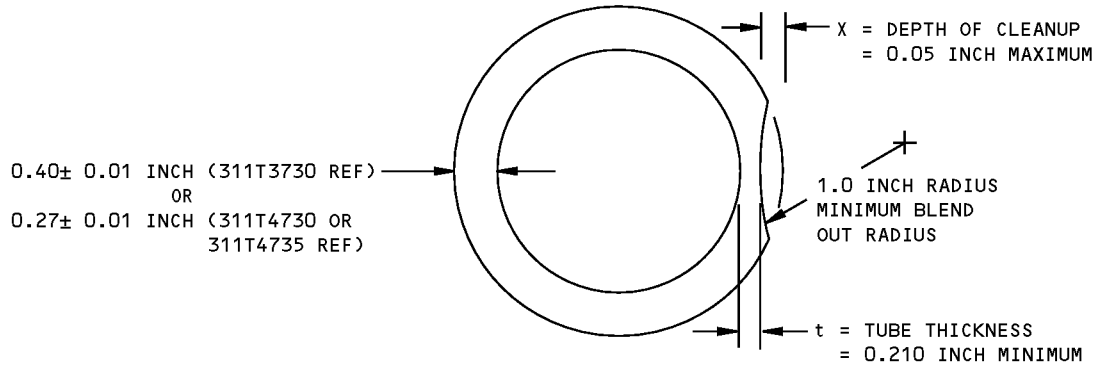
**REMOVAL OF DAMAGE ON A SURFACE
DETAIL IX**



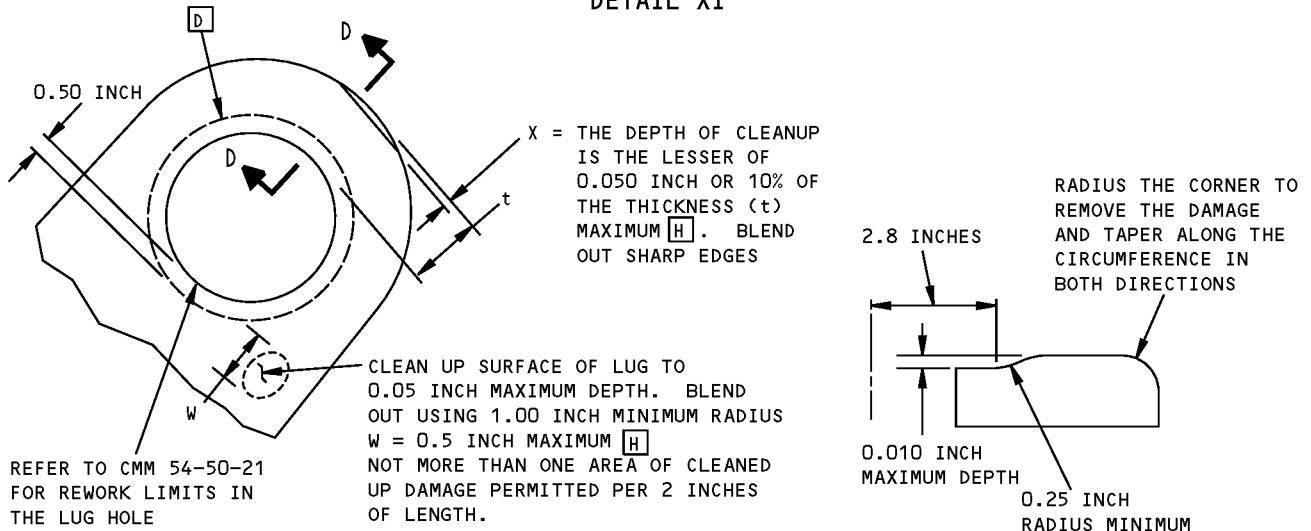
**REMOVAL OF DAMAGE ON A SURFACE
DETAIL X**

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 5 of 7)**

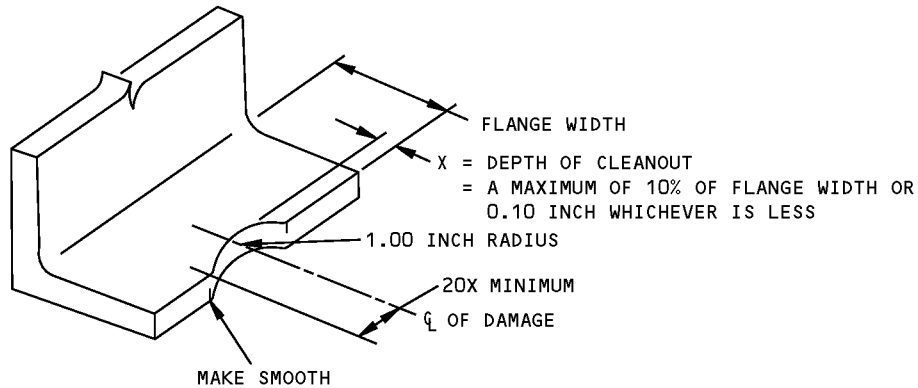
**767-300
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE ON A SURFACE
DETAIL XI**



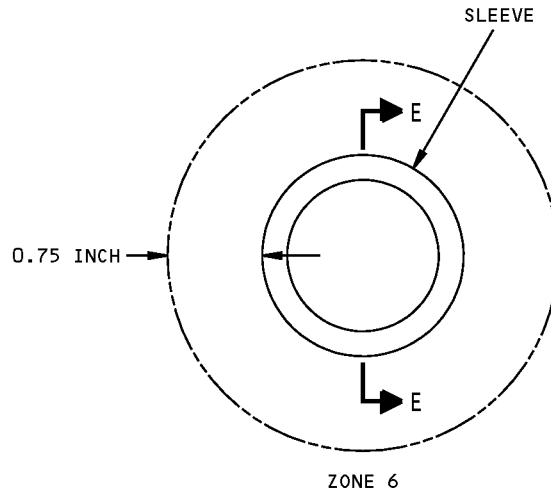
**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL XII**



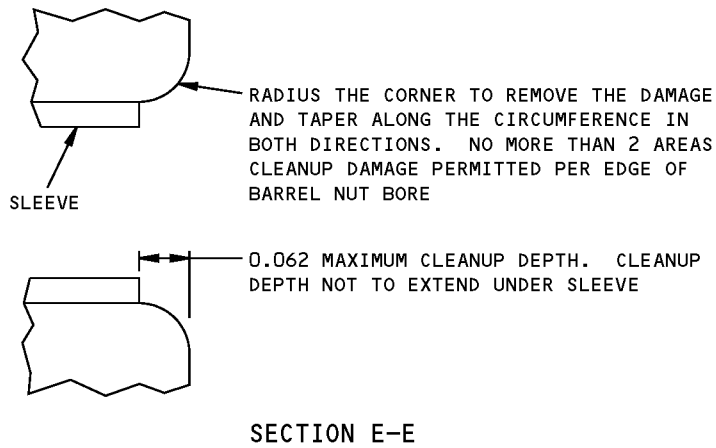
**REMOVAL OF EDGE DAMAGE FROM FREE FLANGE
WITHOUT FASTENERS
DETAIL XIII**

**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 6 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



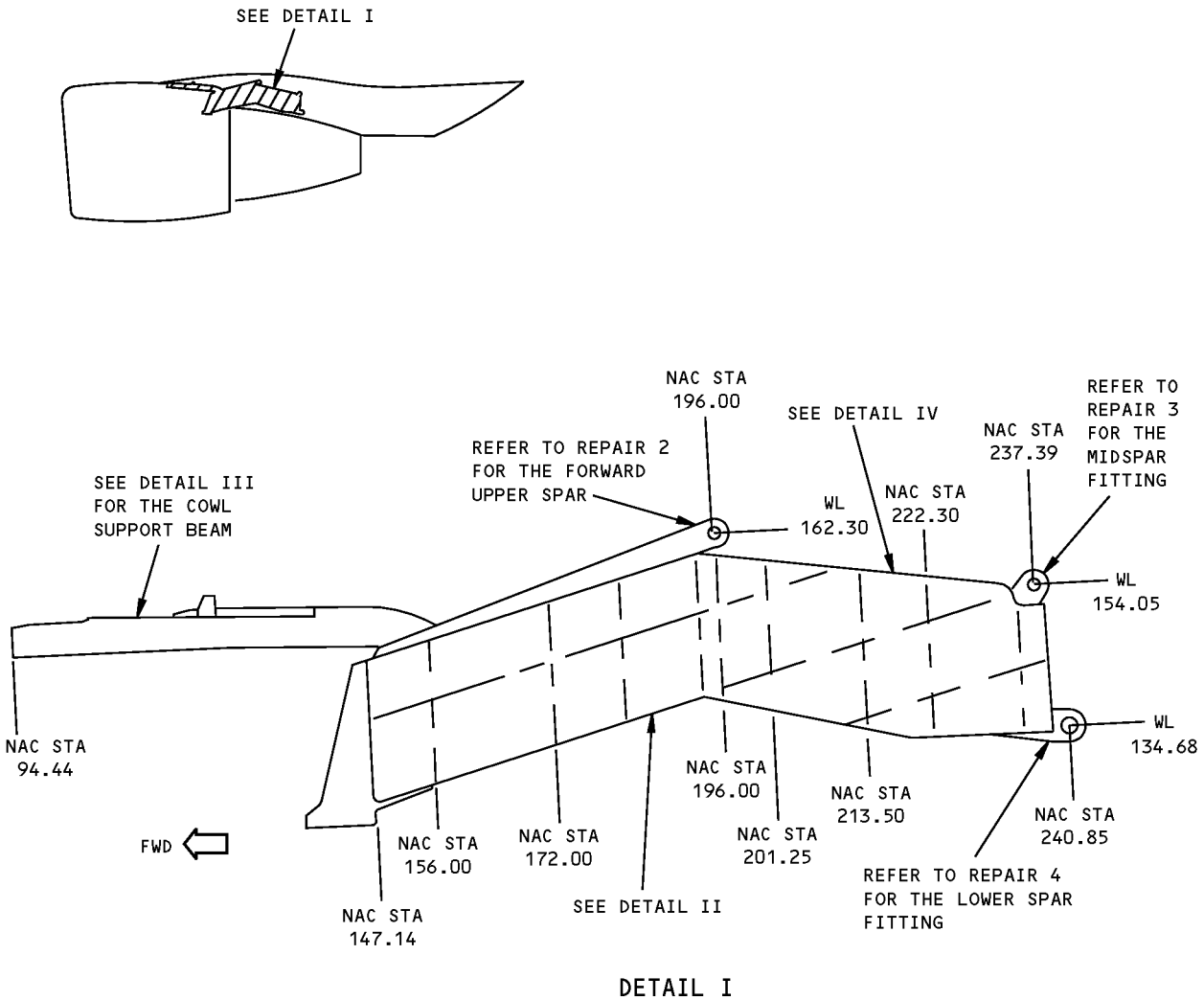
**REMOVAL OF DAMAGE ON A BARREL NUT BORE
DETAIL XIV**



**Allowable Damage - Strut Attachment Links - JT9D-7R4 Engine
Figure 101 (Sheet 7 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT ATTACHMENT FITTINGS - JT9D-7R4 ENGINE



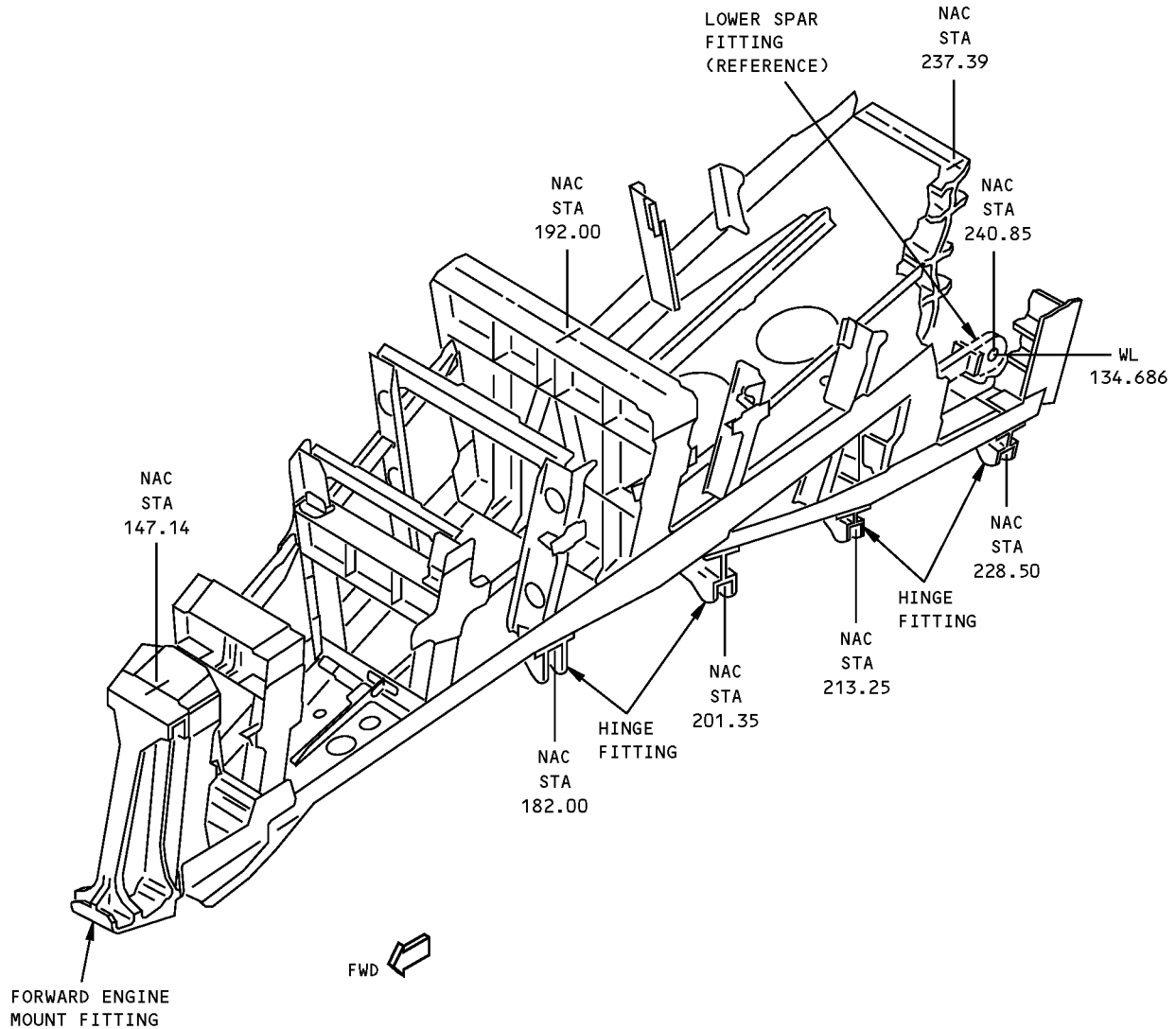
DETAIL I

NOTES

- THE FORWARD UPPER SPAR, MID SPAR AND LOWER SPAR FITTING LUG HOLE REPAIRS ARE LOCATED IN THE FIGURES THAT ARE REFERENCED IN DETAIL I. OTHER STRUT ATTACHED FITTING REPAIRS WILL BE AVAILABLE BASED ON SERVICE EXPERIENCE.
- REFER TO SRM 54-50-02 FOR THE FITTING AND LINKAGE IDENTIFICATION AND ALLOWABLE DAMAGE.
- REFER TO CMM 54-50-21 FOR THE REPAIR OR THE UPPER AND SIDE LINKS, AND THE DIAGONAL BRACE SHOWN IN DETAIL V.

**Strut Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 4)**

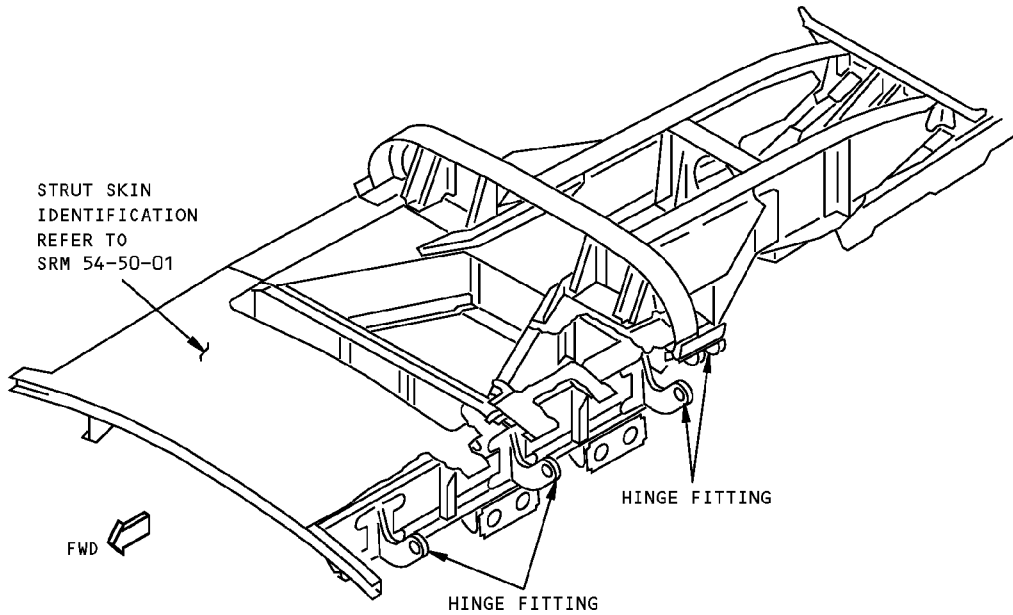
**767-300
STRUCTURAL REPAIR MANUAL**



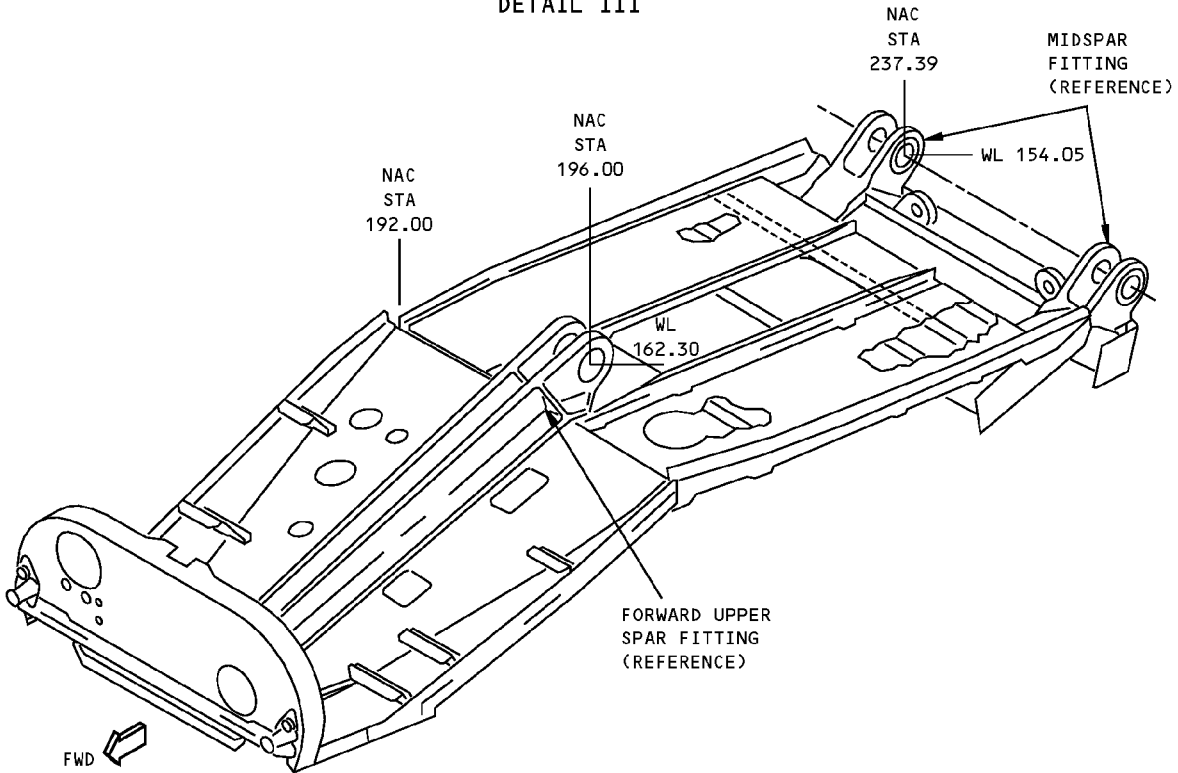
DETAIL II

**Strut Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



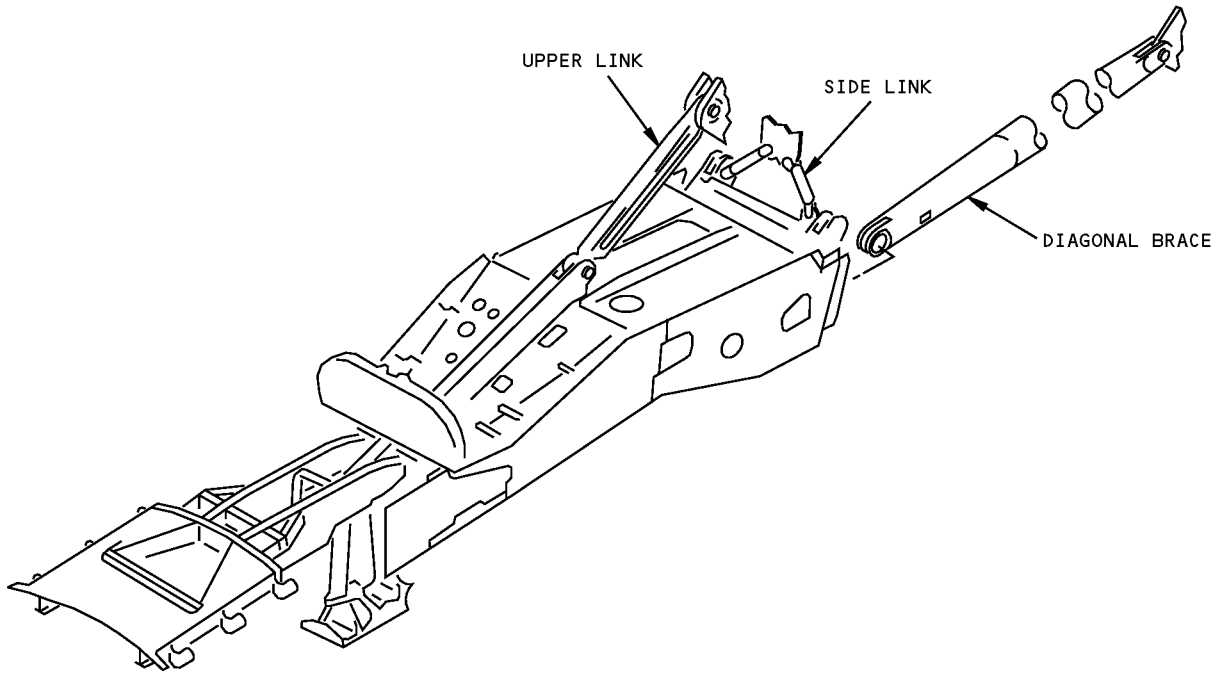
**COWL SUPPORT BEAM
DETAIL III**



DETAIL IV

**Strut Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V

**Strut Attachment Fitting Repair - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FORWARD UPPER SPAR FITTING, LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING
PROCEDURE - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE FORWARD UPPER SPAR FITTING ON THE JT9D-7R4 ENGINE. B

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER EXCEEDS THE MAXIMUM PERMITTED.

REPAIR INSTRUCTIONS

1. Remove the engine strut from the wing. Refer to AMM 54-51-01/401.
 2. Open the strut access doors. Refer to AMM 54-53-01.
 3. Get the bushing removal tool from Boeing tool kit B0F311T2110.
 4. Remove the two bushings from the lugs of the clevis with the bushing removal tool. Discard the bushings. The bushing material is Aluminum-Nickel-Bronze alloy.
 5. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for the magnetic particle inspection procedure.
 6. If damage is not found during the initial inspections and the airplane age is less than or equal to 15 years, then proceed to step 16. If the airplane age is more than 15 years or hole damage is found, proceed to the next step.
 7. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables on both sides of the upper link fitting. Move the bundles and cables up and away from the fitting to make clearance for the repair tools. If any electrical connections are disconnected, install caps or plugs on the equipment. Also, attach location tags to make subsequent connection easier.
 8. Drain the fuel supply line and the hydraulic fluid lines to the engine.
 9. Remove tubes, duct, clamps, support blocks and brackets on both sides of the fitting. See Detail I.
 10. Install the boring tools included in Boeing tool kit B0F311T2110 or equivalent. Use a temporary sheet metal cover, approximately 0.063 inch thick, to support the boring fixture over the hole for the thermal anti-ice duct.
 11. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Do a visual inspection with a 10-power magnifying glass for corrosion or a magnetic particle inspection for cracks to make sure all damage is removed. Machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 1.9962 inches, then get alternative repair instructions from Boeing.
 12. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
 13. Remove the boring tools.
 14. Hone the machined surfaces to remove all machine tears and burrs.
 15. Flap peen the hole. Do not use shot made of ferrous material. Flap peen to an intensity of 0.016A and coverage 2.0. Refer to SOPM 20-10-03.
- NOTE:** If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole before proceeding. To remove the ferrous material, clean the hole using the manual decontamination and repassivation process as specified in BAC5625, surface treatments for ferrous alloys. **A**
16. Hone the holes to the final hole diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.004 inch of material from the hole diameter to get the necessary surface finish. The maximum hole diameter is 1.9962 inches.
 17. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.

Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 6)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

18. Make the replacement bushings. One bushing is necessary for each lug of the clevis. See Detail II and Table I. Make the outer diameter of each bushing 0.003 to 0.004 inch larger than the hole diameter, to give an interference fit. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surface 63 microinches R_a .
19. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

20. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation guide bushing in the liquid nitrogen until the boiling stops. Use the guide bushing from kit BOF311T2110 or the equivalent. Refer to SOPM 20-50-03.
21. Apply sealant or adhesive as follows:
- A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the mating surfaces of the clevis which touch the flanges of the bushings.
- NOTE:** Do not apply BMS 5-95 sealant to the surface of the bores.
- B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.
- NOTE:** If there is primer in the bores, do not remove it.

22. Install the bushings as quickly as possible. Use the installation tools from kit BOF311T2110 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
23. Hone the inner diameter of the bushings to a diameter of 1.6965 to 1.6975 inches. Make the surface finish 32 microinches R_a . Machine the outer chamfers again if necessary. See Detail II.
24. Bond washer to spar fitting with BMS 5-26. See Detail II, Section A-A. Refer to SOPM 20-50-12.
25. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the faces of the lug. Apply a fillet seal of BMS 5-95 to the washer and bushing interface. Refer to SRM 51-20-05.
26. Put the airplane back to its usual condition.

Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 6)

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STRUCTURAL REPAIR MANUAL**

REPAIR INSTRUCTIONS (CONT)

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0095.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE ENGINE STRUT
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - SOPM 20-10-03 FOR FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS

A AS AN ALTERNATIVE TO CLEANING THE HOLE WITH THE MANUAL DECONTAMINATION AND REPASSIVATION PROCESS, YOU CAN ABRASE THE HOLE WITH CLEAN ALUMINUM OXIDE PAPER, 150 GRIT OR FINER. DO NOT USE SILICON CARBIDE ABRASIVE PAPER. SOLVENT CLEAN THE HOLE TO MAKE SURE ALL PARTICLES OF ABRASIVE GRIT ARE REMOVED.

B AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

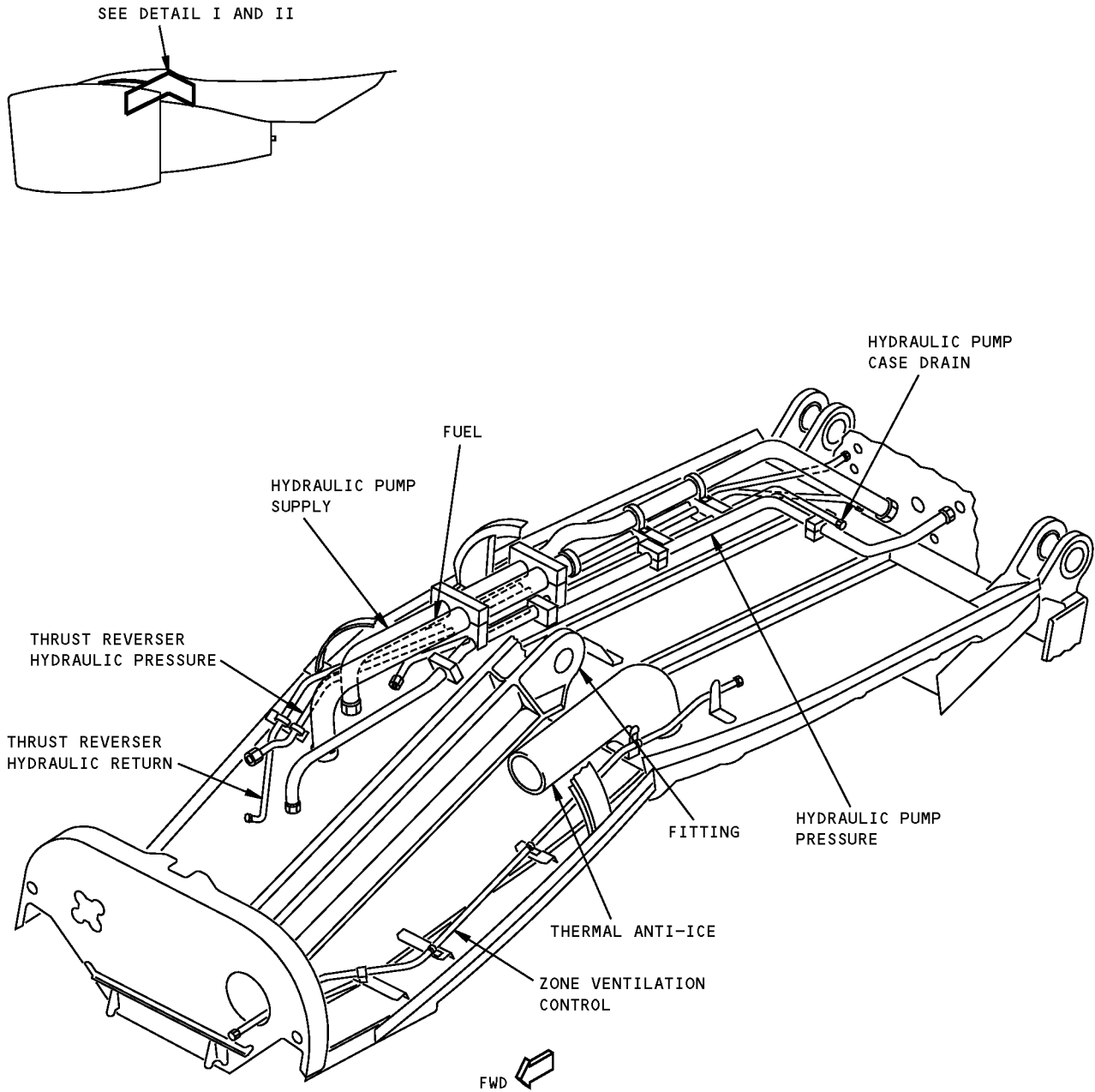
REPAIR MATERIAL		
PART	QTY	MATERIAL
1	OVERSIZED BUSHING	2
		2.25 INCHES DIAMETER BY 1.0 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T4100-70 BUSHING FROM BOEING
2	WASHER	2
		3.0 INCHES DIAMETER BY 0.125 INCH THICK AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 310T2303-1 WASHER FROM BOEING

TABLE I

1728104 S0000311271_V1

**Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 6)**

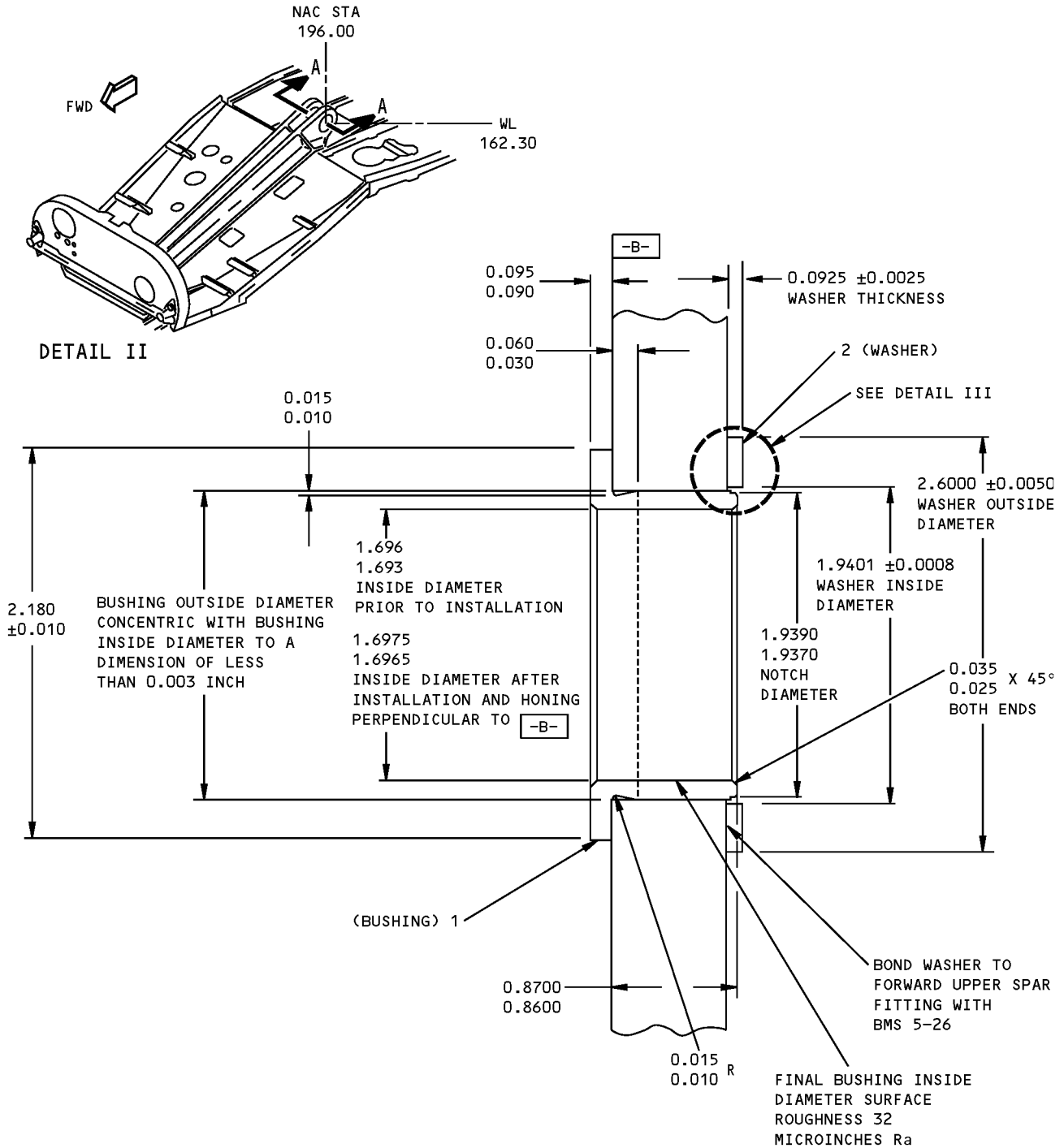
**767-300
STRUCTURAL REPAIR MANUAL**



TUBING AND DUCT
DETAIL I

**Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 4 of 6)**

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STRUCTURAL REPAIR MANUAL**

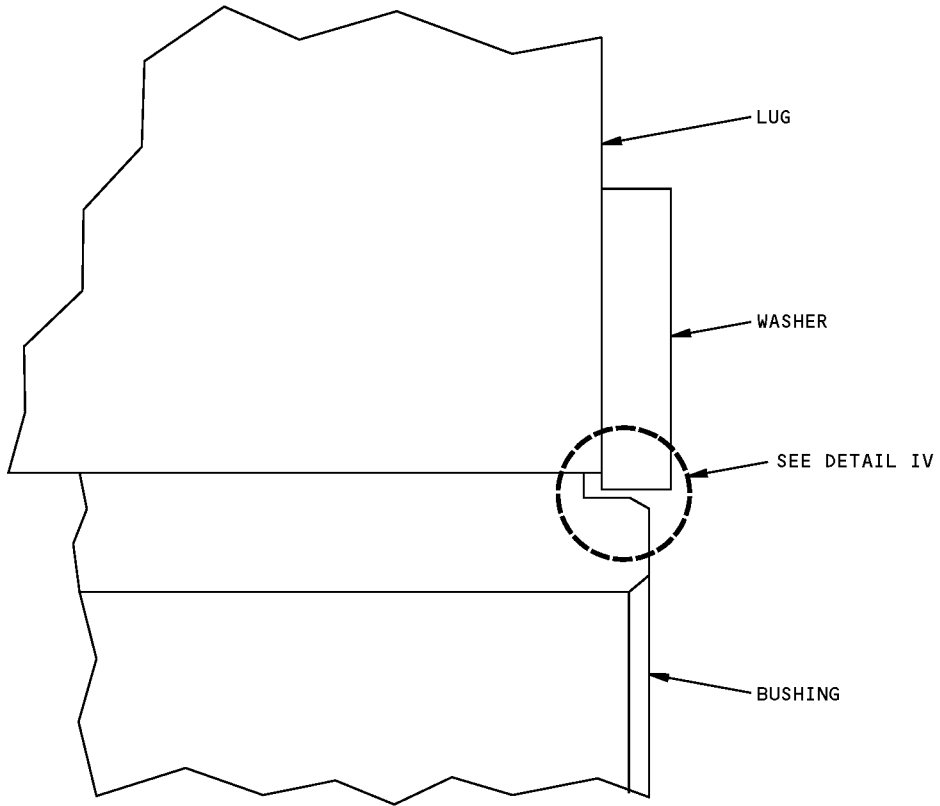


**FLANGED BUSHING
(TYPICAL)**

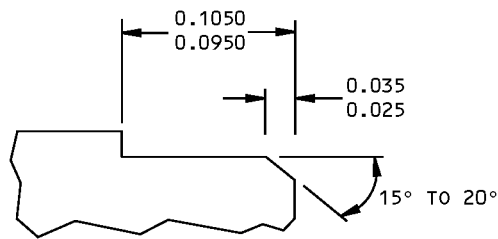
SECTION A-A

**Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III



**BUSHING OD CHAMFER AND
NOTCH DIMENSIONS**

DETAIL IV

**Forward Upper Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - MIDSPAR FITTING, LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING PROCEDURE - JT9D-7R4 ENGINE

APPLICABILITY
<p>THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE MIDSPAR FITTING ON THE JT9D-7R4 ENGINE [8]. IF THE MIDSPAR FITTING HAS THE POST STRUT IMPROVEMENT PROGRAM (SIP) CONFIGURATION OR WITH SB 767-54-0080 INCORPORATED, USE THE MIDSPAR FITTING LUG HOLE REPAIR FOR PW4000 ENGINE IN SRM 54-53-90.</p>

REPAIR INSTRUCTIONS

1. Remove the pylon and get access to the clevises. Refer to AMM 54-51-01 for the removal of the pylon.
2. Remove all four of the bushings from the damaged lug(s) of the clevises. Discard the bushing(s). The bushing material is Aluminum-Nickel-Bronze alloy.
3. Do a 10X magnified visual inspection to determine the amount of corrosion damage. Do magnetic particle inspection to determine the amount of crack damage. Refer to SOPM 20-20-01 for magnetic particle inspection procedures.
4. Machine each bore as necessary to remove scratches, surface defects, cracks or corrosion. Use boring tool, Boeing tool number BOF311T2150 or equivalent. Refer to SOPM 20-10-02. The fitting material is 4330M alloy steel, heat treated to 220-240 KSI.

NOTE: INSTALLATION OF THE BORING TOOL REQUIRES THE REMOVAL OF TUBING THAT IS LOCATED BETWEEN THE MIDSPAR FITTINGS.
5. If cracks or corrosion were found during magnetic particle or 10X visual inspection, continue to machine the bore and to do the inspections until you can not detect cracks or corrosion. Then machine an insurance cut of 0.010 inch minimum from the diameter of the bore. If the diameter of the bore is larger than 1.8640 inches after the bore has been machined, then get alternative repair instructions from Boeing.
6. If you did not find cracks or corrosion during the initial inspections, an insurance cut is not necessary unless the age of the airplane is more than 10 years. The maximum bore diameter is given in Step 5.
7. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.

8. Remove all machine tears and burrs on cut surfaces.
9. Do a surface etch inspection of each lug hole that has been machined. Use ammonium persulfate. This inspection examines the temper of the hole to find if the hole was damaged when it was machined. Refer to SOPM 20-10-02 for the surface temper etch inspection procedure.
10. Shot peen or flap peen the holes of the clevises that have been reworked. Use shot number 170 to 330, intensity 0.010A, and coverage 2.0. Refer to SOPM 20-10-03.
11. Hone the holes to the final bore diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.0028 inch of material from the bore diameter to get the necessary surface finish. The maximum bore diameter is 1.8640 inches.
12. Make four replacement bushings, one bushing for each lug of the clevises. See Detail I and Table I. Make the outer diameter of each bushing 0.0027 to 0.0036 inch larger than the hole diameter before the bushing is cadmium plated. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surfaces 63 microinches R_a .
13. Apply a stylus cadmium plate 0.0003 to 0.0005 inch thick to the surface of the lug hole. Refer to SOPM 20-42-10.
14. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.
15. Apply cadmium plate to the outer surface of the bushing. Use Type II, Class 2 cadmium plating as specified in SOPM 20-42-05. Do not plate the inner surface of the bushing.
16. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation mandrel in the liquid nitrogen until boiling stops. Refer to SOPM 20-50-03.

**Midspar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR INSTRUCTIONS (CONTINUED)

17. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin film of BMS 5-95 sealant to the inner surface of the fitting bore and to the mating surface under the bushing flange.
 - B. If you use adhesive as an alternative to sealant, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the inner surface of the fitting bore then apply a thin film of BMS 5-95 sealant to the mating surface under the bushing flange.

NOTE: If there is primer in the bores, do not remove it.
18. Install the bushings as quickly as possible. Use the bushing installation tool from bushing tool kit B0F311T2150 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
19. Line hone through both lugs of the fitting to keep the bushing holes aligned. Hone the inner diameter of the bushings to a diameter of 1.5810 to 1.5822 inches. Make the surface finish 32 microinches R. Machine the chamfers again if necessary. See Detail I.
20. Apply a fillet seal of BMS 5-95 sealant between the flange of the bushing and the face of the lug. Apply a bead of BMS 5-95 sealant between the opposite end of the bushing and the inner surface of the lug hole. Refer to SRM 51-20-05.
21. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area.
22. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 54-51-01 FOR PYLON REMOVAL AND INSTALLATION
 - AMM 71-00-02 FOR THE ENGINE REMOVAL AND INSTALLATION
 - SOPM 20-10-02 FOR THE MACHINING OF ALLOY STEEL AND FOR SURFACE TEMPER ETCH INSPECTION
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-42-05 FOR CADMIUM PLATING
 - SOPM 20-42-10 FOR STYLUS CADMIUM PLATING
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION.
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

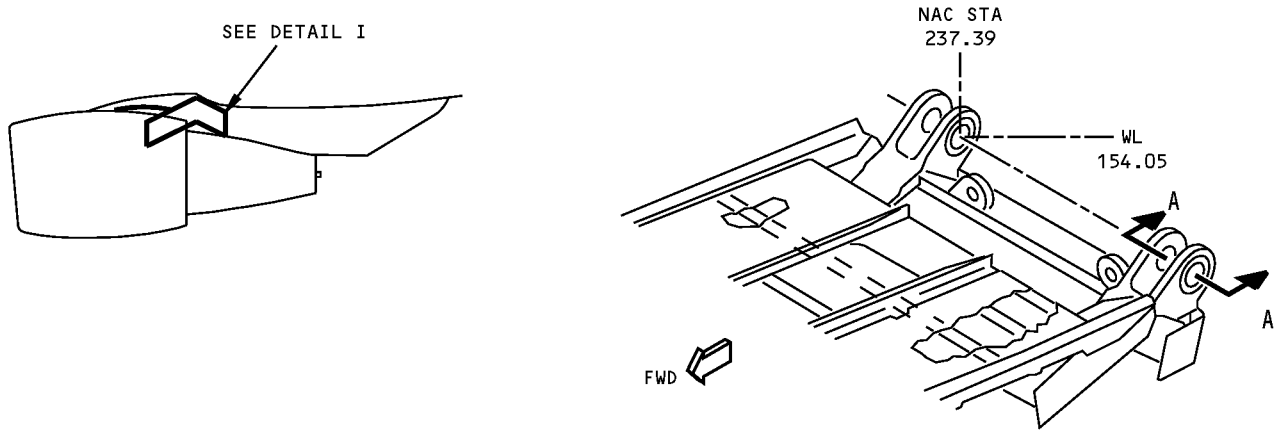
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED BUSHING	AS REQUIRED	2.25 INCHES DIAMETER BY 0.75 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640

TABLE I

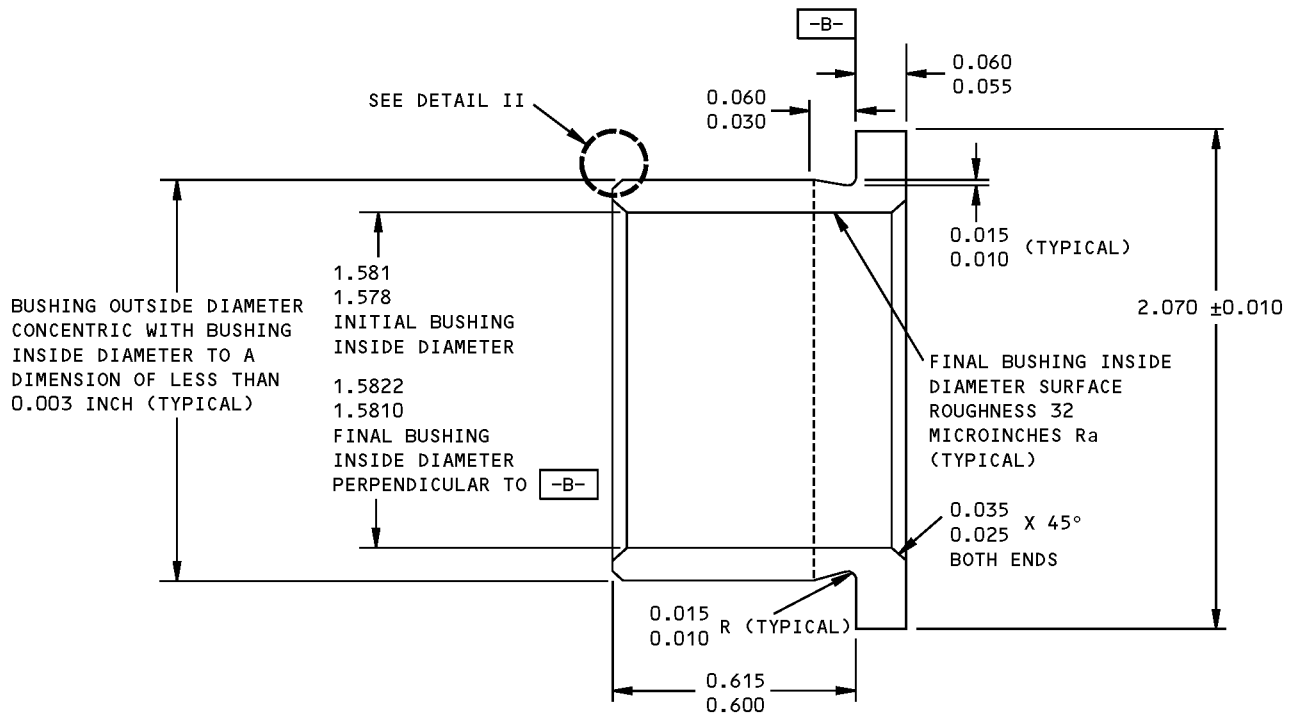
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**Midspar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

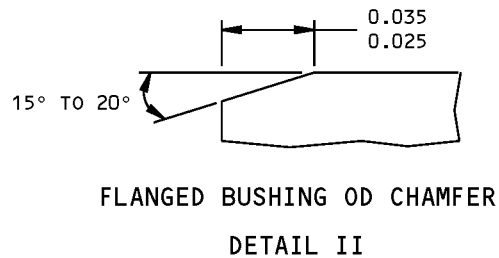
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



**FLANGED BUSHING
(TYPICAL)
SECTION A-A**



**Midspar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - LOWER SPAR FITTING, LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING PROCEDURE - JT9D-7R4 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE LOWER SPAR FITTING ON THE JT9D-7R4 ENGINE. B

REPAIR INSTRUCTIONS

1. Remove the strut diagonal brace and get access to the lower spar fitting. Refer to AMM 54-51-02/401.
2. Remove the two bushings from the fitting lug, and discard them. Use the bushing removal tool in the Boeing tool kit B0F311T4185, or the equivalent.

As an alternative, split bushing removal tool, Boeing tool number B54016-1, can be used.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01.
4. If damage was not found with the inspections, and the age of the airplane is less than or equal to 15 years, then go to step 11.
5. Install the right angle boring tool that is included in the Boeing tool kit, or the equivalent.

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER IS MORE THAN THE MAXIMUM PERMITTED.

6. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Continue to machine the hole and to do the inspections until damage cannot be found. Then machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.3109 inches after the hole has been machined, then get alternative repair instructions from Boeing.
7. Machine a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
5. Remove the boring tool.

9. Hone the hole to remove machine tears and burrs. Break sharp edges on the chamfer.
10. Peen the hole. Do not use peening equipment that has shot made of ferrous material. Flap peen wheels are available with tungsten carbide balls. Refer to SOPM 20-10-03. Use shot size 170-330, intensity 0.014A, and coverage 2.0.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole. Use the manual decontamination and repassivation process as specified in BAC5625, Surface Treatments for Ferrous Alloys. As an alternative, abrade the hole with aluminum oxide paper, 150 grit or finer. Do not use silicon carbide paper. Solvent clean the hole to make sure that all grit is removed.

11. Hone the hole to make the hole surface finish 32 microinches R_a or smoother. A maximum of 0.003 inch material can be removed from the hole diameter (0.0015 inch depth of hone) to get the necessary surface finish. The hole to be circular to a dimension of 0.0003 inch or less. The maximum hole diameter is given in step 6.
12. Make the repair "no hone" bushings from 015T0779-8 or see Table I and Detail I. Make the outside diameter of each bushing 0.0036 to 0.0042 inch larger than the hole diameter to give an interference fit. Make the outside diameter 32 microinches R_a or smoother. Make the surface finish on the other surfaces 63 microinches R_a or smoother. The outside diameter of each bushing to be circular to a dimension of 0.0003 inch or less.
13. Do a magnetic particle inspection of the bushings to make sure there are no surface defects. Refer to SOPM 20-20-01.
14. Apply one layer of BMS 10-11, Type I primer in the hole and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

15. Prepare the bushings for installation with the shrink method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tool plugs in the liquid nitrogen until the boiling stops. Refer to SOPM 20-50-03. Get the installation tool plugs from the Boeing tool kit, or the equivalent.

**Lower Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the surfaces of the lug which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the installation tool assembly from the Boeing tool kit, or the equivalent. Hold the bushing flanges tightly against the lug until the bushings are at room temperature. A press fit can be used to complete the shrink fit installation of the bushings.
18. It is necessary to do a local hone to the inside diameter of the split bushings if the bushings are not aligned to a dimension of 0.0015 inch or less. Hone a small amount from the inside diameter of the bushings until the bushings are aligned to a dimension of 0.0015 inch or less. Make the surface finish 32 microinches R_a or smoother. Machine the outer chamfers again if necessary.
19. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the lug faces. Apply BMS 5-95 sealant to the clearance between the bushings on the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
 - ALL DIMENSIONS ARE IN INCHES.
 - THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0061.
 - WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-02 FOR REMOVAL OF THE DIAGONAL BRACE
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-05 FOR REPAIR SEALING.
- [A]** REFER TO SB 767-54-0061 FOR DATA ON BLANK BUSHING AVAILABILITY.
- [B]** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.
- [C]** ADDITIONAL HONING IS REQUIRED ONLY IF THE FINAL BUSHING INSIDE DIAMETER IS NOT AT THE SPECIFIED RANGE AFTER INSTALLATION.

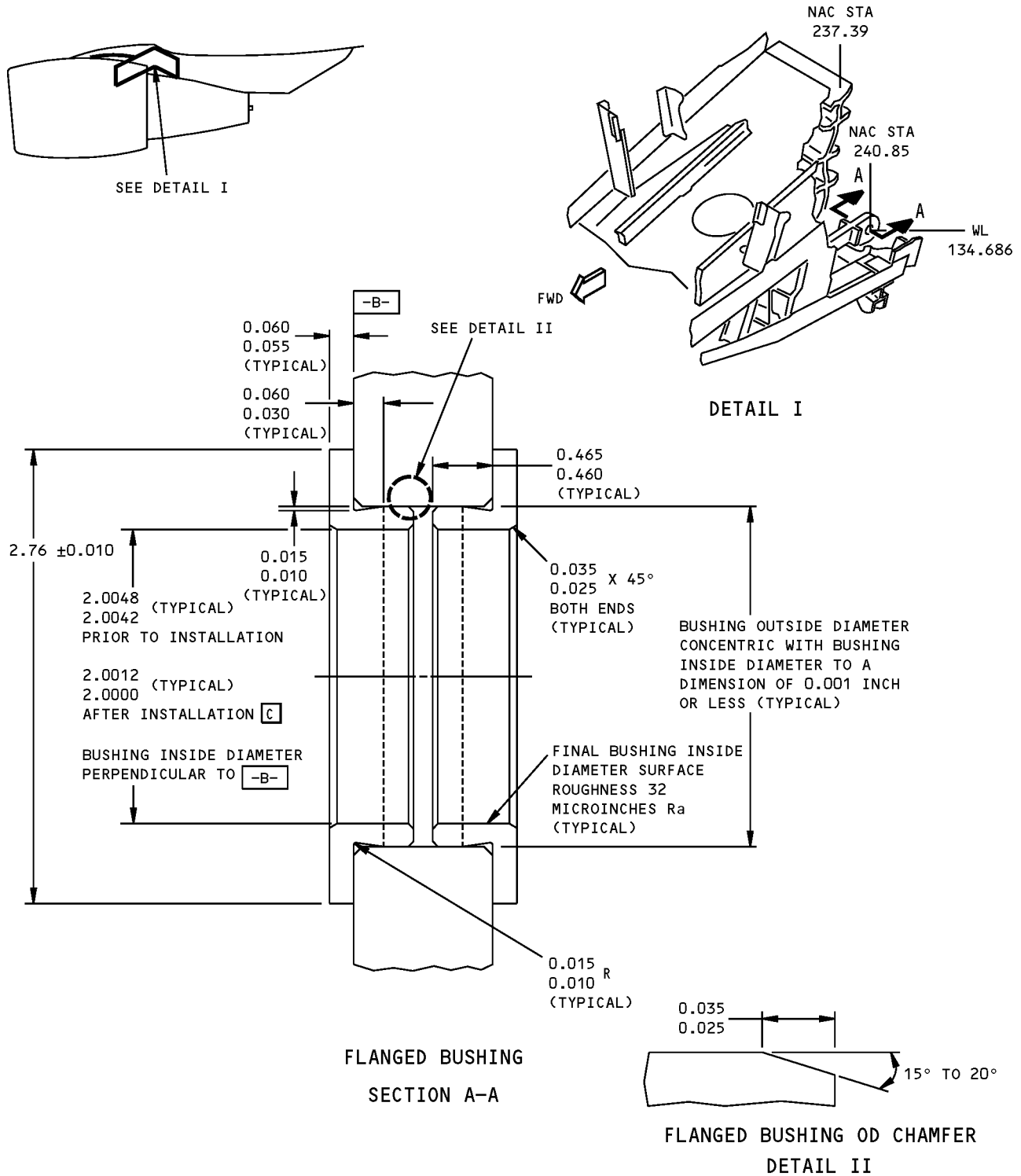
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED "NO-HONE" BUSHING	2	15-5PH CRES SOLUTION TREATED AS SPECIFIED IN AMS 5659, HT TR 180-200 KSI AS SPECIFIED IN BAC5619. SEE DETAIL I AND [A]

TABLE I

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**Lower Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 2 of 3)**

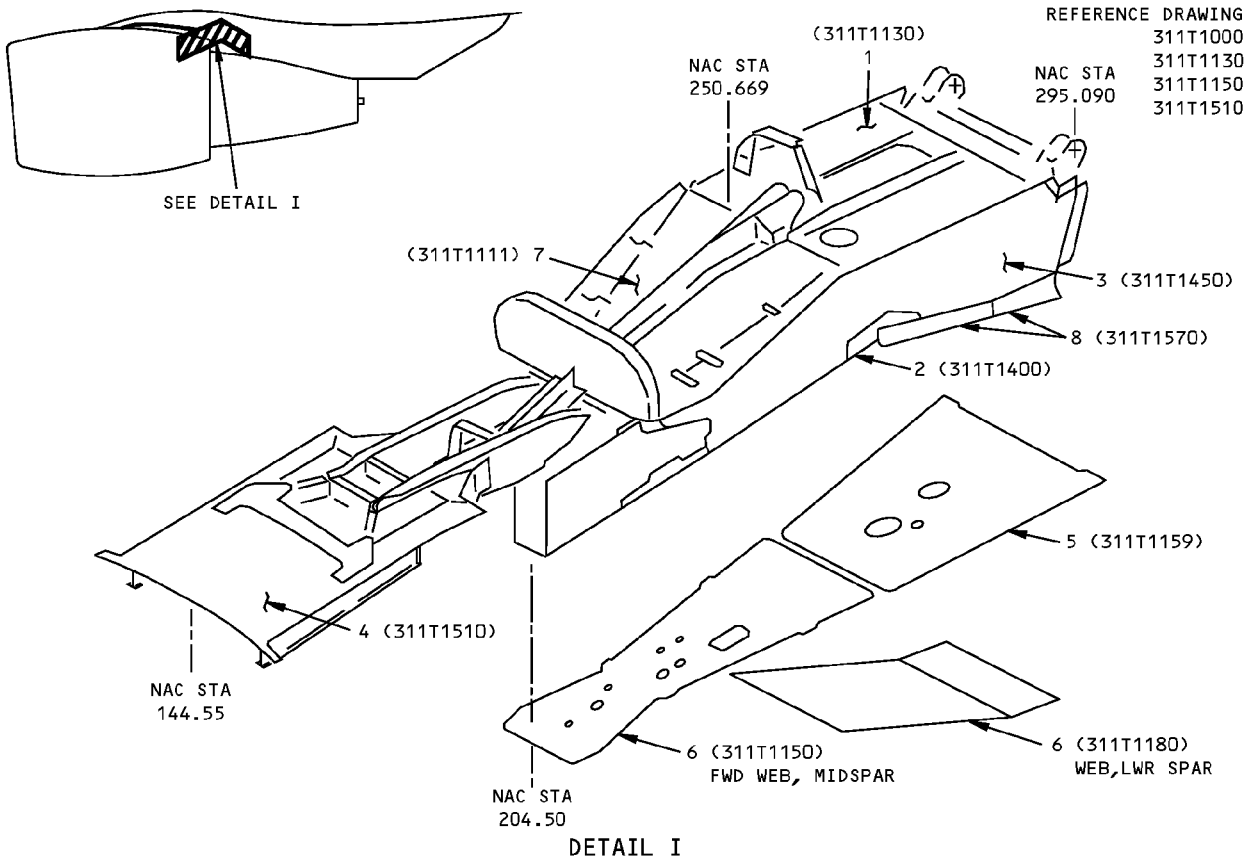
**767-300
STRUCTURAL REPAIR MANUAL**



**Lower Spar Fitting, Lug Hole Repair with Interference Fit Bushing Procedure - JT9D-7R4 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT SKIN - CF6-80A ENGINE



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB, AFT UPR SPAR	0.050 0.063	CLAD 2024-T3 CLAD 2024-T3	A B
2	PLATE	0.100	15-5PH CRES, HT TR 180-200 KSI	
3	SKIN + DOUBLER	0.080 0.080	CLAD 2024-T3 CLAD 2024-T3 (CHEM-MILLED TO 0.040 MIN)	
4	SKIN	0.063	CLAD 2024-T3	
5	AFT WEB, MIDSPAR	0.100	2024-T3 (CHEM-MILLED TO 0.050 MIN)	
6	WEB	0.100	15-5PH CRES, HT TR 180-200 KSI	
7	WEB, FWD UPR SPAR	0.190	2024-T3	
8	CORE COWL SKIRT + DOUBLER	0.050 0.032	CLAD 2024-T3 CLAD 2024-T3	

NOTES

- A** FOR AIRPLANES WITHOUT SB 767-54-0089 INCORPORATION
- B** FOR AIRPLANES WITH SB 767-54-0089 INCORPORATION

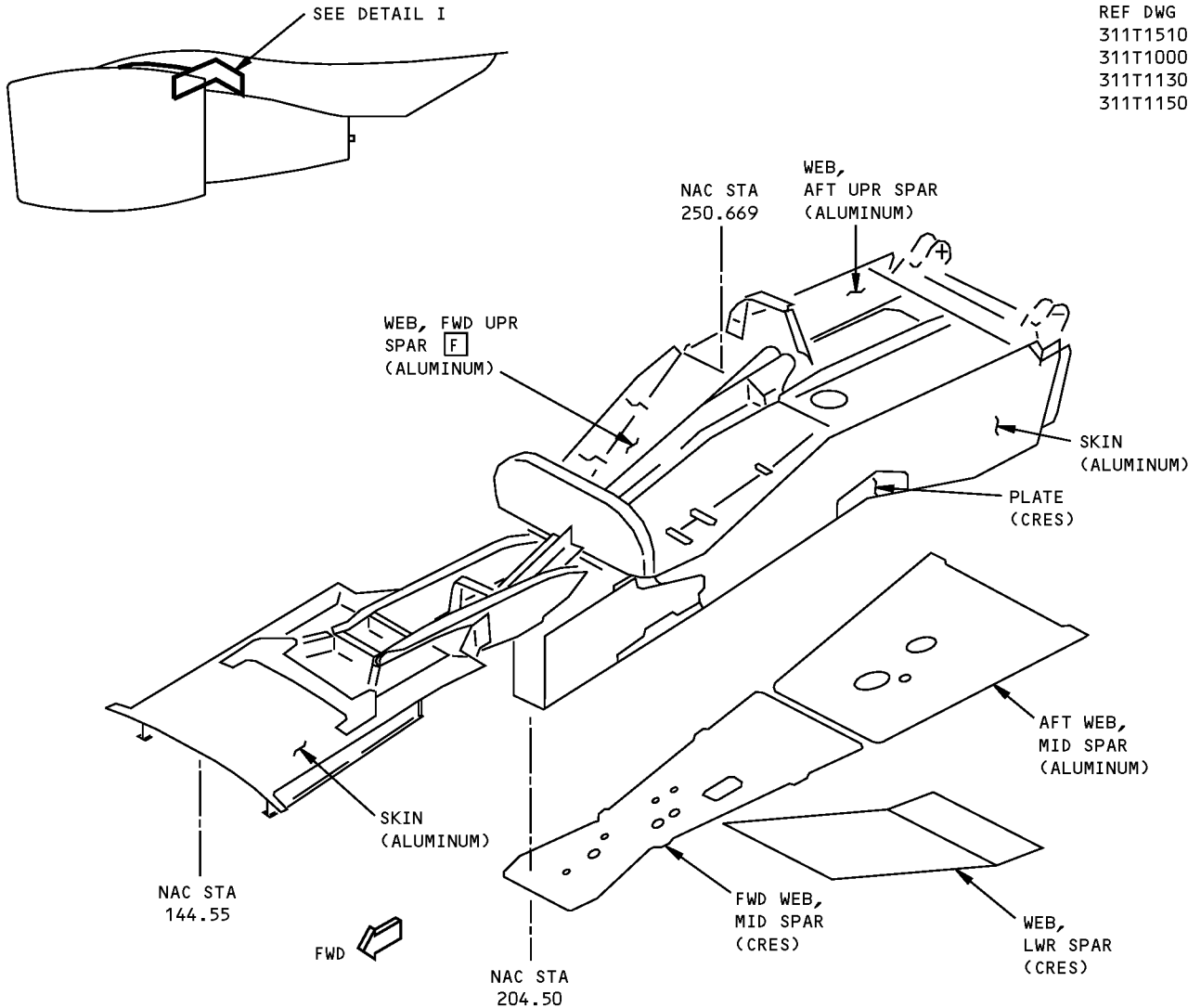
LIST OF MATERIALS

**Strut Skin Identification - CF6-80A Engine
Figure 1**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT SKIN - CF6-80A ENGINE

REF DWG
311T1510
311T1000
311T1130
311T1150



DETAIL I

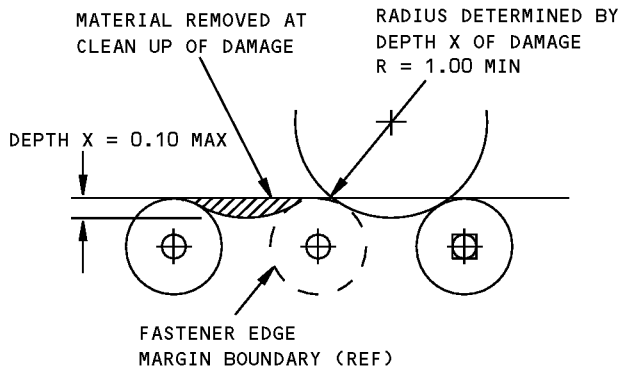
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
WEBS	A	B	SEE DETAIL V	D ALUMINUM E STEEL
PLATE	C	B	SEE DETAIL V	D
SKINS	C	B	SEE DETAIL V	D

**Strut Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 3)**

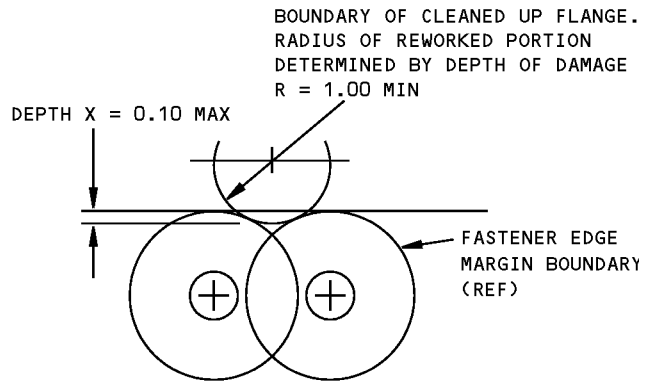
STRUCTURAL REPAIR MANUAL

NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI. SEE DETAIL I FOR APPLICABLE SHOT PEEN REQUIREMENTS
- B** REMOVE DAMAGE PER DETAILS II, III, AND IV
- C** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- D** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- E** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED
- F** SHOT PEEN REWORKED AREA PER 51-20-06



DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

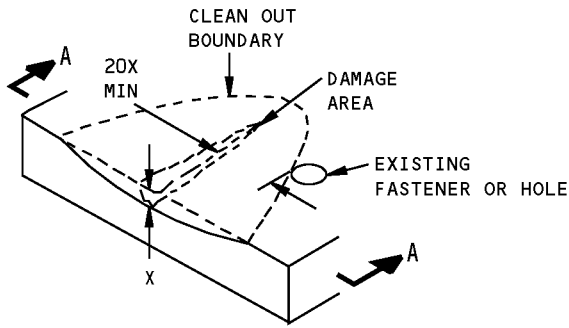


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

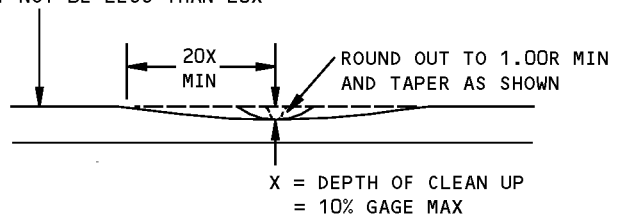
DETAIL II

Strut Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 3)

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STRUCTURAL REPAIR MANUAL**

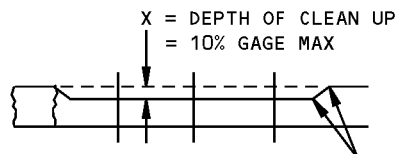
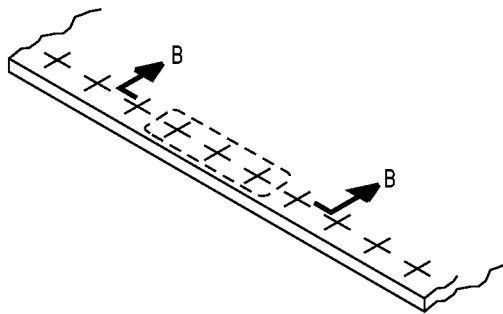


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



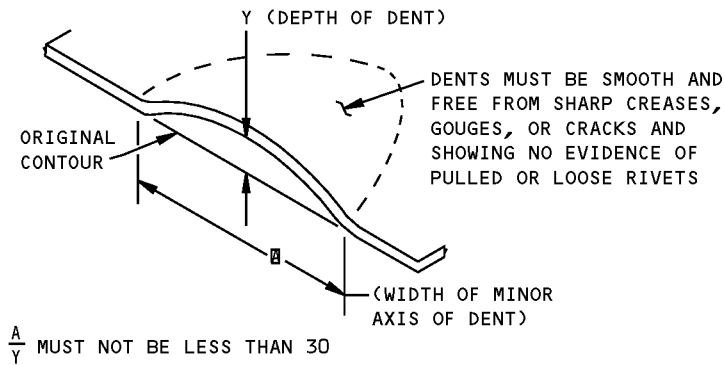
SECTION A-A

DETAIL III

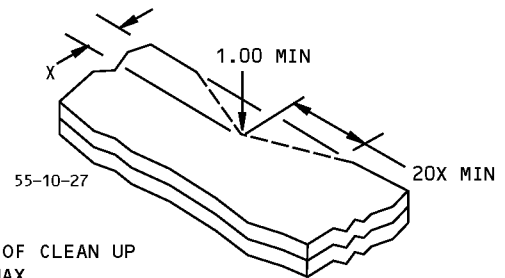


SECTION B-B

CORROSION CLEAN UP
DETAIL IV



ALLOWABLE DAMAGE FOR DENT
DETAIL V



REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VI

**Strut Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 3)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT SKIN REPAIR- CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Clean out damaged area to 1-inch max diameter circle.
2. Fabricate repair part 1.
3. Assemble repair part 1 and drill fastener holes.
4. Remove repair part 1.
5. Break sharp edges of original and repair part. 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of original part.
8. Apply one coat of BMS 10-11, type 1 primer to all of part 1 in accordance with 51-21 of the 767 Maintenance Manual.
9. Install repair part 1 making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
10. Restore finish.

SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

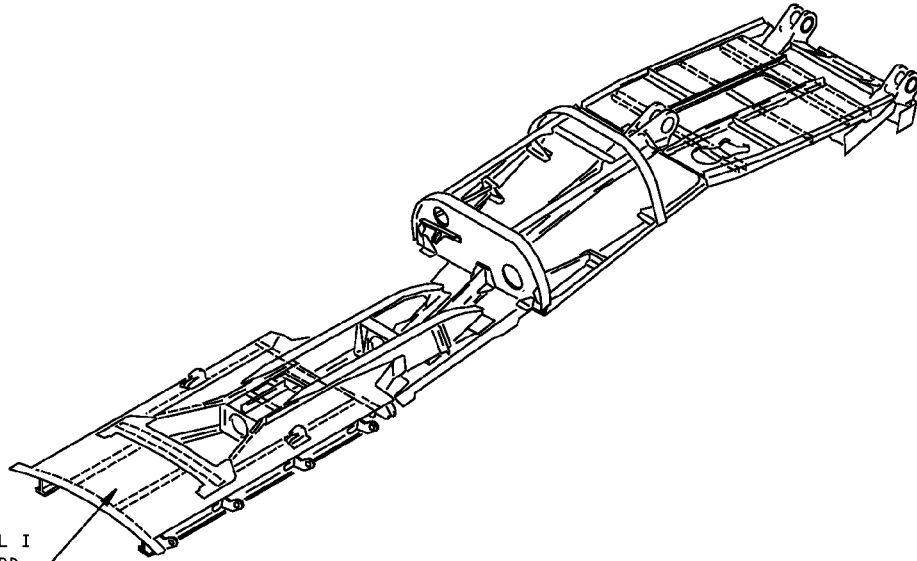
**Strut Skin Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

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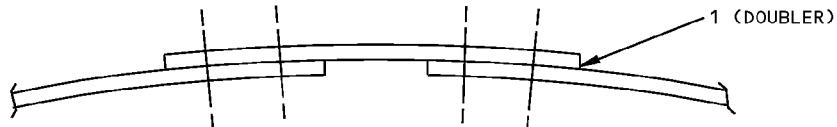
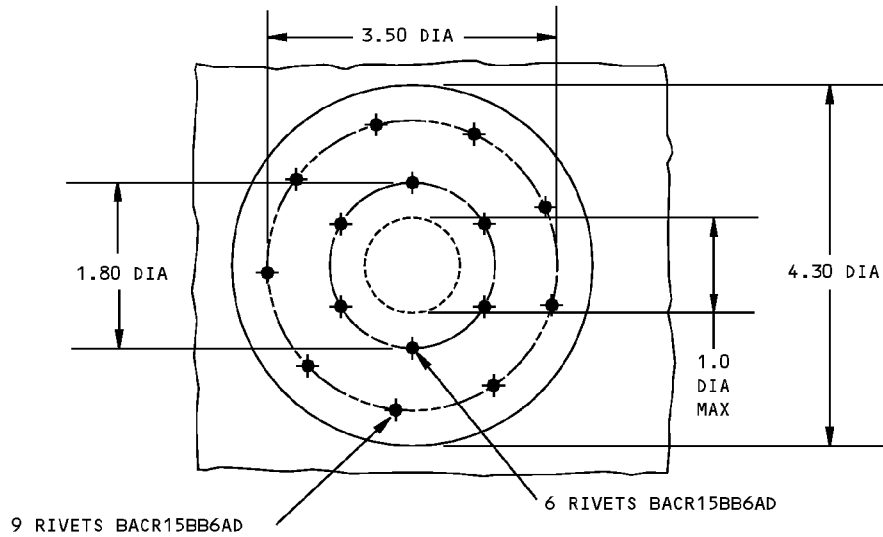
54-51-01

REPAIR 1
Page 201
Apr 01/2005

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STRUCTURAL REPAIR MANUAL**



SEE DETAIL I
FOR FORWARD
SKIN REPAIR



**SMALL HOLE OR CRACK REPAIR
DETAIL I**

**Strut Skin Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

REPAIR 2 - STRUT SIDE SKIN PANEL REPAIR - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Cut out cracked or damaged area to a regular shape. Maintain 1.0 min corner radius.
2. Make the repair plate.
3. Remove existing fasteners over the area to be covered by the repair plate.
4. Assemble the repair plate and drill fastener holes in new and existing locations.

CAUTION: WHEN ESTABLISHING ADDITIONAL RIVET POSITIONS, ENSURE THAT EDGE MARGINS ARE MAINTAINED ON THE INTERNAL DOUBLER, AND THAT SUFFICIENT CLEARANCE IS AVAILABLE FOR THE FORMATION OF RIVET HEADS ON THE UNDER STRUCTURE.

5. Remove the repair plate.
6. Break sharp edges of original and repair plate 0.015 to 0.030.
7. Remove all nicks, scratches, burrs and corners from original and repair plate.
8. Install countersink repair washers in existing countersinks in the skin according to 51-40-08.
9. Alodize the raw edges of existing and repair part according to 51-20-01.
10. Apply one coat of BMS 10-11 type 1 primer to faying surfaces of the repair plate, and to the strut skin according to 51-21 of the 767 Maintenance Manual.
11. Install the repair plate, making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
12. Restore original finishes according to 51-21 of the 767 Maintenance Manual.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31-00 FOR SEALS AND SEALING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITION
 - SRM 51-21-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NONMETALLIC MATERIALS
 - SRM 51-21-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS

FASTENER SYMBOLS

- REPAIR FASTENER LOCATION
- + ORIGINAL FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PLATE	1	0.125 CLAD 2024-T3

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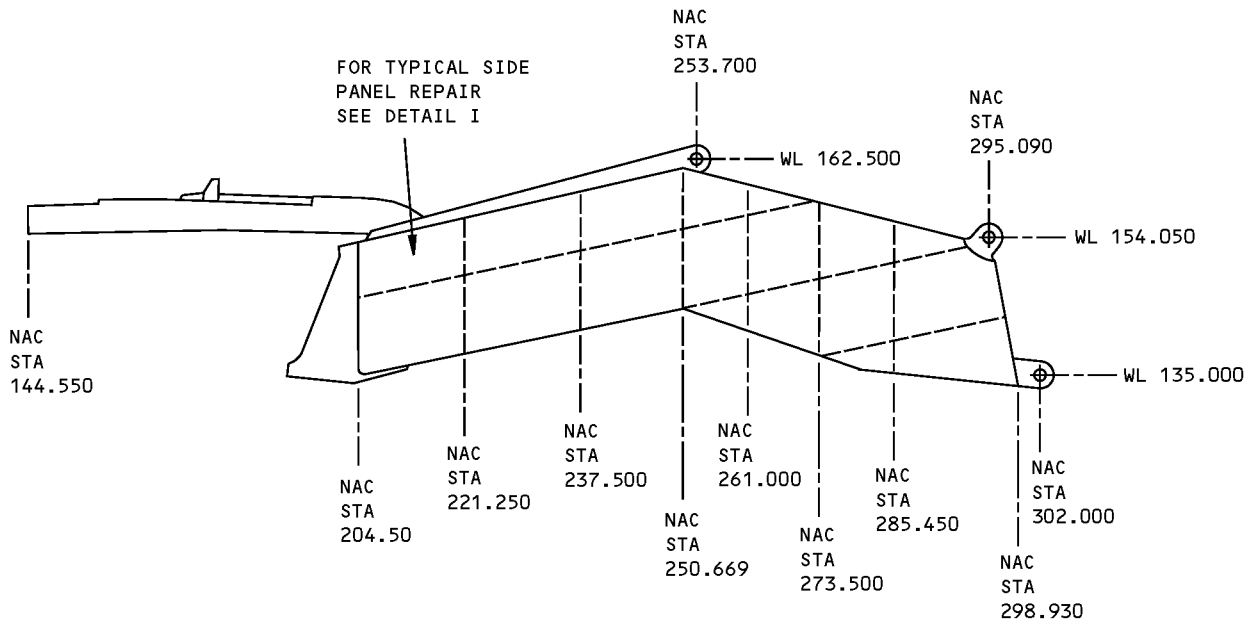
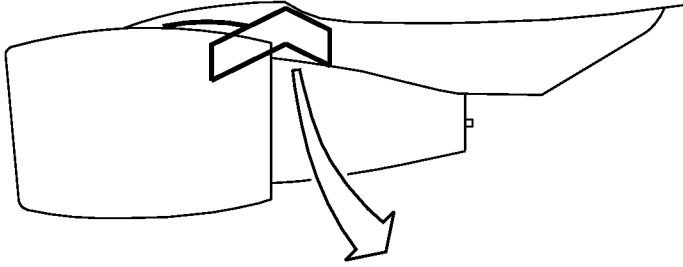
**Strut Side Skin Panel Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

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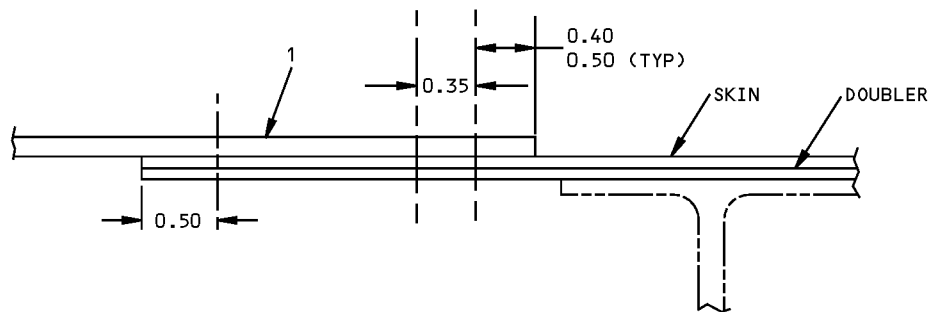
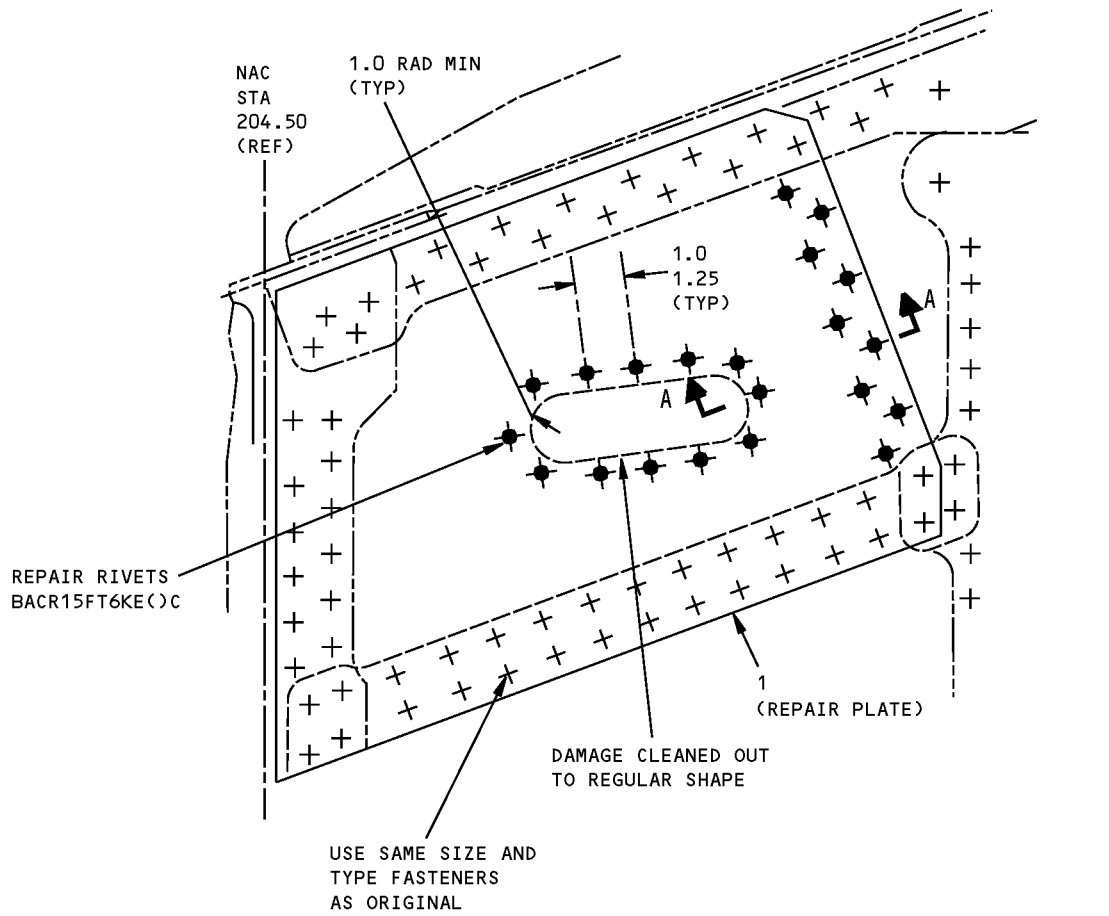
REPAIR 2
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Apr 15/2009

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STRUCTURAL REPAIR MANUAL**



**Strut Side Skin Panel Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**



SECTION A-A
DETAIL I

**Strut Side Skin Panel Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT, AFT UPPER SPAR WEB REPAIR - ADJACENT TO THE THERMAL ANTI-ICE DUCT - CF6-80A ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THE CRACKS MUST BE FULLY INSIDE THE AREA ADJACENT TO THE THERMAL ANTI-ICE DUCT CUTOUT AND ON THE DUCT SIDE OF THE NEAREST STIFFENER AND SPAR CHORD EDGES. SEE DETAIL II.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS

REPAIR INSTRUCTIONS

1. Open the strut access doors. Refer to AMM 54-53-01.
2. Remove the access panels on the wing leading edge that are above the engine strut. Refer to AMM 06-44-00.
3. Remove the thermal anti-ice (TAI) duct that is installed through the web cutout.
4. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
5. Cut and remove the damaged part of the web.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the web.
7. Do the step 4 inspection again to make sure that all of the cracked web was removed.
8. Apply a chemical conversion coating to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
11. Put the airplane back in its usual

TAI duct joints. Refer to AMM 71-00-00.

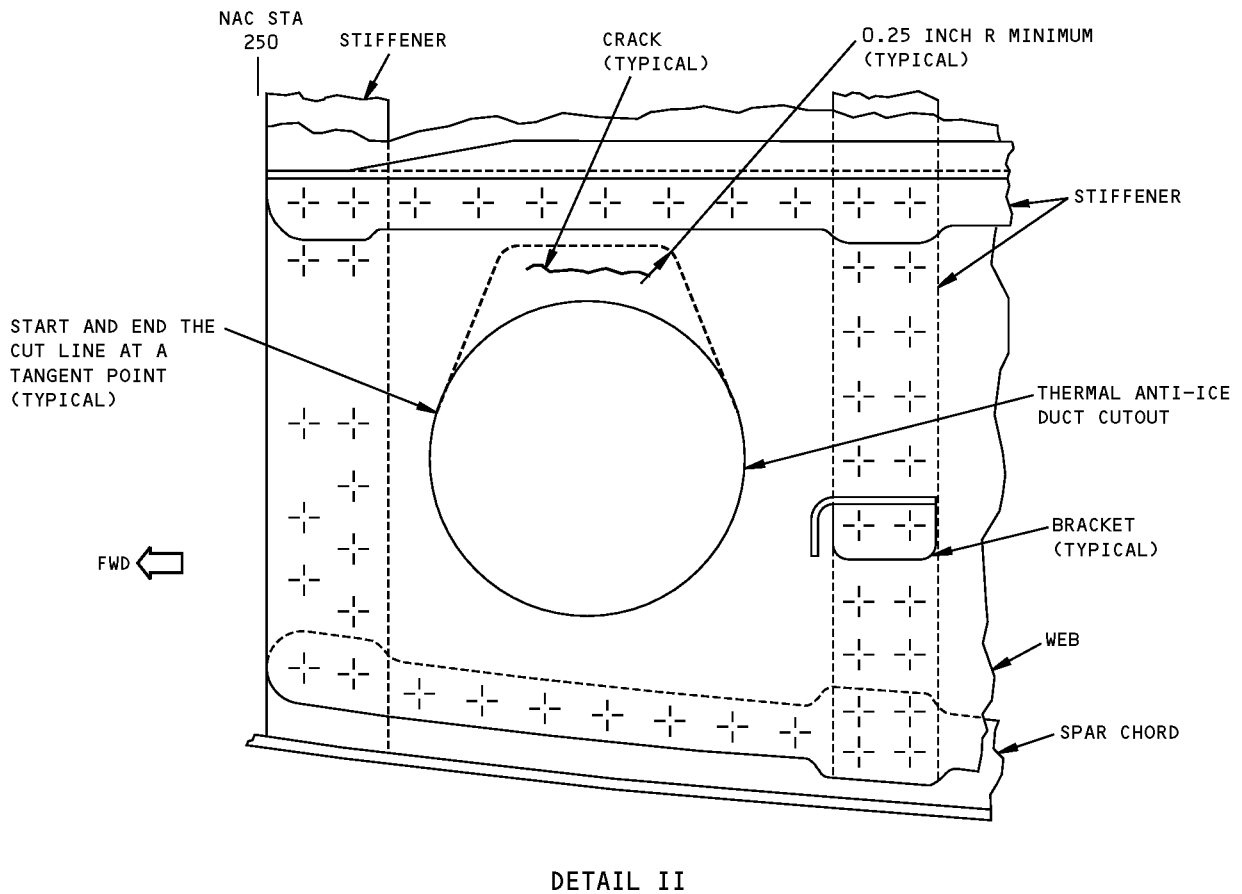
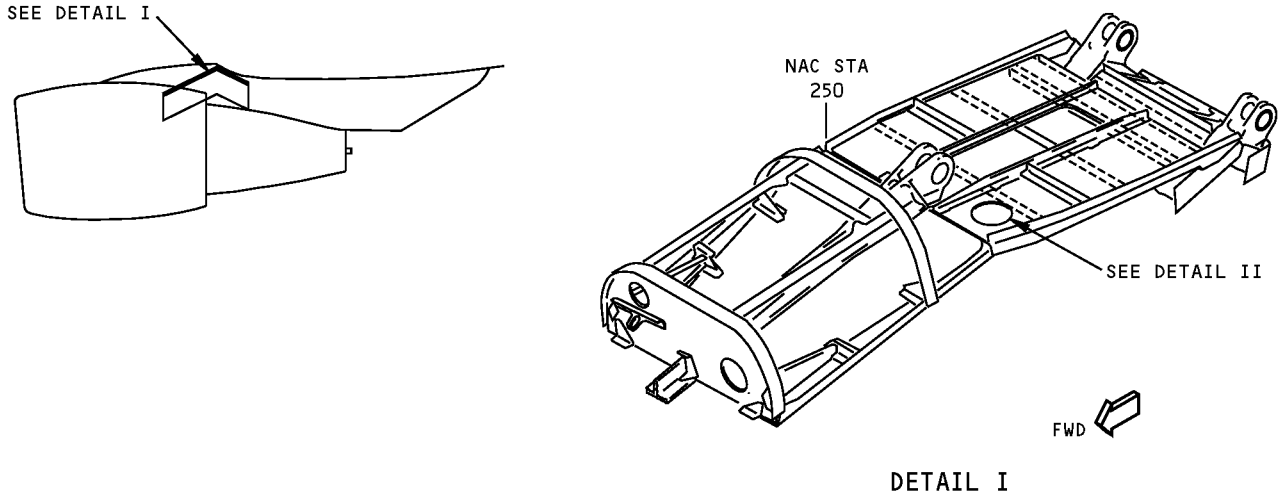
FASTENER SYMBOLS

 REFERENCE FASTENER LOCATION.

1703703 S0000310620_V1

**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT, AFT UPPER SPAR WEB REPAIR - CF6-80A ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THIS REPAIR CAN BE USED AT LOCATIONS FORWARD OR AFT OF THAT GIVEN IN DETAIL II. ALSO, IT CAN BE USED ON THE RIGHT OR LEFT SIDE OF THE SPAR WEB. DO NOT USE THIS REPAIR IN THE AREAS THAT ARE SPECIFIED IN FIGURE 203.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-02. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Open the strut access doors. Refer to AMM 54-53-01.
3. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
4. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-02.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
8. Cut and remove the damaged part of the web.
9. Make the repair parts. See Table I and Detail II. Make the part 1 doubler with sufficient dimensions to attach the outer row of fasteners to a stiffener, chord or bulkhead in all directions.

NOTE: Save the fillers that are installed at each stiffener joggle under the web, for subsequent use.

10. Assemble the repair parts and drill the fastener holes.
 11. Disassemble the repair parts.
 12. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
 13. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
 14. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
 15. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
 16. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
- NOTE:** If the repair is done at a location different than the Detail II location, then replace initial fasteners with oversize fasteners of the same type.
17. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
 18. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Aft Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 4)**

767-300 STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

A MAKE A NEW BRACKET THE SAME AS THE INITIAL BRACKET EXCEPT DRILL NEW FASTENER HOLES THAT ARE 0.050 INCH LOWER (DOUBLER THICKNESS) TO ALIGN WITH THE MATING FAIRING INSTALLATION.

THIS BRACKET IS ONLY INSTALLED ON THE OUTBOARD SIDE OF THE STRUT.

FASTENER SYMBOLS

- |— REFERENCE FASTENER LOCATION
- + REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT7KE()C RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH CRES, HT TR 180-200 KSI
2	FILLER	1	0.050 INCH, 2024-T3 OR 7075-T6
3	TAPERED FILLER	2	0.050 INCH TO 0.010 INCH, 2024-T3 OR 7075-T6
4	FAIRING SUPPORT BRACKET	1	CLAD 2024-T3 OR -T42 A

TABLE I

1703895 S0000310630_V1

Strut, Aft Upper Spar Web Repair - CF6-80A Engine Figure 201 (Sheet 2 of 4)

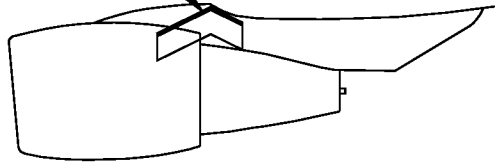
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54-51-01

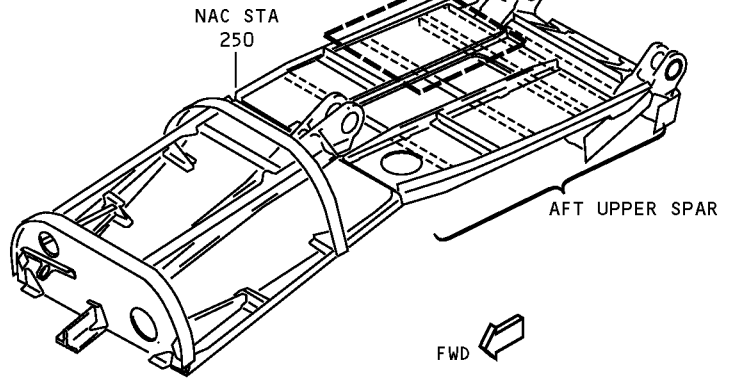
REPAIR 4
Page 202
Apr 15/2009

**767-300
STRUCTURAL REPAIR MANUAL**

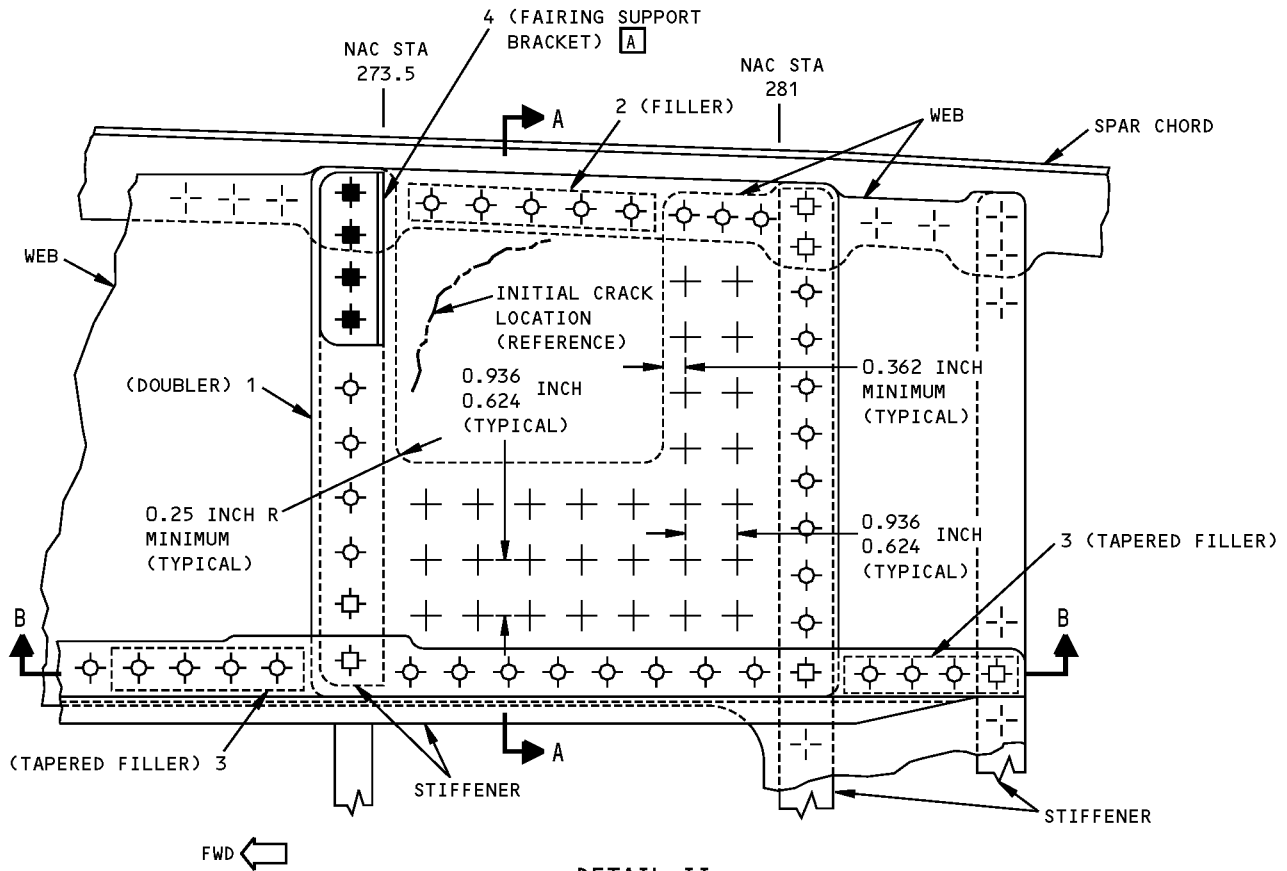
SEE DETAIL I



SEE DETAIL II



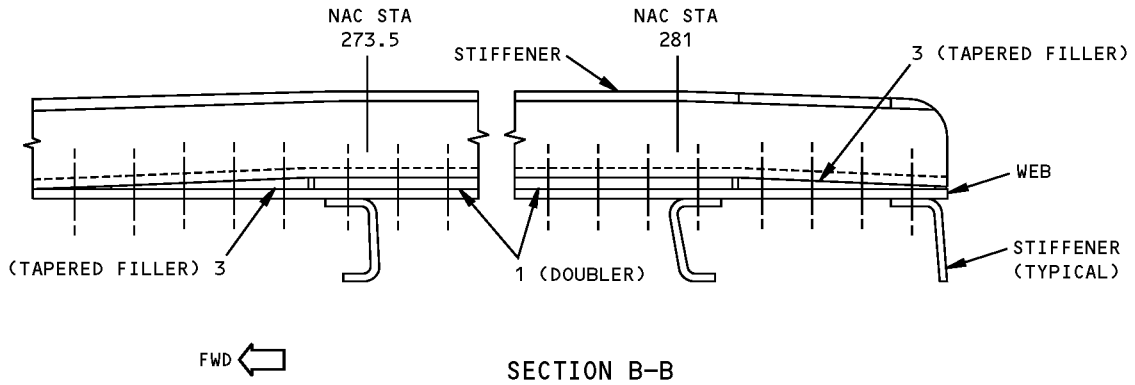
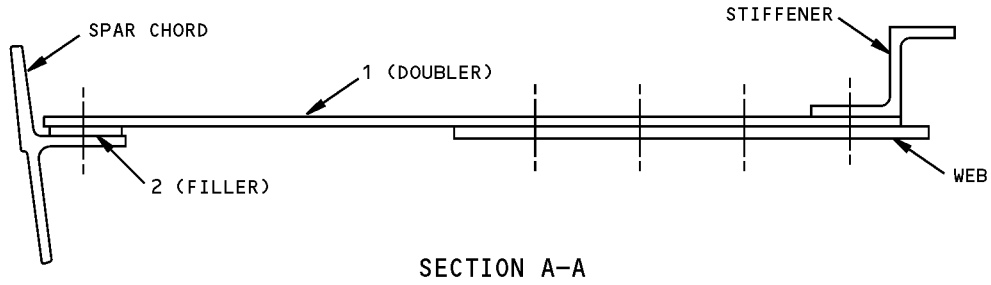
DETAIL I



DETAIL II

**Strut, Aft Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut, Aft Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - STRUT, FORWARD UPPER SPAR WEB REPAIR - CF6-80A ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO CRACKS ORIGINATING FROM THE ELECTRICAL POWER CUTOUT AT NAC 230 IN THE FORWARD UPPER SPAR WEB.

REPAIR INSTRUCTIONS

1. Open the strut access doors. Refer to AMM 54-53-01.
2. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
3. Remove the section of the integrated drive generator (IDG) power feeder cable to allow access to the repair area. The ground wire does not need to be altered. Refer to SB 767-24-0044.
4. Remove the strut area push-pull cable to allow access to the forward upper spar web. Refer to AMM 76-11-07.
5. Remove the thrust control cables as required to allow access to the repair area. Refer to AMM 76-11-03.
6. Remove the thermal anti-ice pressure switch and duct as required to allow access to the repair area. Refer to AMM 30-21-01.
7. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
8. Cut and remove the damaged part of the web. See Detail II. Make the edges of the cut smooth with a surface finish of 63 micro-inches R_a .
9. Make the repair part. See Table I. Make the repair plate with sufficient dimensions to attach the outer row of fasteners to a stiffener or chord in all directions. Break the sharp edges of the original and repair plate 0.015 to 0.030 inch (0.38 to 0.76 mm). Blend smooth all mismatched and stepped surfaces. See Detail II and III. Drill the fastener holes for the anchor nuts to retain the rubber mounts for the Power Feeder Cable and Throttle Cable cutouts.
10. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair plate and the web.
11. Apply a chemical conversion coating to the aluminum repair plate and the bare surfaces of the web. Refer to SRM 51-20-01.

12. Apply two layers of BMS 10-11, Type I primer to the repair plate and the bare surfaces of the web. Refer to SOPM 20-41-02.
13. Install the repair plate and shims with BMS 5-95 sealant between the mating surfaces. Shim as necessary to get a 0.005 maximum mismatch of mating surfaces and a maximum shim thickness of 0.030 inch (0.76 mm).
14. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
15. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
16. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 30-21-01 FOR REMOVAL AND INSTALLATION OF THE THERMAL ANTI-ICE PRESSURE SWITCH (EITAPS) AND THERMAL ANTI-ICE (TAI) DUCT
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - AMM 76-11-07 FOR REMOVAL AND INSTALLATION OF THE STRUT AREA PUSH-PULL CABLE
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SB 767-24-0044 FOR REMOVAL AND INSTALLATION OF POWER FEEDER CABLE
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS.

**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 6)**

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STRUCTURAL REPAIR MANUAL**

FASTENER SYMBOLS

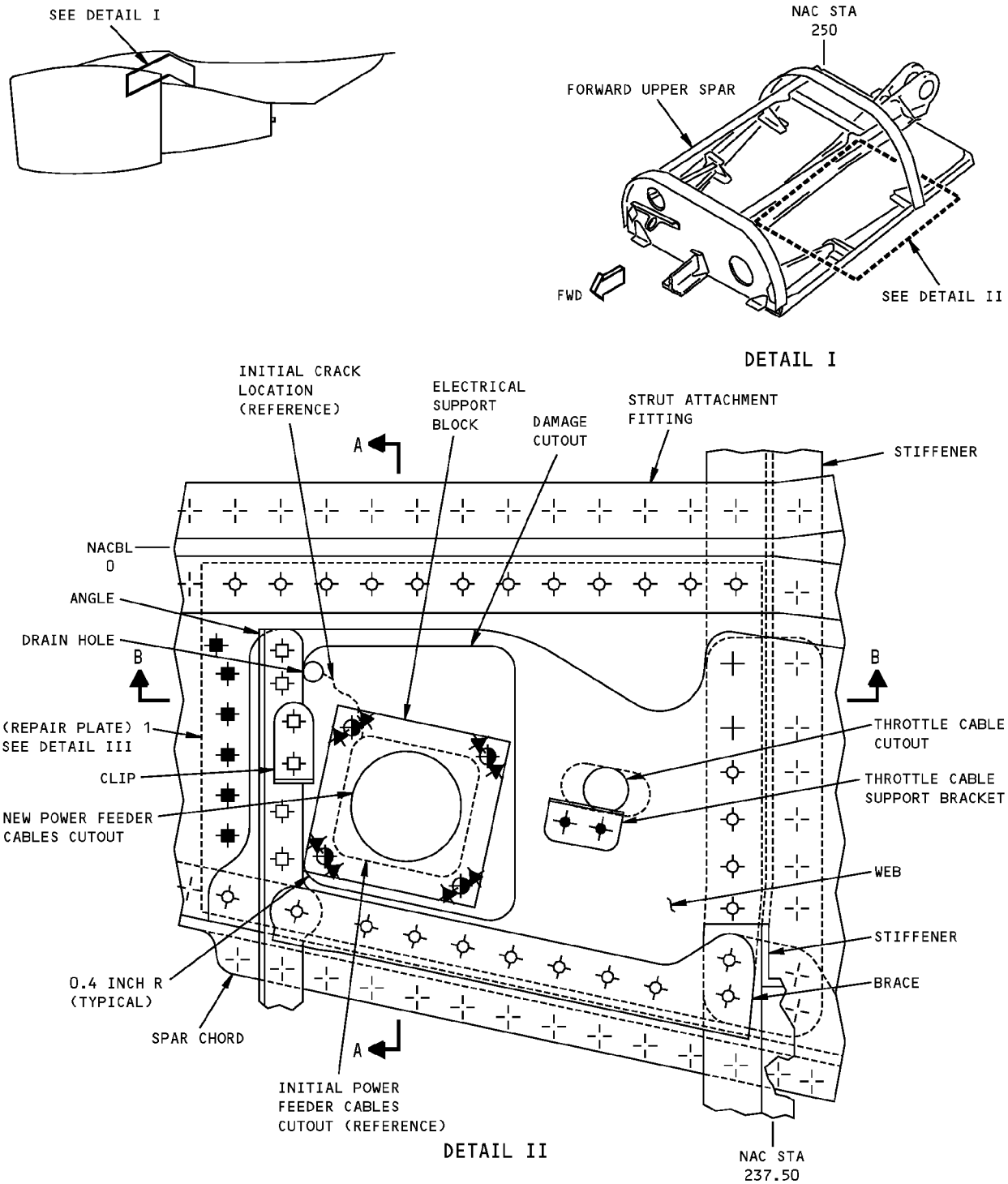
- |- REFERENCE FASTENER LOCATION
- + INITIAL FASTENER LOCATION. INSTALL A BACB30NX8K()X HEX DRIVE BOLT WITH A BACC30X8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATON. INSTALL A BACB30MY5K()X HEX DRIVE BOLT WITH A BACC30M5 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACR15BA3AD FLUSH HEAD SOLID RIVET OR EQUIVALENT. SHAVE TO DOUBLE FLUSH.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A NAS1801-3 BOLT WITH TWO NAS1149F0332P WASHERS AND A MS21043-3 OR EQUIVALENT NUT. (USE ONE WASHER ON THE HEAD SIDE AND THE OTHER ON THE NUT SIDE).

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	REPAIR PLATE	1	0.400 INCH, 2024-T3 PLATE

TABLE I

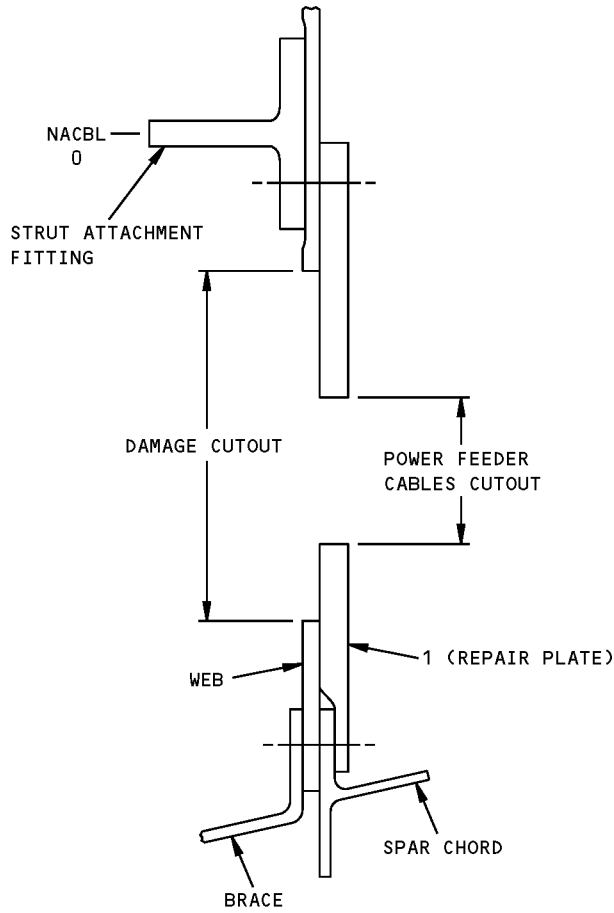
**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 6)**

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STRUCTURAL REPAIR MANUAL**

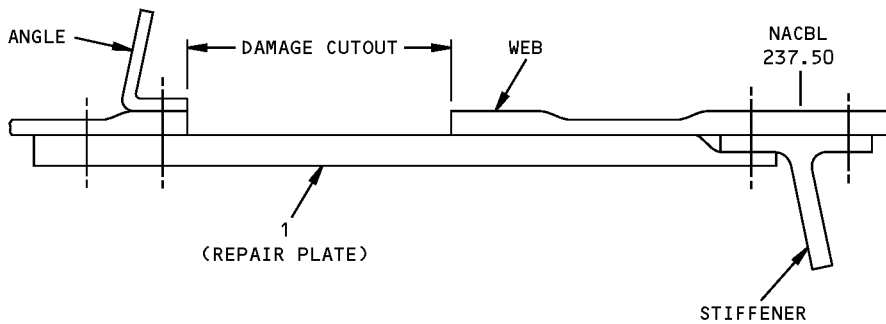


**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



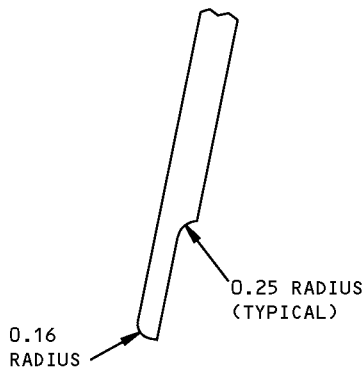
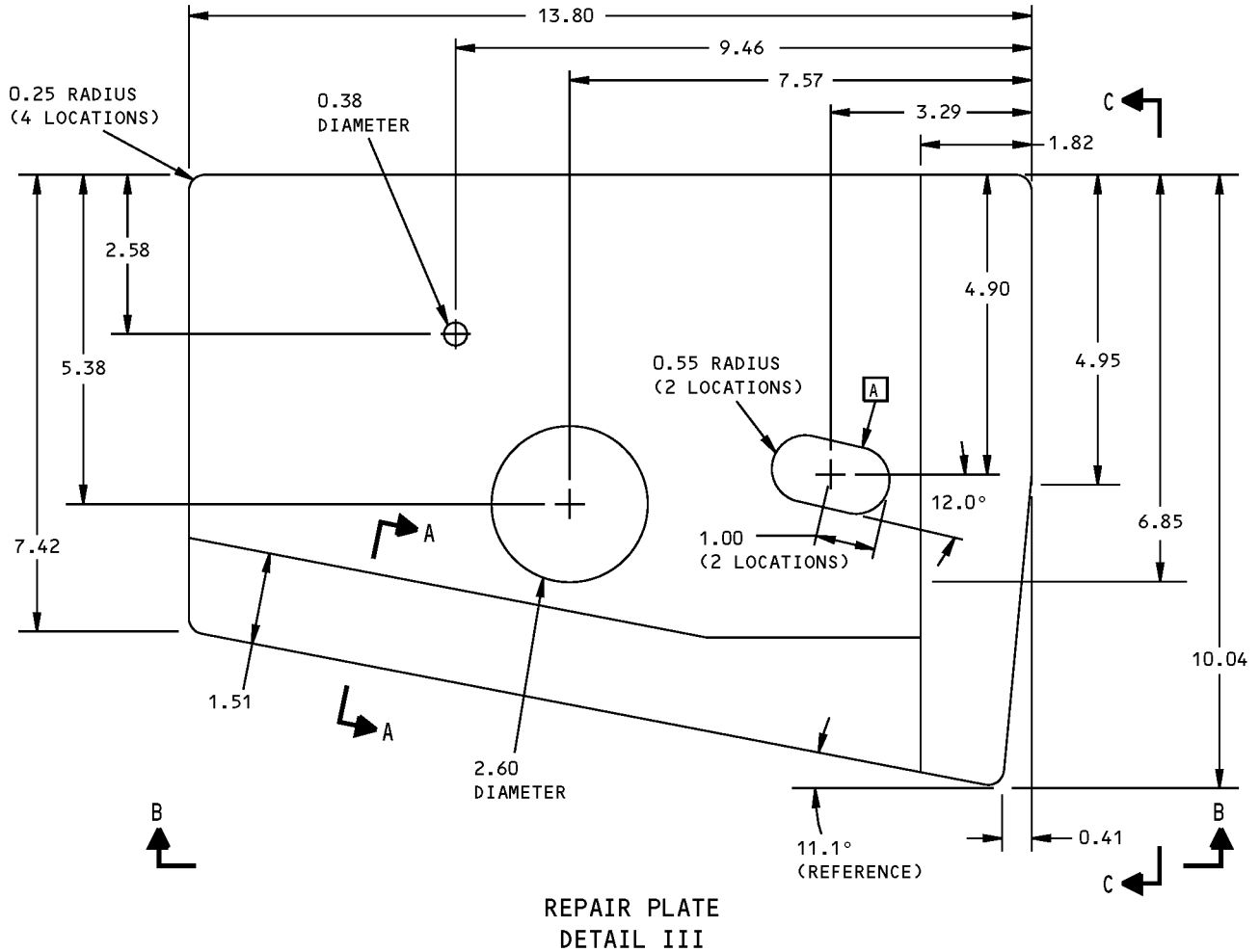
SECTION A-A



SECTION B-B

**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

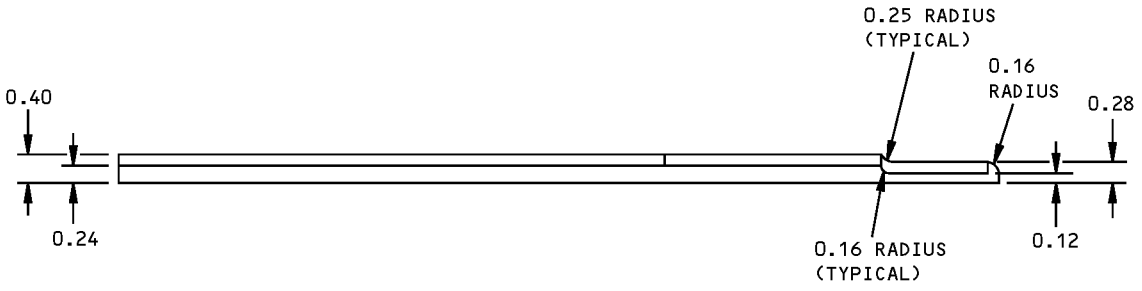


NOTES

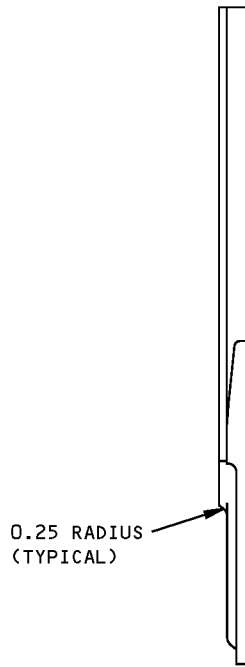
[A] HOLE OPTIONAL FOR FADEC APPLICATIONS

**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



VIEW B-B



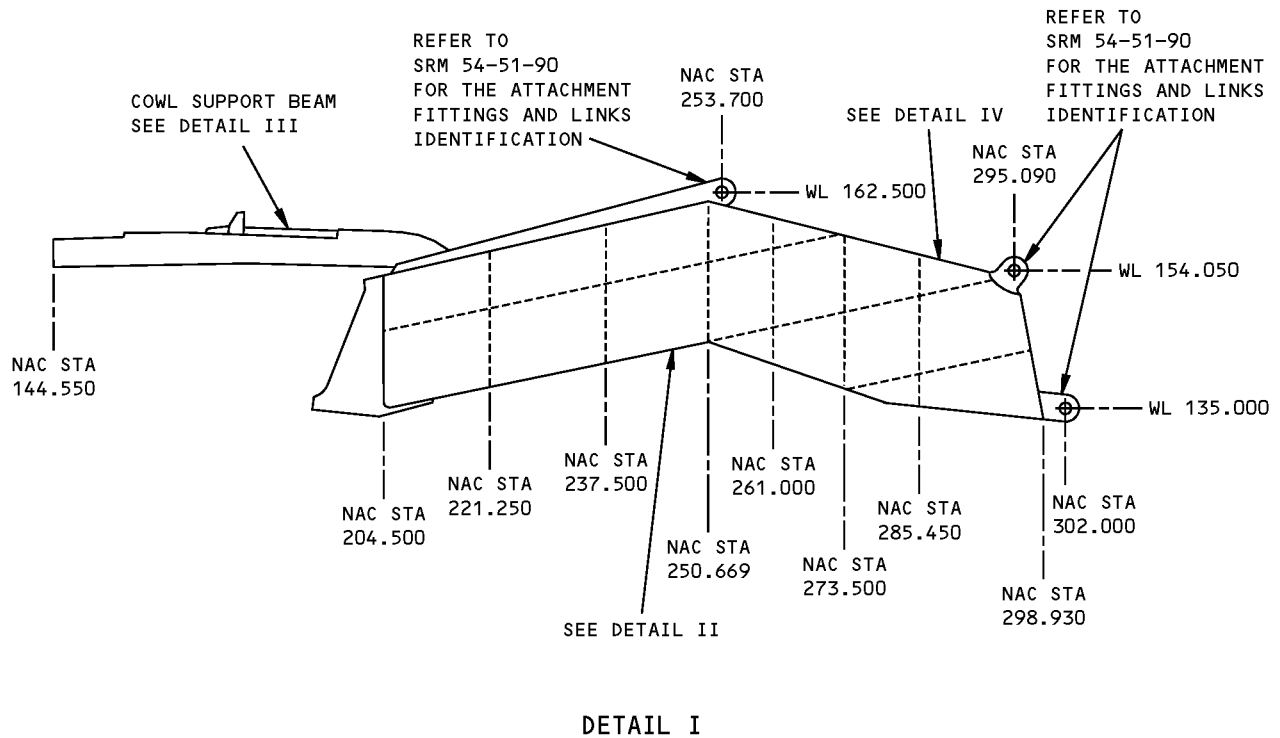
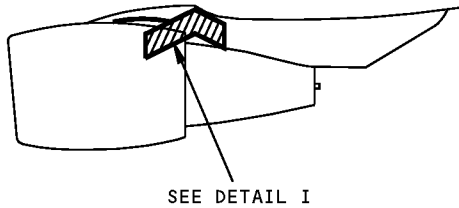
VIEW C-C

**Strut, Forward Upper Spar Web Repair - CF6-80A Engine
Figure 201 (Sheet 6 of 6)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT STRUCTURE - CF6-80A ENGINE

REFERENCE DRAWINGS
311T1510
311T1000



NOTES

- A** FOR AIRPLANES WITH CF6-80A ENGINES UP TO CUM LINE NUMBER 216
- B** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 239 AND ON
- C** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0081 INCORPORATION
- D** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 665 AND ON, AND FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED

**Strut Structure Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 5)**

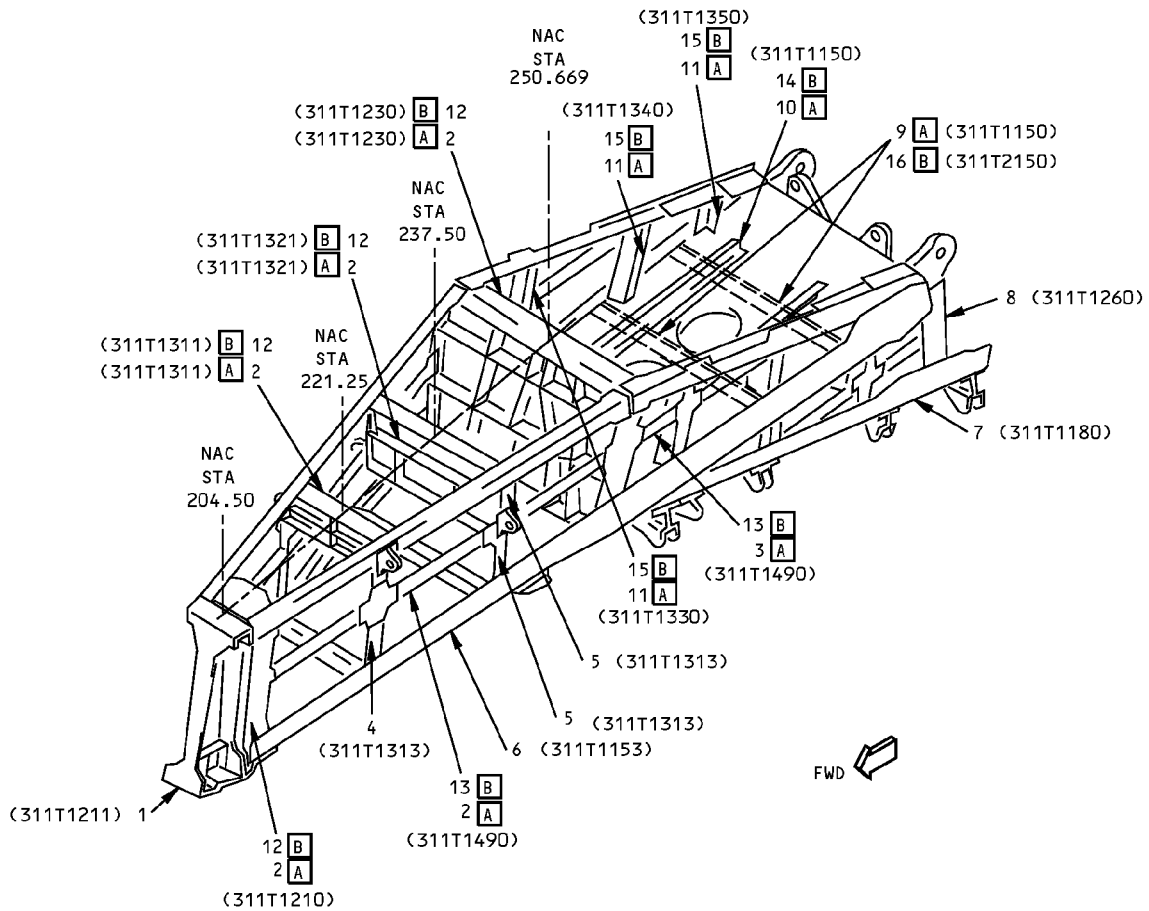
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
311T1000



DETAIL II

LIST OF
MATERIAL

**Strut Structure Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 5)**

IDENTIFICATION 1
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54-51-02

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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD ENGINE MOUNT		FORGING 15-5PH CRES, HT TR 180 KSI MIN.	
2	BULKHEAD		FORGING 7075-T73	A
3	STIFFENER		BAC1506-2115 7075-T6	A
4	STIFFENER		BAC1506-3172 7075-T6	
5	STIFFENER		BAC1506-3173 7075-T6	
6	MIDSPAR CHORD		BAC1527-59 15-5PH CRES HT TR 180-260 KSI	
7	LOWER SPAR CHORD	0.160	15-5PH CRES, HT TR 180-200 KSI OPTIONAL: 15-5PH CRES HT TR 180-200 KSI CHEM MILLED TO 0.160	
8	BULKHEAD (AFT ENGINE MOUNT)		FORGING 2219-T852	
9	STIFFENER	0.071	CLAD 7075-T6	A
10	STIFFENER		AND10139-1205 7075-T6	A
11	FRAME	0.080	7075-T6	A
12	BULKHEAD	5.50	PLATE 2219-T851	B
13	STIFFENER		BAC1506-2115 2024-T62	B
14	STIFFENER		AND10139-1205 2024-T62	B
15	FRAME	0.080	2024-T62	B
16	STIFFENER	0.112	2219-T62	B

LIST OF MATERIALS FOR DETAIL II

**Strut Structure Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 5)**

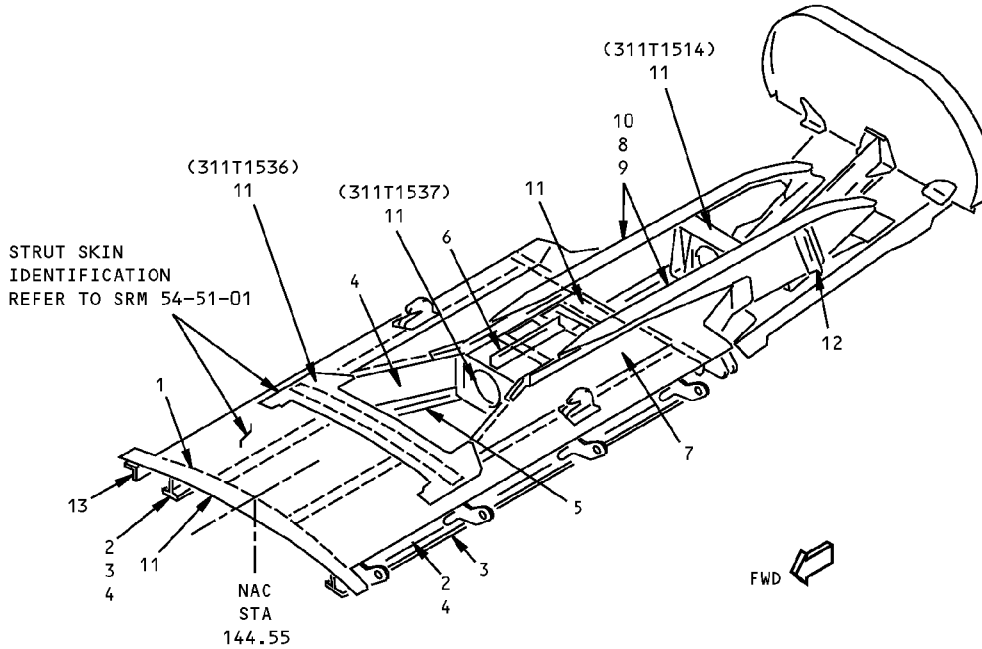
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54-51-02

IDENTIFICATION 1
Page 3
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STRUCTURAL REPAIR MANUAL**

REF DWG
311T1510



**COWL SUPPORT BEAM
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHANNEL	0.050	CLAD 2024-T42	
2	FORWARD UPPER CHORD		BAC1506-3195, 2024-T42	
3	FORWARD LOWER CHORD		BAC1505-101159, 2024-T8511	
4	WEB	0.050	CLAD 2024-T42	
5	LOWER CHORD	0.050	CLAD 2024-T42	
6	STIFFENER		AND10134-1201, 2024-T8511	
7	WEB	0.063	CLAD 2024-T3	
8	WEB AFT	0.08	CLAD 2024-T3	
9	UPPER CHORD		BAC1505-101202, 7075-T73	
10	LOWER CHORD		BAC1505-101157, 7075-T73	
11	BULKHEAD		FORGING 7075-T73	
12	STIFFENER		AND10136-2001, 2024-T8511	
13	ANGLE	0.050	CLAD 2024-T42	

LIST OF MATERIALS FOR DETAIL III

**Strut Structure Identification - CF6-80A Engine
Figure 1 (Sheet 4 of 5)**

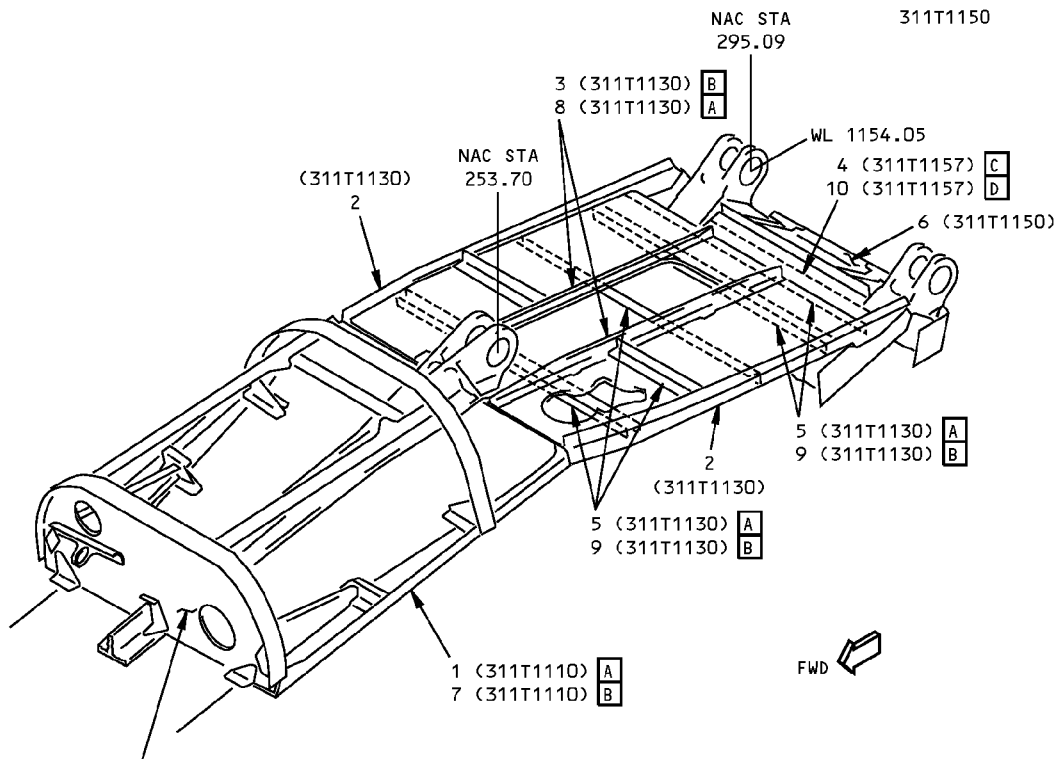
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T1110
311T1130
311T1150



REFER TO SRM 54-51-71
FOR THE FAIRING STRUCTURE

DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1506-3120 7075-T73	A
2	CHORD		BAC1506-3278 7075-T731	
3	STIFFENER		AND10139-1106 7075-T73511	A
4	CLOSEOUT ANGLE		BAC1514-2595 7075-T73511 OPTIONAL: BAC1506-3181 7075-T73	C
5	STIFFENER	0.080	CLAD 7075-T62	A
6	CLOSEOUT WEB	0.071	CLAD 7075-T62	
7	CHORD		BAC1506-3120 2024-T62	B
8	STIFFENER		AND10139-1100 2024-T8511	B
9	STIFFENER	0.080	CLAD 2024-T62	B
10	CLOSEOUT ANGLE		7075-T73511 EXTRUDED BAR	D

LIST OF MATERIALS FOR DETAIL IV

**Strut Structure Identification - CF6-80A Engine
Figure 1 (Sheet 5 of 5)**

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STRUCTURAL REPAIR MANUAL

THE ATTACHMENT LINK IDENTIFICATION
IN FIGURE 2 WAS MOVED TO 54-51-90.

Attachment Linkage Identification - CF6-80A Engine
Figure 2

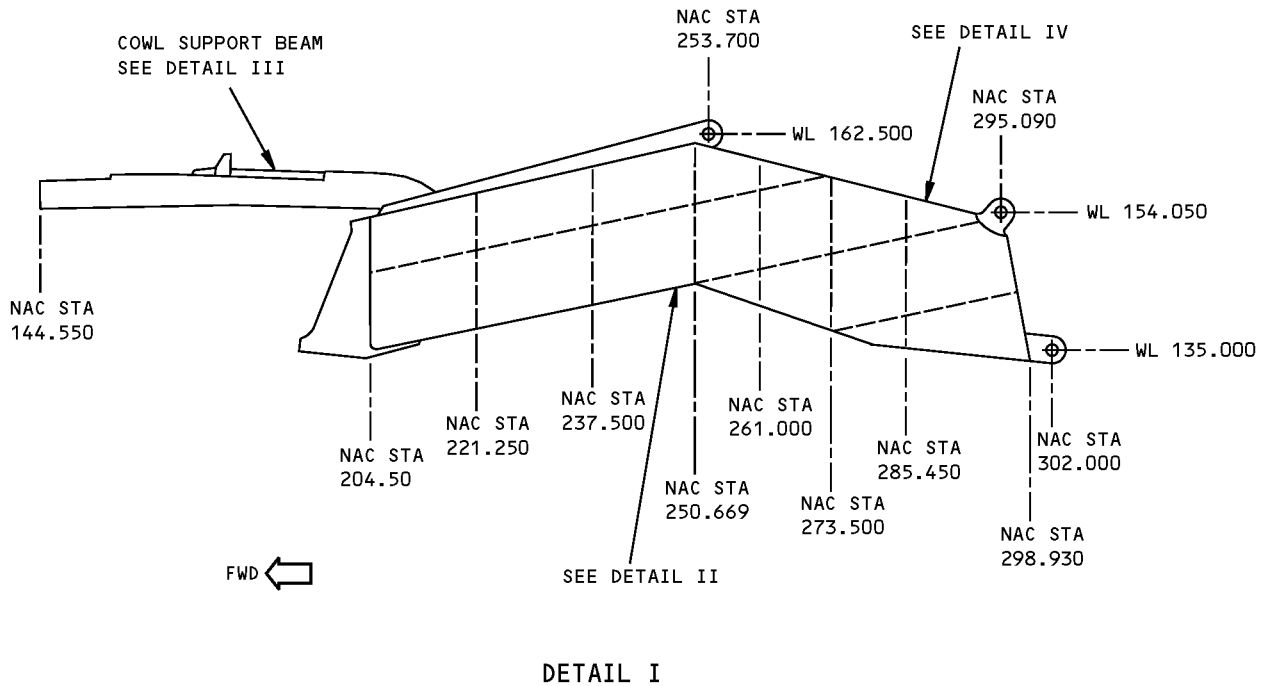
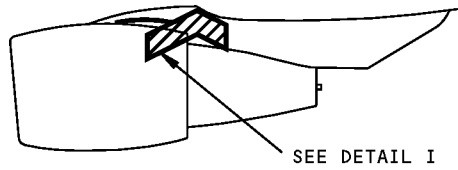
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54-51-02

IDENTIFICATION 1
Page 6
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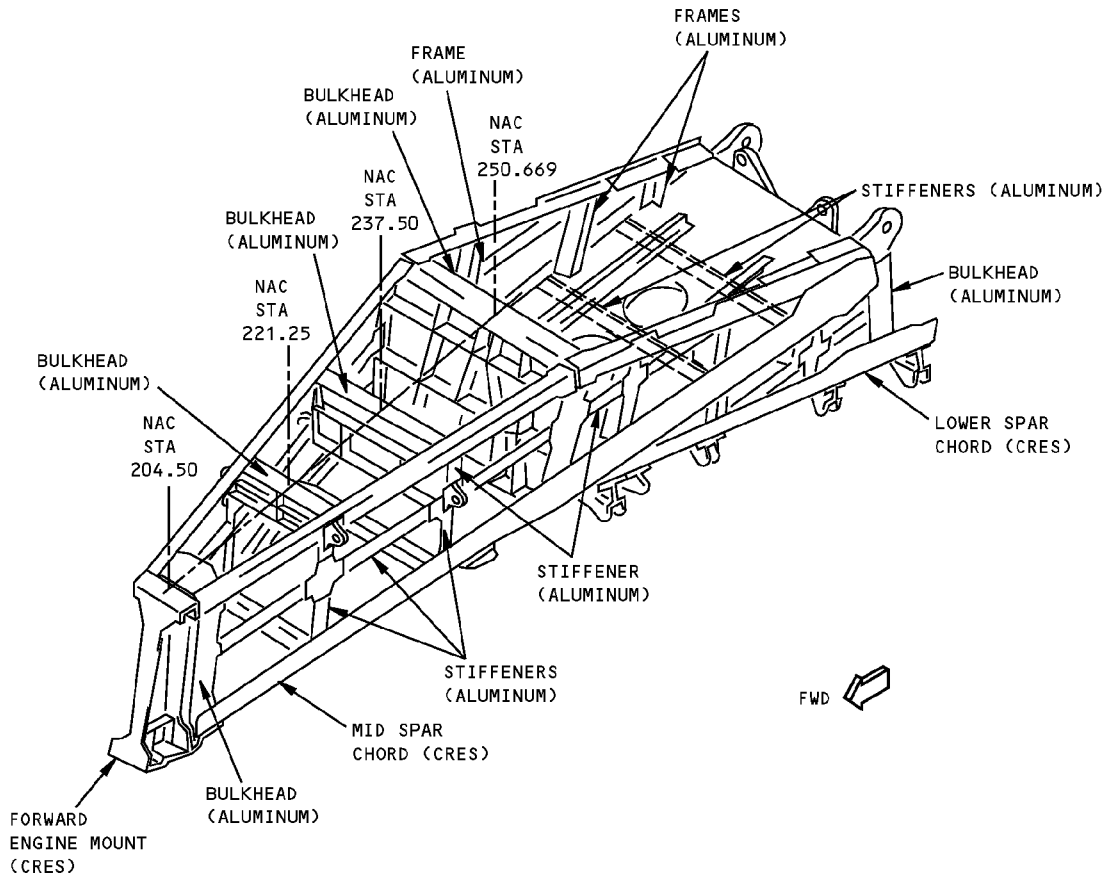
**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT STRUCTURE - CF6-80A ENGINE



**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 1 of 7)**

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STRUCTURAL REPAIR MANUAL**

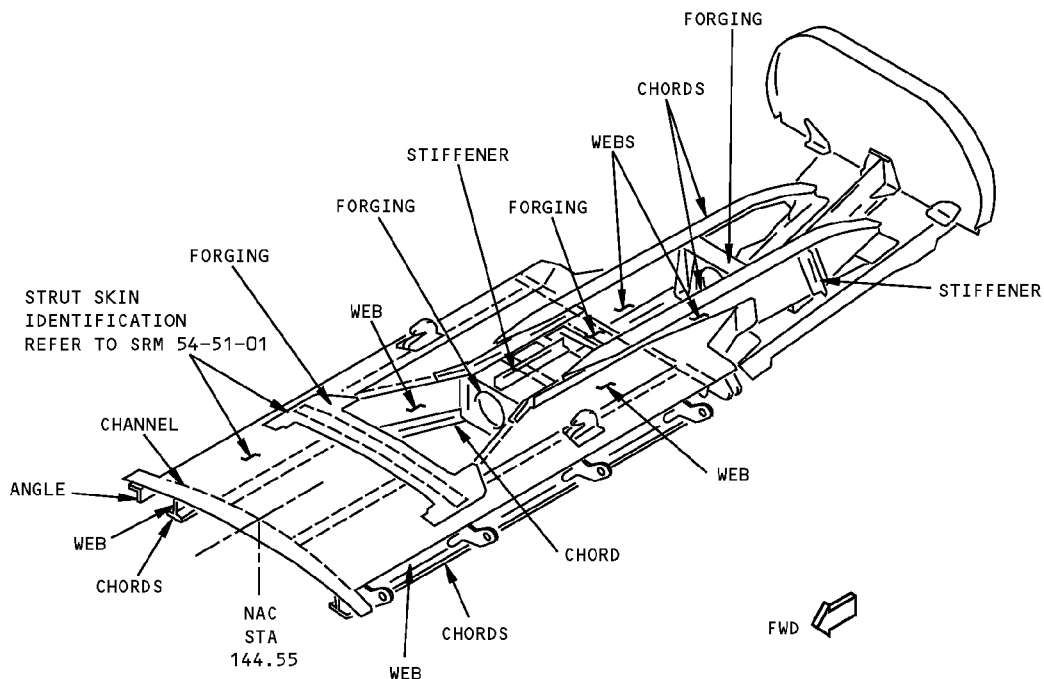


DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
FORWARD ENGINE MOUNT [E]	A	B	NOT ALLOWED	NOT ALLOWED	—
BULKHEADS [E]	A	B	NOT ALLOWED	NOT ALLOWED	—
STIFFENERS	C	B	NOT ALLOWED	SEE DETAIL XI	—
CHORDS [E]	C	B	NOT ALLOWED	NOT ALLOWED	—
FRAME	C	B	NOT ALLOWED	NOT ALLOWED	—

DETAIL II

**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
CHANNEL	C	B	NOT ALLOWED	NOT ALLOWED	—
CHORDS E	C	B	NOT ALLOWED	NOT ALLOWED	—
WEBS	D	B	SEE DETAIL VII	NOT ALLOWED	—
STIFFENERS	C	B	NOT ALLOWED	SEE DETAIL XI	—
FORGINGS E	C	B	NOT ALLOWED	NOT ALLOWED	—
ANGLE	C	B	NOT ALLOWED	NOT ALLOWED	—

DETAIL III

**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 3 of 7)**

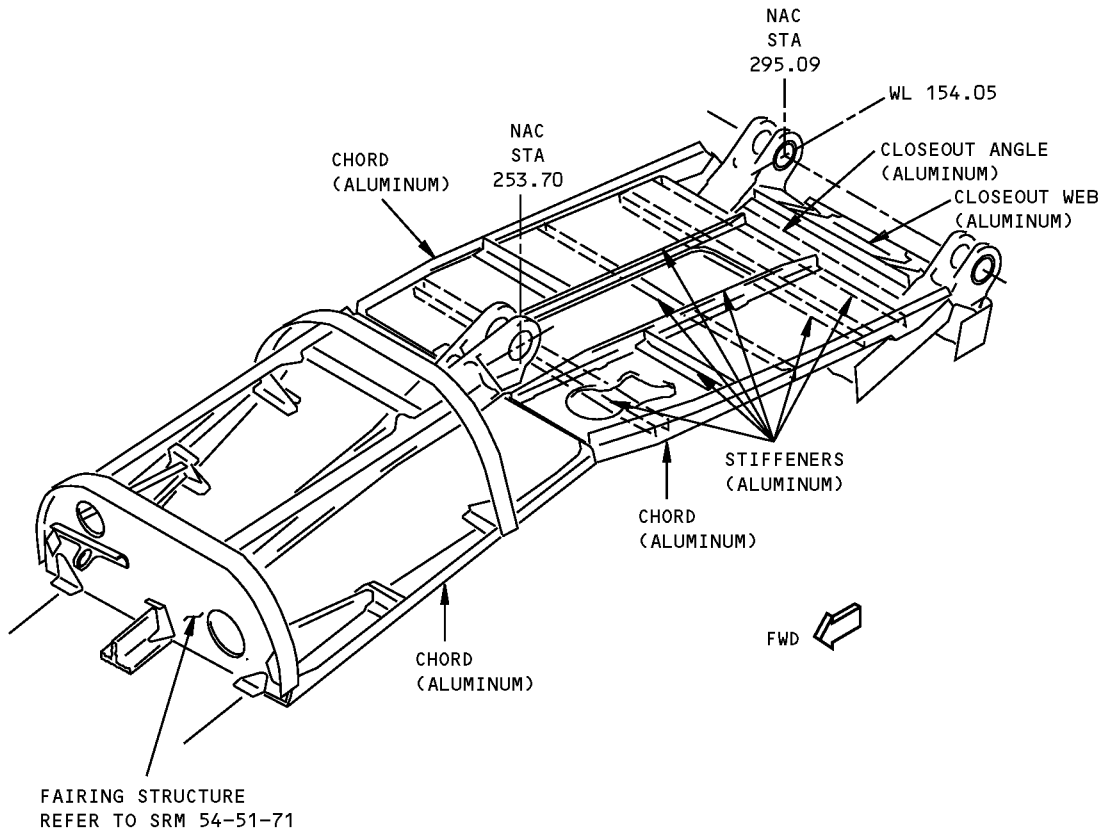
ALLOWABLE DAMAGE 1

54-51-02

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**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS	C	B	NOT ALLOWED	NOT ALLOWED
STIFFENERS	C	B	NOT ALLOWED	SEE DETAIL XI
CLOSEOUT ANGLE	C	B	NOT ALLOWED	SEE DETAIL XI
CLOSEOUT WEB	D	B	SEE DETAIL VII	F

DETAIL IV

**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 4 of 7)**

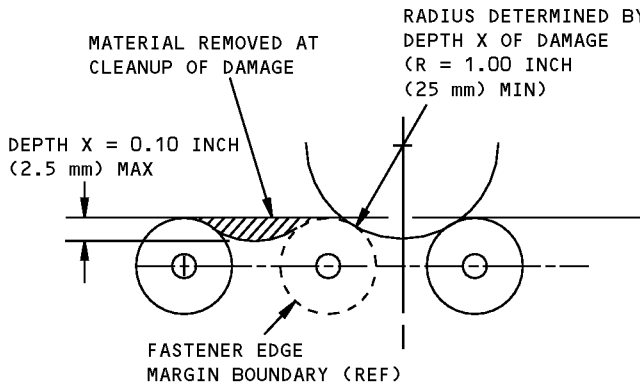
D634T210

ALLOWABLE DAMAGE 1
Page 104
54-51-02
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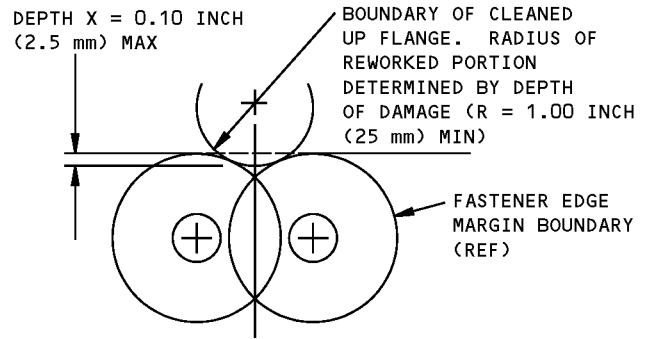
STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO AMM 51-21 TO APPLY THE FINISH TO REWORKED AREAS.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- A** CRACKS ARE NOT ALLOWED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAIL XII. SEE DETAIL II FOR THE APPLICABLE SHOT PEEN REQUIREMENTS.
- B** REMOVE THE DAMAGE AS GIVEN IN DETAILS V, VI, AND VIII. REFER TO DETAILS II, III, AND IV FOR THE APPLICABLE SHOT PEEN REQUIREMENTS.
- C** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND X. SEE DETAILS II AND III FOR THE APPLICABLE SHOT PEEN REQUIREMENTS.
- D** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND IX.
- E** SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.
- F** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO A FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL THE HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES ARE TO BE REPAIRED.

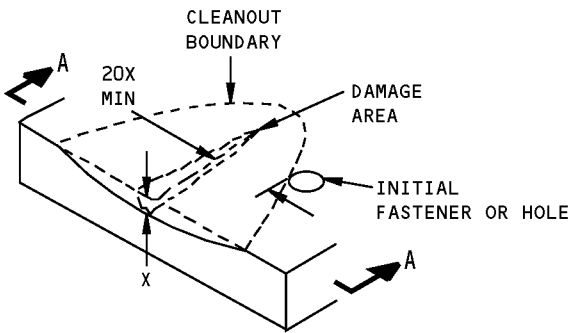


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



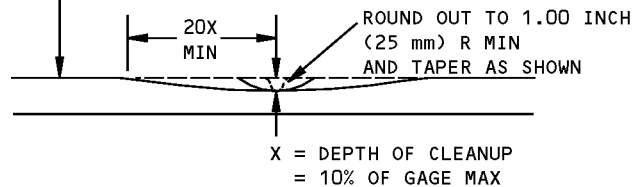
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL V



REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI

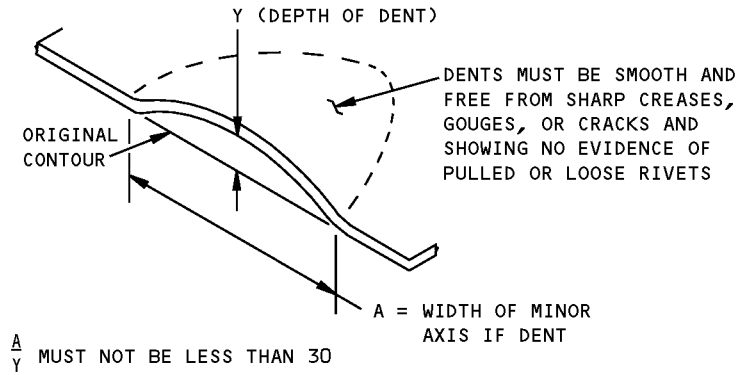
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



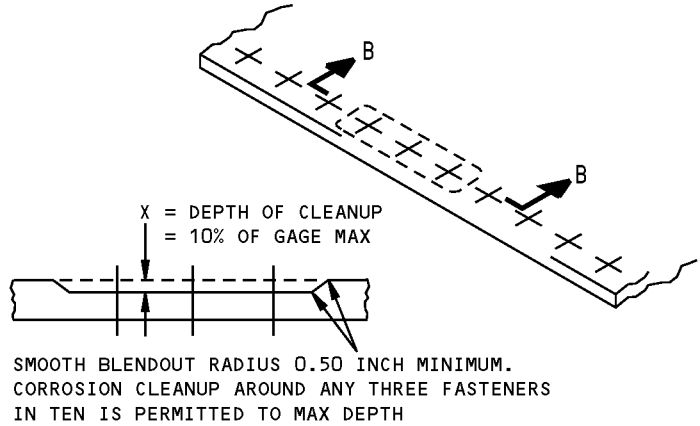
SECTION A-A

Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 5 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**

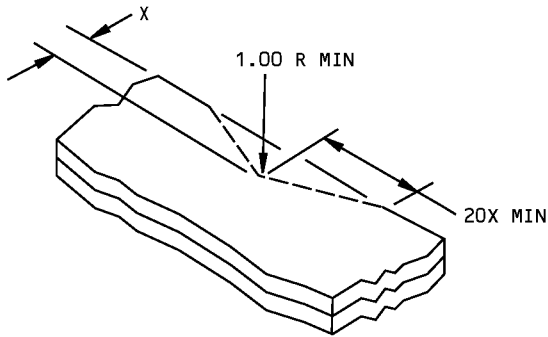


**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



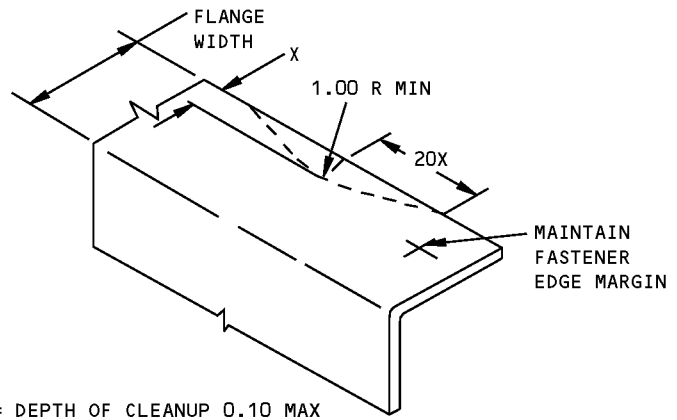
SECTION B-B

**CORROSION CLEANUP
DETAIL VIII**



X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL IX



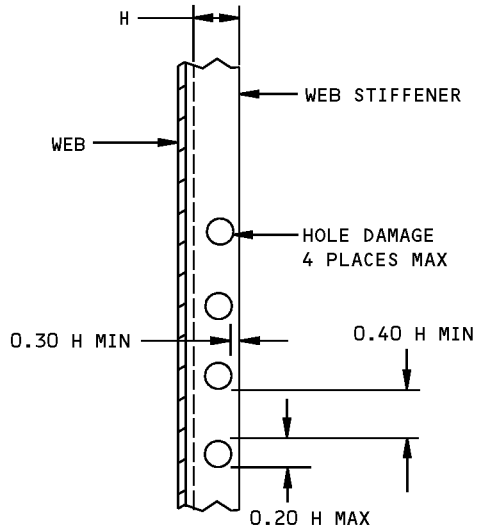
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL X**

**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 6 of 7)**

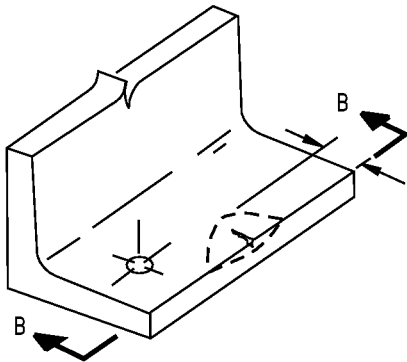
**767-300
STRUCTURAL REPAIR MANUAL**

NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95 SEALANT

H = WIDTH OF STIFFENER FLANGE

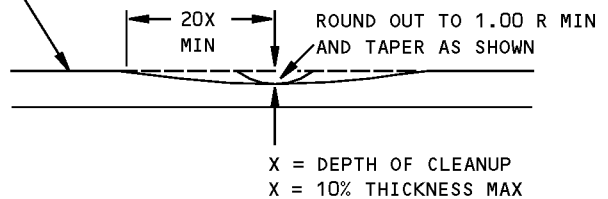


**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL XI**



AREA OF CLEANOUT NOT TO EXCEED 10% OF FLANGE WIDTH

THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR EDGE MUST NOT BE LESS THAN 20X



SECTION B-B

DETAIL XII

**Allowable Damage - Strut Structure - CF6-80A Engine
Figure 101 (Sheet 7 of 7)**



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STRUCTURAL REPAIR MANUAL

**THE ATTACHMENT LINK ALLOWABLE DAMAGE
IN FIGURE 102 WAS MOVED TO 54-51-90.**

**Allowable Damage - Attachment Linkage CF6-80A Engine
Figure 102**

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ALLOWABLE DAMAGE 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT STRUCTURE - CF6-80A ENGINE

REPAIR INSTRUCTIONS

NOTE: This repair is for partially cracked member. If member is cracked completely through, replace member.

1. Stop drill end(s) of crack 0.25 dia.
2. Make the repair angle, form to contour of frame.
3. Assemble repair part and drill fastener holes.
4. Remove repair part.
5. Break sharp edges of repair part 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of the original part.
8. Apply one coat BMS 10-11, type 1 primer to all of the repair part in accordance with 51-27 of the 767 Maintenance Manual.
9. Install the repair parts making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.

SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	ANGLE	1	0.063 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

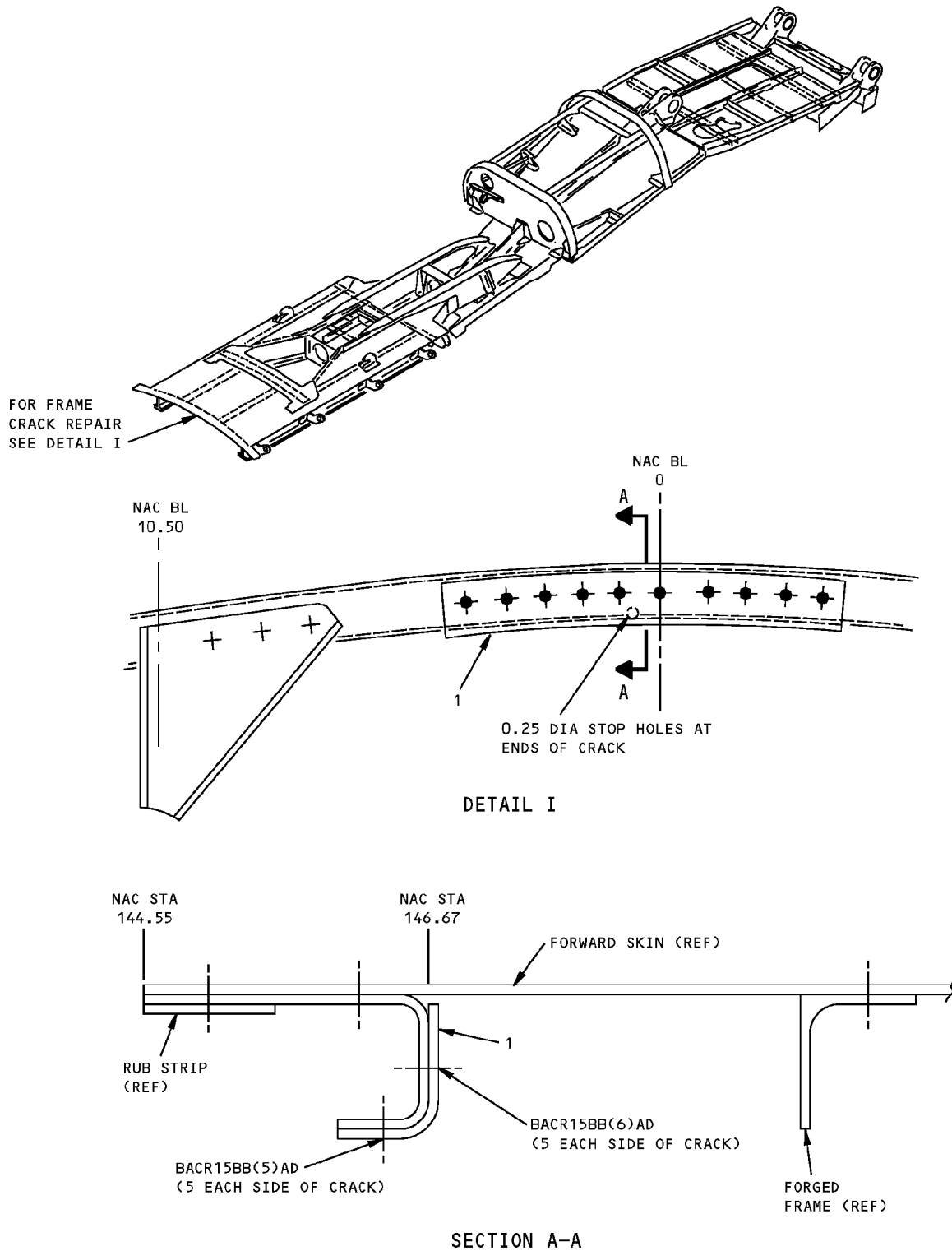
**Strut Structure Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)**

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54-51-02

REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**

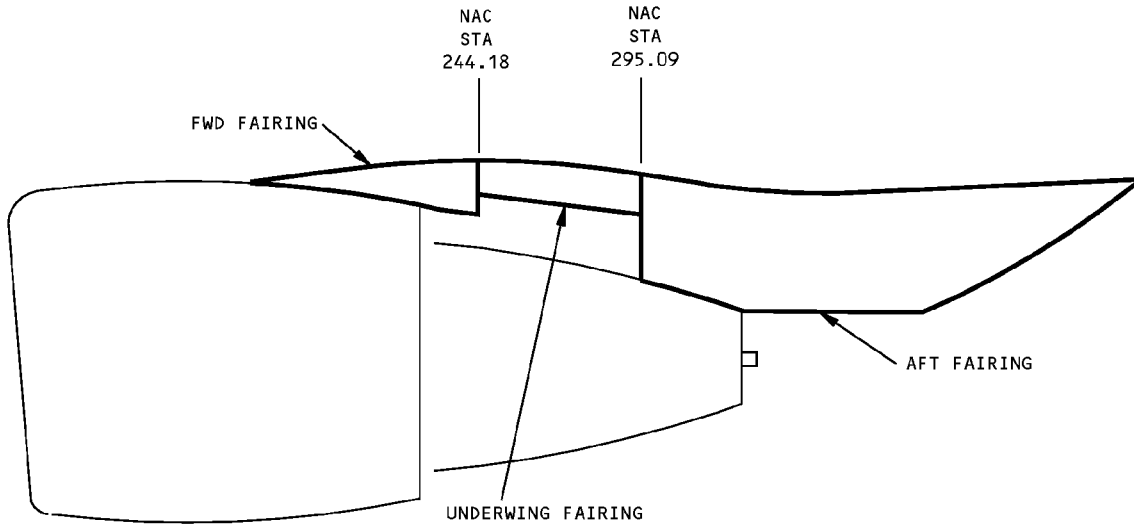


**Strut Structure Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING SKIN - CF6-80A ENGINE

REF DWG
310T1060
313T1100
313T1300



SEE DETAIL I FOR FAIRING ASSEMBLY

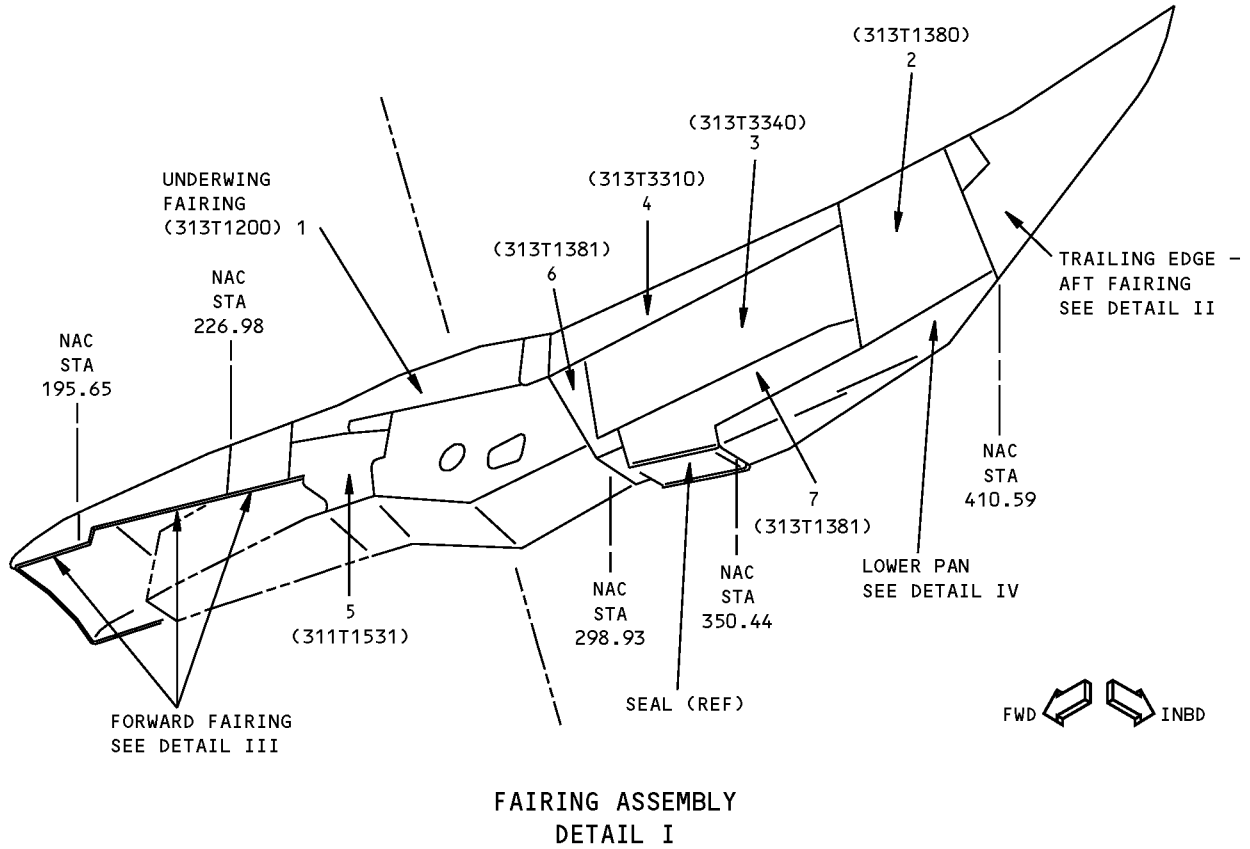
NOTES

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION</p> <p>B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS</p> <p>C ARAMID/EPOXY FABRIC PER BMS 8-218, STYLE 285, 350°F (177°C) CURE</p> <p>D 425 ALUMINUM FOIL (3M COMPANY) PER MIL-T-23397B ON INTERIOR OF PANEL</p> | <p>E FOR AIRPLANES NOT LISTED IN F OR G</p> <p>F FOR CUM LINE NUMBERS: 239 AND ON</p> <p>G FOR AIRPLANES INCORPORATING SB 767-54-0017</p> |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|



**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 8)**

**767-300
STRUCTURAL REPAIR MANUAL**



LIST OF
MATL

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 8)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL V HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0	
2	PANEL SKIN - INNER SKIN - OUTER CORE	0.016 0.016	ALUMINUM HONEYCOMB SANDWICH CLAD 2024-T3 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N	
3	DOOR SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VI [D] HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124 CLASS I, TYPE I, GRADE 12.0	
4	PANEL SKIN DOUBLER	0.063 0.040	CLAD 2024-T3 2024-T3	
5	FAIRING SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, TYPE V, CLASS IV, GRADE 4.0	
6	SKIN PANEL	0.063	CLAD 2024-T81	
7	PANEL ASSY SKIN - OUTER SKIN - INNER DOUBLER DOUBLER CORE DENSE CORE (AT FAIRING STRUCTURE STIFFENER LOCATIONS 3 LOCATIONS)	0.016 0.016 0.020 0.032	CLAD 2024-T81 CLAD 2024-T3 CLAD 2024-T81 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N ALUMINUM HONEYCOMB PER MIL-C-7438E 22.1-1/8-60N (5052)	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 8)**

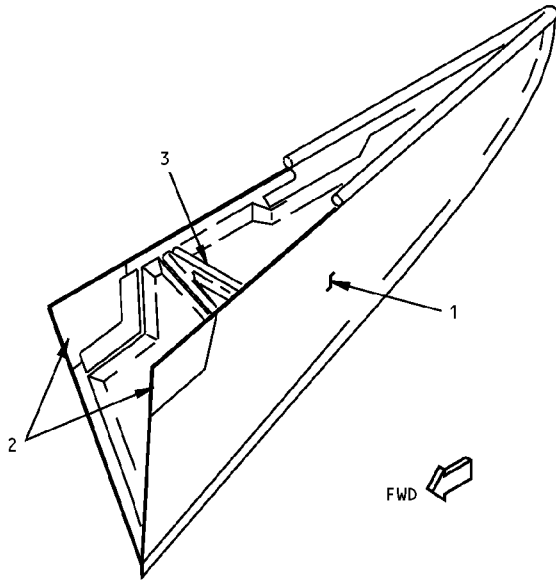
IDENTIFICATION 1
Page 3
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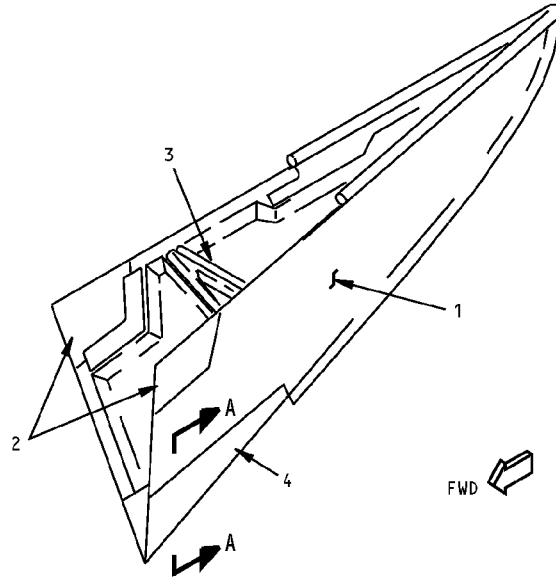
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

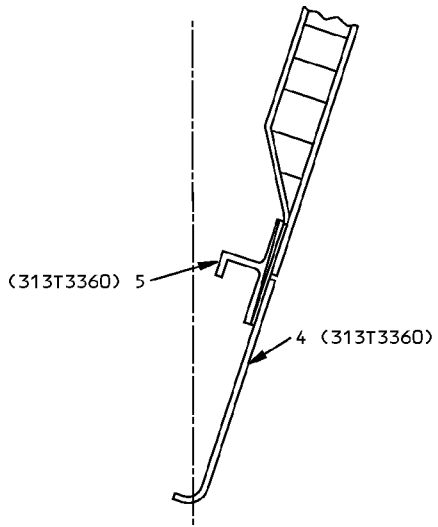
REF DWG
313T3360



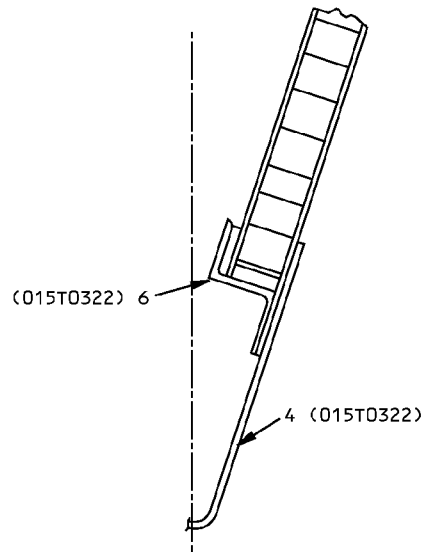
TRAILING EDGE **E**



TRAILING EDGE **F G**



SECTION A-A **F**



SECTION A-A **G**

**TRAILING EDGE - AFT FAIRING
DETAIL II**



**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 4 of 8)**

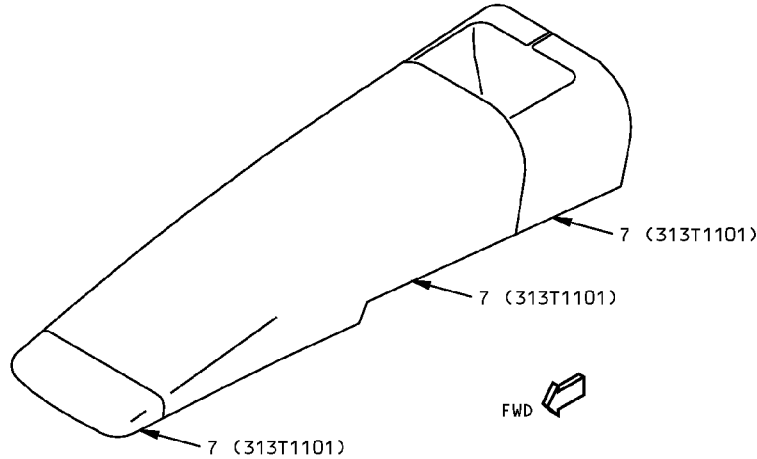
D634T210

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IDENTIFICATION 1
Page 4
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T1100



**FORWARD FAIRING
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VIII D HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0 (4.0 PCF)	
2	DOOR	0.063	CLAD 2024-T3	
3	BULKHEAD	0.063	2024-T42 OPTIONAL: CLAD 2024-T42	
4	SKIN	0.050	INCONEL 625	F G
5	TEE		BAC1506-1934 2024-T3511	F
6	ZEE		AND10138-0605 2024-T3511	G
7	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL IX NONMETALLIC (NOMEX) HONEYCOMB PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	

LIST OF MATERIALS FOR DETAILS II AND III

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 5 of 8)**

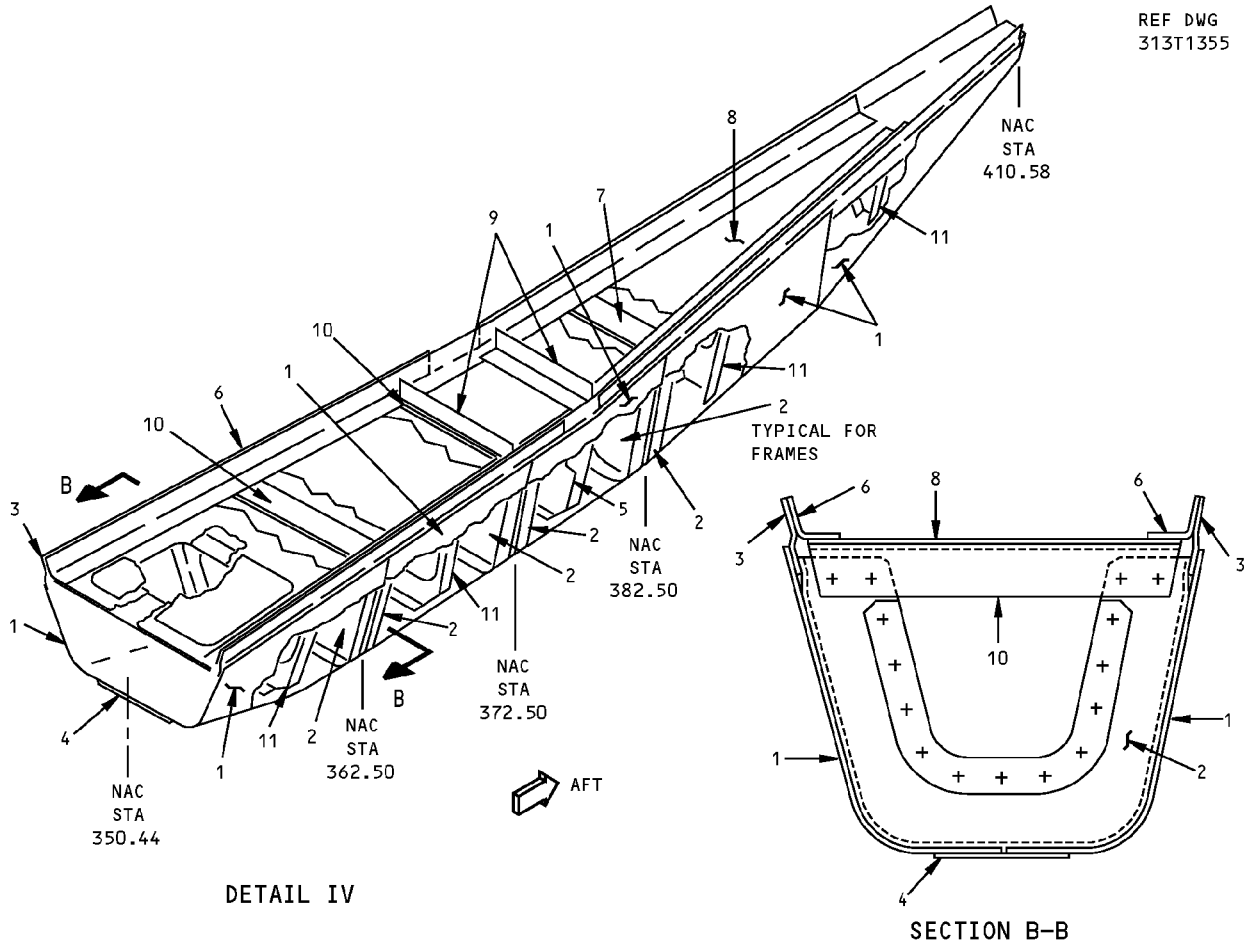
IDENTIFICATION 1
Page 5
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T1355



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.050	INCONEL 625	
2	FRAME	0.063	INCONEL 625	
3	SPLICE	0.063	2024-T42	
4	SPLICE	0.063	INCONEL 625	
5	BULKHEAD	0.063	INCONEL 625	
6	ANGLE	0.063	2024-T3	
7	TEE		AND1506-928 7075-T73511	
8	WEB ASSY WEB (2)	0.025	2024-T3 (BONDED ASSY)	
9	ANGLE	0.050	2024-T42	
10	TEE		AND10136-2006 7075-T6511	
11	RIB	0.050	INCONEL 625	

LIST OF MATERIALS FOR DETAIL IV

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 6 of 8)**

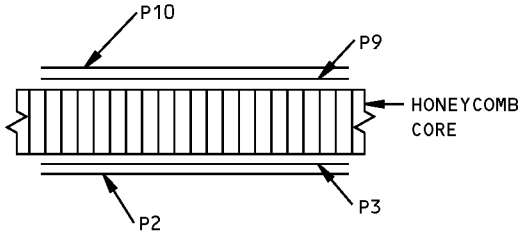
IDENTIFICATION 1
Page 6
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D634T210

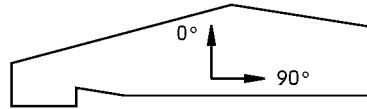
**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T1200

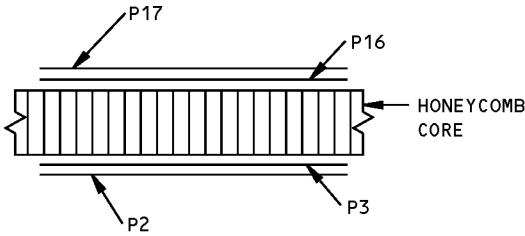


SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL I)

DETAIL V

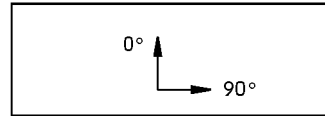


PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL



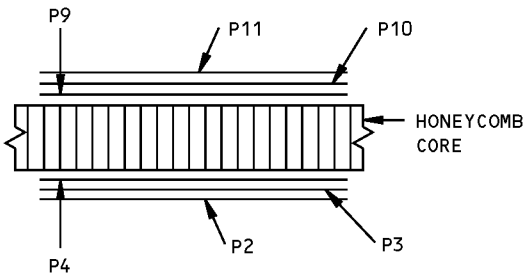
SECTION THRU HONEYCOMB PANEL
(ITEM 3, DETAIL I)

DETAIL VI



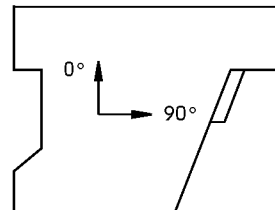
PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

REF DWG
313T3340



SECTION THRU HONEYCOMB PANEL
(ITEM 5, DETAIL I)

DETAIL VII



PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

REF DWG
311T1531

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 7 of 8)**

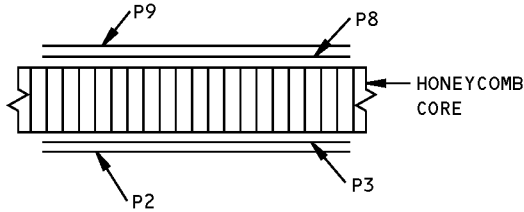
IDENTIFICATION 1
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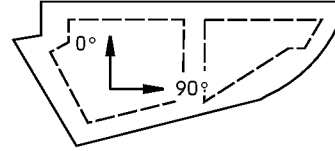
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



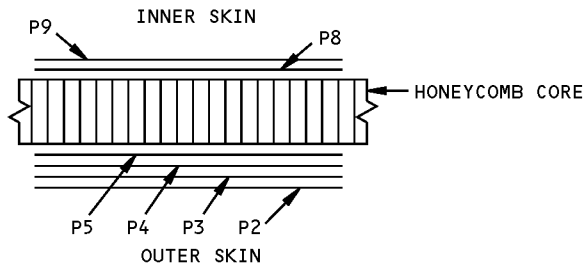
SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL II)



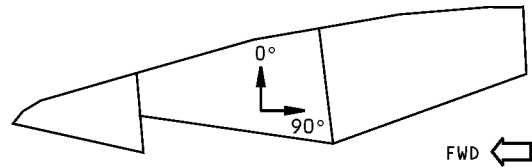
PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

DETAIL VIII

REF DWG
313T1101



SECTION THRU HONEYCOMB PANEL
(ITEM 7, DETAIL III)



PLY ORIENTATION DIAGRAM

DETAIL IX

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1 (DETAIL I)	P2,P3,P9,P10	^C ^D	0 OR 90° OPTIONAL
3 (DETAIL I)	P2,P3,P16,P17	^C ^D	0 OR 90° OPTIONAL
5 (DETAIL I)	P2,P3,P4,P9 P10,P11	^C	0 OR 90° OPTIONAL
1 (DETAIL II)	P2,P3,P8,P19	^C ^D	0 OR 90° OPTIONAL
7 (DETAIL III)	P2,P3,P4,P5, P8,P9	^C ^D	0 OR 90° OPTIONAL

TABLE I ^B

**Strut Fairing Skin Identification - CF6-80A Engine
Figure 1 (Sheet 8 of 8)**

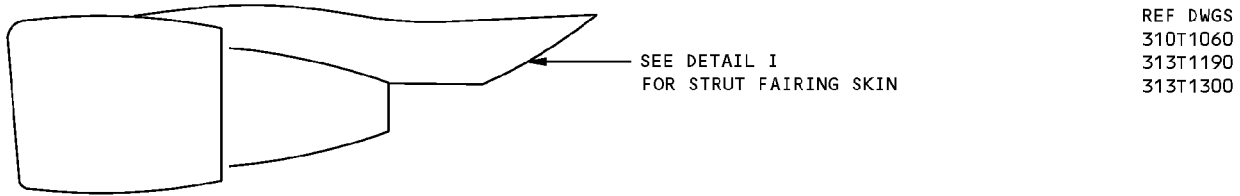
IDENTIFICATION 1
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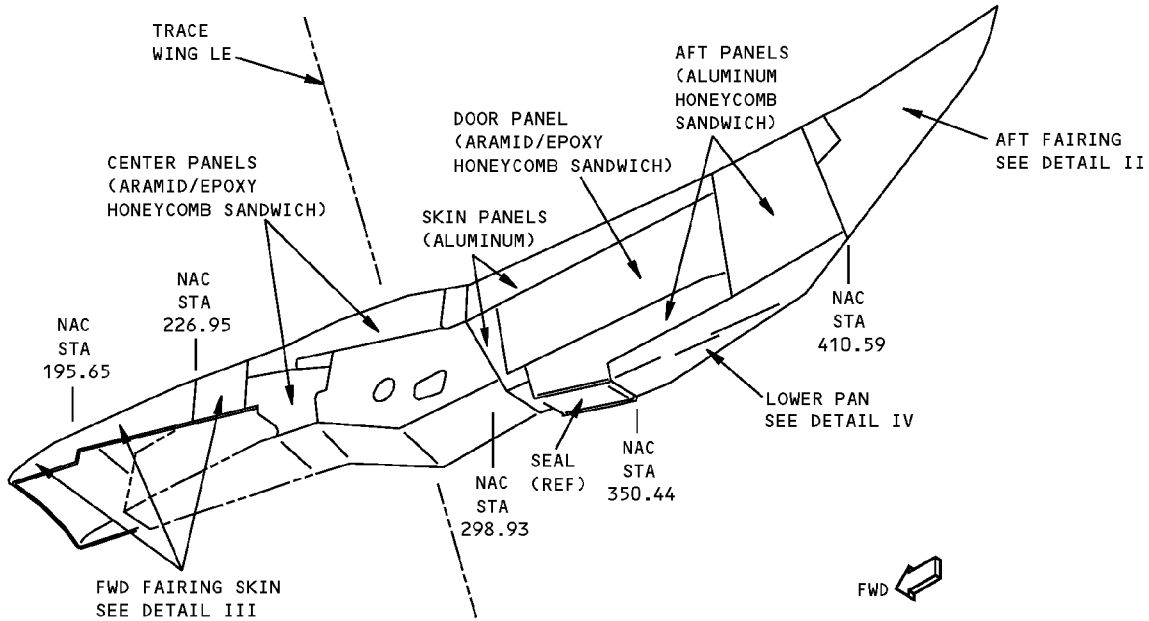
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING SKIN - CF6-80A ENGINE



REF DWGS
310T1060
313T1190
313T1300

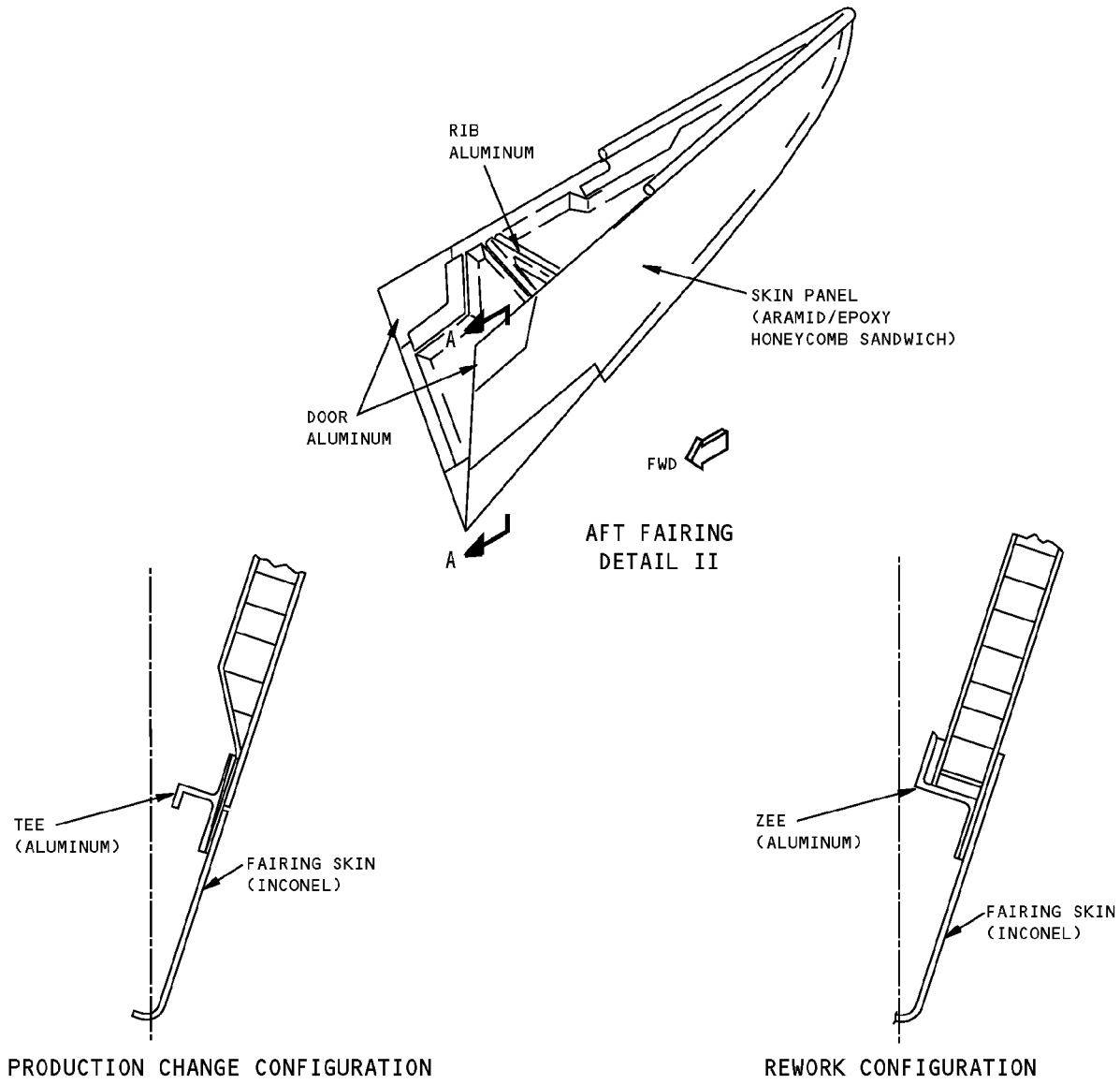


DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANELS	A	B	SEE DETAIL VII	C	—
AFT PANELS	F	B	J	D	E
CENTER PANELS	N	G	H	I	E
DOOR PANEL L	N	G	H	I	E

**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

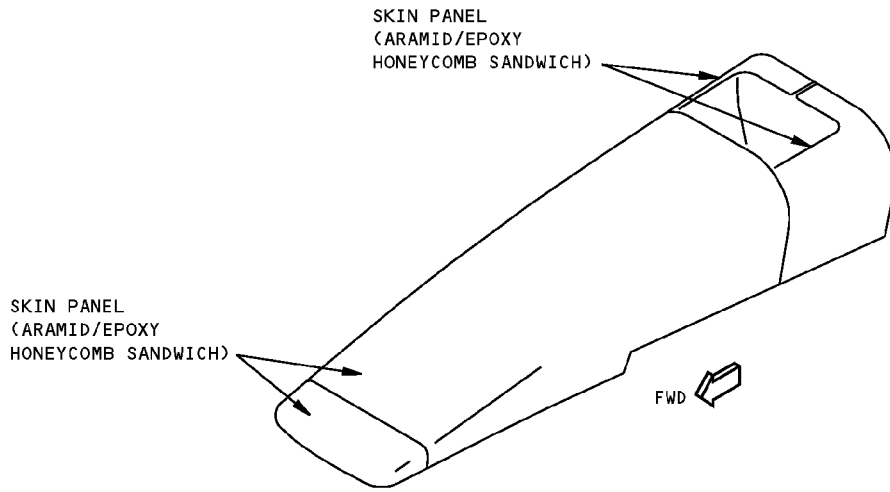


SECTION A-A

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E
DOOR	A	B	SEE DETAIL VII	C	---
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	---
TEE, ZEE	P	B	NOT ALLOWED	SEE DETAIL XI	---
FAIRING SKIN	A	B	SEE DETAIL VII	M	---

**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

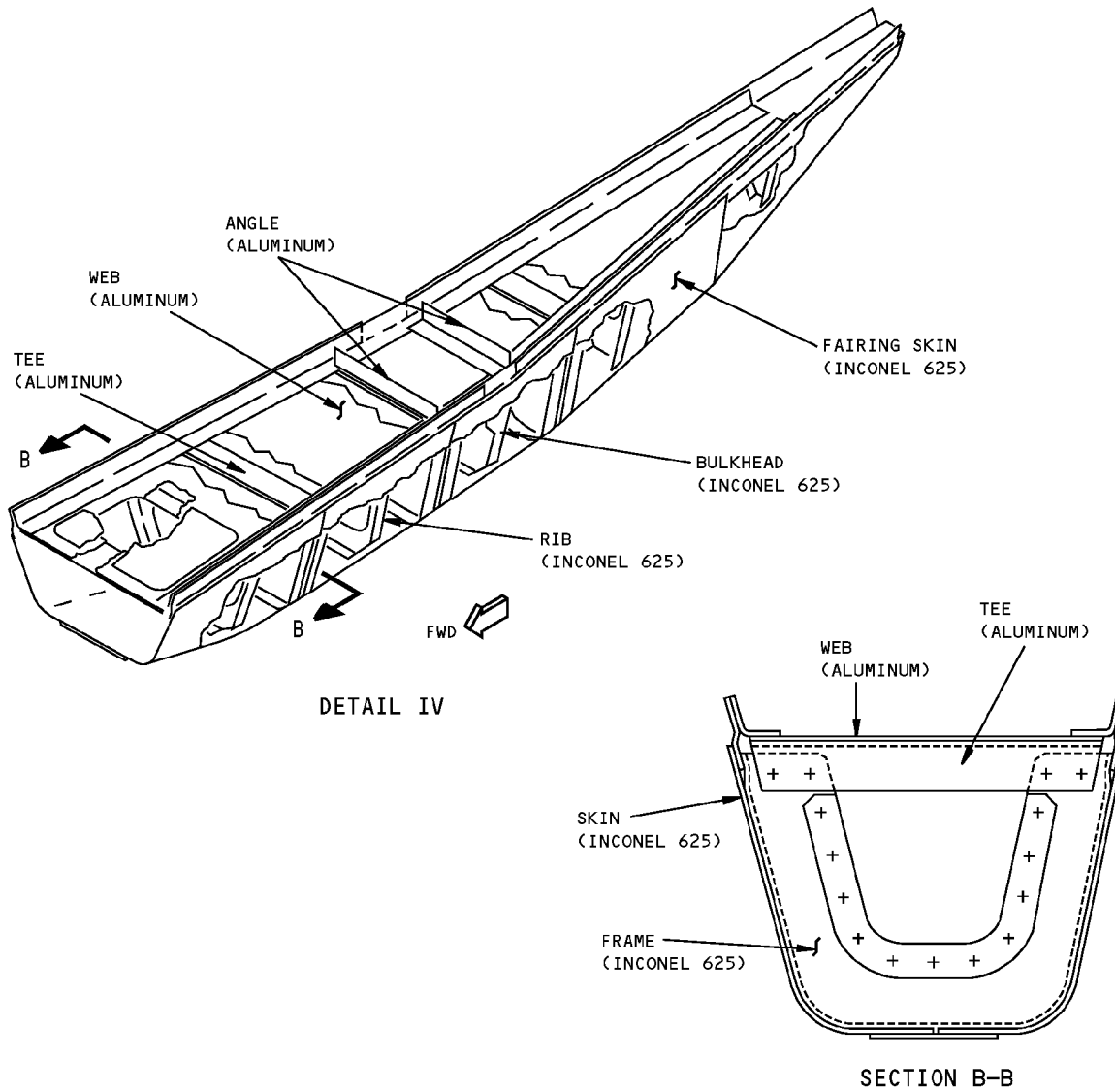


**FWD FAIRING
DETAIL III**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E

**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
FAIRING SKIN	A	B	SEE DETAIL VII	M	---
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	---
BULKHEAD	K	B	NOT ALLOWED	SEE DETAIL XI	---
WEB	A	B	SEE DETAIL VII	C	---
ANGLE	K	B	NOT ALLOWED	SEE DETAIL XI	---
TEE	P	B	NOT ALLOWED	SEE DETAIL XI	---
FRAME	K	B	NOT ALLOWED	SEE DETAIL XI	---

**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 4 of 7)**

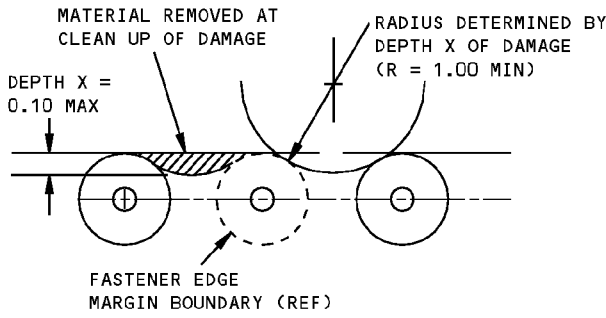
STRUCTURAL REPAIR MANUAL

NOTES

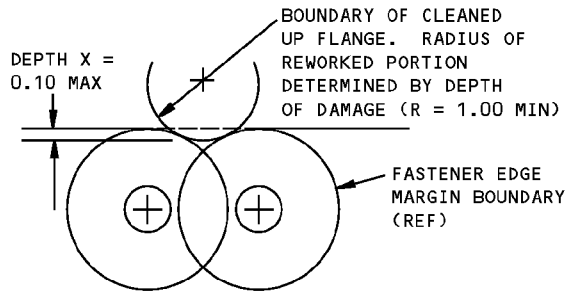
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND IX
 - B** REMOVE DAMAGE AS GIVEN IN DETAILS V, VI AND VIII
 - C** CLEAN PUNCTURE OUT WITH 0.25 INCH (6 mm) MAX DIA HOLE AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
 - D** 1.00 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE. **O**
 - E** 2.00 INCHES (50 mm) MAX DIA IS PERMITTED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.76 mm) DELAMINATION FROM EDGE IS PERMITTED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. PROTECT EDGE DAMAGE AS GIVEN IN **O**
 - F** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA FOR EACH SQUARE FOOT OF AREA AND MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER CRACK. DRILL 0.19 INCH (4.8 mm) STOP HOLES AT ENDS OF CRACK, CLEAN UP EDGE DAMAGE AS GIVEN IN DETAILS V AND IX. **O**
 - G** DAMAGE PERMITTED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS ARE NOT PERMITTED. CLEAN UP EDGE DAMAGE AS GIVEN IN DETAILS V AND IX. **O**
 - H** 2.00 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS PERMITTED PROVIDED THERE IS NO DELAMINATION OR FIBER DAMAGE. ONE DENT FOR EACH SQUARE FOOT OF AREA PERMITTED AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER DENT
 - I** 1.00 INCH (25 mm) MAX DIA PERMITTED PROVIDED DAMAGE IS MIN OF 3 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **O**
 - J** 2.00 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS PERMITTED PROVIDED THERE IS NO DELAMINATION. ONE DENT FOR EACH SQUARE FOOT OF AREA PERMITTED AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER DENT
 - K** NO CRACKS ARE PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND X
 - L** NO DAMAGE IS PERMITTED IN AN AREA 1.50 INCHES (38 mm) AROUND HINGE OR LATCH FITTINGS. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE
 - M** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER DAMAGE TO BE REPAIRED
 - N** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA FOR EACH SQUARE FOOT AND MIN OF 6.00 INCHES (150 mm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS AS GIVEN IN DETAILS V AND X. **O**
 - O** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DETERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
 - P** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND XII

Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 7)

STRUCTURAL REPAIR MANUAL

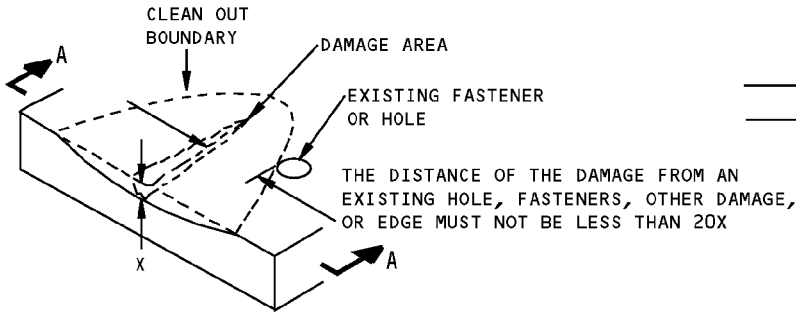


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

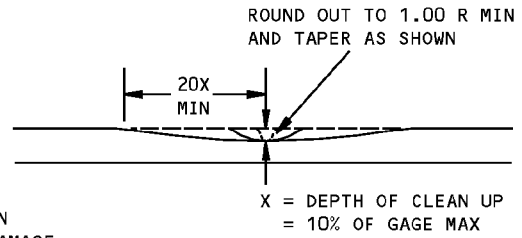


FASTENER EDGE MARGINS OVERLAP

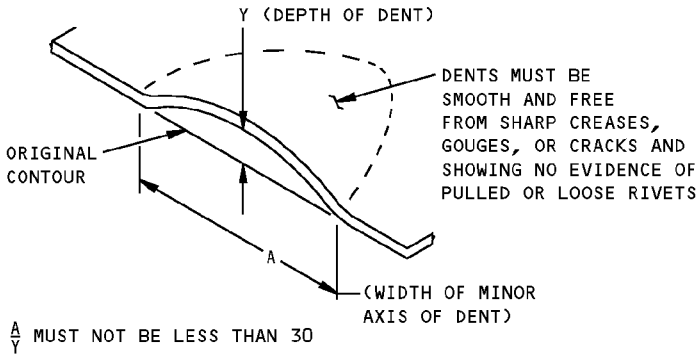
DETAIL V



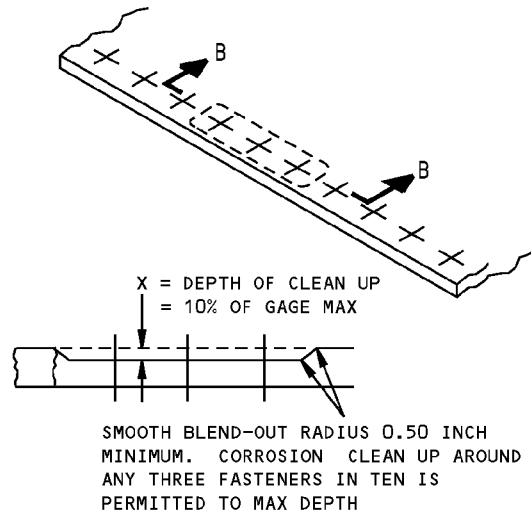
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI**



SECTION A-A



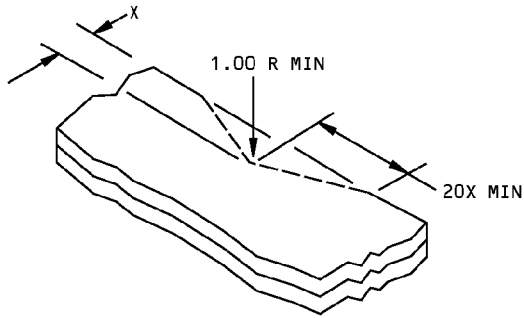
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



**SECTION B-B
CORROSION CLEANUP
DETAIL VIII**

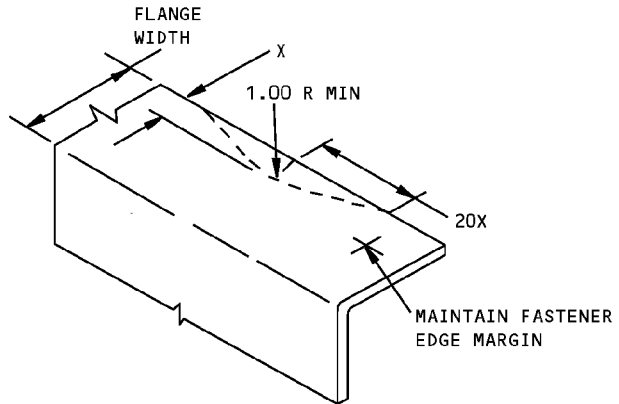
**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 6 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



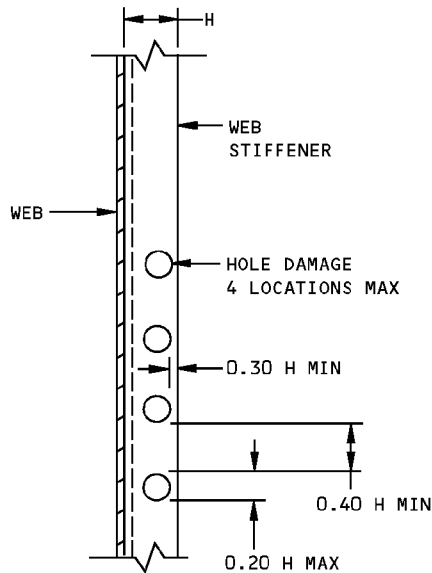
X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL IX



X = DEPTH OF CLEAN UP NOT TO EXCEED 10% OF FLANGE WIDTH

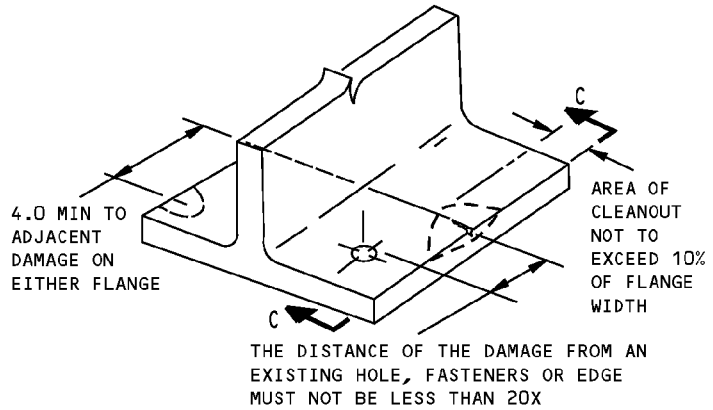
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL X**



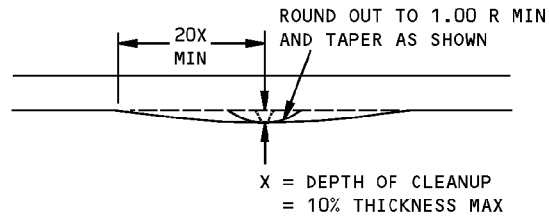
NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES IN ALUMINUM WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95. FILL HOLES IN INCONEL WITH MONEL RIVET INSTALLED DRY

H = WIDTH OF STIFFENER FLANGE

**ALLOWABLE DAMAGE LIMITS FOR HOLES
IN WEB AND FAIRING STIFFENERS
DETAIL XI**



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR EDGE MUST NOT BE LESS THAN 20X



**SECTION C-C
REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL XII**

**Strut Fairing Skin Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 7 of 7)**



767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - SERVICE BULLETIN REPAIRS - CF6-80C2 ENGINE

1. General

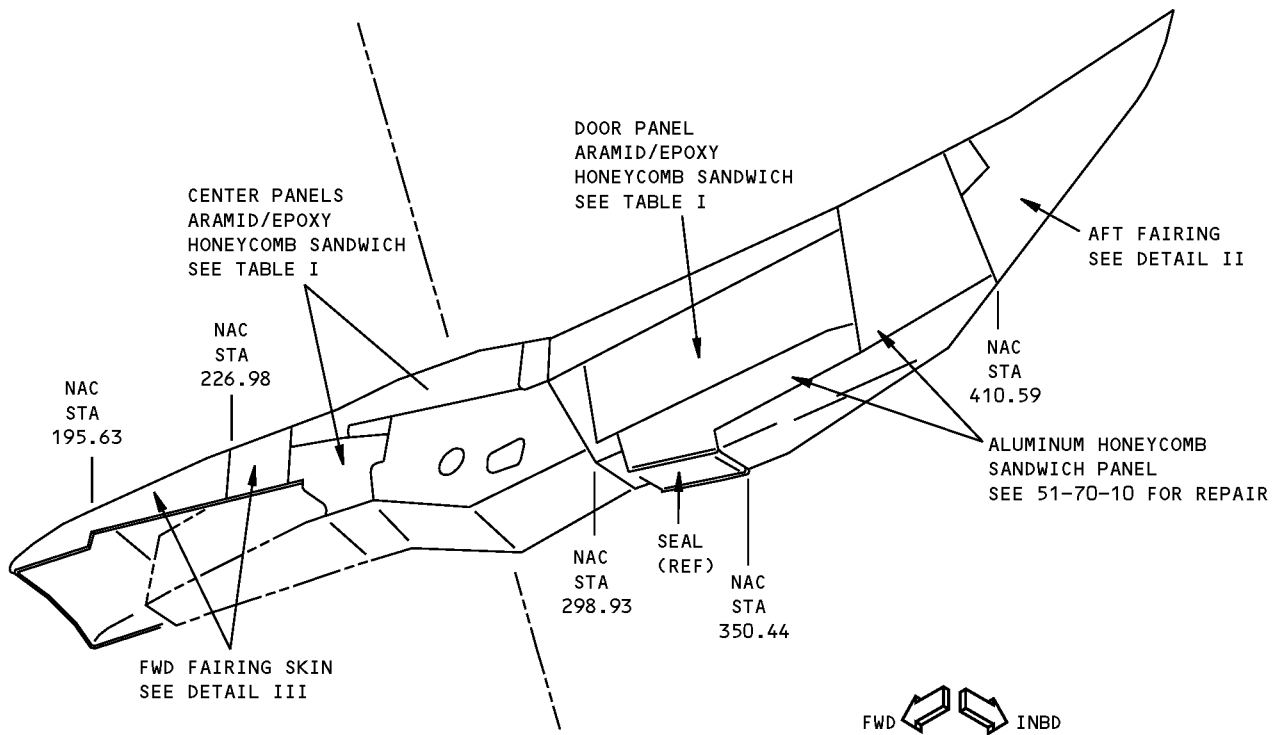
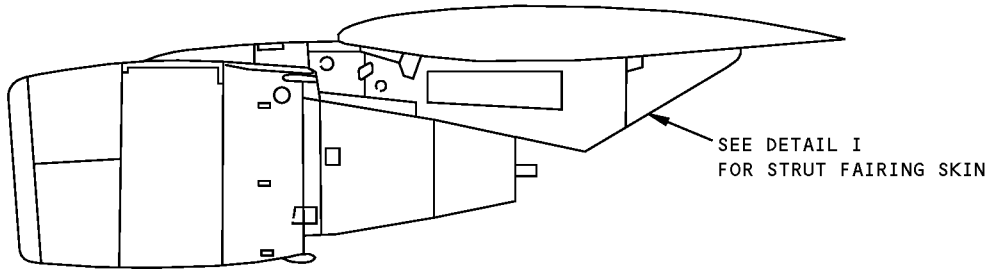
- A. The Service Bulletins listed in Table 201/REPAIR GENERAL contain repairs which you can use when there are specified types of damages. Usually the Service Bulletins also contain preventative modification data which we recommend you use so that structural damage does not occur.

