

**CHAPTER**

**53**

**FUSELAGE**



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1 thru 27	Jul 10/2009	109	Mar 10/2006	203	Nov 10/2007
28	BLANK	110	Mar 10/2006	204	Nov 10/2007
53-CONTENTS		111	Mar 10/2005	205	Nov 01/2003
1	Nov 10/2004	112	Jul 10/2007	206	Nov 01/2003
2	Jul 10/2007	113	Jul 10/2007	207	Nov 10/2004
3	Jul 10/2007	114	Nov 10/2006	208	BLANK
4	Mar 10/2005	115	Nov 10/2006	53-00-01 REPAIR 3	
5	Mar 10/2009	116	Nov 10/2006	201	Jul 10/2005
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O 12	Jul 10/2009	123	Nov 10/2006	208	BLANK
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O 14	Jul 10/2009	125	Nov 10/2006	201	Mar 10/2007
O 15	Jul 10/2009	126	Nov 10/2006	202	Mar 10/2007
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O 17	Jul 10/2009	128	Nov 10/2006	204	Nov 10/2007
18	BLANK	129	Nov 10/2006	205	Nov 10/2007
53-00-00 GENERAL		130	Mar 10/2007	206	Mar 10/2007
1	Nov 01/2003	131	Mar 10/2007	207	Mar 10/2007
2	Jul 10/2005	132	Nov 10/2006	208	Mar 10/2007
3	Nov 10/2004	133	Nov 10/2006	53-00-01 REPAIR 5	
4	Nov 10/2006	134	BLANK	201	Mar 10/2007
5	Nov 10/2004	53-00-01 REPAIR 1		202	Nov 10/2007
6	Nov 01/2003	201	Nov 10/2007	203	Nov 10/2007
7	Nov 10/2006	202	Jul 10/2005	204	Nov 10/2004
8	Nov 01/2003	203	Nov 10/2007	53-00-01 REPAIR 6	
53-00-01 ALLOWABLE DAMAGE 1		204	Nov 10/2004	201	Nov 10/2007
101	Nov 01/2003	205	Nov 10/2004	202	Nov 10/2007
102	Nov 01/2003	206	Mar 10/2005	203	Nov 10/2004
103	Nov 10/2006	207	Nov 10/2004	204	Nov 10/2004
104	Nov 10/2006	208	Mar 10/2005	205	Nov 10/2004
105	Nov 10/2004	53-00-01 REPAIR 2		206	BLANK
106	Nov 10/2006	201	Mar 10/2007	53-00-01 REPAIR 7	
107	Mar 10/2005	202	Nov 10/2004	201	Nov 10/2007
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53-00-01 REPAIR 7 (cont)		53-00-01 REPAIR 11 (cont)		53-00-01 REPAIR 16 (cont)	
203	Nov 10/2007	208	Jul 10/2005	204	Nov 01/2003
204	Nov 01/2003	53-00-01 REPAIR 12		205	Nov 10/2004
205	Nov 01/2003	201	Nov 10/2007	206	BLANK
206	Nov 10/2004	202	Nov 10/2004	53-00-01 REPAIR 17	
53-00-01 REPAIR 8		203	Nov 10/2007	201	Nov 10/2007
201	Nov 10/2007	204	Nov 01/2003	202	Nov 10/2007
202	Nov 10/2006	205	Nov 01/2003	203	Nov 01/2003
203	Nov 10/2007	206	Nov 01/2003	204	Nov 01/2003
204	Jul 10/2004	207	Nov 10/2004	205	Nov 10/2004
205	Jul 10/2004	208	Nov 10/2004	206	BLANK
206	Jul 10/2004	53-00-01 REPAIR 13		53-00-01 REPAIR 18	
207	Jul 10/2004	201	Nov 10/2008	201	Nov 10/2007
208	Jul 10/2004	202	Nov 10/2006	202	Nov 10/2004
209	Jul 10/2004	203	Jul 10/2005	203	Nov 10/2007
210	Nov 10/2004	204	Jul 10/2005	204	Nov 01/2003
53-00-01 REPAIR 9		205	Mar 10/2006	205	Nov 10/2004
201	Nov 10/2004	206	Mar 10/2007	206	BLANK
202	Nov 10/2007	207	Nov 01/2003	53-00-01 REPAIR 19	
203	Nov 10/2007	208	Nov 01/2003	201	Nov 10/2004
204	Jul 10/2004	209	Nov 01/2003	202	Nov 10/2004
205	Jul 10/2004	210	Nov 10/2008	203	Mar 10/2005
206	Jul 10/2004	211	Nov 10/2006	204	Nov 10/2004
207	Jul 10/2004	212	Nov 10/2006	205	Mar 10/2005
208	Nov 10/2004	53-00-01 REPAIR 14		206	Nov 01/2003
53-00-01 REPAIR 10		201	Nov 10/2007	207	Nov 01/2003
201	Nov 10/2007	202	Nov 10/2007	208	Nov 01/2003
202	Nov 10/2004	203	Nov 01/2003	209	Nov 10/2004
203	Nov 10/2007	204	Nov 10/2004	210	BLANK
204	Nov 01/2003	53-00-01 REPAIR 15		53-00-01 REPAIR 20	
205	Nov 10/2004	201	Nov 10/2007	201	Nov 10/2004
206	BLANK	202	Nov 10/2007	202	Mar 10/2005
53-00-01 REPAIR 11		203	Nov 01/2003	203	Mar 10/2005
201	Nov 10/2004	204	Nov 01/2003	204	Nov 01/2003
202	Nov 10/2007	205	Nov 10/2004	205	Nov 01/2003
203	Nov 10/2007	206	BLANK	206	Nov 01/2003
204	Jul 10/2004	53-00-01 REPAIR 16		207	Nov 01/2003
205	Jul 10/2004	201	Nov 10/2007	208	Nov 10/2004
206	Nov 10/2004	202	Nov 10/2007	53-00-01 REPAIR 21	
207	Nov 10/2004	203	Nov 01/2003	201	Jul 10/2007

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53-00-01 REPAIR 21 (cont)		53-00-01 REPAIR 23 (cont)		53-00-01 REPAIR 25 (cont)	
202	Jul 10/2007	205	Jul 10/2007	210	Jul 10/2007
203	Jul 10/2007	206	Jul 10/2007	211	Jul 10/2007
204	Jul 10/2007	207	Jul 10/2007	212	Jul 10/2007
205	Jul 10/2007	208	Jul 10/2007	213	Jul 10/2007
206	Jul 10/2007	209	Jul 10/2007	214	Jul 10/2007
207	Jul 10/2007	210	Jul 10/2007	215	Jul 10/2007
208	Jul 10/2007	211	Jul 10/2007	216	Jul 10/2007
209	Jul 10/2007	212	Jul 10/2007	217	Jul 10/2007
210	Jul 10/2007	213	Jul 10/2007	218	BLANK
211	Jul 10/2007	214	Jul 10/2007	53-00-01 REPAIR 28	
212	Jul 10/2007	215	Jul 10/2007	201	Mar 10/2005
213	Jul 10/2007	216	Jul 10/2007	202	BLANK
214	Jul 10/2007	53-00-01 REPAIR 24		53-00-01 REPAIR 29	
215	Jul 10/2007	201	Jul 10/2007	201	Mar 10/2005
216	Jul 10/2007	202	Jul 10/2007	202	BLANK
217	Jul 10/2007	203	Jul 10/2007	53-00-03 ALLOWABLE DAMAGE 1	
218	BLANK	204	Jul 10/2007	101	Mar 10/2005
53-00-01 REPAIR 22		205	Jul 10/2007	102	Nov 01/2003
201	Jul 10/2007	206	Jul 10/2007	103	Nov 01/2003
202	Jul 10/2007	207	Jul 10/2007	104	Jul 10/2004
203	Jul 10/2007	208	Jul 10/2007	105	Nov 10/2004
204	Jul 10/2007	209	Jul 10/2007	106	Nov 10/2004
205	Jul 10/2007	210	Jul 10/2007	107	Nov 10/2004
206	Jul 10/2007	211	Jul 10/2007	108	Nov 10/2004
207	Jul 10/2007	212	Jul 10/2007	109	Nov 10/2004
208	Jul 10/2007	213	Jul 10/2007	110	Nov 10/2004
209	Jul 10/2007	214	Jul 10/2007	111	Nov 10/2004
210	Jul 10/2007	215	Jul 10/2007	112	Nov 10/2004
211	Jul 10/2007	216	Jul 10/2007	113	Nov 10/2004
212	Jul 10/2007	53-00-01 REPAIR 25		114	Nov 10/2004
213	Jul 10/2007	201	Jul 10/2007	115	Nov 10/2004
214	Jul 10/2007	202	Jul 10/2007	116	Nov 10/2004
215	Jul 10/2007	203	Jul 10/2007	117	Nov 10/2004
216	Jul 10/2007	204	Jul 10/2007	118	BLANK
53-00-01 REPAIR 23		205	Jul 10/2007	53-00-03 REPAIR GENERAL	
201	Jul 10/2007	206	Jul 10/2007	201	Nov 01/2003
202	Jul 10/2007	207	Jul 10/2007	202	Nov 01/2003
203	Jul 10/2007	208	Jul 10/2007	203	Nov 01/2003
204	Jul 10/2007	209	Jul 10/2007	204	BLANK

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53-00-03 REPAIR 1		53-00-03 REPAIR 3 (cont)		53-00-07 REPAIR 1	
201	Mar 10/2007	206	Nov 01/2003	201	Jul 10/2005
202	Mar 10/2007	207	Nov 01/2003	202	Nov 01/2003
203	Mar 10/2007	208	Nov 01/2003	203	Nov 01/2003
204	Nov 10/2004	209	Nov 01/2003	204	Nov 01/2003
205	Nov 01/2003	210	Nov 01/2003	205	Nov 01/2003
206	Nov 01/2003	211	Nov 10/2004	206	BLANK
207	Nov 01/2003	212	BLANK	53-00-07 REPAIR 2	
208	Nov 01/2003	53-00-03 REPAIR 4		201	Mar 10/2007
209	Nov 01/2003	201	Nov 10/2004	202	Nov 01/2003
210	Nov 01/2003	202	Nov 10/2004	203	Nov 01/2003
211	Nov 01/2003	203	Nov 01/2003	204	Jul 10/2005
212	Nov 01/2003	204	Nov 01/2003	205	Mar 10/2007
213	Nov 01/2003	205	Nov 01/2003	206	BLANK
214	Nov 01/2003	206	Nov 01/2003	53-00-12 IDENTIFICATION 1	
215	Nov 01/2003	207	Nov 10/2004	1	Mar 10/2004
216	Nov 01/2003	208	BLANK	2	Mar 10/2004
217	Nov 01/2003	53-00-04 ALLOWABLE DAMAGE 1		3	Mar 10/2004
218	Mar 10/2006	101	Nov 01/2003	4	Mar 10/2004
219	Mar 10/2006	102	Nov 01/2003	5	Mar 10/2004
220	Mar 10/2006	103	Nov 01/2003	6	Mar 10/2004
53-00-03 REPAIR 2		104	Jul 10/2004	7	Mar 10/2004
201	Nov 10/2004	105	Nov 10/2004	8	Mar 10/2004
202	Nov 01/2003	106	Nov 10/2004	9	Mar 10/2004
203	Nov 01/2003	107	Nov 10/2004	10	Mar 10/2004
204	Nov 01/2003	108	Nov 10/2004	11	Mar 10/2004
205	Nov 01/2003	109	Nov 10/2004	12	Mar 10/2004
206	Nov 10/2004	110	Nov 10/2004	13	Nov 01/2003
207	Nov 10/2004	111	Nov 10/2004	14	BLANK
208	Nov 10/2004	112	BLANK	53-00-50 IDENTIFICATION 1	
209	Nov 10/2004	53-00-07 ALLOWABLE DAMAGE 1		1	Nov 10/2006
210	Nov 01/2003	101	Nov 10/2006	2	Mar 10/2004
211	Nov 10/2004	102	Nov 01/2003	3	Mar 10/2004
212	BLANK	103	Jul 10/2004	4	Mar 10/2004
53-00-03 REPAIR 3		104	Nov 10/2004	5	Mar 10/2004
201	Nov 10/2006	105	Nov 10/2004	6	Mar 10/2004
202	Jul 10/2005	106	Nov 10/2004	7	Mar 10/2004
203	Nov 10/2006	107	Nov 10/2004	8	Mar 10/2004
204	Nov 10/2006	108	Nov 10/2004	9	Mar 10/2004
205	Nov 01/2003			10	Nov 10/2006

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11	Nov 01/2003	230	Nov 01/2003	211	Nov 01/2003
12	BLANK	53-00-50 REPAIR 1		212	Nov 01/2003
53-00-50 ALLOWABLE DAMAGE 1		201	Nov 01/2003	213	Nov 01/2003
101	Nov 10/2006	202	Nov 01/2003	214	Nov 01/2003
102	Nov 10/2006	203	Nov 01/2003	53-00-50 REPAIR 5	
103	Nov 10/2006	204	Nov 01/2003	201	Nov 01/2003
104	Nov 10/2006	205	Nov 01/2003	202	Nov 01/2003
105	Nov 10/2006	206	Nov 01/2003	203	Nov 01/2003
106	Nov 10/2006	207	Nov 01/2003	204	Nov 01/2003
53-00-50 REPAIR GENERAL		208	BLANK	205	Nov 01/2003
201	Nov 01/2003	53-00-50 REPAIR 2		206	Nov 01/2003
202	Nov 01/2003	201	Nov 01/2003	207	Nov 01/2003
203	Nov 10/2008	202	Nov 01/2003	208	Nov 01/2003
204	Jul 10/2005	203	Nov 01/2003	209	Nov 01/2003
205	Nov 01/2003	204	Nov 01/2003	210	Nov 01/2003
206	Nov 01/2003	205	Nov 01/2003	211	Nov 01/2003
207	Nov 01/2003	206	Nov 01/2003	212	Nov 01/2003
208	Nov 01/2003	207	Nov 01/2003	213	Nov 01/2003
209	Nov 01/2003	208	BLANK	214	BLANK
210	Nov 01/2003	53-00-50 REPAIR 3		53-00-50 REPAIR 6	
211	Nov 01/2003	201	Nov 01/2003	201	Nov 01/2003
212	Mar 10/2007	202	Nov 01/2003	202	Nov 01/2003
213	Nov 01/2003	203	Nov 01/2003	203	Nov 01/2003
214	Nov 01/2003	204	Nov 01/2003	204	Nov 01/2003
215	Nov 01/2003	205	Nov 01/2003	205	Nov 01/2003
216	Nov 01/2003	206	Nov 01/2003	206	Nov 01/2003
217	Nov 01/2003	207	Nov 01/2003	207	Nov 01/2003
218	Nov 01/2003	208	Nov 01/2003	208	Nov 01/2003
219	Nov 01/2003	53-00-50 REPAIR 4		53-00-50 REPAIR 7	
220	Nov 01/2003	201	Nov 01/2003	201	Nov 01/2003
221	Nov 01/2003	202	Nov 01/2003	202	Nov 01/2003
222	Nov 01/2003	203	Nov 01/2003	53-00-50 REPAIR 8	
223	Nov 01/2003	204	Nov 01/2003	201	Nov 01/2003
224	Nov 01/2003	205	Nov 01/2003	202	Nov 01/2003
225	Nov 01/2003	206	Nov 01/2003	53-00-50 REPAIR 9	
226	Nov 01/2003	207	Nov 01/2003	201	Nov 01/2003
227	Nov 01/2003	208	Nov 01/2003	202	Nov 01/2003
228	Nov 01/2003	209	Nov 01/2003	203	Nov 01/2003
229	Nov 01/2003	210	Nov 01/2003	204	Nov 01/2003