Table 201: Service Bullentin Repairs

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
Aft TE Panel	8 thru 216	767-54-0017

**767-300
STRUCTURAL REPAIR MANUAL**

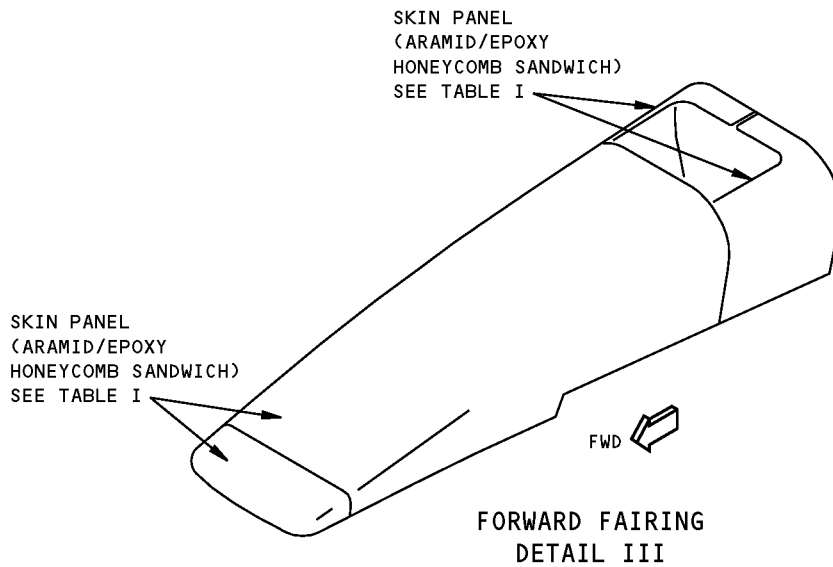
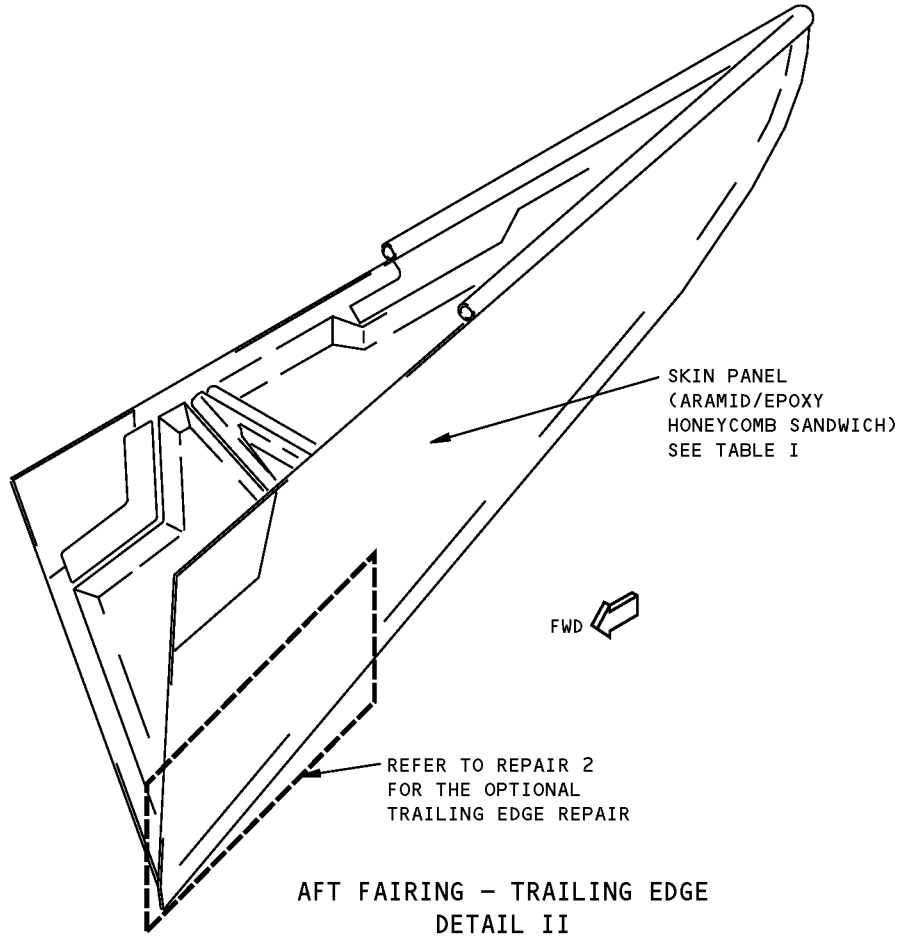
REPAIR 1 - STRUT FAIRING SKIN - CF6-80A ENGINE



DETAIL I

**Strut Fairing Skin Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Fairing Skin Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS [B]	PERMANENT REPAIRS		
	WET LAYUP ROOM TEMP/ 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17)	250°F (121°C) CURE (SRM 51-70-05)	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [A]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [A]	12.0 INCHES (300 mm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	6.0 INCHES (150 mm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.			
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			
DENTS	UP TO 3.0 INCHES (75 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. OVER 3.0 INCHES (75 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			

REPAIR DATA FOR 350°F CURE ARAMID HONEYCOMB PANELS
TABLE I

NOTES

- REFER TO SRM 51-10-02 FOR INVESTIGATION AND CLEANUP OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.

[A] LIMITED TO REPAIR OF DAMAGE TO ONE FACESHEET SKIN AND HONEYCOMB CORE. ONE REPAIR PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (150 mm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL

[B] INSPECT INTERIM REPAIR USING INSTRUMENTED NDT METHODS OR "TAP" TEST EVERY AIRPLANE "C" CHECK. FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. REFER TO SRM 51-70-03, PAR. 4.I. AND THE NON-DESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

[C] ONE REPAIR PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

Strut Fairing Skin Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR 2 - AFT PYLON FAIRING - TRAILING EDGE - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Remove aft fairing (313T3360), trailing edge assembly from pylon.
2. Cut and remove the damaged skin panel as given in Detail I. Refer to SRM 51-10-00.
3. Seal the panel core edges Type 15, Class 1 potting compound, one half cell depth minimum. Refer to SRM 51-1-01.
4. Make the repair parts. See Details I thru VI, and Table I. Refer to SRM 51-10-01 and SRM 51-03-01.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the cut edges of the panel.
8. Apply a chemical conversion coating to the bare aluminum surfaces of the repair parts and panel.
9. Apply primer as follows:
 - (a) Apply two coats of BMS 10-11, Type 1 to all of the nickel alloy to aluminum faying surfaces of part 1.
 - (b) Apply one coat of BMS 10-11, Type 1 to parts 2, 3, 7 and 8.
 - (c) Apply two coats of BMS 10-11, Type 1 to parts 4, 5 and 6.
10. Install the fasteners. Fastener that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Restore initial finish per AMM 51-20.
12. Install 313T3360 aft fairing, trailing edge assembly.









NOTES

- DAMAGE LOCATION IS IN A CRITICAL SONIC ENVIRONMENT. IF THE REPAIR SHOWS SIGNS OF CRACKING OR DETERIORATION, CONTACT THE THE BOEING COMPANY.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL

- SRM 51-30-01 FOR BENDING AND MACHINING OF SHEET METAL MATERIALS
- SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

- A** AS AN ALTERNATIVE, USE TWO SHEETS OF 0.125 2024-T3.
- B** AS AN ALTERNATIVE, USE ONE SHEET OF 0.100 AND ONE SHEET OF 0.063 2024-T3.
- C** DRILL A 0.127-0.131 DIAMETER HOLE THRU OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE AND ROTATE 360 DEGREES TO BREAK THE HONEYCOMB CELL WALLS 0.75-1.00 DIAMETER AROUND THE DRILLED HOLE. VACUUM DEBRIS IS FROM THE HOLE AFTER BREAKING THE HONEYCOMB CELL WALLS. POT THE 0.75-1.00 DIAMETER CAVITY WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. CURE THE POTTING COMPOUND AS SPECIFIED IN TABLE II.
- D** MIX RESIN AND THE HARDENER ACCORDING TO PROPORTIONS IN MANUFACTURER'S INSTRUCTIONS.
- E** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K() HEX-DRIVE BOLT WITH A BACC30M() COLLAR.
- F** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K()X HEX-DRIVE BOLT WITH A BACC30M() COLLAR.

FASTENER SYMBOLS

-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K4X BOLT WITH A BACC30M6 COLLAR. **F**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K4 BOLT. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K14 BOLT WITH A BACC30M6 COLLAR. **C E**
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15ADR RIVETS. INSTALL A BACB30VF3K5 BOLT.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K5 BOLT WITH BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K4 BOLT WITH A BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K2 BOLT WITH A BACC30M6
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15AD4 RIVETS. INSTALL A BACB30MR3K2 BOLT.

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 6)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	SKIN	1	0.050 24.0 X 24.0 INCONEL 625 SHEET
2	ZEE	1	AND10138-0605 2024-T3511
3	ZEE	1	AND10138-0605 2024-T3511
4	FILLER	2	0.160 2024-T3 B
5	FILLER	2	0.250 2024-T3 A
6	FILLER	2	0.100 2024-T3
7	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3
8	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1606A RESIN EPOCAST 1606B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)
BMS 5-28 TYPE 25	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 6)**

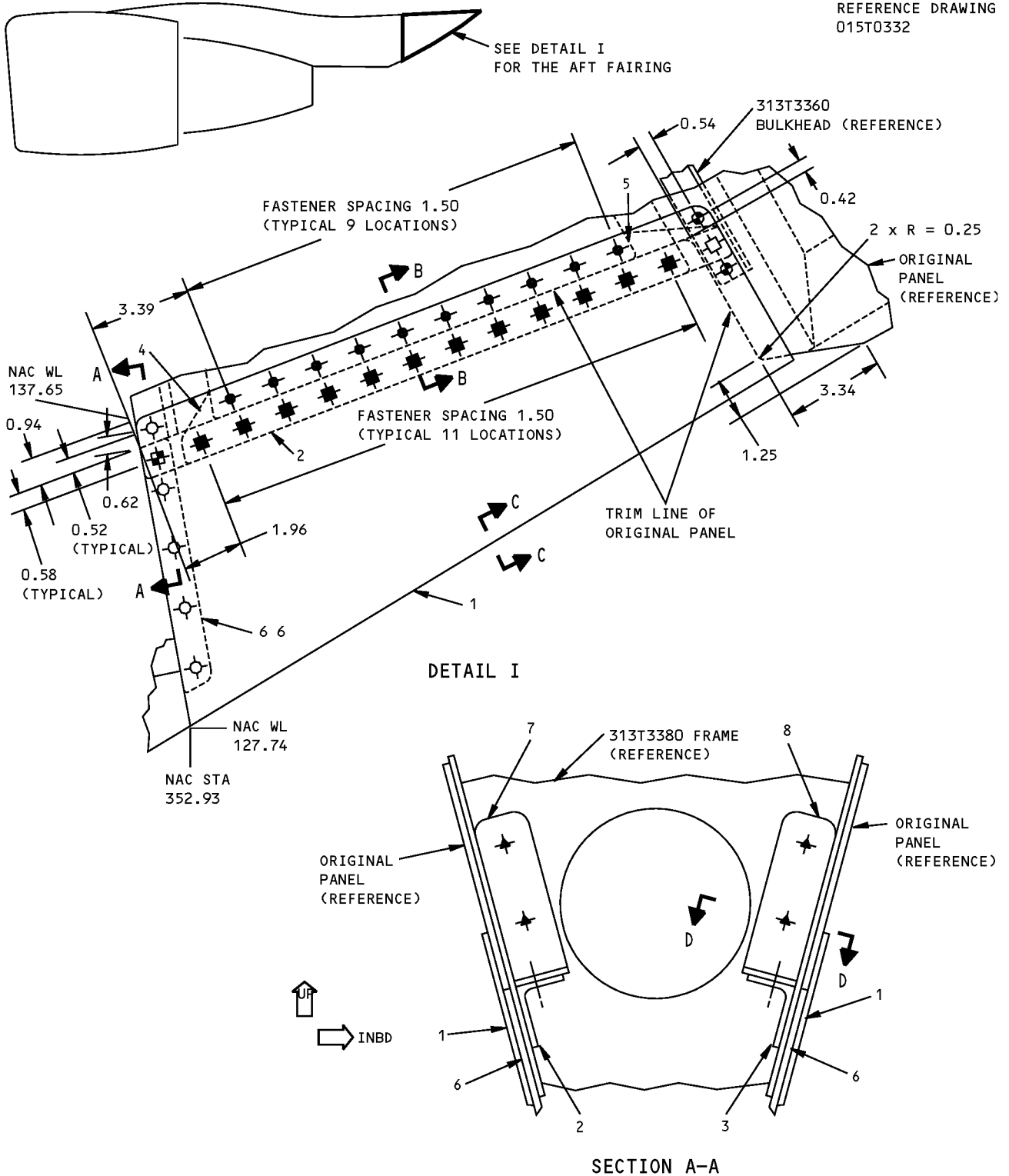
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REPAIR 2
Page 202
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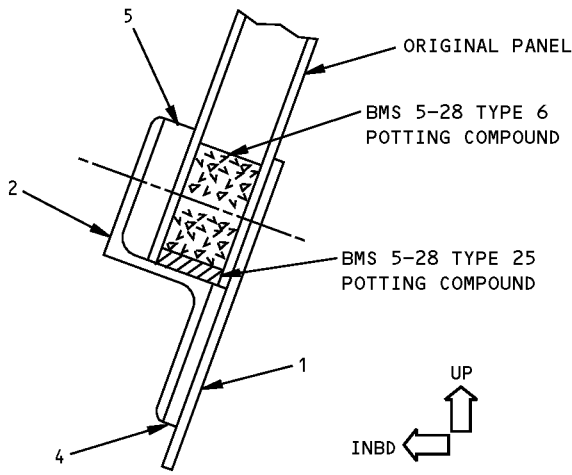
**767-300
STRUCTURAL REPAIR MANUAL**

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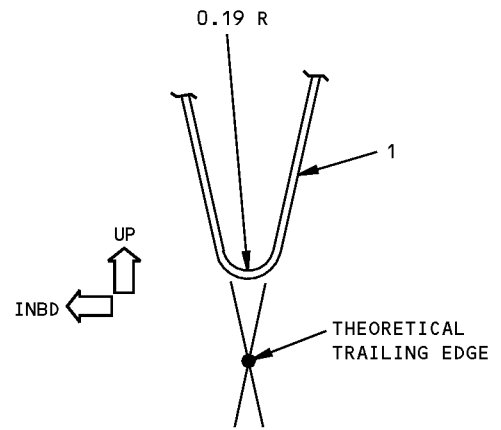


**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 6)**

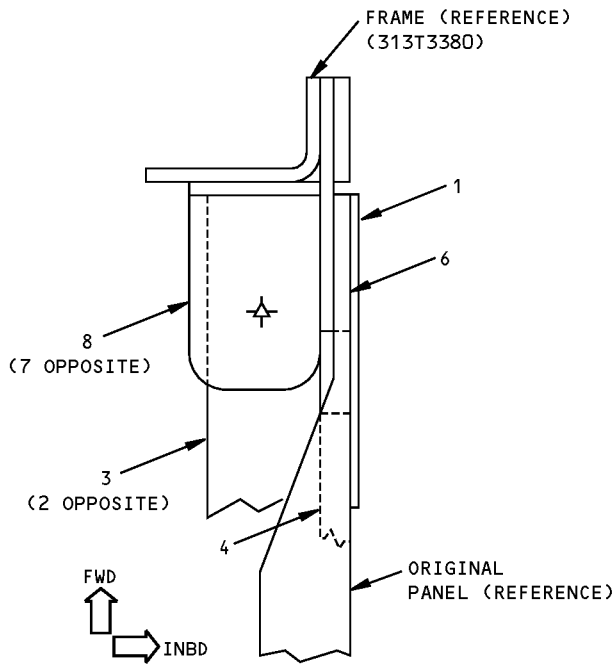
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B



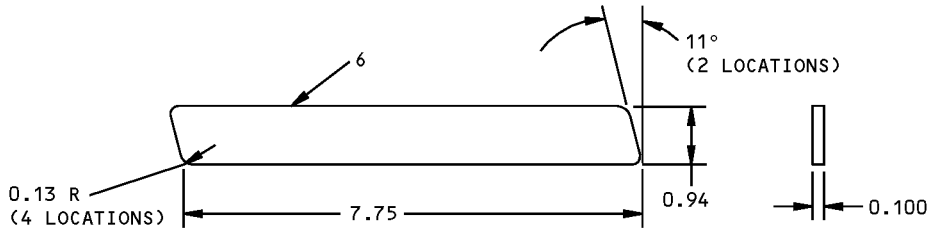
SECTION C-C



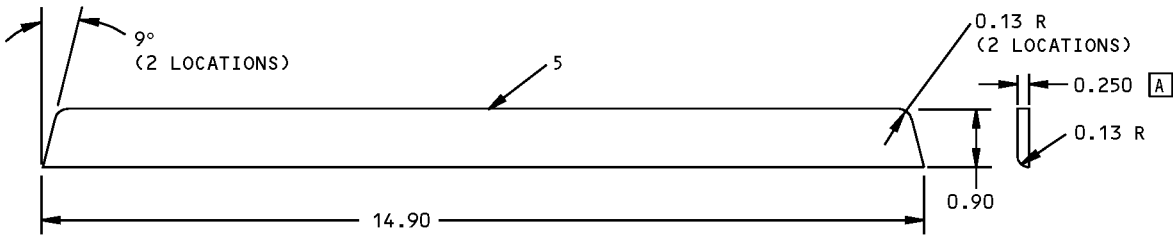
SECTION D-D

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 6)**

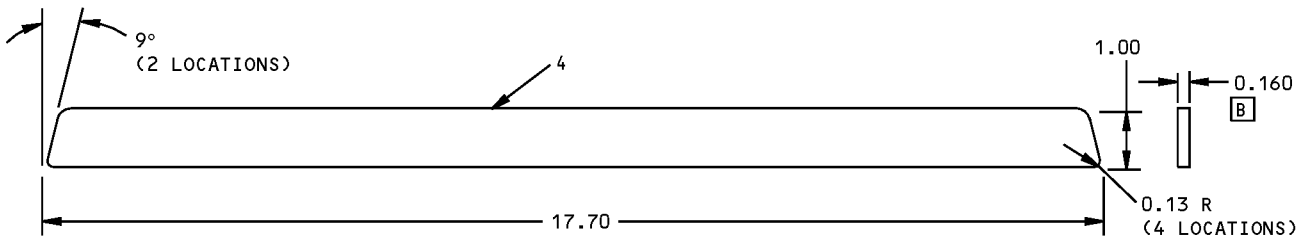
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II



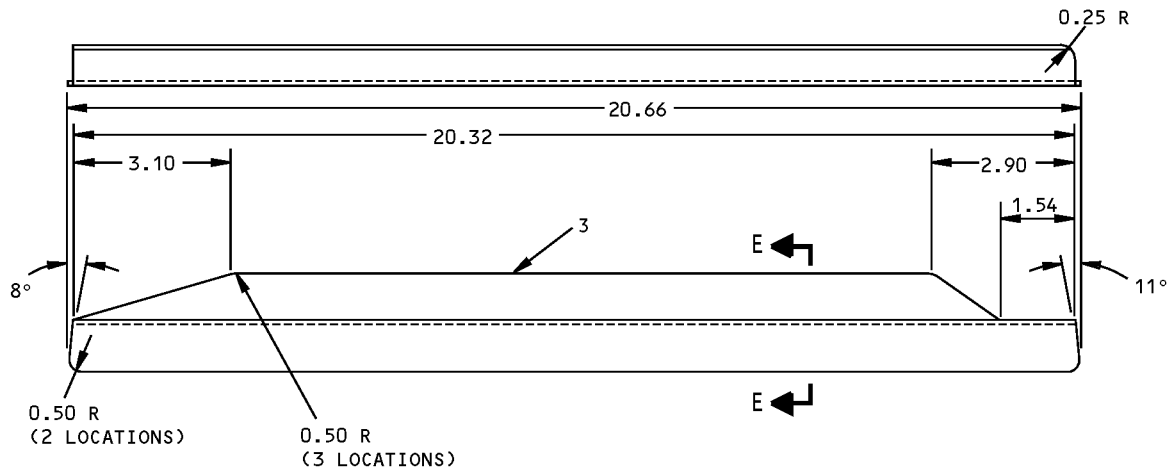
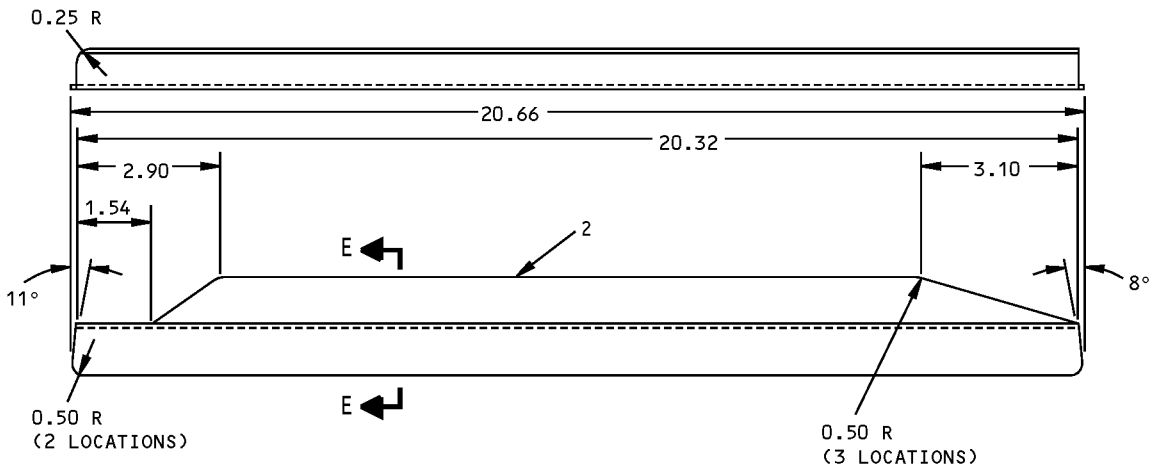
DETAIL III



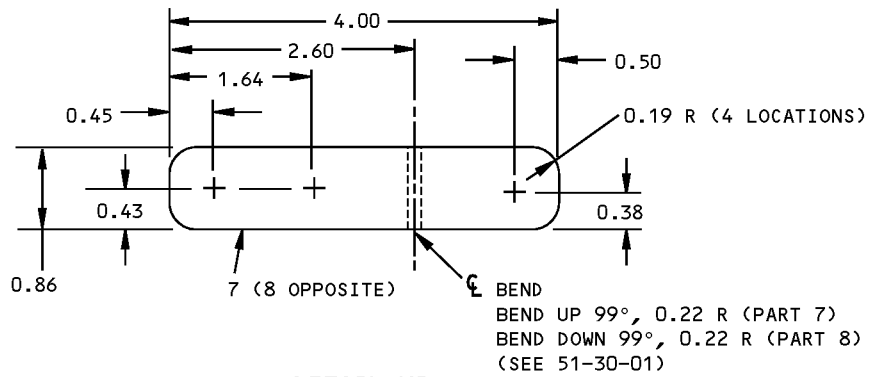
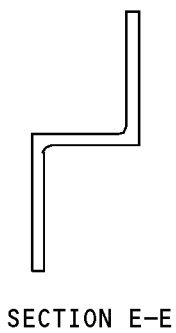
DETAIL IV

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V



DETAIL VI

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80A Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - INTERIM REPAIR - AFT PYLON - AFT STRUT FAIRING LOWER PAN CRACK - CF6-80A ENGINE

APPLICABILITY
THIS INTERIM REPAIR IS APPLICABLE TO AIRPLANES WITH SEGMENTED AFT STRUT LOWER PANS, CUM LINE NUMBERS 111 AND ON WITH CF6-80A ENGINES OR FOR AIRPLANES WITH SB 767-54-0013 OR SB 767-54-0025 INCORPORATED.

REPAIR INSTRUCTIONS

CAUTION: DO NOT DRILL INTO THE STRUCTURE BEHIND THE PAN SKIN.

1. Stop drill the ends of the cracks to 0.25 inch diameter. Refer to SRM 51-10-02. Leave the hole open.
2. Use the repair in Detail I for cracks that are in the middle of a pan segment. Use the repair in Detail II for cracks that are near the edge of a pan segment or if you do not have enough edge margin to install fasteners on the edge of the repair pan segment.
3. Make the repair parts. See Table I.
4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the pan.
7. Install the repair parts.

CAUTION: FASTENERS MUST BE INSTALLED WITHOUT SEALANT. HEAT EXPOSURE IN THIS AREA WILL OXIDIZE THE SEALANT AND CAUSE LOOSE PARTS AND FASTENERS.

8. Install the fasteners. Do not install the fasteners with sealant.

NOTES

- THIS BLIND RIVET REPAIR IS AN INTERIM REPAIR. INSPECT THE REPAIR EVERY '5A' CHECK. IF THERE IS ANY EVIDENCE OF PULLED OR LOOSE RIVETS, THE RIVETS MUST BE REPLACED. THIS REPAIR HAS FAA APPROVAL IF THE INSPECTIONS GIVEN IN THIS FIGURE ARE DONE AT THE SPECIFIED TIMES.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS.
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

FASTENER SYMBOLS

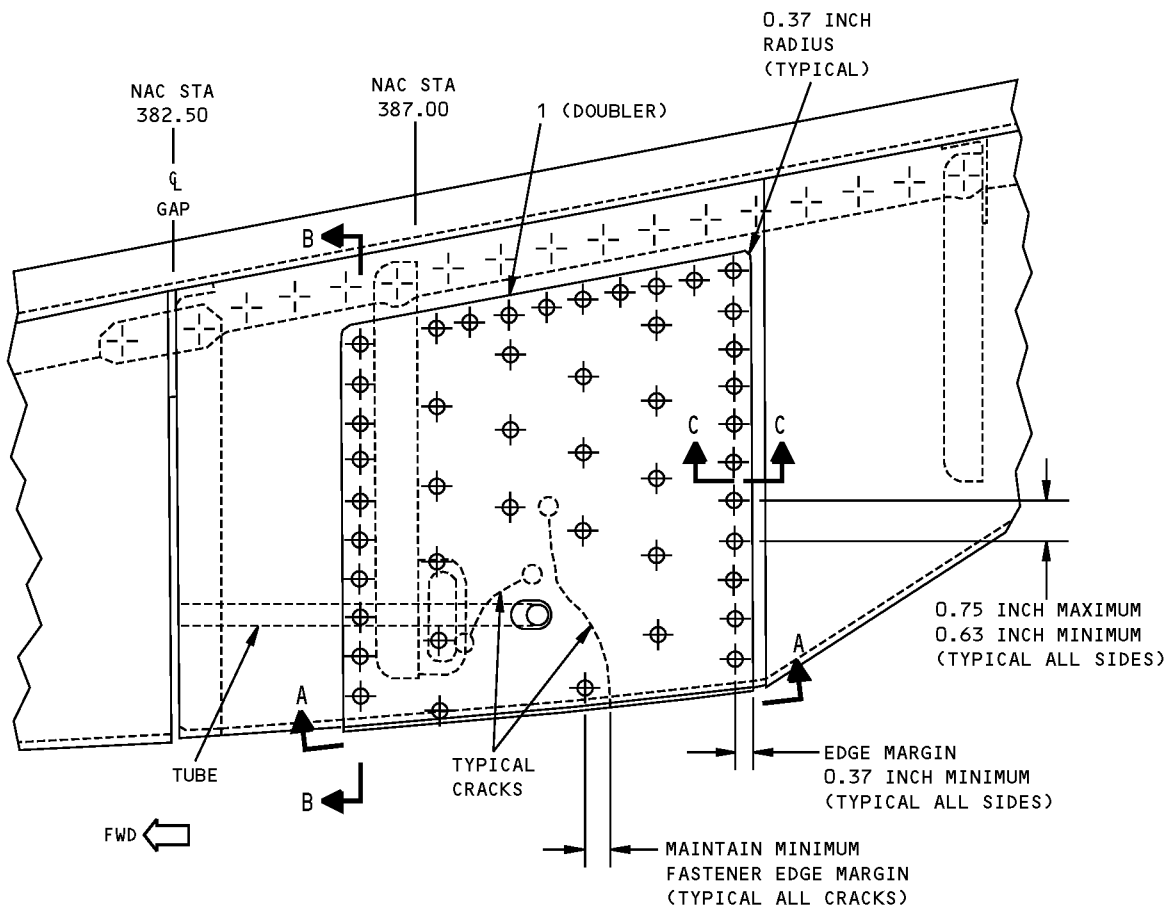
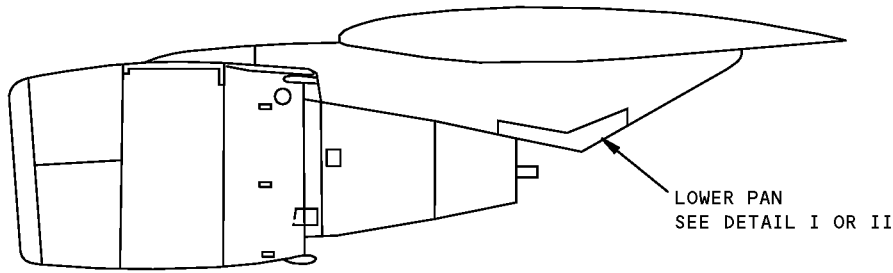
- ⊕ REFERENCE FASTENER LOCATION.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FP5M() BLIND RIVET. AS AN ALTERNATIVE, INSTALL A NAS1739C5-() RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FP5M() BLIND RIVET. AS AN ALTERNATIVE INSTALL A NAS 1739C5-() RIVET.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.063 NICKEL ALLOY 625
2	DOUBLER	1	0.063 NICKEL ALLOY 625

TABLE I

**Interim Repair - Aft Pylon - Aft Strut Fairing Lower Pan Crack - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

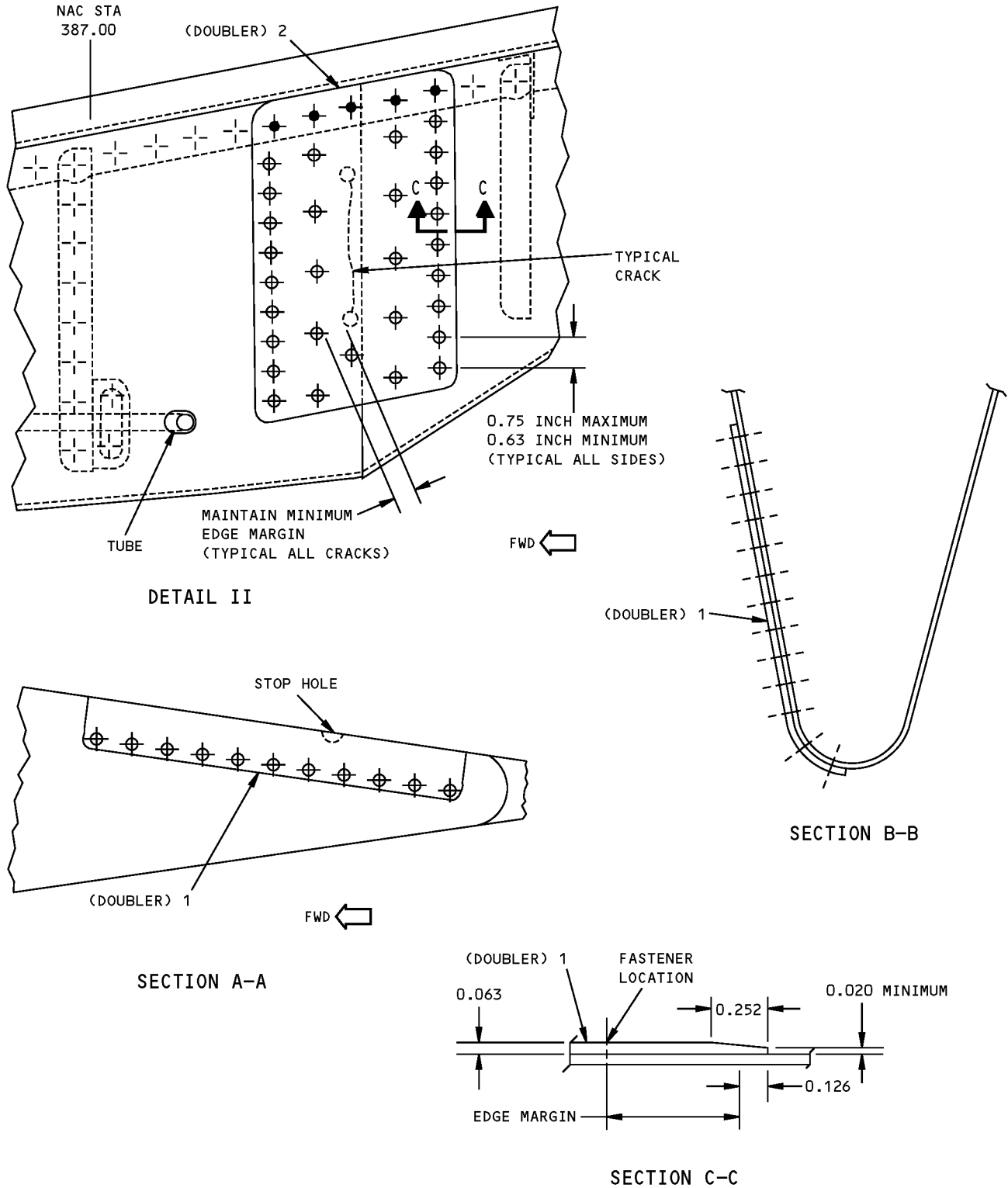
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

**Interim Repair - Aft Pylon - Aft Strut Fairing Lower Pan Crack - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Interim Repair - Aft Pylon - Aft Strut Fairing Lower Pan Crack - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - STRUT AFT FAIRING TRAILING EDGE BULKHEAD CRACK - CF6-80A ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE BULKHEAD SIDE FLANGES.

REPAIR INSTRUCTIONS

1. Get access to the damaged aft fairing trailing edge bulkhead. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Do a high frequency eddy current (HFEC) inspection of the bulkhead flanges to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
3. Cut and remove the cracked bulkhead side flanges along the bend line. Keep the minimum corner radii of 0.25 inch and break all sharp edges.
4. Make the repair parts. See Table I and Details II, III, and IV.

NOTE: As an alternative, the initial web of the bulkhead can be used in lieu of the part 3 bulkhead web if there is a 2D minimum edge margin on the web after the cracks are removed and the initial hole locations are not damaged.

5. Assemble the repair parts and drill the fastener holes. **A**
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Install the aft fairing trailing edge and panel assemblies.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-00 FOR INVESTIGATION AND CLEANUP OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

A THE INITIAL WEB AND STIFFENERS MAY BE USED AS A TEMPLATE TO FIND INITIAL FASTENER LOCATIONS

B FOUR EVENLY SPACED FASTENER LOCATIONS ON EACH FLANGE. SEE DETAIL I, VIEW A-A. KEEP A 2D MINIMUM EDGE MARGIN AND 4D - 6D FASTENER SPACING ON EACH ROW.

FASTENER SYMBOLS

- ⊙ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT6KE()C RIVET OR INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NY6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5KE()C RIVET OR INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **B**

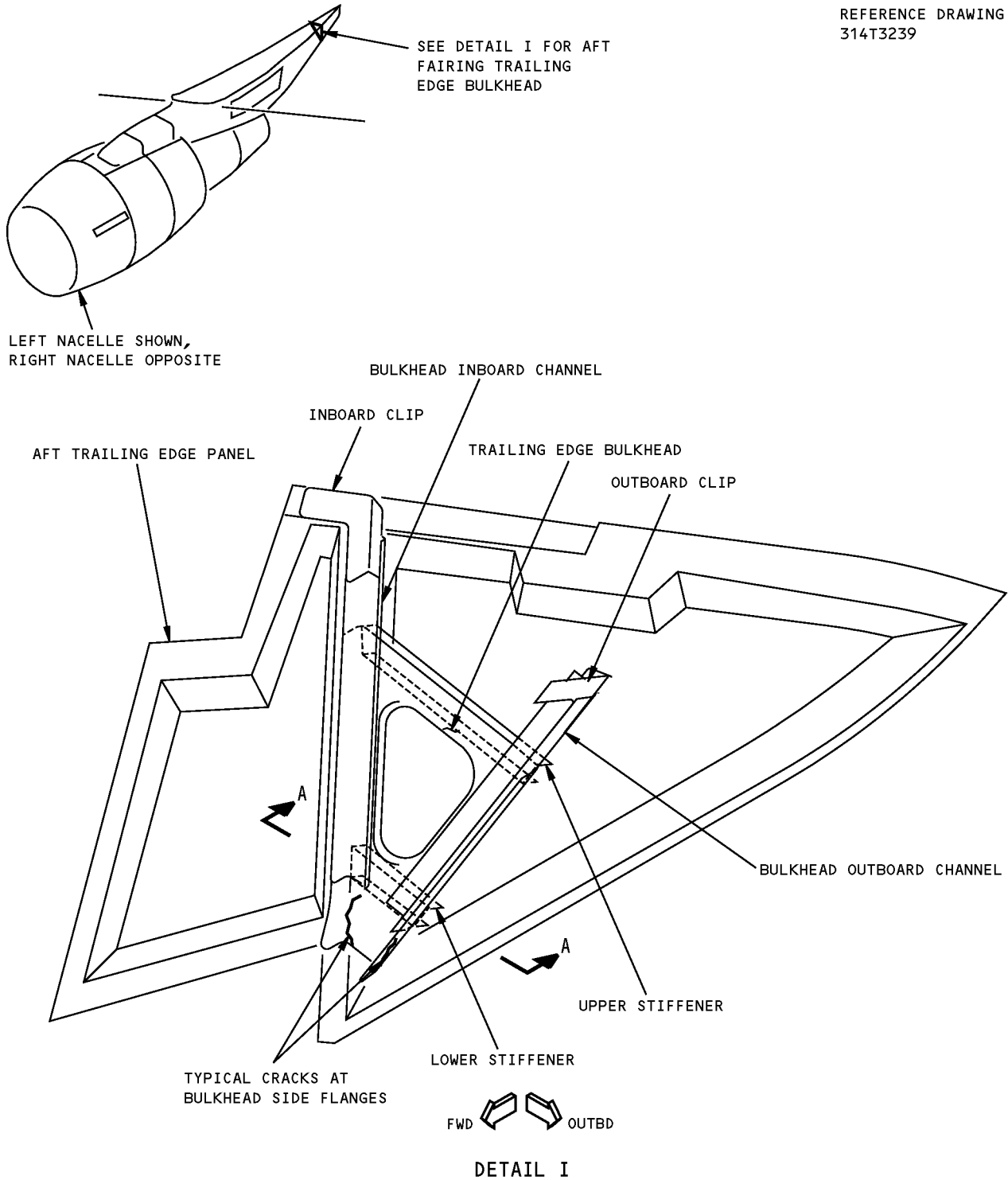
REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	OUTBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
2	INBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
3	BULKHEAD WEB	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
4	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6
5	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6

TABLE I

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

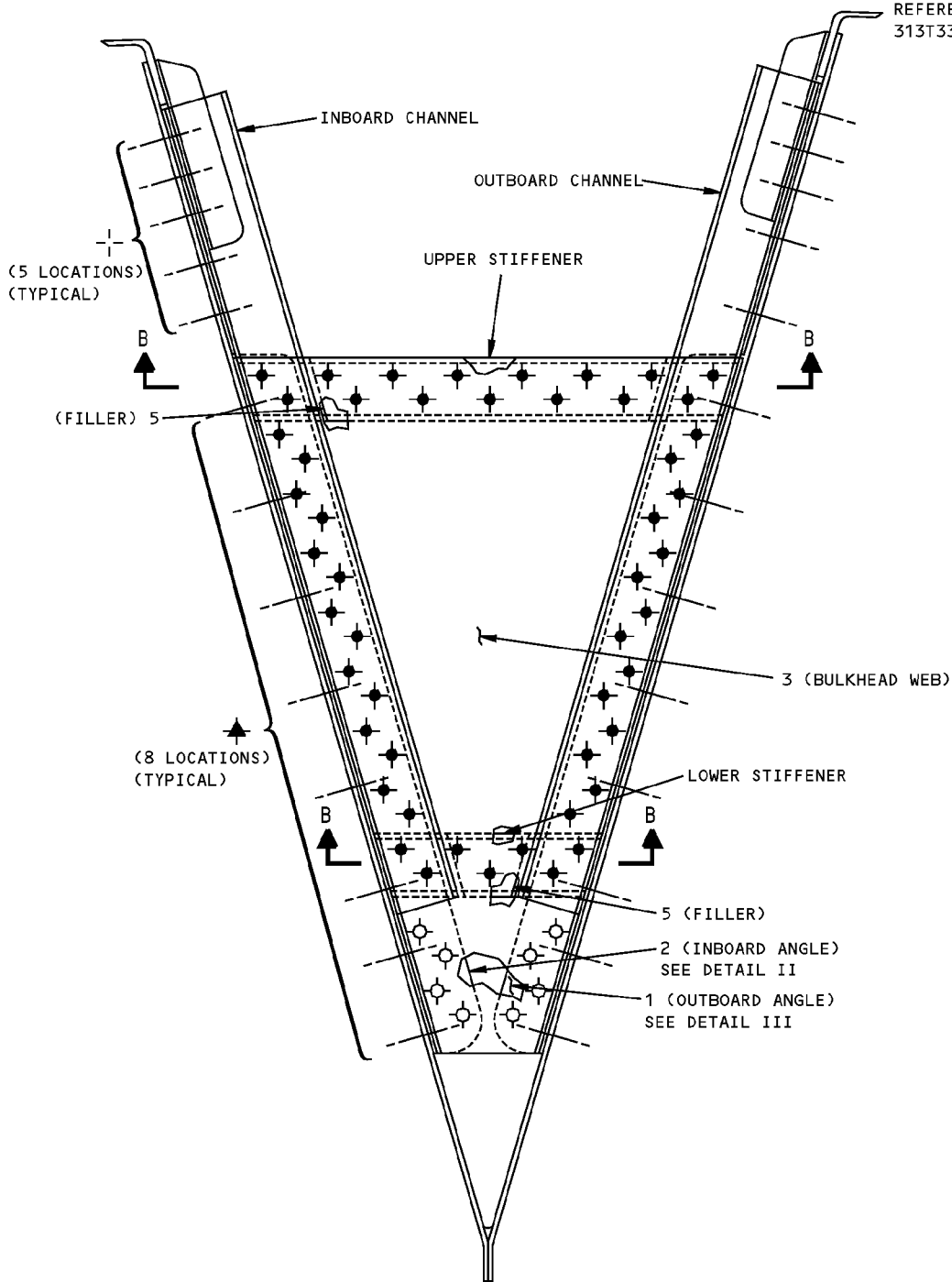
REFERENCE DRAWING
314T3239



**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360

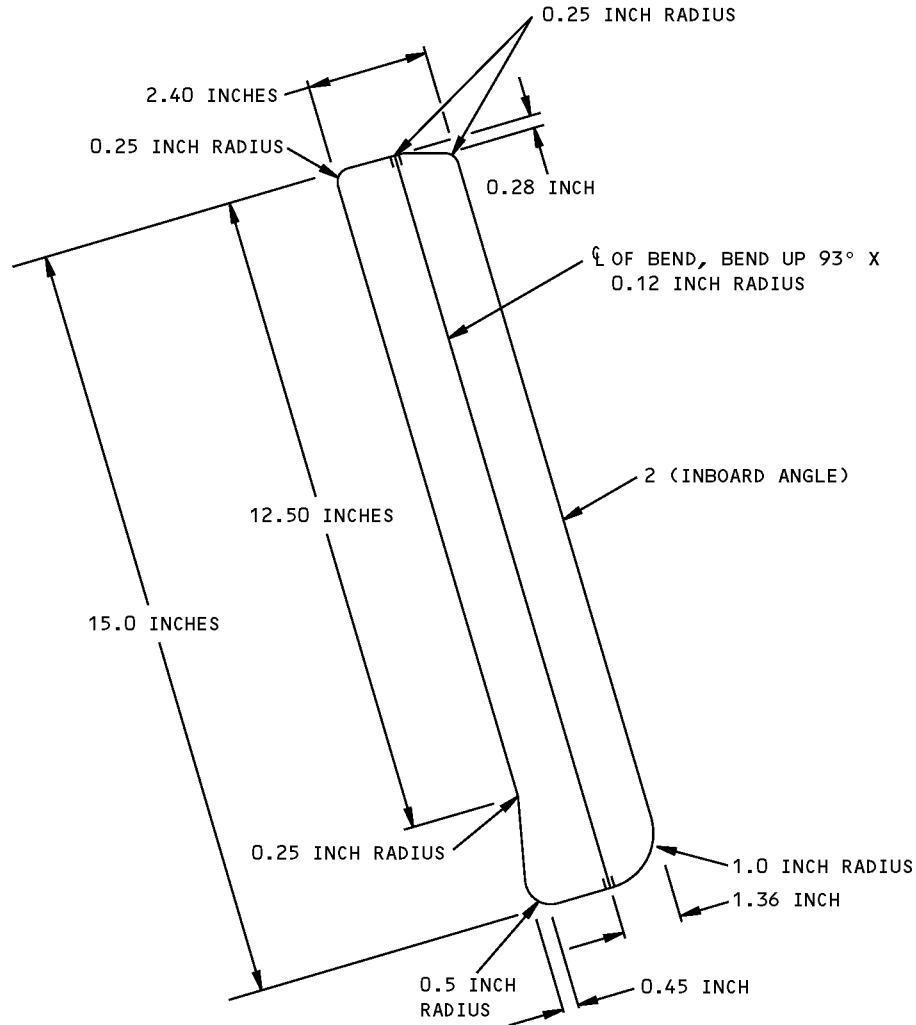
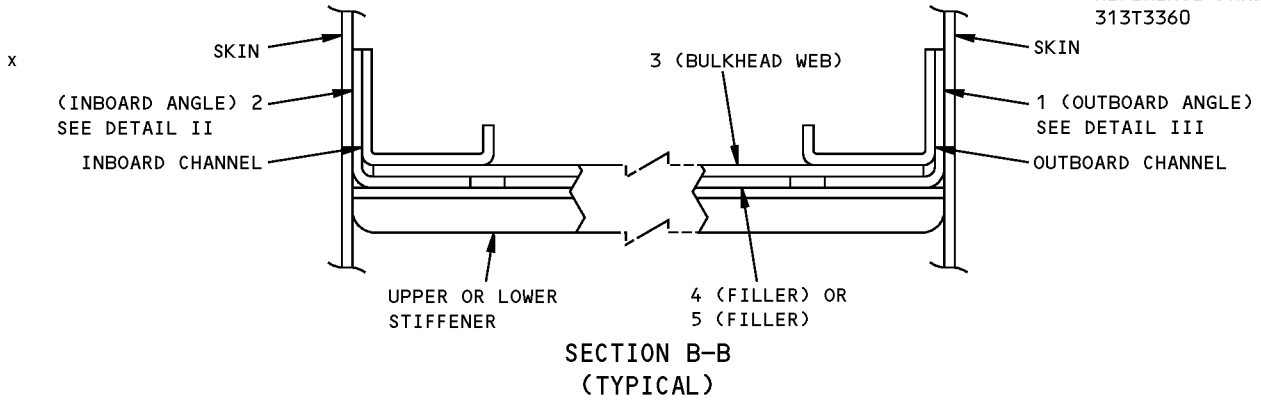


VIEW LOOKING AFT
VIEW A-A

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360

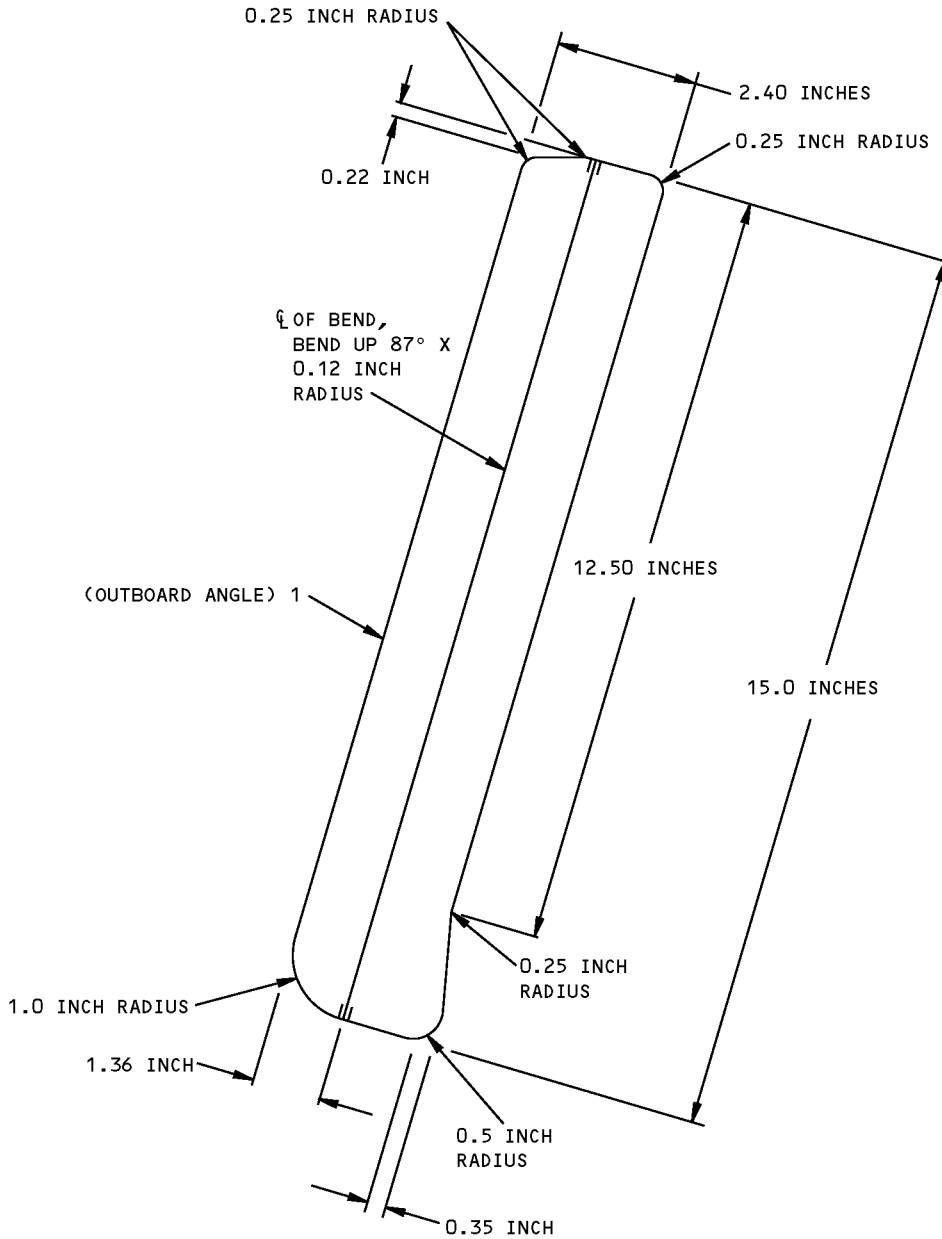


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
DETAIL II

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



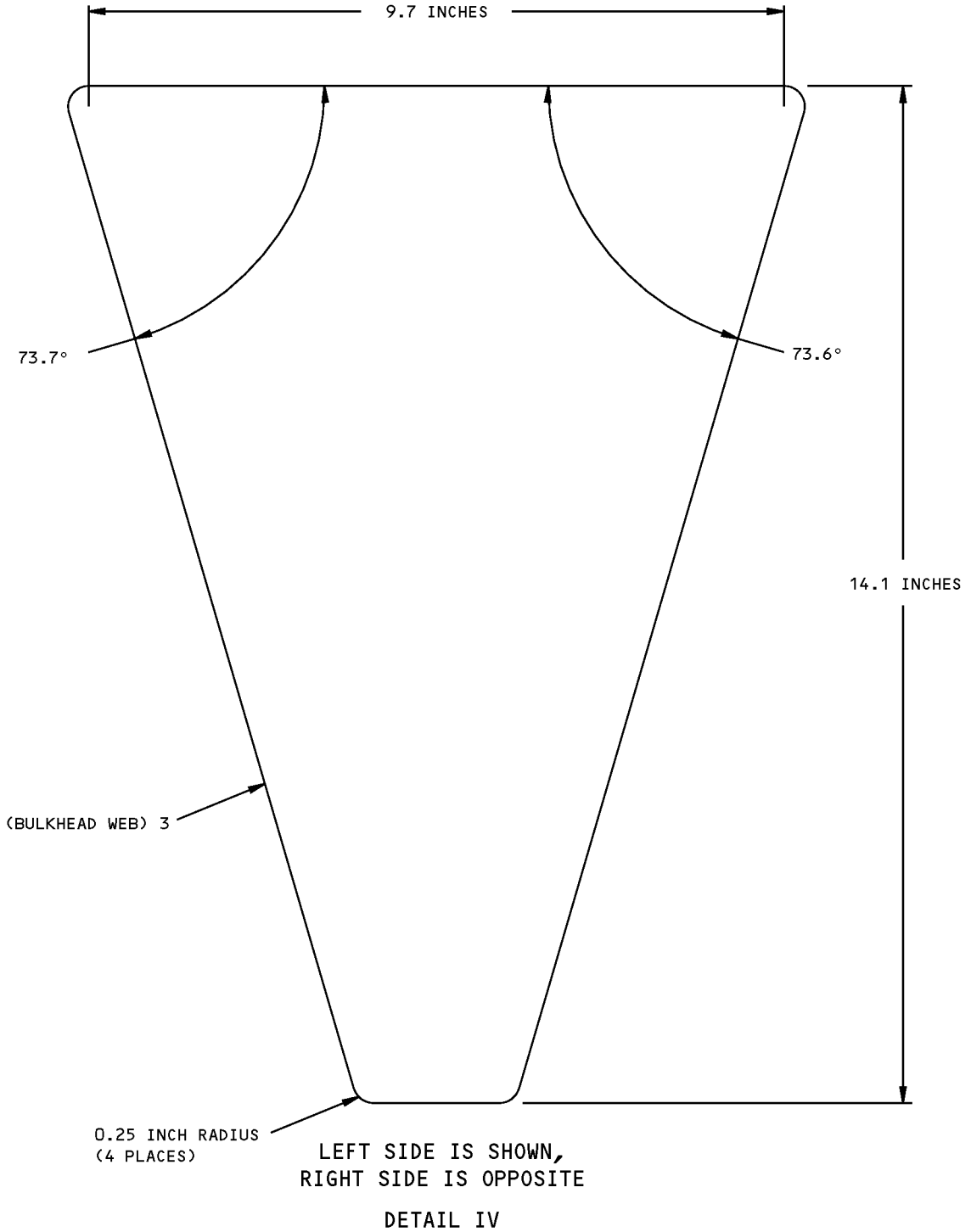
LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

DETAIL III

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80A Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 7 - INBOARD SKIRT BEAM PANEL TAB CRACK - CF6-80A ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged inboard skirt beam panel. Remove the fuse pin access door (313T1200) and the Ground Support Equipment (GSE) fastener located at the skirt beam panel tab. See Detail I.
2. Remove (9) fasteners common to the skirt beam skin and the splice plate as shown in Detail I. Carefully pull the edge of the skirt beam skin open and remove the splice plate. If the panel assembly has an elliptical shim, keep the elliptical shim for subsequent installation. Discard the square shim if it is installed at the GSE location.
3. Trim the splice plate in the area around the GSE attachment location as shown in Detail II.
4. Use special care to trim and remove the cracked skirt beam skin tab as shown in Detail III. Place a 0.040 inch thick steel sheet under the skirt beam skin to prevent damage to the bulkhead before you make the cut.
5. Make the Part 1 filler:
 - a. Make the filler parts as shown in Detail IV.
 - b. Remove the nicks, scratches, gouges, burrs, and sharp edges from the filler parts.
 - c. Apply a chemical conversion coating to the filler parts. Refer to SRM 51-20-01.
 - d. Apply one layer of BMS 10-79 primer to the filler parts.
 - e. Bond the filler parts together with BMS 5-92, Type V, Class 1 or 2 as shown in Detail IV to make the part 1 filler. Refer to SOPM 20-50-12.
6. Assemble the splice plate and elliptical shim under the skirt beam skin and drill the fastener holes. See Detail V.
7. Trim the elliptical shim for clearance as necessary. See Detail V. **D**
8. Assemble the part 1 filler as shown in Detail V. Drill and countersink to match the GSE fastener location from the aft engine mount bulkhead. See Detail IV for the hole size and the countersink dimensions.
9. Disassemble the parts above.
10. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair part and the cut edges.
11. Apply a chemical conversion coating to the bare surfaces of the cut edges and the countersunk hole. Refer to SRM 51-20-01.
12. Apply two layers of BMS 10-79, Type III primer to the bare surfaces of the cut edges and apply one layer of BMS 10-79, Type III primer to the part 1 filler. Refer to SOPM 20-44-04
13. Apply one layer of BMS 10-86, Type 27 teflon coating to the splice plate as shown in Detail II. **A**
14. Install the part 1 filler to the aft engine mount bulkhead with BMS 5-95 sealant. Keep a clearance of 0.060 to 0.080 inch between the edge of filler and the edge of skirt beam skin. Refer to SOPM 20-50-19.
15. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
16. Install GSE fastener through part 1 filler into the aft engine mount bulkhead.
17. Apply the initial finish to the repair area. Refer to AMM 51-20.
18. Install the fuse pin access door.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-20 FOR THE INTERIOR AND EXTERIOR FINISHES
 - SOPM 20-41-02 FOR THE APPLICATIONS OF FINISHES
 - SOPM 20-44-01 FOR THE APPLICATION OF ABRASION RESISTANT FINISHES
 - SOPM 20-44-04 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES
 - SOPM 20-50-19 FOR THE APPLICATION OF SEALANTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF METAL
 - SRM 51-40-00 FOR THE FASTENER CODES, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MATERIALS

Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 1 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES CONT.

- A** APPLY ONE LAYER OF BMS 10-86, TYPE 27 ABRASION RESISTANT TEFLON COATING ON THE MATING SURFACES OF THE SPLICE PLATE WHICH TOUCH THE AFT ENGINE MOUNT BULKHEAD AS SHOWN IN THE HATCHED AREA.
- B** BOND THE MATING SURFACES WITH BMS 5-92, TYPE V, CLASS 1 OR 2 ADHESIVE.
- C** DRILL A 0.5 INCH DIAMETER HOLE AND COUNTERSINK THE HOLE TO 0.755-0.765 INCH MAXIMUM DIAMETER AT 100° TO ACCEPT THE GSE FASTENER AS SHOWN IN BOEING DRAWING 313T3310, SHEET 8, VIEW 2B5.
- D** TRIM THE ELLIPTICAL SHIM AS NECESSARY TO KEEP A MINIMUM CLEARANCE OF 0.060 INCH BETWEEN THE EDGES OF THE SHIM AND THE PART 1 FILER.

FASTENER SYMBOLS

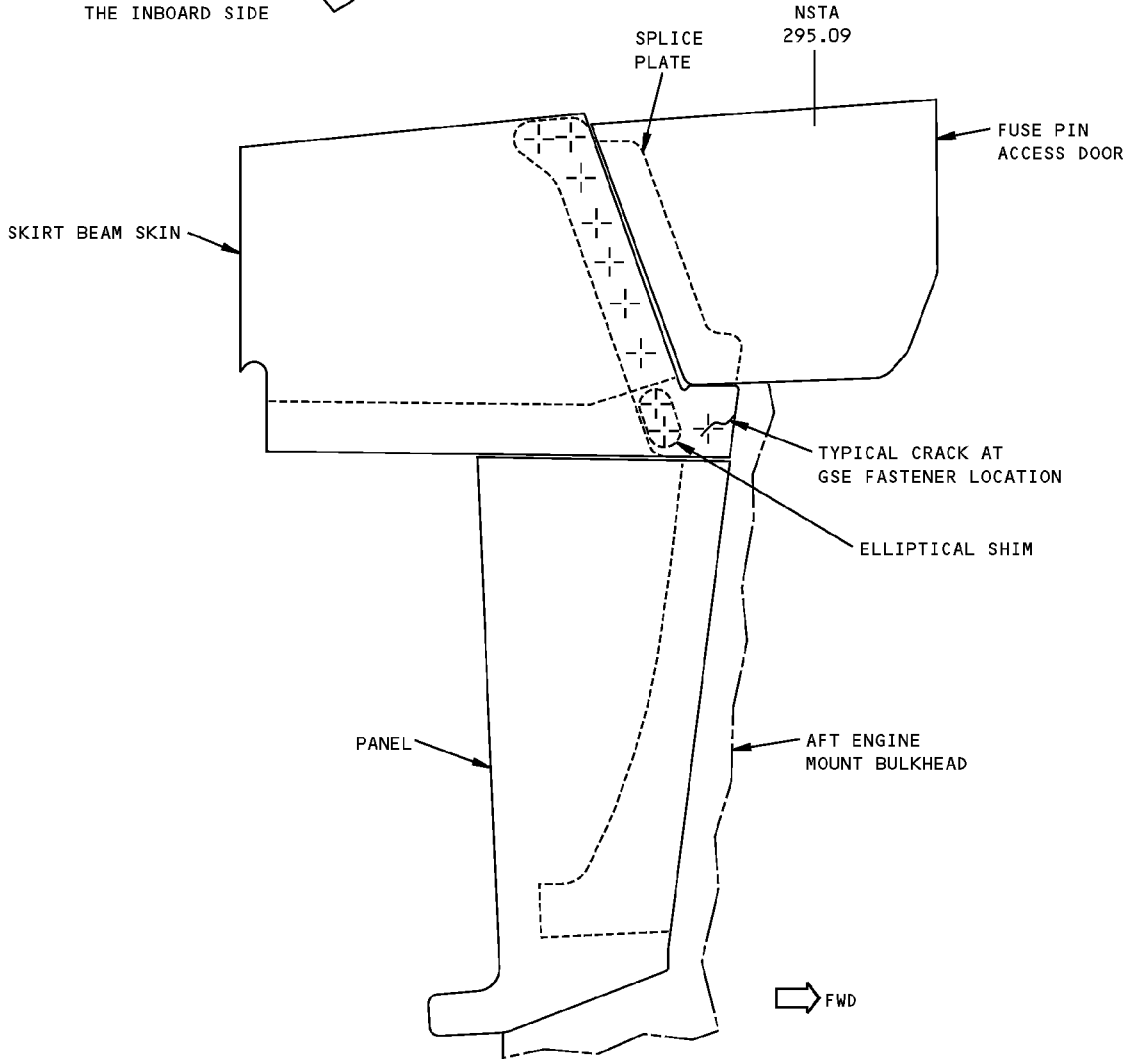
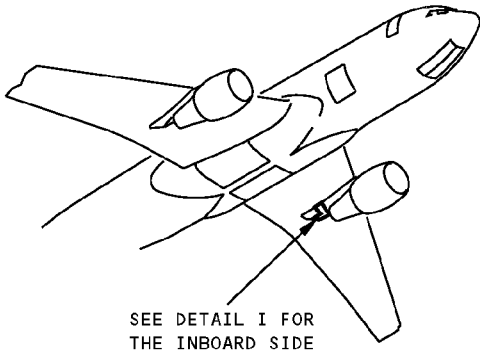
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NN3K() RECESS DRIVE BOLT INTO THE BACN10JR FLOATING NUT PLATE.
- + INITIAL FASTENER LOCATION. INSTALL A BACR15BA6KE()C OR BACR15BA7KE()C RIVET AS NECESSARY
- ▲ INITIAL FASTENER LOCATION. INSTALL A BACB30LR6KP10 RECESS DRIVE BOLT.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	FILLER	1	BOND TWO 2024-T3 CLAD SHEETS TOGETHER AS SHOWN IN DETAIL IV. USE SHEET THICKNESS OF 0.063 INCH AND 0.100 INCH.

TABLE I

**Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

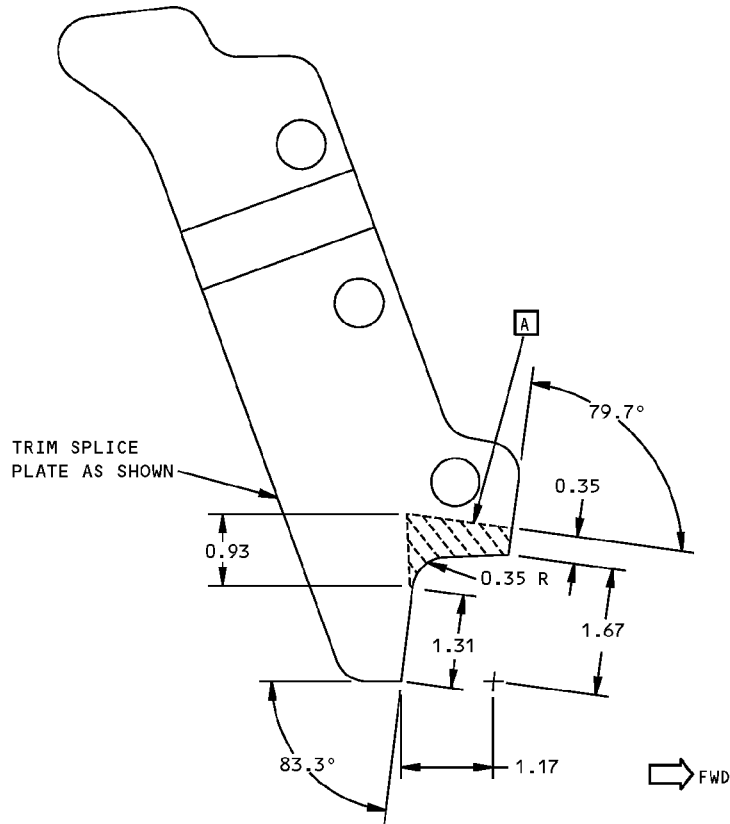


LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE VIEW LOOKING OUTBOARD

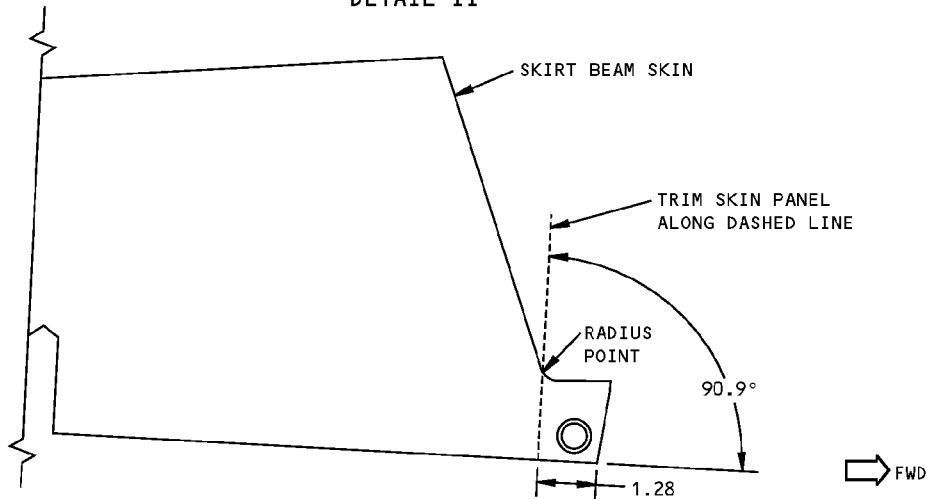
DETAIL I

**Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



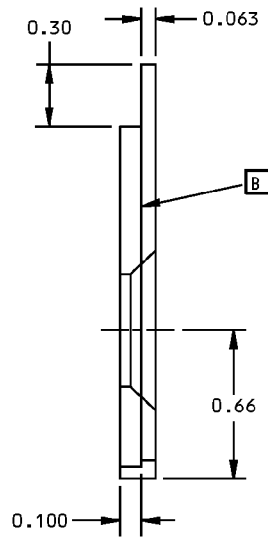
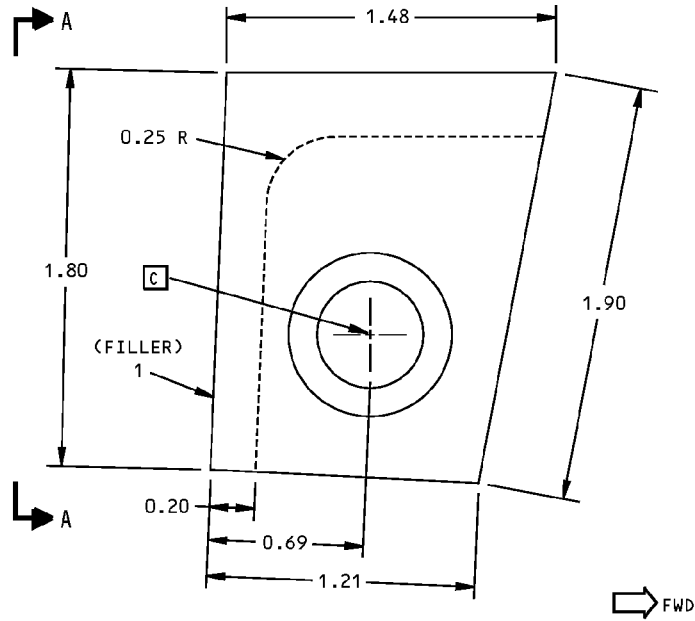
LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL II



LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL III

**Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

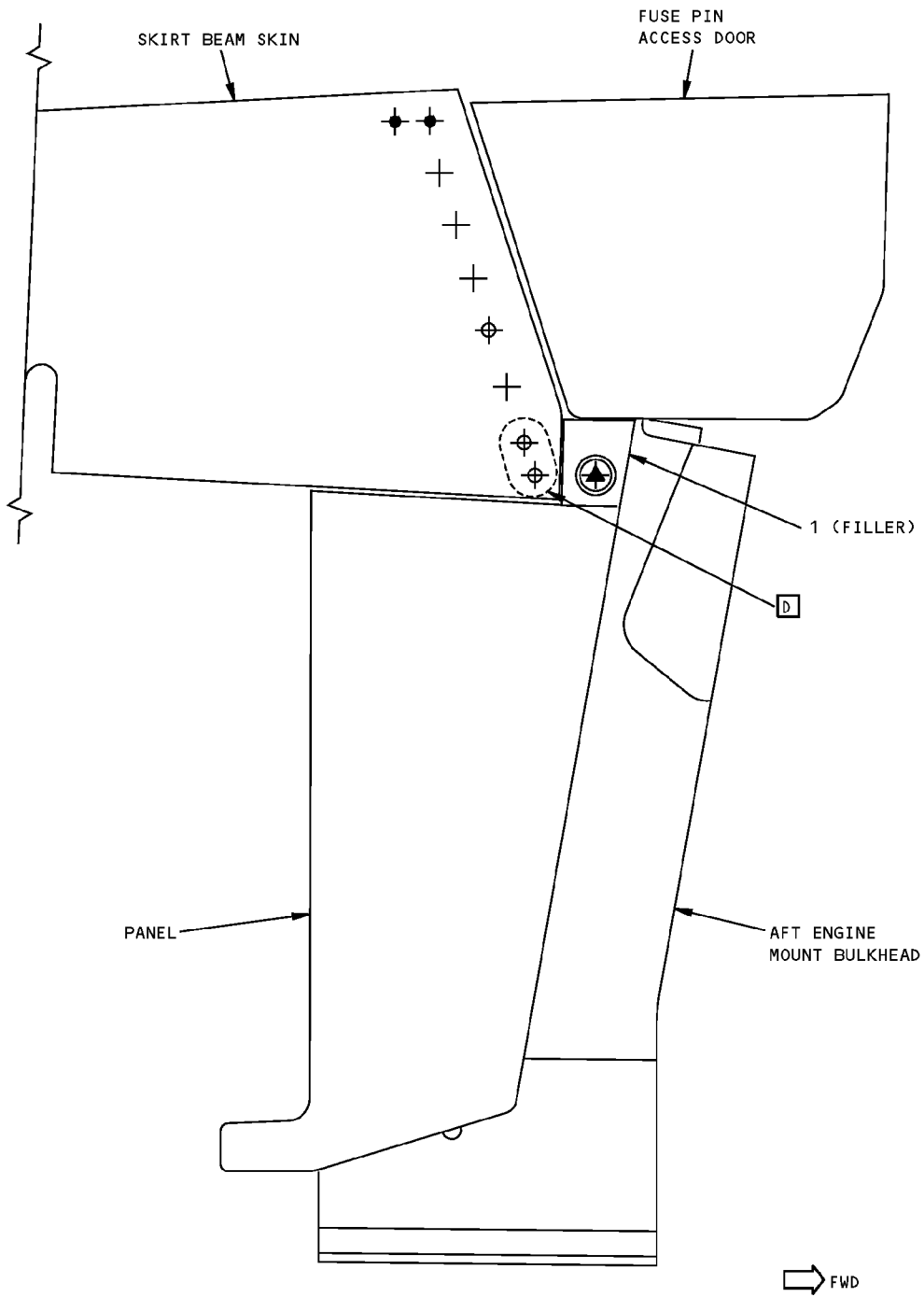


SECTION A-A

LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL IV

**Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL V

**Inboard Skirt Beam Panel Tab Crack Repair- CF6-80A Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 8 - STRUT FAIRING SKIN PANEL CRACK - CF6-80A ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO THE AFT FAIRING STRUT PANEL ASSEMBLY WITH SOLID ALUMINUM SKIN AND DOUBLER BONDED CONSTRUCTION.

REPAIR INSTRUCTIONS





1. Get access to the damaged area.
2. Do a high-frequency eddy current inspection (HFEC) of the panel to find the ends of the crack. Refer to NDT Part 6, 51-00-01.

As an alternative, do a penetrant inspection of the panel to find the ends of the crack. Refer to SOPM 20-20-02.
3. Stop drill the end of the crack. Refer to SRM 51-10-02. Leave the hole open.
4. Make the repair parts. See Table I.
5. Assemble the repair parts and drill the fastener holes. See Detail I. Refer to SRM 51-40-08 to make the countersink repair washer.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the skin.
8. Apply a chemical conversion coating to the repair part and to the bare surfaces of the skin. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-79, Type III primer to the repair part and to the bare surfaces of the skin. Refer to SOPM 20-44-04.
10. Apply BMS 5-63, Type I sealant to the mating surfaces. Refer to SRM 51-20-05.
11. Install the repair part.
12. Install the fasteners wet with BMS 5-63, Type I sealant.
13. Restore the finish to the repair area as applicable. Refer to AMM 51-21-00.

NOTES

- REFER TO SRM 51-10-01 FOR THE AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMIT SHOWN ON SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO LOSS OF PERFORMANCE INVOLVED.
 - D = FASTENER DIAMETER
 - REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
 - NDT PART 6, 51-00-01 FOR THE EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR THE PENETRANT INSPECTION PROCEDURES
 - SRM 51-10-01 FOR THE AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS.
 - SRM 51-20-05 FOR THE REPAIR SEALING
 - SRM 51-40-00 FOR THE FASTENER CODES, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MATERIALS
 - AMM 51-21-00 FOR THE INTERIOR AND EXTERIOR FINISHES
- A** ADJUST THE LOCATION OF THE REPAIR FASTENERS TO HAVE THE FOLLOWING SPACING:
- 2D FROM EDGES
 - 4D TO 6D FROM OTHER FASTENERS
 - 4D TO 6D FROM CRACK STOP HOLE

FASTENER SYMBOLS

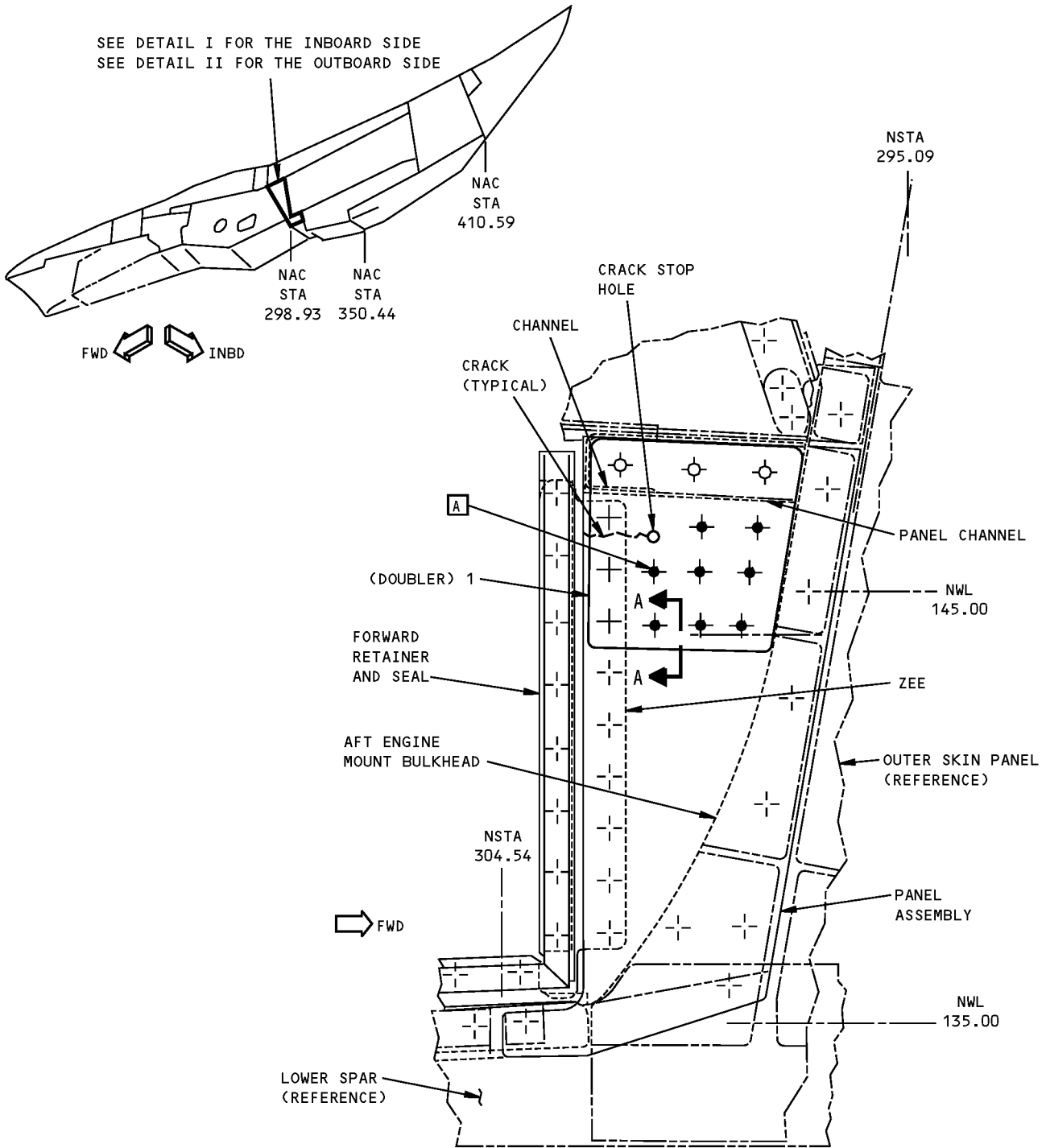
-  REFERENCE FASTENER LOCATION
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **A**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT WITH A NAS620C10L WASHER UNDER A BACN10YR3CD COLLAR.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.063 INCH 2024-T3

TABLE I

Strut Fairing Skin Panel Crack Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 3)

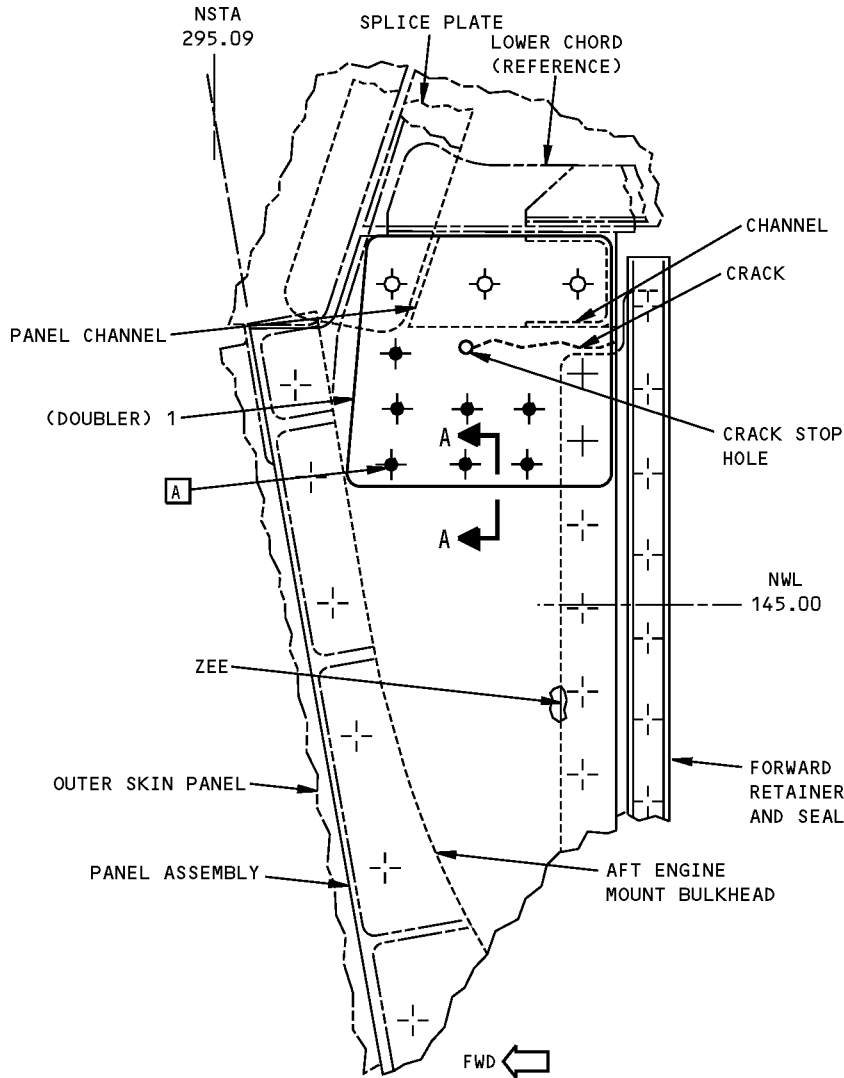
**767-300
STRUCTURAL REPAIR MANUAL**



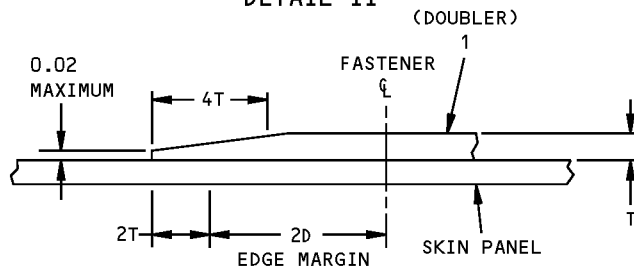
INBOARD LEFT SIDE IS SHOWN
INBOARD RIGHT SIDE IS OPPOSITE
DETAIL I

**Strut Fairing Skin Panel Crack Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



OUTBOARD LEFT SIDE IS SHOWN
OUTBOARD RIGHT SIDE IS OPPOSITE
DETAIL II



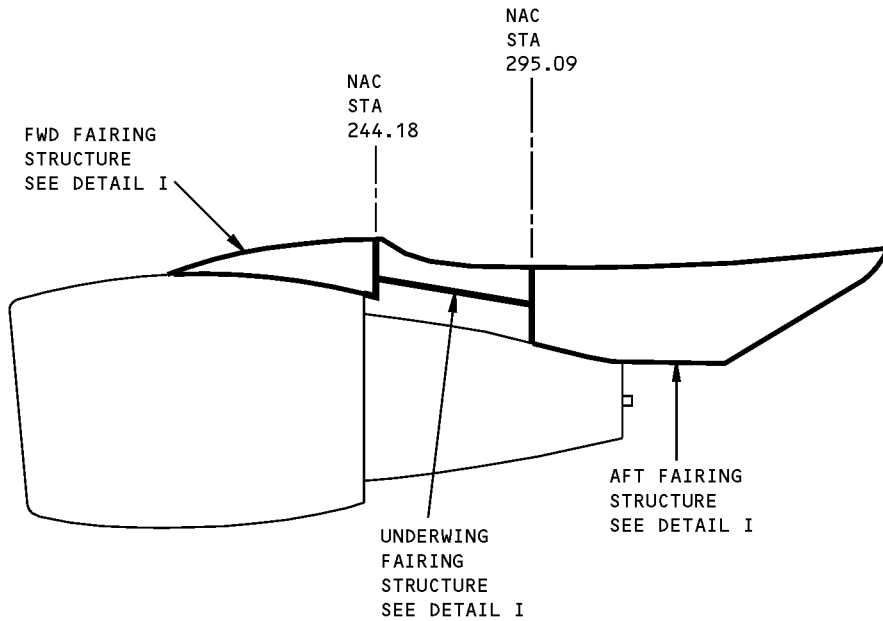
EDGE CHAMFER (TYPICAL ALL EDGES)
SECTION A-A

**Strut Fairing Skin Panel Crack Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING STRUCTURE - CF6-80A ENGINE

REF DWG
310T1060



NOTES

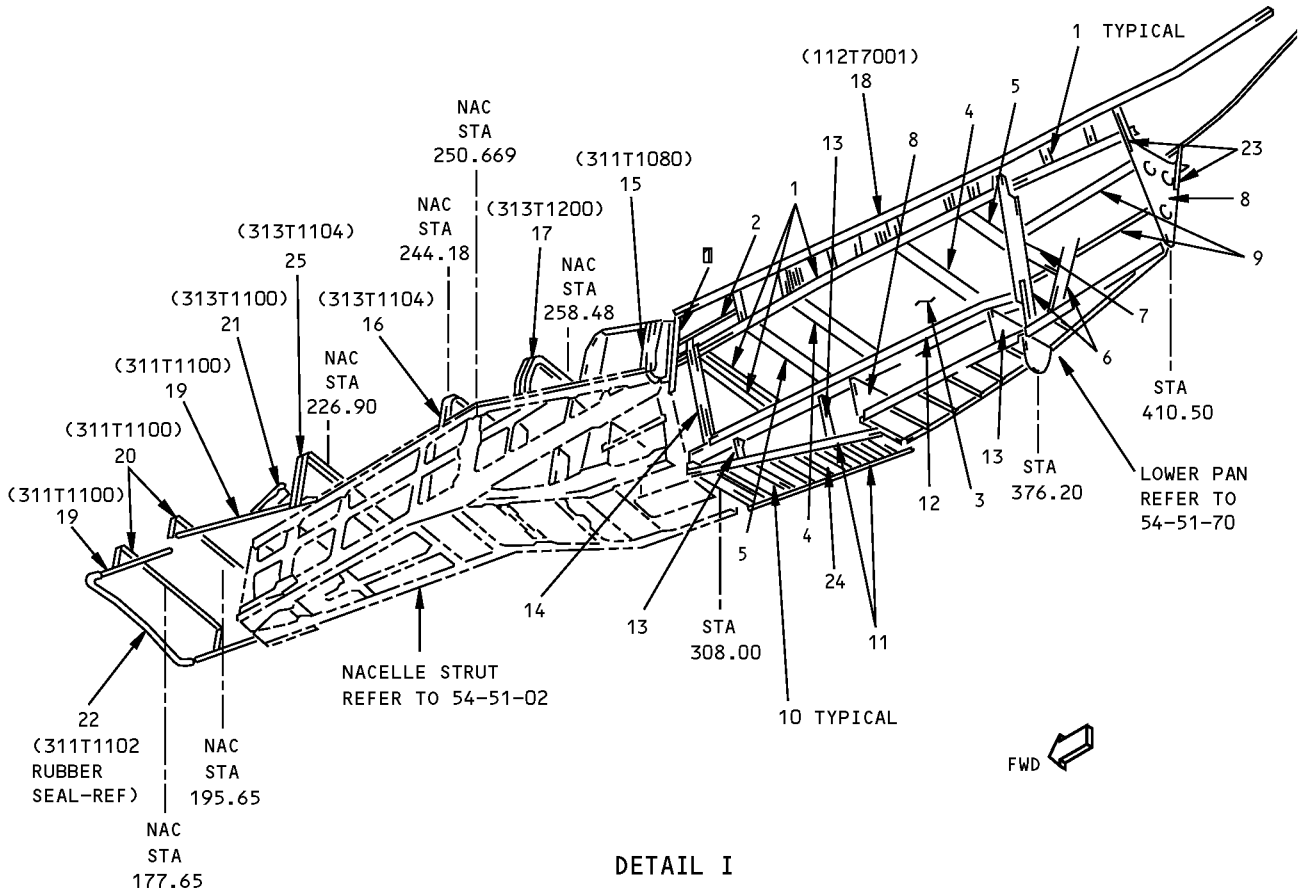
A FOR AFT 7 INCHES OF SKATE ANGLE FOR AIRPLANES WITH CUM LINE NUMBERS: 132 THRU 243 WITH SB 767-0023 INCORPORATED

B FOR AIRPLANES WITH CUM LINE NUMBERS: 244 AND ON

**Strut Fairing Structure Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T1380
313T3310



DETAIL I

LIST OF
MATL →

**Strut Fairing Structure Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
Page 2
Apr 01/2005

54-51-71

D634T210



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ANGLE	0.100	7075-T62	
2	ANGLE	0.080	7075-T62	
3	SKIN	0.063	CLAD 2024-T3	
4	HAT SECTION (EXTRUSION)		BAC1509-100318 7075-T6511	
5	HAT SECTION (FORMED)		BAC1498-145 7075-T6	
6	ZEE	0.080	7075-T6	
7	CHANNEL	0.090	7075-T6	
8	RIB/FRAME	0.063	2024-T42	
9	ANGLE	0.080	7075-T62	
10	STIFFENER		BAC1506-2115 7075-T6	
11	CHORD		BAC1514-1102 2024-T3511	
12	BEAM	0.080	7075-T6	
13	STIFFENER	0.080	7075-T62	
14	ZEE	0.040	2024-T42	
15	VAPOR BARRIER CHANNEL WEB	0.050	BAC1510-319 2024-T3511 CLAD 2024-T42	
16	FRAME		AND10136-2005 7075-T6	
17	TEE		AND10136-2005 2024-T42	
18	ANGLE-SKATE	0.125 0.125	7075-T6 15-5 PH CRES	A B
19	LONGERON	0.063	CLAD 7075-T62	
20	FRAME	0.063	CLAD 2024-T42	
21	DIAGONAL BRACE	0.050	CLAD 2024-T42	
22	NOSE FILLER	0.040	2024-T42	
23	CHANNEL	0.063	2024-T42	
24	WEB ASSY WEB (2)	0.025	CLAD 2024-T3 (BONDED ASSY)	
25	VAPOR BARRIER FRAME WEB	0.050	AND10136-2004 2024-T42 2024-T42	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Structure Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 3)**

IDENTIFICATION 1
Page 3
Apr 01/2005

54-51-71

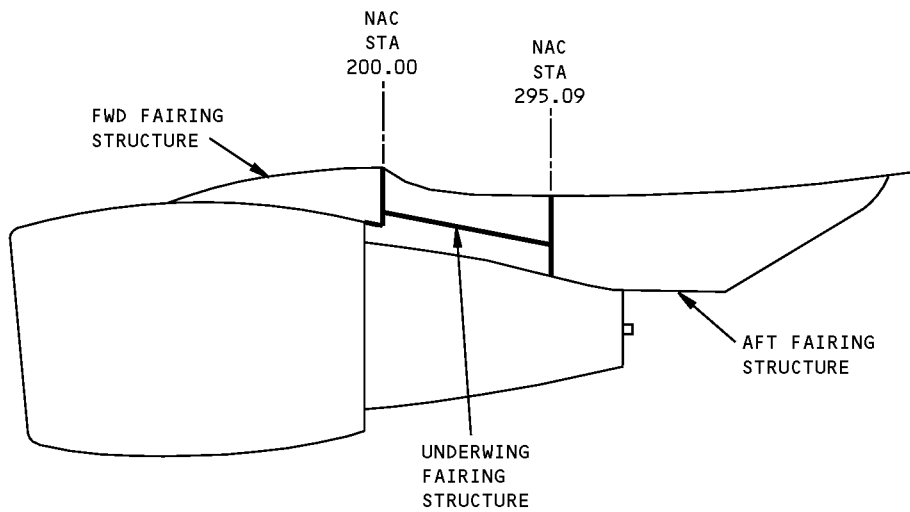
D634T210



767-300
STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - STRUT FAIRING STRUCTURE - CF6-80A ENGINE

REW DWG
313T1100
313T1300



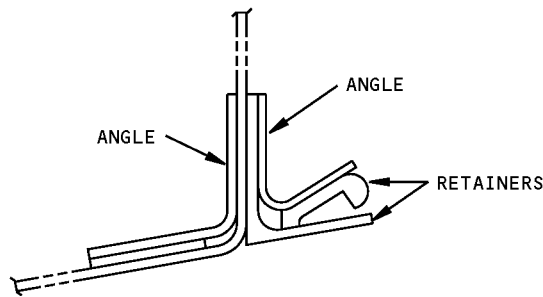
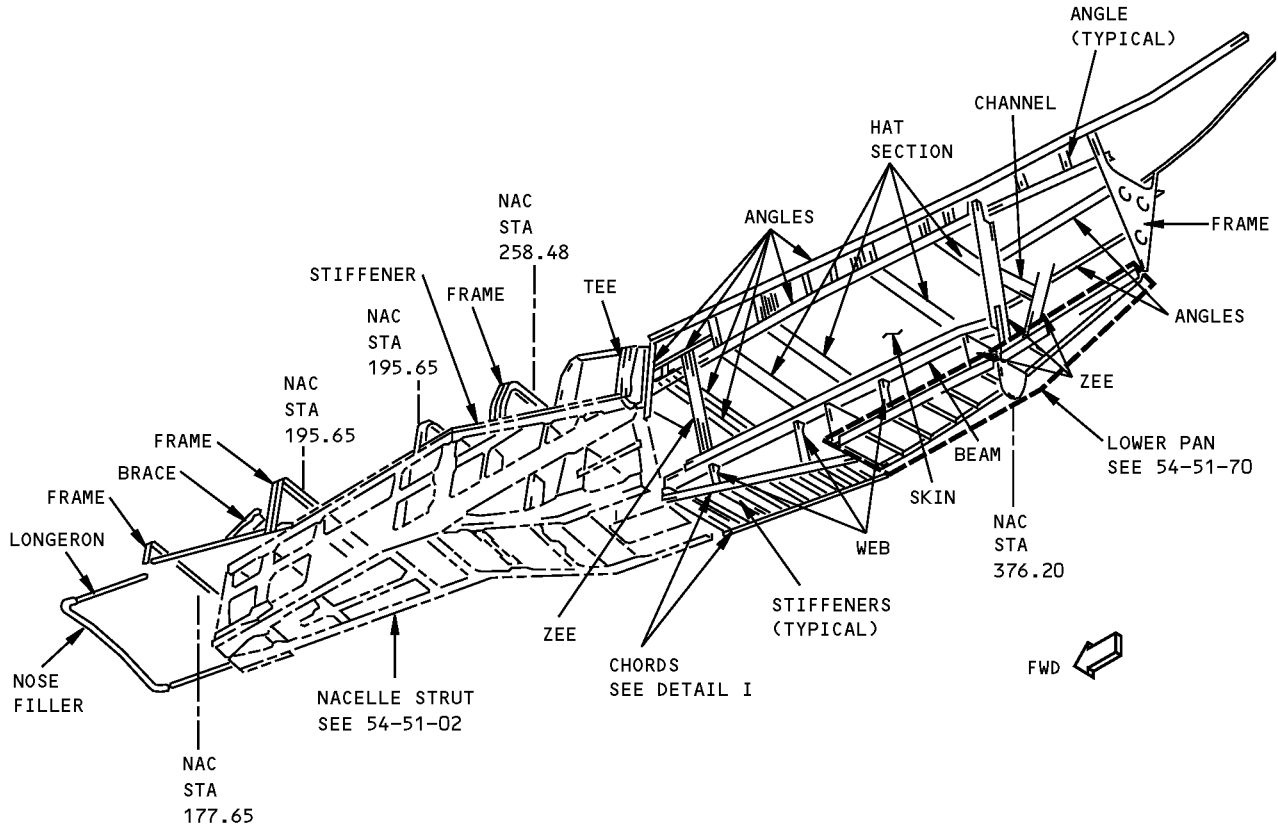
Strut Fairing Structure - CF6-80A Engine
Figure 101 (Sheet 1 of 5)

D634T210

ALLOWABLE DAMAGE 1
Page 101
54-51-71
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T1380
313T1200



DETAIL I

**Strut Fairing Structure - CF6-80A Engine
Figure 101 (Sheet 2 of 5)**

ALLOWABLE DAMAGE 1

54-51-71

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Apr 01/2005

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STRUCTURAL REPAIR MANUAL

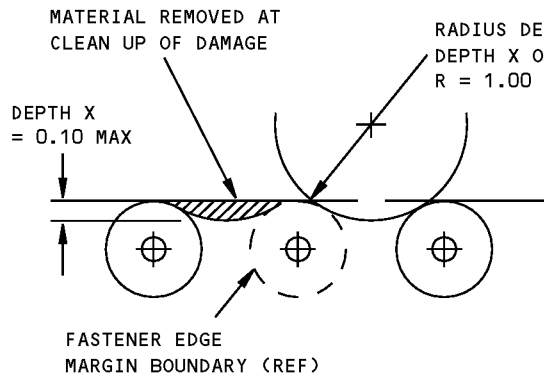
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
ANGLES	A	B	NOT PERMITTED	NOT PERMITTED	—
SKIN	C	B	SEE DETAIL IV	D	—
HAT SECTION	A	B	NOT PERMITTED	NOT PERMITTED	—
ZEE	A	B	NOT PERMITTED	NOT PERMITTED	—
CHANNEL	A	B	NOT PERMITTED	NOT PERMITTED	—
FRAME	A	B	NOT PERMITTED	NOT PERMITTED	—
WEBS	A	B	SEE DETAIL IV	NOT PERMITTED	—
STIFFENERS	A	B	NOT PERMITTED	SEE DETAIL VIII	—
RETAINERS	A	B	NOT PERMITTED	NOT PERMITTED	—
TEE	A	B	NOT PERMITTED	NOT PERMITTED	—
LONGERON	A	B	NOT PERMITTED	NOT PERMITTED	—
BRACE	A	B	NOT PERMITTED	NOT PERMITTED	—
BEAM	A	B	NOT PERMITTED	NOT PERMITTED	—
NOSE FILLER	A	B	NOT PERMITTED	NOT PERMITTED	—

NOTES

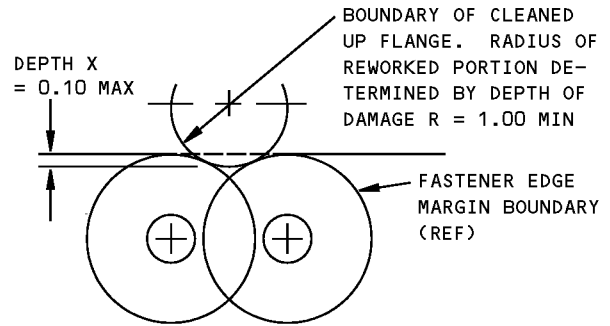
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20.
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE IS MORE THAN THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VII
- B** REMOVE DAMAGE AS GIVEN IN DETAILS II, III AND V
- C** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI
- D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED

**Strut Fairing Structure - CF6-80A Engine
Figure 101 (Sheet 3 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**

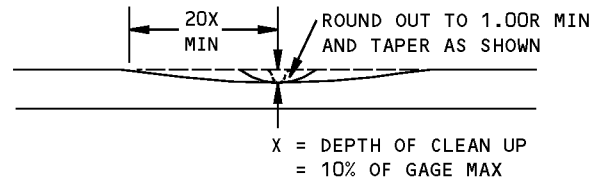
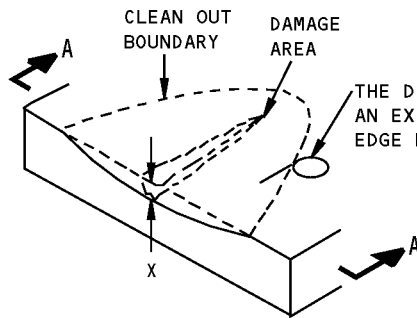


DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



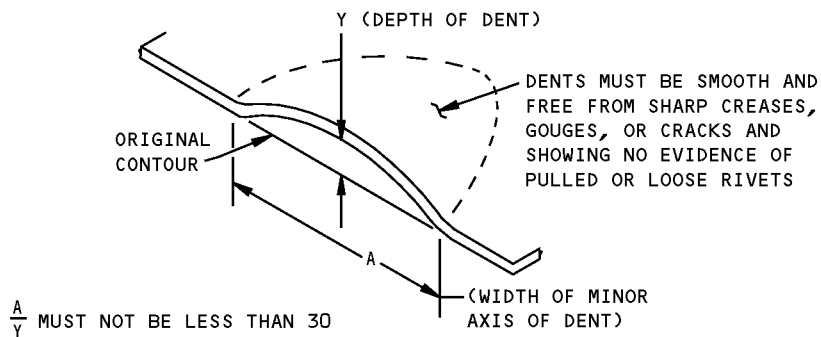
DAMAGE CLEAN UP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



SECTION A-A

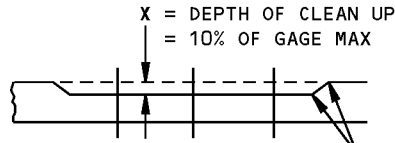
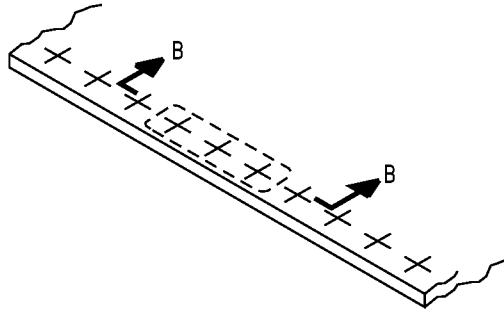
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**



**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**

**Strut Fairing Structure - CF6-80A Engine
Figure 101 (Sheet 4 of 5)**

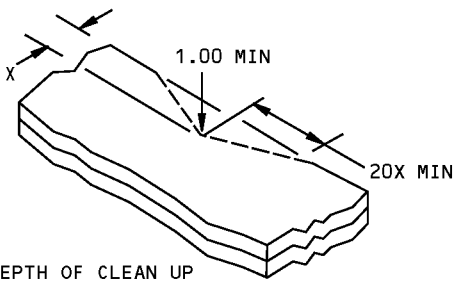
**767-300
STRUCTURAL REPAIR MANUAL**



X = DEPTH OF CLEAN UP
= 10% OF GAGE MAX

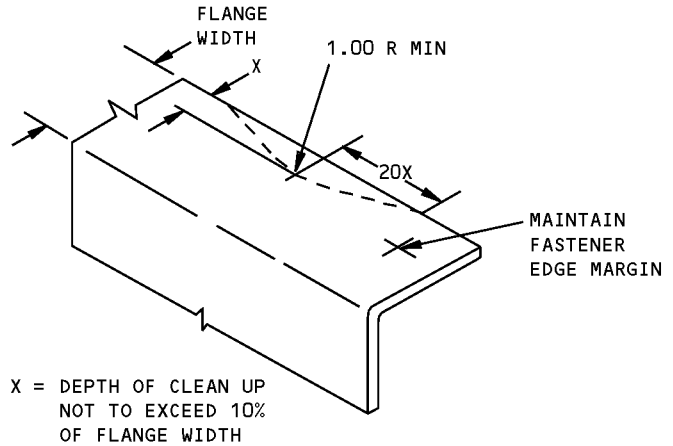
SMOOTH BLEND-OUT RADIUS 0.50 INCH
MINIMUM. CORROSION CLEAN UP AROUND
ANY THREE FASTENERS IN TEN IS
PERMITTED TO MAX DEPTH

**CORROSION CLEAN UP
DETAIL V SECTION B-B**



X = DEPTH OF CLEAN UP
= 0.10 MAX

DETAIL VI



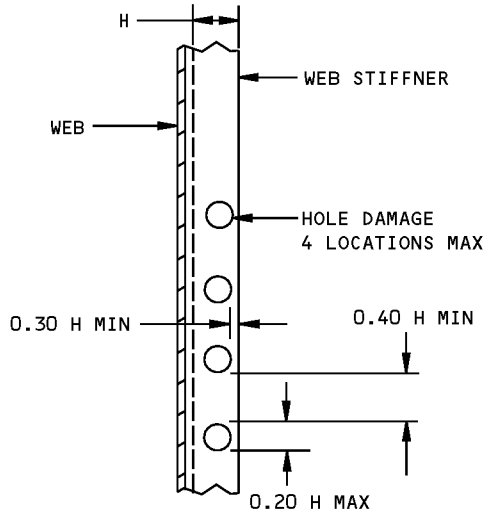
X = DEPTH OF CLEAN UP
NOT TO EXCEED 10%
OF FLANGE WIDTH

**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VII**

NOTE:

NO HOLE DAMAGE ALLOWED IN
STIFFENER FLANGES FASTENED
TO WEB. HOLE DAMAGE NOT TO
EXCEED 4 PLACES. FILL ALL
HOLES WITH 2117-T3 OR T4
RIVETS INSTALLED WET WITH
BMS 5-95.

H = WIDTH OF STIFFNER FLANGE



**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL VIII**

**Strut Fairing Structure - CF6-80A Engine
Figure 101 (Sheet 5 of 5)**



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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - SERVICE BULLETIN REPAIRS - CF6-80A ENGINE

1. General

A. The Service Bulletins listed in contain repairs which you can use when there are specified types of damages. Usually the Service Bulletins also contain preventative modification data which we recommend you use so that structural damage does not occur.

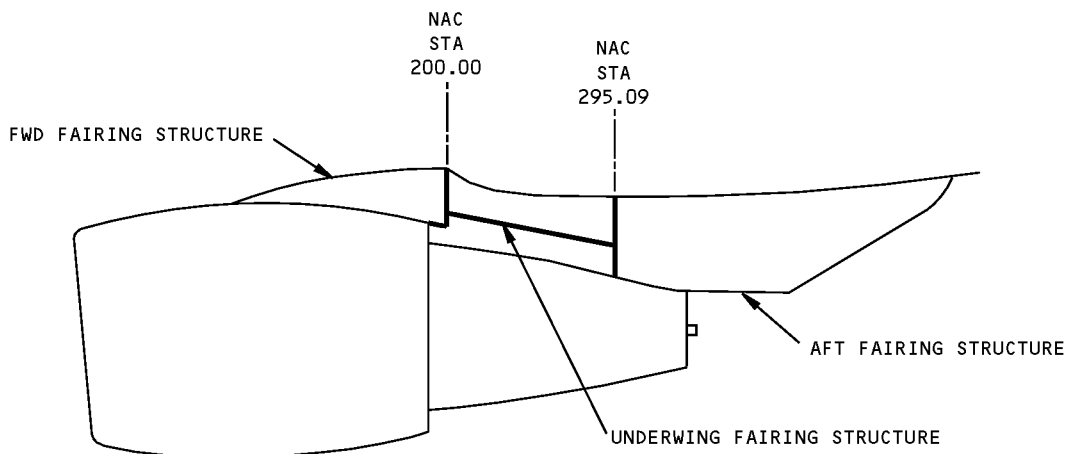
Service Bulletin Repairs

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
Nacelle Strut Aft Fairing Attachment - Outboard Skate Angle	6 thru 244	767-57-0023
Nacelle Pylons - CF6-80A and CF6-80C2 - Nacelle Strut Chord Angle and Stiffener Replacement and Intermediate Bulb Seal Addition	6 thru 256	767-54-0023

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 1 - STRUT FAIRING STRUCTURE - CF6-80A ENGINE

REW DWG
313T1100
313T1300



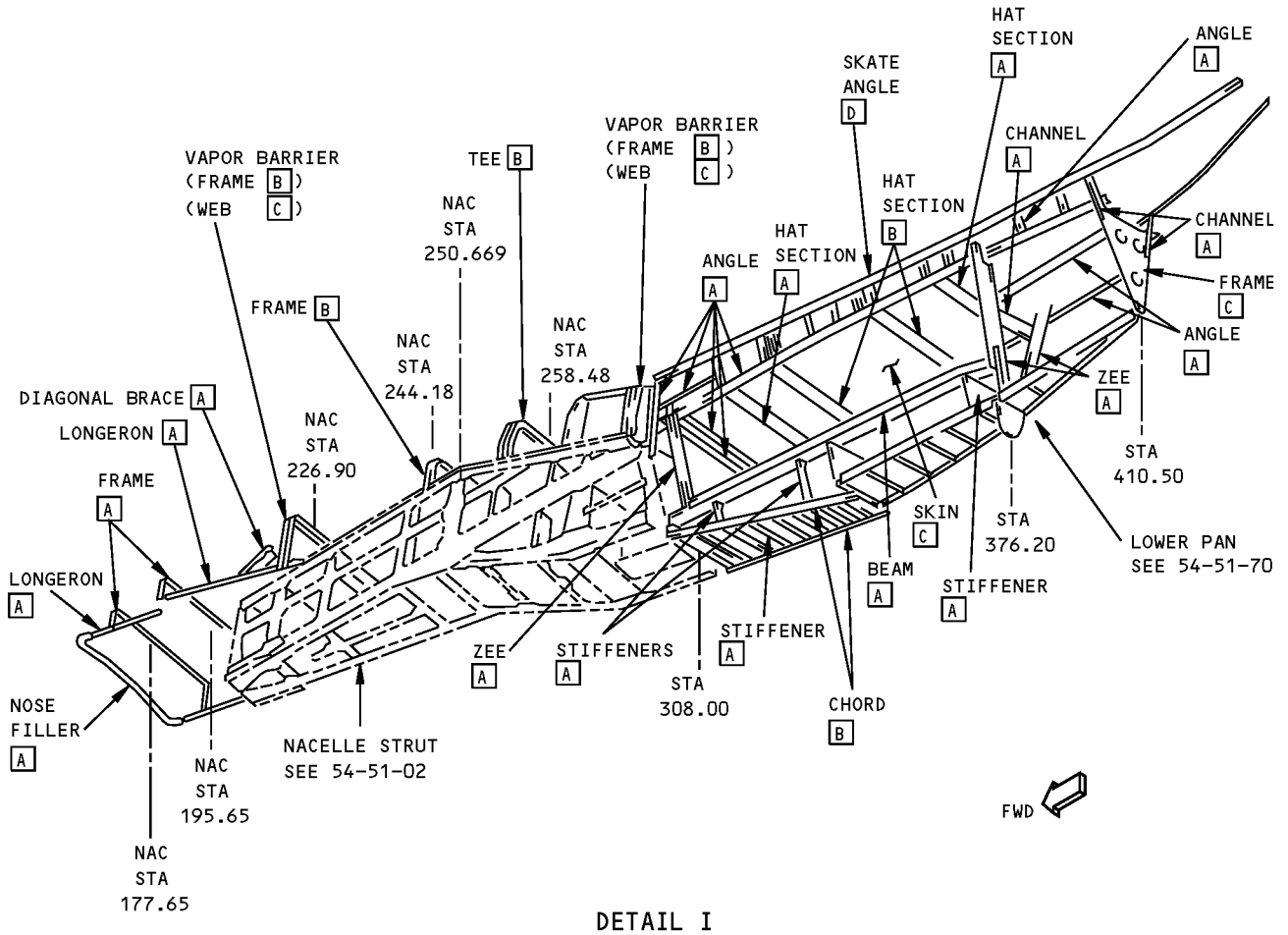
NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-20.
- A** REFER TO SRM 51-70-11 FOR FORMED SECTION REPAIR
- B** REFER TO SRM 51-70-12 FOR EXTRUDED SECTION REPAIR
- C** REFER TO SRM 51-70-13 FOR WEB REPAIR
- D** NO TYPICAL REPAIRS APPLICABLE. REFER TO THE LIST OF SERVICE BULLETIN REPAIRS

Strut Fairing Structure Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T1380
313T3310



MATERIAL: ALUMINUM

LIST OF
MATL

**Strut Fairing Structure Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 2)**

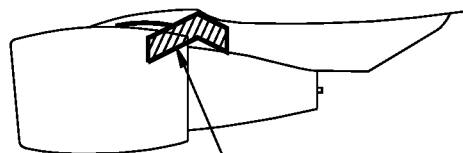
D634T210

54-51-71

REPAIR 1
Page 202
Apr 01/2005

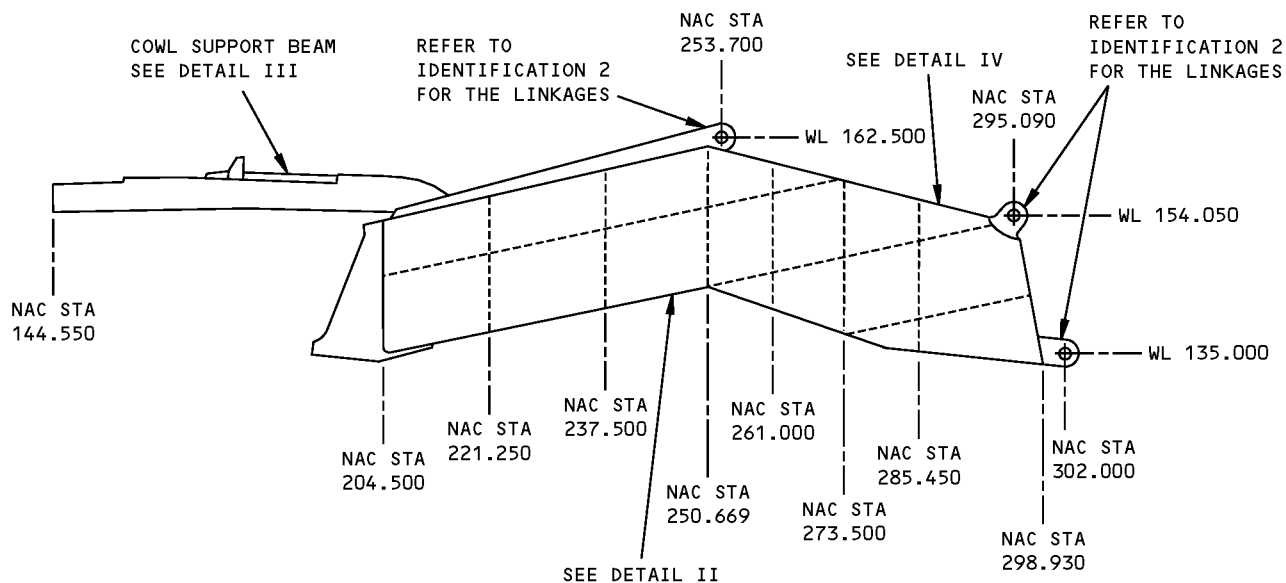
**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT ATTACHMENT FITTING - CF6-80A ENGINE



SEE DETAIL I

REFERENCE DRAWINGS
311T1510
311T1000



DETAIL I

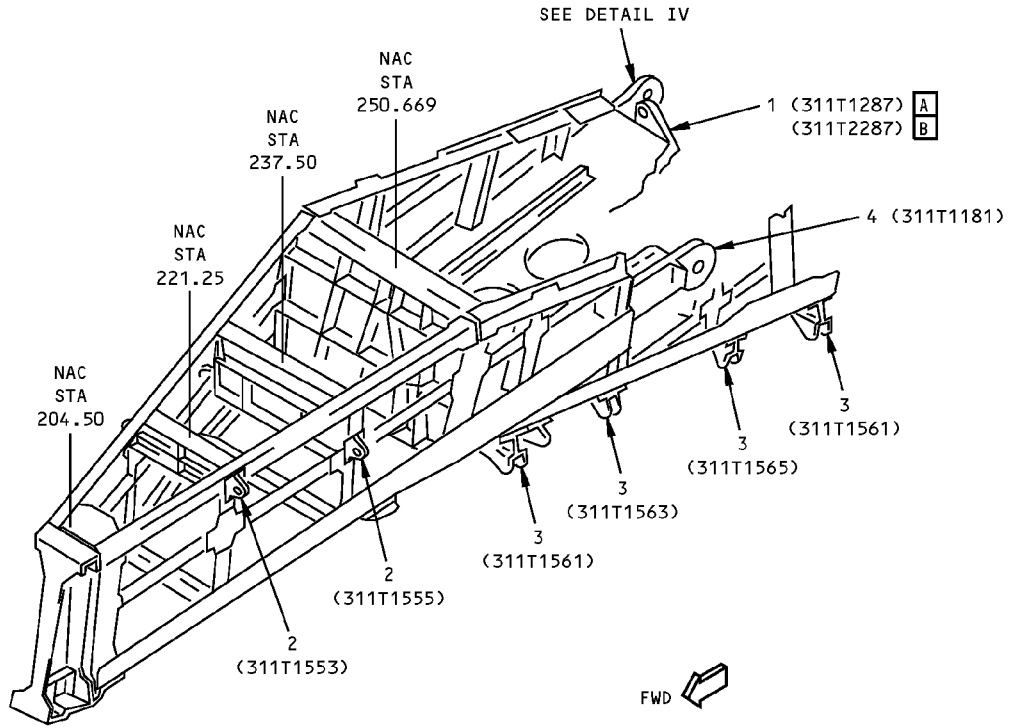
NOTES

- A** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0081 INCORPORATION
- B** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 665 AND ON, AND FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED

**Strut Attachment Fitting Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T1000



DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SIDE LINK FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
2	THRUST REVERSER HINGE FITTING		FORGING TI-6AL-4V	
3	CORE COWL HINGE FITTING		FORGING TI-6AL-4V	
4	LOWER SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	

LIST OF MATERIALS FOR DETAIL II

**Strut Attachment Fitting Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 4)**

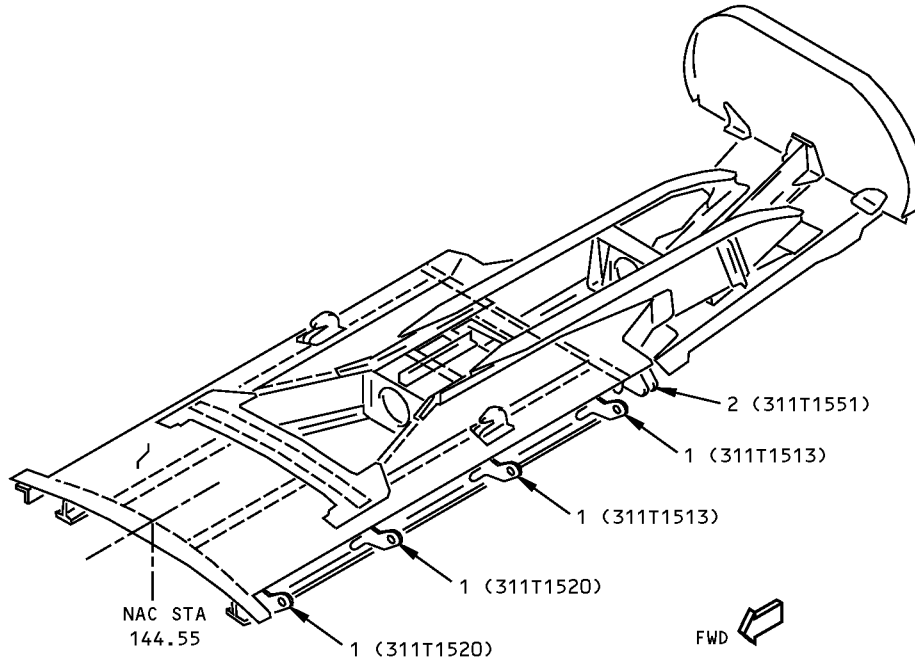
IDENTIFICATION 1
Page 2
Apr 01/2005

54-51-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T1510



**COWL SUPPORT BEAM
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FAN COWL HINGE FITTING		FORGING 7075-T3	
2	THRUST REVERSER HINGE FITTING		FORGING 7075-T3	

LIST OF MATERIALS FOR DETAIL III

**Strut Attachment Fitting Identification - CF6-80A Engine
Figure 1 (Sheet 3 of 4)**

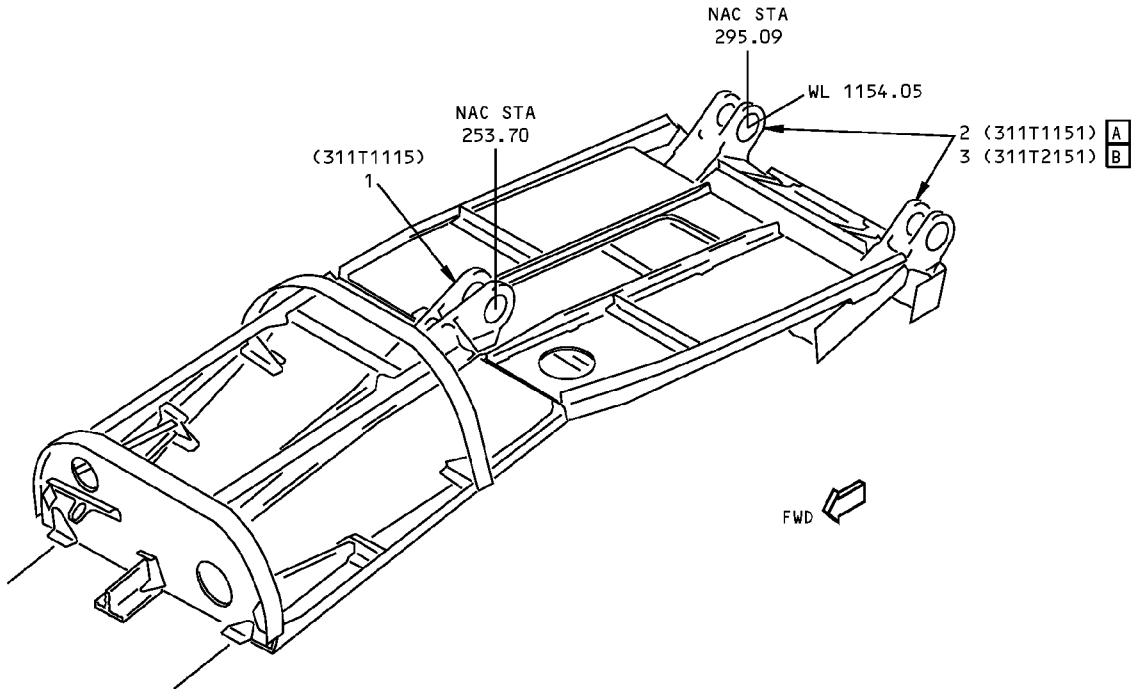
IDENTIFICATION 1
Page 3
Apr 01/2005

54-51-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T1110
311T1130
311T1150



DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD UPPER SPAR FITTING		FORGING TI-6AL-4V ANNEALED	
2	MID SPAR FITTING		4330M STEEL HT TR 220-240 KSI	A
3	MID SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	B

LIST OF MATERIALS FOR DETAIL IV

**Strut Attachment Fitting Identification - CF6-80A Engine
Figure 1 (Sheet 4 of 4)**

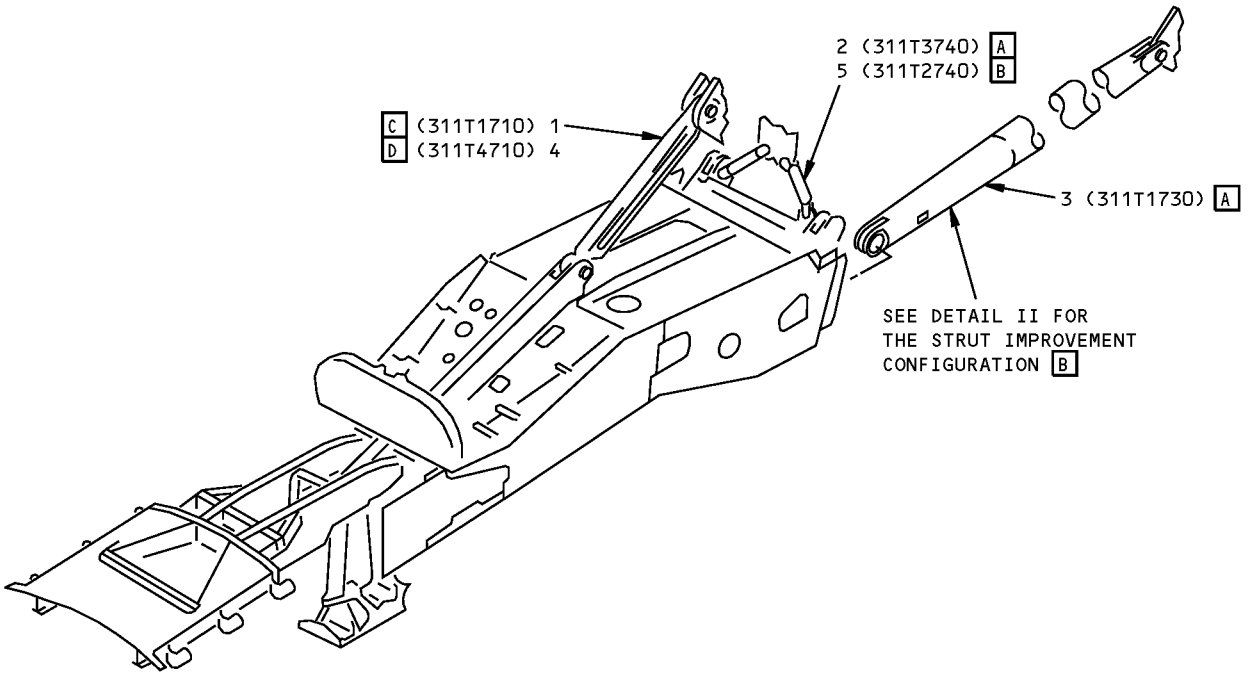
IDENTIFICATION 1
Page 4
Apr 01/2005

54-51-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - STRUT ATTACHMENT LINK - CF6-80A ENGINE



DETAIL I

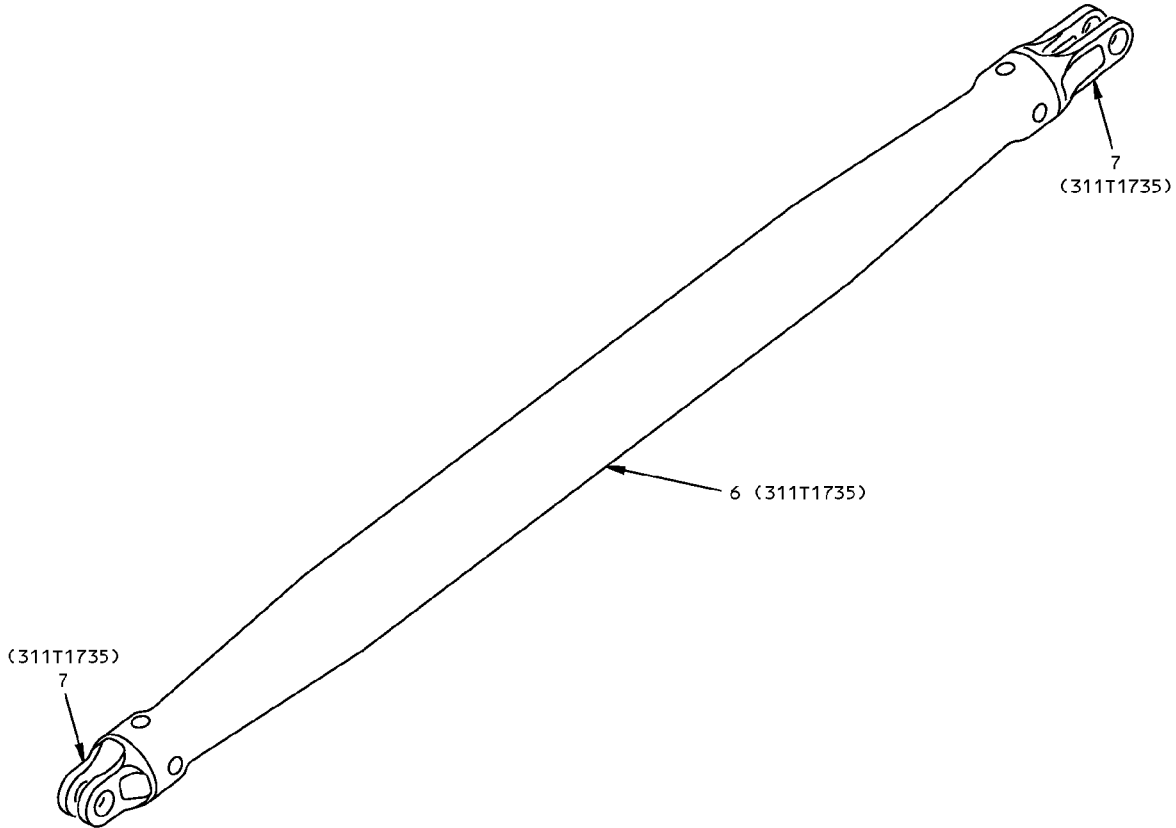
NOTES

- A** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 6 THRU 427 WITHOUT SB 767-54-0081 INCORPORATION
- B** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 665 AND ON, OR FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED
- C** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 6 THRU 427 WITHOUT SB 767-54-0083 INCORPORATION
- D** FOR AIRPLANES WITH CF6-80A ENGINES CUM LINE NUMBER 665 AND ON, OR FOR AIRPLANES WITH SB 767-54-0083 INCORPORATED



**Strut Attachment Link Identification - CF6-80A Engine
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II **B**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER LINK		FORGING 4330M STEEL HT TR 220-240 KSI	C
2	SIDE LINK		BAR 15-5PH CRES HT TR 180-200 KSI	A
3	DIAGONAL BRACE		TUBE OR EXTRUDED BAR 7075-T6	A
4	UPPER LINK		FORGING 15-5PH CRES BLOCK OR BAR HT TR 180-200 KSI	D
5	SIDE LINK	0.625	15-5PH CRES PLATE OR BAR HT TR 180-200 KSI	B
6	DIAGONAL BRACE TUBE		7075-T73 EXTRUDED TUBE OR BAR	B
7	END FITTING		TI-6AL-4V BAR OR FORGED BLOCK ANNEALED	B

LIST OF MATERIALS FOR DETAILS I AND II

**Strut Attachment Link Identification - CF6-80A Engine
Figure 1 (Sheet 2 of 2)**

IDENTIFICATION 2
Page 2
Apr 01/2005

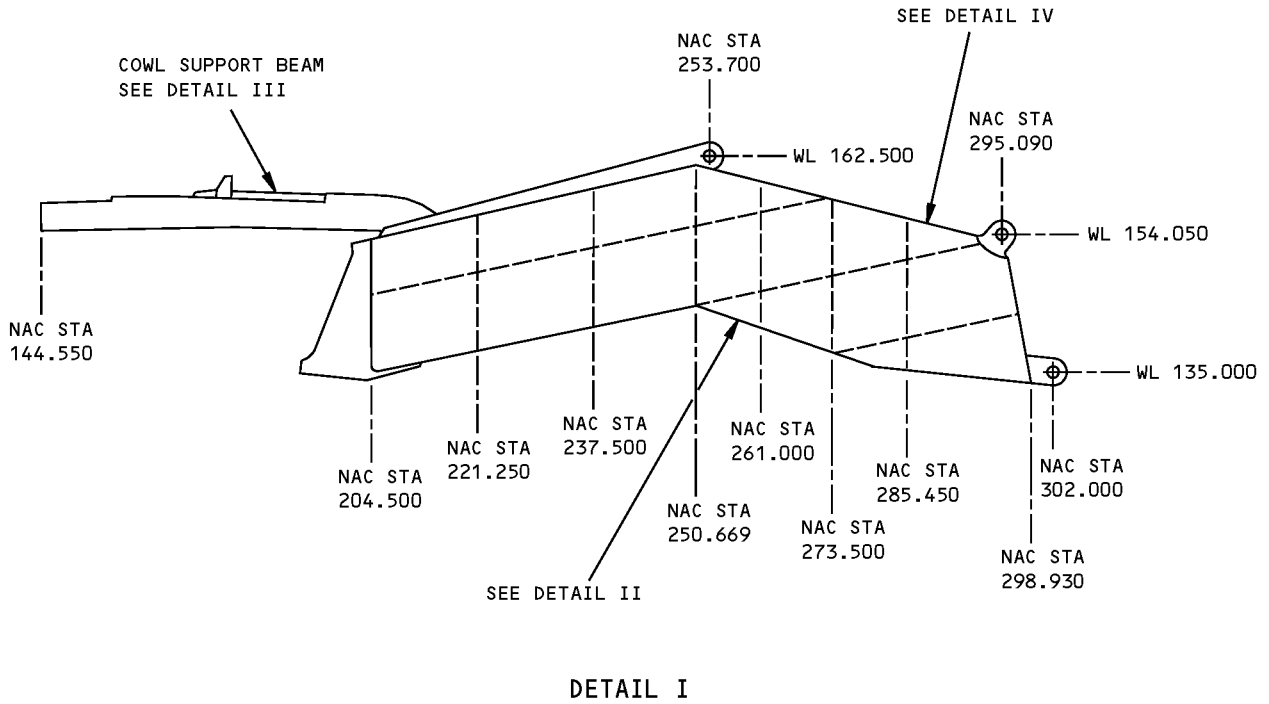
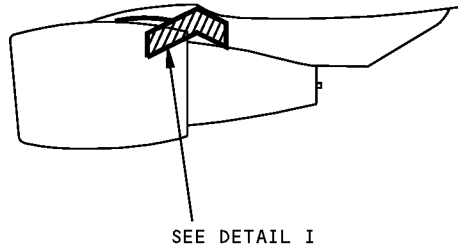
54-51-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT ATTACHMENT FITTINGS - CF6-80A ENGINE

REF DWG
311T1510
311T1000



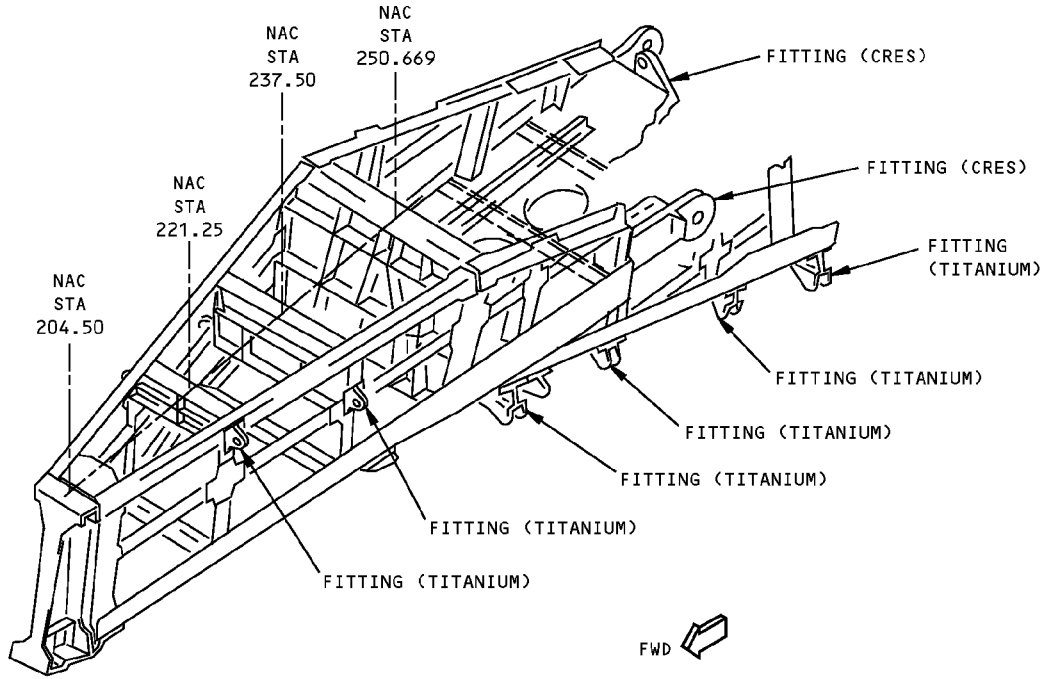
**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 6)**

ALLOWABLE DAMAGE 1
Page 101
Dec 15/2006

54-51-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

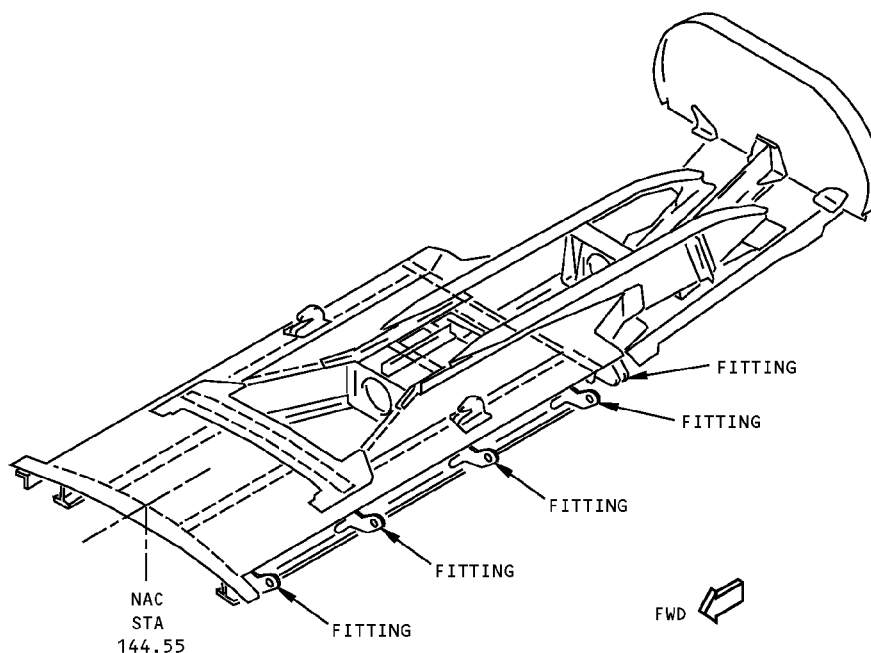


DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED	—

DETAIL II

**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED	—

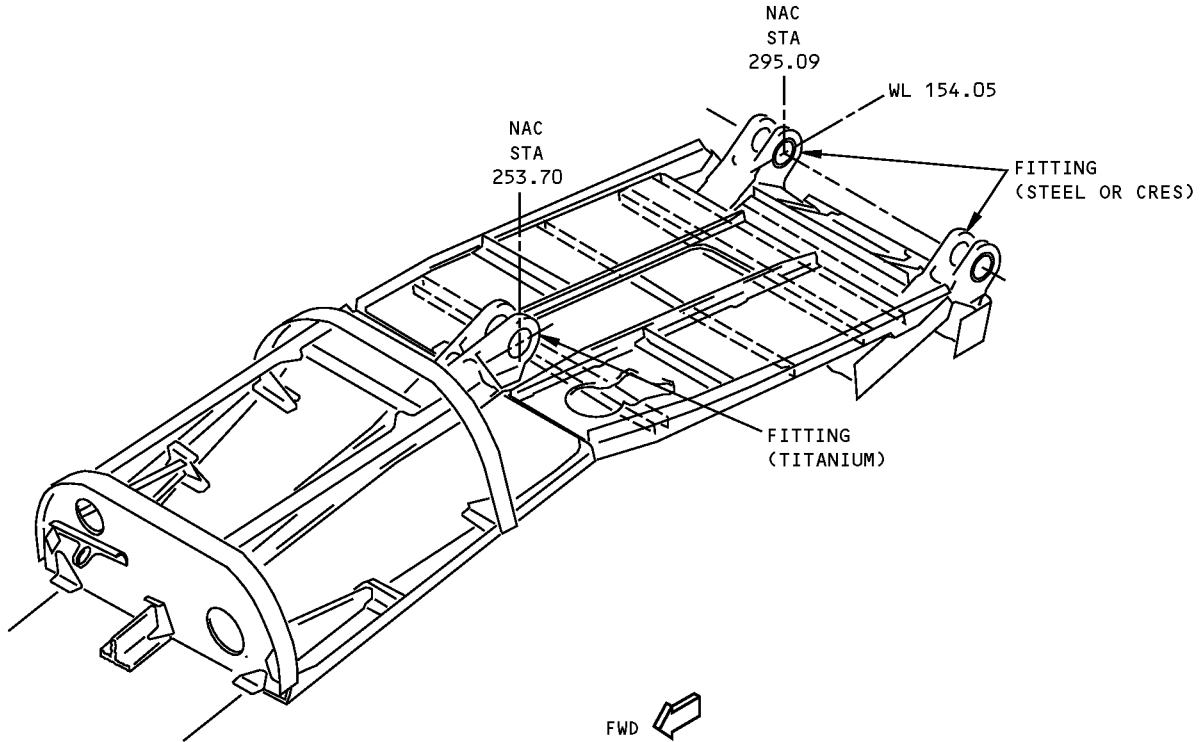
DETAIL III

**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 6)**

D634T210

ALLOWABLE DAMAGE 1
Page 103
54-51-90
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED
STEEL MID SPAR FITTING	A	A	NOT ALLOWED	NOT ALLOWED
CRES MID SPAR FITTING	A	B C	NOT ALLOWED	NOT ALLOWED

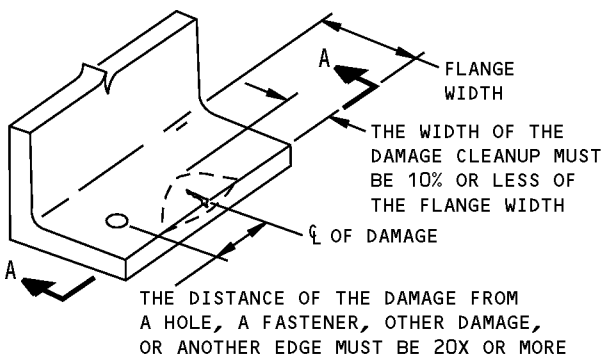
**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 4 of 6)**

STRUCTURAL REPAIR MANUAL

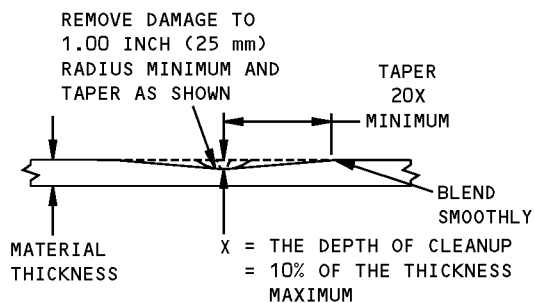
NOTES

- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5 PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM FITTINGS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES FITTINGS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR TITANIUM FITTINGS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURE.
- REFER TO SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES FITTINGS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII. DAMAGE IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHINGS.
- B** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII.
- C** TO MAKE SURE THE MID SPAR FITTING BORE IS ALIGNED CORRECTLY, SEE DETAIL VIII FOR THE DEPTH OF REMOVAL PERMITTED UNDER THE BUSHING FLANGE. THE MATERIAL REMOVAL ON THE FACE OF THE LUG UNDER THE BUSHING FLANGE MUST BE PERPENDICULAR TO THE BORE. AS THE RESULT OF THE SPOTFACE, CUT 0.01 TO 0.02 INCH (0.25 TO 0.50 mm) FROM THE NON-FLANGED END OF THE BUSHING BEFORE BUSHING INSTALLATION.
- D** DAMAGE OR REWORK IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHING EXCEPT AS NOTED IN **C**.



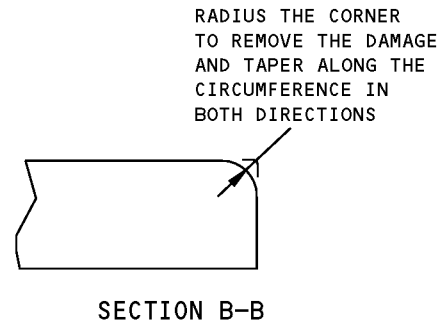
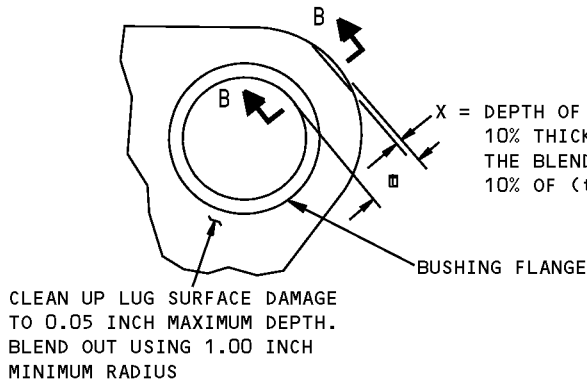
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE AT AN EDGE
DETAIL V**



SECTION A-A

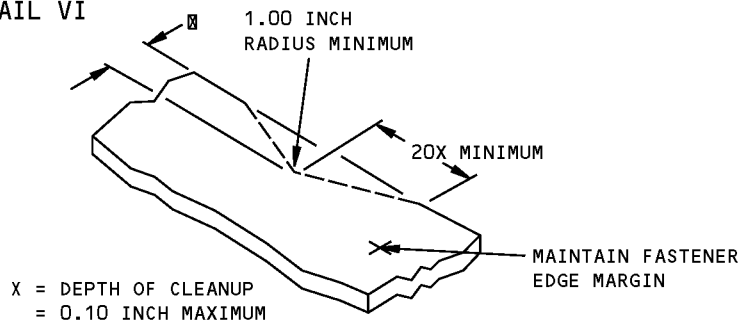
**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



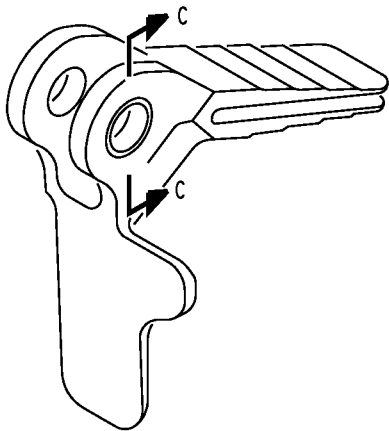
DAMAGE CLEANUP FOR SURFACES OF LUG

DETAIL VI



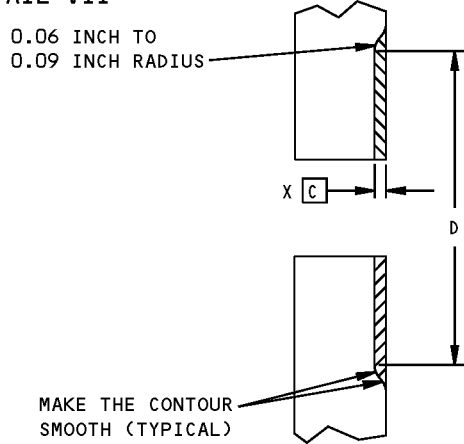
REMOVAL OF CRACK DAMAGE ON THE EDGE

DETAIL VII



REMOVAL OF MATERIAL ON THE LUG FACE UNDER THE FLANGE OF THE BUSHING

DETAIL VIII



X = 0.010 INCH MAXIMUM
 MAX D = BUSHING FLANGE DIAMETER +0.5 INCH
 MIN D = BUSHING FLANGE DIAMETER +0.01 INCH

SHADED AREA SHOWS WHERE MATERIAL HAS BEEN REMOVED.

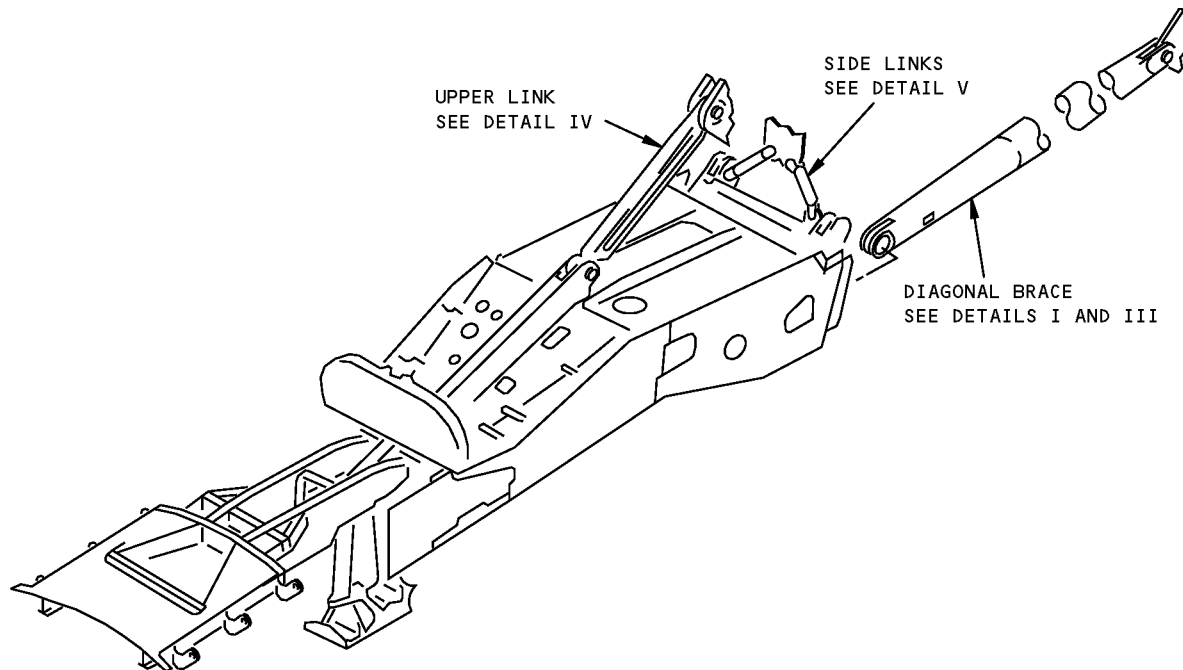
TYPICAL SPOTFACE ON ONE LUG IS SHOWN

SECTION C-C

**Strut Attachment Fittings Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 2 - STRUT ATTACHMENT LINKS - CF6-80A ENGINE



NOTES

- DENTS HOLES OR PUNCTURES ARE NOT PERMITTED.
 - APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
 - CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM COMPONENTS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
 - DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES COMPONENTS.
 - DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL FOR TITANIUM AND ALUMINUM COMPONENTS.
 - REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
 - REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
 - REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
 - SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES COMPONENTS AS GIVEN IN SRM 51-20-06 AFTER YOU DO THE NON-DESTRUCTIVE INSPECTION. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.
- A** NOT MORE THAN ONE AREA OF CLEANED OUT DAMAGE PERMITTED FOR EACH 2 INCHES (50 mm) OF LENGTH. **E**
 - B** NOT MORE THAN THREE AREAS OF CLEANED OUT DAMAGE PERMITTED FOR EACH 10 INCHES (25 cm) OF LENGTH. **F**
 - C** NOT MORE THAN TWO AREAS OF CLEANED OUT DAMAGE PERMITTED FOR EACH 10 INCHES (25 cm) OF LENGTH. **F**
 - D** 0.010 INCH (0.25 mm) MAXIMUM DEPTH REWORK PERMITTED UNDER BUSHING FLANGE. SEE SECTION CUT VIEW.
 - E** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 63 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
 - F** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 125 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
 - G** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VIII OR XIII. FOR OTHER DAMAGE, SEE DETAIL VII.
 - H** EDGE DAMAGE AND SURFACE DAMAGE ARE NOT PERMITTED TOGETHER ON THE SAME LUG. IF THEY ARE ON THE SAME LUG, SEND A REPORT TO BOEING FOR REPAIR INSTRUCTIONS.

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 1 of 6)**

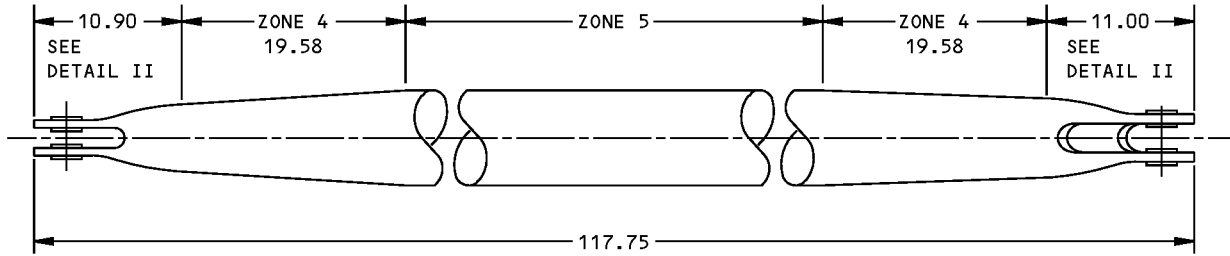
ALLOWABLE DAMAGE 2

54-51-90

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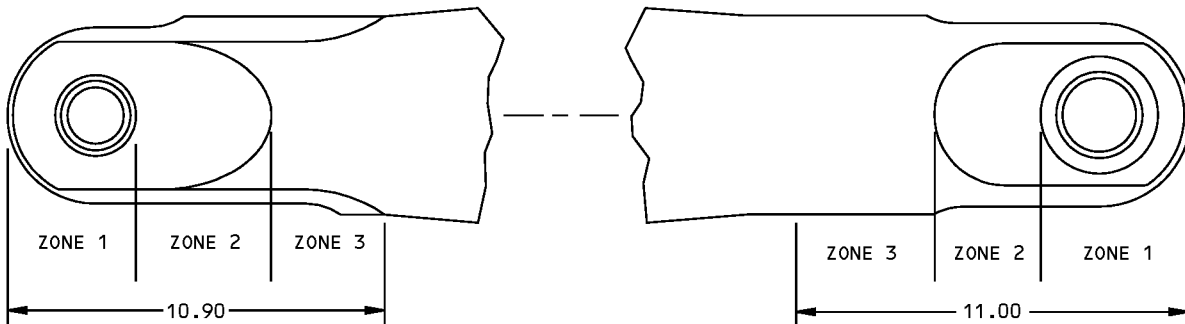
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**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM TUBING OR
EXTRUDED BAR

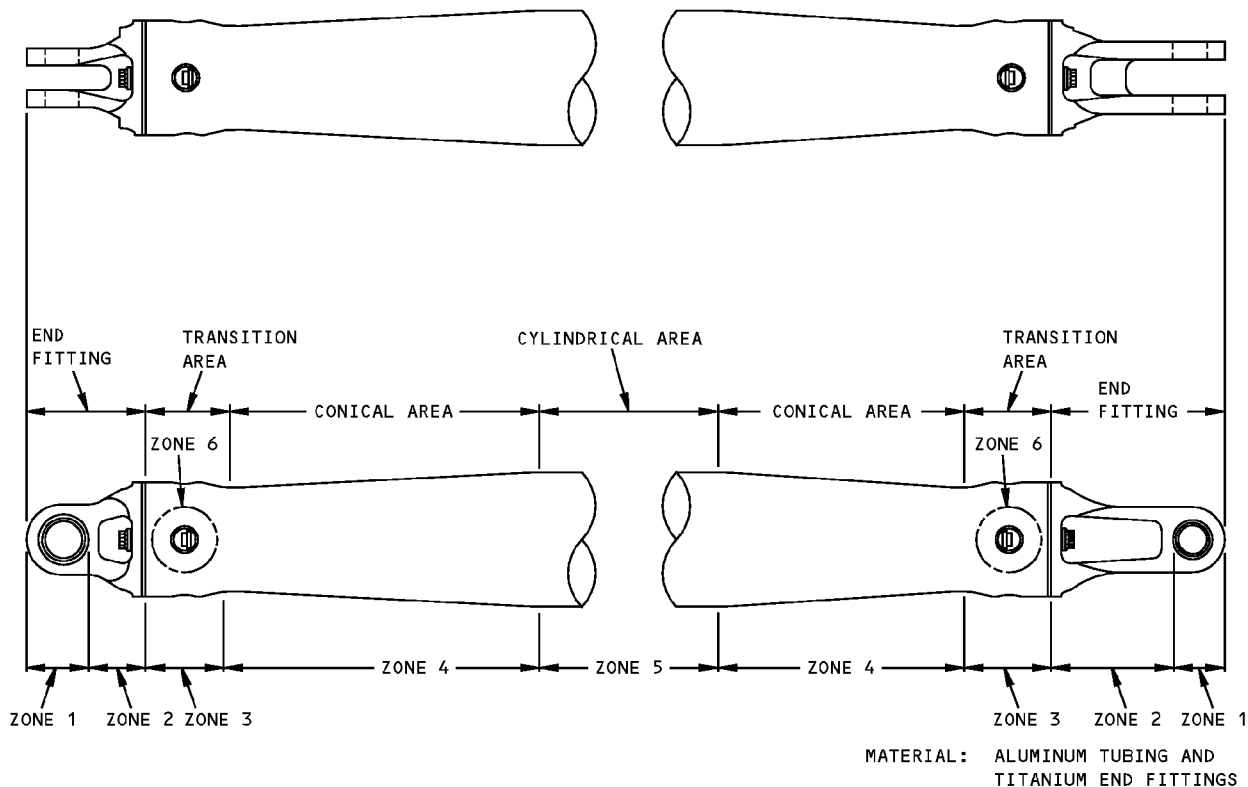


DETAIL II

ZONE	DAMAGE LIMITS
1	SEE DETAIL VI. [A]
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND TUBULAR AREA. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAILS VI AND IX. [A]
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. [A]
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. [B]
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. [C]

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

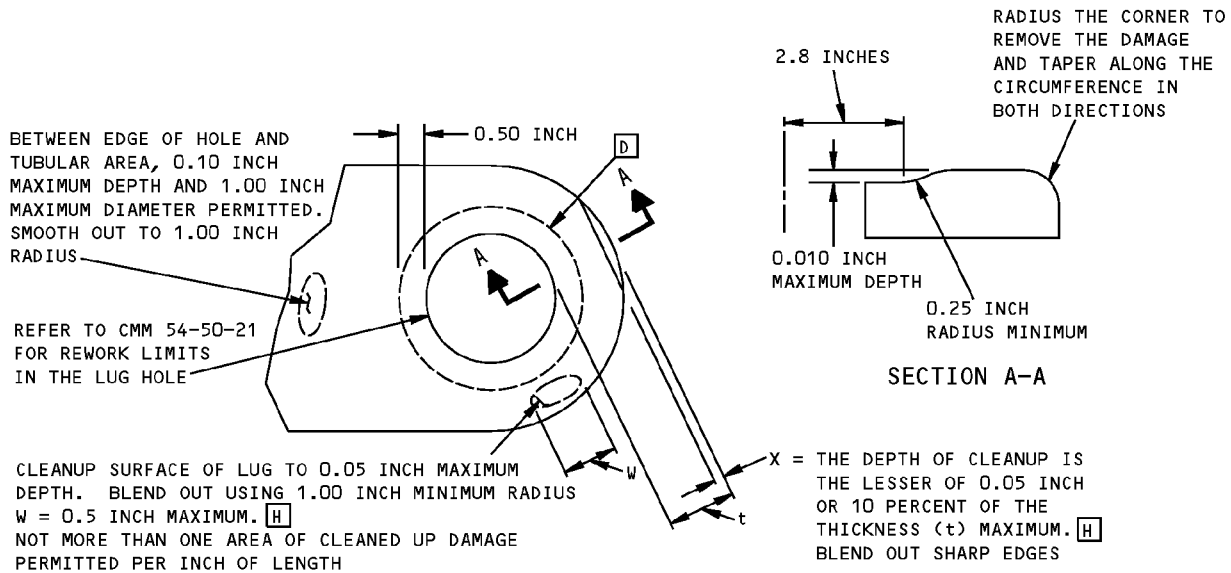
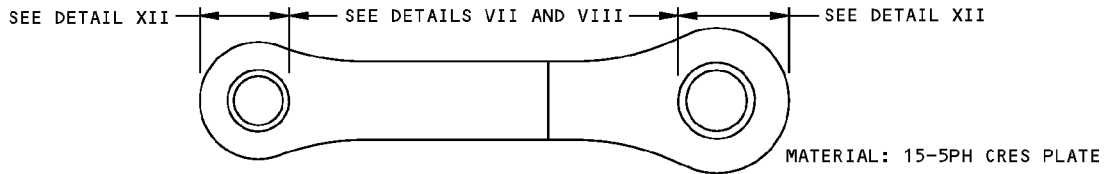
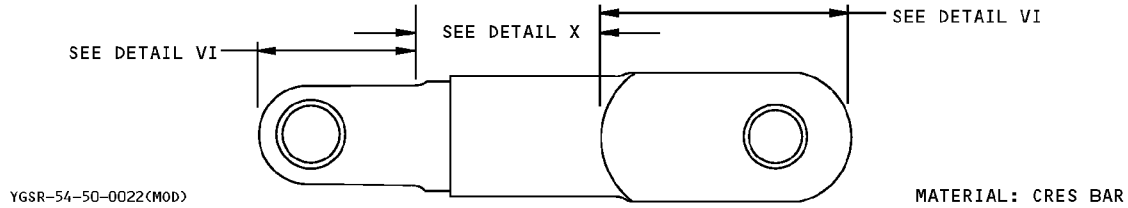
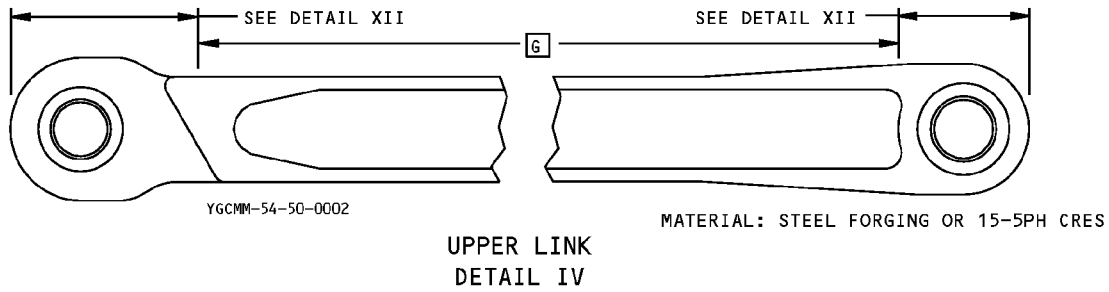


DETAIL III

ZONE	DAMAGE LIMITS
1	SEE DETAIL XII. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND BASE OF END FITTING. SEE DETAILS VII AND VIII. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. C
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C
6	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XIV. A

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 3 of 6)**

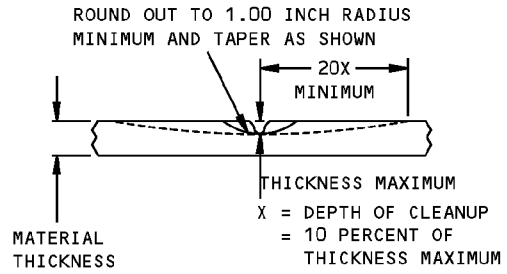
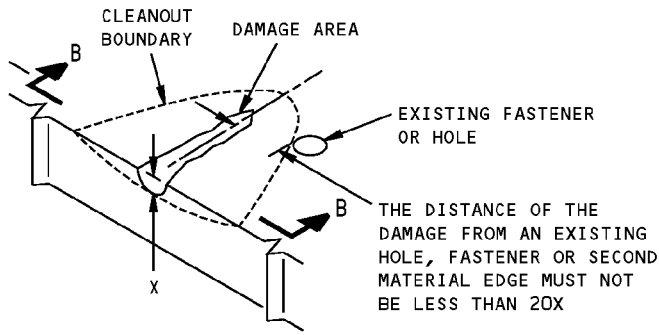
**767-300
STRUCTURAL REPAIR MANUAL**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL VI**

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 4 of 6)**

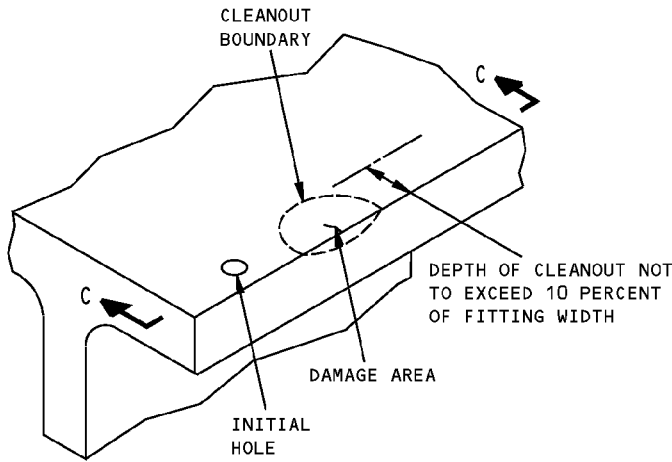
**767-300
STRUCTURAL REPAIR MANUAL**



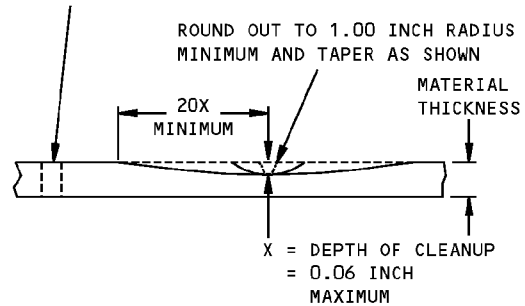
**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE THAT IS NOT ON A LUG
DETAIL VII**

SECTION B-B

DEPTH OF CLEANUP
0.06 INCH
MAXIMUM

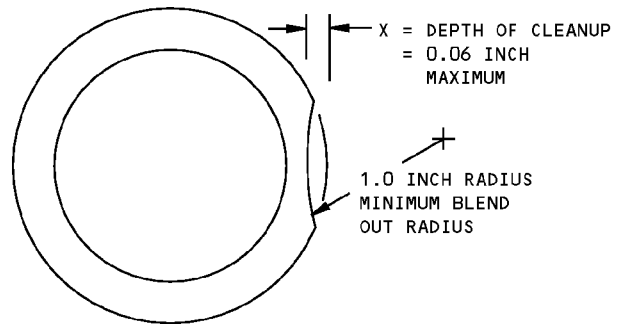
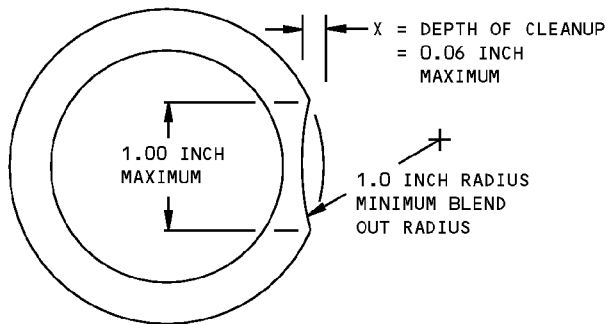


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR SECOND MATERIAL EDGE MUST NOT BE LESS THAN 20X.
X = DEPTH OF CLEANUP = 0.06 INCH MAXIMUM



**REMOVAL OF DAMAGE ON AN EDGE
DETAIL VIII**

SECTION C-C

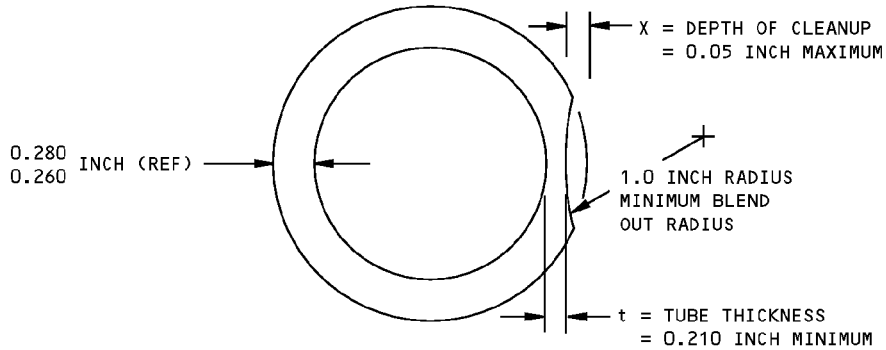


**REMOVAL OF DAMAGE ON A SURFACE
DETAIL IX**

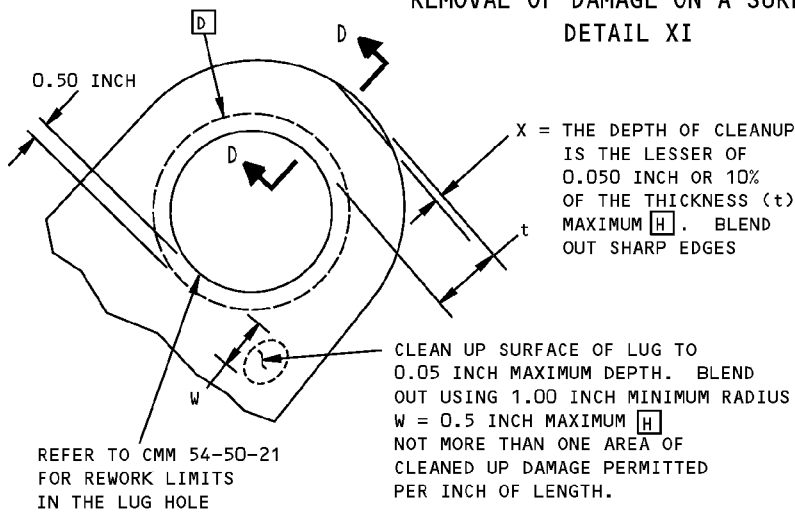
**REMOVAL OF DAMAGE ON A SURFACE
DETAIL X**

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 5 of 6)**

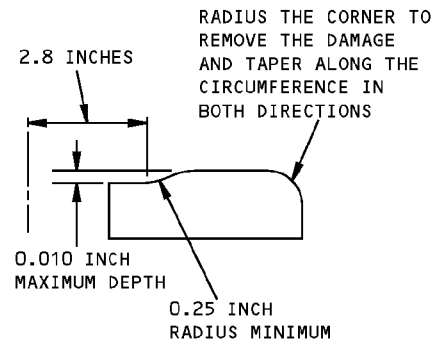
**767-300
STRUCTURAL REPAIR MANUAL**



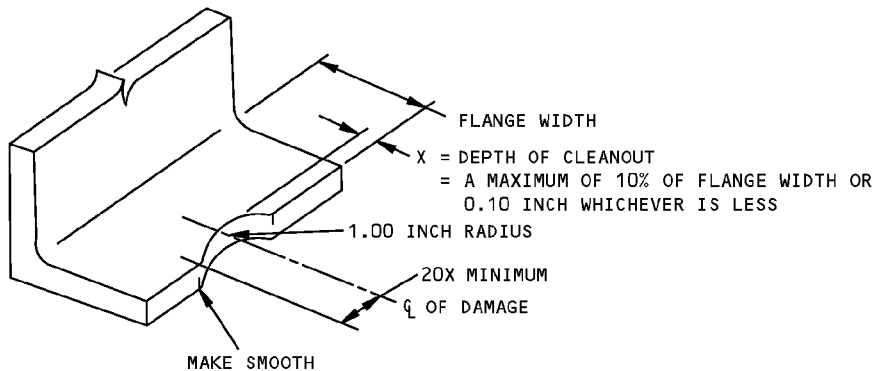
**REMOVAL OF DAMAGE ON A SURFACE
DETAIL XI**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL XII**



SECTION D-D

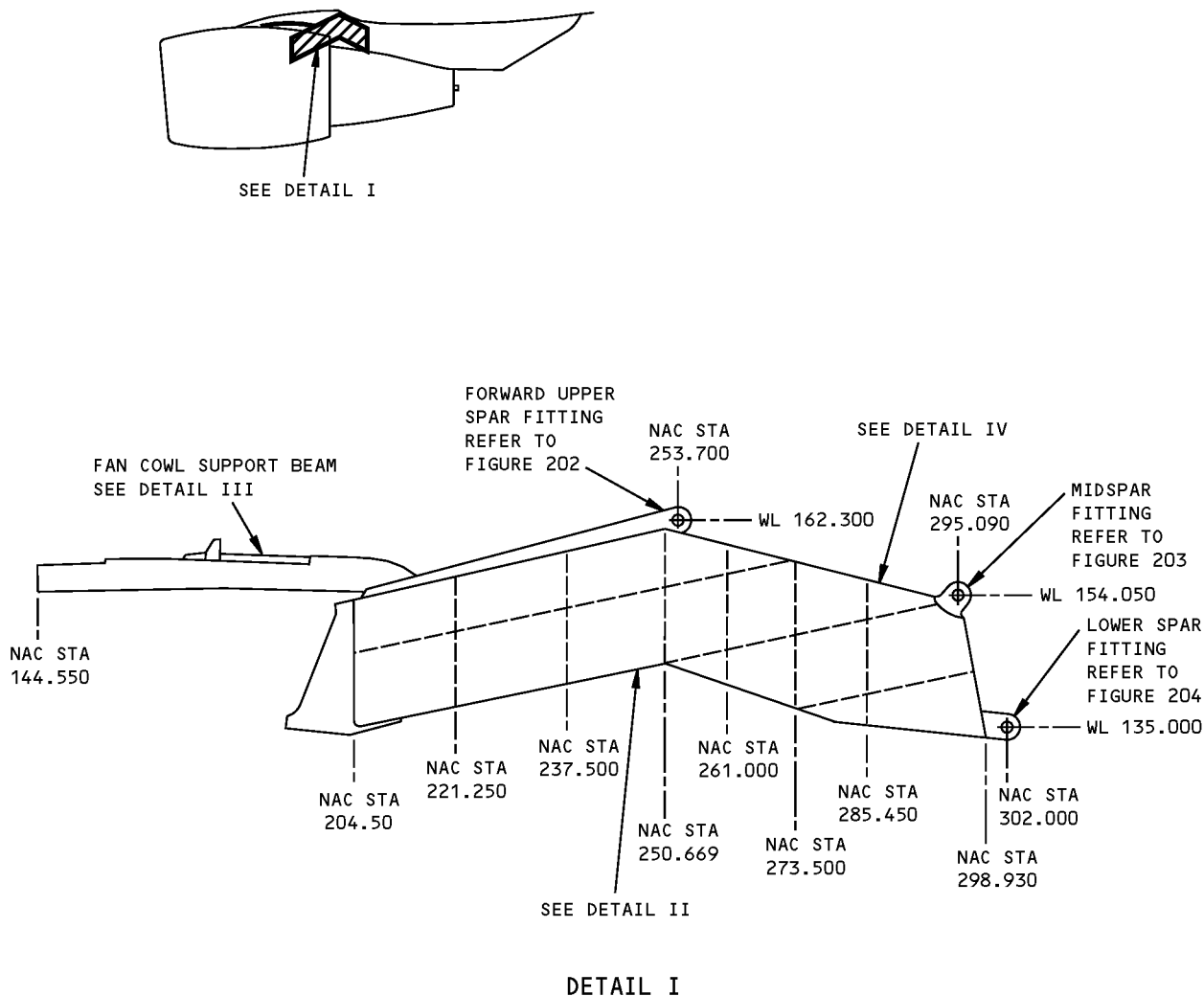


**REMOVAL OF EDGE DAMAGE FROM FREE FLANGE
WITHOUT FASTENERS
DETAIL XIII**

**Strut Attachment Links Allowable Damage - CF6-80A Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT ATTACHMENT FITTING - CF6-80A ENGINE

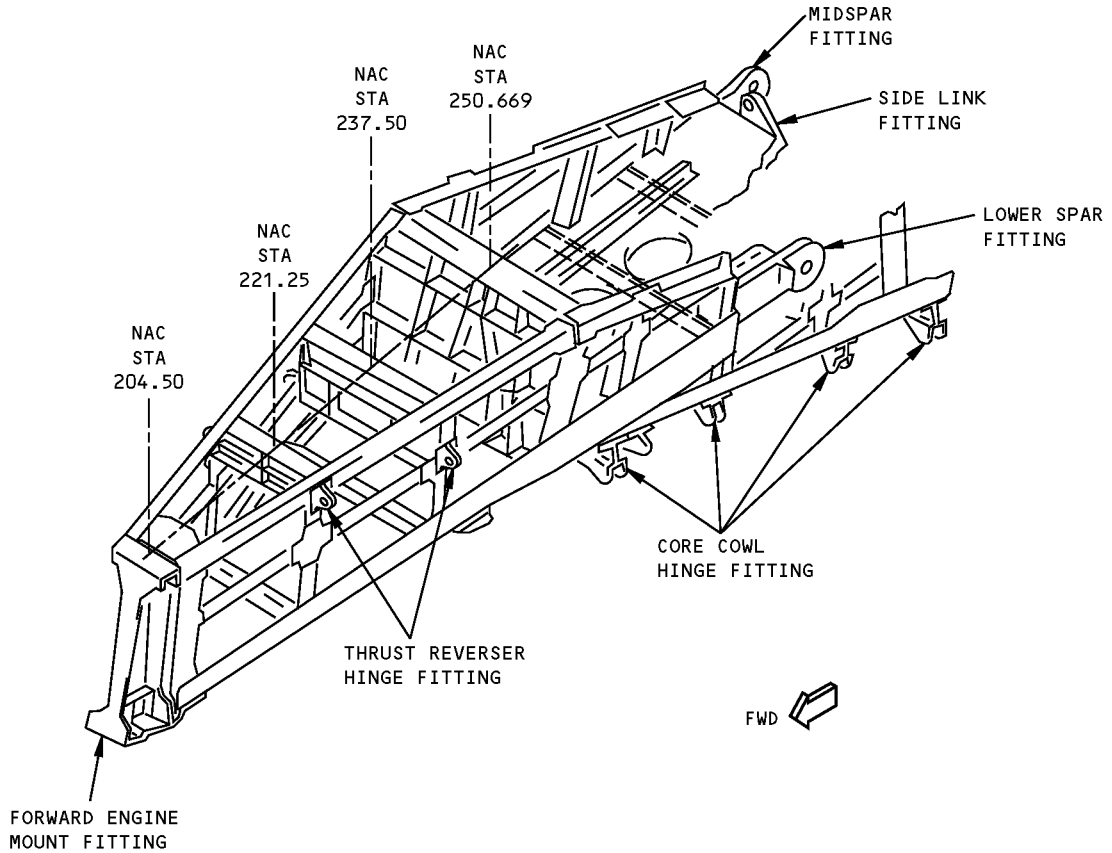


NOTES

- THE FORWARD UPPER SPAR, MID SPAR, AND LOWER SPAR FITTING LUG HOLE REPAIRS ARE THE ONLY TYPICAL STRUT ATTACHMENT FITTING REPAIRS AVAILABLE. OTHER TYPICAL STRUT ATTACHMENT FITTING REPAIRS WILL BE AVAILABLE BASED ON SERVICE EXPERIENCE.
- REFER TO CMM 54-50-21 FOR THE REPAIR OF THE UPPER AND SIDE LINKS, AND THE DIAGONAL BRACE SHOWN IN DETAIL V.

**Strut Attachment Fitting Repair - CF6-80A Engine
Figure 201 (Sheet 1 of 4)**

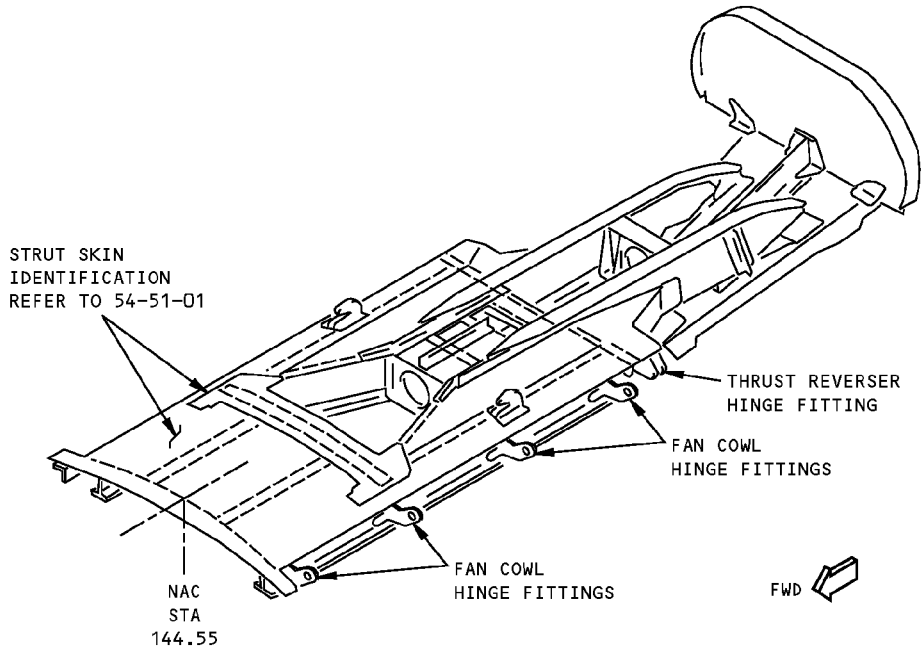
**767-300
STRUCTURAL REPAIR MANUAL**



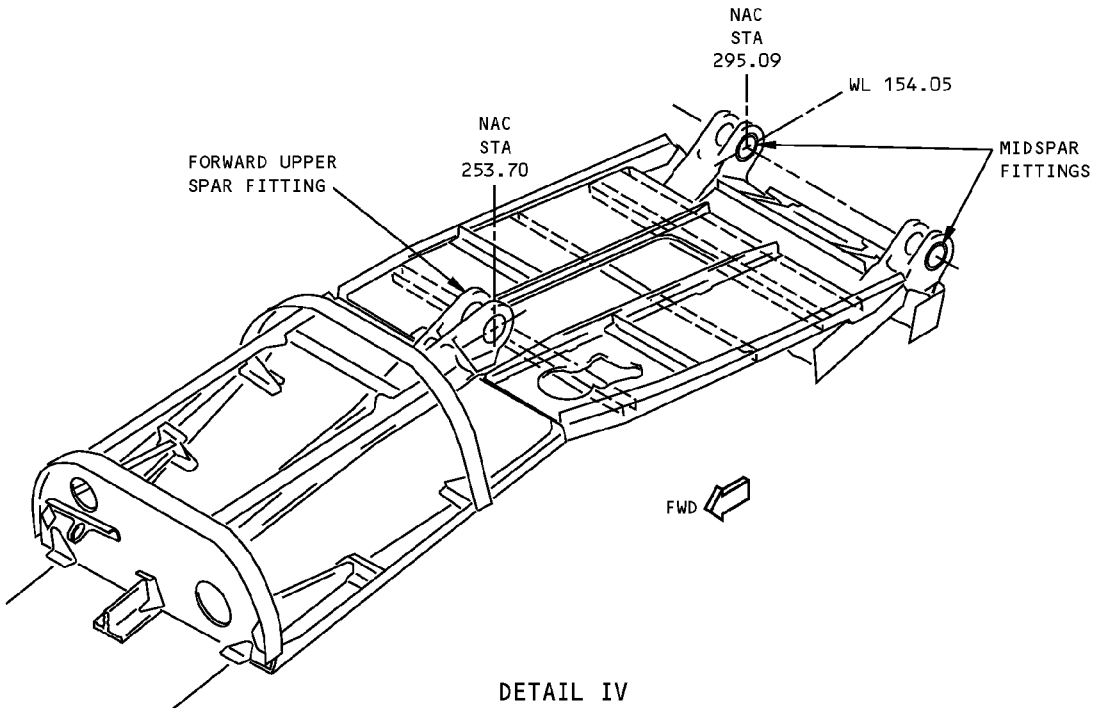
DETAIL II

**Strut Attachment Fitting Repair - CF6-80A Engine
Figure 201 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



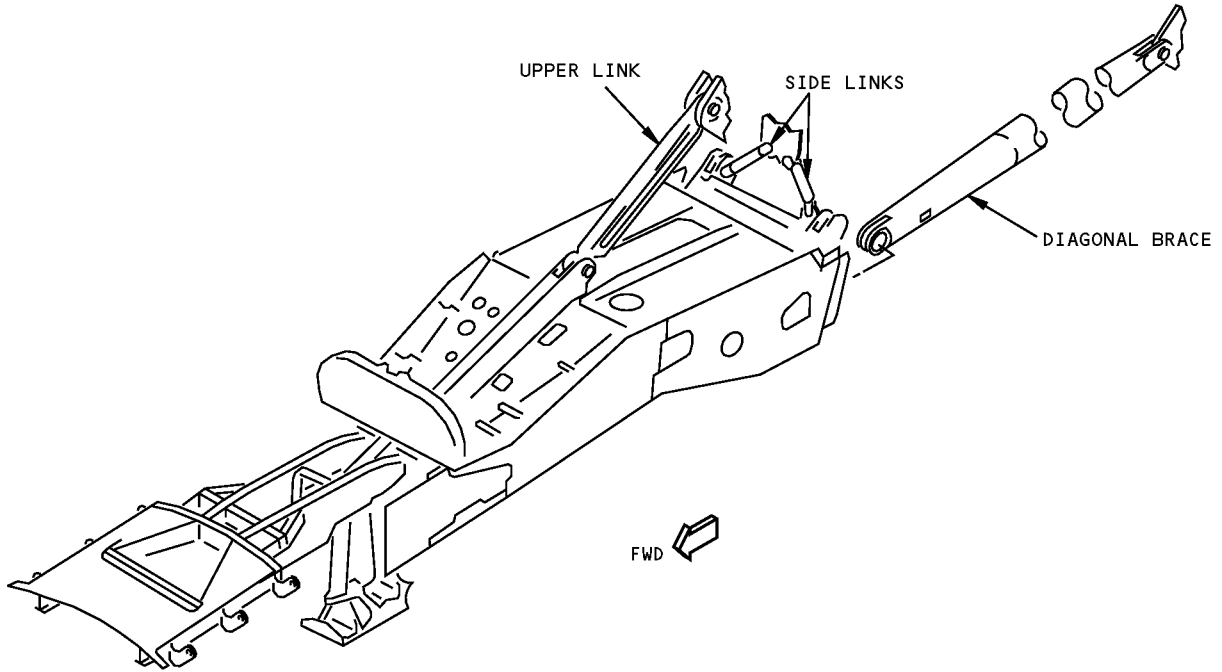
**FAN COWL SUPPORT BEAM
DETAIL III**



DETAIL IV

**Strut Attachment Fitting Repair - CF6-80A Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V

**Strut Attachment Fitting Repair - CF6-80A Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

**REPAIR 2 - FORWARD UPPER SPAR FITTING - LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING
PROCEDURE - CF6-80A ENGINE****APPLICABILITY**

THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE FORWARD UPPER SPAR FITTING ON THE CF6-80A ENGINE. **A**

REPAIR INSTRUCTIONS

1. Remove the engine strut from the wing. Refer to AMM 54-51-01/401.
 2. Open the strut access doors. Refer to AMM 54-53-01/201.
 3. Get the bushing removal tool from Boeing tool kit B0F311T2110.
 4. Remove the two bushings from the lugs of the clevis with the bushing removal tool. Discard the bushings. The bushing material is Aluminum-Nickel-Bronze alloy.
 5. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a high-frequency eddy-current (HFEC) inspection to determine the amount of crack damage in the lug bore. Refer to NDT Part 6, 51-00-13 for the high-frequency eddy-current inspection procedure.
 6. If damage is not found during the initial inspections and the airplane age is less than or equal to 15 years, then proceed to step 16. If the airplane age is more than 15 years or hole damage is found, proceed to the next step.
 7. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables on both sides of the upper link fitting. Move the bundles and cables up and away from the fitting to make clearance for the repair tools. If any electrical connections are disconnected, install caps or plugs on the equipment. Also, attach location tags to make subsequent connection easier.
 8. Drain the fuel supply line and the hydraulic fluid lines to the engine.
 9. Remove tubes, duct, clamps, support blocks and brackets on both sides of the fitting. See Detail I.
 10. Install the boring tools included in Boeing tool kit B0F311T2110 or the equivalent. Use a temporary sheet metal cover, approximately 0.063 inch thick, to support the boring fixture over the hole for the thermal anti-ice duct.
- CAUTION:** MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER EXCEEDS THE MAXIMUM PERMITTED.
11. Machine the hole as necessary to remove the damage. The fitting material is 6AL-4V titanium alloy. Refer to SOPM 20-10-07. Do a visual inspection with a 10-power magnifying glass for corrosion or (HFEC) inspection for cracks to make sure all damage is removed. Machine an insurance cut of 0.020 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 1.9962 inches, then get alternative repair instructions from Boeing.
 12. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
 13. Remove the boring tools.
 14. Hone the machined surfaces to remove all machine tears and burrs.
 15. Shot peen or flap peen the holes of the clevis which have been reworked. Use shot number 170 to 460, intensity 0.014A, and coverage 2.0. Refer to SOPM 20-10-03.
 16. Hone the holes to the final hole diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.0028 inch of material from the hole diameter to get the necessary surface finish. The maximum hole diameter is 1.9962 inches.
 17. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.

**Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

18. Make the replacement bushings. One bushing is necessary for each lug of the clevis. See Detail II and Table I. Make the outer diameter of each bushing 0.003 to 0.004 inch larger than the hole diameter, to give an interference fit. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surface 63 microinches R_a .
19. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

20. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation guide bushing in the liquid nitrogen until the boiling stops. Use the guide bushing from kit BOF311T2110 or the equivalent. Refer to SOPM 20-50-03.
21. Apply sealant or adhesive as follows:
- A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the mating surfaces of the clevis which touch the flanges of the bushings.
- NOTE:** Do not apply BMS 5-95 sealant to the surface of the bores.
- B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.
- NOTE:** If there is primer in the bores, do not remove it.
22. Install the bushings as quickly as possible. Use the installation tools from kit BOF311T2110 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
23. Hone the inner diameter of the bushings to a diameter of 1.6965 to 1.6975 inches. Make the surface finish 32 microinches R_a . Machine the outer chamfers again if necessary. See Detail II.
24. Bond washer to spar fitting with BMS 5-26. See Detail II, Section A-A. Refer to SOPM 20-50-12.
25. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the faces of the lug. Apply a fillet seal of BMS 5-95 to the washer and bushing interface. Refer to SRM 51-20-05.
26. Put the airplane back to its usual condition.

Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 2 of 6)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0095.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE ENGINE STRUT
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - SOPM 20-10-03 FOR FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES.
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

- A** AS AN ALTERNATIVE TO CLEANING THE HOLE WITH THE MANUAL DECONTAMINATION AND REPASSIVATION PROCESS, YOU CAN ABRASE THE HOLE WITH CLEAN ALUMINUM OXIDE PAPER, 150 GRIT OR FINER. DO NOT USE SILICON CARBIDE ABRASIVE PAPER. SOLVENT CLEAN THE HOLE TO MAKE SURE ALL PARTICLES OF ABRASIVE GRIT ARE REMOVED.
- B** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

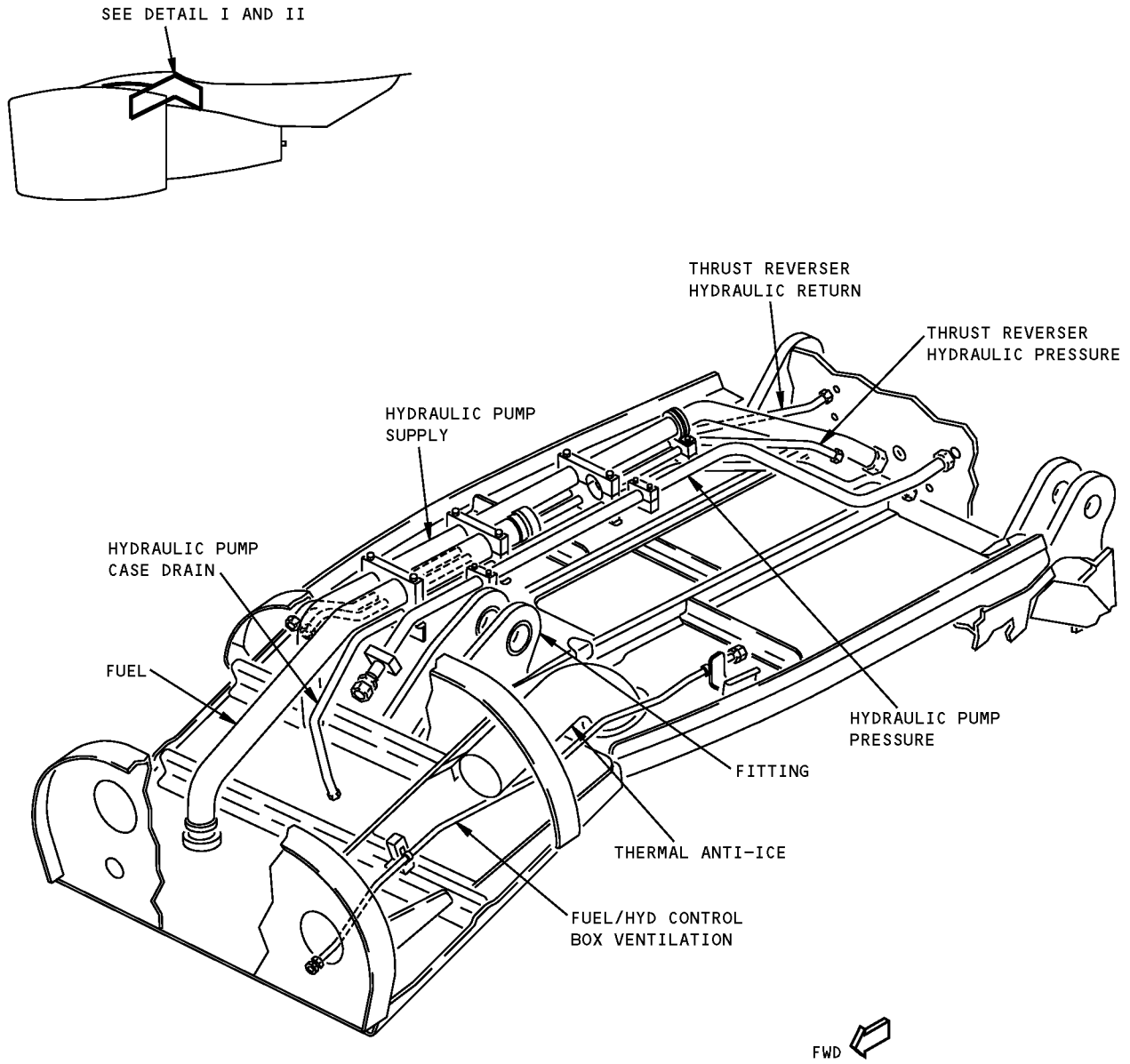
REPAIR MATERIAL			
PART	QTY	MATERIAL	
1	OVERSIZED BUSHING	2	2.25 INCHES DIAMETER BY 1.0 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T4100-70 BUSHING FROM BOEING
2	WASHER	2	3.0 INCHES DIAMETER BY 0.125 INCH THICK AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 310T2303-1 WASHER FROM BOEING

TABLE I

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Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine Figure 201 (Sheet 3 of 6)

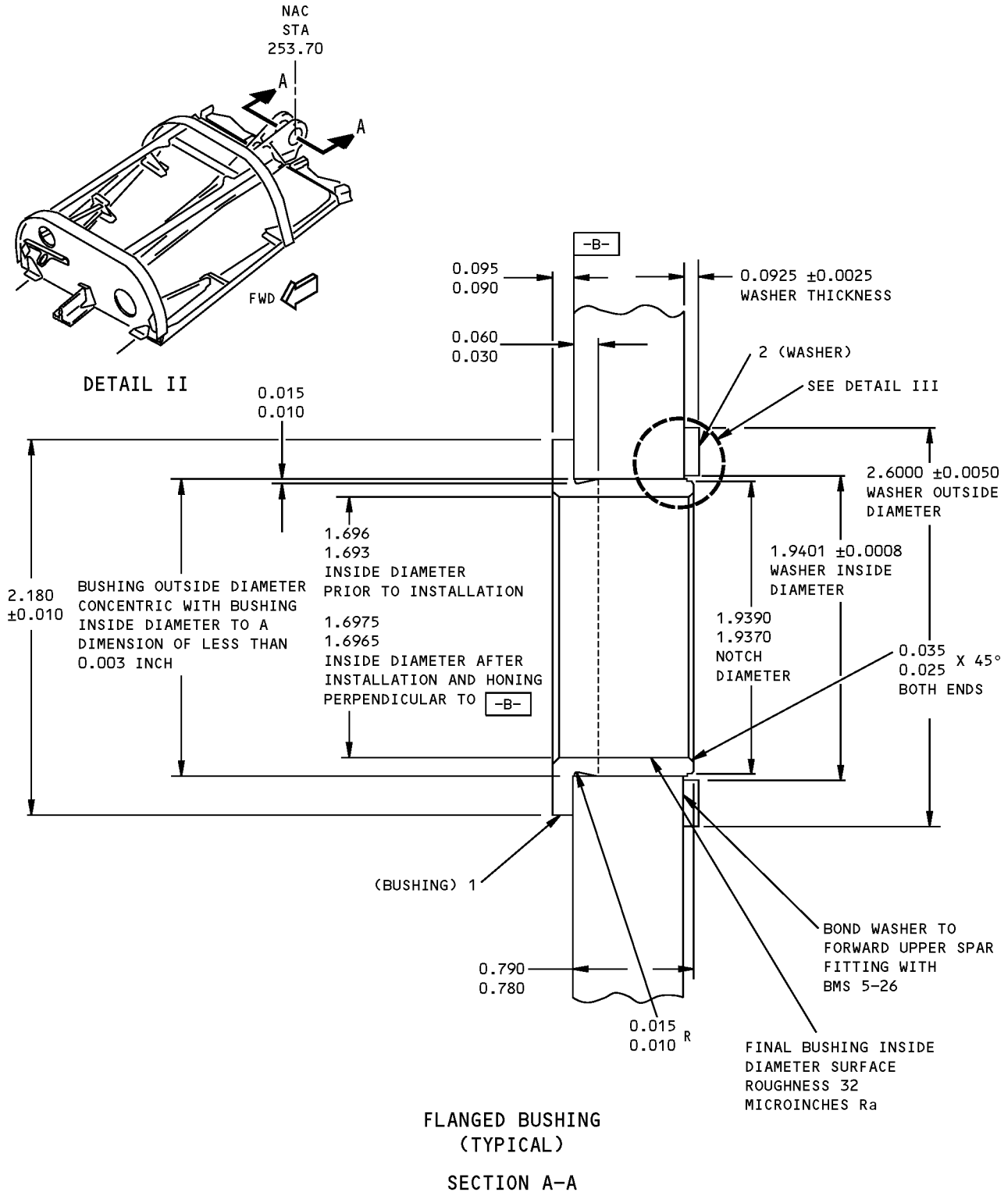
**767-300
STRUCTURAL REPAIR MANUAL**



**TUBING AND DUCT
DETAIL I**

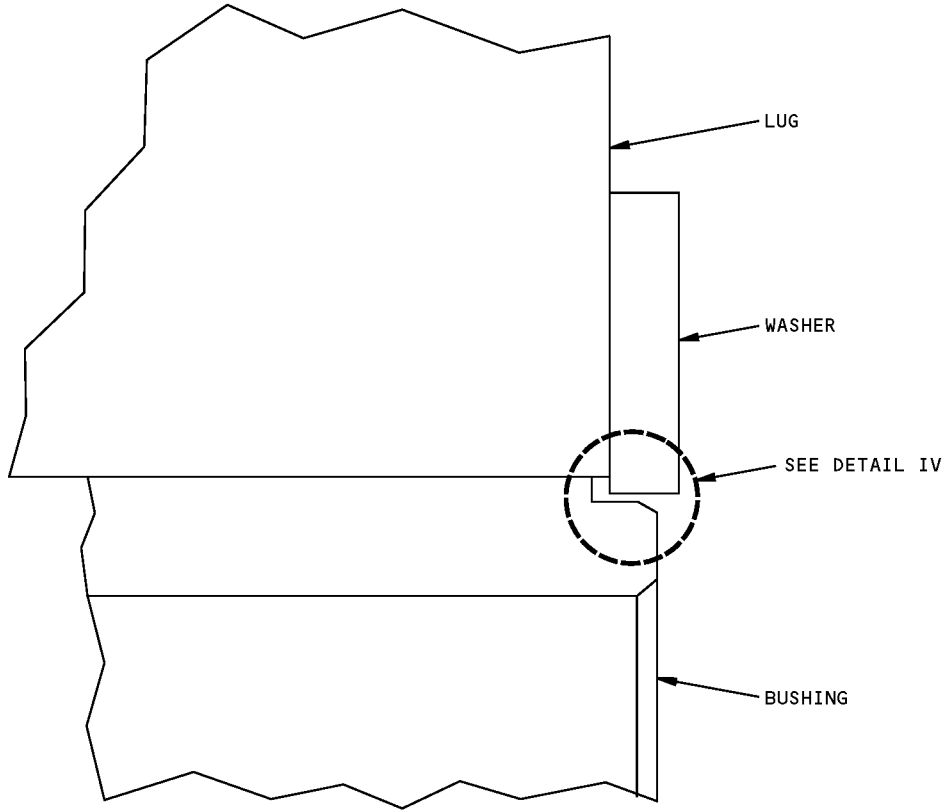
**Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

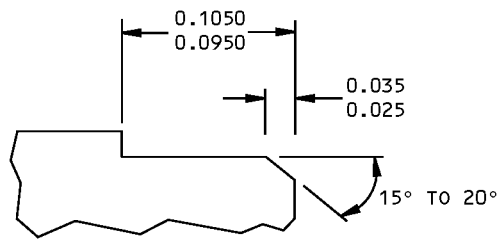


**Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



DETAIL III



**BUSHING OD CHAMFER AND
NOTCH DIMENSIONS**

DETAIL IV

**Forward Upper Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - MIDSPAR FITTING - LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING PROCEDURE - CF6-80A ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE MIDSPAR FITTING ON THE CF6-80A ENGINE [A]. IF THE MIDSPAR FITTING HAS THE POST STRUT IMPROVEMENT PROGRAM (SIP) CONFIGURATION OR WITH SB 767-54-0081 INCORPORATED, USE THE MIDSPAR FITTING LUG HOLE REPAIR FOR CF6-80C ENGINE IN SRM 54-52-90.

REPAIR INSTRUCTIONS

1. Remove the pylon and get access to the clevises. Refer to AMM 54-51-01 for the removal of the pylon.
2. Remove all four of the bushings from the damaged lug(s) of the clevises. Discard the bushing(s). The bushing material is Aluminum-Nickel-Bronze alloy.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for magnetic particle inspection procedures.

As an alternative, do a High-Frequency Eddy Current inspection (HFEC) to determine the amount of crack damage in the lug bore. Refer to 767 NDT Part 6, 51-00-21 for the inspection procedures.

NOTE: If you install new mid-spar fittings with the incorporation of Boeing SB 767-54-0081, the inspection for crack damage in the lug bore is not necessary.

4. Machine each bore as necessary to remove scratches, surface defects, cracks or corrosion. Use boring tool, Boeing tool number B0F311T2150 or equivalent. Refer to SOPM 20-10-02. The fitting material is 4330M alloy steel.
- NOTE:** INSTALLATION OF THE BORING TOOL REQUIRES THE REMOVAL OF TUBING THAT IS LOCATED BETWEEN THE MIDSPAR FITTINGS.
5. If cracks or corrosion were found during the initial inspection, continue to machine the bore and to do the inspections until you can not detect cracks or corrosion. Then machine an insurance cut of 0.010 inch minimum from the diameter of the bore. If the diameter of the bore is larger than 1.8640 inches after the bore has been machined, then get alternative repair instructions from Boeing.

6. If you did not find cracks or corrosion during the initial inspections, an insurance cut is not necessary unless the midspar fitting is more than 10 years old. The maximum bore diameter is given in step 5.
7. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
8. Remove all machine tears and burrs on cut surfaces.
9. Do a surface etch inspection of each lug hole that has been machined. Use ammonium persulfate. This inspection examines the temper of the hole to find if the hole was damaged when it was machined. Refer to SOPM 20-10-02 for the surface temper etch inspection procedure.
10. Shot peen or flap peen the holes of the clevises that have been reworked. Use shot number 170 to 460, intensity 0.014A, and coverage 2.0. Refer to SOPM 20-10-03.
11. Hone the holes to the final bore diameter. Make the finish on the surface of the hole 32 microinches Ra or better. You can remove a maximum of 0.0028 inch of material from the bore diameter to get the necessary surface finish. The maximum bore diameter is 1.8640 inches.
12. Make four replacement bushings, one bushing for each lug of the clevises. See Detail I and Table I. Make the outer diameter of each bushing 0.0028 to 0.0038 inch larger than the hole diameter before the bushing is cadmium plated. Make the surface finish on the outer surface of the bushing 32 microinches Ra or better. Make the surface finish on the other surfaces 63 microinches Ra or better.
13. Apply a stylus cadmium plate 0.0003 to 0.0005 inch thick to the surface of the lug hole. Refer to SOPM 20-42-10.
14. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.
15. Apply cadmium plate to the outer surface of the bushing. Use Type II, Class 2 cadmium plating as specified in SOPM 20-42-05. Do not plate the inner surface of the bushing.
16. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tooling in the liquid nitrogen until boiling stops. Refer to SOPM 20-50-03.

**Midspar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONTINUED)

17. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin film of BMS 5-95 sealant to the inner surface of the fitting bore and to the mating surface under the bushing flange.
 - B. If you use adhesive as an alternative to sealant, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the inner surface of the fitting bore then apply a thin film of BMS 5-95 sealant to the mating surface under the bushing flange.

NOTE: If there is primer in the bores, do not remove it.
18. Install the bushings as quickly as possible. Use the bushing installation tool from Boeing kit B0F311T2150 or the equivalent. Hold the bushing flange tightly against the face of lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
19. Line hone through both lugs of the fitting to keep the bushing holes aligned. Hone the inner diameter of the bushings to a diameter of 1.5810 to 1.5822 inches (40.157 to 40.188 mm). Make the surface finish 32 microinches Ra or better. Machine the chamfers again if necessary. See Detail I.
20. Apply a fillet seal of BMS 5-95 sealant between the flange of the bushing and the face of the lug. Apply a bead of BMS 5-95 sealant between the opposite end of the bushing and the inner surface of the lug hole. Refer to SRM 51-20-05.
21. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area.
22. Put the airplane back to its usual condition.

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 54-51-01 FOR PYLON REMOVAL AND INSTALLATION
 - AMM 71-00-02 FOR THE ENGINE REMOVAL AND INSTALLATION
 - NDT PART 6, 51-00-12 FOR HIGH-FREQUENCY EDDY-CURRENT INSPECTION PROCEDURES
 - SOPM 20-10-02 FOR THE MACHINING OF ALLOY STEEL AND FOR SURFACE TEMPER ETCH INSPECTION
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-42-02 FOR CADMIUM-TITANIUM ALLOY PLATING
 - SOPM 20-42-05 FOR CADMIUM PLATING
 - SOPM 20-42-10 FOR STYLUS CADMIUM PLATING
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

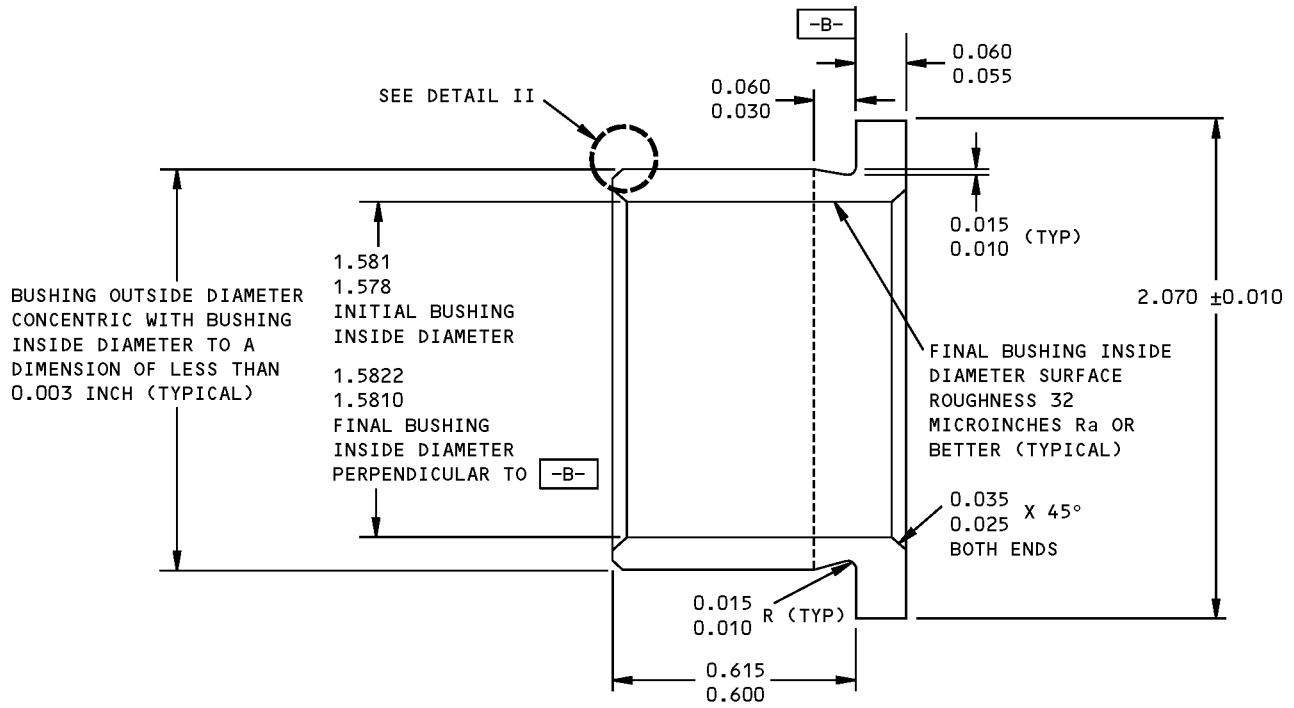
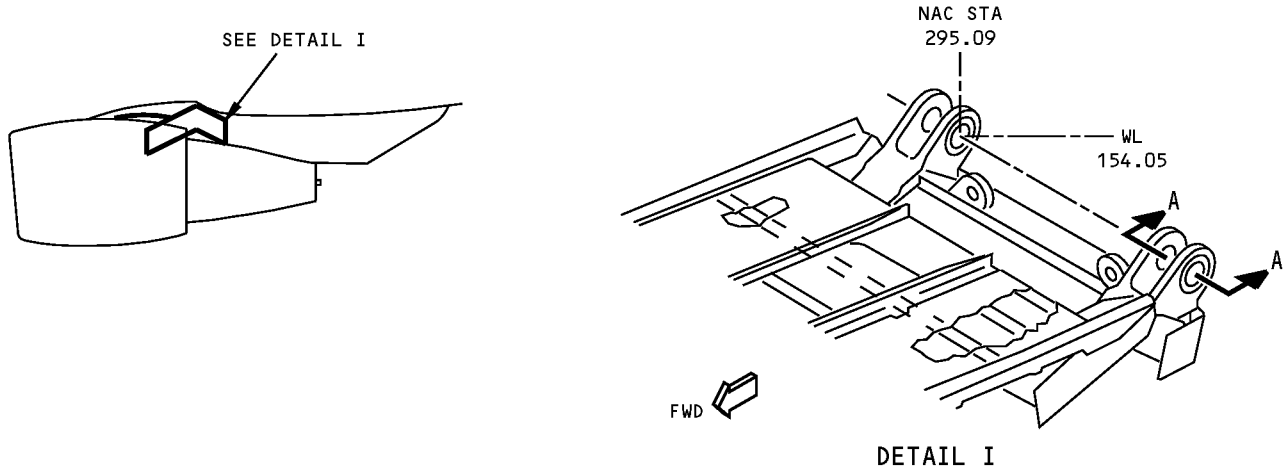
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED BUSHING	AS REQUIRED	2.25 INCHES DIAMETER BY 1.00 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640

TABLE I

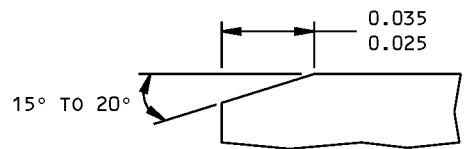
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**Midspar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**FLANGED BUSHING
(TYPICAL)
SECTION A-A**



**FLANGED BUSHING
OUTSIDE DIAMETER CHAMFER
DETAIL II**

**Midspar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - LOWER SPAR FITTING - LUG HOLE REPAIR WITH INTERFERENCE FIT BUSHING PROCEDURE - CF6-80A ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE LOWER SPAR FITTING ON THE CF6-80A ENGINE. B

REPAIR INSTRUCTIONS

1. Remove the strut diagonal brace and get access to the lower spar fitting. Refer to AMM 54-51-02/401.
 2. Remove the two bushings from the fitting lug, and discard them. Use the bushing removal tool in the Boeing tool kit BOF767LS311T4185, or the equivalent.

As an alternative, split bushing removal tool, Boeing tool number B54016-1, can be used.
 3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01.
 4. If damage was not found with the inspections, and the age of the airplane is less than or equal to 15 years, then go to step 11.
 5. Install the right angle boring tool that is included in the Boeing tool kit, or the equivalent.
- CAUTION:** MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER IS MORE THAN THE MAXIMUM PERMITTED.
6. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Continue to machine the hole and to do the inspections until damage cannot be found. Then machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.3109 inches after the hole has been machined, then get alternative repair instructions from Boeing.
 7. Machine a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
 8. Remove the boring tool.
 9. Hone the hole to remove machine tears and burrs. Break sharp edges on the chamfer.

10. Peen the hole. Do not use peening equipment that has shot made of ferrous material. Flap peen wheels are available with tungsten carbide balls. Refer to SOPM 20-10-03. Use shot size 170-330, intensity 0.014A, and coverage 2.0.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole. Use the manual decontamination and repassivation process as specified in BAC5625, Surface Treatments for Ferrous Alloys. As an alternative, abrade the hole with aluminum oxide paper, 150 grit or finer. Do not use silicon carbide paper. Solvent clean the hole to make sure that all grit is removed.

11. Hone the hole to make the hole surface finish 32 microinches R_a or smoother. A maximum of 0.003 inch material can be removed from the hole diameter (0.0015 inch depth of hone) to get the necessary surface finish. The hole to be circular to a dimension of 0.0003 inch or less. The maximum hole diameter is given in step 6.
12. Make the repair "no hone" bushings from Q15T0779-8 or see Table I and Detail I. Make the outside diameter of each bushing 0.0036 to 0.0042 inch larger than the hole diameter to give an interference fit. Make the outside diameter 32 microinches R_a or smoother. Make the surface finish on the other surfaces 63 microinches R_a or smoother. The outside diameter of each bushing to be circular to a dimension of 0.0003 inch or less.
13. Do a magnetic particle inspection of the bushings to make sure there are no surface defects. Refer to SOPM 20-20-01.
14. Apply one layer of BMS 10-11, Type I primer in the hole and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

15. Prepare the bushings for installation with the shrink method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tool plugs in the liquid nitrogen until the boiling stops. Refer to SOPM 20-50-03. Get the installation tool plugs from the Boeing tool kit, or the equivalent.

**Lower Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the surfaces of the lug which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the installation tool assembly from the Boeing tool kit, or the equivalent. Hold the bushing flanges tightly against the lug until the bushings are at room temperature. A press fit can be used to complete the shrink fit installation of the bushings.
18. It is necessary to do a local hone to the inside diameter of the split bushings if the bushings are not aligned to a dimension of 0.0015 inch or less. Hone a small amount from the inside diameter of the bushings until the bushings are aligned to a dimension of 0.0015 inch or less. Make the surface finish 32 microinches R_a or smoother. Machine the outer chamfers again if necessary.
19. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the lug faces. Apply BMS 5-95 sealant to the clearance between the bushings on the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- ALL DIMENSIONS ARE IN INCHES.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0061.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-02 FOR REMOVAL OF THE DIAGONAL BRACE
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-05 FOR REPAIR SEALING.
- [A]** REFER TO SB 767-54-0061 FOR DATA ON BLANK BUSHING AVAILABILITY.
- [B]** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.
- [C]** ADDITIONAL HONING IS REQUIRED ONLY IF THE FINAL BUSHING INSIDE DIAMETER IS NOT AT THE SPECIFIED RANGE AFTER INSTALLATION.

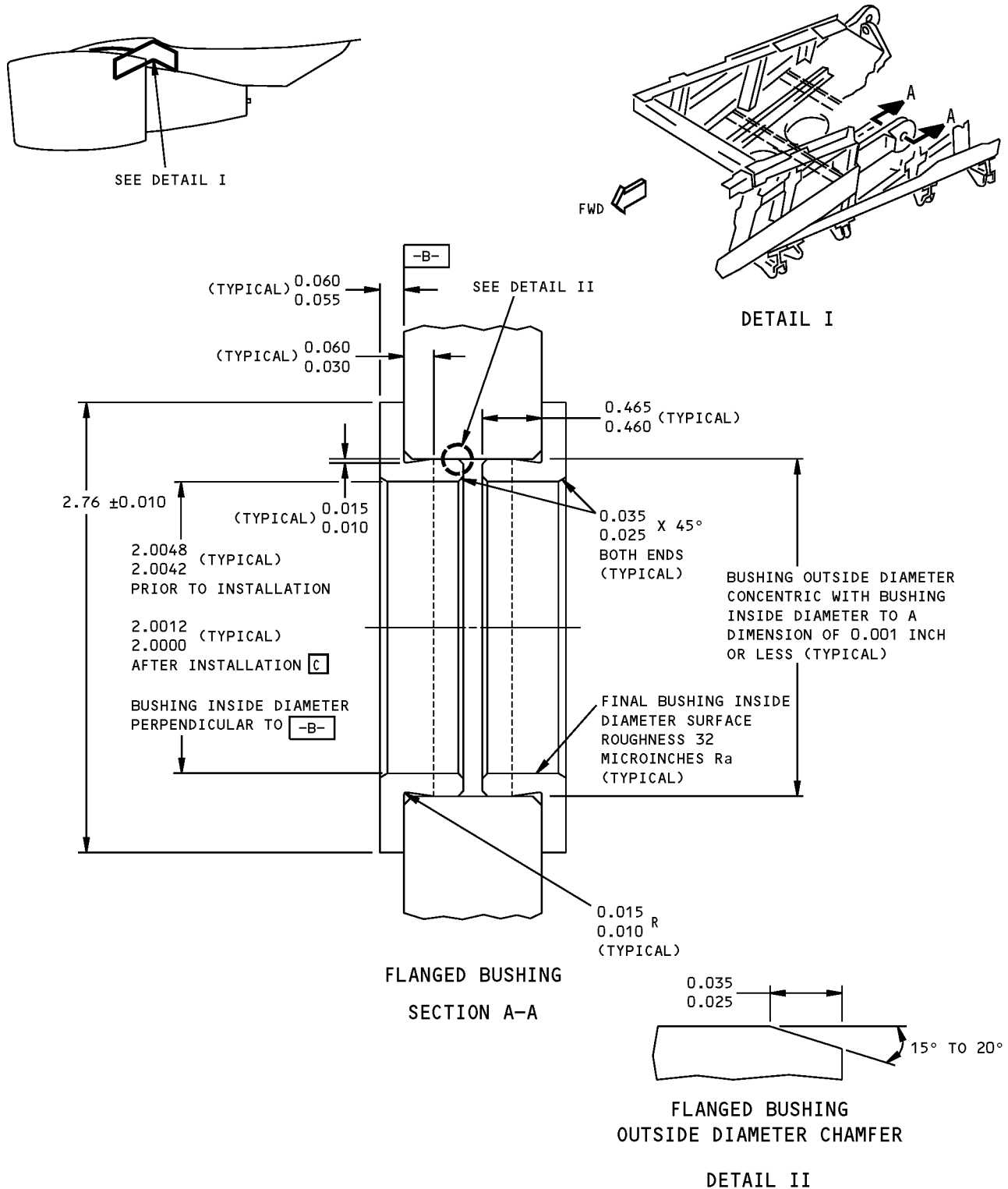
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED "NO-HONE" BUSHING	2	15-5PH CRES SOLUTION TREATED AS SPECIFIED IN AMS 5659, HT TR 180-200 KSI AS SPECIFIED IN BAC5619. SEE DETAIL I AND [A]

TABLE I

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**Lower Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 2 of 3)**

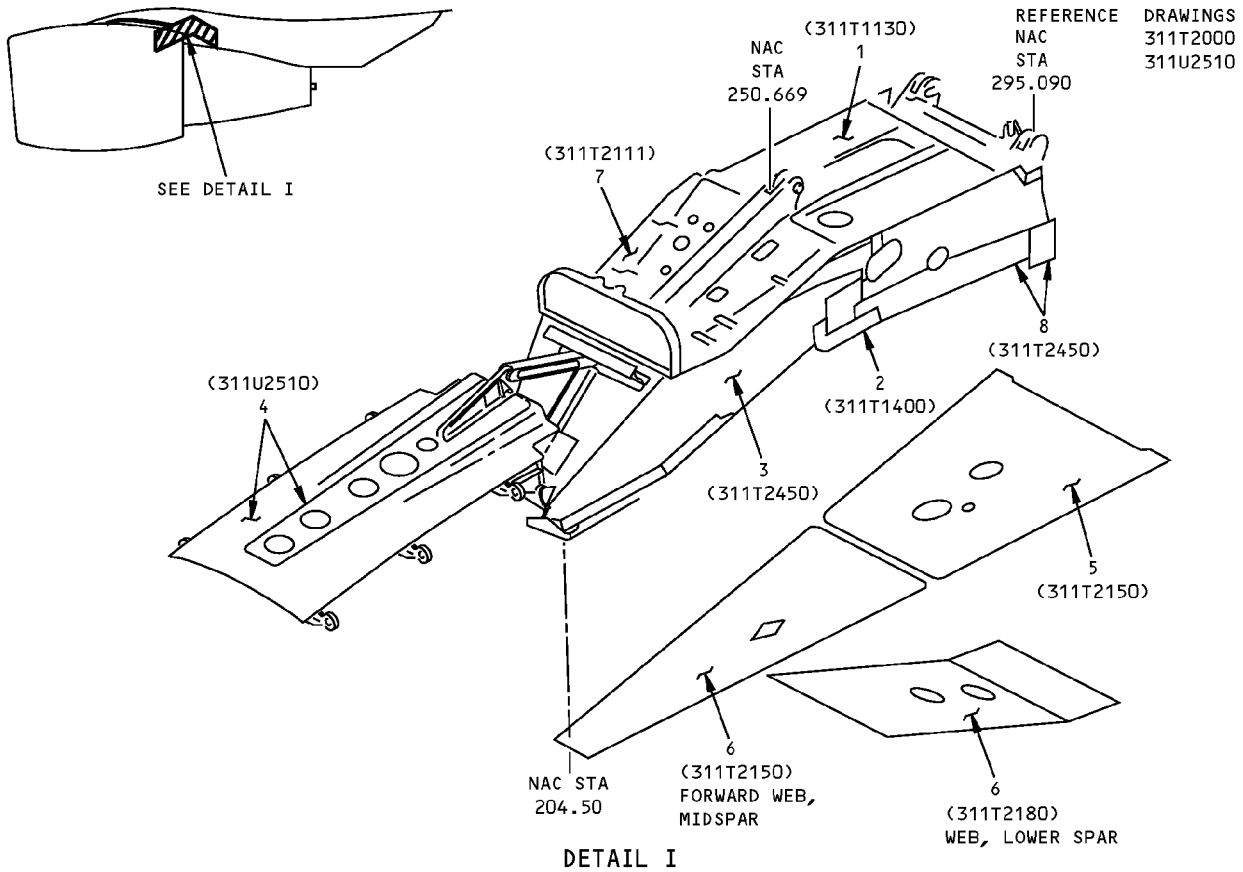
**767-300
STRUCTURAL REPAIR MANUAL**



**Lower Spar Fitting - Lug Hole Repair with Interference Fit Bushing Procedure - CF6-80A Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT SKIN - CF6-80C2 ENGINE



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB, AFT UPR SPAR	0.050	CLAD 2024-T3	A B
		0.063	CLAD 2024-T3	
2	PLATE	0.100	15-5PH CRES, HT TR 180-200 KSI	
3	SKIN + DOUBLER	0.080	CLAD 2024-T3	
		0.080	CLAD 2024-T3 (CHEM-MILLED TO 0.040 MIN)	
4	SKIN + DOUBLER	0.063	CLAD 2024-T3	
		0.063	CLAD 2024-T3	
5	AFT WEB, MIDSPAR	0.100	2024-T3 (CHEM-MILLED TO 0.050 MIN)	
6	WEB	0.100	15-5PH CRES, HT TR 180-200 KSI	
7	WEB, FWD UPR SPAR	0.224	2024-T3	
8	CORE COWL SKIRT + DOUBLER	0.050	CLAD 2024-T3	
		0.032	CLAD 2024-T3	

NOTES

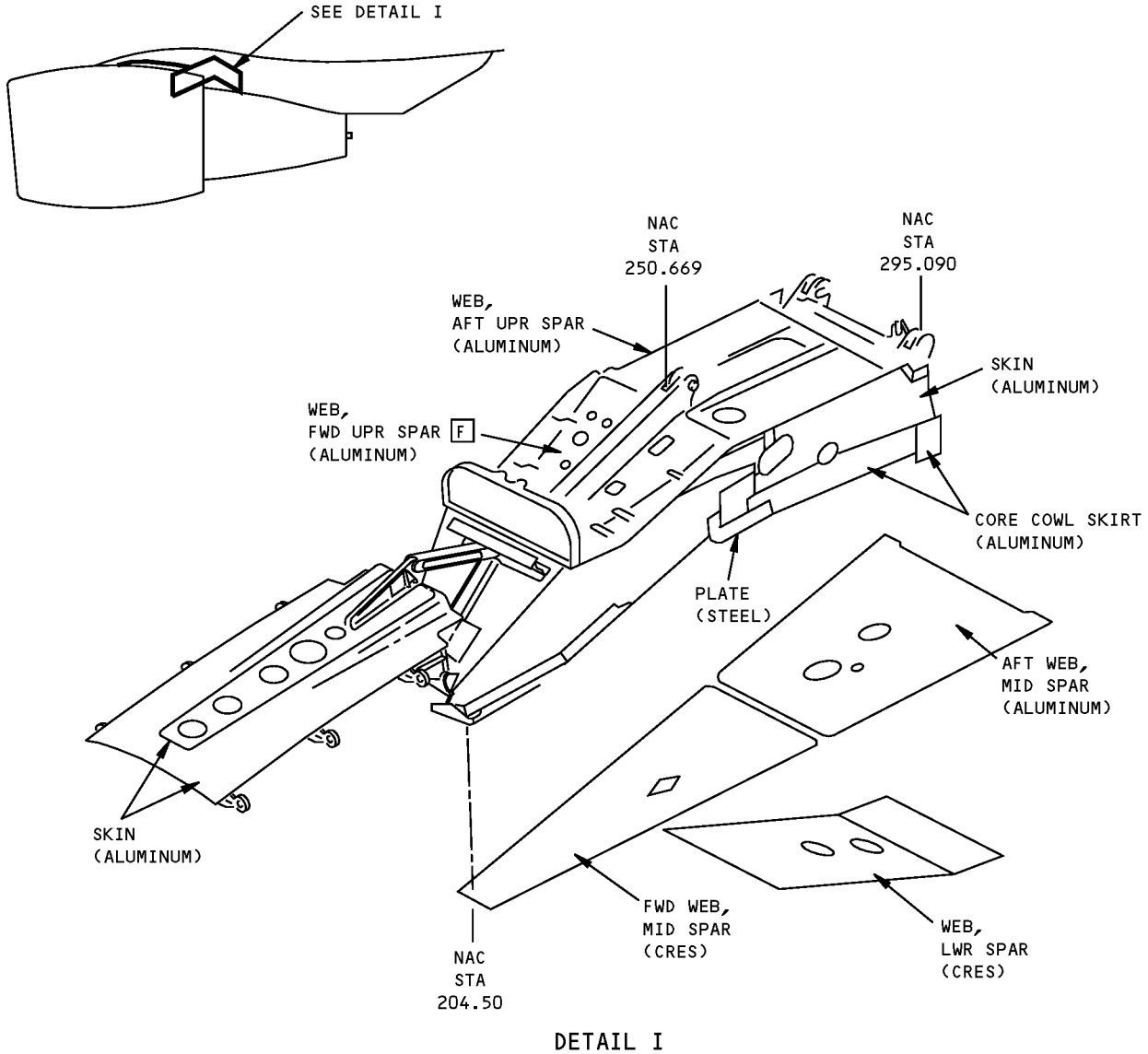
- A** FOR AIRPLANES WITH CUM LINE NUMBERS 158 THRU 637 WITHOUT SB 767-54-0089 INCORPORATION.
- B** FOR AIRPLANES WITH CUM LINE NUMBERS 638 AND ON, AND AIRPLANES WITH SB 767-54-0089 INCORPORATED.

LIST OF MATERIALS

**Strut Skin Identification - CF6-80C2 Engine
Figure 1**

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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT SKIN - CF6-80C2 ENGINE



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
WEBS	A	B	SEE DETAIL V	D E ALUMINUM CRES
PLATE	C	B	SEE DETAIL V	D
SKINS	C	B G	SEE DETAIL V	D

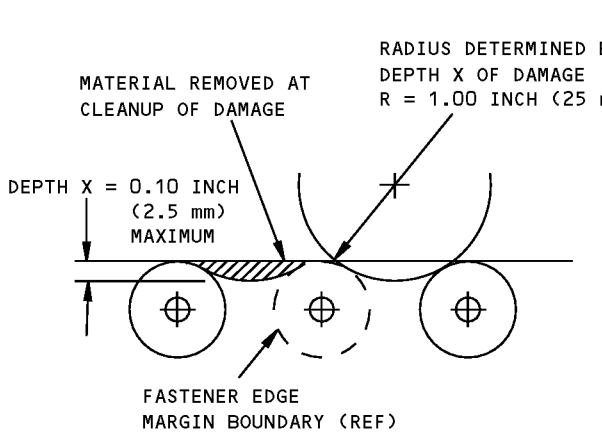
**Strut Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL

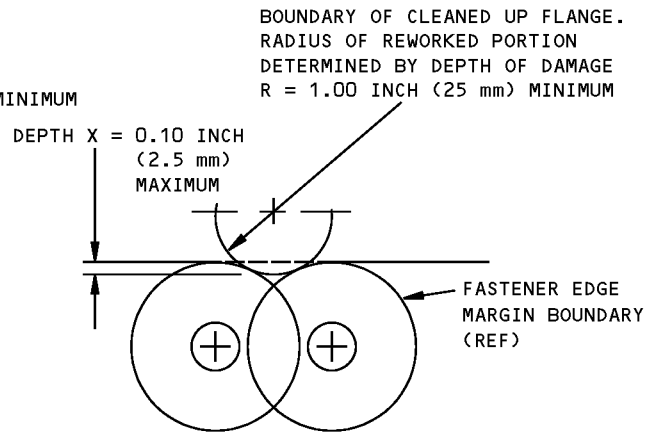
NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI. SEE DETAIL I FOR APPLICABLE SHOT PEEN REQUIREMENTS.
- B** REMOVE DAMAGE AS GIVEN IN DETAILS II, III, AND IV.
- C** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS II AND VI.

- D** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAXIMUM DIAMETER AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET IN- STALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED.
- E** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAXIMUM DIAMETER AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED.
- F** SHOT PEEN REWORKED AREA AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK.
- G** TO PREVENT MORE DAMAGE CAUSED BY RUBBING FROM THE FAN COWL SUPPORT BEAM AT STA 148.50, REFER TO THE REPAIR SECTION OF THE SRM 54-52-71.



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

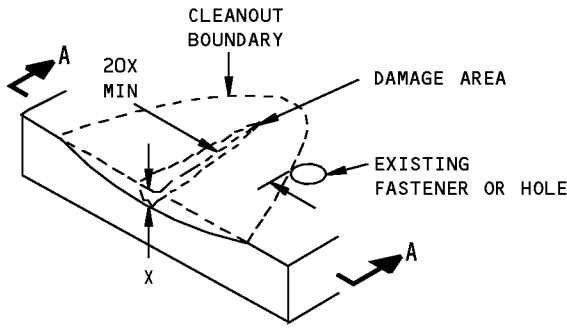


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

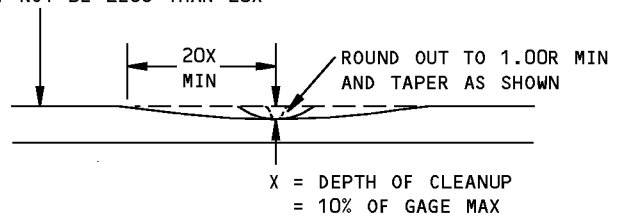
DETAIL II

Strut Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 3)

**767-300
STRUCTURAL REPAIR MANUAL**

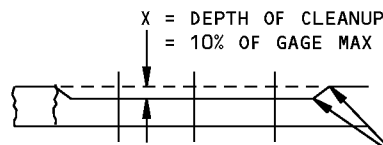
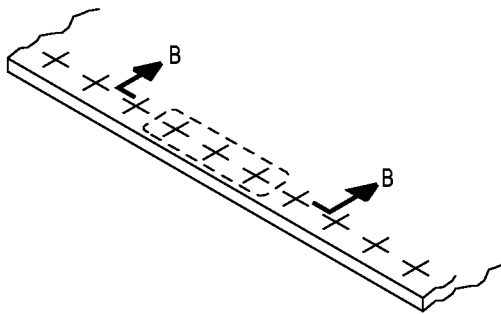


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X



SECTION A-A

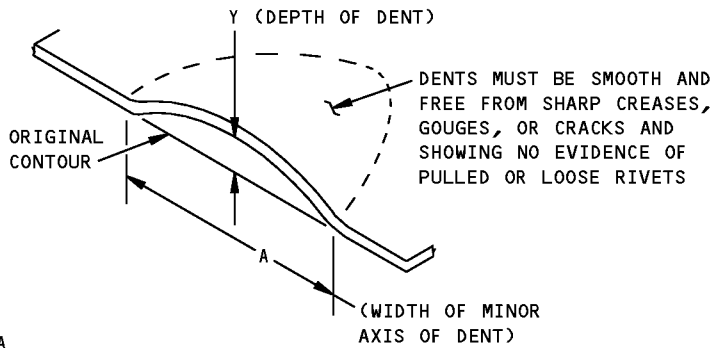
DETAIL III



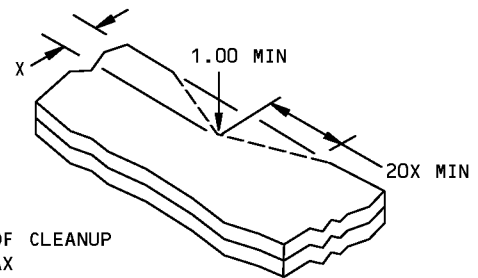
SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL IV**



**ALLOWABLE DAMAGE FOR DENT
DETAIL V**



**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VI**

**Strut Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 3)**



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STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT SKIN - CF6-80C2 ENGINE

REPAIR INSTRUCTIONS

1. Clean out damaged area to 1-inch max diameter circle.
2. Fabricate repair part 1.
3. Assemble repair part 1 and drill fastener holes.
4. Remove repair part 1.
5. Break sharp edges of original and repair part 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of original part.
8. Apply one coat of BMS 10-11, type 1 primer to all of part 1 in accordance with 51-21 of the 767 Maintenance Manual.
9. Install repair part 1 making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
10. Restore finish.

SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

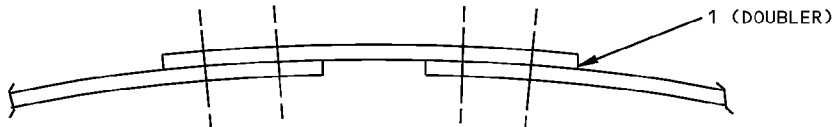
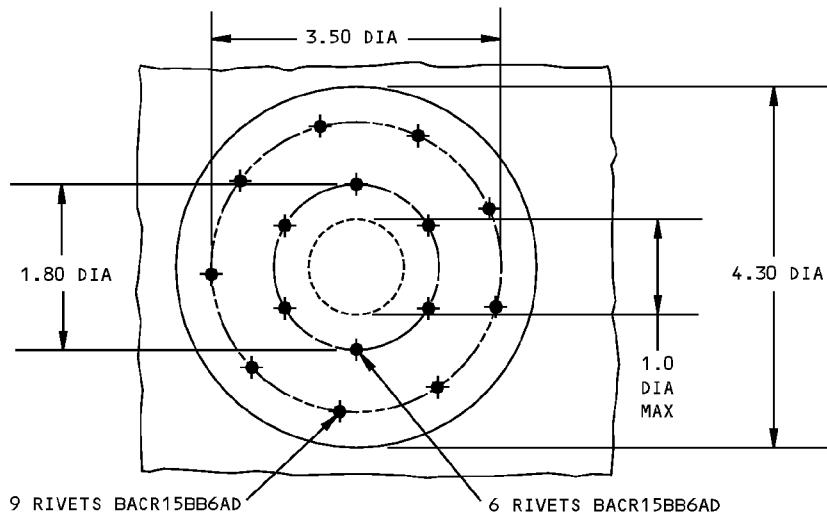
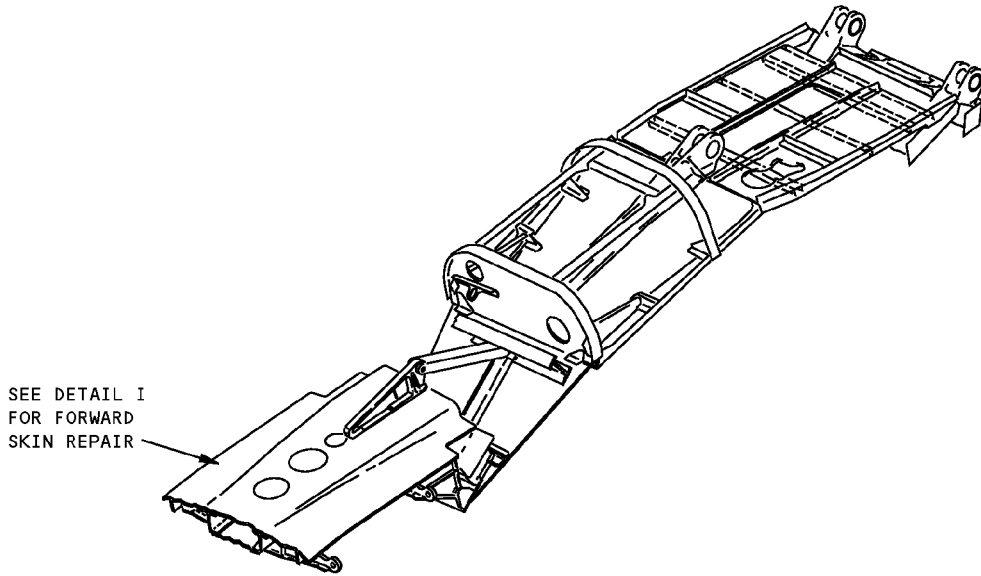
**Strut Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

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REPAIR 1
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STRUCTURAL REPAIR MANUAL**



**SMALL HOLE OR CRACK REPAIR
DETAIL I**

**Strut Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL

REPAIR 2 - STRUT SIDE SKIN PANEL - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO THE STRUT SIDE SKIN PANELS BETWEEN NAC STA 204.50 TO NAC STA 298.93 THAT HAVE CHEM-MILLED DOUBLERS FOR A TOTAL PANEL THICKNESS OF 0.12 INCHES.

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
 2. Cut and remove the damaged part of the strut side skin. Maintain a 1.0 inch minimum radius.
 3. Make the repair part. See Table I.
 4. Assemble the repair part and drill the fastener holes.
- CAUTION:** WHEN ESTABLISHING ADDITIONAL FASTENER POSITIONS, ENSURE THAT EDGE MARGINS ARE MAINTAINED ON THE INTERNAL DOUBLER.
5. Disassemble the repair part.
 6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair part and the strut side skin.
 7. Install countersink repair washers in existing countersinks in the skin according to SRM 51-40-08.
 8. Apply a chemical conversion coating to the repair part and to the bare surfaces of the strut side skin. Refer to SRM 51-20-01.
 9. Apply one coat of BMS 10-11 type I primer to the repair part and to the bare surfaces of the strut side skin. Refer to AMM 51-21.
 10. Install the repair part with BMS 5-63 sealant between the mating surfaces.
 11. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-63 sealant.
 12. Restore the initial finishes according to AMM 51-21.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31-00 FOR SEALS AND SEALING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.

FASTENER SYMBOLS

- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER FASTENER AS THE INITIAL FASTENER.
- ⦿ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() WITH A BACC30M6 COLLAR.
- |- REFERENCE FASTENER LOCATION.

REPAIR MATERIAL

PART		QTY	MATERIAL
1	PLATE	1	0.125 CLAD 2024-T3

TABLE I

1703700 S0000310641_V1

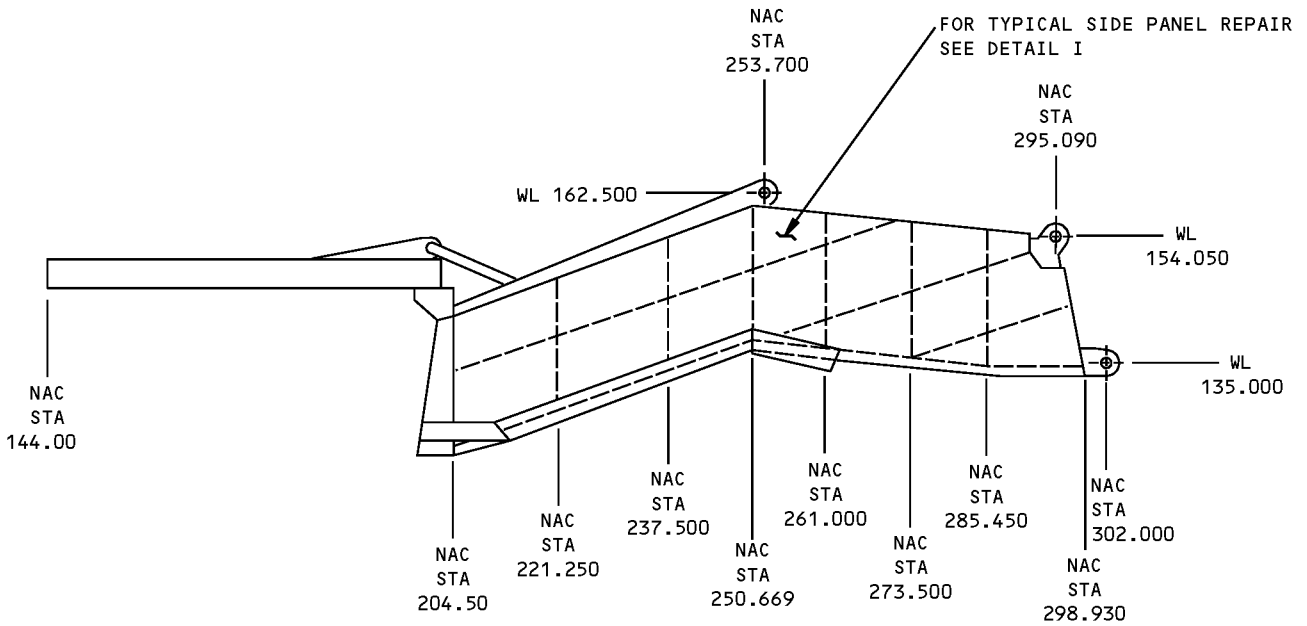
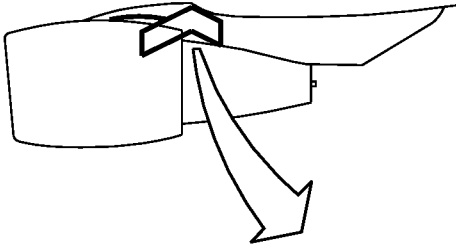
Strut Side Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)

D634T210

54-52-01

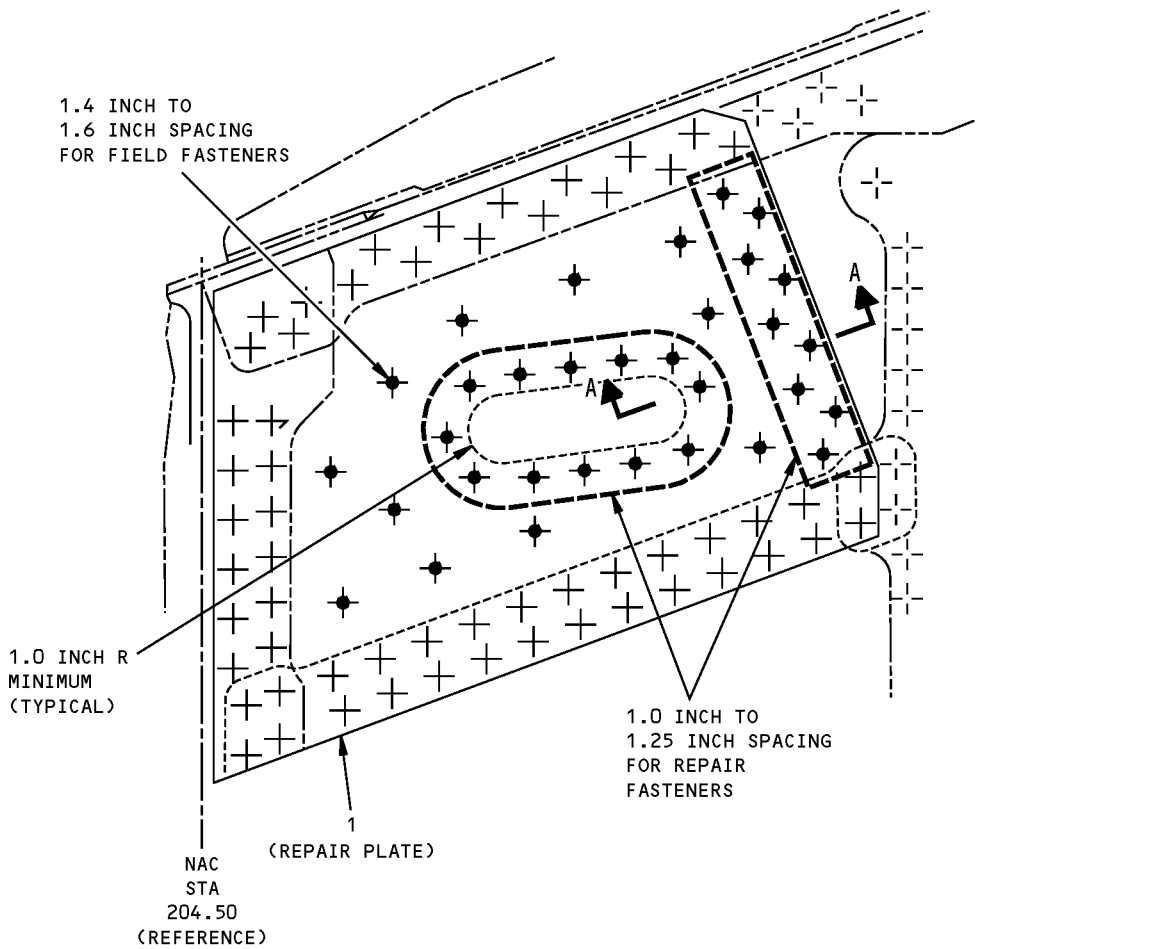
REPAIR 2
Page 201
Apr 15/2009

**767-300
STRUCTURAL REPAIR MANUAL**

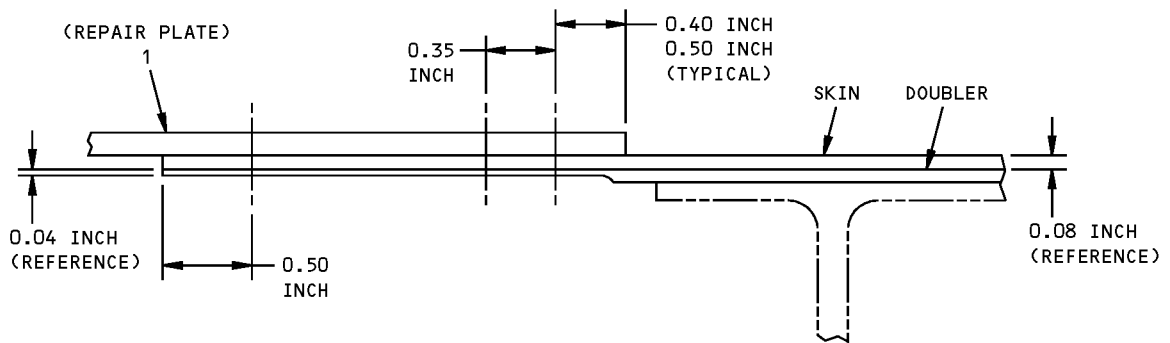


**Strut Side Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



SECTION A-A

**Strut Side Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT, AFT UPPER SPAR WEB - ADJACENT TO THE THERMAL ANTI-ICE DUCT - CF6-80C2 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THE CRACKS MUST BE FULLY INSIDE THE AREA ADJACENT TO THE THERMAL ANTI-ICE DUCT CUTOUT AND ON THE DUCT SIDE OF THE NEAREST STIFFENER AND SPAR CHORD EDGES. SEE DETAIL II.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR INSTRUCTIONS

1. Open the strut access doors. Refer to AMM 54-53-01.
2. Remove the access panels on the wing leading edge that are above the engine strut. Refer to AMM 06-44-00.
3. Remove the thermal anti-ice (TAI) duct that is installed through the web cutout.
4. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
5. Cut and remove the damaged part of the web.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the web.
7. Do the step 4 inspection again to make sure that all of the cracked web was removed.
8. Apply a chemical conversion coating to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
11. Put the airplane back in its usual condition and do a test for leaks at the TAI duct joints. Refer to AMM 71-00-00.

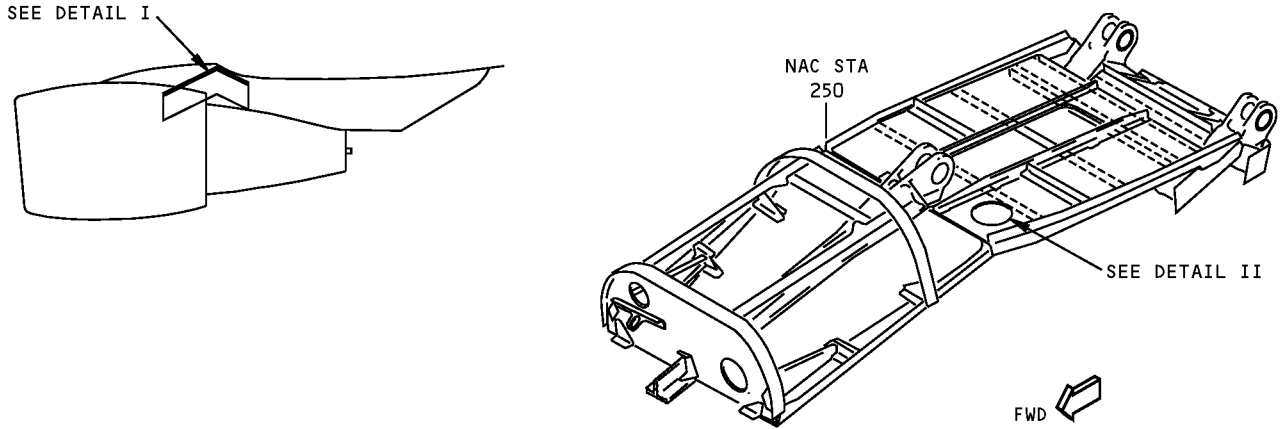
FASTENER SYMBOLS

 REFERENCE FASTENER LOCATION.

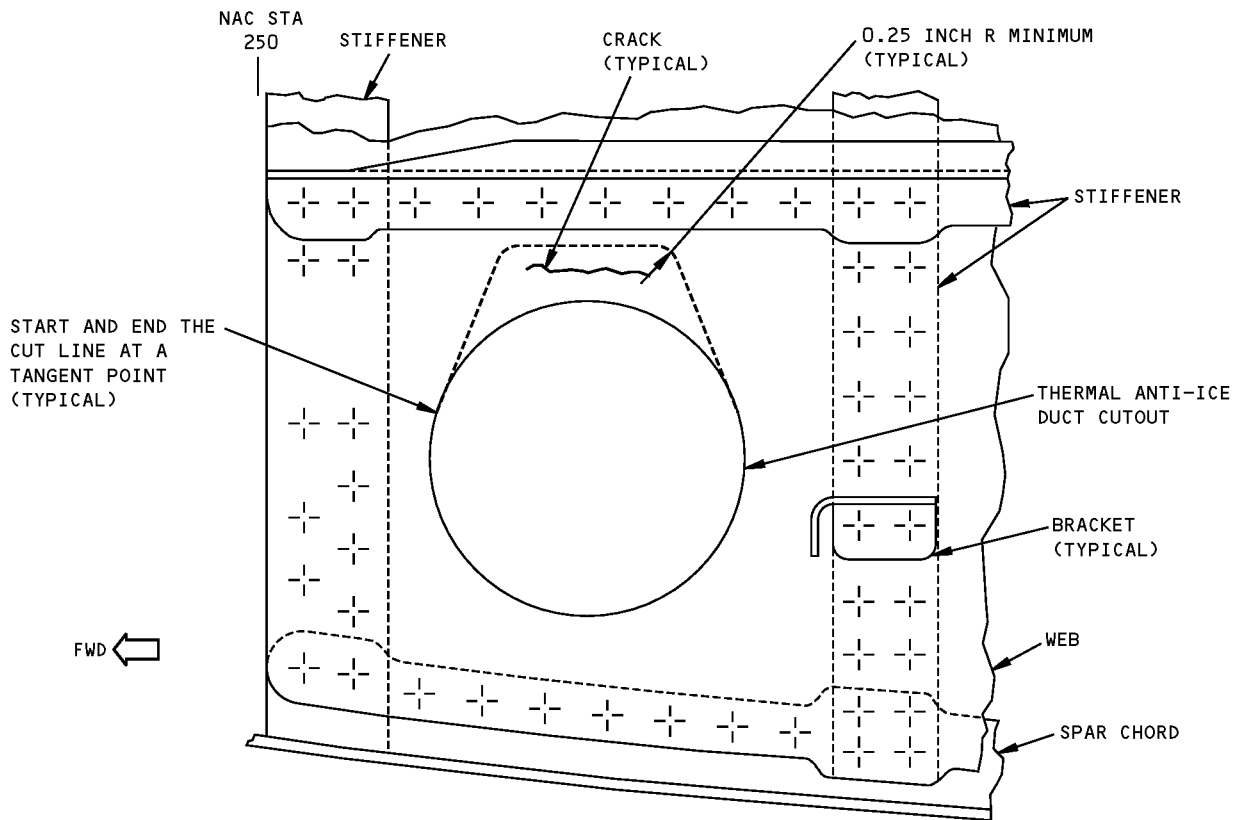
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**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



DETAIL II

**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT, AFT UPPER SPAR WEB - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THIS REPAIR CAN BE USED AT LOCATIONS FORWARD OR AFT OF THAT GIVEN IN DETAIL II. ALSO, IT CAN BE USED ON THE RIGHT OR LEFT SIDE OF THE SPAR WEB. DO NOT USE THIS REPAIR IN THE AREAS THAT ARE SPECIFIED IN REPAIR 3.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-03. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Open the strut access doors. Refer to AMM 54-53-01.
3. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
4. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-03.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
8. Cut and remove the damaged part of the web.
9. Make the repair parts. See Table I and Detail II. Make the part 1 doubler with sufficient dimensions to attach the outer row of fasteners to a stiffener, chord or bulkhead in all directions.

NOTE: Save the fillers that are installed at each stiffener joggle under the web, for subsequent use.

10. Assemble the repair parts and drill the fastener holes.
 11. Disassemble the repair parts.
 12. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
 13. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
 14. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
 15. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
 16. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
- NOTE:** If the repair is done at a location different than the Detail II location, then replace initial fasteners with oversize fasteners of the same type.
17. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
 18. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Aft Upper Spar Web Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS

A MAKE A NEW BRACKET THE SAME AS THE INITIAL BRACKET EXCEPT DRILL NEW FASTENER HOLES THAT ARE 0.050 INCH (1.3 mm) LOWER (DOUBLER THICKNESS) TO ALIGN WITH THE MATING FAIRING INSTALLATION.

THIS BRACKET IS ONLY INSTALLED ON THE OUTBOARD SIDE OF THE STRUT.

FASTENER SYMBOLS

- |- REFERENCE FASTENER LOCATION
- + REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT7KE()C RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH CRES, HT TR 180-200 KSI
2	FILLER	1	0.050 INCH, 2024-T3 OR 7075-T6
3	TAPERED FILLER	2	0.050 INCH TO 0.010 INCH, 2024-T3 OR 7075-T6
4	FAIRING SUPPORT BRACKET	1	CLAD 2024-T3 OR -T42 A

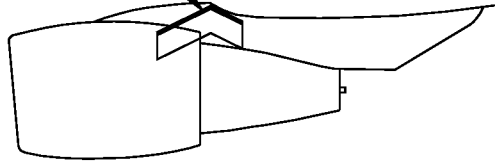
TABLE I

1703688 S0000310693_V1

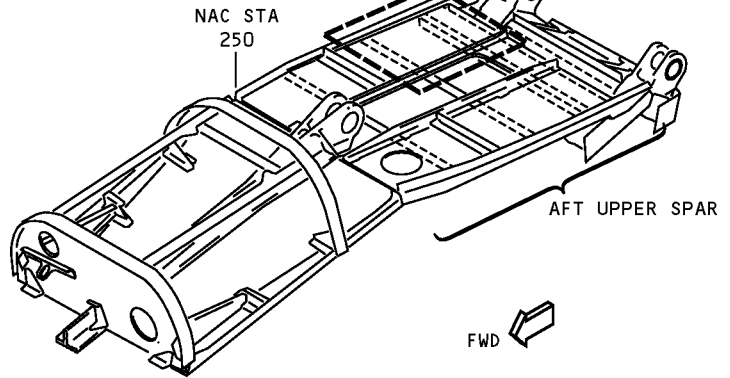
**Strut, Aft Upper Spar Web Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**

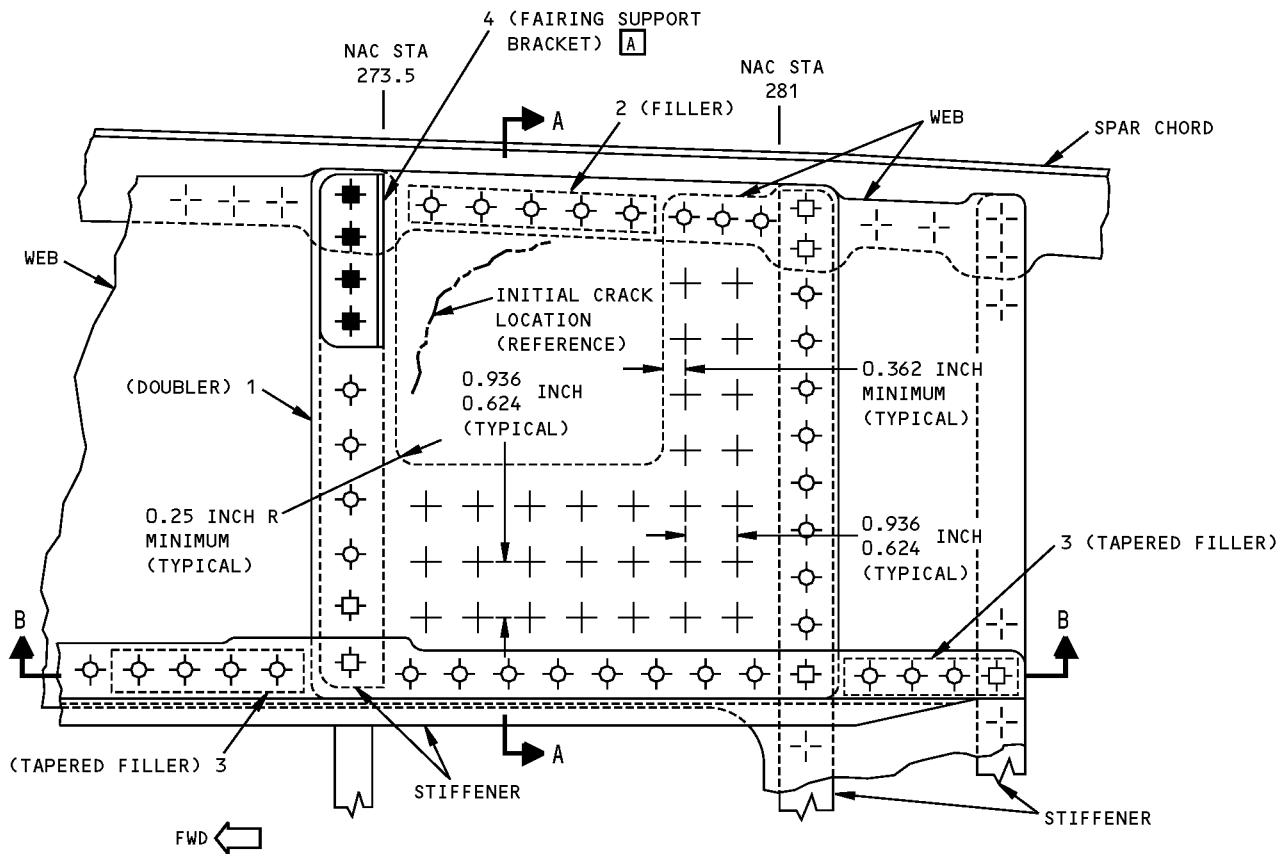
SEE DETAIL I



SEE DETAIL II



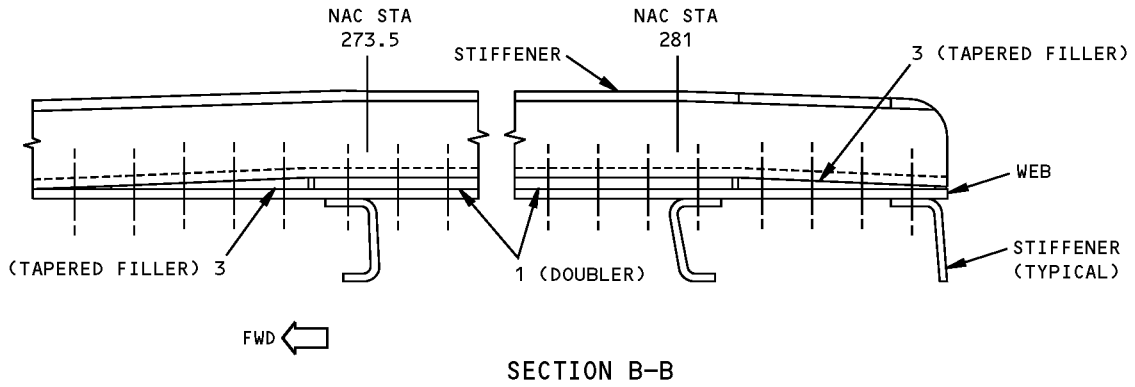
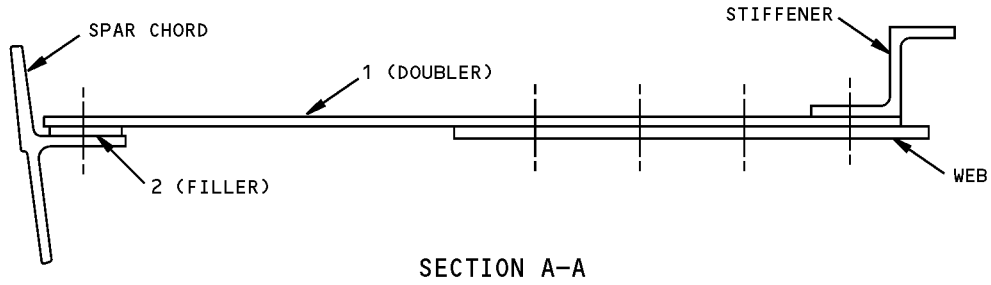
DETAIL I



DETAIL II

**Strut, Aft Upper Spar Web Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**

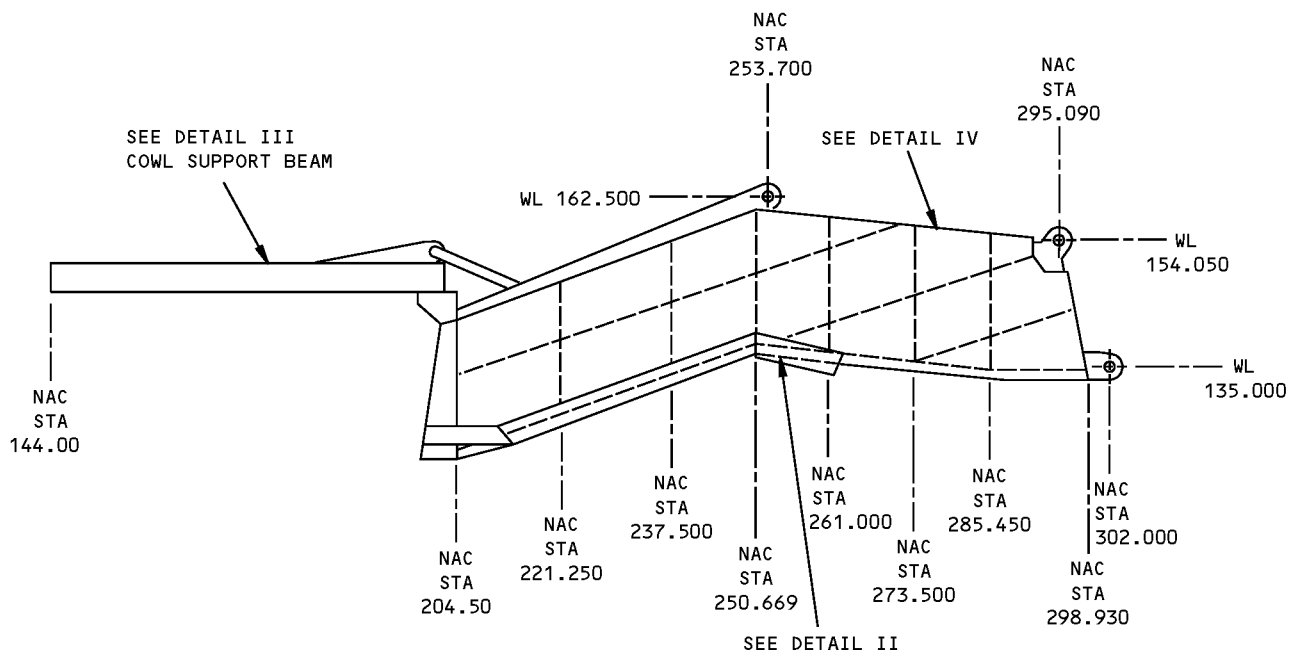
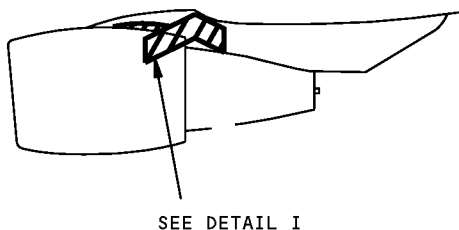


**Strut, Aft Upper Spar Web Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT STRUCTURE - CF6-80C2 ENGINE

REFERENCE DRAWING
311U2510
311T2000



DETAIL I

NOTES

- REFER TO SRM 54-52-90 FOR THE IDENTIFICATION OF ATTACHMENT FITTINGS AND LINKS.
- A** FOR AIRPLANES WITH CF6-80C2 ENGINES UP TO CUM LINE NUMBER 190.
- B** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER 197 AND ON.
- C** FOR AIRPLANES WITH CF6-80C ENGINES CUM LINE 2 THROUGH 633 WITHOUT SB 767-54-0081 INCORPORATED.
- D** FOR AIRPLANES WITH CF6-80C ENGINES CUM LINE 665 AND ON, AND FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED.
- E** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER 637 AND ON.

**Strut Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 5)**

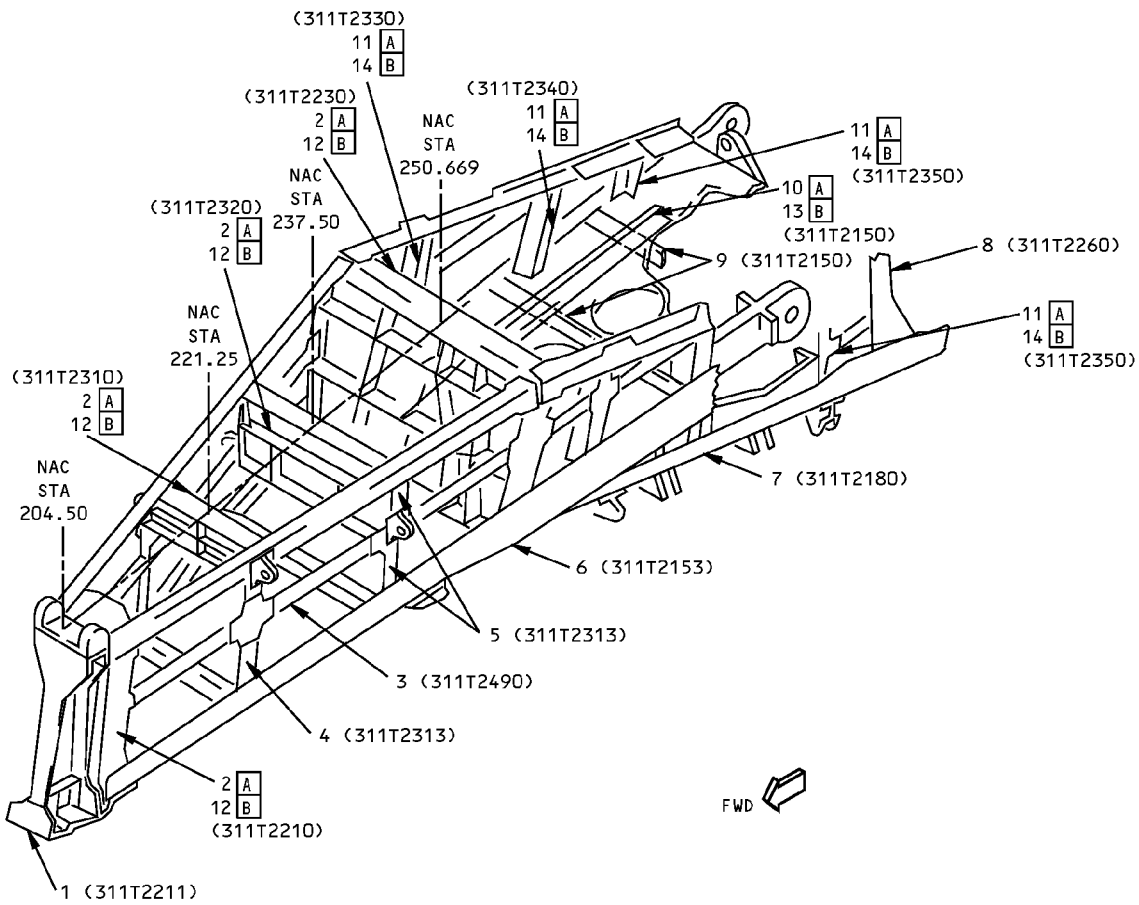
IDENTIFICATION 1
Page 1
Apr 15/2006

54-52-02

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STRUCTURAL REPAIR MANUAL**

REF DWG
311T2000



DETAIL II

LIST OF
MATL

**Strut Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 5)**

IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD ENGINE MOUNT		FORGING 15-5PH CRES, HT TR 180 KSI MIN.	
2	BULKHEAD		FORGING 7075-T73	A
3	STIFFENER		BAC1506-3339 7075-T73	
4	STIFFENER		FORGING 7075-T73	
5	STIFFENER		BAC1506-3173 7075-T73	
6	MIDSPAR CHORD		BAC1527-59, 15-5PH CRES HT TR 180-260 KSI	
7	LOWER SPAR CHORD	0.160	15-5PH CRES, HT TR 180-200 KSI OPTIONAL: 15-5PH CRES HT TR 180-200 KSI CHEM MILLED TO 0.160	
8	BULKHEAD (AFT ENGINE MOUNT)		FORGING 2219-T852	
9	STIFFENER	0.112	2119-T62	
10	STIFFENER		AND10139-1205 7075-T6	A
11	FRAME	0.080	7075-T6	A
12	BULKHEAD		FORGING 2219-T6	B
13	STIFFENER		AND10139-1205 2024-T62	B
14	FRAME	0.080	7075-T6	B

LIST OF MATERIALS FOR DETAIL II

**Strut Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 5)**

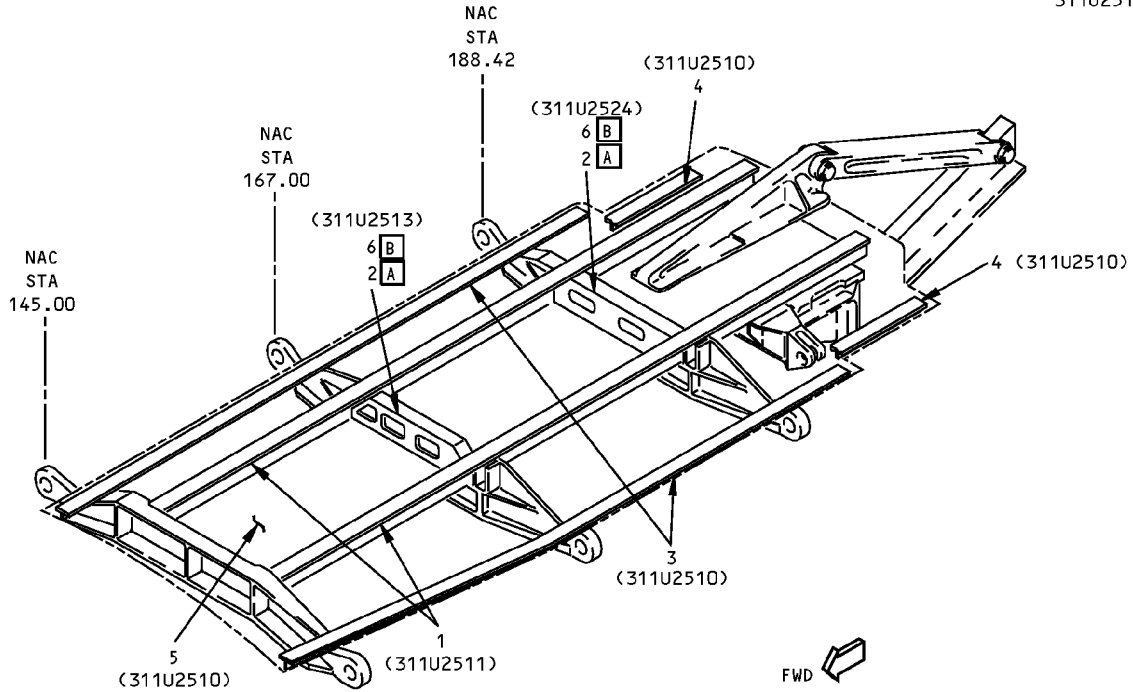
IDENTIFICATION 1
Page 3
Dec 15/2007

54-52-02

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STRUCTURAL REPAIR MANUAL**

REF DWG
311U2510



DETAIL III

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		FORGING 7075-T73	
2	BULKHEAD		FORGING 7075-T73	A
3	LONGERON		BAC1506-3582 7075-T73	
4	ANGLE	0.080	CLAD 2024-T42	
5	LOWER SKIN	0.071	CLAD 2024-T42	
6	BULKHEAD		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL III

**Strut Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 5)**

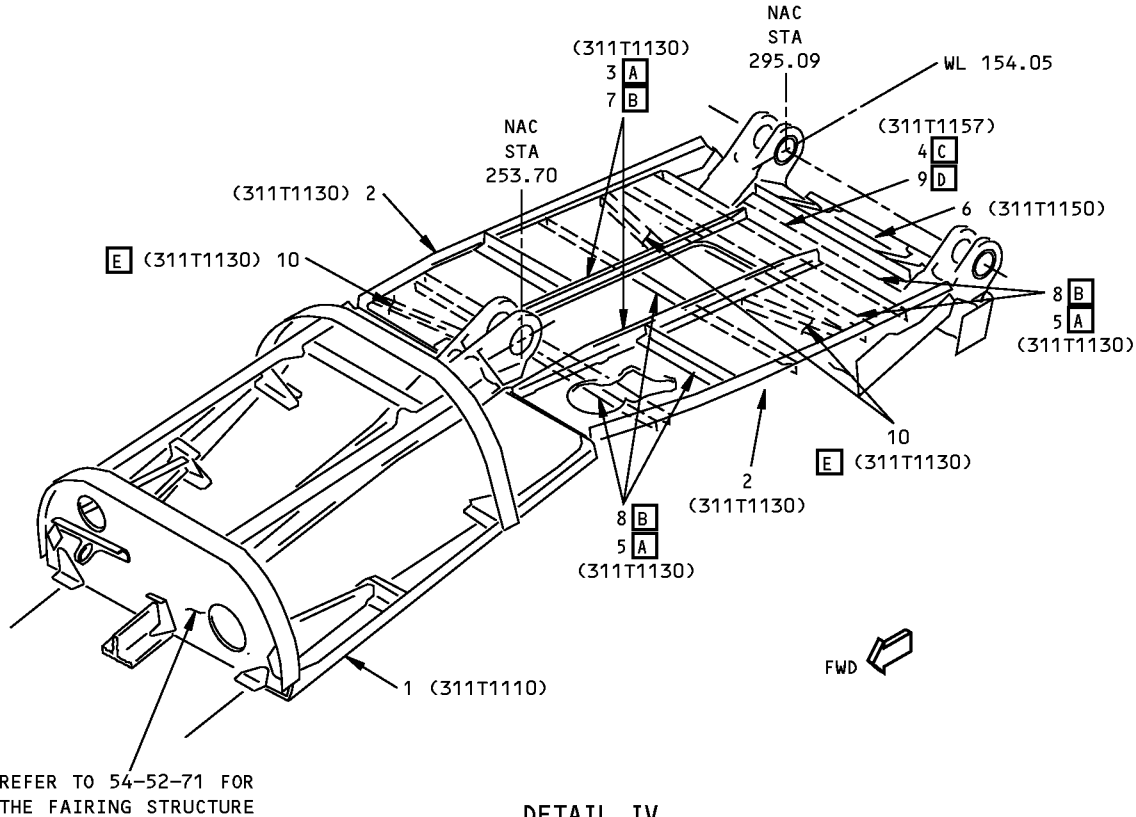
IDENTIFICATION 1
Page 4
Apr 15/2006

54-52-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T1130
311T2110
311T2150



DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1506-3120 7075-T73	
2	CHORD		BAC1506-3278 7075-T731	
3	STIFFENER		AND10139-1106 7075-T73511	A
4	CLOSEOUT ANGLE		BAC1514-2595 7075-T73511 OPT: BAC1506-3181 7075-T73	C
5	STIFFENER	0.080	CLAD 7075-T62	A
6	CLOSEOUT WEB	0.071	CLAD 7075-T62	
7	STIFFENER		AND10139-1106 2024-T8511	B
8	STIFFENER	0.080	CLAD 2024-T62	B
9	CLOSEOUT ANGLE		7075-T73511 EXTRUDED BAR	D
10	STIFFENER	.063	CLAD 2024-T42	E

LIST OF MATERIALS FOR DETAIL IV

**Strut Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 5)**

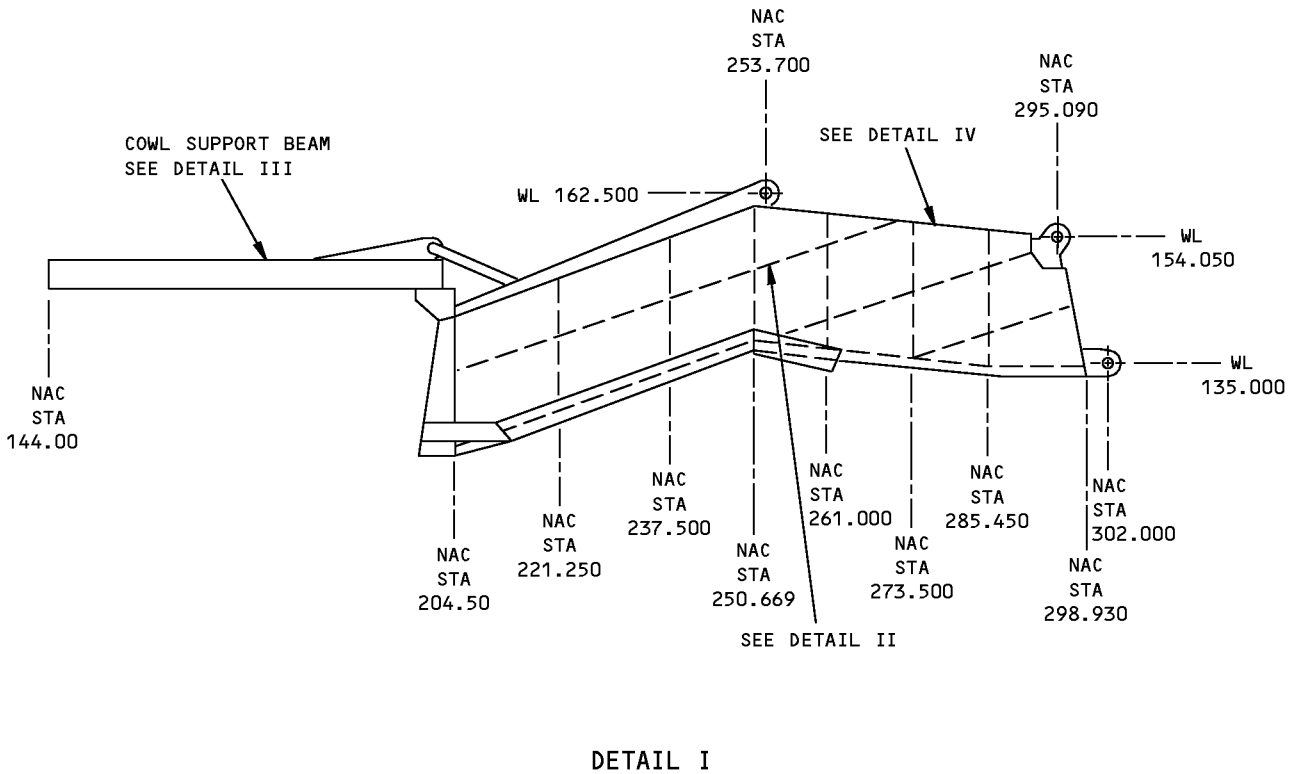
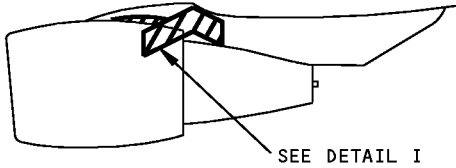
IDENTIFICATION 1
Page 5
Dec 15/2007

54-52-02

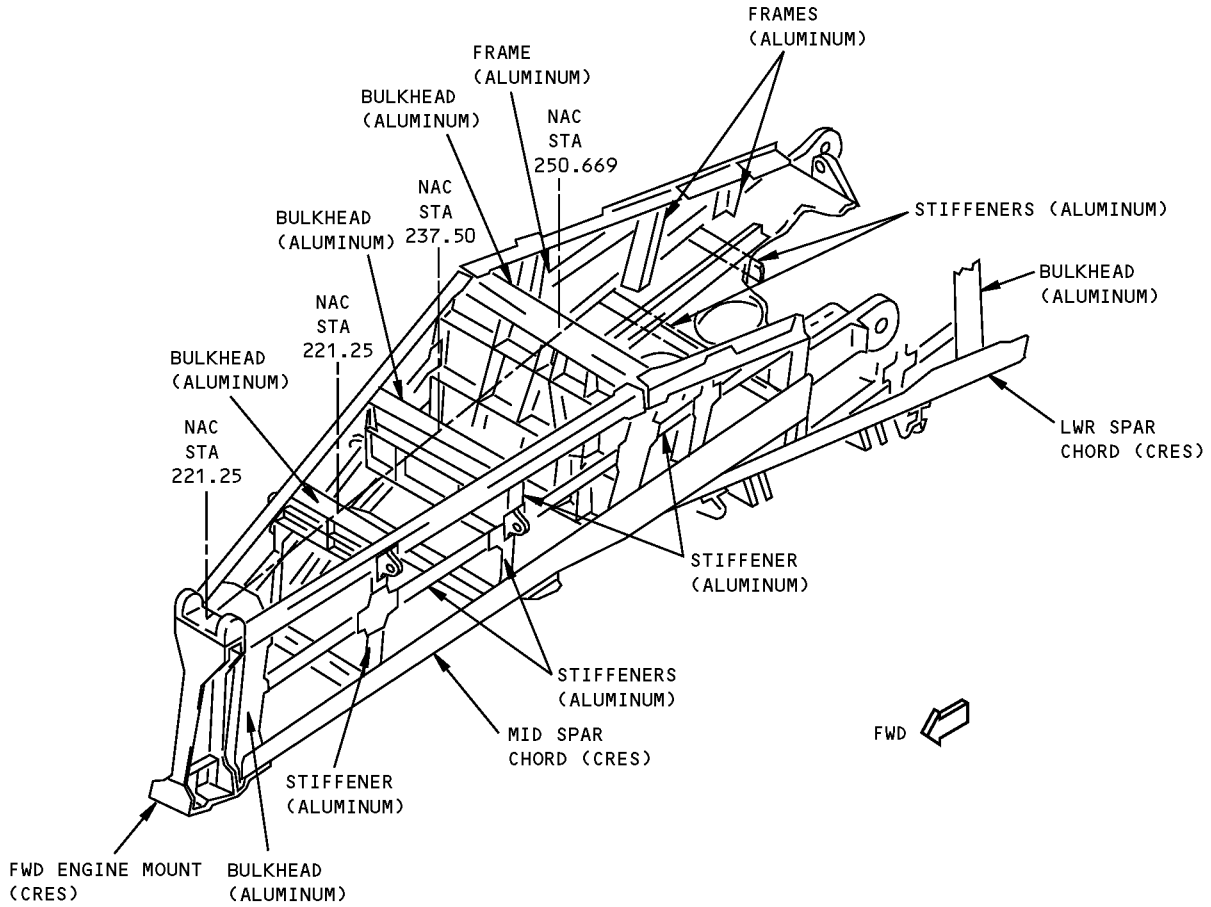
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT STRUCTURE - CF6-80C2 ENGINE



**767-300
STRUCTURAL REPAIR MANUAL**



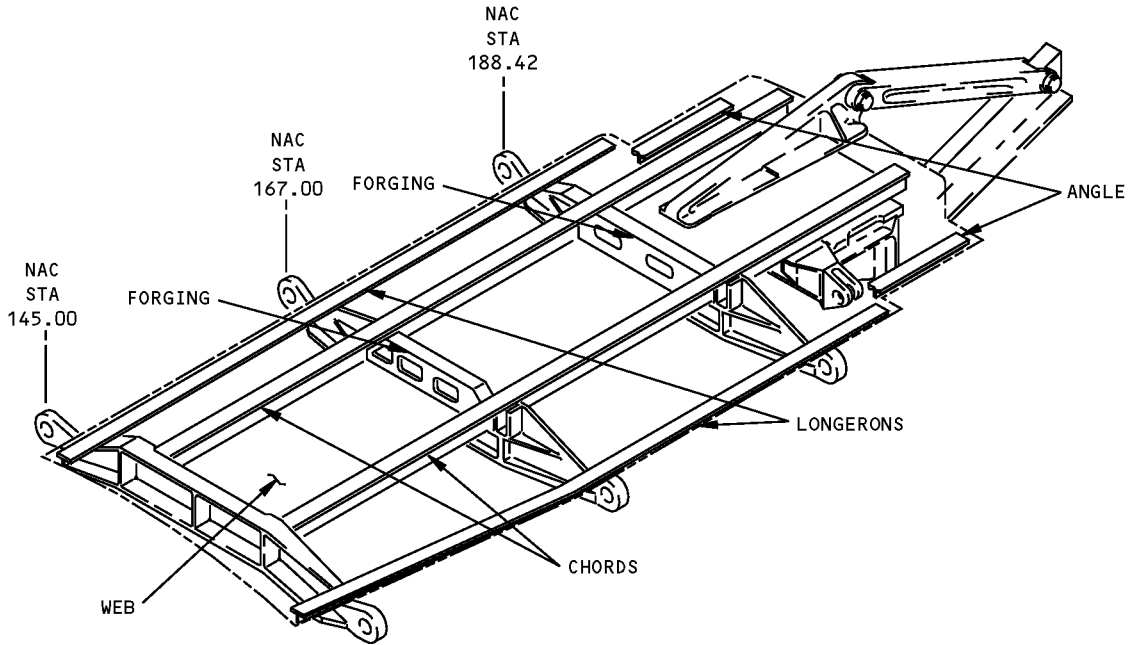
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FWD ENGINE MOUNT E	A	B	NOT ALLOWED	NOT ALLOWED
BULKHEADS E	A	B	NOT ALLOWED	NOT ALLOWED
STIFFENERS	C	B	NOT ALLOWED	SEE DETAIL XI
CHORDS E	C	B	NOT ALLOWED	NOT ALLOWED
FRAME	C	B	NOT ALLOWED	NOT ALLOWED

DETAIL II

**Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 2 of 7)**

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STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS [E]	[C]	[B]	NOT ALLOWED	NOT ALLOWED
WEB	[D]	[B]	SEE DETAIL VII	[F]
LONGERONS [E]	[C]	[B]	NOT ALLOWED	NOT ALLOWED
FORGINGS [E]	[C]	[B]	NOT ALLOWED	NOT ALLOWED
ANGLE	[C]	[B]	NOT ALLOWED	NOT ALLOWED

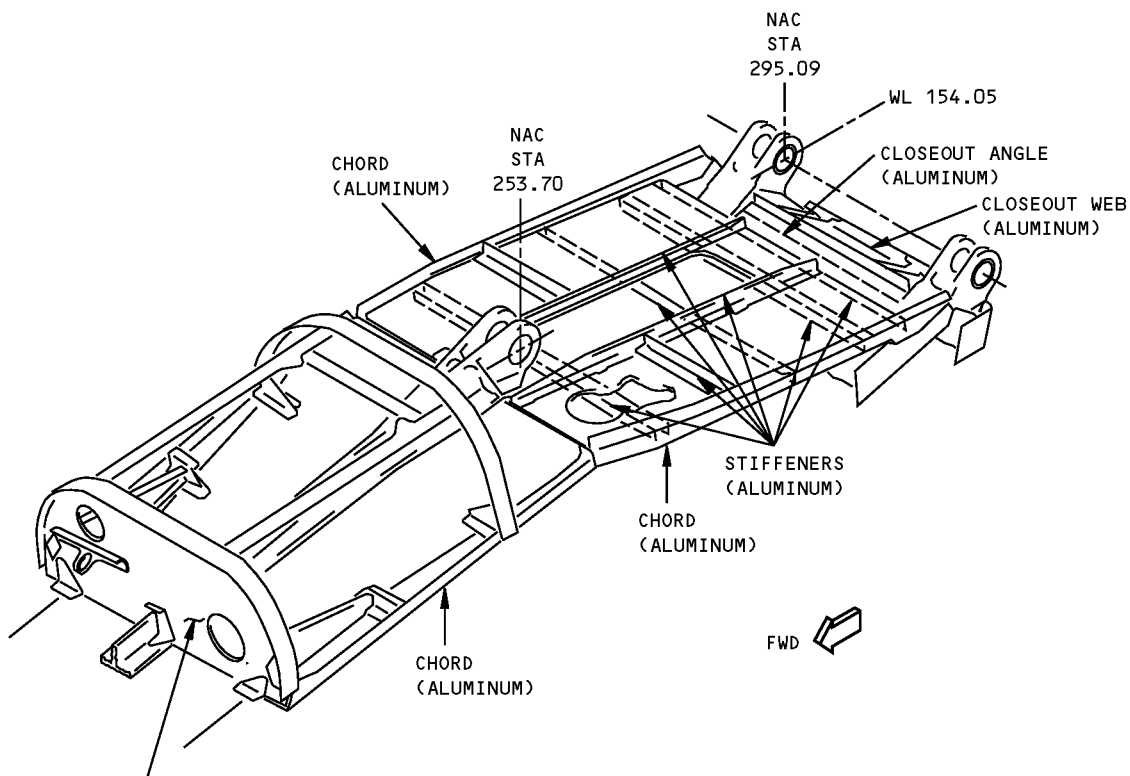
DETAIL III

**Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 3 of 7)**

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ALLOWABLE DAMAGE 1
54-52-02
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STRUCTURAL REPAIR MANUAL**



FAIRING STRUCTURE
REFER TO SRM 54-52-71

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS	C	B	NOT ALLOWED	NOT ALLOWED
STIFFENERS	C	B	NOT ALLOWED	SEE DETAIL XI
CLOSEOUT ANGLE	C	B	NOT ALLOWED	SEE DETAIL XI
CLOSEOUT WEB	D	B	SEE DETAIL VII	F

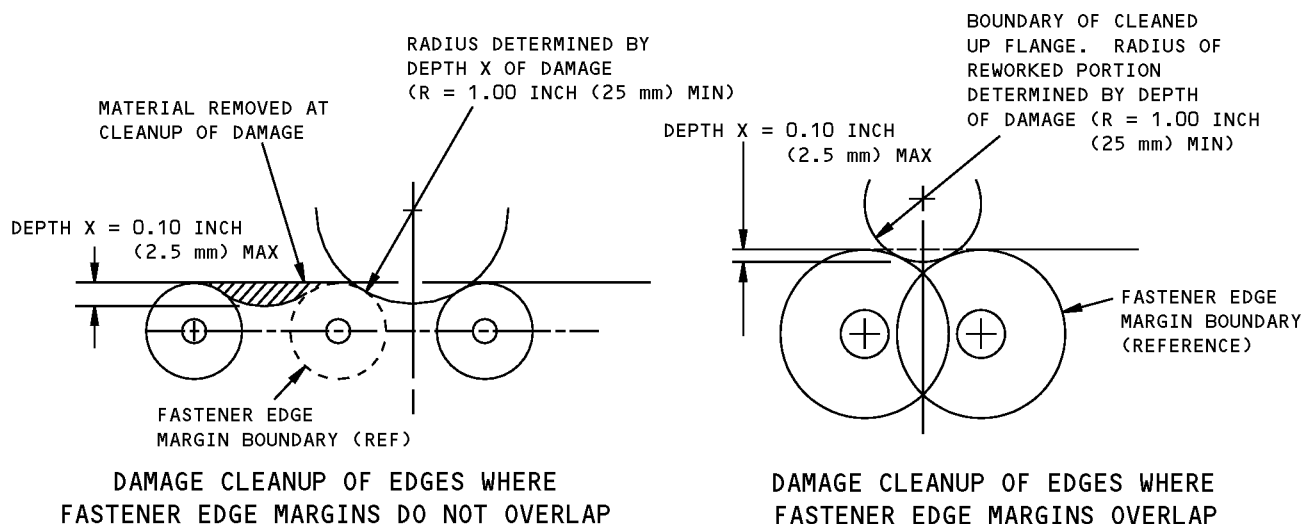
DETAIL IV

**Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 4 of 7)**

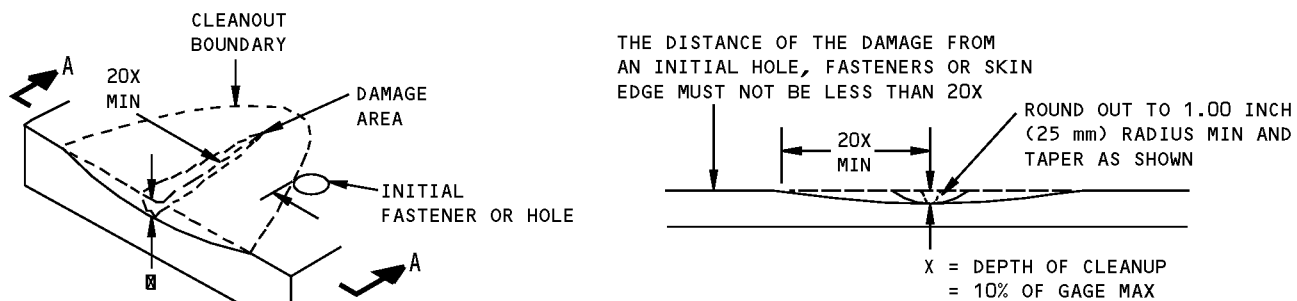
STRUCTURAL REPAIR MANUAL

NOTES

- REFER TO AMM 51-21 TO APPLY THE FINISH TO REWORKED AREAS.
- REFER TO SRM 51-10-02 FOR THE INSPECTION AND REMOVAL OF DAMAGE.
- A** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAIL XII. SEE DETAIL II FOR THE APPLICABLE SHOT PEEN REQUIREMENTS.
- B** REMOVE THE DAMAGE AS GIVEN IN DETAILS V, VI, AND VIII.
- C** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND X. SEE DETAILS II AND III FOR THE APPLICABLE SHOT PEEN REQUIREMENTS.
- D** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS, WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND IX.
- E** SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.
- F** CLEAN OUT DAMAGE UP TO 0.25 (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO A FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL THE HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES ARE TO BE REPAIRED.



DETAIL V



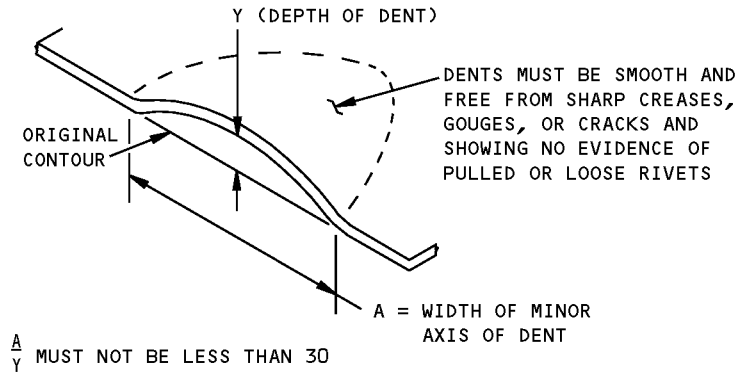
SECTION A-A

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

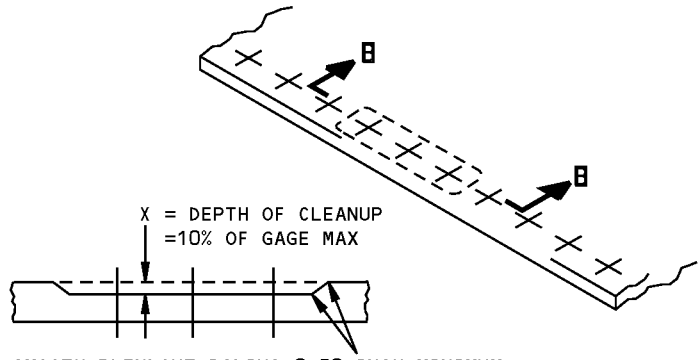
DETAIL VI

Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 5 of 7)

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STRUCTURAL REPAIR MANUAL**



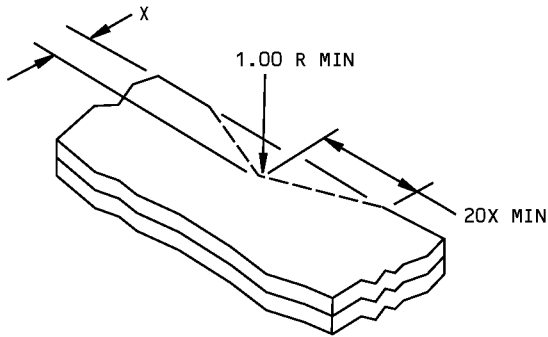
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



SMOOTH BLENDOUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAX DEPTH

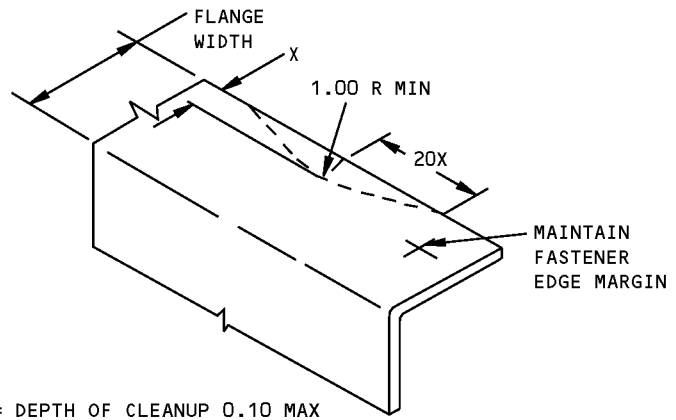
SECTION B-B

**CORROSION CLEANUP
DETAIL VIII**



X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL IX



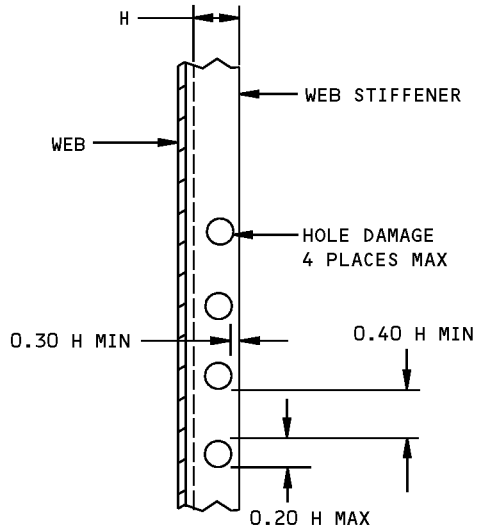
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL X**

**Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 6 of 7)**

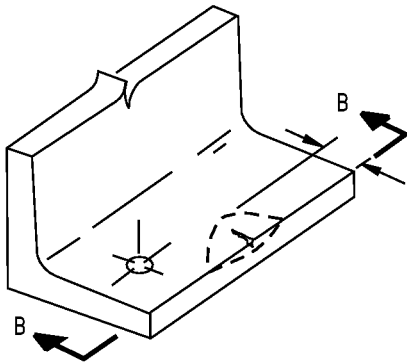
**767-300
STRUCTURAL REPAIR MANUAL**

NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95 SEALANT

H = WIDTH OF STIFFENER FLANGE

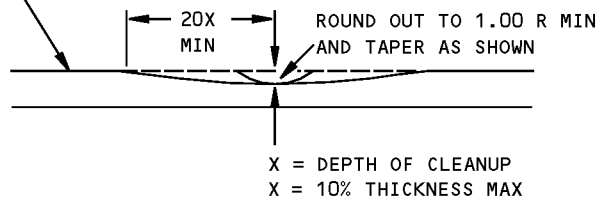


**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL XI**



AREA OF CLEANOUT NOT TO EXCEED 10% OF FLANGE WIDTH

THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR EDGE MUST NOT BE LESS THAN 20X



SECTION B-B

DETAIL XII

**Allowable Damage - Strut Structure - CF6-80C2 Engine
Figure 101 (Sheet 7 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART - CF6-80C2 ENGINE

SERVICE BULLETIN REPAIRS

These service bulletins contain strut structure repairs which you can use when there are specified types of damages. Usually the service bulletins also contain preventive modification data which we recommend you use so that structural damage does not occur.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
CF6-80C2 NACELLE PLYLONS - NACELLE STRUT FRAME CHORD	158 THRU 498	767-54-0054

**Service Bulletin Repair Chart - CF6-80C2 Engine
Figure 201**

D634T210

54-52-02

REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL



REPAIR 1 - STRUT STRUCTURE - CF6-80C2 FAN COWL SUPPORT BEAM

REPAIR INSTRUCTIONS

NOTE: This repair is for a crack in the web portion of the member only. If the member is cracked completely through, replace the member.

1. Dye penetrant inspect the crack to ascertain the full extent of the damage.
2. Stop drill a 0.250 inch (6 mm) hole at the end(s) of the crack.
3. Make the repair angle. Form it to the contour of the frame.
4. Assemble the repair angle and drill all fastener holes.
5. Remove the repair angle.
6. Break sharp edges of original and repair parts 0.015 to 0.030 inch (0.38 to 0.76 mm) radius.
7. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair parts.
8. Apply a chemical conversion coating to the repair part and to the bare surfaces of the door skin. Refer to SRM 51-20-01.
9. Apply one coat of BMS 10-11, Type I primer to the raw edges of the repair parts and the initial parts as given in Amm 51-21-00.
10. Install the repair parts with BMS 5-95 faying surface sealant applied to all faying surfaces. Install fasteners wet with BMS 5-95.
11. Restore initial finish as given in AMM 51-21-00.

SYMBOLS

-  REFERENCE FASTENER LOCATION
-  REPAIR FASTENER LOCATION. INSTALL BACB30FM6-() HI-LOK WITH BACC30M6 COLLAR (5 EACH SIDE OF CRACK)

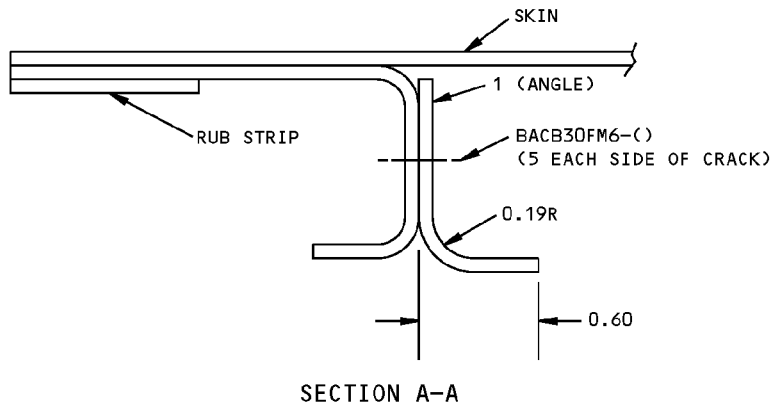
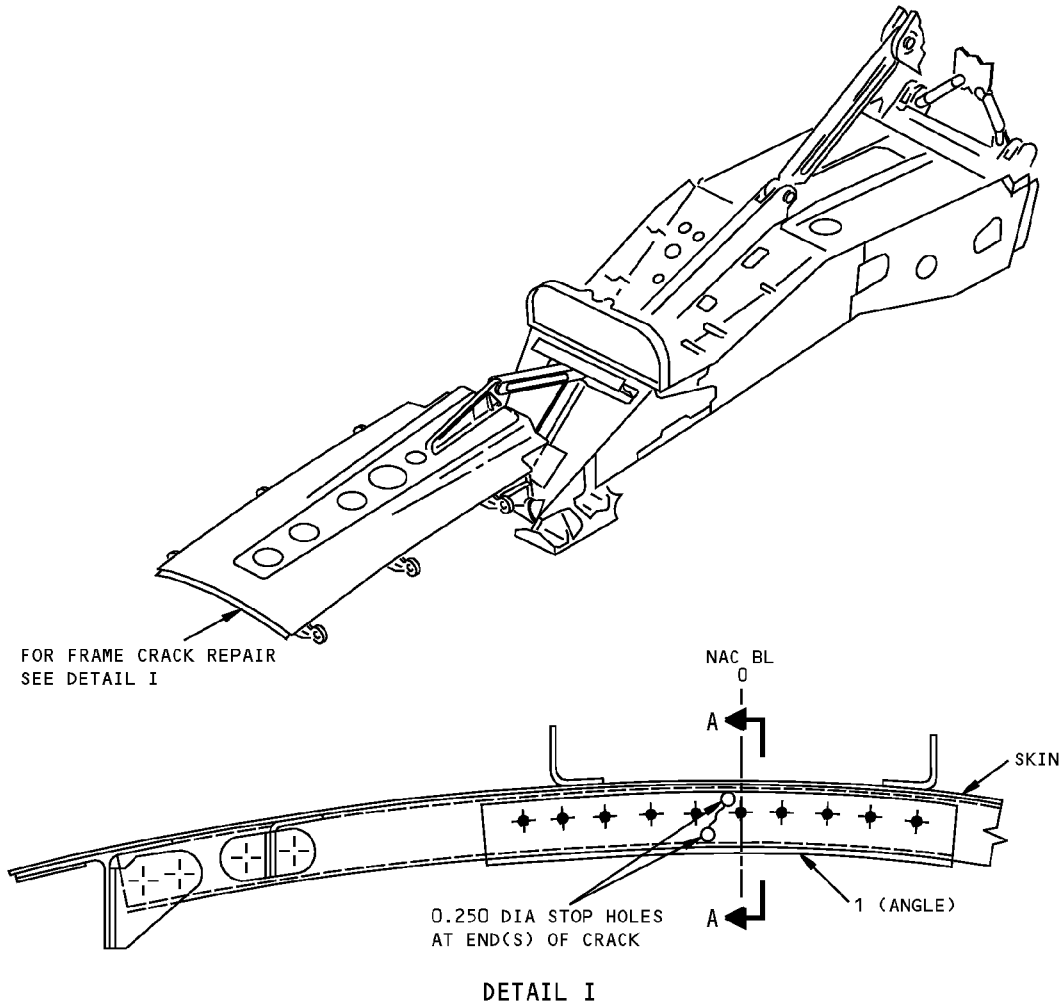
REPAIR MATERIAL			
PART		QTY	MATERIAL
1	ANGLE	1	0.063 CLAD 2024-0 HT TR T42

NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-00 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS

**Strut Structure Repair - CF6-80C2 Fan Cowl Support Beam
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Structure Repair - CF6-80C2 Fan Cowl Support Beam
Figure 201 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL

REPAIR 2 - REMOVED - NACELLE STATION 285 CLIP AND FRAME TIME-LIMITED - CF6-80C2 ENGINE

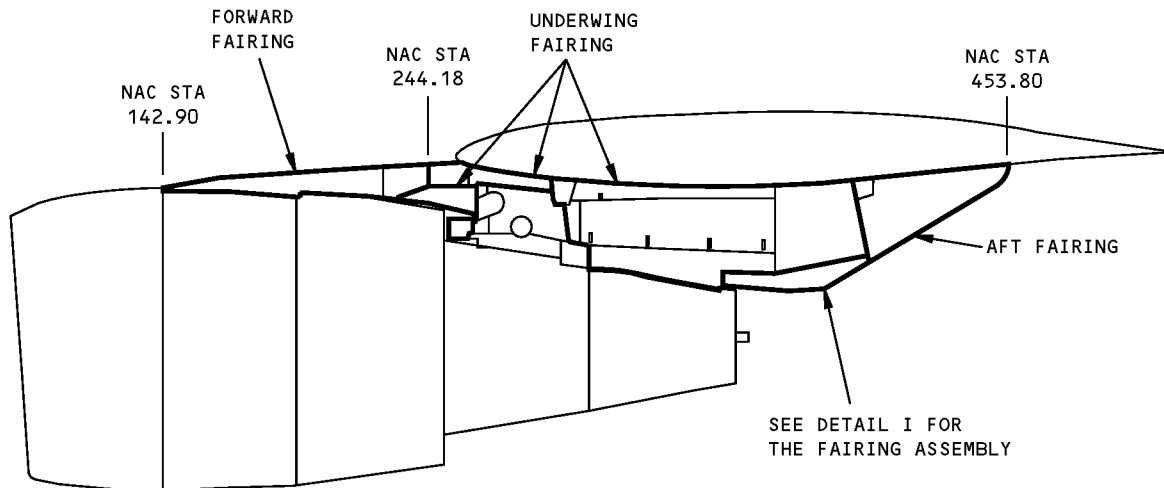
1. REPAIR 2 HAS BEEN REMOVED.

- A. Contact Boeing to get repair instructions for the nacelle station 285 clip and frame structure.

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING SKIN - CF6-80C2 ENGINE

REFERENCE DRAWING
310T1060

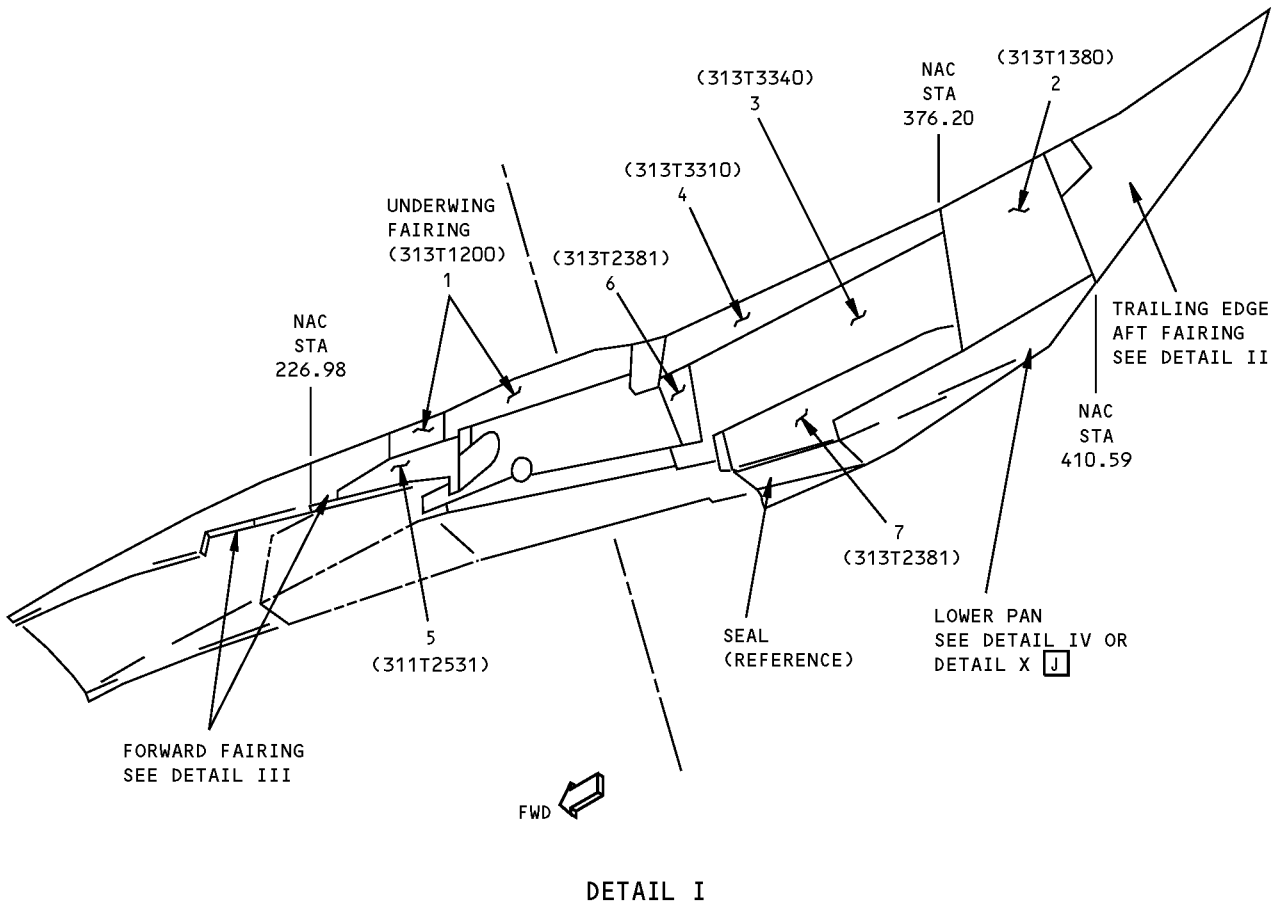


NOTES

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION</p> <p>B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS</p> <p>C ARAMID/EPOXY FABRIC PER BMS 8-218, STYLE 285, 350°F (177°C) CURE</p> <p>D FIBERGLASS/EPOXY FABRIC PER BMS 8-139 TYPE 1581, CLASS II, 350°F (177°C) CURE. (TYPE 1581 WAS FORMERLY TYPE 181)</p> <p>E THORSTRAND FABRIC PER BMS 8-278, TYPE II, CLASS 350</p> | <p>F ALUMINUM FOIL PER BMS 8-289, TYPE 0/350/2/1100/002</p> <p>G FOR AIRPLANES NOT LISTED IN H OR I</p> <p>H FOR CUM LINE NUMBERS: 223 AND ON</p> <p>I FOR AIRPLANES INCORPORATING SB 767-54-0017</p> <p>J FOR CUM LINE NUMBERS: 609 AND ON</p> <p>K FOR CUM LINE NUMBERS: 132 THRU 920</p> <p>L FOR CUM LINE NUMBERS: 921 AND ON</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 9)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL V HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0	
2	PANEL SKIN - INNER SKIN - OUTER CORE	0.016 0.016	ALUMINUM HONEYCOMB SANDWICH CLAD 2024-T3 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N	
3	DOOR SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SANDWICH FIBERGLASS/EPOXY FABRIC HONEYCOMB SANDWICH SEE DETAIL VI ALUMINUM FOIL 425-3M COMPANY HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124 CLASS I, TYPE I, GRADE 12.0	K L
4	SKIN BONDED	0.063 0.040	CLAD 2024-T3 2024-T3	
5	FAIRING SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, TYPE V, CLASS IV, GRADE 4.0	
6	SKIN PANEL DOUBLER DOUBLER	0.063 0.050 0.040	CLAD 2024-T81 CLAD 2024-T81 CLAD 2024-T81	
7	PANEL ASSY SKIN - OUTER SKIN - INNER DOUBLERS (3) CORE DENSE CORE (AT FAIRING STRUCTURE STIFFENER LOCATIONS 3 LOCATIONS)	0.020 0.016 0.020	CLAD 2024-T62 CLAD 2024-T81 CLAD 2024-T62 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N ALUMINUM HONEYCOMB PER MIL-C-7438E 22.1-1/8-60N (5052)	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 9)**

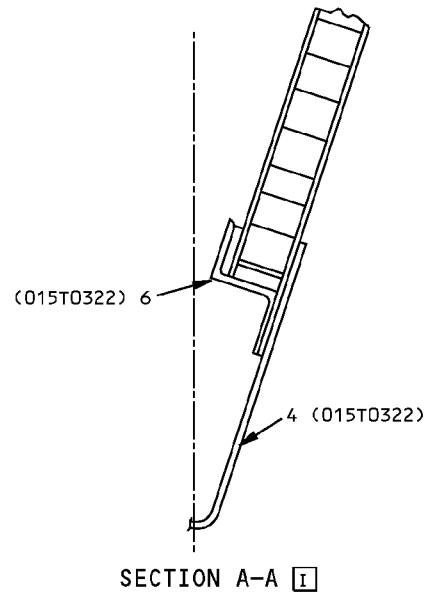
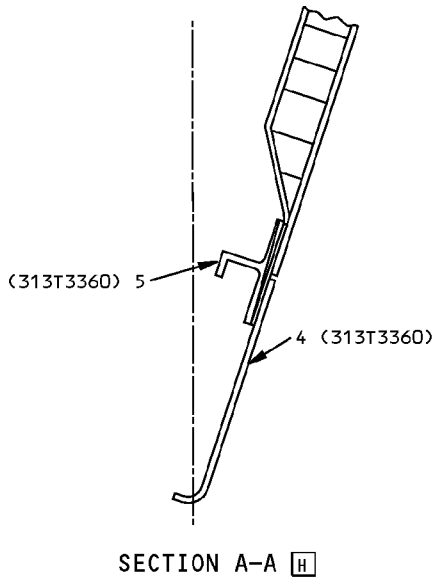
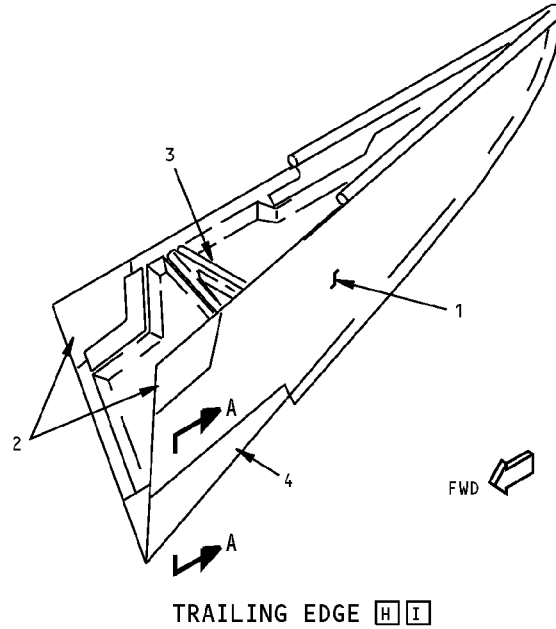
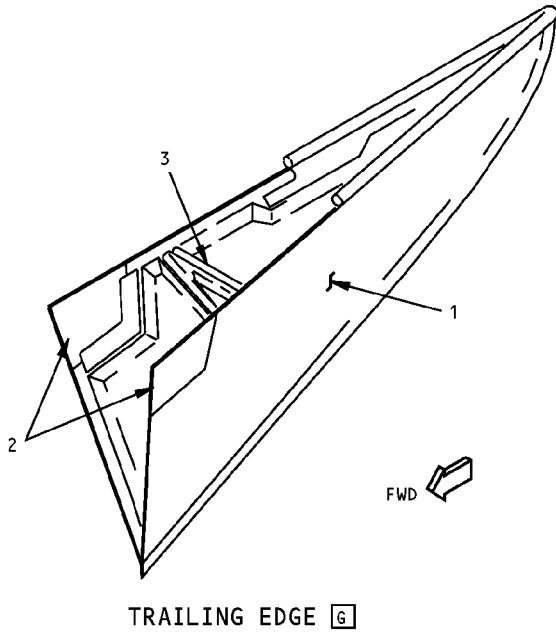
IDENTIFICATION 1
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



TRAILING EDGE - AFT FAIRING
DETAIL II



Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 9)

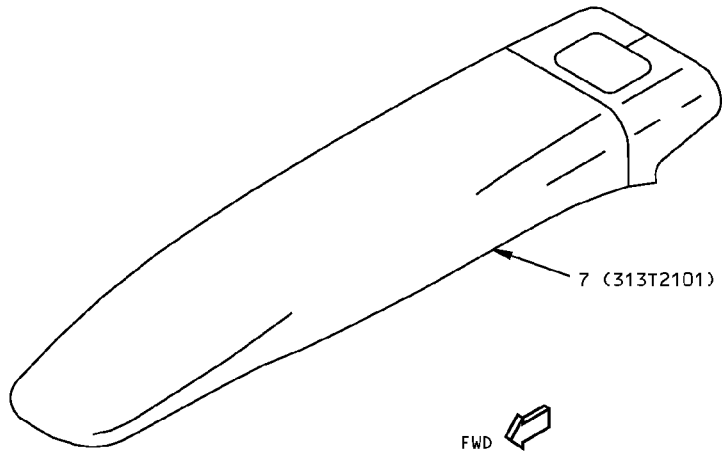
IDENTIFICATION 1
Page 4
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T2100



**FORWARD FAIRING
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VIII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0 (4.0 PCF)	
2	DOOR	0.063	CLAD 2024-T3	
3	BULKHEAD	0.063	2024-T42 OPTIONAL: CLAD 2024-T42	
4	SKIN	0.050	INCONEL 625	H I
5	TEE		BAC1506-1934 2024-T3511	H
6	ZEE		AND10138-0605 2024-T3511	I
7	PANEL SKIN CORE		FIBERGLASS/EPOXY HONEYCOMB SANDWICH SEE DETAIL IX ALUMINUM HONEYCOMB PER BMS 4-6	

LIST OF MATERIALS FOR DETAILS II AND III

**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 5 of 9)**

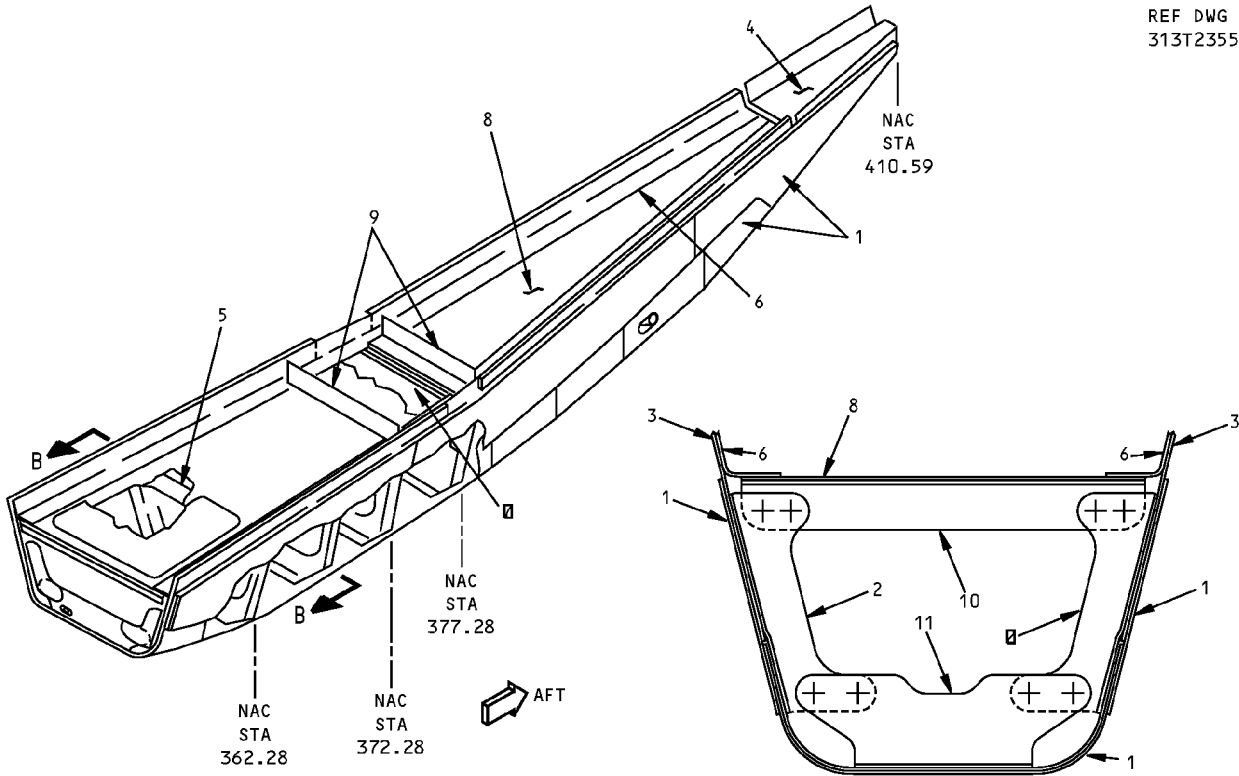
IDENTIFICATION 1
Page 5
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T2355



DETAIL IV

NAC STA 367.28
(TYPICAL EXCEPT AS NOTED)
SECTION B-B

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.050	INCONEL 625	
2	FRAME	0.063	INCONEL 625	
3	SPLICE	0.063	2024-T42	
4	WEB	0.063	2024-T42	
5	ANGLE		AND10134-1005 7075-T65	
6	ANGLE	0.063	2024-T42	
7	TEE		AND1506-2002 2024-T3511	
8	WEB ASSY WEB (2)	0.025	2024-T81 (BONDED ASSY)	
9	CLIP	0.063	INCONEL 625	
10	TEE		AND10136-140 2024-T3511	
11	ANGLE	0.050	INCONEL 625	

LIST OF MATERIALS FOR DETAIL IV

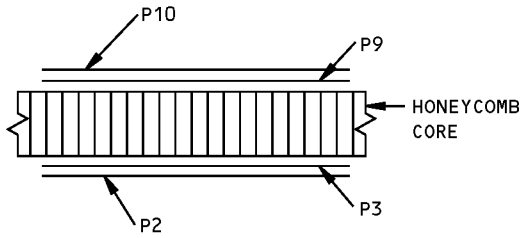
**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 6 of 9)**

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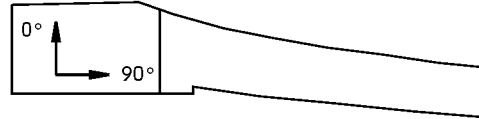
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



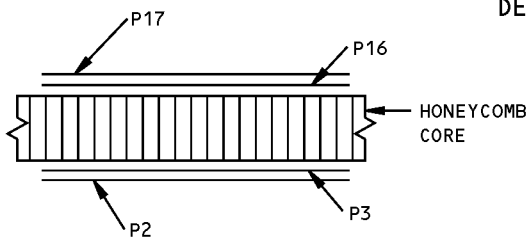
REF DWG
313T1200

SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL I)



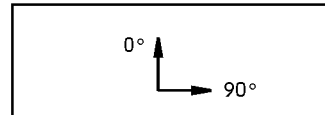
PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

DETAIL V

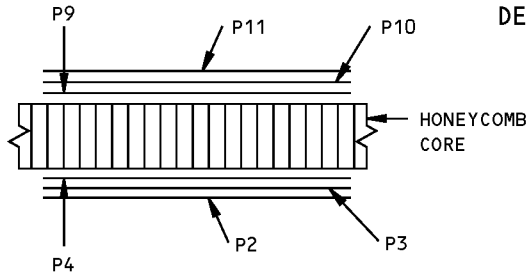


REF DWG
313T3340

SECTION THRU HONEYCOMB PANEL
(ITEM 3, DETAIL I)

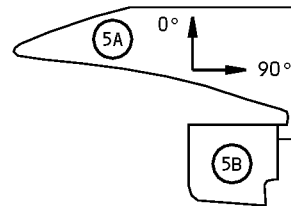


PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

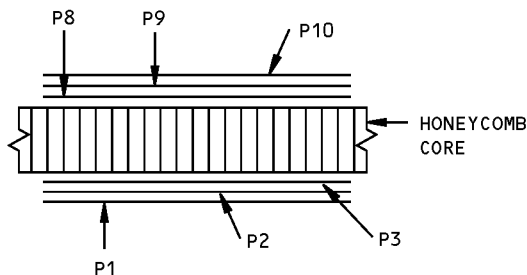


DETAIL VI

SECTION THRU HONEYCOMB PANEL
(ITEM 5A, DETAIL I)



REF DWG
313T2531



SECTION THRU HONEYCOMB PANEL
(ITEM 5B, DETAIL I)

PLY ORIENTATION DIAGRAM. SEE
TABLE I FOR PLY ORIENTATION
AND MATERIAL

DETAIL VII

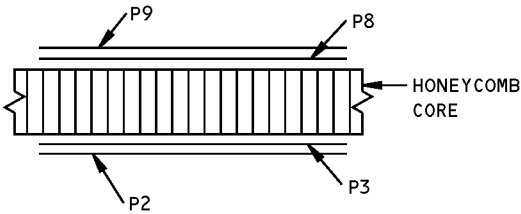
**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 7 of 9)**

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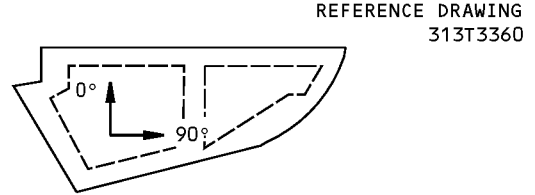
54-52-70

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STRUCTURAL REPAIR MANUAL**

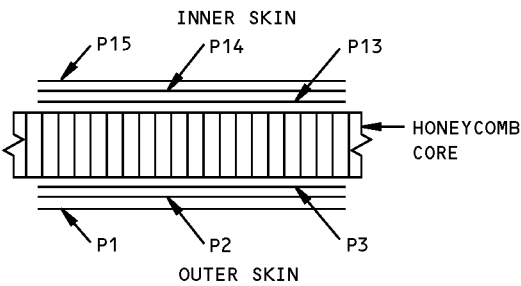


SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL II)

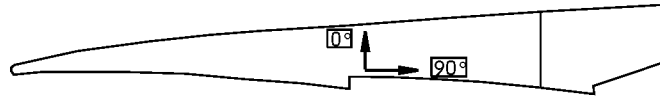


PLY ORIENTATION DIAGRAM.
SEE TABLE I FOR PLY ORIENTATION
AND MATERIAL

DETAIL VIII



SECTION THRU HONEYCOMB PANEL
(ITEM 7, DETAIL III)



PLY ORIENTATION DIAGRAM.
SEE TABLE I FOR PLY ORIENTATION
AND MATERIAL

DETAIL IX

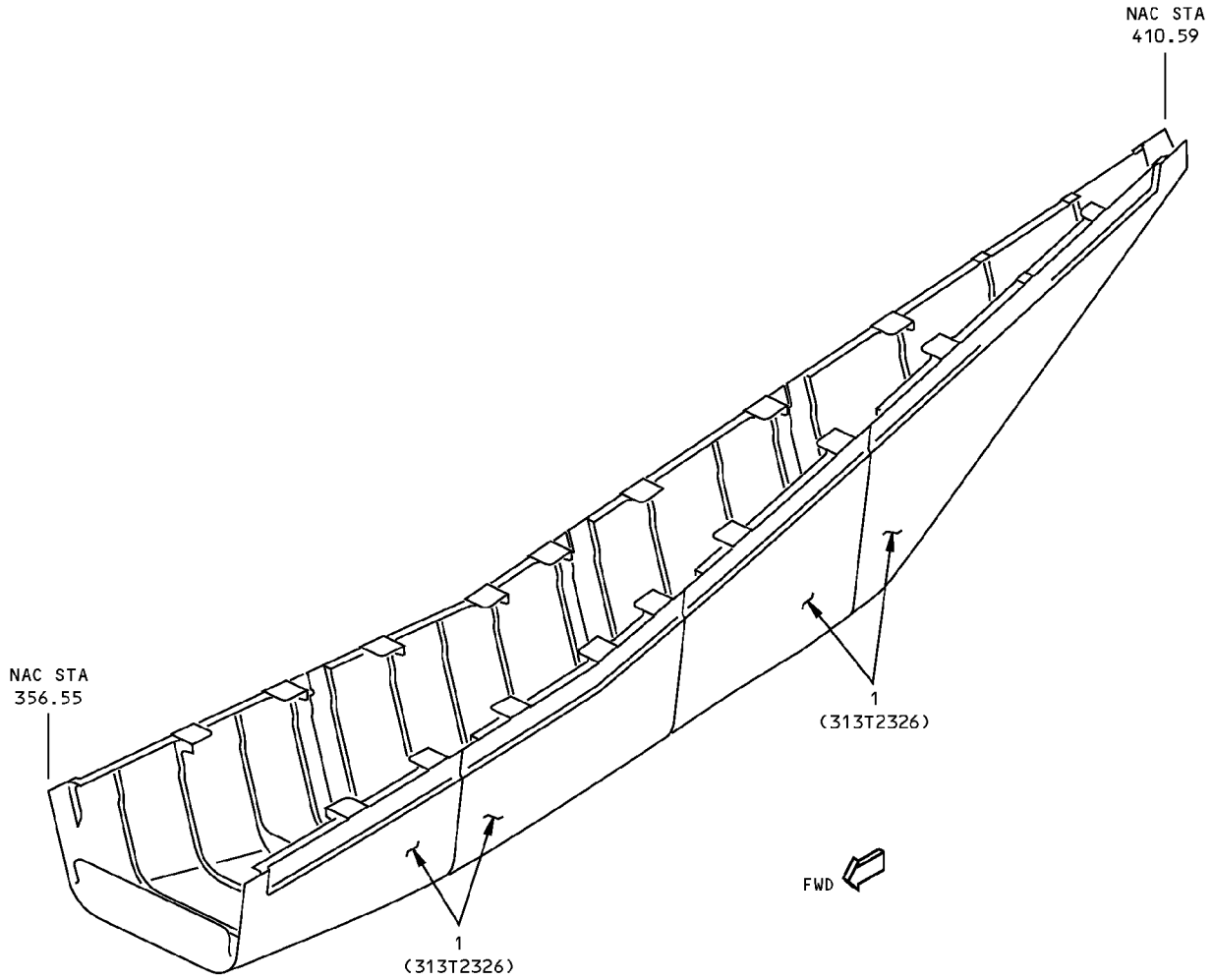
ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1 (DETAIL I)	P2,P3,P9,P10	C	0 OR 90° OPTIONAL
3 (DETAIL I)	P2,P3,P16,P17	C K	0 OR 90° OPTIONAL
	P2,P3,P16,P17	D L	
5A (DETAIL I)	P2,P3,P4,P9 P10,P11	C	0 OR 90° OPTIONAL
5B (DETAIL I)	P1,P2,P3,P8, P9,P10	D	0 OR 90° OPTIONAL
1 (DETAIL II)	P2,P3,P8,P19	C	0 OR 90° OPTIONAL
7 (DETAIL III)	P1	E	0 OR 90° OPTIONAL
	P2,P14	D	0 OR 90° OPTIONAL
	P3,P13	D	± 45°
	P15	F	—

TABLE I ^B

**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 8 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T2326



DETAIL X

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PAN SEGMENT		TITANIUM 6-2-4-2 CASTING, BMS 7-336, GRADE B	J

LIST OF MATERIALS FOR DETAIL X

**Strut Fairing Skin Identification - CF6-80C2 Engine
Figure 1 (Sheet 9 of 9)**

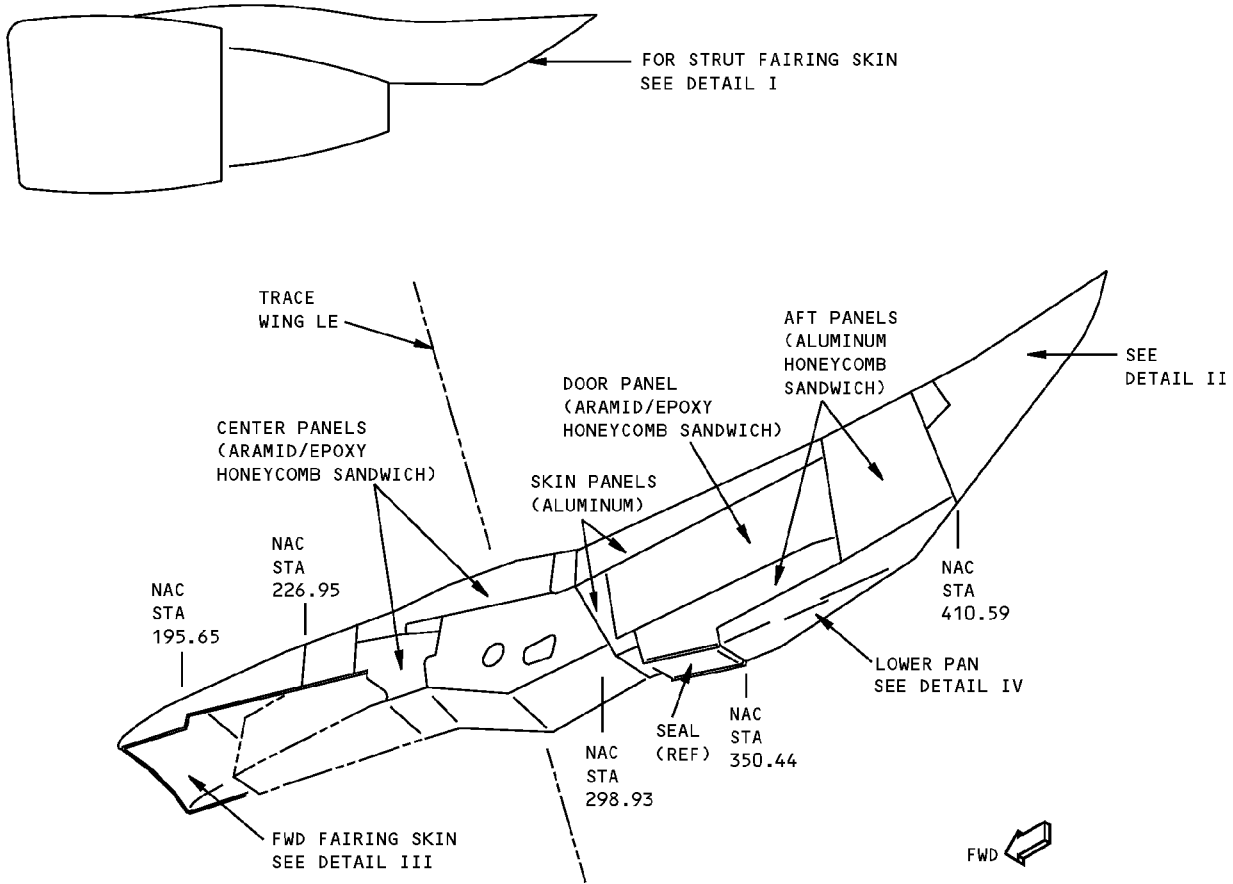
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING SKIN - CF6-80C2 ENGINE

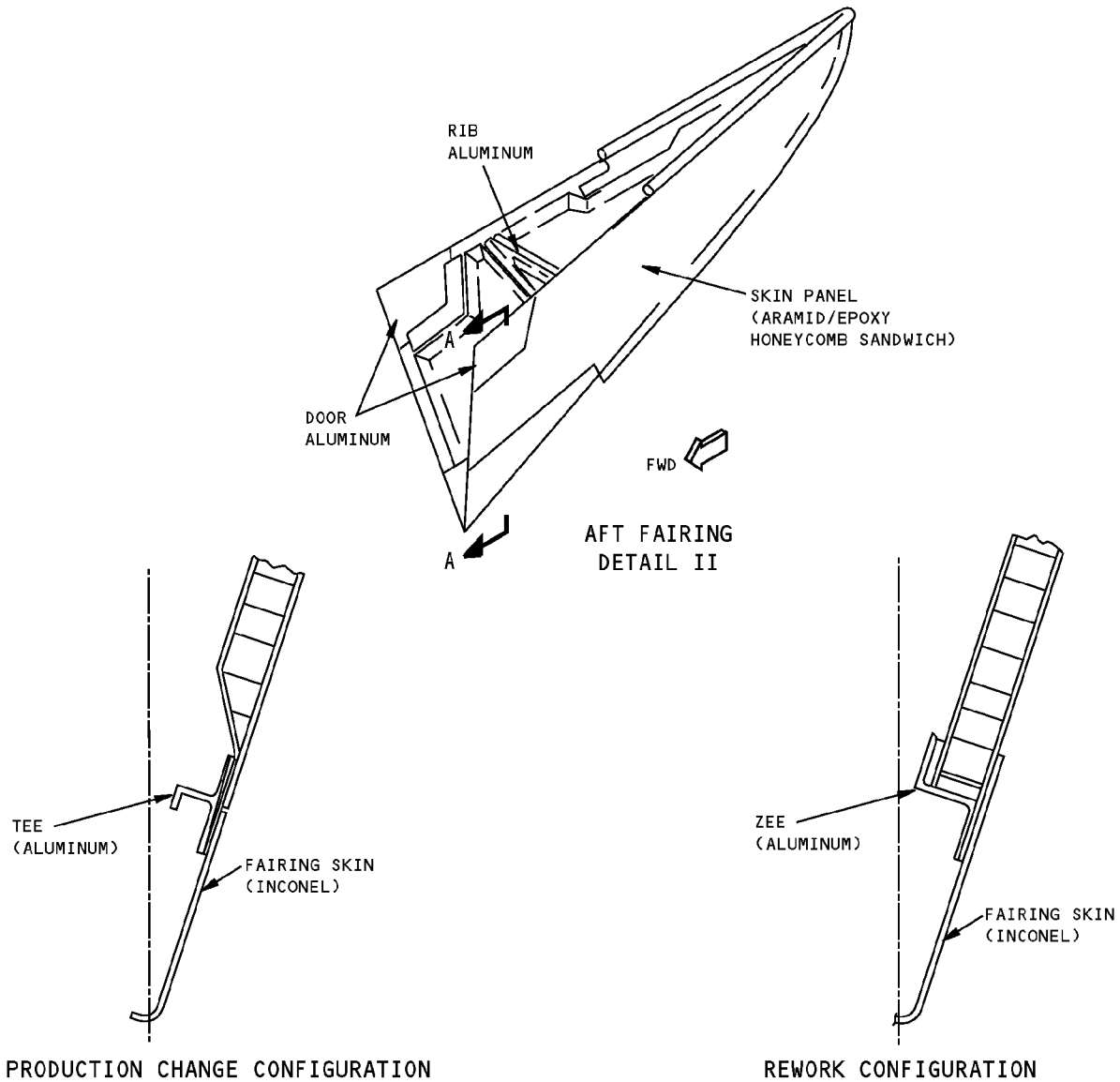


DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANELS	A	B	SEE DETAIL VII	C	—
AFT PANELS	F	B	J	D	E
CENTER PANELS	N	G	H	I	E
DOOR PANEL L	N	G	H	I	E

**Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

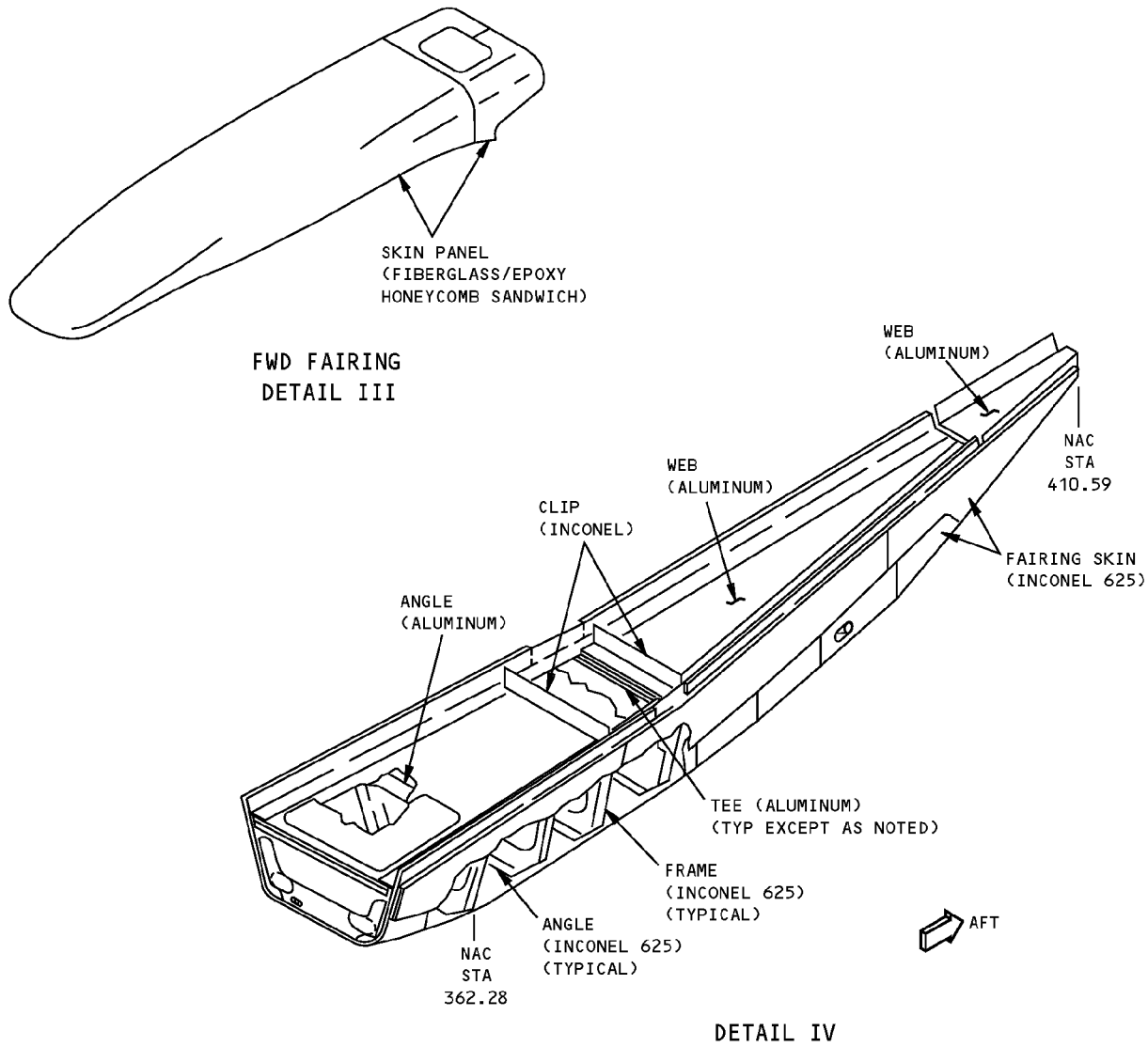


SECTION A-A

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E
FAIRING SKIN	A	B	SEE DETAIL VII	M	—
DOOR	A	B	SEE DETAIL VII	C	—
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	—
TEE, ZEE	O	B	NOT ALLOWED	SEE DETAIL XI	—

**Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
FAIRING SKIN	A	B	SEE DETAIL VII	M	—
WEB	A	B	SEE DETAIL VII	C	—
ANGLE	K	B	NOT ALLOWED	SEE DETAIL XI	—
TEE	P	B	NOT ALLOWED	SEE DETAIL XI	—
FRAME	K	B	NOT ALLOWED	SEE DETAIL XI	—
SKIN PANEL	N	G	H	I	E

**Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES

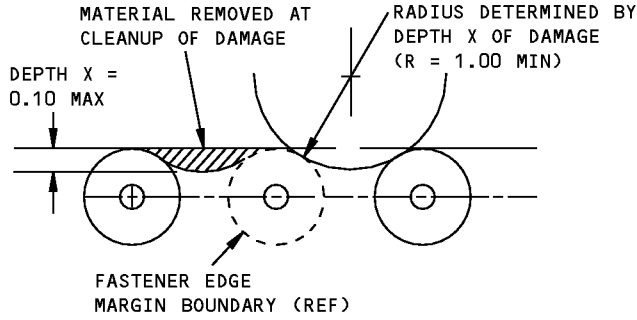
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
- REFER TO 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- REFINISH REWORKED AREAS AS GIVEN IN SRM 51-21
- RESTORE DAMAGED BMS 8-278 ALUMINUM COATED FABRIC, BMS 8-289 ALUMINUM FOIL, AND BMS 10-21 CONDUCTIVE COATING AS GIVEN IN SRM 51-70-14

- A** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND IX
- B** REMOVE DAMAGE AS GIVEN IN DETAILS V, VI AND VIII
- C** CLEAN PUNCTURE OUT WITH 0.25 INCH (6 mm) MAX DIA HOLE AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- D** 1.00 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE. **O**
- E** 2.00 INCHES (50 mm) MAX DIA IS PERMITTED IN HONEYCOMB AREA. A MAXIMUM OF 0.03 INCH (0.8 mm) DELAMINATION FROM EDGE IS PERMITTED. REPAIR DELAMINATION IN HONEYCOMB AREA AS GIVEN IN SRM 51-70 NO LATER THAN THE NEXT "C" CHECK. PROTECT EDGE DAMAGE AS GIVEN IN **O**.
- F** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT OF AREA AND MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER CRACK. DRILL 0.19 INCH (4.8 mm) STOP HOLES AT ENDS OF CRACK, CLEAN UP EDGE DAMAGE AS GIVEN IN DETAILS V AND IX **O**
- G** DAMAGE PERMITTED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT PERMITTED. CLEAN UP EDGE DAMAGE AS GIVEN IN DETAILS V AND IX **O**
- H** 2.00 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS PERMITTED PROVIDED THERE IS NO DELAMINATION OR FIBER DAMAGE. ONE DENT FOR EACH SQUARE FOOT OF AREA PERMITTED AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER DENT

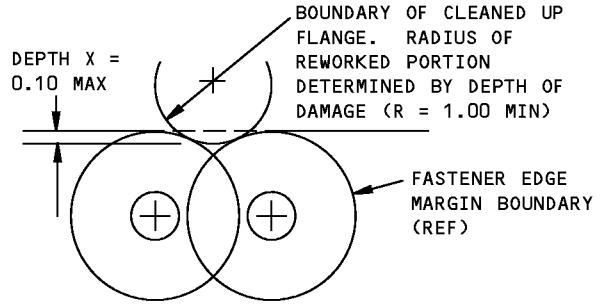
- I** 1.00 INCH (25mm) MAX DIA PERMITTED PROVIDED DAMAGE IS MIN OF 3 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **O**
- J** 2.0 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS PERMITTED PROVIDED THERE IS NO DELAMINATION. ONE DENT FOR EACH SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6.00 INCHES (150 mm) FROM ANY OTHER DENT
- K** NO CRACKS ARE PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND X
- L** NO DAMAGE PERMITTED IN AN AREA 1.50 INCHES (38 mm) AROUND HINGE OR LATCH FITTINGS. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE
- M** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER DAMAGE TO BE REPAIRED
- N** 2.00 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT AND MIN OF 6.00 INCHES (150 mm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS AS GIVEN IN DETAILS V AND X. **O**
- O** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DEGRADATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
- P** CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS V AND XII

Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 6)

STRUCTURAL REPAIR MANUAL

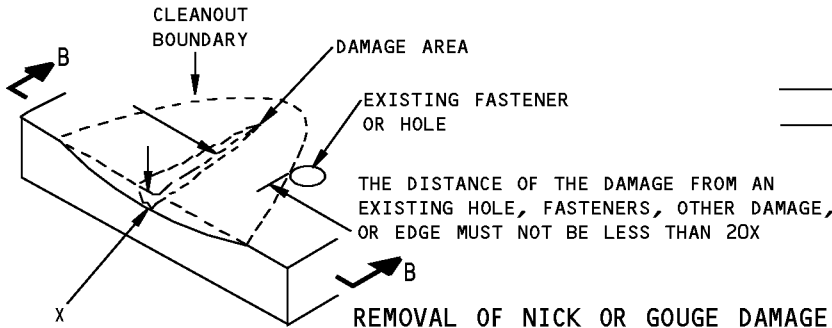


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



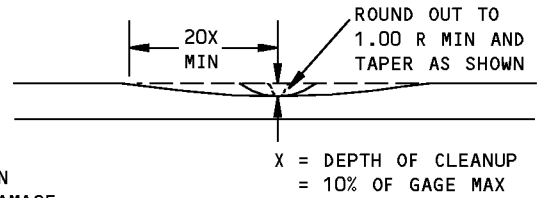
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL V

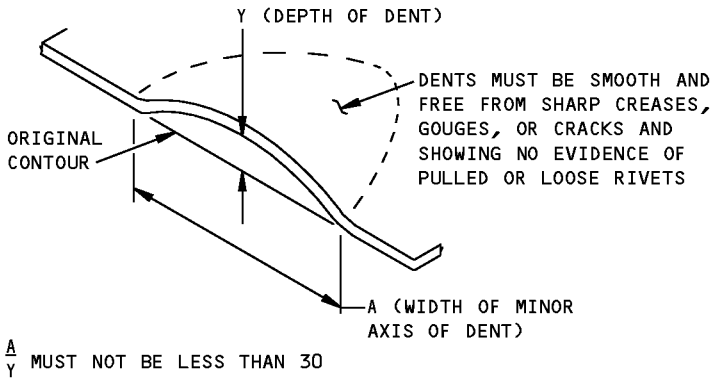


REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

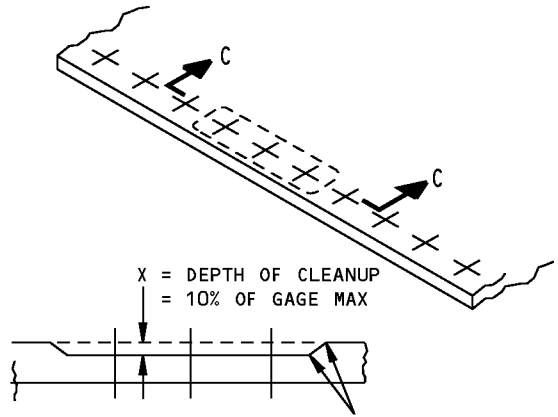
DETAIL VI



SECTION B-B



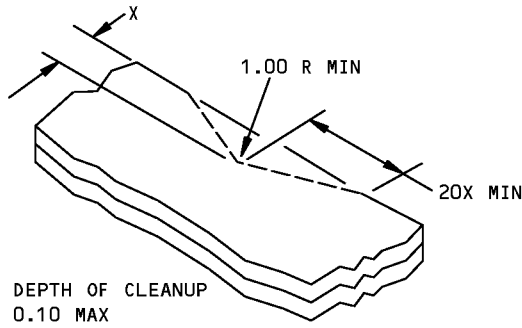
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



**SECTION C-C
CORROSION CLEANUP
DETAIL VIII**

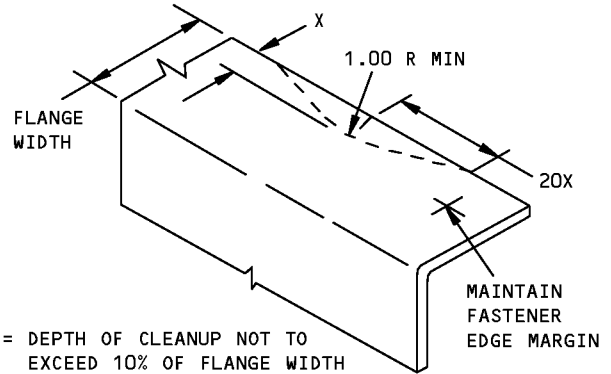
**Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



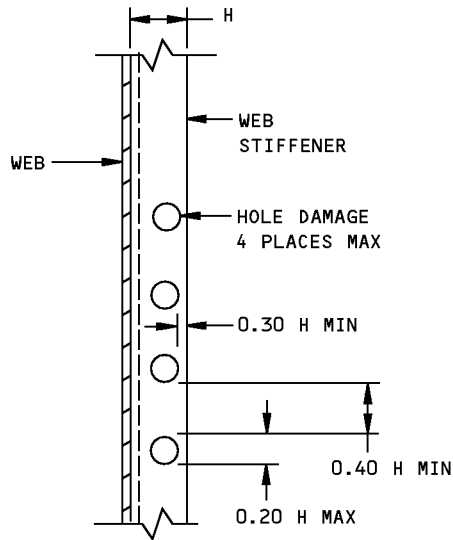
X = DEPTH OF CLEANUP
= 0.10 MAX

DETAIL IX



X = DEPTH OF CLEANUP NOT TO EXCEED 10% OF FLANGE WIDTH

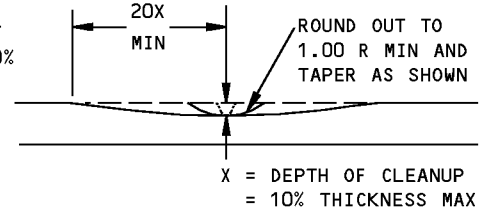
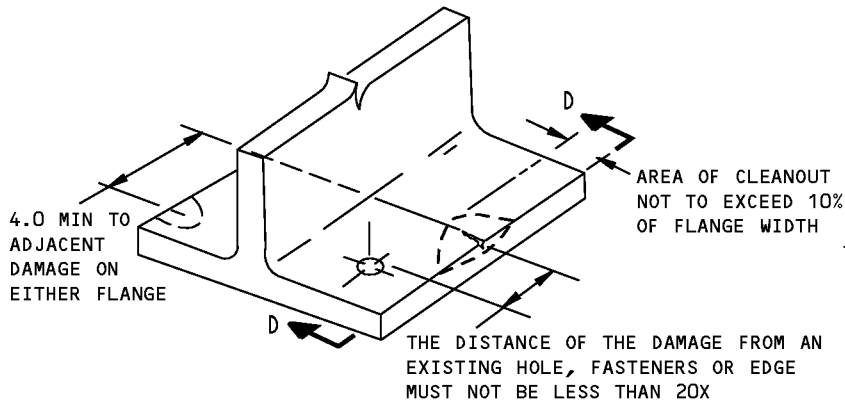
**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL X**



NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES IN ALUMINUM WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95. FILL HOLES IN INCONEL WITH MONEL RIVET INSTALLED DRY

H = WIDTH OF STIFFENER FLANGE

**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB AND FAIRING STIFFENERS
DETAIL XI**



SECTION D-D

**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL XII**

**Strut Fairing Skin Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 6 of 6)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART - CF6-80C2 ENGINE

SERVICE BULLETIN REPAIRS

The following service bulletins contain repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
AFT TE PANEL	158 THRU 222	767-54-0017

**Service Bulletin Repair Chart - CF6-80C2 Engine
Figure 201**

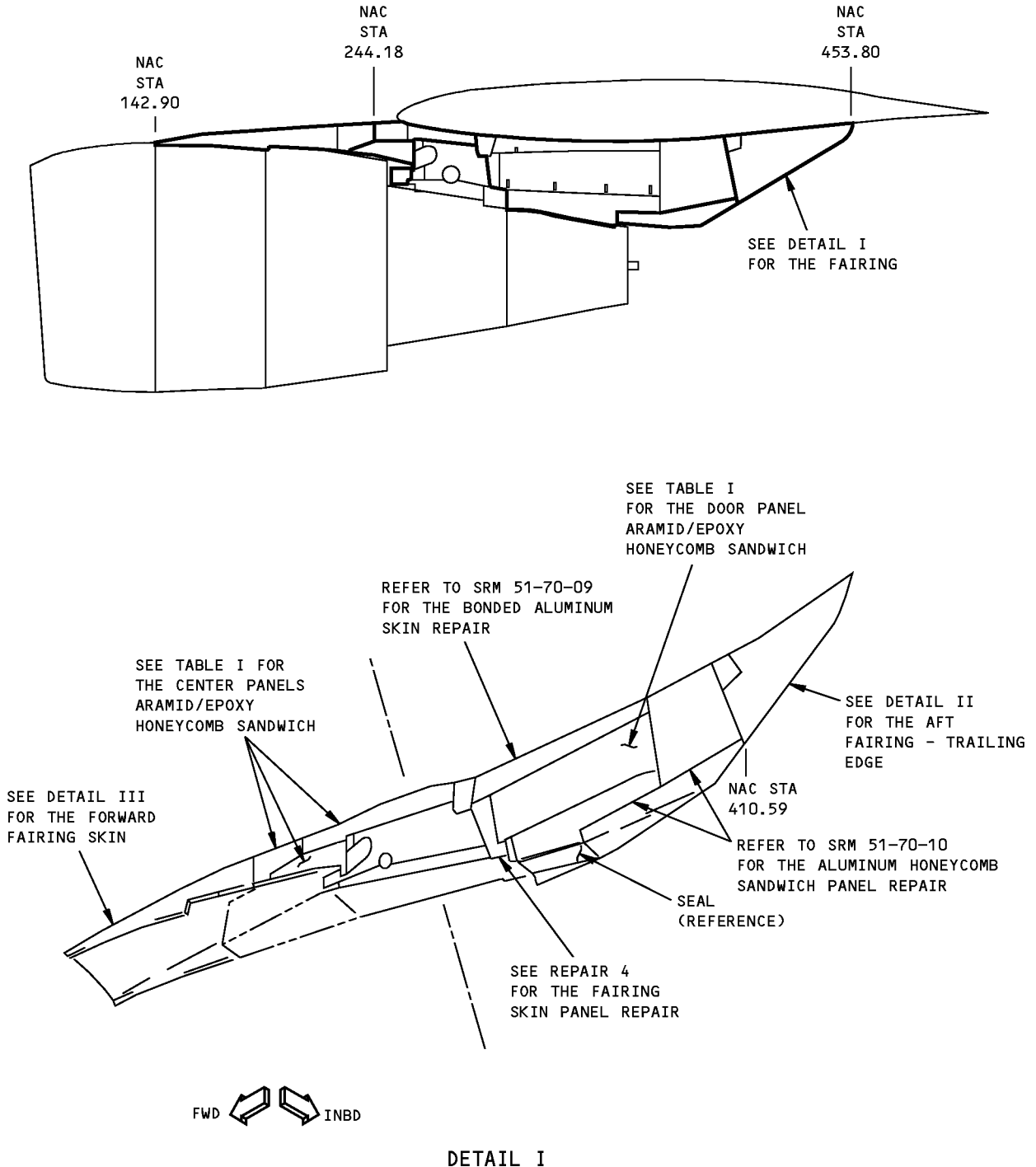
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REPAIR GENERAL
Page 201
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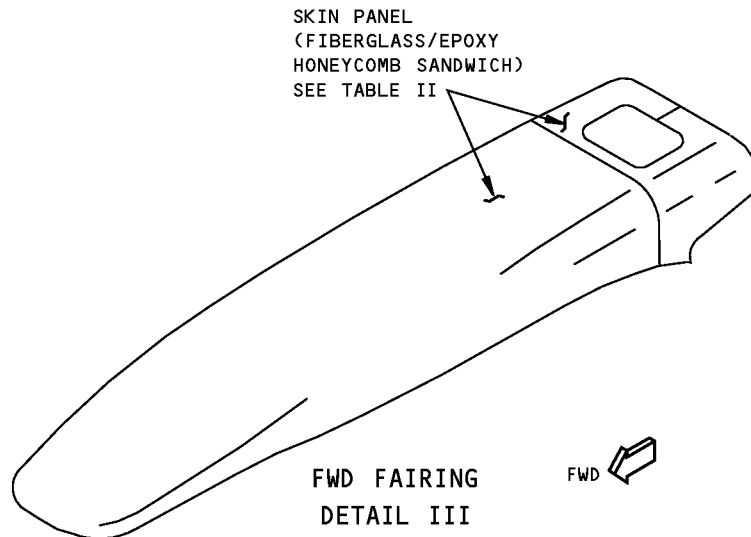
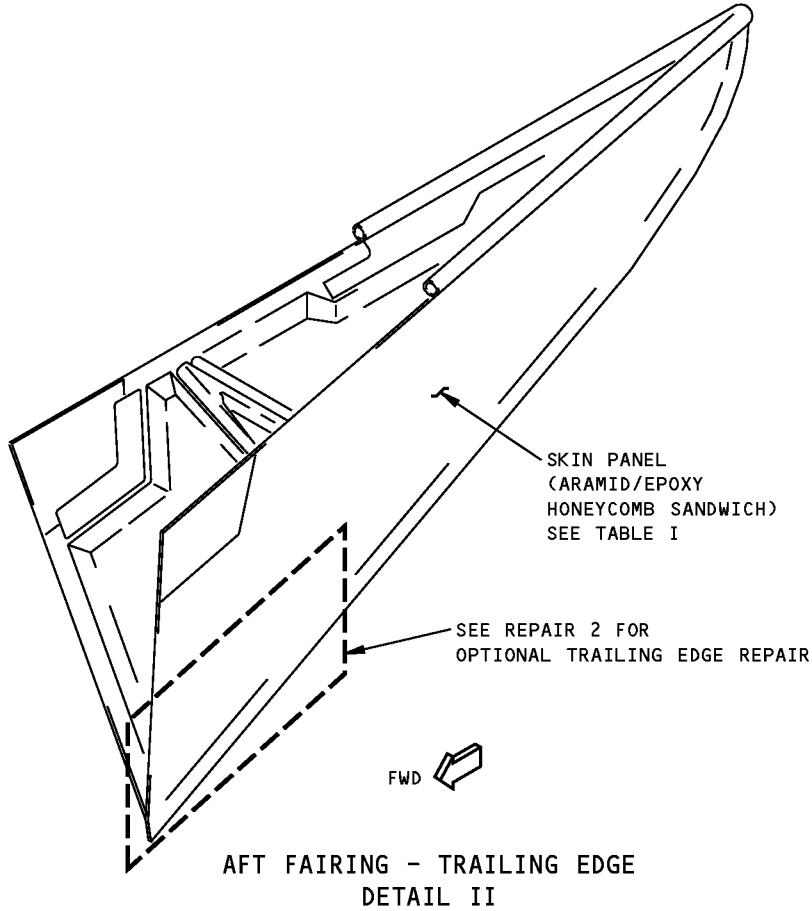
**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT FAIRING SKIN - CF6-80C2 ENGINE



**Strut Fairing Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL



Strut Fairing Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS B	PERMANENT REPAIRS	
	WET LAYUP 150°F CURE (SRM 51-70-03)	WET LAYUP 200-230°F CURE (SRM 51-70-17)	350°F CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03, PAR. 5.N. A	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION ACROSS HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03, PAR. 5.N. A	12.0 INCHES (300 mm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION ACROSS HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLYS PER FACESHEET REPAIRED. C	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 3.0 INCHES (75 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. OVER 3.0 INCHES (75 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

**REPAIR DATA FOR 350°F CURE ARAMID HONEYCOMB PANELS
TABLE I**

NOTES

- REFER TO SRM 51-10-02 FOR INVESTIGATION AND CLEANUP OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21
- RESTORE DAMAGED BMS 8-278 ALUMINUM COATED FABRIC, BMS 8-289 ALUMINUM FOIL, AND BMS 10-21 CONDUCTIVE COATING AS GIVEN IN SRM 51-70-14.

A LIMITED TO REPAIR OF DAMAGE TO ONE FACE-SHEET SKIN AND HONEYCOMB CORE. ONE REPAIR PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (150 mm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL

B INSPECT INTERIM REPAIR USING INSTRUMENTED NDT METHODS OR "TAP" TEST EVERY AIRPLANE "C" CHECK. FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. REFER TO SRM 51-70-03, PAR. 4.I. AND THE NON-DESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

C ONE REPAIR FOR EACH SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (150 mm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

**Strut Fairing Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**



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STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS [B]	PERMANENT REPAIRS	
	WET LAYUP ROOM TEMP/ 150°F CURE (SRM 51-70-06)	WET LAYUP 200-230°F CURE (SRM 51-70-17)	350°F CURE (SRM 51-70-08)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.N. [A]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.N. [A]	12.0 INCHES (300 mm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	NO SIZE LIMIT
DELAMI-NATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-06. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 3.0 INCHES (75 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.L. OVER 3.0 INCHES (75 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

REPAIR DATA FOR 350°F CURE FIBERGLASS HONEYCOMB PANELS
TABLE II

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Strut Fairing Skin Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)

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REPAIR 1
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STRUCTURAL REPAIR MANUAL

REPAIR 2 - AFT PYLON FAIRING - TRAILING EDGE REPAIR - CF6-80C2 ENGINE

REPAIR INSTRUCTIONS









1. Remove 313T3360 aft fairing, trailing edge assembly from pylon.
2. Cut and remove the damaged skin panel as given in Detail I.
3. Seal the panel core edges as shown in Section B-B to a depth of one half cell minimum. Cure the potting compound as specified in Table II.
4. Make the repair parts. See Details I thru VI, and Table I.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the cut edges of the panel.
8. Apply a chemical conversion coating to the bare aluminum surfaces of the repair parts and panel.
9. Apply primer as follows:
 - (a) Apply two coats of BMS 10-11, Type 1 to all of the nickel alloy to aluminum faying surfaces of part 1.
 - (b) Apply one coat of BMS 10-11, Type 1 to parts 2, 3, 7 and 8.
 - (c) Apply two coats of BMS 10-11, Type 1 to parts 4, 5 and 6.
10. Install the fasteners. Fastener that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Restore initial finish per AMM 51-20.
12. Install 313T3360 aft fairing, trailing edge assembly.

NOTES

- DAMAGE LOCATION IS IN CRITICAL SONIC ENVIRONMENT. IF THE REPAIR SHOWS SIGNS OF CRACKING OR DETERIORATION, CONTACT THE BOEING COMPANY.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-41-02 FOR APPLICATION FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30-01 FOR BENDING AND MACHINING OF SHEET METAL MATERIALS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS

- A** AS AN ALTERNATIVE, USE TWO SHEETS OF 0.125 2024-T3.
- B** AS AN ALTERNATIVE, USE ONE SHEET OF 0.100 AND ONE SHEET OF 0.063 2024-T3.
- C** DRILL A 0.127-0.131 INCH (3.22-3.32 mm) DIAMETER HOLE THRU OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE AND ROTATE 360 DEGREES TO BREAK THE HONEYCOMB CELL WALLS 0.75-1.00 INCH (19-25 mm) DIAMETER AROUND THE DRILLED HOLE. VACUUM DEBRIS FROM THE HOLE AFTER BREAKING THE HONEYCOMB CELL WALLS. POT THE 0.75-1.00 INCH (19-25 mm) DIAMETER CAVITY WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. CURE THE POTTING COMPOUND AS SPECIFIED IN TABLE II.
- D** MIX RESIN AND HARDENER ACCORDING TO PROPORTIONS IN MANUFACTURER'S INSTRUCTIONS.
- E** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K() HEX-DRIVE BOLT WITH A BACC30M() COLLAR.
- F** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K()X HEX-DRIVE BOLT WITH A BACC30M() COLLAR.

FASTENER SYMBOLS

-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K4X BOLT WITH A BACC30M6 COLLAR. **F**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K4 BOLT. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K14 BOLT WITH A BACC30M6 COLLAR. **C E**
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15ADR RIVETS. INSTALL A BACB30VF3K5 BOLT.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K5 BOLT WITH BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K4 BOLT WITH A BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K2 BOLT WITH A BACC30M6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15AD4 RIVETS. INSTALL A BACB30MR3K2 BOLT.

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 6)**



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REPAIR MATERIAL			
PART		QTY	MATERIAL
1	SKIN	1	0.050 24.0 X 24.0 INCONEL 625 SHEET
2	ZEE	1	AND10138-0605 2024-T3511
3	ZEE	1	AND10138-0605 2024-T3511
4	FILLER	2	0.160 2024-T3 B
5	FILLER	2	0.250 2024-T3 A
6	FILLER	2	0.100 2024-T3
7	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3
8	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3

TABLE I

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

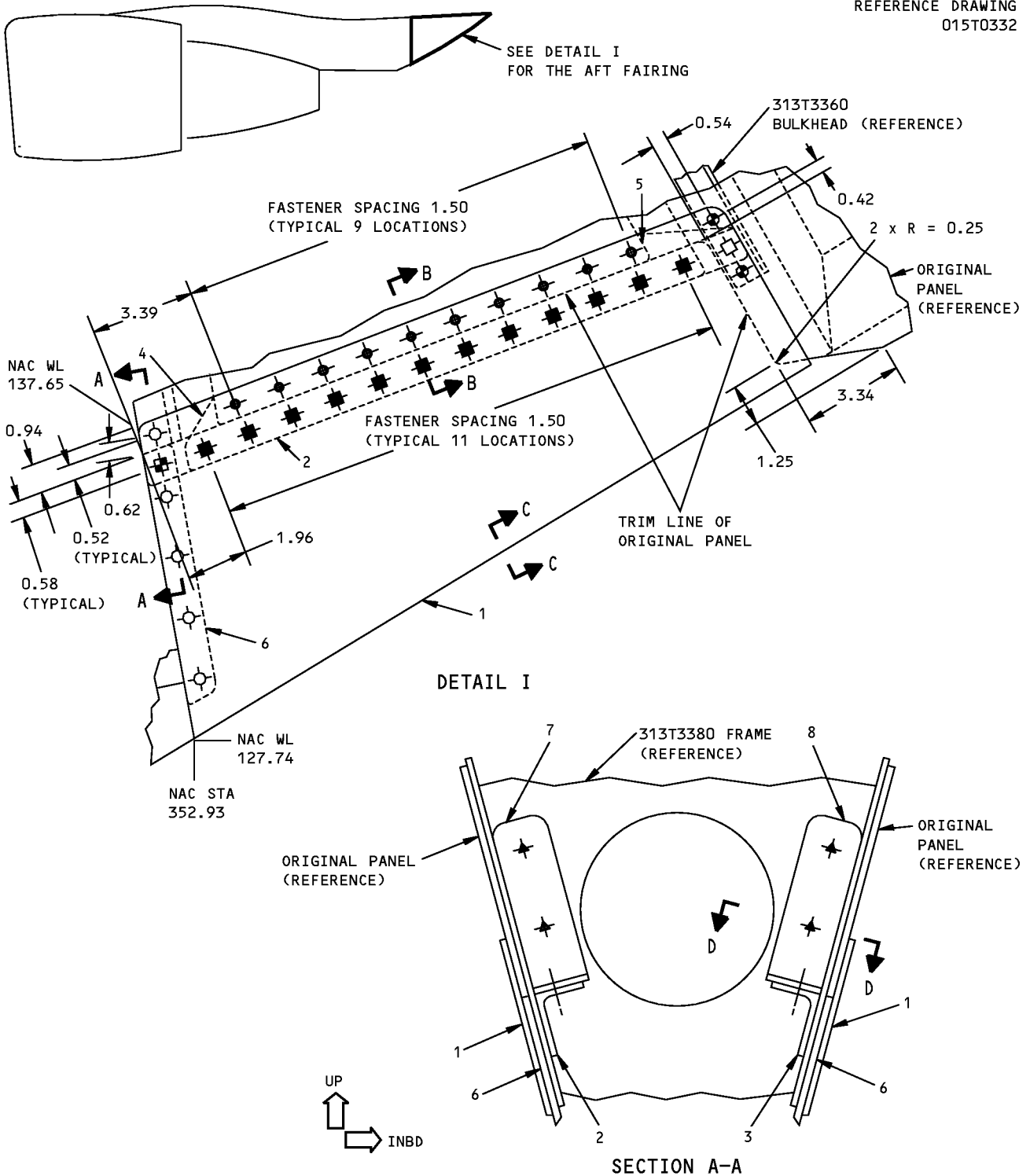
RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1606A RESIN EPOCAST 1606B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)
BMS 5-28 TYPE 25	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

TABLE II

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 6)**

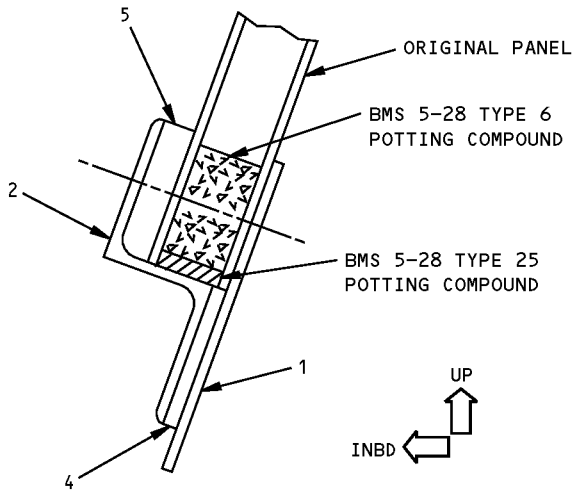
**767-300
STRUCTURAL REPAIR MANUAL**

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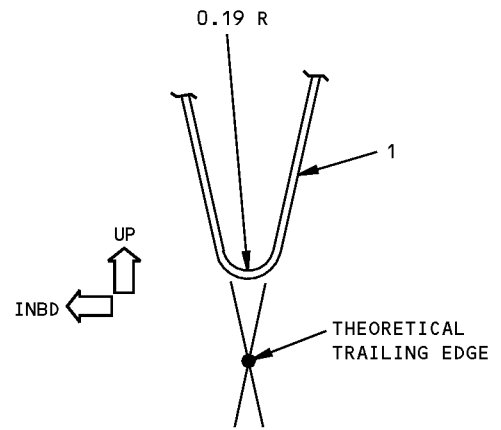


**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 6)**

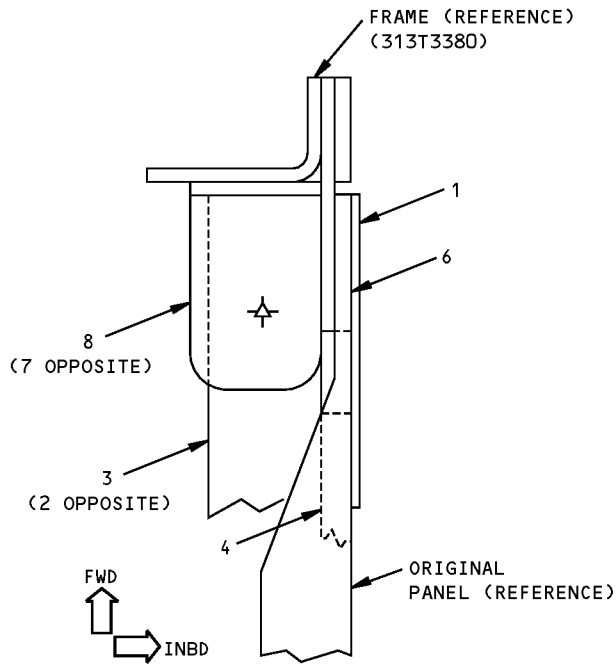
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B



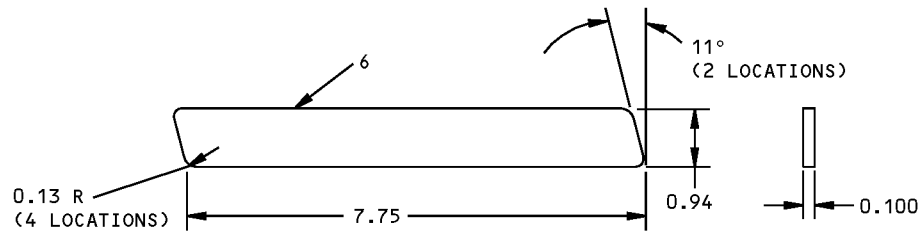
SECTION C-C



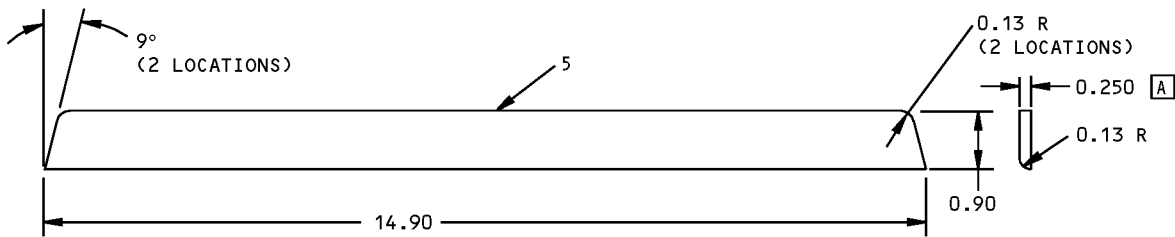
SECTION D-D

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 6)**

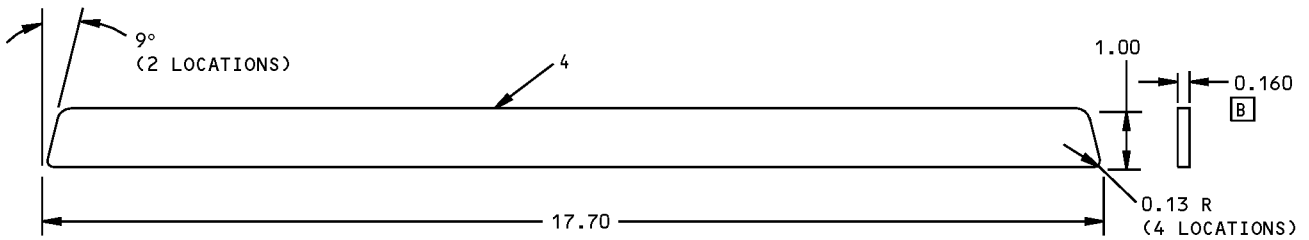
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II



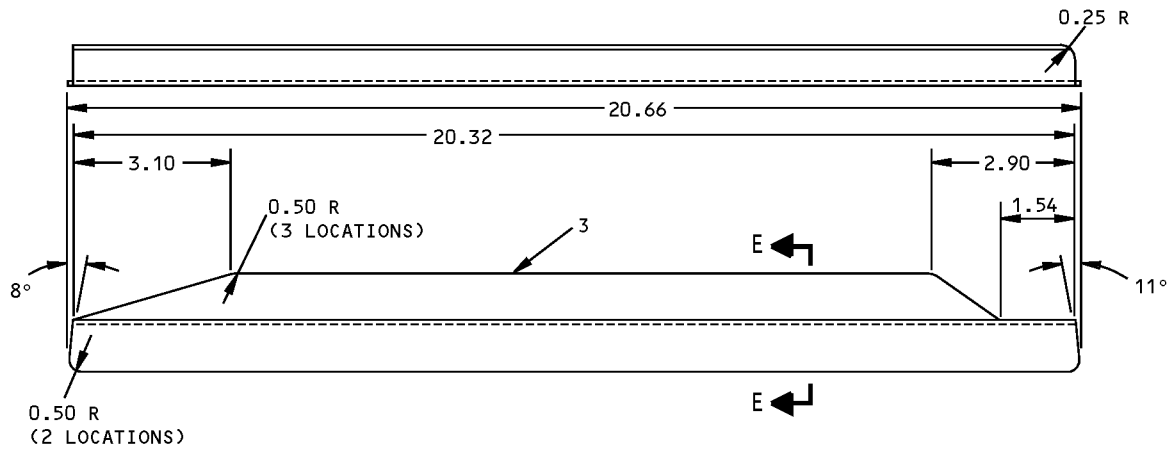
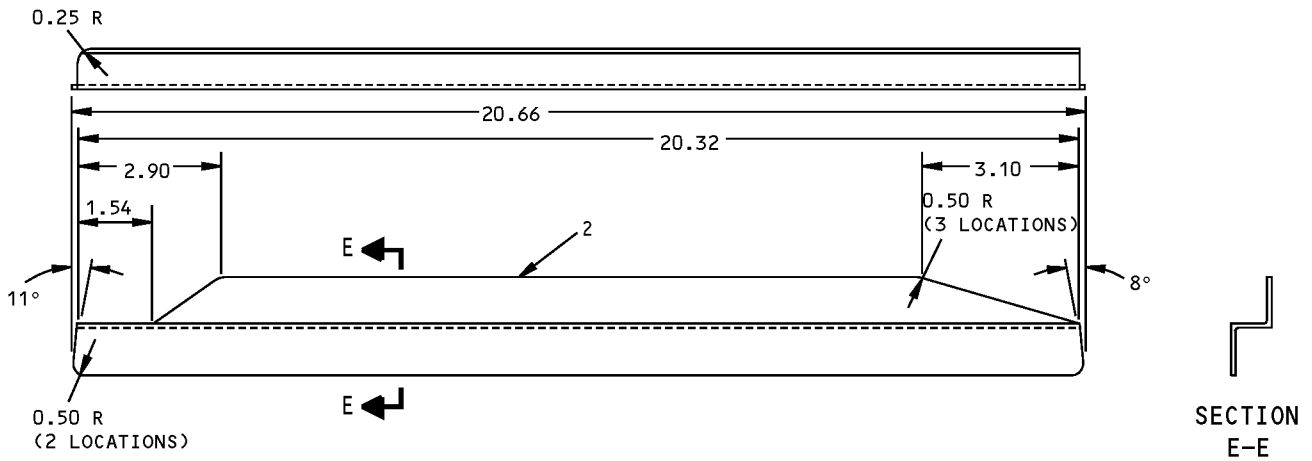
DETAIL III



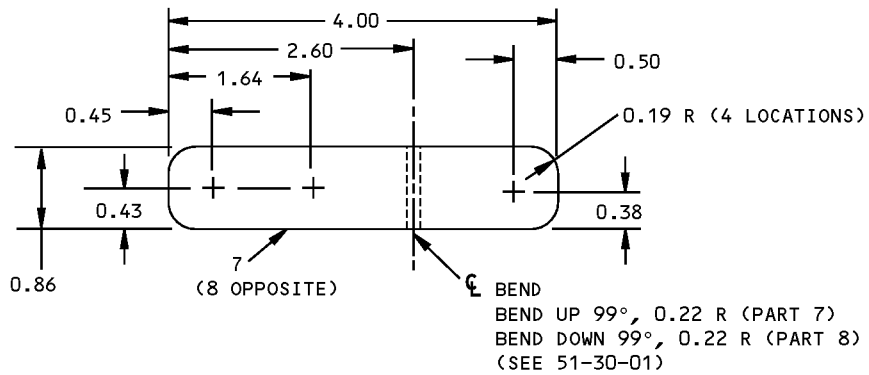
DETAIL IV

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V



DETAIL VI

**Aft Pylon Fairing - Trailing Edge Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT AFT FAIRING TRAILING EDGE BULKHEAD CRACK - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE BULKHEAD SIDE FLANGES.

REPAIR INSTRUCTIONS

1. Get access to the damaged aft fairing trailing edge bulkhead. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Do a high frequency eddy current (HFEC) inspection of the bulkhead flanges to locate the full length of the crack. Refer to NDT Part 6, 51-00-00. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
3. Cut and remove the cracked bulkhead side flanges along the bend line. Keep the minimum corner radii of 0.25 inch (6 mm) and break all sharp edges.
4. Make the repair parts. See Table I and Details II, III, and IV.

NOTE: As an alternative, the initial web of the bulkhead can be used in lieu of the part 3 bulkhead web if there is a 2D minimum edge margin on the web after the cracks are removed and the initial hole locations are not damaged.

5. Assemble the repair parts and drill the fastener holes. **A**
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Install the aft fairing trailing edge and panel assemblies.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - NDT PART 6, 51-00-00 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

- A** THE INITIAL WEB AND STIFFENERS MAY BE USED AS A TEMPLATE TO FIND INITIAL FASTENER LOCATIONS
- B** FOUR EVENLY SPACED FASTENER LOCATIONS ON EACH FLANGE. SEE DETAIL I, VIEW A-A. KEEP A 2D MINIMUM EDGE MARGIN AND 4D - 6D FASTENER SPACING ON EACH ROW.

FASTENER SYMBOLS

- REFERENCE FASTENER LOCATION.
- INITIAL FASTENER LOCATION. INSTALL A BACR15FT6KE()C RIVET OR INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- INITIAL FASTENER LOCATION. INSTALL A BACB30NY6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT5KE()C RIVET OR INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **B**

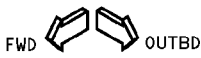
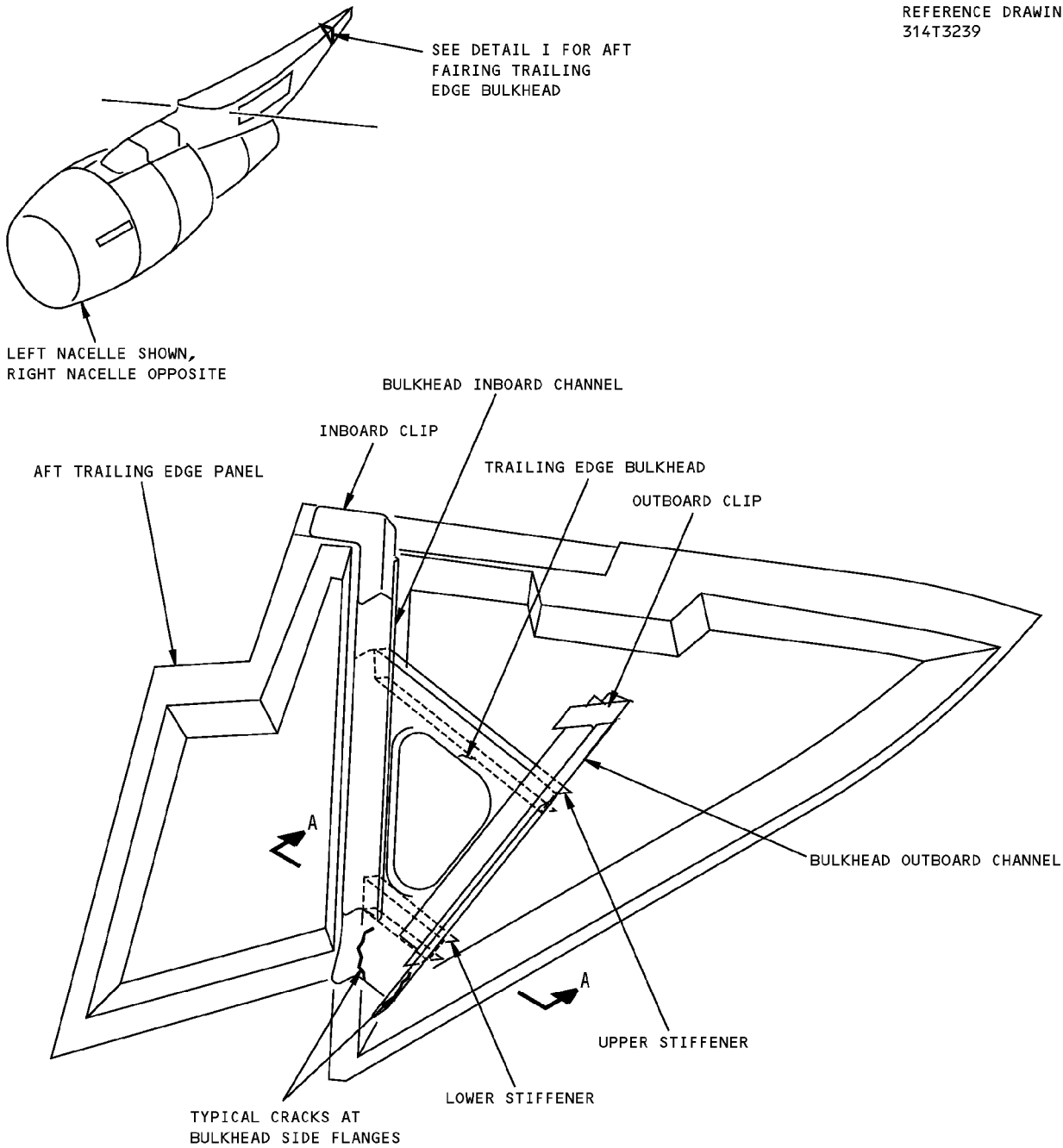
REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	OUTBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
2	INBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
3	BULKHEAD WEB	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
4	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6
5	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6

TABLE I

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
314T3239

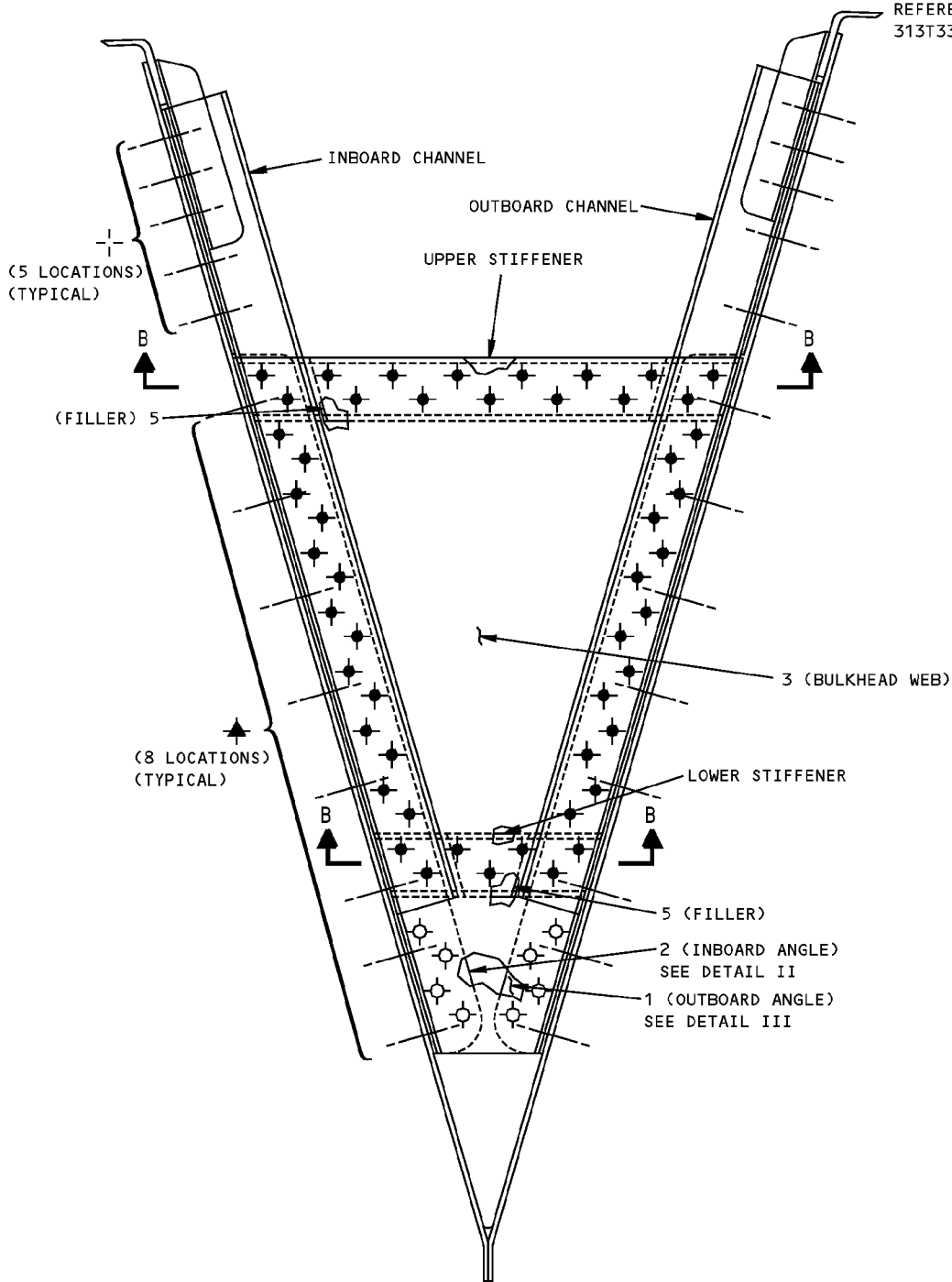


DETAIL I

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360

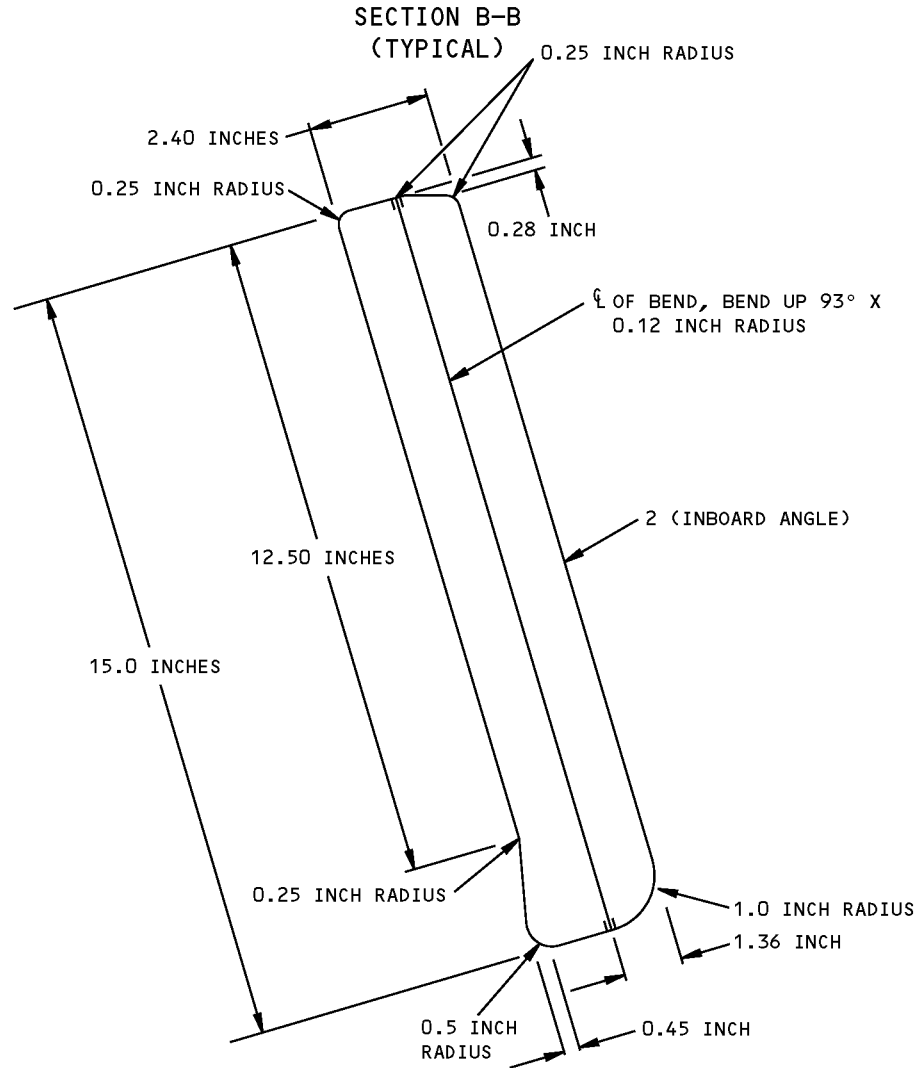
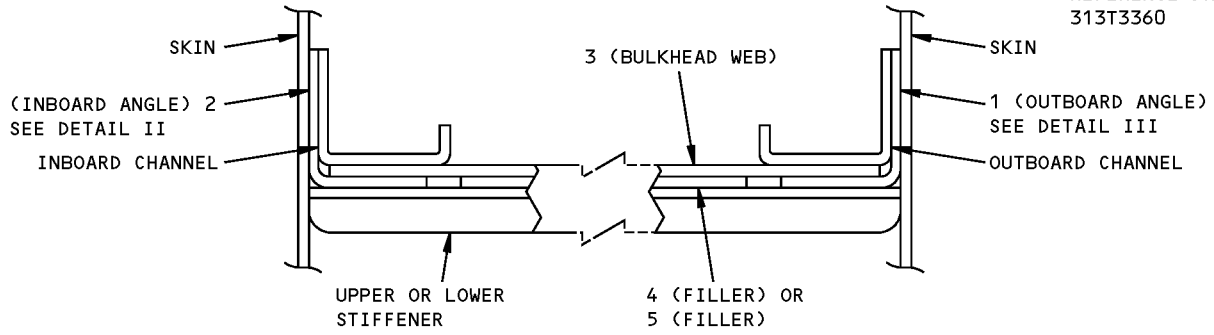


VIEW LOOKING AFT
VIEW A-A

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360

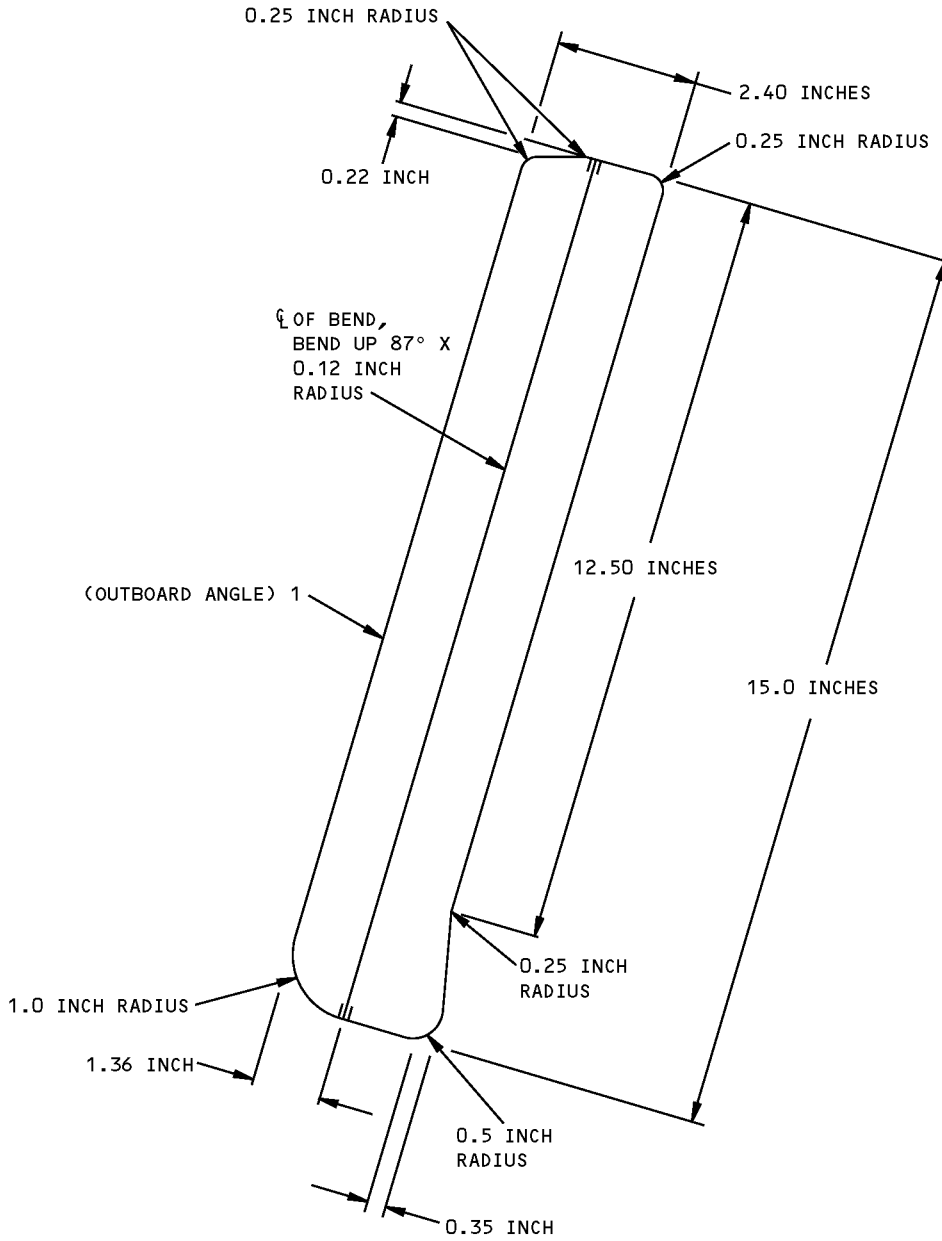


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
DETAIL II

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



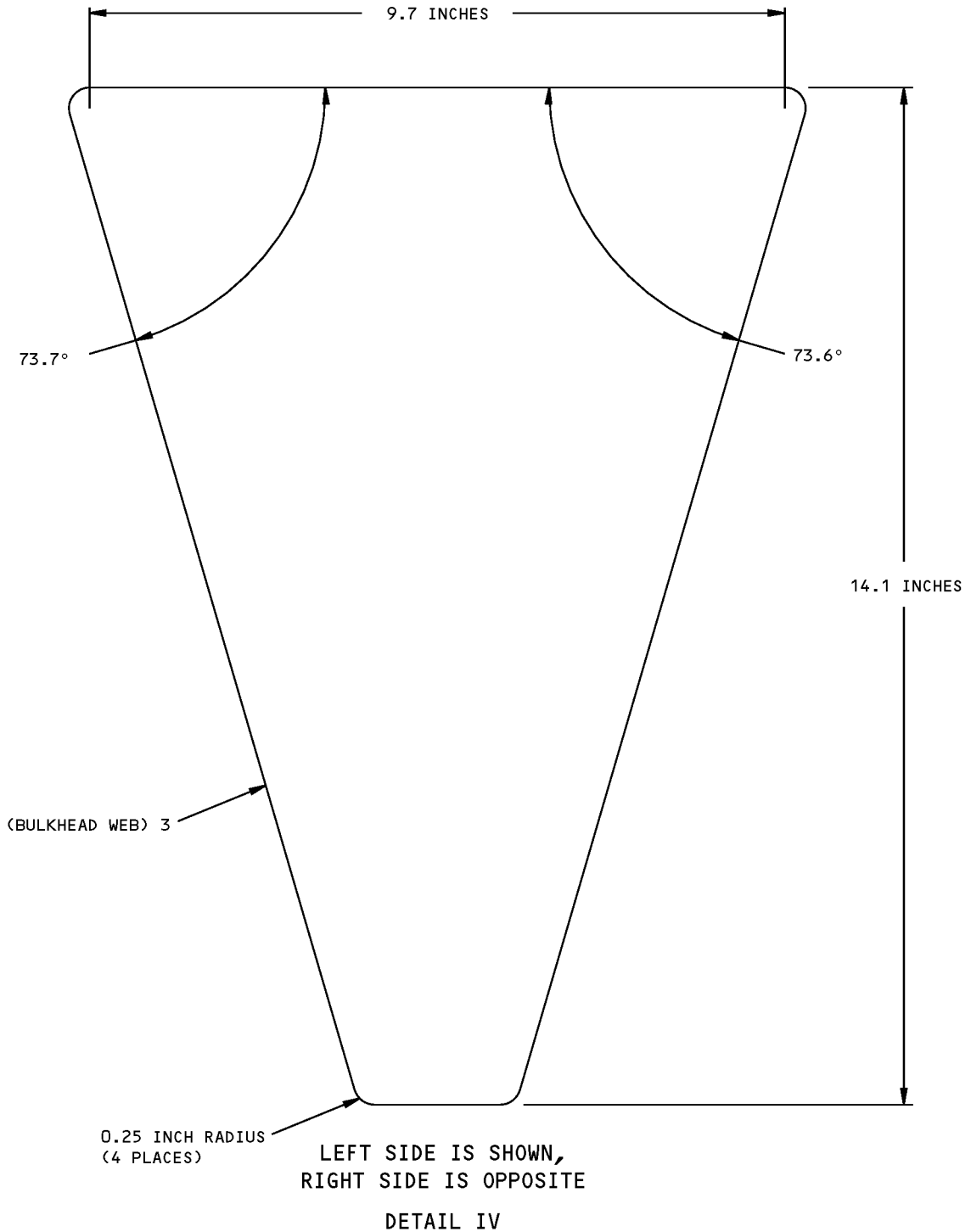
LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

DETAIL III

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT FAIRING SKIN PANEL - CF6-80C2 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Do a high-frequency eddy current inspection (HFEC) of the panel to find the ends of the crack. Refer to NDT Part 6, 51-00-01.
As an alternative, do a penetrant inspection of the panel to find the ends of the crack. Refer to SOPM 20-20-02.
3. Stop drill the end of the crack. Refer to SRM 51-10-02. Leave the hole open.
4. Make the repair parts. See Table I.
5. Assemble the repair parts and drill the fastener holes. See Detail I. Refer to SRM 51-40-08.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the skin.
8. Apply a chemical conversion coating to the aluminum repair part and to the bare surfaces of the skin. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-79, Type III primer to the repair parts and to the bare surfaces of the skin. Refer to SOPM 20-41-02.
10. Apply BMS 5-63 sealant to the mating surfaces. Refer to SRM 51-20-05.
11. Install the repair parts.
12. Install the fasteners wet with BMS 5-63 sealant.
13. Restore the finish to the repair area as applicable. Refer to AMM 51-21-00.