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205	Nov 01/2003	115	Mar 10/2004	202	Nov 01/2003
206	Nov 01/2003	116	Mar 10/2004	203	Nov 01/2003
207	Nov 01/2003	117	Mar 10/2004	204	Nov 01/2003
208	Nov 01/2003	118	BLANK	205	Nov 01/2003
209	Nov 01/2003	53-00-52 REPAIR GENERAL		206	Nov 01/2003
210	Nov 01/2003	201	Nov 01/2003	207	Nov 01/2003
211	Nov 01/2003	202	Nov 01/2003	208	Nov 01/2003
212	Nov 01/2003	203	Nov 01/2003	209	Nov 01/2003
213	Nov 01/2003	204	Nov 01/2003	210	Nov 01/2003
214	Nov 01/2003	205	Nov 01/2003	53-00-53 ALLOWABLE DAMAGE 1	
53-00-50 REPAIR 10		206	BLANK	101	Nov 10/2004
201	Nov 01/2003	53-00-52 REPAIR 1		102	Nov 10/2004
202	Nov 01/2003	201	Nov 01/2003	103	Nov 10/2004
53-00-51 REPAIR 1		202	Nov 01/2003	104	BLANK
201	Nov 10/2006	203	Nov 01/2003	53-00-53 ALLOWABLE DAMAGE 2	
202	Nov 10/2006	204	Nov 01/2003	101	Nov 01/2003
203	Nov 01/2003	205	Nov 01/2003	102	Nov 01/2003
204	Nov 10/2006	206	Nov 01/2003	103	Nov 01/2003
205	Nov 10/2006	207	Nov 01/2003	104	Nov 10/2006
206	Nov 10/2006	208	Nov 01/2003	105	Nov 01/2003
207	Jul 10/2004	53-00-52 REPAIR 2		106	Jul 10/2004
208	Nov 01/2003	201	Nov 01/2003	107	Jul 10/2004
209	Nov 01/2003	202	Nov 01/2003	108	Jul 10/2004
210	Nov 01/2003	203	Nov 01/2003	109	Nov 01/2003
53-00-52 ALLOWABLE DAMAGE 1		204	Nov 01/2003	110	Nov 01/2003
101	Nov 01/2003	205	Nov 01/2003	111	Nov 01/2003
102	Mar 10/2004	206	Nov 01/2003	112	Nov 01/2003
103	Mar 10/2004	207	Nov 01/2003	113	Nov 01/2003
104	Mar 10/2004	208	Nov 01/2003	114	Nov 01/2003
105	Mar 10/2004	53-00-52 REPAIR 3		53-00-53 REPAIR 1	
106	Mar 10/2004	201	Nov 01/2003	201	Nov 10/2006
107	Mar 10/2004	202	Nov 01/2003	202	BLANK
108	Mar 10/2004	203	Nov 01/2003	53-00-53 REPAIR 2	
109	Mar 10/2005	204	Nov 01/2003	201	Nov 01/2003
110	Mar 10/2004	205	Nov 01/2003	202	Nov 01/2003
111	Mar 10/2004	206	Nov 01/2003	203	Nov 01/2003
112	Mar 10/2004	53-00-52 REPAIR 4		204	Jul 10/2004
113	Mar 10/2004	201	Nov 01/2003	205	Nov 01/2003
114	Mar 10/2004			206	BLANK

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201	Nov 01/2003	10	Mar 10/2004	202	Nov 01/2003
202	Nov 01/2003	11	Mar 10/2004	53-10-04 IDENTIFICATION 1	
203	Nov 01/2003	12	Mar 10/2005	1	Mar 10/2005
204	Nov 10/2007	13	Mar 10/2004	2	Mar 10/2004
205	Nov 10/2007	14	Mar 10/2004	3	Mar 10/2004
206	BLANK	53-10-01 IDENTIFICATION 2		4	Mar 10/2004
53-00-53 REPAIR 4		1	Jul 10/2004	5	Mar 10/2004
201	Nov 01/2003	2	Mar 10/2005	6	Mar 10/2004
202	Nov 01/2003	3	Mar 10/2004	7	Mar 10/2004
203	Nov 01/2003	4	Mar 10/2005	8	Mar 10/2004
204	Nov 01/2003	5	Mar 10/2004	9	Nov 01/2003
205	Nov 01/2003	6	Mar 10/2004	10	BLANK
206	BLANK	7	Mar 10/2004	53-10-04 ALLOWABLE DAMAGE GENERAL	
53-00-53 REPAIR 5		8	Mar 10/2004	101	Mar 10/2005
201	Nov 01/2003	9	Mar 10/2004	102	BLANK
202	Nov 01/2003	10	Mar 10/2004	53-10-04 REPAIR 1	
203	Nov 01/2003	11	Mar 10/2004	201	Mar 10/2005
204	Jul 10/2004	12	Mar 10/2004	202	Nov 01/2003
205	Jul 10/2004	13	Mar 10/2004	203	Nov 01/2003
206	BLANK	14	BLANK	204	Nov 01/2003
53-00-53 REPAIR 6		53-10-01 ALLOWABLE DAMAGE GENERAL		205	Nov 01/2003
201	Nov 01/2003	101	Mar 10/2005	206	Mar 10/2007
202	Nov 01/2003	102	BLANK	53-10-07 IDENTIFICATION 1	
203	Nov 01/2003	53-10-01 REPAIR GENERAL		1	Mar 10/2005
204	Nov 01/2003	201	Mar 10/2005	2	Mar 10/2004
205	Nov 01/2003	202	BLANK	3	Mar 10/2004
206	Nov 01/2003	53-10-03 IDENTIFICATION 1		4	Mar 10/2004
207	Nov 01/2003	1	Mar 10/2004	5	Nov 01/2003
208	Nov 01/2003	2	Mar 10/2004	6	Nov 01/2003
53-10-01 IDENTIFICATION 1		3	Mar 10/2004	7	Nov 01/2003
1	Mar 10/2005	4	Nov 01/2003	8	Nov 01/2003
2	Mar 10/2005	5	Nov 01/2003	9	Nov 01/2003
3	Mar 10/2004	6	BLANK	10	Nov 01/2003
4	Mar 10/2005	53-10-03 ALLOWABLE DAMAGE 1		11	Mar 10/2004
5	Mar 10/2004	101	Nov 01/2003	12	Mar 10/2004
6	Mar 10/2005	102	BLANK	13	Nov 01/2003
7	Mar 10/2004	53-10-03 REPAIR 1		14	Nov 01/2003
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16	Jul 10/2004	5	Mar 10/2004	117	Nov 10/2004
17	Jul 10/2004	6	BLANK	118	Nov 10/2004
18	Jul 10/2004	53-10-08 IDENTIFICATION 3		119	Nov 10/2004
19	Jul 10/2004	1	Mar 10/2004	120	BLANK
20	Jul 10/2004	2	Mar 10/2004	53-10-08 ALLOWABLE DAMAGE 2	
21	Jul 10/2004	3	Mar 10/2004	101	Nov 01/2003
22	Jul 10/2004	4	Nov 01/2003	R 102	Jul 10/2009
23	Jul 10/2004	5	Nov 01/2003	103	Nov 01/2003
24	Jul 10/2004	6	Mar 10/2004	104	Nov 01/2003
25	Jul 10/2004	7	Mar 10/2004	105	Nov 01/2003
26	Jul 10/2004	8	Mar 10/2004	106	Jul 10/2004
27	Jul 10/2004	9	Mar 10/2004	107	Nov 10/2004
28	Jul 10/2004	10	Mar 10/2004	108	Nov 10/2004
29	Jul 10/2004	11	Mar 10/2004	109	Nov 10/2004
30	Jul 10/2004	12	Mar 10/2004	110	Nov 10/2004
31	Jul 10/2004	13	Mar 10/2004	111	Nov 10/2004
32	BLANK	14	Nov 01/2003	112	Nov 10/2004
53-10-07 ALLOWABLE DAMAGE GENERAL		53-10-08 IDENTIFICATION 4		53-10-08 REPAIR 1	
101	Mar 10/2005	1	Mar 10/2005	201	Nov 10/2006
102	BLANK	2	Mar 10/2004	202	Mar 10/2007
53-10-07 REPAIR GENERAL		3	Mar 10/2004	203	Nov 01/2003
201	Mar 10/2005	4	Mar 10/2004	204	Nov 01/2003
202	BLANK	53-10-08 ALLOWABLE DAMAGE 1		205	Mar 10/2007
53-10-08 IDENTIFICATION 0		101	Nov 01/2003	206	Nov 01/2003
1	Mar 10/2005	102	Mar 10/2006	207	Nov 01/2003
2	BLANK	103	Nov 01/2003	208	Jul 10/2004
53-10-08 IDENTIFICATION 1		104	Nov 01/2003	53-10-08 REPAIR 2	
1	Jul 10/2004	105	Nov 01/2003	201	Nov 01/2003
2	Mar 10/2006	106	Nov 01/2003	202	Mar 10/2007
3	Mar 10/2006	107	Nov 01/2003	203	Nov 01/2003
4	Mar 10/2006	108	Jul 10/2004	204	Nov 01/2003
5	Mar 10/2006	109	Nov 10/2004	205	Jul 10/2004
6	Mar 10/2006	110	Nov 10/2004	206	BLANK
53-10-08 IDENTIFICATION 2		111	Nov 10/2004	53-10-08 REPAIR 3	
1	Mar 10/2005	112	Nov 10/2004	201	Nov 01/2003
2	Mar 10/2004	113	Nov 10/2004	202	Mar 10/2007
3	Nov 01/2003	114	Nov 10/2004	203	Nov 01/2003
4	Mar 10/2004	115	Nov 10/2004	204	Nov 01/2003
		116	Nov 10/2004		

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53-10-08 REPAIR 3 (cont)		53-10-14 REPAIR 1 (cont)		53-10-15 IDENTIFICATION 3	
205	Nov 01/2003	202	Nov 01/2003	1	Jul 10/2004
206	Nov 01/2003	203	Nov 01/2003	2	Mar 10/2004
207	Jul 10/2004	204	Nov 01/2003	3	Mar 10/2004
208	BLANK	205	Mar 10/2007	4	Mar 10/2004
53-10-08 REPAIR 4		206	Nov 01/2003	5	Nov 01/2003
201	Nov 01/2003	53-10-15 IDENTIFICATION 1		6	BLANK
202	Mar 10/2007	1	Mar 10/2004	53-10-15 IDENTIFICATION 4	
203	Nov 01/2003	2	Mar 10/2004	1	Mar 10/2009
204	Jul 10/2004	3	Mar 10/2004	2	Mar 10/2009
53-10-14 IDENTIFICATION 1		4	Nov 01/2003	3	Mar 10/2009
1	Mar 10/2007	5	Nov 01/2003	4	BLANK
2	Mar 10/2004	6	Nov 01/2003	53-10-15 ALLOWABLE DAMAGE 1	
3	Mar 10/2004	7	Nov 01/2003	101	Mar 10/2007
4	Mar 10/2004	8	Mar 10/2004	102	Nov 01/2003
5	Mar 10/2004	9	Mar 10/2004	103	Mar 10/2007
6	Mar 10/2004	10	Nov 01/2003	104	Mar 10/2007
7	Mar 10/2004	11	Mar 10/2004	105	Nov 01/2003
8	Mar 10/2004	12	Mar 10/2004	106	Nov 01/2003
9	Mar 10/2004	13	Mar 10/2004	107	Nov 01/2003
10	Mar 10/2004	14	Mar 10/2004	108	Nov 01/2003
53-10-14 ALLOWABLE DAMAGE 1		15	Mar 10/2004	109	Nov 01/2003
101	Mar 10/2007	16	Mar 10/2004	110	Nov 01/2003
102	Nov 01/2003	17	Nov 01/2003	111	Nov 01/2003
103	Nov 01/2003	18	BLANK	112	Nov 01/2003
104	Nov 01/2003	53-10-15 IDENTIFICATION 2		113	Nov 01/2003
105	Nov 01/2003	1	Mar 10/2004	114	Nov 01/2003
106	Nov 01/2003	2	Mar 10/2004	115	Nov 01/2003
107	Nov 01/2003	3	Mar 10/2004	116	Nov 01/2003
108	Nov 01/2003	4	Nov 01/2003	117	Nov 01/2003
109	Nov 01/2003	5	Mar 10/2004	118	Nov 01/2003
110	Nov 10/2004	6	Mar 10/2004	119	Nov 01/2003
111	Nov 10/2004	7	Mar 10/2004	120	Nov 01/2003
112	Nov 10/2004	8	Mar 10/2004	121	Nov 01/2003
113	Nov 10/2004	9	Mar 10/2004	122	Jul 10/2004
114	Nov 10/2004	10	Mar 10/2004	123	Jul 10/2004
115	Nov 10/2004	11	Mar 10/2004	124	Jul 10/2004
116	BLANK	12	Mar 10/2004	125	Nov 10/2004
53-10-14 REPAIR 1		13	Nov 01/2003	126	Nov 10/2004
201	Mar 10/2007	14	BLANK	127	Nov 10/2004

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53-10-15 ALLOWABLE DAMAGE 1 (cont)		53-10-15 ALLOWABLE DAMAGE 3 (cont)		53-10-15 REPAIR 2 (cont)	
128	Nov 10/2004	106	Nov 10/2004	205	Nov 01/2003
129	Nov 10/2004	107	Nov 10/2004	206	Nov 01/2003
130	Nov 10/2004	108	Nov 10/2004	207	Nov 01/2003
131	Nov 10/2004	109	Nov 10/2004	208	Nov 01/2003
132	Nov 10/2004	110	Nov 10/2004	209	Nov 01/2003
133	Nov 10/2004	111	Nov 10/2004	210	Nov 01/2003
134	BLANK	112	Nov 10/2004	211	Nov 01/2003
53-10-15 ALLOWABLE DAMAGE 2		53-10-15 ALLOWABLE DAMAGE 4		212	Nov 01/2003
101	Nov 01/2003	101	Mar 10/2009	213	Nov 01/2003
102	Nov 01/2003	102	Mar 10/2009	214	BLANK
103	Nov 01/2003	103	Mar 10/2009	53-10-15 REPAIR 3	
104	Nov 01/2003	104	Mar 10/2009	201	Nov 01/2003
105	Nov 01/2003	53-10-15 REPAIR 1		202	Nov 01/2003
106	Nov 01/2003	201	Nov 10/2006	203	Nov 01/2003
107	Nov 01/2003	202	Mar 10/2007	204	Nov 01/2003
108	Nov 01/2003	203	Nov 01/2003	53-10-15 REPAIR 4	
109	Nov 01/2003	204	Nov 01/2003	201	Mar 10/2009
110	Nov 01/2003	205	Nov 01/2003	202	Mar 10/2009
111	Nov 01/2003	206	Nov 01/2003	203	Mar 10/2009
112	Nov 01/2003	207	Nov 01/2003	204	Mar 10/2009
113	Nov 01/2003	208	Nov 01/2003	205	Mar 10/2009
114	Nov 01/2003	209	Nov 01/2003	206	Mar 10/2009
115	Jul 10/2004	210	Nov 01/2003	207	Mar 10/2009
116	Nov 10/2004	211	Nov 01/2003	208	Mar 10/2009
117	Nov 10/2004	212	Nov 01/2003	209	Mar 10/2009
118	Nov 10/2004	213	Nov 01/2003	210	Mar 10/2009
119	Nov 10/2004	214	Nov 01/2003	53-10-50 IDENTIFICATION 0	
120	Nov 10/2004	215	Nov 01/2003	1	Mar 10/2004
121	Nov 10/2004	216	Nov 01/2003	2	BLANK
122	Nov 10/2004	217	Nov 01/2003	53-10-50 ALLOWABLE DAMAGE GENERAL	
123	Nov 10/2004	218	Nov 01/2003	101	Nov 01/2003
124	Nov 10/2004	219	Nov 01/2003	102	BLANK
53-10-15 ALLOWABLE DAMAGE 3		220	BLANK	53-10-50 REPAIR GENERAL	
101	Nov 01/2003	53-10-15 REPAIR 2		201	Nov 01/2003
102	Nov 01/2003	201	Nov 01/2003	202	BLANK
103	Nov 01/2003	202	Nov 10/2006	53-10-51 IDENTIFICATION 1	
104	Nov 01/2003	203	Nov 01/2003	1	Mar 10/2004
105	Jul 10/2004	204	Nov 01/2003	2	Mar 10/2004