SRM 51-20-05 FOR THE REPAIR SEALING





SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS

SRM 51-40-00 FOR THE FASTENER CODES, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MATERIALS

AMM 51-21-00 FOR THE INTERIOR AND EXTERIOR FINISHES

- A** ADJUST THE LOCATIONS OF THE REPAIR FASTENERS TO HAVE THESE SEPARATION SPACINGS:
- 2D FROM EDGES
 - 4D TO 6D FROM OTHER FASTENERS
 - 4D TO 6D FROM CRACK STOP HOLE.

SYMBOLS

-  REFERENCE FASTENER LOCATION
-  INITIAL FASTENER LOCATION. INSTALL A BACB30N5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30N5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT WITH A NAS620C10L WASHER UNDER A BACN10YR3CD COLLAR.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.063 2024-T3

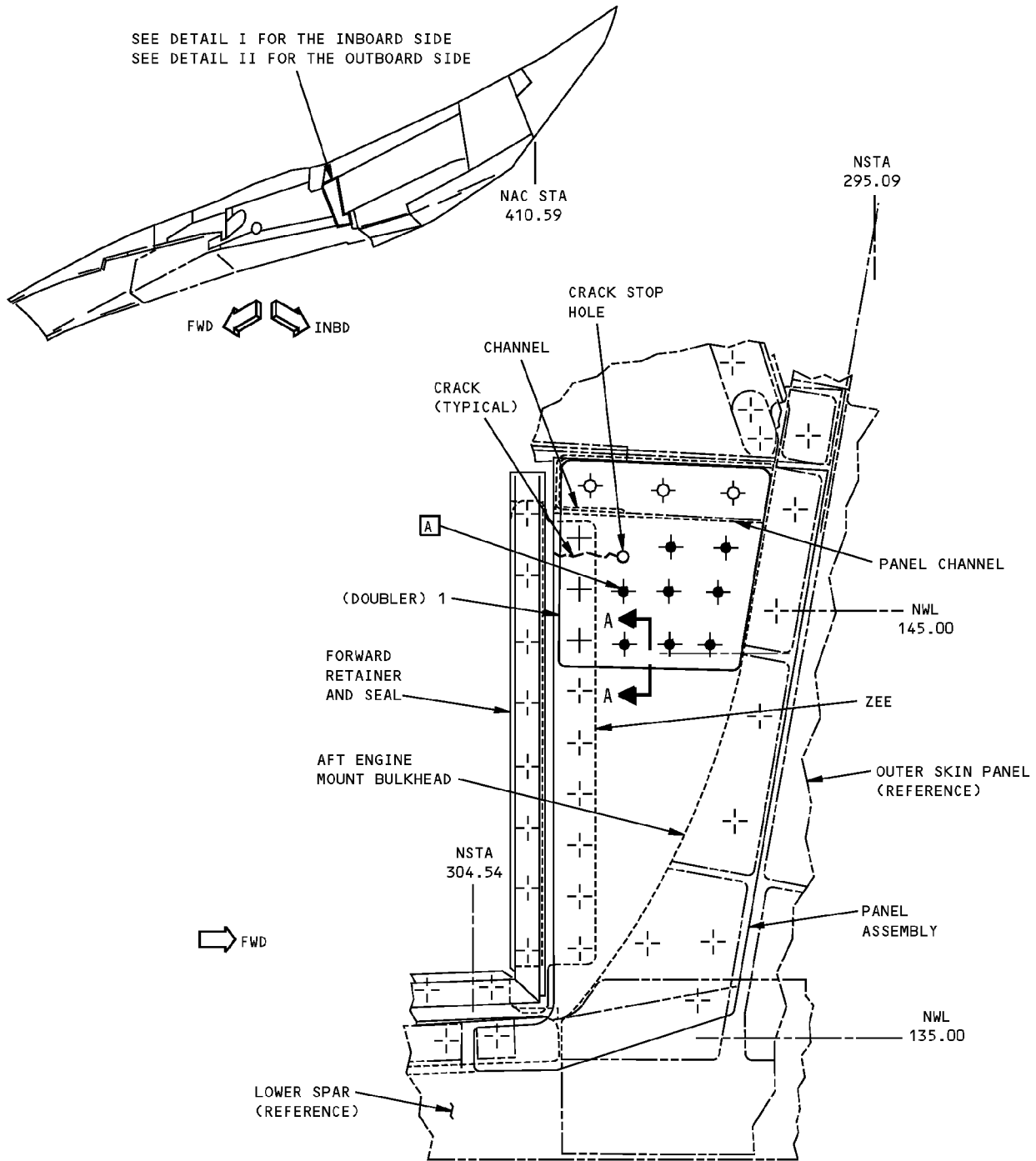
TABLE I

NOTES

- REFER TO SRM 51-10-01 FOR THE AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR IS MORE THAN THE LIMIT SHOWN ON SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- D = FASTENER DIAMETER
- REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
 NDT PART 6, 51-00-01 FOR THE EDDY CURRENT INSPECTION PROCEDURES
 SOPM 20-20-02 FOR THE DYE PENETRANT INSPECTION PROCEDURES
 SRM 51-10-02 FOR THE INSPECTION AND REMOVAL OF DAMAGE
 SRM 51-10-01 FOR THE AREODYNAMIC SMOOTHNESS REQUIREMENTS

**Strut Fairing Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**

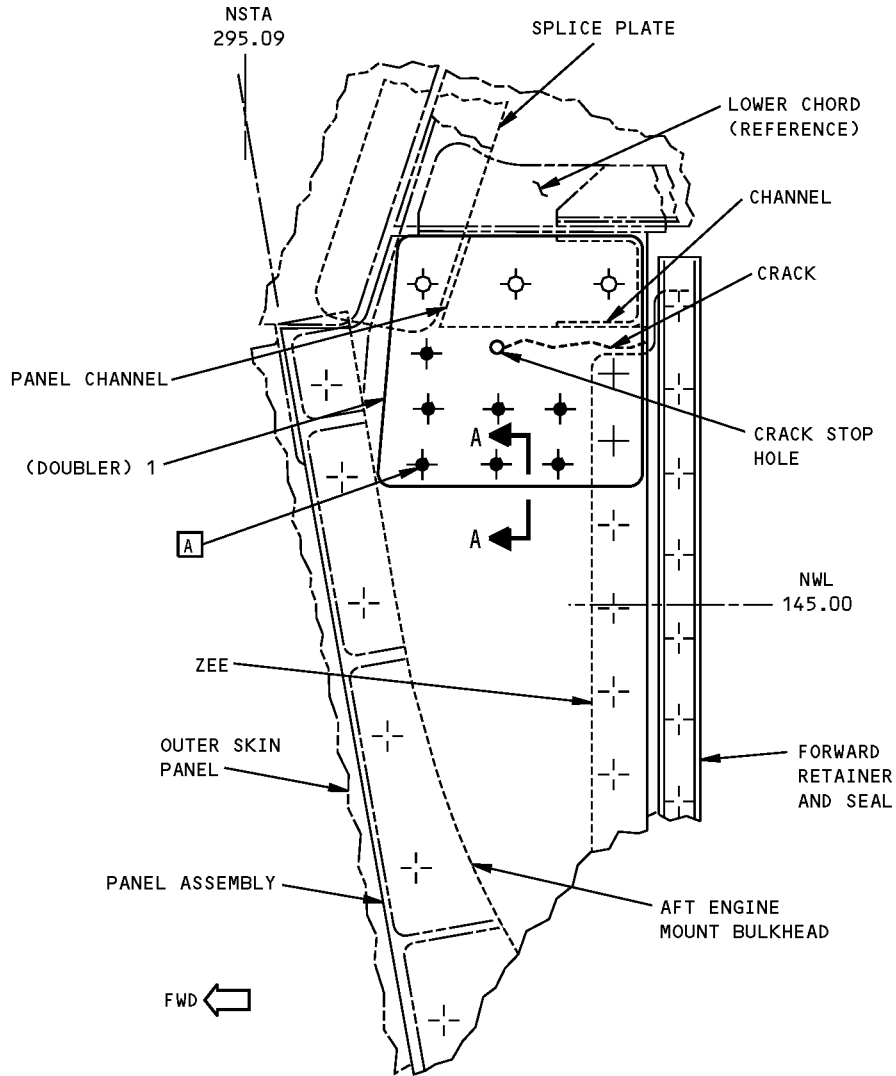
**767-300
STRUCTURAL REPAIR MANUAL**



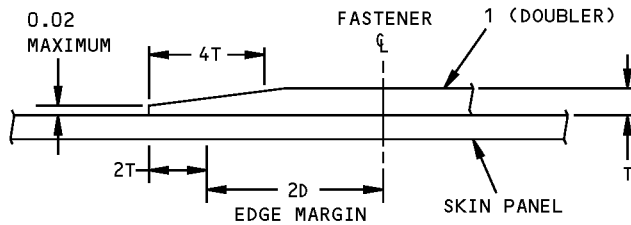
INBOARD LEFT SIDE IS SHOWN
INBOARD RIGHT SIDE IS OPPOSITE
DETAIL I

**Strut Fairing Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



OUTBOARD LEFT SIDE IS SHOWN
OUTBOARD RIGHT SIDE IS OPPOSITE
DETAIL II



EDGE CHAMFER (TYPICAL ALL EDGES)
SECTION A-A

**Strut Fairing Skin Panel Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - INBOARD SKIRT BEAM PANEL TAB CRACK - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO CUM LINE NUMBERS 1 THRU 773.

REPAIR INSTRUCTIONS

1. Get access to the damaged inboard skirt beam panel. Remove the fuse pin access door (313T1200) and the Ground Support Equipment (GSE) fastener located at the skirt beam panel tab. See Detail I.
2. Remove (9) fasteners common to the skirt beam skin and the splice plate as shown in Detail I. Carefully pull the edge of the skirt beam skin open and remove the splice plate. If the panel assembly has an elliptical shim, keep the elliptical shim for subsequent installation. Discard the square shim if it is installed at the GSE location.
3. Trim the splice plate in the area around the GSE attachment location as shown in Detail II.
4. Use special care to trim and remove the cracked skirt beam skin tab as shown in Detail III. Place a 0.040 inch (1.0 mm) thick steel sheet under the skirt beam skin to prevent damage to the bulkhead before you make the cut.
5. Make the Part 1 filler:
 - a. Make the filler parts as shown in Detail IV.
 - b. Remove the nicks, scratches, gouges, burrs, and sharp edges from the filler parts.
 - c. Apply a chemical conversion coating to the filler parts. Refer to SRM 51-10-02.
 - d. Apply one layer of BMS 10-79 primer to the filler parts.
 - e. Bond the filler parts together with BMS 5-92, Type V, Class 1 or 2 as shown in Detail IV to make the part 1 filler. Refer to SOPM 20-50-12.
6. Assemble the splice plate and elliptical shim under the skirt beam skin and drill the fastener holes. See Detail V.
7. Trim the elliptical shim for clearance as necessary. See Detail V. **D**
8. Assemble the part 1 filler as shown in Detail V. Drill and countersink to match the GSE fastener location from the aft engine mount bulkhead. See Detail IV for the hole size and the countersink dimensions.
9. Disassemble the parts above.

10. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair part and the cut edges.
11. Apply a chemical conversion coating to the bare surfaces of the cut edges and the countersunk hole. Refer to SRM 51-10-02.
12. Apply two layers of BMS 10-79, Type III primer to the bare surfaces of the cut edges and apply one layer of BMS 10-79, Type III primer to the part 1 filler. Refer to SOPM 20-44-04.
13. Apply one layer of BMS 10-86, Type 27 teflon coating to the splice plate as shown in Detail II. **A**
14. Install the part 1 filler to the aft engine mount bulkhead with BMS 5-95 sealant. Keep a clearance of 0.060 to 0.080 inch (1.5 TO 2.0 mm) between the edge of filler and the edge of skirt beam skin. Refer to SOPM 20-50-19.
15. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
16. Install GSE fastener through part 1 filler into the aft engine mount bulkhead.
17. Apply the initial finish to the repair area. Refer to AMM 51-20.
18. Install the fuse pin access door.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-20 FOR THE INTERIOR AND EXTERIOR FINISHES
 - SOPM 20-41-02 FOR THE APPLICATIONS OF FINISHES
 - SOPM 20-44-01 FOR THE APPLICATION OF ABRASION RESISTANT FINISHES
 - SOPM 20-44-04 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES
 - SOPM 20-50-19 FOR THE APPLICATION OF SEALANTS
 - SRM 51-10-02 FOR THE INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-02 FOR THE PROTECTIVE TREATMENT OF METAL
 - SRM 51-40-00 FOR THE FASTENER CODES, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MATERIALS





**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES CONT.

- A** APPLY ONE LAYER OF BMS 10-86, TYPE 27 ABRASION RESISTANT TEFLON COATING ON THE MATING SURFACES OF THE SPLICE PLATE WHICH TOUCH THE AFT ENGINE MOUNT BULKHEAD AS SHOWN IN THE HATCHED AREA.
- B** BOND THE MATING SURFACES WITH BMS 5-92, TYPE V, CLASS 1 OR 2 ADHESIVE.
- C** DRILL A 0.5 INCH DIAMETER HOLE AND COUNTERSINK THE HOLE TO 0.755-0.765 INCH MAXIMUM DIAMETER AT 100° TO ACCEPT THE GSE FASTENER AS SHOWN IN BOEING DRAWING 313T3310, SHEET 8, VIEW 2B5.
- D** TRIM THE ELLIPTICAL SHIM AS NECESSARY TO KEEP A MINIMUM CLEARANCE OF 0.060 INCH BETWEEN THE EDGES OF THE SHIM AND THE PART 1 FILER.

FASTENER SYMBOLS

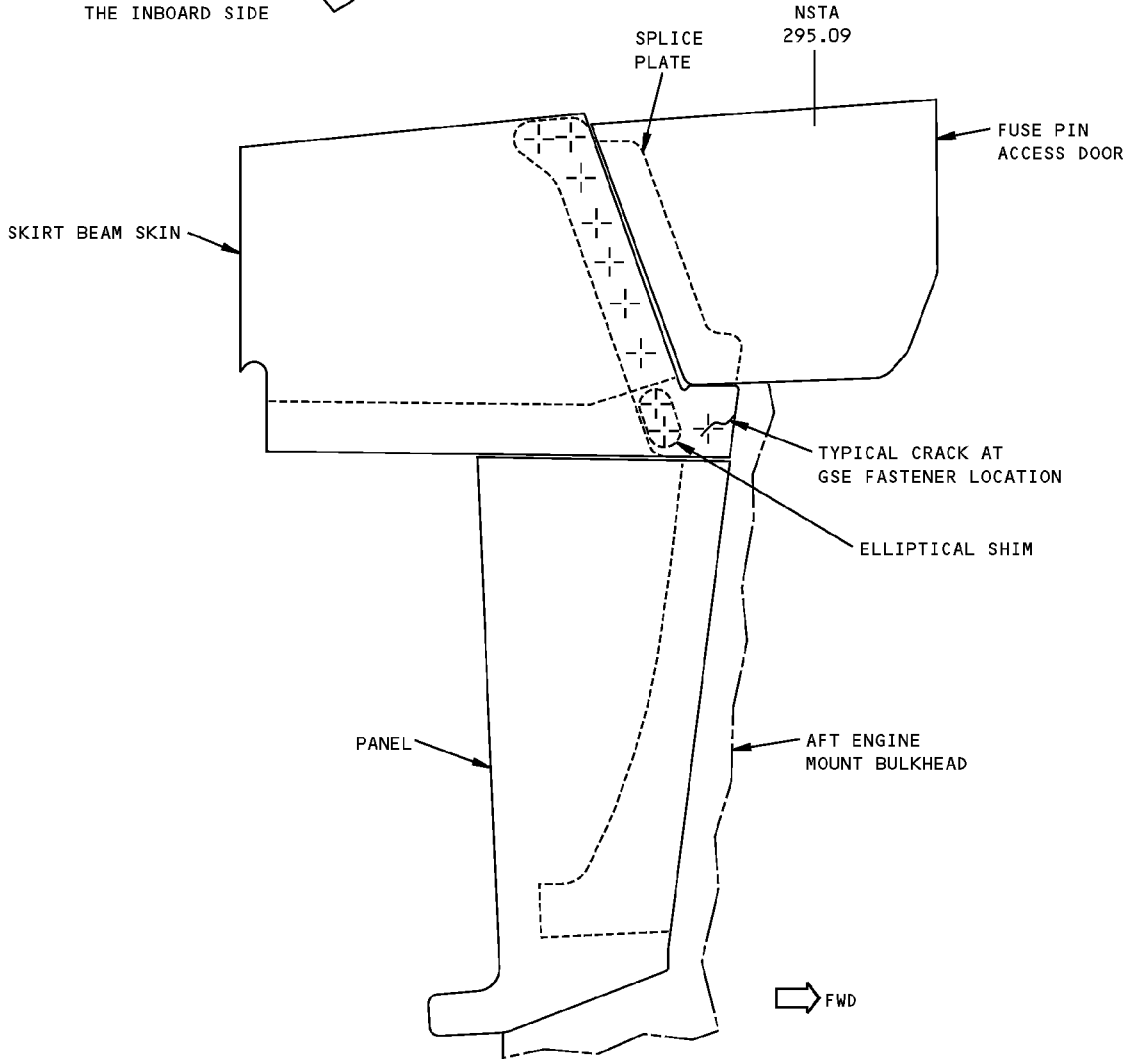
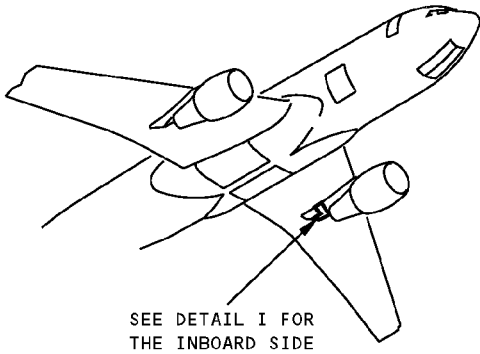
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NN3K() RECESS DRIVE BOLT INTO THE BACN10JR FLOATING NUT PLATE.
-  INITIAL FASTENER LOCATION. INSTALL A BACR15BA6KE()C OR BACR15BA7KE()C RIVET AS NECESSARY
-  INITIAL FASTENER LOCATION. INSTALL A BACB30LR6KP10 RECESS DRIVE BOLT.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	FILLER	1	BOND TWO 2024-T3 CLAD SHEETS TOGETHER AS SHOWN IN DETAIL IV. USE SHEET THICKNESS OF 0.063 INCH AND 0.100 INCH.

TABLE I

**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

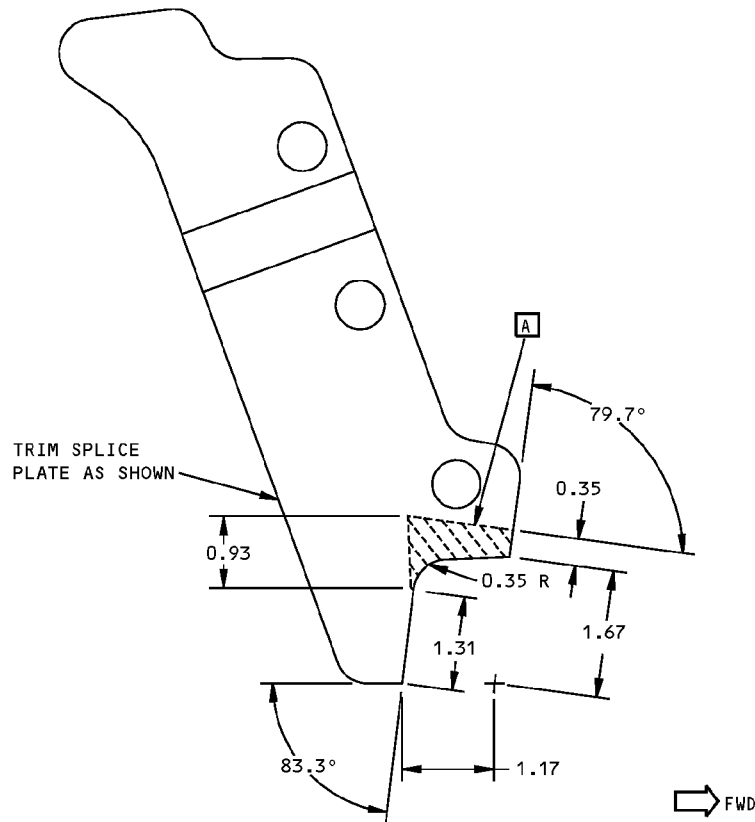


LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD

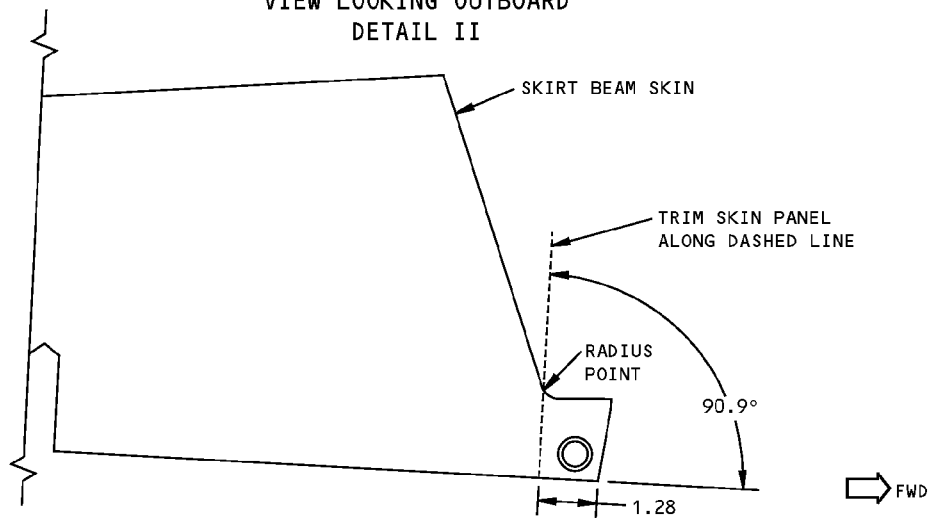
DETAIL I

**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



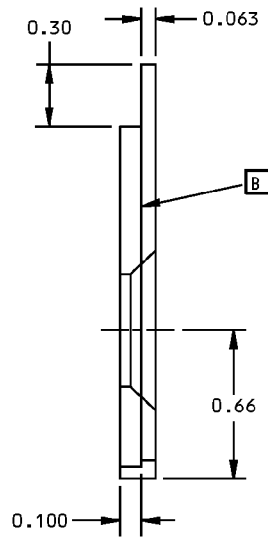
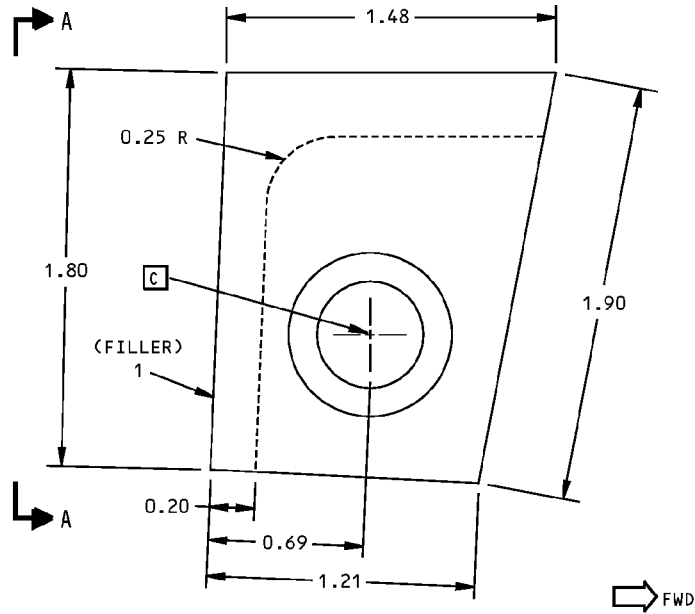
LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL II



LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL III

**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

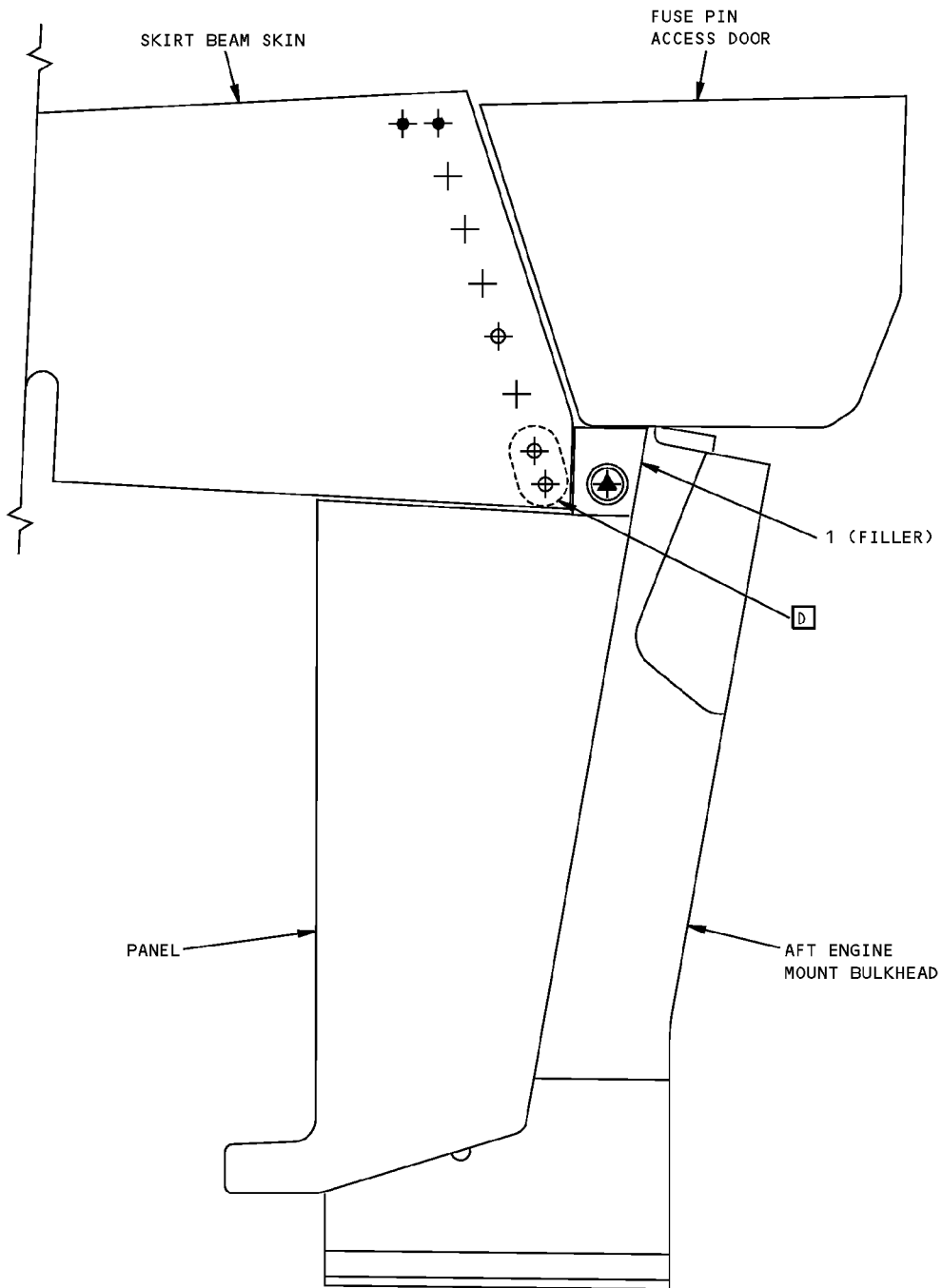


SECTION A-A

LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL IV

**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



⇨ FWD

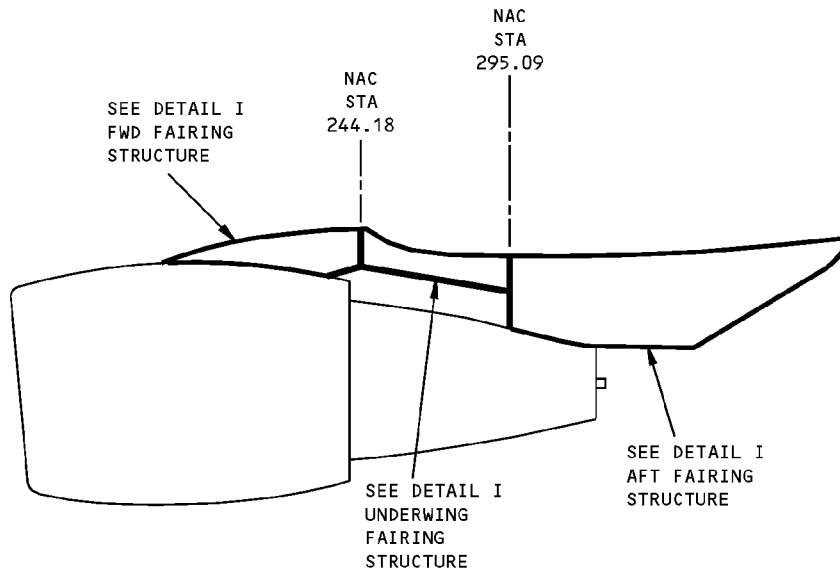
LEFT STRUT IS SHOWN, RIGHT STRUT IS OPPOSITE
VIEW LOOKING OUTBOARD
DETAIL V

**Inboard Skirt Beam Panel Tab Crack Repair - CF6-80C2 Engine
Figure 201 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING STRUCTURE - CF6-80C2 ENGINE

REFERENCE DRAWING
310T1060



NOTES

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A APPLICABLE TO THE AFT MOST 7 INCHES OF THE SKATE ANGLE. FOR AIRPLANES WITH THE CF6-80C ENGINES, CUM LINE NUMBERS 1 THROUGH 243 AND 250 WITH SB 767-57-0023 INCORPORATED</p> <p>B APPLICABLE TO THE AFT MOST 7 INCHES OF THE SKATE ANGLE. FOR AIRPLANES WITH CF6-80C CUM LINE NUMBERS 244 THROUGH 249, AND 251 THROUGH 614</p> | <p>C FOR AIRPLANES WITH CF6-80C ENGINES, CUM LINE NUMBERS 1 THROUGH 243 AND 250 WITHOUT SB 767-57-0023 INCORPORATED</p> <p>D APPLICABLE TO THE AFT MOST 32 INCH SEGMENT FOR AIRPLANES WITH CF6-80C ENGINES, CUM LINE NUMBERS 615 AND ON</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Strut Fairing Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 3)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ANGLE	0.100	7075-T62	
2	ANGLE	0.080	7075-T62	
3	SKIN	0.063	CLAD 2024-T3	
4	HAT SECTION (EXTRUSION)		BAC1509-100318 7075-T6511	
5	HAT SECTION (FORMED)		BAC1498-145 7075-T6	
6	ZEE	0.080	7075-T6	
7	CHANNEL	0.090	7075-T6	
8	RIB/FRAME	0.063	2024-T42	
9	ANGLE	0.080	7075-T62	
10	STIFFENER		BAC1506-2115 7075-T6	
11	CHORD	0.063	7075-T62	
12	BEAM	0.080	7075-T6	
13	STIFFENER	0.080	7075-T62	
14	ZEE		AND10138-0710 2024-T3511	
15	VAPOR BARRIER CHANNEL WEB	0.050	BAC1510-319 2024-T3511 CLAD 2024-T42	
16	FRAME		AND10136-2005 7075-T6	
17	TEE		AND10136-2005 2024-T42	
18	ANGLE - SKATE	0.125	7075-T6	C
19	LONGERON	0.063	CLAD 7075-T62	
20	FRAME	0.063	CLAD 2024-T42	
21	DIAGONAL BRACE	0.063	CLAD 2024-T42	
22	NOSE FILLER	0.040	2024-T42	
23	CHANNEL	0.063	2024-T42	
24	WEB ASSEMBLY WEB (2)	0.025	CLAD 2024-T3 (BONDED ASSEMBLY)	
25	LONGERON	0.063	CLAD 2024-T42	
26	FITTING		FORGING 7075-T73	
27	FRAME		BAC1506-1332 2024-T42	
28	VAPOR BARRIER FRAME WEB	0.050	AND10136-2004 2024-T42 2024-T42	
29	AFT ANGLE - SKATE	0.125	15-5PH CRES	A B
30	INBOARD AFT ANGLE - SKATE		BAC1514-3106 7075-T73 (OPTIONAL: 7075-T73 EXTRUDED BAR)	D
31	OUTBOARD AFT ANGLE - SKATE		BAC1514-3100 7075-T73 (OPTIONAL: 7075-T73 EXTRUDED BAR)	D

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Structure Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 3)**

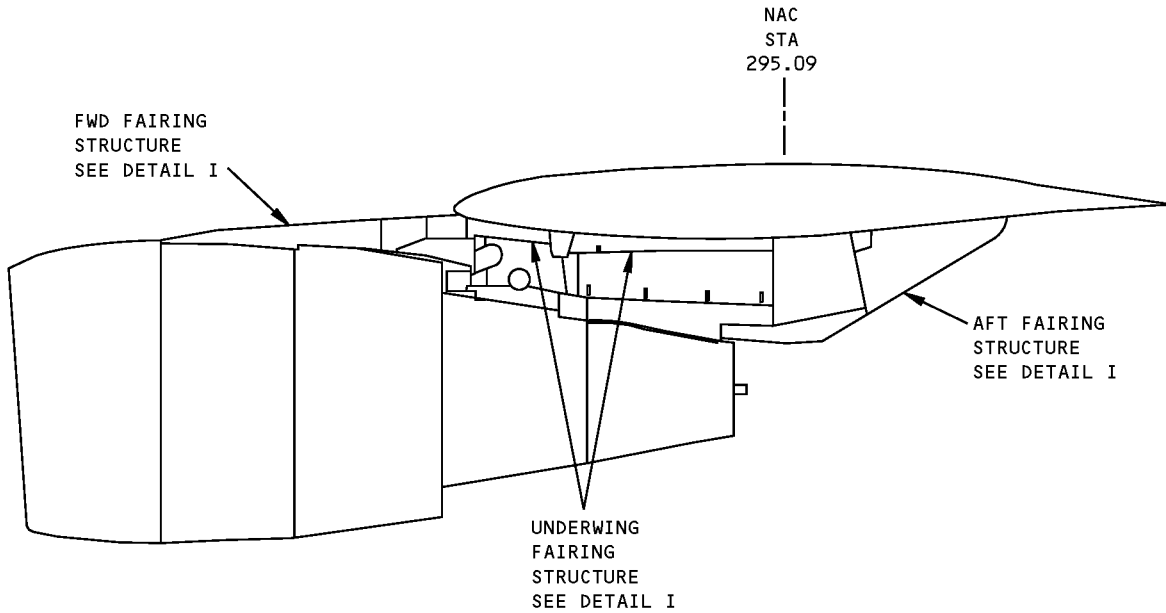
IDENTIFICATION 1
Page 3
Apr 15/2006

54-52-71

D634T210

767-300
STRUCTURAL REPAIR MANUAL

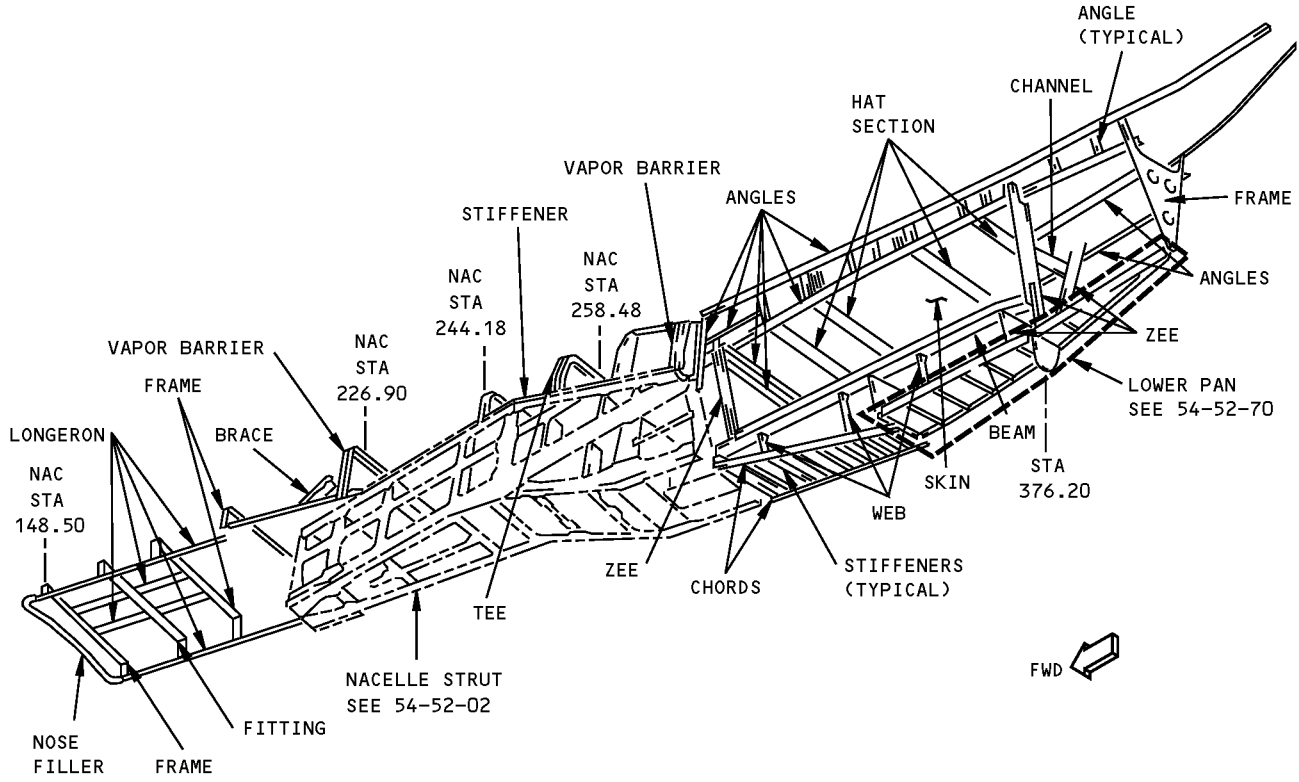
ALLOWABLE DAMAGE 1 - STRUT FAIRING STRUCTURE - CF6-80C2 ENGINE



Strut Fairing Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 5)

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T2380
313T3310



DETAIL I

**Strut Fairing Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 5)**

54-52-71
ALLOWABLE DAMAGE 1
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D634T210



767-300

STRUCTURAL REPAIR MANUAL

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED
SKIN	C	B	SEE DETAIL IV	D
HAT SECTION	A	B	NOT ALLOWED	NOT ALLOWED
ZEE	A	B	NOT ALLOWED	NOT ALLOWED
CHANNEL	A	B	NOT ALLOWED	NOT ALLOWED
FRAME	A	B	NOT ALLOWED	NOT ALLOWED
WEBS	A	B	SEE DETAIL IV	NOT ALLOWED
STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL VIII
RETAINERS	A	B	NOT ALLOWED	NOT ALLOWED
TEE	A	B	NOT ALLOWED	NOT ALLOWED
LONGERON	A	B	NOT ALLOWED	NOT ALLOWED
BRACE	A	B	NOT ALLOWED	NOT ALLOWED
BEAM	A	B	NOT ALLOWED	NOT ALLOWED
NOSE FILLER	A	B	NOT ALLOWED	NOT ALLOWED
VAPOR BARRIER	A	B	NOT ALLOWED	NOT ALLOWED
CHANNEL OR FRAME	C	B	SEE DETAIL IV	D
WEB	C	B	SEE DETAIL IV	D

NOTES

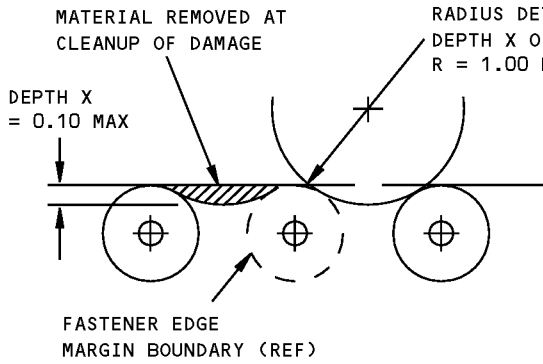
- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL.
 - REFER TO 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
- A CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VII
- B REMOVE DAMAGE PER DETAILS II, III AND V
- C CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- D CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED

Strut Fairing Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 5)

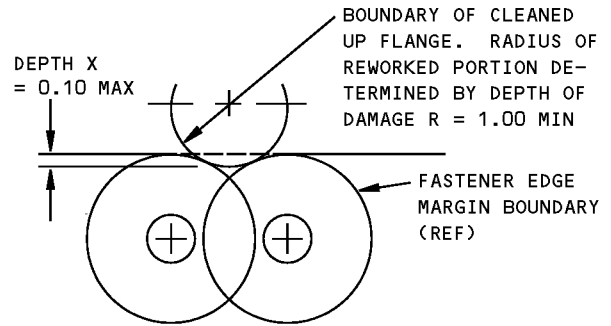
D634T210

ALLOWABLE DAMAGE 1
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STRUCTURAL REPAIR MANUAL

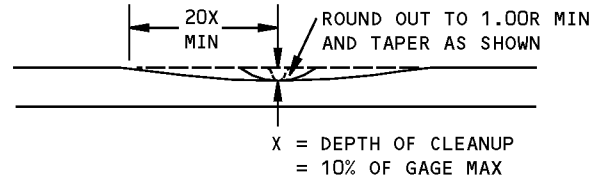
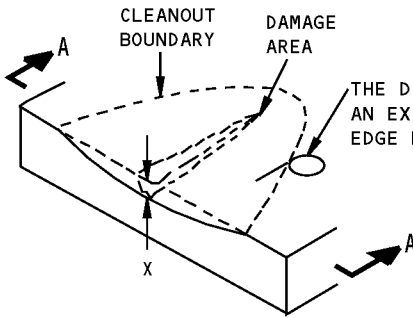


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



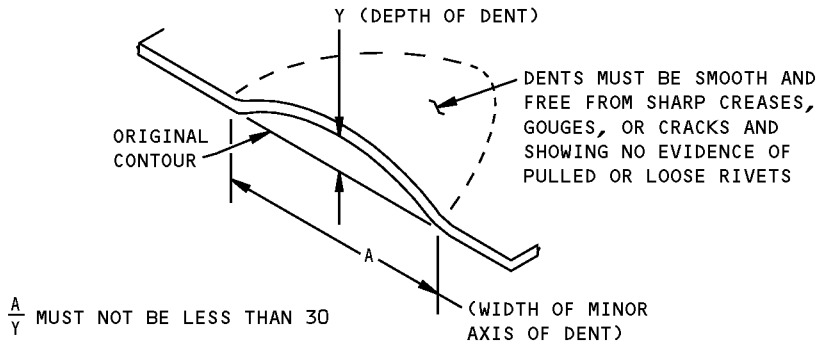
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



SECTION A-A

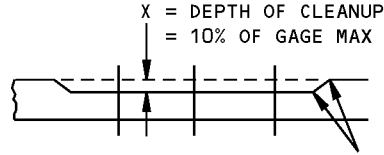
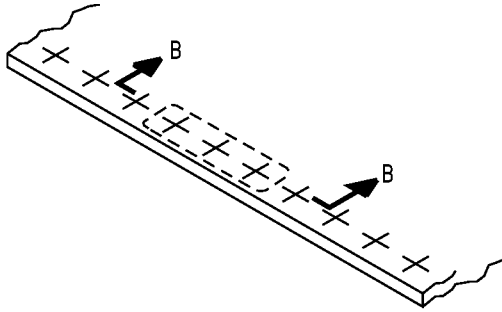
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL III**



**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**

**Strut Fairing Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 5)**

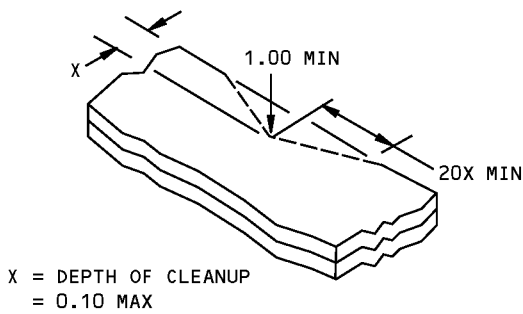
STRUCTURAL REPAIR MANUAL



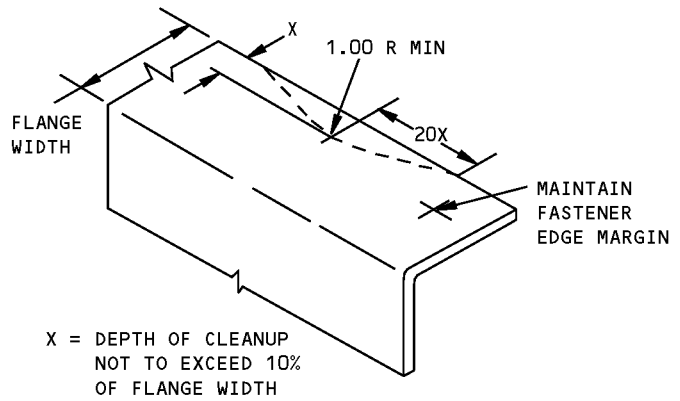
SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

SECTION B-B

CORROSION CLEANUP
DETAIL V



DETAIL VI

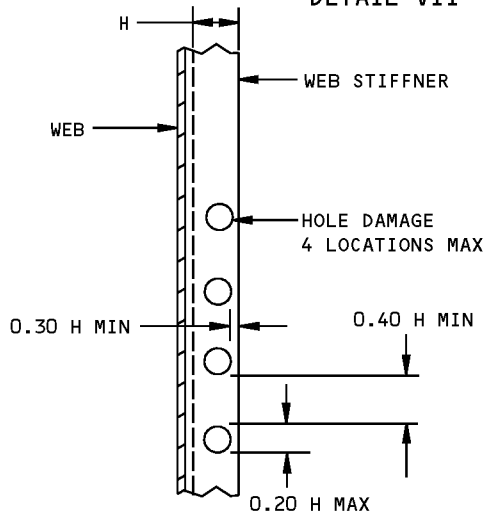


REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL VII

NOTE:

NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95.

H = WIDTH OF STIFFNER FLANGE



ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL VIII

Strut Fairing Structure Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 5 of 5)



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART - CF6-80C2 ENGINE

SERVICE BULLETIN REPAIRS

The following service bulletins contain strut fairing structure repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY ^A	SB NUMBER
NACELLE STRUT AFT FAIRING ATTACHMENT - OUTBOARD SKATE ANGLE	158 THRU 244	767-57-0023
NACELLE PYLONS - CF6-80A AND CF6-80C2 - NACELLE STRUT CHORD ANGLE AND STIFFENER REPLACEMENT AND INTERMEDI- ATE BULB SEAL ADDITION	158 THRU 272	767-54-0023

^A FOR AIRPLANES ON WHICH PREVENTIVE MODIFICATION HAS NOT BEEN ACCOMPLISHED

**Service Bulletin Repair Chart - CF6-80C2 Engine
Figure 201**

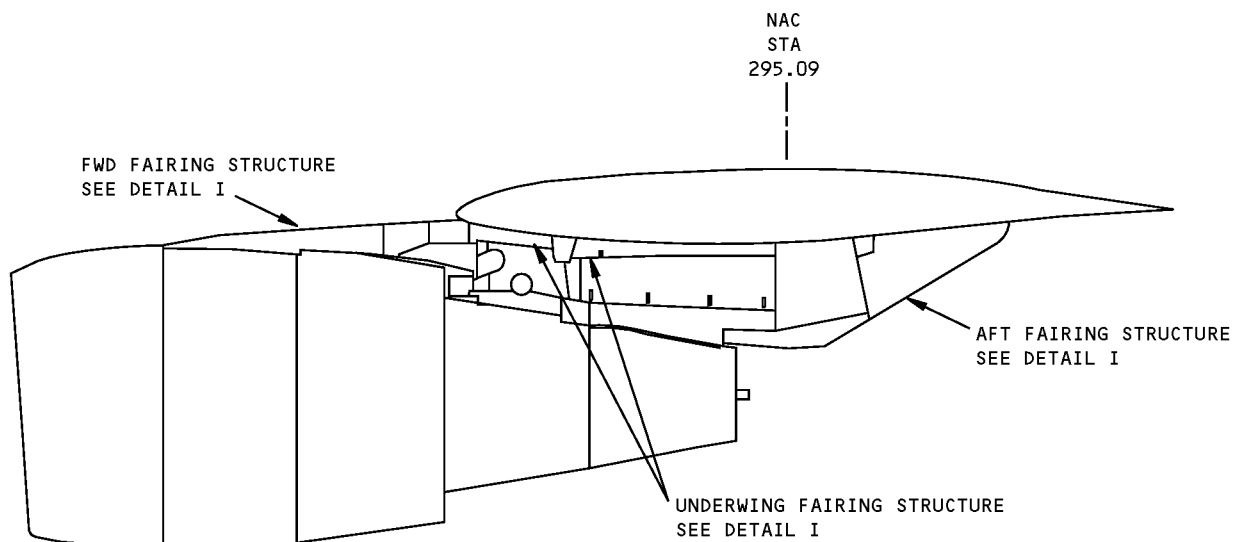
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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT FAIRING STRUCTURE - CF6-80C2 ENGINE



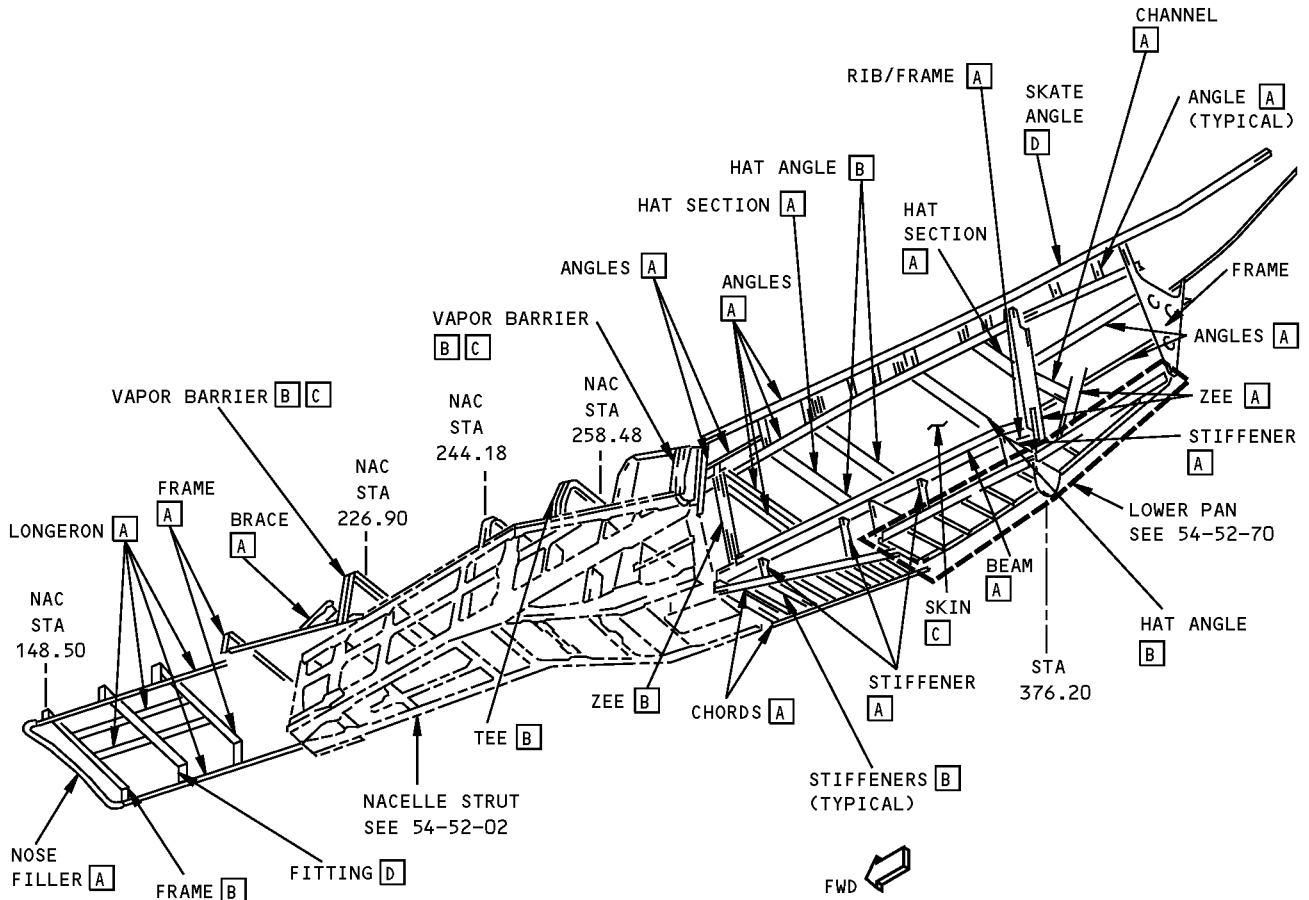
NOTES

- REFER TO 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFINISH REWORKED AREAS AS GIVEN IN AMM 51-21
- A** REFER TO SRM 51-70-11 FOR FORMED SECTION REPAIR
- B** REFER TO SRM 51-70-12 FOR EXTRUDED SECTION REPAIR
- C** REFER TO SRM 51-70-13 FOR WEB REPAIR
- D** NO TYPICAL REPAIRS APPLICABLE. REFER TO THE LIST OF SERVICE BULLETIN REPAIRS

**Strut Fairing Structure Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
313T2380
313T3310



DETAIL I

MATERIAL: ALUMINUM

**Strut Fairing Structure Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 2)**

767-300
STRUCTURAL REPAIR MANUAL

REPAIR 2 - FORWARD STRUT FAIRING FRAME AT STA 148.50 - CF6-80C2 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Inspect the station 148.5 frame (313T2100) and the adjacent fan cowl support beam (311U2510) to find the damage.
3. Trim frame web as necessary to prevent riding condition between frame and fan cowl support beam during normal operation. The maximum depth of trim in zone 1 is 0.120 inch (3.0 mm), and the maximum depth of trim in zone 2 is 0.080 inch (2.0 mm). Make the edges of cut smooth to 125 microinches Ra. See Detail II.
4. Do a penetrant inspection to make sure there are no cracks. Refer to SOPM 20-20-02.
5. Remove the nicks, scratches, gouges, burrs and sharp edges from the trimmed frame.
6. Apply a chemical conversion coating to the bare surfaces of the frame. Refer to SRM 51-20-01.
7. Apply two coats of BMS 10-11, Type I primer to the bare surfaces of the frame. Refer to SOPM 20-41-02.

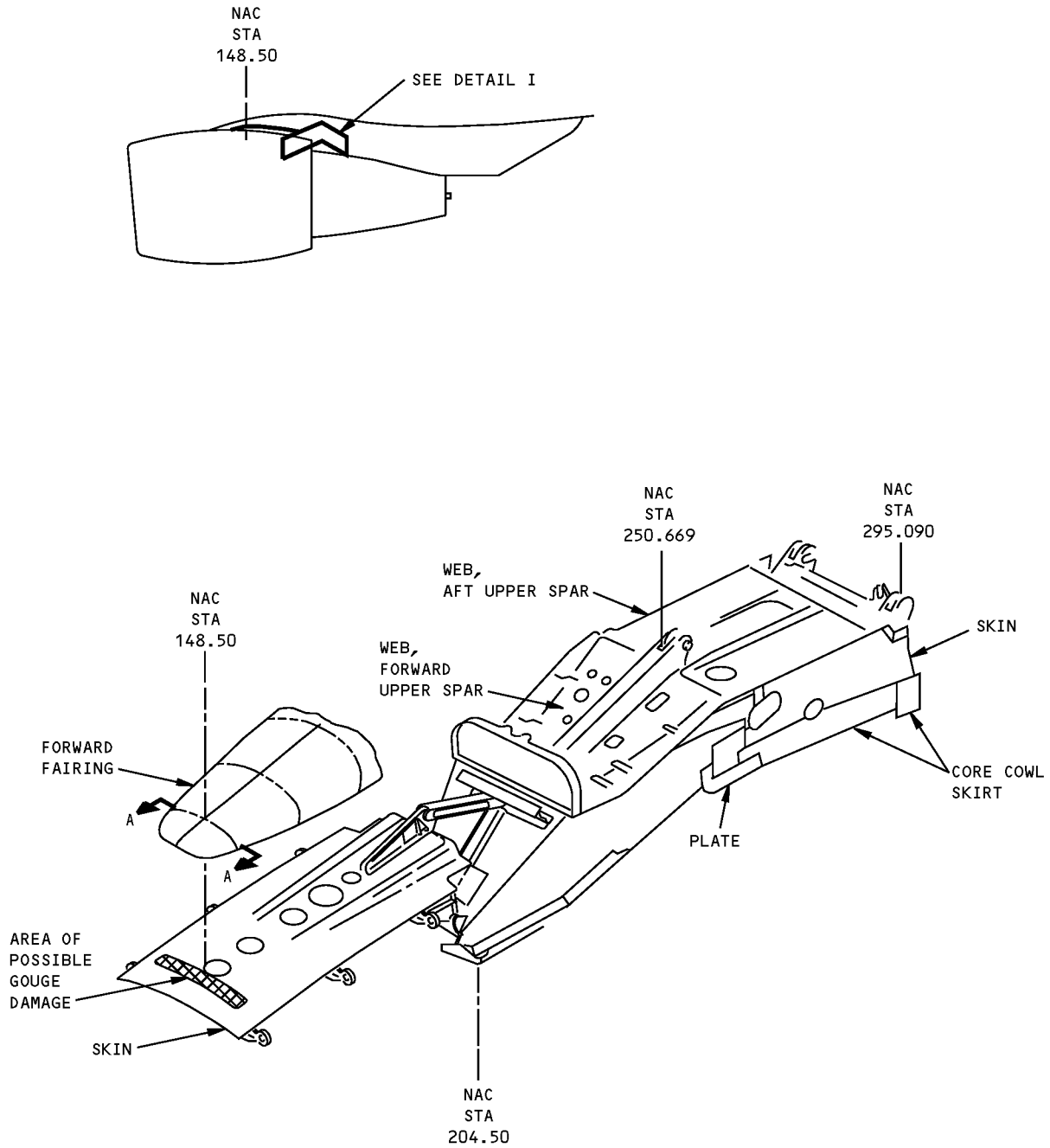
NOTES

- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC
 - SRM 51-20-05 FOR REPAIR SEALING

A TRIM FRAME WEB AS SHOWN IN DETAIL II. TRIM AS NECESSARY TO MAKE SURE THAT THE FRAME WEB DOES NOT TOUCH THE FAN COWL SUPPORT BEAM SKIN DURING NORMAL OPERATION. DO NOT TRIM ANY OTHER STRUCTURE

**Forward Strut Fairing Frame Repair at STA 148.50 - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

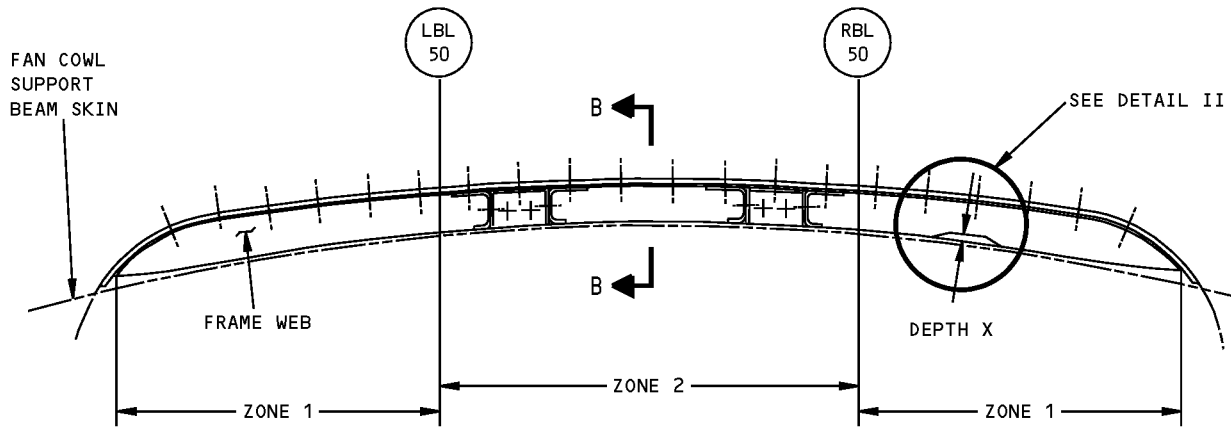
**767-300
STRUCTURAL REPAIR MANUAL**



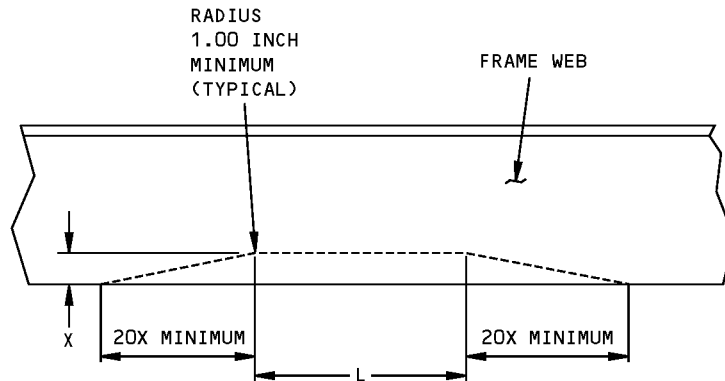
DETAIL I

**Forward Strut Fairing Frame Repair at STA 148.50 - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



SECTION A-A A



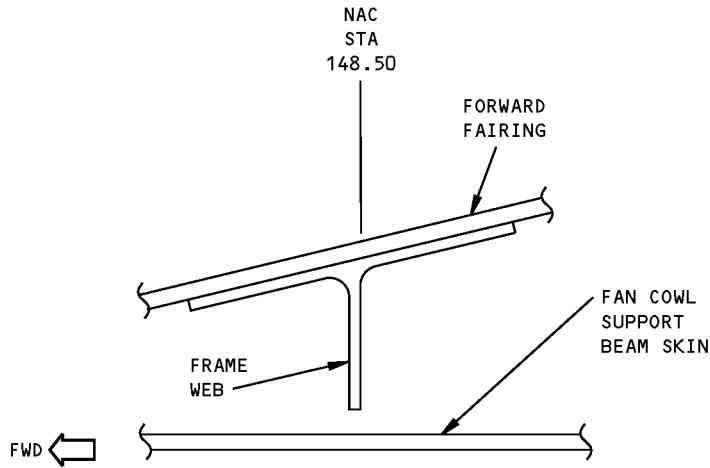
MAXIMUM DEPTH X = 0.120 INCH IN ZONE 1
MAXIMUM DEPTH X = 0.080 INCH IN ZONE 2

L = LENGTH AS NECESSARY TO PREVENT RIDING CONDITION

DETAIL II

**Forward Strut Fairing Frame Repair at STA 148.50 - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL



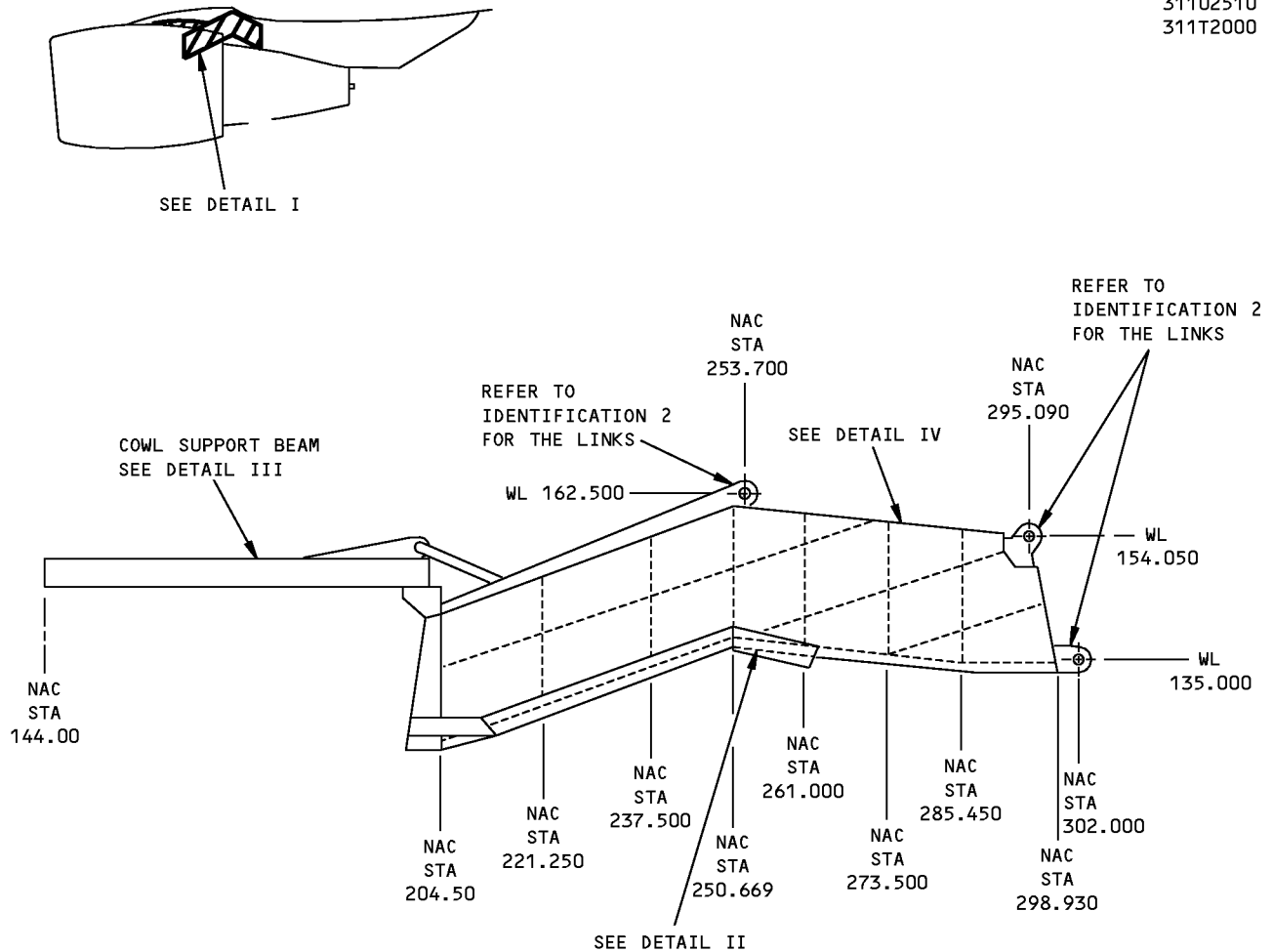
SECTION B-B
ZONE 1 AND ZONE 2 (TYPICAL)

Forward Strut Fairing Frame Repair at STA 148.50 - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT ATTACHMENT FITTING - CF6-80C2 ENGINE

REFERENCE DRAWINGS
311U2510
311T2000



DETAIL I

NOTES

- A** FOR AIRPLANES WITH CF6-80C2 ENGINES UP TO CUM LINE NUMBER 190.
- B** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER 197 AND ON.
- C** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER 2 THRU 633 WITHOUT SB 767-54-0081 INCORPORATION
- D** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER 665 AND ON, AND FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED

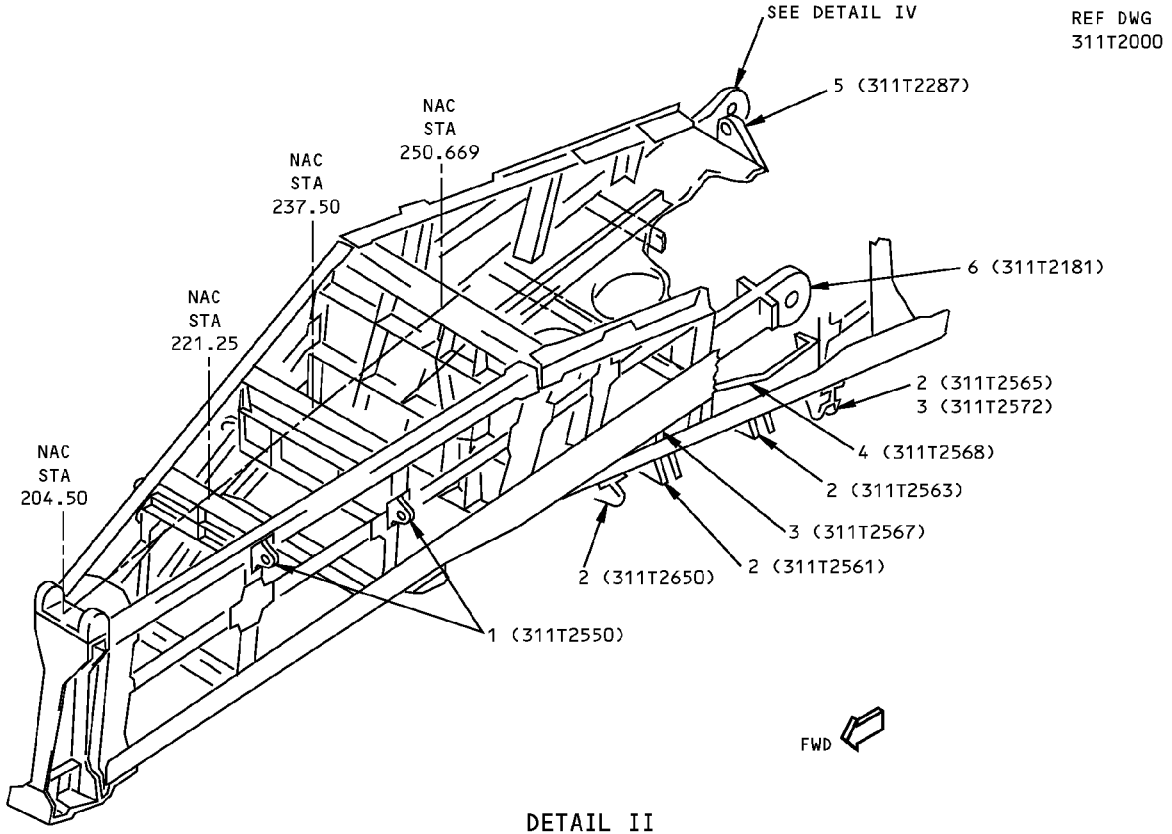
**Strut Attachment Fitting Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 4)**

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**



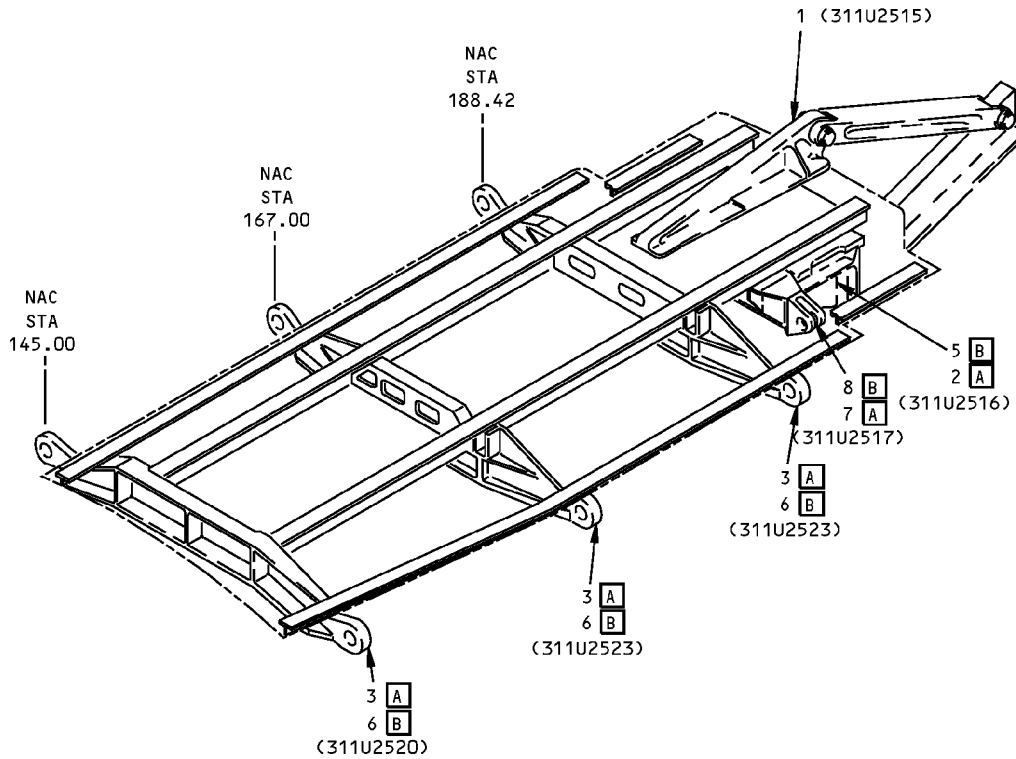
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FITTING		FORGING TI 6AL-4V ANNEALED	
2	FITTING		BAR, PLATE, OR FORGING, 15-5PH CRES HT TR 180-200 KSI	
3	BACK-UP FITTING		BAR OR FORGING 15-5PH CRES HT TR 180-200 KSI	
4	BACK-UP FITTING		FORGING 7075-T73	
5	SIDE LINK FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
6	LOWER SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	

LIST OF MATERIALS FOR DETAIL II

**Strut Attachment Fitting Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311U2510



DETAIL III

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER ATTACHMENT FITTING		FORGING 7075-T73	
2	LOWER ATTACHMENT FITTING		FORGING 7075-T73	A
3	FAN COWL HINGE FITTING		FORGING 7075-T73	A
4	DELETED			
5	LOWER ATTACHMENT FITTING		FORGING 2219-T6	B
6	FAN COWL HINGE FITTING		FORGING 2219-T6	B
7	THRUST REVERSER HINGE FITTING		FORGING 7075-T73	A
8	THRUST REVERSER HINGE FITTING		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL III

**Strut Attachment Fitting Identification - CF6-80C2 Engine
Figure 1 (Sheet 3 of 4)**

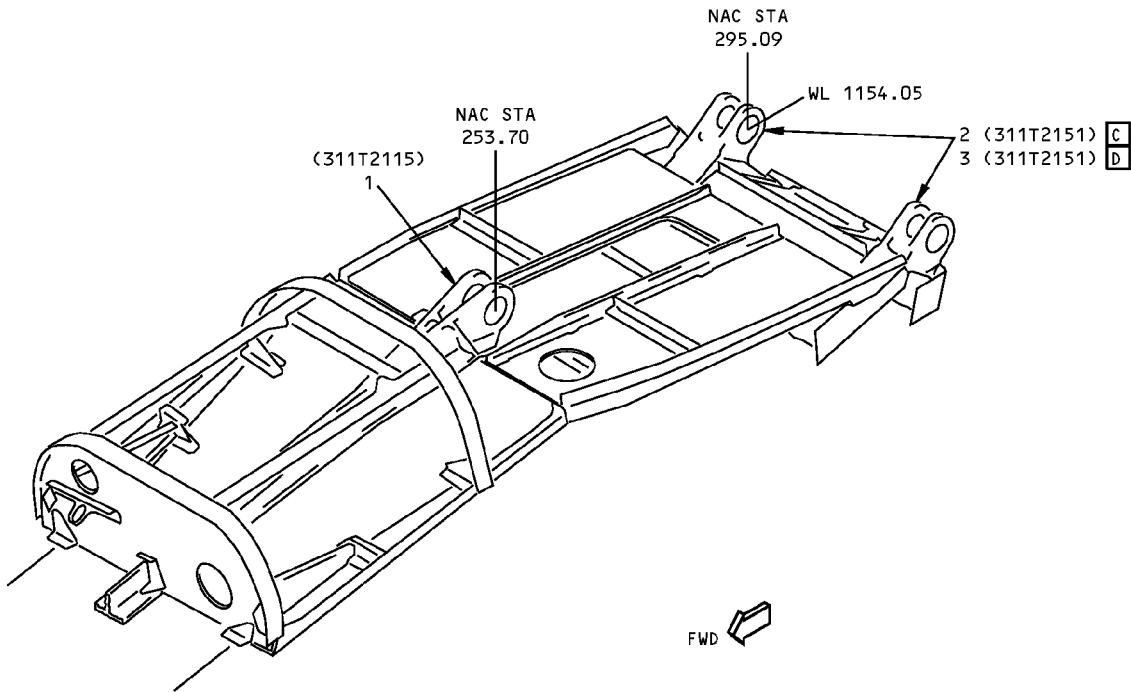
IDENTIFICATION 1
Page 3
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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T1130
311T2110
311T2115
311T2150



DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD UPPER SPAR FITTING		FORGING TI-6AL-4V ANNEALED	
2	MID SPAR FITTING		4330M STEEL HT TR 220-240 KSI	C
3	MID SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	D

LIST OF MATERIALS FOR DETAIL IV

**Strut Attachment Fitting Identification - CF6-80C2 Engine
Figure 1 (Sheet 4 of 4)**

IDENTIFICATION 1
Page 4
Apr 15/2006

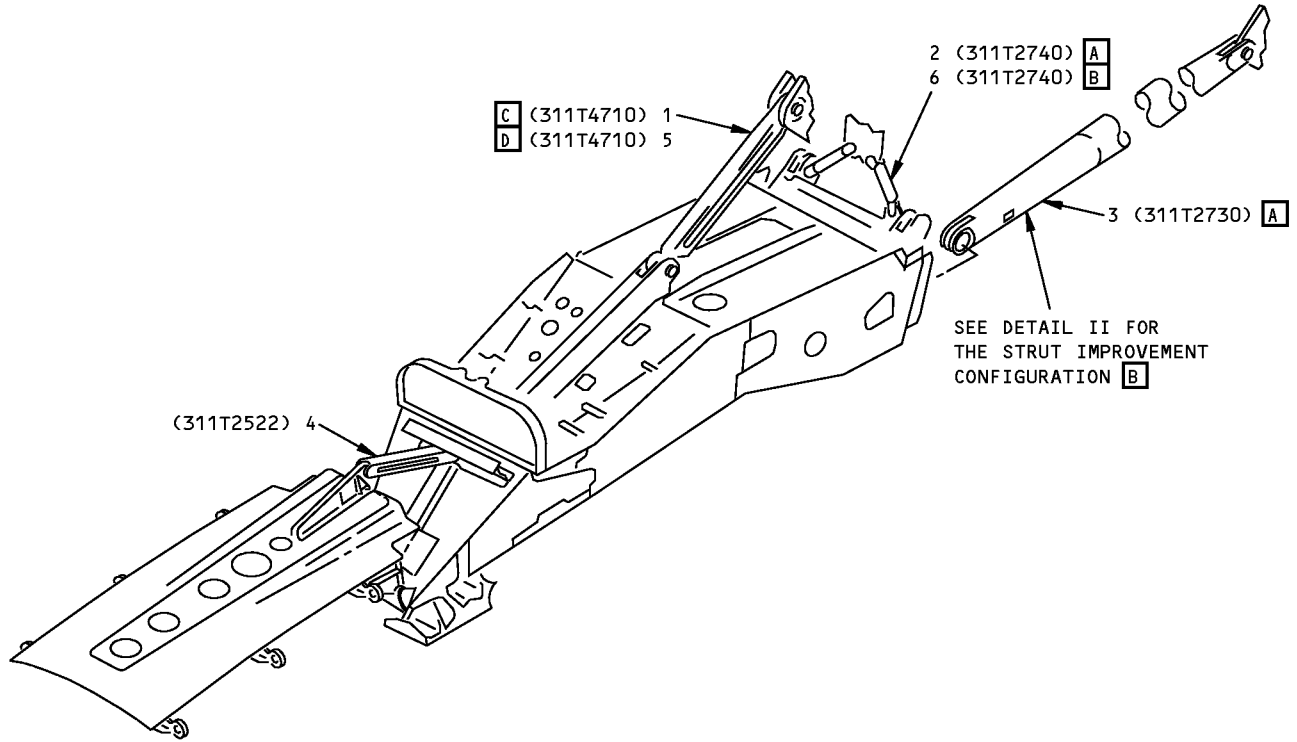
54-52-90

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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - STRUT ATTACHMENT LINK - CF6-80C2 ENGINE

REFERENCE DRAWING
310T2030



NOTES

- A** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER:
 - 158 THRU 663 WITHOUT SB 767-54-0081 INCORPORATION
- B** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER:
 - 665 AND ON, OR FOR AIRPLANES WITH SB 767-54-0081 INCORPORATED
- C** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER:
 - 158 THRU 663 WITHOUT SB 767-54-0083 INCORPORATION
- D** FOR AIRPLANES WITH CF6-80C2 ENGINES CUM LINE NUMBER:
 - 665 AND ON, OR FOR WITH SB 767-54-0083 INCORPORATED

LIST OF
MATL 

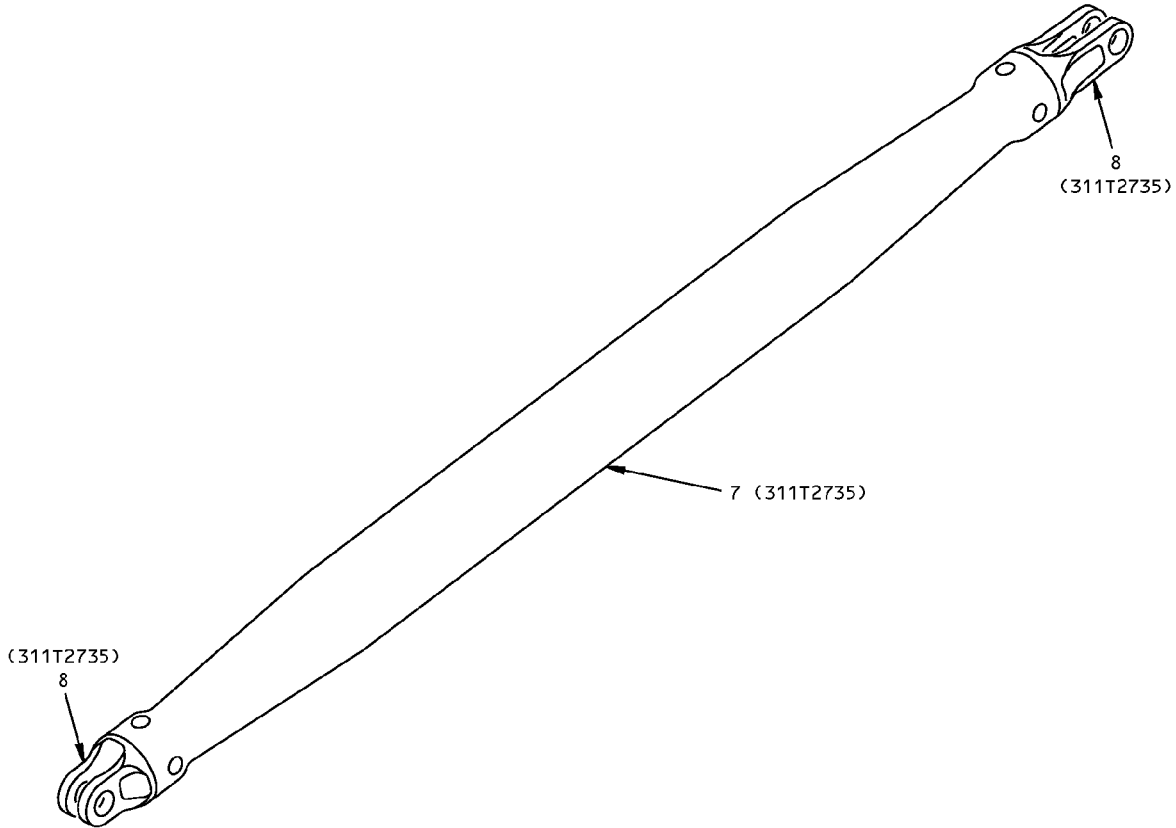
**Strut Attachment Link Identification - CF6-80C2 Engine
Figure 1 (Sheet 1 of 2)**

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IDENTIFICATION 2
Page 1
Aug 15/2006

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STRUCTURAL REPAIR MANUAL**



DETAIL II **B**

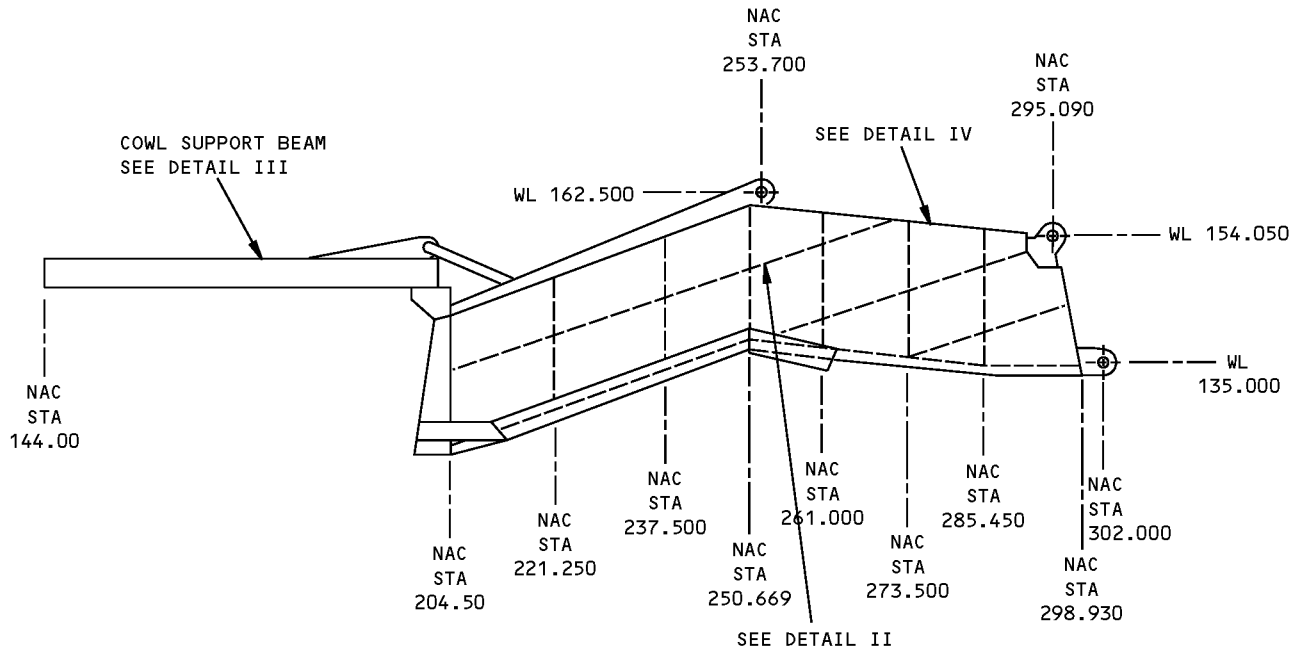
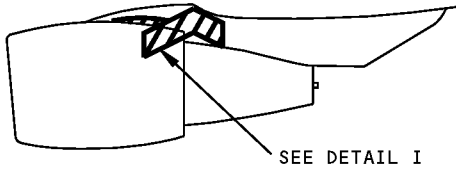
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER LINK		4330M ALLOY STEEL FORGING HT TR 220-240 KSI	C
2	SIDE LINK		15-5PH CRES BAR HT TR 180-200 KSI	A
3	DIAGONAL BRACE		TUBE OR EXTRUDED BAR 7075-T6	A
4	FAN COWL SUPPORT BEAM LINK		7075-T73 FORGING	
5	UPPER LINK		15-5PH CRES FORGING BLOCK OR BAR HT TR 180-200 KSI	D
6	SIDE LINK	0.625	15-5PH CRES PLATE OR BAR HT TR 180-200 KSI	B
7	DIAGONAL BRACE TUBE		7075-T73 EXTRUDED TUBE OR BAR	B
8	END FITTING		TI-6AL-4V BAR OR FORGED BLOCK ANNEALED	B

LIST OF MATERIALS FOR DETAILS I AND II

**Strut Attachment Link Identification - CF6-80C2 Engine
Figure 1 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

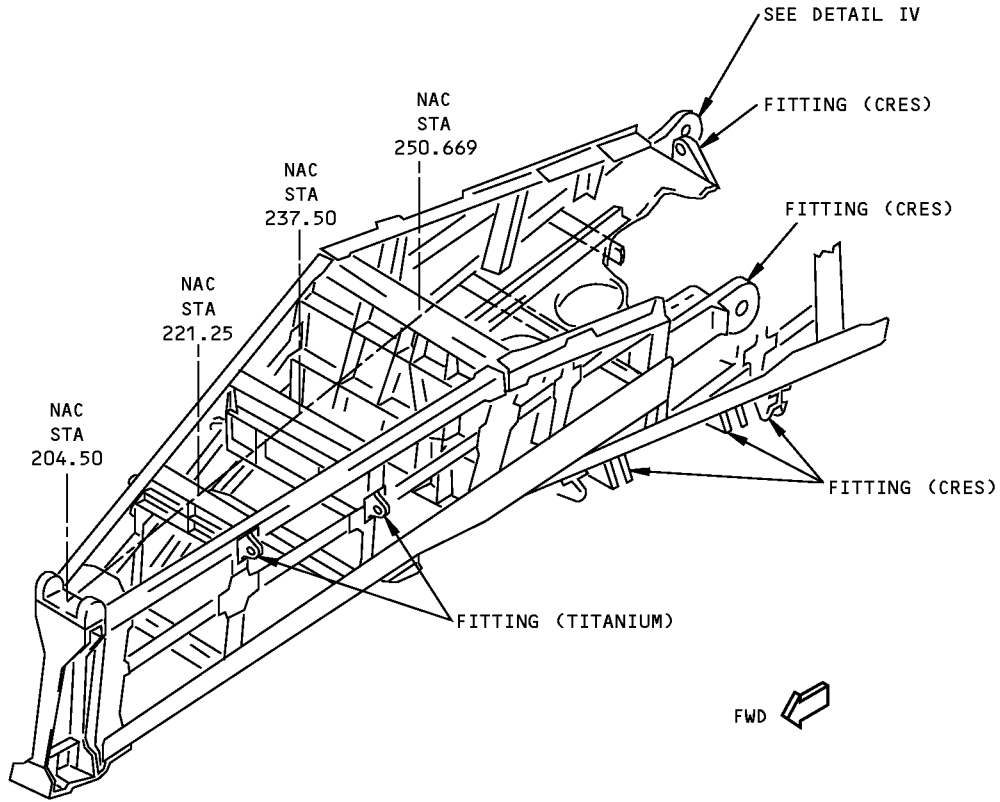
ALLOWABLE DAMAGE 1 - STRUT ATTACHMENT FITTINGS ALLOWABLE DAMAGE - CF6-80C2 ENGINE



DETAIL I

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED	—

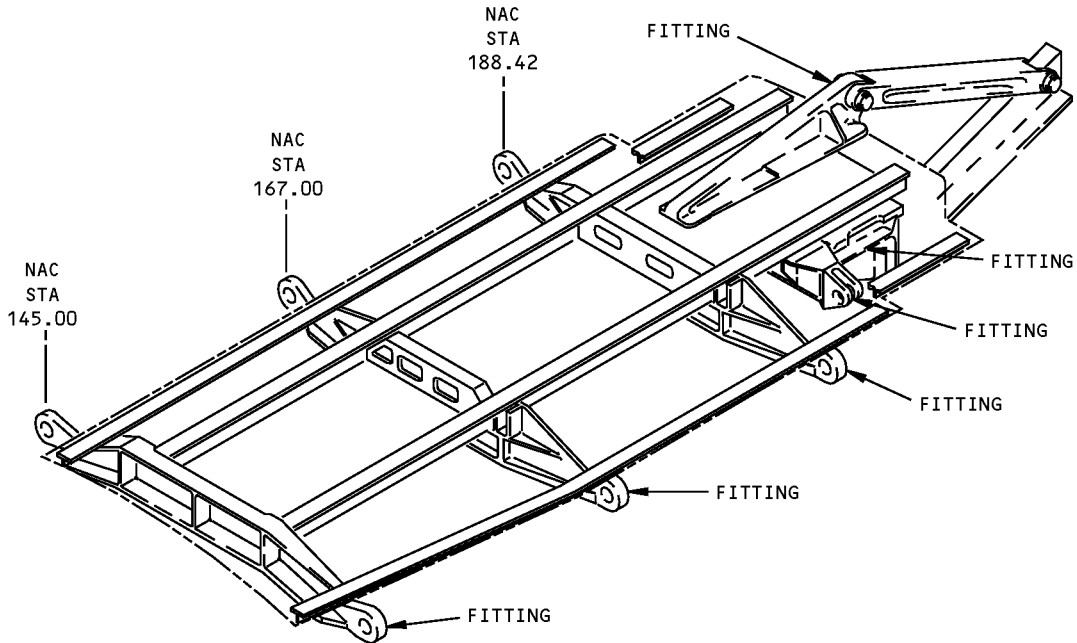
DETAIL II

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 2 of 6)**

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ALLOWABLE DAMAGE 1
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Dec 15/2007

**767-300
STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED

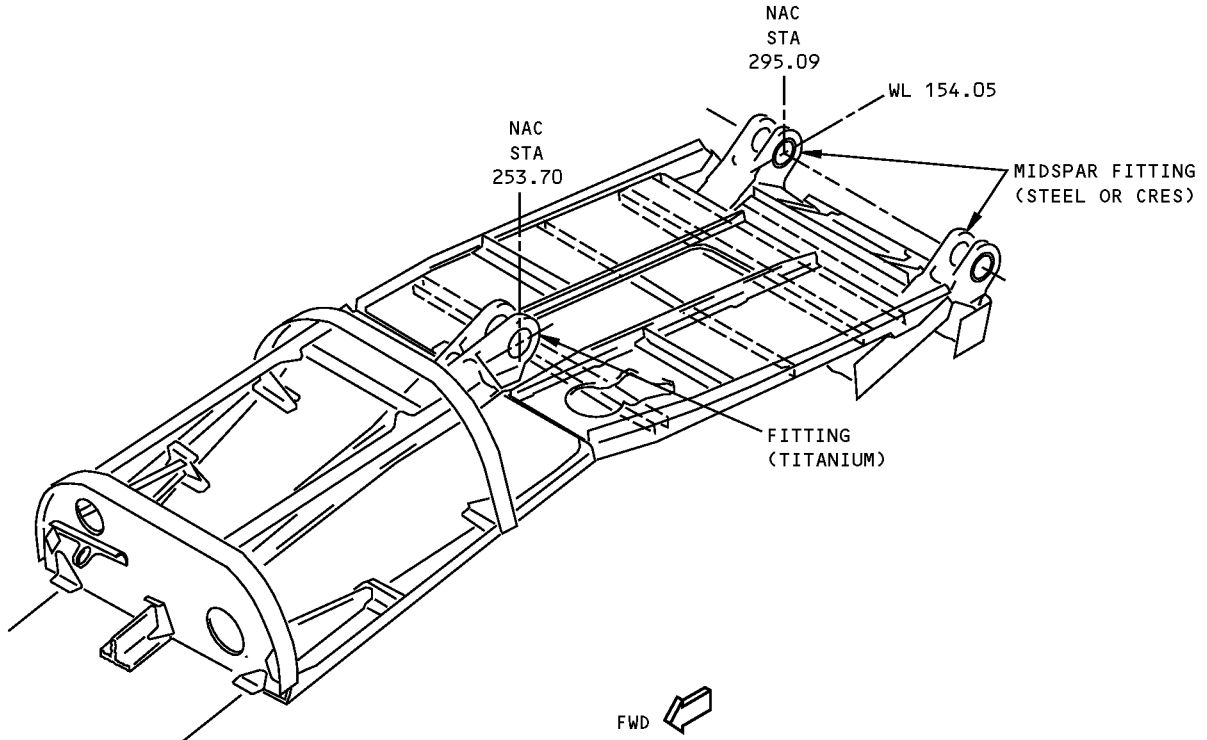
DETAIL III

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 3 of 6)**

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ALLOWABLE DAMAGE 1
Page 103
54-52-90
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**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED
STEEL MID SPAR FITTING	A	A	NOT PERMITTED	NOT PERMITTED
CRES MID SPAR FITTING	A	B C	NOT PERMITTED	NOT PERMITTED

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 4 of 6)**

D634T210

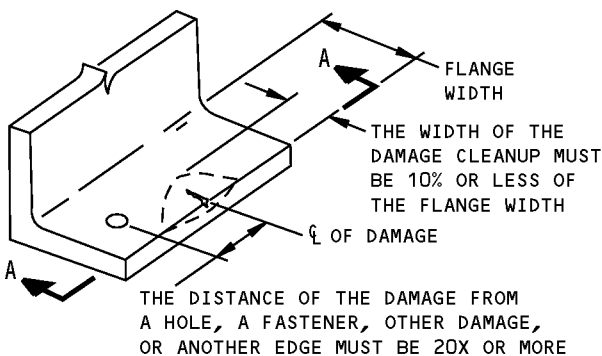
ALLOWABLE DAMAGE 1
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54-52-90
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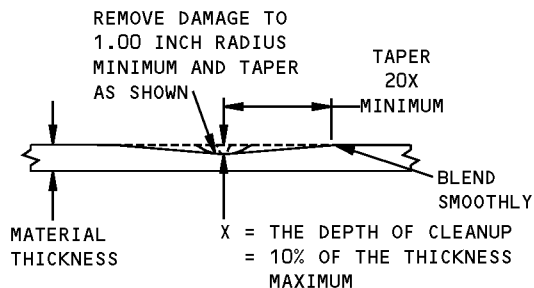
NOTES

- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5 PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM FITTINGS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES FITTINGS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR TITANIUM FITTINGS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
- REFER TO SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES FITTINGS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII. DAMAGE IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHINGS.
- B** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII.
- C** TO MAKE SURE THE MID SPAR FITTING BORE IS ALIGNED CORRECTLY, SEE DETAIL VIII FOR THE DEPTH OF REMOVAL PERMITTED UNDER THE BUSHING FLANGE. THE MATERIAL REMOVAL ON THE FACE OF THE LUG UNDER THE BUSHING FLANGE MUST BE PERPENDICULAR TO THE BORE. AS THE RESULT OF THE SPOTFACE, CUT 0.01 TO 0.02 INCH FROM THE NON-FLANGED END OF THE BUSHING BEFORE BUSHING INSTALLATION.
- D** DAMAGE OR REWORK IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHING EXCEPT AS NOTED IN **C**.



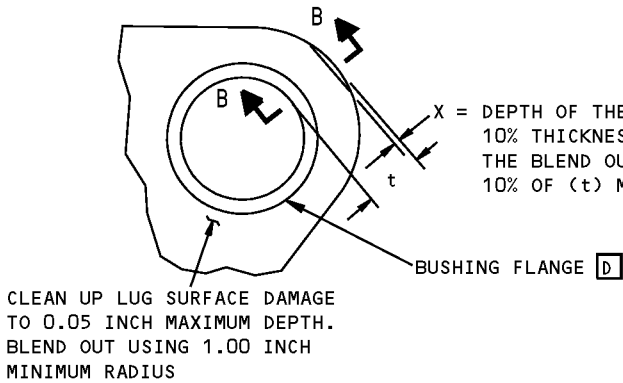
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE AT AN EDGE
DETAIL V**



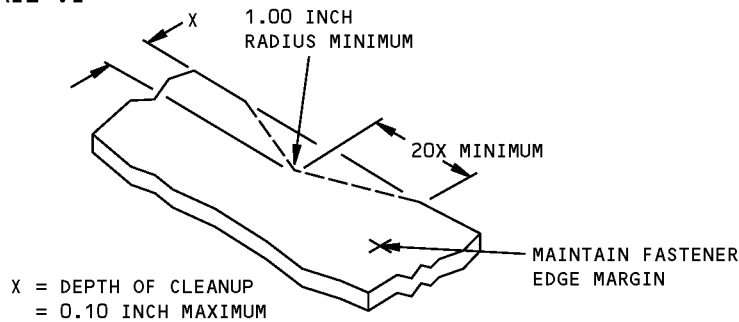
SECTION A-A

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 5 of 6)**

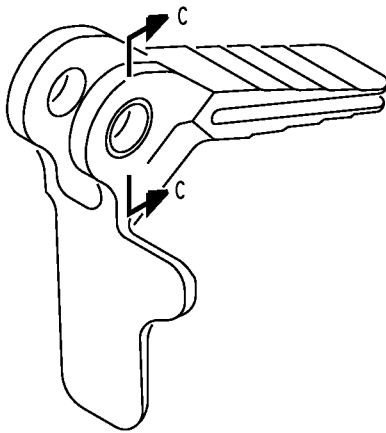
**767-300
STRUCTURAL REPAIR MANUAL**



**DAMAGE CLEANUP FOR SURFACES OF LUG
DETAIL VI**

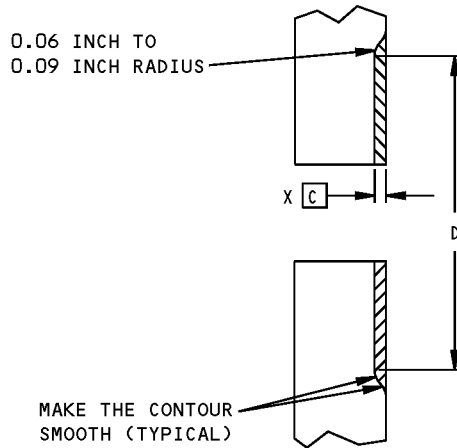


**REMOVAL OF CRACK DAMAGE ON THE EDGE
DETAIL VII**



**REMOVAL OF MATERIAL ON THE LUG FACE
UNDER THE FLANGE OF THE BUSHING**

DETAIL VIII



X = 0.010 INCH MAXIMUM
MAX D = BUSHING FLANGE DIAMETER +0.5 INCH
MIN D = BUSHING FLANGE DIAMETER +0.01 INCH

SHADED AREA SHOWS WHERE MATERIAL HAS BEEN REMOVED.

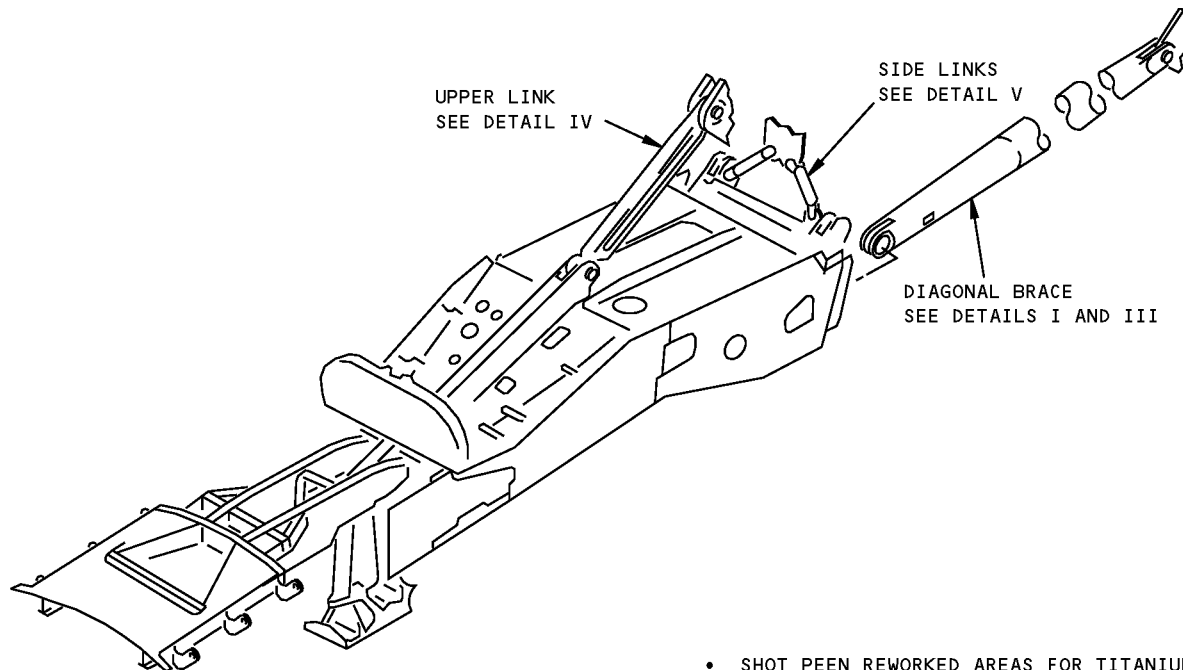
TYPICAL SPOTFACE ON ONE LUG IS SHOWN

SECTION C-C

**Strut Attachment Fittings - CF6-80C2 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 2 - STRUT ATTACHMENT LINKS - CF6-80C2 ENGINE



NOTES

- DENTS HOLES OR PUNCTURES ARE NOT PERMITTED.
 - APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
 - CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM COMPONENTS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
 - DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES COMPONENTS.
 - DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL FOR TITANIUM AND ALUMINUM COMPONENTS.
 - REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
 - REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
 - REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES COMPONENTS AS GIVEN IN SRM 51-20-06 AFTER YOU DO THE NON-DESTRUCTIVE INSPECTION. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.
- A** NOT MORE THAN ONE AREA OF CLEANED OUT DAMAGE PERMITTED FOR EACH 2 INCHES OF LENGTH. **E**
 - B** NOT MORE THAN THREE AREAS OF CLEANED OUT DAMAGE PERMITTED FOR EACH 10 INCHES OF LENGTH. **F**
 - C** NOT MORE THAN TWO AREAS OF CLEANED OUT DAMAGE PERMITTED FOR EACH 10 INCHES OF LENGTH. **F**
 - D** 0.010 INCH (0.25 mm) MAXIMUM DEPTH REWORK PERMITTED UNDER BUSHING FLANGE. SEE SECTION CUT VIEW.
 - E** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 63 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
 - F** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 125 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
 - G** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS GIVEN IN DETAILS VIII OR XIII. FOR OTHER DAMAGE, SEE DETAIL VII.
 - H** EDGE DAMAGE AND SURFACE DAMAGE ARE NOT PERMITTED TOGETHER ON THE SAME LUG. IF THEY ARE ON THE SAME LUG, SEND A REPORT TO BOEING FOR REPAIR INSTRUCTIONS.

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 1 of 7)**

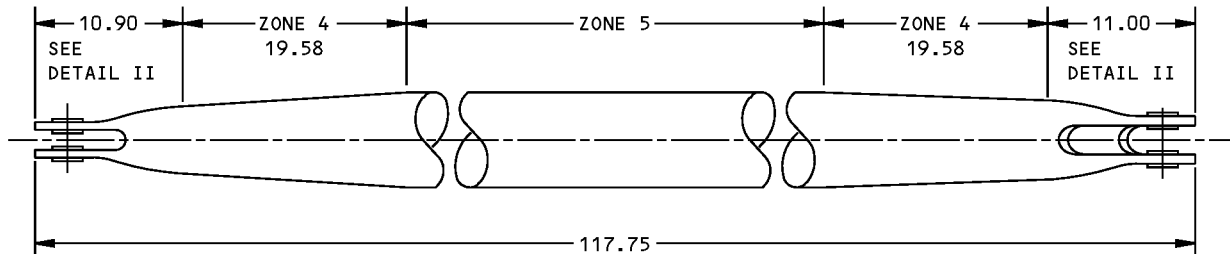
ALLOWABLE DAMAGE 2

54-52-90

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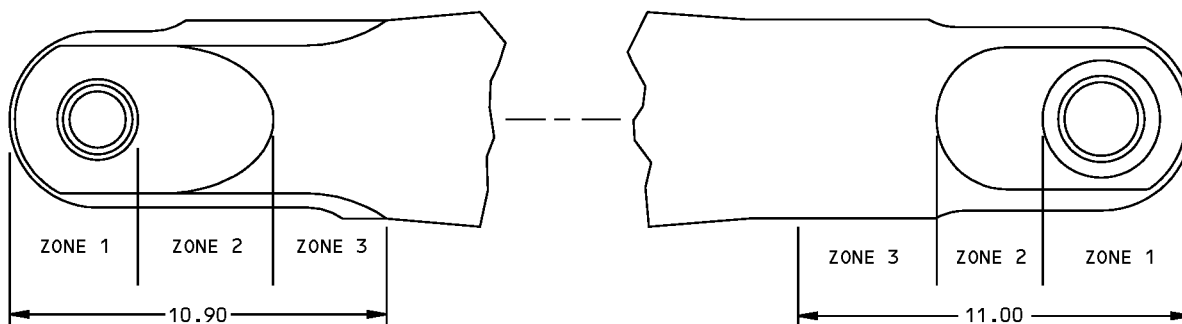
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**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM TUBING OR
EXTRUDED BAR

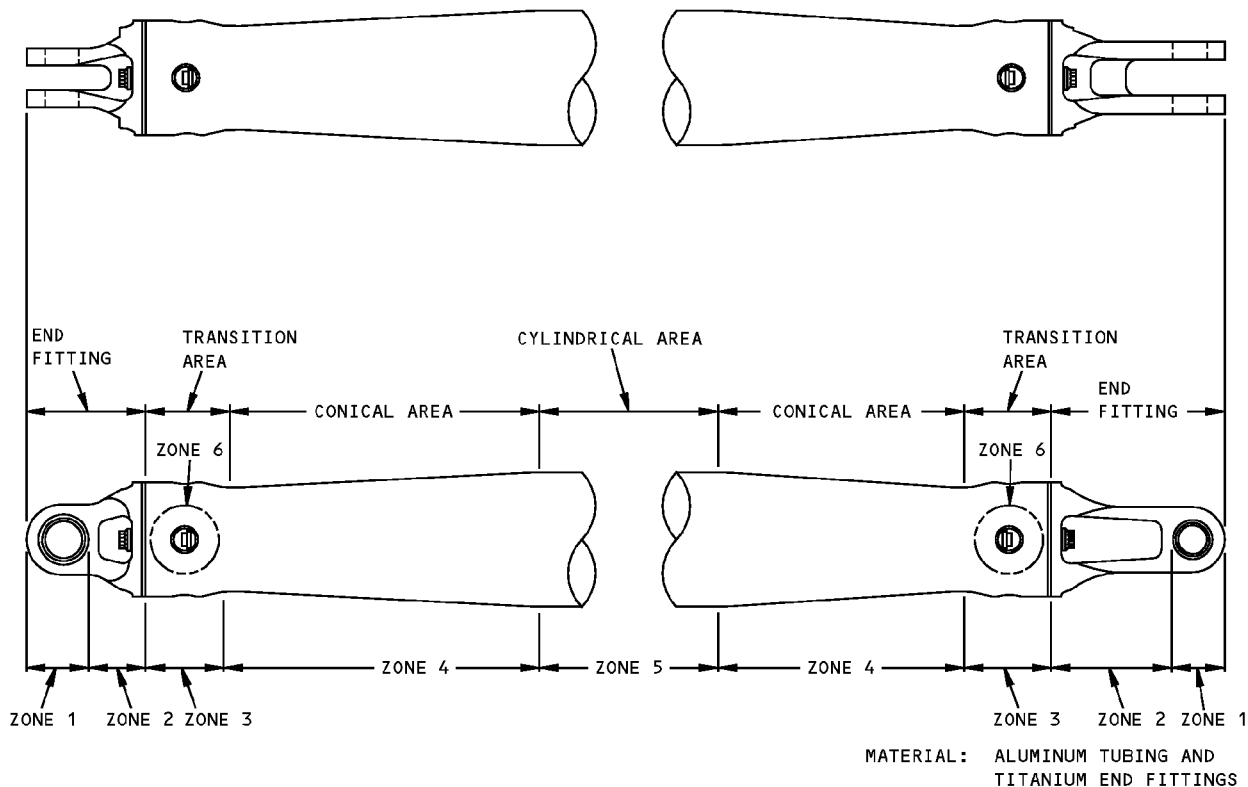


DETAIL II

ZONE	DAMAGE LIMITS
1	SEE DETAIL VI. [A]
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND TUBULAR AREA. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAILS VI AND IX. [A]
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. [A]
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. [B]
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. [C]

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

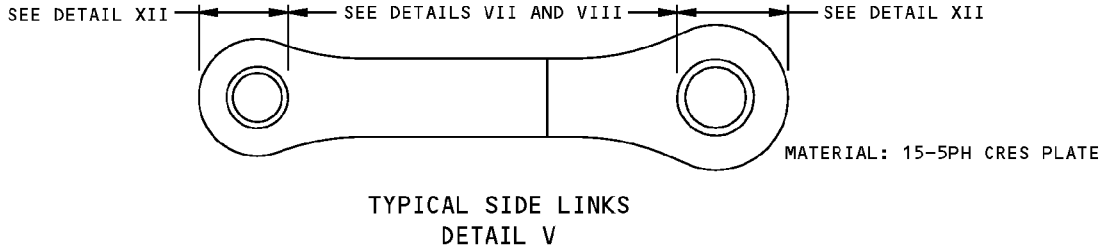
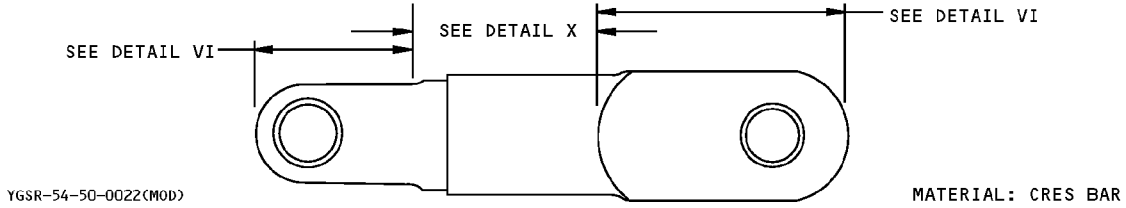
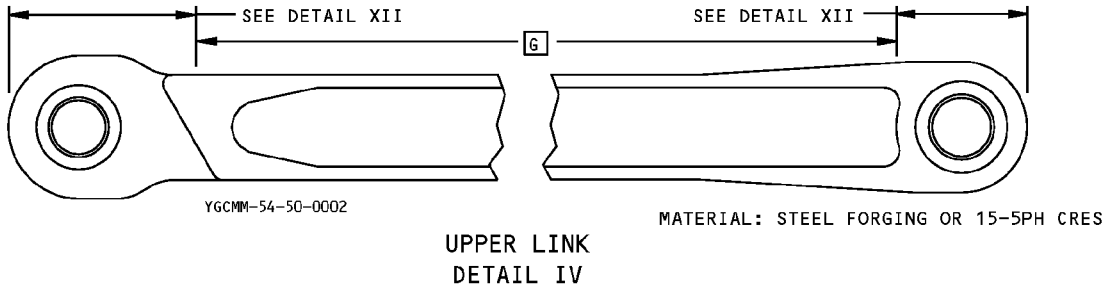


DETAIL III

ZONE	DAMAGE LIMITS
1	SEE DETAIL XII. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND BASE OF END FITTING. SEE DETAILS VII AND VIII. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. C
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C
6	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XIV. A

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 3 of 7)**

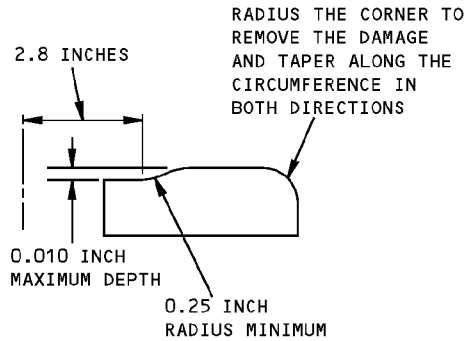
**767-300
STRUCTURAL REPAIR MANUAL**



BETWEEN EDGE OF HOLE AND TUBULAR AREA, 0.10 INCH MAXIMUM DEPTH AND 1.00 INCH MAXIMUM DIAMETER PERMITTED. SMOOTH OUT TO 1.00 INCH RADIUS

REFER TO CMM 54-50-21 FOR REWORK LIMITS IN THE LUG HOLE

CLEANUP SURFACE OF LUG TO 0.05 INCH MAXIMUM DEPTH. BLEND OUT USING 1.00 INCH MINIMUM RADIUS $W = 0.5$ INCH MAXIMUM. [H]
NOT MORE THAN ONE AREA OF CLEANED UP DAMAGE PERMITTED PER INCH OF LENGTH



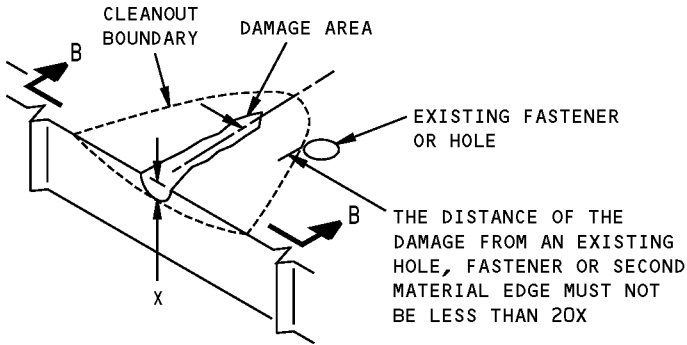
SECTION A-A

X = THE DEPTH OF CLEANUP IS THE LESSER OF 0.05 INCH OR 10 PERCENT OF THE THICKNESS (t) MAXIMUM. [H]
BLEND OUT SHARP EDGES

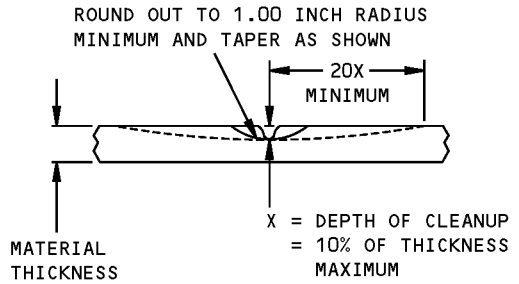
**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL VI**

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 4 of 7)**

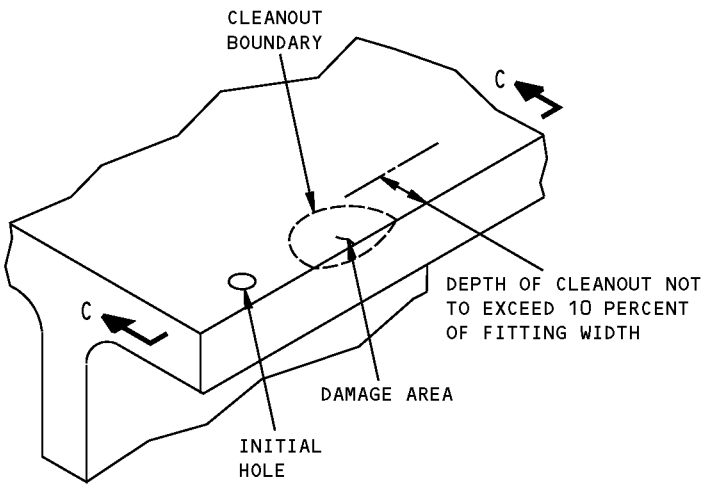
**767-300
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE
ON A SURFACE THAT IS NOT ON A LUG
DETAIL VII**

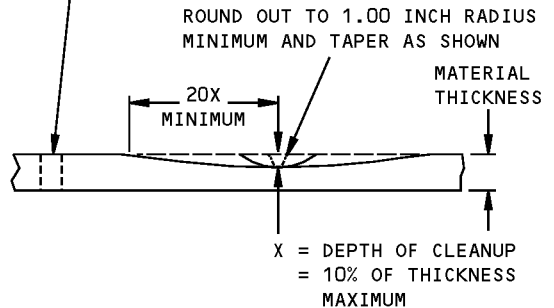


SECTION B-B

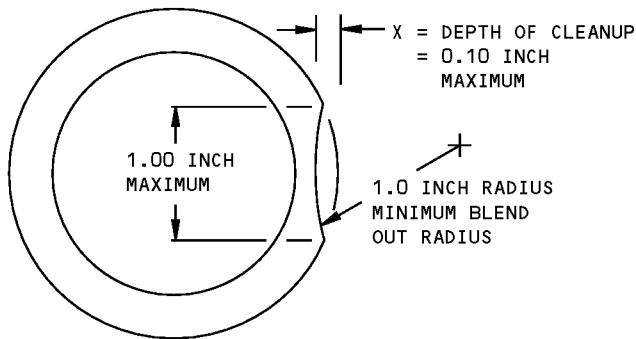


**REMOVAL OF DAMAGE ON AN EDGE
DETAIL VIII**

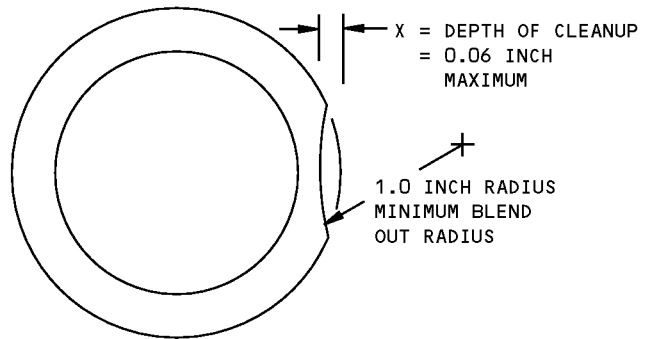
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR SECOND MATERIAL EDGE MUST NOT BE LESS THAN 20X



SECTION C-C



**REMOVAL OF DAMAGE ON A SURFACE
DETAIL IX**



**REMOVAL OF DAMAGE ON A SURFACE
DETAIL X**

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 5 of 7)**

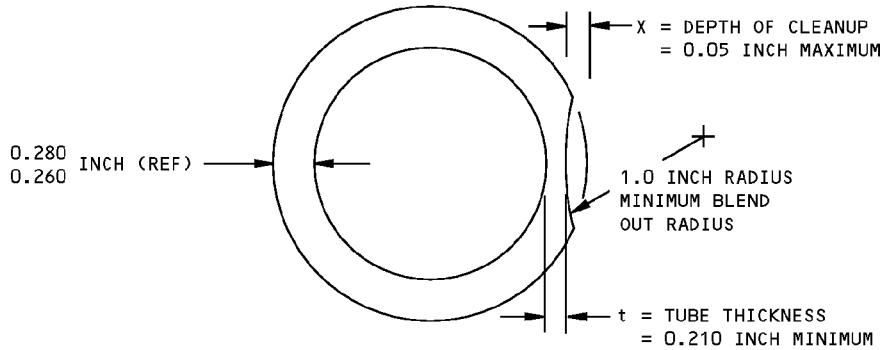
ALLOWABLE DAMAGE 2

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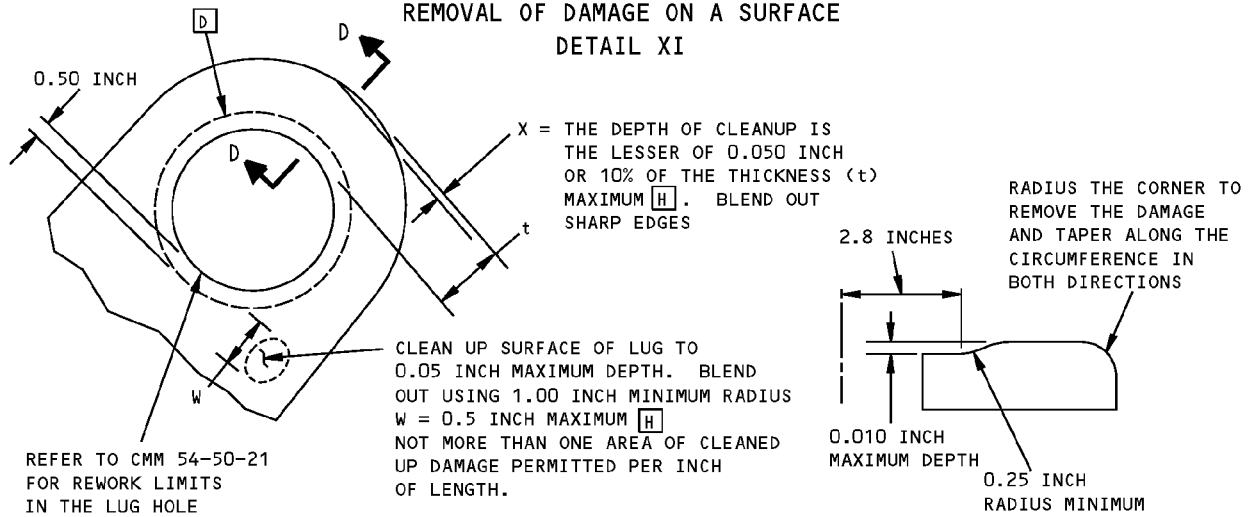
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STRUCTURAL REPAIR MANUAL**

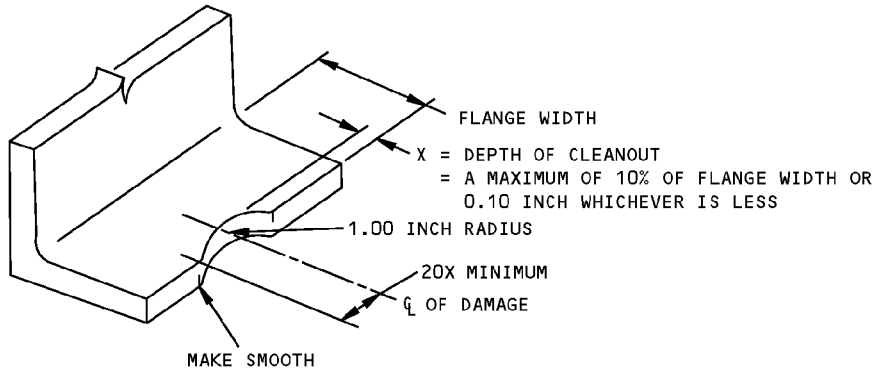


**REMOVAL OF DAMAGE ON A SURFACE
DETAIL XI**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL XII**

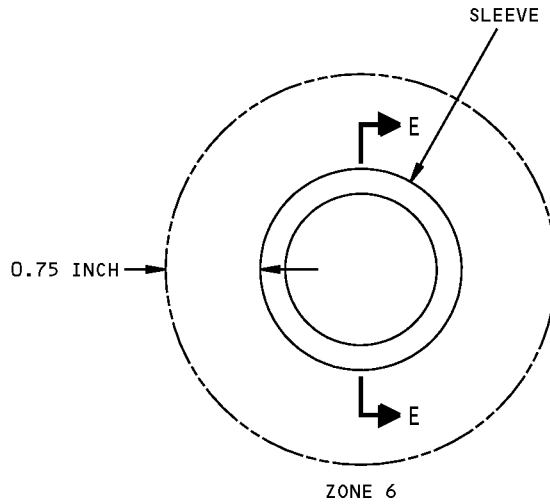
SECTION D-D



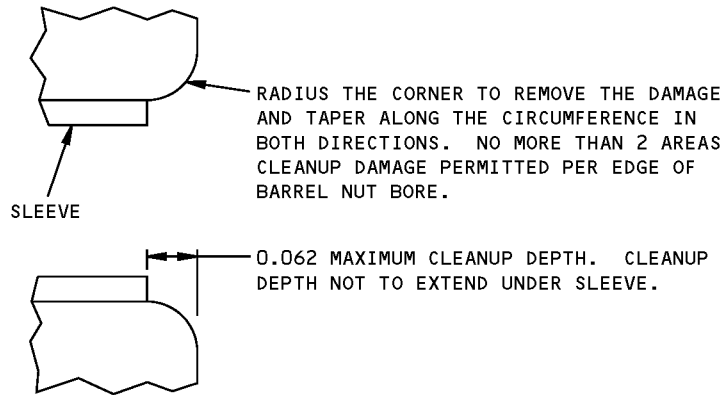
**REMOVAL OF EDGE DAMAGE FROM FREE FLANGE
WITHOUT FASTENERS
DETAIL XIII**

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 6 of 7)**

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STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE ON A BARREL NUT BORE
DETAIL XIV**



SECTION E-E

**Strut Attachment Links Allowable Damage - CF6-80C2 Engine
Figure 101 (Sheet 7 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIRS

SERVICE BULLETIN REPAIRS

These service bulletins contain strut structure repairs which you can use when there are specified types of damages. Usually the service bulletins also contain preventive modification data which we recommend you use so that structural damage does not occur.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
CF6-80C2 NACELLE PYLONS - ATTACH FITTINGS - MIDSPAR FITTING INSPECTION, REWORK AND REPLACEMENT NACELLES/PYLONS - STRUT ATTACH FUSE PINS - DIAGONAL BRACE FUSE PIN AND BUSHING REPLACEMENT	580 THRU 660 764, 778 AND 806	767-54A0101R3 767-54A0102

**Service Bulletin Repairs
Figure 201**

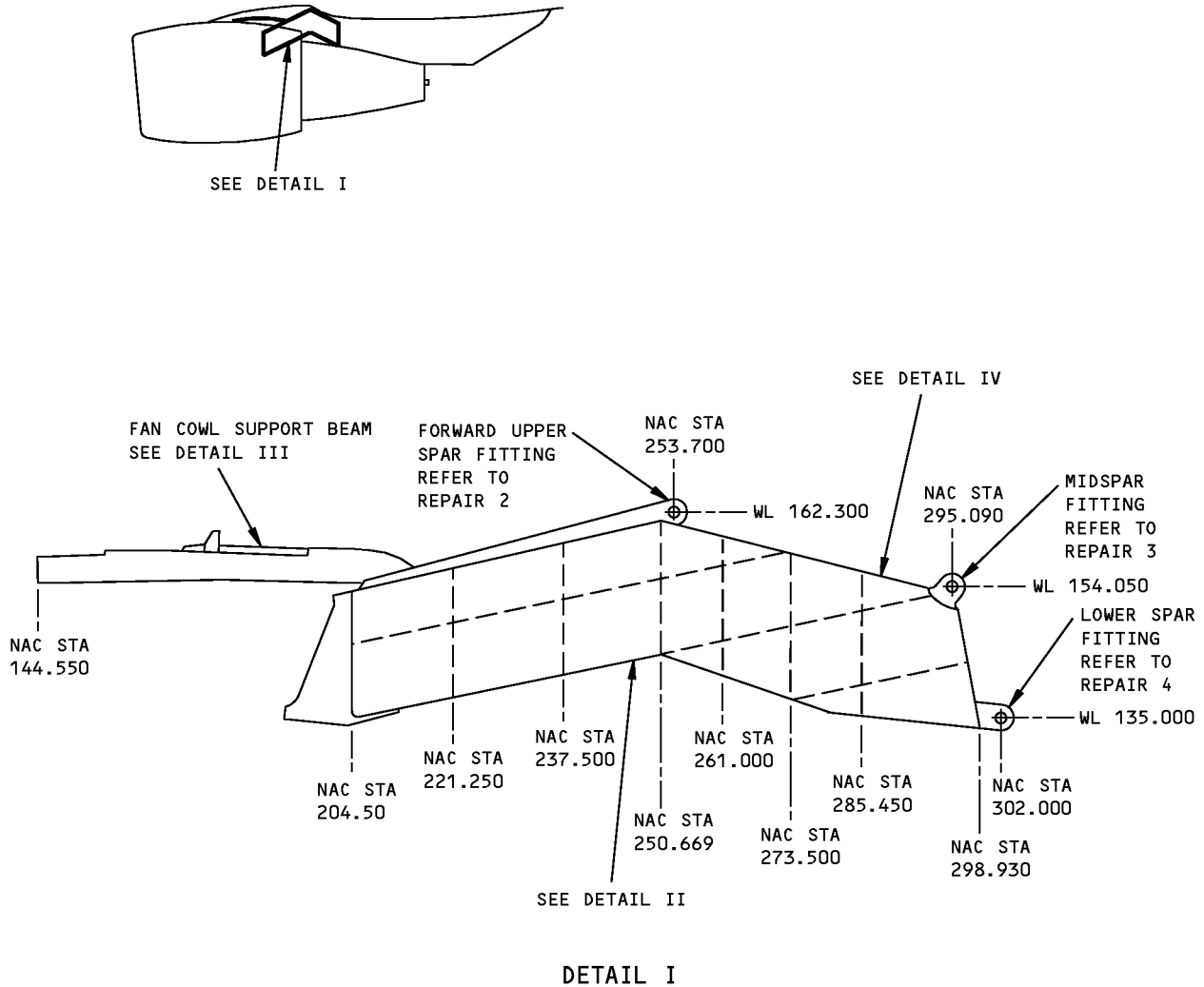
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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT ATTACHMENT FITTINGS - CF6-80C2 ENGINE

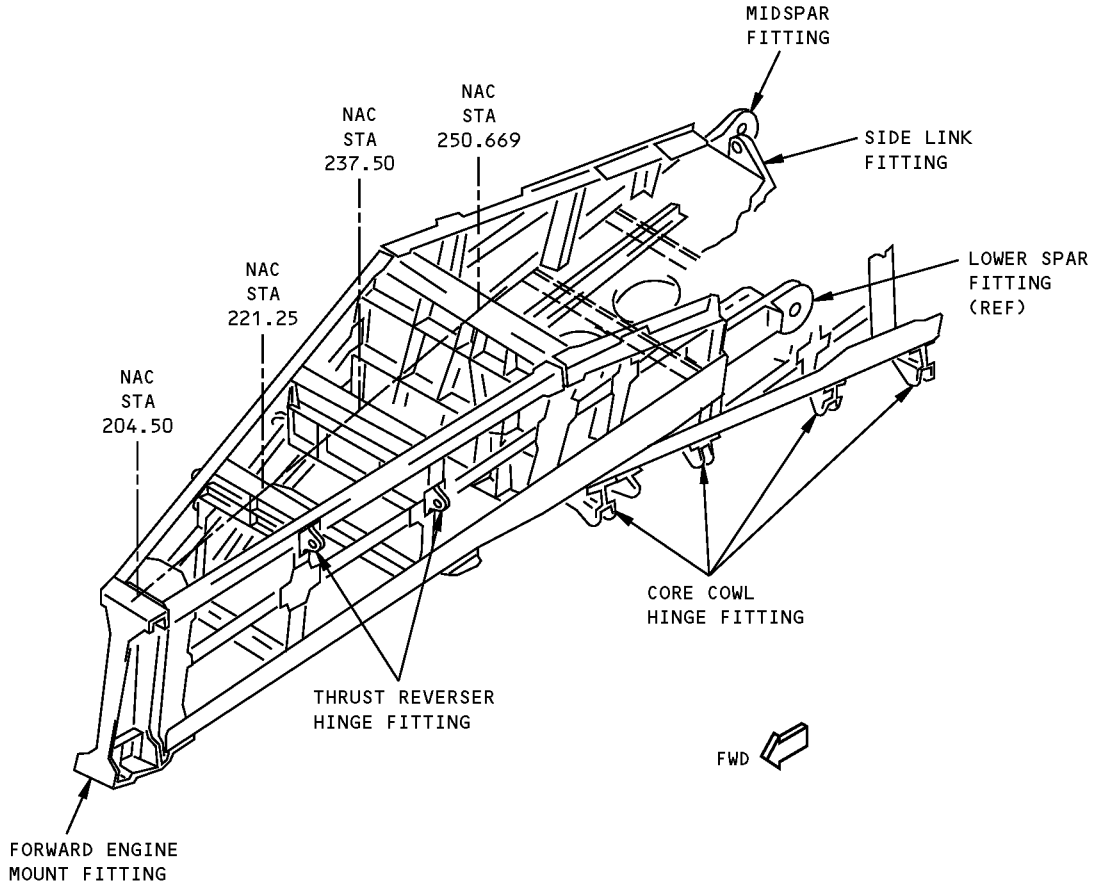


NOTES

- THE FORWARD UPPER SPAR, MID SPAR AND LOWER SPAR FITTING, LUG HOLE REPAIRS ARE THE ONLY TYPICAL STRUT ATTACH FITTING REPAIRS AVAILABLE. OTHER TYPICAL STRUT ATTACH FITTING REPAIRS WILL BE AVAILABLE BASED ON SERVICE EXPERIENCE.
- REFER TO CMM 54-50-21 FOR THE REPAIR OF THE UPPER AND SIDE LINKS, THE DIAGONAL BRACE AND THE FAN COWL SUPPORT BEAM LINK, SHOWN IN DETAIL V.

**Strut Attachment Fitting Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

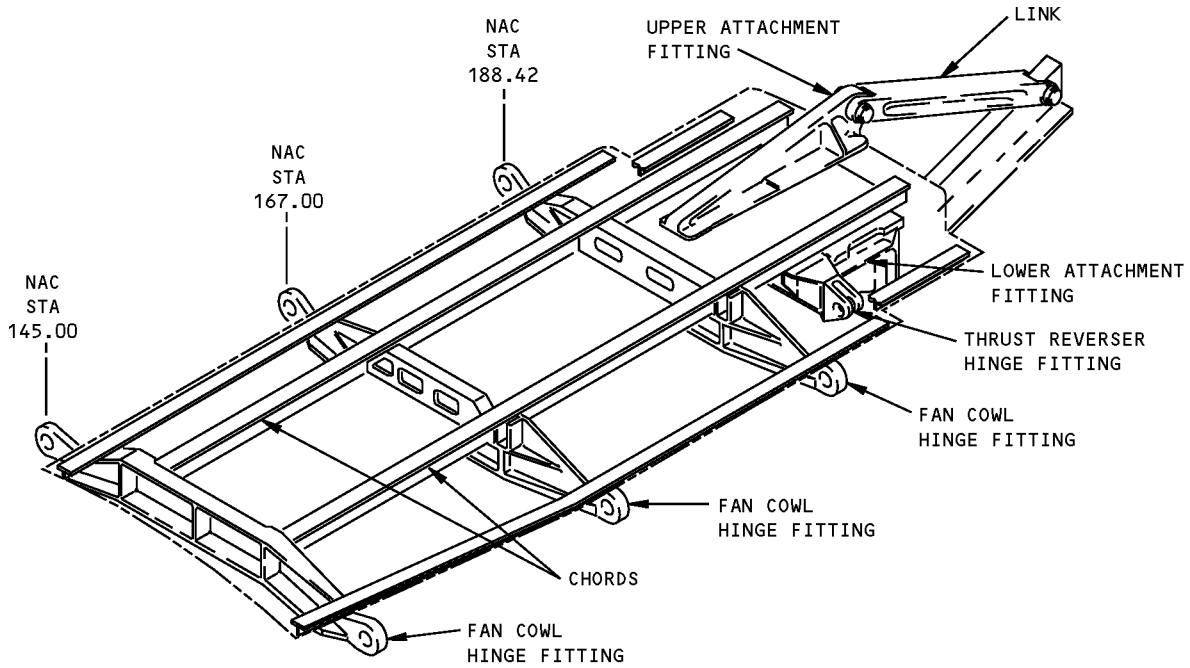
**767-300
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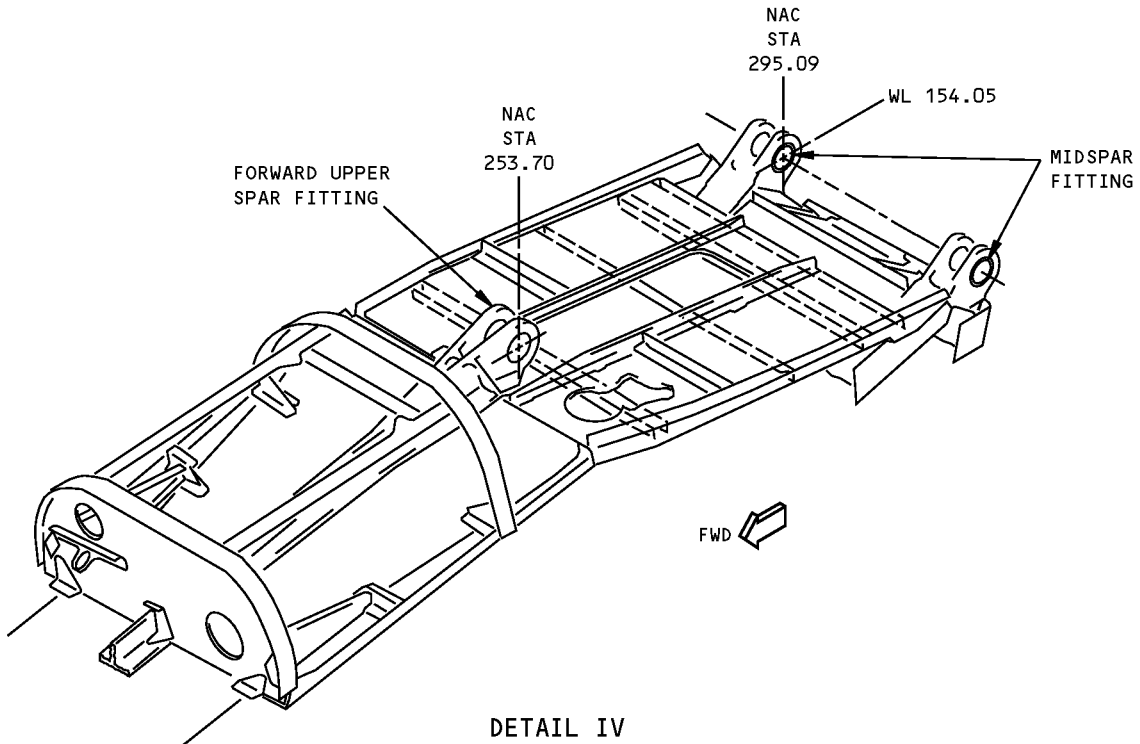
DETAIL II

**Strut Attachment Fitting Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



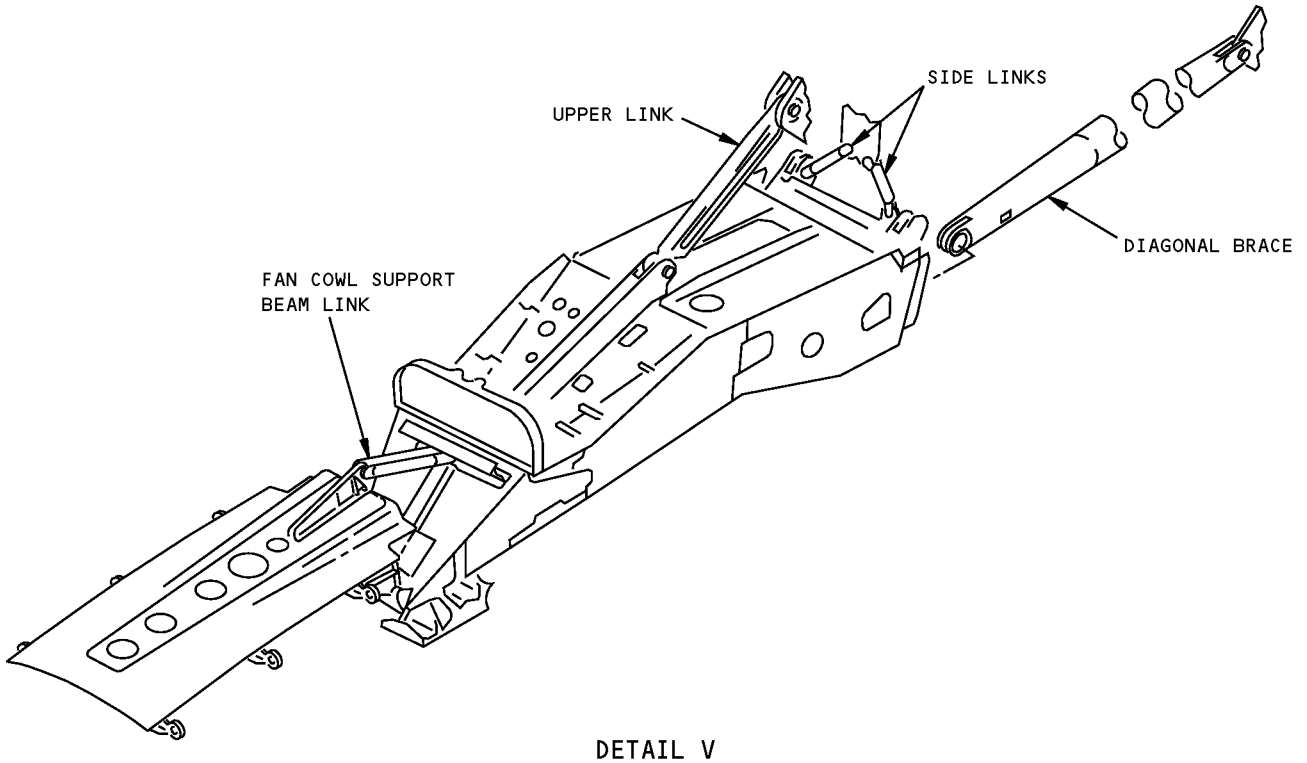
**FAN COWL SUPPORT BEAM
DETAIL III**



DETAIL IV

**Strut Attachment Fitting Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Attachment Fitting Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FORWARD UPPER SPAR FITTING, LUG HOLE - CF6-80C2 ENGINE**APPLICABILITY**

THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE FORWARD UPPER SPAR FITTING ON THE CF6-80C2 ENGINE. **A**

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER EXCEEDS THE MAXIMUM PERMITTED.

REPAIR INSTRUCTIONS

1. Remove the engine strut from the wing. Refer to AMM 54-51-01/401.
2. Open the strut access doors. Refer to AMM 54-53-01/201.
3. Get the bushing removal tool from Boeing tool kit B0F311T2110.
4. Remove the two bushings from the lugs of the clevis with the bushing removal tool. Discard the bushings. The bushing material is Aluminum-Nickel-Bronze alloy.
5. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a High Frequency Eddy Current (HFEC) inspection to determine the amount of crack damage in the lug bore. Refer to NDT Part 6, 51-00-13 or NDT Part 6, 51-00-14 for the High Frequency Eddy Current inspection procedure.
6. If damage is not found during the initial inspections and the airplane age is less than or equal to 15 years, then proceed to step 16. If the airplane age is more than 15 years or hole damage is found, proceed to the next step.
7. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables on both sides of the upper link fitting. Move the bundles and cables up and away from the fitting to make clearance for the repair tools. If any electrical connections are disconnected, install caps or plugs on the equipment. Also, attach location tags to make subsequent connection easier.
8. Drain the fuel supply line and the hydraulic fluid lines to the engine.
9. Remove tubes, duct, clamps, support blocks and brackets on both sides of the fitting. See Detail I.
10. Install the boring tools included in Boeing tool kit B0F311T2110 or the equivalent. Use a temporary sheet metal cover approximately 0.063 inch thick, to support the boring fixture over the hole for the thermal anti-ice duct.
11. Machine the hole as necessary to remove the damage. The fitting material is 6AL-4V titanium alloy. Refer to SOPM 20-10-07. Do a visual inspection with a 10-power magnifying glass for corrosion or (HFEC) inspection for cracks to make sure all damage is removed. Machine an insurance cut of 0.020 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 1.9962 inches, then get alternative repair instructions from Boeing.
12. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
13. Remove the boring tools.
14. Hone the machined surfaces to remove all machine tears and burrs.
15. Shot peen or flap peen the holes of the clevis which have been reworked. Use shot number 170 to 460, intensity 0.014A, and coverage 2.0. Refer to SOPM 20-10-03.
16. Hone the holes to the final hole diameter. Make the finish on the surface of the hole 32 microinches Ra. You can remove a maximum of 0.0028 inch of material from the hole diameter to get the necessary surface finish. The maximum hole diameter is 1.9962 inches.
17. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.
18. Make the replacement bushings. One bushing is necessary for each lug of the clevis. See Detail II and Table I. Make the outer diameter of each bushing 0.003 to 0.004 inch larger than the hole diameter to give an interference fit. Make the surface finish on the outer surface of the bushing 32 microinches Ra. Make the surface finish on the other surfaces 63 microinches Ra.
19. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.

**Forward Upper Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

20. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation guide bushing in the liquid nitrogen until boiling stops. Use the guide bushing from kit B0F311T2110 or the equivalent. Refer to SOPM 20-50-03.
21. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the mating surfaces of the clevis which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
22. Install the bushings as quickly as possible. Use the installation tools from kit B0F311T2110 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
- 23.hone the inner diameter of the bushings to a diameter of 1.6965 to 1.6975 inches. Make the surface finish 32 microinches R. Machine the outer chamfers again if a necessary. See Detail II.
24. Bond washer to spar fitting with BMS 5-26. See Detail II, Section A-A. Refer to SOPM 20-50-12.
25. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the faces of the lug. Apply a fillet seal of BMS 5-95 to the washer and bushing interface. Refer to SRM 51-20-05.
26. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0095.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - NDT PART 6, 51-00-13 FOR HIGH-FREQUENCY EDDY-CURRENT INSPECTION PROCEDURES
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-10-07 FOR THE MACHINING OF TITANIUM
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

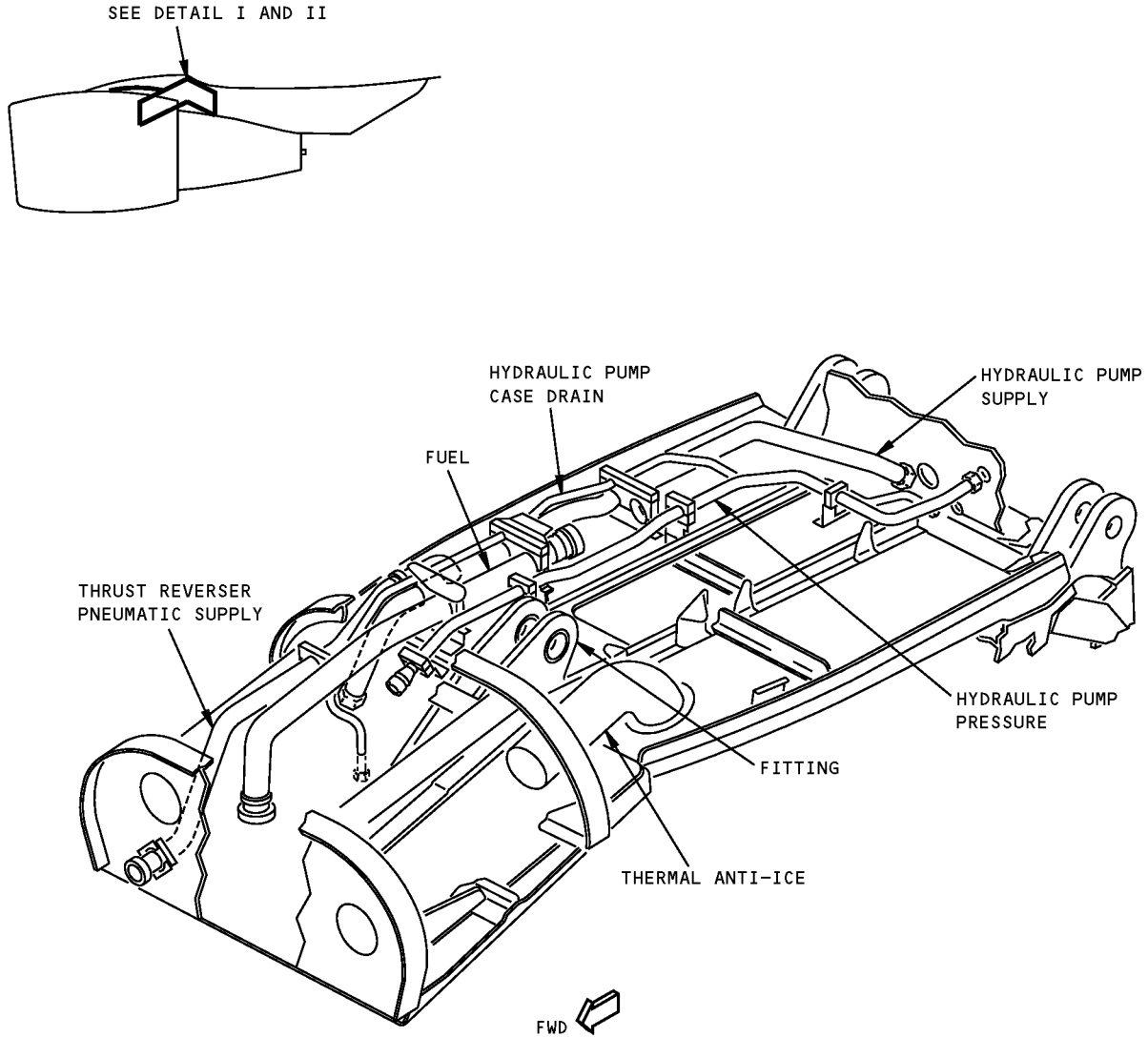
REPAIR MATERIAL		
PART	QTY	MATERIAL
1 OVERSIZED BUSHING	2	2.25 INCHES DIAMETER BY 1.0 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T4100-70 BUSHING FROM BOEING
2 WASHER	2	3.0 INCHES DIAMETER BY 0.125 INCH THICK AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 310T2303-1 WASHER FROM BOEING

TABLE I

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**Forward Upper Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 5)**

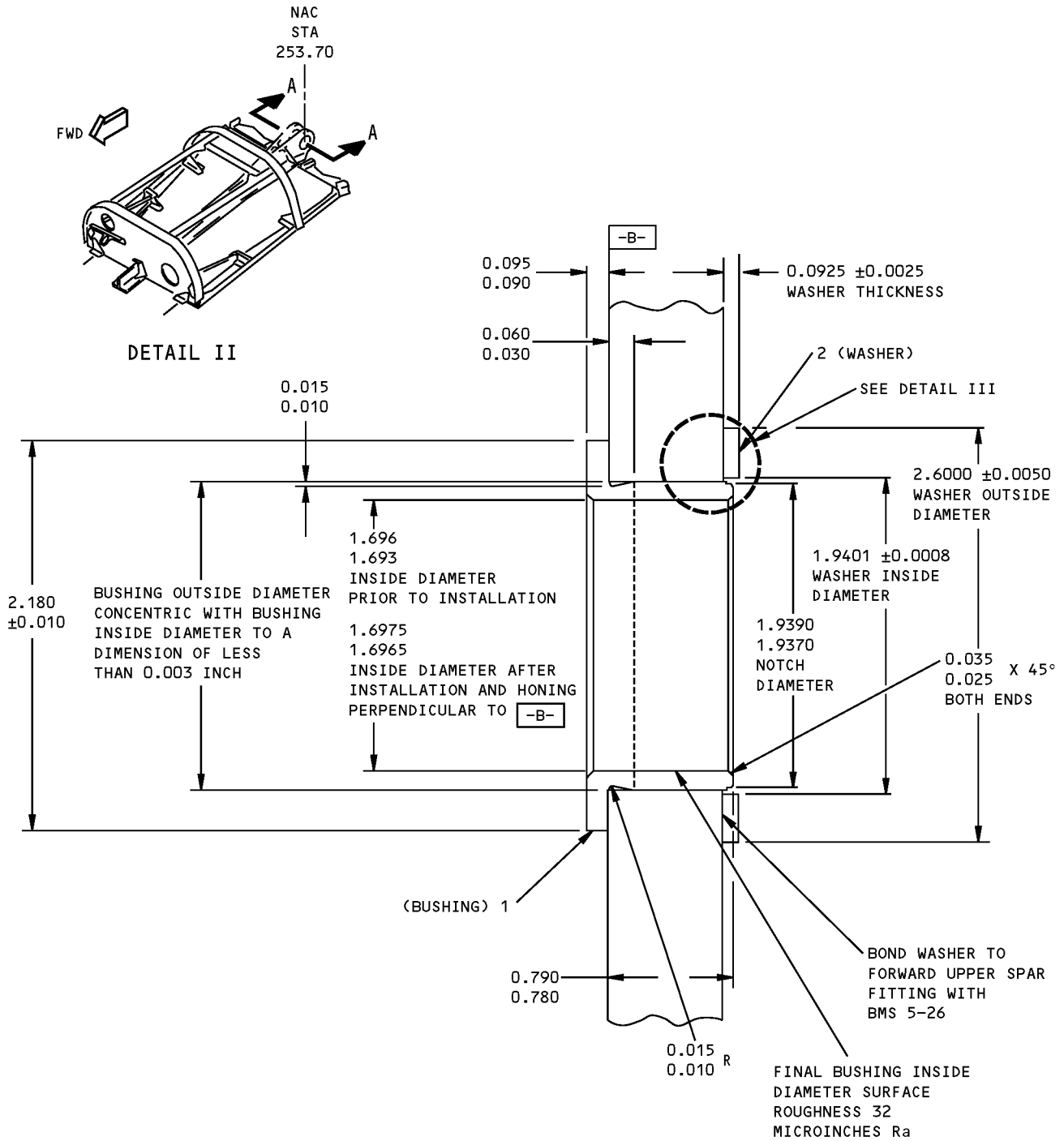
**767-300
STRUCTURAL REPAIR MANUAL**



TUBING AND DUCT
DETAIL I

**Forward Upper Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 5)**

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STRUCTURAL REPAIR MANUAL**

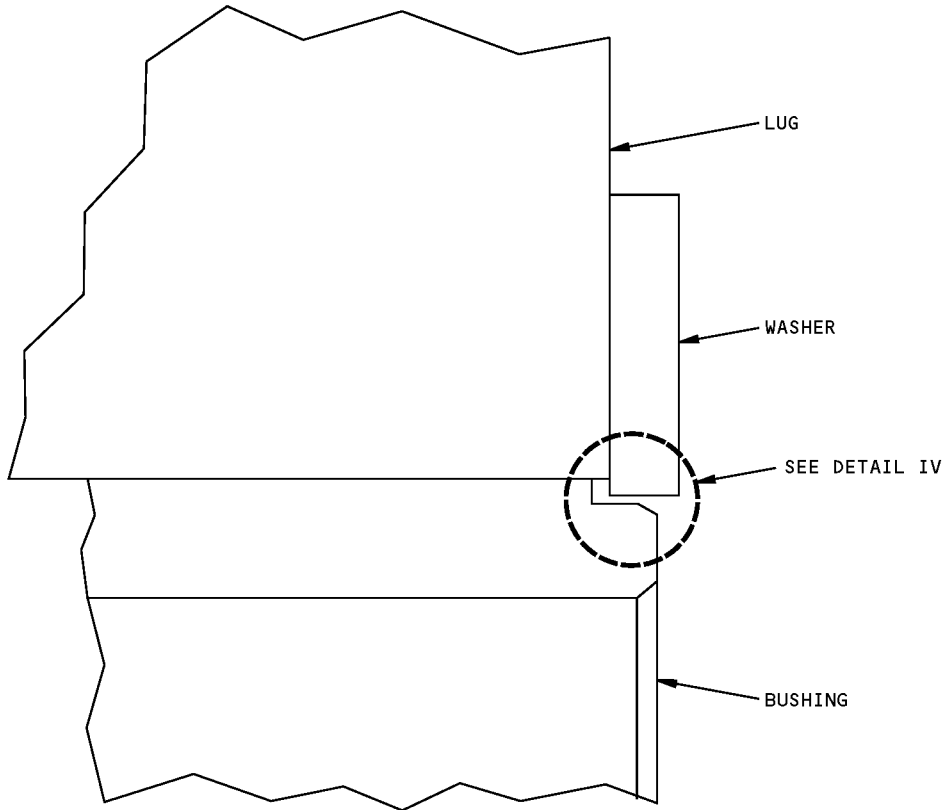


**FLANGED BUSHING
(TYPICAL)**

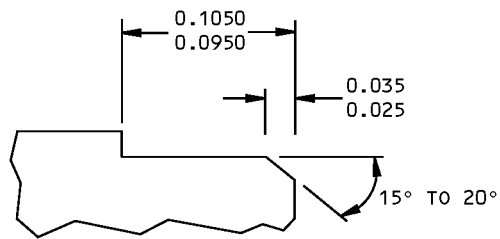
SECTION A-A

**Forward Upper Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



DETAIL III



**BUSHING OD CHAMFER AND
NOTCH DIMENSIONS**

DETAIL IV

**Forward Upper Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - MIDSPAR FITTING, LUG HOLE - CF6-80C2 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE MIDSPAR FITTING ON THE CF6-80C2 ENGINE A .

REPAIR INSTRUCTIONS

1. Get access to the clevises.
2. Remove all four of the bushings from the damaged lug(s) of the clevises. Discard the bushing(s). The bushing material is Aluminum-Nickel-Bronze alloy.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for magnetic particle inspection procedure.

As an alternative, do a High Frequency Eddy Current inspection (HFEC) to determine the amount of crack damage in the lug bore. Refer to 767 NDT Part 6, 51-00-21 or NDT Part 6, 51-00-17 for the inspection procedures.

NOTE: If you install new mid-spar fittings with the incorporation of Boeing SB 767-54-0081, the inspection for crack damage in the lug bore is not necessary.

4. Machine each bore as necessary to remove scratches, surface defects, cracks or corrosion. Use a boring tool, Boeing tool number B0F311T2150 or equivalent. Refer to SOPM 20-10-02. There are two types of material used for the midspar fitting. For airplane cum line number 2 through 663 without SB 767-54-0081 incorporation, the fitting material is 4330M alloy steel. For airplane cum line numbers 665 and on, or airplanes with SB 767-54-0081 incorporation, the fitting material is 15-5PH CRES.

NOTE: Use of the boring tool requires the removal of tubing that is located between the midspar fittings.

5. If cracks or corrosion were found during the initial inspection, continue to machine the bore and to do the inspections until you can not detect cracks or corrosion. Then machine an insurance cut of 0.010 inch minimum from the diameter of the bore. If the diameter of the bore is larger than 1.8640 inches after the bore has been machined, then get alternative repair instructions from Boeing.

6. If you did not find cracks or corrosion during the initial inspection, an insurance cut is not necessary unless the midspar fitting is more than 10 years old. The maximum bore diameter is given in step 5.
7. For the midspar fitting made with 4330M alloy steel, do a surface etch inspection of each lug hole that has been machined. Use ammonium persulfate. This inspection examines the temper of the hole to find if the hole was damaged when it was machined. Refer to SOPM 20-10-02 for the surface temper etch inspection procedure.
8. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
9. Shot peen or flap peen the holes of the clevises that have been reworked. Use shot number 170 to 460, intensity 0.014A, and coverage 2.0. Refer to SOPM 20-10-03. Make the finish on the surface of the hole 32 microinches Ra or better. You can remove a maximum of 0.0028 inch of material from the bore diameter to get the necessary surface finish. The maximum bore diameter is 1.8640 inches.
10. For the midspar fitting made with 4330M alloy steel, apply a stylus cadmium plate 0.0003 to 0.0005 inch thick to the surface of the lug hole. Refer to SOPM 20-42-10. For the midspar fitting made with 15-5PH CRES, use the manual decontamination and repassivation process for ferrous alloys as given in SOPM 20-30-03 to clean the lug bore.
11. Make four replacement bushings, one bushing for each lug of the clevises. See Detail I and Table I. Make the outer diameter of each bushing 0.0028 to 0.0038 inch larger than the hole diameter before the bushing is cadmium plated as necessary. Make the surface finish on the outer surface of the bushing 32 microinches Ra or better. Make the surface finish on the other surfaces 63 microinches Ra or better.
12. Do a dye penetrant inspection of the bushings to make sure there are no defects on the surface. Refer to SOPM 20-20-02 for the dye penetrant inspection procedure.
13. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.

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**Midspar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONTINUED)

14. For the mid-spar fitting made with 4330M alloy steel, apply cadmium plate to the outer surface of the bushing. Use Type II, Class 2 cadmium plating as specified in SOPM 20-42-05. Do not plate the inner surface of the bushing.
15. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tooling in the liquid nitrogen until boiling stops. Refer to SOPM 20-50-03.
16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin film of BMS 5-95 sealant to the inner surface of the fitting bore and to the mating surface under the bushing flange.
 - B. If you use adhesive as an alternative to sealant, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the inner surface of the fitting bore then apply a thin film of BMS 5-95 sealant to the mating surface under the bushing flange.

NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the bushing installation tool from Boeing tool kit B0F311T2150 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
18. Line hone through both lugs of the fitting to keep the bushing holes aligned. Hone the inner diameter of the bushings to a diameter of 1.5810 to 1.5822 inches. Make the surface finish 32 microinches Ra or better. Machine the chamfers again if necessary. See Detail I.
19. Apply a fillet seal of BMS 5-95 sealant between the flange of the bushing and the face of the lug. Apply a bead of BMS 5-95 sealant between the opposite end of the bushing and the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area.
21. Put the airplane back to its usual condition.

1734462 S0000314166_V1

Midspar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 2 of 4)

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STRUCTURAL REPAIR MANUAL

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 54-51-01 FOR PYLON REMOVAL AND INSTALLATION
 - AMM 71-00-02 FOR THE ENGINE REMOVAL AND INSTALLATION
 - NDT PART 6, 51-00-12 FOR HIGH-FREQUENCY EDDY-CURRENT INSPECTION PROCEDURES
 - SOPM 20-10-02 FOR THE MACHINING OF ALLOY STEEL AND FOR SURFACE TEMPER ETCH INSPECTION
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-30-03 FOR CLEANING AND SURFACE PREPERATION OF FERROUS ALLOYS
 - SOPM 20-42-02 FOR CADMIUM-TITANIUM ALLOY PLATING
 - SOPM 20-42-05 FOR CADMIUM PLATING
 - SOPM 20-42-10 FOR STYLUS CADMIUM PLATING
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

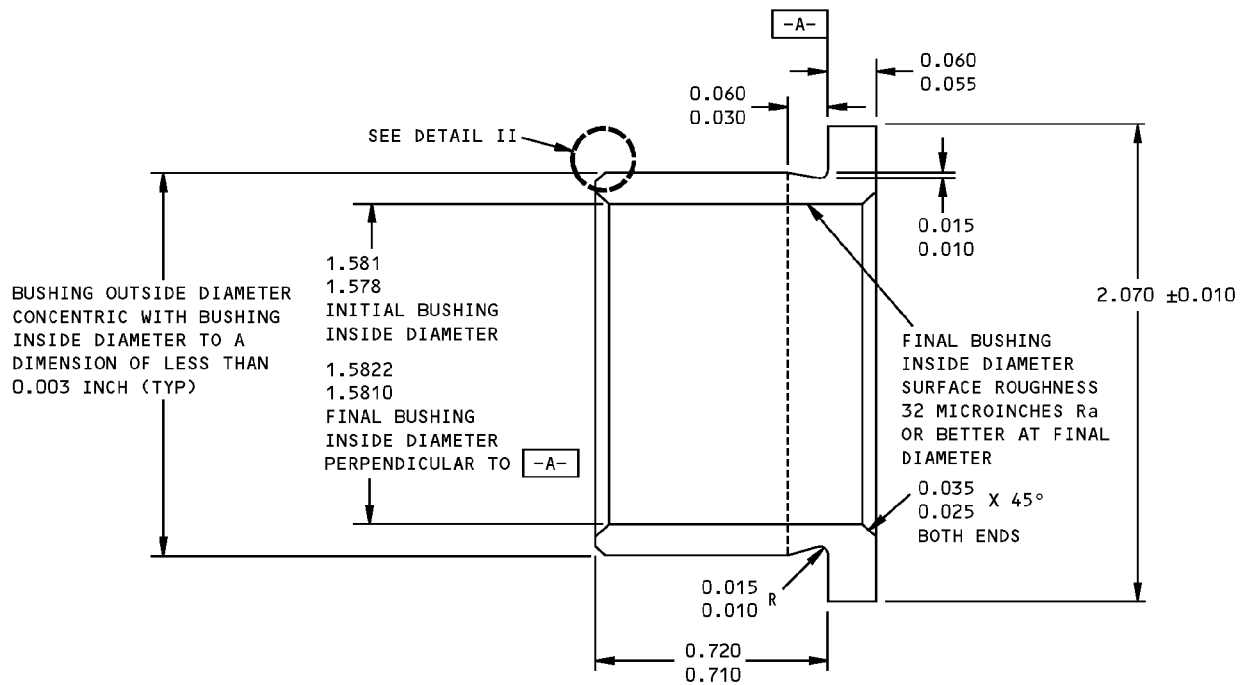
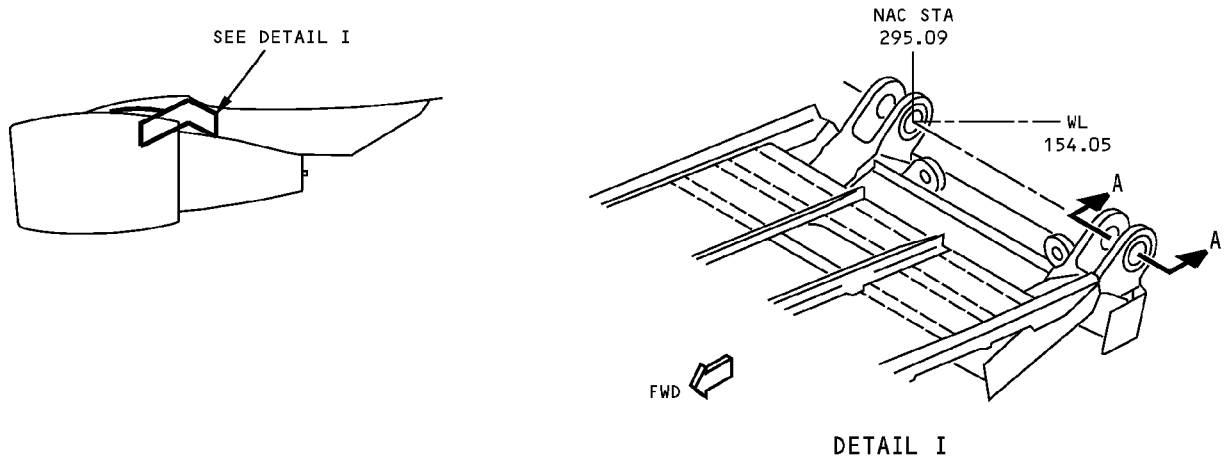
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED BUSHING	AS REQUIRED	2.25 INCHES DIAMETER BY 1.00 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640

TABLE I

1734493 S0000314170_V1

**Midspar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 4)**

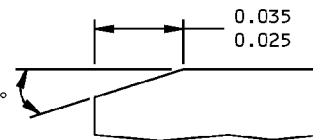
**767-300
STRUCTURAL REPAIR MANUAL**



**FLANGED BUSHING
(TYPICAL)**

SECTION A-A

15° TO 20°



**FLANGED BUSHING
OUTSIDE DIAMETER CHAMFER**

DETAIL II

**Midspar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - LOWER SPAR FITTING, LUG HOLE - CF6-80C2 ENGINE

APPLICABILITY

THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE LOWER SPAR FITTING ON THE CF6-80C2 ENGINE. **B**

REPAIR INSTRUCTIONS

1. Remove the strut diagonal brace and get access to the lower spar fitting. Refer to AMM 54-51-02.
2. Remove the two bushings from the fitting lug, and discard them. Use the bushing removal tool in the boeing tool kit B0F767LS311T4185, or the equivalent.

As an alternative, split bushing removal tool, Boeing tool number B54016-1, can be used.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to 20-20-01.
4. If damage was not found with the inspections, and the age of the airplane is less than or equal to 15 years, then go to step 11.
5. Install the right angle boring tool that is included in the Boeing tool kit, or the equivalent.

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER IS MORE THAN THE MAXIMUM PERMITTED.

6. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Continue to machine the hole and to do the inspections until damage cannot be found. Then machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.1859 inches after the hole has machined, then get alternative repair instructions from Boeing.
7. Machine a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
8. Remove the boring tool.
9. Hone the hole to remove machine tears and burrs. Break sharp edges on the chamfer.

10. Peen the hole. Do not use peening equipment that has shot made of ferrous material. Flap peen wheels are available with tungsten carbide balls. Refer to SOPM 20-10-03. Use shot size 170-330, intensity 0.014A, and coverage 2.0.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole. Use the manual decontamination and repassivation process as specified in BAC5625, Surface Treatments for Ferrous Alloys. As an alternative, abrade the hole with aluminum oxide paper, 150 grit or finer. Do not use silicon carbide paper. Solvent clean the hole to make sure that all grit is removed.

11. Hone the hole to make the hole surface finish 32 microinches Ra or smoother. A maximum of 0.003 inch material can be removed from the hole diameter (0.0015 inch depth of hone) to get the necessary surface finish. The hole to be circular to a dimension of 0.0003 inch or less. The maximum hole diameter is given in step 6.
12. Make the repair "no hone" bushings from 015T0779-9 or see Table I and Detail I. Make the outside diameter of each bushing 0.0035 to 0.0041 inch larger than the hole diameter to give an interference fit. Make the outside diameter 32 microinches Ra or smoother. Make the surface finish on the other surfaces 63 microinches Ra or smoother. The outside diameter of each bushing to be circular to a dimension of 0.0003 inch or less.
13. Do a magnetic particle inspection of the bushings to make sure there are no surface defects. Refer to SOPM 20-20-01.
14. Apply one layer of BMS 10-11, Type I primer in the hole and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

15. Prepare the bushings for installation with the shrink method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tool plugs in the liquid nitrogen until the boiling stops. Refer to SOPM 20-50-03. Get the installation tool plugs from the Boeing tool kit, or the equivalent.

**Lower Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 1 of 3)**



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STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the surfaces of the lug which touch the flanges of the bushings.
NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.
NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the installation tool assembly from the Boeing tool kit, or the equivalent. Hold the bushing flanges tightly against the lug until the bushings are at room temperature. A press fit can be used to complete the shrink fit installation of the bushings.
18. It is necessary to do a local hone to the inside diameter of the split bushings if the bushings are not aligned to a dimension of 0.0015 inch or less. Hone a small amount from the inside diameter of the bushings until the bushings are aligned to a dimension of 0.0015 inch or less. Make the surface finish 32 microinches Ra or smoother. Machine the outer chamfers again if necessary.
19. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the lug faces. Apply BMS 5-95 sealant to the clearance between the bushings on the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- ALL DIMENSIONS ARE IN INCHES.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0061.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-02 FOR REMOVAL OF THE DIAGONAL BRACE
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-05 FOR REPAIR SEALING.
- A** REFER TO SB 767-54-0061 FOR DATA ON BLANK BUSHING AVAILABILITY.
- B** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.
- C** ADDITIONAL HONING IS REQUIRED ONLY IF THE FINAL BUSHING INSIDE DIAMETER IS NOT AT THE SPECIFIED RANGE AFTER INSTALLATION.

REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED "NO-HONE" BUSHING	2	15-5PH CRES SOLUTION TREATED AS SPECIFIED IN AMS 5659, HT TR 180-200 KSI AS SPECIFIED IN BAC5619. SEE DETAIL I AND A

TABLE I

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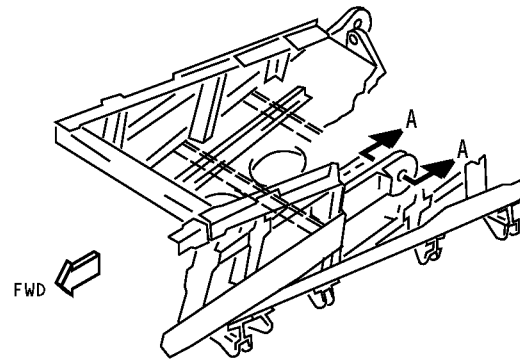
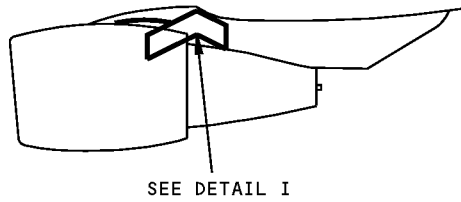
Lower Spar Fitting, Lug Hole Repair - CF6-80C2 Engine Figure 201 (Sheet 2 of 3)

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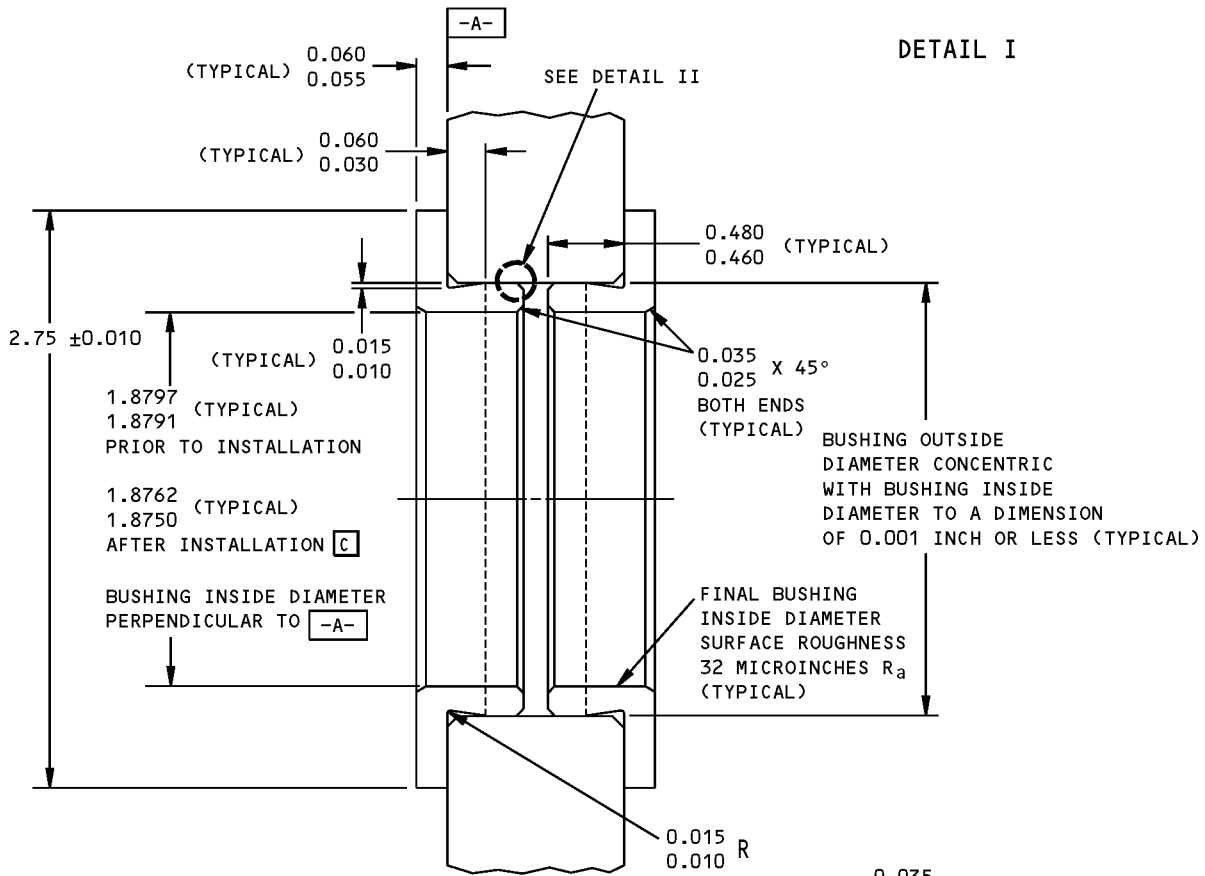
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REPAIR 4
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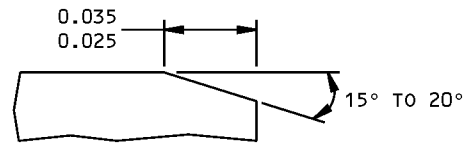


DETAIL I



FLANGED BUSHING

SECTION A-A



**FLANGED BUSHING
OUTSIDE DIAMETER CHAMFER**

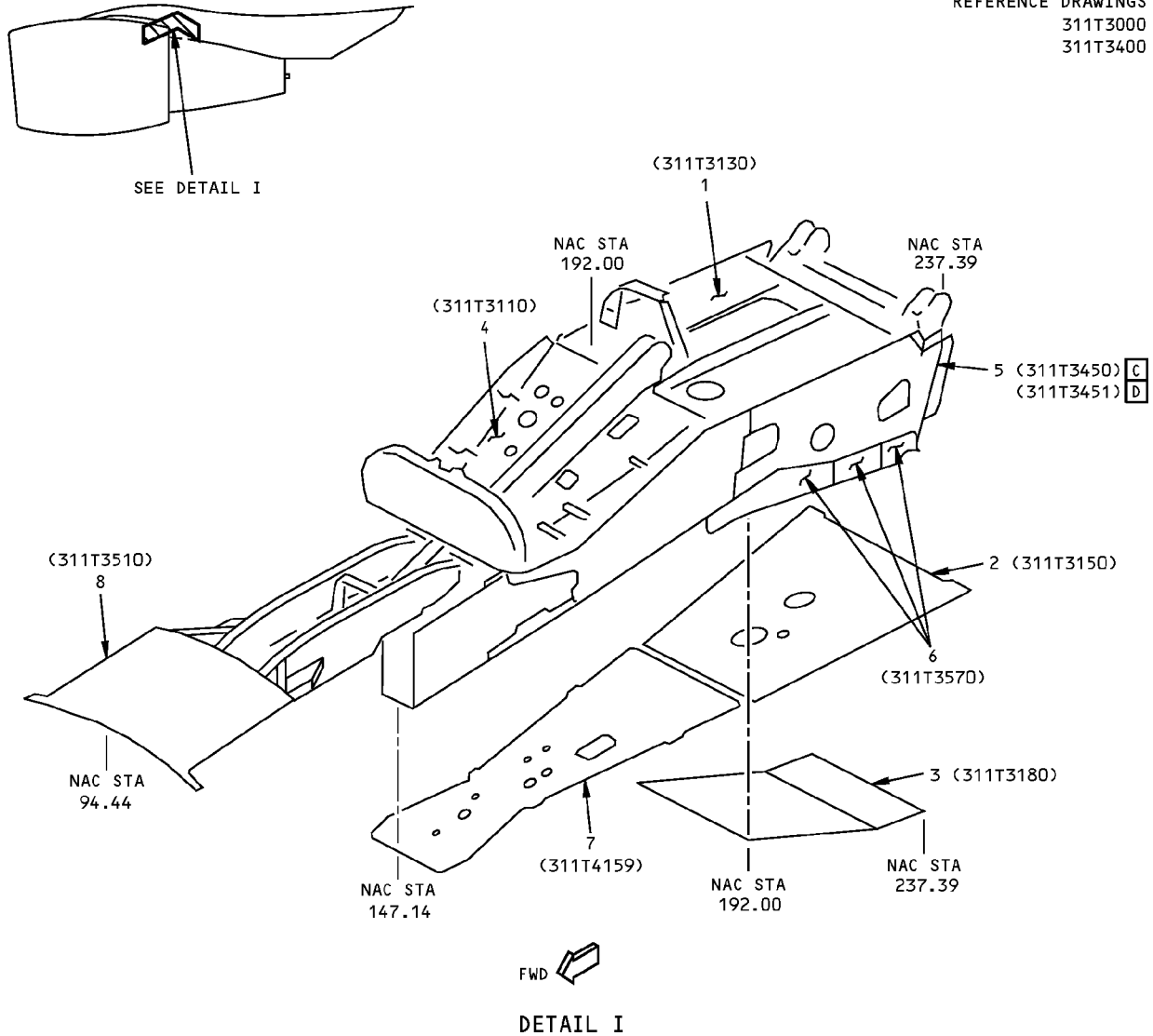
DETAIL II

**Lower Spar Fitting, Lug Hole Repair - CF6-80C2 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT SKIN - PW4000 ENGINE

REFERENCE DRAWINGS
311T3000
311T3400



NOTES

- A** FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 165 THRU 653 WITHOUT SB 767-54-0089 INCORPORATION.
- B** FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 654 AND ON, AIRPLANES WITH SB 767-54-0089 INCORPORATED.

- C** FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 165 THRU 856.
- D** FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 857 AND ON.

**Strut Skin Identification - PW4000 Engine
Figure 1 (Sheet 1 of 2)**



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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	WEB, AFT UPR SPAR	0.050	CLAD 2024-T3	A B
	WEB, AFT UPR SPAR, PANEL BOND ASSEMBLY			
	WEB	0.032	CLAD 2024-T81	
	DOUBLER	0.025	CLAD 2024-T81	
2	AFT WEB, MIDSPAR	0.063	CLAD 2024-T3	
		0.063	CLAD 2024-T3	
		0.063	CLAD 2024-T81	
3	WEB, LWR SPAR	0.100	15-5PH CRES HT TR 180-200 KSI	
4	WEB, FWD UPR SPAR	0.080	CLAD 2024-T3	
		0.040	CLAD 2024-T3	
5	SKIN + DOUBLER SKIN	0.080	CLAD 2024-T3	C D
		0.080	CLAD 2024-T3 (CHEM-MILLED TO 0.040 MIN)	
		0.160	CLAD 2024-T3	
6	CORE COWL SKIRT + DOUBLER	0.050	CLAD 2024-T3	
		0.032	CLAD 2024-T3	
7	FWD WEB, MIDSPAR	0.1875	15-5PH CRES HT TR 180-200 KSI	
8	FAN COWL BEAM ASSY			
	AFT UPR SKIN	0.063	CLAD 2024-T4	
	UPR SKIN, L.H. AND R.H.	0.063	CLAD 2024-T42	
	FWD UPR SKIN	0.063	CLAD 2024-T3	

LIST OF MATERIALS FOR DETAIL I

**Strut Skin Identification - PW4000 Engine
Figure 1 (Sheet 2 of 2)**

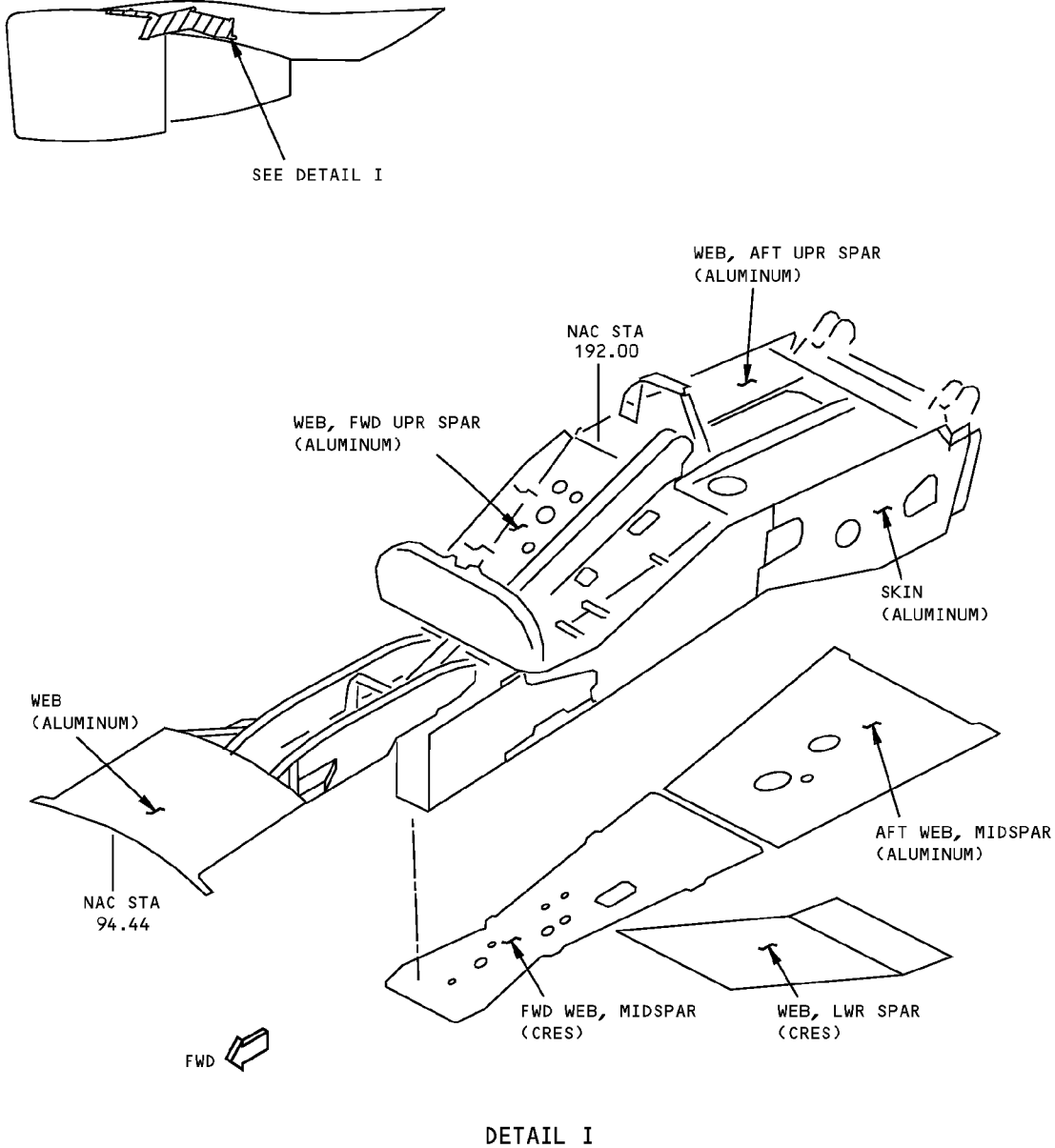
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT SKIN - PW4000 ENGINE



DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
SKINS	A	B	SEE DETAIL IV	C
WEBS	A	B	SEE DETAIL IV	C

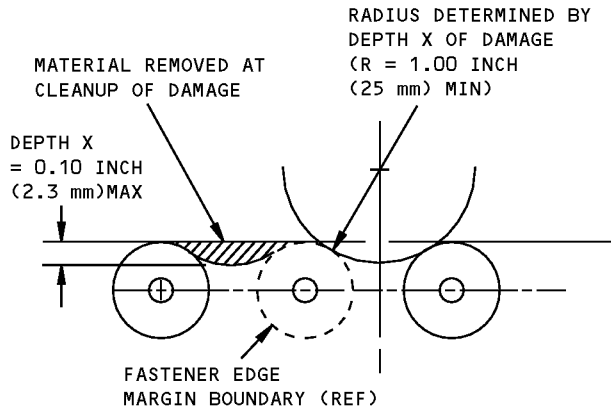
**Strut Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

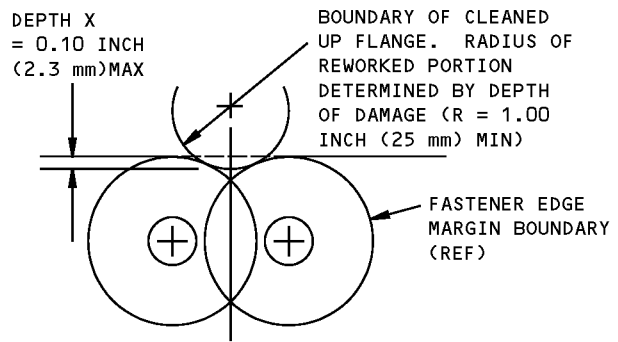
NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III, AND V

- C** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.00 INCH (25 mm) TO FASTENER HOLE, MATERIAL EDGE, FOR OTHER DAMAGE. FILL HOLES IN ALUMINUM WEB OR SKIN WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. FILL HOLES IN CRES SKIN OR WEB WITH MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED

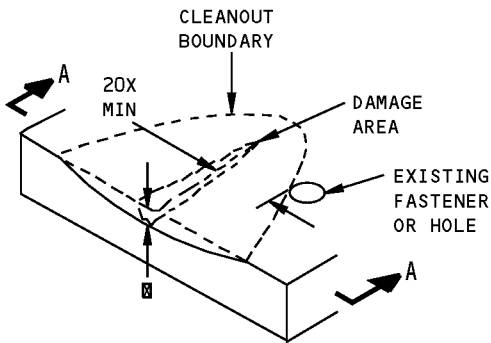


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

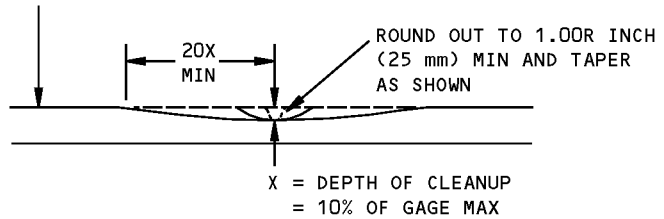


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR SKIN EDGE MUST NOT BE LESS THAN 20X

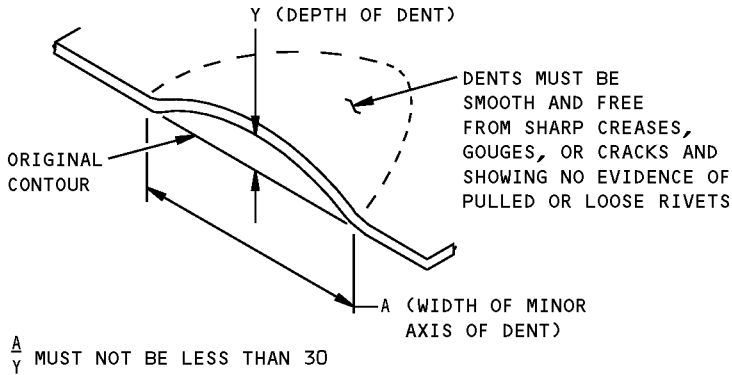


SECTION A-A

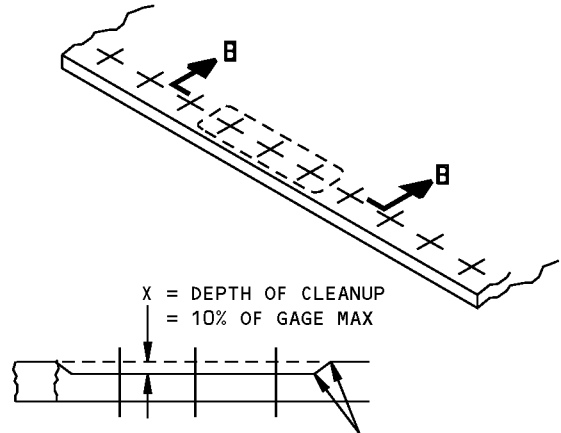
DETAIL III

**Strut Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**

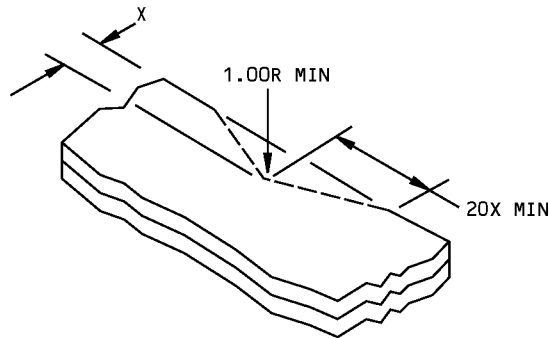


**ALLOWABLE DAMAGE FOR DENT
DETAIL IV**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

**SECTION B-B
CORROSION CLEANUP
DETAIL V**



X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL VI

**Strut Skin Allowable Damage - PW4000 Engine
Figure 101 (Sheet 3 of 3)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT SKIN - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Clean out damaged area to 1-inch max diameter circle.
2. Fabricate repair part 1.
3. Assemble repair part 1 and drill fastener holes.
4. Remove repair part 1.
5. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
6. Alodize the repair part and raw edges of original part.
7. Apply one coat of BMS 10-11, type 1 primer to all of part 1 in accordance with 51-21 of the 767 Maintenance Manual.
8. Install repair part 1 making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
9. Restore finish.

SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.071 CLAD 2024-T3

NOTES

- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31 FOR SEALS AND SEALING
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR SEALING OF REPAIRS
 - SRM 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31 FOR SEALS AND SEALING

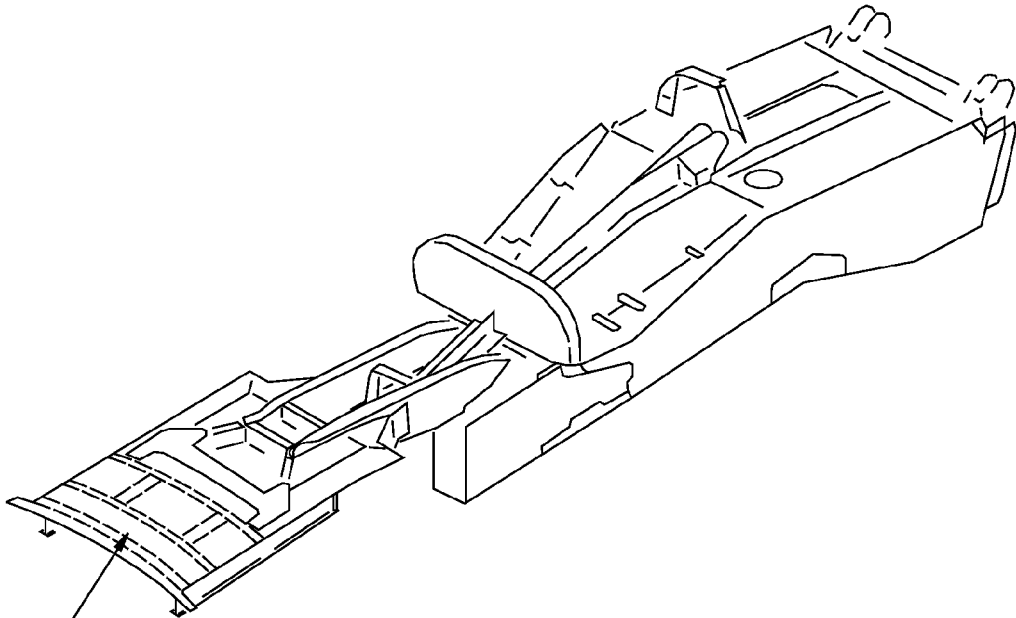
**Strut Skin Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

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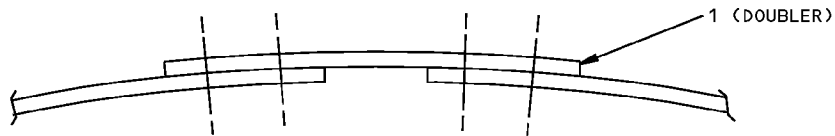
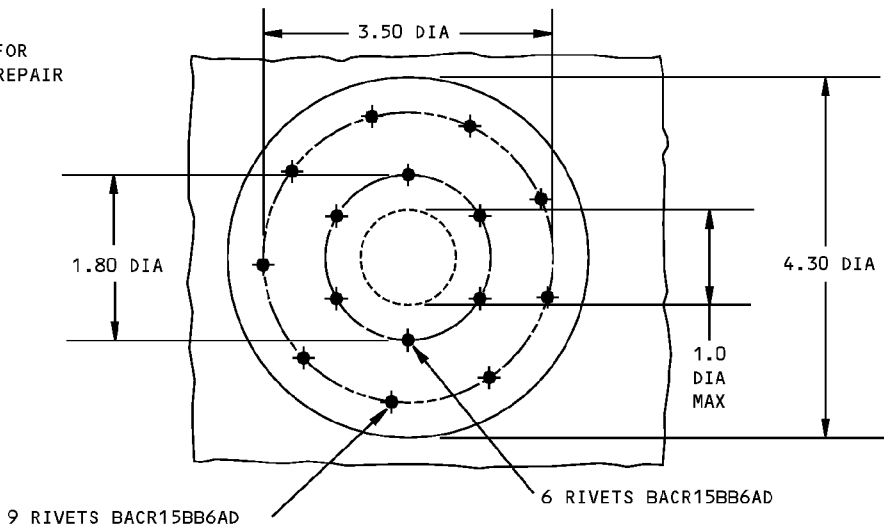
54-53-01

REPAIR 1
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STRUCTURAL REPAIR MANUAL**



SEE DETAIL I FOR
FORWARD SKIN REPAIR



**SMALL HOLE OR CRACK REPAIR
DETAIL I**

**Strut Skin Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - STRUT SIDE SKIN PANEL - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Cut out cracked or damaged area to a regular shape. Maintain 1.0 min corner radius.
 2. Make the repair plate.
 3. Remove existing fasteners over the area to be covered by the repair plate.
 4. Assemble the repair plate and drill fastener holes in new and existing locations.
- CAUTION:** WHEN ESTABLISHING ADDITIONAL RIVET POSITIONS, ENSURE THAT EDGE MARGINS ARE MAINTAINED ON THE INTERNAL DOUBLER, AND THAT SUFFICIENT CLEARANCE IS AVAILABLE FOR THE FORMATION OF RIVET HEADS ON THE UNDER STRUCTURE.
5. Remove the repair plate.
 6. Remove all nicks, scratches, burrs and sharp edges from initial and repair plate.
 7. Install countersink repair washers in existing countersinks in the skin according to 51-40-08.
 8. Alodize the raw edges of existing and repair part according to 51-20-01.
 9. Apply one coat of BMS 10-11 type 1 primer to faying surfaces of the repair plate, and to the strut skin according to 51-21 of the 767 Maintenance Manual.
 10. Install the repair plate, making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
 11. Restore original finishes according to 51-21 of the 767 Maintenance Manual.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
 - WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31-00 FOR SEALS AND SEALING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.
- A** INSIDE OF SKIN IS CHEM-MILLED. MAKE SURE RIVET HEAD CLEARS RADIUS

FASTENER SYMBOLS

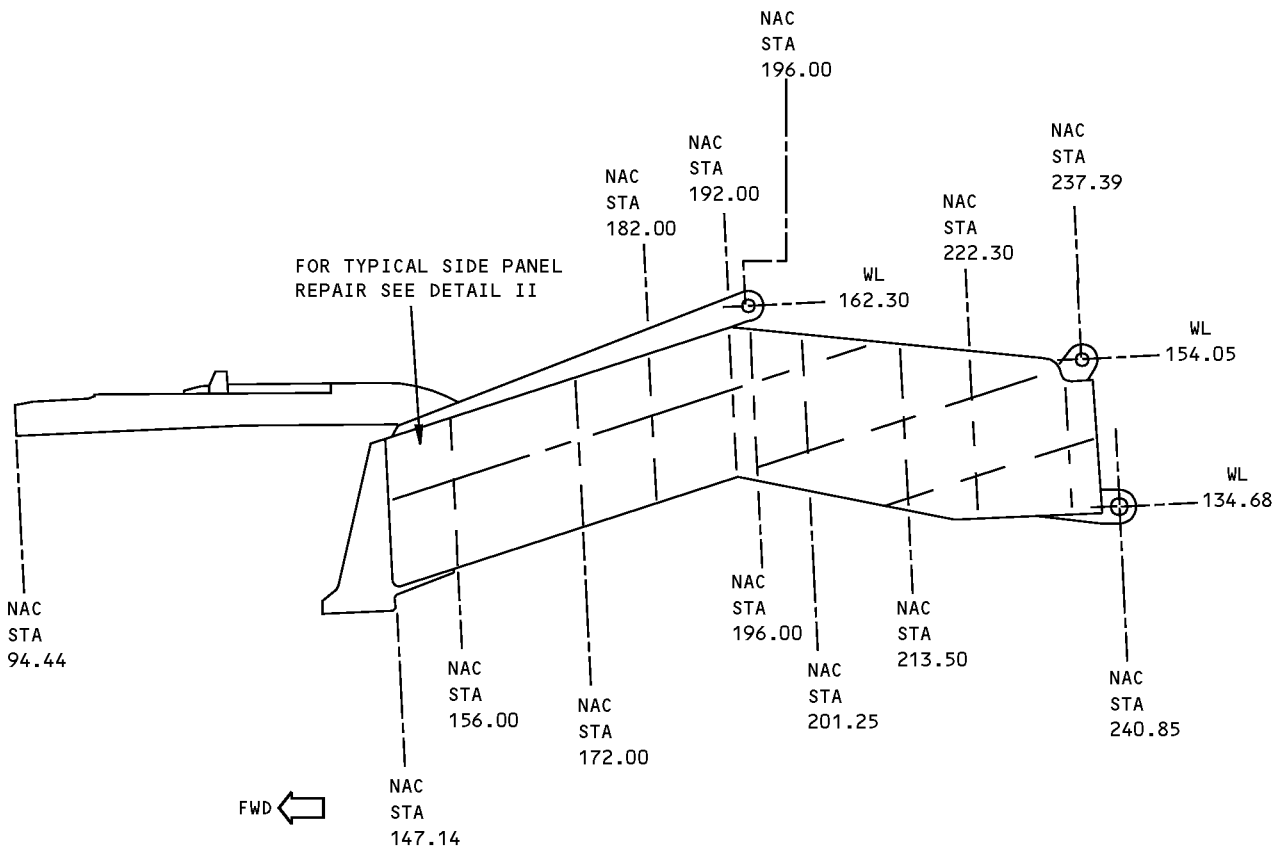
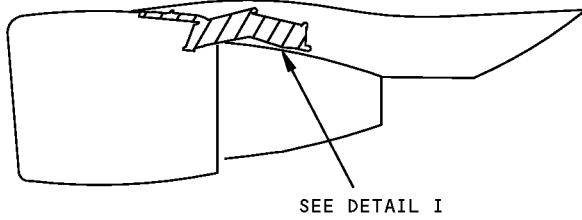
- ◆ REPAIR FASTENER LOCATION
- ⊕ ORIGINAL FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PLATE	1	0.10 CLAD 2024-T3

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**Strut Side Skin Panel Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

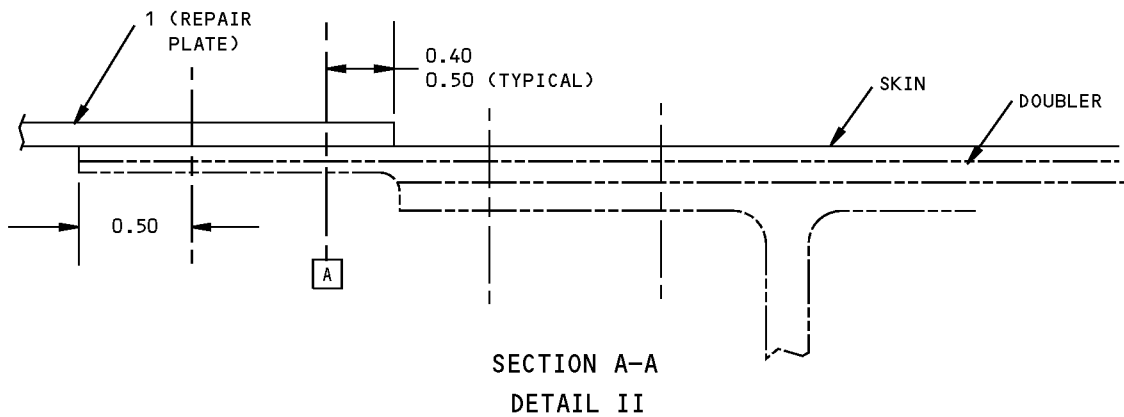
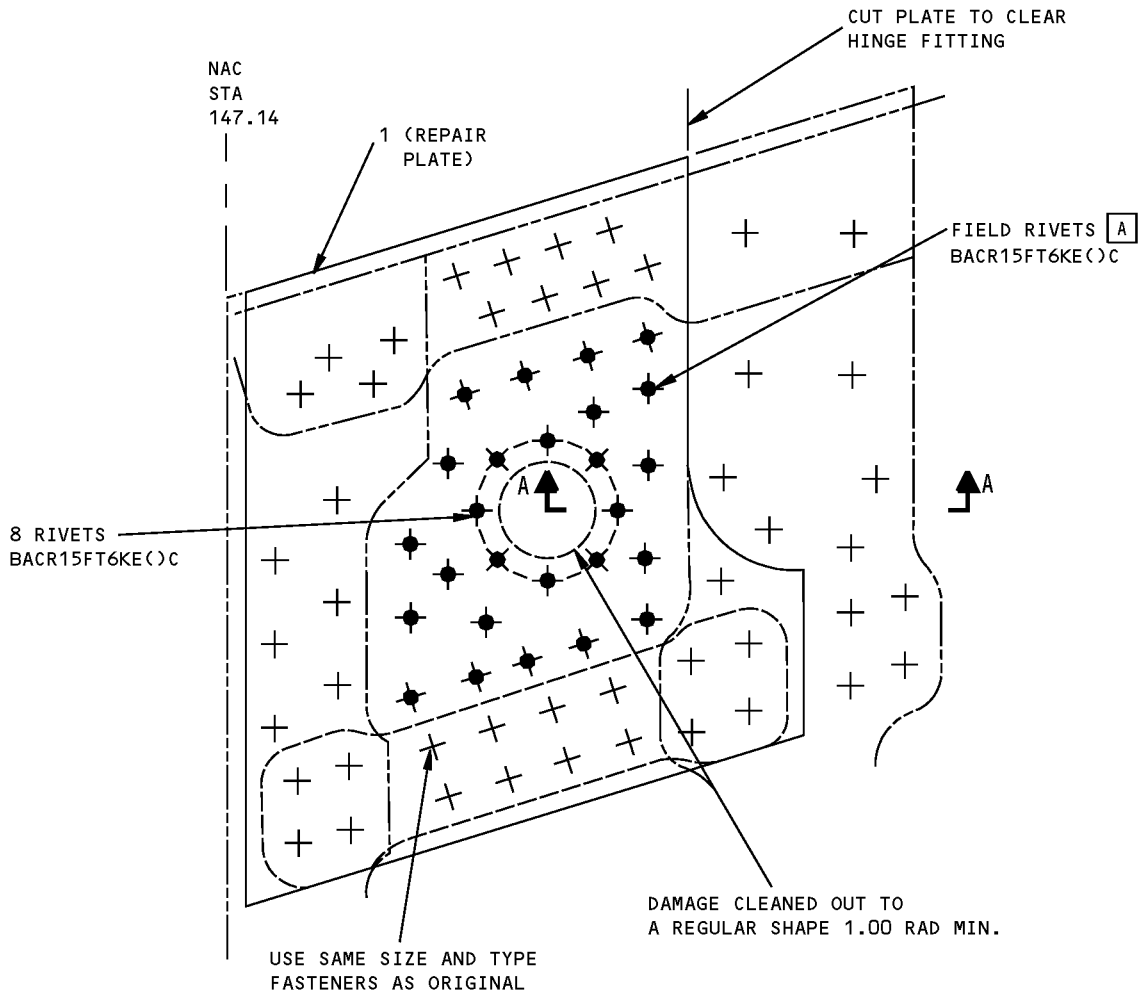
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

**Strut Side Skin Panel Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Strut Side Skin Panel Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT, AFT UPPER SPAR WEB ADJACENT TO THE HYDRAULIC FITTING HOLE - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area. It may be necessary to remove additional fasteners to get clearance.
2. Do a high frequency eddy current (HFEC) inspection of the web to find the end of the crack. Refer to NDT Part 6, 51-00-01, Fig. 4.

As an alternative, do a dye penetrant inspection of the web to find the end of the crack. Refer to SOPM 20-20-02.
3. Stop drill the end of the crack. Refer to SRM 51-10-00.
4. Make the repair parts. See Table I.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the initial web.
8. Cadmium plate the CRES doubler. Refer to SOPM 20-42-05.
9. Apply a chemical conversion coating to the aluminum repair part and to the bare surfaces of the initial web. Refer to SRM 51-20-01.
10. Apply two layers of BMS 10-11 primer to the repair parts and to the bare surfaces of the initial web. Refer to AMM 51-21-00.
11. Apply BMS 5-95 sealant to all of the mating surfaces.
12. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
13. Apply the finish to the repair area. Refer to AMM 51-21-00.
14. Apply BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - NDT PART 6 51-00-01, D6-7170 FOR EDDY CURRENT INSPECTION PROCEDURES.
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES.
 - SOPM 20-24-05 FOR CADMIUM PLATING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-00 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

FASTENER SYMBOLS

- ⊙ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

AS AN ALTERNATIVE, INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
- ⊙ INITIAL FASTENER LOCATION. INSTALL A BACR15ET7AD() RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.05 15-5PH HT TR 180-200KSI
2	TAPERED FILLER	2	0.050 TO 0.010 INCHES, 7075-T6 OR 2024-T3.

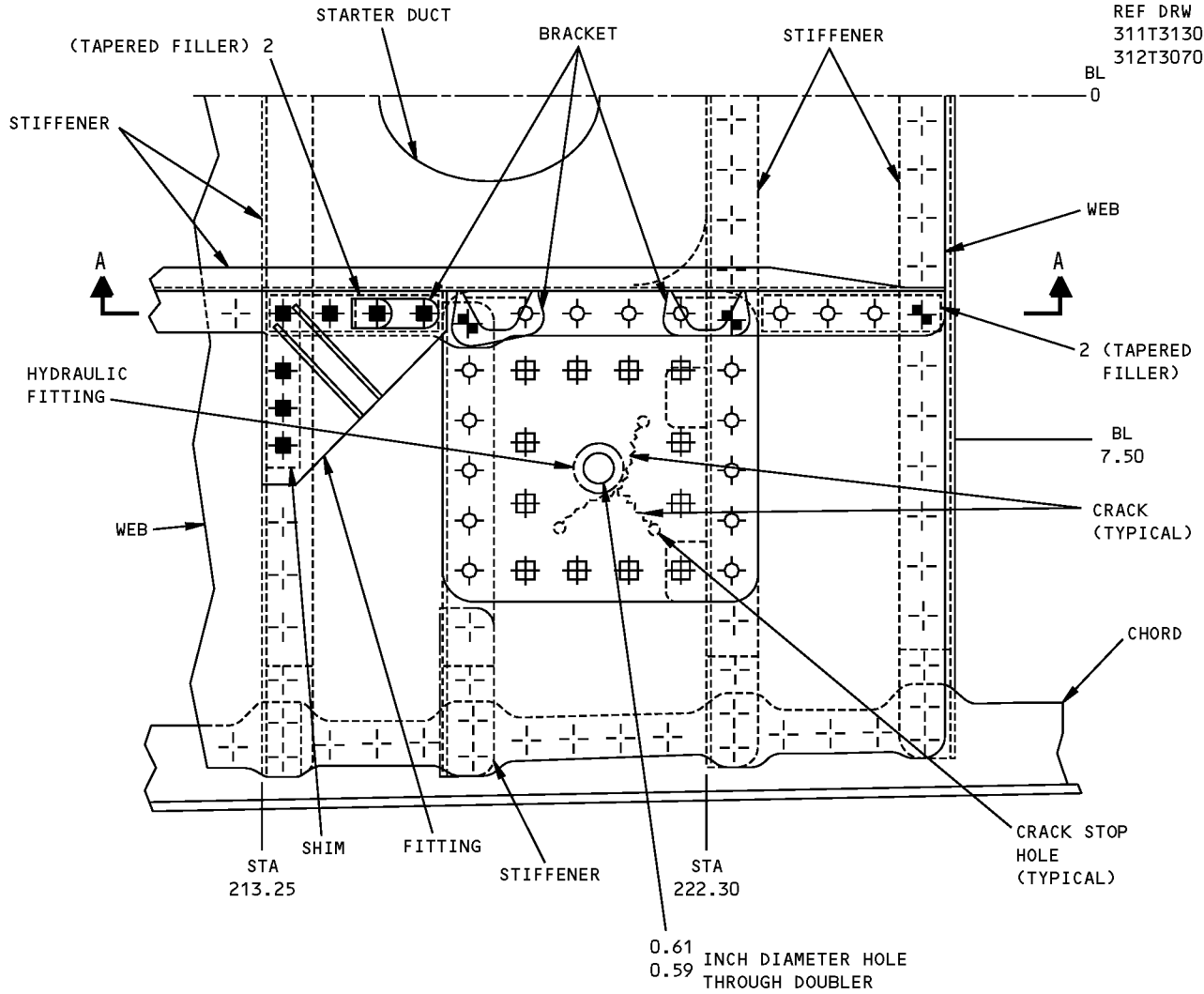
TABLE I

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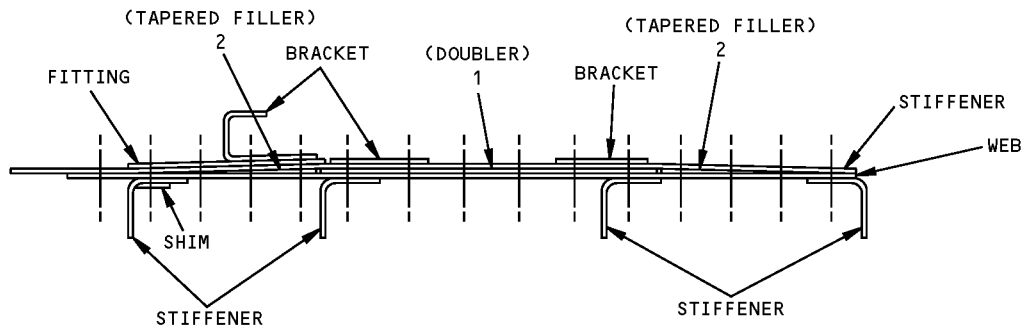
**Strut, Aft Upper Spar Web Repair- Adjacent to the Hydraulic Fitting Hole - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

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REF DRW
311T3130
312T3070



DETAIL I



SECTION A-A

**Strut, Aft Upper Spar Web Repair- Adjacent to the Hydraulic Fitting Hole - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

REPAIR 3
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STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT, AFT UPPER SPAR WEB ADJACENT TO THE THERMAL ANTI-ICE DUCT - PW4000 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THE CRACKS MUST BE FULLY INSIDE THE AREA ADJACENT TO THE THERMAL ANTI-ICE DUCT CUTOUT AND ON THE DUCT SIDE OF THE NEAREST STIFFENER AND SPAR CHORD EDGES. SEE DETAIL II.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR INSTRUCTIONS

1. Open the strut access doors. Refer to AMM 54-53-01.
2. Remove the access panels on the wing leading edge that are above the engine strut. Refer to AMM 06-44-00.
3. Remove the thermal anti-ice (TAI) duct that is installed through the web cutout.
4. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
5. Cut and remove the damaged part of the web.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the web.
7. Do the step 4 inspection again to make sure that all of the cracked web was removed.
8. Apply a chemical conversion coating to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
11. Put the airplane back in its usual condition and do a test for leaks at the TAI duct joints. Refer to AMM 71-00-00.

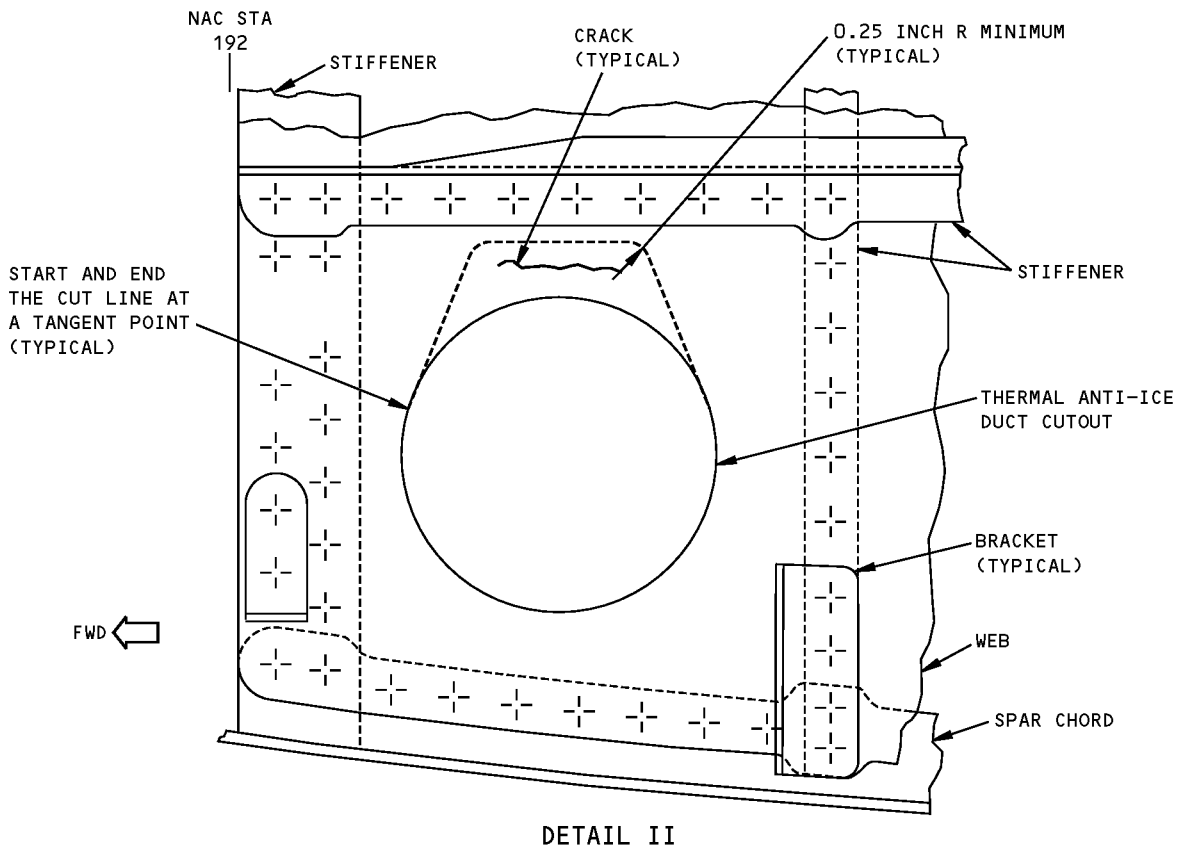
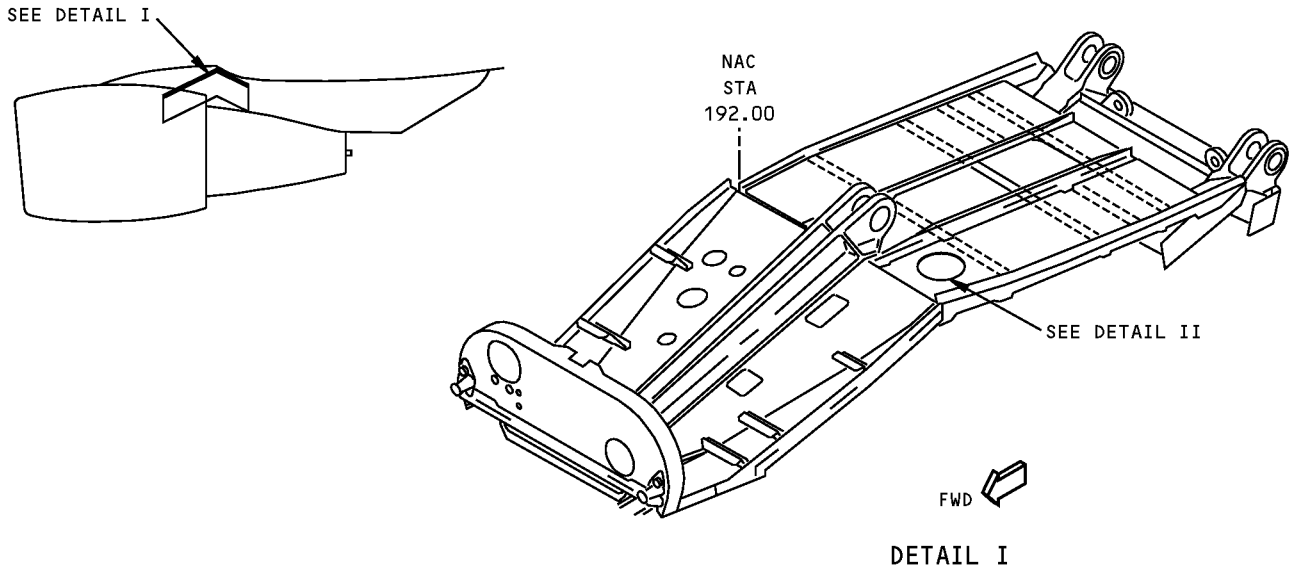
FASTENER SYMBOLS

 REFERENCE FASTENER LOCATION.

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**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

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**Strut, Aft Upper Spar Web Repair - Adjacent to the Thermal Anti-Ice Duct - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - STRUT, AFT UPPER SPAR WEB - PW4000 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT UPPER SPAR WEB. THIS REPAIR CAN BE USED AT LOCATIONS FORWARD OR AFT OF THAT GIVEN IN DETAIL II. ALSO, IT CAN BE USED ON THE RIGHT OR LEFT SIDE OF THE SPAR WEB. DO NOT USE THIS REPAIR IN THE AREAS THAT ARE SPECIFIED IN FIGURES 203 OR 204.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-02. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Open the strut access doors. Refer to AMM 54-53-01.
3. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
4. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-02.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
8. Cut and remove the damaged part of the web.
9. Make the repair parts. See Table I and Detail II. Make the part 1 doubler with sufficient dimensions to attach the outer row of fasteners to a stiffener, chord or bulkhead in all directions.

NOTE: Save the fillers that are installed at each stiffener joggle under the web, for subsequent use.

10. Assemble the repair parts and drill the fastener holes.
11. Disassemble the repair parts.
12. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
13. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
14. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
15. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
16. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
NOTE: If the repair is done at a location different than the Detail II location, then replace initial fasteners with oversize fasteners of the same type.
17. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
18. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

Strut, Aft Upper Spar Web Repair - PW4000 Engine
Figure 201 (Sheet 1 of 5)

STRUCTURAL REPAIR MANUAL






NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

A MAKE A NEW BRACKET THE SAME AS THE INITIAL BRACKET EXCEPT DRILL NEW FASTENER HOLES THAT ARE 0.050 INCH LOWER (DOUBLER THICKNESS) TO ALIGN WITH THE MATING FAIRING INSTALLATION.

THIS BRACKET IS ONLY INSTALLED ON THE OUTBOARD SIDE OF THE STRUT.

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15BB5AD() OR MS20470AD5() RIVET.
-  INITIAL FASTENER LOCATION. INSTALL A BACR15FT7KE()C RIVET.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH CRES, HT TR 180-200 KSI
2	FILLER	1	0.050 INCH, 2024-T3 OR 7075-T6
3	FILLER	1	2024-T3 OR 7075-T6 THICKNESS AS NECESSARY
4	TAPERED FILLER	1	0.050 TO 0.010 INCH, 2024-T3 OR 7075-T6
5	FAIRING SUPPORT BRACKET	1	CLAD 2024-T3 OR -T42 A

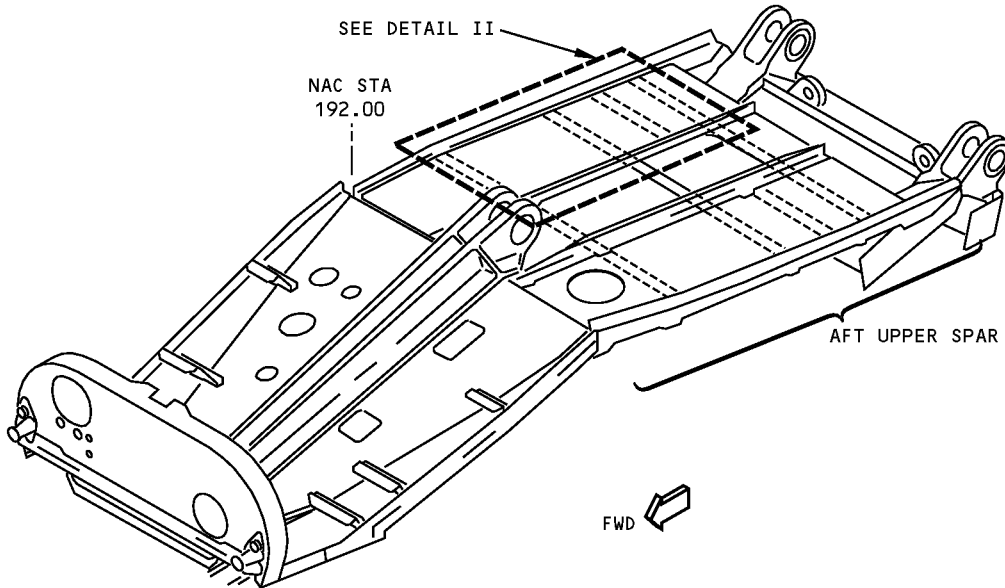
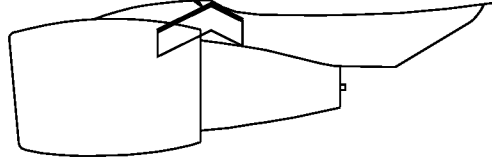
TABLE I

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**Strut, Aft Upper Spar Web Repair - PW4000 Engine
Figure 201 (Sheet 2 of 5)**

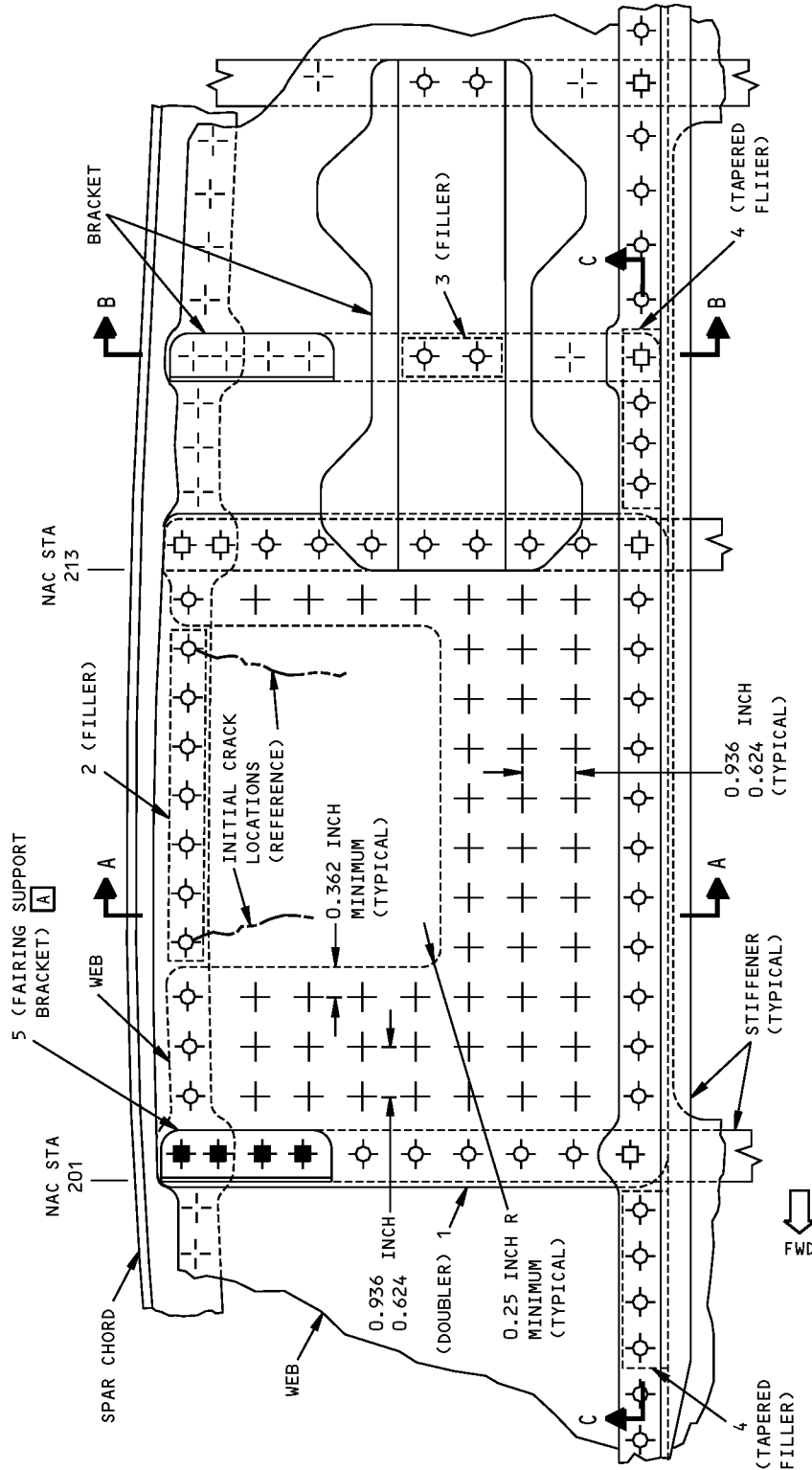
**767-300
STRUCTURAL REPAIR MANUAL**

SEE DETAIL I



DETAIL I

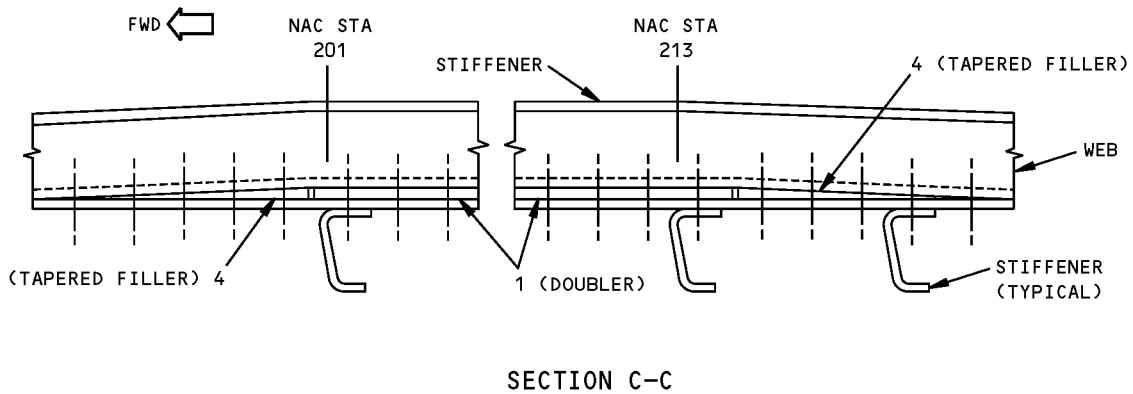
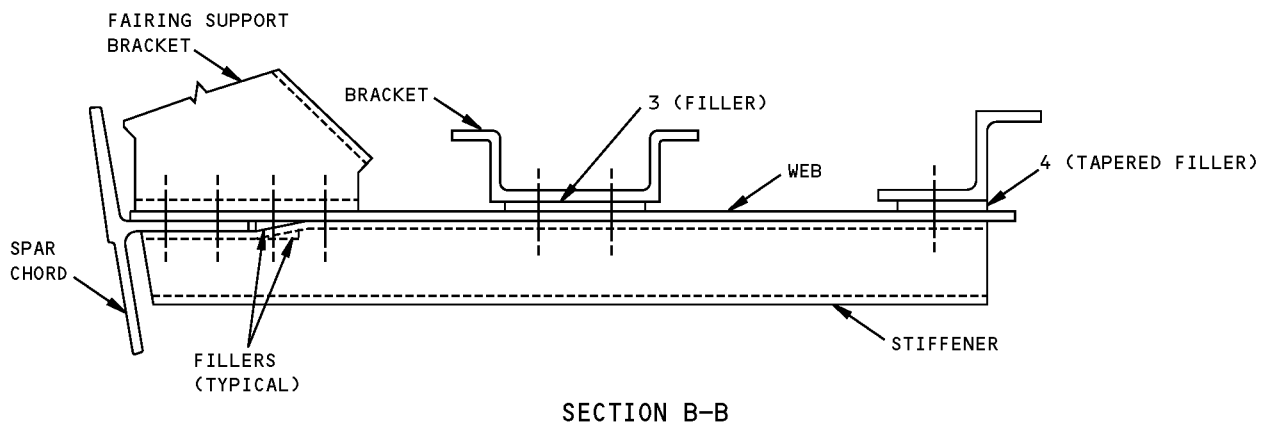
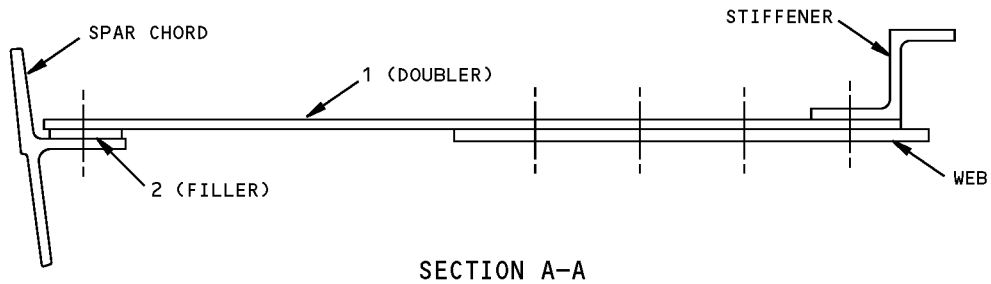
**Strut, Aft Upper Spar Web Repair - PW4000 Engine
Figure 201 (Sheet 3 of 5)**



DETAIL II

Strut, Aft Upper Spar Web Repair - PW4000 Engine
Figure 201 (Sheet 4 of 5)

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STRUCTURAL REPAIR MANUAL**



**Strut, Aft Upper Spar Web Repair - PW4000 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 6 - STRUT SIDE SKIN PANEL AT FORWARD TORQUE BOX ACCESS HOLE - PW4000 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AREA OF THE FORWARD TORQUE BOX ACCESS HOLE (BETWEEN NAC STA 156.0 AND 172.0). TO USE THIS REPAIR, CRACKS THAT ARE FOUND MUST NOT BE IN ZONE 2, AS SHOWN IN DETAIL II.

REPAIR INSTRUCTIONS

1. Get access to the damaged area of the strut. Do the procedure to remove the thrust reverser half. Refer to AMM 78-31-01/401.
2. Remove the hinge fitting at Nac Sta 172.0. Do not discard the shim at this time.
3. Do a high frequency eddy current (HFEC) inspection of the skin panel to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a penetrant inspection can be done. Refer to SOPM 20-20-02.
4. Do one of the following operations to stop crack growth:

CAUTION: DO NOT DRILL INTO THE SUB STRUCTURE. STOP DRILL THE SKIN AND THE DOUBLER ONLY.

- a. Stop drill the end of the crack as given in SRM 51-10-00. Leave the hole open. Do an HFEC inspection to verify that there is no further cracking on the side of the hole opposite the crack.
- b. If the crack stops at an initial hole, enlarge hole by reaming to next oversize fastener diameter. Do an HFEC inspection to verify that there is no further cracking on the side of the hole opposite the crack.

CAUTION: DO NOT ENLARGE HOLE TO OVER 0.60 INCH (15 mm) DIAMETER. THE REMAINING DISTANCE FROM THE HOLE EDGE TO THE SKIN TRIM MUST NOT BE LESS THAN 0.60 INCH (15 mm) AFTER ENLARGING HOLE.

- c. If the crack stops very near an initial fastener hole, enlarge the hole to the minimum diameter required to include the tip of the crack. Make an aluminum sheet metal filler for the skin hole. Apply one layer of BMS 10-11 type I primer to the filler and bare surfaces. Install filler wet with BMS 5-63 sealant. Drill repair fastener size hole again at the initial hole location.
5. Make the repair parts. See Table I and Details III, IV and V.

6. Assemble the repair parts and drill the fastener holes as shown in Detail III. Close ream the fastener holes in the repair parts and the skin panel as specified in SRM 51-40-02 and SRM 51-40-05. Make oversized fastener holes as necessary.
7. Disassemble the repair parts.
8. Remove the nicks, scratches, gouges, burrs and sharp edges from the repair parts and the skin panel.
9. Apply a chemical conversion coating to the bare surfaces of the skin panel. Refer to SRM 51-20-01.
10. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the skin panel. Refer to SOPM 20-41-02.
11. Apply two layers of BMS 10-11, Type I primer to the surfaces of the doubler. Refer to SOPM 20-41-02.
12. Install the part 3 (countersink repair washers) with BMS 5-63 sealant in the initial fastener locations. Refer to SRM 51-40-08.
13. Install the repair parts with BMS 5-63 sealant between the mating surfaces.
14. Install the fasteners as shown in Detail III. Install all fasteners wet with BMS 5-95 sealant. Refer to SRM 51-20-05.
15. Fillet seal around the edges of the repair parts with BMS 5-95 sealant. Refer to SRM 51-20-05.
16. Rework the hinge fitting. **A**
17. Install the hinge fitting with BMS 5-95 sealant between the mating surfaces and on the fasteners. Refer to SRM 51-20-05.
18. Do the procedure to install the thrust reverser half. Refer to AMM 78-31-01/401.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 78-31-01/401 FOR REMOVAL AND INSTALLATION OF THE THRUST REVERSER
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 1 of 6)**

STRUCTURAL REPAIR MANUAL

NOTES (CONTINUED)

- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
- SRM 51-20-05 FOR REPAIR SEALING
- SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
- SRM 51-40-05 FOR FASTENER HOLE SIZES.
- SRM 51-40-08 FOR COUNTERSINK REPAIR WASHER

A USE ONE OF THE FOLLOWING TWO METHODS TO REWORK THE THRUST REVERSE HINGE FITTING.

CAUTION: THIS PROCEDURE INCLUDES THE REMOVAL OF A THRUST REVERSE HINGE. IT PUTS THE FITTING HINGE POINT BACK TO ITS INITIAL LOCATION, BUT MACHINING TOLERANCES MAY CHANGE THE INITIAL POSITION OF THE HINGE AXIS. USE OF MEASUREMENT TOOLING IS STRONGLY RECOMMENDED TO KEEP THE INITIAL LOCATION OF THE FITTING HINGE POINT WHILE YOU DO THIS REPAIR.

1. MEASURE THE INITIAL SHIM THICKNESS AND RECORD. DISCARD THE SHIM.

MACHINE THE MATING SURFACE OF THE FITTING PARALLEL TO ITS INITIAL SURFACE. REMOVE 0.040 INCH MINUS THE INITIAL SHIM THICKNESS UP TO 0.030 INCH.

EXAMPLE:

SHIM THICKNESS = 0.025

0.040 - 0.025 = 0.015

MACHINE OFF 0.015 FROM THE MATING SURFACE OF THE FITTING.

2. MACHINE THE MATING SURFACE OF THE FITTING PARALLEL TO ITS INITIAL SURFACE. REMOVE 0.040 INCH THICKNESS. KEEP SHIM AND USE IT AGAIN TO ASSEMBLE FITTING.

FASTENER SYMBOLS

- + REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K10 OR (IF NECESSARY) BACB30MY8K10X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K9 OR (IF NECESSARY) BACB30MY8K9X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K8 OR (IF NECESSARY) BACB30MY8K8X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K7 OR (IF NECESSARY) BACB30MY8K7X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.

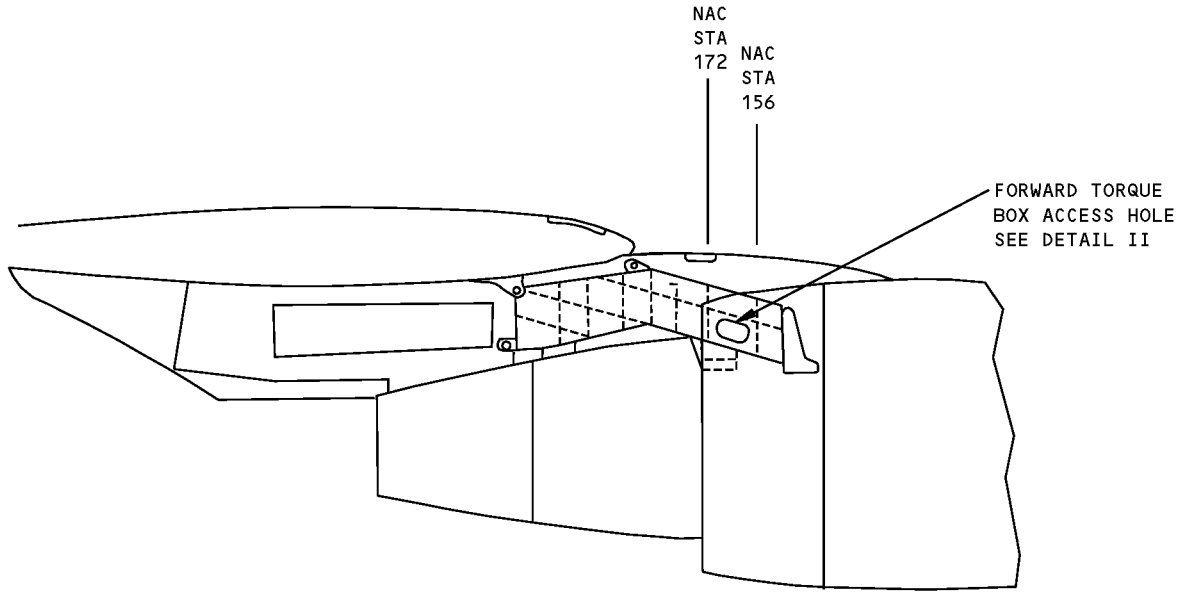
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K6 OR (IF NECESSARY) BACB30MY8K6X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. IF THE REPAIR IS ON THE RIGHT HAND NACELLE, INSTALL A BACB30MY6K6 OR (IF NECESSARY) BACB30MY6K6X HEX DRIVE BOLT WITH A BACC30M6 COLLAR. IF THE REPAIR IS ON THE LEFT HAND NACELLE, INSTALL A BACB30MY8K6 OR (IF NECESSARY) BACB30MY8K6X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K5 OR (IF NECESSARY) BACB30MY8K5X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K10 OR (IF NECESSARY) BACB30MY6K10X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K9 OR (IF NECESSARY) BACB30MY6K9X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K6 OR (IF NECESSARY) BACB30MY6K6X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K5 OR (IF NECESSARY) BACB30MY6K5X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K5 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K4 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K3 HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.040 X 16.5 X 29.0 INCH TI-6AL-4V SHEET ANNEALED
2	DOUBLER	1	0.063 X 13.0 X 26.9 INCH TI-6AL-4V SHEET ANNEALED
3	COUNTERSINK REPAIR WASHERS	AS NECESSARY	REFER TO SRM 51-40-08

TABLE I

Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 2 of 6)

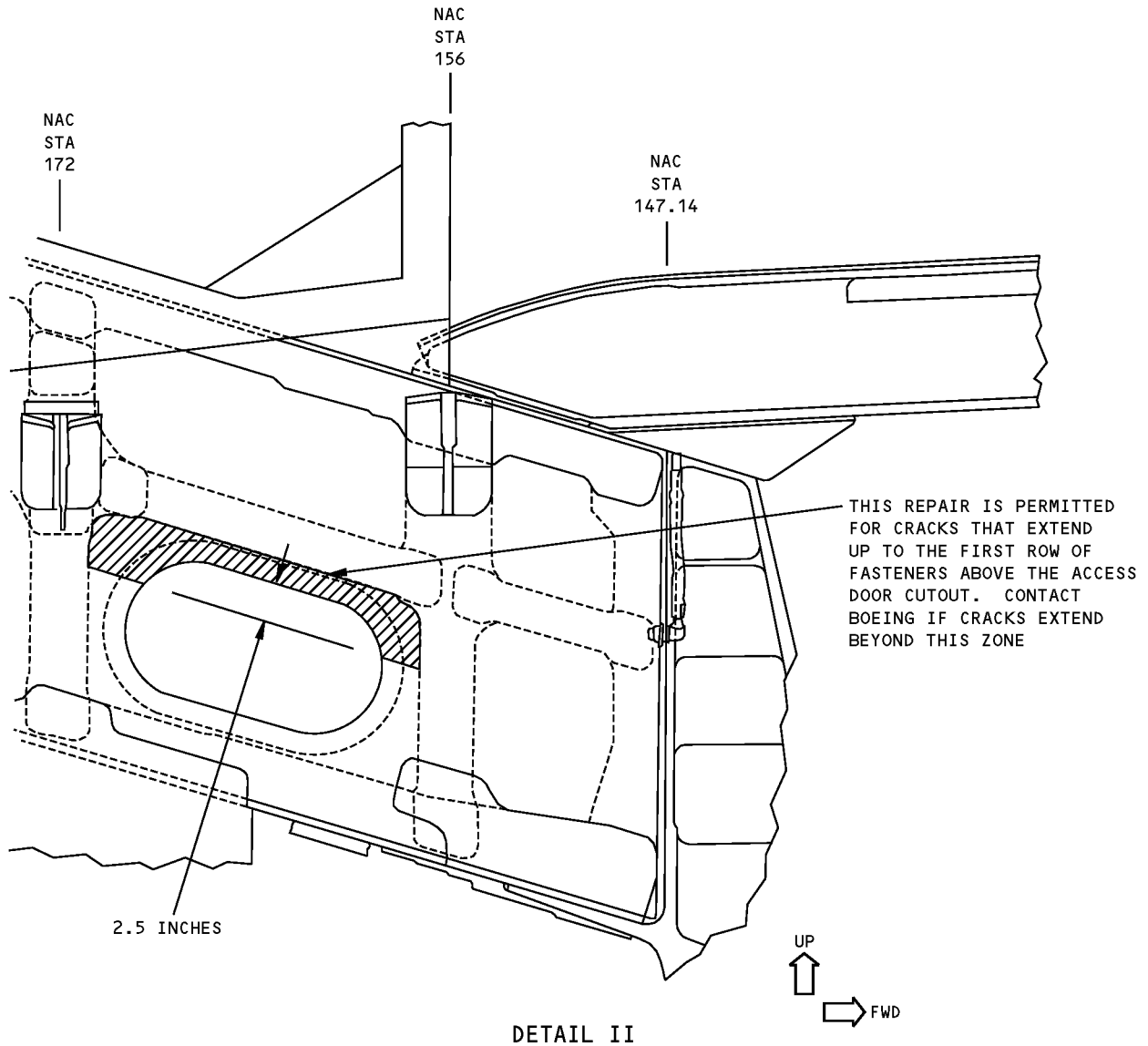
**767-300
STRUCTURAL REPAIR MANUAL**





DETAIL I

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

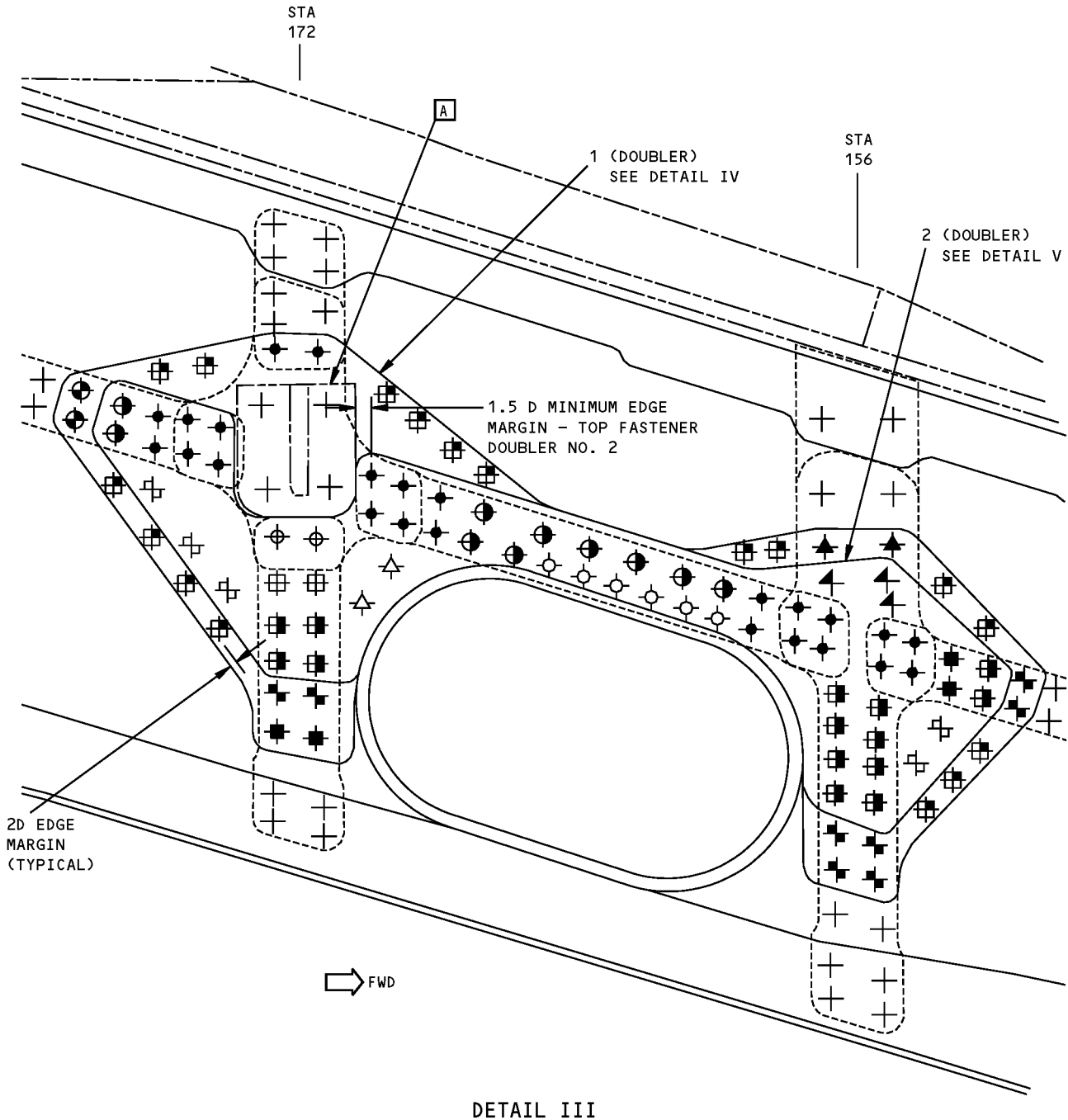


DETAIL II

-  **ZONE I** - THIS REPAIR IS APPLICABLE TO ALL DAMAGE THAT IS FOUND IN THIS ZONE. SEE DETAIL III.
-  **ZONE II** - THIS REPAIR IS NOT APPLICABLE FOR DAMAGE IN THIS ZONE.

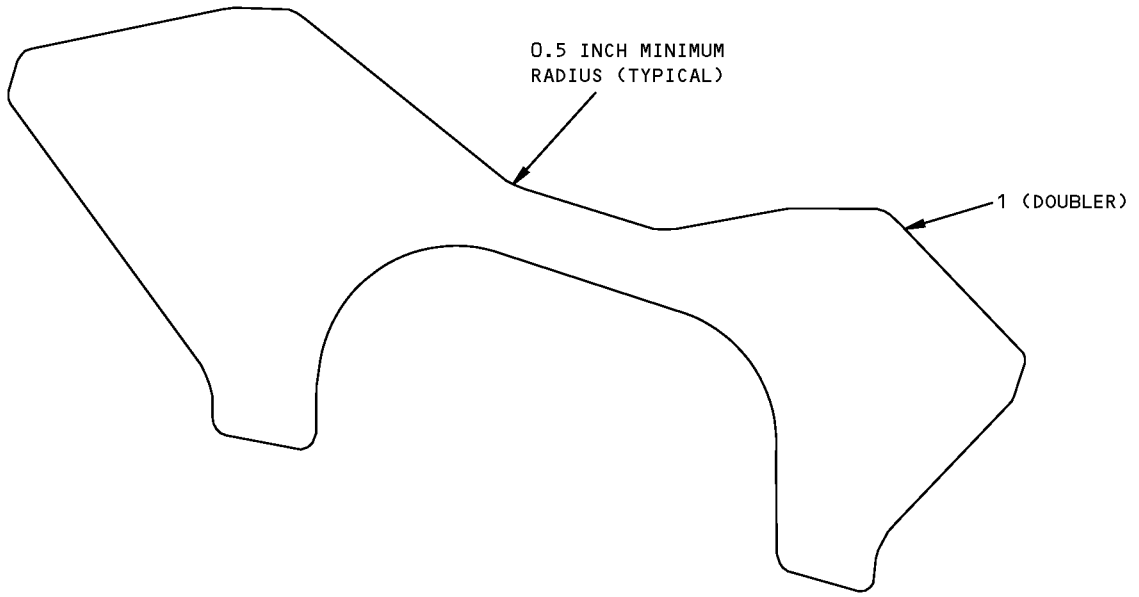
**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

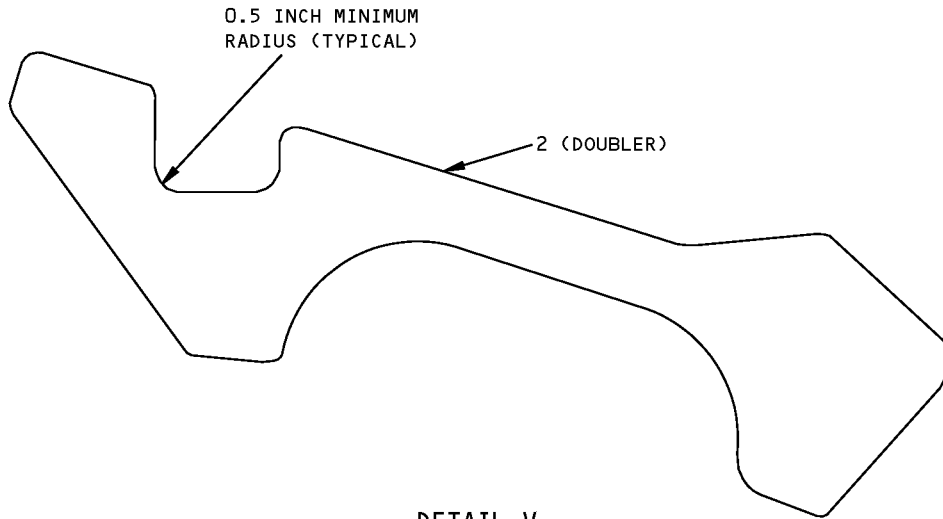


**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV



DETAIL V

**Strut Side Skin Panel Repair at Forward Torque Box Access Hole - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 7 - STRUT SIDE SKIN CUTOUT AT AFT TRAPEZOIDAL ACCESS DOOR - PW4000 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE CORNERS OF ACCESS PANELS 446L OR 446R CUTOUT.

REPAIR INSTRUCTIONS

1. Get access to the damaged area.
2. Use Detail I if the crack has not grown beyond the first row of fasteners in the upper corner of the access panel cutout. Use Detail II if the crack has grown beyond the first row of fasteners.
3. Do a high frequency eddy current (HFEC) inspection of the skin panel to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
4. Stop drill the crack ends using a 0.25 inch (6 mm) diameter drill. Leave the hole open. Refer to SRM 51-10-00.
5. Make the repair parts. See Table I.
6. Mark and cut away the cowl skirt to clear the repair doubler. Leave 0.050 inch (12.7 mm) gap between the new skirt edge and the repair doubler.
7. Assemble the repair parts and drill the fastener holes. **B**
8. Disassemble the repair parts.
9. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the nacelle skin.
10. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
11. Apply two layers of BMS 10-79, Type II primer to the bare surfaces of the skin cutout. Refer to SOPM 20-41-02.
12. Apply two layers of BMS 10-11, Type I primer on the CRES sheet doublers before assembly.
13. Install countersink repair washers into initial countersink holes. Refer to SRM 51-40-08.
14. Install the repair parts with BMS 5-26 sealant between the mating surfaces. As an alternative use BMS 5-95. Fill all gaps before final assembly.

15. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-26 or BMS 5-95 sealant.
16. Fillet seal around the edges of the repair parts with BMS 5-26 sealant. As an alternative use BMS 5-95 sealant. Refer to SRM 51-20-05.
17. Apply a layer of BMS 10-60, Type II enamel to the repair area.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

- A** USE DOUBLER 1 IF THE CRACK HAS NOT GROWN BEYOND THE FIRST ROW OF FASTENERS. USE DOUBLER 2 IF THE CRACK HAS GROWN BEYOND THE FIRST ROW OF FASTENERS.
- B** MS20427M5() RIVETS SECURE DOUBLER 3 TO THE SKIRT ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND THE DOUBLER(S).
- C** DRILL THROUGH REPAIR DOUBLER(S) ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND THE DOUBLER(S).
- D** AS AN ALTERNATIVE, USE 17-7PH CRES SHEET, MIL-S-25043. HEAT TREAT TO 180-200 KSI.
NOTE: 15-5PH CRES IS RECOMMENDED DUE TO BETTER FATIGUE PROPERTIES.
- E** DO NOT DRILL DOUBLER 3 FOR THESE FASTENERS. THESE FASTENERS ATTACH DOUBLER 1 OR DOUBLER 2 TO THE STRUT SIDE SKIN ONLY. INSTALL THESE FASTENERS BEHIND DOUBLER 3.

**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - PW4000 Engine
Figure 201 (Sheet 1 of 4)**

STRUCTURAL REPAIR MANUAL

FASTENER SYMBOLS

- ⊕ REFERENCE FASTENER LOCATION
- + INITIAL FASTENER LOCATION. INSTALL A BACB30NW8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30NW8K() HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30AB6S COLLAR. E
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF5K() BOLT. C
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF4K() BOLT.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30VU6() HEX DRIVE BOLT WITH A BACC30BL6 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT. C
- ⊕ REPAIR FASTENER LOCATION. INSTALL AN MS20427M5C() SOLID RIVET. THESE FASTENERS ATTACH THE DOUBLER AND THE SKIRT FAIRING ONLY. DO NOT DRILL INTO THE STRUCTURE THAT IS BEHIND. FASTENERS MUST BE FLUSH ON BOTH SIDES (DOUBLE FLUSH). REFER TO SRM 51-40-08.
- ⊕ INITIAL FASTENER LOCATION INSTALL A BACB30NW10K()X HEX DRIVE BOLT WITH A BACC30M10 COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR. E
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NW8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR. E

REPAIR MATERIAL		
PART	QTY	MATERIAL
1	DOUBLER	1
2	DOUBLER	1
3	DOUBLER	1

0.100 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. A D

0.100 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. A D

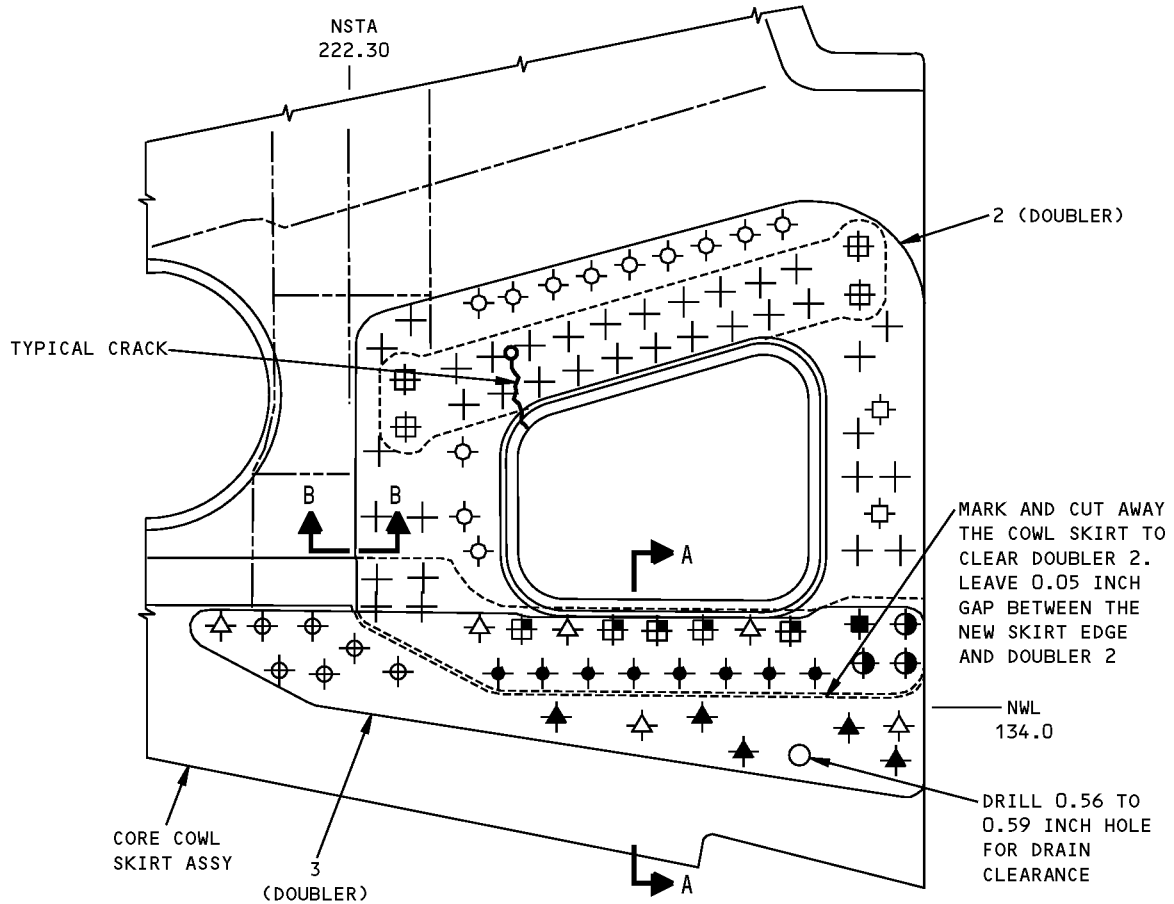
0.063 15-5 PH CRES SHEET, BMS 7-240, TYPE 1. HEAT TREAT TO 180-200 KSI. A D

TABLE I

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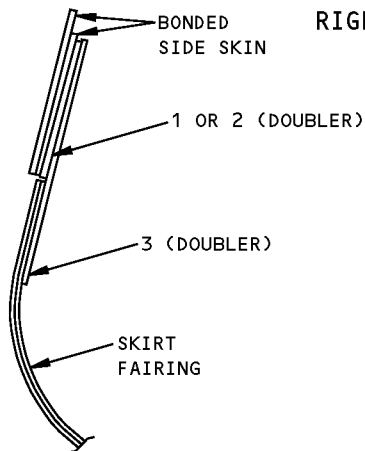
**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - PW4000 Engine
Figure 201 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

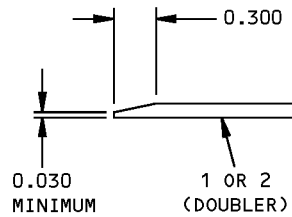


LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE
DETAIL II

FWD ←



SECTION A-A



SECTION B-B

**Strut Side Skin Cutout Repair at Aft Trapezoidal Access Door - PW4000 Engine
Figure 201 (Sheet 4 of 4)**

STRUCTURAL REPAIR MANUAL**REPAIR 8 - STRUT, MIDSPAR AFT WEB CRACK AT NAC. STA. 230 - PW4000 ENGINE****REPAIR INSTRUCTIONS**

1. Remove fairing panels to gain access to the repair area. Refer to drawing 313T3200, sheet 1, and zone A8. Remove the upper link and/or the engine strut as necessary for access to the repair area. Refer to AMM 54-51-02 and AMM 54-51-01 respectively.
2. If necessary, disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
3. Drain any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
4. Remove and discard the initial 311T3080 bottom plate shown in Detail I, Section A-A. A repair filler will be installed in its place.
5. Remove and keep the (4) clips shown in Detail I, Section B-B for reinstallation after the repair parts are installed.
6. Do a high frequency eddy current (HFEC) inspection of the web to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a dye penetrant inspection can be done. Refer to SOPM 20-20-02.
7. Cut and remove all damages to the web as shown in Section B-B.
8. Make the repair parts. See Table I, Sections B-B and C-C. Make all repair parts with sufficient dimensions to maintain 2 diameter minimum edge margin.
9. Assemble the repair parts and drill the fastener holes. Position repair filler flush against closeout angle.
10. Disassemble the repair parts.
11. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
12. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
13. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
14. Install the repair parts with DC93-006 sealant between the mating surface. Install the (4) clips that were removed in step 5.
15. Install the Fasteners. Fasteners that are not made of aluminum must be installed with DC93-006 sealant.
16. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
17. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	FILLER	1	2024-T3 OR 7075-T6 THICKNESS AS NECESSARY TO FILL THE STEP.
2	DOUBLER	1	0.063 INCH, 2024-T3 OR 7075-T6

TABLE I

FASTENER SYMBOLS

- |— REFERENCE FASTENER LOCATION.
- + INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

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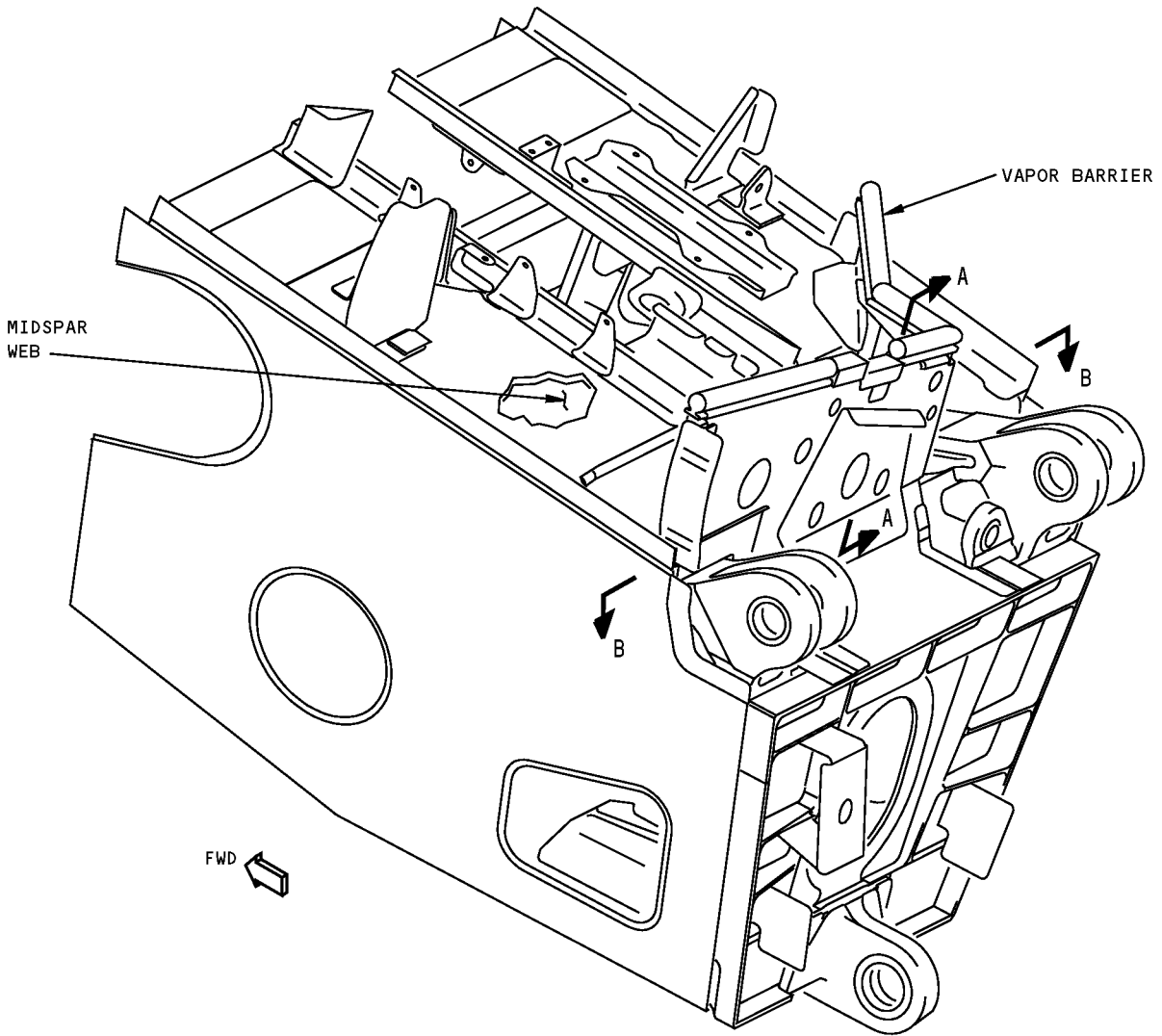
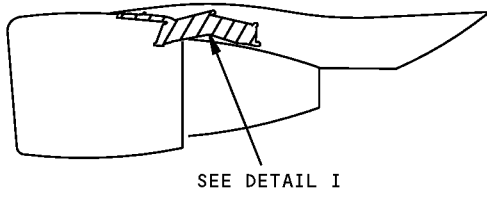
**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 2 of 6)**

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54-53-01

REPAIR 8
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Apr 15/2009

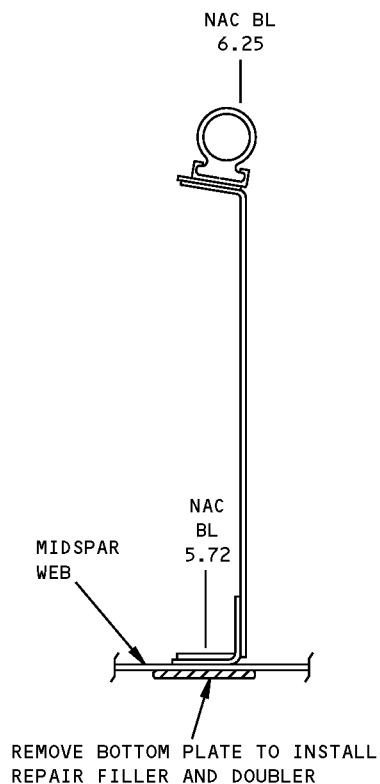
**767-300
STRUCTURAL REPAIR MANUAL**



**STRUT STRUCTURE
DETAIL I**

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

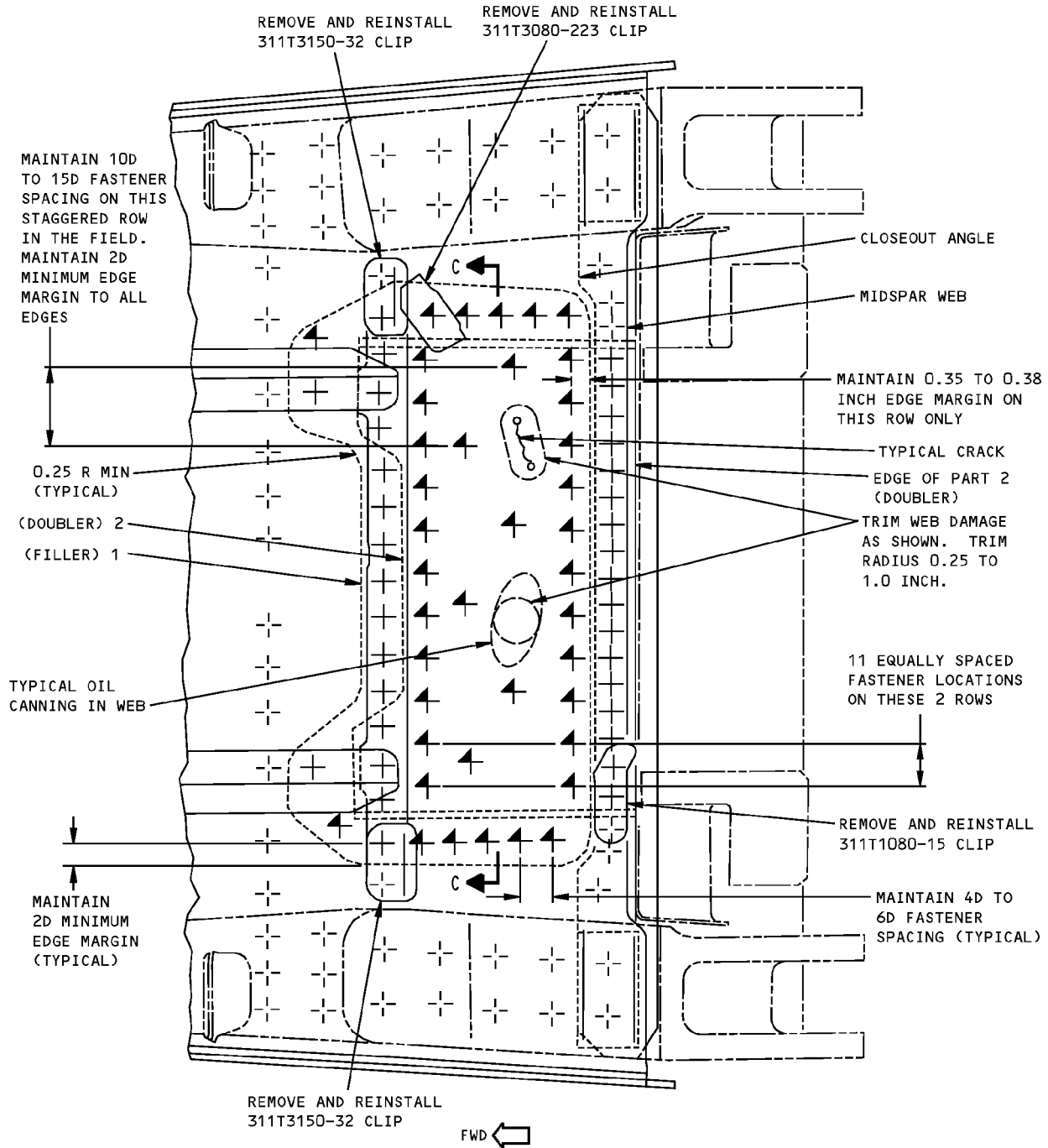
767-300
STRUCTURAL REPAIR MANUAL



VAPOR BARRIER ASSEMBLY
SECTION A-A

Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 4 of 6)

**767-300
STRUCTURAL REPAIR MANUAL**

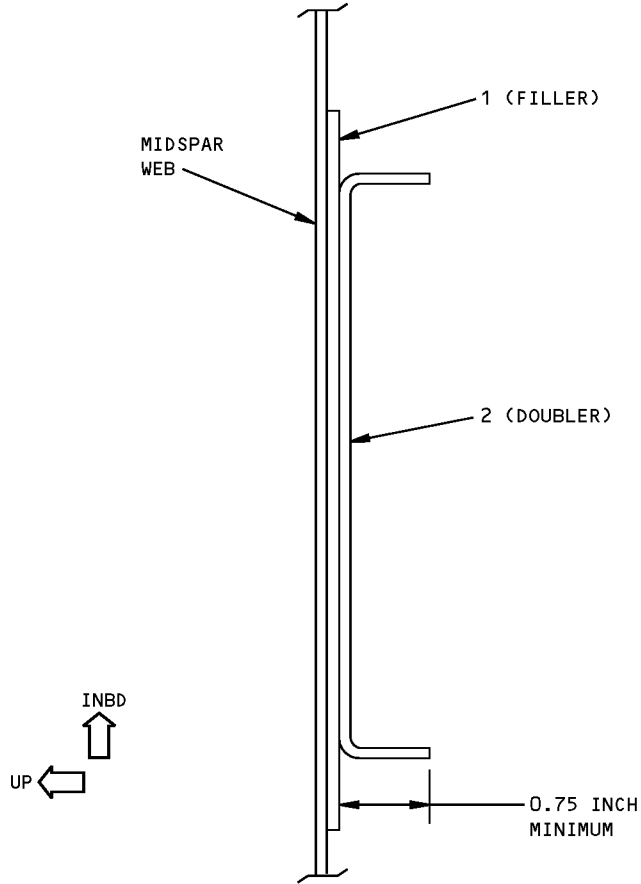


PLAN VIEW OF THE MIDSPAR WEB

SECTION B-B

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION C-C

**Strut, Midspar Aft Web Crack Repair at NAC. STA. 230 - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL**REPAIR 9 - STRUT, AFT UPPER SPAR WEB CORNER CRACK - PW4000 ENGINE****APPLICABILITY**

THIS REPAIR IS APPLICABLE TO CRACKS IN THE AFT CORNERS OF THE WEB CUTOUT FOR THE STARTER DUCT.

REPAIR INSTRUCTIONS

1. Prepare for the removal of the upper link fuse pins. Refer to AMM 54-51-02. As an alternative, to get more access to the repair area, remove the engine strut. Refer to AMM 54-51-01.
2. Remove the access panels on the wing leading edge that are above the engine strut, as applicable. Refer to AMM 06-44-00.
3. Remove the upper link fuse pins and the upper link, as necessary for access. Refer to AMM 54-51-02.
4. Open the strut access doors. Refer to AMM 54-53-01.
5. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables above the area of the damaged web. Move the bundles and cables up and away from the repair area. Install caps or plugs on any disconnected electrical equipment. Also, attach location tags to make subsequent connection easier.
6. Drain and plug any fuel or hydraulic line that is in the repair area. Remove any tubes, ducts, clamps, support blocks and brackets that are in the repair area.
7. Remove brackets and angle clips to get access to the repair area. Save all removed parts for subsequent use.
8. Remove sufficient fasteners common to the zee stiffeners to permit the installation of the part 1 and 2 doubler below the stiffeners.
9. Do a high frequency eddy current (HFEC) inspection of the web to find the full length and the end of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, a penetrant inspection can be done. Refer to SOPM 20-20-02.

If the crack is less than 0.5 inch in length, cut and remove the material around the crack. Keep a 0.75 inch minimum radius on the inside corner and a 0.5 inch minimum radius on the outside corner. Keep 2D minimum edge margin to adjacent fasteners. See Detail III. Do the inspection as given in step 8 to make sure that the crack is removed completely.

11. If the crack is 0.5 inch or more in length, make a 0.25 inch diameter crack stop hole at the end of the crack. Refer to SRM 51-10-00.
12. Make the repair parts. See Table I and Detail II. Make the doubler with sufficient dimensions to extend to the aft end of the web.
13. Assemble the repair parts and drill the fastener holes.
14. Disassemble the repair parts.
15. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
16. Visually inspect the fastener holes to make sure that there are no scratches or gouges. Refer to SRM 51-00-06.
17. Apply a chemical conversion coating to the aluminum repair parts and the bare surfaces of the web. Refer to SRM 51-20-01.
18. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
19. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
20. Install the fasteners wet with BMS 5-95 sealant.
21. Apply a layer of BMS 3-23 corrosion inhibiting compound to the repair area. Refer to SRM 51-20-01.
22. Put the airplane back in its usual condition and do an operational test of systems that were disconnected. Refer to the AMM for the applicable test procedures.

**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 06-44-00 FOR LOCATION OF WING ACCESS PANELS
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-51-02 FOR REMOVAL AND INSTALLATION OF THE STRUT FUSE PINS
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - AMM 71-00-00 FOR PNEUMATIC SYSTEM LEAK TEST PROCEDURES
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISH
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
2	DOUBLER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
3	STIFFENER	1	0.050 INCH, 15-5PH OR 17-4PH CRES, HT TR 180-200 KSI
4	FILLER	1	0.050 CLAD 2024-T3 OR 7075-T6. AS AN ALTERNATIVE, GET A BACF3F020G037NN FILLER FROM BOEING
5	TAPERED FILLER	AS REQUIRED	0.010 TO 0.050 INCH, CLAD 2024-T3 OR 7075-T6

TABLE I

FASTENER SYMBOLS

- ⊥ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ⊙ REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

1728169 S0000311211_V1

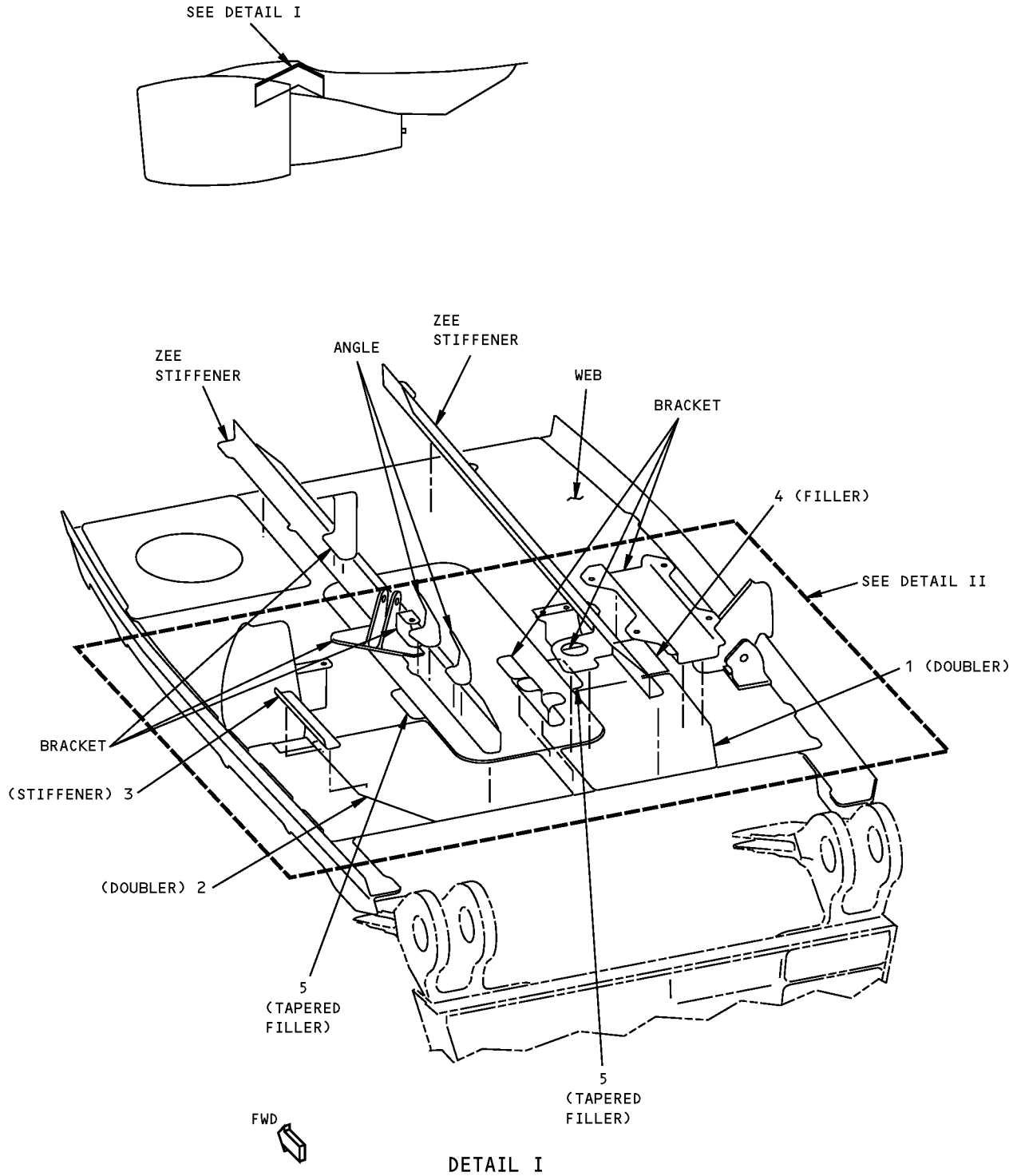
**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 2 of 6)**

D634T210

54-53-01

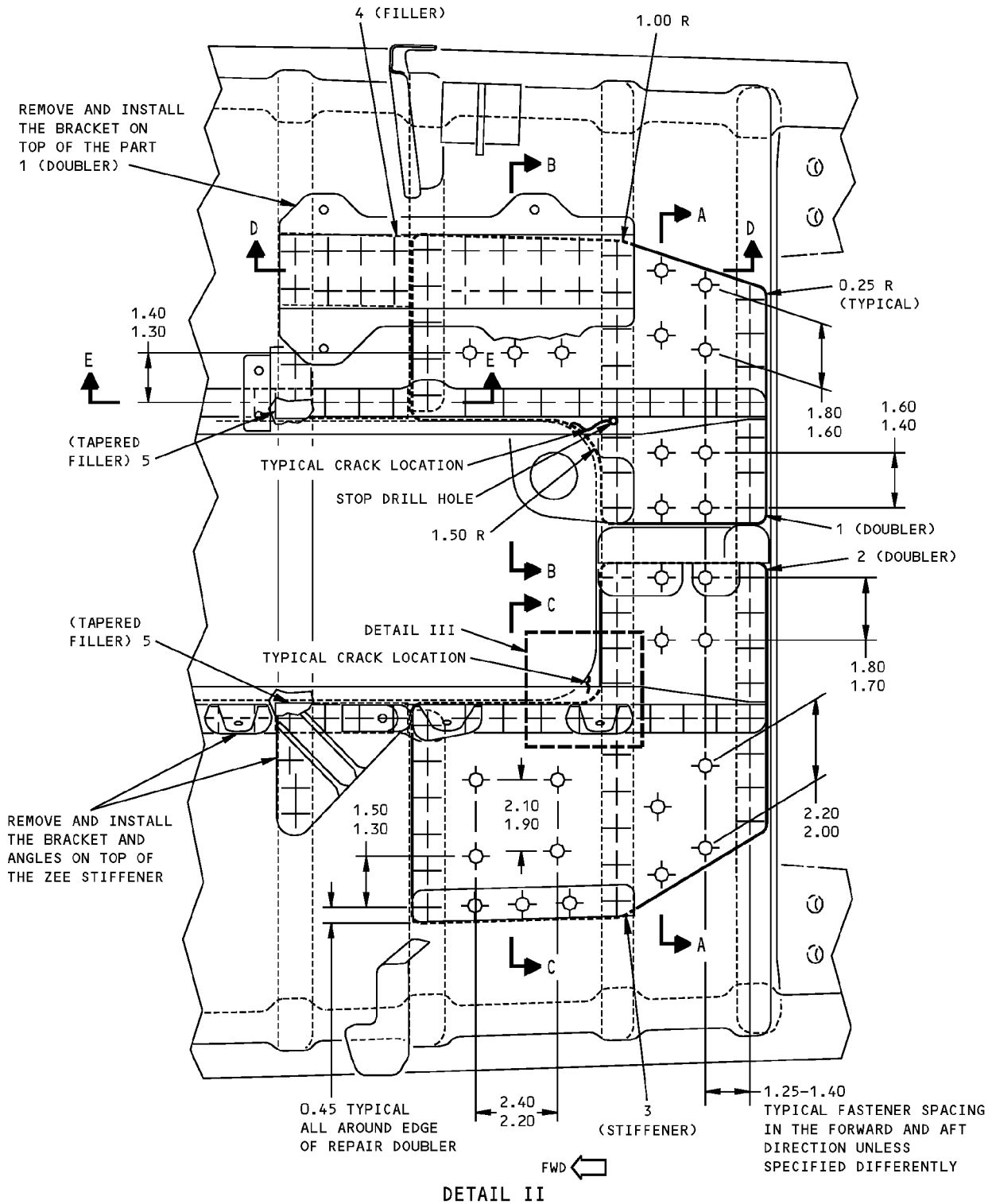
REPAIR 9
Page 202
Apr 15/2009

**767-300
STRUCTURAL REPAIR MANUAL**



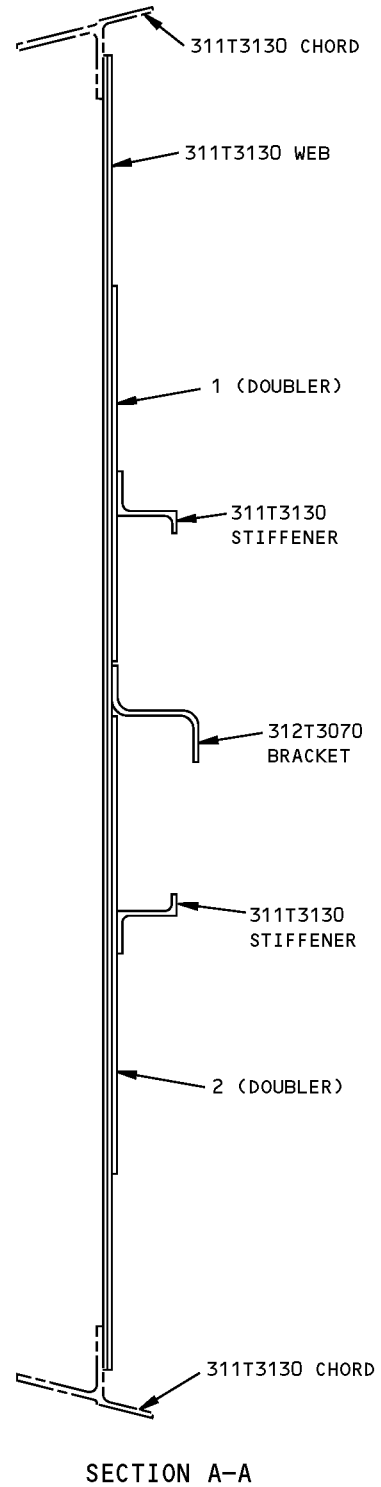
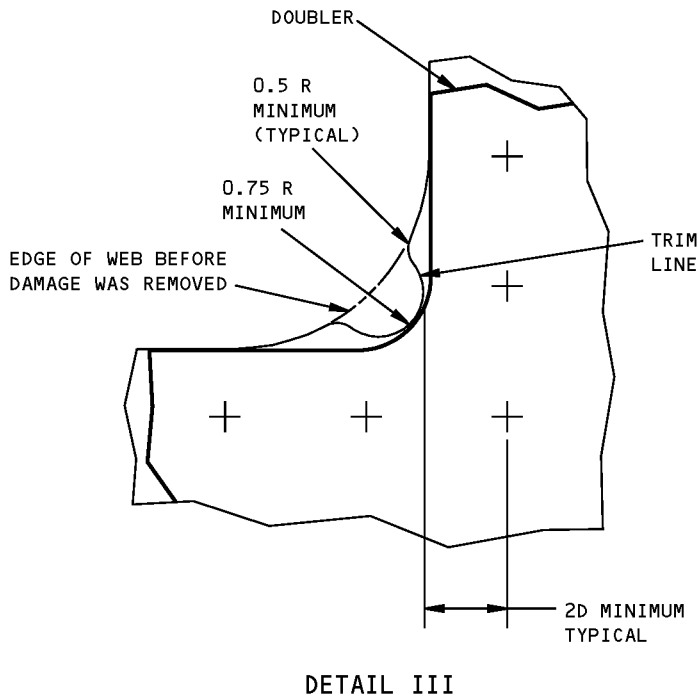
**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



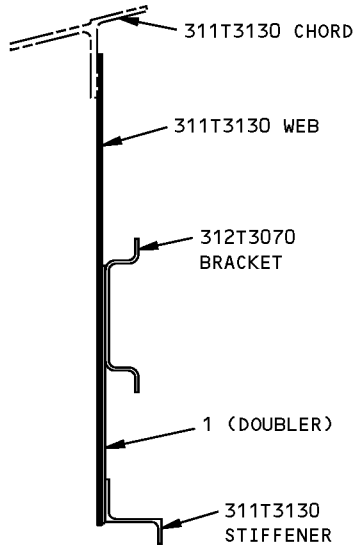
**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

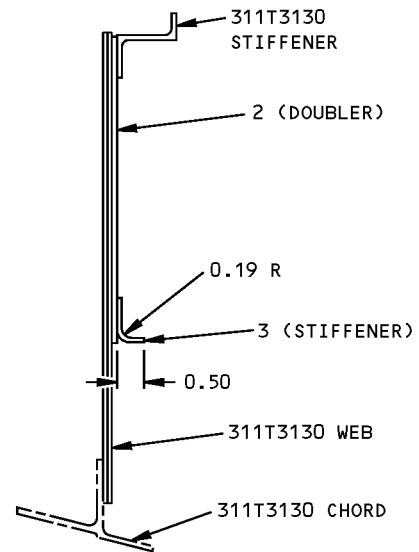


**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

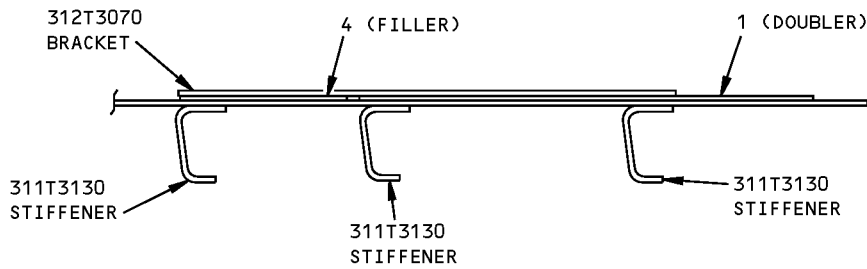
**767-300
STRUCTURAL REPAIR MANUAL**



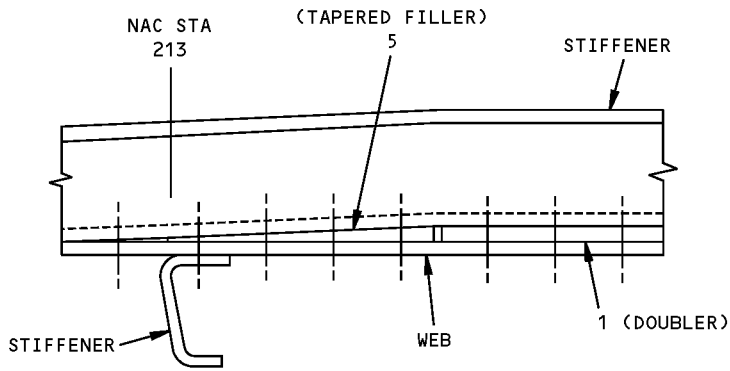
SECTION B-B



SECTION C-C



SECTION D-D



SECTION E-E FWD ←

**Strut, Aft Upper Spar Web Corner Crack Repair - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 10 - STRUT FORWARD UPPER SPAR WEB CRACK AT NAC STA 156 DRAIN HOLES - PW 4000 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO CRACKS WHICH START AT THE DRAIN HOLES NEAR NAC STA 156.0. A

REPAIR INSTRUCTIONS

1. Get access to the damaged area.

NOTE: Do one of the following repairs depending on the length of the crack.

REPAIR A: Crack length is small enough so that it can be removed when the hole is enlarged to a maximum of 0.4688 inch diameter.

CAUTION: Be careful when you enlarge the hole. Do not damage internal structure.

2. Enlarge the drain hole until crack is removed.
3. Do a high frequency eddy current inspection (HFEC) of the repair area to make sure that all of the damage is removed. Refer to NDT part 6, 51-00-01, for HFEC inspection procedures.
4. Oversize the drain hole an additional 1/64th inch.
5. Cold work the hole using the High Interference Cold Working Process. Refer to SRM 51-40-09. Point the split sleeve bushing in the fore-aft direction.
6. Final ream or hone the hole for a high quality finish.
7. Do a final high frequency eddy current inspection (HFEC) of the hole. Refer to NDT part 6, 51-00-04, for HFEC inspection procedures.
8. Apply a chemical conversion coating to the hole. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the hole. Refer to SOPM 20-41-02.
10. Cold work the drain hole on the opposite side of the strut as follows even if there is no crack found;
 - a) Ream hole to first oversize
 - b) Do steps 3 to 9.

REPAIR B: Crack length is less than 0.75 inch but can not be removed when the hole is enlarged to a maximum of 0.4688 inch diameter.

CAUTION: Be careful when you stop drill. Do not damage internal structure.

2. Stop drill or cut out the crack on the web to remove all damage. Use a 0.25 or 0.31 inch diameter cutter. Refer to SRM 51-10-02

3. Make the repair parts. See Table I.
4. Cold work the drain hole on the opposite side of the strut as given in step 10 of Repair A. If crack has developed at both drain holes, install a second machined doubler opposite to part 1, and complete the repair as given in Repair B. **B**
5. Assemble the repair parts and drill the fastener holes. Install shims as necessary.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the web. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
11. Install the fasteners. Fasteners must be installed wet with BMS 5-95 sealant.
12. Apply one layer of BMS 10-11, Type 1 primer to the repair area. Refer to SOPM 20-41-02.

REPAIR C: Crack length is greater than 0.75 inch. **A**

CAUTION: Be careful when you stop drill. Do not damage internal structure.

2. Stop drill the ends of the crack. Refer to SRM 51-10-02.
3. Make the repair parts. See Table I.
4. Cold work the drain hole on the opposite side of the strut as given in step 10 of Repair A. If crack has developed at both drain holes, install a second machined doubler opposite to part 1, and complete the repair as given in Repair C. **B**
5. Assemble the repair parts and drill the fastener holes. Install shims as necessary.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the web. Refer to SRM 51-20-01.

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**





9. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the repair parts with BMS 5-95 sealant between the mating surfaces.
11. Install the fasteners. Fasteners must be installed wet with BMS 5-95 sealant.
12. Apply one layer of BMS 10-11, Type 1 primer to the repair area. Refer to SOPM 20-41-02.

NOTES

- D = FASTENER DIAMETER
- ALL DIMENSIONS ARE IN INCHES
- WHEN YOU USE THIS REPAIR REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-00 FOR STOP DRILLING, INVESTIGATION AND CLEANUP OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALIC AND GRAPHITE MATERIALS.
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-20-06 FOR SHOT PEENING
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.

- A** CONTACT BOEING IF THE CRACK IS UNDERNEATH THE UPPER SPAR FITTING, THE THRUST REVERSER HINGE BACKUP FITTING OR THE FORWARD UPPER SPAR CHORDS.
- B** IF CRACKS HAVE DEVELOPED ON BOTH THE DRAIN HOLES, TWO PARTS ARE NECESSARY. RIGHT HAND DOUBLER OPPOSITE TO LEFT HAND DOUBLER.
- C** CUT THE PART 1 DOUBLER AS NECESSARY TO MAKE SURE IT DOES NOT INTERFERE WITH THE RADIUS OF THE THRUST REVERSER HINGE BACK UP FITTING.
- D** SHOT PEEN DOUBLER AS GIVEN IN SRM 51-20-06.

FASTENER SYMBOLS

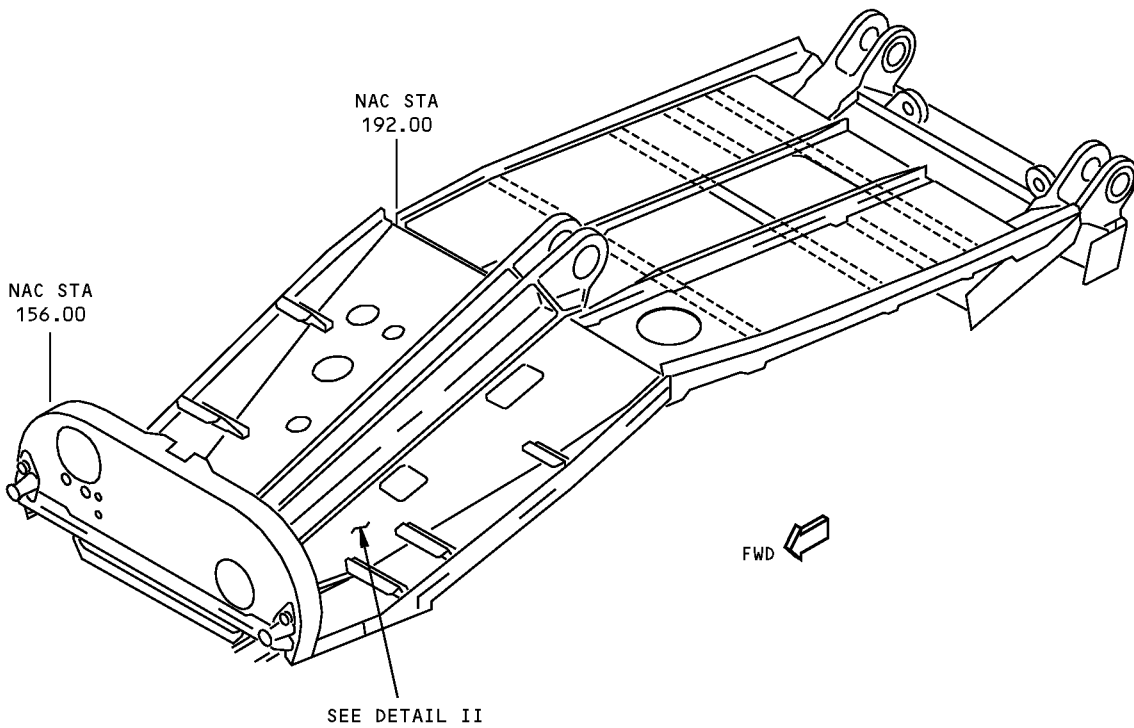
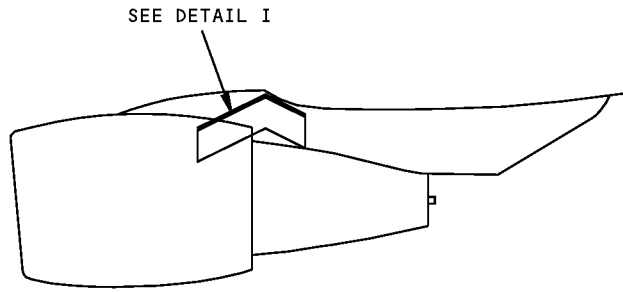
-  REFERENCE FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K () HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX8K()X HEX DRIVE BOLT WITH A BACC30X8 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K()X HEX DRIVE BOLT WITH A BACC30M8 COLLAR.

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1 B C	0.320, 2024-T351 PLATE D
2	FILLER	1	0.156, 2024-T3 SHEET
3	RADIUS FILLER	1 B	0.156, 2024-T3 OR 7075-T6 SHEET

TABLE I

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

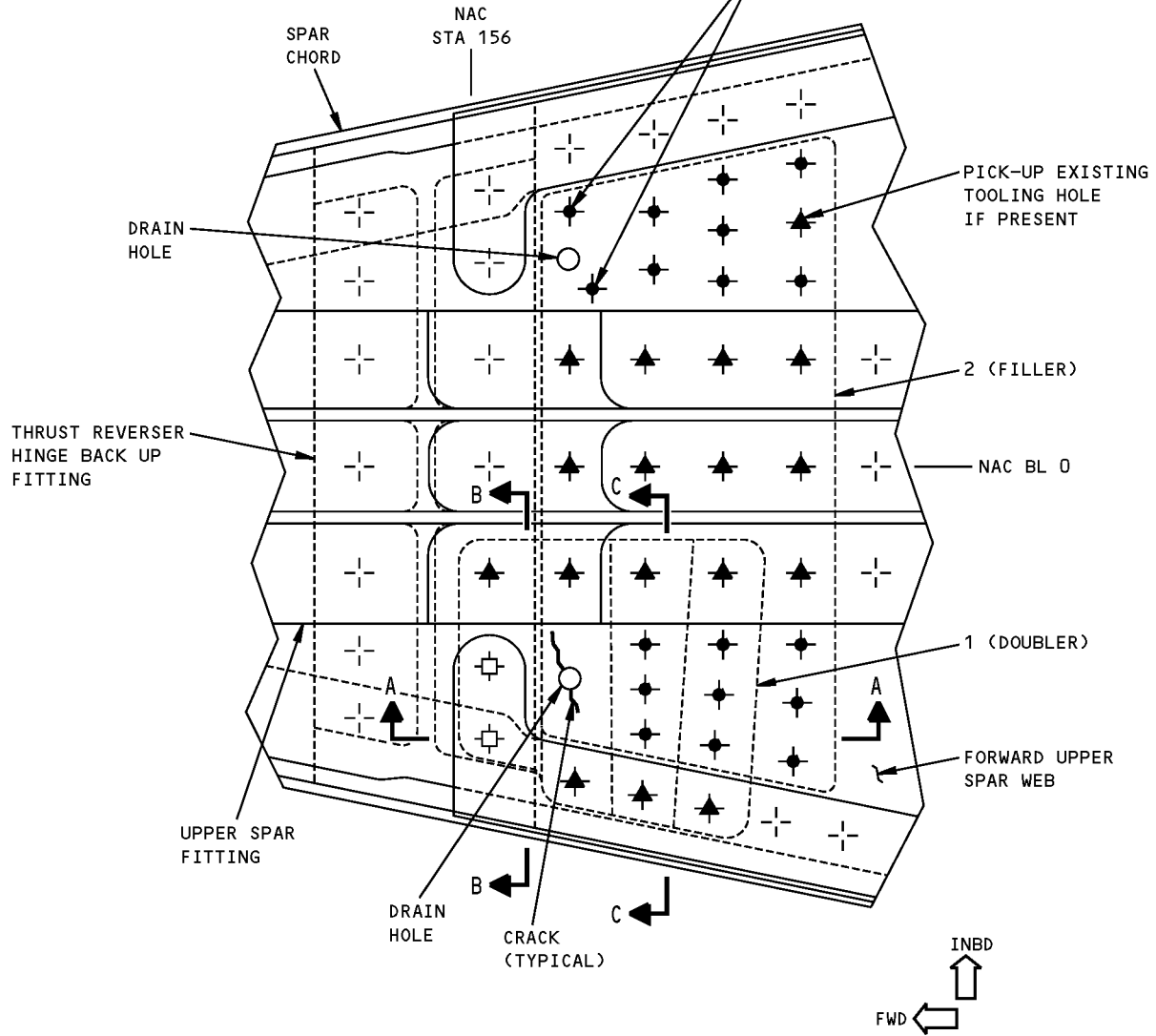


DETAIL I

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

DO NOT INSTALL THESE FASTENERS IF DRAIN HOLE IS CRACKED ON THIS SIDE. KEEP A 0.75 INCH MINIMUM PITCH BETWEEN DRAIN HOLE AND FASTENERS

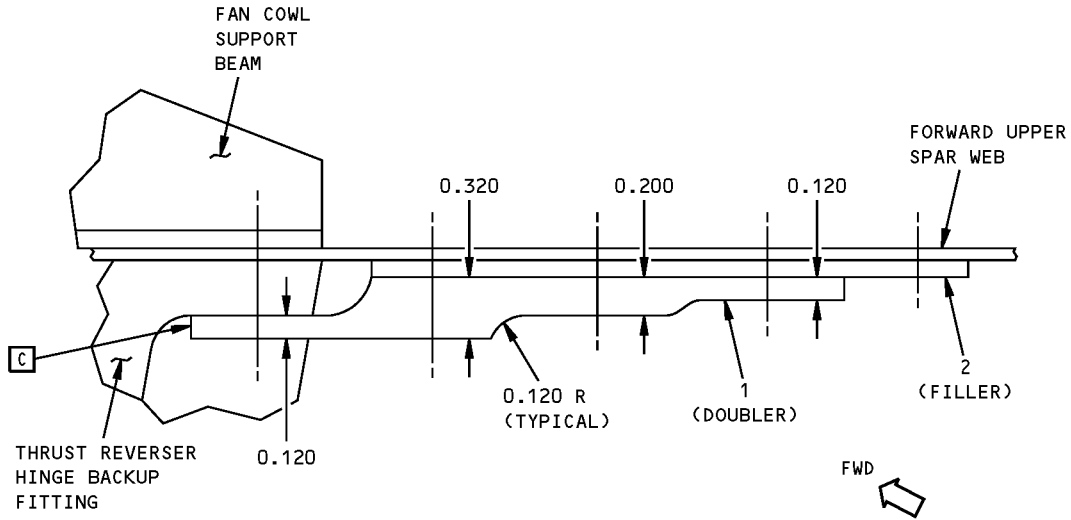


VIEW LOOKING DOWN
(SOME PARTS ARE NOT SHOWN FOR CLARITY)

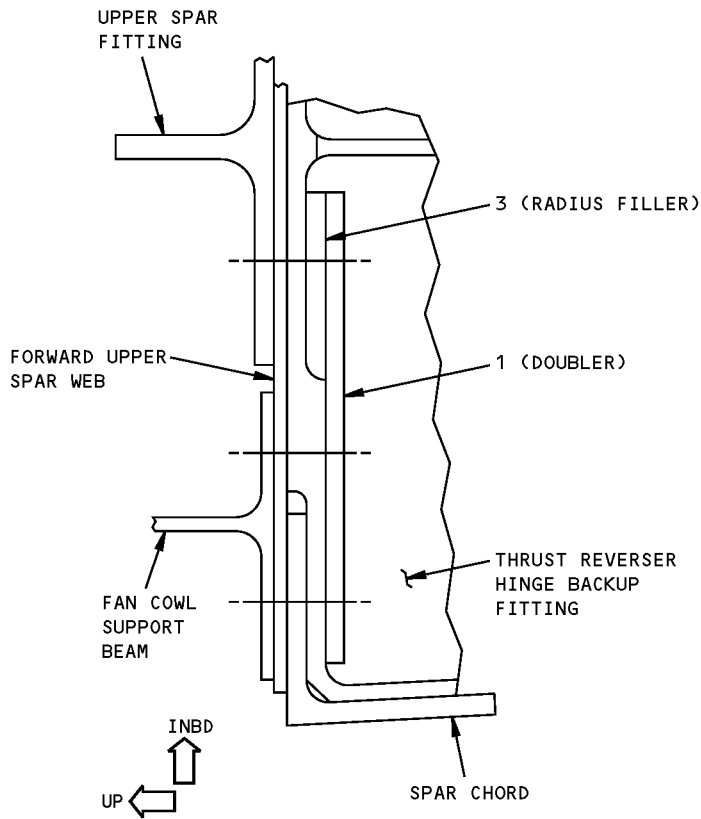
DETAIL II

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



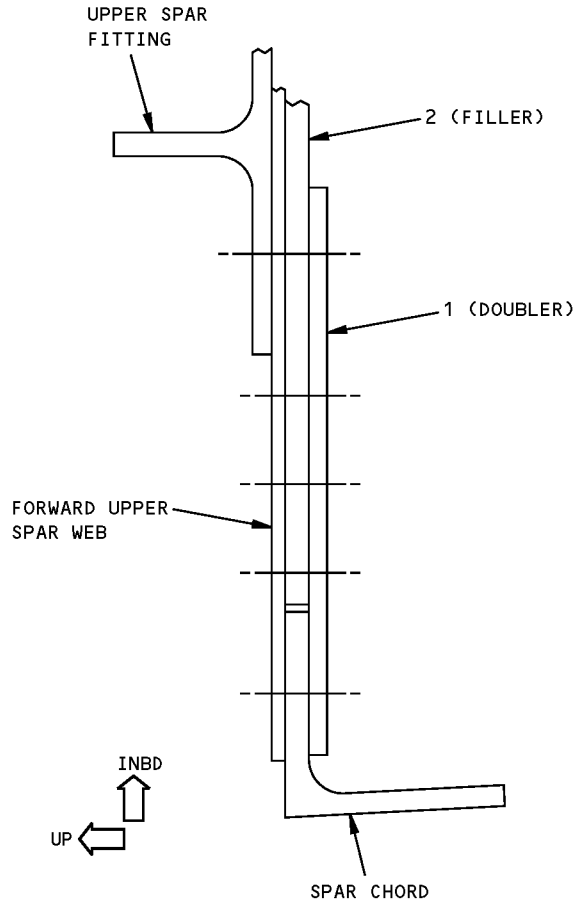
SECTION A-A



SECTION B-B

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

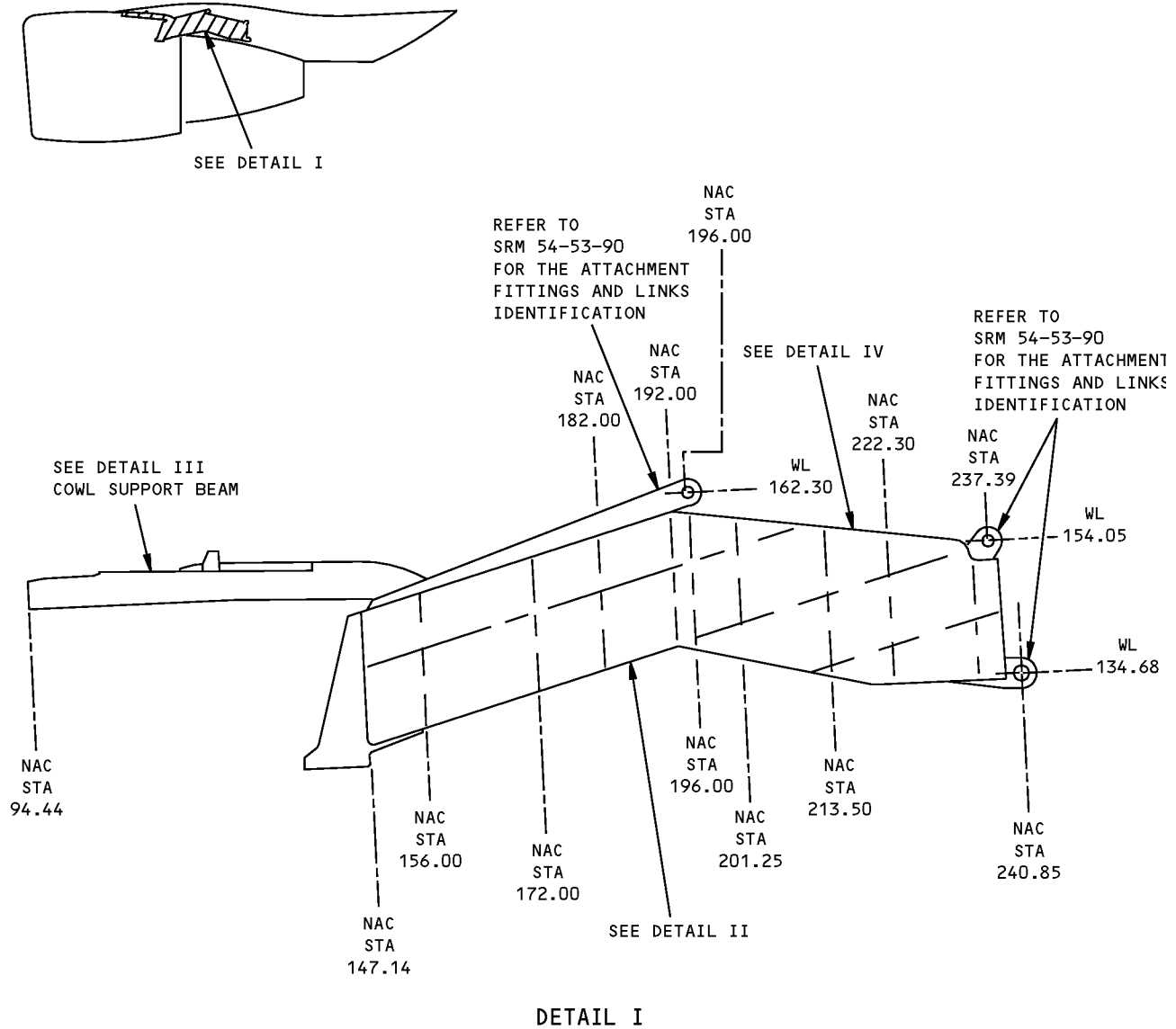


SECTION C-C

**Strut Forward Upper Spar Web Crack Repair at NAC STA 156 Drain Holes - PW 4000 Engine
Figure 201 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT STRUCTURE - PW4000 ENGINE



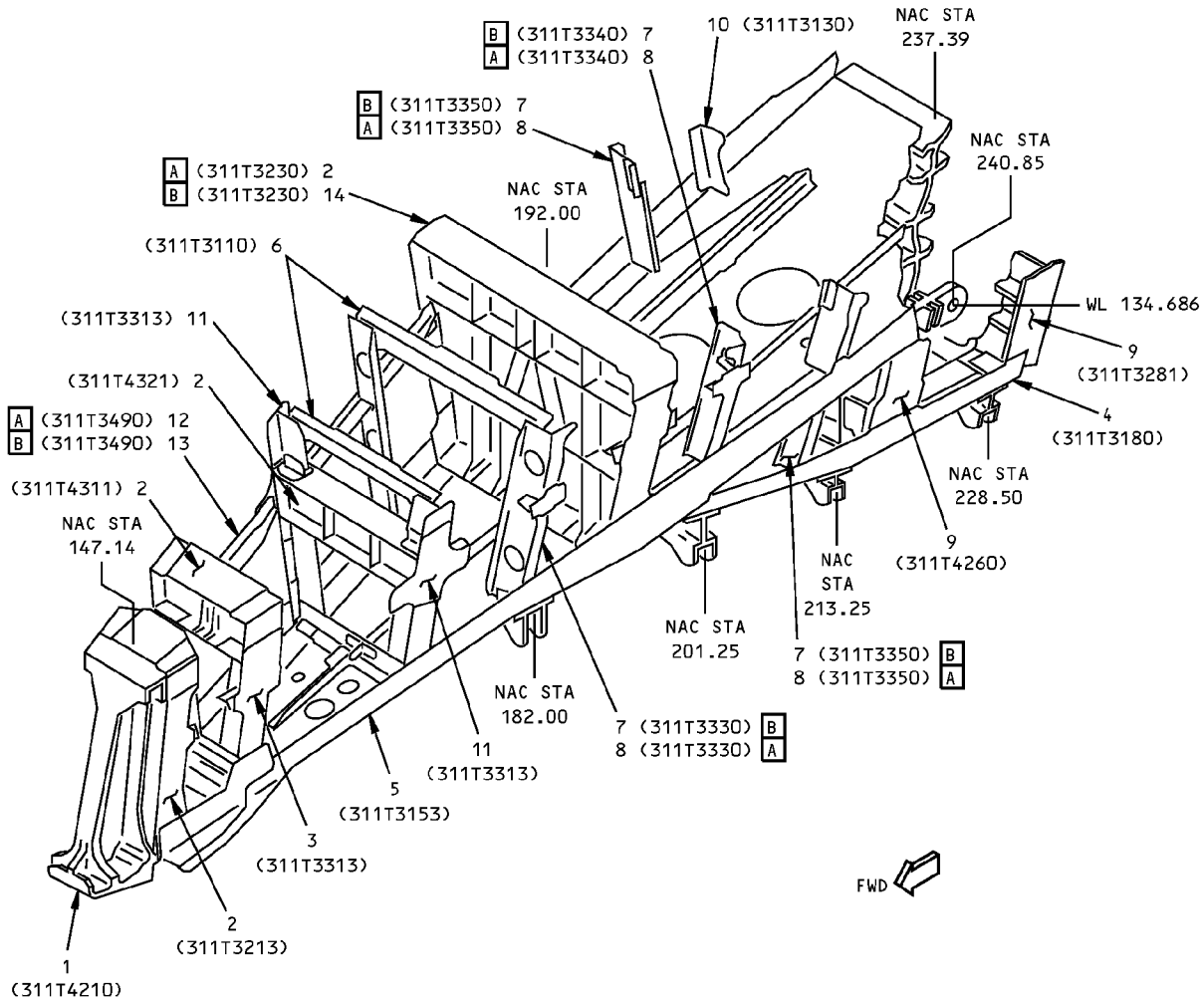
NOTES

- A** FOR AIRPLANES WITH PW4000 ENGINES UP TO CUM LINE NUMBER 255
- B** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 255 AND ON
- C** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0080 INCORPORATION
- D** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 664 AND ON, AND FOR AIRPLANES WITH SB 767-54-0080 INCORPORATED
- E** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 654 AND ON

**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3000
311T3130



DETAIL II



**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 2 of 7)**

IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FORWARD ENGINE MOUNT		FORGING 15-5PH CRES HT TR 180-200 KSI	
2	MID STRUT BULKHEAD		FORGING 7075-T73	A
3	STIFFENER		BAC1506-3173 7075-T73	
4	LOWER SPAR CHORD	0.160 0.187	15-5PH CRES HT TR 180-200 KSI OPTIONAL: 15-5PH CRES HT TR 180-200 KSI CHEM MILLED TO 0.160	
5	MIDSPAR CHORD		BAC1527-59 15-5PH CRES HT TR 180-200 KSI	
6	STIFFENER	0.090	15-5PH CRES HT TR 180-200 KSI	
7	FRAME	0.080	2024-T62	B
8	FRAME	0.080	7075-T6	A
9	BULKHEAD (AFT ENGINE MOUNT)		FORGING 2219-T852 FLANGES, RIBS. 2219-T6 WEB ONLY	
10	FRAME	0.071	CLAD 2024-T42	
11	STIFFENER		BAC1506-3172 7075-T73	
12	STIFFENER		BAC1506-2115 7075-T6	A
13	STIFFENER		BAC1506-2115 2024-T62	B
14	MID STRUT BULKHEAD		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL II

**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 3 of 7)**

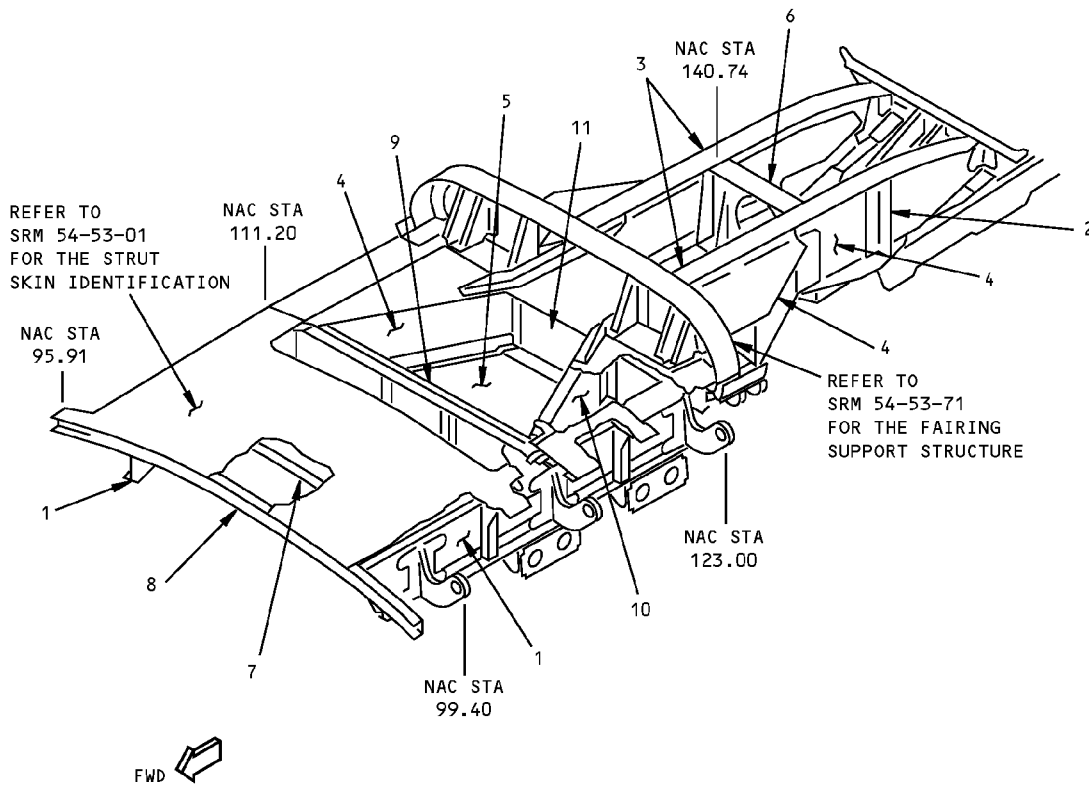
D634T210

54-53-02

IDENTIFICATION 1
Page 3
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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T3510



**COWL SUPPORT BEAM
DETAIL III**



**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 4 of 7)**

IDENTIFICATION 1
Page 4
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767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	BEAM ASSEMBLY LOWER CHORD UPPER CHORD WEB	0.050	BAC1505-101159 2024-T8511 BAC1506-3195 2024-T42 2024-T3	
2	STIFFENER		AND10136-2401 2024-T8511	
3	UPPER CHORD		BAC1505-101202 2024-T8511	
4	BEAM ASSEMBLY WEB ANGLE	0.050 0.050	CLAD 2024-T42 CLAD 2024-T4	
5	LOWER SKIN	0.063	2024-T3	
6	BULKHEAD		FORGING 7075-T73	
7	CHORD	0.050	2024-T4	
8	CHANNEL	0.050	2024-T4	
9	BEAM ASSEMBLY CHORD WEB ANGLE	0.050 0.050 0.050	2024-T4 2024-T4 2024-T42	
10	BEAM	0.050	2024-T3	
11	BEAM ASSEMBLY WEB LOWER CHORD UPPER CHORD	0.070 0.070	2024-T4 BAC1505-100614 2024-T8511 2024-T4	

LIST OF MATERIALS FOR DETAIL III

Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 5 of 7)

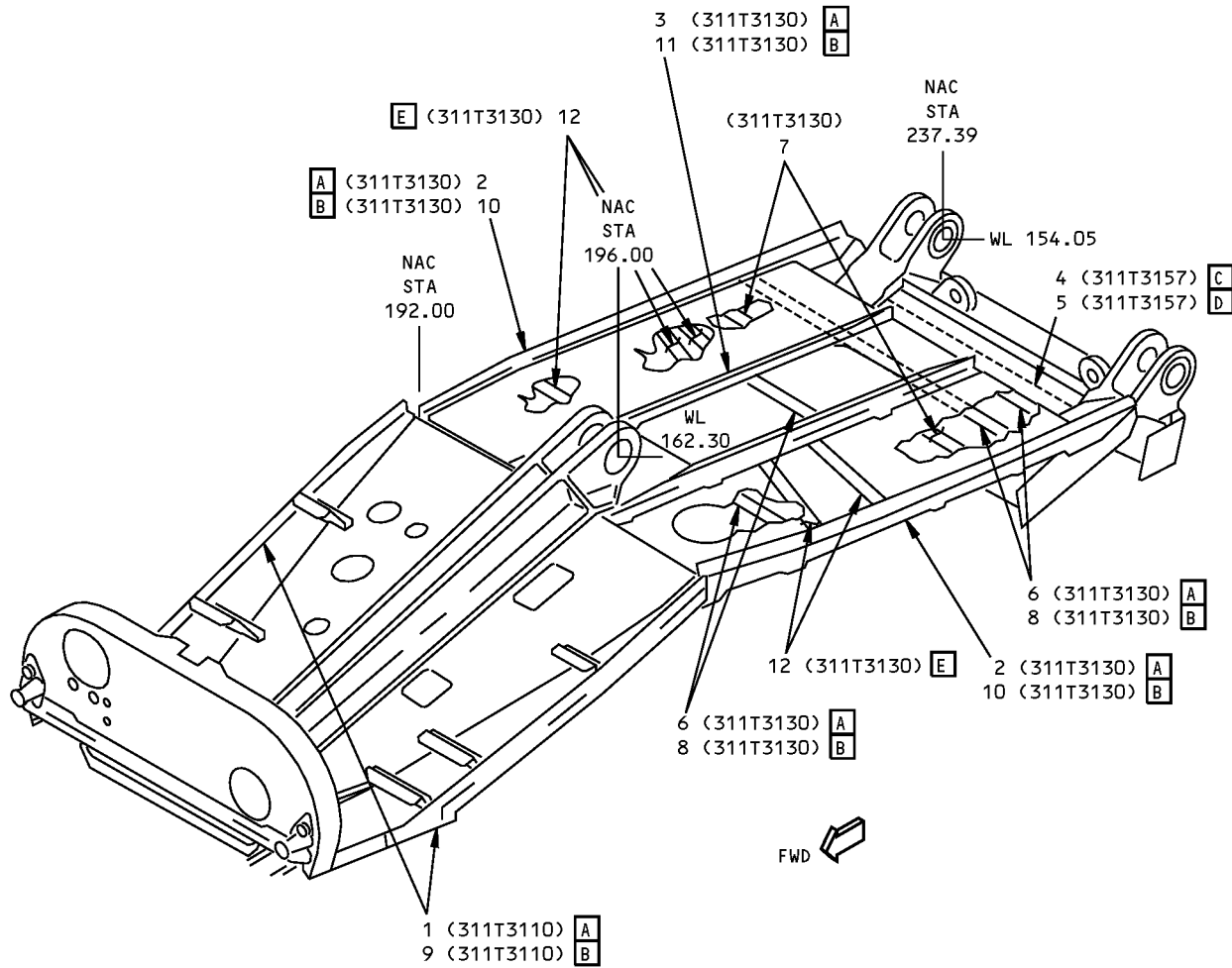
D634T210

54-53-02

IDENTIFICATION 1
Page 5
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL IV

LIST OF
MATL

**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 6 of 7)**

IDENTIFICATION 1
Page 6
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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD		BAC1506-3120 7075-T73	A
2	CHORD		BAC1506-3278 7075-T62	A
3	STIFFENER		AND10139-1106 7075-T62	A
4	CLOSEOUT ANGLE		BAC1514-2595 7075-T73511 OPTIONAL: BAC1506-3181 7075-T73	C
5	CLOSEOUT ANGLE		7075-T73511 EXTRUDED BAR	D
6	STIFFENER	0.080	CLAD 7075-T62	A
7	STIFFENER	0.080	CLAD 2024-T42	
8	STIFFENER	0.080	CLAD 2024-T62	B
9	CHORD		BAC1506-3120 2024-T62	B
10	CHORD		BAC1506-3278 2025-T62	B
11	STIFFENER		AND10139-1106 2025-T62	B
12	STIFFENER	0.063	CLAD 2024-T42	E

LIST OF MATERIALS FOR DETAIL IV

**Strut Structure Identification - PW4000 Engine
Figure 1 (Sheet 7 of 7)**

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IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - ATTACHMENT LINKAGE - PW4000 ENGINE

THE ATTACHMENT LINK IDENTIFICATION
IN FIGURE 2 WAS MOVED TO 54-53-90.

**Attachment Linkage Identification - PW4000 Engine
Figure 1**

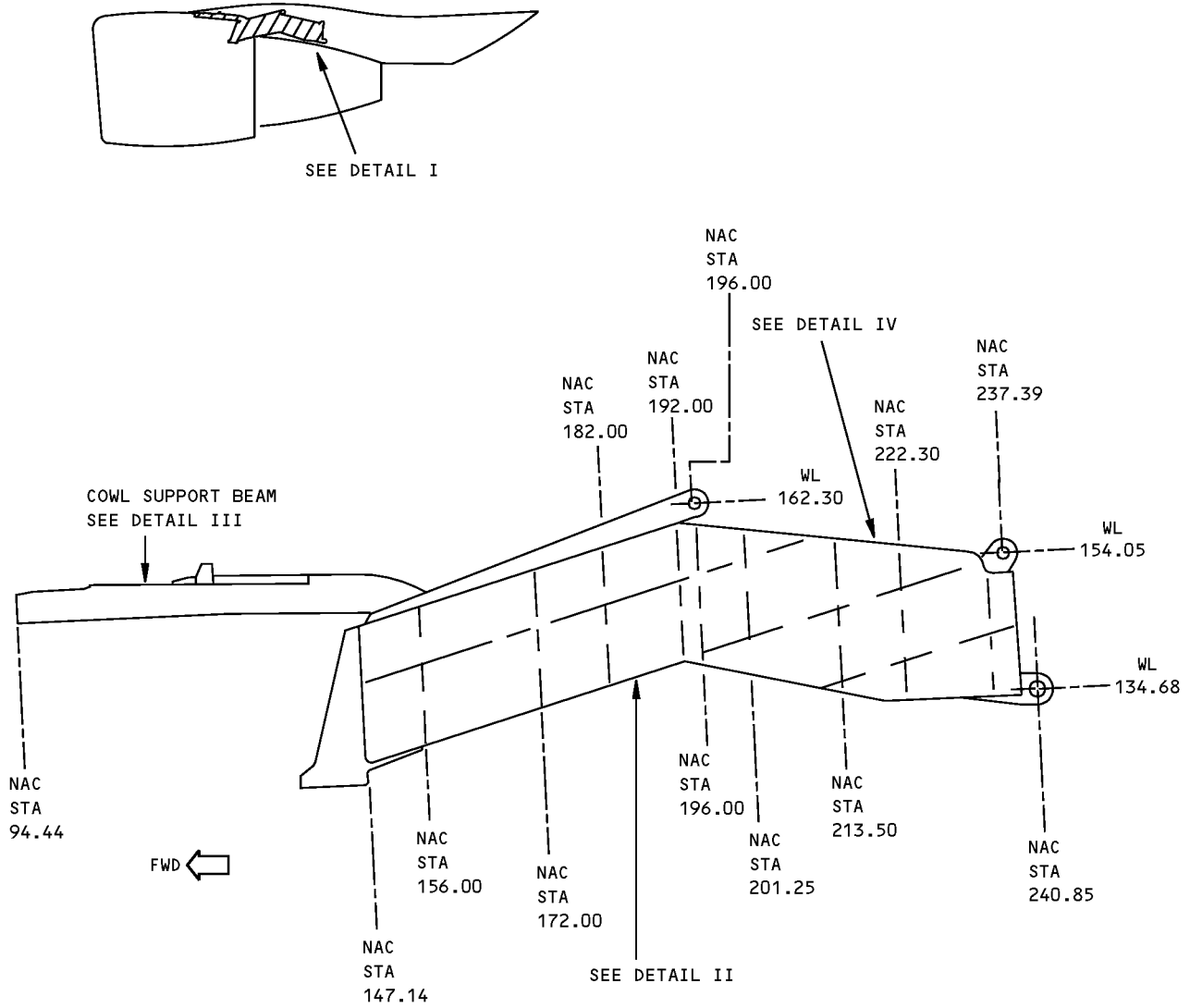
D634T210

54-53-02

IDENTIFICATION 2
Page 1
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

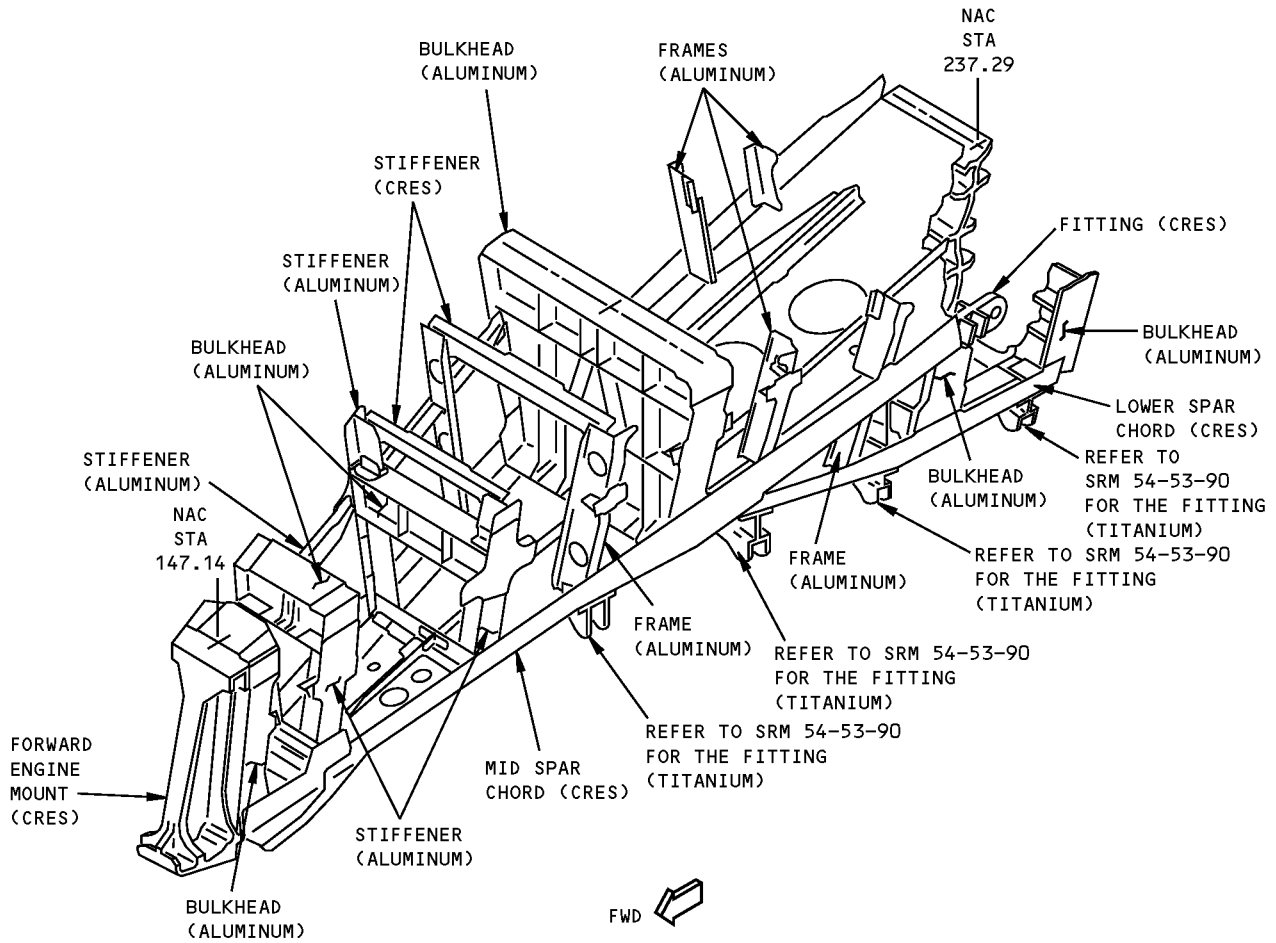
ALLOWABLE DAMAGE 1 - STRUT STRUCTURE - PW4000 ENGINE



DETAIL I

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

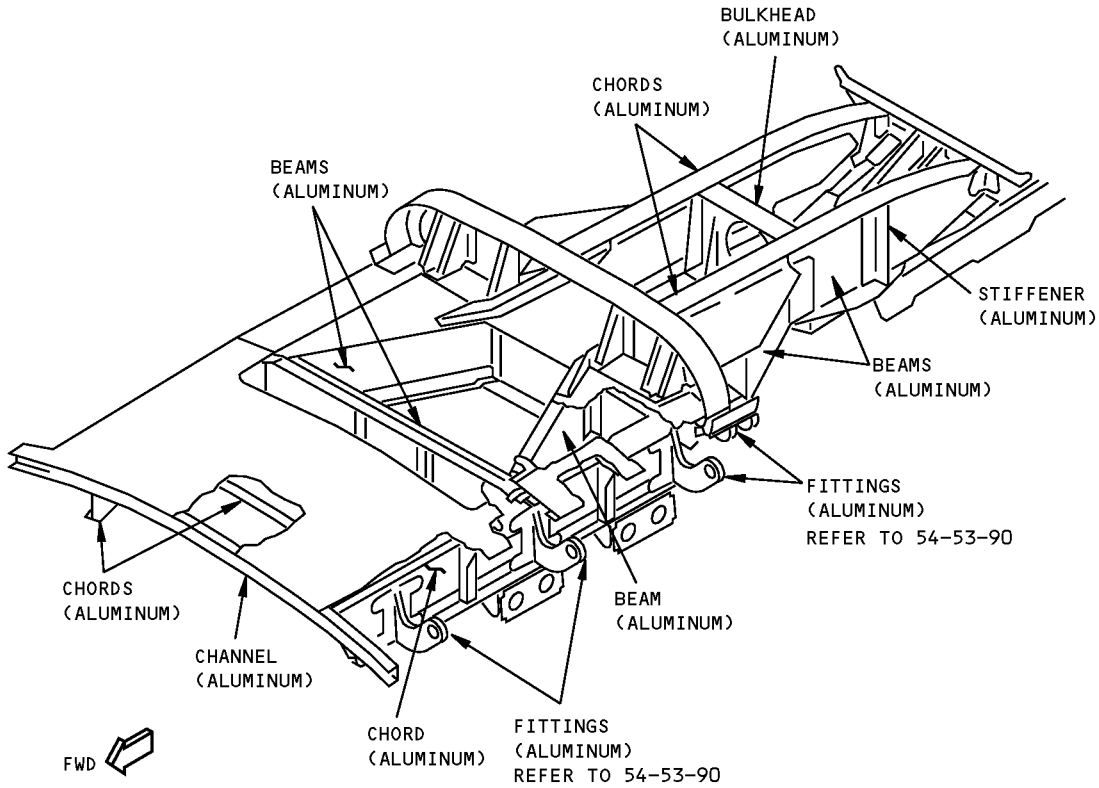


DETAIL II

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FORWARD ENGINE MOUNT D	A	B	NOT PERMITTED	NOT PERMITTED
BULKHEADS D	A	B	NOT PERMITTED	NOT PERMITTED
STIFFENERS	C	B	NOT PERMITTED	SEE DETAIL X
CHORDS D	C	B	NOT PERMITTED	NOT PERMITTED
FRAMES	C	B	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

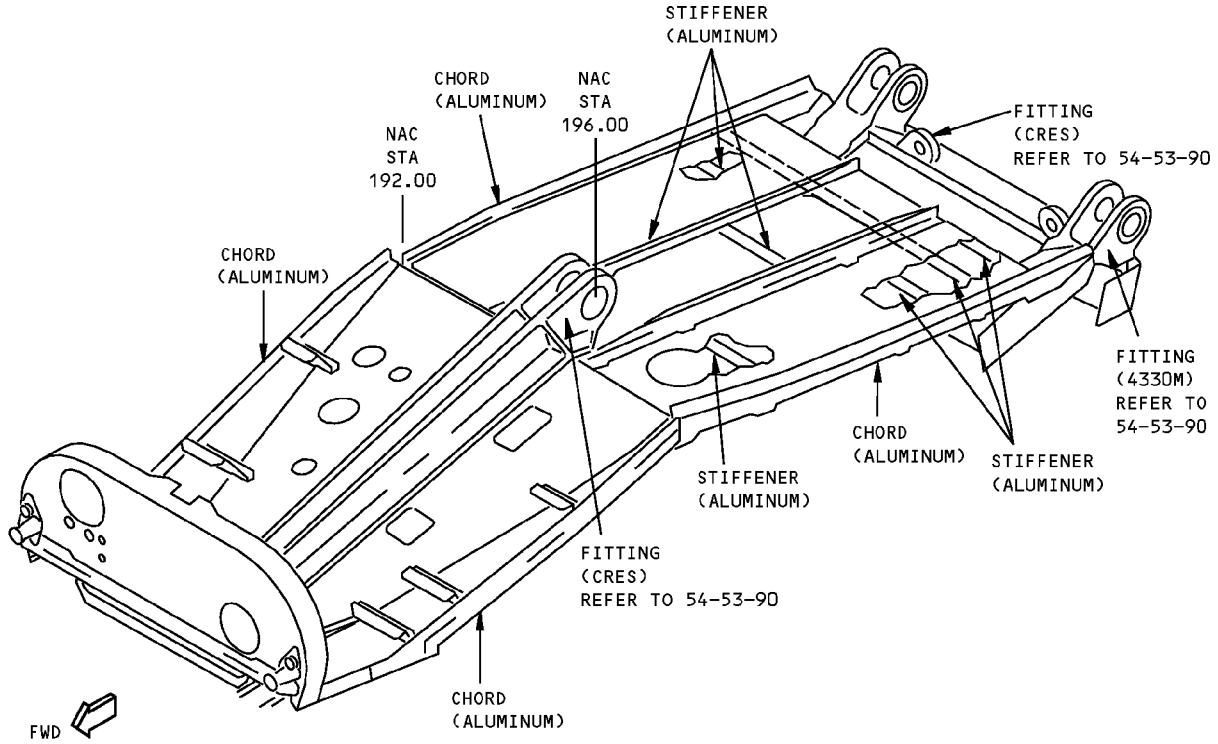


DETAIL III

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
BEAMS	A	B	SEE DETAIL VII	NOT PERMITTED
CHORDS	C	B	NOT PERMITTED	NOT PERMITTED
STIFFENER	C	B	NOT PERMITTED	SEE DETAIL X
BULKHEAD	A	B	NOT PERMITTED	NOT PERMITTED
CHANNEL	C	B	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 3 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS	C	B	NOT PERMITTED	NOT PERMITTED
STIFFENERS	C	B	NOT PERMITTED	SEE DETAIL X

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 4 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

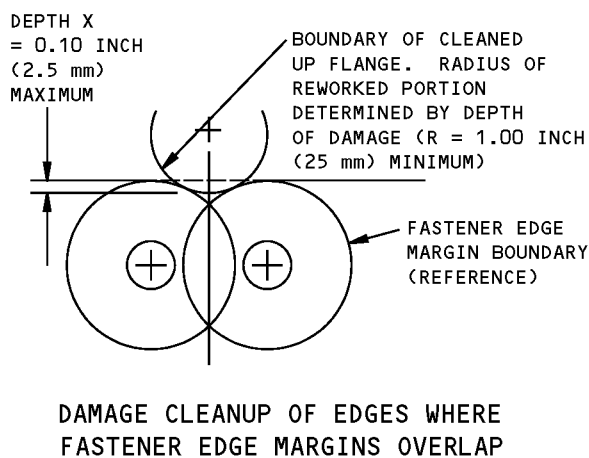
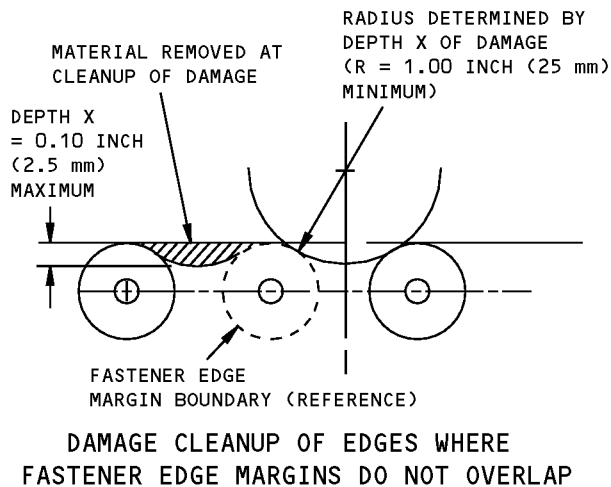
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.

A CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAIL XI.

B REMOVE DAMAGE AS SHOWN IN DETAILS V, VI AND VIII.

C CRACKS ARE NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED AS SHOWN IN DETAILS V AND IX.

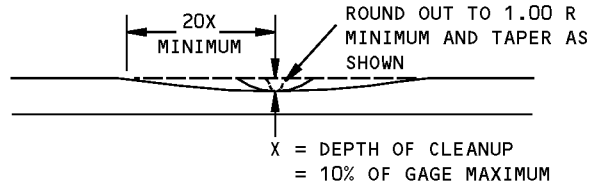
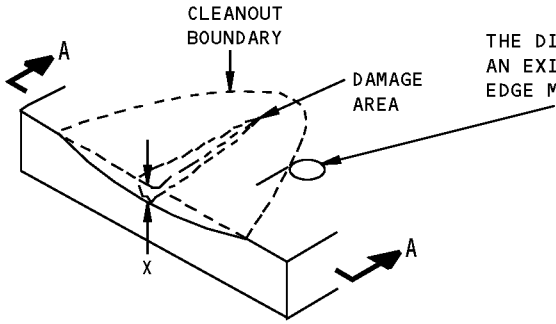
D SHOT PEEN REWORKED AREAS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK.



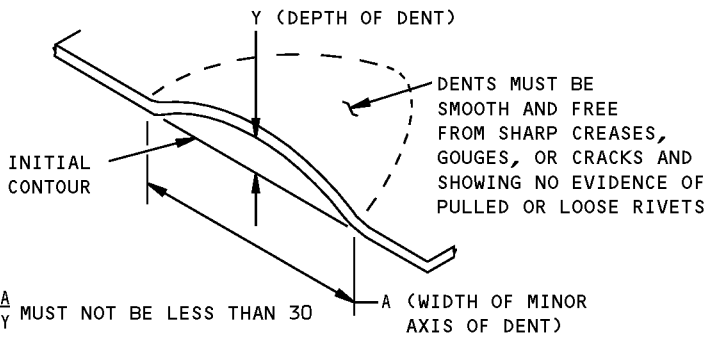
DETAIL V

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 5 of 7)**

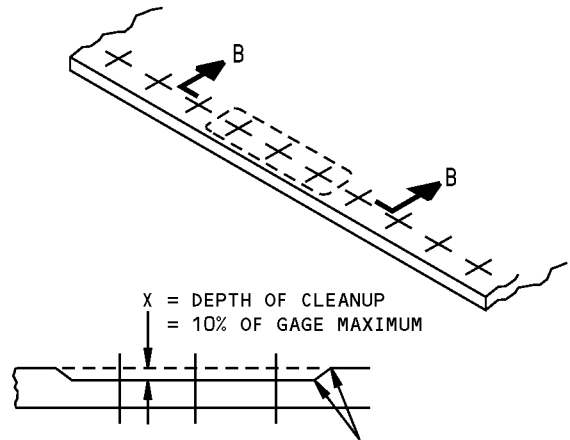
STRUCTURAL REPAIR MANUAL



**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI**

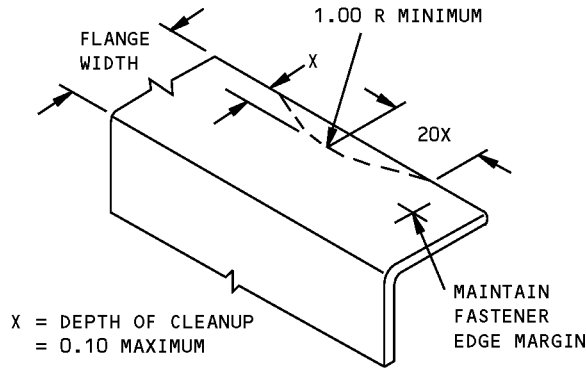


**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAXIMUM DEPTH

**SECTION B-B
CORROSION CLEANUP
DETAIL VIII**



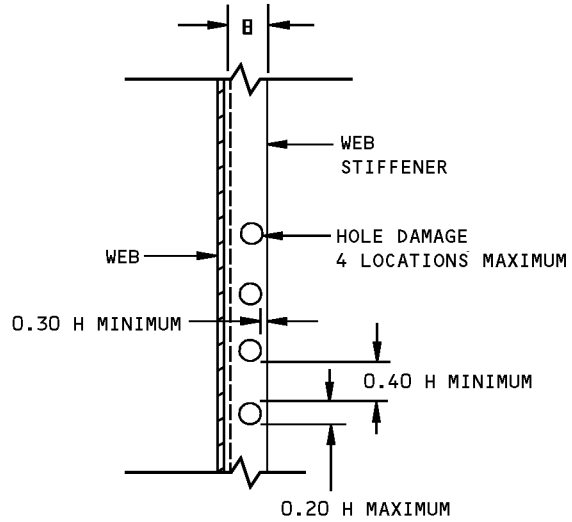
**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL IX**

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 6 of 7)**

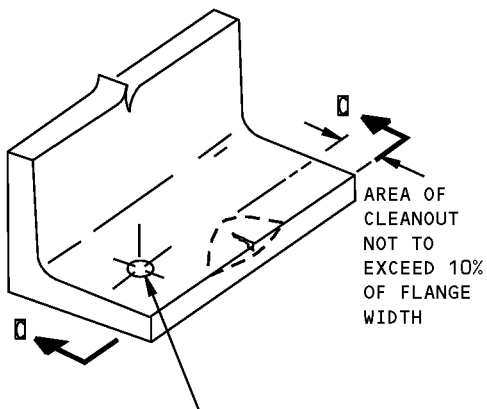
**767-300
STRUCTURAL REPAIR MANUAL**

NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE STIFFENER FLANGE THAT IS FASTENED TO THE WEB. HOLE DAMAGE MUST NOT OCCUR IN MORE THAN 4 LOCATIONS. FILL ALL HOLES WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95 SEALANT.

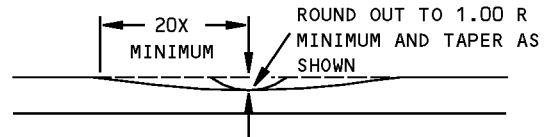
H = WIDTH OF STIFFENER FLANGE



**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB STIFFENERS
DETAIL X**



THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR EDGE MUST NOT BE LESS THAN 20X



X = DEPTH OF CLEANUP
X = 10% OF THICKNESS MAXIMUM

SECTION C-C

**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL XI**

**Allowable Damage - Strut Structure - PW4000 Engine
Figure 101 (Sheet 7 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 2 - ATTACHMENT LINKAGE - PW4000 ENGINE

THE ATTACHMENT LINK ALLOWABLE DAMAGE
IN FIGURE 102 WAS MOVED TO 54-53-90.

**Allowable Damage - Attachment Linkage - PW4000 Engine
Figure 101**

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ALLOWABLE DAMAGE 2
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STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT STRUCTURE - PW4000 ENGINE

REPAIR INSTRUCTIONS

NOTE: This repair is for partially cracked member. If member is cracked completely through, replace member.

1. Stop drill end(s) of crack 0.25 dia.
2. Make the repair angle, form to contour of frame.
3. Assemble repair part and drill fastener holes.
4. Remove repair part.
5. Break sharp edges of repair part 0.015R to 0.030R.
6. Remove all nicks, scratches, burrs, sharp edges and corners from original and repair part.
7. Alodize the repair part and raw edges of the original part.
8. Apply one coat BMS 10-11, type 1 primer to all of the repair part in accordance with 51-27 of the 767 Maintenance Manual.
9. Install the repair parts making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.

SYMBOLS

 REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	ANGLE	1	0.063 CLAD 2024-T3

NOTES

- REFER TO THE FOLLOWING WHEN MAKING THIS REPAIR
 - 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - 51-20-05 FOR SEALING OF REPAIRS
 - 51-40 FOR FASTENER CODE, REMOVAL, INSTALLATION, HOLE SIZES AND EDGE MARGINS
 - 51-21 OF THE 767 MAINTENANCE MANUAL FOR INTERIOR AND EXTERIOR FINISHES
 - 51-31 OF THE 767 MAINTENANCE MANUAL FOR SEALS AND SEALING

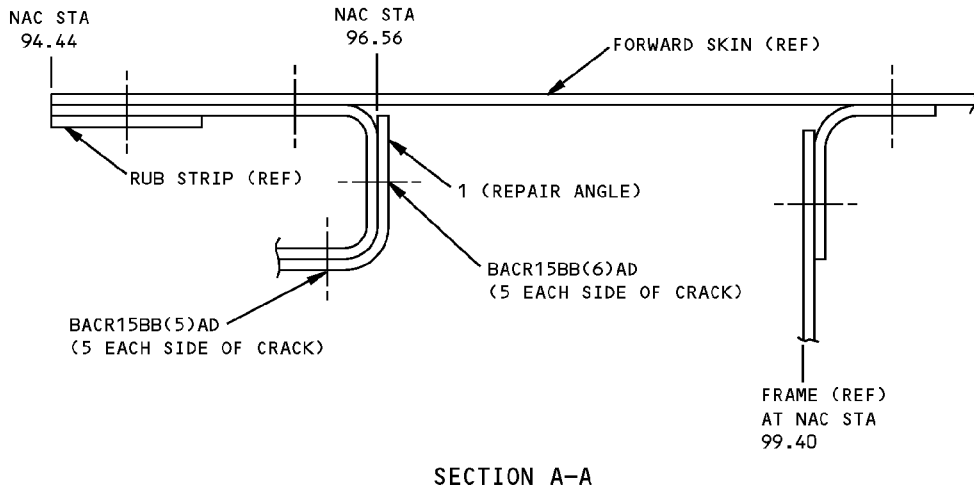
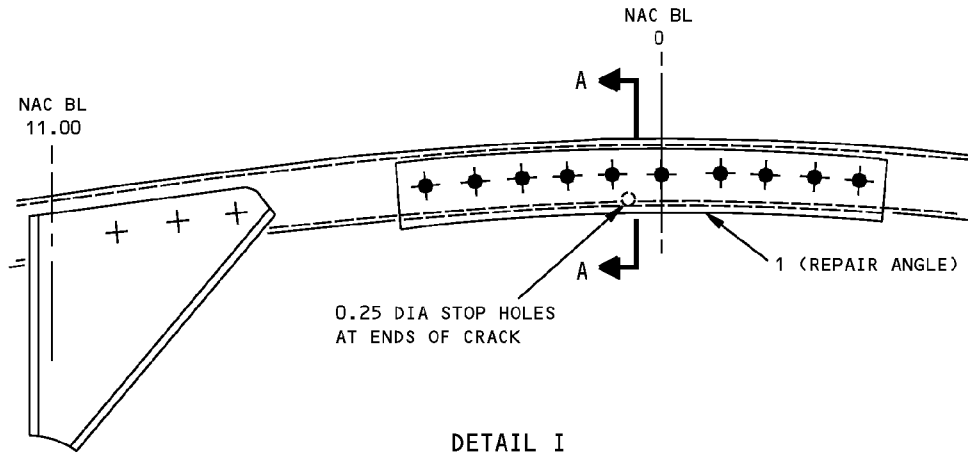
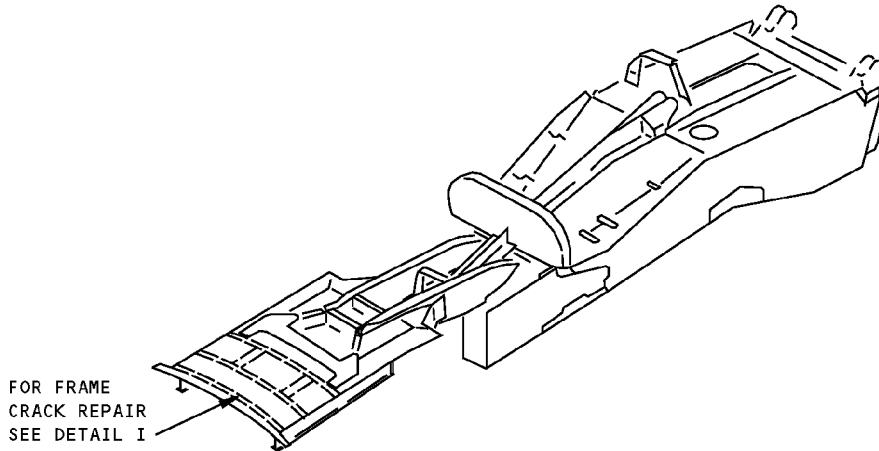
**Strut Structure Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)**

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REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Structure Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - STRUT FORWARD UPPER SPAR WEB CRACK AT EQUIPMENT CUTOUTS - PW4000 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO AIRPLANES WITH PW4000 ENGINES.
THIS REPAIR IS APPLICABLE TO BOTH CUTOUTS BETWEEN NACELLE STA 172.00 AND 192.00.

REPAIR INSTRUCTIONS

NOTE: Detail III is for the repair at the forward cutout for the IDG cables. Detail IV is for the repair at the aft cutout for other electrical harnesses.

CAUTION: BE CAREFUL WHEN YOU REMOVE THE POWER FEEDERS AND WIRE BUNDLES. THE EDGES OF BRACKETS AND ROUTING HOLES CAN CAUSE DAMAGE.

1. Refer to Drawing 312T4280 for instructions to get access to the damaged area.
2. Use a 0.25 inch (6 mm) diameter drill bit to stop drill cracks as necessary. Refer to SRM 51-10-00.
3. Make the repair parts.

NOTE: Refer to Table I when you do the repair for the forward cutout.

Refer to Table II when you do the repair for the aft cutout.

Refer to Detail III or Detail IV and Drawing 312T4280 to determine which parts are removed and used again.

4. Temporarily assemble the repair parts and drill the fastener holes. Maintain edge margins. See Detail III and Detail IV. **B**
5. Disassemble the repair parts.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts.
7. Apply a chemical conversion coating to the aluminum repair parts and to the bare surfaces of the repair area. Refer to SRM 51-20-01.
8. Apply two layers of BMS 10-11 Type I primer to the repair parts and to the bare surfaces of the repair area. Refer to SOPM 20-44-04.
9. Install parts with BMS 5-63 sealant. Fillet seal edges of the repair area.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Apply a layer of BMS 10-11, Type II finish to the repair area.
12. Apply a layer of BMS 3-23, Type 2 corrosion inhibiting compound followed by a layer of BMS 3-26 corrosion inhibiting compound to the outer surface of the repair area. As an alternative, apply a layer of BMS 3-29 corrosion inhibiting compound. Refer to SRM 51-10-02.









NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR REFER TO:
 - DRAWING 312T4280 FOR INSTRUCTIONS TO GET ACCESS TO THE DAMAGED AREA.
 - SOPM 20-44-04 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-00 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS

A MAKE THE DIAMETER OF THE HOLE FOR THE POWER FEEDER WIRE BUNDLE IN THE PART 1 DOUBLER THE SAME AS THE WIDTH OF THE INITIAL SQUARE HOLE IN THE WEB.

B REMOVE THE INITIAL NUT PLATES. DOUBLE FLUSH PLUG THE NUT PLATE ATTACHMENT HOLES IN THE WEB. DRILL THE HOLES BETWEEN THE NUT PLATE ATTACHMENT HOLES TO 0.218 TO 0.229 INCH (5.5 mm TO 5.8 mm) DIAMETER.

FASTENER SYMBOLS

-  REFERENCE FASTENER LOCATION.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX8K()X HEX DRIVE BOLT WITH A BACC30X8 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NX6K() HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACR15BA3AD FLUSH HEAD SOLID RIVET OR EQUIVALENT. SHAVE TO DOUBLE FLUSH PLUG HOLES.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A BACB30MC6AK() HEX DEIVE BOLT WITH A BACC30X6 COLLAR. AS AN ALTERNATIVE, INSTALL A BACB30MC6A HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
-  INITIAL FASTENER LOCATION. INSTALL A NAS1801-3 BOLT WITH TWO NAS1149F0332P WASHERS AND A MS21043-3 OR EQUIVALENT NUT. (USE ONE WASHER ON THE HEAD SIDE AND THE OTHER ON THE NUT SIDE).

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 1 of 7)**

STRUCTURAL REPAIR MANUAL

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
2	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
3	TAPERED FILLER	4	CUT LENGTH AS REQUIRED FROM 311T3180-18
4	STIFFENER	1	0.090 INCH, 15-5PH, HT TR 180-200 KSI OR ORDER BLANK STIFFENER 311T3110-14 (WITH NO PILOT HOLES)
5	FILLER	2	0.063 INCH, 15-5PH, HT TR 180-200 KSI
6	SHIM	2	CUT LENGTH AS REQUIRED FROM BACS4OR012U013
7	SPLICE	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
8	SHIM	1	CUT LENGTH AS REQUIRED FROM BACS4OR022W024
9	ANGLE	1	0.063 INCH, 15-5PH, HT TR 180-200 KSI (SEE DRAWING 015T1580-13)
10	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
11	SHIM	1	CUT LENGTH AS REQUIRED FROM BACS4OR011T011

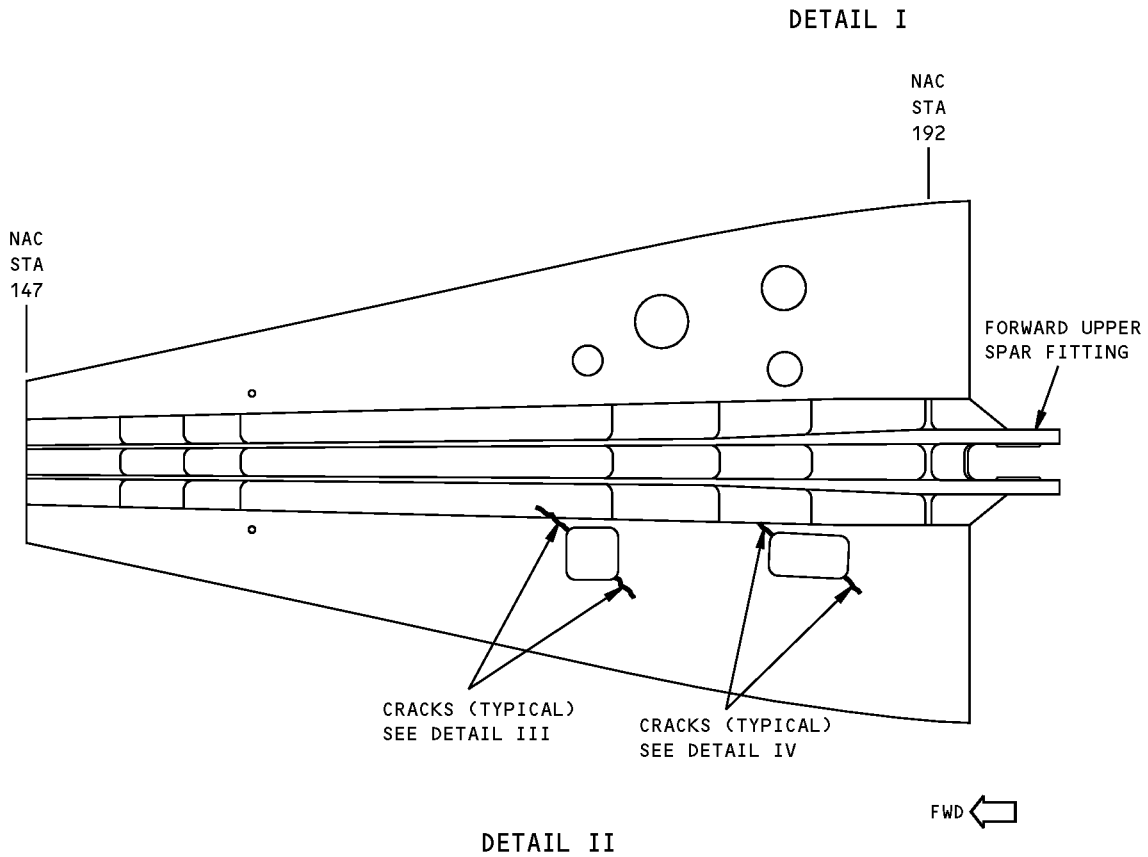
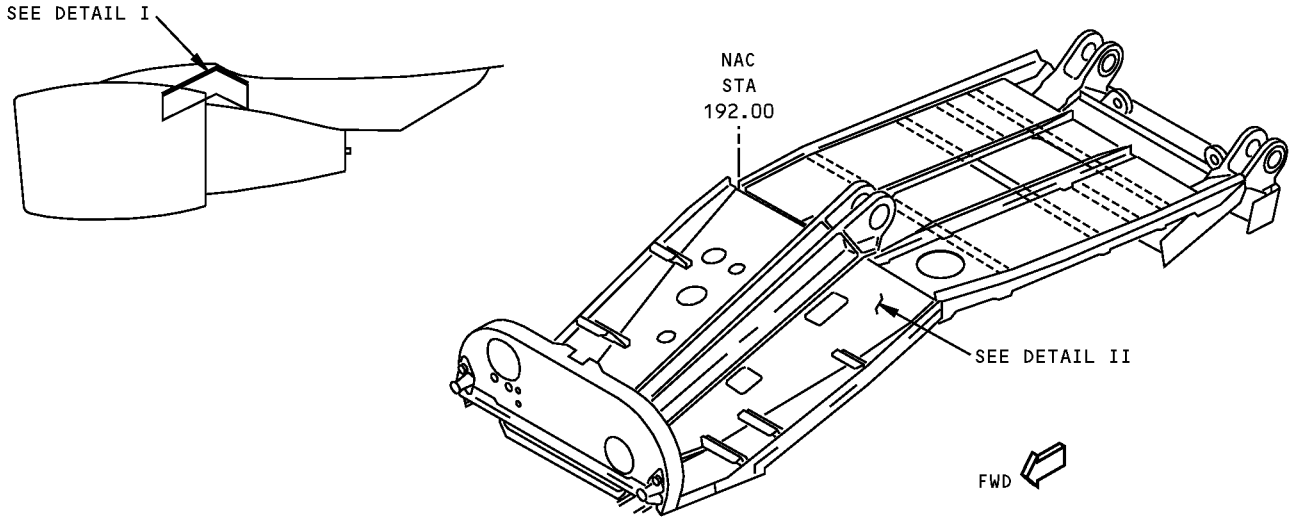
TABLE I

REPAIR MATERIAL			
	PART	QTY	MATERIAL
12	DOUBLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
13	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
14	FILLER	1	0.080 INCH, 15-5PH, HT TR 180-200 KSI
15	FILLER	2	0.063 INCH, 15-5PH, HT TR 180-200 KSI
16	SHIM	2	CUT LENGTH AS REQUIRED FROM BACS4OR012U013
17	TAPERED FILLER	4	CUT LENGTH AS REQUIRED FROM 311T3180-18
18	STIFFENER	1	0.090 INCH, 15-5PH, HT TR 180-200 KSI OR ORDER BLANK STIFFENER 311T3110-35 (WITH NO PILOT HOLES)

TABLE II

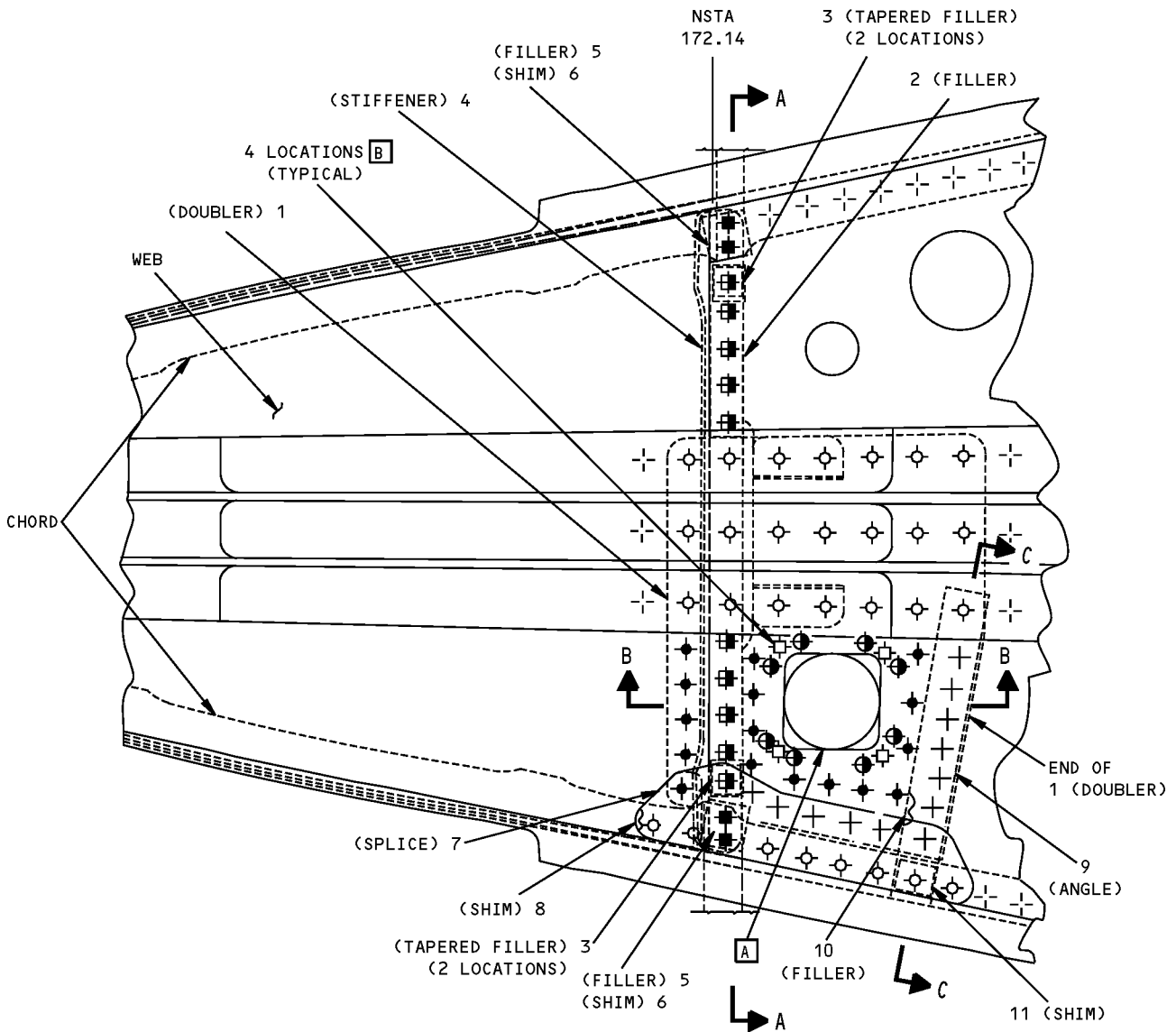
**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 2 of 7)**

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STRUCTURAL REPAIR MANUAL**



**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 3 of 7)**

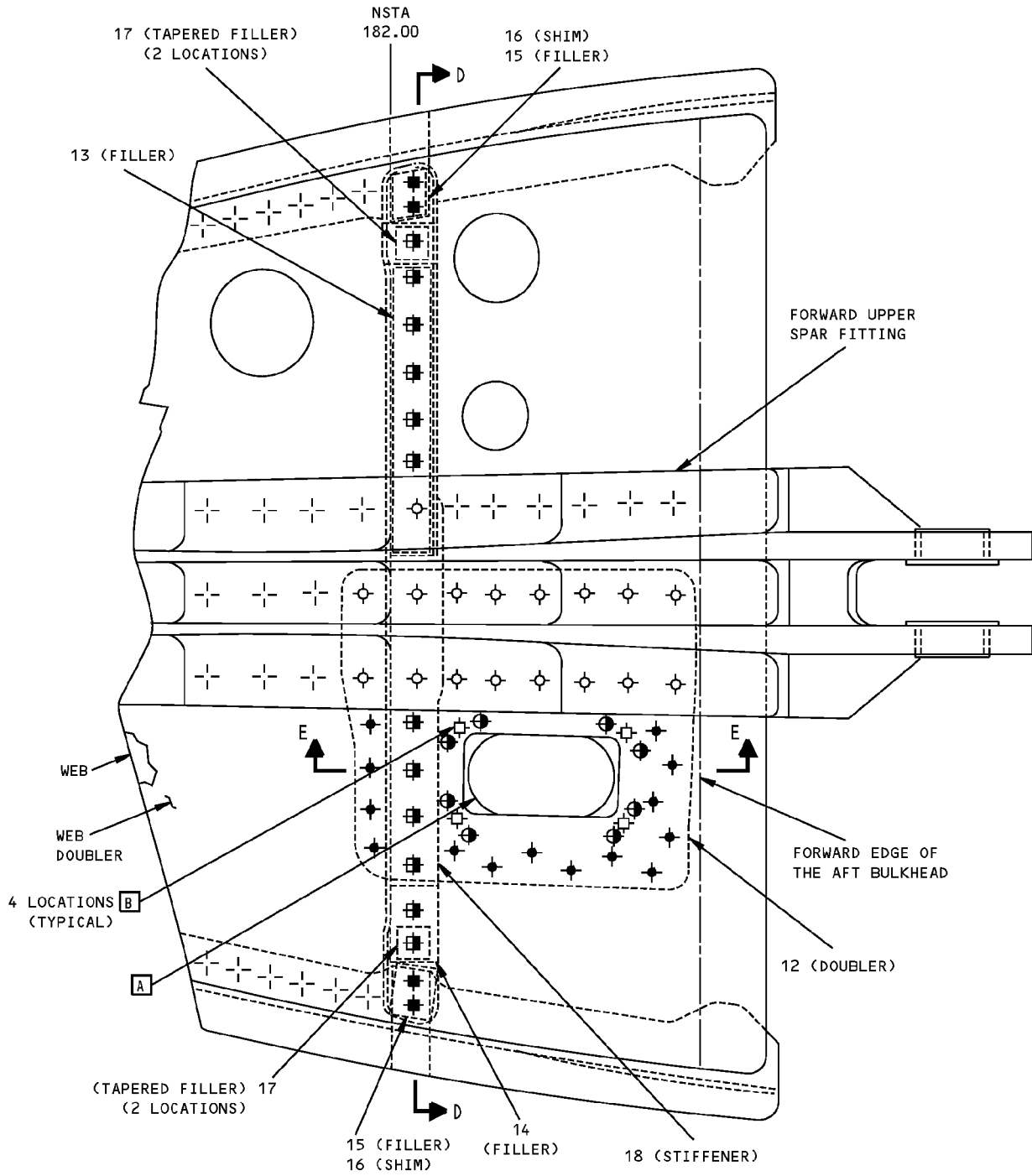
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 4 of 7)**

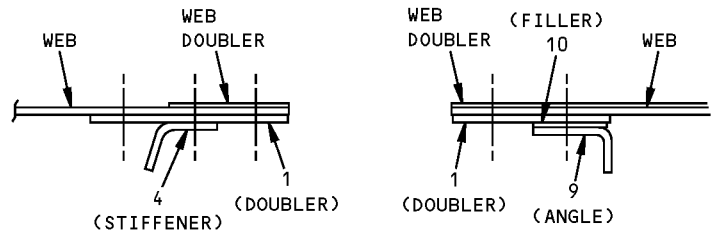
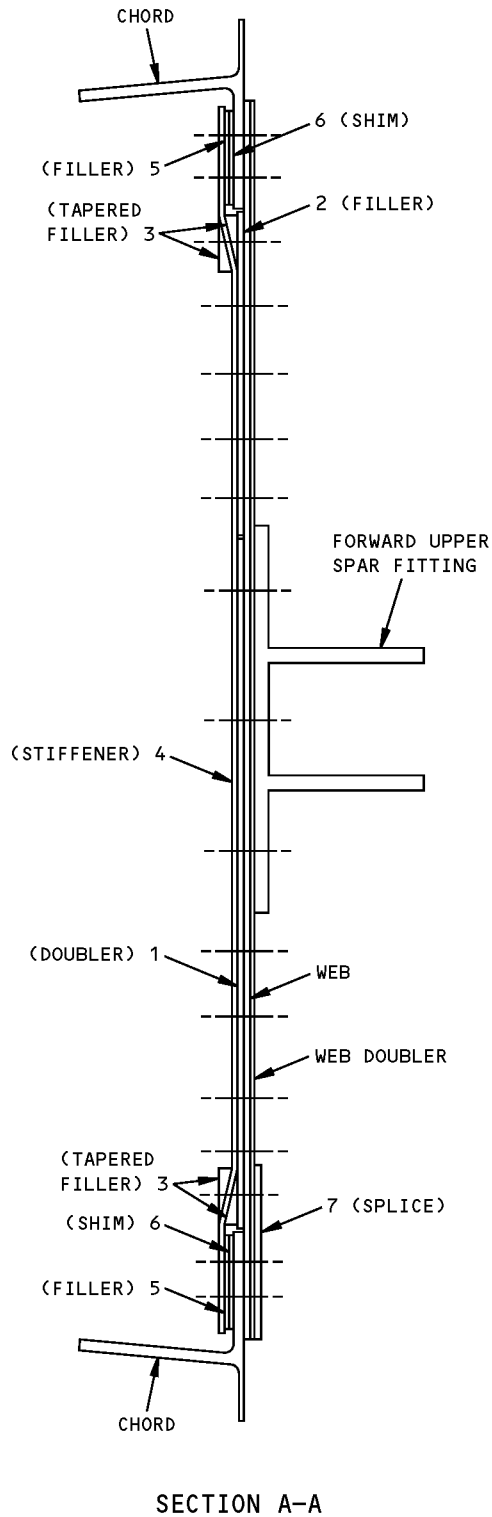
**767-300
STRUCTURAL REPAIR MANUAL**



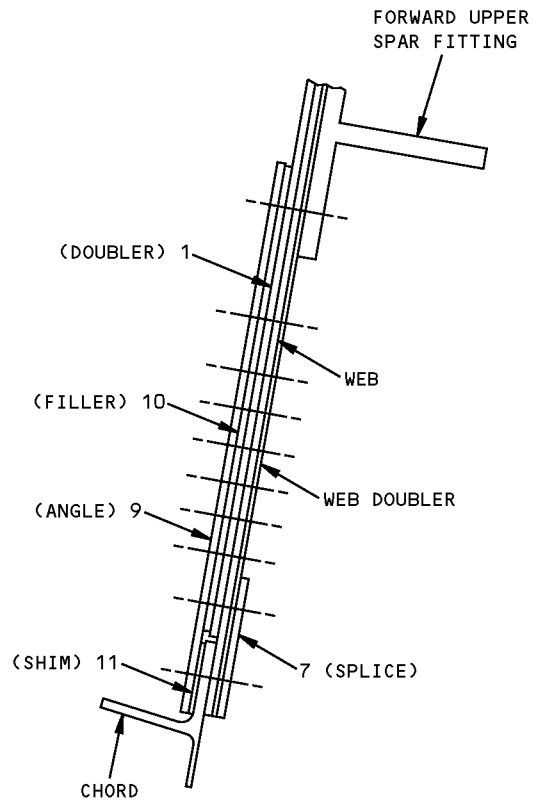
DETAIL IV

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 5 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



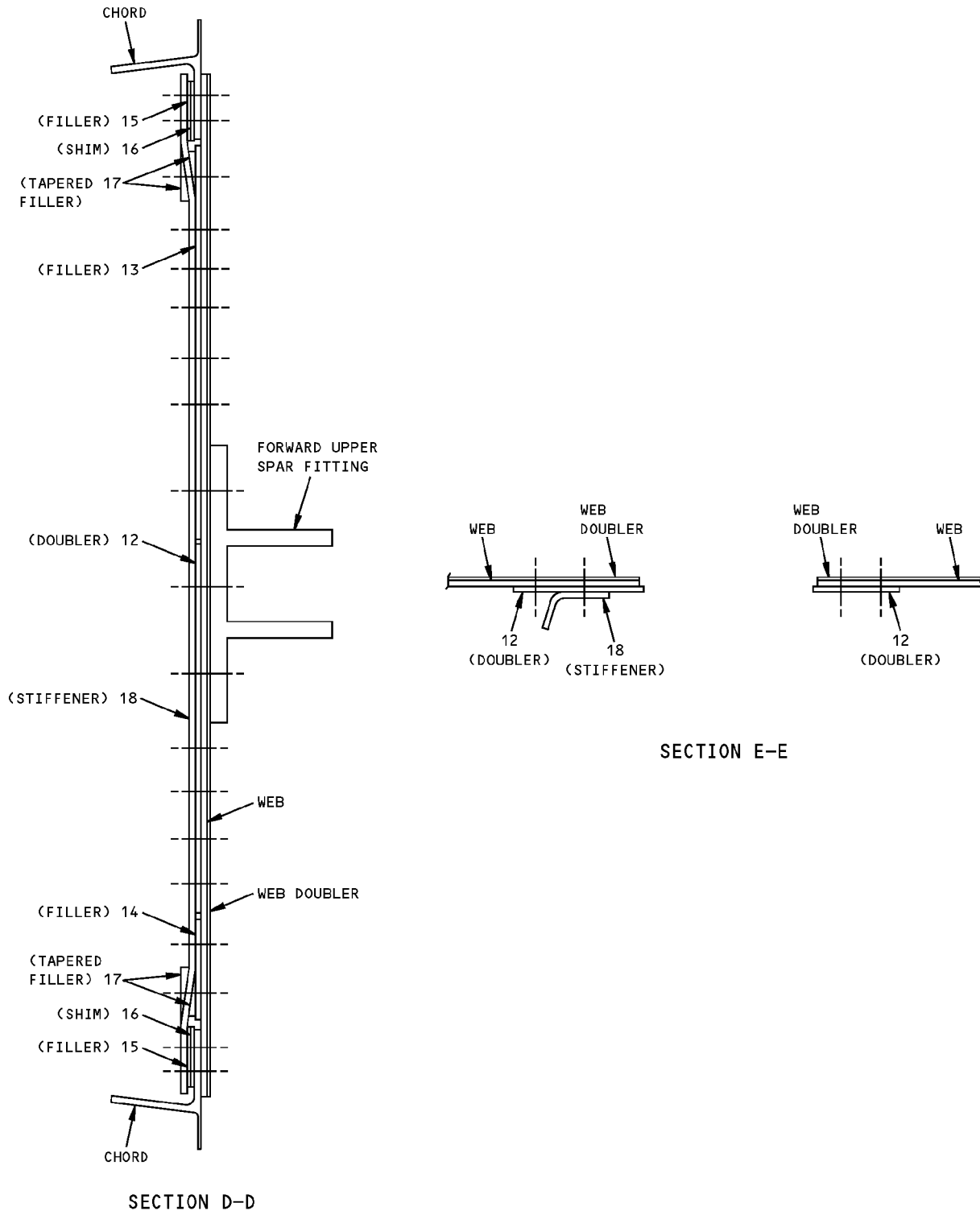
SECTION B-B



SECTION C-C

**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 6 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

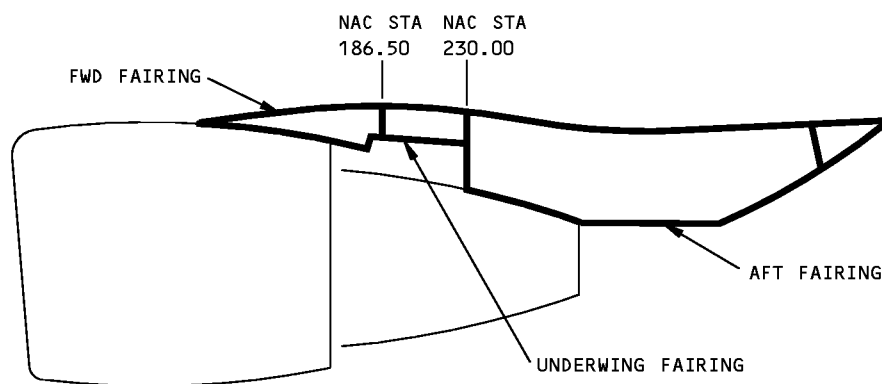


**Strut Forward Upper Spar Web Crack Repair at Equipment Cutouts - PW4000 Engine
Figure 201 (Sheet 7 of 7)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING SKIN ASSEMBLY - PW4000 ENGINE

REFERENCE DRAWINGS
313T3300
313T3100



SEE DETAIL I FOR FAIRING ASSEMBLY

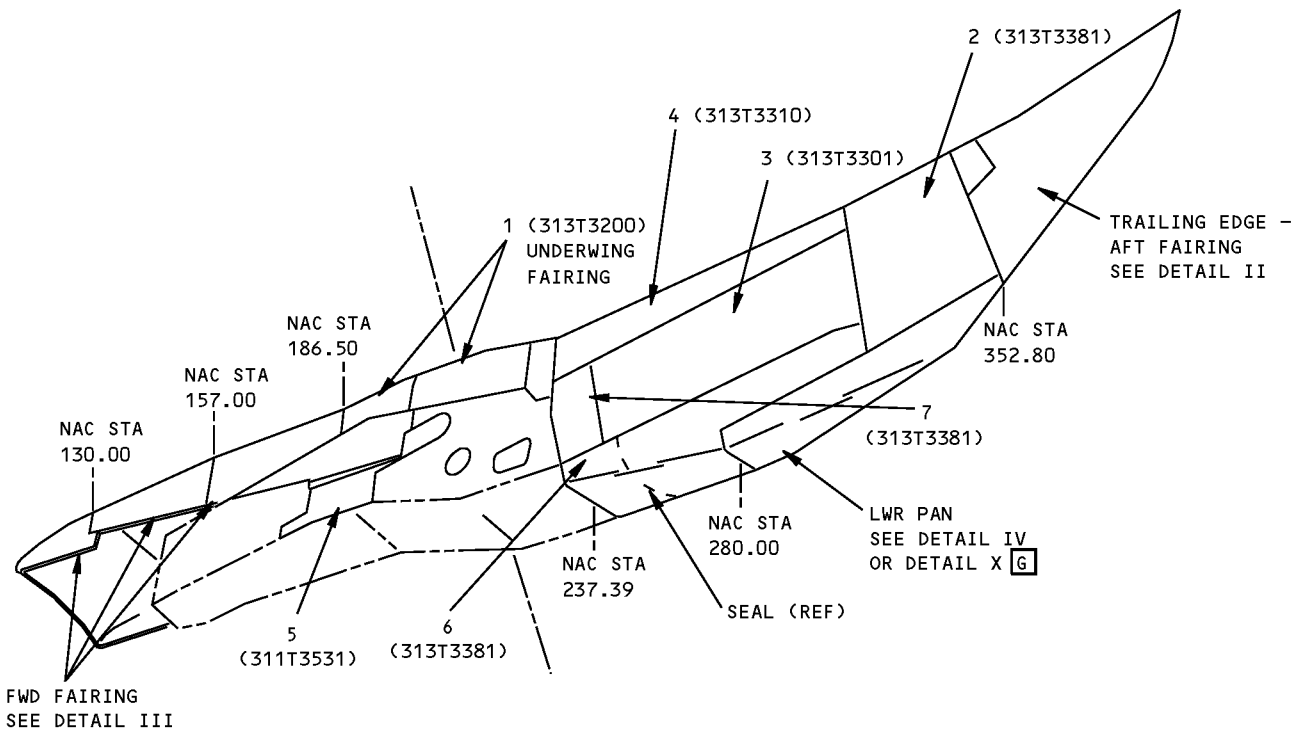
NOTES

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION</p> <p>B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS</p> <p>C ARAMID/EPOXY FABRIC PER BMS 8-218, STYLE 285, 350°F (177°C) CURE</p> <p>D FOR AIRPLANES NOT LISTED IN E OR F</p> <p>E FOR CUM LINE NUMBERS:
251 AND ON</p> | <p>F FOR AIRPLANES INCORPORATING SB 767-54-0017</p> <p>G FOR CUM LINE NUMBERS:
653 AND ON</p> <p>H FIBERGLASS/EPOXY FABRIC PER BMS 8-139, STYLE 1581, CLASS 1, 350°F (177°C)</p> <p>I FOR CUM LINE NUMBERS:
165 THRU 918</p> <p>J FOR CUM LINE NUMBERS:
922 AND ON</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 1 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
313T3300
313T3100



**FAIRING ASSEMBLY
DETAIL I**

LIST OF
MATERIAL

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 2 of 9)**

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STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL V HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	
2	PANEL SKIN - INNER SKIN - OUTER CORE	0.016 0.016	CLAD 2024-T3 CLAD 2024-T3 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N	
3	DOOR SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH FIBERGLASS/EPOXY HONEYCOMB SANDWICH SEE DETAIL VI ALUMINUM FOIL 425-3M PER MIL-T-23397B ON INTERIOR HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS I, TYPE I, GRADE 12.0	I J
4	PANEL SKIN DOUBLER	0.063 0.040	CLAD 2024-T3 2024-T3	
5	FAIRING SKIN CORE EXTERNAL FILLER		ARAMID FABRIC/EPOXY HONEYCOMB SANDWICH SEE DETAIL VII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, TYPE V, CLASS IV, GRADE 4.0 ARAMID FABRIC/EPOXY PER BMS 8-218, STYLE 285	
6	PANEL SKIN - INNER SKIN - OUTER DOUBLER DOUBLER CORE DENSE CORE	0.016 0.016 0.020 0.033	CLAD 2024-T3 CLAD 2024-T81 CLAD 2024-T81 CLAD 2024-T81 ALUMINUM HONEYCOMB PER BMS 4-4, 3-15N ALUMINUM HONEYCOMB PER MIL-C-7438E - 22-1 1/8-60N (5052)	
7	PANEL SKIN - INNER SKIN - OUTER DOUBLER	0.040 0.032 0.036	CLAD 2024-T81 CLAD 2024-T81 CLAD 2024-T81	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 3 of 9)**