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53-10-51 IDENTIFICATION 1 (cont)		53-10-51 IDENTIFICATION 2 (cont)		53-10-51 REPAIR 1 (cont)	
3	Mar 10/2004	21	Mar 10/2004	206	Nov 01/2003
4	Mar 10/2004	22	BLANK	207	Nov 01/2003
5	Mar 10/2004	53-10-51 ALLOWABLE DAMAGE 1		208	Nov 01/2003
6	Mar 10/2004	101	Nov 01/2003	209	Nov 01/2003
7	Nov 01/2003	102	Nov 01/2003	210	Nov 01/2003
8	Nov 01/2003	103	Nov 01/2003	211	Nov 01/2003
9	Mar 10/2004	104	Nov 01/2003	212	Nov 01/2003
10	Mar 10/2004	105	Nov 01/2003	213	Nov 01/2003
11	Jul 10/2004	106	Nov 01/2003	214	BLANK
12	Jul 10/2004	107	Nov 01/2003	53-10-51 REPAIR 2	
13	Jul 10/2004	108	Nov 01/2003	201	Nov 01/2003
14	Jul 10/2004	109	Nov 01/2003	202	Nov 01/2003
15	Jul 10/2004	110	Nov 01/2003	203	Nov 01/2003
16	Jul 10/2004	111	Nov 01/2003	204	Nov 01/2003
17	Jul 10/2004	112	Nov 01/2003	205	Nov 01/2003
18	Jul 10/2004	113	Nov 01/2003	206	Nov 01/2003
19	Jul 10/2004	114	Nov 01/2003	207	Nov 01/2003
20	Jul 10/2004	115	Jul 10/2004	208	Nov 01/2003
53-10-51 IDENTIFICATION 2		116	Nov 01/2003	53-10-51 REPAIR 3	
1	Jul 10/2004	117	Nov 01/2003	201	Nov 01/2003
2	Nov 10/2007	118	Nov 01/2003	202	Nov 10/2007
3	Mar 10/2004	119	Nov 01/2003	203	Nov 10/2007
4	Mar 10/2004	120	Nov 01/2003	204	Nov 01/2003
5	Mar 10/2004	121	Nov 01/2003	205	Nov 01/2003
6	Mar 10/2004	122	Nov 01/2003	206	Nov 01/2003
7	Mar 10/2004	123	Nov 01/2003	207	Nov 01/2003
8	Mar 10/2004	124	Nov 01/2003	208	Nov 01/2003
9	Mar 10/2004	125	Nov 01/2003	209	Nov 01/2003
10	Mar 10/2004	126	Nov 01/2003	210	Nov 01/2003
11	Mar 10/2004	127	Nov 01/2003	211	Nov 01/2003
12	Mar 10/2004	128	Nov 01/2003	212	Nov 01/2003
13	Mar 10/2004	129	Nov 01/2003	213	Nov 01/2003
14	Mar 10/2004	130	Nov 01/2003	214	Nov 01/2003
15	Mar 10/2004	53-10-51 REPAIR 1		53-10-51 REPAIR 6	
16	Mar 10/2004	201	Nov 10/2006	201	Mar 10/2009
17	Mar 10/2004	202	Nov 01/2003	202	Mar 10/2009
18	Mar 10/2004	203	Mar 10/2007	203	Mar 10/2009
19	Mar 10/2004	204	Nov 01/2003	204	Mar 10/2009
20	Mar 10/2004	205	Nov 01/2003	205	Mar 10/2009

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53-10-51 REPAIR 6 (cont)		53-10-51 REPAIR 7 (cont)		53-10-54 ALLOWABLE DAMAGE 1	
206	Mar 10/2009	A 216	Jul 10/2009	101	Nov 01/2003
207	Mar 10/2009	A 217	Jul 10/2009	102	Nov 01/2003
208	Mar 10/2009	A 218	Jul 10/2009	103	Nov 10/2004
209	Mar 10/2009	A 219	Jul 10/2009	104	Nov 10/2004
210	Mar 10/2009	A 220	Jul 10/2009	53-10-54 ALLOWABLE DAMAGE 2	
211	Mar 10/2009	A 221	Jul 10/2009	101	Nov 01/2003
212	Mar 10/2009	A 222	Jul 10/2009	102	Nov 01/2003
213	Mar 10/2009	A 223	Jul 10/2009	103	Nov 01/2003
214	Mar 10/2009	A 224	Jul 10/2009	104	Nov 01/2003
215	Mar 10/2009	A 225	Jul 10/2009	105	Nov 01/2003
216	Mar 10/2009	A 226	Jul 10/2009	106	Nov 01/2003
217	Mar 10/2009	A 227	Jul 10/2009	107	Jul 10/2004
218	Mar 10/2009	A 228	Jul 10/2009	108	Nov 10/2004
219	Mar 10/2009	A 229	Jul 10/2009	109	Nov 10/2004
220	Mar 10/2009	A 230	BLANK	110	Nov 10/2004
221	Mar 10/2009	53-10-52 IDENTIFICATION 1		111	Nov 10/2004
222	Mar 10/2009	1	Jul 10/2004	112	Nov 10/2004
223	Mar 10/2009	2	Jul 10/2004	113	Nov 10/2004
224	Mar 10/2009	53-10-52 ALLOWABLE DAMAGE GENERAL		114	Nov 10/2004
225	Mar 10/2009	101	Nov 01/2003	53-10-54 REPAIR 1	
226	Mar 10/2009	102	BLANK	201	Nov 10/2006
227	Mar 10/2009	53-10-52 REPAIR GENERAL		202	Nov 01/2003
228	BLANK	201	Nov 01/2003	203	Nov 10/2006
53-10-51 REPAIR 7		202	BLANK	204	BLANK
A 201	Jul 10/2009	53-10-54 IDENTIFICATION 1		53-10-54 REPAIR 2	
A 202	Jul 10/2009	1	Jul 10/2004	201	Nov 01/2003
A 203	Jul 10/2009	2	Mar 10/2004	202	Nov 01/2003
A 204	Jul 10/2009	3	Nov 01/2003	203	Nov 01/2003
A 205	Jul 10/2009	4	BLANK	204	Nov 01/2003
A 206	Jul 10/2009	53-10-54 IDENTIFICATION 2		205	Nov 01/2003
A 207	Jul 10/2009	1	Jul 10/2004	206	Nov 01/2003
A 208	Jul 10/2009	2	Mar 10/2004	207	Nov 10/2006
A 209	Jul 10/2009	3	Mar 10/2004	208	BLANK
A 210	Jul 10/2009	4	Mar 10/2004	53-10-72 IDENTIFICATION 1	
A 211	Jul 10/2009	5	Mar 10/2004	1	Jul 10/2004
A 212	Jul 10/2009	6	Mar 10/2004	2	Mar 10/2004
A 213	Jul 10/2009	7	Mar 10/2004	3	Mar 10/2004
A 214	Jul 10/2009	8	Jul 10/2004	4	Mar 10/2004
A 215	Jul 10/2009			5	Nov 01/2003

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53-10-72 IDENTIFICATION 1 (cont)		53-10-72 REPAIR GENERAL (cont)		53-10-72 REPAIR 4	
6	BLANK	231	Mar 10/2006	201	Nov 01/2003
53-10-72 ALLOWABLE DAMAGE 1		232	Mar 10/2006	202	Jul 10/2005
101	Jul 10/2005	233	Mar 10/2006	203	Nov 01/2003
102	Nov 01/2003	234	Mar 10/2006	204	Nov 01/2003
103	Nov 01/2003	235	Mar 10/2006	205	Nov 01/2003
104	Jul 10/2005	236	Mar 10/2006	206	BLANK
105	Nov 01/2003	237	Mar 10/2006	53-10-72 REPAIR 5	
106	BLANK	238	Mar 10/2006	201	Nov 01/2003
53-10-72 REPAIR GENERAL		239	Mar 10/2006	202	Nov 01/2003
201	Mar 10/2006	240	Mar 10/2006	203	Nov 01/2003
202	Mar 10/2006	241	Mar 10/2006	204	Jul 10/2004
203	Mar 10/2006	242	Mar 10/2006	205	Jul 10/2004
204	Mar 10/2006	53-10-72 REPAIR 1		206	BLANK
205	Nov 10/2008	201	Nov 01/2003	53-10-72 REPAIR 6	
206	Mar 10/2006	202	Nov 01/2003	201	Jul 10/2004
207	Mar 10/2006	203	Nov 01/2003	202	Nov 01/2003
208	Mar 10/2006	204	Nov 01/2003	203	Nov 01/2003
209	Mar 10/2006	205	Nov 01/2003	204	Nov 01/2003
210	Mar 10/2006	206	Nov 01/2003	205	Nov 01/2003
211	Mar 10/2006	207	Nov 01/2003	206	BLANK
212	Mar 10/2006	208	Nov 01/2003	53-10-72 REPAIR 7	
213	Mar 10/2006	209	Nov 01/2003	201	Jul 10/2004
214	Mar 10/2006	210	Nov 01/2003	202	Jul 10/2005
215	Mar 10/2006	211	Nov 01/2003	203	Nov 01/2003
216	Mar 10/2006	212	BLANK	204	Nov 01/2003
217	Mar 10/2006	53-10-72 REPAIR 2		205	Nov 01/2003
218	Mar 10/2006	201	Nov 01/2003	206	Jul 10/2005
219	Mar 10/2007	202	Nov 01/2003	53-10-72 REPAIR 8	
220	Mar 10/2006	203	Nov 01/2003	201	Nov 01/2003
221	Mar 10/2006	204	Nov 01/2003	202	Jul 10/2005
222	Mar 10/2006	205	Nov 01/2003	203	Nov 01/2003
223	Mar 10/2006	206	BLANK	204	Nov 01/2003
224	Mar 10/2006	53-10-72 REPAIR 3		205	Nov 01/2003
225	Mar 10/2006	201	Jul 10/2005	206	Nov 01/2003
226	Mar 10/2006	202	Nov 01/2003	207	Jul 10/2005
227	Mar 10/2006	203	Nov 01/2003	208	BLANK
228	Mar 10/2006	204	Nov 01/2003	53-10-72 REPAIR 9	
229	Mar 10/2006	205	Nov 01/2003	R 201	Jul 10/2009
230	Mar 10/2006	206	Jul 10/2005	202	Nov 01/2003

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53-10-72 REPAIR 9 (cont)		53-10-72 REPAIR 13 (cont)		53-30-01 ALLOWABLE DAMAGE GENERAL	
203	Nov 01/2003	206	Jul 10/2004	101	Nov 10/2006
204	Jul 10/2004	207	Jul 10/2004	102	BLANK
205	Jul 10/2004	208	BLANK	53-30-01 REPAIR GENERAL	
206	BLANK	53-10-90 IDENTIFICATION 1		201	Nov 10/2006
53-10-72 REPAIR 10		1	Mar 10/2005	202	BLANK
201	Jul 10/2004	2	Mar 10/2004	53-30-03 IDENTIFICATION 1	
202	Nov 01/2003	3	Nov 01/2003	1	Mar 10/2004
203	Nov 01/2003	4	Nov 01/2003	2	Mar 10/2004
204	Nov 01/2003	53-10-90 ALLOWABLE DAMAGE 1		3	Mar 10/2004
205	Nov 01/2003	101	Mar 10/2005	4	Mar 10/2004
206	Nov 01/2003	102	Nov 01/2003	5	Nov 01/2003
207	Nov 01/2003	103	Nov 01/2003	6	BLANK
208	BLANK	104	Jul 10/2008	53-30-03 ALLOWABLE DAMAGE 1	
53-10-72 REPAIR 11		105	Jul 10/2005	101	Nov 01/2003
201	Jul 10/2004	106	Jul 10/2004	102	BLANK
202	Jul 10/2005	107	Nov 01/2003	53-30-03 REPAIR 1	
203	Nov 01/2003	108	Nov 01/2003	201	Nov 01/2003
204	Nov 01/2003	109	Nov 01/2003	202	Nov 01/2003
205	Nov 01/2003	110	Nov 01/2003	53-30-04 IDENTIFICATION 1	
206	Nov 01/2003	111	Nov 01/2003	1	Mar 10/2004
207	Nov 01/2003	112	BLANK	2	BLANK
208	Jul 10/2005	53-10-90 REPAIR 1		53-30-04 ALLOWABLE DAMAGE 1	
53-10-72 REPAIR 12		201	Jul 10/2007	101	Nov 01/2003
201	Nov 01/2003	202	BLANK	102	BLANK
202	Jul 10/2005	53-30-01 IDENTIFICATION 1		53-30-04 REPAIR 1	
203	Nov 01/2003	1	Jul 10/2004	201	Nov 01/2003
204	Nov 01/2003	2	Mar 10/2004	202	BLANK
205	Nov 01/2003	3	Mar 10/2004	53-30-07 IDENTIFICATION 1	
206	Nov 01/2003	4	Mar 10/2004	1	Nov 10/2006
207	Nov 01/2003	5	Mar 10/2004	2	Nov 10/2006
208	Nov 01/2003	6	Mar 10/2004	3	Nov 10/2006
209	Jul 10/2005	7	Mar 10/2004	4	Nov 10/2006
210	BLANK	8	Mar 10/2004	5	Nov 10/2006
53-10-72 REPAIR 13		9	Nov 10/2006	6	Nov 10/2006
201	Jul 10/2004	10	Mar 10/2007	7	Nov 10/2006
202	Nov 01/2003	11	Nov 10/2006	8	Nov 10/2006
203	Nov 01/2003	12	Nov 10/2006	9	Nov 10/2006
204	Nov 01/2003	13	Mar 10/2007	10	BLANK
205	Jul 10/2004	14	BLANK		

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53-30-07 ALLOWABLE DAMAGE GENERAL		53-30-15 IDENTIFICATION 1 (cont)		53-30-15 ALLOWABLE DAMAGE 1 (cont)	
101	Nov 01/2003	6	Nov 10/2006	128	Nov 10/2004
102	BLANK	7	Mar 10/2004	53-30-30 IDENTIFICATION 1	
53-30-07 REPAIR GENERAL		8	Mar 10/2004	1	Jul 10/2004
201	Nov 01/2003	9	Mar 10/2004	2	Jul 10/2004
202	BLANK	10	Mar 10/2004	3	Jul 10/2004
53-30-12 IDENTIFICATION 0		11	Mar 10/2006	4	BLANK
1	Mar 10/2004	12	Jul 10/2004	53-30-30 ALLOWABLE DAMAGE 1	
2	BLANK	13	Jul 10/2004	101	Nov 01/2003
53-30-12 ALLOWABLE DAMAGE GENERAL		14	Jul 10/2004	102	Nov 01/2003
101	Nov 01/2003	15	Jul 10/2004	103	Nov 10/2004
102	BLANK	16	BLANK	104	Nov 10/2004
53-30-12 REPAIR GENERAL		53-30-15 ALLOWABLE DAMAGE 1		105	Nov 10/2004
201	Nov 01/2003	101	Nov 01/2003	106	Nov 10/2004
202	BLANK	102	Jul 10/2004	107	Nov 10/2004
53-30-13 IDENTIFICATION 1		103	Nov 01/2003	108	BLANK
1	Jul 10/2004	104	Nov 01/2003	53-30-50 IDENTIFICATION 0	
2	Mar 10/2004	105	Nov 01/2003	1	Mar 10/2004
3	Mar 10/2004	106	Nov 01/2003	2	BLANK
4	Jul 10/2005	107	Nov 01/2003	53-30-50 ALLOWABLE DAMAGE GENERAL	
5	Nov 10/2005	108	Nov 01/2003	101	Nov 01/2003
6	Nov 10/2005	109	Nov 01/2003	102	BLANK
7	Jul 10/2005	110	Nov 01/2003	53-30-50 REPAIR GENERAL	
8	Nov 10/2005	111	Nov 01/2003	201	Nov 01/2003
9	Jul 10/2005	112	Nov 01/2003	202	BLANK
10	Jul 10/2005	113	Nov 01/2003	53-30-51 IDENTIFICATION 1	
11	Jul 10/2005	114	Nov 01/2003	1	Mar 10/2004
12	Jul 10/2005	115	Jul 10/2004	2	Mar 10/2004
13	Jul 10/2005	116	Jul 10/2004	3	Nov 10/2006
14	Jul 10/2005	117	Jul 10/2004	4	Mar 10/2007
53-30-13 REPAIR 1		118	Jul 10/2004	5	Nov 10/2006
201	Nov 01/2003	119	Jul 10/2004	6	Nov 10/2006
202	Nov 10/2006	120	Jul 10/2004	7	Nov 10/2006
53-30-15 IDENTIFICATION 1		121	Nov 10/2004	8	Mar 10/2004
1	Mar 10/2004	122	Nov 10/2004	9	Mar 10/2004
2	Mar 10/2004	123	Nov 10/2004	10	Mar 10/2004
3	Mar 10/2004	124	Nov 10/2004	11	Mar 10/2004
4	Mar 10/2004	125	Nov 10/2004	12	Mar 10/2004
5	Nov 01/2003	126	Nov 10/2004	13	Nov 10/2006
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14	Mar 10/2004	3	Jul 10/2004	105	Nov 01/2003
15	Mar 10/2004	4	Mar 10/2004	106	Nov 10/2007
16	Mar 10/2007	53-30-52 ALLOWABLE DAMAGE GENERAL		107	Nov 01/2003
17	Mar 10/2007	101	Nov 01/2003	108	Nov 01/2003
18	Mar 10/2007	102	BLANK	109	Nov 01/2003
19	Mar 10/2004	53-30-52 REPAIR GENERAL		110	Nov 10/2007
20	Mar 10/2004	201	Nov 01/2003	111	Nov 01/2003
21	Mar 10/2004	202	BLANK	112	Nov 01/2003
22	Mar 10/2004	53-30-53 IDENTIFICATION 1		113	Nov 01/2003
23	Mar 10/2004	1	Mar 10/2004	114	Nov 01/2003
24	Mar 10/2004	2	Mar 10/2004	115	Nov 01/2003
25	Nov 10/2006	3	Nov 01/2003	116	BLANK
26	Mar 10/2004	4	BLANK	53-30-70 REPAIR 1	
27	Nov 10/2006	53-30-53 IDENTIFICATION 2		201	Nov 01/2003
28	Nov 10/2006	1	Mar 10/2004	202	Nov 01/2003
29	Mar 10/2004	2	Mar 10/2004	203	Nov 10/2007
30	Mar 10/2004	3	Mar 10/2004	204	Nov 01/2003
31	Mar 10/2004	4	Nov 10/2006	205	Nov 10/2007
32	Mar 10/2004	5	Nov 10/2006	206	Nov 10/2006
33	Mar 10/2004	6	BLANK	207	Nov 10/2006
34	Mar 10/2004	53-30-53 ALLOWABLE DAMAGE GENERAL		208	BLANK
35	Mar 10/2004	101	Nov 01/2003	53-30-71 IDENTIFICATION 1	
36	Mar 10/2007	102	BLANK	1	Mar 10/2004
37	Mar 10/2007	53-30-53 REPAIR GENERAL		2	Mar 10/2004
38	Mar 10/2007	201	Nov 01/2003	3	Mar 10/2004
53-30-51 IDENTIFICATION 2		202	BLANK	4	Nov 10/2006
1	Jul 10/2004	53-30-70 IDENTIFICATION 1		5	Nov 10/2006
2	Mar 10/2004	1	Jul 10/2004	6	Jul 10/2007
3	Nov 01/2003	2	Mar 10/2004	7	Nov 10/2006
4	BLANK	3	Nov 01/2003	8	BLANK
53-30-51 REPAIR 1		4	Nov 01/2003	53-30-71 ALLOWABLE DAMAGE 1	
201	Jul 10/2004	5	Nov 01/2003	101	Nov 01/2003
202	BLANK	6	BLANK	102	Nov 10/2006
53-30-51 REPAIR 2		53-30-70 ALLOWABLE DAMAGE 1		103	Nov 10/2006
201	Nov 01/2003	101	Jul 10/2004	104	Nov 10/2007
202	Nov 10/2006	102	Nov 01/2003	105	Nov 01/2003
53-30-52 IDENTIFICATION 1		103	Nov 10/2007	106	Nov 10/2007
1	Jul 10/2004	104	Nov 10/2006	107	Mar 10/2007
2	Mar 10/2004				

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53-30-71 ALLOWABLE DAMAGE 1 (cont)		53-40-01 REPAIR GENERAL (cont)		53-40-07 ALLOWABLE DAMAGE 1	
108	Mar 10/2007	202	BLANK	101	Nov 01/2003
109	Nov 10/2007	53-40-03 IDENTIFICATION 1		102	Nov 01/2003
110	Nov 10/2006	1	Jul 10/2004	103	Jul 10/2004
111	Nov 10/2006	2	Mar 10/2004	104	Nov 10/2004
112	Nov 10/2006	3	Nov 10/2006	105	Nov 10/2004
113	Nov 10/2006	4	BLANK	106	Nov 10/2004
114	Nov 10/2006	53-40-03 ALLOWABLE DAMAGE 1		107	Nov 10/2004
115	Nov 10/2006	101	Nov 01/2003	108	BLANK
116	Nov 10/2006	102	BLANK	53-40-07 REPAIR GENERAL	
117	Nov 10/2006	53-40-03 REPAIR 1		201	Nov 01/2003
118	Nov 10/2006	201	Nov 01/2003	202	BLANK
119	Nov 10/2006	202	Mar 10/2007	53-40-08 IDENTIFICATION 1	
120	Nov 10/2006	53-40-04 IDENTIFICATION 1		1	Jul 10/2004
121	Nov 10/2006	1	Jul 10/2004	2	Mar 10/2004
122	BLANK	2	Mar 10/2004	3	Nov 01/2003
53-30-71 REPAIR 1		3	Nov 10/2006	4	Nov 01/2003
201	Nov 01/2003	4	BLANK	53-40-08 IDENTIFICATION 2	
202	Nov 10/2006	53-40-04 ALLOWABLE DAMAGE GENERAL		1	Nov 10/2006
203	Nov 10/2006	101	Nov 01/2003	2	Nov 10/2006
204	Nov 01/2003	102	BLANK	3	Mar 10/2007
205	Mar 10/2007	53-40-04 REPAIR 1		4	Nov 10/2006
206	Nov 10/2006	201	Nov 01/2003	53-40-08 IDENTIFICATION 3	
53-40-01 IDENTIFICATION 1		202	Nov 01/2003	1	Jul 10/2004
1	Jul 10/2004	203	Mar 10/2007	2	Mar 10/2004
2	Mar 10/2004	204	BLANK	3	Nov 10/2006
3	Mar 10/2004	53-40-07 IDENTIFICATION 1		4	Nov 10/2006
4	Mar 10/2004	1	Nov 10/2006	5	Nov 10/2006
5	Mar 10/2004	2	Nov 10/2006	6	Mar 10/2004
6	Mar 10/2004	3	Nov 10/2006	53-40-08 ALLOWABLE DAMAGE 1	
7	Mar 10/2004	4	Nov 10/2006	101	Nov 01/2003
8	Mar 10/2004	5	Nov 10/2006	102	Nov 01/2003
9	Mar 10/2004	6	Nov 10/2006	103	Nov 01/2003
10	Mar 10/2004	7	Nov 10/2006	104	Nov 01/2003
53-40-01 ALLOWABLE DAMAGE GENERAL		8	Nov 10/2006	105	Jul 10/2004
101	Nov 01/2003	9	Nov 10/2006	106	Jul 10/2004
102	BLANK	10	Nov 10/2006	107	Nov 01/2003
53-40-01 REPAIR GENERAL		11	Nov 10/2006	108	Nov 01/2003
201	Nov 01/2003	12	BLANK	109	Nov 01/2003
				110	Nov 01/2003

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53-40-08 ALLOWABLE DAMAGE 1 (cont)		53-40-15 IDENTIFICATION 1 (cont)		53-40-70 IDENTIFICATION 1	
111	Nov 01/2003	11	Mar 10/2004	1	Jul 10/2004
112	Nov 01/2003	12	Mar 10/2004	2	Mar 10/2004
113	Nov 01/2003	53-40-50 IDENTIFICATION 0		3	Nov 10/2006
114	Nov 01/2003	1	Mar 10/2004	4	Nov 10/2006
115	Nov 01/2003	2	BLANK	5	Mar 10/2007
116	BLANK	53-40-50 ALLOWABLE DAMAGE GENERAL		6	Nov 10/2006
53-40-12 IDENTIFICATION 0		101	Nov 01/2003	7	Nov 10/2006
1	Mar 10/2004	102	BLANK	8	BLANK
2	BLANK	53-40-50 REPAIR GENERAL		53-40-70 ALLOWABLE DAMAGE 1	
53-40-12 ALLOWABLE DAMAGE GENERAL		201	Nov 01/2003	101	Nov 01/2003
101	Nov 01/2003	202	BLANK	102	Nov 01/2003
102	BLANK	53-40-51 IDENTIFICATION 1		103	Nov 10/2007
53-40-12 REPAIR GENERAL		1	Jul 10/2004	104	Nov 10/2006
201	Nov 01/2003	2	Mar 10/2004	105	Nov 01/2003
202	BLANK	3	Mar 10/2004	106	Nov 10/2007
53-40-13 IDENTIFICATION 1		4	Mar 10/2004	107	Nov 10/2006
1	Jul 10/2004	5	Mar 10/2004	108	Nov 10/2006
2	Mar 10/2004	6	Nov 10/2006	109	Nov 10/2006
3	Nov 01/2003	7	Nov 10/2006	110	Nov 10/2006
4	Nov 01/2003	8	Nov 01/2003	111	Nov 10/2006
5	Nov 10/2006	53-40-51 IDENTIFICATION 2		112	Nov 10/2006
6	Nov 10/2006	1	Jul 10/2004	113	Nov 01/2003
53-40-14 IDENTIFICATION 1		2	Mar 10/2004	114	Nov 01/2003
1	Mar 10/2004	3	Mar 10/2004	115	Nov 01/2003
2	Mar 10/2004	4	Nov 10/2006	116	Nov 01/2003
3	Mar 10/2004	5	Nov 10/2006	117	Nov 01/2003
4	Nov 10/2006	6	Nov 10/2006	118	Nov 01/2003
53-40-15 IDENTIFICATION 1		7	Mar 10/2004	119	Nov 01/2003
1	Nov 10/2006	8	Nov 10/2006	120	BLANK
2	Nov 10/2006	53-40-52 IDENTIFICATION 1		53-40-70 REPAIR 1	
3	Mar 10/2004	1	Jul 10/2004	201	Nov 01/2003
4	Nov 10/2006	2	Nov 10/2006	202	Nov 01/2003
5	Mar 10/2004	53-40-52 ALLOWABLE DAMAGE GENERAL		203	Nov 10/2007
6	Mar 10/2004	101	Nov 01/2003	204	Nov 01/2003
7	Nov 10/2006	102	BLANK	205	Nov 10/2007
8	Mar 10/2004	53-40-52 REPAIR GENERAL		206	Nov 10/2006
9	Mar 10/2004	201	Nov 01/2003	207	Nov 10/2006
10	Mar 10/2004	202	BLANK	208	BLANK

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53-40-71 IDENTIFICATION 1		53-40-71 REPAIR 1 (cont)		53-60-04 ALLOWABLE DAMAGE 1 (cont)	
1	Mar 10/2004	202	Nov 10/2006	102	BLANK
2	Mar 10/2004	203	Nov 10/2006	53-60-04 REPAIR 1	
3	Nov 10/2006	204	Nov 10/2006	201	Nov 01/2003
4	Nov 10/2005	53-60-01 IDENTIFICATION 1		202	BLANK
5	Nov 10/2006	1	Jul 10/2004	53-60-07 IDENTIFICATION 1	
6	Nov 01/2003	2	Jul 10/2005	1	Mar 10/2004
7	Nov 01/2003	3	Nov 10/2006	2	Mar 10/2004
8	BLANK	4	Mar 10/2004	3	Mar 10/2004
53-40-71 ALLOWABLE DAMAGE 1		5	Mar 10/2004	4	Nov 01/2003
101	Nov 01/2003	6	Mar 10/2004	5	Nov 10/2006
102	Nov 10/2005	7	Mar 10/2004	6	Mar 10/2004
103	Nov 10/2005	8	Mar 10/2004	7	Nov 01/2003
104	Jul 10/2005	9	Mar 10/2004	8	Nov 01/2003
105	Nov 01/2003	10	Mar 10/2004	9	Nov 10/2006
106	Jul 10/2005	11	Mar 10/2004	10	Nov 10/2006
107	Nov 01/2003	12	BLANK	53-60-07 ALLOWABLE DAMAGE GENERAL	
108	Nov 01/2003	53-60-01 ALLOWABLE DAMAGE GENERAL		101	Nov 01/2003
109	Nov 01/2003	101	Nov 10/2006	102	BLANK
110	Nov 01/2003	102	BLANK	53-60-07 REPAIR GENERAL	
111	Nov 01/2003	53-60-01 REPAIR GENERAL		201	Nov 01/2003
112	Nov 01/2003	201	Nov 10/2006	202	BLANK
113	Nov 01/2003	202	BLANK	53-60-12 IDENTIFICATION 0	
114	Nov 01/2003	53-60-03 IDENTIFICATION 1		1	Mar 10/2004
115	Nov 01/2003	1	Jul 10/2004	2	BLANK
116	Nov 01/2003	2	Mar 10/2004	53-60-12 ALLOWABLE DAMAGE GENERAL	
117	Nov 01/2003	3	Mar 10/2006	101	Nov 01/2003
118	Nov 01/2003	4	Nov 01/2003	102	BLANK
119	Nov 01/2003	53-60-03 ALLOWABLE DAMAGE 1		53-60-12 REPAIR GENERAL	
120	Nov 01/2003	101	Nov 01/2003	201	Nov 01/2003
121	Nov 01/2003	102	BLANK	202	BLANK
122	Nov 01/2003	53-60-03 REPAIR 1		53-60-13 IDENTIFICATION 1	
123	Nov 01/2003	201	Nov 01/2003	1	Jul 10/2004
124	Nov 01/2003	202	Nov 01/2003	2	Mar 10/2004
125	Nov 01/2003	53-60-04 IDENTIFICATION 1		3	Jul 10/2005
126	Nov 01/2003	1	Mar 10/2004	4	Nov 10/2005
127	Nov 01/2003	2	BLANK	5	Jul 10/2005
128	Nov 01/2003	53-60-04 ALLOWABLE DAMAGE 1		6	Jul 10/2005
53-40-71 REPAIR 1		101	Nov 01/2003		
201	Jul 10/2008				

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53-60-13 IDENTIFICATION 1 (cont)		53-60-15 ALLOWABLE DAMAGE 1 (cont)		53-60-51 IDENTIFICATION 1 (cont)	
7	Nov 10/2005	122	Nov 10/2004	5	Nov 10/2006
8	Jul 10/2005	123	Nov 10/2004	6	Nov 10/2006
53-60-15 IDENTIFICATION 1		124	Nov 10/2004	7	Nov 10/2006
1	Jul 10/2004	125	Nov 10/2004	8	Jul 10/2004
2	Mar 10/2004	126	Nov 10/2004	9	Jul 10/2004
3	Mar 10/2004	127	Nov 10/2004	10	BLANK
4	Nov 10/2006	128	Nov 10/2004	53-60-51 IDENTIFICATION 2	
5	Nov 10/2006	129	Nov 10/2004	1	Jul 10/2004
6	Mar 10/2004	130	Nov 10/2004	2	Mar 10/2004
7	Nov 10/2006	53-60-15 REPAIR 1		3	Nov 01/2003
8	Mar 10/2004	201	Nov 10/2006	4	Nov 01/2003
9	Nov 10/2006	202	Mar 10/2007	53-60-51 ALLOWABLE DAMAGE 1	
10	Mar 10/2004	203	Mar 10/2007	101	Nov 01/2003
11	Mar 10/2004	204	Mar 10/2007	102	BLANK
12	Nov 10/2006	205	Mar 10/2007	53-60-51 REPAIR 1	
13	Nov 10/2006	206	Mar 10/2007	201	Nov 01/2003
14	BLANK	207	Mar 10/2007	202	BLANK
53-60-15 ALLOWABLE DAMAGE 1		208	Mar 10/2007	53-60-51 REPAIR 2	
101	Nov 01/2003	209	Mar 10/2007	201	Nov 01/2003
102	Nov 01/2003	210	Mar 10/2007	202	Nov 01/2003
103	Nov 01/2003	211	Mar 10/2007	203	Mar 10/2007
104	Nov 01/2003	212	Mar 10/2007	204	BLANK
105	Nov 01/2003	213	Mar 10/2007	53-60-52 IDENTIFICATION 1	
106	Nov 01/2003	214	Mar 10/2007	1	Jul 10/2004
107	Nov 01/2003	53-60-50 IDENTIFICATION 0		2	Jul 10/2004
108	Nov 01/2003	1	Mar 10/2004	53-60-52 ALLOWABLE DAMAGE GENERAL	
109	Nov 01/2003	2	BLANK	101	Nov 01/2003
110	Nov 01/2003	53-60-50 ALLOWABLE DAMAGE GENERAL		102	BLANK
111	Nov 01/2003	101	Nov 01/2003	53-60-52 REPAIR GENERAL	
112	Nov 01/2003	102	BLANK	201	Nov 01/2003
113	Jul 10/2004	53-60-50 REPAIR GENERAL		202	BLANK
114	Jul 10/2004	201	Nov 01/2003	53-60-53 IDENTIFICATION 1	
115	Jul 10/2004	202	BLANK	1	Nov 10/2006
116	Jul 10/2004	53-60-51 IDENTIFICATION 1		2	Nov 10/2006
117	Jul 10/2004	1	Jul 10/2004	3	Nov 10/2006
118	Jul 10/2004	2	Mar 10/2004	4	BLANK
119	Jul 10/2004	3	Mar 10/2004	53-60-53 IDENTIFICATION 2	
120	Jul 10/2004	4	Nov 10/2006	1	Jul 10/2004
121	Nov 10/2004				