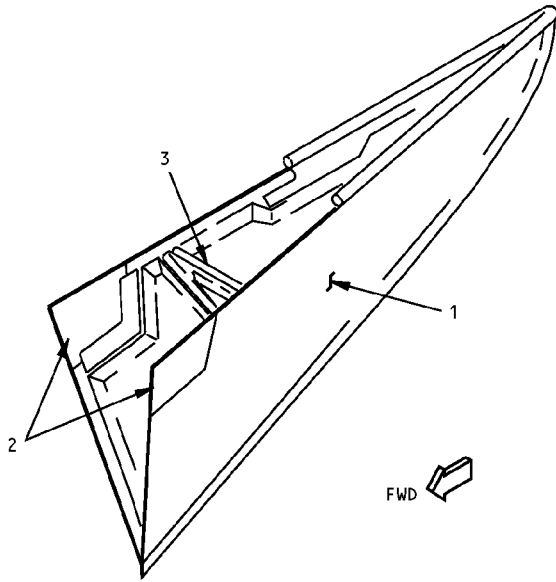
IDENTIFICATION 1
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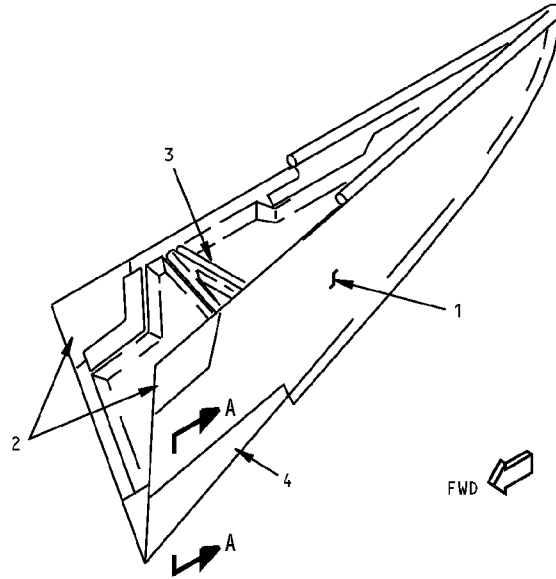
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**767-300
STRUCTURAL REPAIR MANUAL**

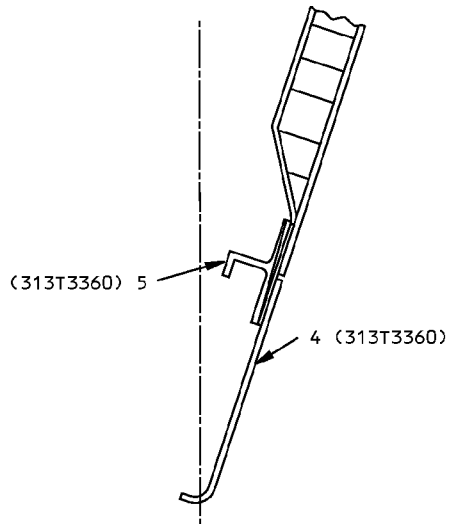
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313T3360



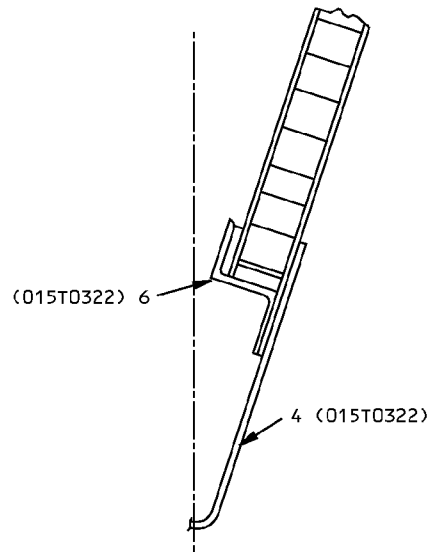
TRAILING EDGE **D**



TRAILING EDGE **E F**



SECTION A-A **E**



SECTION A-A **F**

**TRAILING EDGE - AFT FAIRING
DETAIL II**



**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 4 of 9)**

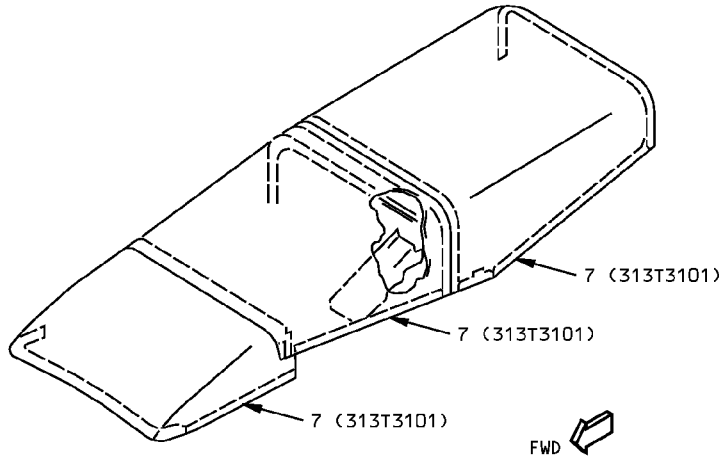
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T3100



**FORWARD FAIRING
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL VIII HONEYCOMB NONMETALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE V, GRADE 4.0 (4.0 PCF)	
2	DOOR	0.063	CLAD 2024-T3	
3	BULKHEAD	0.063	2024-T42 OPTIONAL: CLAD 2024-T42	
4	SKIN	0.050	INCONEL 625	E F
5	TEE		BAC1506-1934 2024-T3511	E
6	ZEE		AND10138-0605 2024-T3511	F
7	PANEL SKIN CORE		ARAMID/EPOXY HONEYCOMB SANDWICH SEE DETAIL IX NONMETALLIC (NOMEX) HONEYCOMB PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	

LIST OF MATERIALS FOR DETAILS II AND III

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 5 of 9)**

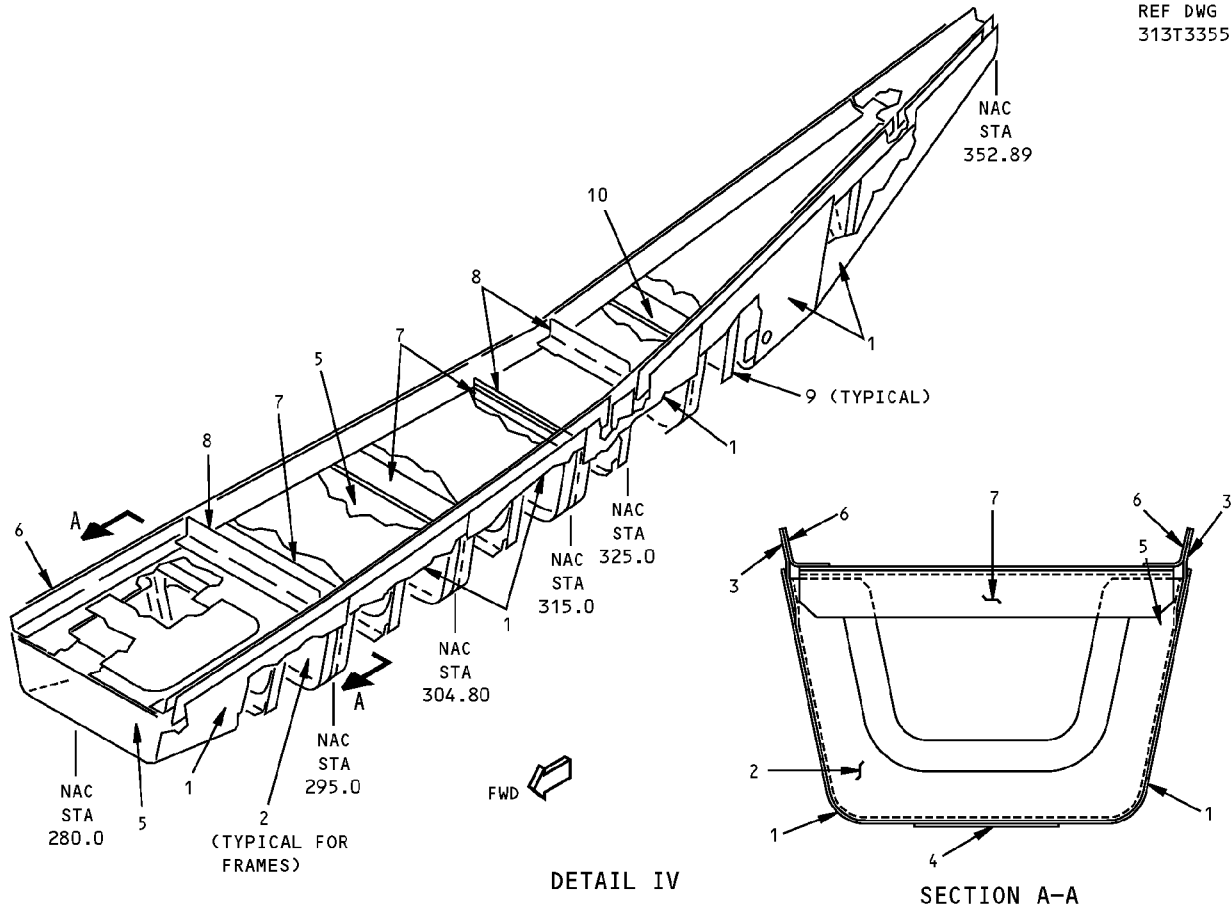
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3355



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN	0.050	INCONEL 625	
2	FRAME	0.063	INCONEL 625	
3	SPLICE	0.063	2024-T42	
4	SPLICE	0.063	INCONEL 625	
5	WEB ASSY WEB (2)	0.025	2024-T3 (BONDED ASSY)	
6	ANGLE	0.063	2024-T42	
7	TEE		AND10136-2006 7075-T6511	
8	ANGLE	0.050	2024-T42	
9	RIB	0.050	INCONEL 625	
10	TEE		AND1506-928 7075-T73511	

LIST OF MATERIALS FOR DETAIL IV

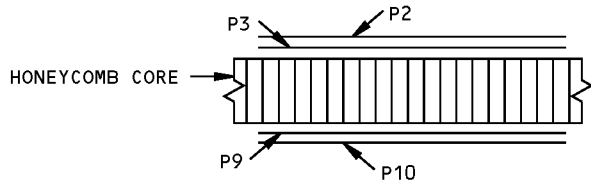
**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 6 of 9)**

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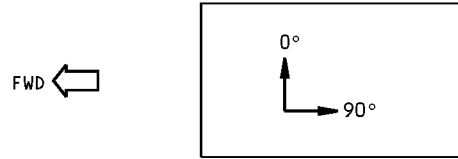
54-53-70

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STRUCTURAL REPAIR MANUAL**

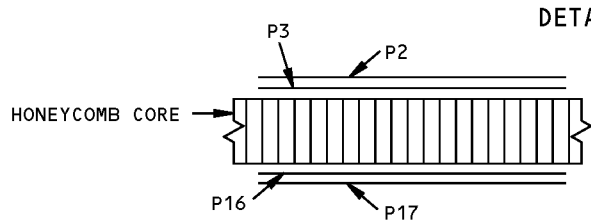


SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL I)



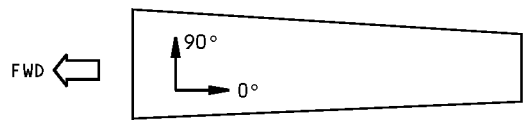
SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM



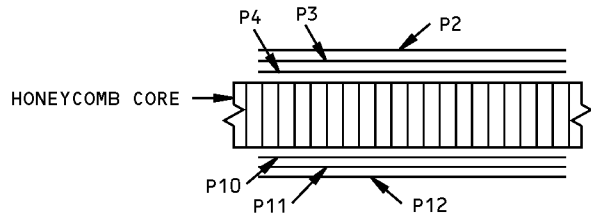
SECTION THRU HONEYCOMB PANEL
(ITEM 3, DETAIL I)

DETAIL V



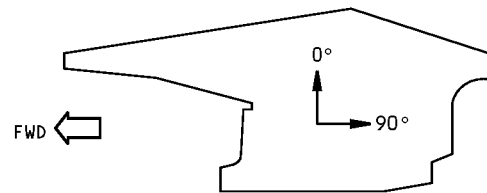
SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM



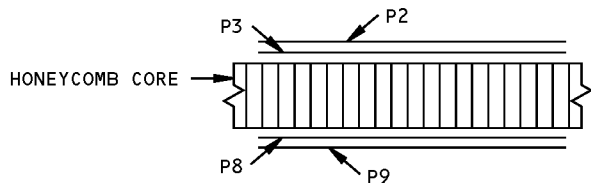
SECTION THRU HONEYCOMB PANEL
(ITEM 5, DETAIL I)

DETAIL VI



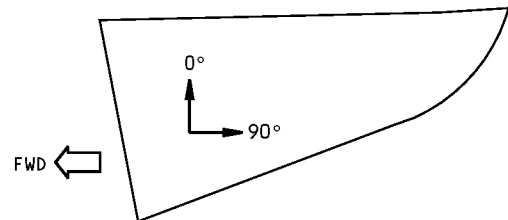
SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM



SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL II)

DETAIL VII



SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM

DETAIL VIII

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 7 of 9)**

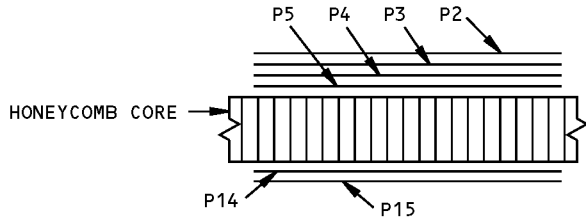
IDENTIFICATION 1

54-53-70

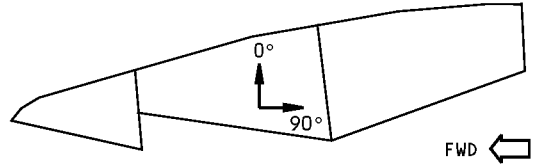
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**767-300
STRUCTURAL REPAIR MANUAL**



SECTION THRU HONEYCOMB PANEL
(ITEM 7, DETAIL III)



SEE TABLE I FOR PLY ORIENTATION AND MATERIAL

PLY ORIENTATION DIAGRAM

DETAIL IX

ITEM	PLY NO.	MATERIAL	PLY ORIENTATION ^A
1 DETAIL I	P2,P3,P9,P10	C	0° OR 90° OPTIONAL
3 DETAIL I	P2,P3,P16,P17	C I	0° OR 90° OPTIONAL
	P2,P3,P16,P17	H J	
5 DETAIL I	P2,P3,P4, P10,P11,P12	C	0° OR 90° OPTIONAL
1 DETAIL II	P2,P3,P8,P9	C	0° OR 90° OPTIONAL
7 DETAIL III	P2,P3,P4,P5, P14,P15	C	0° OR 90° OPTIONAL

TABLE I ^B

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 8 of 9)**

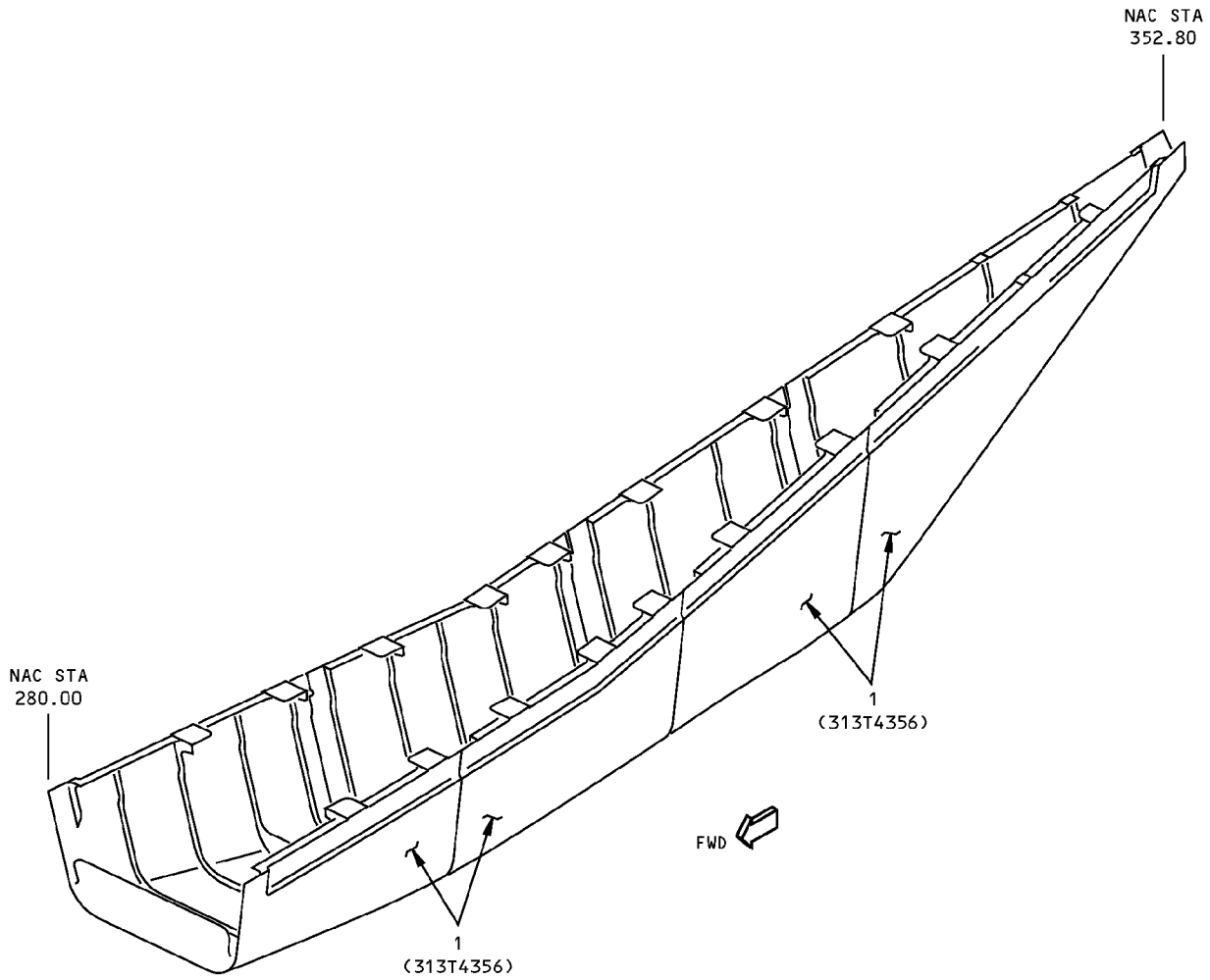
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T4356



DETAIL X

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PAN SEGMENT		TITANIUM 6-2-4-2 CASTING, BMS 7-336, GRADE B	G

LIST OF MATERIALS FOR DETAIL X

**Strut Fairing Skin Assembly Identification - PW4000 Engine
Figure 1 (Sheet 9 of 9)**

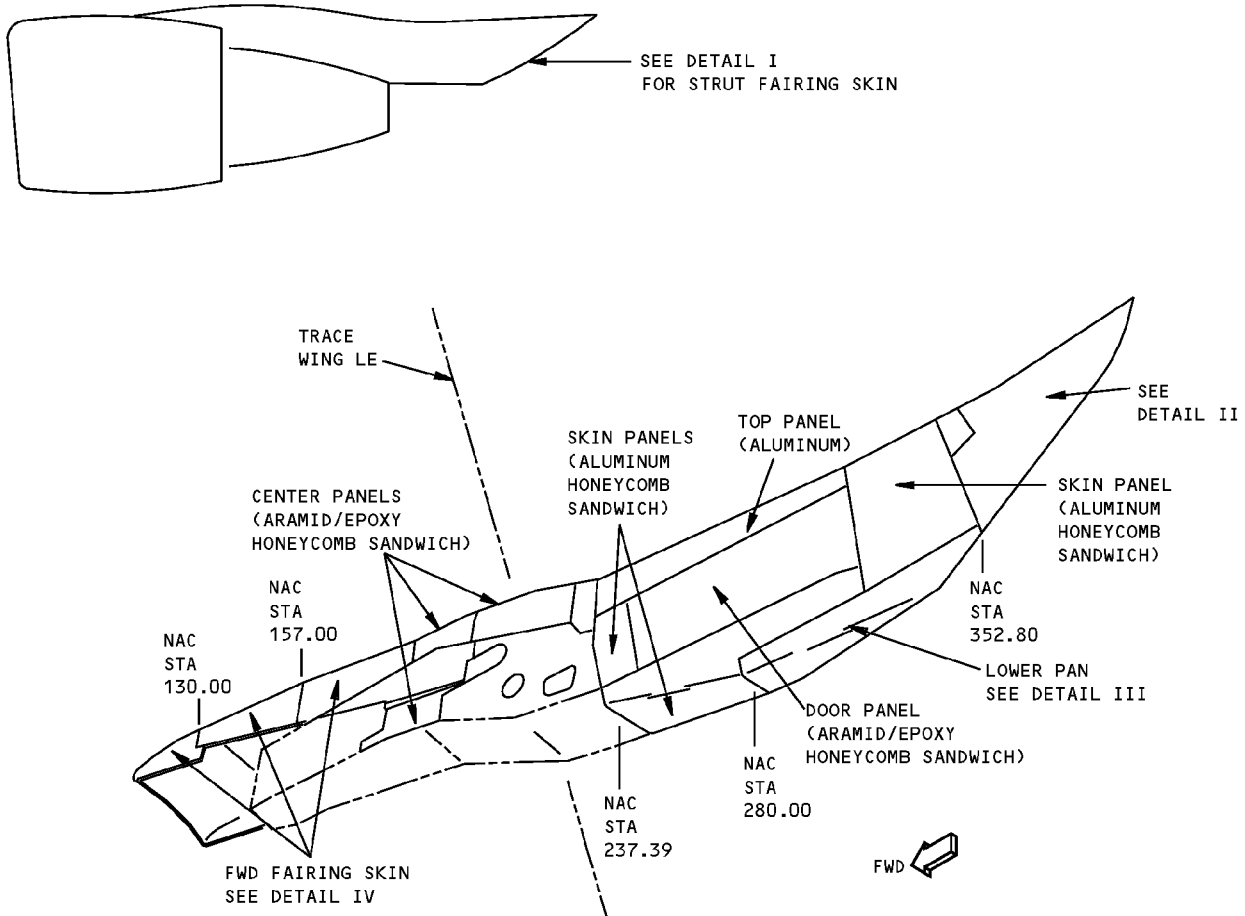
IDENTIFICATION 1
Page 9
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING SKIN - PW4000 ENGINE

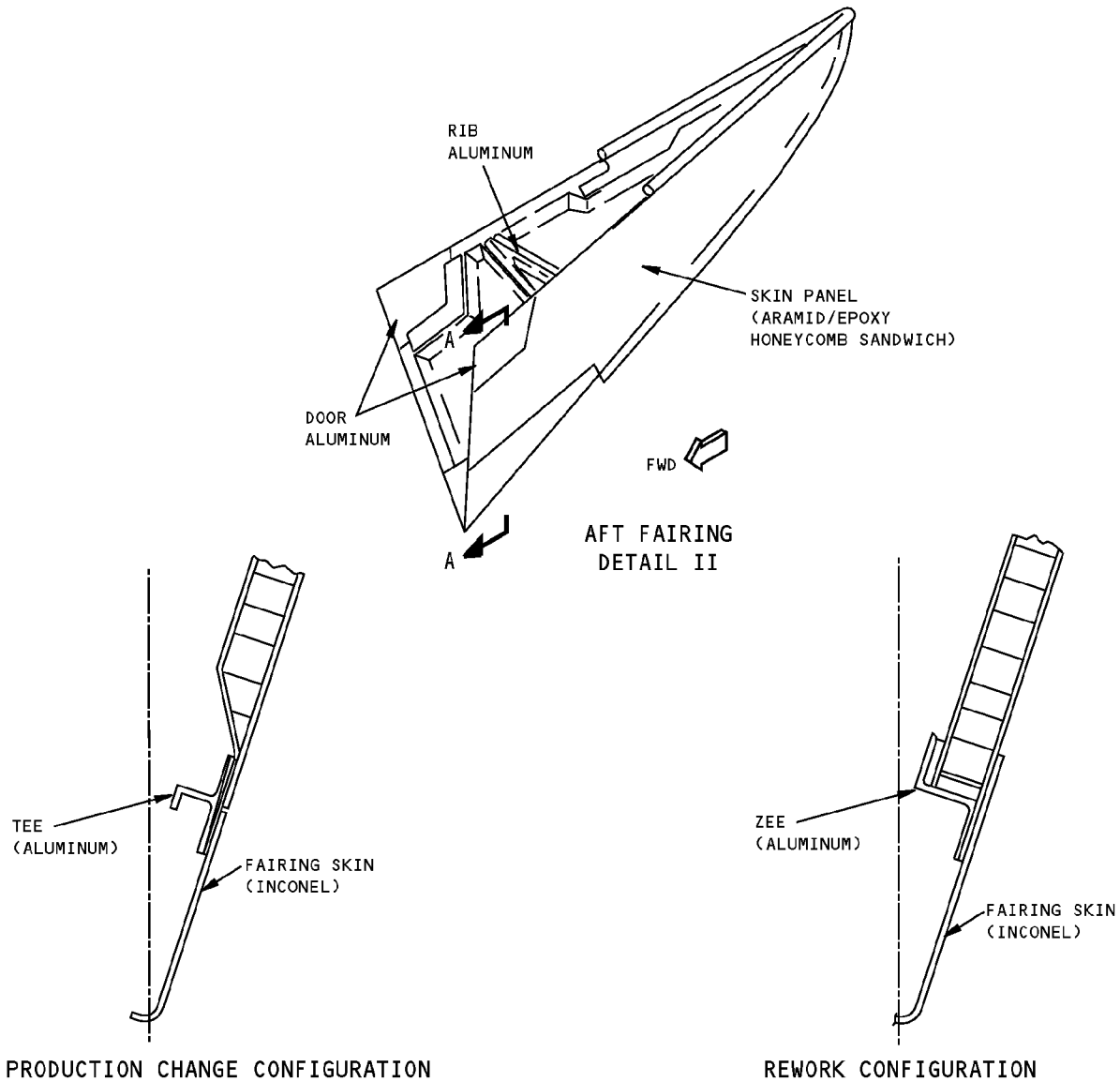


DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANELS	F	B	J	D	E
TOP PANELS	A	B	SEE DETAIL VII	C	—
CENTER PANELS	N	G	H	I	E
DOOR PANEL L	N	G	H	I	E

**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

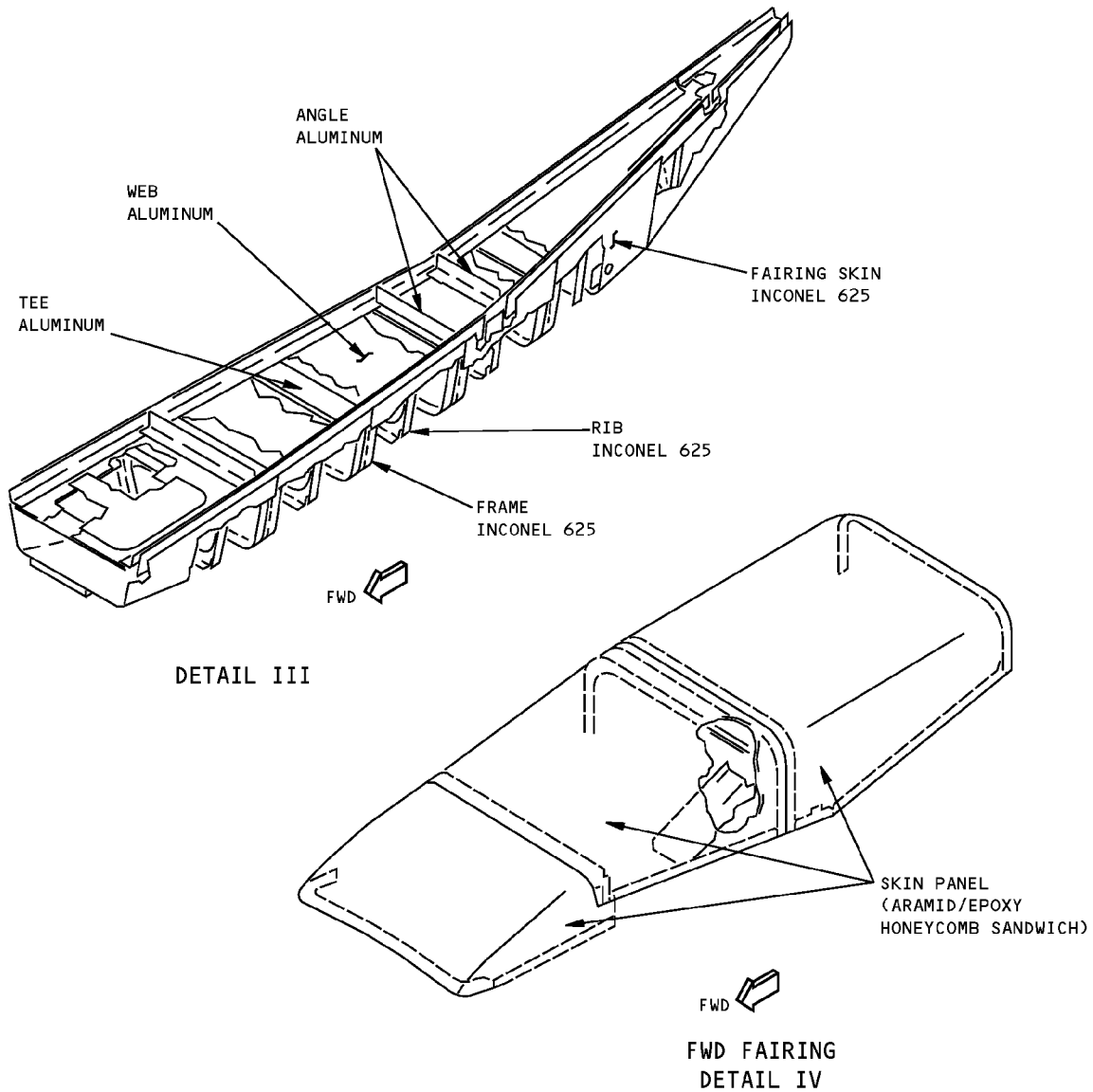


SECTION A-A

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
SKIN PANEL	N	G	H	I	E
DOOR	A	B	SEE DETAIL VII	C	---
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	---
TEE, ZEE	O	B	NOT ALLOWED	SEE DETAIL XI	---
FAIRING SKIN	A	B	SEE DETAIL VII	M	---

**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	DELAMINATION
FAIRING SKIN	A	B	SEE DETAIL VII	M	—
RIB	K	B	NOT ALLOWED	SEE DETAIL XI	—
FRAME	K	B	NOT ALLOWED	SEE DETAIL XI	—
WEB	A	B	SEE DETAIL VII	C	—
ANGLE	K	B	NOT ALLOWED	SEE DETAIL XI	—
TEE	O	B	NOT ALLOWED	SEE DETAIL XI	—
SKIN PANEL	N	G	H	I	E

**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 3 of 6)**

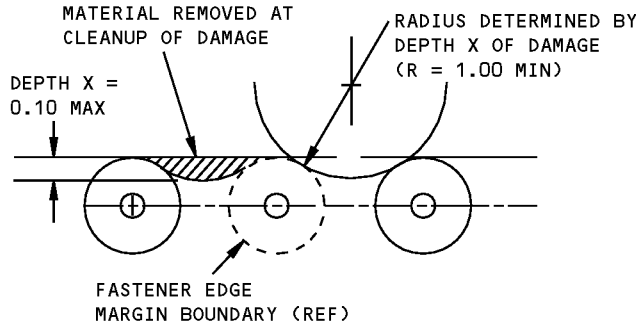
STRUCTURAL REPAIR MANUAL

NOTES

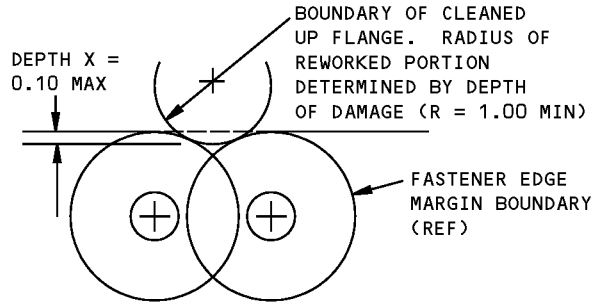
- THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS PER AMM 51-21
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND IX
- B** REMOVE DAMAGE PER DETAILS V, VI AND VIII
- C** CLEAN PUNCTURE OUT WITH 0.25 INCH (6 mm) MAX DIA HOLE AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- D** 1.0 INCH (25 mm) MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 D FROM NEAREST HOLE OR MATERIAL EDGE. **P**
- E** 2.0 INCHES (50 mm) MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.10 INCH (25 mm) DELAMINATION FROM EDGE IS ALLOWED. **P**
- F** 2.0 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (15 cm) FROM ANY OTHER CRACK. DRILL 0.19 INCH (5 mm) DIA STOP HOLES AT END OF CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
- G** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. CLEAN UP EDGE DAMAGE PER DETAILS V AND IX. **P**
- H** 2.0 INCHES (50 mm) MAX DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION OR FIBER DAMAGE. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER DENT
- I** 1.0 INCH (25 mm) MAX DIA ALLOWED PROVIDED DAMAGE IS MIN OF 3.0 D FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **P**
- J** 2.0 INCHES (50 mm) DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6 INCHES (15 cm) FROM ANY OTHER DENT
- K** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND X
- L** NO DAMAGE ALLOWED IN AN AREA 1.50 INCHES (25 mm) AROUND HINGE OR LATCH FITTINGS. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE
- M** CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER DAMAGE TO BE REPAIRED
- N** 2.0 INCHES (50 mm) MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT AND MIN OF 6.0 INCHES (15 mm) FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
- O** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND XII
- P** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DE-TERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK

**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 4 of 6)**

STRUCTURAL REPAIR MANUAL

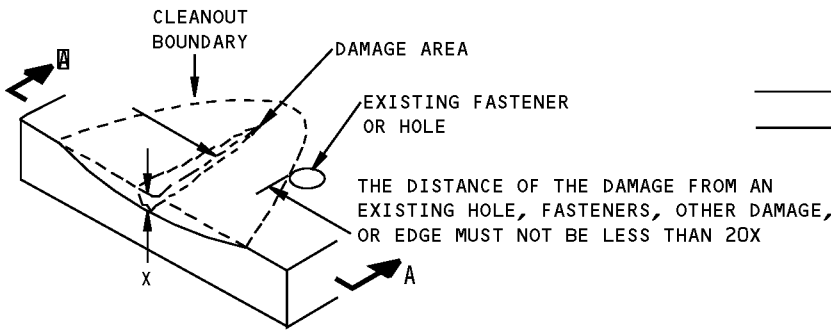


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

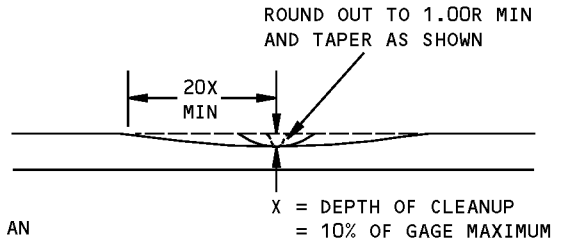


FASTENER EDGE MARGINS OVERLAP

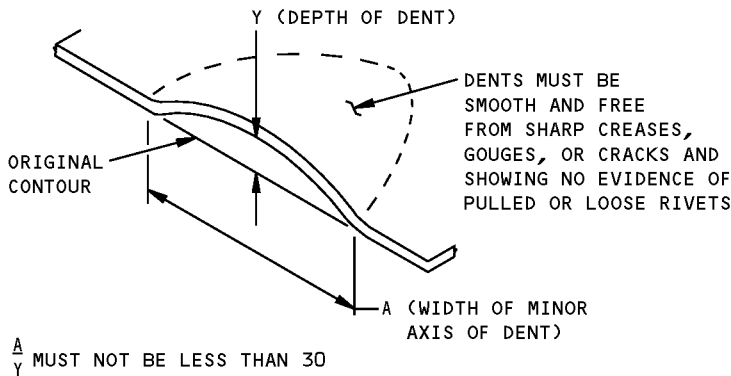
DETAIL V



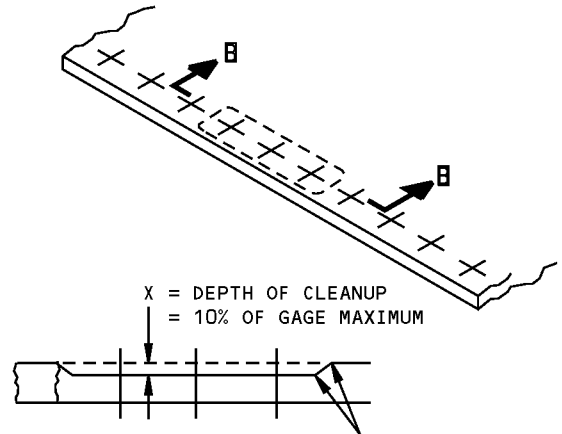
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL VI**



SECTION A-A



**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**

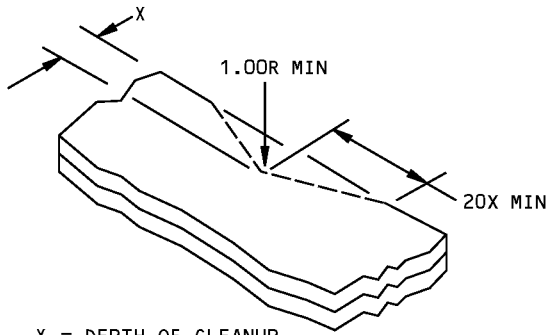


SMOOTH BLEND-OUT RADIUS 0.50 INCH MINIMUM. CORROSION CLEANUP AROUND ANY THREE FASTENERS IN TEN IS PERMITTED TO MAX DEPTH

**SECTION B-B
CORROSION CLEANUP
DETAIL VIII**

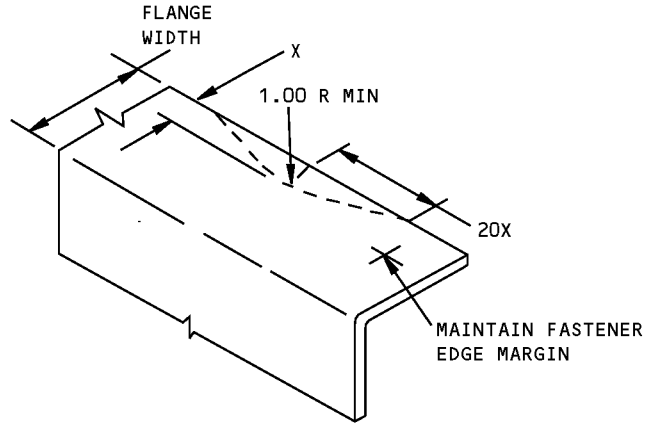
**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



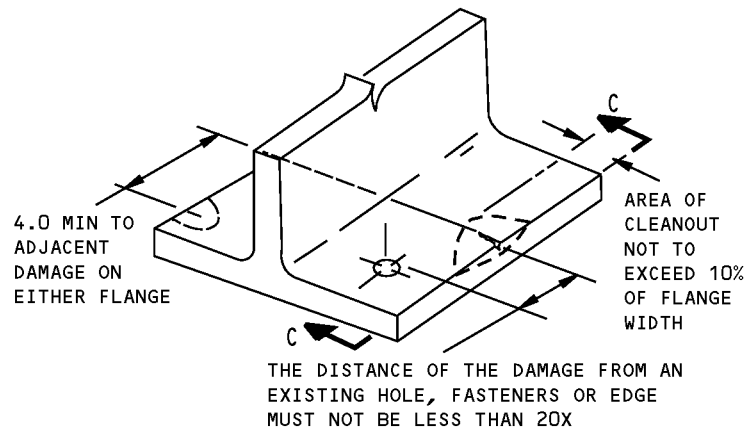
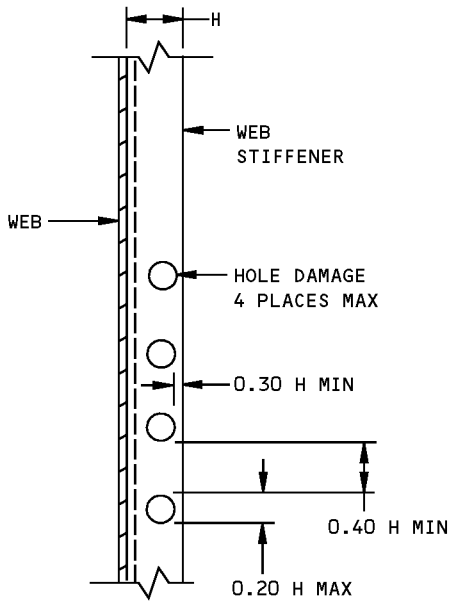
X = DEPTH OF CLEANUP
= 10% OF GAGE MAXIMUM

DETAIL IX



X = DEPTH OF CLEANUP
EXCEED 10% OF FLANGE WIDTH

**REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL X**

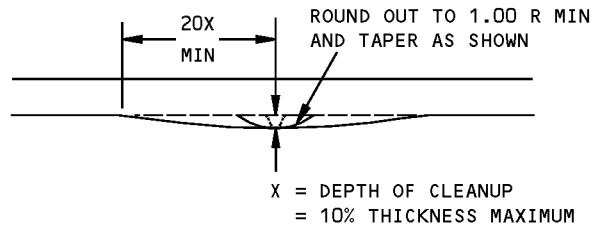


THE DISTANCE OF THE DAMAGE FROM AN
EXISTING HOLE, FASTENERS OR EDGE
MUST NOT BE LESS THAN 20X

NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER
FLANGES FASTENED TO WEB. HOLE DAMAGE
NOT TO EXCEED 4 PLACES. FILL ALL
HOLES IN ALUMINUM WITH 2117-T3 OR T4
RIVETS INSTALLED WET WITH BMS 5-95.
FILL HOLES IN INCONEL WITH MONEL
RIVET INSTALLED DRY

H = WIDTH OF STIFFENER FLANGE

**ALLOWABLE DAMAGE LIMITS FOR HOLES
IN WEB AND FAIRING STIFFENERS
DETAIL XI**



**SECTION C-C
REMOVAL OF NICK OR CRACK
DAMAGE ON AN EDGE
DETAIL XII**

**Allowable Damage - Strut Fairing Skin - PW4000 Engine
Figure 101 (Sheet 6 of 6)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART

SERVICE BULLETIN REPAIRS

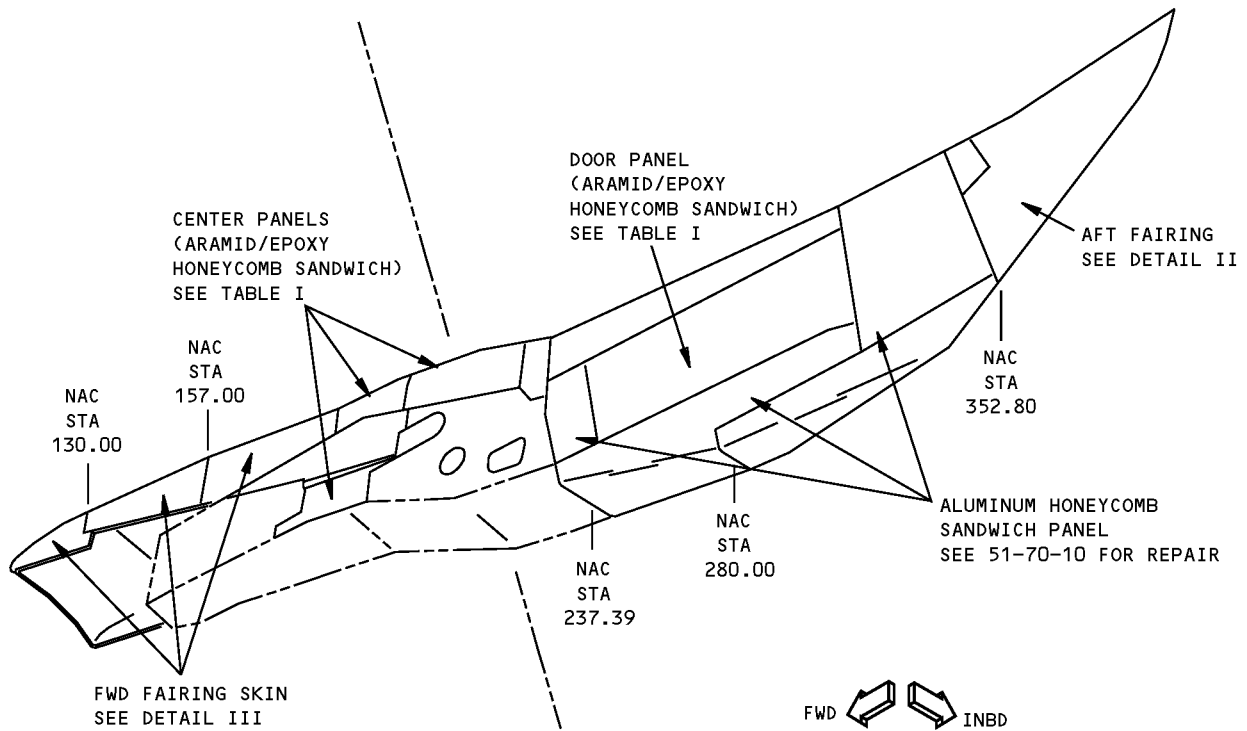
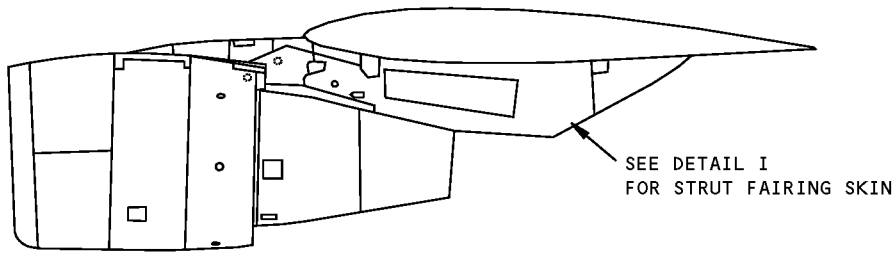
The following service bulletins contain repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY	SB NUMBER
AFT TE PANEL	165,204	767-54-0017

**Service Bulletin Repair Chart
Figure 201**

**767-300
STRUCTURAL REPAIR MANUAL**

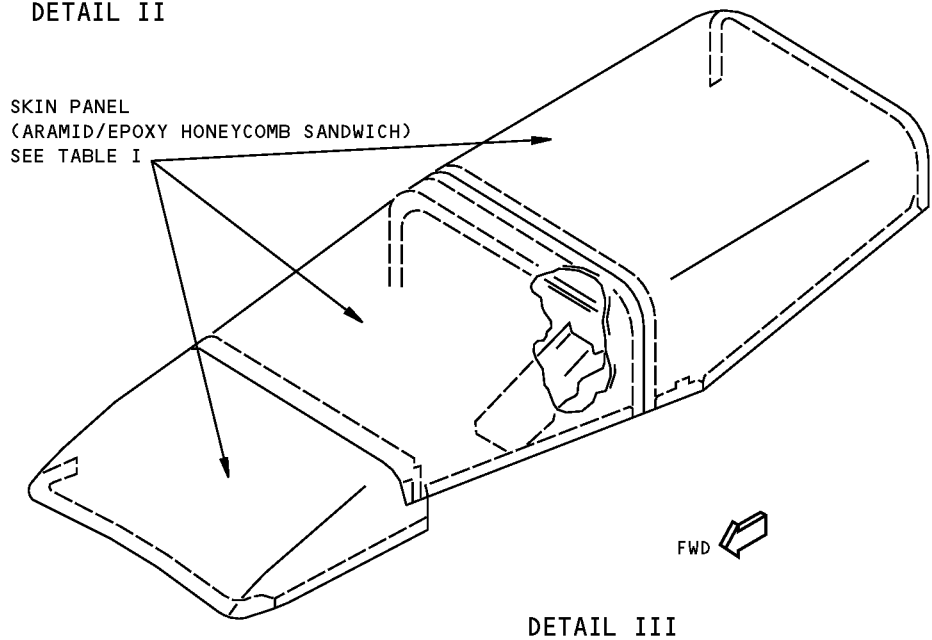
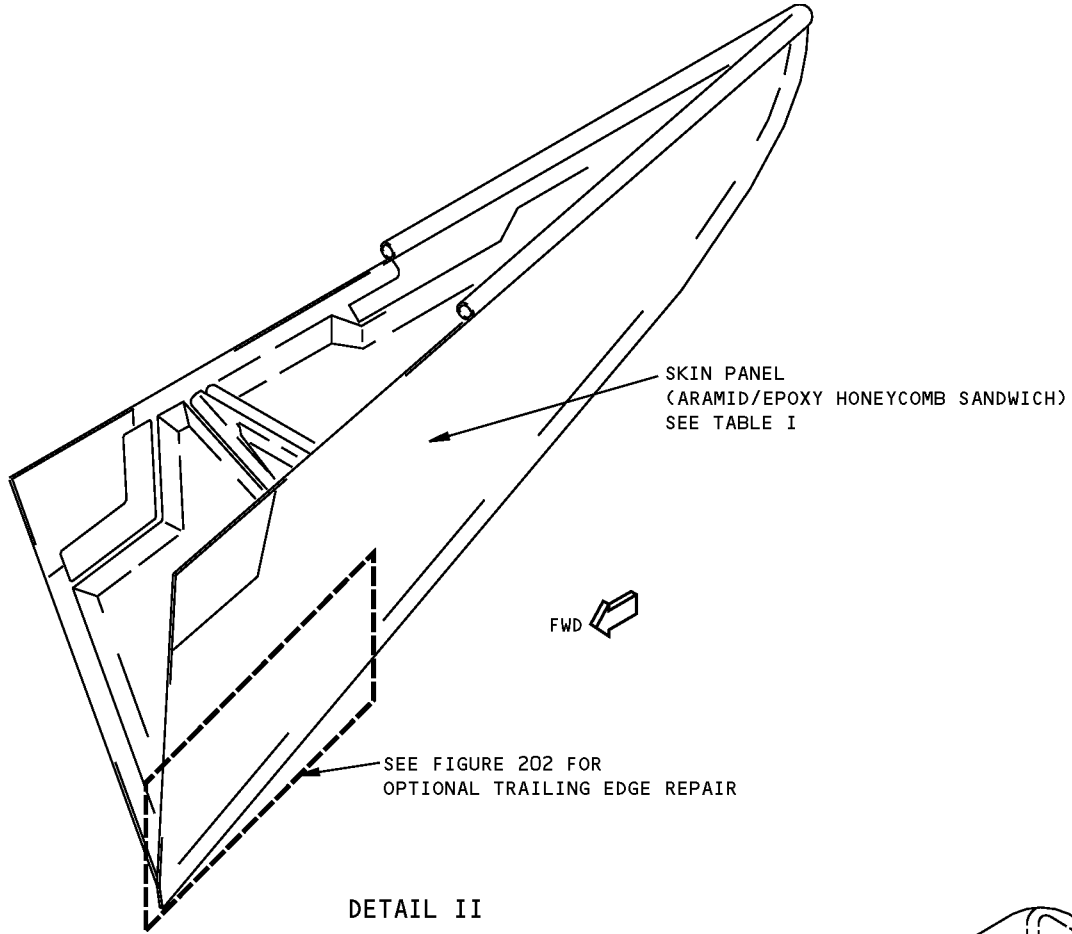
REPAIR 1 - STRUT FAIRING SKIN - PW4000 ENGINE



DETAIL I

**Strut Fairing Skin Repairs - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



**Strut Fairing Skin Repairs - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

DAMAGE	INTERIM REPAIRS [B]	PERMANENT REPAIRS		
	WET LAYUP ROOM TEMP/ 150°F (66°C) CURE (SRM 51-70-03)	WET LAYUP 200-230°F (93-110°C) CURE (SRM 51-70-17)	250°F (121°C) CURE (SRM 51-70-05)	350°F (177°C) CURE (SRM 51-70-04)
CRACKS	UP TO 3.0 INCHES (76 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-03. [A]	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (76 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. [A]	12.0 INCHES (30 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	6.0 INCHES (15 cm) MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. [C]	NO SIZE LIMIT
DELAMI- NATION	CUT OUT AND REPAIR AS A HOLE.			
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-03. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			
DENTS	UP TO 3.0 INCHES (76 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-03. OVER 3.0 INCHES (76 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.			

**REPAIR DATA FOR 350°F (177°C) CURE ARAMID HONEYCOMB PANELS
TABLE I**

NOTES

- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.

[A] LIMITED TO REPAIR OF DAMAGE TO ONE FACESHEET SKIN AND HONEYCOMB CORE. ONE REPAIR PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (15 cm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

[B] INSPECT INTERIM REPAIR USING INSTRUMENTED NDT METHODS OR "TAP" TEST EVERY AIRPLANE "C" CHECK. FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. REFER TO SRM 51-70-03, PAR. 4.I. AND THE NON-DESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

[C] ONE REPAIR PER SQUARE FOOT OF AREA AND A MINIMUM OF 6.0 INCHES (15 cm) (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

**Strut Fairing Skin Repairs - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - AFT PYLON FAIRING - TRAILING EDGE - PW4000 ENGINE

REPAIR INSTRUCTIONS









1. Remove aft fairing (313T3360), trailing edge assembly from pylon.
2. Cut and remove the damaged skin panel as given in Detail I. Refer to SRM 51-10-00.
3. Seal the panel core edges Type 15, Class 1 potting compound, one half cell depth minimum. Refer to SRM 51-10-01.
4. Make the repair parts. See Details I thru VI, and Table I. Refer to SRM 51-10-01 and SRM 51-03-01.
5. Assemble the repair parts and drill the fastener holes.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the cut edges of the panel.
8. Apply a chemical conversion coating to the bare aluminum surfaces of the repair parts and panel.
9. Apply primer as follows:
 - (a) Apply two coats of BMS 10-11, Type 1 to all of the nickel alloy to aluminum faying surfaces of part 1.
 - (b) Apply one coat of BMS 10-11, Type 1 to parts 2, 3, 7 and 8.
 - (c) Apply two coats of BMS 10-11, Type 1 to parts 4, 5 and 6.
10. Install the fasteners. Fastener that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Restore initial finish per AMM 51-20.
12. Install 313T3360 aft fairing, trailing edge assembly.

NOTES

- DAMAGE LOCATION IS IN A CRITICAL SONIC ENVIRONMENT. IF THE REPAIR SHOWS SIGNS OF CRACKING OR DETERIORATION, CONTACT THE THE BOEING COMPANY.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METAL
 - SRM 51-30-01 FOR BENDING AND MACHINING OF SHEET METAL MATERIALS
 - SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

- A** AS AN ALTERNATIVE, USE TWO SHEETS OF 0.125 2024-T3.
- B** AS AN ALTERNATIVE, USE ONE SHEET OF 0.100 AND ONE SHEET OF 0.063 2024-T3.
- C** DRILL A 0.127-0.131 INCH (3.2-3.3 mm) DIAMETER HOLE THRU OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE AND ROTATE 360 DEGREES TO BREAK THE HONEYCOMB CELL WALLS 0.75-1.00 INCH (19-25 mm) DIAMETER AROUND THE DRILLED HOLE. VACUUM DEBRIS FROM THE HOLE AFTER BREAKING THE HONEYCOMB CELL WALLS. POT THE 0.75-1.00 INCH (19-25 mm) DIAMETER CAVITY WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. CURE THE POTTING COMPOUND AS SPECIFIED IN TABLE II.
- D** MIX RESIN AND THE HARDENER ACCORDING TO PROPORTIONS IN MANUFACTURER'S INSTRUCTIONS.
- E** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K() HEX-DRIVE BOLT WITH A BACC30M() COLLAR.
- F** AS AN ALTERNATIVE, YOU CAN USE A BACB30MY()K()X HEX-DRIVE BOLT WITH A BACC30M() COLLAR.

FASTENER SYMBOLS

-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW6K4X BOLT WITH A BACC30M6 COLLAR. **F**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K4 BOLT. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K14 BOLT WITH A BACC30M6 COLLAR **C** **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15ADR RIVETS. INSTALL A BACB30VF3K5 BOLT.
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K5 BOLT WITH BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K4 BOLT WITH A BACC30M6 COLLAR. **E**
-  REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K2 BOLT WITH A BACC30M6 COLLAR.
-  REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH TWO BACR15AD4 RIVETS. INSTALL A BACB30MR3K2 BOLT.

**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 1 of 6)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	SKIN	1	0.050 24.0 X 24.0 INCONEL 625 SHEET
2	ZEE	1	AND10138-0605 2024-T3511
3	ZEE	1	AND10138-0605 2024-T3511
4	FILLER	2	0.160 2024-T3 B
5	FILLER	2	0.250 2024-T3 A
6	FILLER	2	0.100 2024-T3
7	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3
8	BRACKET	1	0.063 2024-T3 OR CLAD 2024-T3

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)
BMS 5-28 TYPE 25	EPOCAST 1625A RESIN EPOCAST 1625B HARDENER	D	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 2 of 6)**

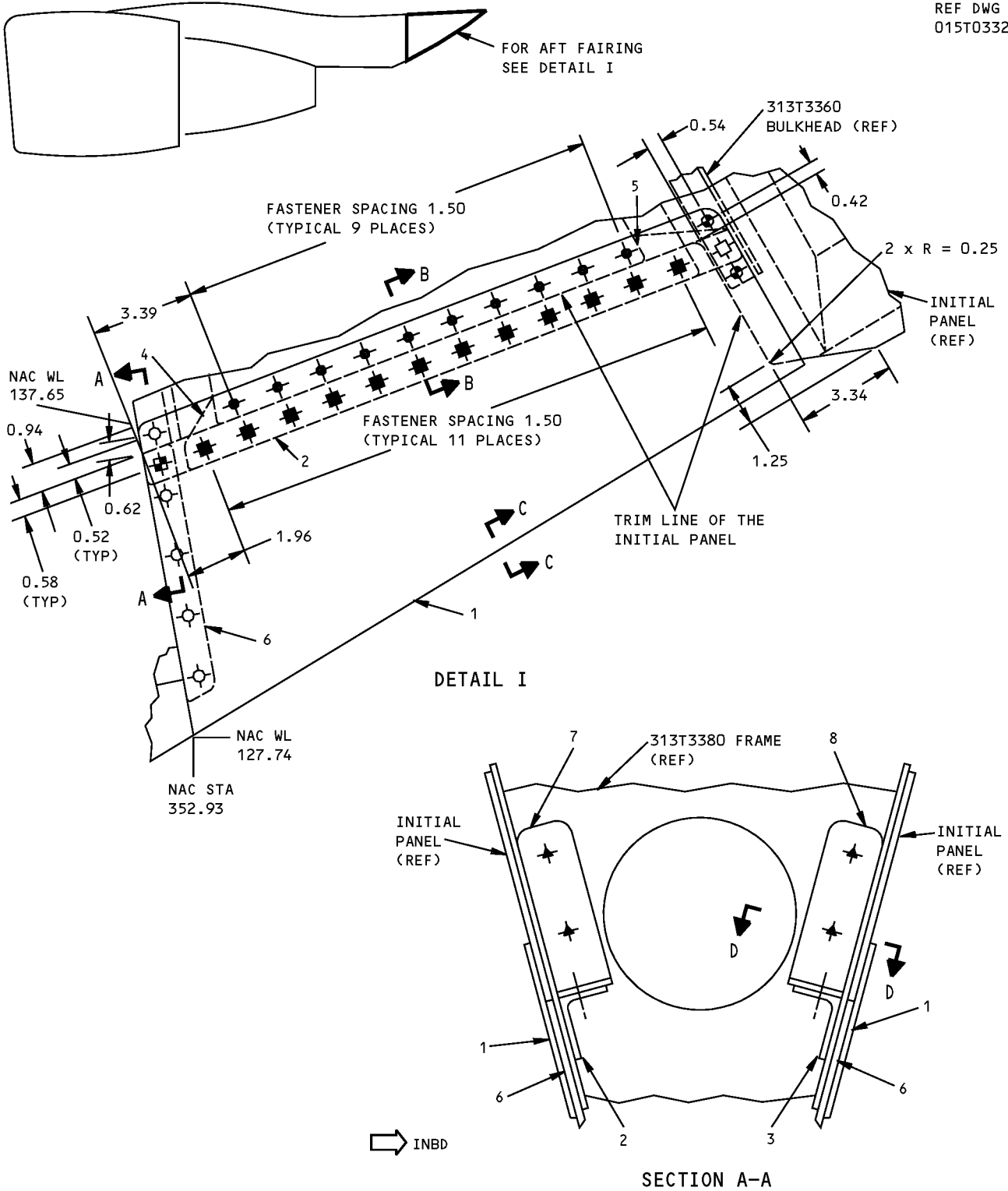
D634T210

54-53-70

REPAIR 2
Page 202
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
015T0332



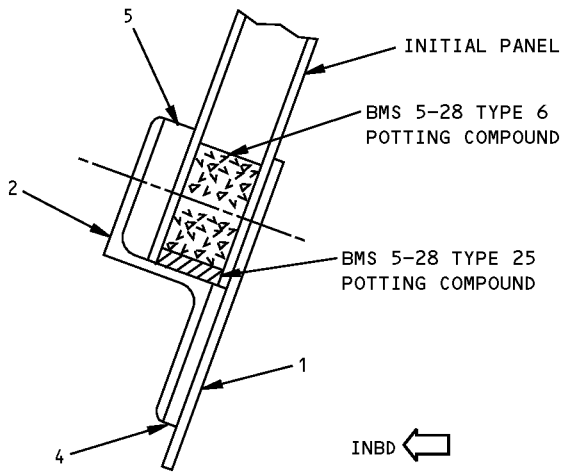
**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

REPAIR 2
Page 203
Apr 01/2005

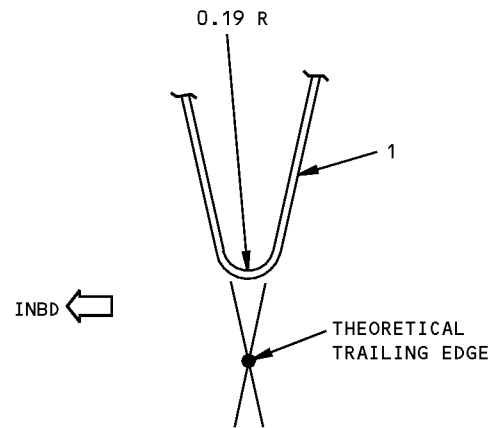
54-53-70

D634T210

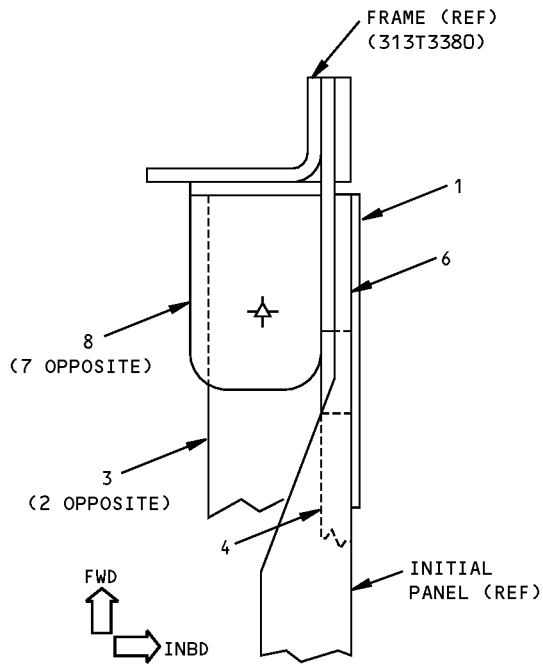
**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B



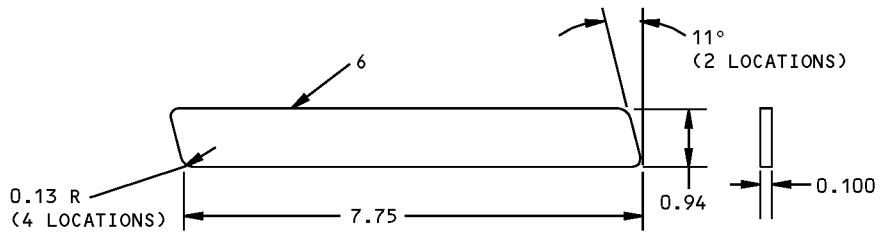
SECTION C-C



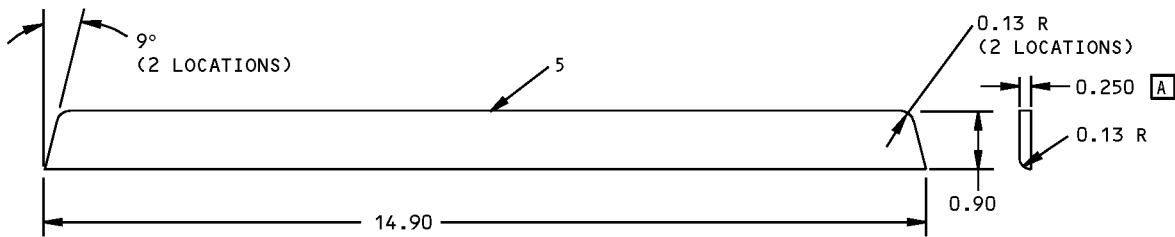
SECTION D-D

**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 4 of 6)**

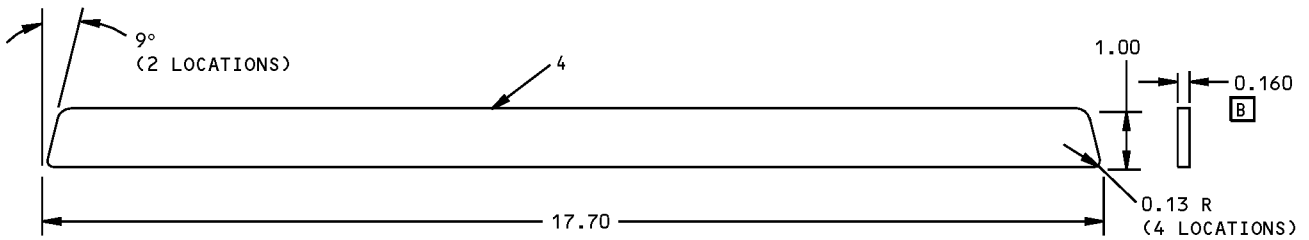
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II



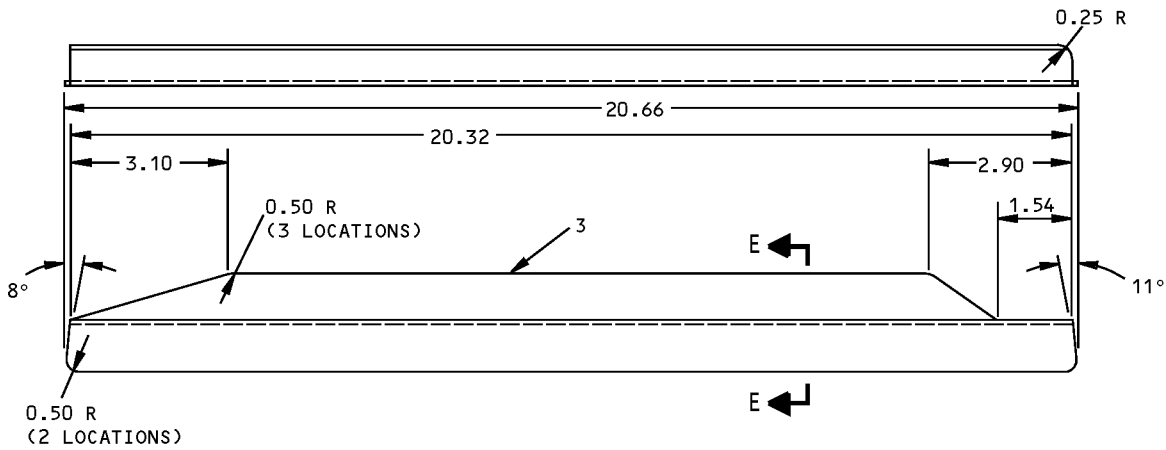
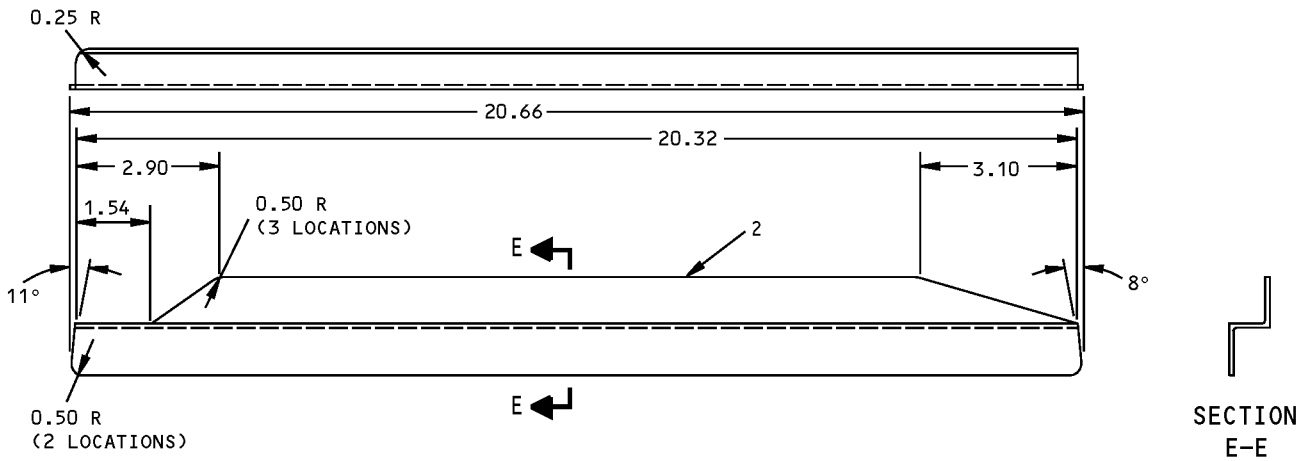
DETAIL III



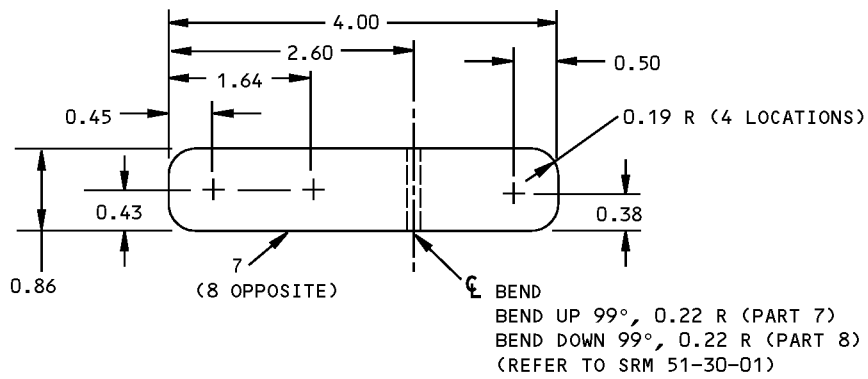
DETAIL IV

**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL V



DETAIL VI

**Aft Pylon Fairing - Trailing Edge Repair - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - STRUT AFT FAIRING TRAILING EDGE BULKHEAD CRACK - PW4000 ENGINE

APPLICABILITY
THIS REPAIR IS APPLICABLE TO REPAIR OF CRACKS AT THE BULKHEAD SIDE FLANGES.

REPAIR INSTRUCTIONS

1. Get access to the damaged aft fairing trailing edge bulkhead. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Do a high frequency eddy current (HFEC) inspection of the bulkhead flanges to locate the full length of the crack. Refer to NDT Part 6, 51-00-01. As an alternative, do a penetrant inspection. Refer to SOPM 20-20-02.
3. Cut and remove the cracked bulkhead side flanges along the bend line. Keep the minimum corner radii of 0.25 inch (6 mm) and break all sharp edges.
4. Make the repair parts. See Table I and Details II, III, and IV.

NOTE: As an alternative, the initial web of the bulkhead can be used in lieu of the part 3 bulkhead web if there is a 2D minimum edge margin on the web after the cracks are removed and the initial hole locations are not damaged.

5. Assemble the repair parts and drill the fastener holes. **A**
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the web.
8. Apply a chemical conversion coating to the bare surfaces of the skin cutout. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the web. Refer to SOPM 20-41-02.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 5-95 sealant.
11. Install the aft fairing trailing edge and panel assemblies.

NOTES

- D = FASTENER DIAMETER
- WHEN YOU USE THIS REPAIR, REFER TO:
 - NDT PART 6, 51-00-01 FOR EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR APPLICATION OF FINISHES
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
 - SRM 51-40-02 FOR INSTALLATION AND REMOVAL OF FASTENERS
 - SRM 51-40-05 FOR FASTENER HOLE SIZES.

- A** THE INITIAL WEB AND STIFFENERS MAY BE USED AS A TEMPLATE TO FIND INITIAL FASTENER LOCATIONS
- B** FOUR EVENLY SPACED FASTENER LOCATIONS ON EACH FLANGE. SEE DETAIL I, VIEW A-A. KEEP A 2D MINIMUM EDGE MARGIN AND 4D - 6D FASTENER SPACING ON EACH ROW.

FASTENER SYMBOLS

- ⊥ REFERENCE FASTENER LOCATION.
- ◆ INITIAL FASTENER LOCATION. INSTALL A BACR15FT6KE()C RIVET OR INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR.
- ▲ INITIAL FASTENER LOCATION. INSTALL A BACB30NY6K()X HEX DRIVE BOLT WITH A BACC30X6 COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5KE()C RIVET OR INSTALL A BACB30MY5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **B**

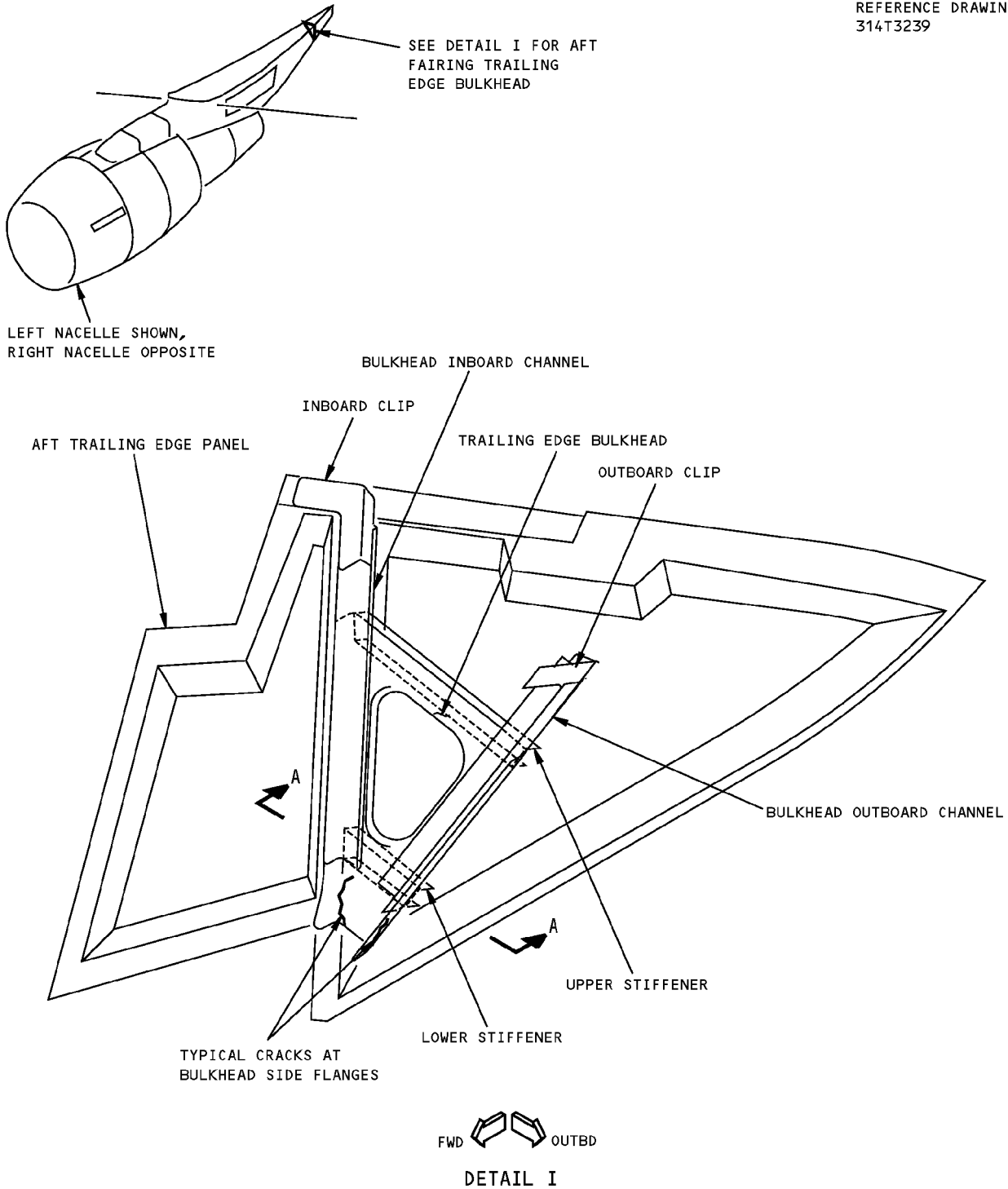
REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	OUTBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
2	INBOARD ANGLE	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
3	BULKHEAD WEB	1	0.063 CLAD 2024-0 HEAT TREAT TO T42 AFTER FORMING
4	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6
5	FILLER	1	0.063 CLAD 2024-T3 OR 7075-T6

TABLE I

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

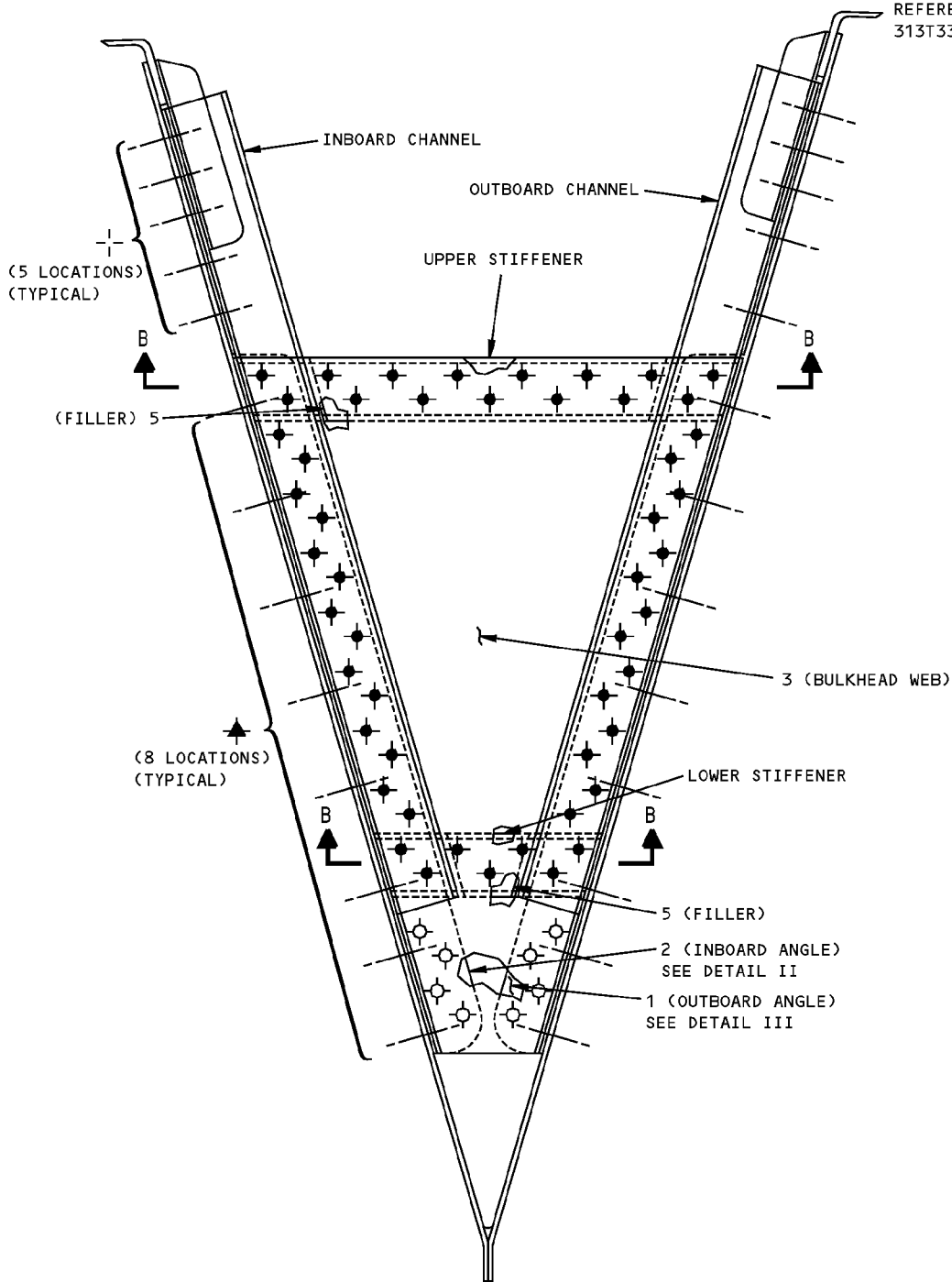
REFERENCE DRAWING
314T3239



**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 2 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

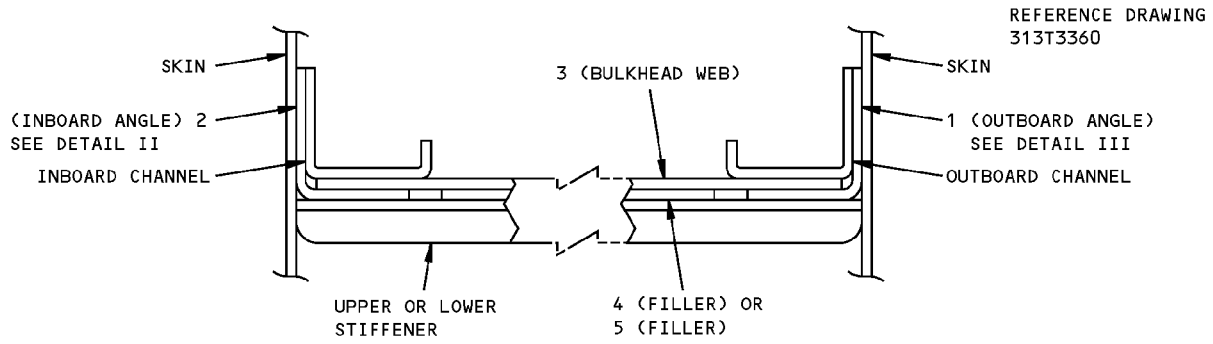
REFERENCE DRAWING
313T3360



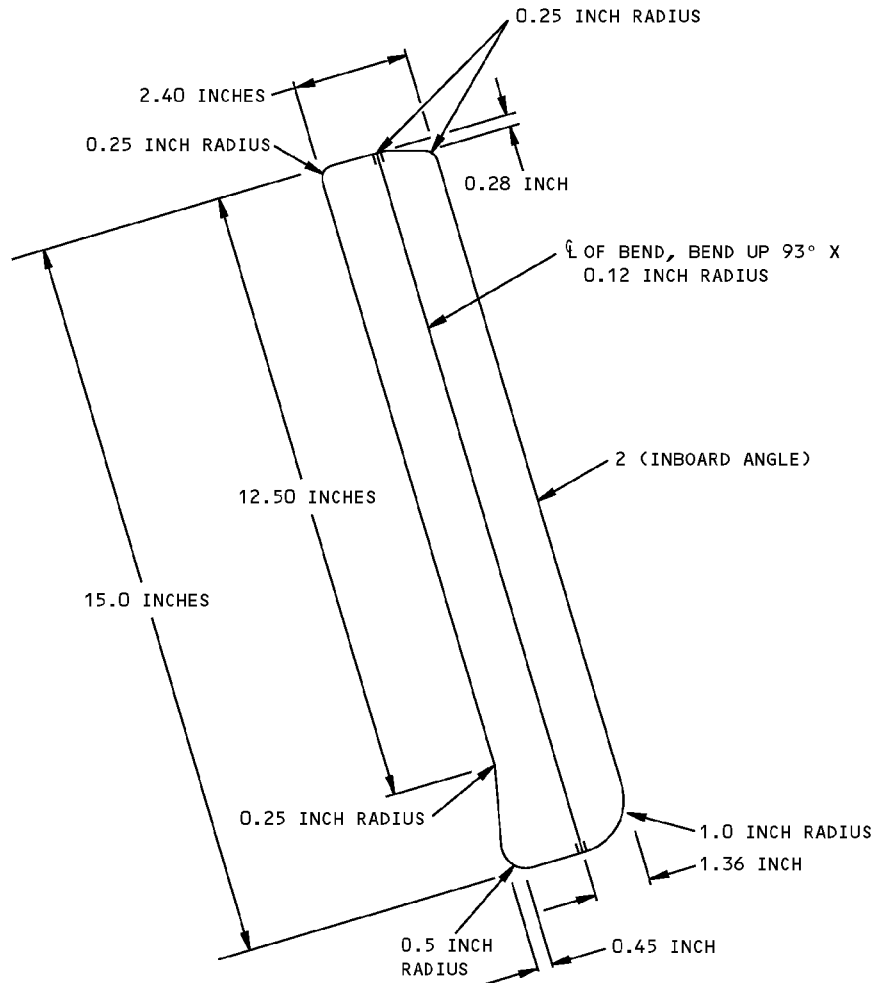
VIEW LOOKING AFT
VIEW A-A

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



**SECTION B-B
(TYPICAL)**

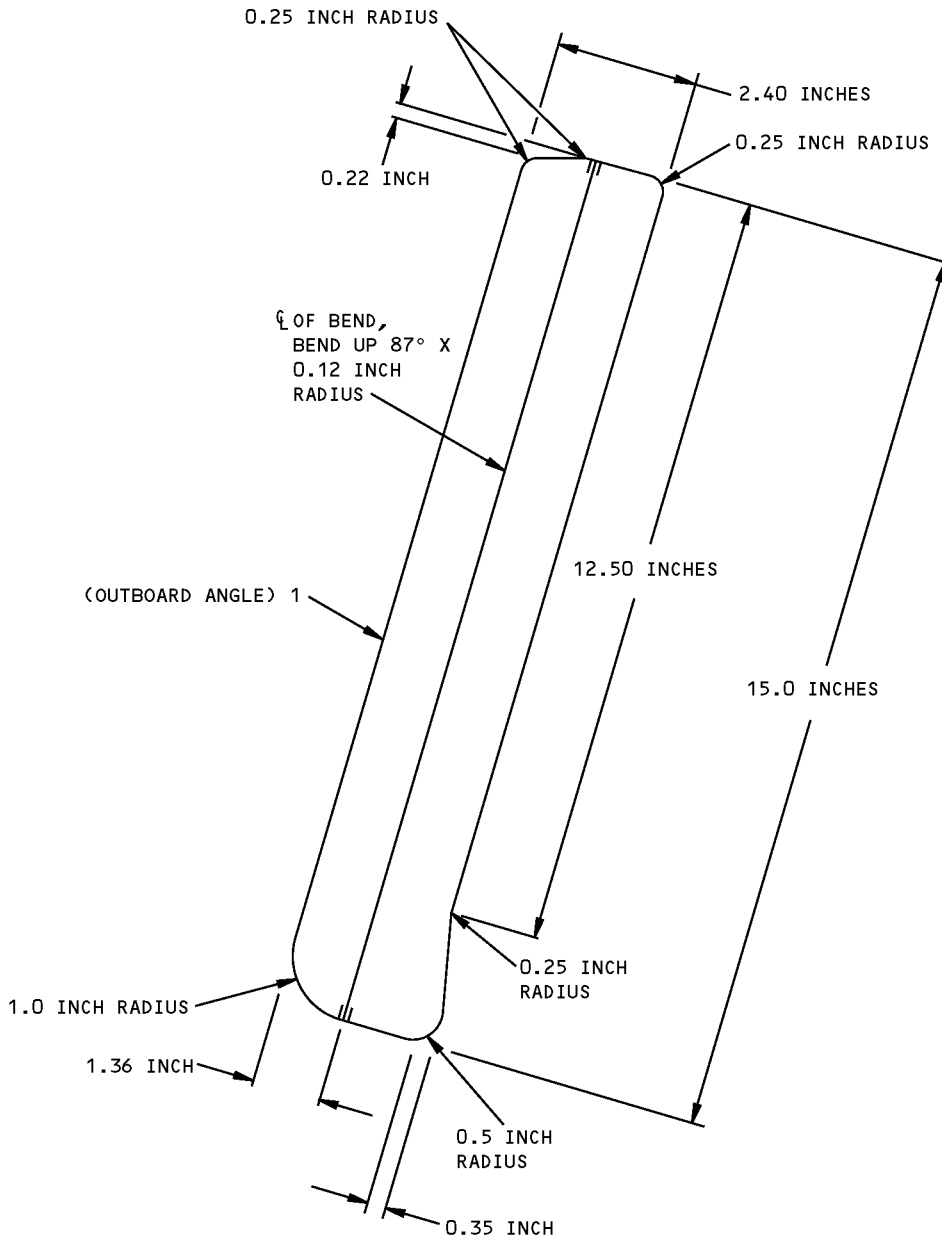


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE
DETAIL II

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



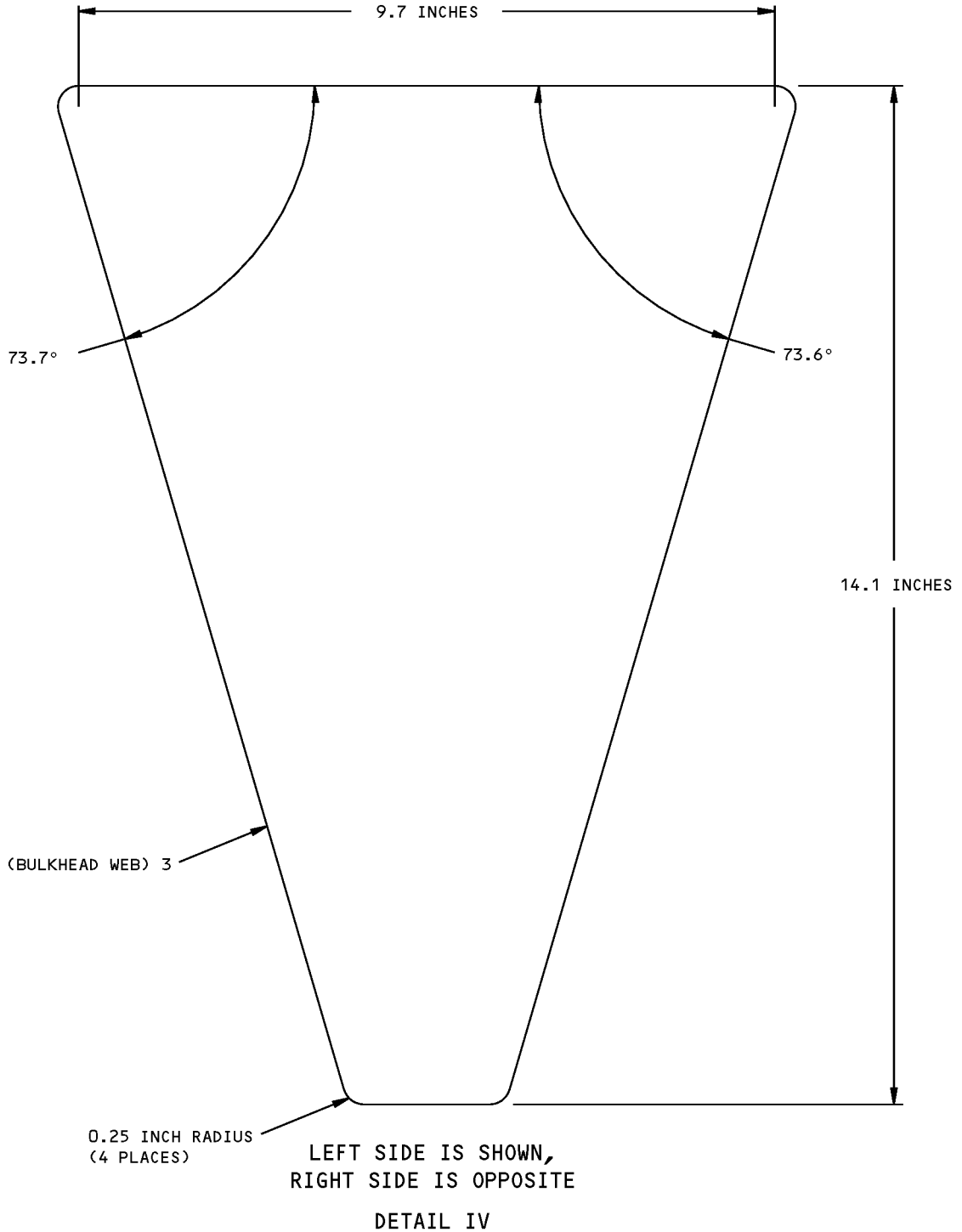
LEFT SIDE IS SHOWN,
RIGHT SIDE IS OPPOSITE

DETAIL III

**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3360



**Strut Aft Fairing Trailing Edge Bulkhead Crack Repair - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - STRUT FAIRING SKIN PANEL CRACK - PW4000 ENGINE

APPLICABILITY

THIS REPAIR IS APPLICABLE TO THE AFT FAIRING STRUT PANEL ASSEMBLY WITH SOLID ALUMINUM SKIN AND DOUBLER BONDED CONSTRUCTION.

REPAIR INSTRUCTIONS





1. Get access to the damaged area.
2. Do a high-frequency eddy current inspection (HFEC) of the panel to find the ends of the crack. Refer to NDT Part 6, 51-00-01.

As an alternative, do a penetrant inspection of the panel to find the ends of the crack. Refer to SOPM 20-20-02.
3. Stop drill the end of the crack. Refer to SRM 51-10-02. Leave the hole open.
4. Make the repair parts. See Table I.
5. Assemble the repair parts and drill the fastener holes. See Detail I. Refer to SRM 51-40-08 to make the countersink repair washer.
6. Disassemble the repair parts.
7. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the skin.
8. Apply a chemical conversion coating to the repair part and to the bare surfaces of the skin. Refer to SRM 51-20-01.
9. Apply two layers of BMS 10-79, Type III primer to the repair part and to the bare surfaces of the skin. Refer to SOPM 20-44-04 .
10. Apply BMS 5-63, Type I sealant to the mating surfaces. Refer to SRM 51-20-05.
11. Install the repair part.
12. Install the fasteners wet with BMS 5-63, Type I sealant.
13. Restore the finish to the repair area as applicable. Refer to AMM 51-21-00.

NOTES

- REFER TO SRM 51-10-01 FOR THE AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMIT SHOWN ON SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO LOSS OF PERFORMANCE INVOLVED.
 - D = FASTENER DIAMETER
 - REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
 - NDT PART 6, 51-00-01 FOR THE EDDY CURRENT INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR THE PENETRANT INSPECTION PROCEDURES
 - SRM 51-10-01 FOR THE AERODYNAMIC SMOOTHNESS REQUIREMENTS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS.
 - SRM 51-20-05 FOR THE REPAIR SEALING
 - SRM 51-40-00 FOR THE FASTENER CODES, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MATERIALS
 - AMM 51-21-00 FOR THE INTERIOR AND EXTERIOR FINISHES
- A** ADJUST THE LOCATION OF THE REPAIR FASTENERS TO HAVE THE FOLLOWING SPACING:
- 2D FROM EDGES
 - 4D TO 6D FROM OTHER FASTENERS
 - 4D TO 6D FROM CRACK STOP HOLE

FASTENER SYMBOLS

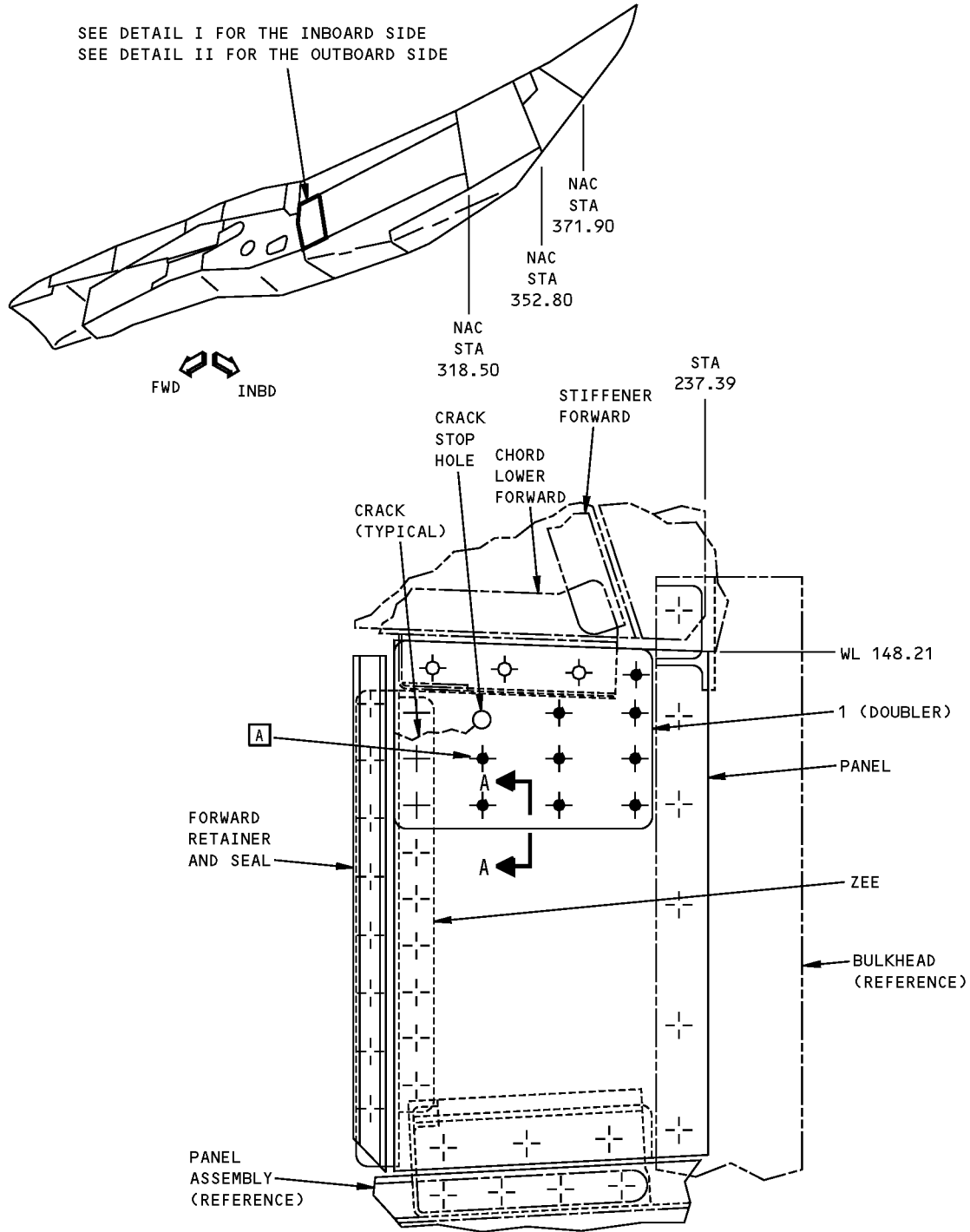
-  REFERENCE FASTENER LOCATION
-  INITIAL FASTENER LOCATION. INSTALL A BACB30NW5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR
-  REPAIR FASTENER LOCATION. INSTALL A BACB30NW5K() HEX DRIVE BOLT WITH A BACC30M5 COLLAR. **A**
-  INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT WITH A NAS620C10L WASHER UNDER A BACN10YR3CD COLLAR.

REPAIR MATERIAL			
	PART	QTY	MATERIAL
1	DOUBLER	1	0.063 INCH 2024-T3

TABLE I

**Strut Fairing Skin Panel Crack Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

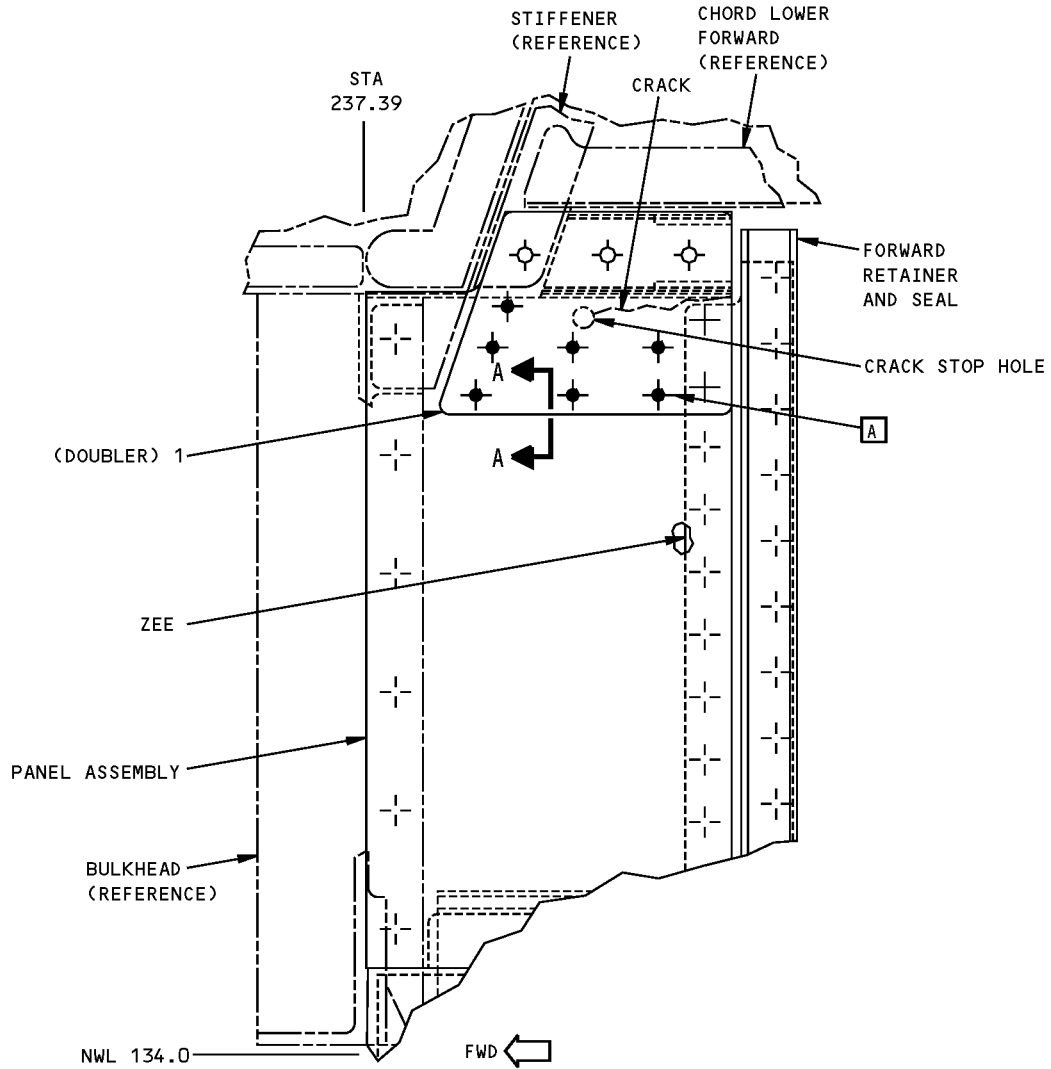


INBOARD LEFT SIDE IS SHOWN,
INBOARD RIGHT SIDE IS OPPOSITE

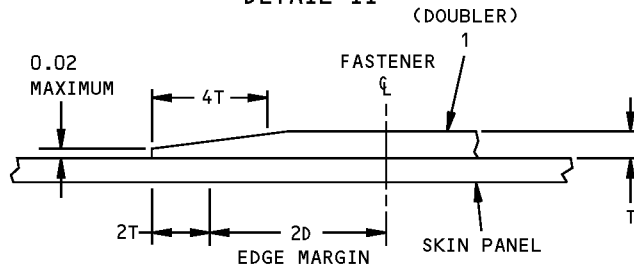
DETAIL I

**Strut Fairing Skin Panel Crack Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**



OUTBOARD LEFT SIDE IS SHOWN
OUTBOARD RIGHT SIDE IS OPPOSITE
DETAIL II



EDGE CHAMFER (TYPICAL ALL EDGES)
SECTION A-A

**Strut Fairing Skin Panel Crack Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 5 - AFT PYLON FAIRING DELAMINATION - PW4000 ENGINE

REPAIR INSTRUCTIONS

1. Get access to the damaged area. Remove the aft fairing trailing edge assembly (313T3360) and the aft fairing panel assembly (313T3380) from the engine pylon.
2. Repair the trailing edge and panel assemblies. Refer to SRM 51-70-10 for repairs to the aluminum-honeycomb structure. Refer to Repair 1 for repairs to the pylon aft fairing trailing edge.
3. Make the repair parts. See Table I.
4. Assemble the repair parts and drill the fastener holes.
5. Disassemble the repair parts.
6. Remove the nicks, scratches, gouges, burrs, and sharp edges from the doublers and the panel assemblies.
7. Apply a chemical conversion coating to the panel assemblies. Refer to SRM 51-20-01.
8. Apply two layers of BMS 10-79, Type III primer to the doublers. Refer to SOPM 20-44-04.
9. Bond the part 4 shims to the doubler with Dow Corning 93-006. Refer to SRM 51-20-05.
Bond the separation sheets to the doublers with Dow Corning 93-006. Refer to SRM 51-20-05.
10. Install the fasteners. Fasteners that are not made of aluminum must be installed wet with BMS 10-79, Type III primer.
11. Reinstall the trailing edge and panel assemblies.
12. Apply a fillet seal with Dow Corning 93-006 sealant in accordance with SRM 51-20-05.

NOTES

- THE DAMAGE IS IN A CRITICAL SONIC ENVIRONMENT. EXAMINE THE REPAIR AT 3000 FLIGHT HOUR INTERVALS. IF A CRACK OR DETERIORATION OF THE REPAIR OCCURS, CONTACT BOEING.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.

• WHEN YOU USE THIS REPAIR REFER TO:

- SOPM 20-30-30 FOR GENERAL CLEANING PROCEDURES
- SOPM 20-44-04 FOR THE APPLICATION OF FINISHES
- SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS
- SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND GRAPHITE MATERIALS
- SRM 51-20-05 FOR REPAIR SEALING
- SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS
- SRM 51-70-10 FOR ALUMINUM HONEYCOMB STRUCTURE REPAIRS.

- A** FOR CUM LINE NUMBERS 165 AND 204, MODIFIED AS GIVEN IN SB 767-54-0017 OR REPAIRED AS GIVEN IN SRM 54-53-70, FIG. 202.
- B** FOR CUM LINE NUMBERS 165 AND 204.
- C** FOR CUM LINE NUMBERS 251 THRU 537.
- D** THE REPAIR CAN BE EXTENDED AS NECESSARY TO COVER THE DAMAGED AREAS.
- E** DRILL A 0.10 INCH (2.5 mm) DIAMETER HOLE THROUGH THE OUTER SKIN ONLY. INSERT A SMALL ALLEN WRENCH OR EQUIVALENT THROUGH THE DRILLED HOLE. USE A DRILL TO QUICKLY TURN THE ALLEN WRENCH TO BREAK THE HONEYCOMB CELL WALLS TO A 1.00 INCH (25 mm) DIAMETER HOLE AROUND THE DRILLED HOLE. DRILL A 0.062 INCH (1.5 mm) DIAMETER VENT HOLE THROUGH THE INNER SKIN ONLY. VACUUM TO REMOVE THE DEBRIS FROM THE HOLE.
- F** POT THE 1.00 INCH (25 mm) DIAMETER HOLE WITH BMS 5-28, TYPE 6 POTTING COMPOUND. POTTING COMPOUND OVERFILL INTO ADJACENT CELLS IS PERMITTED. SEE TABLE III FOR THE CURING INFORMATION.
- G** OBEY THE MANUFACTURERS INSTRUCTIONS WHEN YOU MIX THE RESIN AND HARDENER.
- H** REMOVE AND DISCARD THE REPAIR PARTS INSTALLED AS GIVEN IN SB 767-54-0017 OR SRM 54-53-70, REPAIR 2.
- I** MAKE ALL THE REPAIR DOUBLERS FROM ONE OF THE MATERIALS LISTED IN TABLE II.
- J** THE SUPPLIER'S ADDRESS IS AS FOLLOWS:
FABRI COTE, INC.
724 E. 60TH STREET
LOS ANGELES, CA 90001
U.S.A.

Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 1 of 11)

STRUCTURAL REPAIR MANUAL

FASTENER SYMBOLS

- ⊥ REFERENCE FASTENER LOCATION.
- INITIAL FASTENER LOCATION. FILL THE INITIAL FASTENER HOLE WITH DOW CORNING 93-006 SEALANT AS GIVEN IN SRM 51-20-05.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30VF3K() BOLT.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACN10KE3B2 NUTPLATE WITH BACR15BA3AD() RIVETS. INSTALL A BACB30VF3K() BOLT.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A NAS1149D0332H WASHER UNDER A BACC30M6 COLLAR. [E]
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M6 COLLAR. [E]

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	DOUBLER	1	0.063 25.0 X 24.0 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3360-135 (LEFT) -136 (RIGHT)
2	DOUBLER	2	0.050 35.0 X 11.00 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3381-291 (LEFT) -292 (RIGHT)
3	DOUBLER	2	0.050 33.00 X 8.25 [I] OR EQUIVALENT TO BOEING PART NUMBER 313T3381-288 (LEFT) -289 (RIGHT)
4	SHIM	2	BACS40R010E074F OR EQUIVALENT TO BOEING PART NUMBER 313T3360-165 OPTIONAL: USE KAPTON SHIM BACS40V010E074
5	SEPARATION SHEET	2	0.010 35.0 X 11.00 FABRI COTE [J] 112/38 INCH S/2S 7212 RED 0.003/0.003 CURED
6	SEPARATION SHEET		0.010 33.0 X 8.25 FABRI COTE [J] 112/38 INCH S/2S 7212 RED 0.003/0.003 CURED

TABLE I

DOUBLER MATERIAL	
MATERIAL SPECIFICATION	METHOD TO CLEAN THE SURFACE
Ti-6-4 SHEET PER MIL-T-9046, CODE AB-1, CONDITION A	BAC5753, METHOD 2, REFER TO SOPM 20-30-30
NICKEL ALLOY 625 SHEET PER AMS 5599, ANNEALED	BAC5748, REFER TO SOPM 20-30-30
15-5PH CRES PER BMS 7-240, TYPE I, SOLUTION TREATED	BAC5625, METHOD 3, REFER TO SOPM 20-30-30
301 CRES SHEET PER MIL-S-5069, ANNEALED	BAC5625, METHOD 3, REFER TO SOPM 20-30-30

TABLE II

Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 2 of 11)



767-300
STRUCTURAL REPAIR MANUAL

WARNING: THESE CHEMICALS CONTAIN TOXIC INGREDIENTS. PROVIDE ADEQUATE VENTILATION AND PROTECT THE SKIN AND EYES FROM CONTACT WITH UNCURED RESINS OR CURING AGENT. WEAR RUBBER GLOVES OVER COTTON GLOVES FOR PROTECTION OF HANDS. IF SKIN IS EXPOSED TO DIRECT CONTACT WITH UNCURED RESINS OR CURING AGENT, WASH WITH WARM WATER OR SOAP. AVOID THE USE OF SOLVENTS FOR CLEANING THE SKIN.

CAUTION: TO PREVENT CONTAMINATION OF THE RESIN, DO NOT USE WAXED CONTAINERS FOR MIXING.

NOTE: ADD HARDENER TO RESIN AND MIX THOROUGHLY.

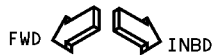
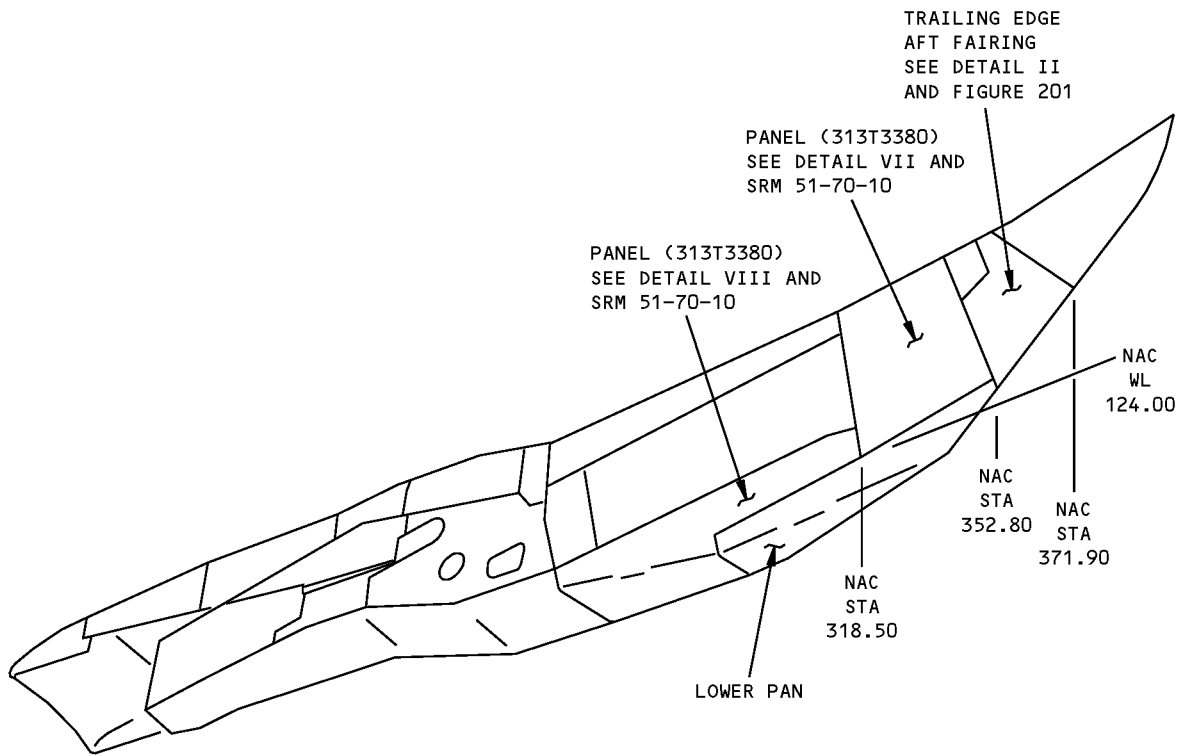
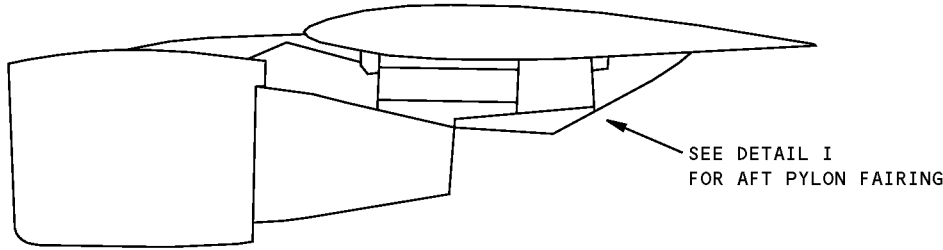
RESIN, PREPREG, OR ADHESIVE TYPE	COMPONENTS	PARTS BY WEIGHT	OPEN TIME BEFORE USE, OR POT LIFE OF MIXTURE	CURING TIME
BMS 5-28 TYPE 6	EPOCAST 1636A RESIN EPOCAST 1636B HARDENER	1	60 MINUTES AT 70°F (21°C)	1.5 HOURS AT 260°F (126°C) OR 1.0 HOUR AT 350°F (176°C)

NOTE: THE MATERIAL CAN BE HEATED AT A MAXIMUM RATE OF 5 TO 7°F (2.8 TO 3.9°C) PER MINUTE, THEN HELD AT THE CURE TEMPERATURE FOR THE INDICATED TIME.

TABLE III

Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 3 of 11)

**767-300
STRUCTURAL REPAIR MANUAL**

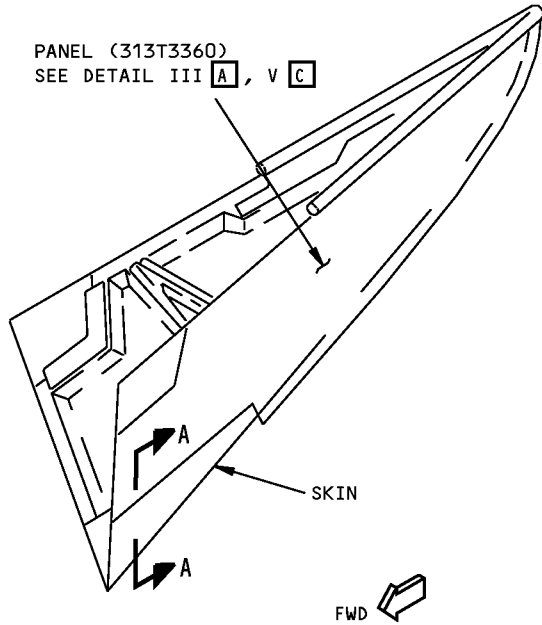


DETAIL I

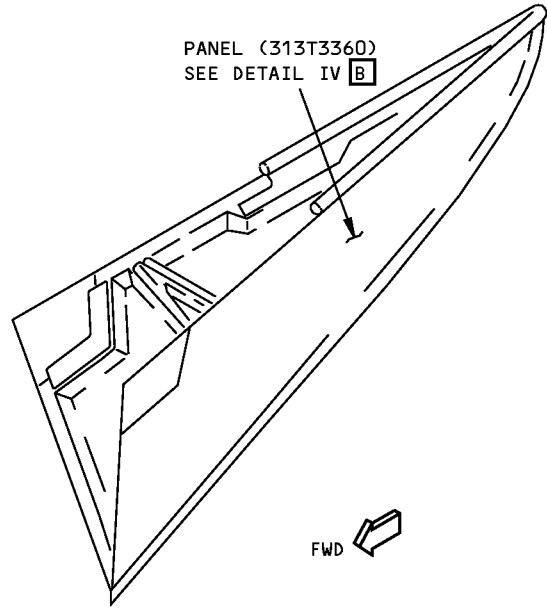
**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 4 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
313T3360
015T0322

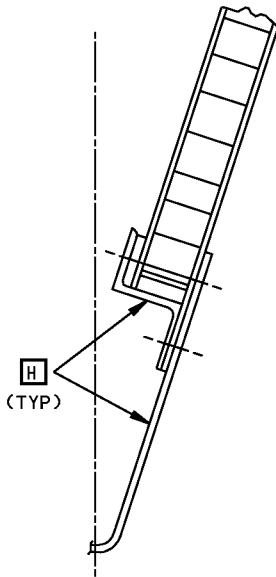


TRAILING EDGE
AFT FAIRING **A** **C**

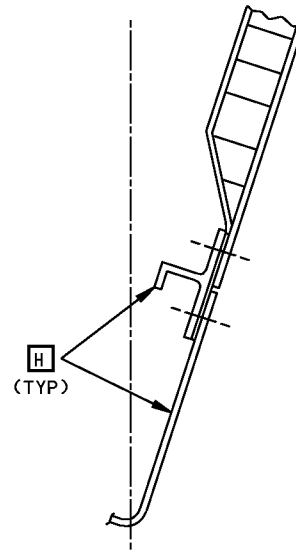


TRAILING EDGE
AFT FAIRING **B**

**TRAILING EDGE - AFT FAIRING
DETAIL II**



SECTION A-A **A**

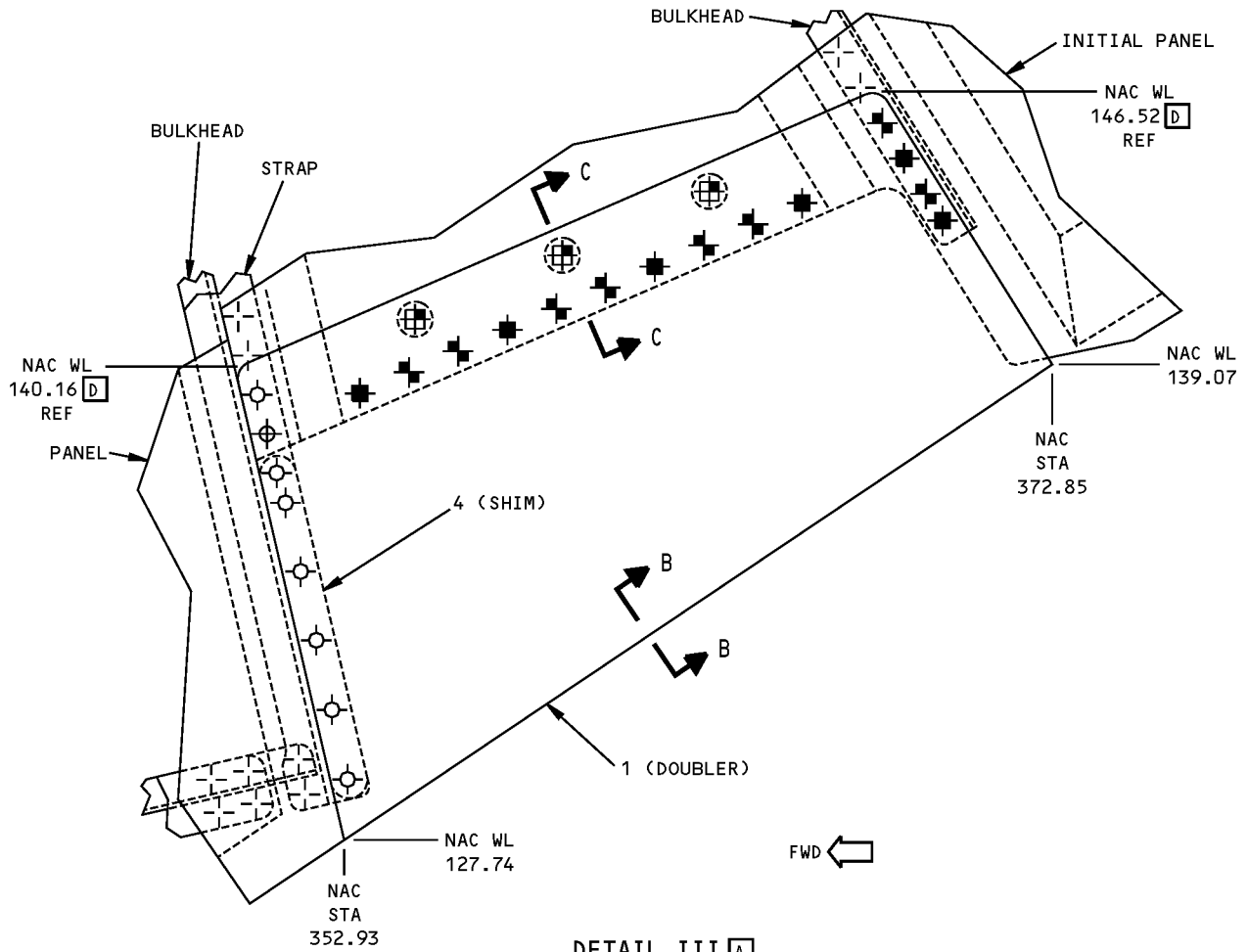


SECTION A-A **C**

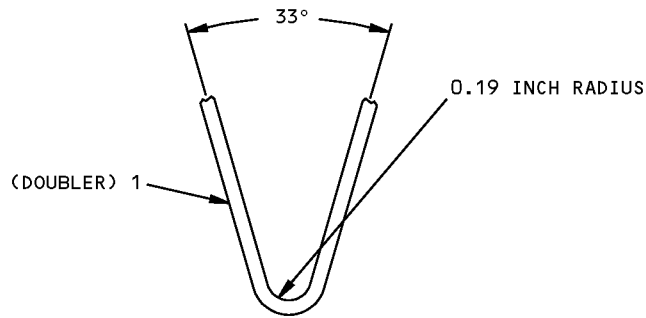
**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 5 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360
015T0322



DETAIL III A

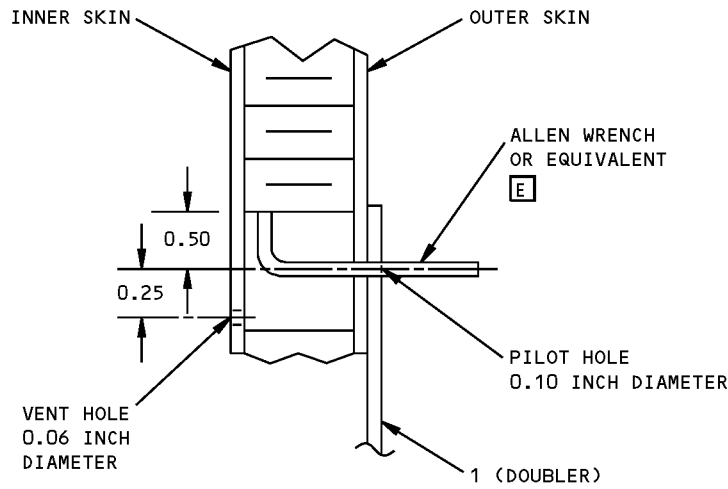


SECTION B-B

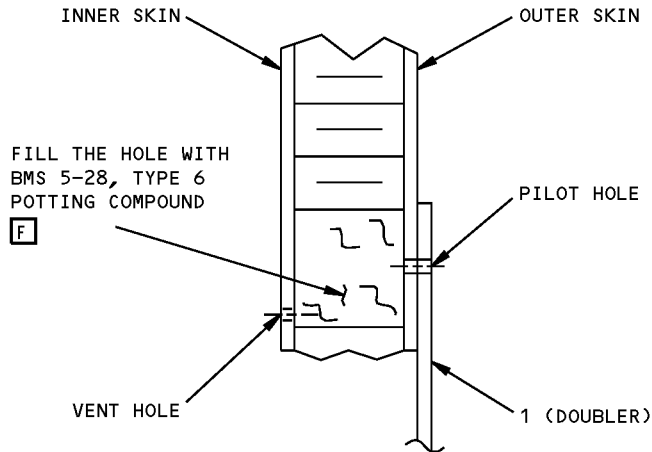
**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 6 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360
015T0322



**REMOVE HONEYCOMB CORE MATERIAL
AT NEW FASTENER LOCATIONS**

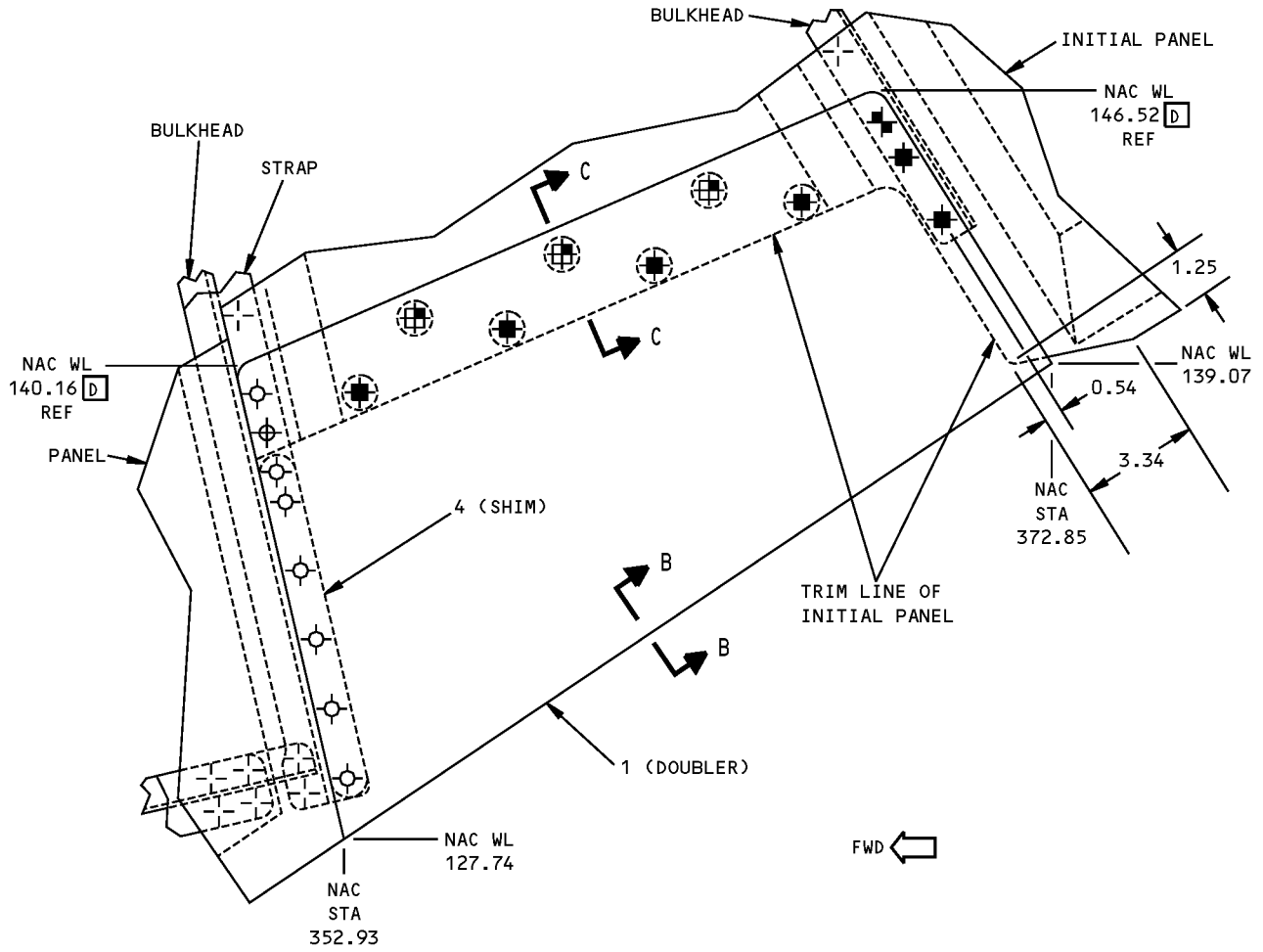


**POT FASTENER HOLES AT NEW
FASTENER LOCATIONS**
SECTION C-C

**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 7 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360

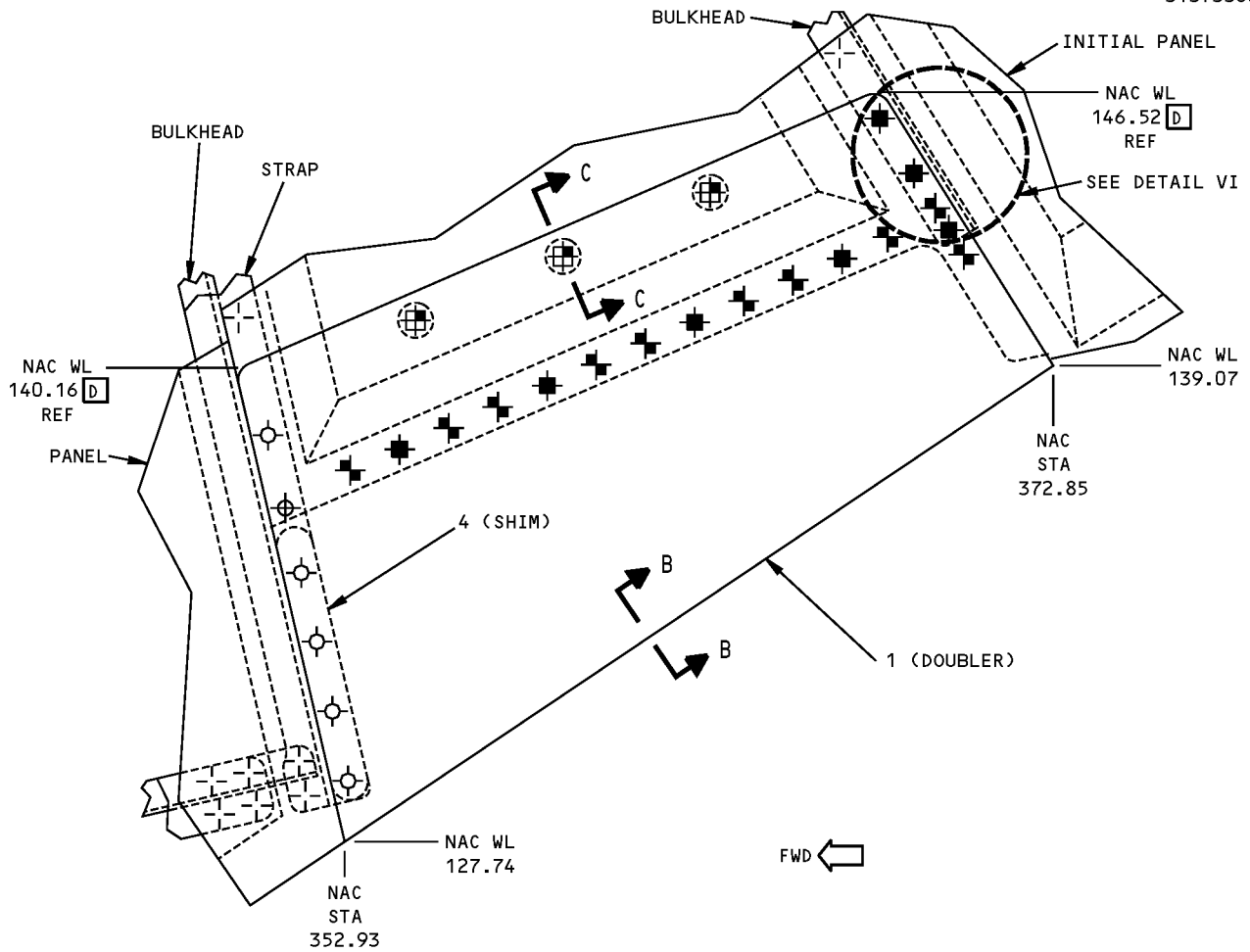


DETAIL IV **B**

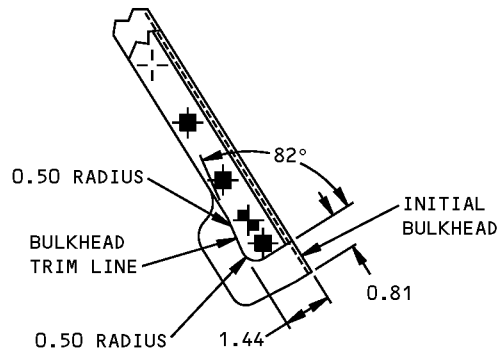
**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 8 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



DETAIL V [C]

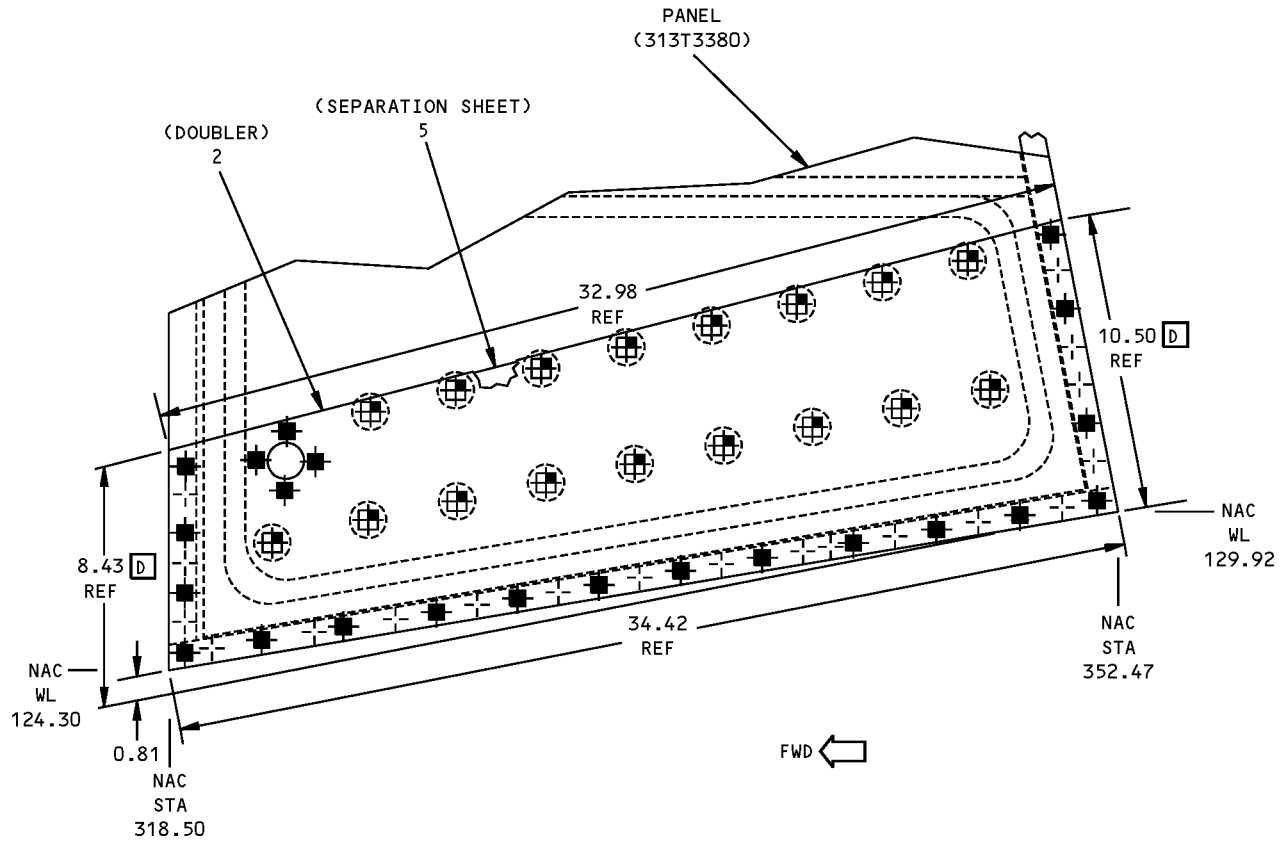


DETAIL VI

**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 9 of 11)**

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STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



DETAIL VII

**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 10 of 11)**

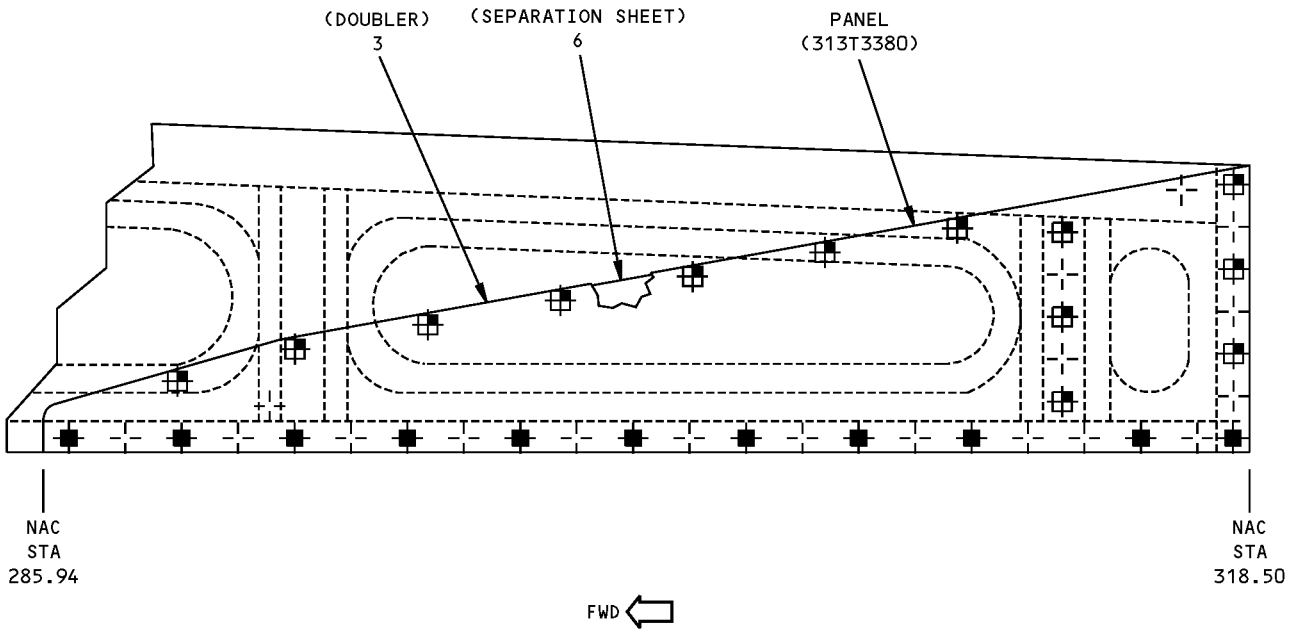
D634T210

54-53-70

REPAIR 5
Page 210
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T3360



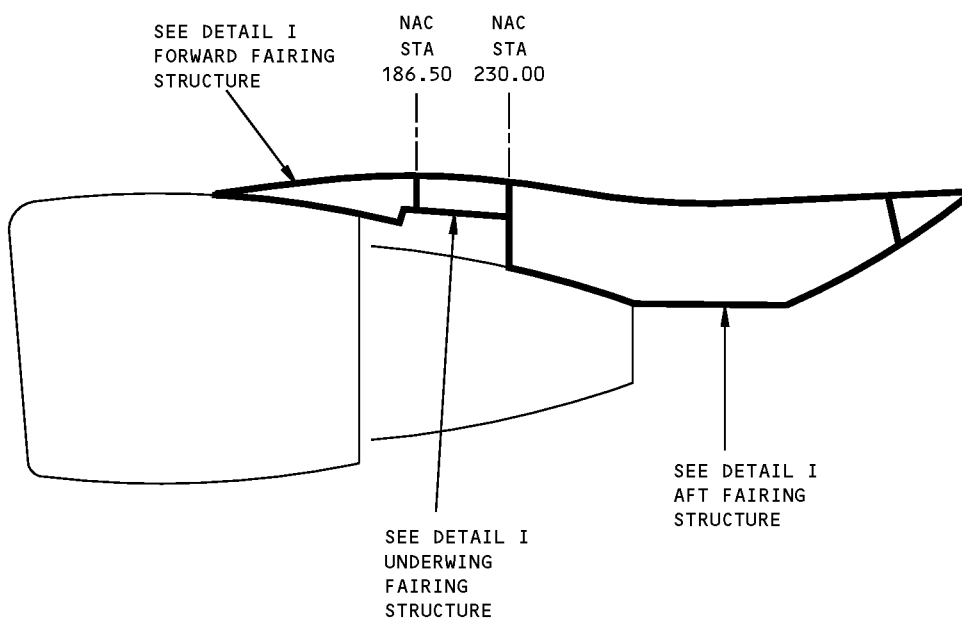
DETAIL VIII

**Aft Pylon Fairing Delamination Repair - PW4000 Engine
Figure 201 (Sheet 11 of 11)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING STRUCTURE - PW4000 ENGINE

REFERENCE DRAWINGS
313T338C
313T331C
313T320C
313T310C
311T351C



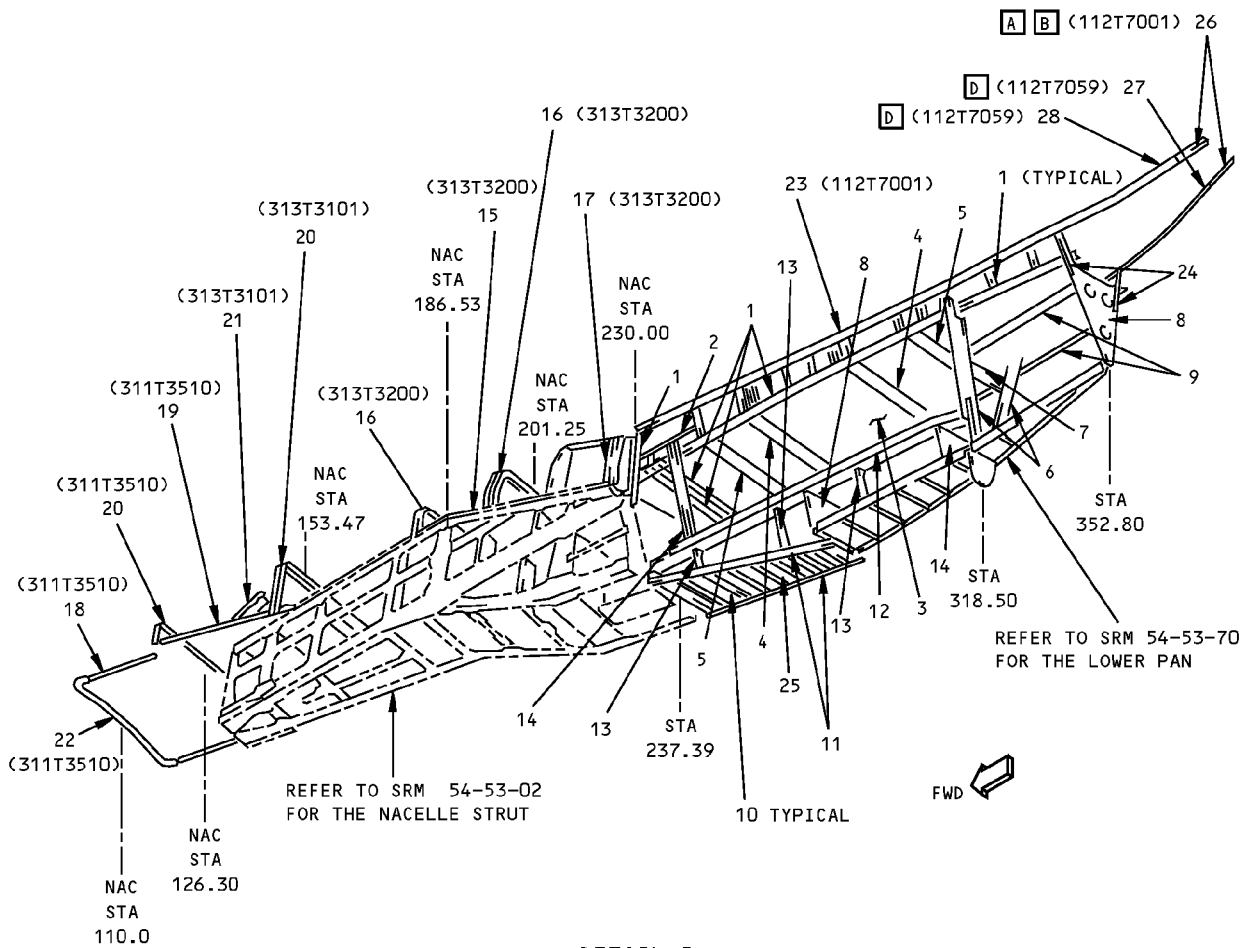
NOTES

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A APPLICABLE TO THE AFT MOST 7 INCHES OF THE SKATE ANGLE. FOR AIRPLANES WITH THE PW4000 ENGINES, CUM LINE NUMBERS 1 THROUGH 243 WITH SB 767-57-0023 INCORPORATED</p> <p>B FOR AIRPLANES WITH PW4000 CUM LINE NUMBERS 244 THROUGH 249, AND 251 THROUGH 616</p> | <p>C FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 1 THROUGH 243 AND 250 WITHOUT SB 767-57-0023 INCORPORATED</p> <p>D APPLICABLE TO THE AFT MOST 32 INCH SEGMENT FOR AIRPLANES WITH PW4000 ENGINES, CUM LINE NUMBERS 617 AND ON</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Strut Fairing Structure Identification - PW4000 Engine
Figure 1 (Sheet 1 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
313T3310



DETAIL I



**Strut Fairing Structure Identification - PW4000 Engine
Figure 1 (Sheet 2 of 3)**

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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ANGLE	0.10	7075-T62	
2	ANGLE	0.090	7075-T62	
3	SKIN	0.063	CLAD 2024-T3	
4	HAT SECTION (EXTRUSION)		BAC1509-100318 7075-T6511	
5	HAT SECTION (FORMED)		BAC1498-145 7075-T6	
6	ZEE	0.080	7075-T6	
7	CHANNEL	0.090	7075-T6	
8	FRAME	0.063	2024-T62	
9	ANGLE	0.080	7075-T6	
10	STIFFENER		BAC1506-2115 7075-T6	
11	CHORD		BAC1514-1102 2024-T3511	
12	BEAM	0.080	7075-T6	
13	WEB	0.063	2024-T63	
14	ZEE	0.040	2024-T62	
15	CHORD	0.063	CLAD 2024-T42	
16	TEE		AND10136-2005 2024-T42	
17	TEE		AND10136-2002 2024-T42	
18	CHORD		BAC1506-3195 2024-T8511	
19	LONGERON	0.050	2024-T42	
20	FRAME	0.050	2024-T42	
21	DIAGONAL BRACE	0.050	2024-T42	
22	NOSE FILLER	0.050	2024-T42	
23	ANGLE - SKATE	0.125	7075-T6	C
24	CHANNEL	0.063	2024-T42	
25	WEB ASSEMBLY WEB (2)	0.025	2024-T3 (BONDED ASSEMBLY)	
26	AFT ANGLE - SKATE	0.125	15-5PH CRES	A B
27	INBOARD AFT ANGLE - SKATE		BAC1514-3106 7075-T73 (OPTIONAL: 7075-T73 EXTRUDED BAR)	D
28	OUTBOARD AFT ANGLE - SKATE		BAC1514-3100 7075-T73 (OPTIONAL: 7075-T73 EXTRUDED BAR)	D

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Structure Identification - PW4000 Engine
Figure 1 (Sheet 3 of 3)**

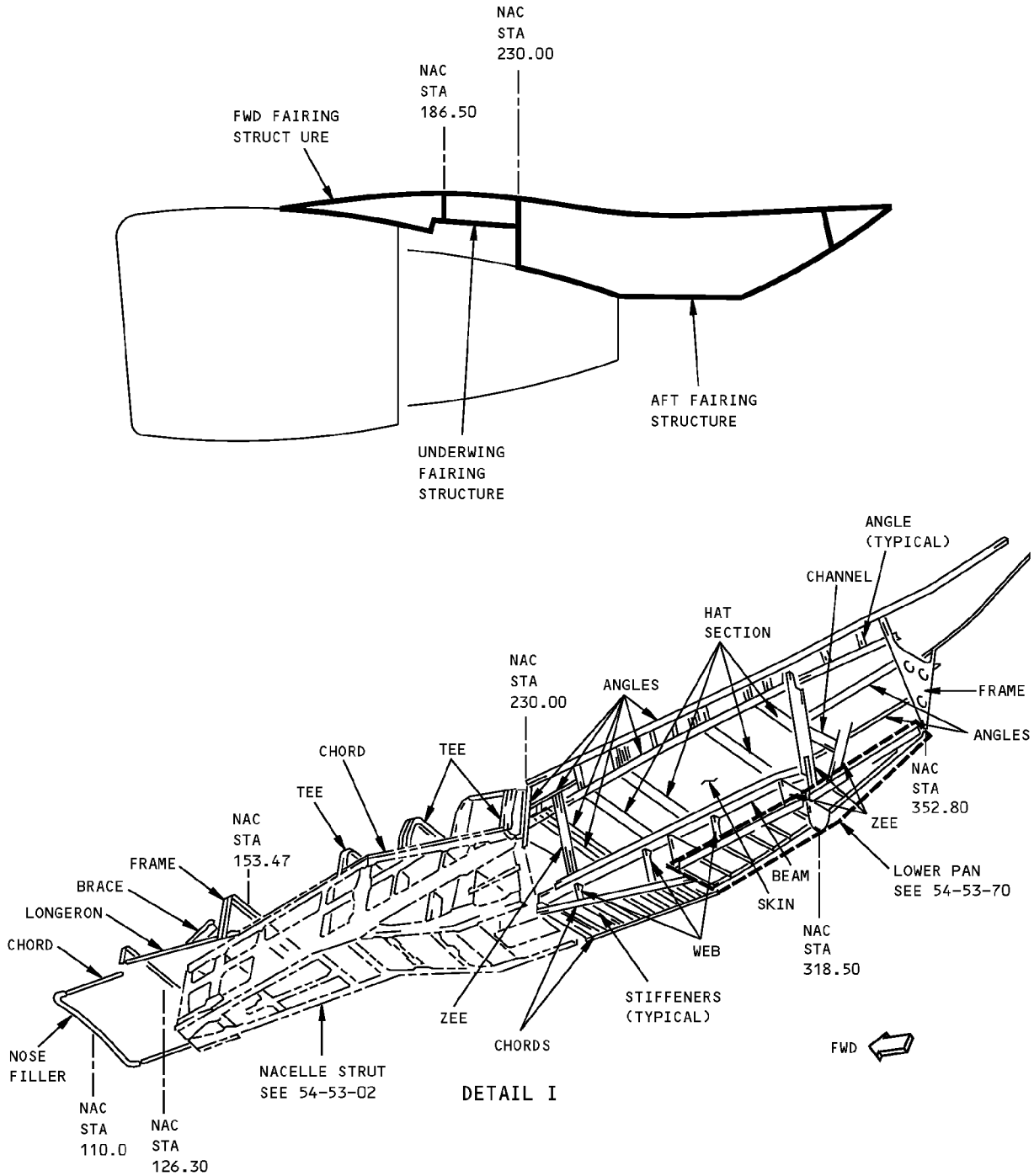
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING STRUCTURE - PW4000 ENGINE



MATERIAL: ALUMINUM

**Allowable Damage - Strut Fairing Structure - PW4000 Engine
Figure 101 (Sheet 1 of 4)**



**767-300
STRUCTURAL REPAIR MANUAL**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED	—
SKIN	C	B	SEE DETAIL IV	D	—
HAT SECTION	A	B	NOT ALLOWED	NOT ALLOWED	—
ZEE	A	B	NOT ALLOWED	NOT ALLOWED	—
CHANNEL	A	B	NOT ALLOWED	NOT ALLOWED	—
FRAME	A	B	NOT ALLOWED	NOT ALLOWED	—
WEBS	A	B	SEE DETAIL IV	NOT ALLOWED	—
RETAINERS	A	B	NOT ALLOWED	NOT ALLOWED	—
STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL VIII	—
BEAM	A	B	NOT ALLOWED	NOT ALLOWED	—
CHORD	A	B	NOT ALLOWED	NOT ALLOWED	—
TEE	A	B	NOT ALLOWED	NOT ALLOWED	—
LONGERON	A	B	NOT ALLOWED	NOT ALLOWED	—
BRACE	A	B	NOT ALLOWED	NOT ALLOWED	—
NOSE FILLER	A	B	NOT ALLOWED	NOT ALLOWED	—

NOTES

REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE

- REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL.

A CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VII.

B REMOVE DAMAGE PER DETAILS II, III AND V.

C CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI.

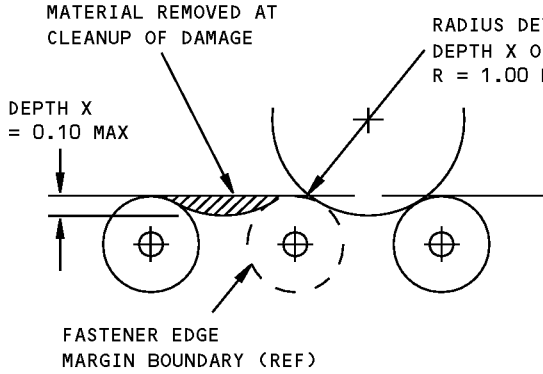
D CLEAN OUT DAMAGE UP TO 0.25 INCH (6 mm) MAX DIA AND NOT CLOSER THAN 1.0 INCH (25 mm) TO FASTENER HOLE MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED.

**Allowable Damage - Strut Fairing Structure - PW4000 Engine
Figure 101 (Sheet 2 of 4)**

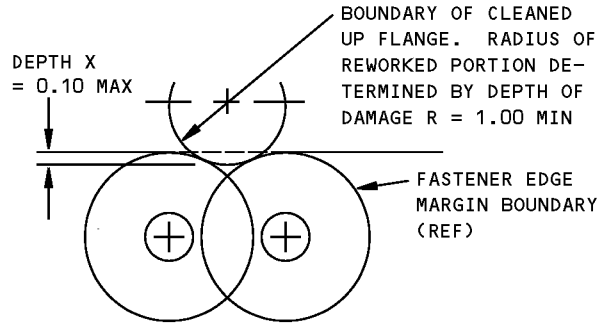
D634T210

ALLOWABLE DAMAGE 1
Page 102
54-53-71
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STRUCTURAL REPAIR MANUAL

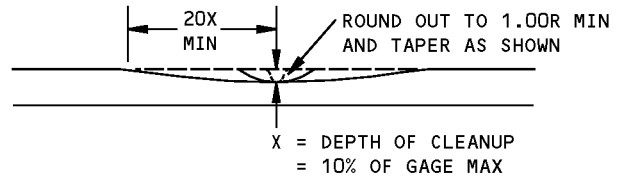
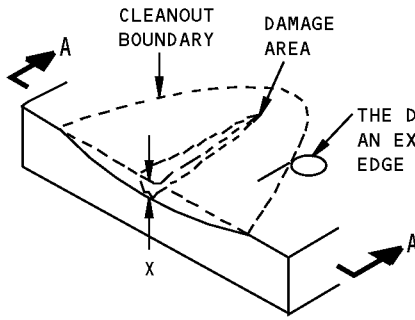


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

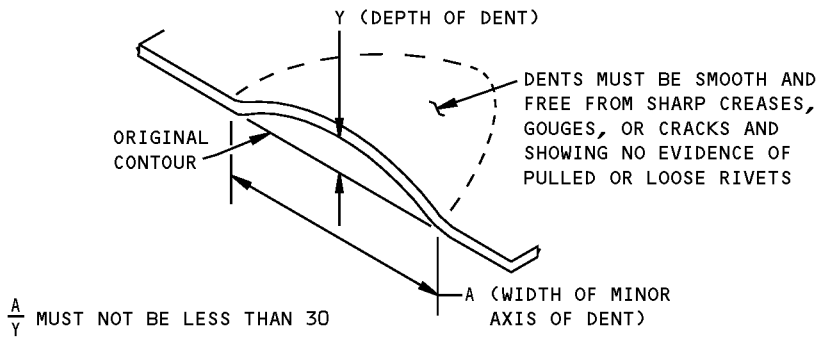
DETAIL II



SECTION A-A

REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

DETAIL III



ALLOWABLE DAMAGE FOR DENT

DETAIL IV

**Allowable Damage - Strut Fairing Structure - PW4000 Engine
Figure 101 (Sheet 3 of 4)**



767-300
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - SERVICE BULLETIN REPAIR CHART

SERVICE BULLETIN REPAIRS

The following service bulletins contain strut fairing structure repairs which are available for use where specific damage has been encountered. Usually, the service bulletin also covers preventive modification data which operators are encouraged to use to eliminate the need for repair.

DAMAGED AREA	CUM LINE NUMBER EFFECTIVITY A	SB NUMBER
NACELLE STRUT AFT FAIRING ATTACHMENT - OUTBOARD SKATE ANGLE	1 THRU 244	767-57-0023

A FOR AIRPLANES ON WHICH PREVENTIVE MODIFICATION HAS NOT BEEN ACCOMPLISHED

Service Bulletin Repair Chart
Figure 201

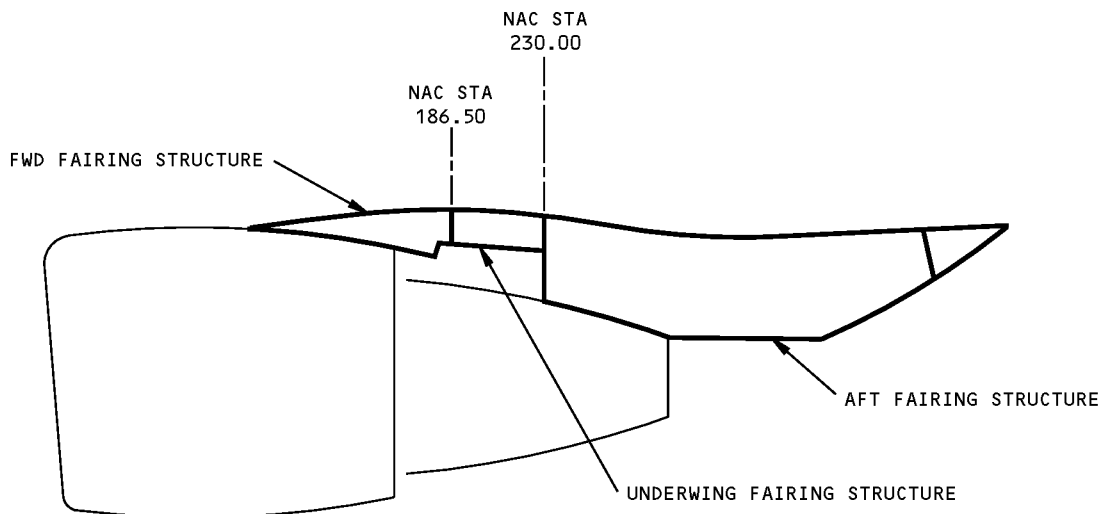
D634T210

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REPAIR GENERAL
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STRUCTURAL REPAIR MANUAL

REPAIR 1 - STRUT FAIRING STRUCTURE - PW4000 ENGINE

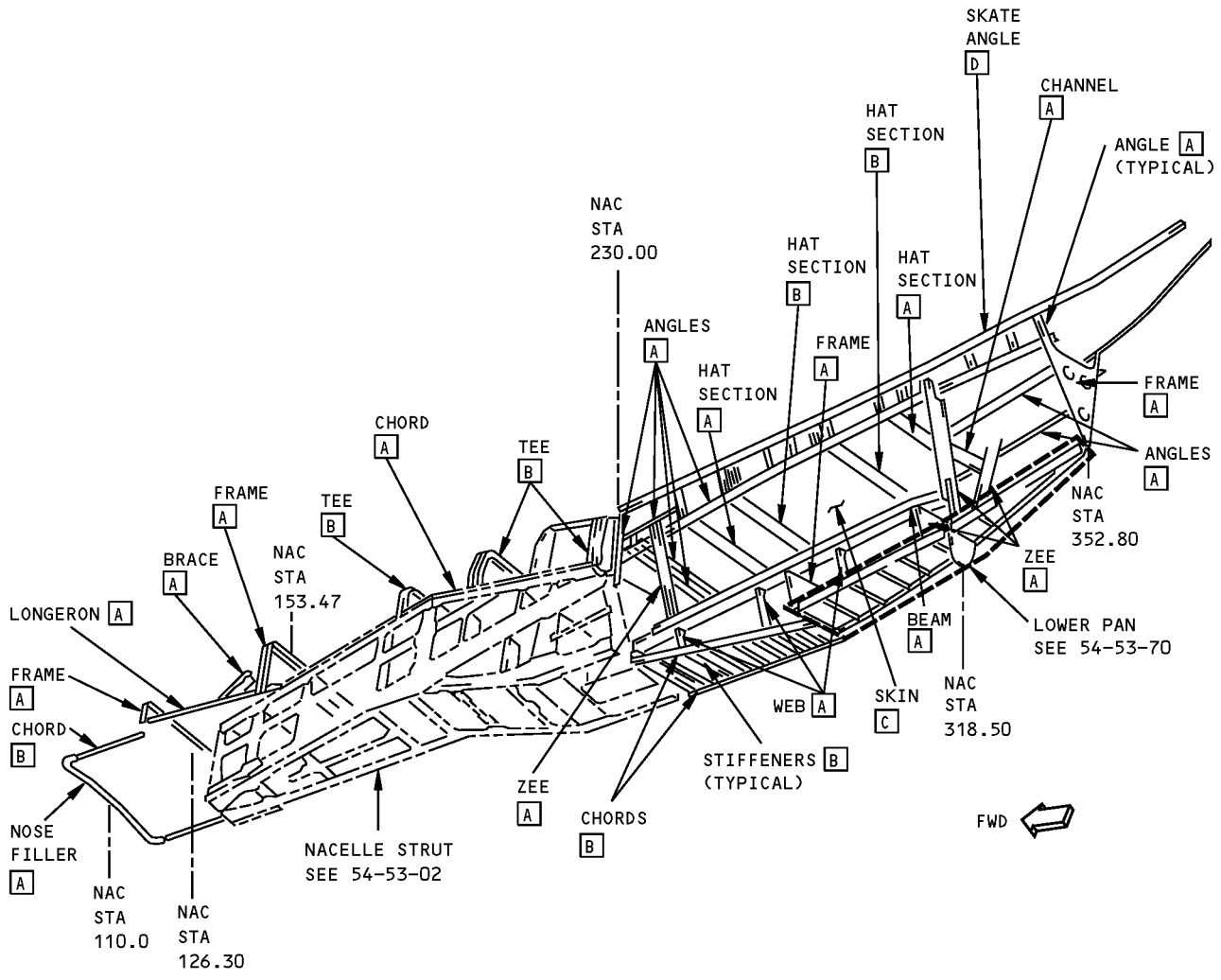


NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFINISH REWORKED AREAS PER 51-21 OF THE 767 MAINTENANCE MANUAL
- A** SEE 51-70-11 FOR FORMED SECTION REPAIR
- B** SEE 51-70-12 FOR EXTRUDED SECTION REPAIR
- C** SEE 51-70-13 FOR WEB REPAIR
- D** NO TYPICAL REPAIRS APPLICABLE. REFER TO THE LIST OF SERVICE BULLETIN REPAIRS

Strut Fairing Structure Repair - PW4000 Engine
Figure 201 (Sheet 1 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM

**Strut Fairing Structure Repair - PW4000 Engine
Figure 201 (Sheet 2 of 2)**

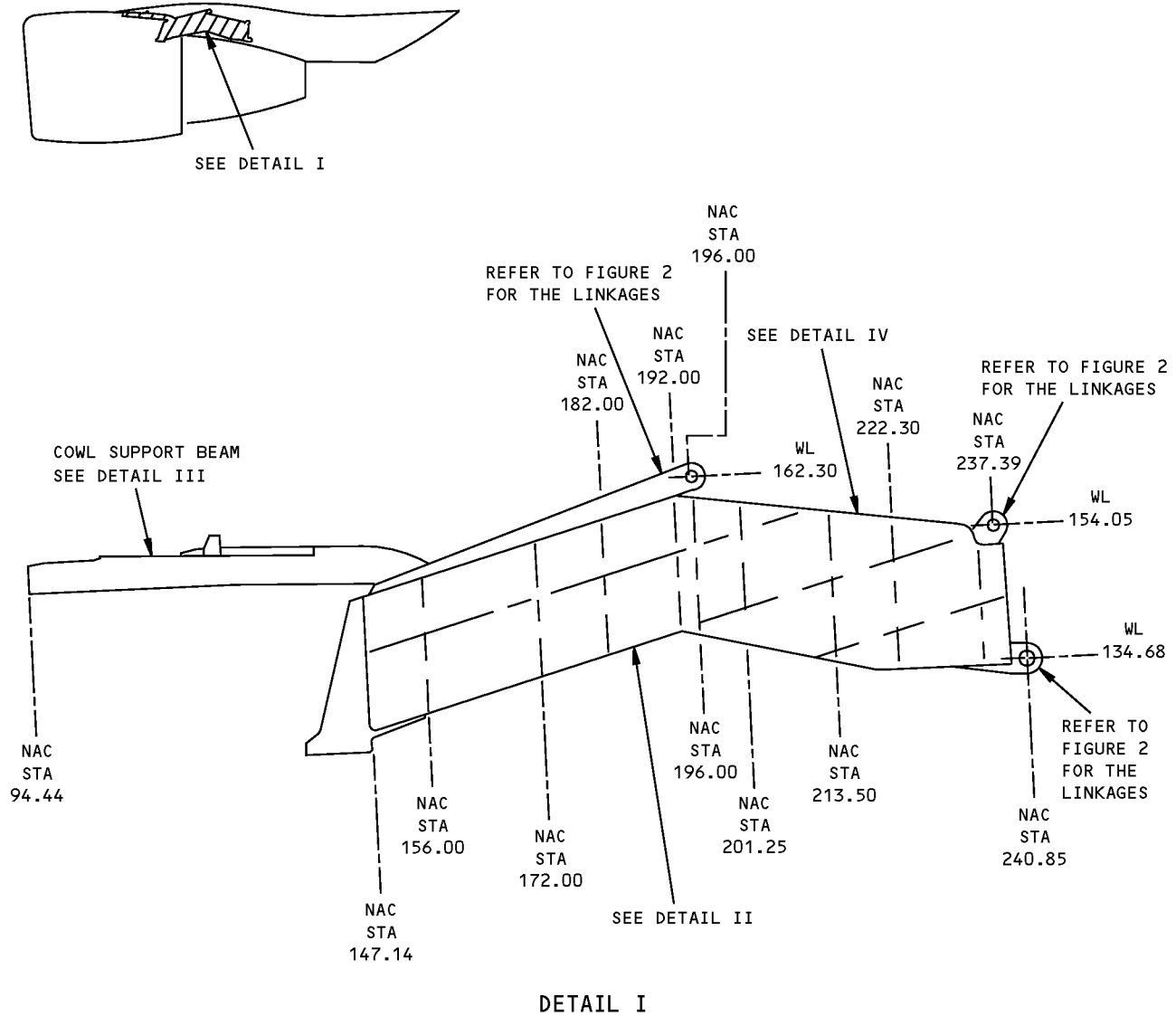
54-53-71

**REPAIR 1
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**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT ATTACHMENT FITTINGS - PW4000 ENGINE



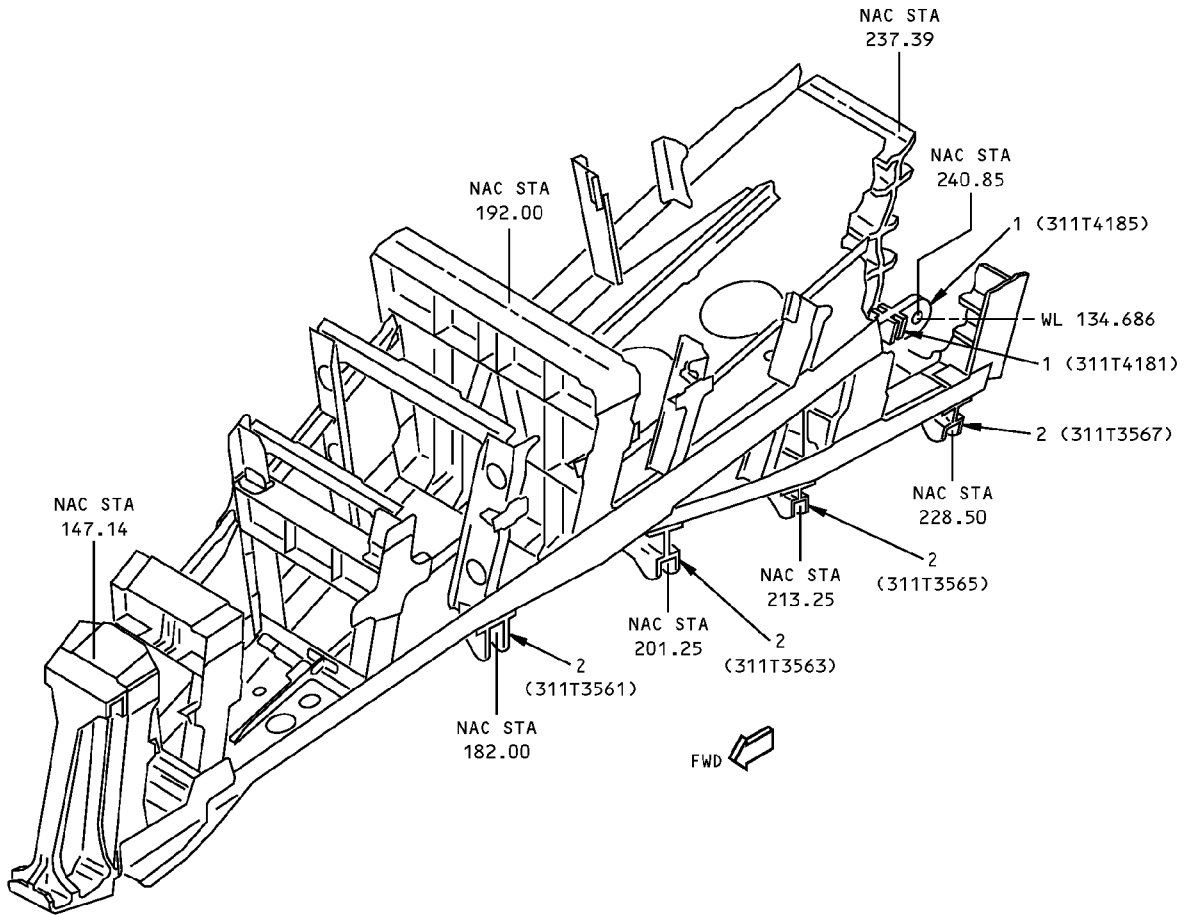
NOTES

- A FOR AIRPLANES WITH PW4000 ENGINES UP TO CUM LINE NUMBER 255
- B FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 255 AND ON
- C FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 2 THRU 663 WITHOUT SB 767-54-0080 INCORPORATION
- D FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER 664 AND ON, AND FOR AIRPLANES WITH SB 767-54-0080 INCORPORATED

**Strut Attachment Fitting Identification - PW4000 Engine
Figure 1 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3000
311T3130



DETAIL II

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	LOWER SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
2	HINGE FITTING		FORGING TITANIUM 6AL-4V	

LIST OF MATERIALS FOR DETAIL II

**Strut Attachment Fitting Identification - PW4000 Engine
Figure 1 (Sheet 2 of 4)**

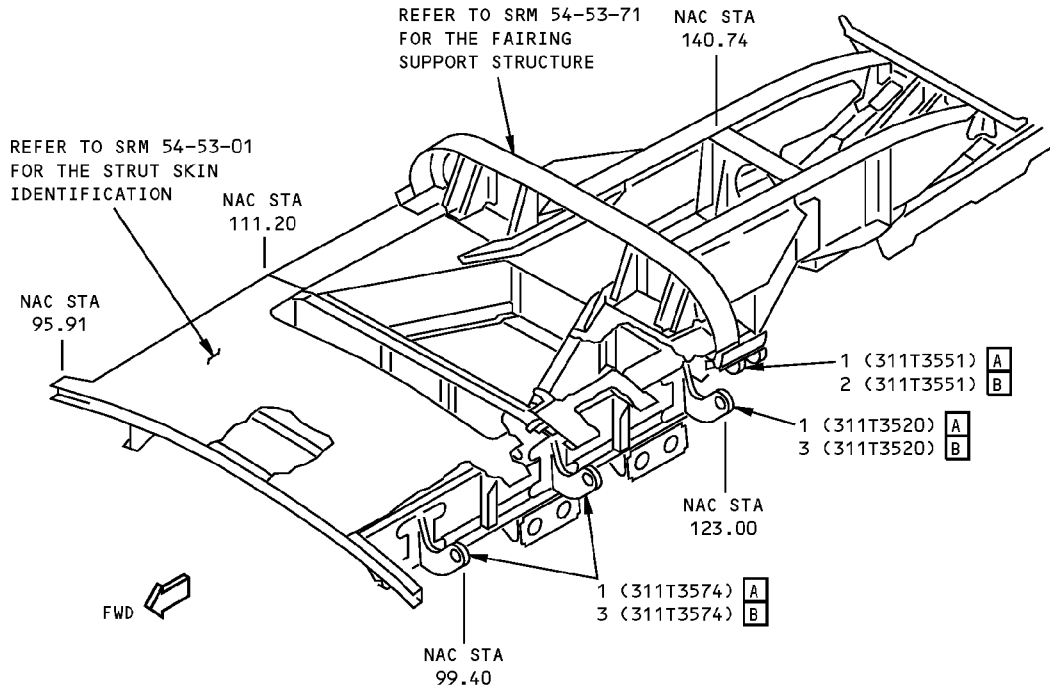
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWING
311T3510



**COWL SUPPORT BEAM
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	HINGE FITTING		FORGING 7075-T73	A
2	HINGE FITTING		PLATE 2219-T851	B
3	HINGE FITTING		FORGING 2219-T6	B

LIST OF MATERIALS FOR DETAIL III

**Strut Attachment Fitting Identification - PW4000 Engine
Figure 1 (Sheet 3 of 4)**

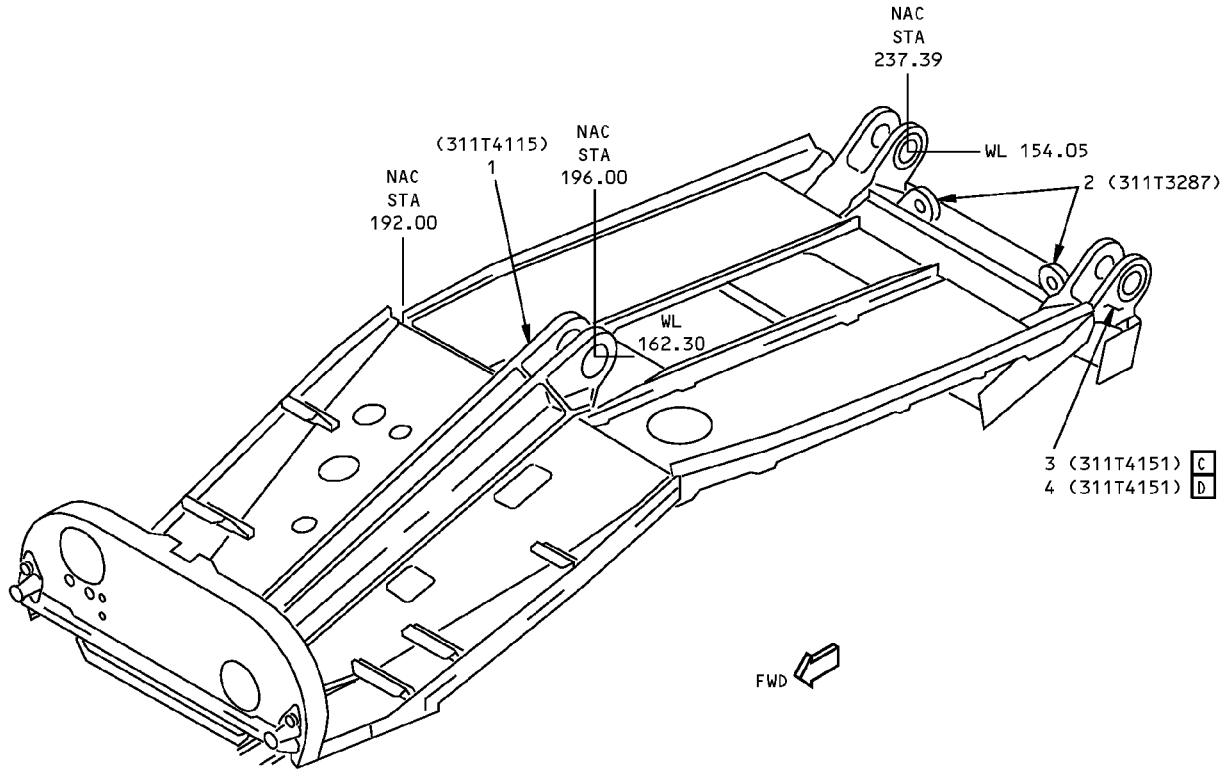
IDENTIFICATION 1
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS
311T3110
311T3150



DETAIL IV

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER SPAR FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
2	SIDE LOAD FITTING		FORGING 15-5PH CRES HT TR 180-200 KSI	
3	MIDSPAR FITTING		FORGING 4330M ALLOY STEEL HT TR 220-240 KSI	C
4	MIDSPAR FITTING		FORGING 15-5PH CRES HT TR 150-200 KSI	D

LIST OF MATERIALS FOR DETAIL IV

**Strut Attachment Fitting Identification - PW4000 Engine
Figure 1 (Sheet 4 of 4)**

IDENTIFICATION 1
Page 4
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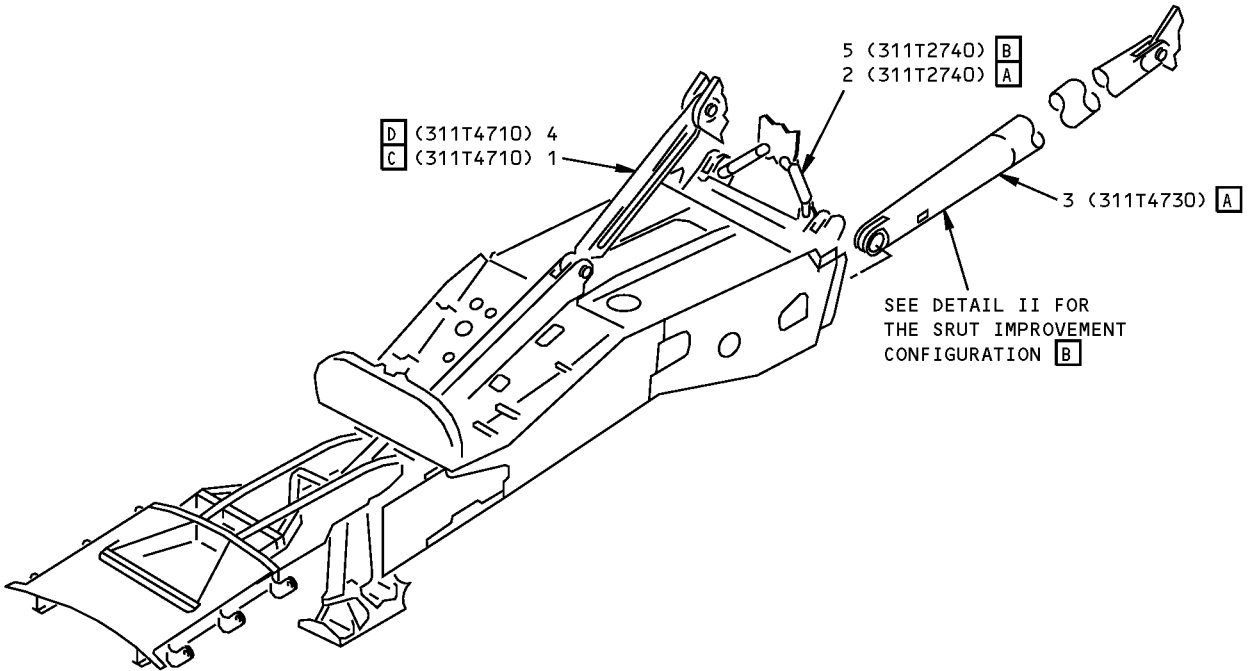
54-53-90

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 2 - ATTACHMENT LINKAGE - PW4000 ENGINE

REFERENCE DRAWING
310T404C



DETAIL I

NOTES

- A** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER:
 - 165 THRU 655 WITHOUT SB 767-54-0080 INCORPORATION
- B** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER:
 - 664 AND ON OR, FOR AIRPLANES WITH SB 767-54-0080 INCORPORATED
- C** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER:
 - 165 THRU 655 WITHOUT SB 767-54-0083 INCORPORATION
- D** FOR AIRPLANES WITH PW4000 ENGINES CUM LINE NUMBER:
 - 664 AND ON, OR FOR AIRPLANES WITH SB 767-54-0083 INCORPORATED



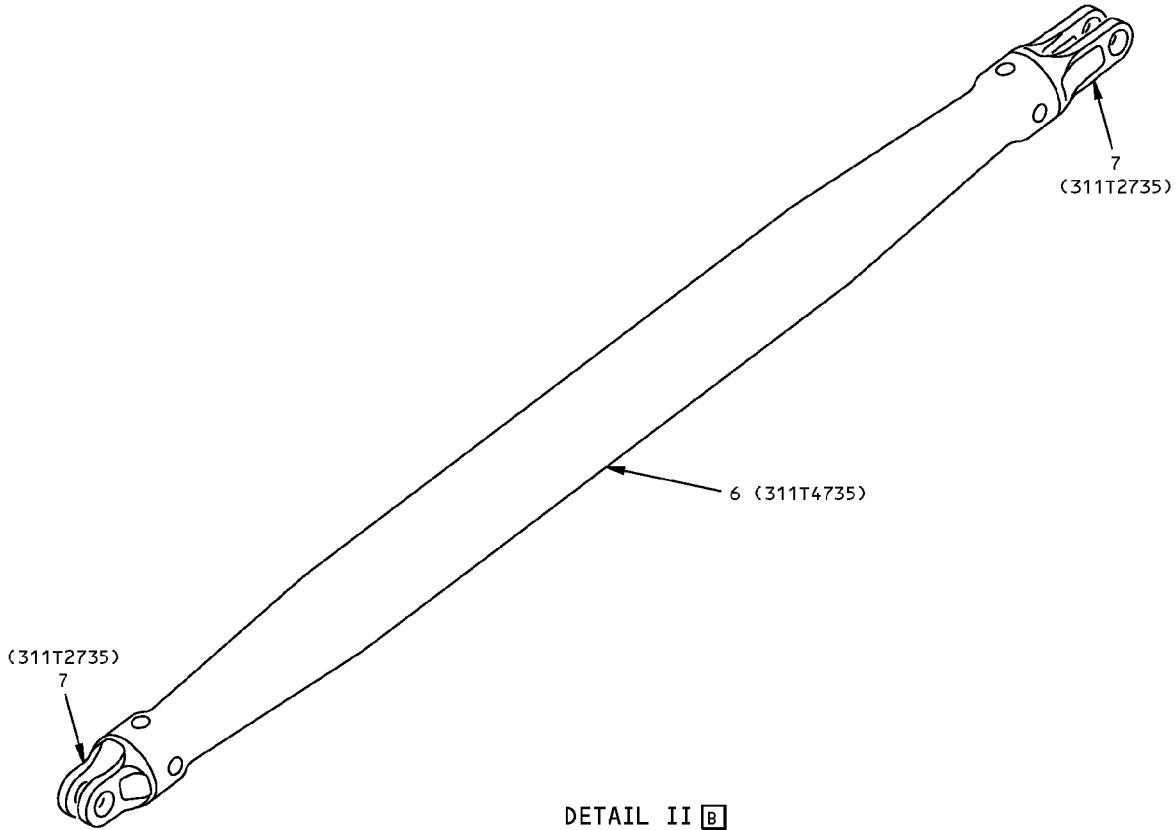
**Attachment Linkage Identification - PW4000 Engine
Figure 1 (Sheet 1 of 2)**

D634T210

54-53-90

IDENTIFICATION 2
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**767-300
STRUCTURAL REPAIR MANUAL**



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPPER LINK		4330M ALLOY STEEL FORGING, HT TR 220-240 KSI	C
2	SIDE LINK		15-5PH CRES BAR, HT TR 180-200 KSI	A
3	DIAGONAL BRACE		7075-T76 TUBE OR 7075-T6 EXTRUDED BAR	A
4	UPPER LINK		15-5PH CRES FORGING BLOCK OR BAR, HT TR 180-200 KSI	D
5	SIDE LINK	0.625	15-5PH CRES PLATE OR BAR, HT TR 180-200 KSI	B
6	DIAGONAL BRACE TUBE		7075-T73 TUBE OR BAR	B
7	END FITTING		TI-6AL-4V BAR OR FORGED BLOCK ANNEALED	B

LIST OF MATERIALS FOR DETAILS I AND II

**Attachment Linkage Identification - PW4000 Engine
Figure 1 (Sheet 2 of 2)**

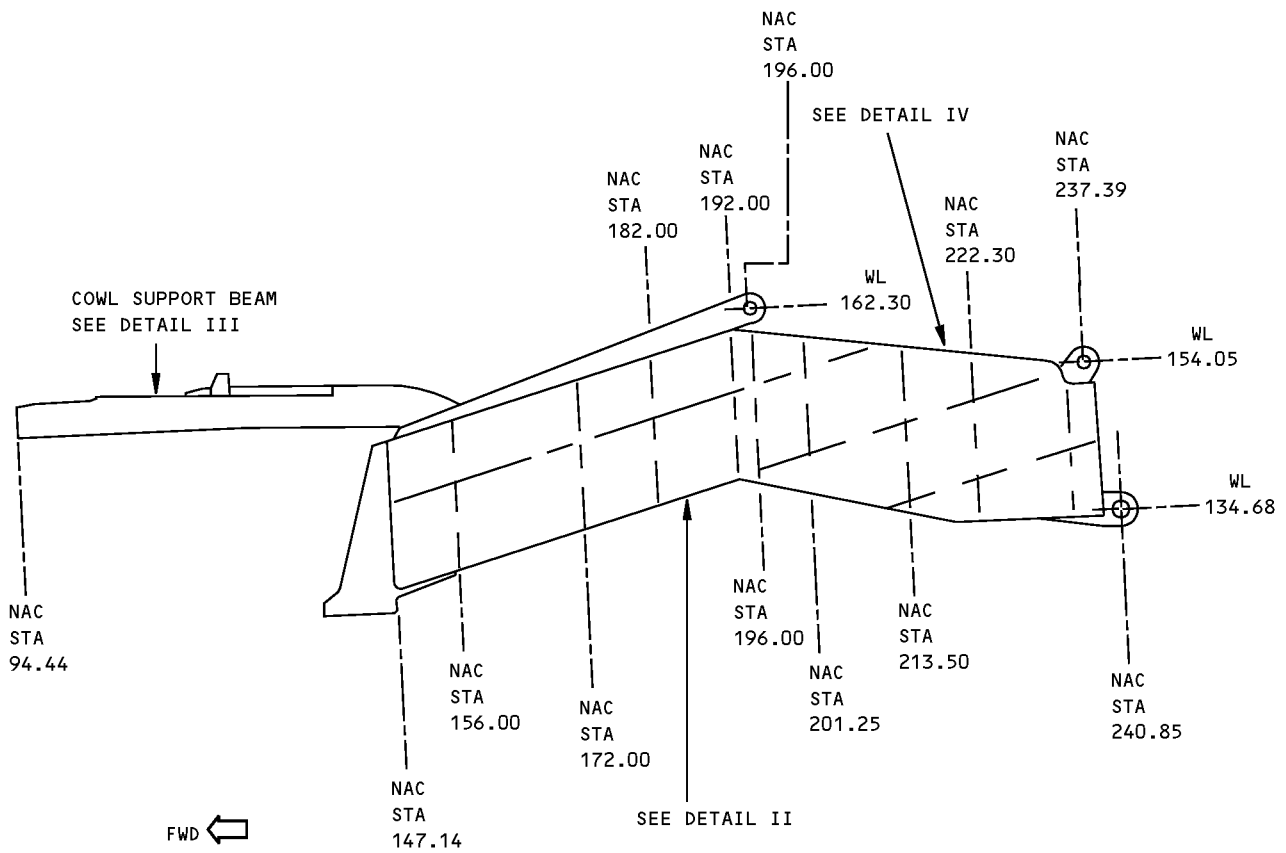
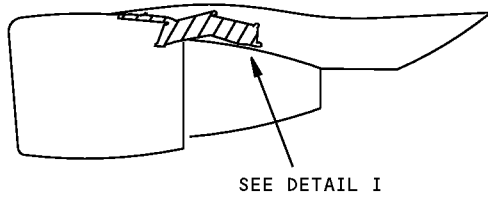
D634T210

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IDENTIFICATION 2
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STRUCTURAL REPAIR MANUAL**

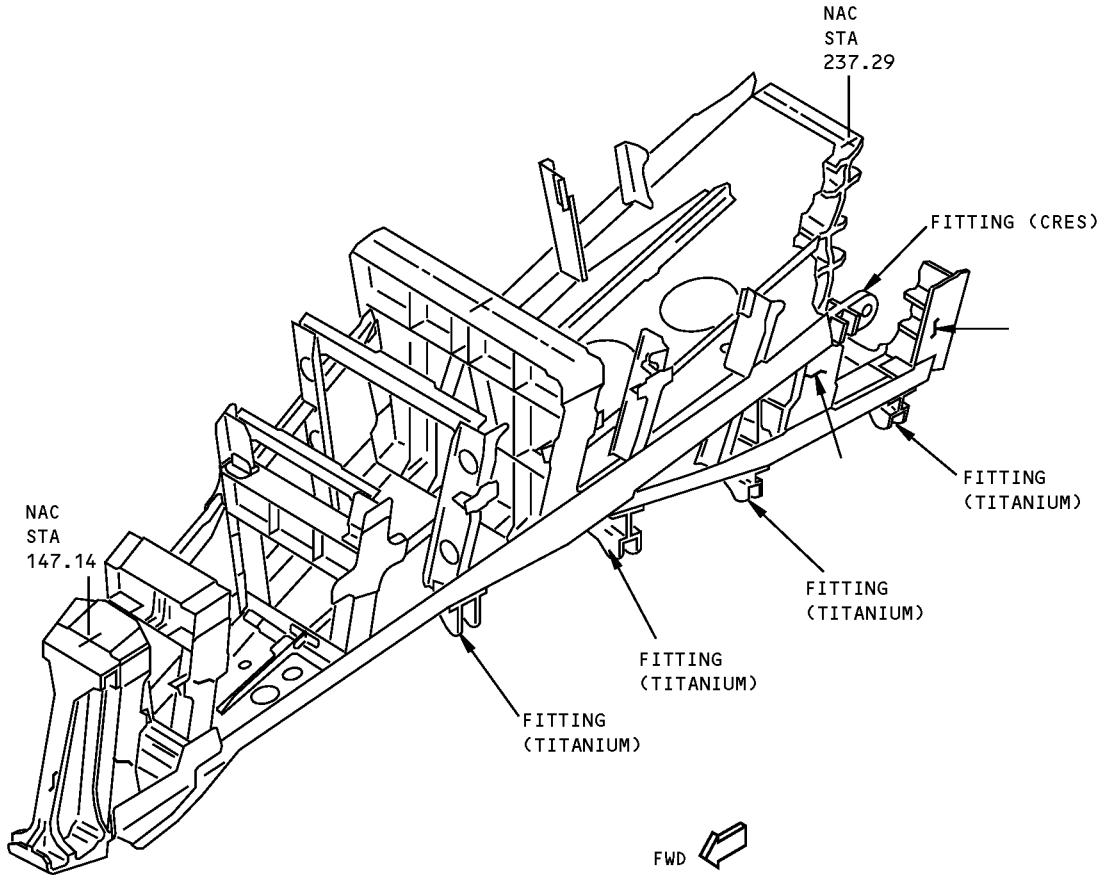
ALLOWABLE DAMAGE 1 - STRUT ATTACHMENT FITTINGS - PW4000 ENGINE



DETAIL I

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 1 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

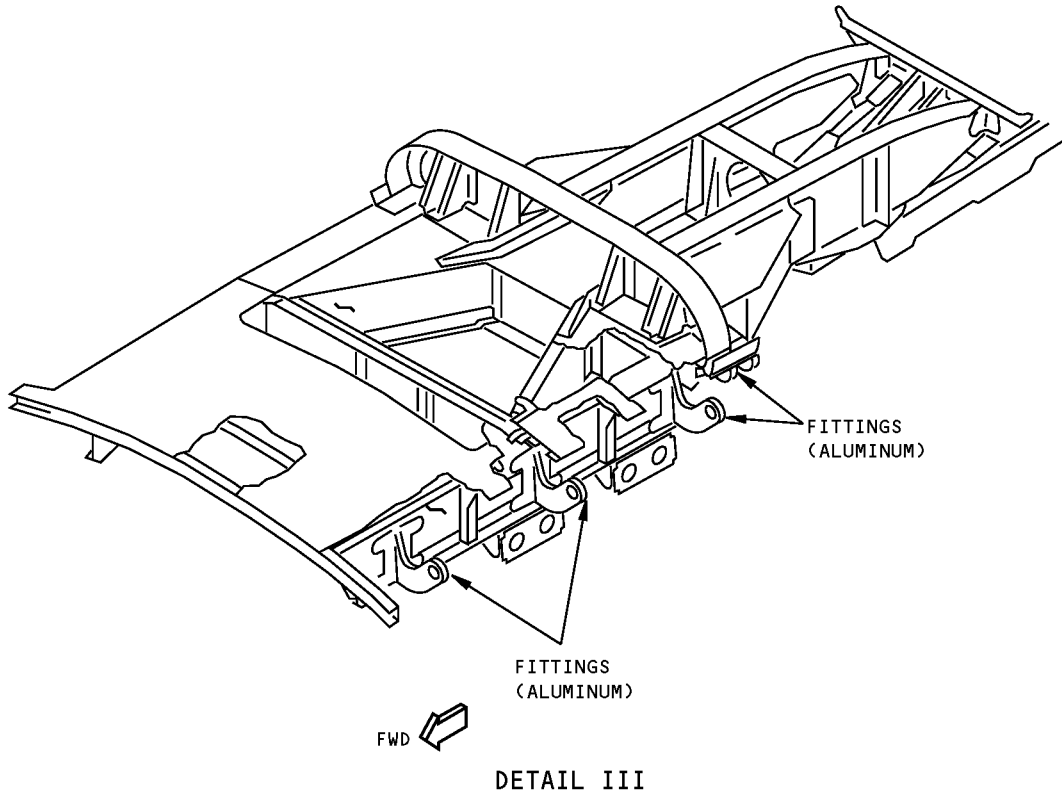


DETAIL II

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 2 of 6)**

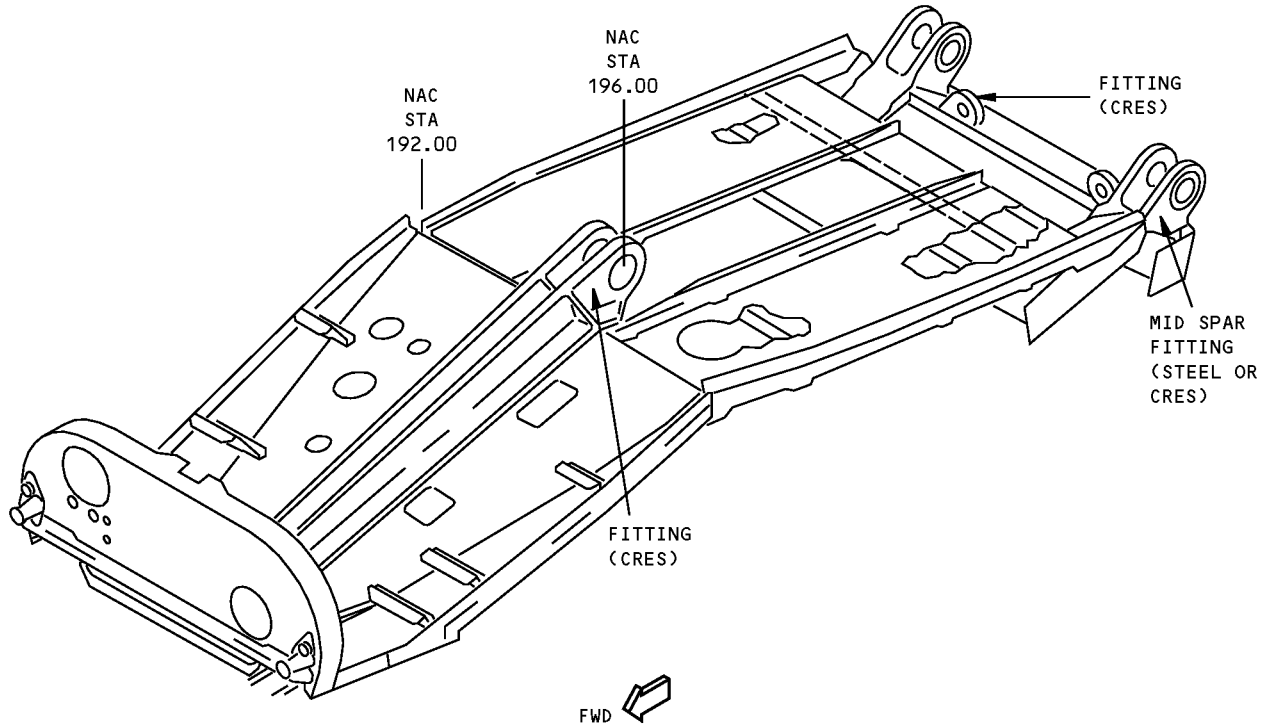
**767-300
STRUCTURAL REPAIR MANUAL**



DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 3 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL IV

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT PERMITTED	NOT PERMITTED
STEEL MID SPAR FITTING	A	A	NOT PERMITTED	NOT PERMITTED
CRES MID SPAR FITTING	A	B C	NOT PERMITTED	NOT PERMITTED

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 4 of 6)**

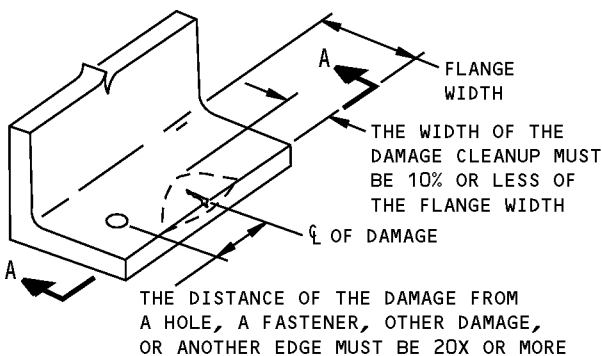
STRUCTURAL REPAIR MANUAL

NOTES

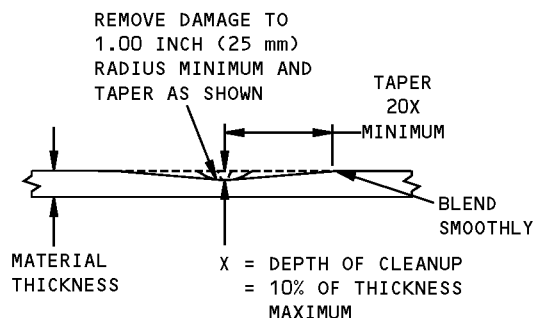
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5 PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM FITTINGS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES FITTINGS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR TITANIUM FITTINGS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.

- REFER TO SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES FITTINGS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII. DAMAGE IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHINGS.
- B** FOR SURFACE DAMAGE SEE DETAIL V. FOR LUG DAMAGE SEE DETAIL VI. FOR OTHER DAMAGE SEE DETAIL VII.
- C** TO MAKE SURE THE MID SPAR FITTING BORE IS ALIGNED CORRECTLY, SEE DETAIL VIII FOR THE DEPTH OF REMOVAL PERMITTED UNDER THE BUSHING FLANGE. THE MATERIAL REMOVAL ON THE FACE OF THE LUG UNDER THE BUSHING FLANGE MUST BE PERPENDICULAR TO THE BORE. AS THE RESULT OF THE SPOTFACE, CUT 0.01 TO 0.02 INCH (0.25 TO 0.50 mm) FROM THE NON-FLANGED END OF THE BUSHING BEFORE BUSHING INSTALLATION.
- D** DAMAGE OR REWORK IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHING EXCEPT AS NOTED IN **C**.



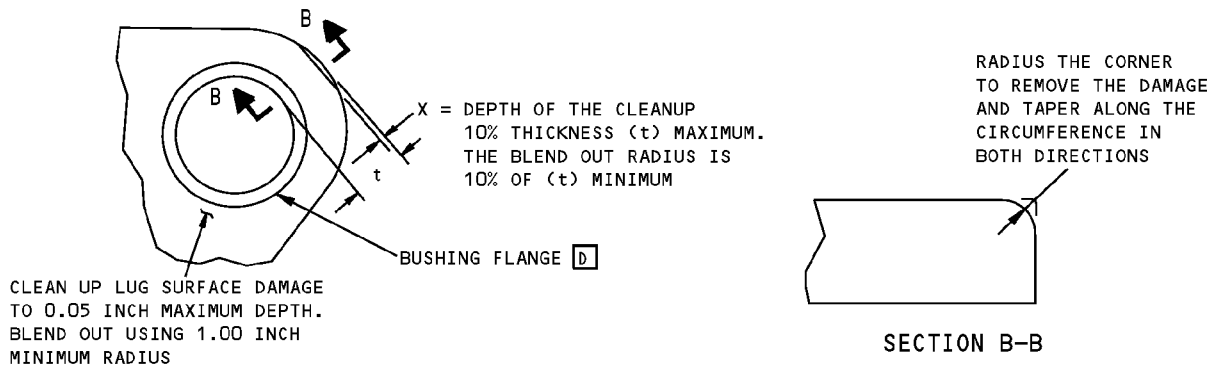
**REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE AT AN EDGE
DETAIL V**



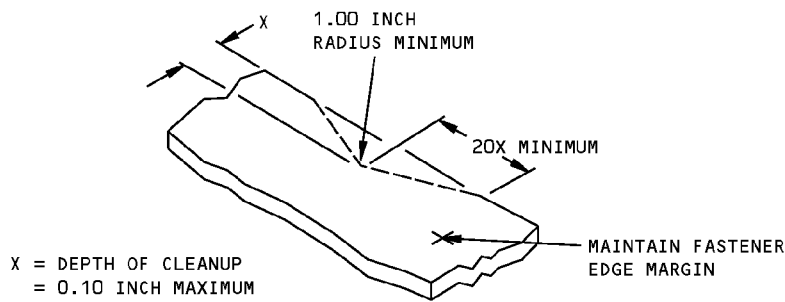
SECTION A-A

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 5 of 6)**

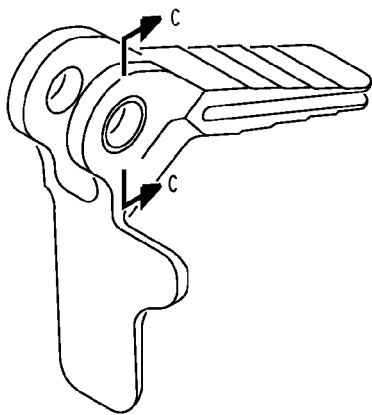
**767-300
STRUCTURAL REPAIR MANUAL**



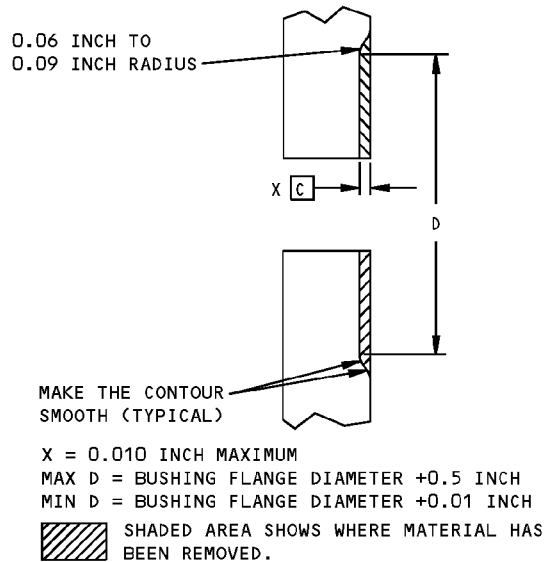
**DAMAGE CLEANUP FOR SURFACES OF LUG
DETAIL VI**



**REMOVAL OF CRACK DAMAGE ON THE EDGE
DETAIL VII**



**REMOVAL OF MATERIAL ON THE LUG FACE
UNDER THE FLANGE OF THE BUSHING
DETAIL VIII**

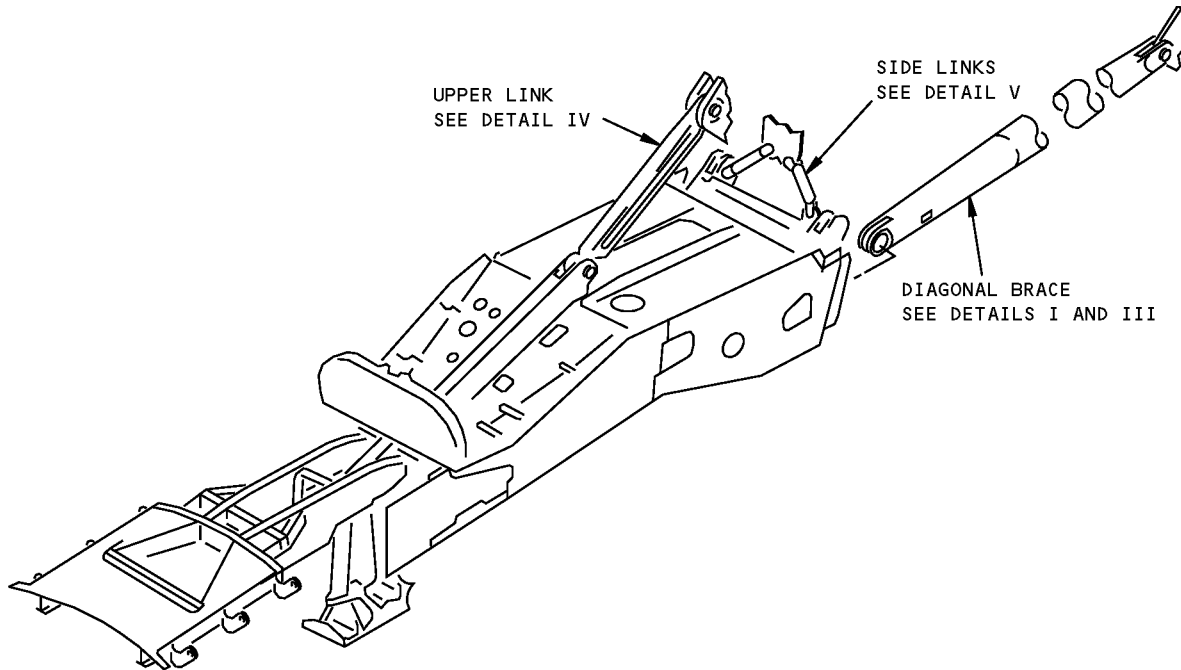


**TYPICAL SPOTFACE ON ONE LUG IS SHOWN
SECTION C-C**

**Allowable Damage - Strut Attachment Fitting - PW4000 Engine
Figure 101 (Sheet 6 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 2 - STRUT ATTACHMENT LINKS - PW4000 ENGINE



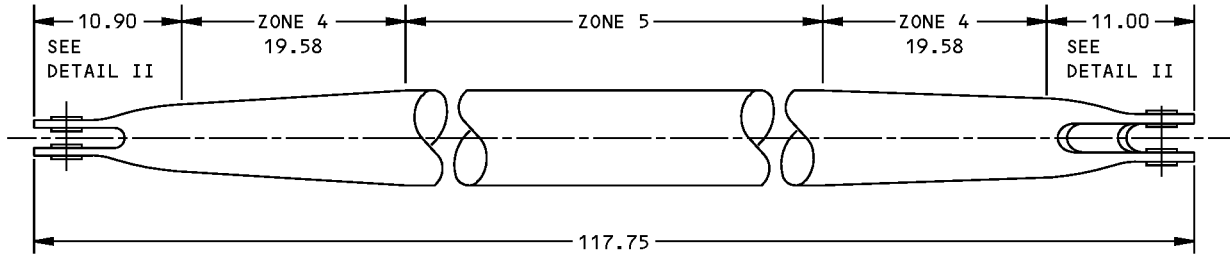
NOTES

- DENTS HOLES OR PUNCTURES ARE NOT PERMITTED.
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM COMPONENTS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES COMPONENTS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL FOR TITANIUM AND ALUMINUM COMPONENTS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES COMPONENTS AS GIVEN IN SRM 51-20-06 AFTER YOU DO THE NON-DESTRUCTIVE INSPECTION. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** NOT MORE THAN ONE AREA OF CLEANED OUT DAMAGE PERMITTED PER 2 INCHES (50 mm) OF LENGTH. **E**
- B** NOT MORE THAN THREE AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES (25 cm) OF LENGTH. **F**
- C** NOT MORE THAN TWO AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES (25 cm) OF LENGTH. **F**
- D** 0.010 INCH (2.5 mm) MAXIMUM DEPTH REWORK PERMITTED UNDER BUSHING FLANGE. SEE SECTION CUT VIEW.
- E** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 63 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- F** SMOOTH OUT WITH A 1.00 INCH (25 mm) RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 125 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- G** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VIII OR XIII. FOR OTHER DAMAGE, SEE DETAIL VII.
- H** EDGE DAMAGE AND SURFACE DAMAGE ARE NOT PERMITTED TOGETHER ON THE SAME LUG. IF THEY ARE ON THE SAME LUG, SEND A REPORT TO BOEING FOR REPAIR INSTRUCTIONS.

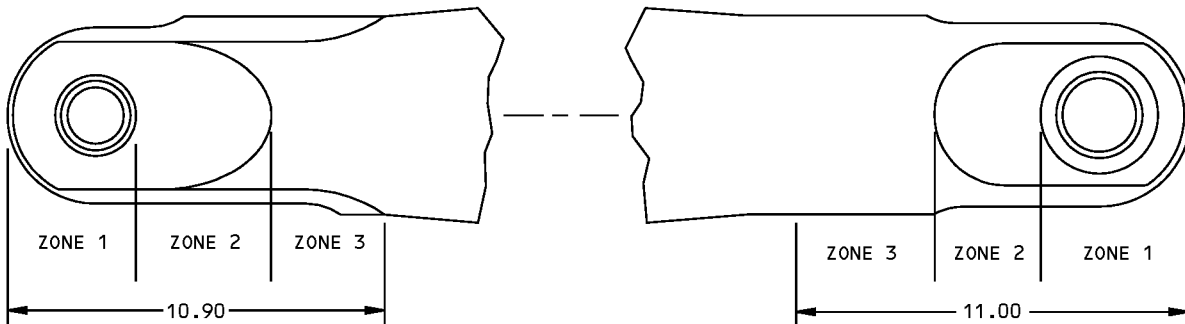
**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 1 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM TUBING OR
EXTRUDED BAR

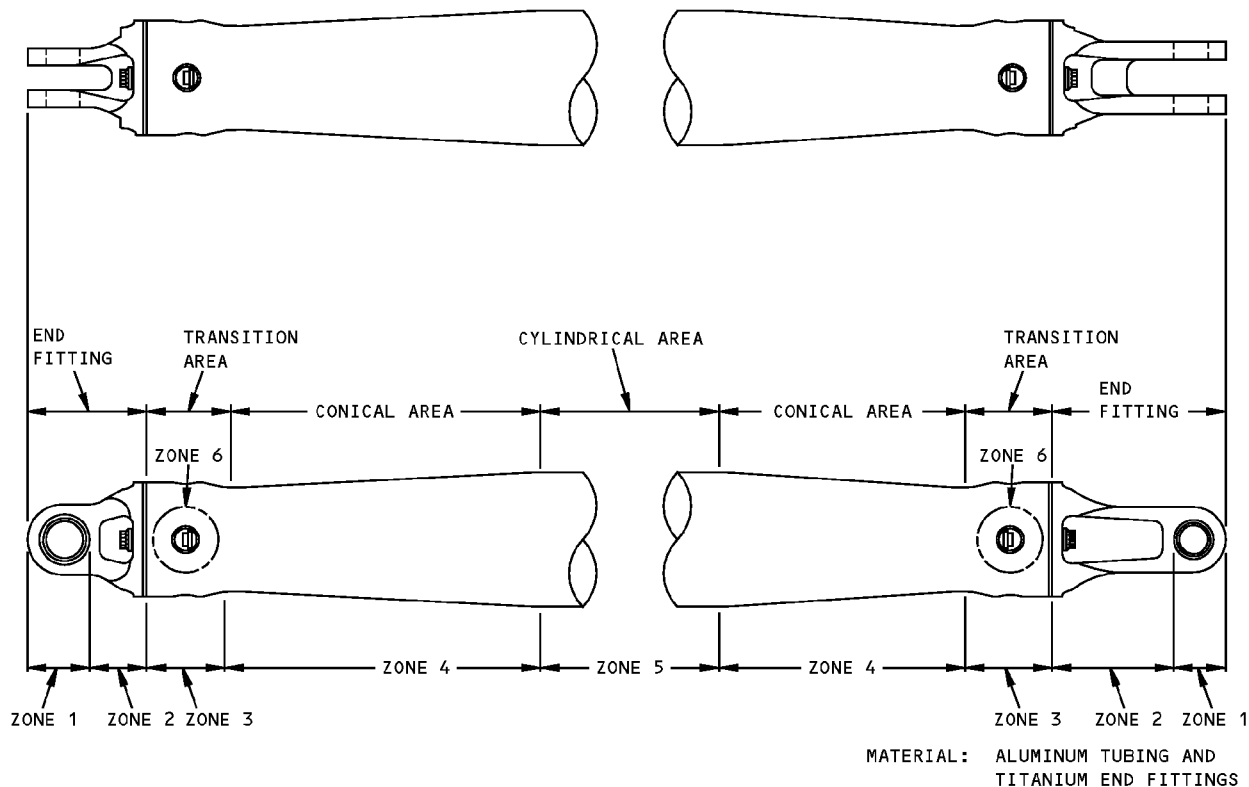


DETAIL II

ZONE	DAMAGE LIMITS
1	SEE DETAIL VI. [A]
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND TUBULAR AREA. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAILS VI AND IX. [A]
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. [A]
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. [B]
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. [C]

**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

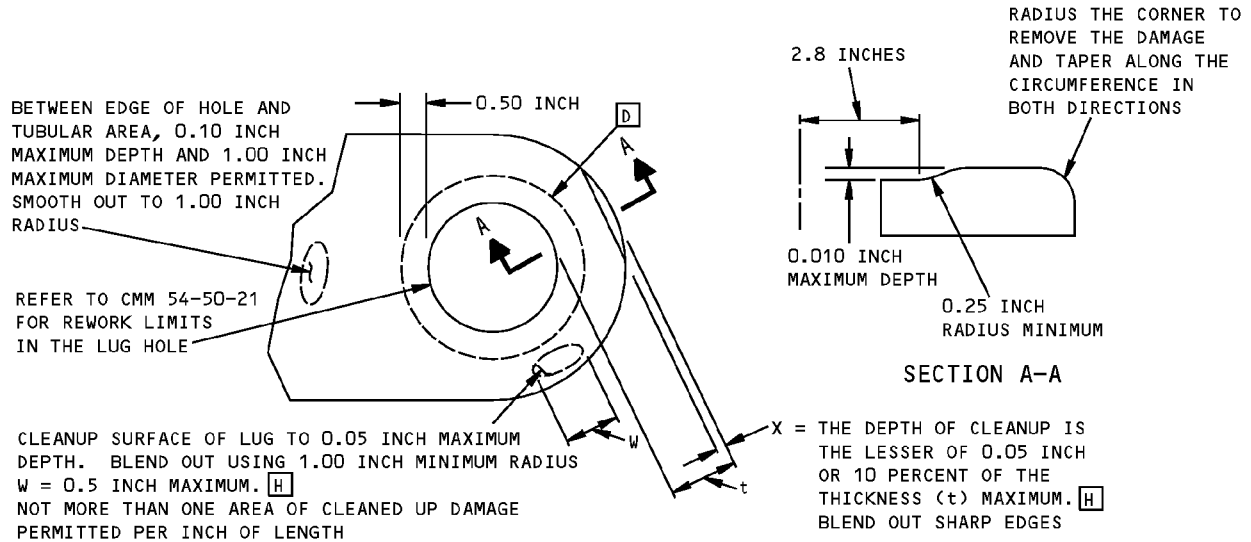
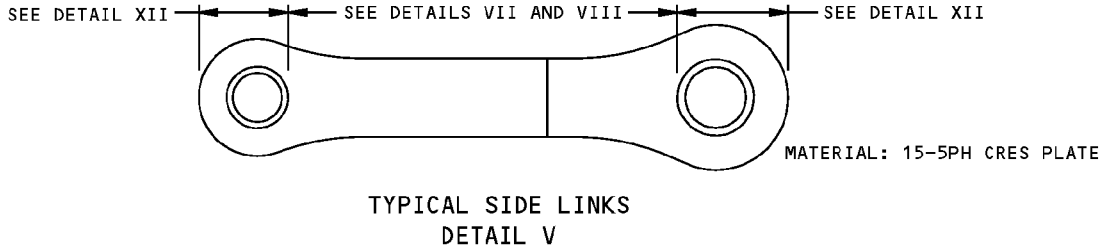
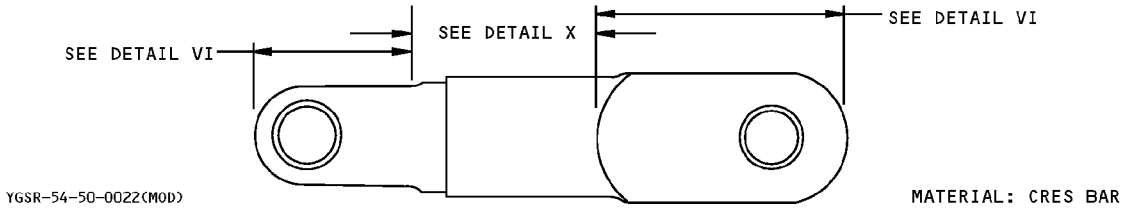
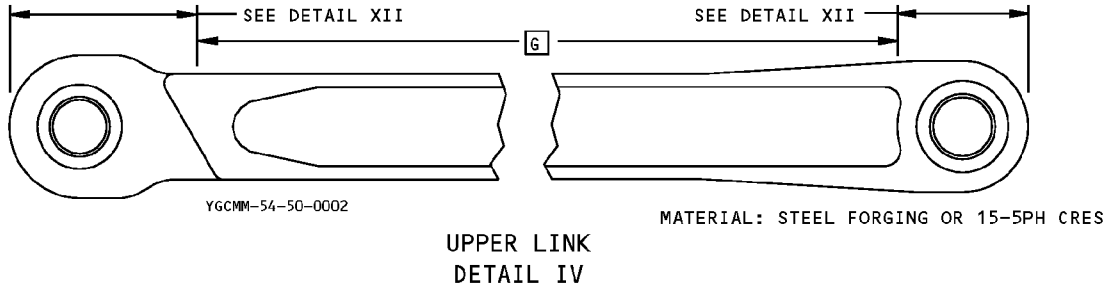


DETAIL III

ZONE	DAMAGE LIMITS
1	SEE DETAIL XII. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND BASE OF END FITTING. SEE DETAILS VII AND VIII. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. C
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C
6	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XIV. A

**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 3 of 7)**

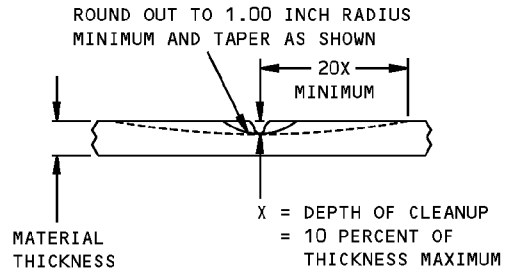
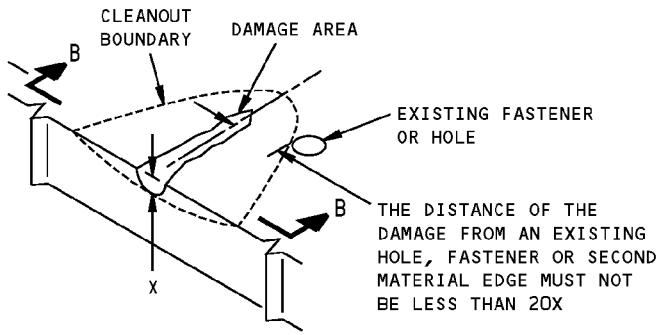
**767-300
STRUCTURAL REPAIR MANUAL**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL VI**

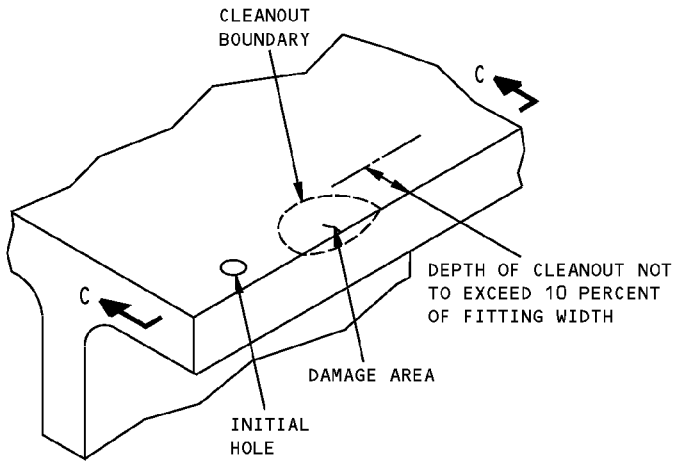
**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 4 of 7)**

STRUCTURAL REPAIR MANUAL

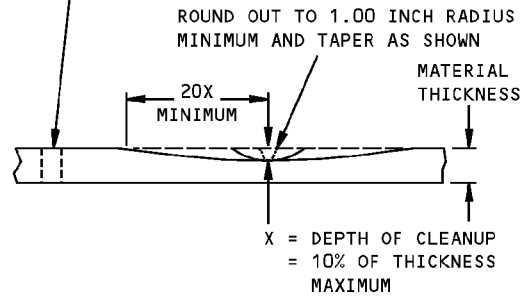


**REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE THAT IS NOT ON A LUG
DETAIL VII**

SECTION B-B

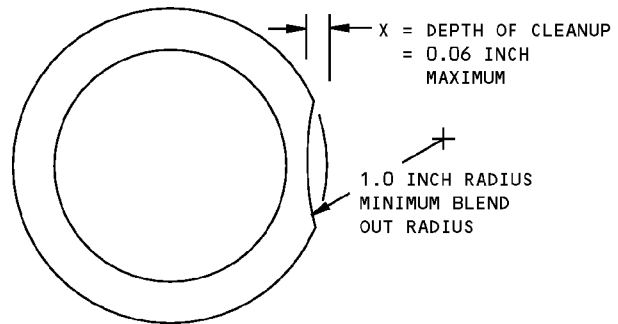
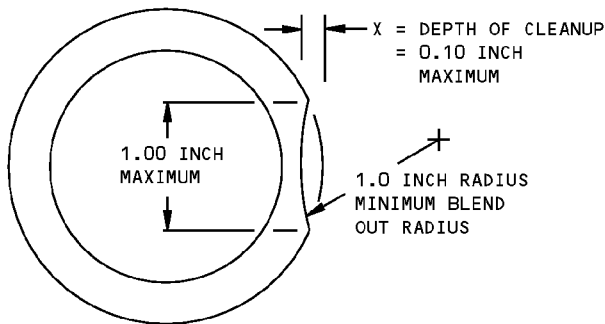


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR SECOND MATERIAL EDGE MUST NOT BE LESS THAN 20X



**REMOVAL OF DAMAGE ON AN EDGE
DETAIL VIII**

SECTION C-C

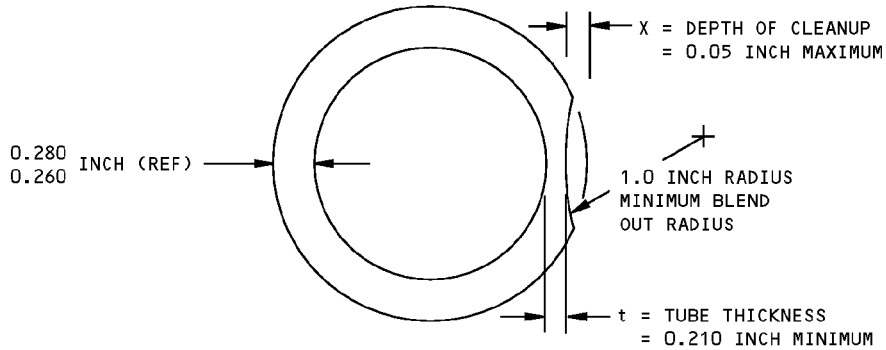


**REMOVAL OF DAMAGE ON A SURFACE
DETAIL IX**

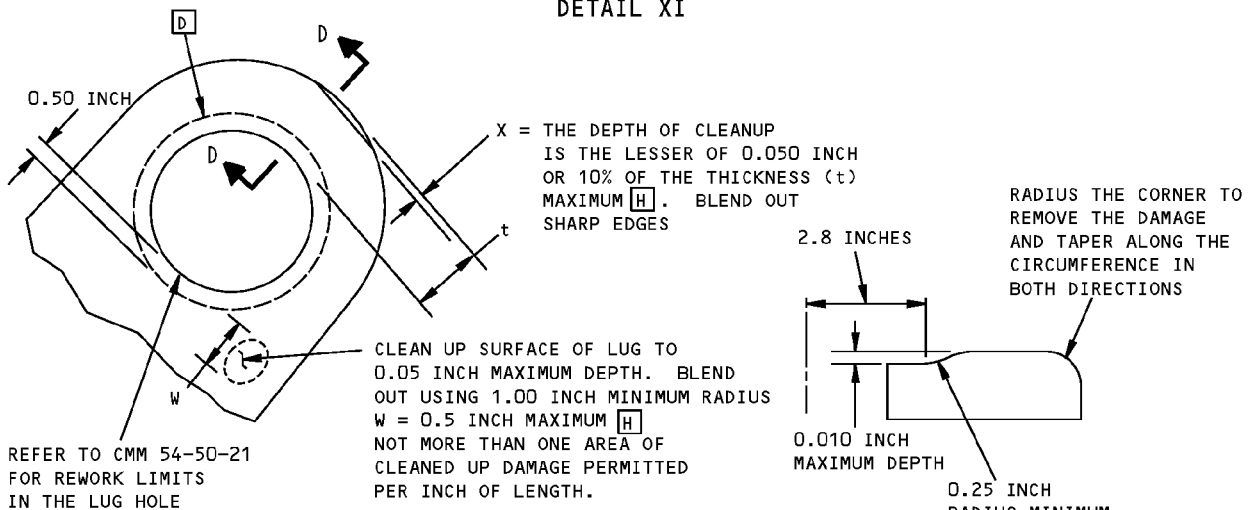
**REMOVAL OF DAMAGE ON A SURFACE
DETAIL X**

**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 5 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

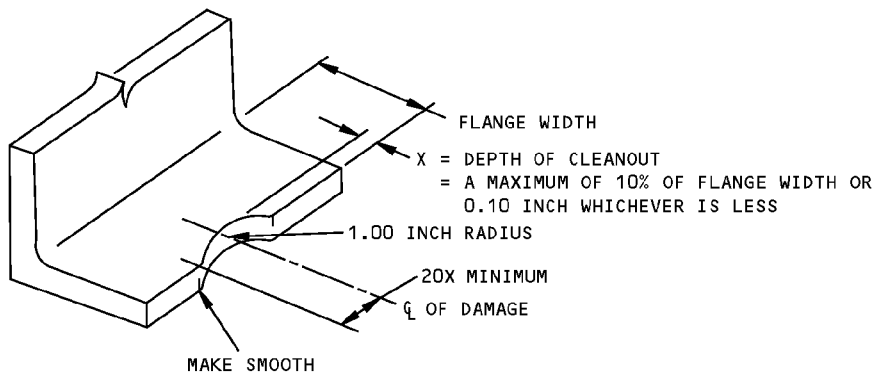


**REMOVAL OF DAMAGE ON A SURFACE
DETAIL XI**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL XII**

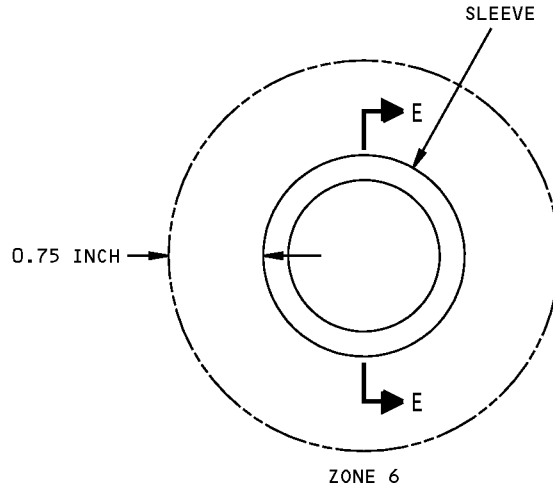
SECTION D-D



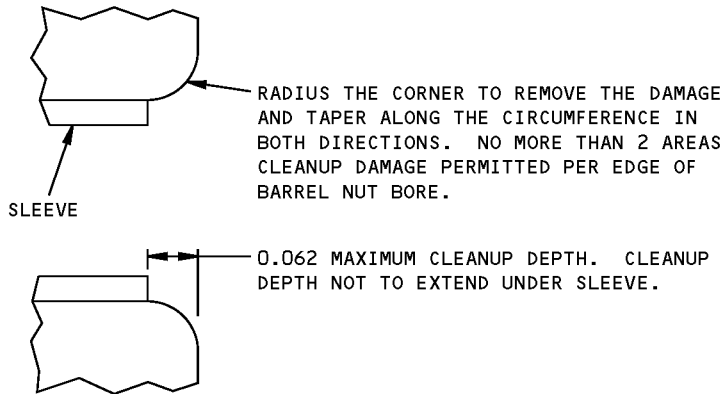
**REMOVAL OF EDGE DAMAGE FROM FREE FLANGE
WITHOUT FASTENERS
DETAIL XIII**

**Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 6 of 7)**

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STRUCTURAL REPAIR MANUAL



REMOVAL OF DAMAGE ON A BARREL NUT BORE
DETAIL XIV

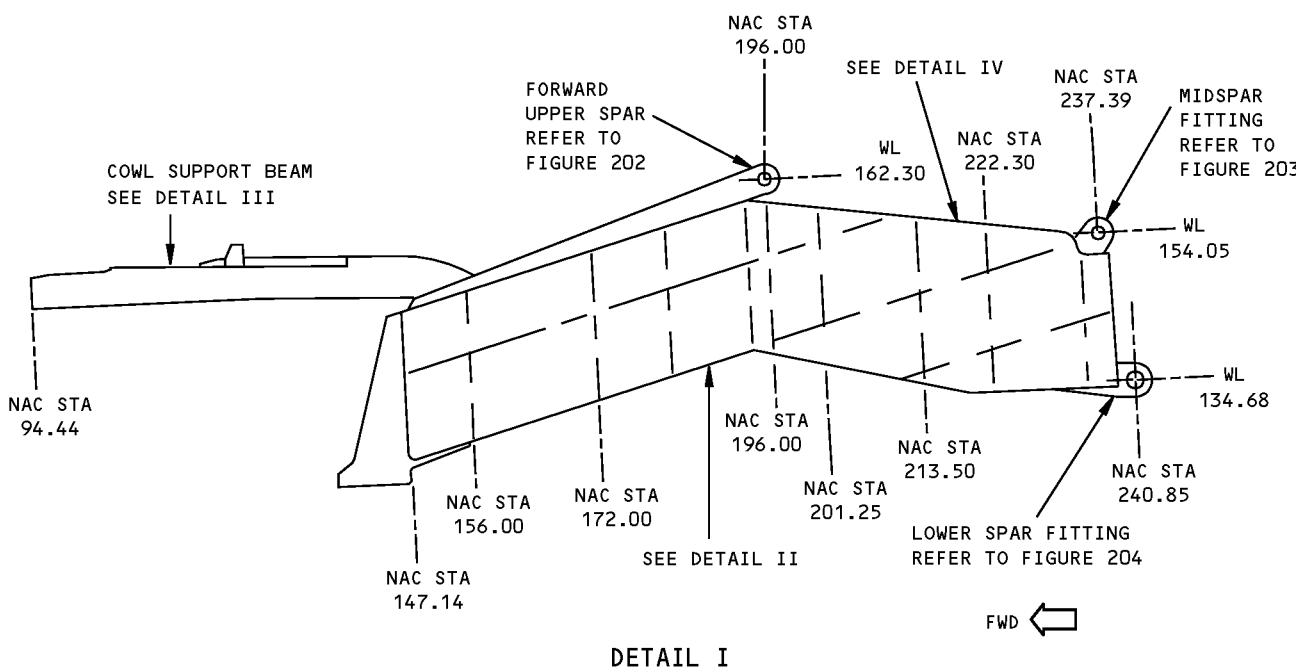
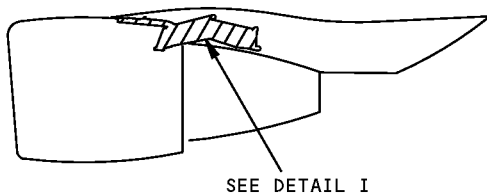


SECTION E-E

Allowable Damage - Strut Attachment Links - PW4000 Engine
Figure 101 (Sheet 7 of 7)

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT ATTACHMENT FITTINGS - PW4000 ENGINE

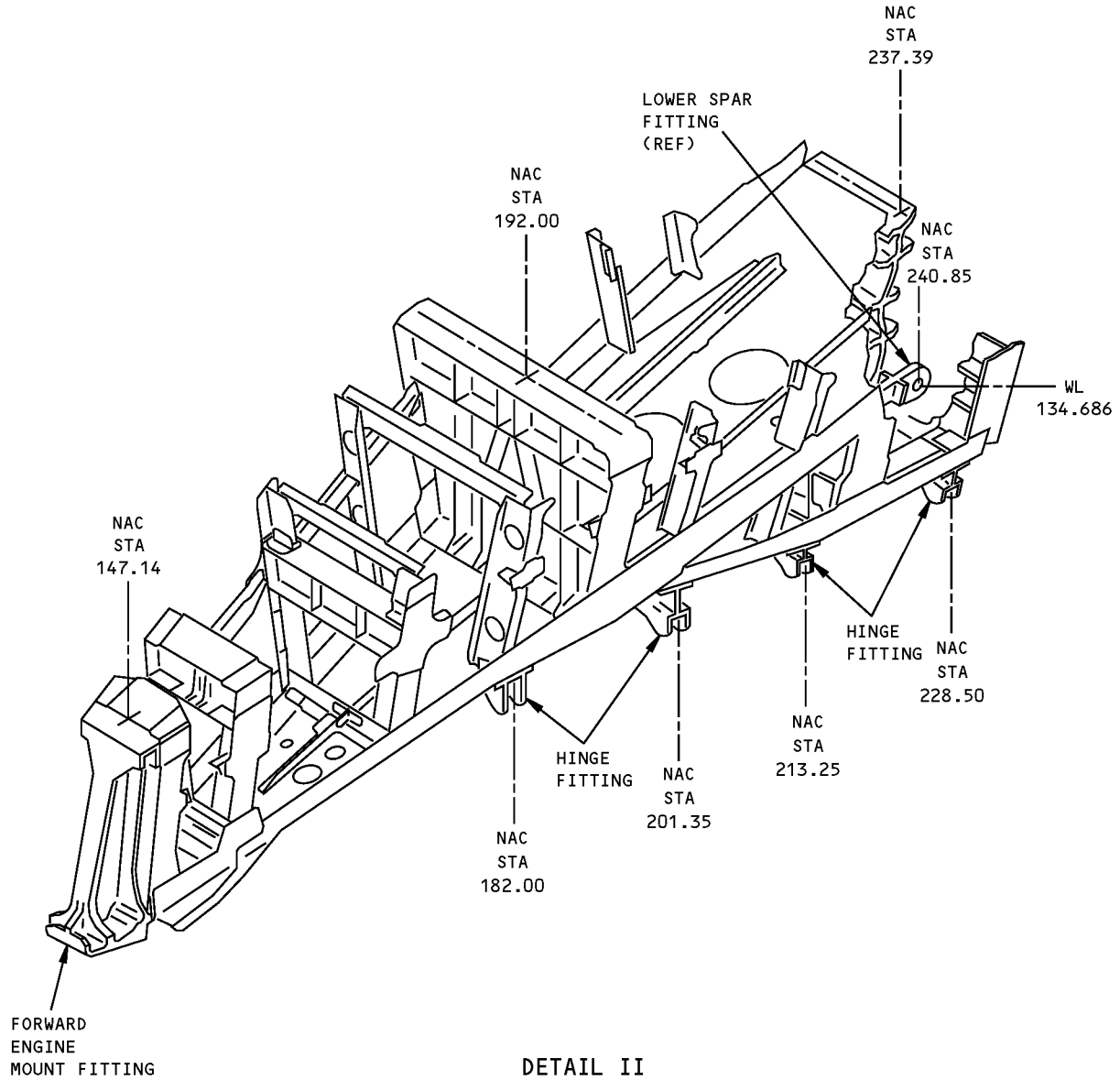


NOTES

- THE FORWARD UPPER SPAR, MID SPAR AND LOWER SPAR FITTING, LUG HOLE REPAIRS ARE THE ONLY TYPICAL STRUT ATTACHED FITTING REPAIRS AVAILABLE. OTHER TYPICAL STRUT ATTACHED FITTING REPAIRS WILL BE AVAILABLE BASED ON SERVICE EXPERIENCE.
- REFER TO SRM 54-53-02 FOR FITTING AND LINKAGE IDENTIFICATION AND ALLOWABLE DAMAGE
- REFER TO 54-50-21 OF THE COMPONENT MAINTENANCE MANUAL FOR THE REPAIR OF THE UPPER AND SIDE LINKS, AND THE DIAGONAL BRACE SHOWN IN DETAIL V.

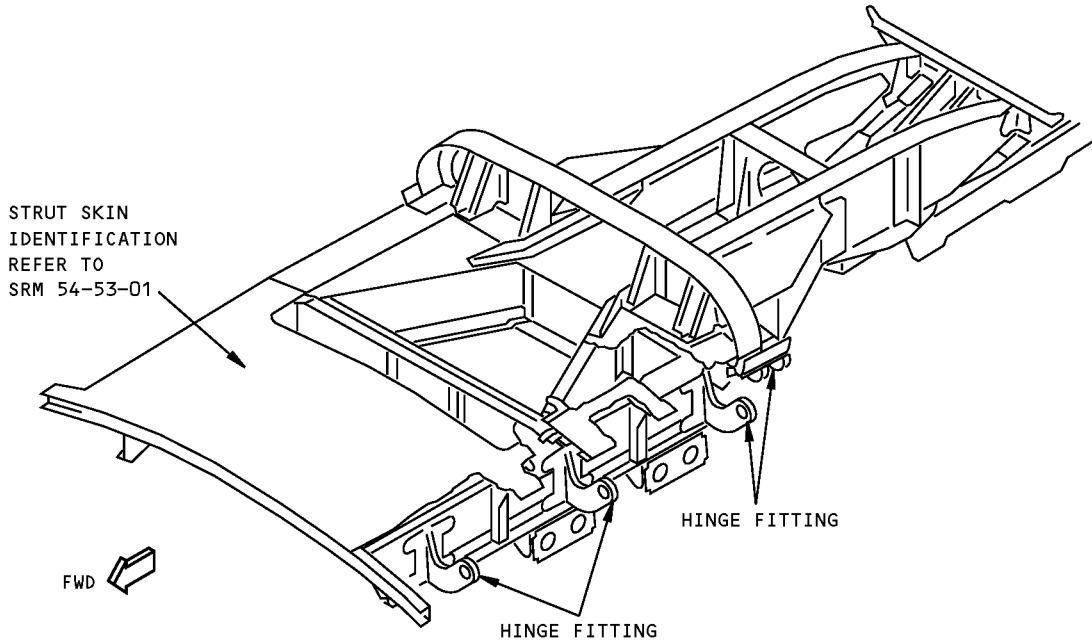
**Strut Attachment Fitting Repair - PW4000 Engine
Figure 201 (Sheet 1 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

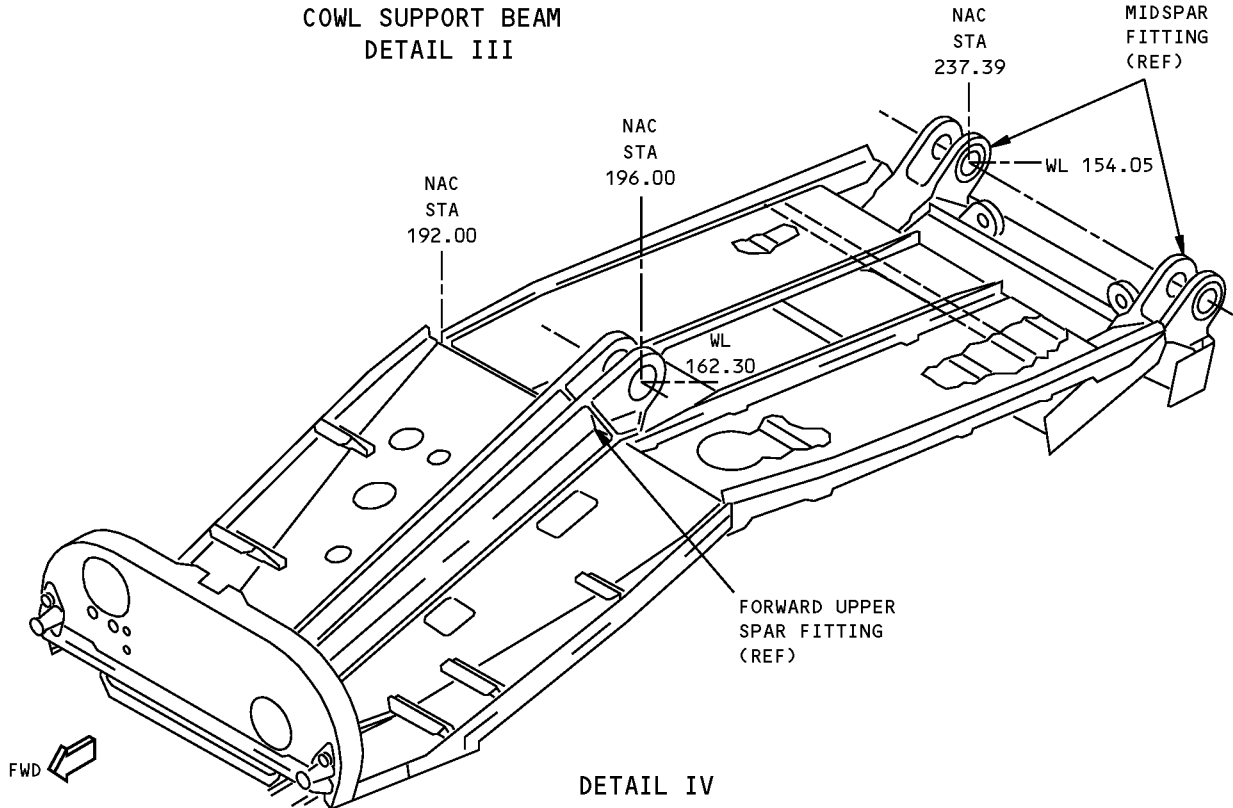


**Strut Attachment Fitting Repair - PW4000 Engine
Figure 201 (Sheet 2 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**

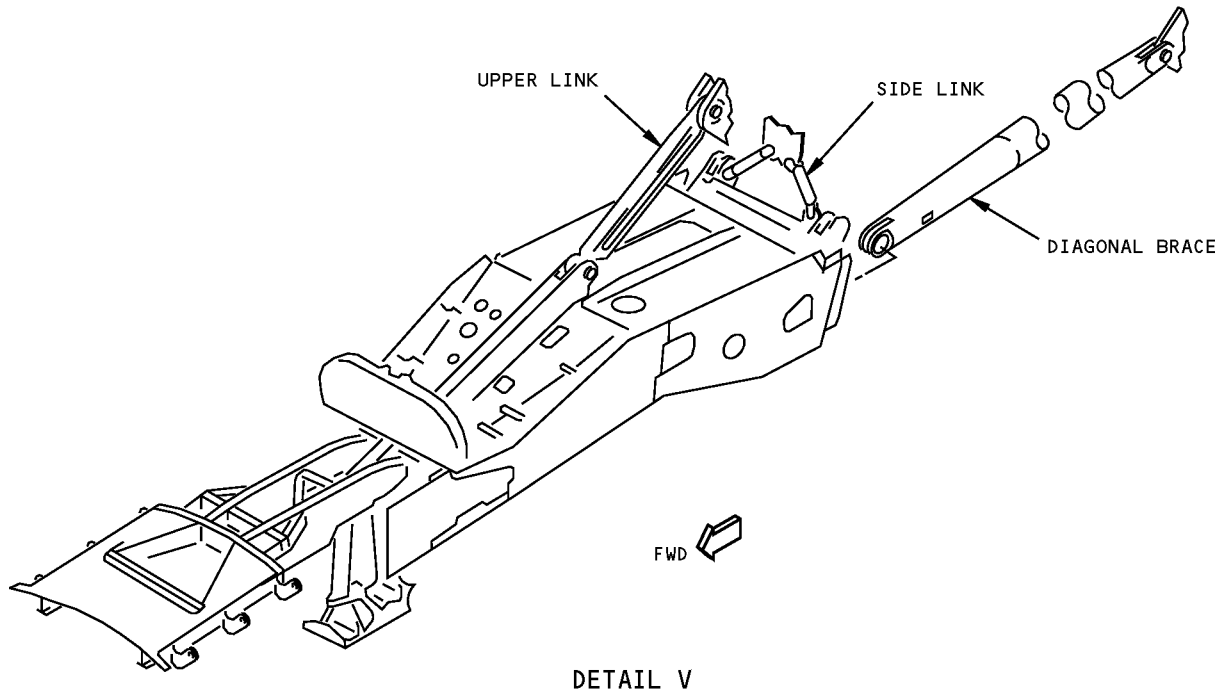


**COWL SUPPORT BEAM
DETAIL III**



**Strut Attachment Fitting Repair - PW4000 Engine
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL



Strut Attachment Fitting Repair - PW4000 Engine
Figure 201 (Sheet 4 of 4)

STRUCTURAL REPAIR MANUAL

REPAIR 2 - FORWARD UPPER SPAR FITTING LUG HOLE - PW4000 ENGINE

APPLICABILITY

THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE FORWARD UPPER SPAR FITTING ON THE PW4000 ENGINE. **B**

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER EXCEEDS THE MAXIMUM PERMITTED.

REPAIR INSTRUCTIONS

1. Remove the engine strut from the wing. Refer to AMM 54-51-01/401.
2. Open the strut access doors. Refer to AMM 54-53-01/201.
3. Get the bushing removal tool from Boeing tool kit B0F311T2110.
4. Remove the two bushings from the lugs of the clevis with the bushing removal tool. Discard the bushings. The bushing material is Aluminum-Nickel-Bronze alloy.
5. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for the magnetic particle inspection procedure.
6. If damage is not found during the initial inspections and the airplane age is less than or equal to 15 years, then proceed to step 16. If the airplane age is more than 15 years or hole damage is found, proceed to the next step.
7. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables on both sides of the upper link fitting. Move the bundles and cables up and away from the fitting to make clearance for the repair tools. If any electrical connections are disconnected, install caps or plugs on the equipment. Also, attach location tags to make subsequent connection easier.
8. Drain the fuel supply line and the hydraulic fluid lines to the engine.
9. Remove tubes, duct, clamps, support blocks and brackets on both sides of the fitting. Refer to Detail I.
10. Install the boring tools included in Boeing tool kit B0F311T2110 or equivalent. Use a temporary sheet metal cover, approximately 0.063 inch thick, to support the boring fixture over the hole for the thermal anti-ice duct.
11. Machine the hole as necessary to remove the damage. The fitting material is 15-SPH corrosion resistant steel, heat treated to 180-200 KSI. Do a visual inspection with a 10-power magnifying glass for corrosion or a magnetic particle inspection for cracks to make sure all damage is removed. Machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 1.9962 inches, then get alternative repair instructions from Boeing.
12. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
13. Remove the boring tools.
14. Hone the machined surfaces to remove all machine tears and burrs.
15. Flap peen the hole. Do not use shot made of ferrous material. Flap peen to an intensity of 0.016A and coverage 2.0. Refer to SOPM 20-10-03.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole before proceeding. To remove the ferrous material, clean the hole using the manual decontamination and repassivation process as specified in BAC5625, surface treatments for ferrous alloys. **A**
16. Hone the holes to the final hole diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.004 inch of material from the hole diameter to get the necessary surface finish. The maximum hole diameter is 1.9962 inches.
17. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.
18. Make the replacement bushings. One bushing is necessary for each lug of the clevis. See Detail II and Table I. Make the outer diameter of each bushing 0.0029 to 0.0039 inch larger than the hole diameter, to give an interference fit. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surfaces 63 microinches R_a .

Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 1 of 6)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

19. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY MINUS 320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

20. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation guide bushing in the liquid nitrogen until the boiling stops. Use the guide bushing from kit B0F311T2110 or the equivalent. Refer to SOPM 20-50-03.

21. Apply sealant or adhesive as follows:

A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the mating surfaces of the clevis which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.

B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.

22. Install the bushings as quickly as possible. Use the installation tools from kit B0F311T2110 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.

23.hone the inner diameter of the bushings to a diameter of 1.6965 to 1.6975 inches. Make the surface finish 32 microinches R. Machine the outer chamfers again if necessary. See Detail II.

24. Bond washer to spar fitting with BMS 5-26. See Detail II, Section A-A. Refer to SOPM 20-50-12.

25. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushing and the faces of the lug. Apply a fillet seal of BMS 5-95 to the washer and bushing interface. Refer to SRM 51-20-05.

26. Put the airplane back to its usual condition.

Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 2 of 6)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0095.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - SOPM 20-10-03 FOR FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.

AS AN ALTERNATIVE TO CLEANING THE HOLE WITH THE MANUAL DECONTAMINATION AND REPASSIVATION PROCESS, YOU CAN ABRABE THE HOLE WITH CLEAN ALUMINUM OXIDE PAPER, 150 GRIT OR FINER. DO NOT USE SILICON CARBIDE ABRASIVE PAPER. SOLVENT CLEAN THE HOLE TO MAKE SURE ALL PARTICLES OF ABRASIVE GRIT ARE REMOVED.

AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

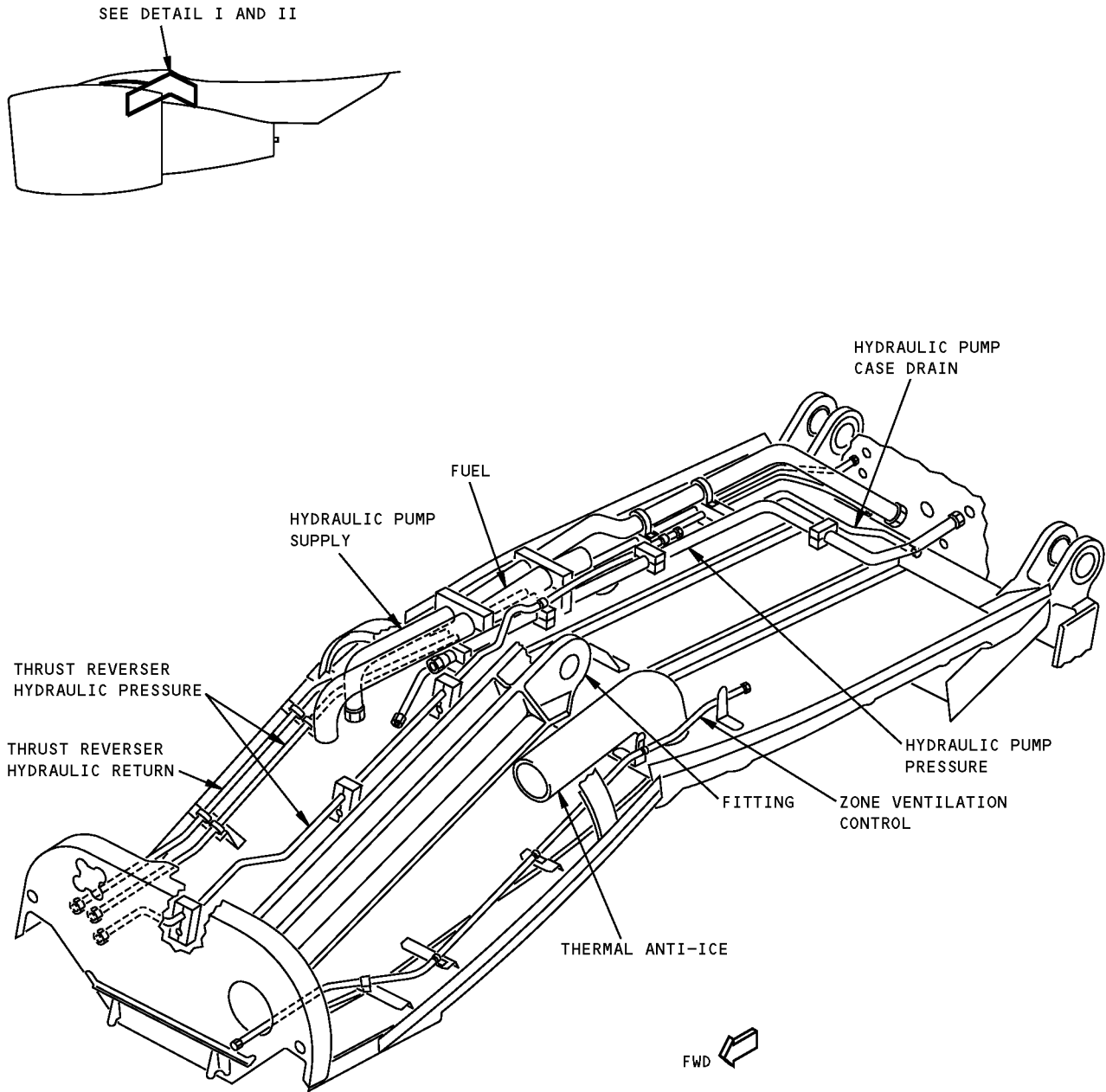
REPAIR MATERIAL		
PART	QTY	MATERIAL
1 OVERSIZED BUSHING	2	2.25 INCHES (57 mm) DIAMETER BY 1.0 INCH (25 mm) LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T4100-70 BUSHING FROM BOEING
2 WASHER	2	3.0 INCHES (76 mm) DIAMETER BY 0.125 INCH (3 mm) THICK AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 310T2303-1 WASHER FROM BOEING

TABLE I

1728176 S0000311067_V1

**Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 3 of 6)**

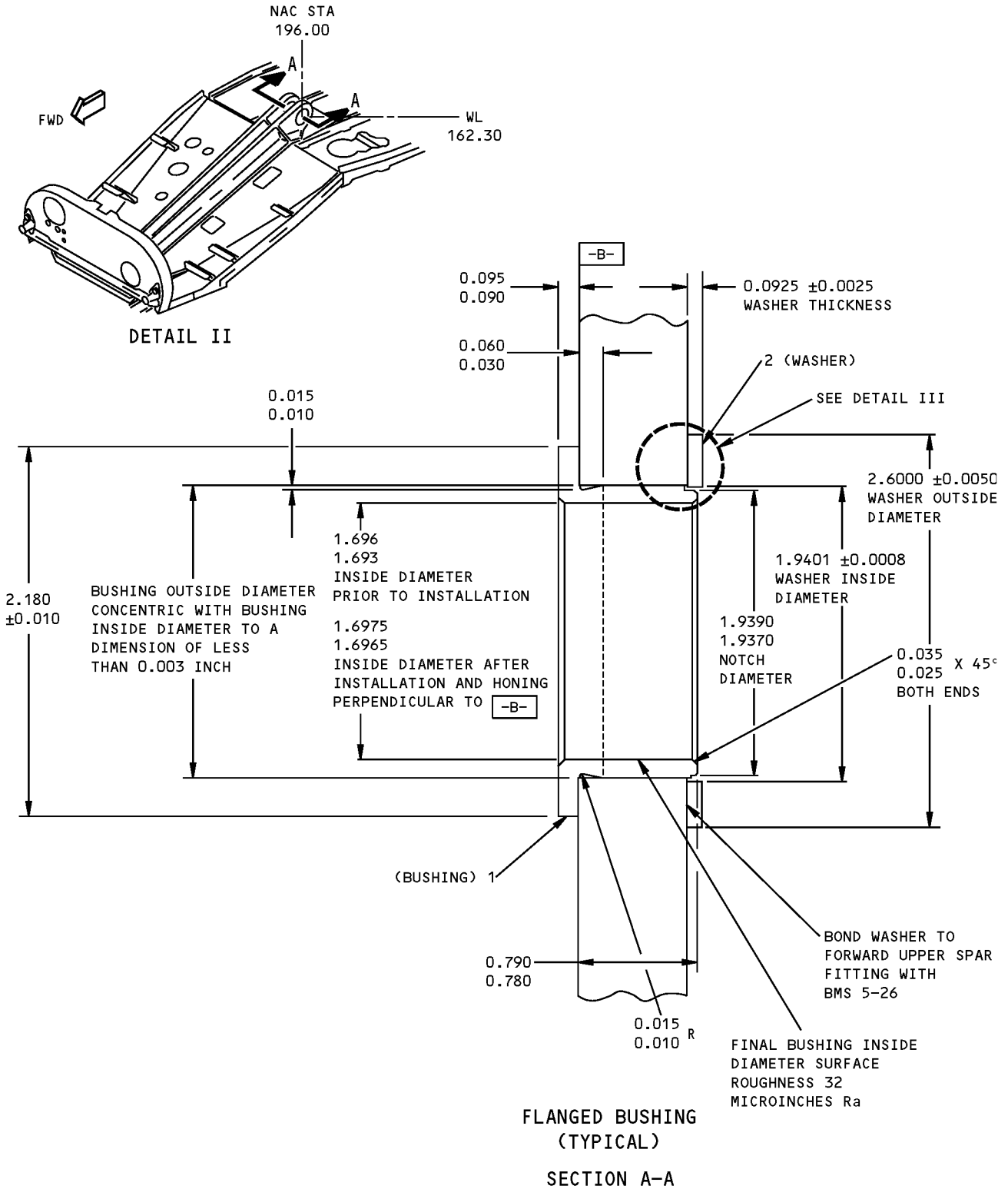
**767-300
STRUCTURAL REPAIR MANUAL**



**TUBING AND DUCT
DETAIL I**

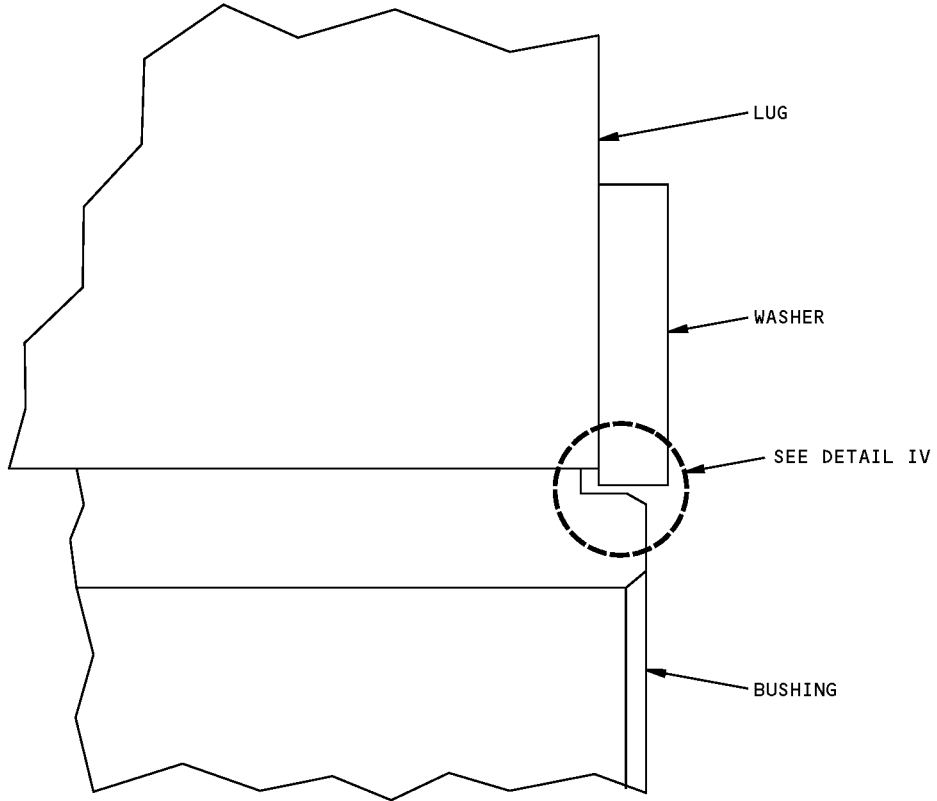
**Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 4 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**

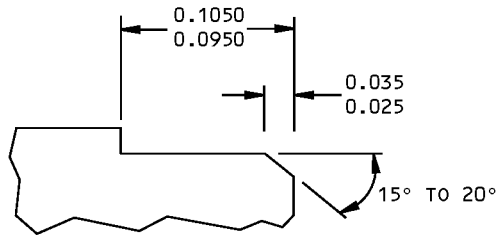


**Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 5 of 6)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III



**BUSHING OD CHAMFER AND
NOTCH DIMENSIONS**

DETAIL IV

**Forward Upper Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 6 of 6)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - MIDSPAR FITTING LUG HOLE - PW4000 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE MIDSPAR FITTING ON THE PW4000 ENGINE. A

REPAIR INSTRUCTIONS

1. Remove the pylon and get access to the clevises. Refer to AMM 54-51-01/401 for the removal of the pylon.
 2. Remove all four of the bushings from the damaged lug(s) of the clevises. Discard the bushing(s). The bushing material is Aluminum-Nickel-Bronze alloy.
 3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for magnetic particle inspection procedure.
 4. Machine each bore as necessary to remove scratches, surface defects, cracks or corrosion. Use boring tool, Boeing tool number B0F311T2150 or equivalent. Refer to SOPM 20-10-02. There are two types of material used for the midspar fitting. For airplane cum line number 2 through 663 without SB 767-54-0080 incorporation, the fitting material is 4330M alloy steel. For airplane cum line numbers 664 and on, or airplanes with SB 767-54-0080 incorporation, the fitting material is 15-5PH CRES.
- NOTE:** INSTALLATION OF THE BORING TOOL REQUIRES THE REMOVAL OF TUBING THAT IS LOCATED BETWEEN THE MIDSPAR FITTINGS.
5. If cracks or corrosion were found during magnetic particle or 10-power magnifying glass visual inspection, continue to machine the bore and to do the inspections until you can not detect cracks or corrosion. Then machine an insurance cut of 0.010 inch minimum from the diameter of the bore. If the diameter of the bore is larger than 1.8640 inches after the bore has been machined, then get alternative repair instructions from Boeing.
 6. If you did not find cracks or corrosion during the initial inspections, an insurance cut is not necessary unless the age of the airplane is more than 10 years. The maximum bore diameter is given in step 5.
 7. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.

8. Remove all machine tears and burrs on cut surfaces.
9. For the midspar fitting made with 4330M alloy steel, do a surface etch inspection of each lug hole that has been machined. Use ammonium persulfate. This inspection examines the temper of the hole to find if the hole was damaged when it was machined. Refer to SOPM 20-10-02 for the surface temper etch inspection procedure.
10. Shot peen or flap peen the holes of the clevises that have been reworked. Use shot number 170 to 330, intensity 0.010A, and coverage 2.0. Refer to SOPM 20-10-03.
11. Hone the holes to the final bore diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.0028 inch of material from the bore diameter to get the necessary surface finish. The maximum bore diameter is 1.8640 inches.
12. For the midspar fitting made with 4330M alloy steel, apply a stylus cadmium plate 0.0003 to 0.0005 inch thick to the surface of the lug hole. Refer to SOPM 20-42-10. For the midspar fitting made with 15-5PH CRES, use the manual decontamination and repassivation process for ferrous alloys as given in SOPM 20-30-03 to clean the lug bore.
13. Make four replacement bushings, one bushing for each lug of the clevises. See Detail I and Table I. Make the outer diameter of each bushing 0.0027 to 0.0036 inch larger than the hole diameter before the bushing is cadmium plated as necessary. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surfaces 63 microinches R_a .
14. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.
15. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.

**Midspar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONTINUED)

16. For the midspar fitting made with 4330M alloy steel, apply cadmium plate to the outer surface of the bushing. Use Type II, Class 2 cadmium plating as specified in SOPM 20-42-05. Do not plate the inner surface of the bushing.
17. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tooling in the liquid nitrogen until boiling stops. Refer to SOPM 20-50-03.
18. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin film of BMS 5-95 sealant to the inner surface of the fitting bore and to the mating surface under the bushing flange.
 - B. If you use adhesive as an alternative to sealant, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the inner surface of the fitting bore then apply a thin film of BMS 5-95 sealant to the mating surface under the bushing flange.

NOTE: If there is primer in the bores, do not remove it.
19. Install the bushings as quickly as possible. Use the bushing installation tool from Boeing kit B0F311T2150 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
20. Line hone through both lugs of the fitting to keep the bushing holes aligned. Hone the inner diameter of the bushings to a diameter of 1.5810 to 1.5822 inches. Make the surface finish 32 microinches R. Machine the chamfers again if necessary. See Detail I.
21. Apply a fillet seal of BMS 5-95 sealant between the flange of the bushing and the face of the lug. Apply a bead of BMS 5-95 sealant between the opposite end of the bushing and the inner surface of the lug hole. Refer to SRM 51-20-05.
22. Apply a layer of BMS 3-23, Type II corrosioninhibiting compound to the repair area.
23. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE

PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

• WHEN YOU USE THIS REPAIR REFER TO:

- AMM 51-21 FOR INTERIOR AND EXTERIOR FINISHES
- AMM 54-51-01 FOR PYLON REMOVAL AND INSTALLATION
- AMM 71-00-02 FOR THE ENGINE REMOVAL AND INSTALLATION
- SOPM 20-10-02 FOR THE MACHINING OF ALLOY STEEL AND FOR SURFACE TEMPER ETCH INSPECTION
- SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
- SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
- SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
- SOPM 20-30-03 FOR CLEANING AND SURFACE PREPARATION OF FERROUS ALLOYS
- SOPM 20-42-05 FOR CADMIUM PLATING
- SOPM 20-42-10 FOR STYLUS CADMIUM PLATING
- SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION.
- SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
- SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
- SRM 51-20-05 FOR REPAIR SEALING
- SRM 51-40 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

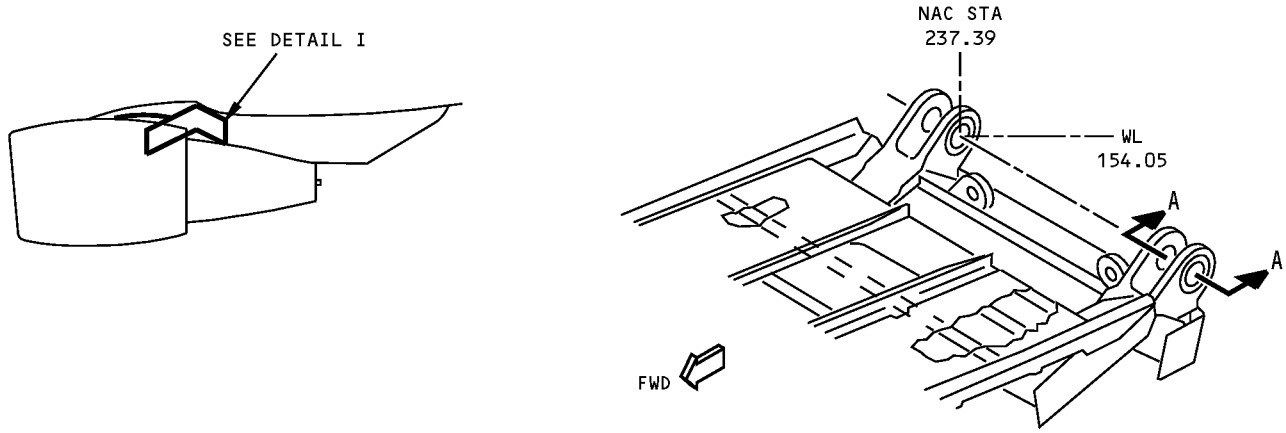
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED BUSHING	AS REQUIRED	2.25 INCHES DIAMETER BY 1.00 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640

TABLE I

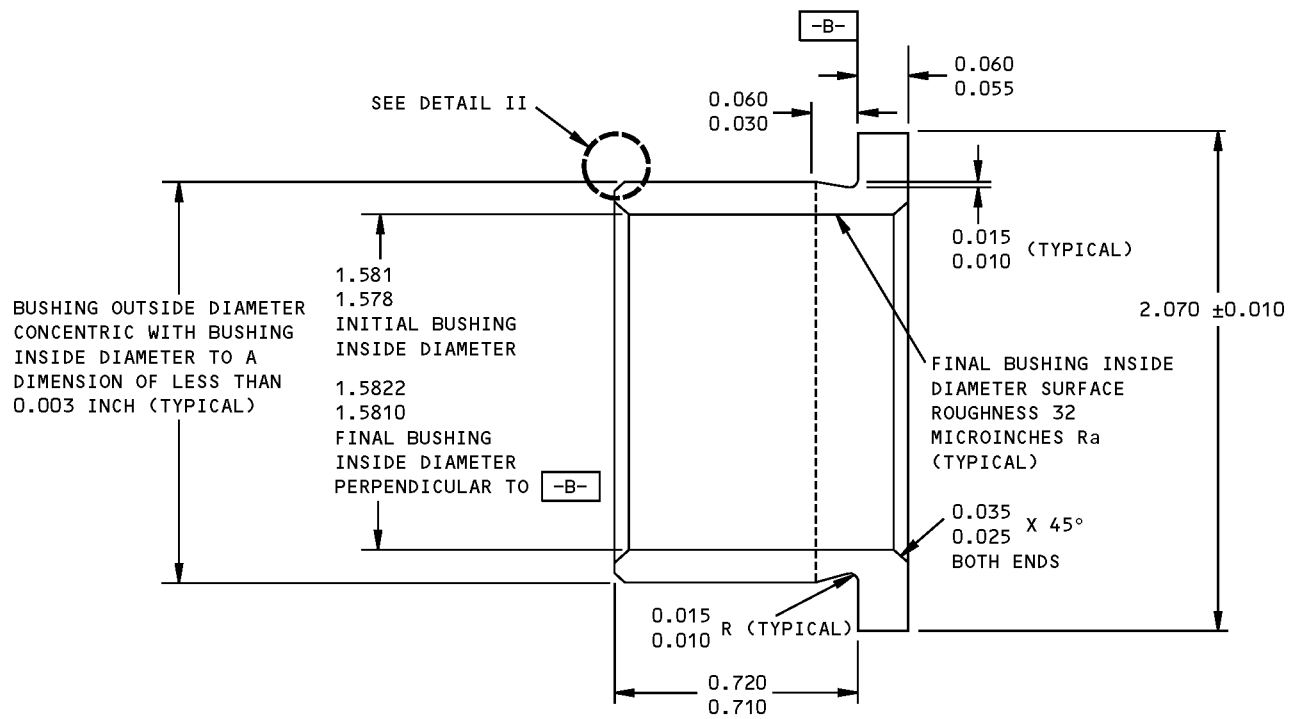
1703657 S0000311043_V1

**Midspar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

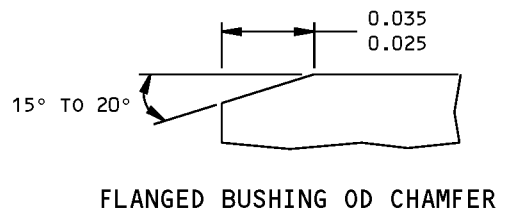
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



**FLANGED BUSHING
(TYPICAL)
SECTION A-A**



**FLANGED BUSHING OD CHAMFER
DETAIL II**

**Midspar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 4 - LOWER SPAR FITTING LUG HOLE - PW4000 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE LOWER SPAR FITTING ON THE PW4000 ENGINE. B

REPAIR INSTRUCTIONS

1. Remove the strut diagonal brace and get access to the lower spar fitting. Refer to AMM 54-51-02/401.
2. Remove the two bushings from the fitting lug, and discard them. Use the bushing removal tool in the Boeing tool kit B0F311T4185, or the equivalent.

As an alternative, split bushing removal tool, Boeing tool number B54016-1, can be used.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01.
4. If damage was not found with the inspections, and the age of the airplane is less than or equal to 15 years, then go to step 11.
5. Install the right angle boring tool that is included in the Boeing tool kit, or the equivalent.

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER IS MORE THAN THE MAXIMUM PERMITTED.

6. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Continue to machine the hole and to do the inspections until damage cannot be found. Then machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.1859 inches after the hole has been machined, then get alternative repair instructions from Boeing.
7. Machine a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
8. Remove the boring tool.
9. Hone the hole to remove machine tears and burrs. Break sharp edges on the chamfer.

10. Peen the hole. Do not use peening equipment that has shot made of ferrous material. Flap peen wheels are available with tungsten carbide balls. Refer to SOPM 20-10-03. Use shot size 170-330, intensity 0.014A, and coverage 2.0.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole. Use the manual decontamination and repassivation process as specified in BAC5625, Surface Treatments for Ferrous Alloys. As an alternative, abrade the hole with aluminum oxide paper, 150 grit or finer. Do not use silicon carbide paper. Solvent clean the hole to make sure that all grit is removed.

11. Hone the hole to make the hole surface finish 32 microinches R_a or smoother. A maximum of 0.003 inch material can be removed from the hole diameter (0.0015 inch depth of hone) to get the necessary surface finish. The hole to be circular to a dimension of 0.0003 inch or less. The maximum hole diameter is given in step 6.
12. Make the repair "no hone" bushings from Q15T0779-9 or see Table I and Detail I. Make the outside diameter of each bushing 0.0035 to 0.0041 inch larger than the hole diameter to give an interference fit. Make the outside diameter 32 microinches R_a or smoother. Make the surface finish on the other surfaces 63 microinches R_a or smoother. The outside diameter of each bushing to be circular to a dimension of 0.0003 inch or less.
13. Do a magnetic particle inspection of the bushings to make sure there are no surface defects. Refer to SOPM 20-20-01.
14. Apply one layer of BMS 10-11, Type I primer in the hole and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

15. Prepare the bushings for installation with the shrink method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tool plugs in the liquid nitrogen until the boiling stops. Refer to SOPM 20-50-03. Get the installation tool plugs from the Boeing tool kit, or the equivalent.

**Lower Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the surfaces of the lug which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the installation tool assembly from the Boeing tool kit, or the equivalent. Hold the bushing flanges tightly against the lug until the bushings are at room temperature. A press fit can be used to complete the shrink fit installation of the bushings.
18. It is necessary to do a local hone to the inside diameter of the split bushings if the bushings are not aligned to a dimension of 0.0015 inch or less. Hone a small amount from the inside diameter of the bushings until the bushings are aligned to a dimension of 0.0015 inch or less. Make the surface finish 32 microinches R_a or smoother. Machine the outer chamfers again if necessary.
19. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the lug faces. Apply BMS 5-95 sealant to the clearance between the bushings on the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
 - ALL DIMENSIONS ARE IN INCHES.
 - THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0061.
 - WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 54-51-02 FOR REMOVAL OF THE DIAGONAL BRACE
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-05 FOR REPAIR SEALING.
- [A]** REFER TO SB 767-54-0061 FOR DATA ON BLANK BUSHING AVAILABILITY.
- [B]** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.
- [C]** ADDITIONAL HONING IS REQUIRED ONLY IF THE FINAL BUSHING INSIDE DIAMETER IS NOT AT THE SPECIFIED RANGE AFTER INSTALLATION.

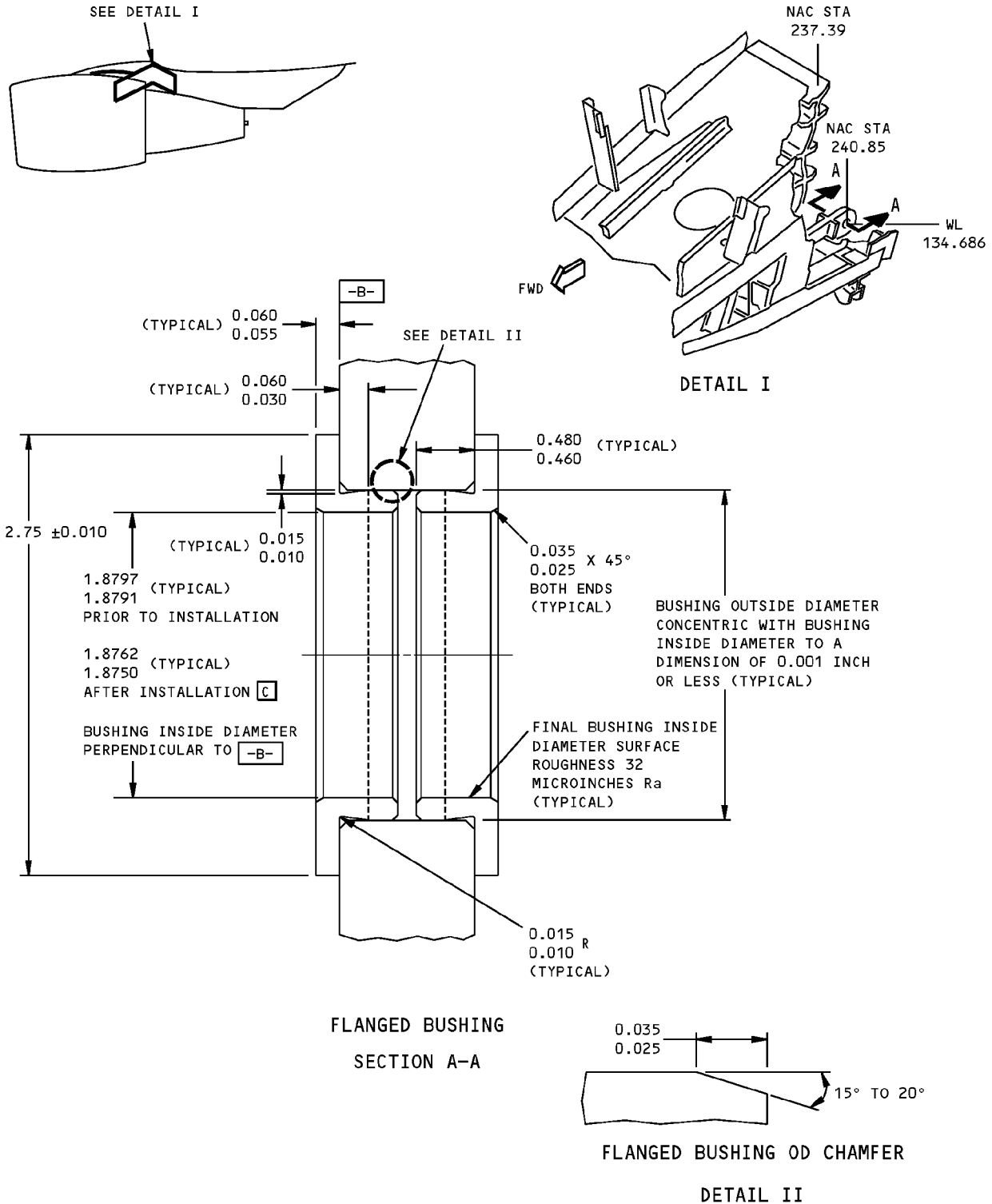
REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED "NO-HONE" BUSHING	2	15-5PH CRES SOLUTION TREATED AS SPECIFIED IN AMS 5659, HT TR 180-200 KSI AS SPECIFIED IN BAC5619. SEE DETAIL I AND [A]

TABLE I

1727690 S0000311144_V1

**Lower Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 2 of 3)**

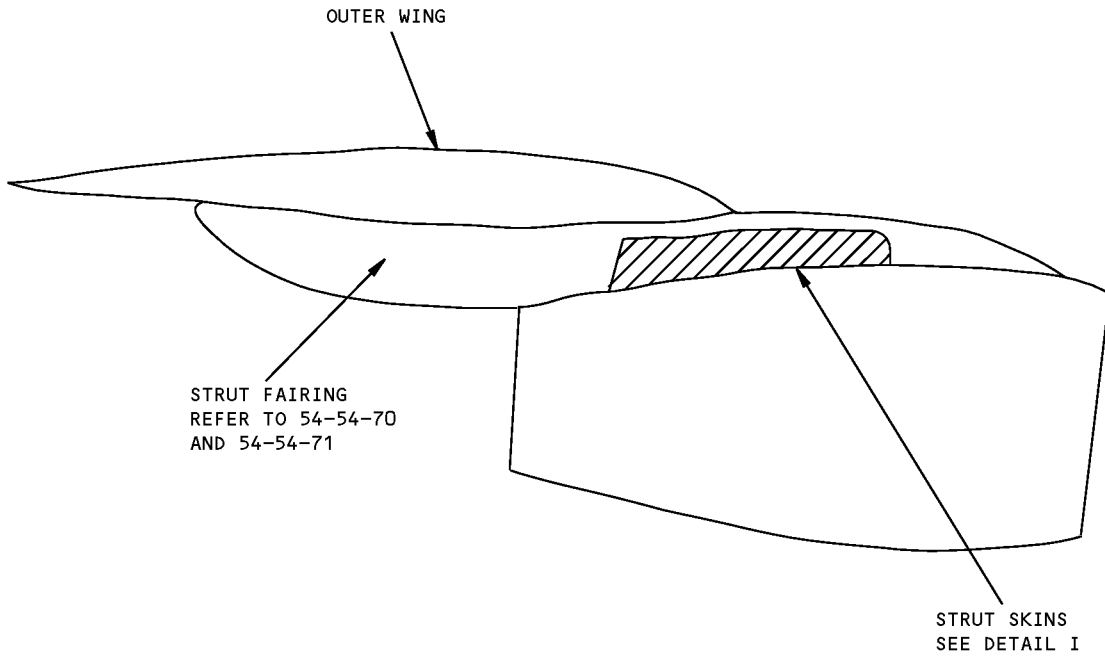
**767-300
STRUCTURAL REPAIR MANUAL**



**Lower Spar Fitting, Lug Hole Repair - PW4000 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

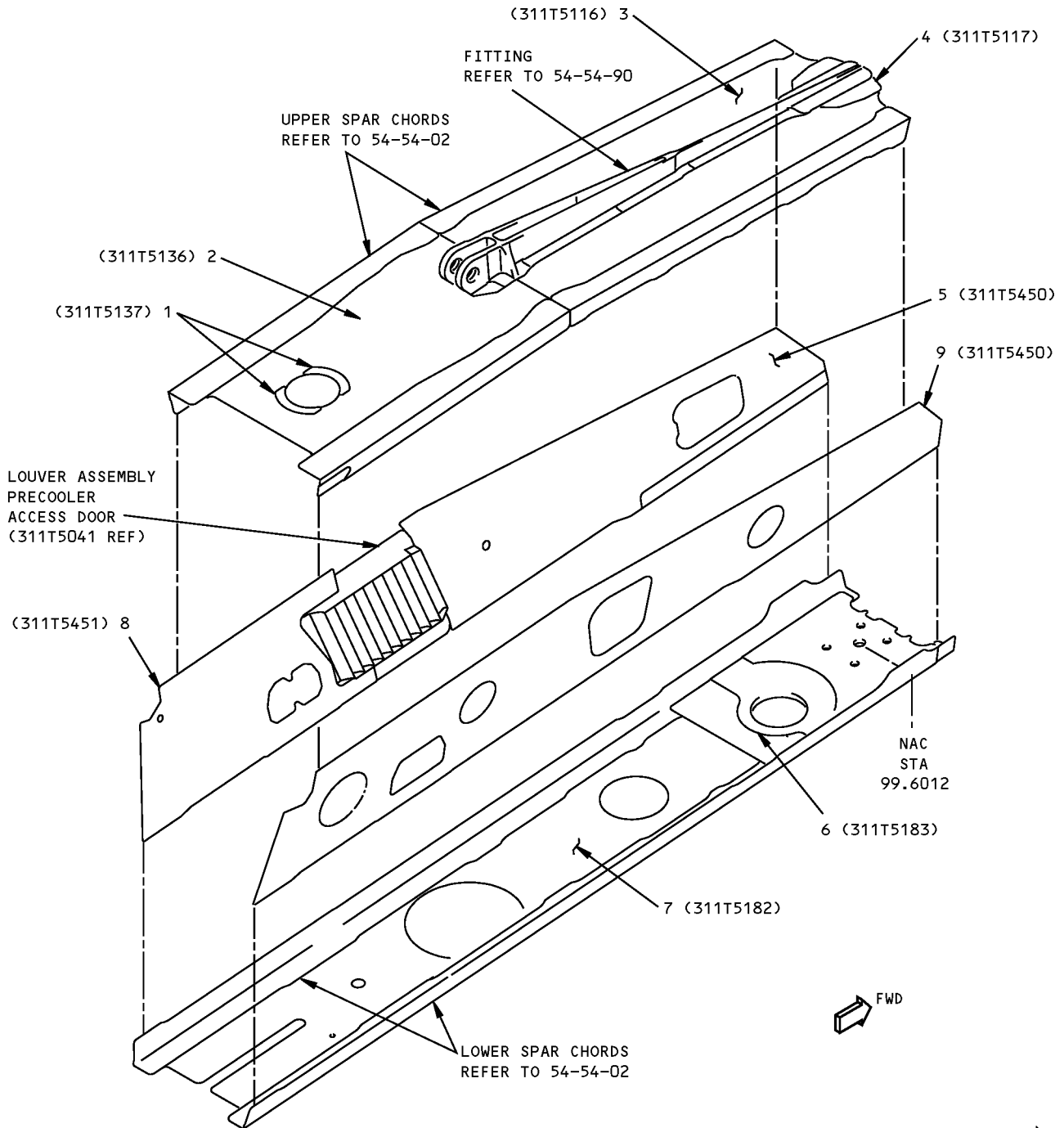
IDENTIFICATION 1 - STRUT SKIN - RB211-524 ENGINE



**Strut Skin Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**

REF DWG
311T5400



DETAIL I

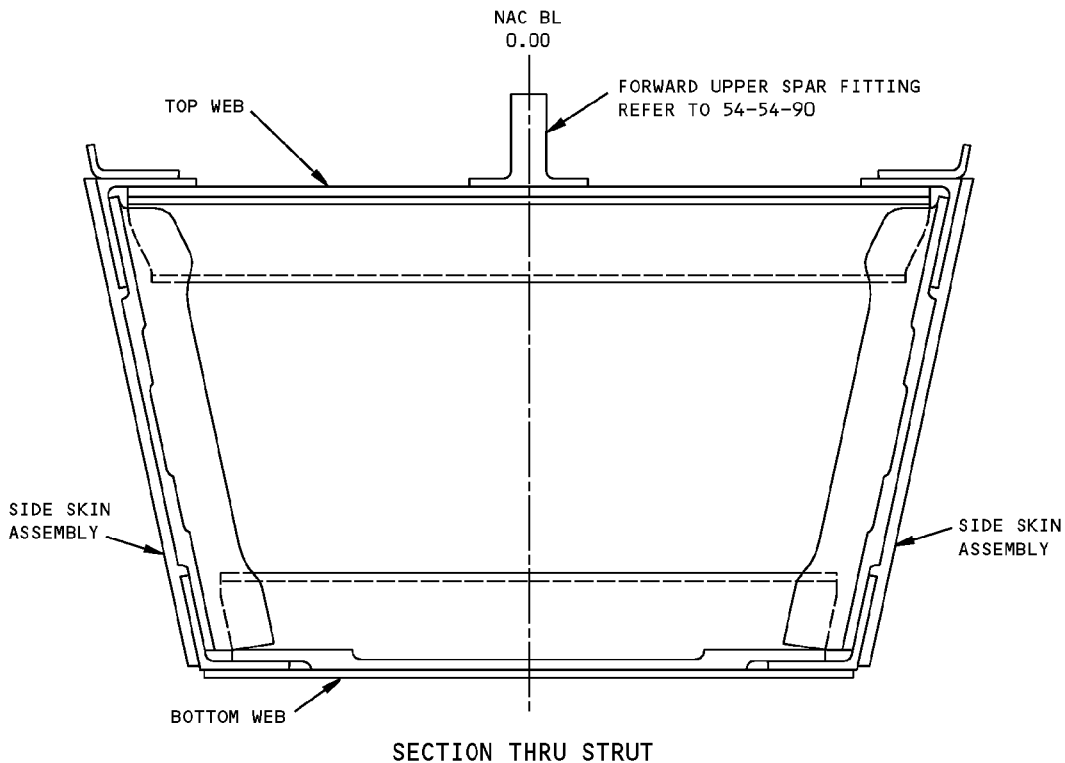
**Strut Skin Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 3)**

IDENTIFICATION 1
Page 2
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54-54-01

D634T210

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STRUCTURAL REPAIR MANUAL**



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	DOUBLER, AFT UPPER SPAR	0.156	2024-T81	
2	WEB, AFT UPPER SPAR	0.160	2024-T81	
3	WEB, FWD UPPER SPAR	0.160	2024-T81	
4	DOUBLER, FWD UPPER SPAR	0.160	2024-T81	
5	BONDED SKIN PANEL ASSY OUTER SKIN INNER SKIN	0.090 0.090	2024-T81 2024-T81 CLAD (MACHINED TO 0.060 MIN)	
6	THRUST PLATE, LWR SPAR	0.875	15-5 PH CRES, HT TR 180-200 KSI (MACHINED TO 0.080 MIN)	
7	WEB, LWR SPAR	0.300	Ti-6AL-4V ANNEALED (MACHINED TO 0.080 MIN)	
8	SKIN PANEL, AFT OUTBD SIDE	0.190	Ti-6AL-4V ANNEALED (MACHINED TO 0.090 MIN)	
9	SKIN PANEL	0.190	Ti-6AL-4V ANNEALED	

LIST OF MATERIALS FOR DETAIL I

**Strut Skin Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 3)**

D634T210

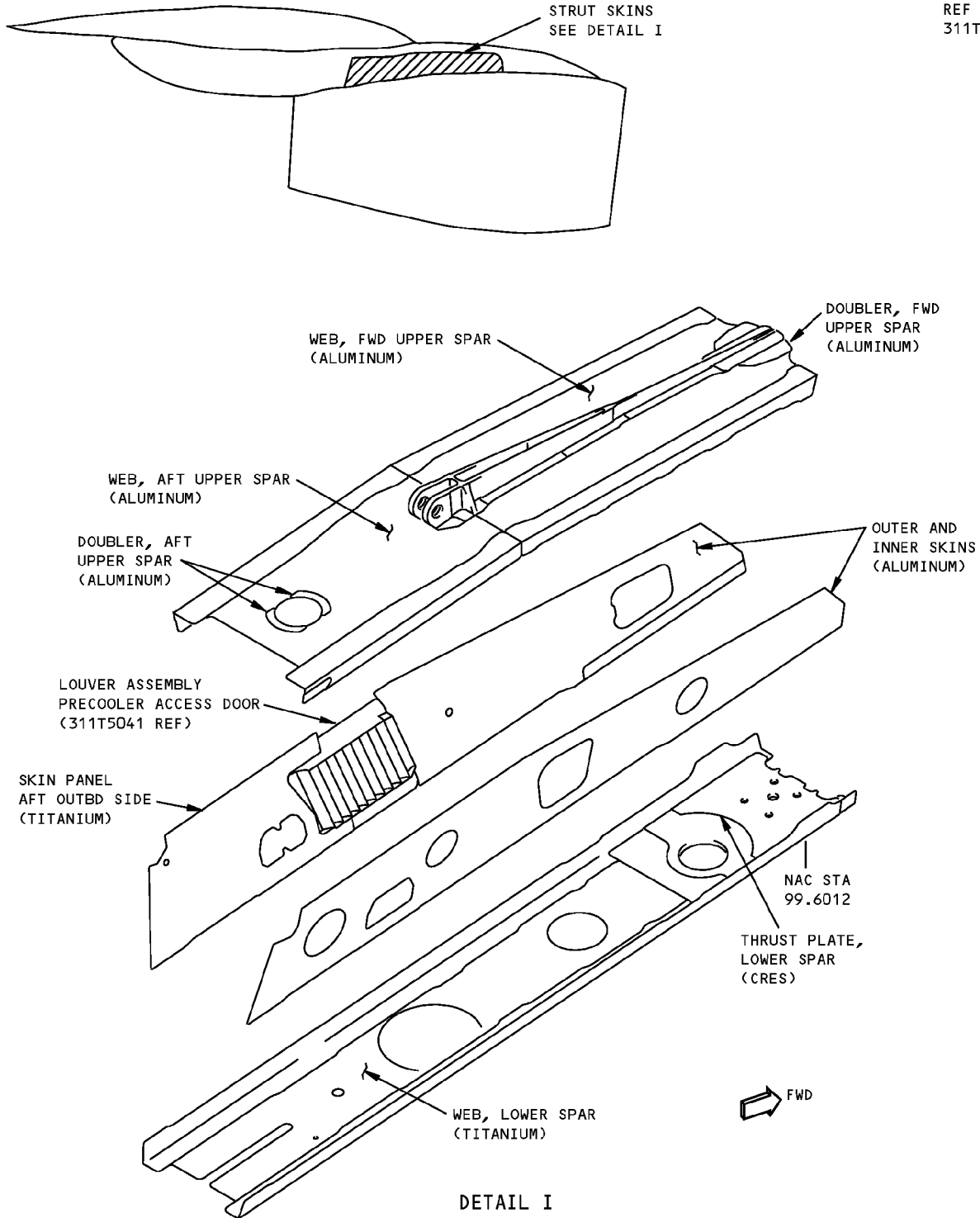
54-54-01

IDENTIFICATION 1
Page 3
Apr 01/2005

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ALLOWABLE DAMAGE 1 - STRUT SKIN - RB211-524 ENGINE

REF DWG
311T5400

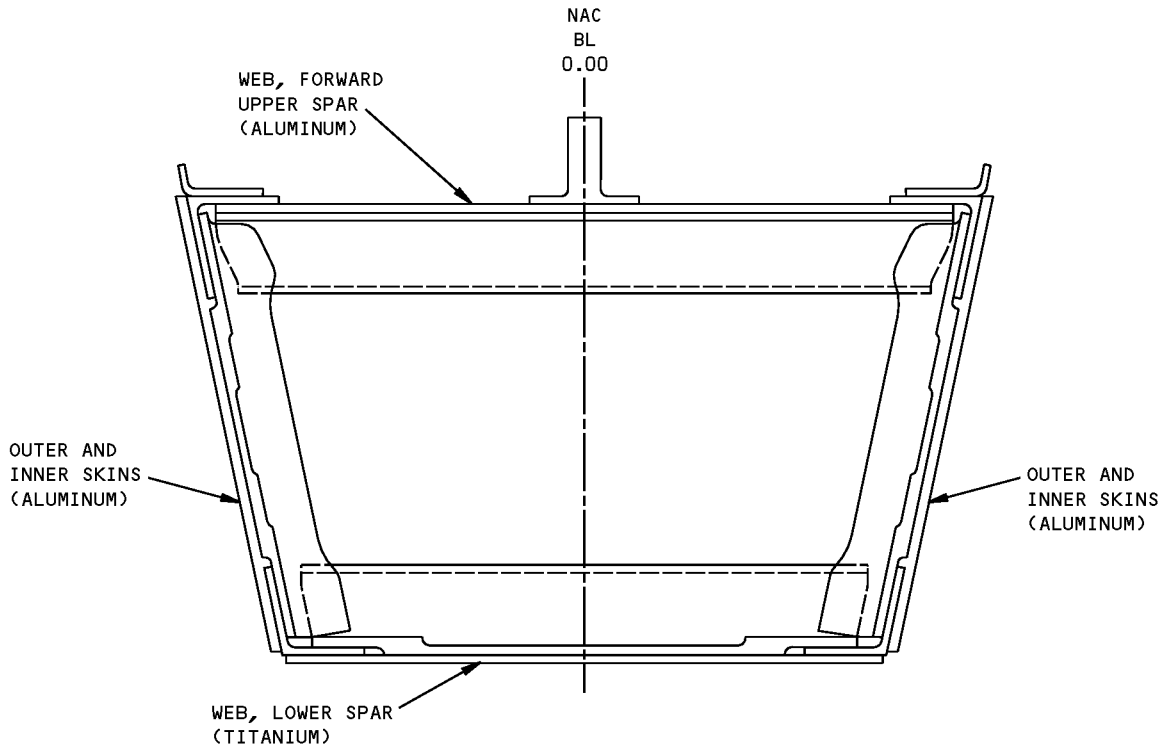


**Allowable Damage - Strut Skin - RB211-524 Engine
Figure 101 (Sheet 1 of 4)**

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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5400



SECTION THRU STRUT

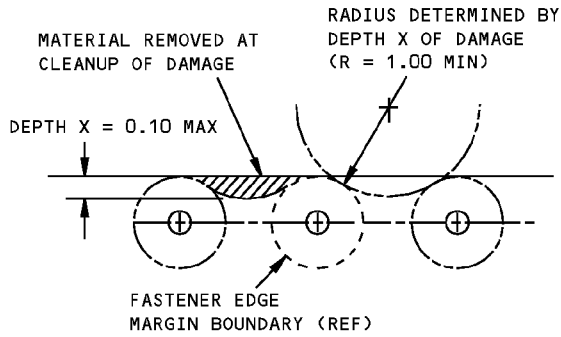
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
DOUBLER, AFT UPPER SPAR	A	B	SEE DETAIL IV	NOT ALLOWED
WEB, AFT UPPER SPAR	A	B	SEE DETAIL IV	C
WEB, FORWARD UPPER SPAR	A	B	SEE DETAIL IV	C
DOUBLER, FORWARD UPPER SPAR	A	B	SEE DETAIL IV	NOT ALLOWED
BONDED SKIN PANEL ASSEMBLY	A	B	SEE DETAIL IV	C
THRUST PLATE, LOWER SPAR	A	D	SEE DETAIL IV	E
WEB, LOWER SPAR	A	D	SEE DETAIL IV	E
SKIN PANEL, AFT OUTBOARD SIDE	A	D	SEE DETAIL IV	E

**Allowable Damage - Strut Skin - RB211-524 Engine
Figure 101 (Sheet 2 of 4)**

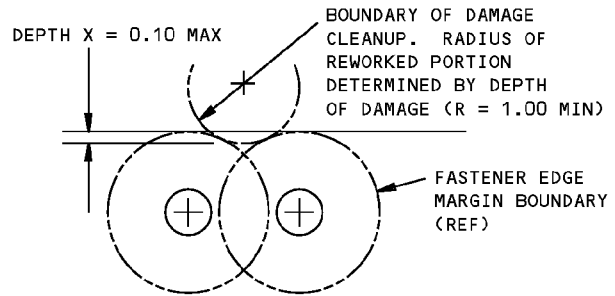
**767-300
STRUCTURAL REPAIR MANUAL**

NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS II AND VI
- B** REMOVE DAMAGE PER DETAILS II, III AND V
- C** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLES WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
- D** REMOVE DAMAGE PER DETAILS II AND III
- E** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLES WITH A MONEL RIVET INSTALLED DRY. ALL OTHER HOLES TO BE REPAIRED

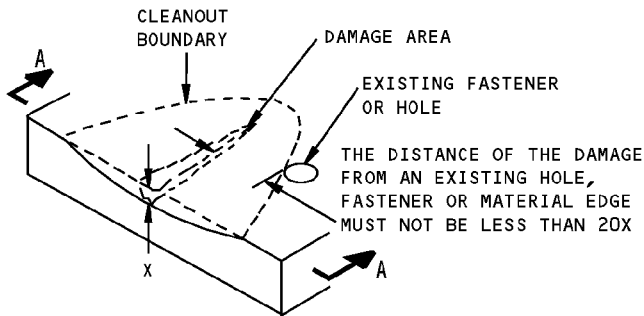


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

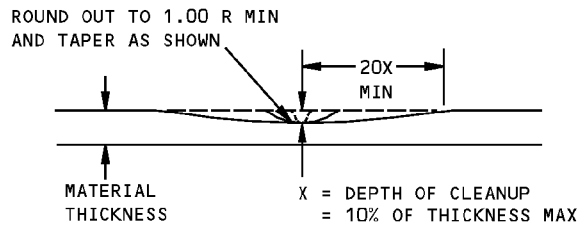


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL II



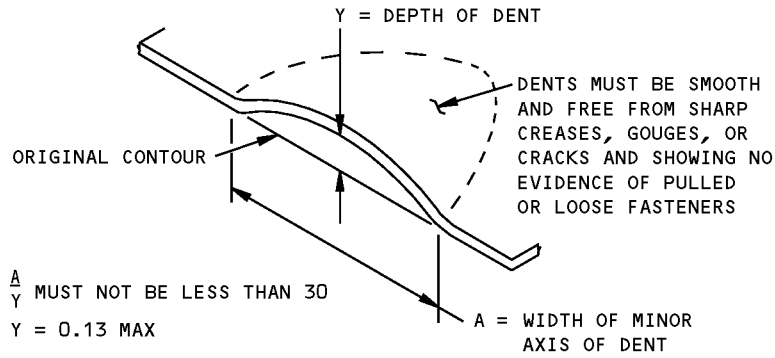
**REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III**



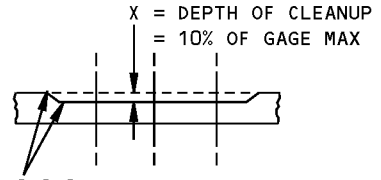
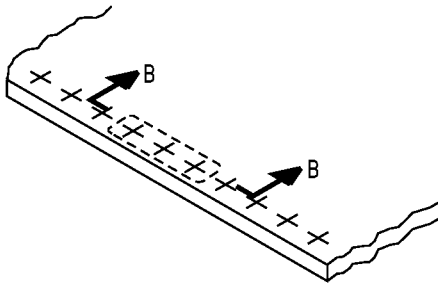
SECTION A-A

**Allowable Damage - Strut Skin - RB211-524 Engine
Figure 101 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



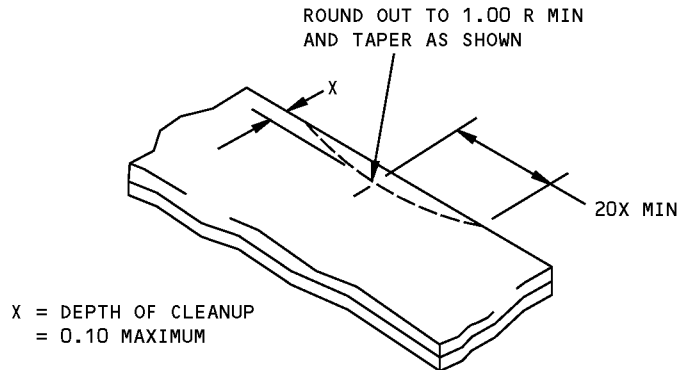
**DENT ALLOWABLE DAMAGE
DETAIL IV**



SMOOTH BLENDOUT RADIUS 0.050 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAXIMUM DEPTH

SECTION B-B

**CORROSION CLEANUP
DETAIL V**



**REMOVAL OF DAMAGE ON AN EDGE
DETAIL VI**

**Allowable Damage - Strut Skin - RB211-524 Engine
Figure 101 (Sheet 4 of 4)**



**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT SKIN - RB211-524

REPAIR INSTRUCTIONS

1. Cut out cracked or damaged area to a regular shape.
2. Make the repair plate.
3. Assemble the repair plate and drill fastener holes.



CAUTION: WHEN ESTABLISHING RIVET POSITIONS, ENSURE THAT EDGE MARGINS ARE MAINTAINED ON THE INTERNAL DOUBLER, AND THAT SUFFICIENT CLEARANCE IS AVAILABLE FOR THE FORMATION OF RIVET HEADS ON THE UNDERSTRUCTURE.

4. Remove the repair plate.
5. Break sharp edges of original and repair parts 0.015 to 0.030 R.
6. Remove all nicks, scratches, burrs, and corners from original and repair plate.
7. Alodize the raw edges of existing and repair part according to 51-20-01.
8. Apply one coat of BMS 10-11, Type I primer to faying surfaces of the repair plate, and to the strut skin according to 51-21 of the 767 Maintenance Manual.
9. Install the repair plate, making a faying surface seal with BMS 5-63 sealant. Install fasteners wet with BMS 5-63.
10. Apply one coat of BMS 10-79, Type III to outer surface of repair. Restore original finish per 51-21 of the 767 Maintenance Manual.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
 - REFER TO THE FOLLOWING WHEN USING THIS REPAIR:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 51-31-00 FOR SEALS AND SEALING
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES AND EDGE MARGINS.
- A** INSIDE OF SKIN IS CHEM-MILLED. MAKE SURE RIVET HEAD CLEARS RADIUS

FASTENER SYMBOLS

-  ORIGINAL FASTENER LOCATION
-  REPAIR FASTENER LOCATION

REPAIR MATERIAL			
PART		QTY	MATERIAL
1	PLATE	1	0.10 CLAD 2024-T3

1728141 S0000311270_V1

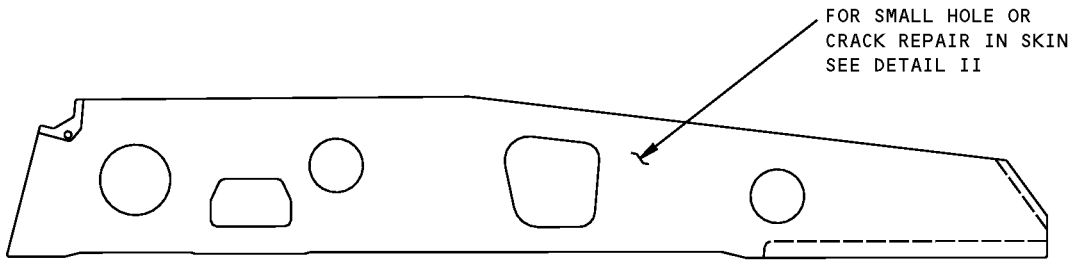
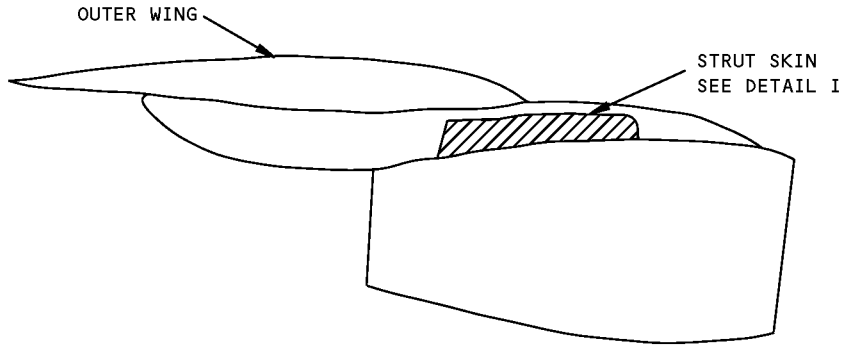
**Strut Side Skin Small Hole or Crack Repair - RB211-524 Engine
Figure 201 (Sheet 1 of 3)**

D634T210

54-54-01

REPAIR 1
Page 201
Apr 15/2009

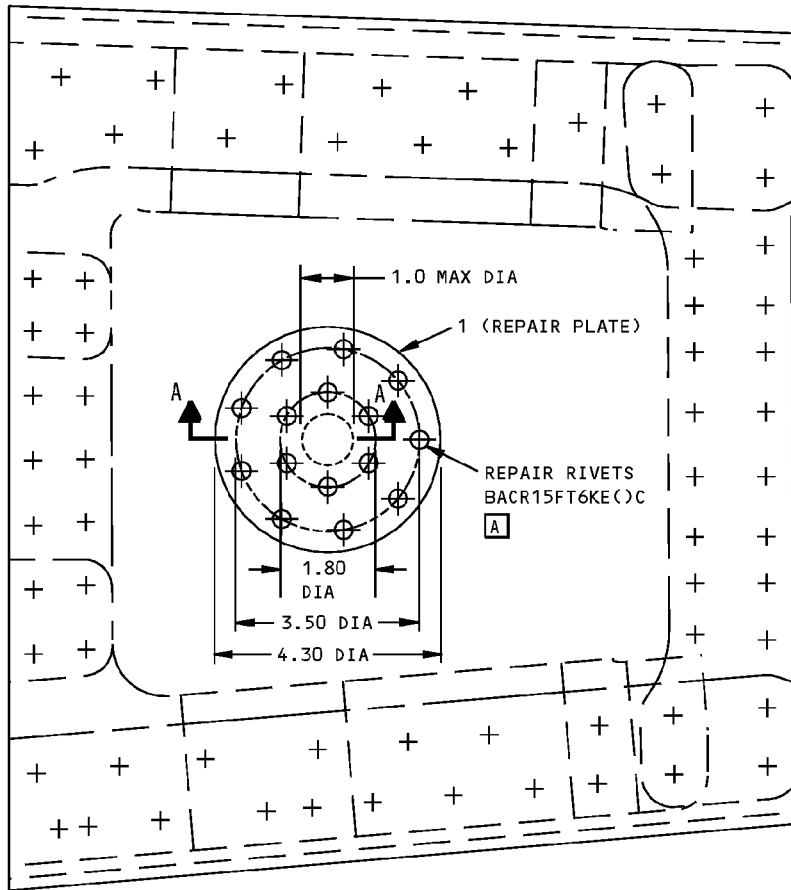
**767-300
STRUCTURAL REPAIR MANUAL**



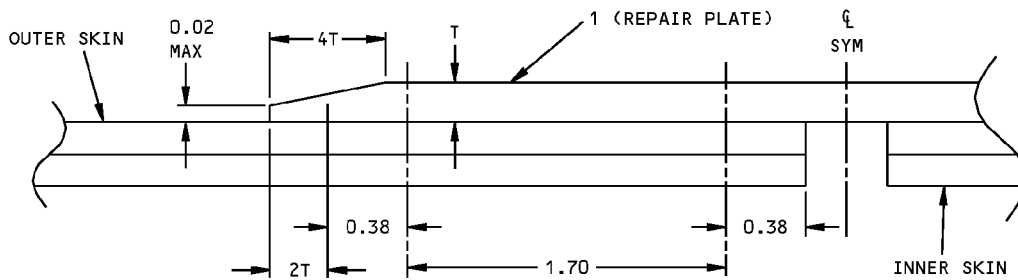
DETAIL I

**Strut Side Skin Small Hole or Crack Repair - RB211-524 Engine
Figure 201 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL



**SMALL HOLE OR CRACK REPAIR
DETAIL II**



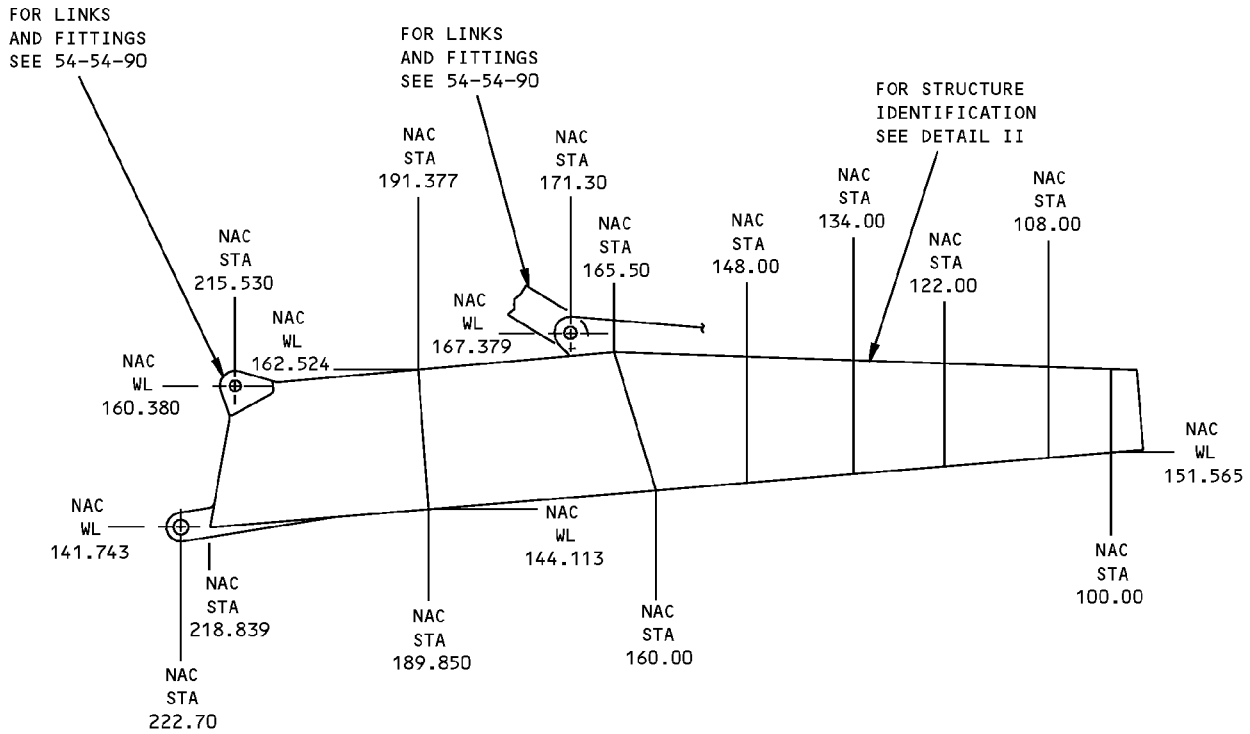
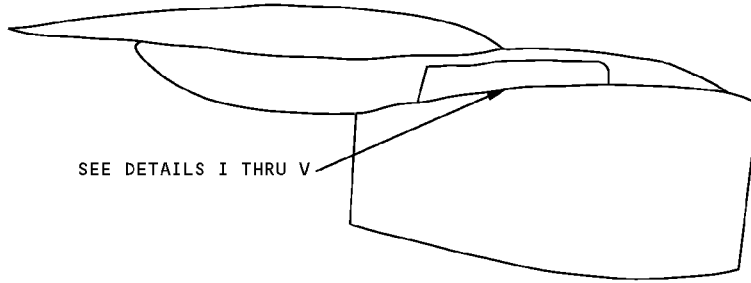
SECTION A-A

**Strut Side Skin Small Hole or Crack Repair - RB211-524 Engine
Figure 201 (Sheet 3 of 3)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT STRUCTURE - RB211-524 ENGINE

REF DWG
311T5001
311T5003

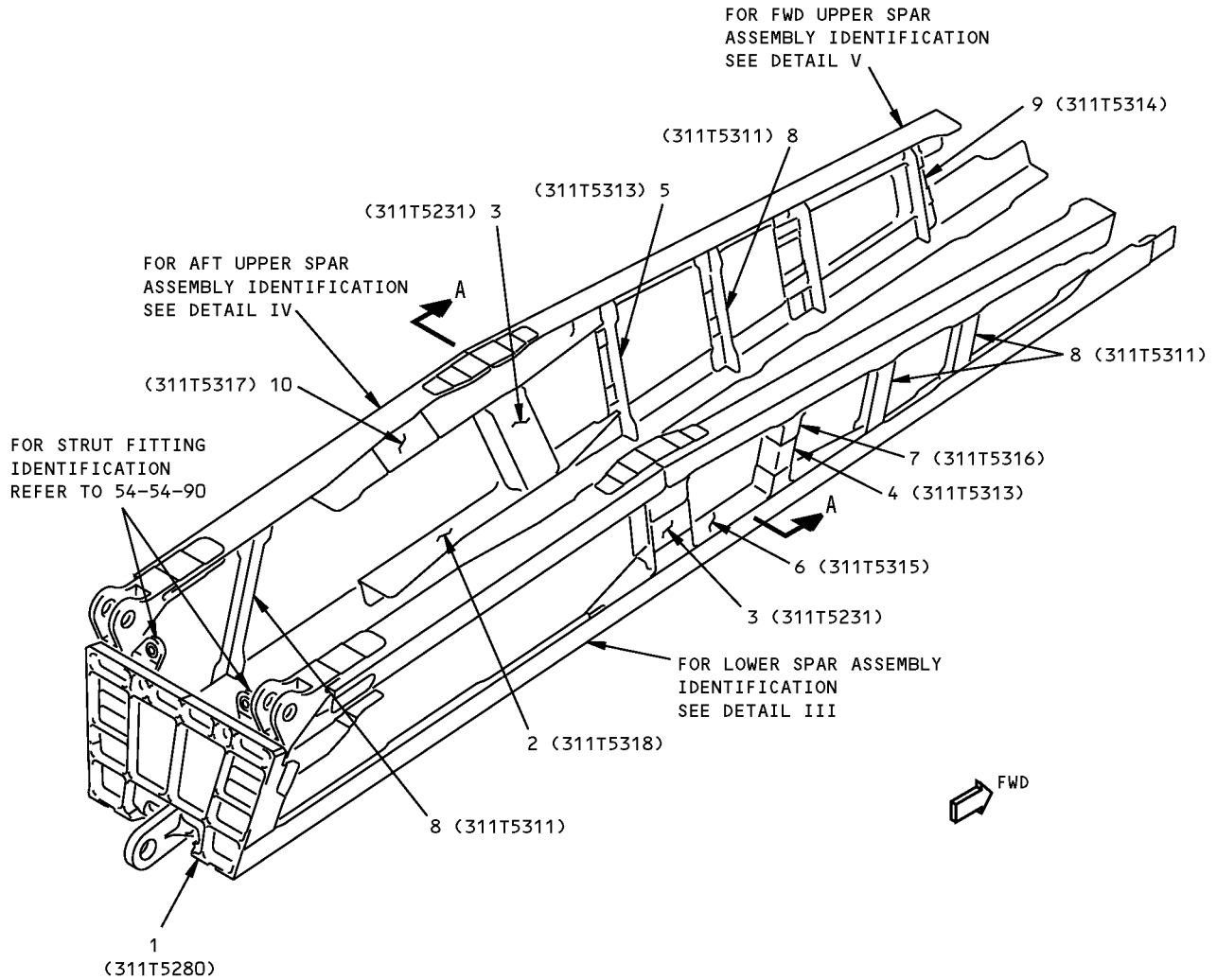


**STRUT STATION DIAGRAM
DETAIL I**

**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5100



DETAIL II



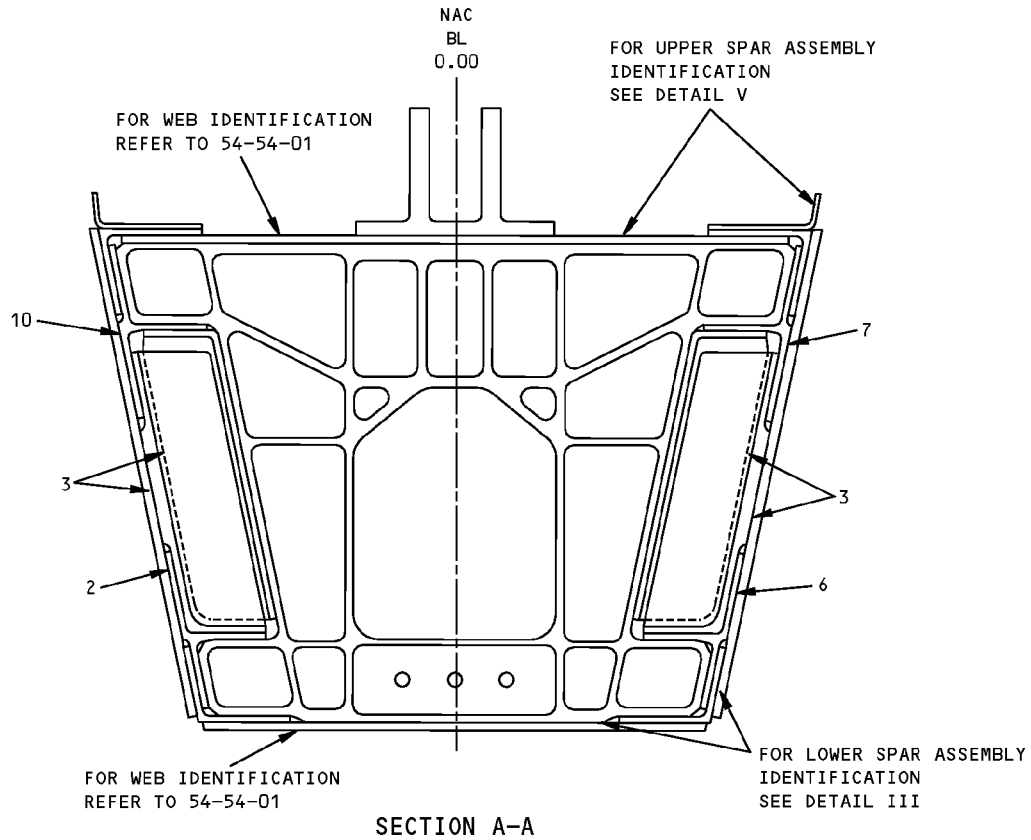
**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 9)**

IDENTIFICATION 1
Page 2
Apr 01/2005

54-54-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

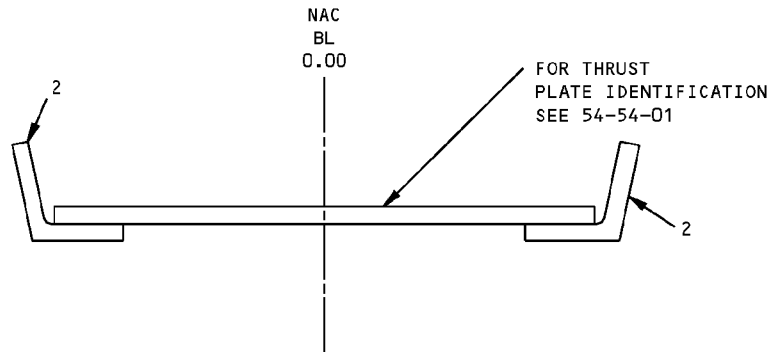


ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FITTING, AFT BULKHEAD		15-5 PH FORGED STEEL BLOCK, HT TR 180-200 KSI	
2	BACKUP CHORD, LWR SPAR OUTBD		15-5 PH STEEL BAR OR FORGING, HT TR 180-200 KSI	
3	SHEAR FITTING, MID BULKHEAD		FORGING 2219-T852	
4	ANGLE, VERT STIFFENER	0.080	15-5 PH CRES SHEET, HT TR 150-170 KSI	
5	VERT SKIN STIFFENER		BAC1505-100679 2024-T8511	
6	BACKUP CHORD, LWR SPAR INBD		15-5 PH STEEL BAR OR FORGING, HT TR 180-200 KSI	
7	BACKUP CHORD, UPPER SPAR INBD		15-5 PH CRES BAR OR FORGING, HT TR 180-200 KSI	
8	FITTING, VERTICAL STIFFENER		BAC1505-100679 2024-T8511	
9	CUTOUT REINFORCEMENT, PRESSURE RELIEF		15-5PH CRES BAR OR FORGING, HT TR 180-200 KSI	
10	BACKUP CHORD, UPPER SPAR OUTBD		15-5 PH CRES BAR OR FORGING, HT TR 180-200 KSI	

LIST OF MATERIALS FOR DETAIL II

**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION B-B

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHORD, LWR SPAR	0.250	15-5 PH CRES, HT TR 180-200 KSI	
2	FITTING, FWD MOUNT		FORGING 2219-T852	
3	STIFFENER, LWR SPAR		FORGING 2219-T852	
4	FITTING, MID BULKHEAD		FORGING 2219-T852	
5	FITTING		FORGING 2219-T852	

LIST OF MATERIALS FOR DETAIL III

**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 9)**

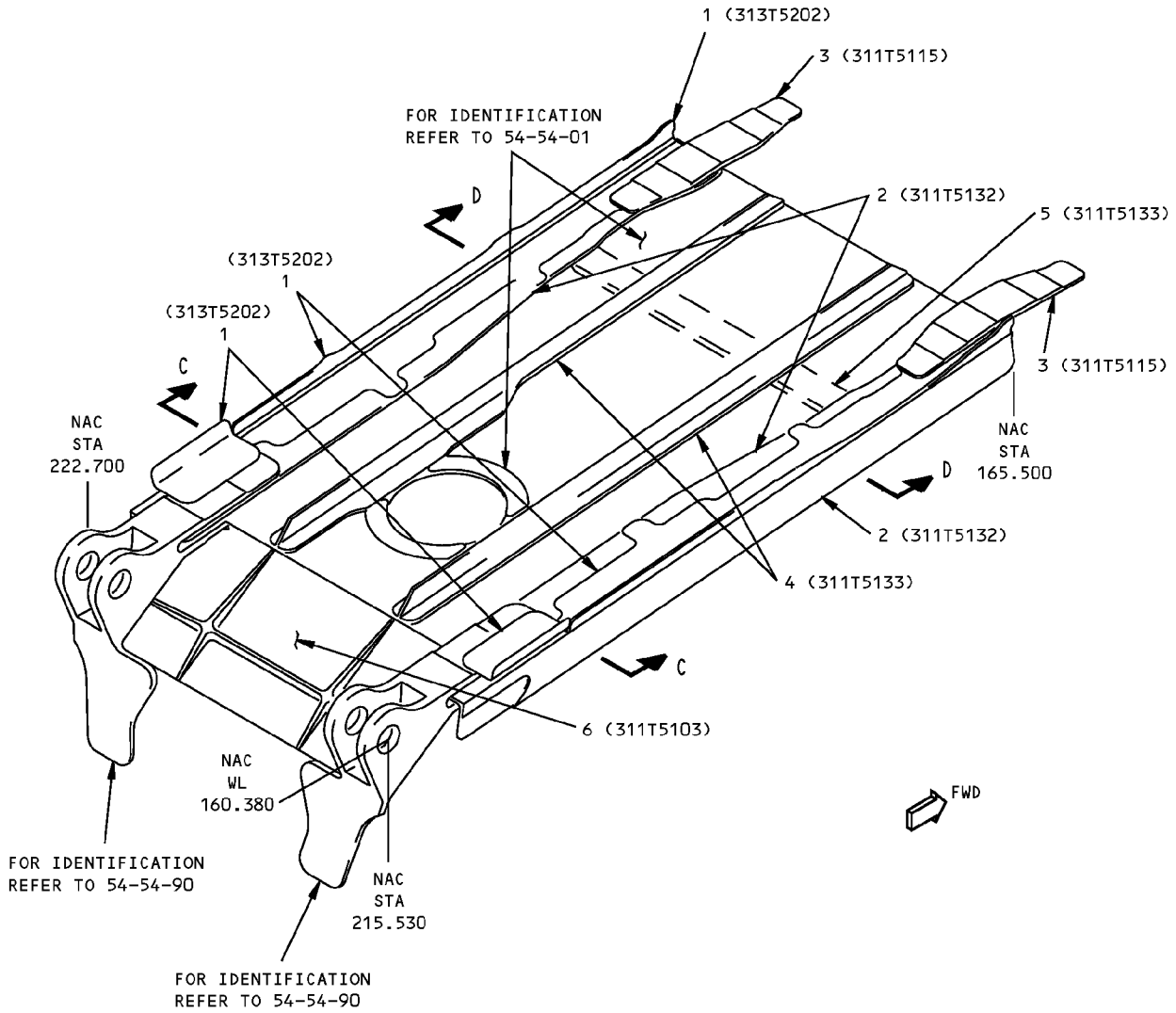
D634T210

54-54-02

IDENTIFICATION 1
Page 5
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5110



**AFT UPPER SPAR
DETAIL IV**

LIST OF
MATERIAL

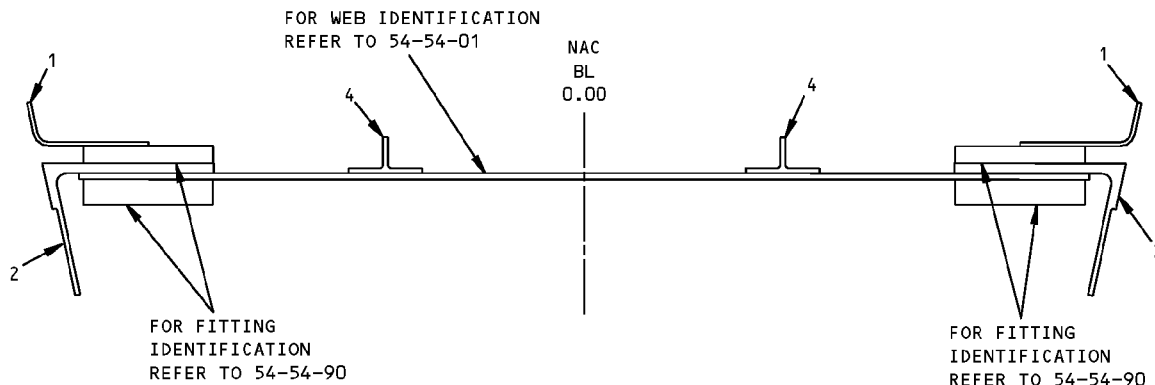
**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 9)**

IDENTIFICATION 1
Page 6
Apr 01/2005

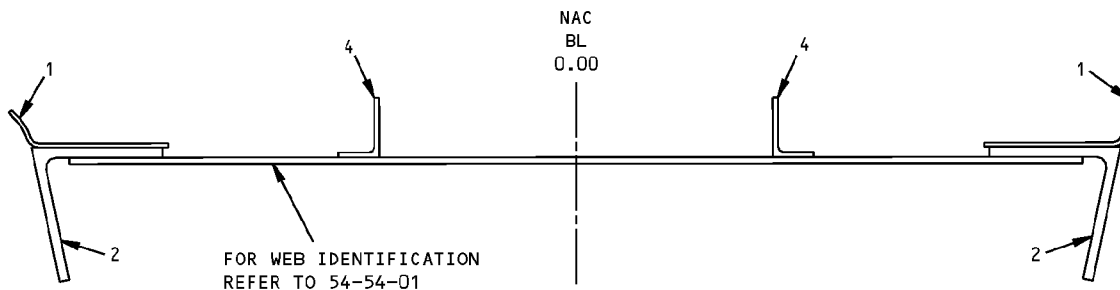
54-54-02

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**767-300
STRUCTURAL REPAIR MANUAL**



SECTION C-C



SECTION D-D

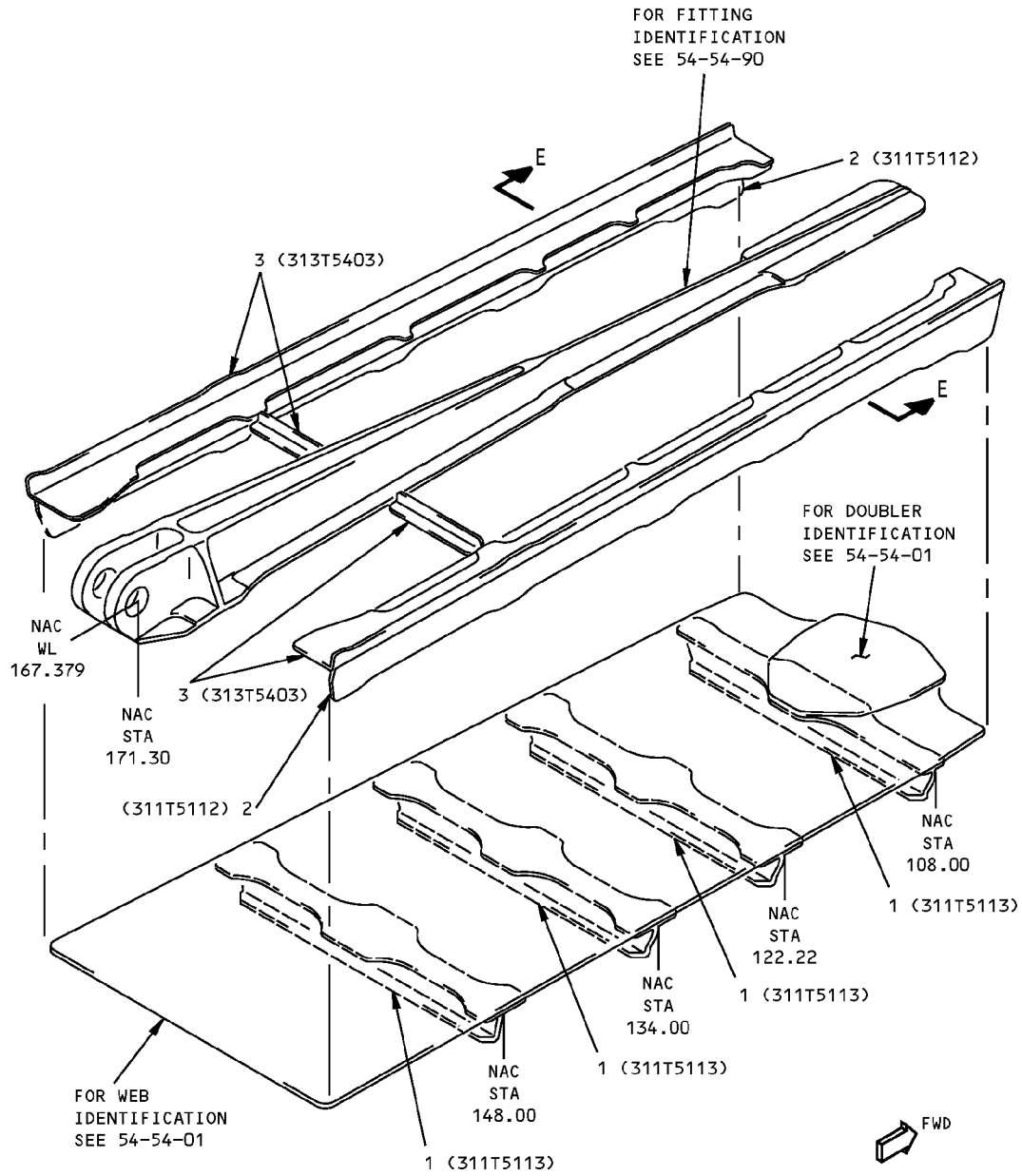
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKATE ANGLE	0.100	2024-T42	
2	CHORD, AFT UPPER SPAR		BAC1527-96 15-5 PH CRES, HT TR 180-200 KSI	
3	PLATE, UPPER SPAR		15-5 PH CRES BAR, HT TR 180-200 KSI	
4	STIFFENER, AFT UPPER SPAR		AND10136-3001 2024-T8511	
5	STIFFENER, AFT UPPER SPAR		AND10136-2405 2024-T8511	
6	CLOSEOUT PANEL	0.80	15-5 PH CRES PLATE, HT TR 150-170 KSI	

LIST OF MATERIALS FOR DETAIL IV

**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 7 of 9)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5110



**FWD UPPER SPAR
DETAIL V**

LIST OF
MATL

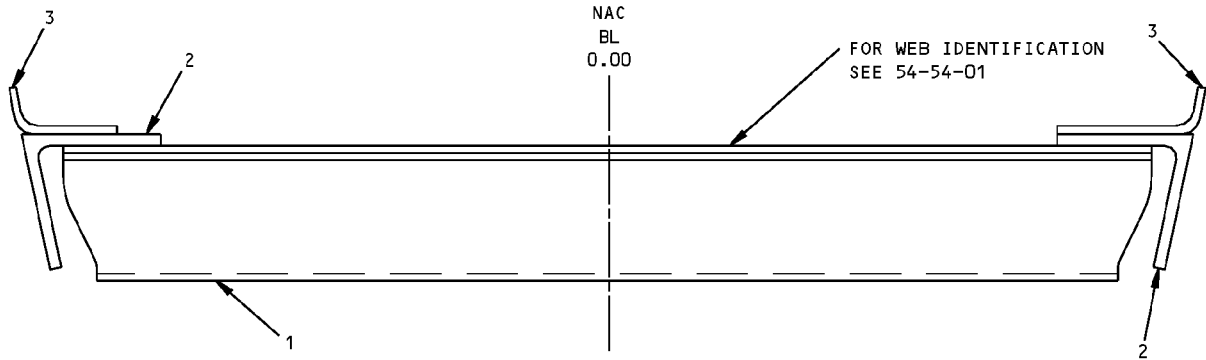
**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 9)**

IDENTIFICATION 1
Page 8
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54-54-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION E-E

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	STIFFENER, FWD UPPER SPAR		BAC1506-3686 2024-T8511	
2	CHORD, FWD UPPER SPAR		BAC1527-96 15-5 PH CRES, HT TR 180-200 KSI	
3	ANGLE	0.100	2024-T42	

LIST OF MATERIALS FOR DETAIL V

**Strut Structure Identification - RB211-524 Engine
Figure 1 (Sheet 9 of 9)**

IDENTIFICATION 1
Page 9
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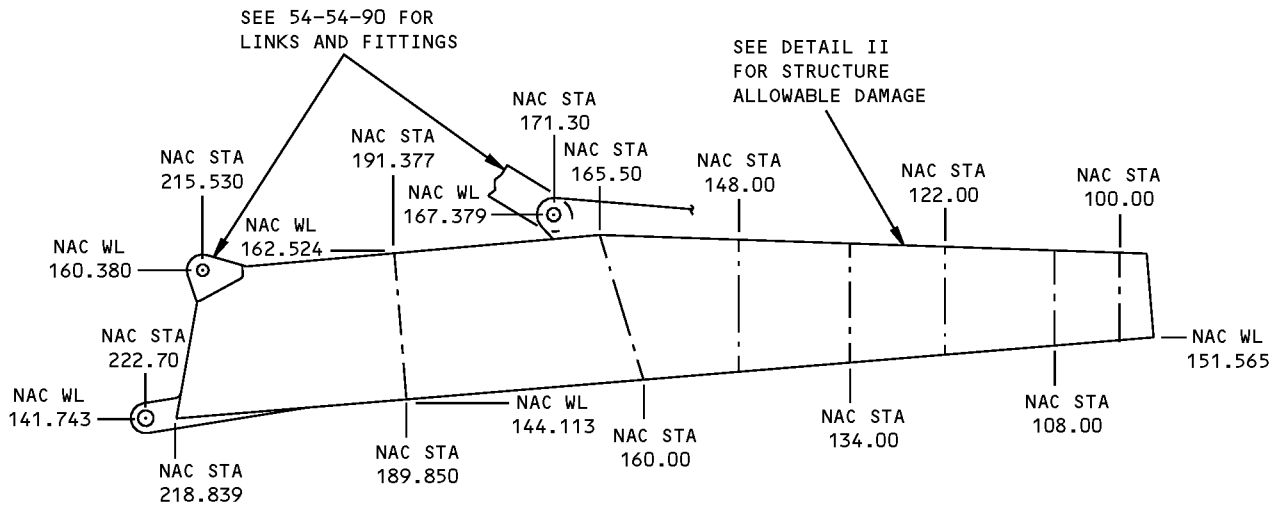
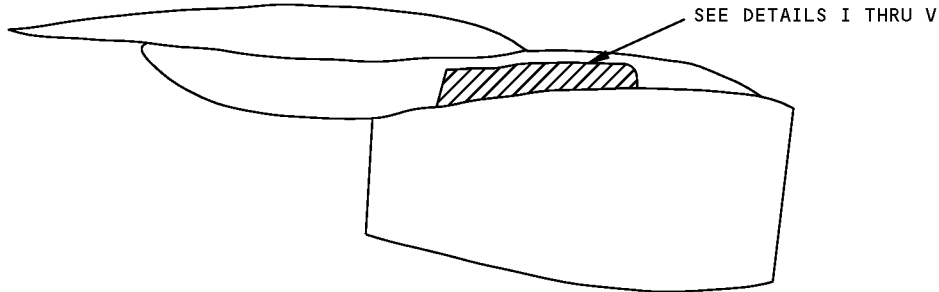
54-54-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT STRUCTURE - RB211-524 ENGINE

REF DWG
311T5001
311T5003

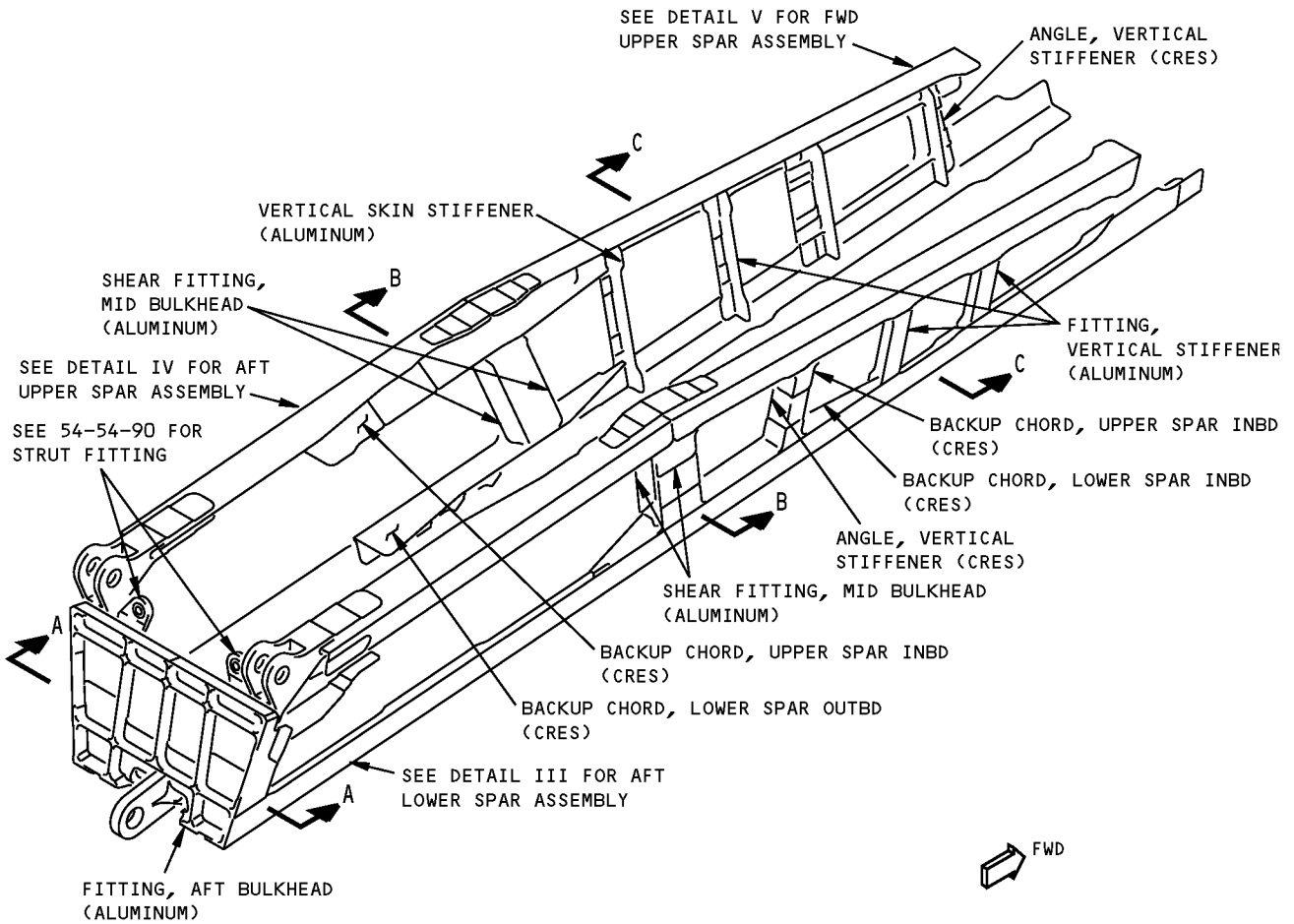


**STRUT STATION DIAGRAM
DETAIL I**

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 1 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T510C



DETAIL II

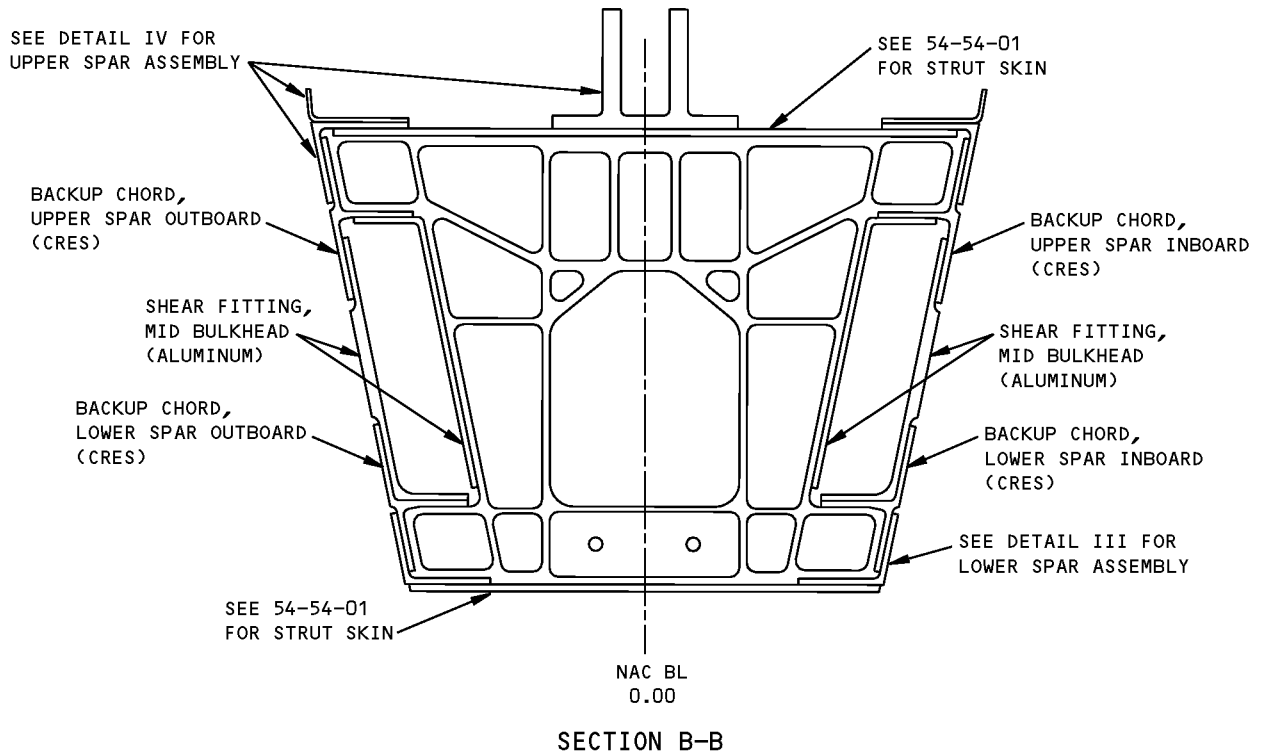
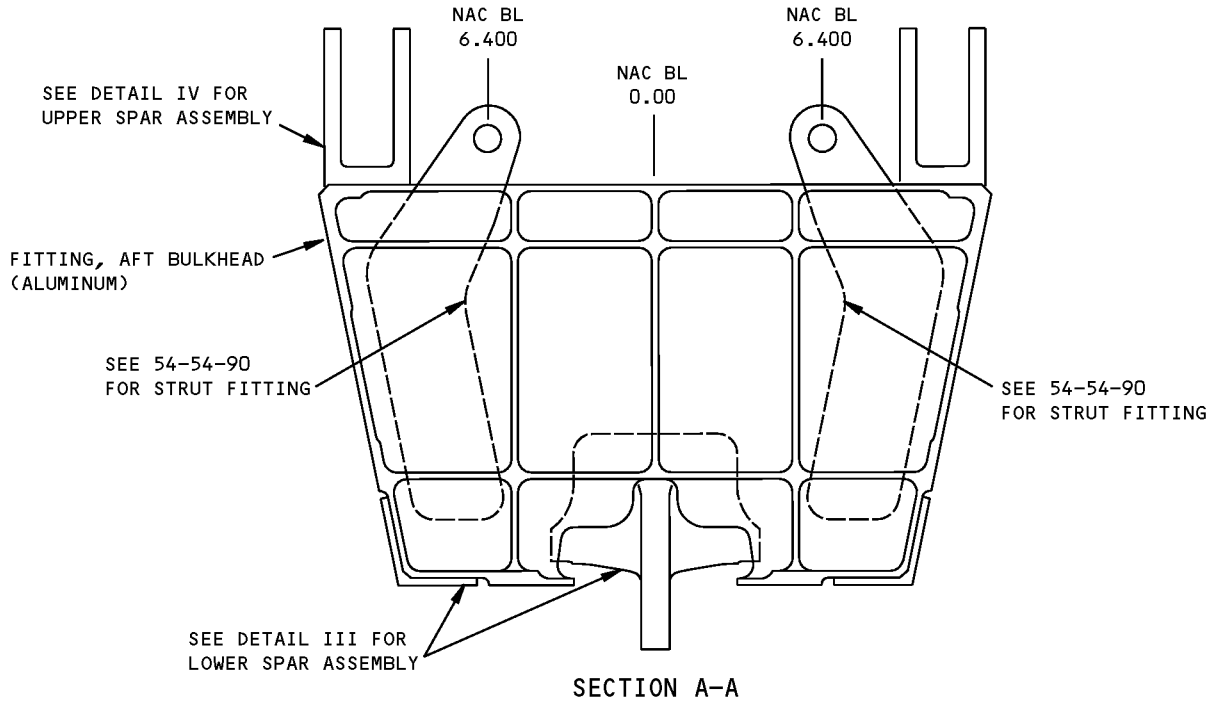
**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 2 of 12)**

ALLOWABLE DAMAGE 1
Page 102
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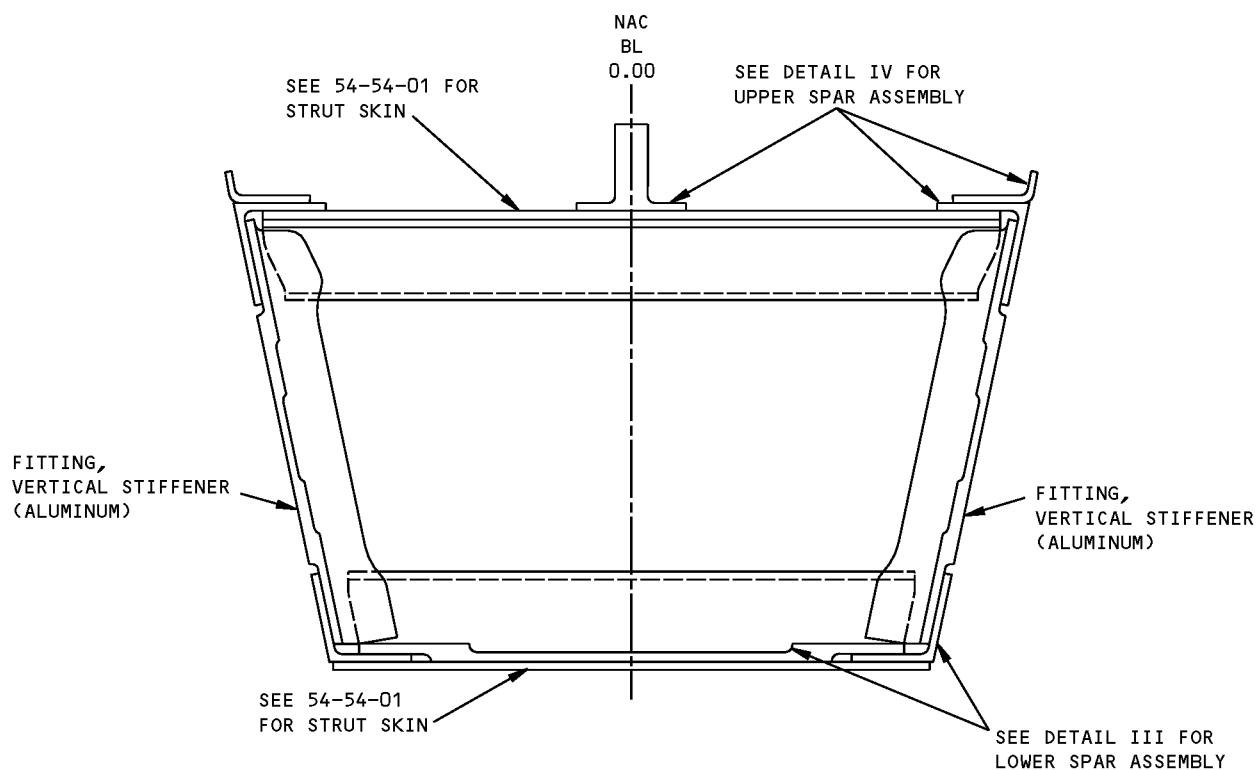
D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 3 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION C-C

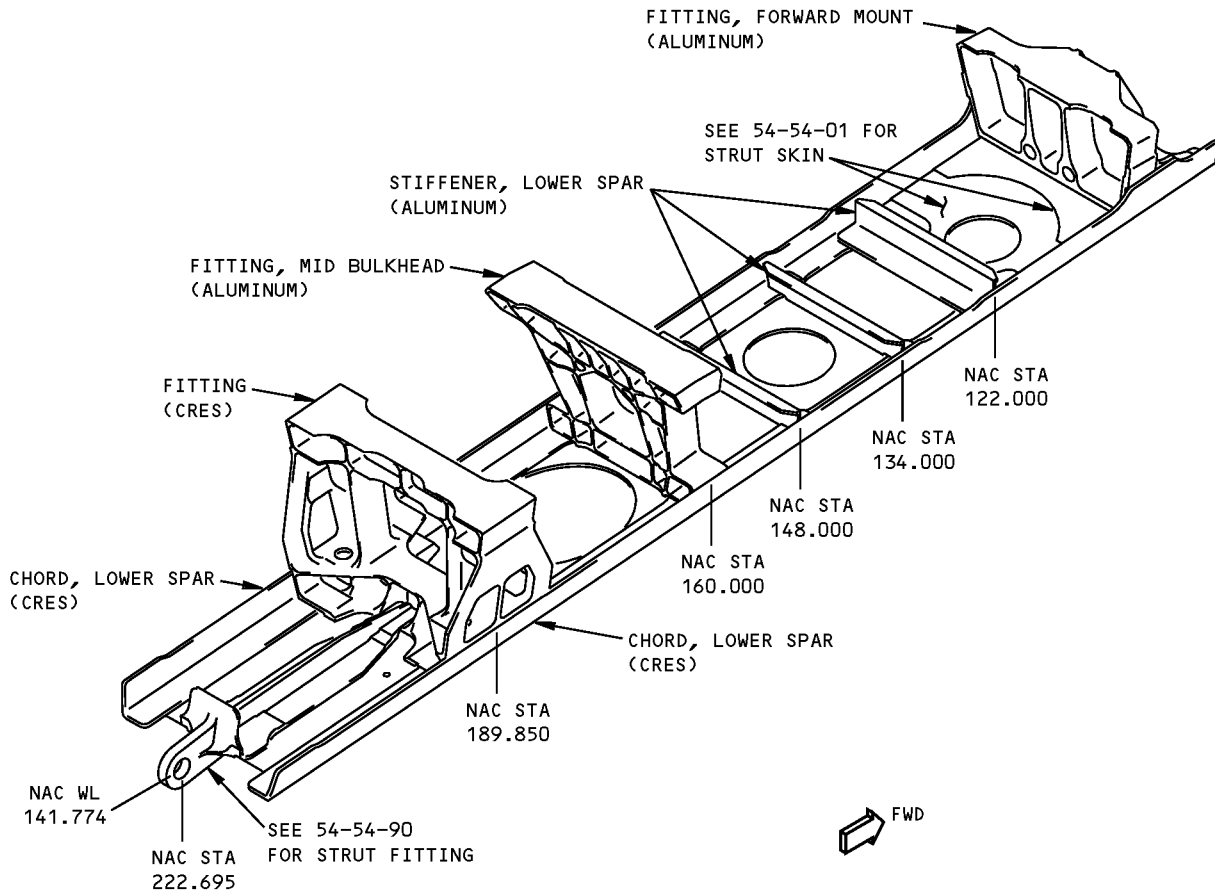
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
AFT BULKHEAD F	A	B C	NOT ALLOWED	NOT ALLOWED
BACKUP CHORDS F	A	D	NOT ALLOWED	NOT ALLOWED
SHEAR FITTINGS, MID BULKHEAD F	G	J C	NOT ALLOWED	NOT ALLOWED
ANGLES F	A	D C	SEE DETAIL V	E
VERTICAL SKIN STIFFENER F	I	H C	NOT ALLOWED	SEE DETAIL VI
FITTINGS, VERTICAL STIFFENER F	G	J C	NOT ALLOWED	NOT ALLOWED
ANGLE, VERTICAL STIFFENER	A	D	NOT ALLOWED	NOT ALLOWED

ALLOWABLE DAMAGE FOR DETAIL II

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 4 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5180



**LOWER SPAR
DETAIL III**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS [F]	[G]	[J] [C]	NOT ALLOWED	NOT ALLOWED
BULKHEADS [F]	[A]	[B] [C]	NOT ALLOWED	NOT ALLOWED
CHORDS, LOWER SPAR [F]	[A]	[D]	NOT ALLOWED	NOT ALLOWED
STIFFENERS [F]	[A]	[D] [C]	NOT ALLOWED	SEE DETAIL VI

ALLOWABLE DAMAGE FOR DETAIL III

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 5 of 12)**

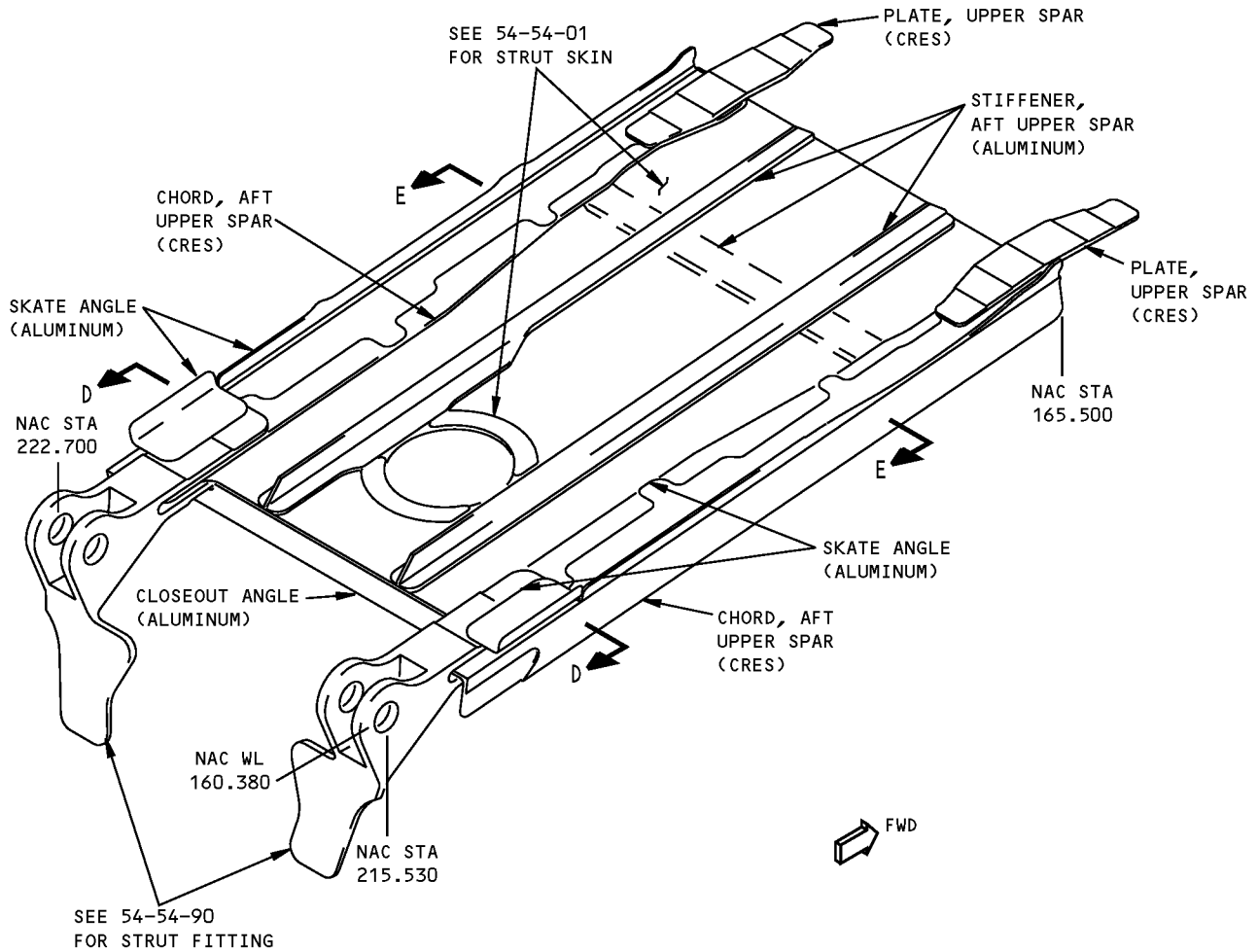
ALLOWABLE DAMAGE 1
Page 105
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D634T210

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T511C



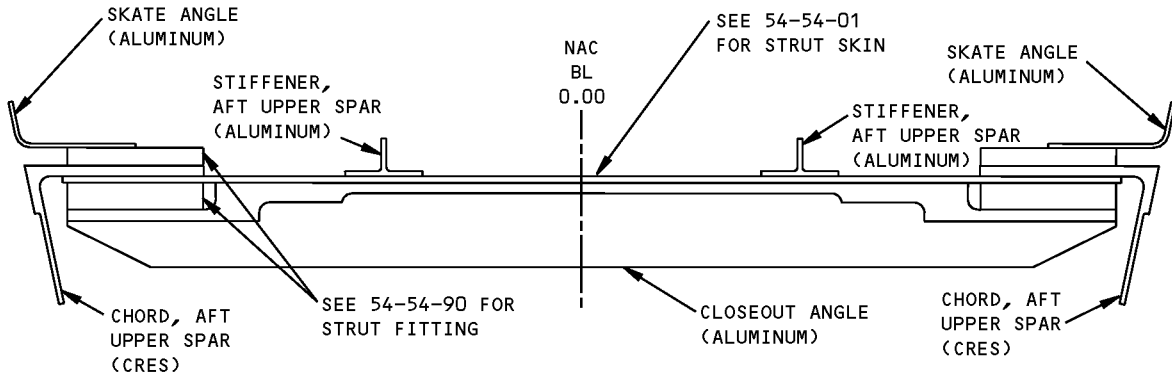
**AFT UPPER SPAR
DETAIL IV**

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 6 of 12)**

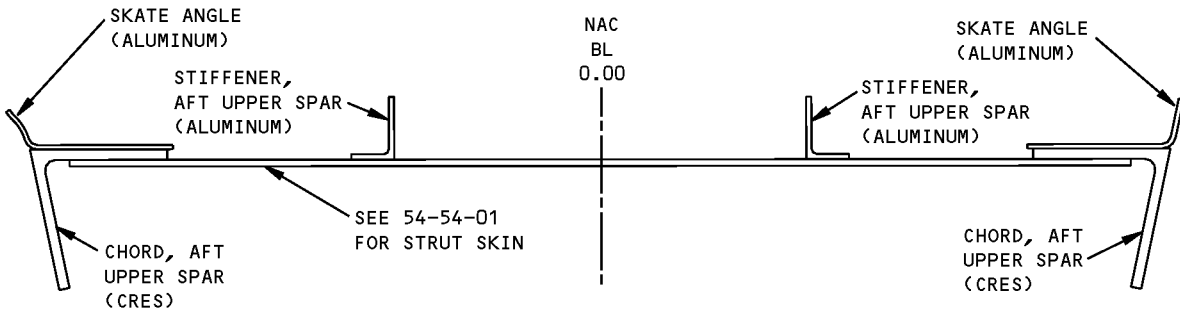
D634T210

ALLOWABLE DAMAGE 1
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54-54-02
Apr 01/2005

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION D-D



LEFT SIDE STRUT SHOWN
(RIGHT SIDE OPPOSITE)
SECTION E-E

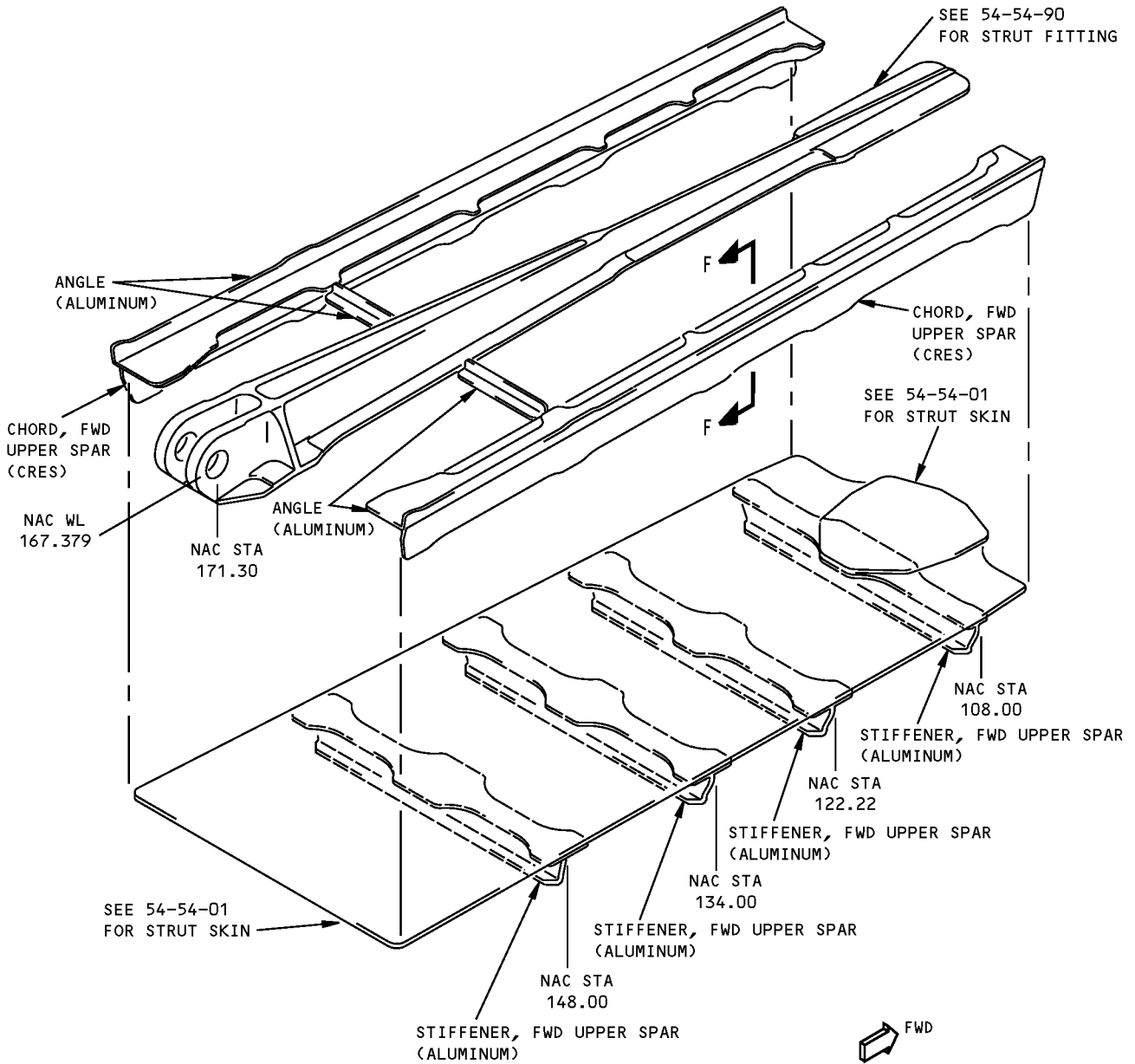
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
ANGLES	A	D C	SEE DETAIL V	E
CHORDS, AFT UPPER SPAR F	A	D	NOT ALLOWED	NOT ALLOWED
PLATES, AFT UPPER SPAR F	A	D	NOT ALLOWED	NOT ALLOWED
STIFFENERS, AFT UPPER SPAR	I	H C	NOT ALLOWED	SEE DETAIL VI
CLOSEOUT ANGLE F	I	H C	NOT ALLOWED	SEE DETAIL VI

ALLOWABLE DAMAGE FOR DETAIL IV

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 7 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T511C



**FORWARD UPPER SPAR
DETAIL V**

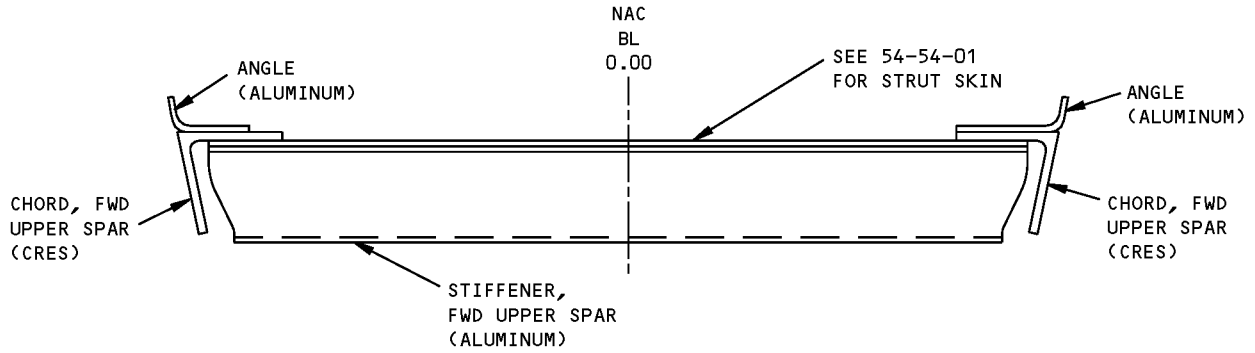
**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 8 of 12)**

ALLOWABLE DAMAGE 1
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54-54-02

D634T210

**767-300
STRUCTURAL REPAIR MANUAL**



SECTION F-F

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
STIFFENERS, FWD UPPER SPAR [F]	[I]	[H] [C]	NOT ALLOWED	SEE DETAIL VI
CHORDS, FWD UPPER SPAR [F]	[A]	[D]	NOT ALLOWED	NOT ALLOWED
ANGLES	[A]	[D] [C]	SEE DETAIL V	[E]

ALLOWABLE DAMAGE FOR DETAIL V

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 9 of 12)**

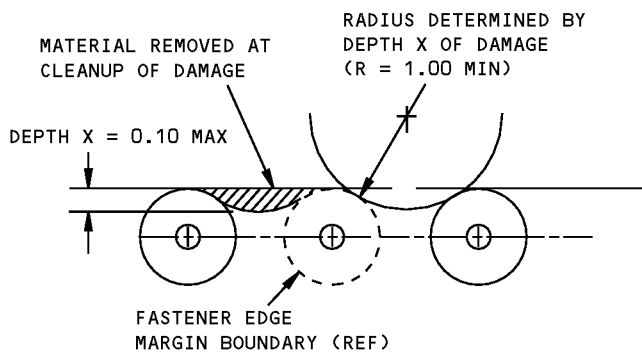
STRUCTURAL REPAIR MANUAL

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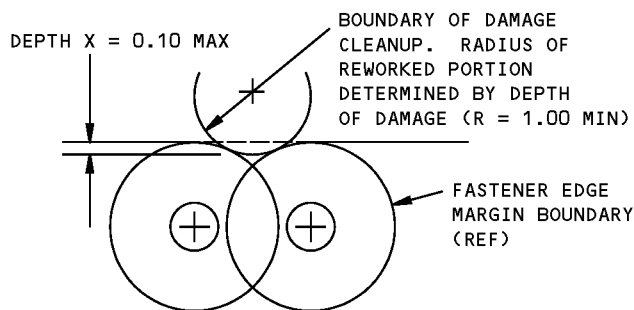
- REFINISH REWORKED AREAS PER AMM 51-20
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED

- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VI AND XI
- B** REMOVE DAMAGE PER DETAILS VI, VII, AND X
- C** CLEAN UP CORROSION PER DETAIL XIII
- D** REMOVE DAMAGE PER DETAILS VI, VII, AND XI
- E** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE, MATERIAL EDGE, OR OTHER DAMAGE. FILL HOLES WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED

- F** SHOT PEEN REWORKED AREAS PER 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS LEFT OVER AFTER REWORK
- G** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAIL XII
- H** REMOVE DAMAGE PER DETAILS VI, VII, AND XII
- I** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VI AND XII
- J** FOR EDGE CRACKS SEE DETAIL XII. FOR OTHER DAMAGE SEE DETAIL VII



DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

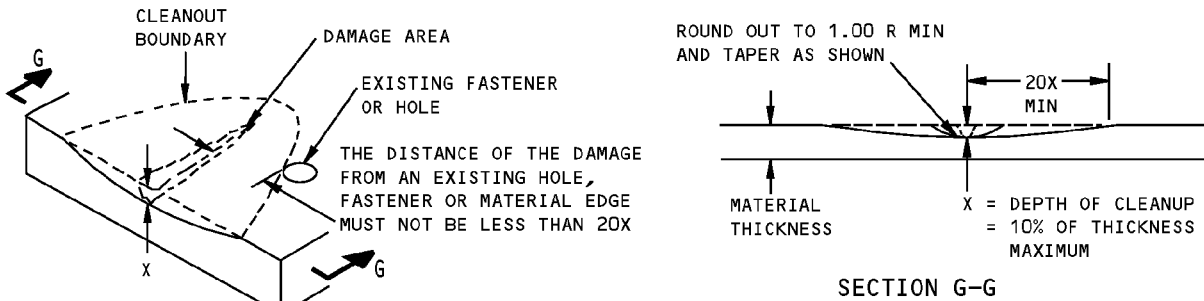


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

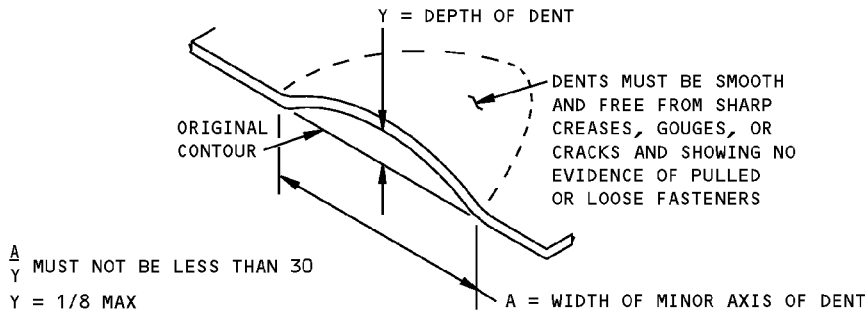
DETAIL VI

Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 10 of 12)

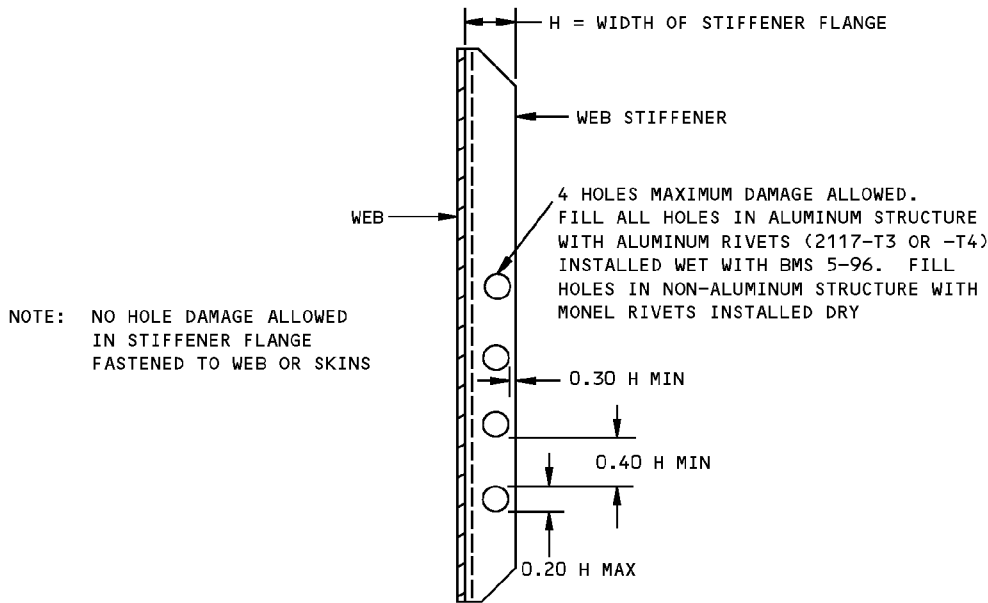
**767-300
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF NICK, GOUGE, CORROSION, AND SCRATCH DAMAGE ON A SURFACE
DETAIL VII**



**DENT ALLOWABLE DAMAGE
DETAIL VIII**

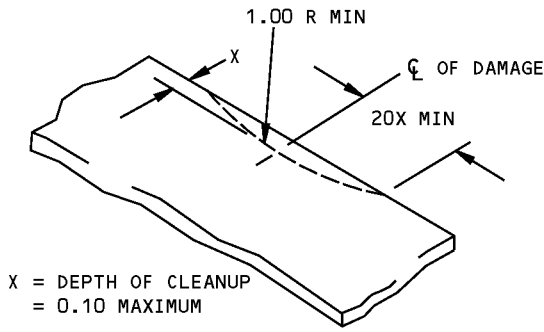


NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGE FASTENED TO WEB OR SKINS

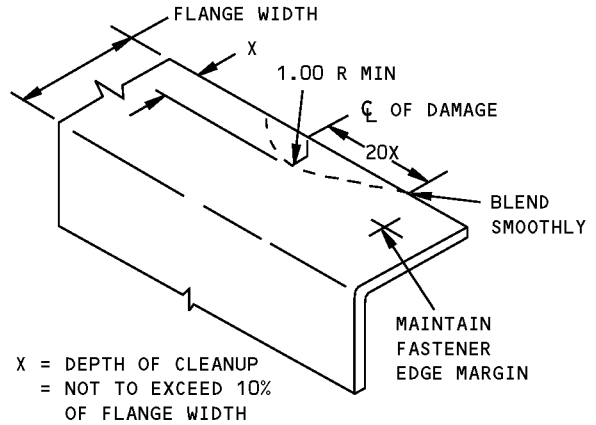
**ALLOWABLE DAMAGE LIMITS FOR HOLES IN STIFFENERS
DETAIL IX**

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 11 of 12)**

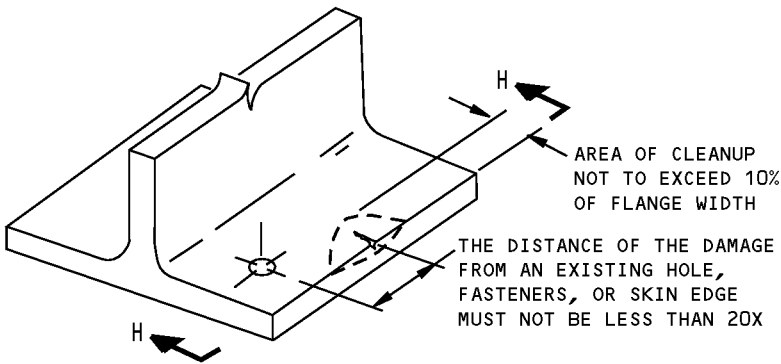
STRUCTURAL REPAIR MANUAL



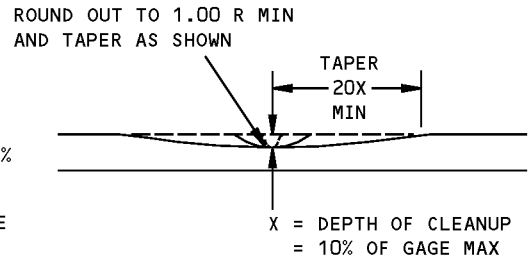
**REMOVAL OF DAMAGE ON AN EDGE
DETAIL X**



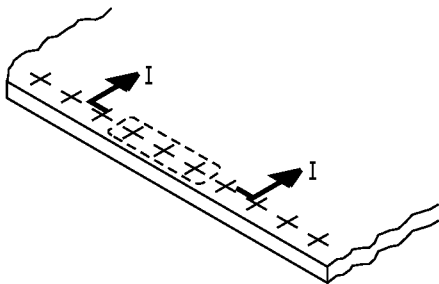
**REMOVAL OF SURFACE DAMAGE ON AN EDGE
DETAIL XI**



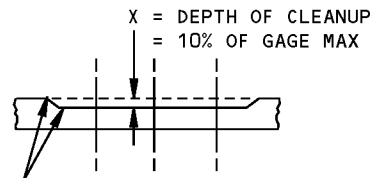
**REMOVAL OF SURFACE DAMAGE ON AN EDGE
DETAIL XII**



SECTION H-H



**CORROSION CLEANUP
DETAIL XIII**



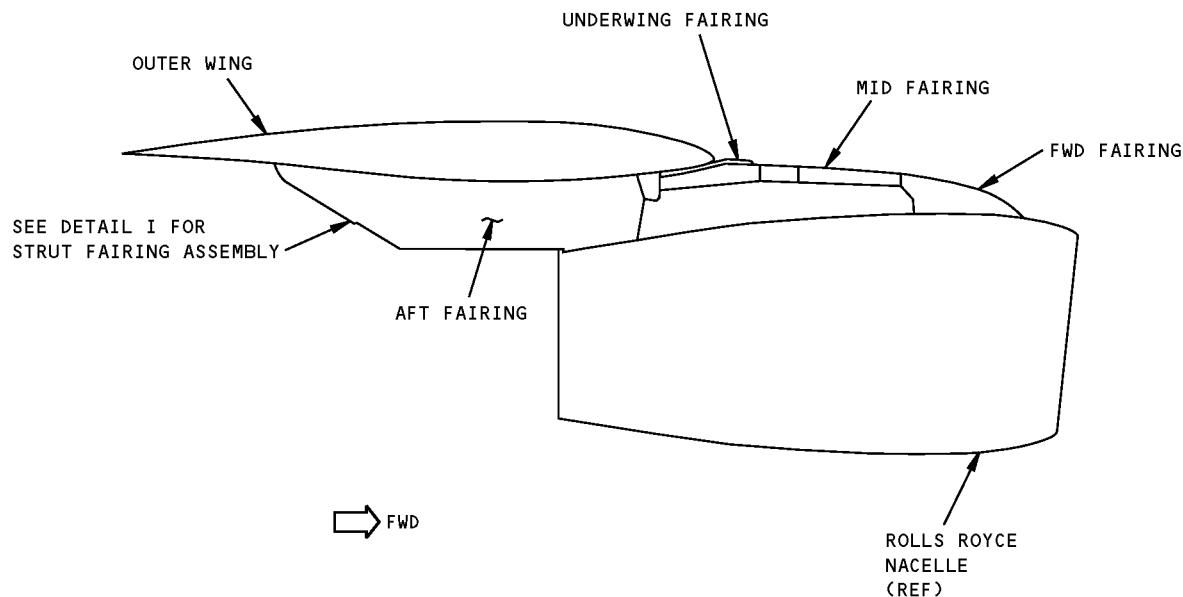
SMOOTH BLENDOUT RADIUS 0.050 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAXIMUM DEPTH

SECTION I-I

**Allowable Damage - Strut Structure - RB211-524 Engine
Figure 101 (Sheet 12 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT FAIRING SKIN - RB211-524 ENGINE

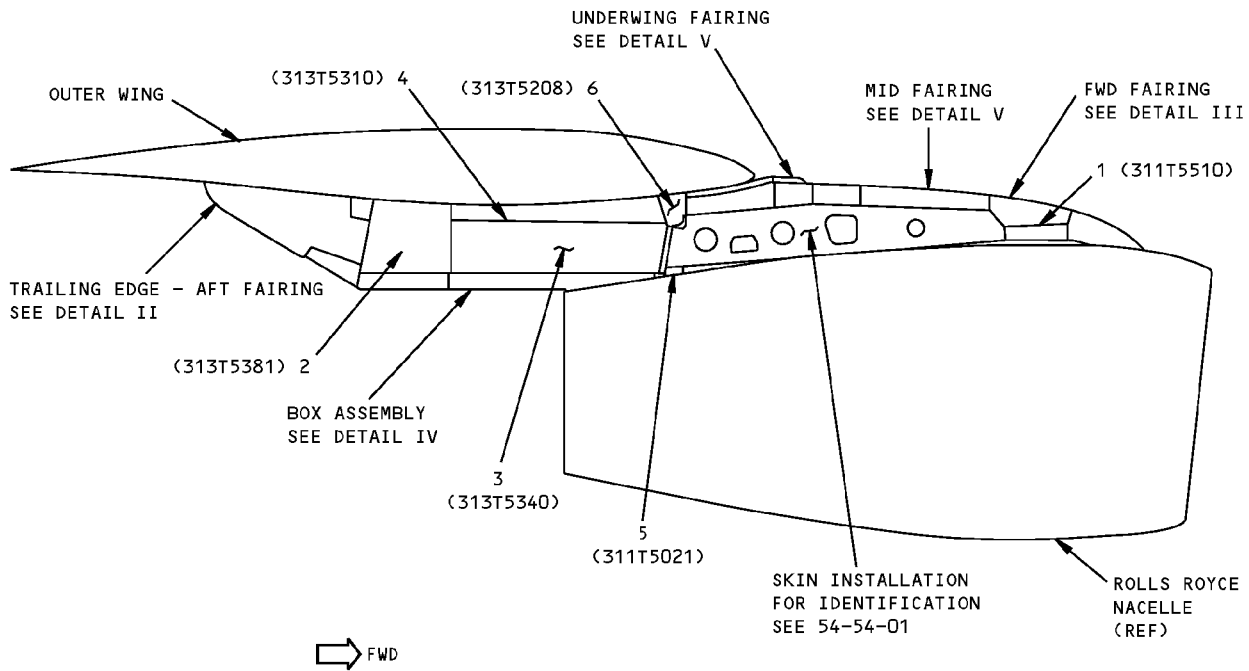


NOTES

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A PLY ORIENTATION CONVENTION, DEGREES INDICATED IS PARALLEL TO THE FABRIC WARP DIRECTION</p> <p>B MATERIAL AND PLY ORIENTATION SHOWN FOR FIELD AREAS ONLY. SEE BOEING DRAWINGS FOR EDGE BANDS AND AREAS WITH DOUBLERS</p> <p>C FOR CUM LINE NUMBERS:
266,282</p> <p>D FIBERGLASS/EPOXY PER BMS 8-139, TYPE 1581, 350°F (177°C) CURE</p> | <p>E FIBERGLASS/EPOXY PER BMS 8-139, TYPE 120, 350°F (177°C) CURE</p> <p>F GRAY OR WHITE TEDLAR</p> <p>G ALUMINUM FOIL PER BMS 8-289, TYPE 0/350/2/1235/002</p> <p>H THORSTRAND FABRIC PER BMS 8-278, TYPE II, GRADE 2.0, CLASS 350</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 12)**

**767-300
STRUCTURAL REPAIR MANUAL**



**STRUT FAIRING SKIN
DETAIL I**



**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 12)**



**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN ASSY SKIN SKIN	0.005 0.090	304 CRES CLAD 2024-T81	
2	PANEL SKIN CORE		SEE DETAIL VI ALUMINUM HONEYCOMB PER BMS 4-4, TYPE 3-15, CLASS N AL5052, GRADE 1.0, DENSITY 4.4 PCF	
3	PANEL SKIN CORE CORE		SEE DETAIL VII NON-METALLIC (GLASS) HONEYCOMB PER BMS 8-124, CLASS 1, TYPE 1, GRADE 12.0 NON-METALLIC (GLASS) HONEYCOMB PER BMS 8-124, CLASS 1, TYPE 1, GRADE 5.5	
4	PANEL SKIN DOUBLER	0.063 0.040	CLAD 2024-T81 OPTIONAL: CLAD 2024-T3 CLAD 2024-T81 OPTIONAL: CLAD 2024-T3	<input type="checkbox"/> <input type="checkbox"/>
5	SKIRT FAIRING	0.080	CLAD 2024-T42	
6	ACCESS DOOR SKIN	0.080	CLAD 2024-T3	

LIST OF MATERIALS FOR DETAIL I

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 12)**

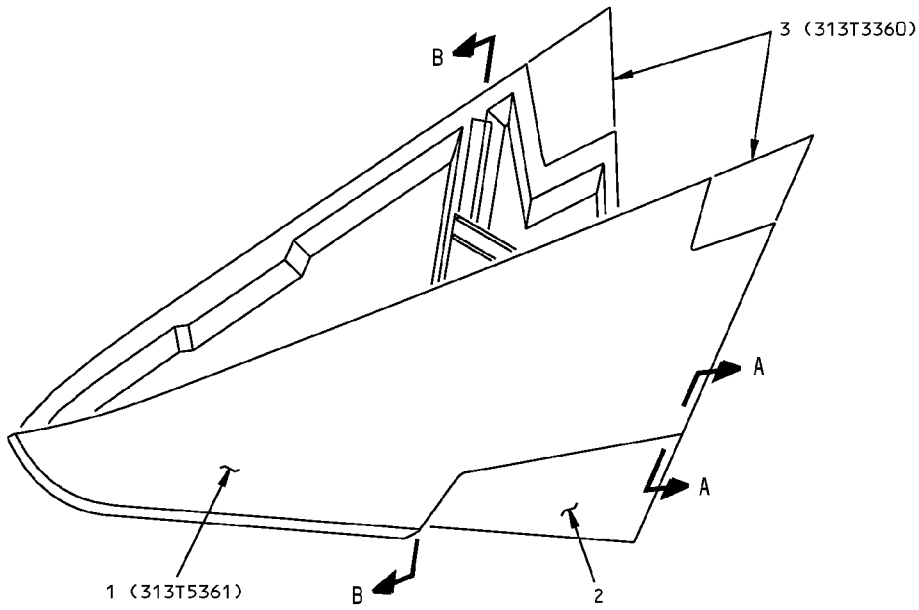
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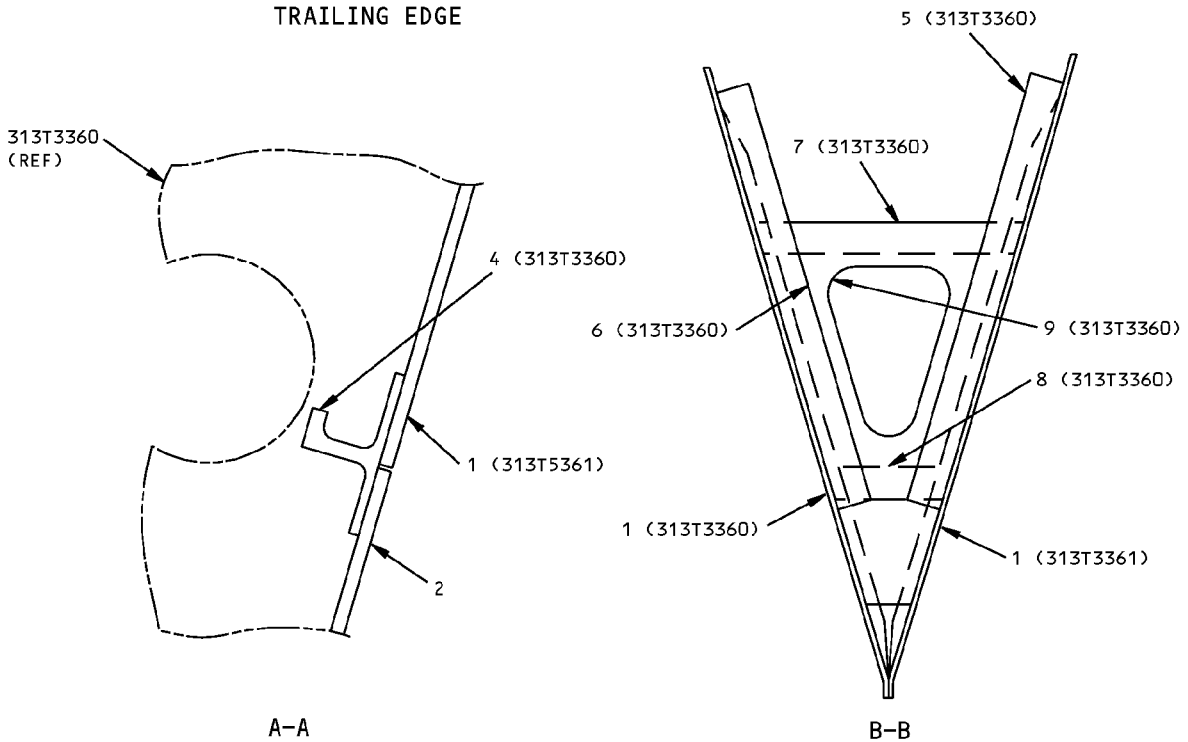
IDENTIFICATION 1
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REF DWG
313T5360



TRAILING EDGE



TRAILING EDGE - AFT FAIRING
DETAIL II



Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 12)

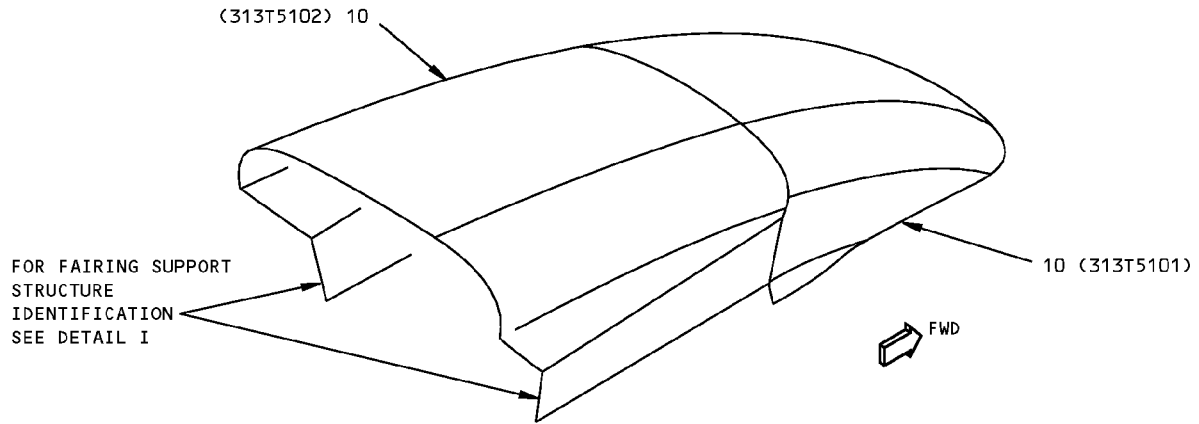
IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5100



**FORWARD FAIRING
DETAIL III**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL SKIN CORE		SEE DETAIL VIII HONEYCOMB PER BMS 4-4, TYPE 2-07, CLASS N AL 5052	
2	SKIN	0.050	INCONEL 625	
3	DOOR SKIN DOUBLER		CLAD 2024-T42 CLAD 2024-T42	
4	TEE (2)		BAC1506-1934 2024-T3511	
5	CHANNEL - OUTBOARD	0.063	2024-T42	
6	CHANNEL - INBOARD	0.063	2024-T42	
7	CHANNEL - UPPER	0.063	2024-T42	
8	CHANNEL - LOWER	0.063	2024-T42	
9	BULKHEAD	0.063	2024-T42	
10	PANEL SKIN CORE		FIBERGLASS/EPOXY HONEYCOMB SANDWICH SEE DETAIL IX NON-METALLIC (NOMEX) PER BMS 8-124, CLASS IV, TYPE VI, GRADE 3.0	

LIST OF MATERIALS FOR DETAILS II AND III

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 12)**

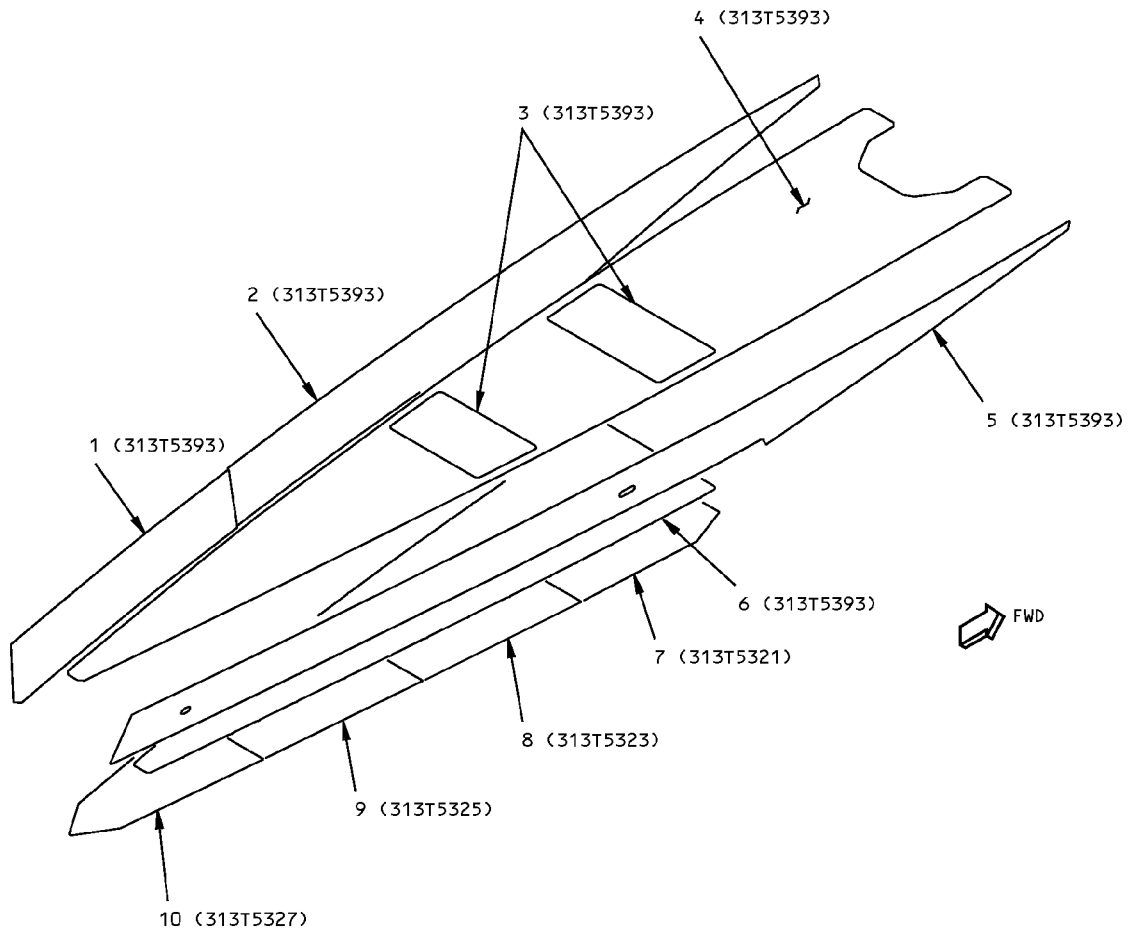
IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T5390



**BOX ASSEMBLY
DETAIL IV**

LIST OF
MATL

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 12)**

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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SKIN ASSY - AFT DOUBLER	0.050	2219-T81 OPTIONAL: 2024-T81	
	SKIN - OUTER	0.050	CLAD 2219-T81 OPTIONAL: CLAD 2024-T81	
2	SKIN ASSY - OUTBD DOUBLER	0.050	2219-T81 OPTIONAL: 2024-T81	
	SKIN - OUTER	0.050	CLAD 2219-T81 OPTIONAL: CLAD 2024-T81	
3	ACCESS COVER	0.050	2219-T81	
4	WEB ASSY WEB (2)	0.032	2219-T81	
5	SKIN ASSY - INBD DOUBLER	0.050	2219-T81 OPTIONAL: 2024-T81	
	SKIN - OUTER	0.050	CLAD 2219-T81 OPTIONAL: CLAD 2024-T81	
6	WEB ASSY WEB (2)	0.050	CLAD 2219-T81	
7	PANEL ASSY - HEAT SHIELD NO. 1 FACESHEET (2) HONEYCOMB CORE	0.022	15-7PH CRES HT TR 1125	
		0.250	15-7PH CRES HT TR 1125 (SPOT WELDED)	
8	PANEL ASSY - HEAT SHIELD NO. 2 FACESHEET (2) HONEYCOMB CORE	0.022	15-7PH CRES HT TR 1125	
		0.250	15-7PH CRES HT TR 1125 (SPOT WELDED)	
9	PANEL ASSY - HEAT SHIELD NO. 3 FACESHEET (2) HONEYCOMB CORE	0.022	15-7PH CRES HT TR 1125	
		0.250	15-7PH CRES HT TR 1125 (SPOT WELDED)	
10	PANEL ASSY - HEAT SHIELD NO. 4 FACESHEET (2) HONEYCOMB CORE	0.022	15-7PH CRES HT TR 1125	
		0.250	15-7PH CRES HT TR 1125 (SPOT WELDED)	