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53-60-53 IDENTIFICATION 2 (cont)		53-60-70 ALLOWABLE DAMAGE 1 (cont)		53-60-71 ALLOWABLE DAMAGE 1 (cont)	
2	Mar 10/2004	120	BLANK	111	Nov 10/2006
3	Nov 01/2003	53-60-70 REPAIR 1		112	Nov 01/2003
4	Nov 01/2003	201	Nov 01/2003	113	Nov 01/2003
5	Nov 01/2003	202	Nov 01/2003	114	Nov 01/2003
6	BLANK	203	Nov 10/2007	115	Nov 10/2007
53-60-53 ALLOWABLE DAMAGE GENERAL		204	Nov 01/2003	116	Nov 01/2003
101	Nov 01/2003	205	Nov 10/2007	117	Nov 01/2003
102	BLANK	206	Nov 10/2006	118	Nov 01/2003
53-60-53 REPAIR GENERAL		207	Nov 10/2006	119	Nov 01/2003
201	Nov 01/2003	208	BLANK	120	Nov 01/2003
202	BLANK	53-60-71 IDENTIFICATION 1		121	Nov 01/2003
53-60-70 IDENTIFICATION 1		1	Nov 10/2006	122	Nov 01/2003
1	Jul 10/2004	2	Nov 10/2006	123	Nov 01/2003
2	Mar 10/2004	3	Nov 10/2006	124	Nov 01/2003
3	Nov 01/2003	4	Mar 10/2007	125	Nov 01/2003
4	Nov 01/2003	5	Mar 10/2007	126	Nov 01/2003
5	Nov 01/2003	6	Nov 10/2006	127	Nov 01/2003
6	Nov 01/2003	7	Nov 10/2006	128	Nov 01/2003
53-60-70 ALLOWABLE DAMAGE 1		8	Nov 10/2006	129	Nov 01/2003
101	Nov 01/2003	9	Nov 10/2006	130	Nov 01/2003
102	Nov 01/2003	10	Nov 10/2006	131	Nov 01/2003
103	Nov 10/2007	11	Nov 10/2006	132	BLANK
104	Nov 10/2006	12	Nov 10/2006	53-60-71 REPAIR 1	
105	Nov 01/2003	13	Nov 10/2006	201	Nov 01/2003
106	Nov 10/2007	14	Nov 10/2006	202	Nov 10/2006
107	Nov 01/2003	15	Nov 10/2006	203	Nov 10/2006
108	Nov 01/2003	16	BLANK	204	Nov 10/2005
109	Nov 01/2003	53-60-71 ALLOWABLE DAMAGE 1		205	Nov 10/2005
110	Nov 10/2007	101	Nov 01/2003	206	Jul 10/2005
111	Nov 10/2006	102	Nov 10/2005	207	Nov 01/2003
112	Nov 01/2003	103	Nov 10/2006	208	Jul 10/2005
113	Nov 01/2003	104	Nov 10/2005	209	Nov 10/2006
114	Nov 01/2003	105	Nov 10/2005	210	Mar 10/2007
115	Nov 01/2003	106	Jul 10/2005	211	Mar 10/2007
116	Nov 01/2003	107	Nov 10/2007	212	BLANK
117	Nov 01/2003	108	Nov 01/2003	53-70-01 IDENTIFICATION 1	
118	Nov 01/2003	109	Nov 10/2007	1	Jul 10/2004
119	Nov 01/2003	110	Nov 01/2003	2	Mar 10/2004

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53-70-01 IDENTIFICATION 1 (cont)		53-70-04 REPAIR 1		53-70-15 ALLOWABLE DAMAGE 1 (cont)	
3	Mar 10/2004	201	Nov 01/2003	112	Nov 01/2003
4	Mar 10/2004	202	BLANK	113	Mar 10/2007
5	Nov 10/2006	53-70-07 IDENTIFICATION 1		114	Mar 10/2007
6	Nov 10/2006	1	Nov 10/2006	115	Mar 10/2007
7	Mar 10/2004	2	Nov 10/2006	116	Jul 10/2004
8	Mar 10/2004	3	Nov 10/2006	117	Nov 10/2004
9	Mar 10/2004	4	Mar 10/2007	118	Nov 10/2004
10	Mar 10/2004	5	Nov 10/2006	119	Nov 10/2004
11	Mar 10/2004	6	Nov 10/2006	120	Nov 10/2004
12	Mar 10/2004	7	Nov 10/2006	121	Nov 10/2004
13	Mar 10/2004	8	Nov 10/2006	122	Nov 10/2004
14	Mar 10/2004	53-70-07 ALLOWABLE DAMAGE GENERAL		123	Nov 10/2004
53-70-01 ALLOWABLE DAMAGE GENERAL		101	Nov 01/2003	124	BLANK
101	Nov 01/2003	102	BLANK	53-70-15 REPAIR 1	
102	BLANK	53-70-07 REPAIR GENERAL		201	Nov 01/2003
53-70-01 REPAIR GENERAL		201	Nov 01/2003	202	Nov 10/2006
201	Nov 01/2003	202	BLANK	203	Nov 01/2003
202	BLANK	53-70-15 IDENTIFICATION 1		204	Nov 01/2003
53-70-03 IDENTIFICATION 1		1	Jul 10/2004	205	Nov 01/2003
1	Mar 10/2004	2	Mar 10/2004	206	Nov 01/2003
2	Mar 10/2004	3	Nov 10/2006	207	Nov 01/2003
3	Nov 10/2006	4	Nov 10/2006	208	Nov 01/2003
4	Nov 10/2006	5	Nov 10/2006	209	Nov 01/2003
5	Nov 01/2003	6	Nov 10/2006	210	Nov 01/2003
6	BLANK	7	Nov 10/2006	211	Nov 01/2003
53-70-03 ALLOWABLE DAMAGE 1		8	Nov 10/2006	212	Nov 01/2003
101	Nov 01/2003	53-70-15 ALLOWABLE DAMAGE 1		213	Nov 01/2003
102	BLANK	101	Nov 01/2003	214	BLANK
53-70-03 REPAIR 1		102	Nov 01/2003	53-70-50 IDENTIFICATION 0	
201	Nov 01/2003	103	Nov 01/2003	1	Nov 10/2006
202	Nov 01/2003	104	Nov 01/2003	2	BLANK
53-70-04 IDENTIFICATION 1		105	Nov 01/2003	53-70-50 ALLOWABLE DAMAGE GENERAL	
1	Mar 10/2004	106	Nov 01/2003	101	Nov 10/2006
2	BLANK	107	Nov 01/2003	102	BLANK
53-70-04 ALLOWABLE DAMAGE 1		108	Nov 01/2003	53-70-50 REPAIR GENERAL	
101	Nov 01/2003	109	Nov 01/2003	201	Nov 10/2006
102	BLANK	110	Nov 01/2003	202	BLANK
		111	Nov 01/2003		

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53-70-51 IDENTIFICATION 1		53-70-51 REPAIR 1		53-70-52 REPAIR GENERAL	
1	Nov 10/2006	201	Nov 10/2006	201	Nov 10/2006
2	Jul 10/2004	202	BLANK	202	BLANK
3	Jul 10/2004	53-70-51 REPAIR 2		53-70-53 IDENTIFICATION 1	
4	Jul 10/2004	201	Nov 01/2003	1	Jul 10/2004
5	Jul 10/2004	202	Nov 10/2006	2	Jul 10/2004
6	Jul 10/2004	53-70-51 REPAIR 4		53-70-53 IDENTIFICATION 2	
7	Nov 10/2006	R 201	Jul 10/2009	1	Mar 10/2004
8	Nov 10/2006	202	Nov 10/2008	2	Mar 10/2004
9	Nov 10/2006	R 203	Jul 10/2009	3	Nov 01/2003
10	Jul 10/2007	R 204	Jul 10/2009	4	Nov 01/2003
11	Nov 10/2006	R 205	Jul 10/2009	53-70-53 ALLOWABLE DAMAGE GENERAL	
12	BLANK	R 206	Jul 10/2009	101	Nov 01/2003
53-70-51 IDENTIFICATION 2		207	Nov 10/2008	102	BLANK
1	Mar 10/2007	208	Nov 10/2008	53-70-53 REPAIR GENERAL	
2	Mar 10/2007	209	Nov 10/2008	201	Nov 01/2003
3	Mar 10/2007	210	Nov 10/2008	202	BLANK
4	BLANK	R 211	Jul 10/2009	53-80-01 IDENTIFICATION 1	
53-70-51 ALLOWABLE DAMAGE 1		212	Nov 10/2008	1	Mar 10/2004
101	Nov 01/2003	213	Nov 10/2008	2	Mar 10/2004
102	Nov 01/2003	214	Nov 10/2008	3	Mar 10/2007
103	Nov 01/2003	215	Nov 10/2008	4	Mar 10/2007
104	Nov 01/2003	216	Nov 10/2008	5	Mar 10/2004
105	Nov 01/2003	R 217	Jul 10/2009	6	Mar 10/2004
106	Nov 01/2003	R 218	Jul 10/2009	7	Mar 10/2007
107	Nov 01/2003	219	Nov 10/2008	8	Mar 10/2007
108	Nov 01/2003	220	Nov 10/2008	9	Mar 10/2007
109	Jul 10/2004	221	Nov 10/2008	10	Mar 10/2007
110	Jul 10/2004	222	Nov 10/2008	11	Mar 10/2007
111	Nov 01/2003	223	Nov 10/2008	12	Mar 10/2007
112	Nov 01/2003	224	Nov 10/2008	13	Mar 10/2007
113	Nov 01/2003	225	Nov 10/2008	14	Mar 10/2007
114	Nov 01/2003	226	BLANK	15	Mar 10/2007
115	Nov 01/2003	53-70-52 IDENTIFICATION 1		16	Mar 10/2007
116	Nov 01/2003	1	Mar 10/2007	17	Jul 10/2007
117	Nov 01/2003	2	Jul 10/2004	18	Mar 10/2007
118	Nov 01/2003	53-70-52 ALLOWABLE DAMAGE GENERAL		19	Mar 10/2007
119	Nov 01/2003	101	Nov 10/2006	20	Mar 10/2007
120	Nov 01/2003	102	BLANK	21	Jul 10/2007

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53-80-01 IDENTIFICATION 1 (cont)		53-80-04 ALLOWABLE DAMAGE GENERAL		53-80-08 IDENTIFICATION 2 (cont)	
22	Mar 10/2007	101	Nov 01/2003	3	Nov 10/2006
23	Mar 10/2007	102	BLANK	4	Nov 01/2003
24	Mar 10/2007	53-80-04 REPAIR 1		5	Nov 10/2006
25	Mar 10/2007	201	Nov 01/2003	6	Nov 10/2006
26	BLANK	202	Nov 01/2003	7	Jul 10/2005
53-80-01 ALLOWABLE DAMAGE GENERAL		203	Jul 10/2004	8	Mar 10/2007
101	Nov 01/2003	204	BLANK	9	Mar 10/2007
102	BLANK	53-80-07 IDENTIFICATION 1		10	Nov 10/2006
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201	Nov 01/2003	2	Nov 10/2006	12	BLANK
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203	Nov 10/2007	7	Nov 10/2006	4	Nov 10/2006
204	Jul 10/2005	8	Nov 10/2006	5	Nov 10/2006
205	Jul 10/2005	9	Nov 10/2006	6	Mar 10/2004
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1	Nov 10/2006	12	Nov 10/2006	9	Nov 01/2003
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3	Nov 10/2006	14	BLANK	11	Nov 10/2006
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8	Nov 10/2006	201	Nov 01/2003	3	Nov 10/2006
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101	Nov 01/2003	53-80-08 IDENTIFICATION 1		53-80-08 IDENTIFICATION 5	
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102	Jul 10/2005	111	Mar 10/2007	203	Mar 10/2007
103	Nov 01/2003	112	Mar 10/2007	204	Mar 10/2007
104	Nov 01/2003	53-80-08 ALLOWABLE DAMAGE 5		205	Mar 10/2007
105	Nov 01/2003	101	Mar 10/2007	206	Nov 10/2006
106	Nov 10/2007	102	Mar 10/2007	207	Nov 10/2006
107	Jul 10/2007	103	Mar 10/2007	208	Nov 10/2006
108	Nov 10/2006	104	Mar 10/2007	209	Nov 10/2006
109	Nov 10/2006	105	Mar 10/2007	210	Nov 10/2006
110	Nov 10/2006	106	Mar 10/2007	211	Nov 10/2006
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123	Jul 10/2005	204	Mar 10/2006	224	BLANK
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126	Jul 10/2005	207	Mar 10/2004	202	BLANK
127	Jul 10/2005	208	Mar 10/2005	53-80-08 REPAIR 5	
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103	Mar 10/2007	202	Nov 01/2003	2	Mar 10/2007
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105	Mar 10/2007	204	Mar 10/2005	4	Mar 10/2007
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5	Mar 10/2007	53-80-13 REPAIR 2		104	Nov 01/2003
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101	Nov 01/2003	203	Nov 01/2003	53-80-70 ALLOWABLE DAMAGE 3	
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113	Nov 01/2003	3	Mar 10/2004	105	Nov 01/2003
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113	Nov 01/2003	101	Nov 01/2003	53-80-70 REPAIR 3	
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116	BLANK	104	Nov 01/2003	203	Nov 10/2007
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8	BLANK	202	Nov 01/2003		
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**GENERAL - FUSELAGE STATIONS**