LIST OF MATERIALS FOR DETAIL IV

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 7 of 12)**

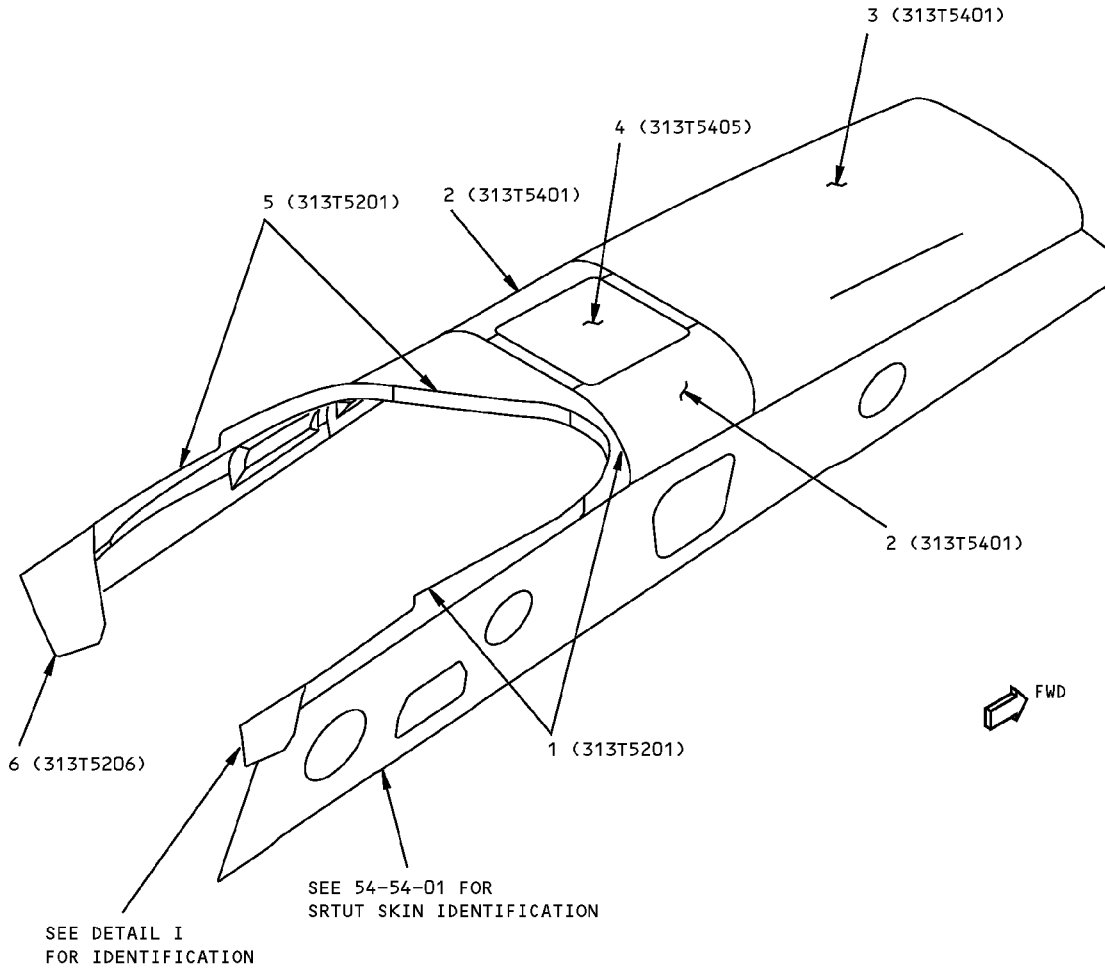
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T5200
313T5400



**MID AND UNDERWING FAIRINGS
DETAIL V**

LIST OF
MATL

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 12)**

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ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	PANEL ASSY - UNDERWING		SEE DETAIL X	
2	PANEL ASSY - MID		SEE DETAIL X	
3	PANEL - MID FAIRING SKIN CORE		SEE DETAIL IX NON-METALLIC (NOMEX) HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 3.0	
4	PANEL OUTER SKIN INNER SKIN DOUBLER CORE CORE	0.050 0.020 0.020	CLAD 2024-T3 HT TR T81 CLAD 2024-T3 HT TR T81 CLAD 2024-T3 HT TR T81 HONEYCOMB CORE PER BMS 4-4, TYPE 3-10, CLASS N HONEYCOMB CORE 21.1-1/8-60N (5056)	
5	PANEL - UNDERWING SKIN CORE		SEE DETAIL IX NON-METALLIC (NOMEX) HONEYCOMB PER BMS 8-124, CLASS IV, TYPE V, GRADE 3.0	
6	ACCESS DOOR SKIN	0.080	CLAD 2024-T42	

LIST OF MATERIALS FOR DETAIL V

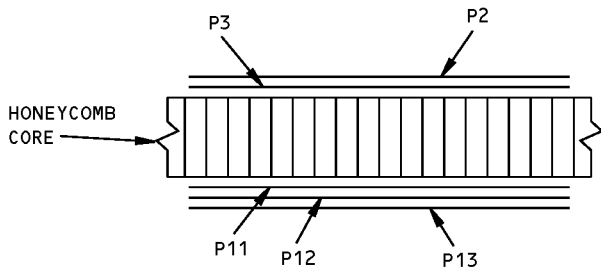
Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 9 of 12)

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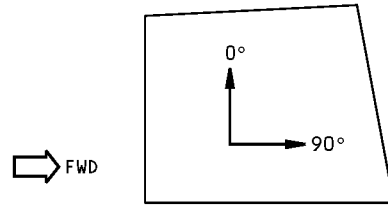
54-54-70

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STRUCTURAL REPAIR MANUAL**

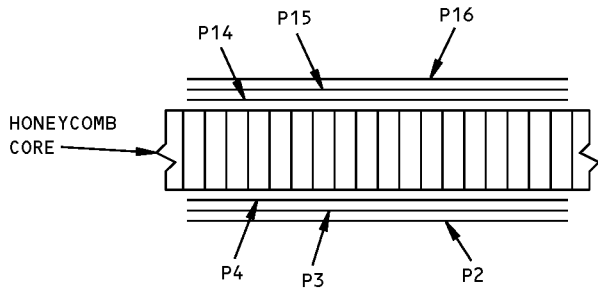


SECTION THRU HONEYCOMB PANEL
(ITEM 2, DETAIL I)

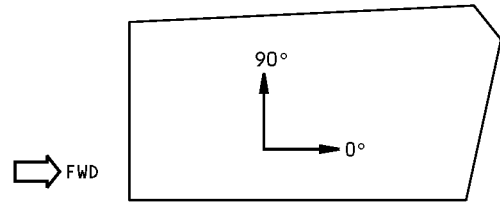


PLY ORIENTATION DIAGRAM.
SEE TABLE 1 FOR PLY
ORIENTATION AND MATERIAL

DETAIL VI

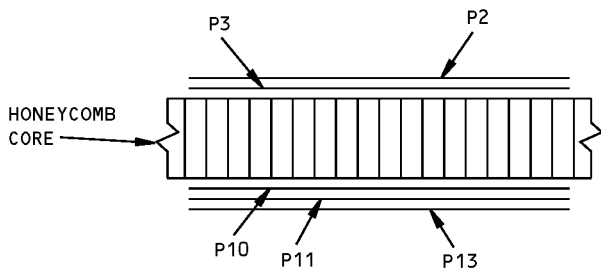


SECTION THRU HONEYCOMB PANEL
(ITEM 3, DETAIL I)

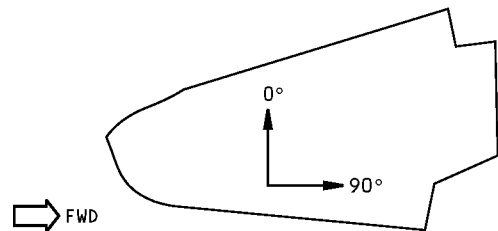


PLY ORIENTATION DIAGRAM.
SEE TABLE 1 FOR PLY
ORIENTATION AND MATERIAL

DETAIL VII



SECTION THRU HONEYCOMB PANEL
(ITEM 1, DETAIL II)



PLY ORIENTATION DIAGRAM.
SEE TABLE 1 FOR PLY
ORIENTATION AND MATERIAL

DETAIL VIII

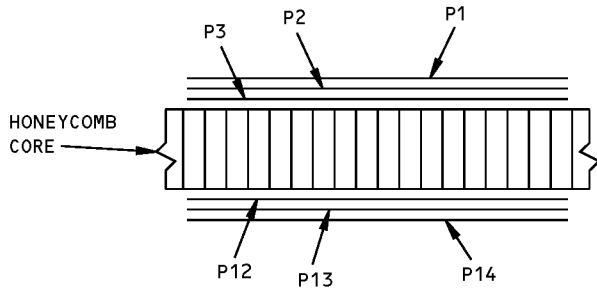
**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 10 of 12)**

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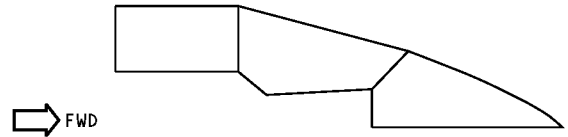
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STRUCTURAL REPAIR MANUAL**

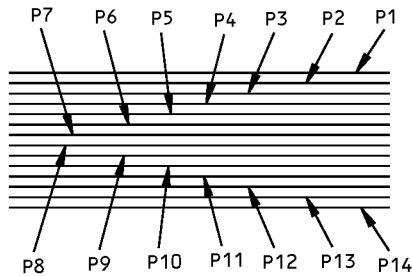


SECTION THRU HONEYCOMB PANEL
(ITEM 10, DETAIL III AND
ITEMS 3 AND 5, DETAIL V)

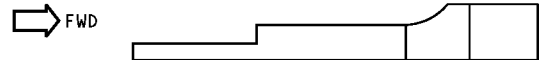


PLY ORIENTATION DIAGRAM.
SEE TABLE 1 FOR PLY
ORIENTATION AND MATERIAL

DETAIL IX



SECTION THRU HONEYCOMB PANEL
(ITEM 1 AND 2, DETAIL V)



PLY ORIENTATION DIAGRAM.
SEE TABLE 1 FOR PLY
ORIENTATION AND MATERIAL

DETAIL X

**Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 11 of 12)**

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STRUCTURAL REPAIR MANUAL

ITEM NO.	PLY NO.	MATERIAL	PLY ORIENTATION ^A
2 DETAIL I	P2,P3,P11	D	0 - 90°
	P12	E	
	P13	F	
3 DETAIL I	P2,P3,P4,P14, P15,P16	D	0 OR 90° OPTIONAL
1 DETAIL II	P2,P3,P10,P11	D	0 OR 90° OPTIONAL
	P13	F	
10 DETAIL III AND 3,5 DETAIL V	P1	H	0 OR 90° OPTIONAL
	P2,P3,P12,P13	D	
	P14	G	
1 AND 2 DETAIL V	P1	H	0 OR 90° OPTIONAL
	P2 THRU P13	D	
	P14	G	

TABLE I ^B

Strut Fairing Skin Identification - RB211-524 Engine
Figure 1 (Sheet 12 of 12)

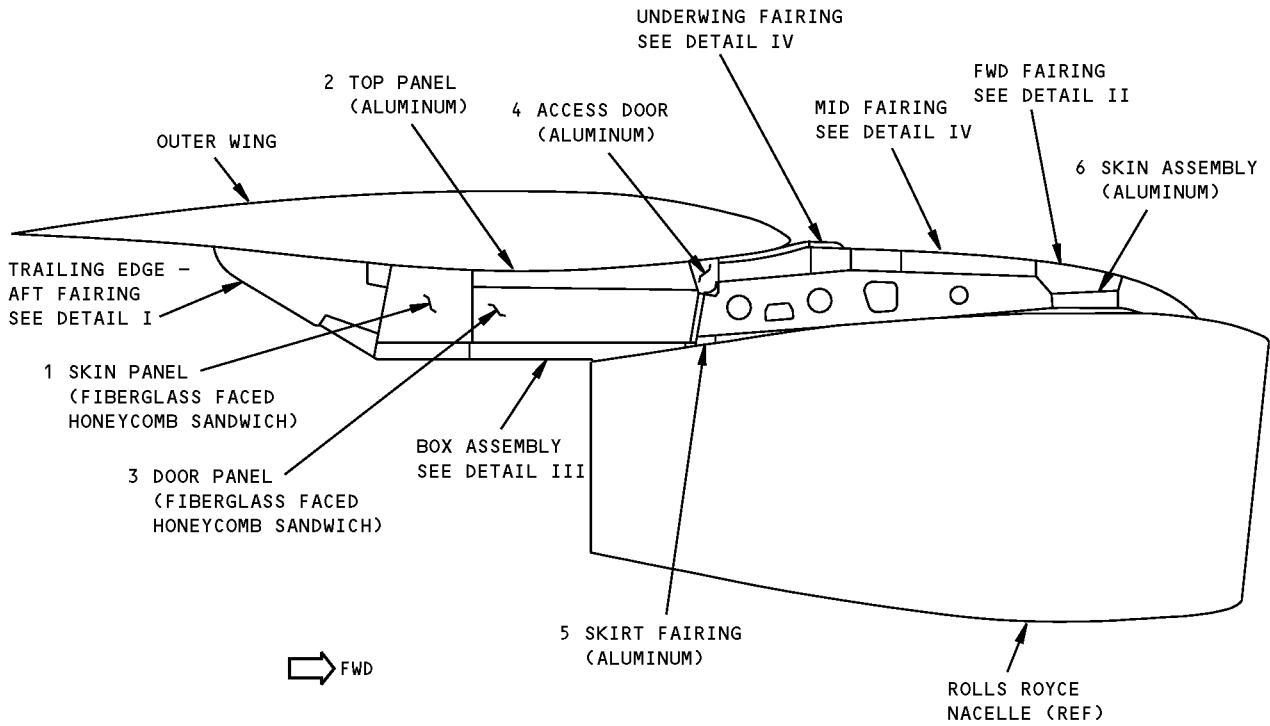
D634T210

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STRUCTURAL REPAIR MANUAL**

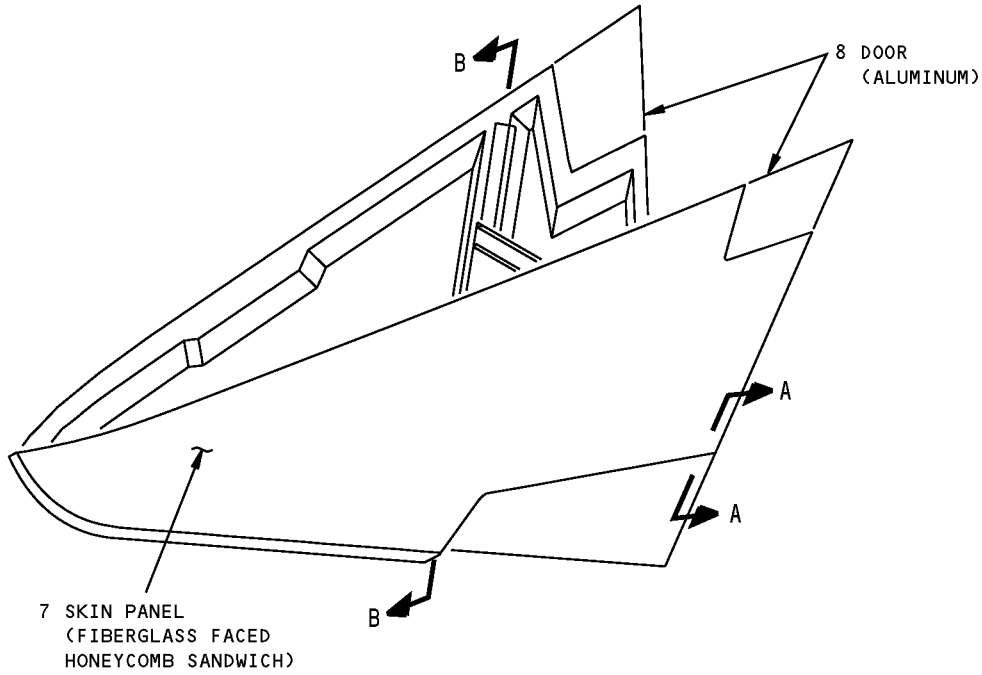
ALLOWABLE DAMAGE 1 - STRUT FAIRING SKIN - RB211-524 ENGINE



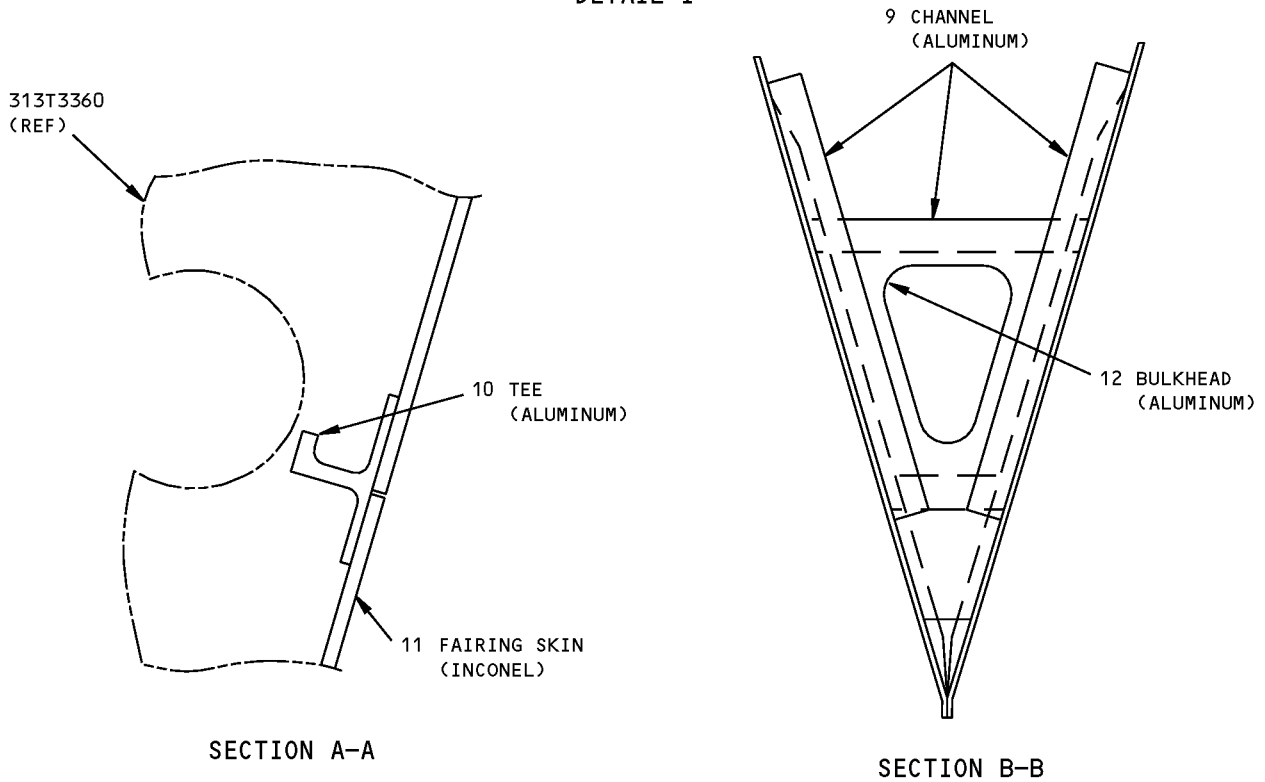
STRUT FAIRING SKIN DIAGRAM

**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 1 of 7)**

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STRUCTURAL REPAIR MANUAL**

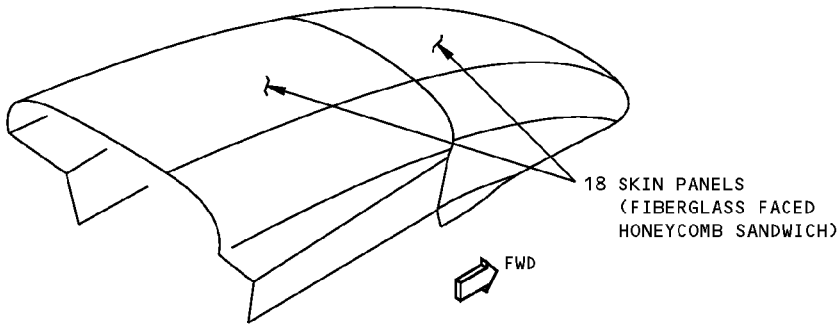


**TRAILING EDGE
DETAIL I**

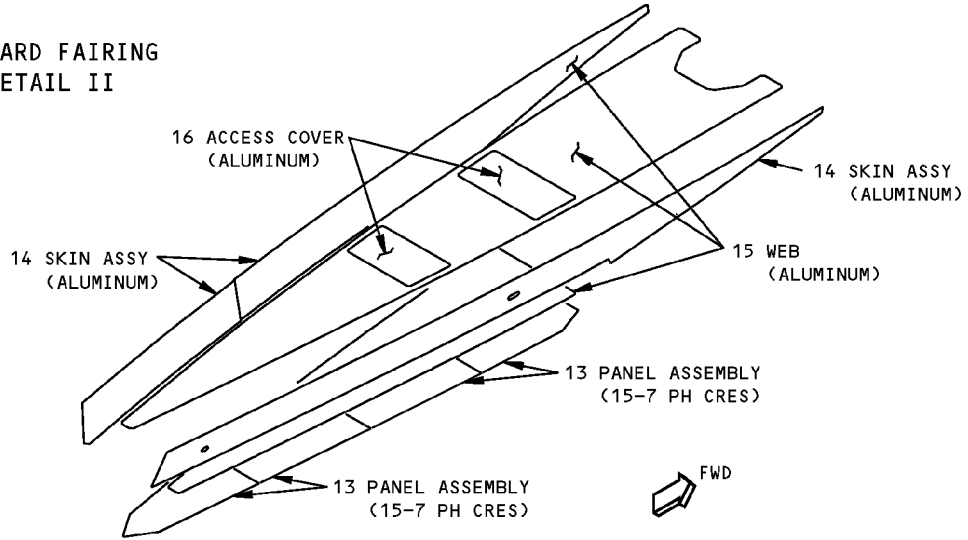


**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 2 of 7)**

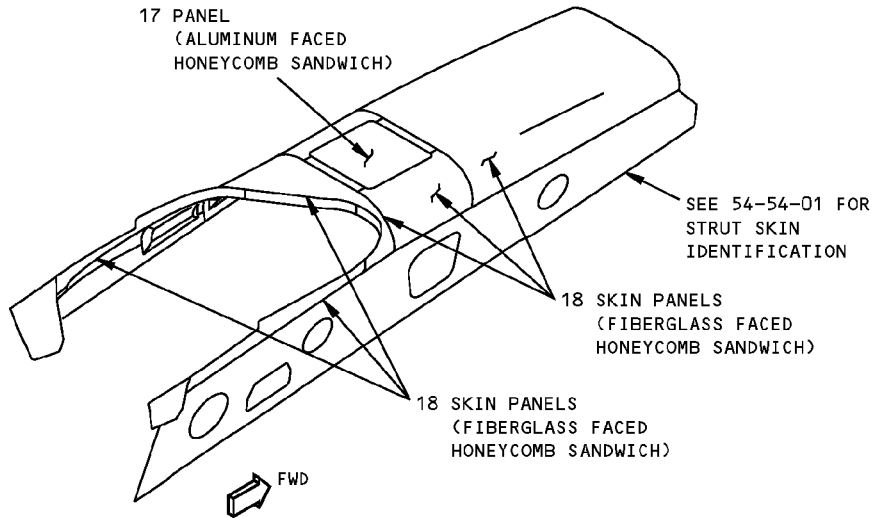
**767-300
STRUCTURAL REPAIR MANUAL**



**FORWARD FAIRING
DETAIL II**



**BOX ASSEMBLY
DETAIL III**



**MID AND UNDERWING FAIRINGS
DETAIL IV**

**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 3 of 7)**



**767-300
STRUCTURAL REPAIR MANUAL**

	DESCRIPTION	CRACKS	NICKS, GOUGES, SCRATCHES AND CORROSION	DENTS	HOLES AND PUNCTURES	PANEL DELAMINATION
1	SKIN PANEL	N	G	H	I	E
2	TOP PANEL	A	B	SEE DETAIL VII	C	NOT APPLICABLE
3	DOOR PANEL L	N	G	H	I	E
4	ACCESS DOOR	A	B	SEE DETAIL VII	C	NOT APPLICABLE
5	SKIRT FAIRING	A	B	SEE DETAIL VII	C	NOT APPLICABLE
6	SKIN ASSEMBLY	A	B	SEE DETAIL VII	C	NOT APPLICABLE
7	SKIN PANEL	N	G	H	I	E
8	DOOR	A	B	SEE DETAIL VII	C	NOT APPLICABLE
9	CHANNELS	K	B	NOT ALLOWED	SEE DETAIL XI	NOT APPLICABLE
10	TEE	D	B	NOT ALLOWED	SEE DETAIL XI	NOT APPLICABLE
11	FAIRING SKIN	A	B	SEE DETAIL VII	M	NOT APPLICABLE
12	BULKHEAD	A	B	NOT ALLOWED	NOT ALLOWED	NOT APPLICABLE
13	PANEL ASSEMBLY	K	B	SEE DETAIL VII	Q	NOT APPLICABLE
14	SKIN ASSEMBLY	A	B	SEE DETAIL VII	C	NOT APPLICABLE
15	WEB	A	B	SEE DETAIL VII	C	NOT APPLICABLE
16	ACCESS COVER	A	B	SEE DETAIL VII	SEE DETAIL XI	NOT APPLICABLE
17	PANEL	F	B	J	D	E
18	SKIN PANEL	N	G	H	I	E

**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 4 of 7)**

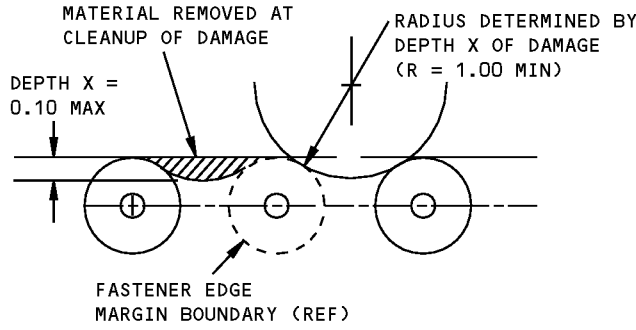
STRUCTURAL REPAIR MANUAL

NOTES

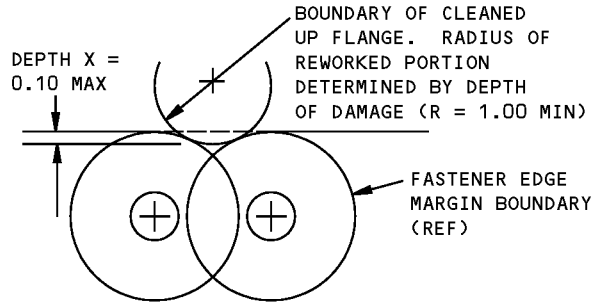
- DAMAGE TO FIRE PROTECTIVE COATINGS ON INTERIOR SURFACES OF THE PANELS IS NOT ALLOWED
 - THESE ALLOWABLE DAMAGE LIMITS ARE FAA APPROVED CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN
 - REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED
 - REFINISH REWORKED AREAS PER AMM 51-21
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND IX
 - B** REMOVE DAMAGE PER DETAILS V, VI AND VIII
 - C** CLEAN PUNCTURE OUT WITH 0.25 MAX DIA HOLE AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A 2117-T3 OR T4 ALUMINUM RIVET INSTALLED WET WITH BMS 5-95 SEALANT. ALL OTHER HOLES TO BE REPAIRED
 - D** 1.0 MAX DIA IN HONEYCOMB AREA ONLY AND MIN OF 2.5 DIA FROM NEAREST HOLE OR MATERIAL EDGE. **P**
 - E** 2.0 INCH MAX DIA IS ALLOWED IN HONEYCOMB AREA. A MAXIMUM OF 0.10 INCH DELAMINATION FROM EDGE IS ALLOWED. **P**
 - F** 2.0 MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 FROM ANY OTHER CRACK. DRILL 0.19 DIA STOP HOLES AT END OF CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
 - G** DAMAGE ALLOWED ON SURFACE RESIN ONLY. DAMAGE TO FIBERS NOT ALLOWED. CLEAN UP EDGE DAMAGE PER DETAILS V AND IX. **P**
 - H** 2.0 MAX DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION OR FIBER DAMAGE. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6 INCHES FROM ANY OTHER DENT
 - I** 1.0 MAX DIA ALLOWED PROVIDED DAMAGE IS MIN OF 3.0 DIA FROM OTHER DAMAGE, NEAREST HOLE, OR MATERIAL EDGE. DO NOT CLEAN UP DAMAGE EXCEPT TO REMOVE RESIN BURRS EXTENDING INTO SURFACE CONTOUR. **P**
 - J** 2.0 DIA IN HONEYCOMB AREA IS ALLOWED PROVIDED THERE IS NO DELAMINATION. ONE DENT PER SQUARE FOOT OF AREA ALLOWED AND A MINIMUM OF 6 INCHES FROM ANY OTHER DENT
 - K** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND X
 - L** NO DAMAGE ALLOWED IN AN AREA 1.50 AROUND HINGE OR LATCH FITTINGS. CONTACT THE BOEING COMPANY FOR ALLOWABLE DAMAGE
 - M** CLEAN OUT DAMAGE UP TO 0.25 MAX DIA AND NOT CLOSER THAN 1.0 INCH TO FASTENER HOLE OR OTHER DAMAGE. FILL HOLE WITH A MONEL RIVET INSTALLED DRY. ALL OTHER DAMAGE TO BE REPAIRED
 - N** 2.0 MAX LENGTH IN HONEYCOMB AREA PER SQUARE FOOT AND MIN OF 6.0 FROM ANY OTHER CRACK. CLEAN UP EDGE CRACKS PER DETAILS V AND IX. **P**
 - O** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS V AND XII
 - P** REMOVE MOISTURE FROM DAMAGE AREA. USE OF VACUUM AND HEAT (MAX OF 125°F (52°C)) TO REMOVE MOISTURE FROM HONEYCOMB CELLS IS RECOMMENDED. PROTECT DAMAGE FROM ENTRANCE OF WATER, SUNLIGHT OR OTHER FOREIGN MATTER BY SEALING WITH ALUMINUM FOIL TAPE (SPEED TAPE). RECORD THE LOCATION AND INSPECT EACH AIRPLANE "A" CHECK. REPLACE THE ALUMINUM FOIL TAPE IF ANY PEELING OR DE-TERIORATION IS EVIDENT. REPAIR NO LATER THAN NEXT AIRPLANE "C" CHECK
 - Q** HOLES IN THE LOWER SKIN UP TO 0.10-INCH LENGTH OR DIAMETER AFTER CLEANUP ARE ALLOWED. SHARP OR JAGGED EDGES AROUND THE HOLES SHOULD BE SMOOTHED OUT AND ANY SLIT TYPE PUNCTURES SHOULD BE MADE ROUND OR OVAL. ANY LOWER SKIN DAMAGE LARGER THAN THE ABOVE LIMITS SHALL BE WELD REPAIRED, UP TO 0.25 INCH DIA. ANY PUNCTURES THAT COMPLETELY PIERCE THE HONEYCOMB PANEL SHALL BE WELD REPAIRED, UP TO 0.25 INCH DIA. MINIMUM SPACING ALLOWED BETWEEN AN UNREPAIRED HOLE AND ANOTHER HOLE IS 2.00 INCHES

Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 5 of 7)

STRUCTURAL REPAIR MANUAL

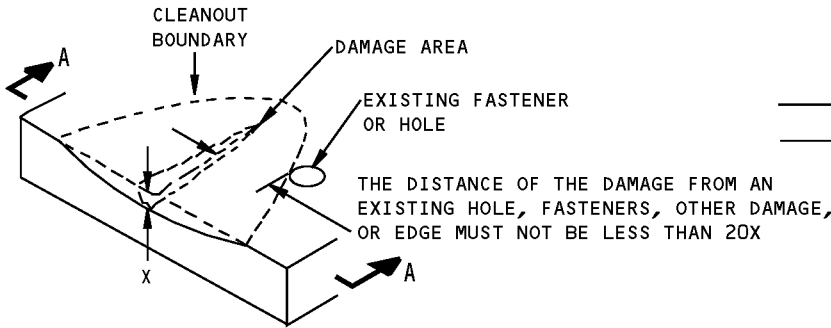


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP



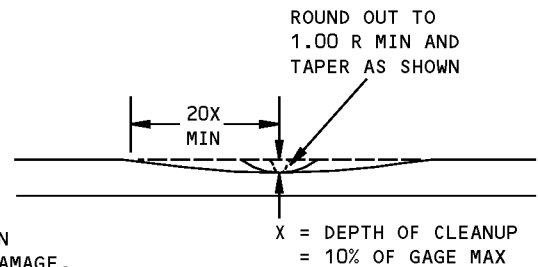
DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

DETAIL V

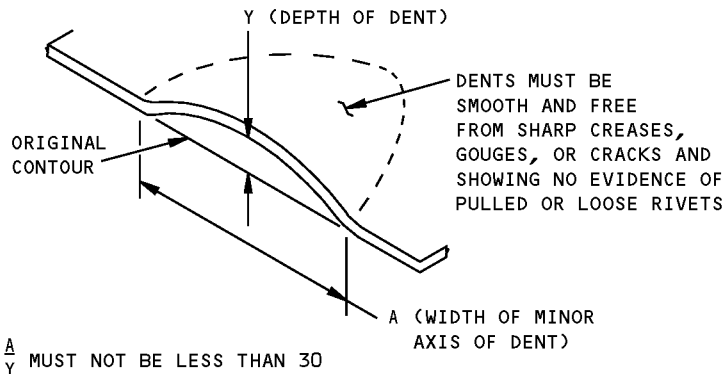


REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE

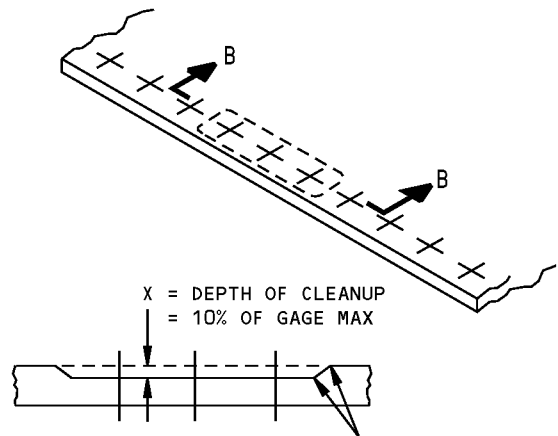
DETAIL VI



SECTION A-A



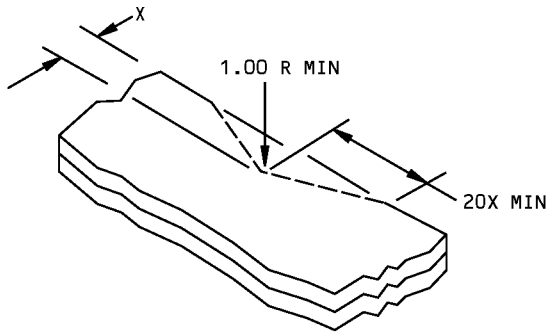
**ALLOWABLE DAMAGE FOR DENT
DETAIL VII**



**SECTION B-B
CORROSION CLEANUP
DETAIL VIII**

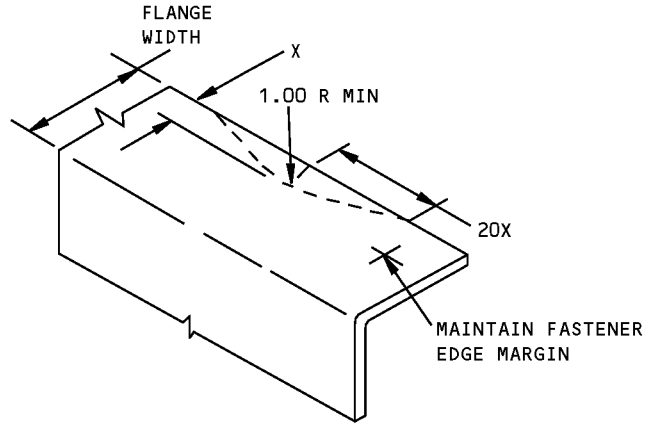
**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 6 of 7)**

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STRUCTURAL REPAIR MANUAL**



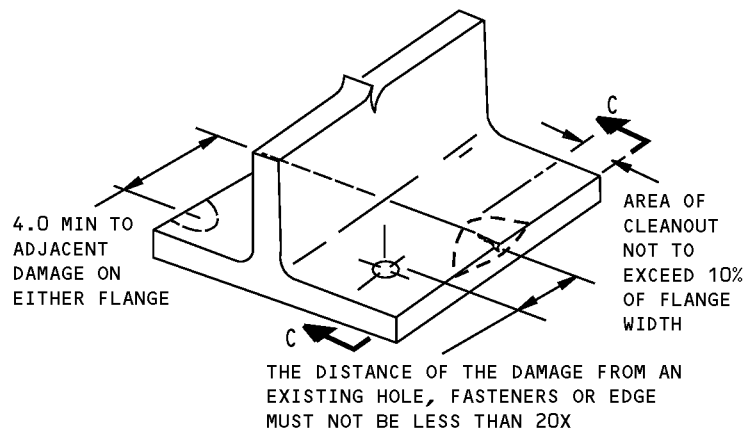
X = DEPTH OF CLEANUP = 0.10 MAX

DETAIL IX

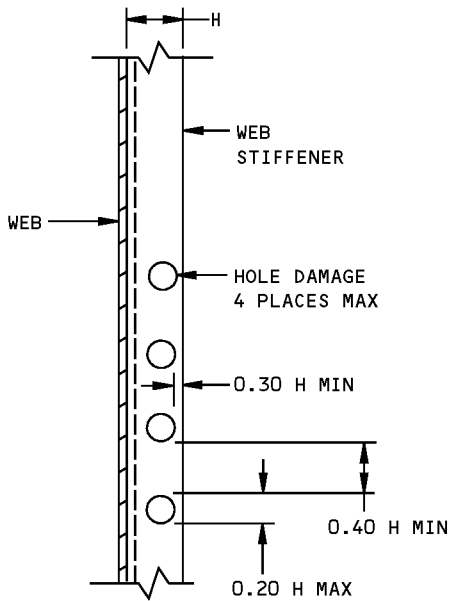


X = DEPTH OF CLEANUP NOT TO EXCEED 10% OF FLANGE WIDTH

**REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL X**



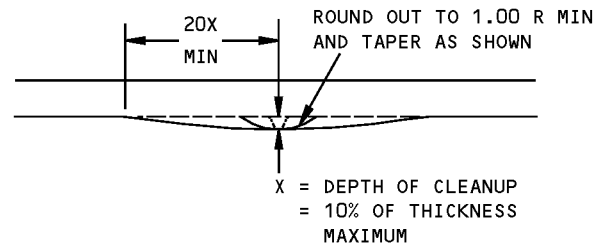
THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENERS OR EDGE MUST NOT BE LESS THAN 20X



NOTE: NO HOLE DAMAGE ALLOWED IN STIFFENER FLANGES FASTENED TO WEB. HOLE DAMAGE NOT TO EXCEED 4 PLACES. FILL ALL HOLES IN ALUMINUM WITH 2117-T3 OR T4 RIVETS INSTALLED WET WITH BMS 5-95. FILL HOLES IN INCONEL WITH MONEL RIVET INSTALLED DRY

H = WIDTH OF STIFFENER FLANGE

**ALLOWABLE DAMAGE LIMITS FOR HOLES IN WEB AND FAIRING STIFFENERS
DETAIL XI**

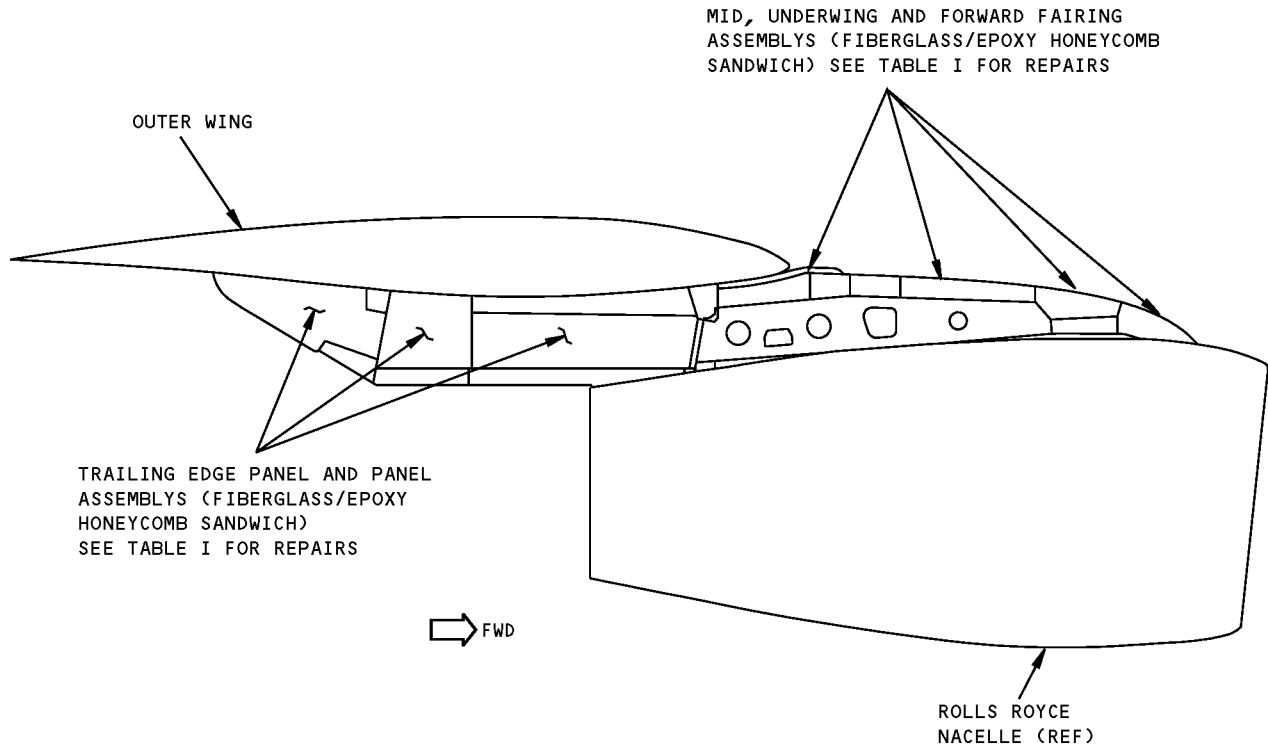


**SECTION C-C
REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL XII**

**Allowable Damage - Strut Fairing Skin - RB211-524 Engine
Figure 101 (Sheet 7 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR 1 - STRUT FAIRING SKIN - RB211-524 ENGINE



**STRUT FAIRING SKIN
DETAIL I**

**Strut Fairing Skin Repairs - RB211-524 Engine
Figure 201 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL

DAMAGE	INTERIM REPAIRS B	PERMANENT REPAIRS	
	WET LAYUP ROOM TEMP/ 150°F (66°F) CURE (SRM 51-70-06)	WET LAYUP 200-230°F (93-121°C) CURE (SRM 51-70-17)	350°F (177°C) CURE (SRM 51-70-08)
CRACKS	UP TO 3.0 INCHES (75 mm) LONG, REPAIR WITH PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.0. A	CLEAN UP DAMAGE AND REPAIR AS A HOLE.	CLEAN UP DAMAGE AND REPAIR AS A HOLE.
HOLES	3.0 INCHES (75 mm) MAX DIA, NOT TO EXCEED 30% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.0. A	12.0 INCHES MAX DIA, NOT TO EXCEED 50% OF SMALLEST DIMENSION OF HONEYCOMB PANEL AT THE DAMAGE LOCATION. USE TWO EXTRA PLIES PER FACESHEET REPAIRED. C	NO SIZE LIMIT
DELAMINATION	CUT OUT AND REPAIR AS A HOLE.		
NICKS AND GOUGES	IF THERE IS NO FIBER DAMAGE OR DELAMINATION, FILL NICKS OR GOUGES AS GIVEN IN SRM 51-70-06. IF THERE IS FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		
DENTS	UP TO 3.0 INCHES (75 mm) DIA WITH NO FIBER DAMAGE OR DELAMINATION, FILL WITH BMS 5-28, TYPE 7 POTTING COMPOUND AND PATCH AS GIVEN IN SRM 51-70-06, PAR. 5.M. OVER 3.0 INCHES (75 mm) DIA OR WITH FIBER DAMAGE OR DELAMINATION, REPAIR AS A HOLE.		

REPAIR DATA FOR 350°F CURE FIBERGLASS HONEYCOMB PANELS
TABLE I

NOTES

- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE REPAIR EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.
- FINISH REWORKED AREAS AS GIVEN IN AMM 51-21.

A LIMITED TO REPAIR OF DAMAGE TO ONE FACE-SHEET SKIN AND HONEYCOMB CORE. ONE REPAIR PER SQUARE FOOT OF AREA AND MINIMUM OF 6.0 INCHES (EDGE TO EDGE) FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL.

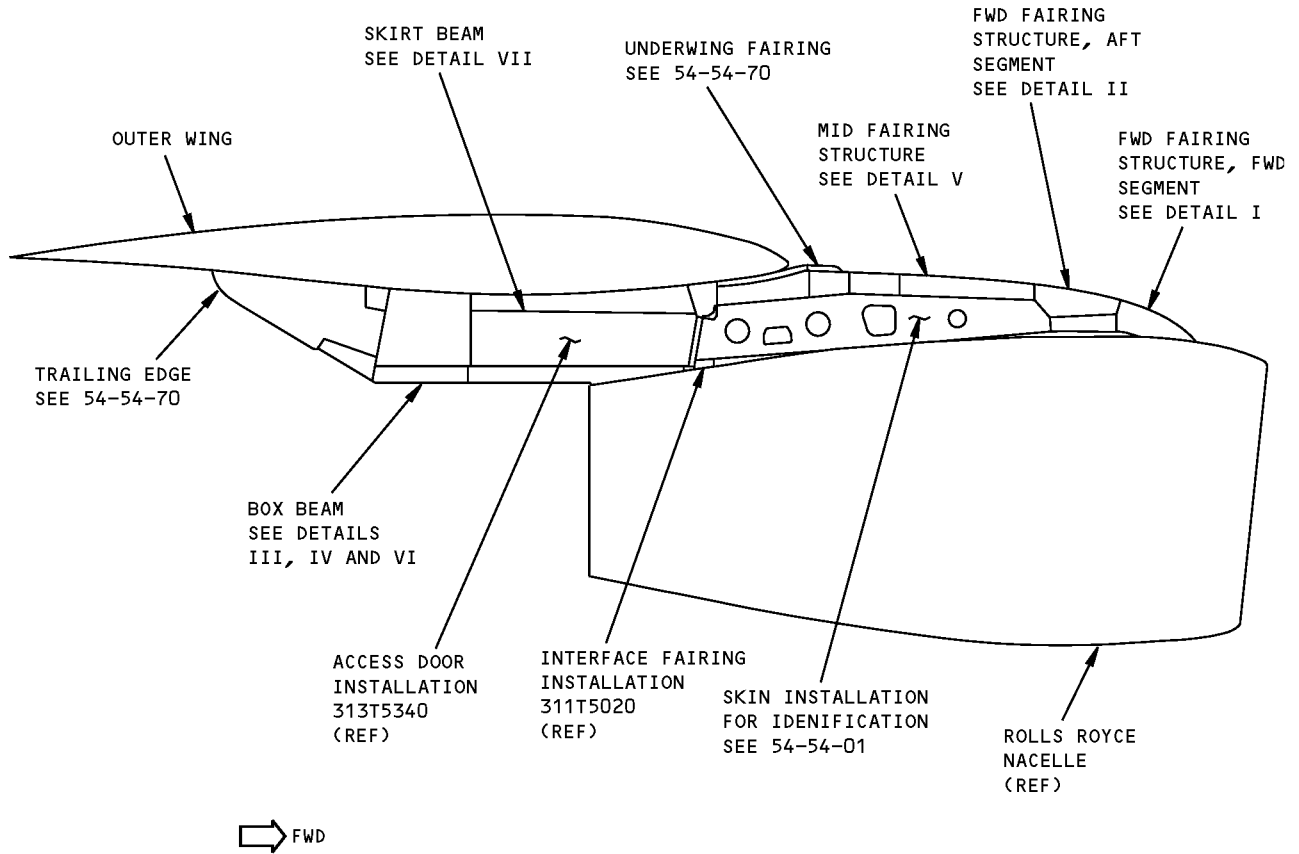
B INSPECT INTERIM REPAIR USING INSTRUMENTED NDI METHODS OR "TAP" TEST EVERY AIRPLANE "C" CHECK. FOR "TAP" TEST, USE A SOLID METAL DISK AND TAP THE REPAIR AREA LIGHTLY BUT FIRMLY. VOID AREAS WILL PRODUCE A DULL SOUND AS OPPOSED TO A SHARP RING ON A SOLID BONDED AREA. PERMANENT REPAIR IS REQUIRED IF ANY DETERIORATION IS EVIDENT. REFER TO SRM 51-70-03, PAR. 5.J. AND THE NONDESTRUCTIVE TEST MANUAL, D634T301. THIS REPAIR HAS FAA APPROVAL CONTINGENT ON ACCOMPLISHMENT OF THE INSPECTIONS AT THE INTERVALS CONTAINED HEREIN.

C REPAIRS MUST BE A MINIMUM OF 2 TIMES THE DIAMETER OF THE DAMAGE AWAY FROM ANY OTHER DAMAGE, FASTENER HOLE, OR EDGE OF PANEL. IF 2 TIMES THE DIAMETER OF THE LARGER DAMAGE IS GREATER THAN 6 INCHES (150 mm), THEN A MINIMUM 6 INCH (150 mm) DISTANCE CAN BE USED.

Strut Fairing Skin Repairs - RB211-524 Engine
Figure 201 (Sheet 2 of 2)

**767-300
STRUCTURAL REPAIR MANUAL**

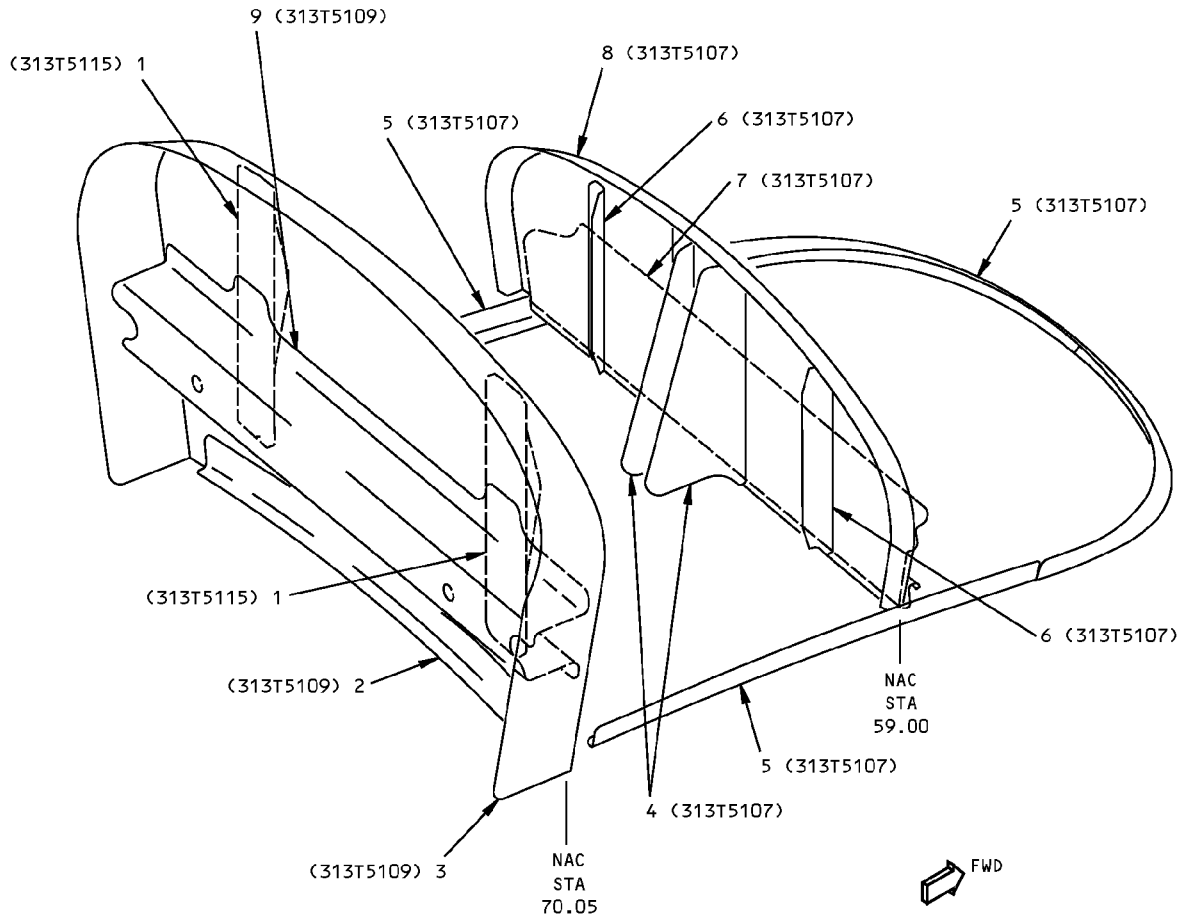
IDENTIFICATION 1 - STRUT FAIRING STRUCTURE - RB211-524 ENGINE



**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 13)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5101



FWD FAIRING ASSY - FWD SEGMENT
DETAIL I



Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 13)

IDENTIFICATION 1
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D634T210



767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	STIFFENER		AND10136-1503 2024-T8511	
2	ANGLE	0.050	T1-6AL-4V ANNEALED	
3	BULKHEAD	0.050	T1-6AL-4V ANNEALED	
4	SUPPORT ANGLE	0.100	2024-T3	
5	SEAL RETAINER	0.032	2024-T42	
6	STIFFENER		BAC1490-2669	
7	STIFFENER	0.050	2024-T3	
8	BULKHEAD	0.050	2024-T8511	
9	STIFFENER	0.063	T1-6AL-4V ANNEALED	

LIST OF MATERIALS FOR DETAIL I

Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 3 of 13)

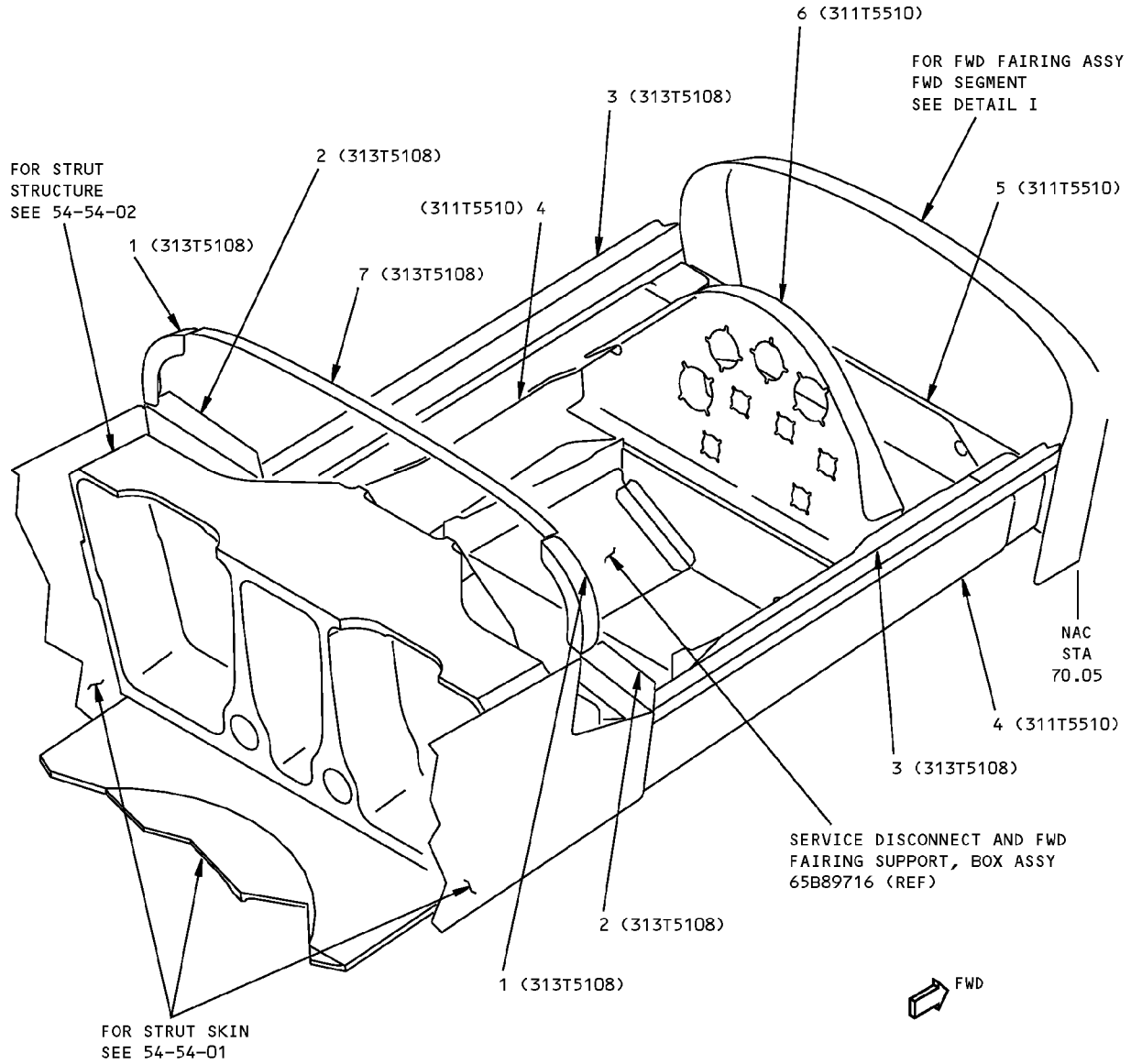
D634T210

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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
311T5510
313T5102



**FWD FAIRING ASSY - AFT SEGMENT
DETAIL II**

LIST OF
MATL

**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 4 of 13)**

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767-300
STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	SEAL DEPRESSOR	0.050	2024-T3	
2	TIE PLATE	0.090	2024-T3	
3	TIE PLATE	0.080	2024-T3	
4	LONGERON	0.125	T1-COM-PURE-40 ANNEALED	
5	CHANNEL - FAIRING SPRT	0.063	15-5 PH CRES	
6	BULKHEAD	0.063	15-5 PH CRES, HT TR 180-200 KSI	
7	RUB STRIP	0.040	TYPE 304 CRES ANNEALED	

LIST OF MATERIALS FOR DETAIL II

Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 5 of 13)

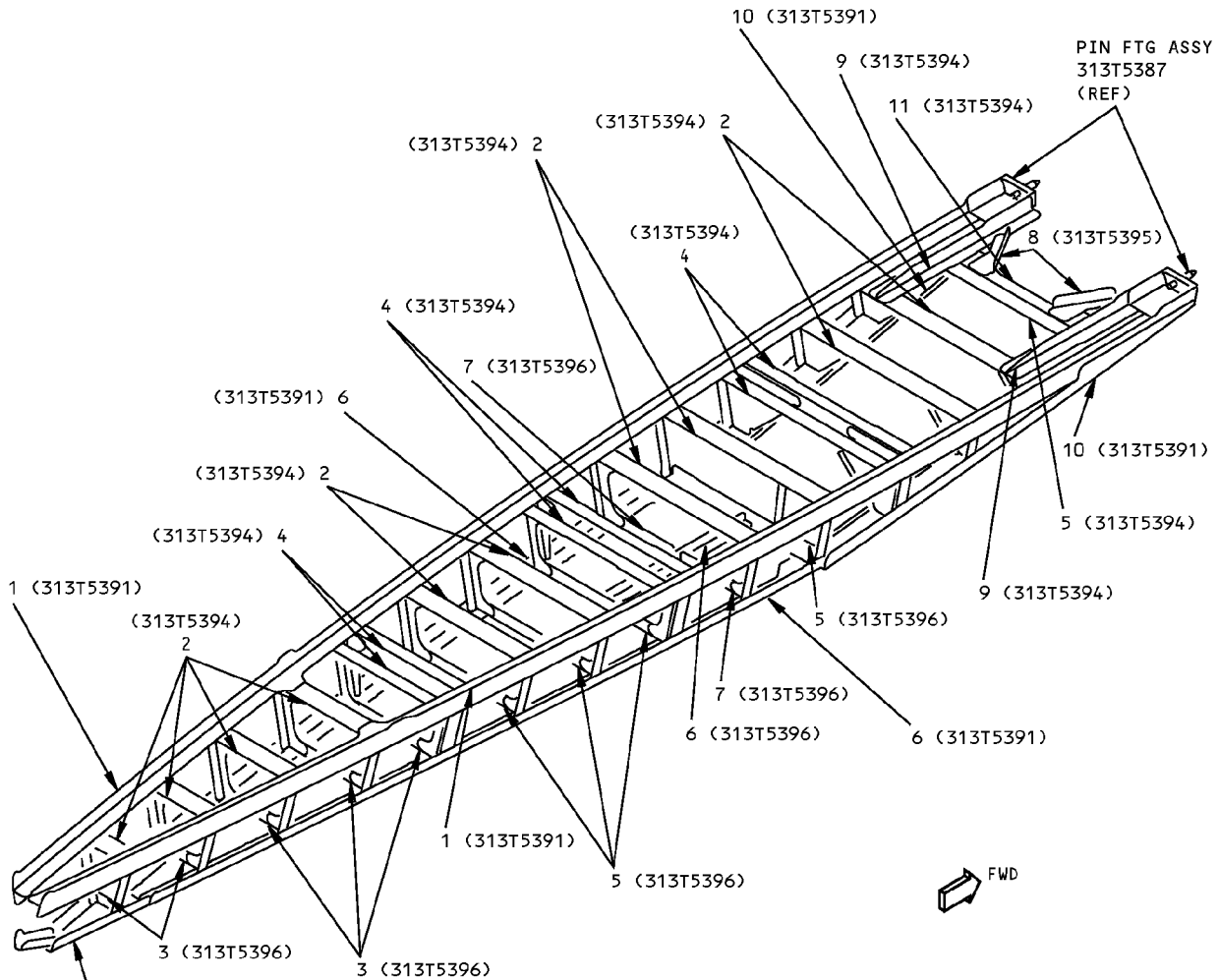
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IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T5390



FOR AFT WEB
IDENTIFICATION
SEE 54-54-70

**BOX ASSEMBLY
DETAIL III**

LIST OF
MATL

**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 6 of 13)**

IDENTIFICATION 1
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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	UPR CHORD		BAC1506-1769 2024-T3511	
2	TEE STIFFENER		AND10136-1603 2024-T3511	
3	ANGLE STIFFENER		AND10134-1006 2024-T3511	
4	ANGLE STIFFENER		AND10133-1202 2024-T3511	
5	ANGLE STIFFENER		AND10134-1205 2024-T3511	
6	CHORD	0.080	2219-T62	
7	ANGLE STIFFENER		AND10134-1006 2024-T42	
8	ATTACH ANGLE	0.050	2219-T62	
9	TEE STIFFENER		BAC1505-100881 2024-T3511	
10	FWD CHORD	0.063	2219-T62	
11	TEE STIFFENER		AND10136-2005 2024-T3511	

LIST OF MATERIALS FOR DETAIL III

Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 7 of 13)

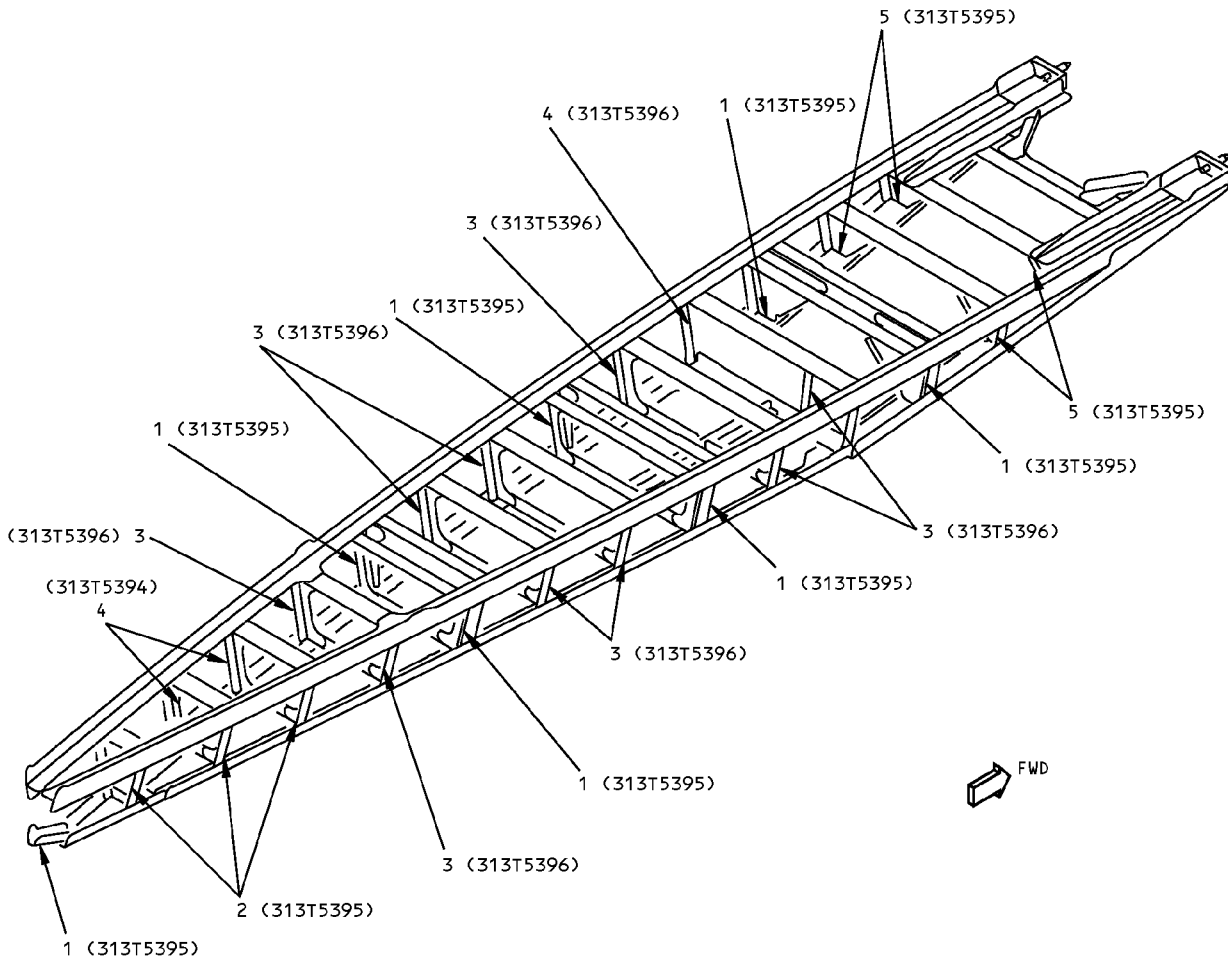
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5390



**BOX ASSEMBLY
DETAIL IV**



**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 8 of 13)**

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**767-300
STRUCTURAL REPAIR MANUAL**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	CHANNEL	0.080	2219-T62	
2	ANGLE STIFFENER	0.080	2219-T62	
3	STIFFENER	0.080	2219-T62	
4	TEE STIFFENER		AND10136-2401 2024-T3511	
5	GUSSET	0.080	2219-T62	

LIST OF MATERIALS FOR DETAIL IV

**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 9 of 13)**

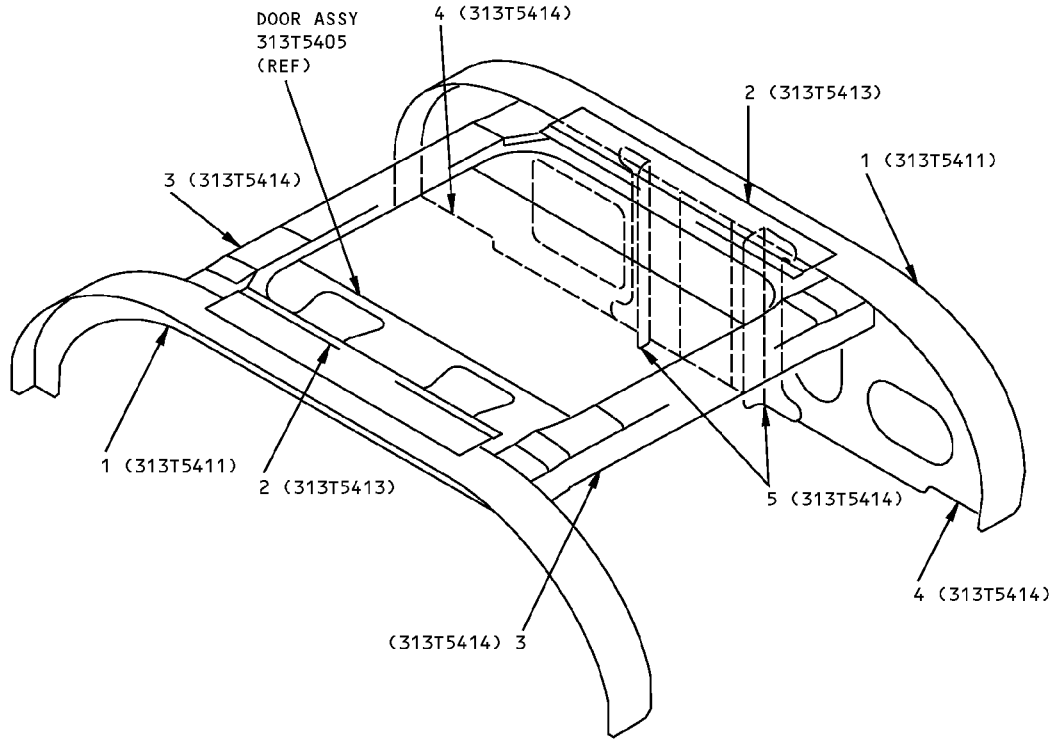
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STRUCTURAL REPAIR MANUAL**

REF DWG
313T5100



**MID FAIRING STRUCTURE
DETAIL V**

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	TEE		AND10136-2005 2024-T42	
2	DOOR SUPPORT	0.250	2024-T3 PLATE MACHINED TO 0.12 MIN	
3	DOOR FRAME	0.063	2024-T42	
4	BULKHEAD	0.050	2024-T3	
5	STIFFENER	0.063	2024-T3	

LIST OF MATERIALS FOR DETAILS V

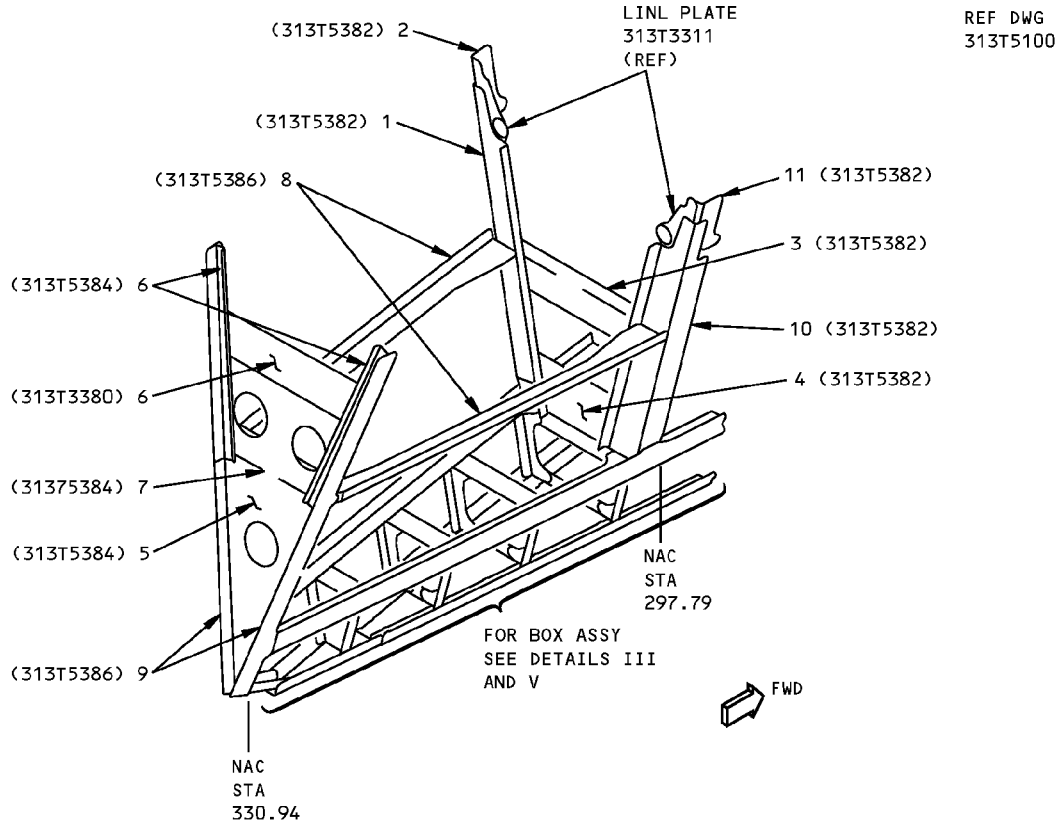
**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 10 of 13)**

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STRUCTURAL REPAIR MANUAL**



DETAIL VI

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ZEE OUTBD	0.080	7075-T6	
2	ANGLE OUTBD	0.080	7075-T6	
3	CHANNEL	0.090	7075-T6	
4	WEB	0.063	2024-T42	
5	FRAME	0.063	2024-T42	
6	CHANNEL	0.063	2024-T42	
7	CHANNEL	0.080	2024-T42	
8	STIFFENER	0.080	2024-T42	
9	SPLICE PLATE	0.063	2024-T3	
10	ZEE INBD	0.080	7075-T6	
11	ANGLE INBD	0.080	7075-T6	

LIST OF MATERIALS FOR DETAIL VI

**Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 11 of 13)**



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STRUCTURAL REPAIR MANUAL

ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	ANGLE BRACKET	0.10	2024-T42	
2	ANGLE, HINGE	0.10	2024-T42	
3	HAT SECTION		BAC1509-100318 7075-T6511	
4	HAT SECTION		BAC1498-145 7075-T6	
5	HAT SECTION		BAC1498-145 7075-T62	
6	CHORD, UPR SHORT	0.080	2024-T42	
7	CHORD, LWR	0.10	2024-T42	
8	STIFFENER	0.10	2024-T42	

LIST OF MATERIALS FOR DETAIL VII

Strut Fairing Structure Identification - RB211-524 Engine
Figure 1 (Sheet 13 of 13)

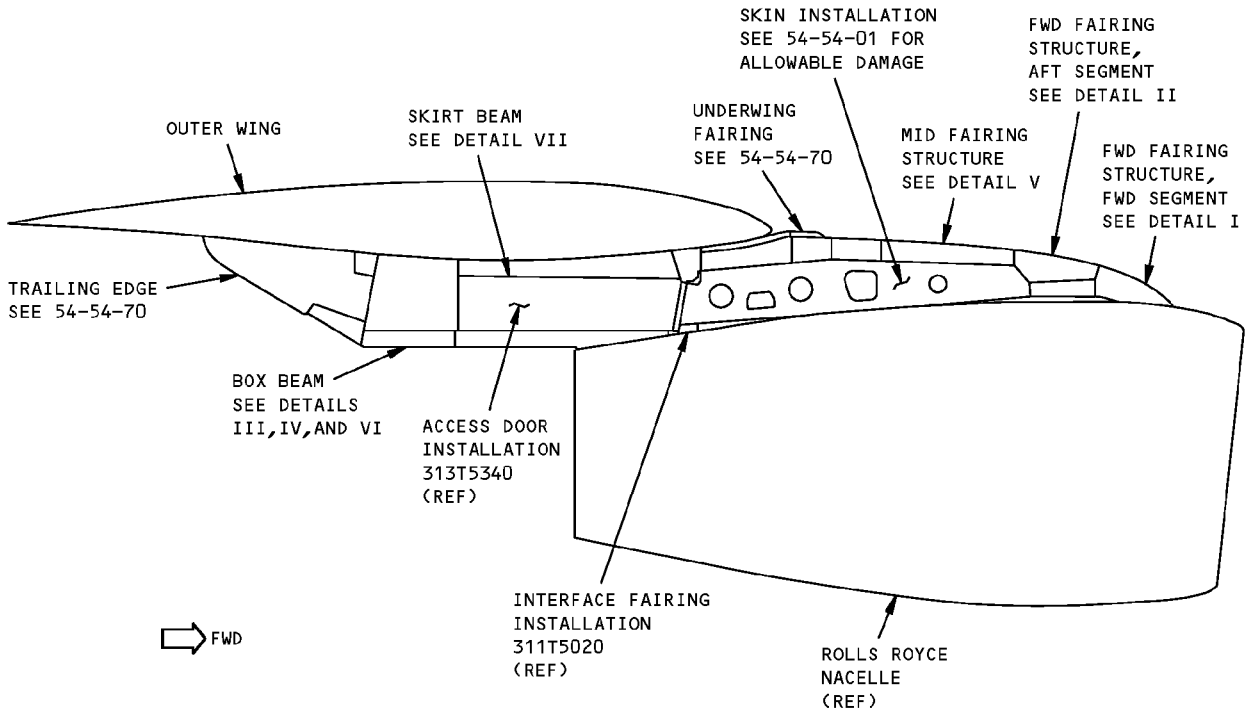
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IDENTIFICATION 1
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**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT FAIRING STRUCTURE - RB211-524 ENGINE



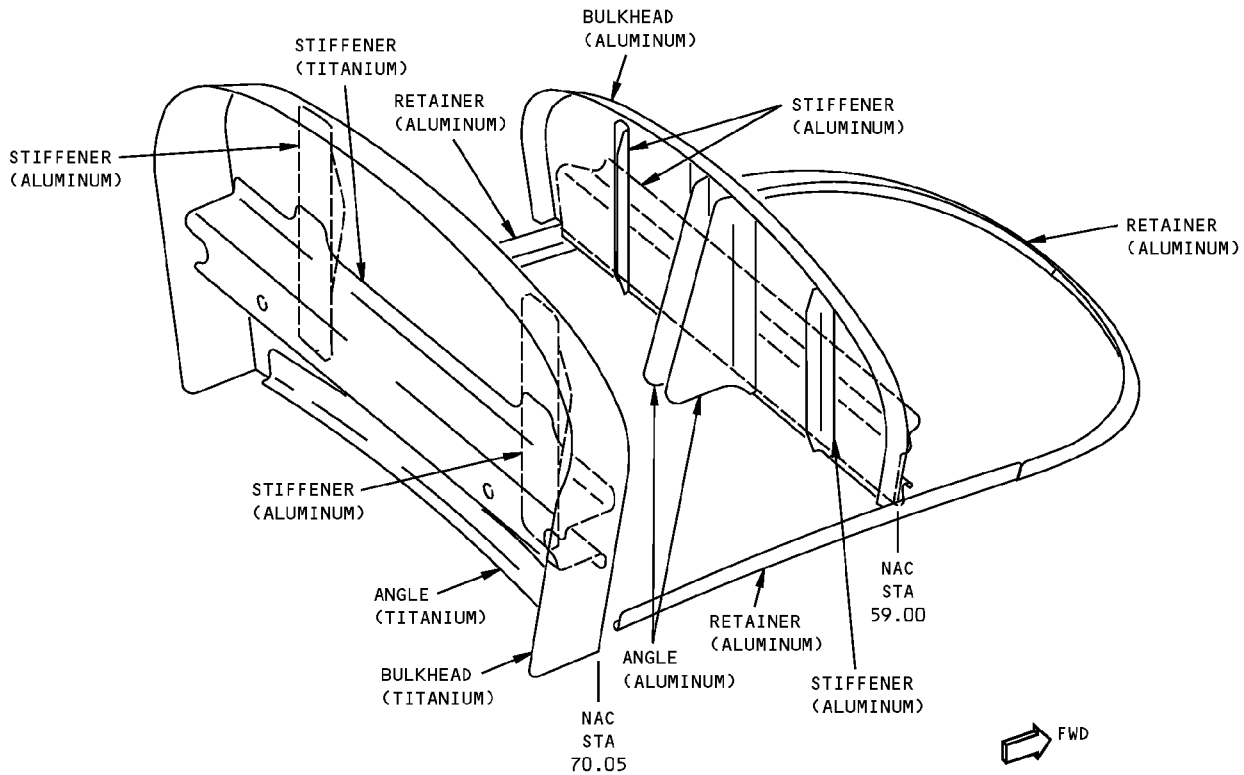
NOTES

- REFINISH REWORKED AREAS PER 51-20 OF THE MAINTENANCE MANUAL
- A** CRACKS NOT ALLOWED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VIII, XI AND XIII
- B** REMOVE DAMAGE PER DETAILS VIII, IX AND XII
- C** REMOVE DAMAGE PER DETAILS VIII AND IX

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 1 of 10)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5101



**FORWARD FAIRING ASSEMBLY - FORWARD SEGMENT
DETAIL I**

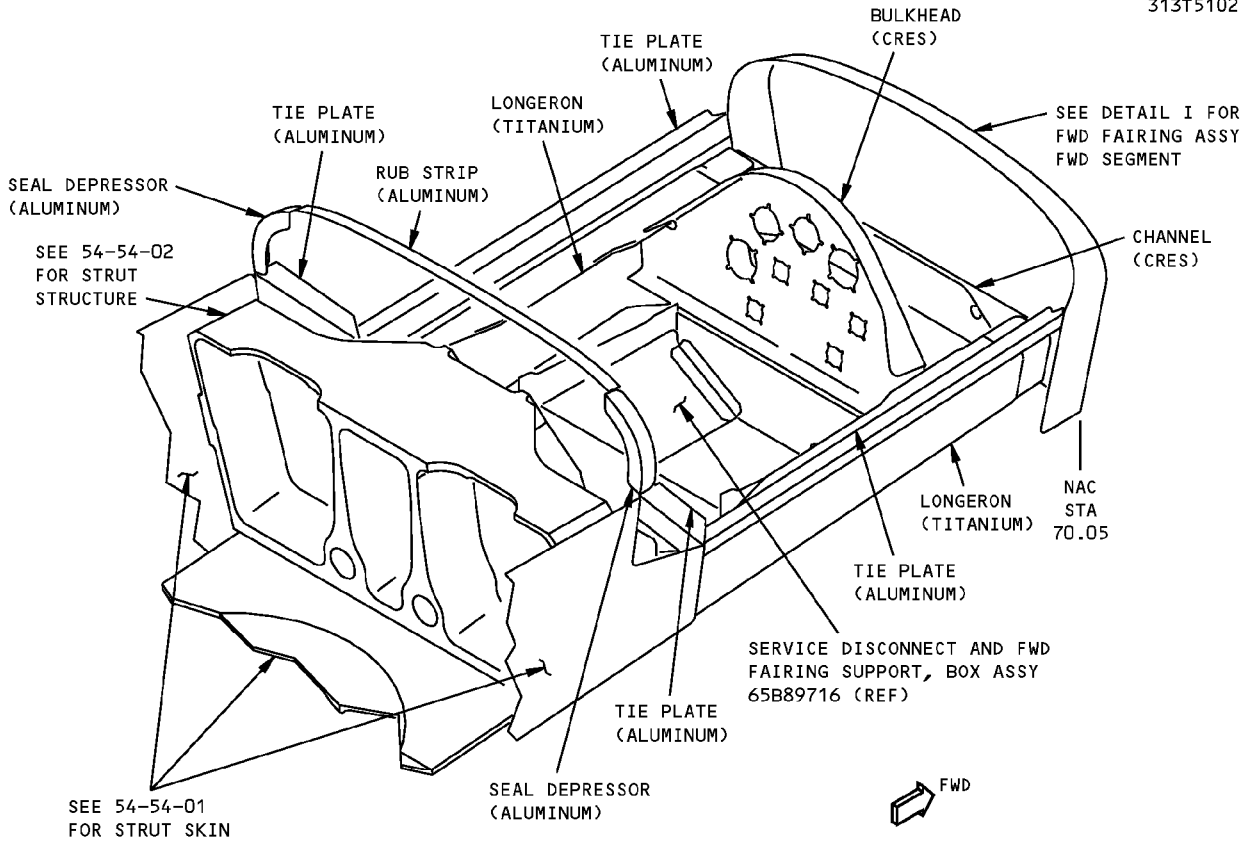
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
STIFFENERS (ALUMINUM)	A	B	NOT ALLOWED	SEE DETAIL XIV
ANGLES (ALUMINUM)	A	B	NOT ALLOWED	NOT ALLOWED
BULKHEADS (ALUMINUM)	A	B	NOT ALLOWED	NOT ALLOWED
RETAINER (ALUMINUM)	A	B	NOT ALLOWED	NOT ALLOWED
STIFFENERS (CRES OR TITANIUM)	A	C	NOT ALLOWED	SEE DETAIL XIV
ANGLES (CRES OR TITANIUM)	A	C	NOT ALLOWED	NOT ALLOWED
BULKHEADS (CRES OR TITANIUM)	A	C	NOT ALLOWED	NOT ALLOWED

ALLOWABLE DAMAGE FOR DETAIL I

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 2 of 10)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5510
313T5102



**FORWARD FAIRING ASSEMBLY - AFT SEGMENT
DETAIL II**

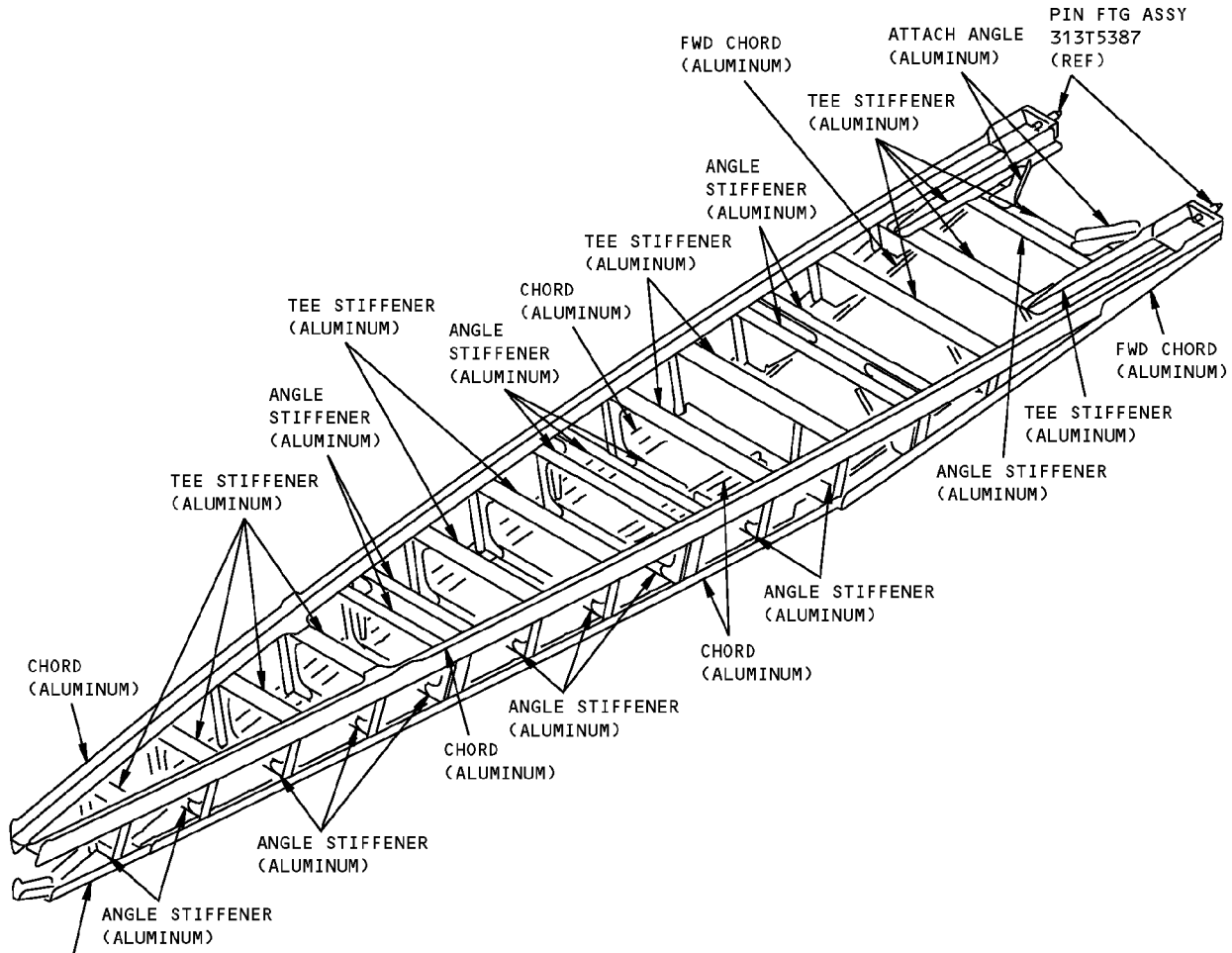
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
SEAL DEPRESSOR	A	B	NOT ALLOWED	NOT ALLOWED
TIE PLATES	A	B	NOT ALLOWED	NOT ALLOWED
LONGERON	A	C	NOT ALLOWED	NOT ALLOWED
CHANNEL	A	C	NOT ALLOWED	NOT ALLOWED
BULKHEAD	A	C	NOT ALLOWED	SEE DETAIL XIV
RUB STRIP	A	B	NOT ALLOWED	NOT ALLOWED

ALLOWABLE DAMAGE FOR DETAIL II

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 3 of 10)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5390



SEE 54-54-70
FOR AFT WEB
IDENTIFICATION

**BOX ASSEMBLY
DETAIL III**

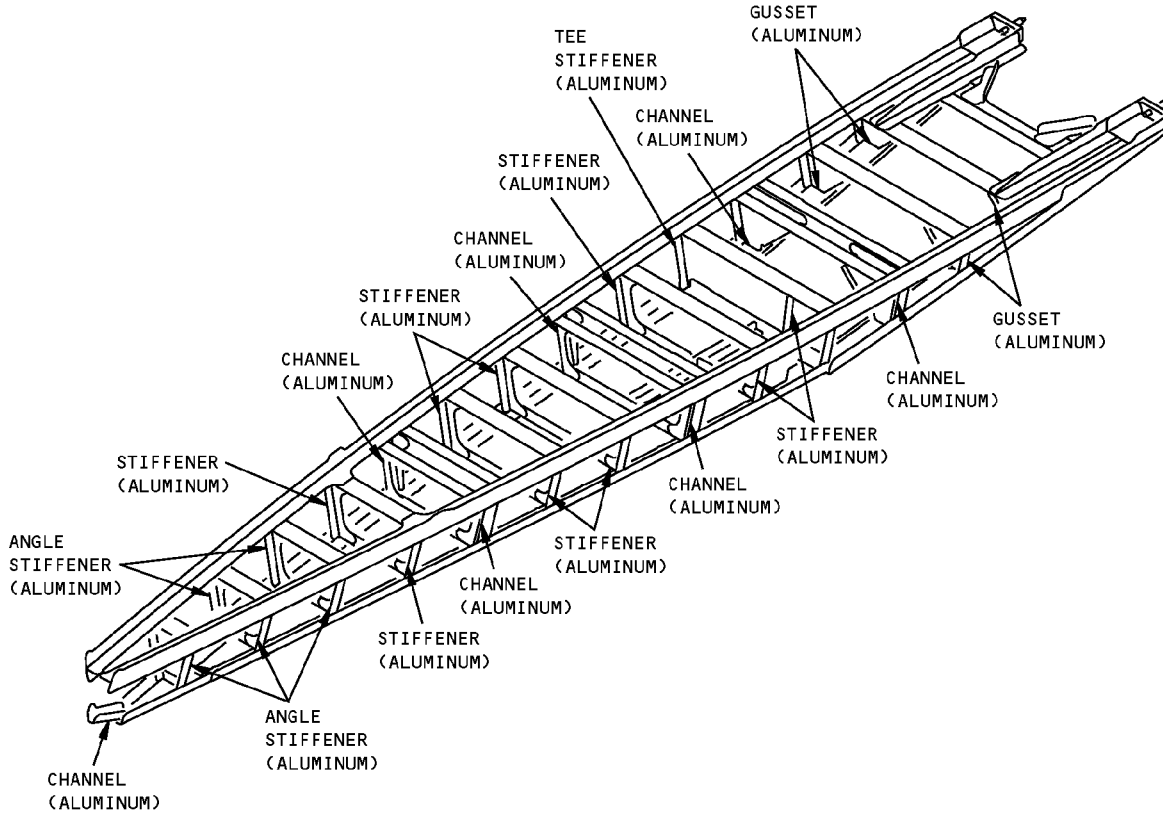
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHORDS	A	B	NOT ALLOWED	NOT ALLOWED
ANGLE STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL XIV
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED
TEE STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL XIV

ALLOWABLE DAMAGE FOR DETAIL III

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 4 of 10)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5390



**BOX ASSEMBLY
DETAIL IV**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
CHANNEL	A	B	NOT ALLOWED	NOT ALLOWED
ANGLE STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL XIV
GUSSET	A	B	NOT ALLOWED	NOT ALLOWED
TEE STIFFENERS	A	B	NOT ALLOWED	SEE DETAIL XIV

ALLOWABLE DAMAGE FOR DETAIL IV

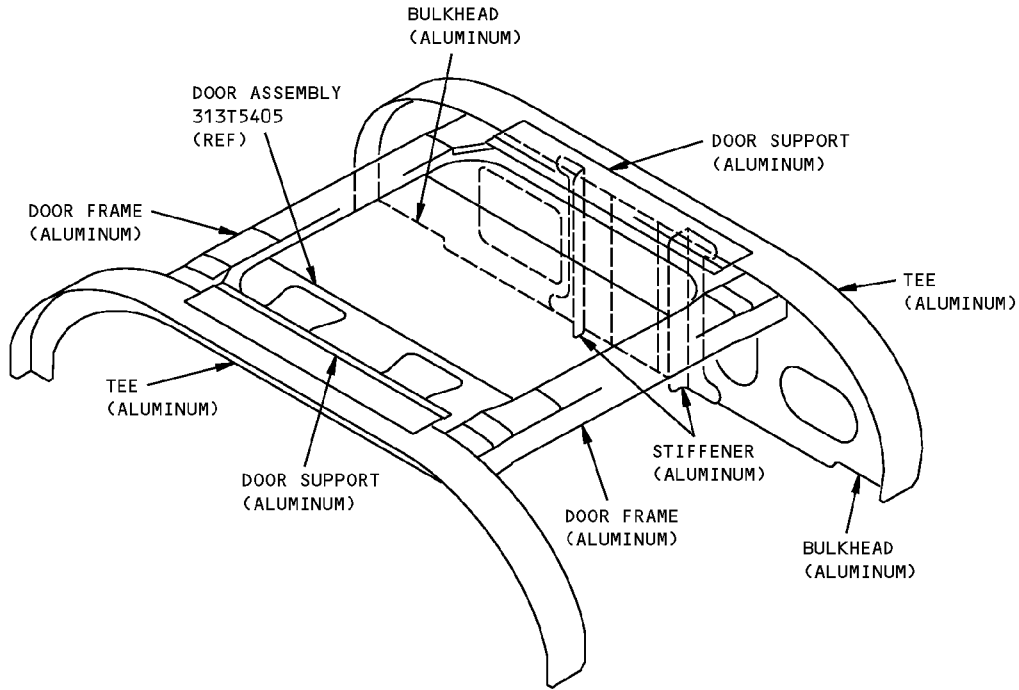
**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 5 of 10)**

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ALLOWABLE DAMAGE 1
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5400



**MID FAIRING STRUCTURE
DETAIL V**

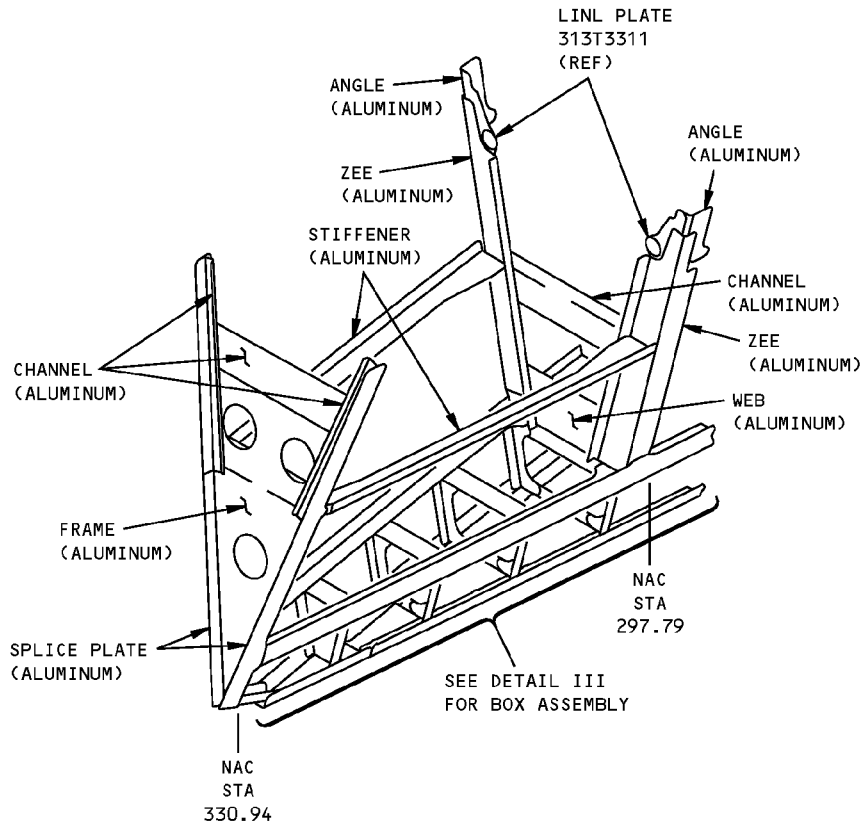
DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
TEE	A	B	NOT ALLOWED	NOT ALLOWED
DOOR SUPPORT	A	B	NOT ALLOWED	NOT ALLOWED
DOOR FRAME	A	B	NOT ALLOWED	NOT ALLOWED
BULKHEAD	A	B	NOT ALLOWED	SEE DETAIL XIV
STIFFENER	A	B	NOT ALLOWED	SEE DETAIL XIV

ALLOWABLE DAMAGE FOR DETAIL V

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 6 of 10)**

**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5380



DETAIL VI

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
ZEE	A	B	NOT ALLOWED	NOT ALLOWED
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED
CHANNELS	A	B	NOT ALLOWED	NOT ALLOWED
WEB	A	B	SEE DETAIL X	NOT ALLOWED
FRAME	A	B	NOT ALLOWED	SEE DETAIL XIV
STIFFENER	A	B	NOT ALLOWED	SEE DETAIL XIV
PLATE	A	B	NOT ALLOWED	NOT ALLOWED

ALLOWABLE DAMAGE FOR DETAIL VI

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 7 of 10)**

ALLOWABLE DAMAGE 1

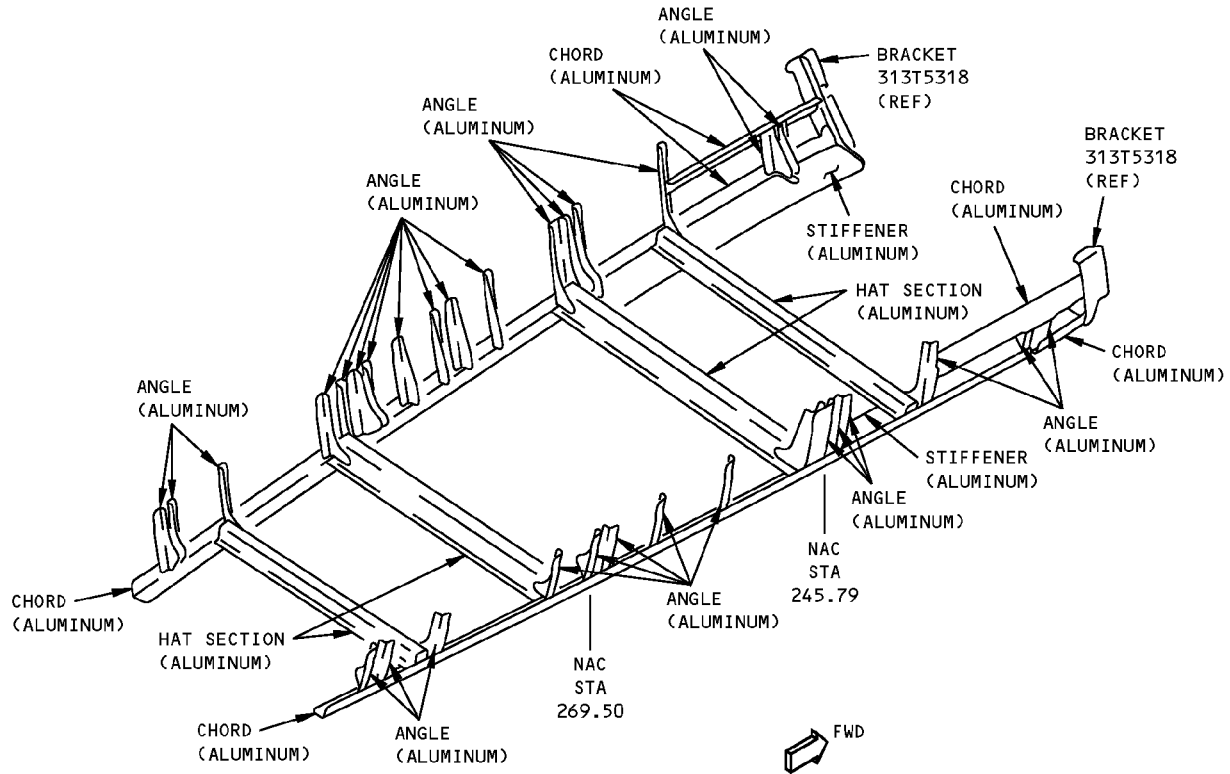
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**767-300
STRUCTURAL REPAIR MANUAL**

REF DWG
313T5310



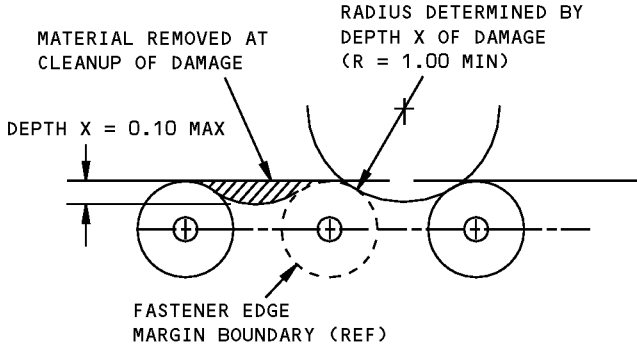
**SKIRT BEAM INSTALLATION
DETAIL VII**

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
ANGLES	A	B	NOT ALLOWED	NOT ALLOWED
HAT SECTION	A	B	NOT ALLOWED	NOT ALLOWED
CHORDS	A	B	NOT ALLOWED	NOT ALLOWED
STIFFENER	A	B	NOT ALLOWED	SEE DETAIL XIV

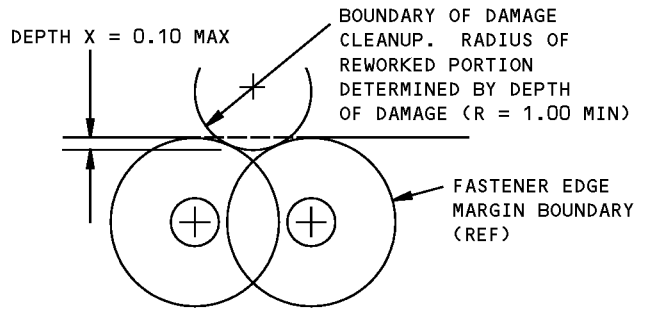
ALLOWABLE DAMAGE FOR DETAIL VII

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 8 of 10)**

STRUCTURAL REPAIR MANUAL

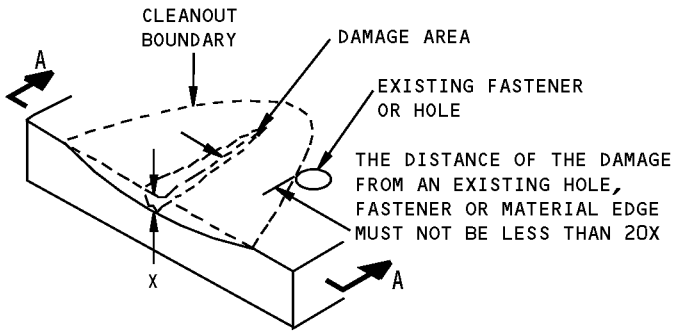


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS DO NOT OVERLAP

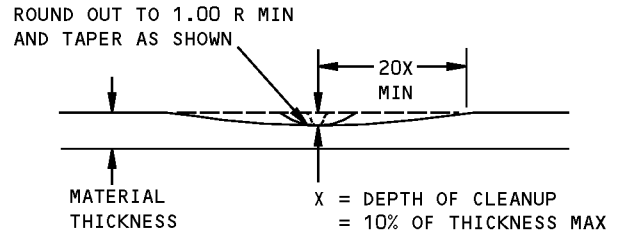


DAMAGE CLEANUP OF EDGES WHERE FASTENER EDGE MARGINS OVERLAP

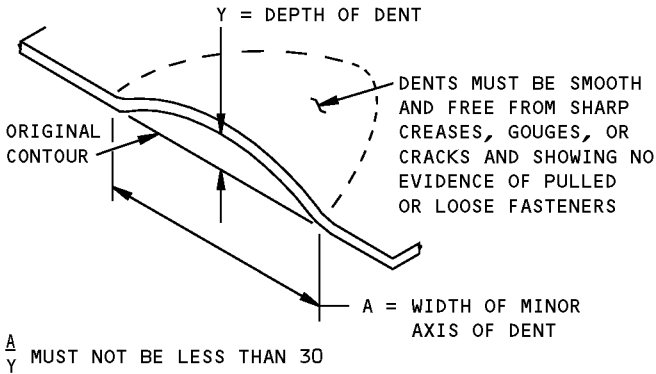
DETAIL VIII



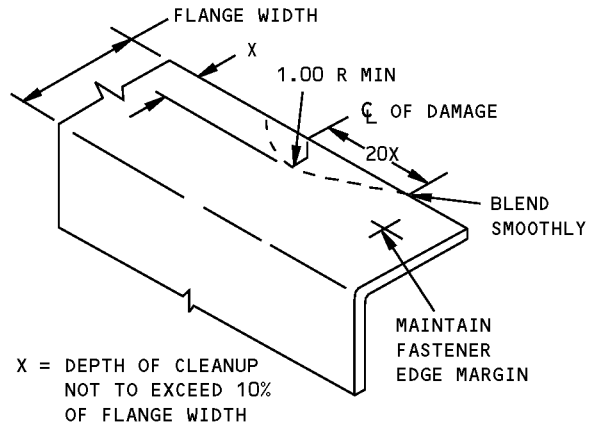
REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE
DETAIL IX



SECTION A-A



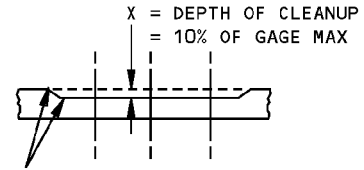
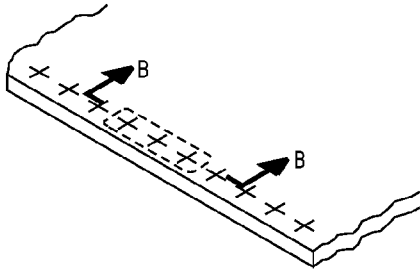
ALLOWABLE DAMAGE FOR DENT
DETAIL X



REMOVAL OF NICK OR CRACK DAMAGE ON AN EDGE
DETAIL XI

Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 9 of 10)

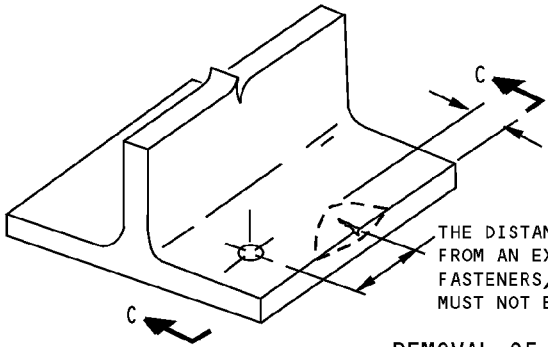
**767-300
STRUCTURAL REPAIR MANUAL**



SMOOTH BLENDOUT RADIUS 0.050 INCH MINIMUM.
CORROSION CLEANUP AROUND ANY THREE FASTENERS
IN TEN IS PERMITTED TO MAXIMUM DEPTH

SECTION B-B

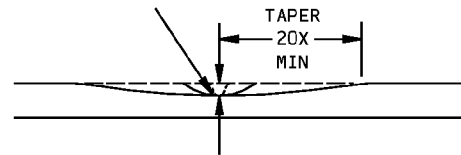
**CORROSION CLEANUP
DETAIL XII**



AREA OF CLEANUP
NOT TO EXCEED 10%
OF FLANGE WIDTH

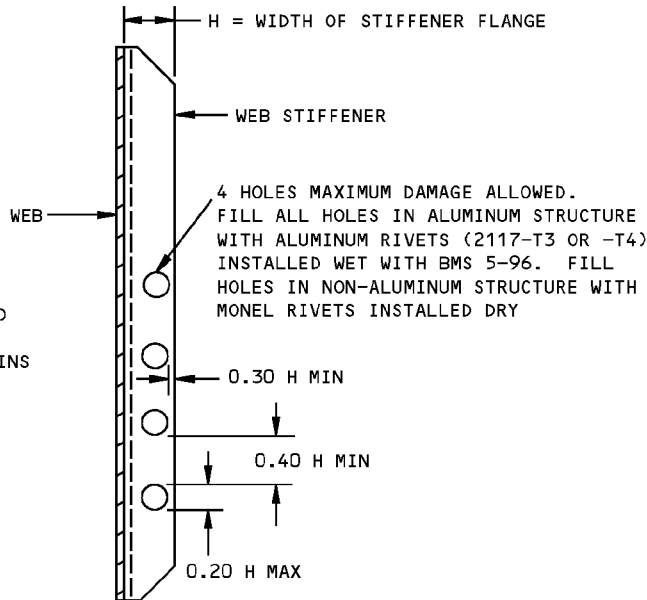
THE DISTANCE OF THE DAMAGE
FROM AN EXISTING HOLE,
FASTENERS, OR SKIN EDGE
MUST NOT BE LESS THAN 20X

ROUND OUT TO 1.00 R MIN
AND TAPER AS SHOWN



SECTION C-C

**REMOVAL OF SURFACE DAMAGE ON AN EDGE
DETAIL XIII**



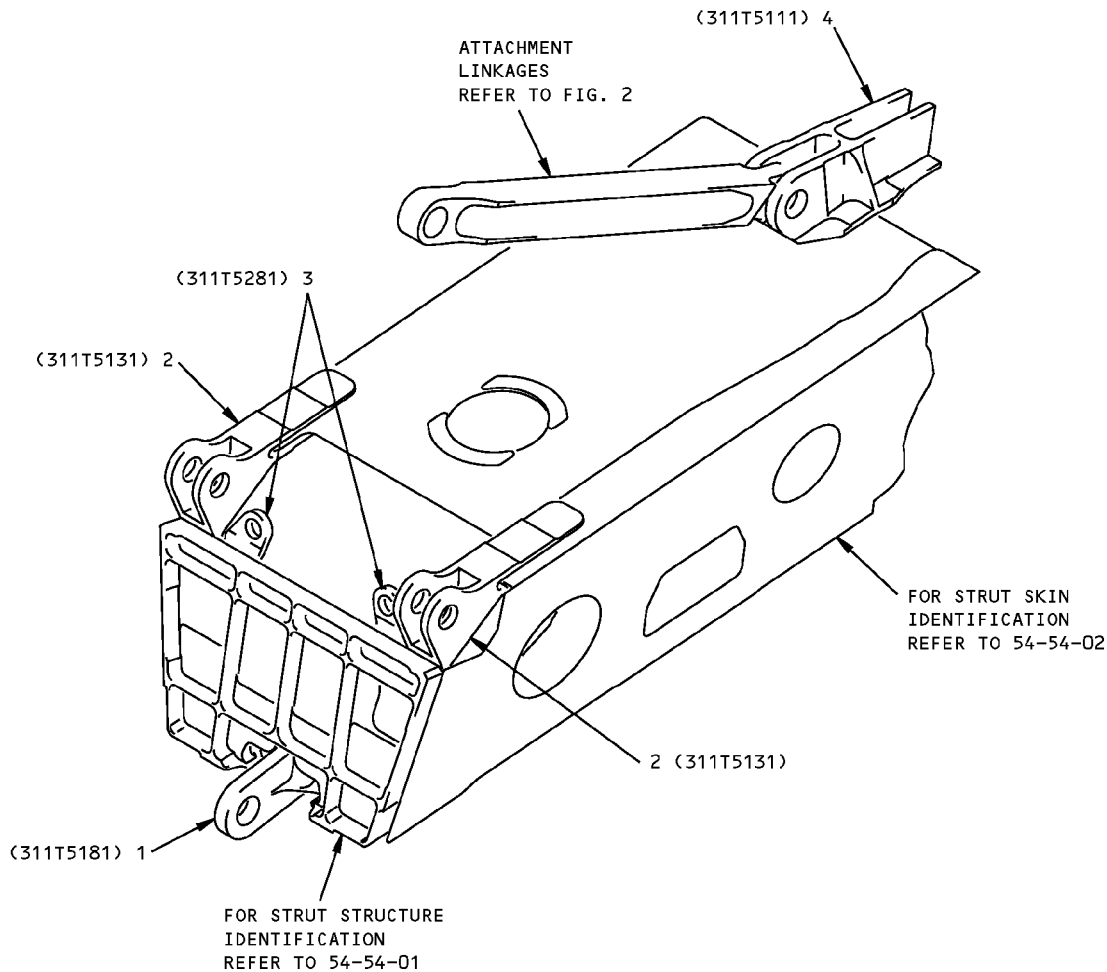
NOTE: NO HOLE DAMAGE ALLOWED
IN STIFFENER FLANGE
FASTENED TO WEB OR SKINS

**ALLOWABLE DAMAGE LIMITS FOR HOLES IN STIFFENERS
DETAIL XIV**

**Allowable Damage - Strut Fairing Structure - RB211-524 Engine
Figure 101 (Sheet 10 of 10)**

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STRUCTURAL REPAIR MANUAL**

IDENTIFICATION 1 - STRUT ATTACHMENT FITTINGS - RB211-524 ENGINE



ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	FITTING, LWR SPAR		15-5 PH CRES BAR OR FORGING, HT TR 180-200 KSI	
2	FITTING, MID SPAR		15-5 PH CRES BAR OR FORGING, HT TR 180-200 KSI	
3	FITTING, SIDE LOAD		15-5 PH STEEL PLATE, HT TR 180-200 KSI	
4	FITTING, FWD UPPER SPAR		FORGING TI-6AL-4V	

LIST OF MATERIALS

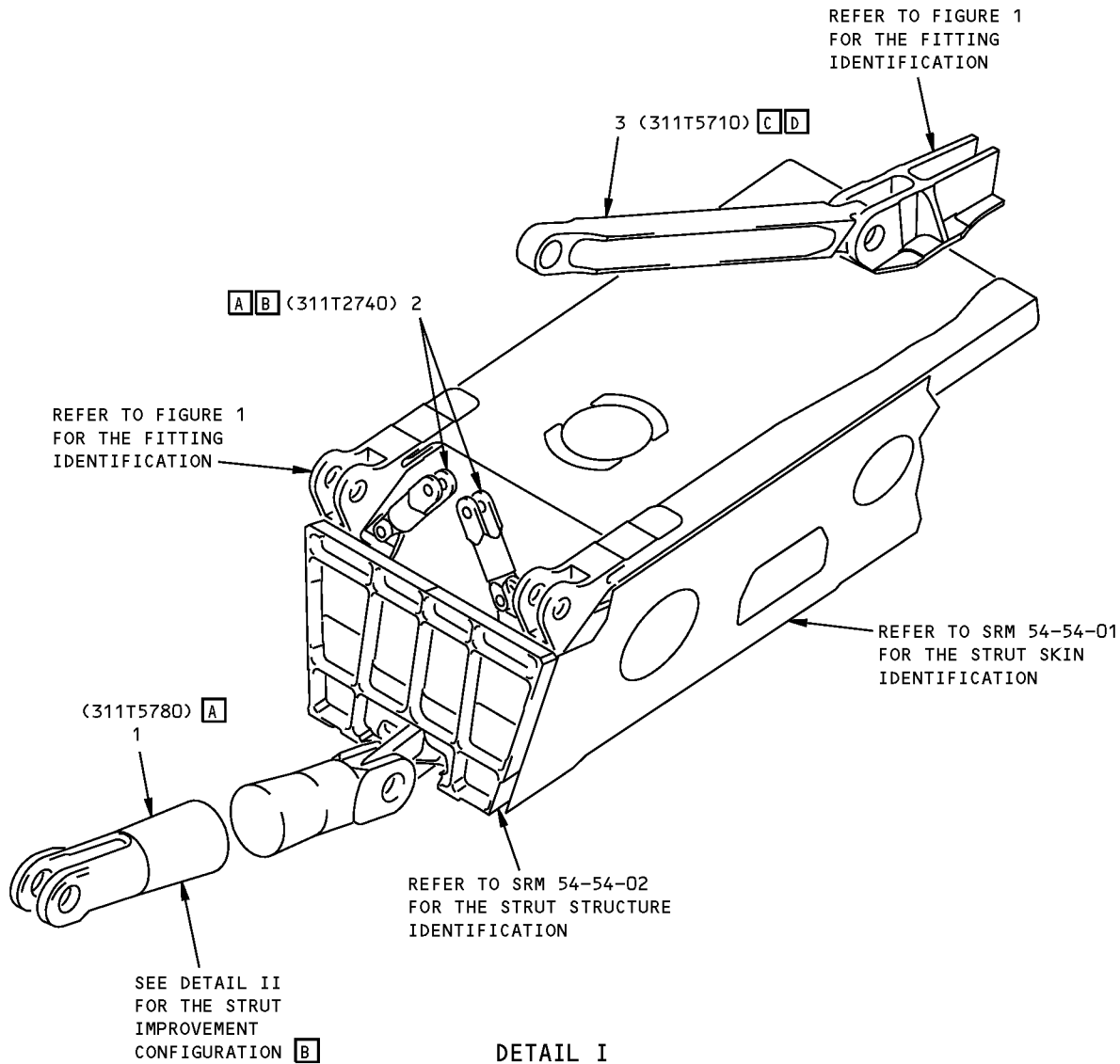
**Strut Fitting Identification - RB211-524 Engine
Figure 1**

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IDENTIFICATION 1
Page 1
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IDENTIFICATION 2 - ATTACHMENT LINKAGE - RB211-524 ENGINE



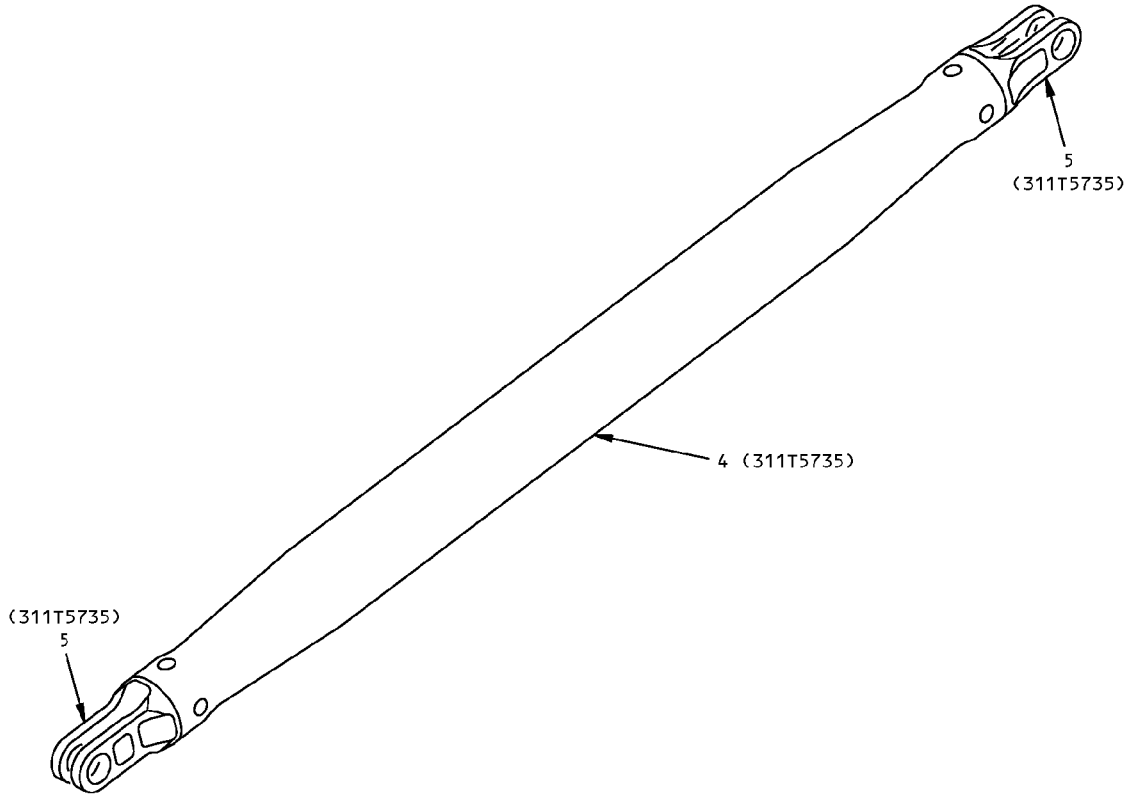
NOTES

- A** FOR AIRPLANES WITH RB211-524 ENGINES CUM LINE 265 THRU 648 WITHOUT SB 767-54-0082 INCORPORATED.
- B** FOR AIRPLANES WITH RB211-524 ENGINES CUM LINE 702 AND ON, OR FOR AIRPLANES WITH SB 767-54-0082 INCORPORATED.
- C** FOR AIRPLANES WITH RB211-524 ENGINES CUM LINE NUMBER 265 THRU 648 WITHOUT SB 767-54-0083 INCORPORATED
- D** FOR AIRPLANES WITH RB211-524 ENGINES CUM LINE NUMBER 702 AND ON, OR FOR AIRPLANES WITH SB 767-54-0083 INCORPORATED



**Attachment Linkage Identification - RB211-524 Engine
Figure 1 (Sheet 1 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II **B**

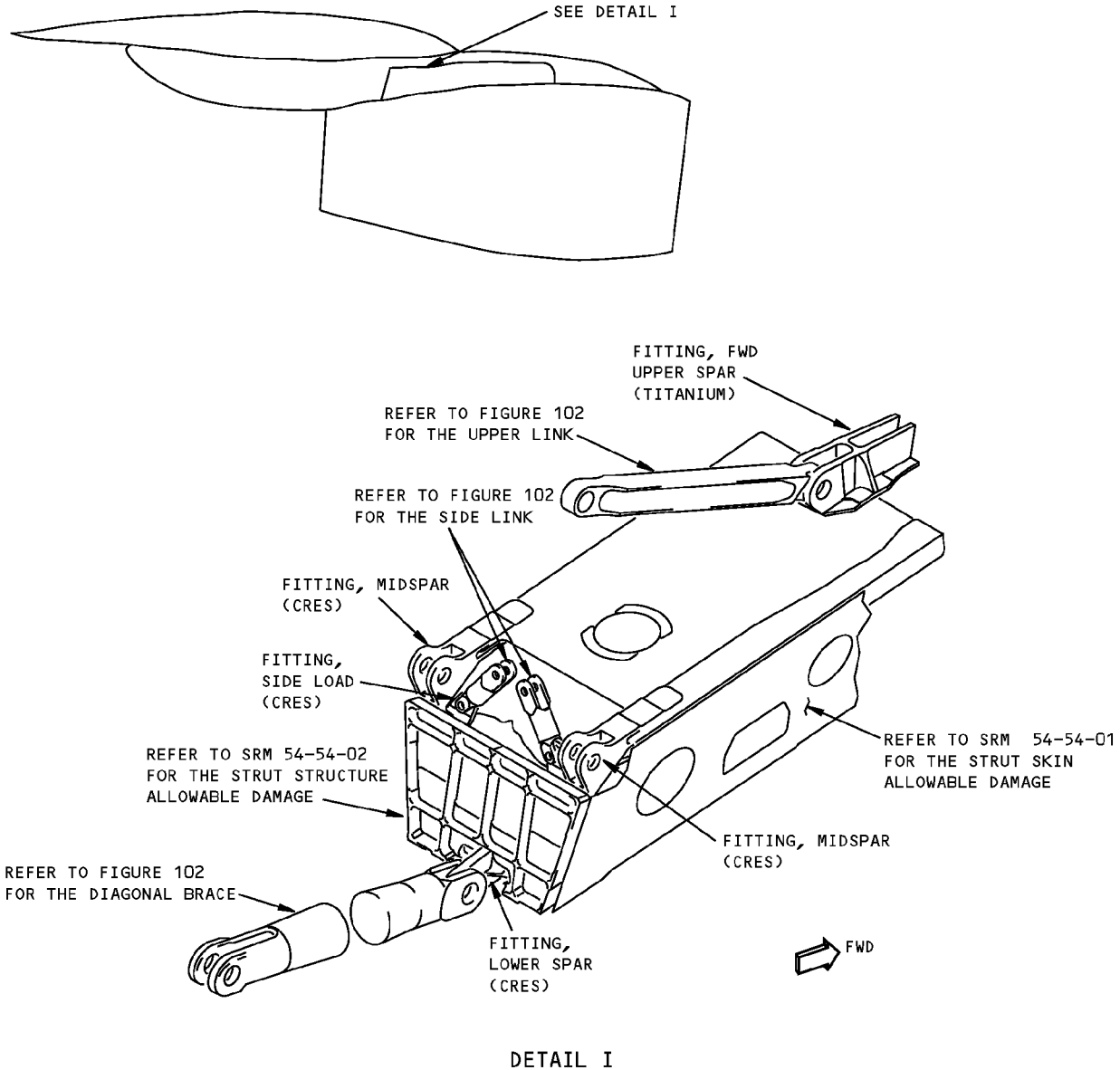
ITEM	DESCRIPTION	GAGE	MATERIAL	EFFECTIVITY
1	DIAGONAL BRACE		7075-T73 TUBING OR 7075-T6 EXTRUDED BAR	A
2	SIDE LINK	0.625	15-5 PH CRES BAR, HT TR 180-200 KSI	A
			15-5 PH CRES PLATE OR BAR, HT TR 180-200 KSI	B
3	UPPER LINK		15-5 PH CRES BAR OR FORGING, HT TR 180-200 KSI	C
			15-5 PH CRES BAR OR FORGED BLOCK, HT TR 180-200 KSI	D
4	DIAGONAL BRACE TUBE		7075-T73 EXTRUDED TUBE OR BAR	B
5	END FITTING		TI-6AL-4V BAR OR FORGED BLOCK ANNEALED	B

LIST OF MATERIALS FOR DETAILS I AND II

**Attachment Linkage Identification - RB211-524 Engine
Figure 1 (Sheet 2 of 2)**

**767-300
STRUCTURAL REPAIR MANUAL**

ALLOWABLE DAMAGE 1 - STRUT ATTACHMENT FITTINGS - RB211-524 ENGINE



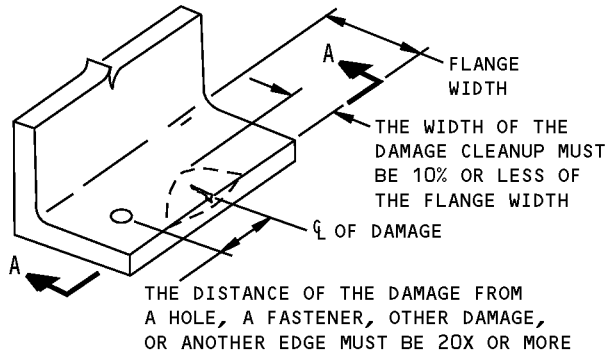
DETAIL I

DESCRIPTION	CRACKS	NICKS, GOUGES AND CORROSION	DENTS	HOLES AND PUNCTURES
FITTINGS	A	A	NOT ALLOWED	NOT ALLOWED
MID SPAR FITTING	A	B C	NOT ALLOWED	NOT ALLOWED

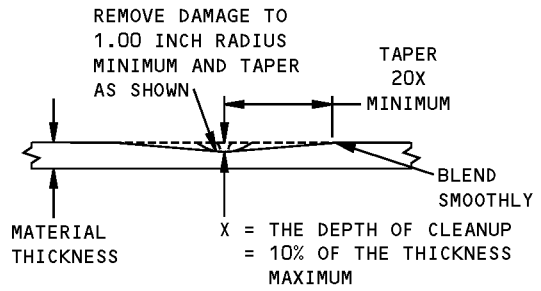
ALLOWABLE DAMAGE FOR DETAIL I

**Allowable Damage - Strut Attachment Fittings - RB211-524 Engine
Figure 101 (Sheet 1 of 4)**

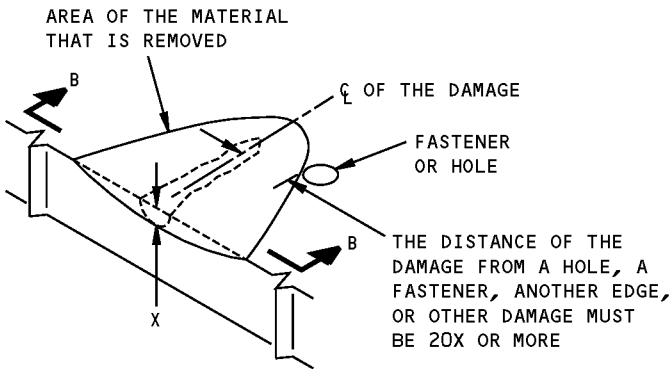
STRUCTURAL REPAIR MANUAL



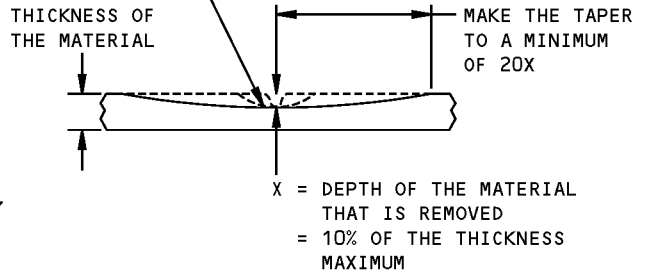
REMOVAL OF NICK OR GOUGE DAMAGE ON A SURFACE AT AN EDGE
DETAIL II



SECTION A-A



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

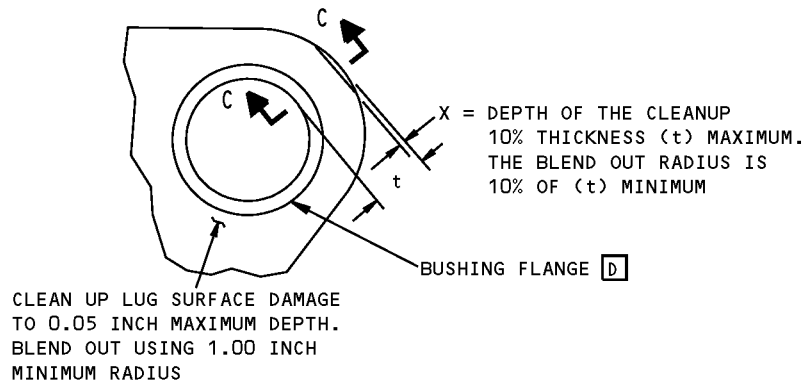


SECTION B-B

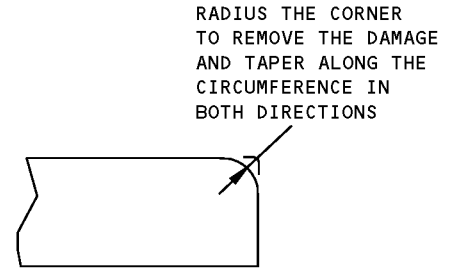
REMOVAL OF NICK, GOUGE, CORROSION AND SCRATCH DAMAGE ON A SURFACE
DETAIL III

Allowable Damage - Strut Attachment Fittings - RB211-524 Engine
Figure 101 (Sheet 2 of 4)

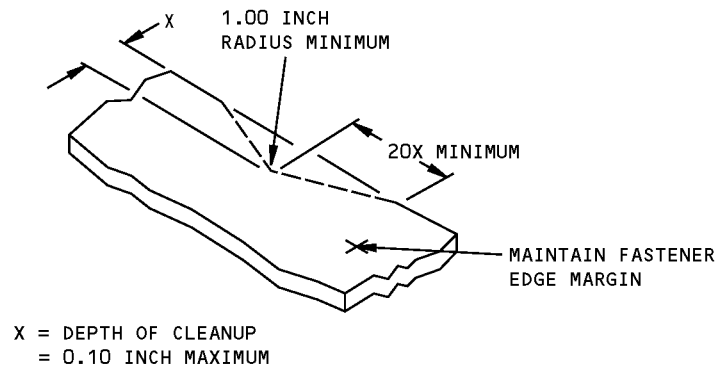
**767-300
STRUCTURAL REPAIR MANUAL**



**DAMAGE CLEANUP FOR SURFACES OF LUG
DETAIL IV**



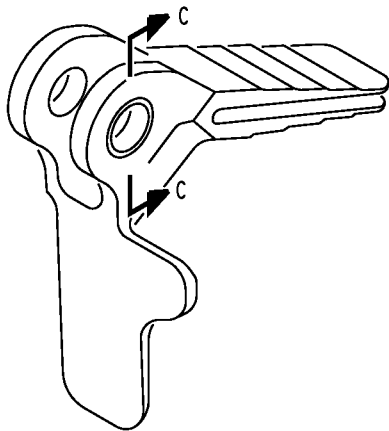
SECTION C-C



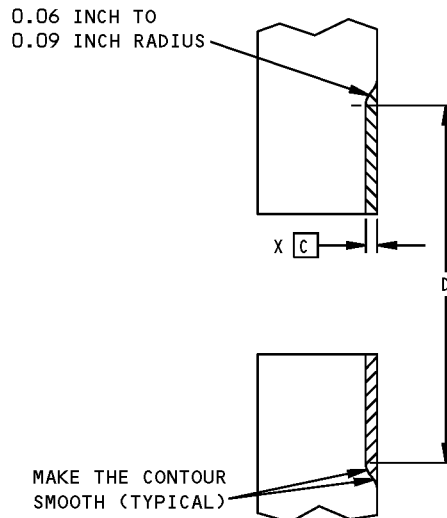
**REMOVAL OF CRACK DAMAGE ON THE EDGE
DETAIL V**

**Allowable Damage - Strut Attachment Fittings - RB211-524 Engine
Figure 101 (Sheet 3 of 4)**

**767-300
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF MATERIAL ON THE LUG FACE
UNDER THE FLANGE OF THE BUSHING
DETAIL VI**



$X = 0.010$ INCH MAXIMUM
 MAX $D =$ BUSHING FLANGE DIAMETER $+0.5$ INCH
 MIN $D =$ BUSHING FLANGE DIAMETER $+0.01$ INCH
 SHADED AREA SHOWS WHERE MATERIAL HAS BEEN REMOVED.

**TYPICAL SPOTFACE ON ONE LUG IS SHOWN
SECTION C-C**

NOTES

- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5 PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM FITTINGS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES FITTINGS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR TITANIUM FITTINGS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURE.
- REFER TO SOPM 20-20-02 FOR PENETRANT INSPECTION PROCEDURES.
- REFER TO SRM 51-10-01 FOR AERODYNAMIC SMOOTHNESS REQUIREMENTS. WHERE THE DAMAGE EXCEEDS THE LIMITS SHOWN IN SRM 51-10-01, CONSIDERATION SHOULD BE GIVEN TO THE LOSS OF PERFORMANCE INVOLVED.

- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES FITTINGS AS GIVEN IN SRM 51-20-06. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** FOR SURFACE DAMAGE SEE DETAILS II AND III FOR LUG DAMAGE SEE DETAIL IV. FOR OTHER DAMAGE SEE DETAIL V. DAMAGE IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHINGS.
- B** FOR SURFACE DAMAGE SEE DETAILS II AND III FOR LUG DAMAGE SEE DETAIL IV. FOR OTHER DAMAGE SEE DETAIL V.
- C** TO MAKE SURE THE MID SPAR BORE FITTING IS ALIGNED CORRECTLY, SEE DETAIL VI FOR THE DEPTH OF REMOVAL PERMITTED UNDER THE BUSHING FLANGE. THE MATERIAL REMOVAL ON THE FACE OF THE LUG UNDER THE BUSHING FLANGE MUST BE PERPENDICULAR TO THE BORE. AS THE RESULT OF THE SPOTFACE, CUT 0.01 TO 0.02 INCH FROM THE NON-FLANGED END OF THE BUSHING BEFORE BUSHING INSTALLATION.
- D** DAMAGE OR REWORK IS NOT PERMITTED UNDER BUSHING FLANGE OR NEAR BUSHING EXCEPT AS NOTED IN **C**.

**Allowable Damage - Strut Attachment Fittings - RB211-524 Engine
Figure 101 (Sheet 4 of 4)**

ALLOWABLE DAMAGE 1

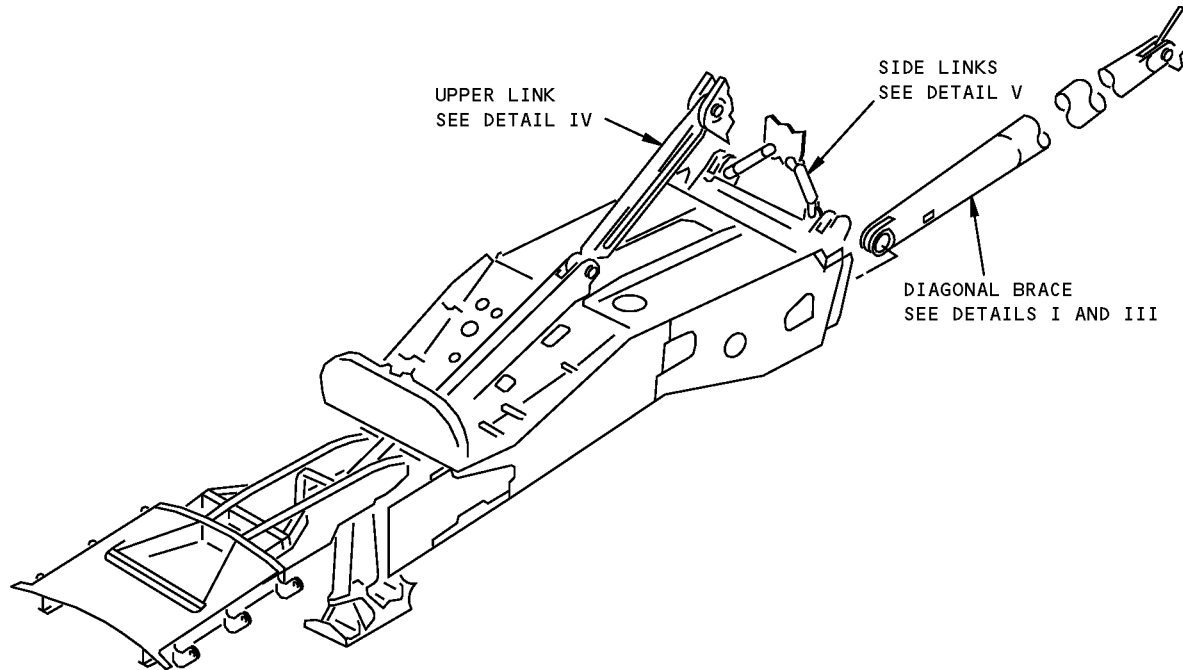
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ALLOWABLE DAMAGE 2 - STRUT ATTACHMENT LINKS - RB211-524 ENGINE



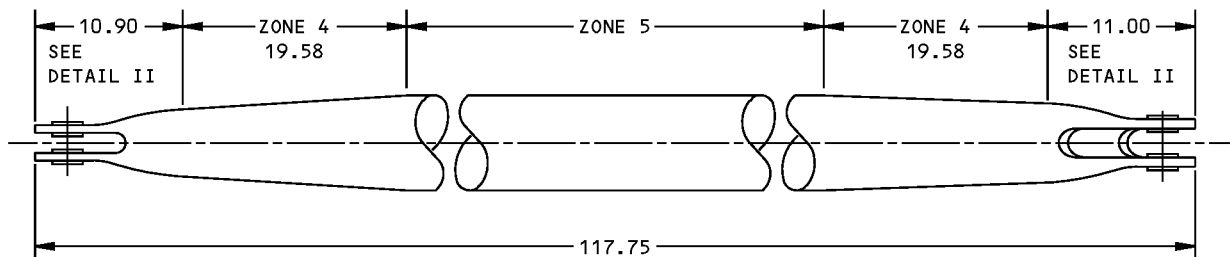
NOTES

- DENTS HOLES OR PUNCTURES ARE NOT PERMITTED.
- APPLY THE FINISH TO REWORKED AREAS AS GIVEN IN AMM 51-21.
- REFER TO SRM 51-10-00 FOR INVESTIGATION AND CLEANUP OF DAMAGE.
- USE A 10 POWER MAGNIFIER TO DO A VISUAL INSPECTION FOR SURFACE CORROSION.
- CLEAN THE AREA WHERE THE DAMAGE WAS REMOVED ON 15-5PH CORROSION RESISTANT STEEL (CRES) AND TITANIUM COMPONENTS. USE CLEAN 150 GRIT OR FINER ALUMINUM OXIDE ABRASIVE PAPER.
- DO A MAGNETIC PARTICLE OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL AND BEFORE PEENING FOR STEEL AND CRES COMPONENTS.
- DO A HIGH FREQUENCY EDDY CURRENT (HFEC) OR PENETRANT INSPECTION AFTER DAMAGE REMOVAL FOR TITANIUM AND ALUMINUM COMPONENTS.
- REFER TO SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES.
- REFER TO NDT, PART 6, 51-00-13 FOR HIGH FREQUENCY EDDY CURRENT INSPECTION PROCEDURES.
- REFER TO SRM 51-20-01 FOR THE PROTECTIVE TREATMENT OF REWORKED METAL SURFACES.
- SHOT PEEN REWORKED AREAS FOR TITANIUM, STEEL AND CRES COMPONENTS AS GIVEN IN SRM 51-20-06 AFTER YOU DO THE NON-DESTRUCTIVE INSPECTION. SHOT PEEN INTENSITIES WILL VARY WITH THE THICKNESS REMAINING AFTER REWORK.

- A** NOT MORE THAN ONE AREA OF CLEANED OUT DAMAGE PERMITTED PER 2 INCHES OF LENGTH. **E**
- B** NOT MORE THAN THREE AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES OF LENGTH. **F**
- C** NOT MORE THAN TWO AREAS OF CLEANED OUT DAMAGE PERMITTED PER 10 INCHES OF LENGTH. **F**
- D** 0.010 INCH MAXIMUM DEPTH REWORK PERMITTED UNDER BUSHING FLANGE. SEE SECTION CUT VIEW.
- E** SMOOTH OUT WITH A 1.00 INCH RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 63 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- F** SMOOTH OUT WITH A 1.00 INCH RADIUS AND POLISH TO A SURFACE ROUGHNESS EQUIVALENT TO 125 MICROINCHES. APPLY PROTECTIVE TREATMENT ACCORDING TO SRM 51-20-01.
- G** CRACKS NOT PERMITTED EXCEPT FOR EDGE CRACKS WHICH MUST BE REMOVED PER DETAILS VIII OR XIII. FOR OTHER DAMAGE, SEE DETAIL VII.
- H** EDGE DAMAGE AND SURFACE DAMAGE ARE NOT PERMITTED TOGETHER ON THE SAME LUG. IF THEY ARE ON THE SAME LUG, SEND A REPORT TO BOEING FOR REPAIR INSTRUCTIONS.

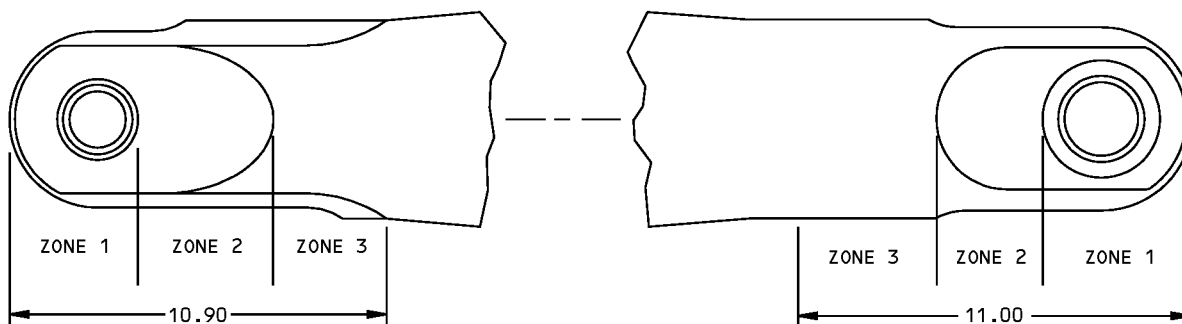
**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 1 of 7)**

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STRUCTURAL REPAIR MANUAL**



DETAIL I

MATERIAL: ALUMINUM TUBING OR
EXTRUDED BAR

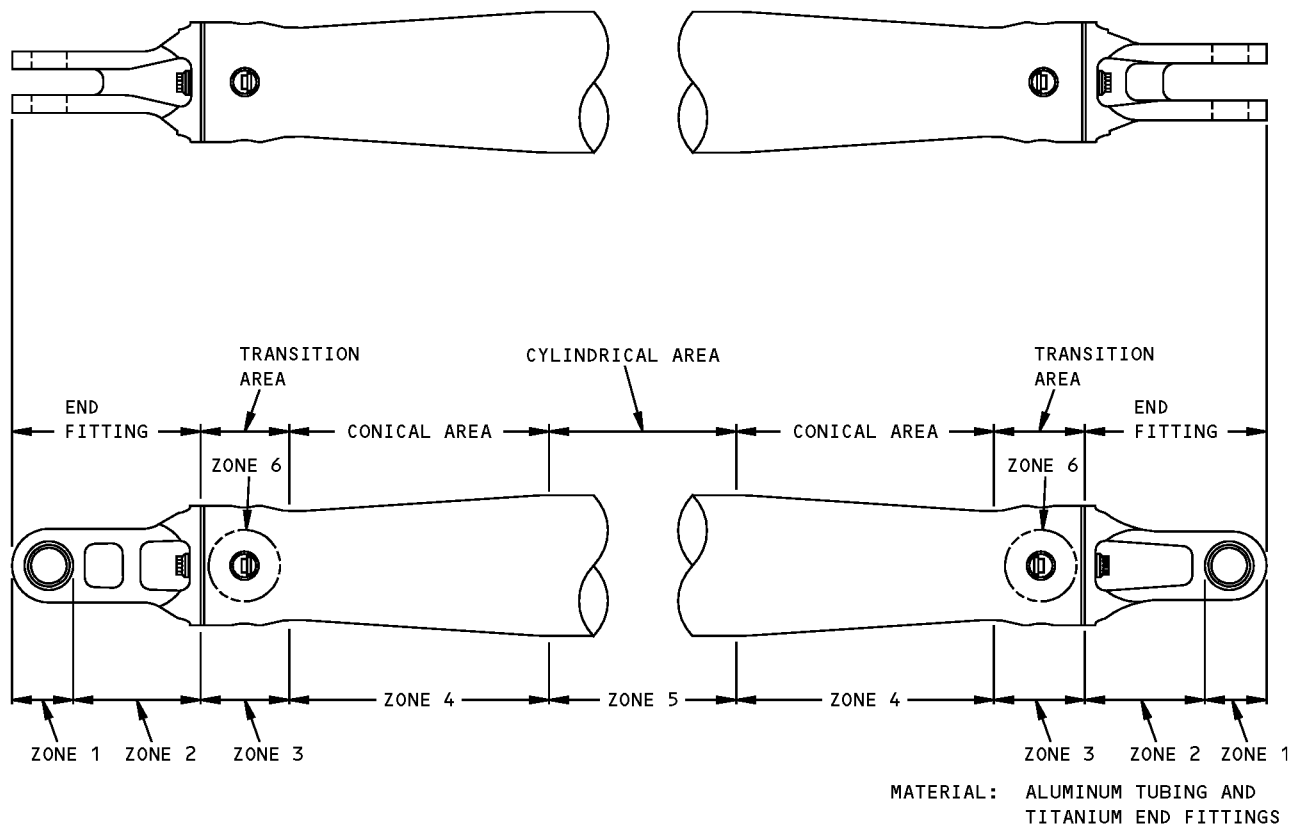


DETAIL II

ZONE	DAMAGE LIMITS
1	SEE DETAIL VI. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND TUBULAR AREA. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAILS VI AND IX. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. A
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C

**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 2 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

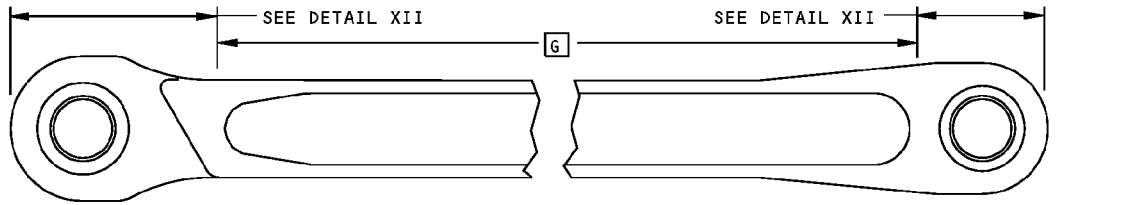


DETAIL III

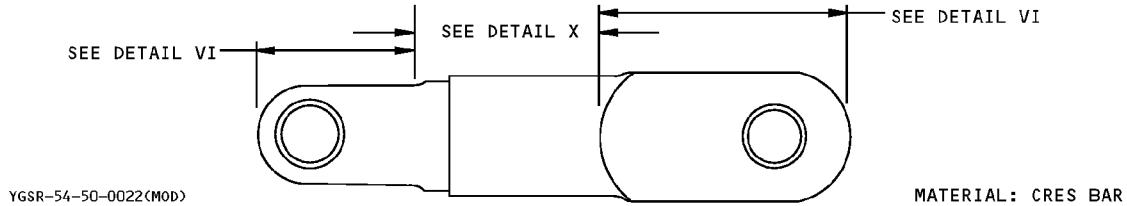
ZONE	DAMAGE LIMITS
1	SEE DETAIL XII. A
2	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF LUG BETWEEN EDGE OF HOLE AND BASE OF END FITTING. SEE DETAILS VII AND VIII. A
3	DAMAGE REMOVAL PERMITTED LOCALLY ON OUTER SURFACE OF TUBULAR PORTION. MAXIMUM DEPTH 0.100 INCH AND MAXIMUM DIAMETER 1.00 INCH. SEE DETAIL IX. C
4	SCRATCHES, NICKS, GOUGES AND ABRASIONS NOT DEEPER THAN 0.06 INCH. SEE DETAIL X. B
5	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XI. C
6	SUPERFICIAL SCRATCHES, NICKS AND ABRASIONS NOT DEEPER THAN 0.050 INCH. SEE DETAIL XIV. A

**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 3 of 7)**

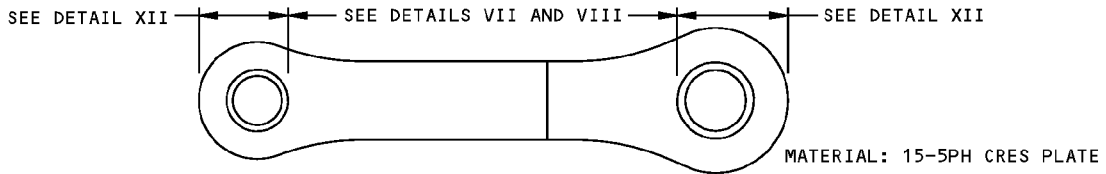
**767-300
STRUCTURAL REPAIR MANUAL**



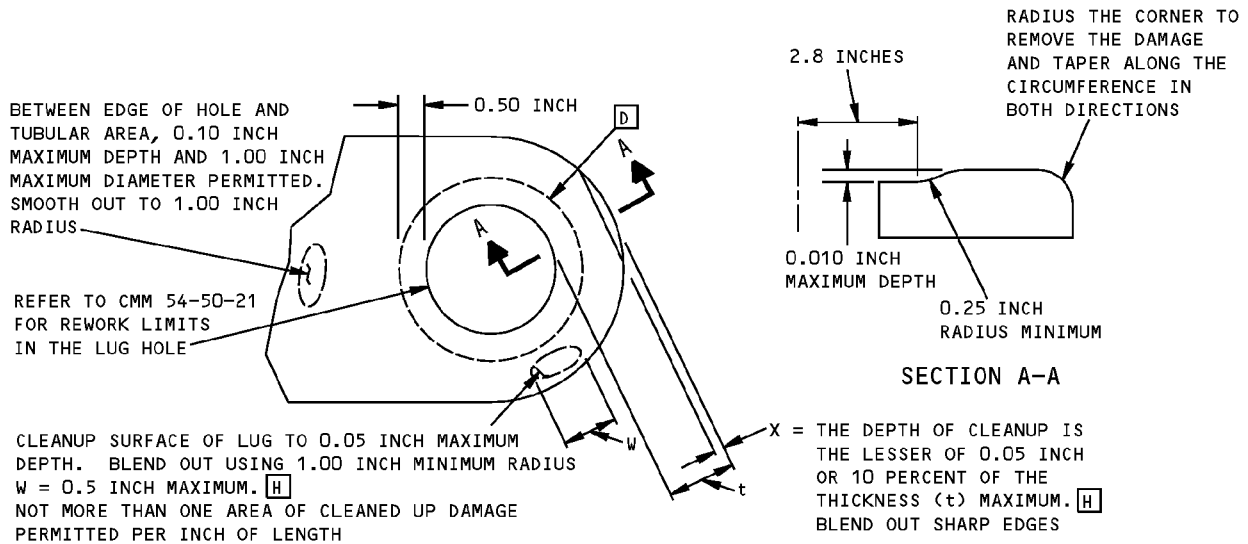
**UPPER LINK
DETAIL IV**



YGSR-54-50-0022(MOD)



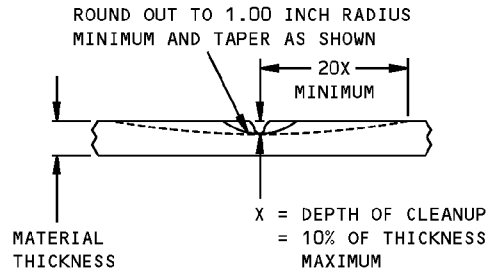
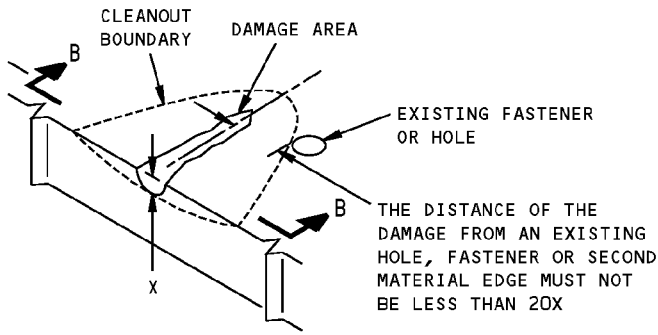
**TYPICAL SIDE LINKS
DETAIL V**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL VI**

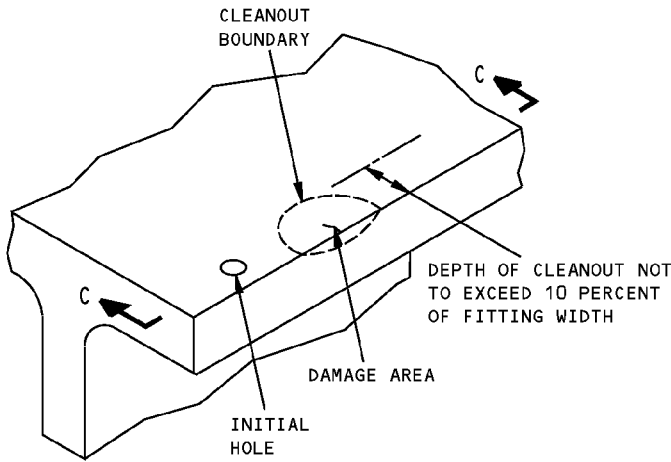
**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 4 of 7)**

STRUCTURAL REPAIR MANUAL

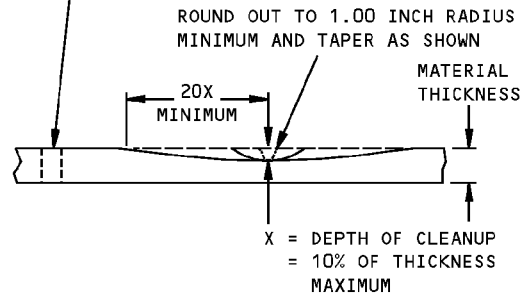


REMOVAL OF NICK, GOUGE AND SCRATCH DAMAGE ON A SURFACE THAT IS NOT ON A LUG
DETAIL VII

SECTION B-B

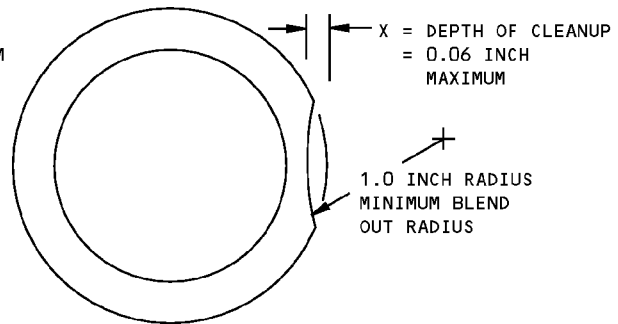
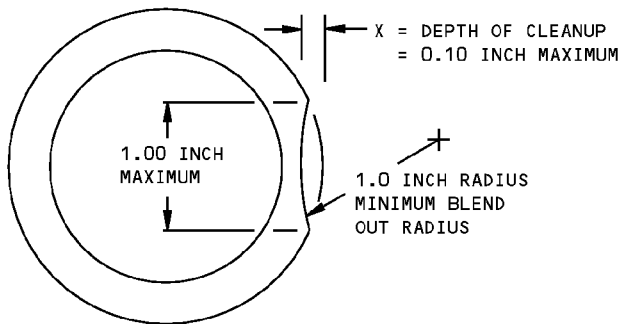


THE DISTANCE OF THE DAMAGE FROM AN EXISTING HOLE, FASTENER OR SECOND MATERIAL EDGE MUST NOT BE LESS THAN 20X.



REMOVAL OF DAMAGE ON AN EDGE
DETAIL VIII

SECTION C-C

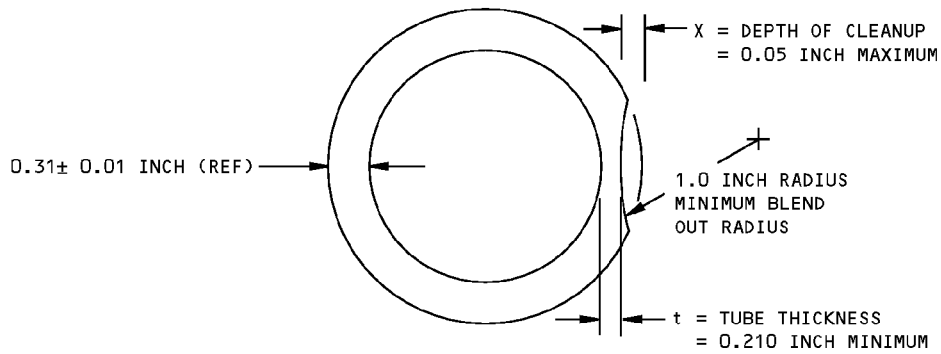


REMOVAL OF DAMAGE ON A SURFACE
DETAIL IX

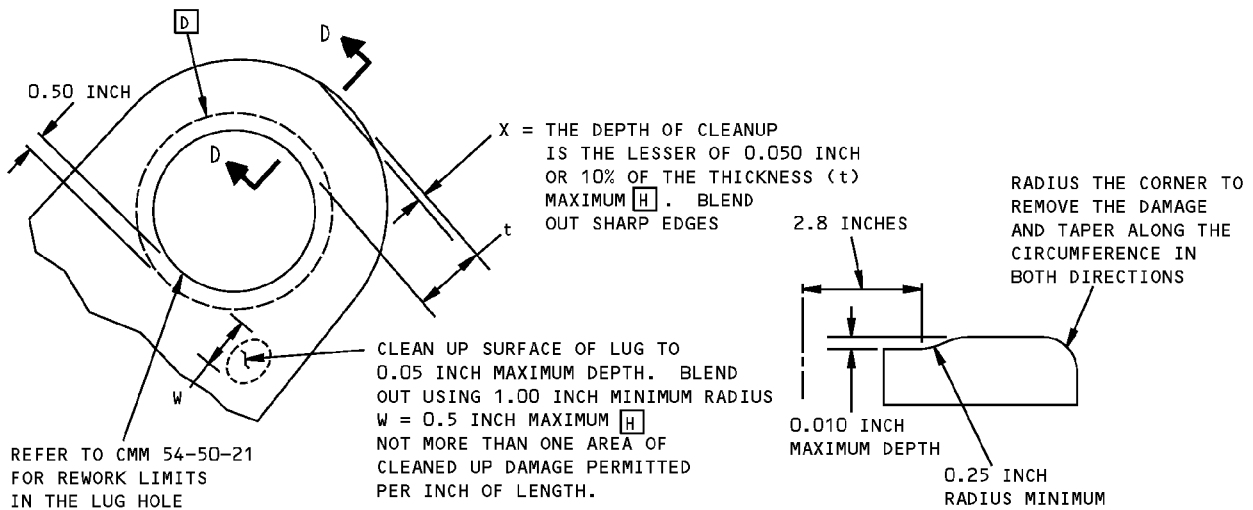
REMOVAL OF DAMAGE ON A SURFACE
DETAIL X

**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 5 of 7)**

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STRUCTURAL REPAIR MANUAL**

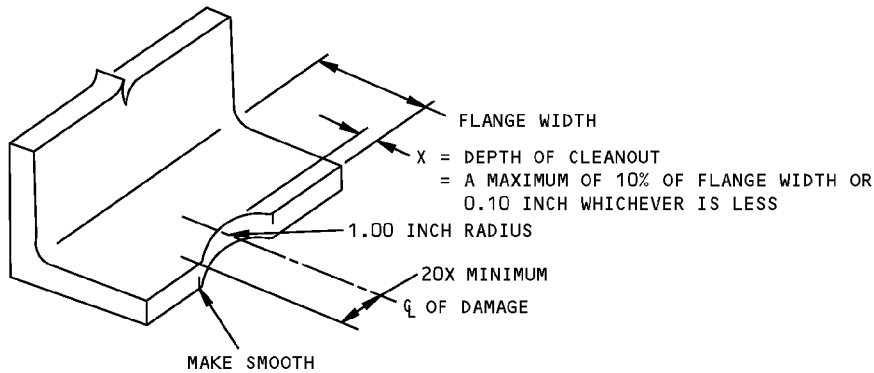


**REMOVAL OF DAMAGE ON A SURFACE
DETAIL XI**



**DAMAGE CLEANUP FOR LUG SURFACES
DETAIL XII**

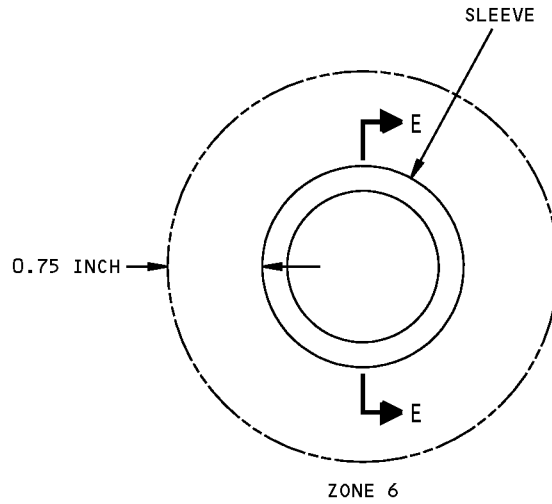
SECTION D-D



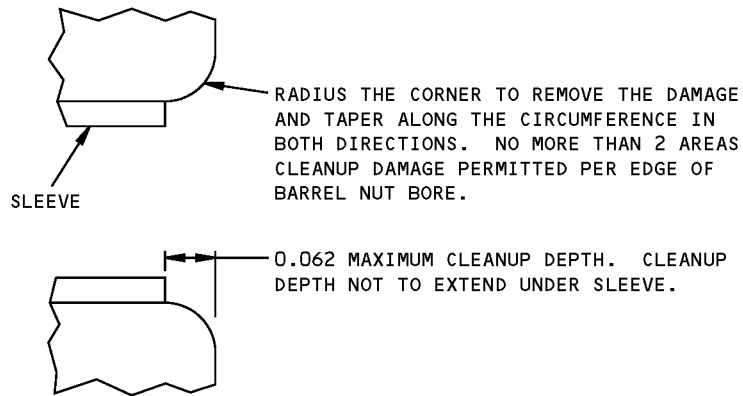
**REMOVAL OF EDGE DAMAGE FROM FREE FLANGE
WITHOUT FASTENERS
DETAIL XIII**

**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 6 of 7)**

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STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE ON A BARREL NUT BORE
DETAIL XIV**

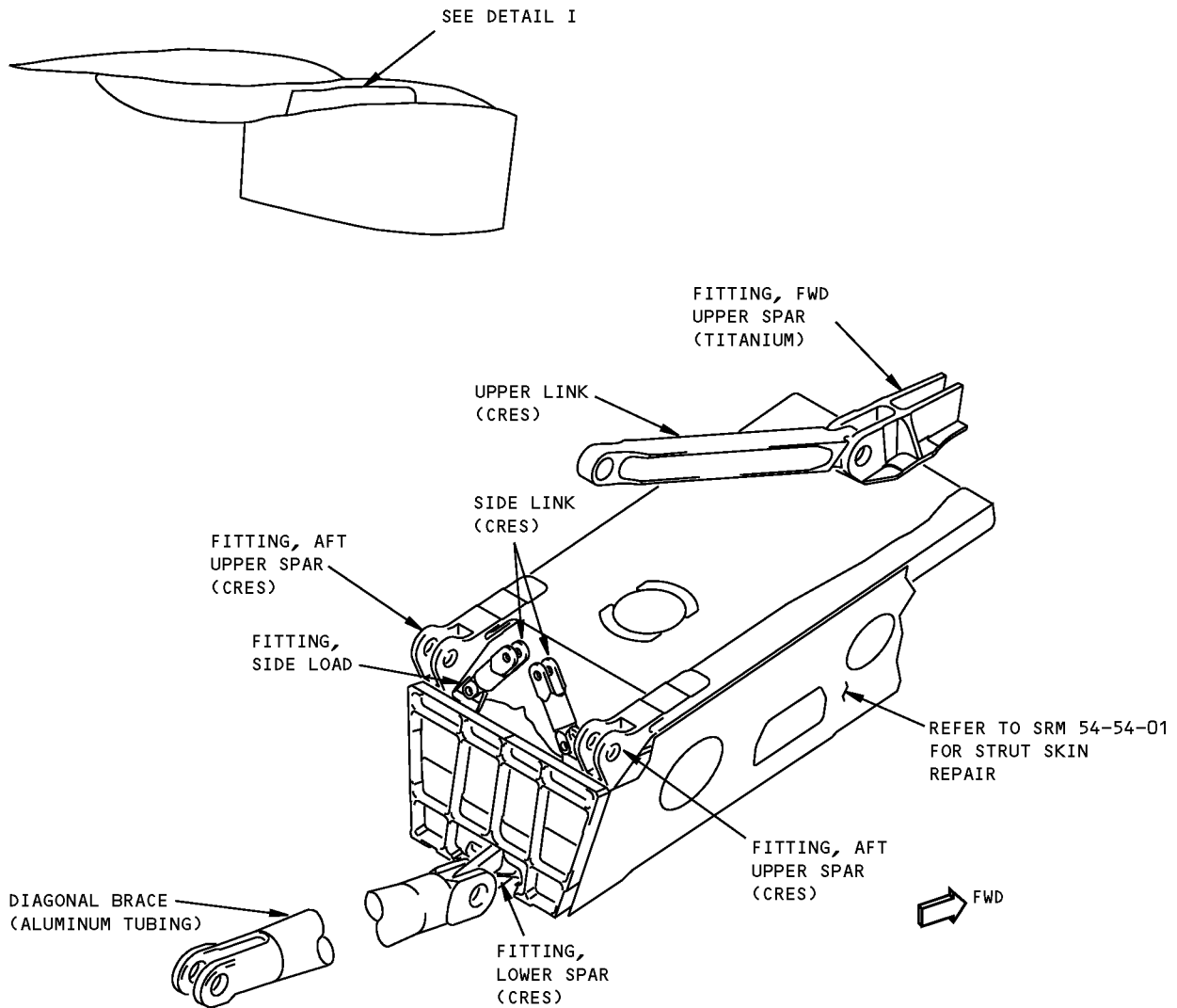


SECTION E-E

**Allowable Damage - Strut Attachment Links - RB211-524 Engine
Figure 101 (Sheet 7 of 7)**

**767-300
STRUCTURAL REPAIR MANUAL**

REPAIR GENERAL - STRUT ATTACHMENT FITTINGS - RB211-524 ENGINES



DETAIL I

NOTES

- REFER TO CMM 54-50-21 FOR THE REPAIR OF THE DIAGONAL BRACE, THE UPPER LINKS AND THE SIDE LINKS.
- THE FORWARD UPPER SPAR, MID SPAR AND LOWER SPAR FITTING LUG HOLE REPAIRS ARE THE ONLY TYPICAL STRUT ATTACH FITTING REPAIRS AVAILABLE. OTHER TYPICAL STRUT ATTACH FITTING REPAIRS WILL BE AVAILABLE BASED ON SERVICE EXPERIENCE.

**Diagonal Brace - Links and Fittings Repair - RB211-524 Engine
Figure 201**

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STRUCTURAL REPAIR MANUAL

REPAIR 1 - FORWARD UPPER SPAR FITTING, LUG HOLE - RB211-524 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE FORWARD UPPER FITTING ON THE RB211-524 ENGINE. A

REPAIR INSTRUCTIONS

1. Remove the engine strut from the wing. Refer to AMM 54-51-01/401.
2. Open the strut access doors. Refer to AMM 54-53-01/201.
3. Get the bushing removal tool from Boeing tool kit B0F311T2110.
4. Remove the two bushings from the lugs of the clevis with the bushing removal tool. Discard the bushings. The bushing material is Aluminum-Nickel-Bronze alloy.
5. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a high-frequency eddy-current (HFEC) inspection to determine the amount of crack damage in the lug bore. Refer to NDT Part 6, 51-00-13 for the high-frequency eddy-current inspection procedure.
6. If damage is not found during the initial inspections and the airplane age is less than or equal to 15 years then proceed to step 16. If the airplane age is more than 15 years or hole damage is found, proceed to the next step.
7. Disconnect and make a record of clamps, clamp blocks, brackets and routing of wire bundles and electrical cables on both sides of the upper link fitting. Move the bundles and cables up and away from the fitting to make clearance for the repair tools. If any electrical connections are disconnected, install caps or plugs on the equipment. Also, attach location tags to make subsequent connection easier.
8. Drain the fuel supply line and the hydraulic fluid lines to the engine.
9. Remove tubes, clamps, support blocks and brackets on both sides of the fitting. See Detail I.
10. Install the boring tools included in Boeing tool kit B0F311T2110 or the equivalent.

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER EXCEEDS THE MAXIMUM ALLOWED.

11. Machine the hole as necessary to remove the damage. The fitting material is 6AL-4v titanium alloy. Refer to SOPM 20-10-07. Do a visual inspection with a 10-power magnifying glass for corrosion of (HFEC) inspection for cracks to make sure all damage is removed. Machine an insurance cut of 0.020 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.1457 inches, then get alternative repair instructions from Boeing.
12. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
13. Remove the boring tools.
14. Hone the machined surfaces to remove all machine tears and burrs.
15. Shot peen or flap peen the holes of the clevis which have been reworked. Use shot number 170 to 460, intensity 0.014A, and coverage 2.0. Refer to SOPM 20-10-03.
16. Hone the holes to the final hole diameter. Make the finish on the surface of the hole 32 microinches Ra. You can remove a maximum of 0.0028 inch of material from the hole diameter to get the necessary surface finish. The maximum hole diameter is 2.1457 inches.
17. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.
18. Make the replacement bushings. One bushing is necessary for each Lug of the clevis. See Detail II and Table I. Make the outer diameter of each bushing 0.0031 to 0.0042 inch larger than the hole diameter to give an interference fit. Make the surface finish on the outer surface of the bushing 32 microinches Ra. Make the surface finish on the other 63 Microinches Ra.
19. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.

**Forward Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 1 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

20. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation guide bushing in the liquid nitrogen until boiling stops. Use the guide bushing from kit B0311T2110 or the equivalent. Refer to SOPM 20-50-03.
21. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the mating surfaces of the clevis which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
22. Install the bushings as quickly as possible. Use the installation tools from kit B0F311T2110 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.
- 23.hone the inner diameter of the bushings to a diameter of 1.8460 to 1.8470 inches. Make the surface finish 32 microinches Ra. Machine the outer chamfers again if necessary. See Detail II.
24. Bond washer to spar fitting with BMS 5-26. See Detail II, Section A-A. Refer to SOPM 20-50-12.
25. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the faces of the lug. Appl a fillet seal of BMS 5-95 to the washer and bushing interface. Refer to SRM 51-20-05.
26. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.

- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0095.
- WHEN YOU USE THIS REPAIR, REFER TO:
 - AMM 54-51-01 FOR REMOVAL AND INSTALLATION OF THE STRUT
 - AMM 54-53-01 FOR LOCATION OF STRUT ACCESS DOORS
 - NDT PART 6, 51-00-13 FOR HIGH-FREQUENCY EDDY-CURRENT INSPECTION PROCEDURES
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-10-07 FOR THE MACHINING OF TITANIUM
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SOPM 20-50-12 FOR THE APPLICATION OF ADHESIVES
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

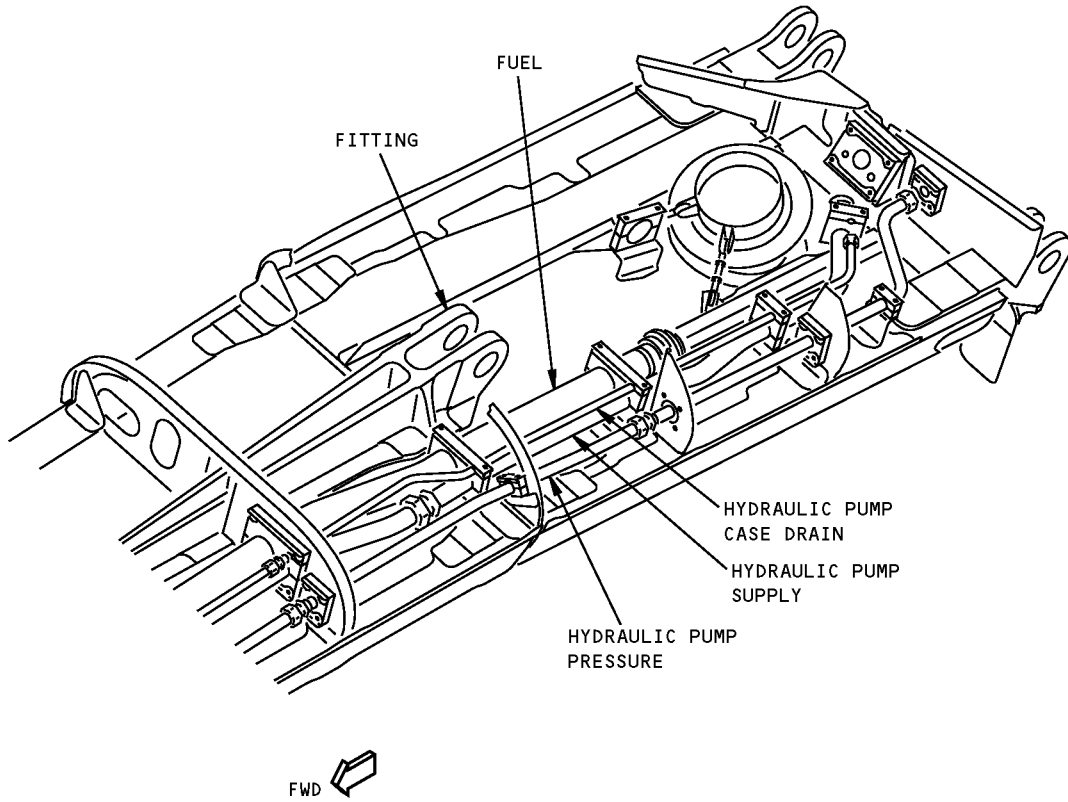
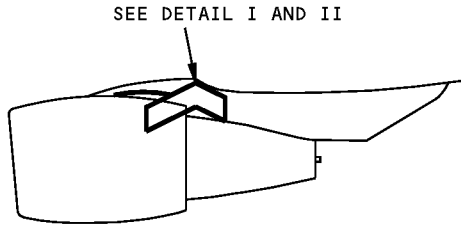
REPAIR MATERIAL			
PART	QTY	MATERIAL	
1	OVERSIZED BUSHING	2	2.625 INCHES DIAMETER BY 1.2 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T5111-10 BUSHING FROM BOEING
2	WASHER	2	3.0 INCHES DIAMETER BY 0.125 INCH THICK AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640. SEE DETAIL II, SECTION A-A. AS AN ALTERNATIVE, GET A 311T5111-11 WASHER FROM BOEING

TABLE I

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**Forward Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 2 of 5)**

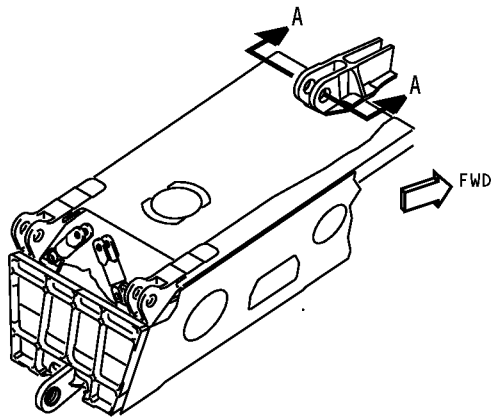
**767-300
STRUCTURAL REPAIR MANUAL**



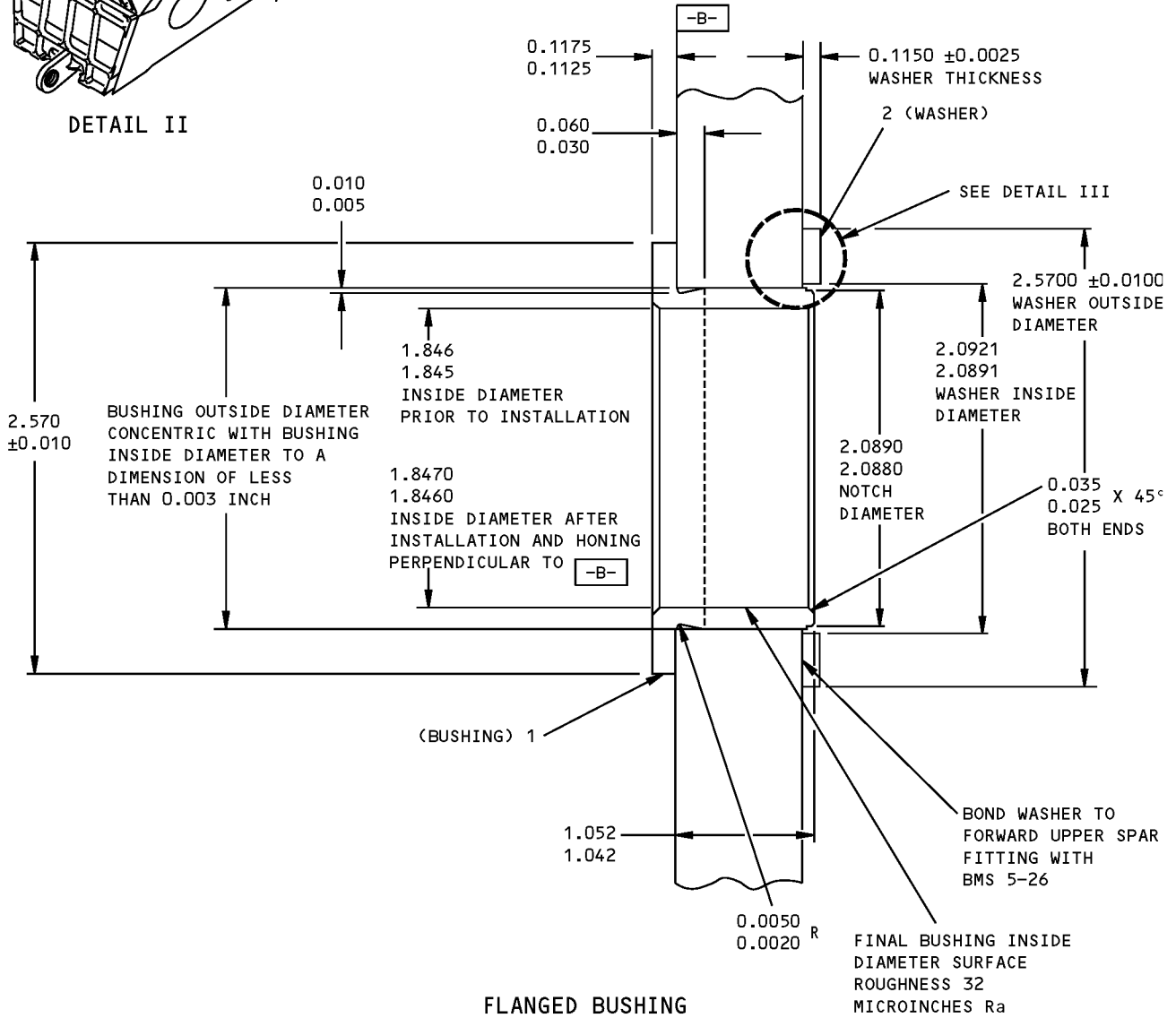
TUBING
DETAIL I

**Forward Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 3 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL II

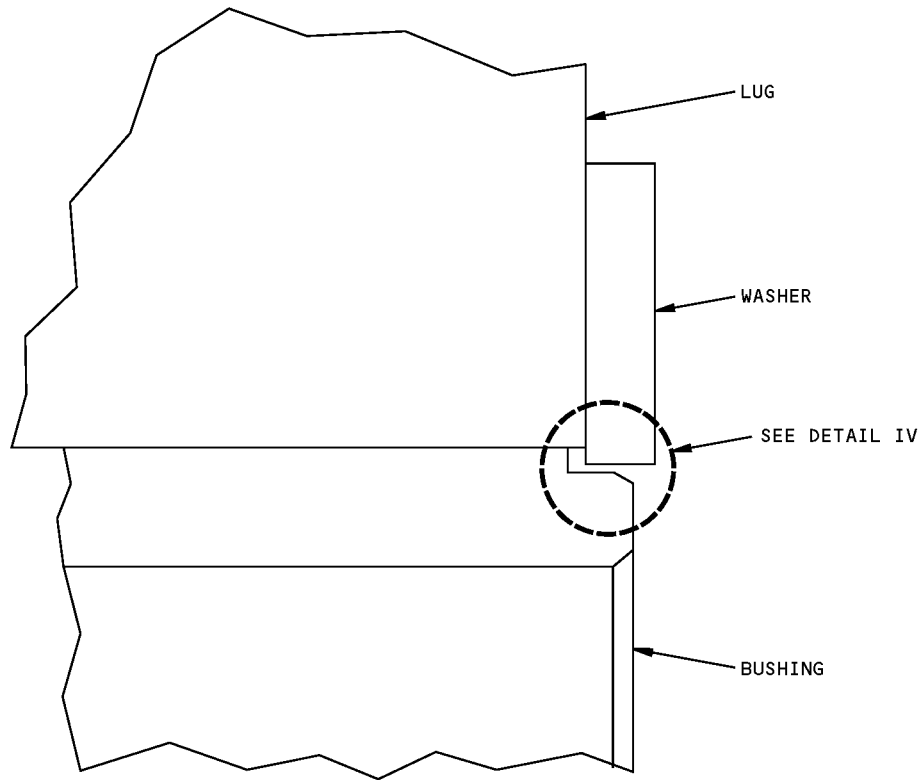


**FLANGED BUSHING
(TYPICAL)**

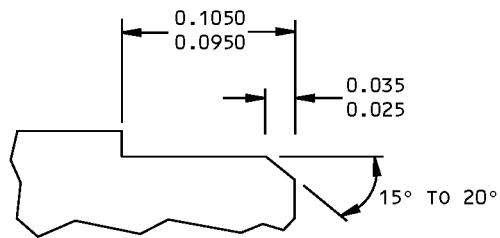
SECTION A-A

**Forward Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 4 of 5)**

**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL III



**BUSHING OD CHAMFER AND
NOTCH DIMENSIONS**

DETAIL IV

**Forward Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 5 of 5)**

STRUCTURAL REPAIR MANUAL

REPAIR 2 - AFT UPPER SPAR FITTING, LUG HOLE - RB211-524 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE AFT UPPER FITTING ON THE RB211-524 ENGINE. A

REPAIR INSTRUCTIONS

1. Remove the pylon and get access to the clevises. Refer to AMM 54-51-01/401 for the removal of the pylon.
2. Remove all four of the bushings from the damaged lug(s) of the clevises. Discard the bushing(s). The bushing material is Aluminum-Nickel-Bronze alloy.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01 for the magnetic particle inspection procedure.
4. Machine each bore as necessary to remove scratches, surface defects, cracks or corrosion. Use boring tool, Boeing tool number B0F311T2150 or equivalent. Refer to SOPM 20-10-02. The fitting material is 15-5PH CRES, heat treated to 180-200 KSI.
NOTE: INSTALLATION OF THE BORING TOOL REQUIRES THE REMOVAL OF TUBING THAT IS LOCATED BETWEEN THE MIDSPAR FITTINGS.
5. If cracks or corrosion were found during magnetic particle or 10-power magnifying glass visual inspection, continue to machine in the bore and to do the inspections until you can not detect cracks or corrosion. Then machine an insurance cut of 0.010 inch minimum from the diameter of the bore. If the diameter of the bore is larger than 1.8640 inches after of the bore has been machined, then get alternative repair instructions from Boeing.
6. If you did not find cracks or corrosion during the initial inspections, an insurance cut is not necessary unless the age of the airplane is more than 15 years. The maximum bore diameter is given in step 5.
7. Put a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
8. Remove all machine tears and burrs on cut surfaces.
9. Flap peen (do not peen with steel shot) the holes of the clevises that have been reworked to an intensity of 0.014A, and coverage 2.0. Refer to SOPM 20-10-03.

10. Hone the holes to the final bore diameter. Make the finish on the surface of the hole 32 microinches R_a . You can remove a maximum of 0.0028 inch of material from the bore diameter to get the necessary surface finish. The maximum bore diameter is 1.8640 inches.
11. Make four replacement bushings, one bushing for each lug of the clevises. See Detail I and Table I. Make the outer diameter of each bushing 0.0027 to 0.0036 inch larger than the hole diameter. Make the surface finish on the outer surface of the bushing 32 microinches R_a . Make the surface finish on the other surfaces 63 microinches R_a .
12. Do a penetrant inspection of the bushings to make sure there are no defects on the surface. Use Type I, method C, sensitivity level 3 or higher penetrant for the inspection. Refer to SOPM 20-20-02.
13. Apply one layer of BMS 10-11, Type I primer in the holes and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

14. Prepare the bushings for installation with the shrink fit method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tooling in the liquid nitrogen until boiling stops. Refer to SOPM 20-50-03.
15. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin film of BMS 5-95 sealant to the inner surface of the fitting bore and to the mating surface under the bushing flange.
 - B. If you use adhesive as an alternative to sealant, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the inner surface of the fitting bore then apply a thin film of BMS 5-95 sealant to the mating surface under the bushing flange.

NOTE: If there is primer in the bores, do not remove it.
16. Install the bushings as quickly as possible. Use the bushing installation tool from Boeing tool kit B0F311T2150 or the equivalent. Hold the bushing flange tightly against the face of the lug until the assembly is at room temperature to make sure that the bushing is installed correctly. A press fit can be used to complete the shrink fit installation of the bushings.

Aft Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 1 of 3)

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

17. Line hone through both lugs of the fitting to keep the bushing holes aligned. Hone the inner diameter of the bushings to a diameter of 1.5810 to 1.5822 inches. Make the surface finish 32 microinches Ra. Machine the chamfers again if necessary. See Detail I.
18. Apply a fillet seal of BMS 5-95 sealant between the flange of the bushing and the face of the lug. Apply a bead of BMS 5-95 sealant between the opposite end of the bushing and the inner surface of the lug hole. Refer to SRM 51-20-05.
19. Apply a layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area.
20. Put the airplane back to its usual condition.

A AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.

REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED BUSHING	AS REQUIRED	2.75 INCHES DIAMETER BY 1.00 INCH LONG AL-NI-BRONZE BAR AS SPECIFIED IN AMS 4640

TABLE I

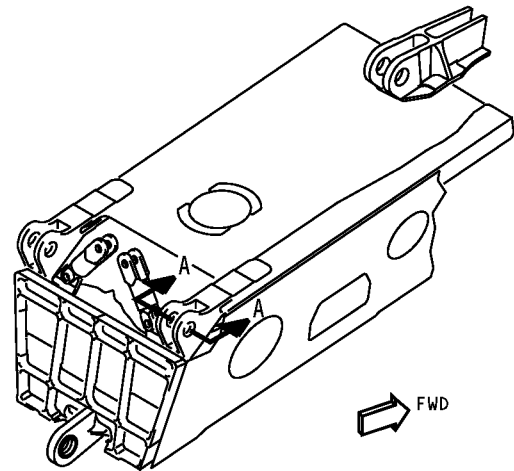
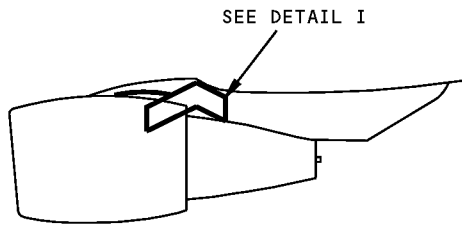
NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 51-21-00 FOR INTERIOR AND EXTERIOR FINISHES
 - AMM 54-51-01 FOR PYLON REMOVAL AND INSTALLATION
 - AMM 71-00-02 FOR THE ENGINE REMOVAL AND INSTALLATION
 - SOPM 20-10-02 FOR THE MACHINING OF ALLOY STEEL AND FOR SURFACE TEMPER ETCH INSPECTION
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-10-02 FOR INSPECTION AND REMOVAL OF DAMAGE
 - SRM 51-20-01 FOR PROTECTIVE TREATMENT OF METALLIC AND NON-METALLIC MATERIALS
 - SRM 51-20-05 FOR REPAIR SEALING
 - SRM 51-40-01 FOR FASTENER CODE, INSTALLATION AND REMOVAL, HOLE SIZES, AND EDGE MARGINS.

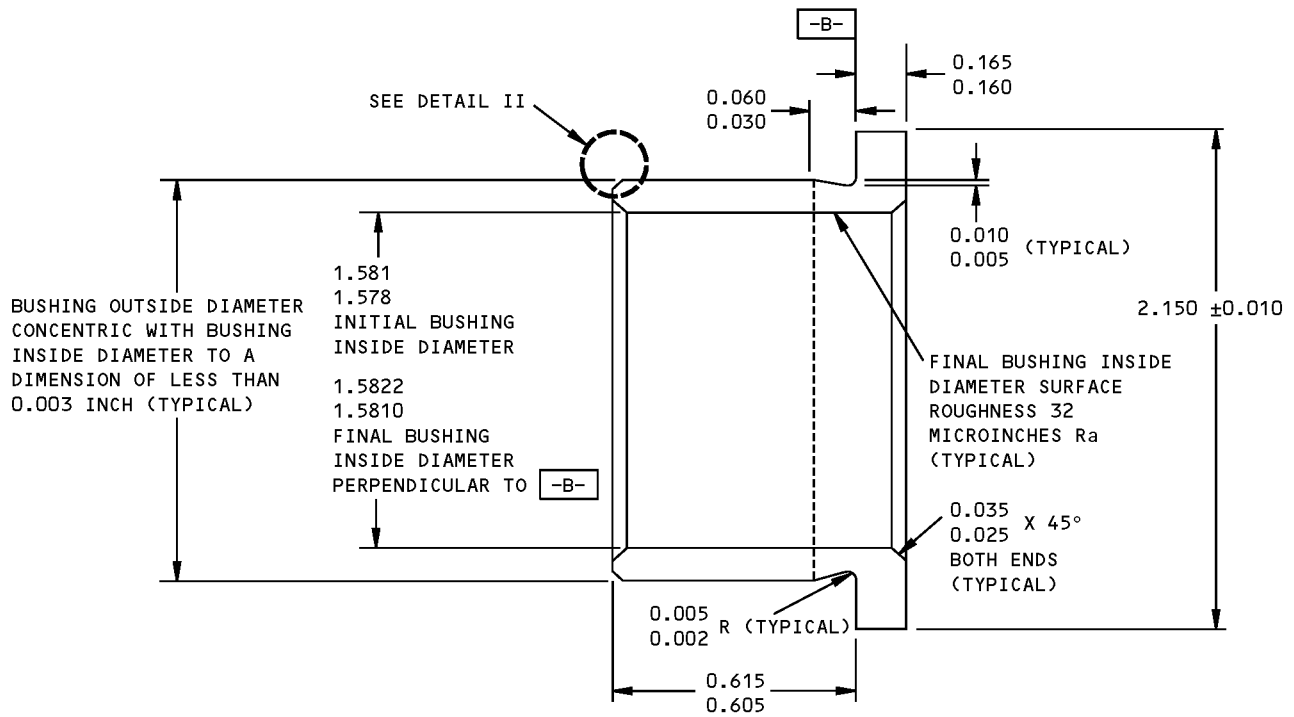
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**Aft Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 2 of 3)**

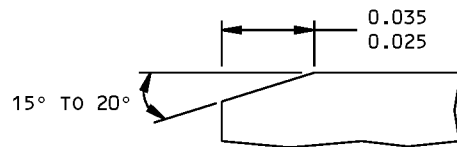
**767-300
STRUCTURAL REPAIR MANUAL**



DETAIL I



**FLANGED BUSHING
(TYPICAL)
SECTION A-A**



**FLANGED BUSHING OD CHAMFER
DETAIL II**

**Aft Upper Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR 3 - LOWER SPAR FITTING, LUG HOLE - RB211-524 ENGINE

APPLICABILITY
THIS REPAIR USES THE INTERFERENCE FIT PROCEDURE TO INSTALL THE REPLACEMENT BUSHINGS FOR THE LOWER SPAR FITTING ON THE RB211-524 ENGINE. B

REPAIR INSTRUCTIONS

1. Remove the strut diagonal brace and get access to the lower spar fitting. Refer to AMM 54-51-02/401.
2. Remove the two bushings from the fitting lug, and discard them. Use the bushing removal tool in the Boeing tool kit B0F311T4185, or the equivalent.

As an alternative, split bushing removal tool, Boeing tool number B54016-1, can be used.
3. Do a visual inspection with a 10-power magnifying glass to determine the amount of the corrosion damage in the lug bore. Do a magnetic particle inspection to determine the amount of crack damage in the lug bore. Refer to SOPM 20-20-01.
4. If damage was not found with the inspection, and the age of the airplane is less than or equal to 15 years, then go to step 11.
5. Install the right angle boring tool that is included in the Boeing tool kit, or the equivalent.

CAUTION: MAKE SURE THE BORING TOOL IS PROPERLY ALIGNED BEFORE THE HOLE IS MACHINED. IF THE TOOL IS MISALIGNED, THEN THE HOLE WILL NOT BE CUT IN THE CORRECT LOCATION OR THE DAMAGE MAY NOT BE REMOVED BEFORE THE HOLE DIAMETER IS MORE THAN THE MAXIMUM PERMITTED.

6. Machine the hole as necessary to remove the damage. The fitting material is 15-5PH corrosion resistant steel, heat treated to 180-200 KSI. Continue to machine the hole and to do the inspections until damage cannot be found. Then machine an insurance cut of 0.010 inch minimum from the diameter of the hole. If the diameter of the hole is larger than 2.1859 inches after the hole has been machined, then get alternative repair instructions from Boeing.
7. Machine a chamfer on the edges of the hole 0.020 to 0.040 inch by 45 degrees. As an alternative, make a radius equivalent to the chamfer.
8. Remove the boring tool.
9. Hone the hole to remove machine tears and burrs. Break sharp edges on the chamfer.

10. Peen the hole. Do not use peening equipment that has shot made of ferrous material. Flap peen wheels are available with tungsten carbide balls. Refer to SOPM 20-10-03. Use shot size 170-330, intensity 0.014A, and coverage 2.0.

NOTE: If a hole is peened with ferrous shot, then remove all traces of the ferrous material from the hole. Use the manual decontamination and repassivation process as specified in BAC5625, Surface Treatments for Ferrous Alloys. As an alternative, abrade the hole with aluminum oxide paper, 150 grit or finer. Do not use silicon carbide paper. Solvent clean the hole to make sure that all grit is removed.

11. Hone the hole to make the hole surface finish 32 microinches R_a or smoother. A maximum of 0.003 inch material can be removed from the hole diameter (0.0015 inch depth of hone) to get the necessary surface finish. The hole to be circular to a dimension of 0.0003 inch or less. The maximum hole diameter is given in step 6.
12. Make the repair "no hone" bushings from Q15T0779-7 or see Table I and Detail I. Make the outside diameter of each bushing 0.0035 to 0.0041 inch larger than the hole diameter to give an interference fit. Make the outside diameter 32 microinches R_a or smoother. Make the surface finish on the other surfaces 63 microinches R_a or smoother. The outside diameter of each bushing to be circular to a dimension of 0.0003 inch or less.
13. Do a magnetic particle inspection of the bushings to make sure there are no surface defects. Refer to SOPM 20-20-01.
14. Apply one layer of BMS 10-11, Type I primer in the hole and let it fully dry. Refer to SOPM 20-41-02.

WARNING: LIQUID NITROGEN IS APPROXIMATELY -320°F (-196°C). WEAR PROTECTIVE CLOTHING AND USE IN A VENTILATED AREA TO PREVENT INJURY.

15. Prepare the bushings for installation with the shrink method. Use liquid nitrogen at -320°F (-196°C). Soak the bushings and the installation tool plugs in the liquid nitrogen until the boiling stops. Refer to SOPM 20-50-03. Get the installation tool plugs from the Boeing tool kit, or the equivalent.

**Lower Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 1 of 3)**

STRUCTURAL REPAIR MANUAL

REPAIR INSTRUCTIONS (CONT)

16. Apply sealant or adhesive as follows:
 - A. If you use sealant, apply a thin layer of BMS 5-95 sealant to the surfaces of the lug which touch the flanges of the bushings.

NOTE: Do not apply BMS 5-95 sealant to the surface of the bores.
 - B. If you use adhesive, apply Loctite 640 retaining compound (MIL-R-46082, Type II) to the fitting bores and the flange mating surfaces. Refer to BAC5011.

NOTE: If there is primer in the bores, do not remove it.
17. Install the bushings as quickly as possible. Use the installation tool assembly from the Boeing tool kit, or the equivalent. Hold the bushing flanges tightly against the lug until the bushings are at room temperature. A press fit can be used to complete the shrink fit installation of the bushings.
18. It is necessary to do a local hone to the inside diameter of the split bushings if the bushings are not aligned to a dimension of 0.0015 inch or less. Hone a small amount from the inside diameter of the bushings until the bushings are aligned to a dimension of 0.0015 inch or less. Make the surface finish 32 microinches R_a or smoother. Machine the outer chamfers again if necessary.
19. Apply a fillet seal of BMS 5-95 sealant between the flanges of the bushings and the lug faces. Apply BMS 5-95 sealant to the clearance between the bushings on the inner surface of the lug hole. Refer to SRM 51-20-05.
20. Put the airplane back to its usual condition.

NOTES

- THIS REPAIR IS A CATEGORY A REPAIR. THE INSPECTIONS GIVEN IN THE MAINTENANCE PLANNING DATA (MPD) ARE SUFFICIENT TO MAINTAIN THE DAMAGE TOLERANCE OF THE INITIAL STRUCTURE WITH THIS REPAIR INSTALLED. REFER TO SRM 51-00-06 FOR REPAIR CATEGORIES AND DEFINITIONS.
- ALL DIMENSIONS ARE IN INCHES.
- THIS REPAIR IS REFERRED TO IN SERVICE BULLETIN 767-54-0061.
- WHEN YOU USE THIS REPAIR REFER TO:
 - AMM 54-51-02 FOR REMOVAL OF THE DIAGONAL BRACE
 - SOPM 20-10-03 FOR SHOT PEENING AND FLAP PEENING
 - SOPM 20-20-01 FOR MAGNETIC PARTICLE INSPECTION PROCEDURES
 - SOPM 20-20-02 FOR DYE PENETRANT INSPECTION PROCEDURES
 - SOPM 20-41-02 FOR THE APPLICATION OF FINISHES
 - SOPM 20-50-03 FOR BUSHING REMOVAL AND INSTALLATION
 - SRM 51-00-06 FOR STRUCTURAL REPAIR DEFINITIONS
 - SRM 51-20-05 FOR REPAIR SEALING.
- [A]** REFER TO SB 767-54-0061 FOR DATA ON BLANK BUSHING AVAILABILITY.
- [B]** AS AN ALTERNATIVE, THE EXPANDED FIT BUSHING INSTALLATION PROCEDURE IS PERMITTED IF THE INSTALLATION REQUIREMENTS LISTED IN SRM 51-20-09 ARE SATISFIED. REFER TO SRM 51-20-09 FOR THE LIST OF EXPANDED FIT BUSHING INSTALLATION GUIDELINES.
- [C]** ADDITIONAL HONING IS REQUIRED ONLY IF THE FINAL BUSHING INSIDE DIAMETER IS NOT AT THE SPECIFIED RANGE AFTER INSTALLATION.

REPAIR MATERIAL		
PART	QTY	MATERIAL
OVERSIZED "NO-HONE" BUSHING	2	15-5PH CRES SOLUTION TREATED AS SPECIFIED IN AMS 5659, HT TR 180-200 KSI AS SPECIFIED IN BAC5619. SEE DETAIL I AND [A]

TABLE I

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**Lower Spar Fitting, Lug Hole Repair - RB211-524 Engine
Figure 201 (Sheet 2 of 3)**