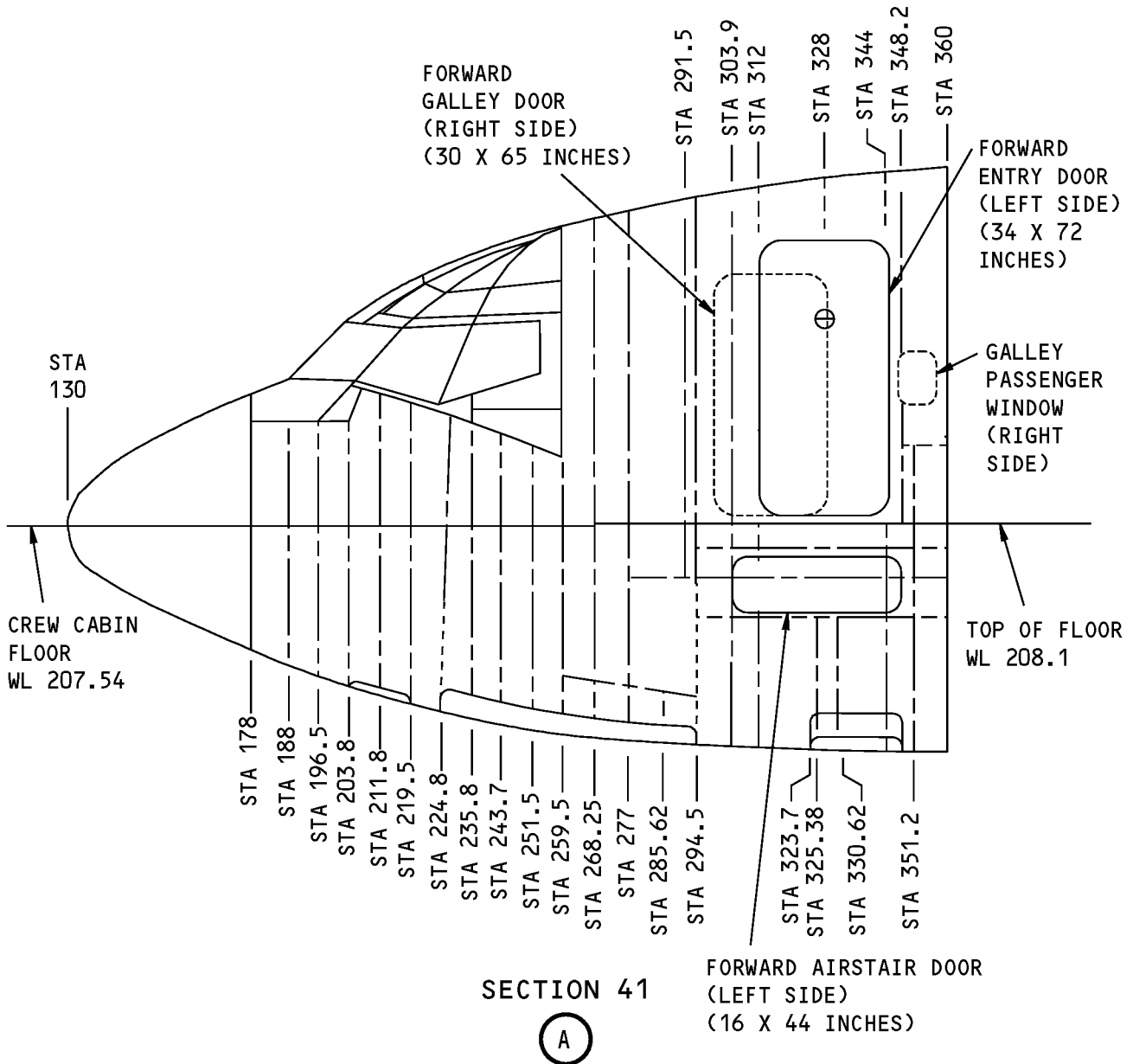
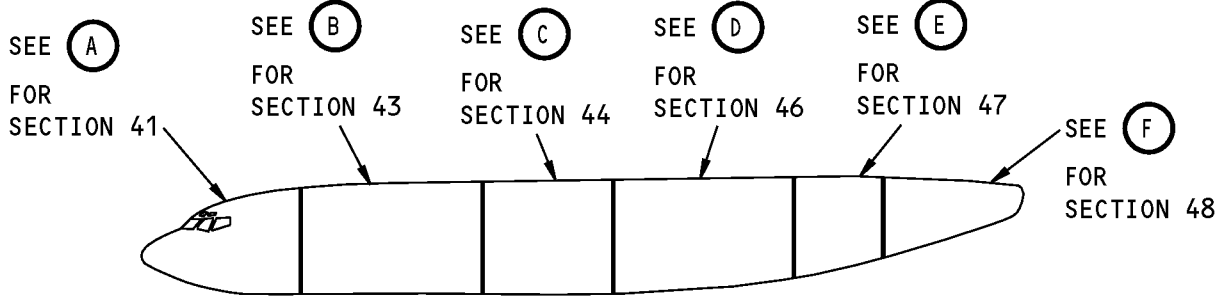
**1. General**

- A. The fuselage station diagram gives you the reference system to find the different airplane components and major structural openings in relation to a datum plane. The datum plane is perpendicular to the centerline and is found 130.00 inches forward of the airplane nose. Refer to:
- (1) Table 1/GENERAL for the reference drawings
  - (2) Fuselage Station Diagram, Figure 1/GENERAL for the fuselage station diagram
  - (3) Fuselage Cross-Section Diagram, Figure 2/GENERAL for the fuselage cross-section diagram.

**Table 1:**

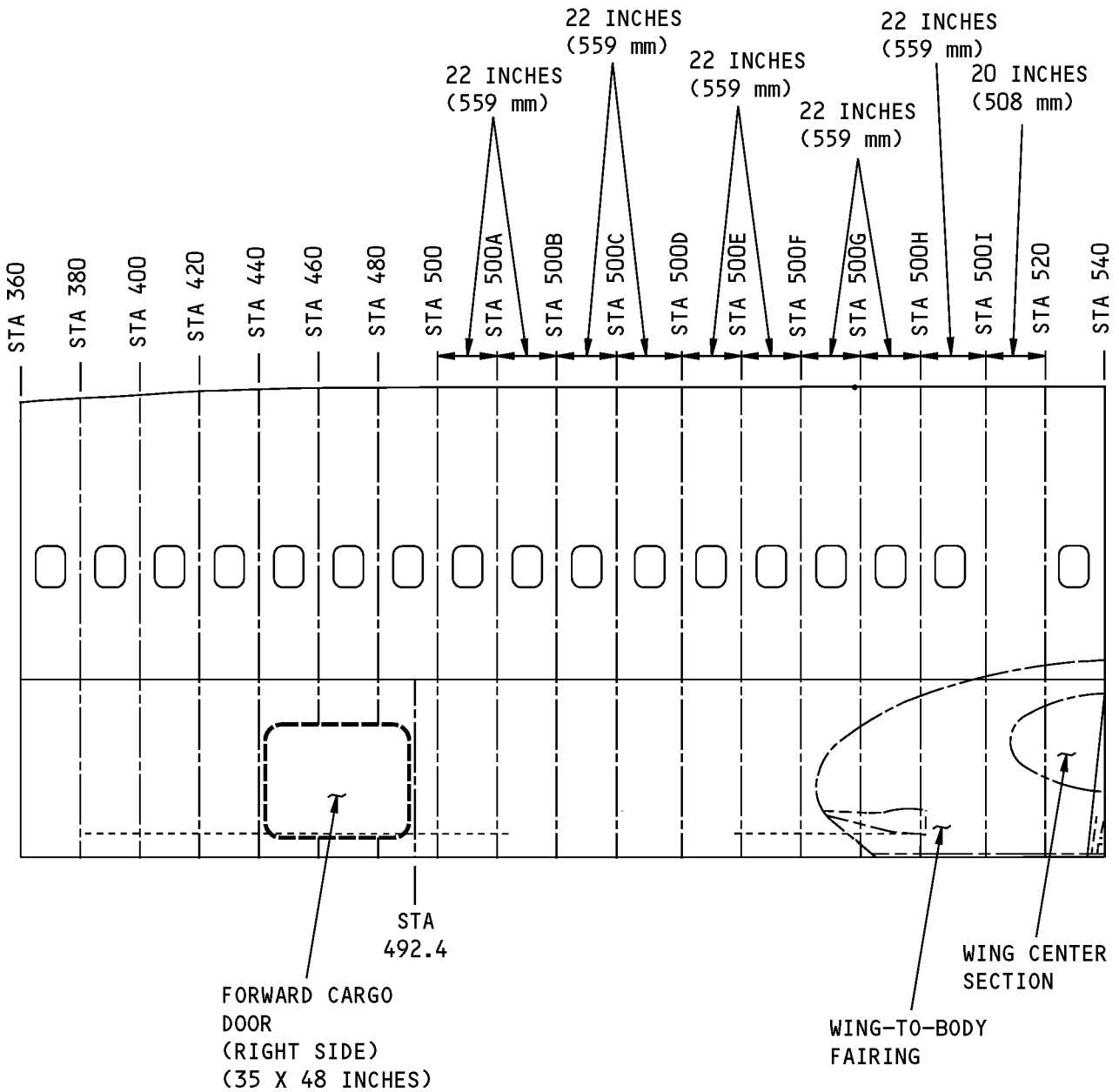
<b>REFERENCE DRAWINGS</b>	
<b>DRAWING NUMBER</b>	<b>TITLE</b>
140A1540	Fuselage Centerline Diagram
—	Fuselage Cross-section Diagram

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**Fuselage Station Diagram  
Figure 1 (Sheet 1 of 6)**

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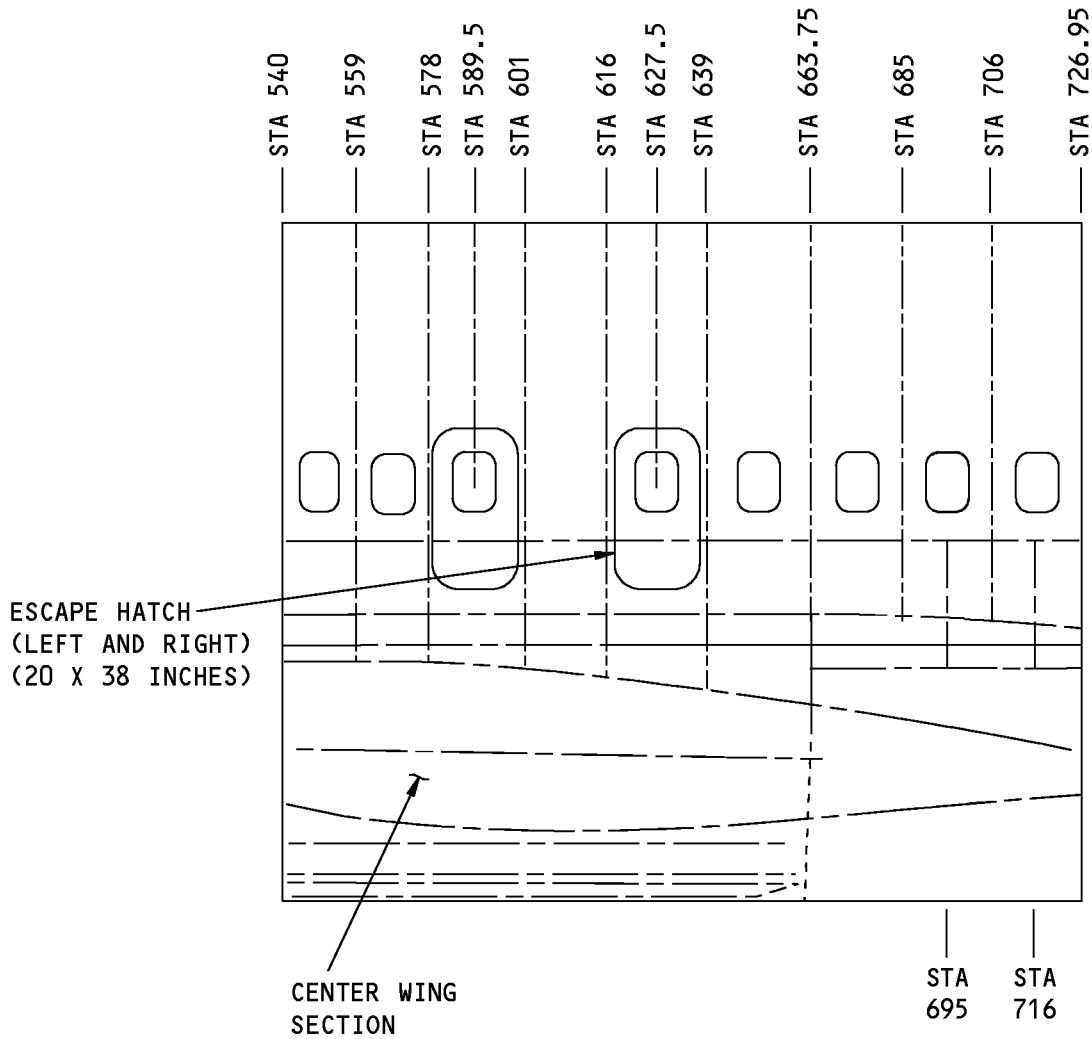
**SECTION 43**

**(B)**

**Fuselage Station Diagram  
Figure 1 (Sheet 2 of 6)**



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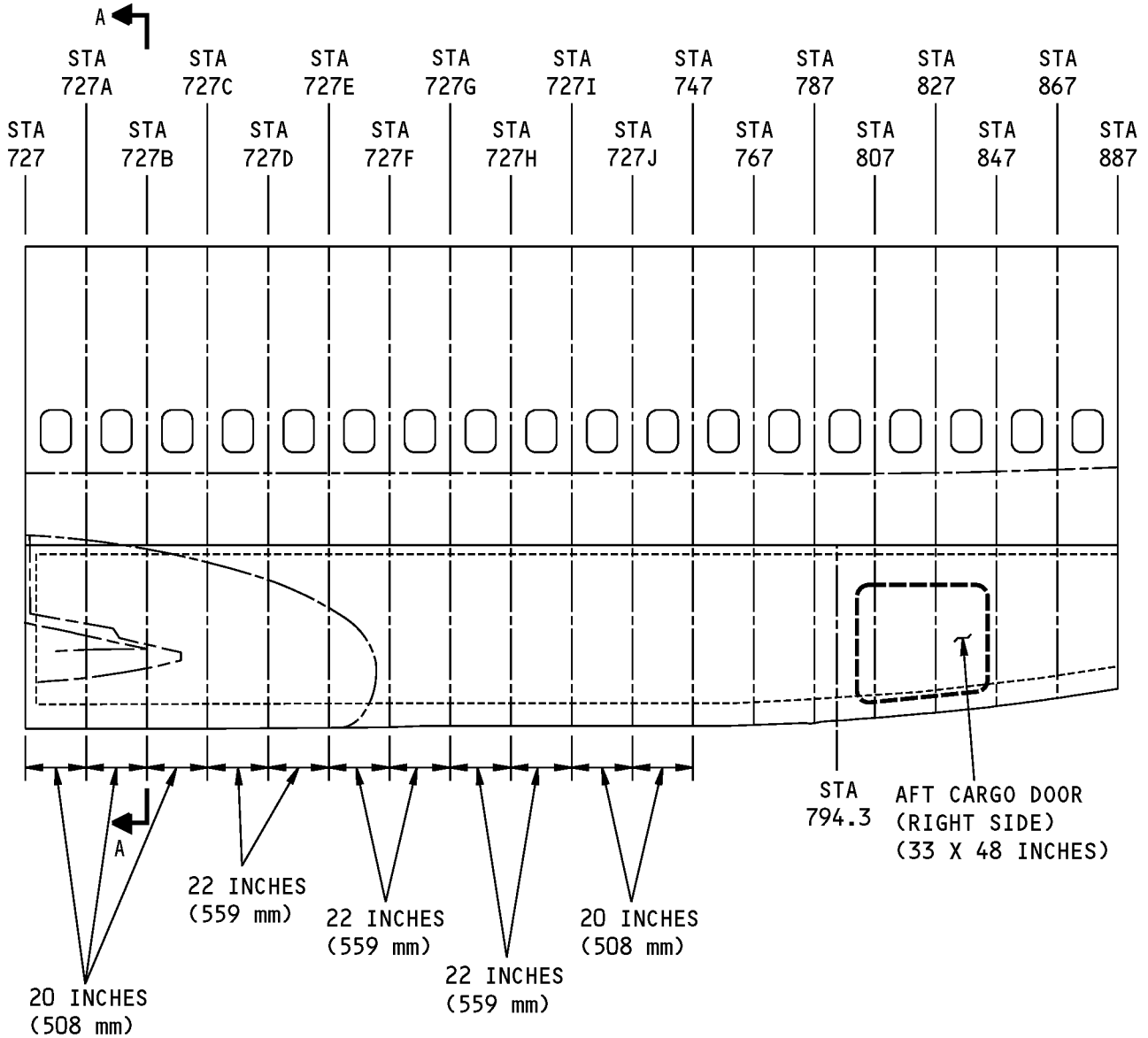


**SECTION 44**

(C)

**Fuselage Station Diagram  
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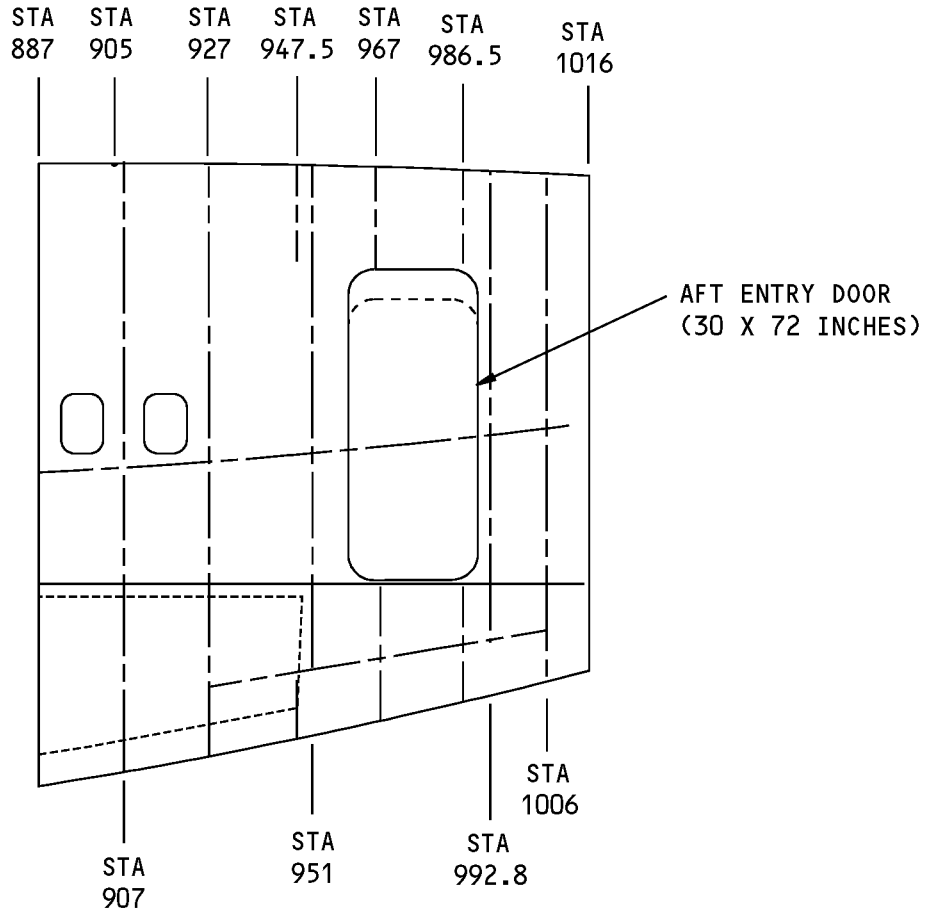
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**D**

**Fuselage Station Diagram  
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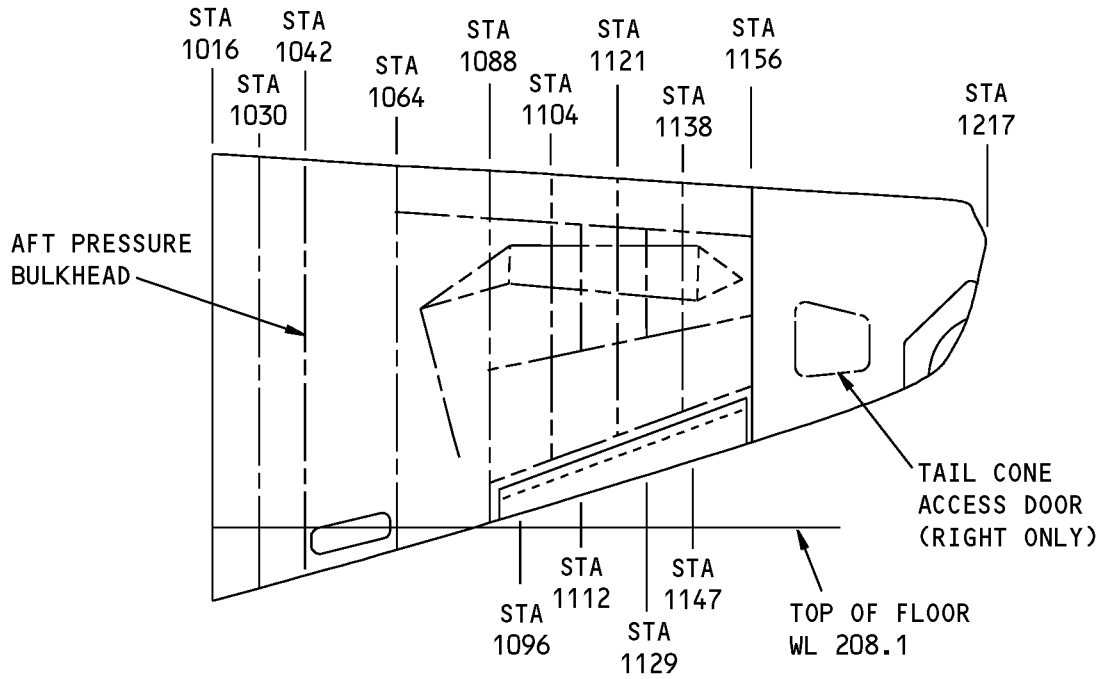


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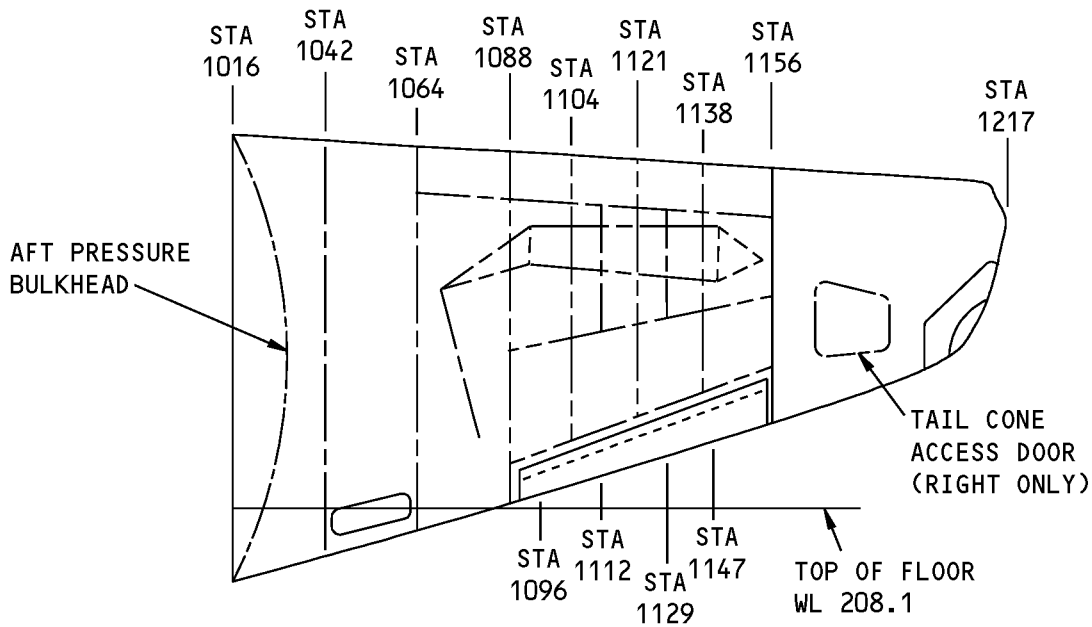
(E)

Fuselage Station Diagram  
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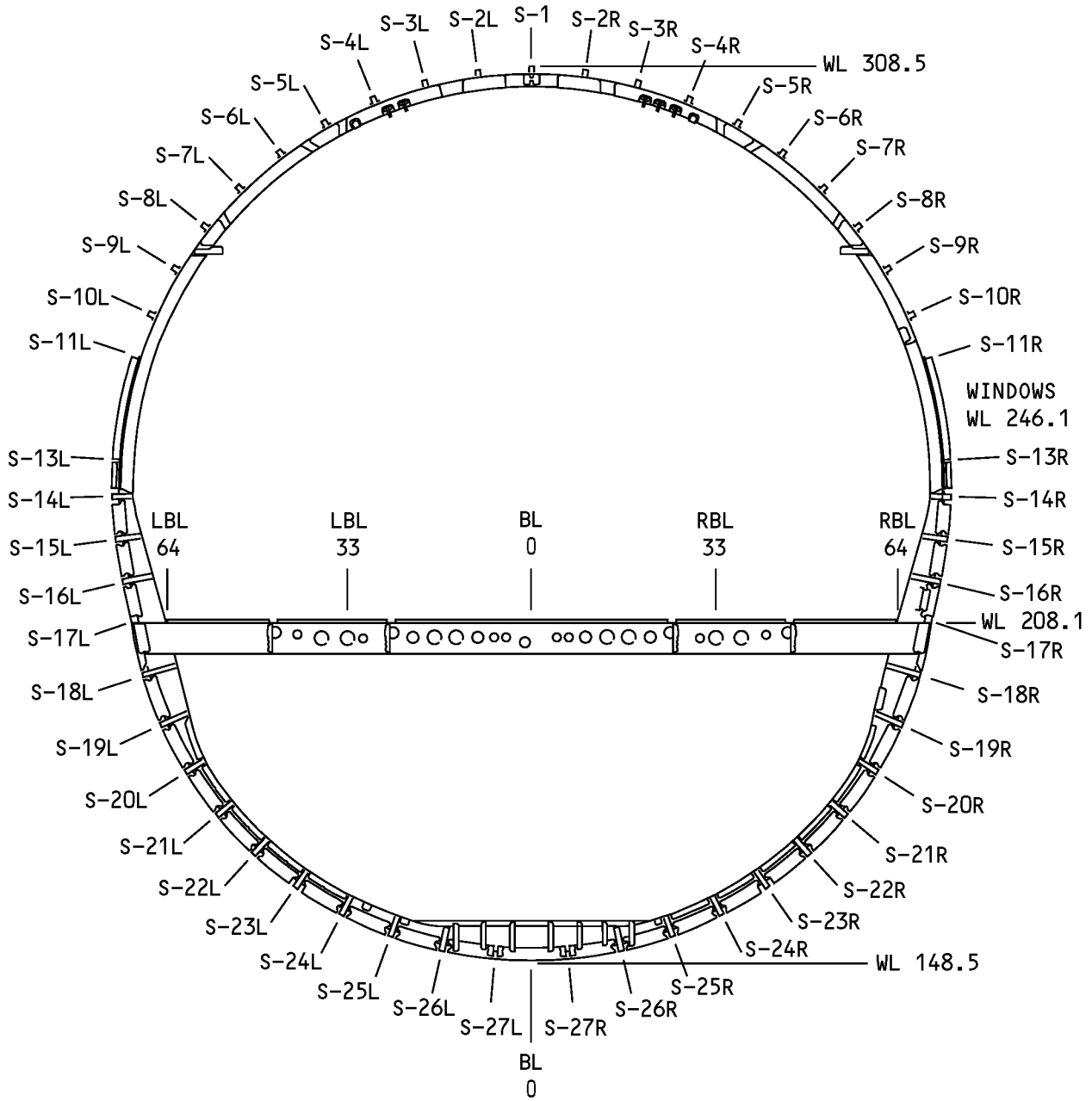
**AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD**



**AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD**

**Fuselage Station Diagram  
Figure 1 (Sheet 6 of 6)**

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A-A

**Fuselage Cross-Section Diagram  
Figure 2**



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## STRUCTURAL REPAIR MANUAL

### ALLOWABLE DAMAGE 1 - FUSELAGE SKIN

#### 1. Applicability

- A. This subject gives the allowable damage and the airplane flight operation limits for the fuselage skins shown in Fuselage Skin, Figure 101/ALLOWABLE DAMAGE 1.

#### 2. General

- A. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the allowable damage zones.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- C. If you find damage, airplane flight operation limits can be necessary. Refer to Paragraph 5./ALLOWABLE DAMAGE 1
- D. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the performance of the airplane. Refer to 51-10-01.

**NOTE:** The areas specified in Paragraph 4./ALLOWABLE DAMAGE 1 will be in a critical or non-critical aerodynamic area. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the different areas.

- E. After you remove the damage on aluminum parts, do the steps that follow:
  - (1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.
  - (2) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
  - (3) Apply BMS 5-95 sealant to the mating surfaces before you assemble a lap joint. Refer to 51-20-05.
- F. Fill the space between the edges of skin panels in the area forward of BS 663.75 with BMS 5-95 sealant. Refer to 51-20-05.
- G. Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
- H. Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

ALLOWABLE DAMAGE 1

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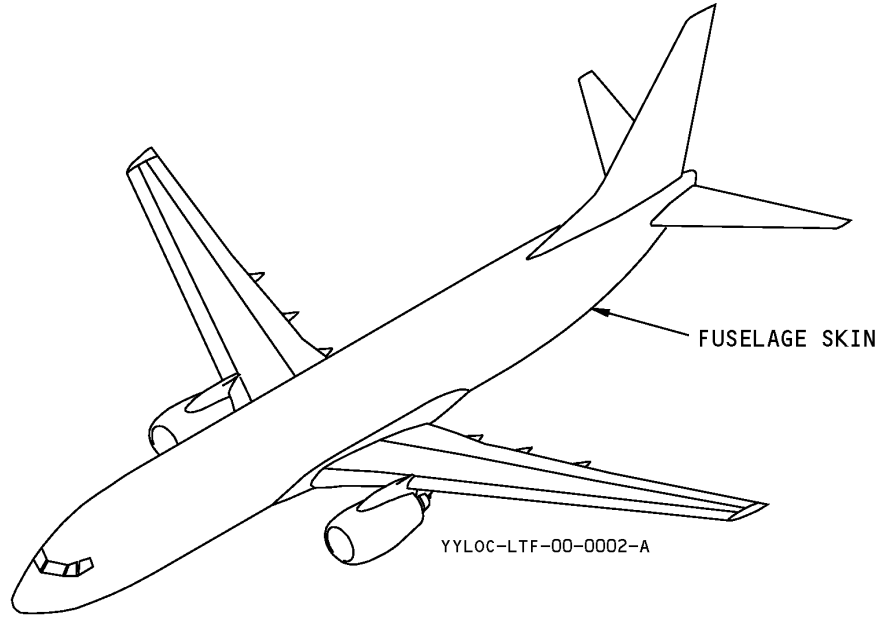
Nov 01/2003

**53-00-01**

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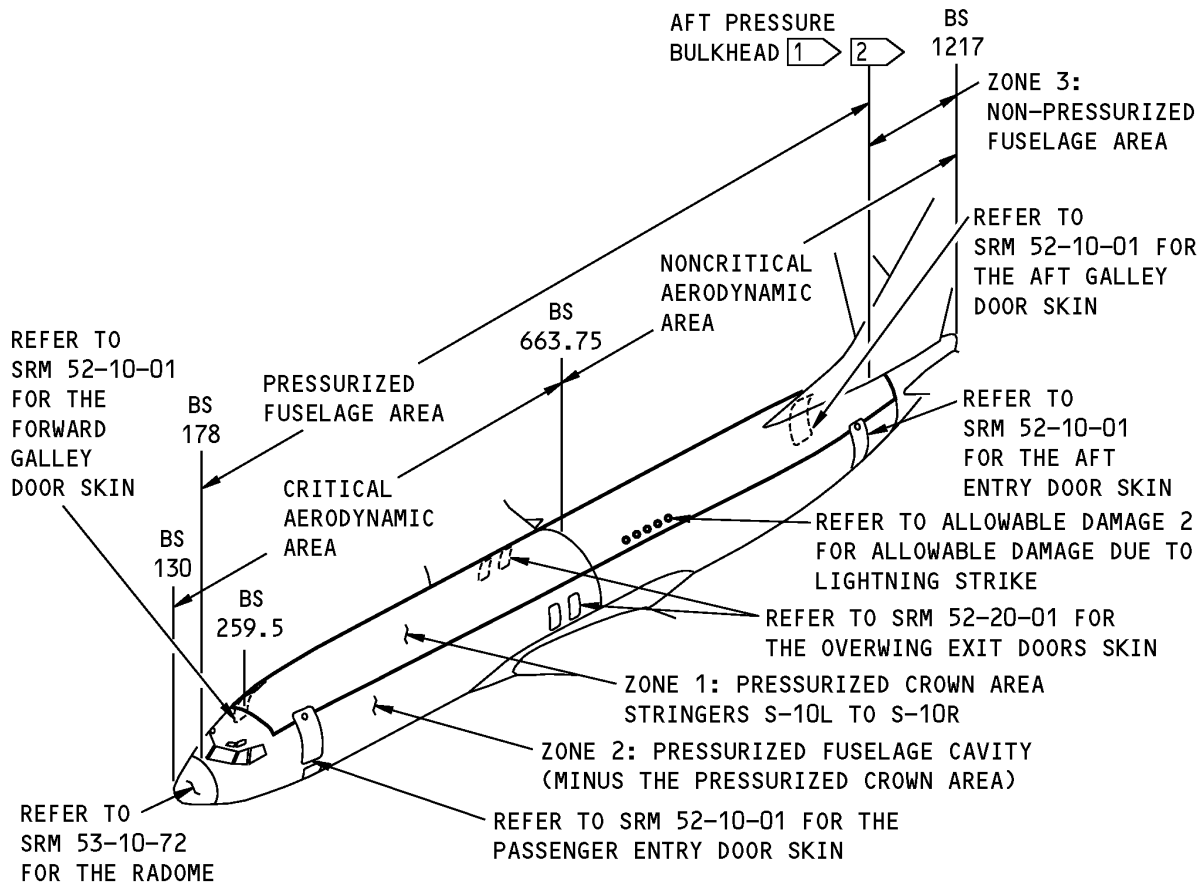


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**Fuselage Skin**  
**Figure 101**

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1 BS 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.

2 BS 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

**Allowable Damage Zones  
Figure 102**

### 3. References

Reference	Title
51-10-01	AERODYNAMIC SMOOTHNESS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-05, GENERAL	Fastener Hole Sizes
51-70-01	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
53-00-01, REPAIR 13	Repair of Lightning Strike Damage in Fuselage Skin
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes





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### STRUCTURAL REPAIR MANUAL

#### 4. Allowable Damage Limits for the Fuselage Skin

**NOTE:** See Paragraph 4.D./ALLOWABLE DAMAGE 1 for allowable damage due to lightning strike to all zones of the fuselage skin and fasteners.

##### A. Zone 1 - (Pressurized Fuselage Crown Area)

###### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B .

###### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E , F, S, T, and U .

###### 1) You can remove the damage from the areas that follow:

- a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice
- b) The sealed surfaces of a skin lap splice.

###### 2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

**NOTE:** When you calculate the depth of damage removal, use the skin thickness given in the applicable identification subject or engineering drawing.

- a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.
- b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.

- (b) If you remove corrosion damage that goes across the head of a countersink rivet, replace the rivet.

- (c) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.

###### 1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.

###### 2) The countersink depth must not be more than 80 percent of the total thickness of the bonded skin assembly.

###### 3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

**NOTE:** A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

**Table 101:**

REPAIR RIVETS	
INITIAL RIVET	REPAIR RIVET
BACR15GF5D	BACR15FT7D
BACR15GF6D	BACR15FT8D



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- (3) Dents:
- (a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, Paragraph 4./ALLOWABLE DAMAGE 1
- CAUTION:** DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.
- (b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G .
- 1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:
- a) There are no loose or missing fasteners
- b) There are no damaged fastener holes
- c) There are no creases, gouges or cracks near the dent
- d) The damage does not go across a stringer, frame, or intercostal
- e) You do not fill the dent
- f) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals that follow:
- < 1 > For airplanes that have completed Service Bulletin 737-21-1149, inspect each 2500 flight cycle interval or more frequently.
- < 2 > For airplanes that have not completed Service Bulletin 737-21-1149, inspect each 5000 flight cycle interval or more frequently.
- (c) An "oilcan" condition is permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G if:
- 1) You make an inspection of the damage at the flight cycle intervals that follow:
- a) For airplanes that have completed Service Bulletin 737-21-1149, inspect the damage every 400 flight cycle intervals.
- b) For airplanes that have not completed Service Bulletin 737-21-1149, inspect the damage every 800 flight cycle intervals.
- (4) Holes and Punctures are not permitted.
- (5) Wrinkles and Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if the damage does not go in or through a fastener hole.
- (6) Unbonded areas:
- (a) Unbonded areas in the skin-to-bear strap bonds at the forward and aft entry and galley door surround structure are permitted.
- 1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.
- (b) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .
- 1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

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### B. Zone 2 - (Pressurized Fuselage not in the Crown Area)

#### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B.
- (b) Remove the damage as shown in Figure 103, Details P, Q, and R for the fuselage skin areas adjacent to the forward and aft cargo doors. Make sure to remove the damage with a surface finish of 63 Ra or better. For Figure 103, Detail Q, do a High Frequency Eddy Current (HFEC) inspection of the reworked area of the skin and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16.

- 1) Replace any fasteners in the damaged area with initial type drawing fasteners in a shifted transition fit hole. Use an interference between 0.0005 and 0.0045 inch. Refer to 51-40-05, GENERAL.

**NOTE:** Install a SRM approved hex drive bolt and nut to damaged areas along the aft edge of the door cutout as given in Figure 103, Detail P that is common to a frame outer chord fastener. Torque as given in BAC5004-2 if the surface sealant has been applied again between the frame chord and the adjacent skin surfaces.

#### (2) Nick, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as given in Figure 103, Details P, Q, and R for fuselage skin areas adjacent to the forward and aft cargo doors. Make sure to remove the damage with a surface finish of 63 Ra or better. For Figure 103, Detail Q, do a High Frequency Eddy Current (HFEC) inspection of the reworked area of the skin and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16.

- 1) Replace any fasteners in the damaged area with initial type drawing fasteners in a shifted transition fit hole. Use an interference between 0.0005 and 0.0045 inch. Refer to 51-40-05, GENERAL.

**NOTE:** Install a SRM approved hex drive bolt and nut to damaged areas along the aft edge of the door cutout as given in Figure 103, Detail P that is common to a frame outer chord fastener. Torque as given in BAC5004-2 if the surface sealant has been applied again between the frame chord and the adjacent skin surfaces.

- (b) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E, S, T, and U.

- 1) You can remove the damage from the areas that follow:

- a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice.
- b) The sealed surfaces of a skin lap splice.

- 2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

**NOTE:** When you calculate the depth of damage removal, use the thickness given in the applicable identification subject or engineering drawing.

- a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.

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- b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.
- (c) If you remove corrosion damage that goes across the head of a countersink rivet, replace the rivet.
- (d) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.
  - 1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.
  - 2) The countersink depth must not be more than 80 percent of the total thickness of a bonded skin assembly.
  - 3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

**NOTE:** Protruding head fasteners are not permitted near static ports or angle of attack sensors where external repairs are not permitted. Refer to 51-10-01. A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

(3) Dents:

- (a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, Paragraph 4./ALLOWABLE DAMAGE 1

**CAUTION:** DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.

- (b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G .
  - 1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:
    - a) There are no loose or missing fasteners
    - b) There are no damaged fastener holes
    - c) There are no creases, gouges, or cracks near the dent
    - d) The damage does not go across stringers, frames, or intercostals
    - e) You do not fill the dent
    - f) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals that follow:
      - < 1 > For airplanes that have completed Service Bulletin 737-21-1149, inspect each 2500 flight cycle interval or more frequently.
      - < 2 > For airplanes that have not completed Service Bulletin 737-21-1149, inspect each 5000 flight cycle interval or more frequently.
- (c) An "oilcan" condition is permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G if:
  - 1) You make an inspection of the damage at the flight cycle intervals that follow:

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- a) For airplanes that have completed Service Bulletin 737-21-1149, inspect the damage every 400 flight cycle intervals.
  - b) For airplanes that have not completed Service Bulletin 737-21-1149, inspect the damage every 800 flight cycle intervals.
- (4) Wrinkles and Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:
- (a) They do not go in or through a fastener hole
  - (b) They do not cross stringers, intercostals or frame
  - (c) There are no cracks near the wrinkles or buckles
  - (d) They are not more than 0.15 inch in depth as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H
  - (e) There are no loose or damaged fasteners
  - (f) You make an inspection of the dent for corrosion and cracks at the flight cycle intervals that follow:
    - 1) For airplanes that have completed Service Bulletin 737-21-1149, inspect each 2500 flight cycle interval or more frequently.
    - 2) For airplanes that have not completed Service Bulletin 737-21-1149, inspect each 5000 flight cycle interval or more frequently.
- (5) Holes and Punctures are not permitted.
- (6) Unbonded areas:
- (a) Unbonded areas in the skin-to-bear strap bonds at the forward and aft entry and galley door surround structure are permitted.
    - 1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.
  - (b) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .
    - 1) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.
- C. Zone 3 - (Non-pressurized Fuselage)
- (1) Cracks:
- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A and B .
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , E, S, T, and U .
    - 1) You can remove the damage from the areas that follow:
      - a) The inner and outer surfaces of the solid skin, a bonded skin assembly, or a skin lap splice
      - b) The sealed surfaces of a skin lap splice.

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- 2) The total depth of the damage removed at each location must be less than or equal to the percentage of the skin thickness at the damage location.

**NOTE:** When you calculate the depth of damage removal, use the skin thickness given in the applicable identification subject or engineering drawing.

- a) When you remove damage on a solid skin, use the skin thickness at the damage location to calculate the percentage of damage removal.
  - b) When you remove damage on a bonded skin assembly, use the thickness of the skin layer from which you removed the damage to calculate the percentage of damage removal.
- (b) If you remove a countersink rivet to remove the damage, install a new rivet of the same size and type as the initial rivets. Use an oversize rivet as necessary.
- 1) The countersink depth must not be more than 80 percent of the thickness of the solid skin.
  - 2) The countersink depth must not be more than 80 percent of the total thickness of a bonded skin assembly.
  - 3) You can replace the countersink rivet with a protruding head rivet. Refer to Table 101/ALLOWABLE DAMAGE 1 for the type and size of protruding head rivet to use.

**NOTE:** A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

(3) Dents

- (a) Dents in extra critical areas near the air data sensors must be reworked to initial contour as described in 51-10-01, Paragraph 4./ALLOWABLE DAMAGE 1

**CAUTION:** DO NOT FILL DENTS THAT ARE MORE THAN THE ALLOWABLE DAMAGE LIMITS. IF YOU DO NOT OBEY, THE RESULT CAN BE AN UNSATISFACTORY CONDITION THAT CAN CAUSE MORE DAMAGE TO THE AIRPLANE STRUCTURE.

- (b) Other dents not near the air data sensors are permitted as given in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G .

- 1) A dent larger than the limits shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G is permitted if:

- a) There are no loose or missing fasteners
- b) There are no damaged fastener holes
- c) There are no creases, gouges, or cracks near the dent
- d) You do not fill the dent
- e) You make an inspection of the dent for corrosion and cracks at each 5000 flight cycle interval or more frequently.

- (c) An "oilcan" condition is permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail G if:

- 1) You inspect the damage at every 800 flight cycle interval.

(4) Holes and Punctures are permitted if:

- (a) They are a maximum of 0.25 inch in diameter



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- (b) They are a minimum of 1.00 inch away from a fastener hole, an edge, or other damage
- (c) They are a filled with a 2017-T3 or 2017-T4 aluminum protruding head rivet installed without sealant.
- (5) Wrinkles or Buckles are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:
  - (a) The damage does not go in or through a fastener hole
  - (b) You make an inspection of the damage for corrosion and cracks at each 5000 flight cycle interval or more frequently.
- (6) Unbonded areas in skin-to-doubler bonds are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I .
  - (a) You must apply BMS 3-23 corrosion inhibiting compound to an unbonded area that is at an edge.

**Table 102:**

<b>BLENDING LIMITS FOR FIGURE 104</b>				
<b>BODY SECTION</b>	<b>STRINGERS</b>	<b>SIDE OF THE FUSELAGE</b>	<b>BODY STATION</b>	<b>MAXIMUM DAMAGE DEPTH PERMITTED</b>
43	S-17 TO S-18 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	L	STA 500E TO STA 500F	0.05T
43	S-21 TO S-22 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	L	STA 500F TO STA 500G	0.05T
43	S-13 TO S-15	BOTH	STA 500H TO STA 500I	0.05T
43	S-13 TO S-17	R	STA 520 TO STA 540	0.05T
43	S-14 TO S-18	L	STA 520 TO STA 540	0.05T
46	S-2 TO S-4 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 847 TO STA 887	0.05T
46	S-1 TO S-4 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 847 TO STA 887	0.05T
46	S-3 TO S-4	L	STA 807 TO STA 847	0.05T
46	S-5 TO S-7 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 767 TO STA 807	0.05T



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BLENDING LIMITS FOR FIGURE 104				
BODY SECTION	STRINGERS	SIDE OF THE FUSELAGE	BODY STATION	MAXIMUM DAMAGE DEPTH PERMITTED
46	S-5 TO S-7 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 727I TO STA 807	0.05T
46	S-6 TO S-7	L	STA 867 TO STA 887	0.05T
46	S-8 TO S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 727H TO STA 727I	0.05T
46	S-7 TO S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	BOTH	STA 727H TO STA 727I	0.05T
46	S-8 TO S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	L	STA 727H TO STA 727L	0.05T
46	S-7 TO S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	R	STA 747 TO STA 767	0.05T
46	S-14 TO S-16	R	STA 827 TO STA 847	0.05T
46	S-17 TO S-19	BOTH	STA 727A TO STA 727B	0.05T
46	S-25 TO S-26	L	STA 727E TO STA 727G	0.05T

D. For allowable damage for heat damage due to lightning strike do as follows:

**NOTE:** These limits are applicable to all Zones of the aircraft.

(1) Do the following general inspections:

- (a) Do a detail visual inspection of the damage with a minimum of 10X magnification in a 3 inch radius area around the damage to make sure there are no cracks.
- (b) Do a general visual inspection of the skin within a 20 inch radius around the damage to make sure there are no cracks or corrosion.

(2) For lightning strike damage to the fuselage skin away from fasteners, you can operate the airplane for 350 flight cycles if you meet the following conditions:

- (a) The lightning strike damage is equal to or less than 0.250 inch in diameter,
- (b) The distance between any two lightning strike damages is greater than 3 inches, and
- (c) The lightning strike damage is a minimum of 1 inch away from an edge of a part or fasteners.
- (d) No skin material is missing.



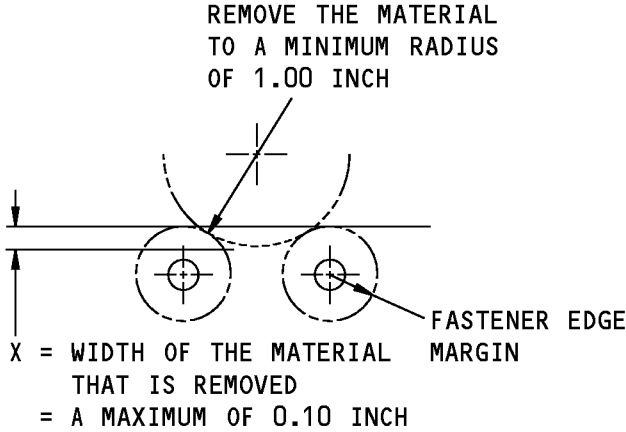


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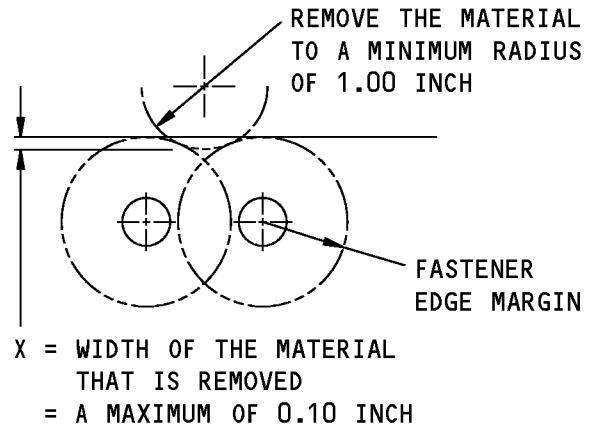
- (3) For lightning strike damage to the fuselage at fasteners you can operate the airplane for up to 350 flight cycles if you meet the following conditions:
  - (a) The damage at a fastener is within the damage rating limits given in Figure 103, Details L, M, N, and O.
  - (b) You do a close visual inspection to the damage area to make sure there are no exposed countersink fasteners or further damage.
  - (c) You apply all initial production drawing finishes as necessary.
- (4) You must do the repair given in 53-00-01, REPAIR 13 at or before 350 flight cycles for all lightning strike damages.

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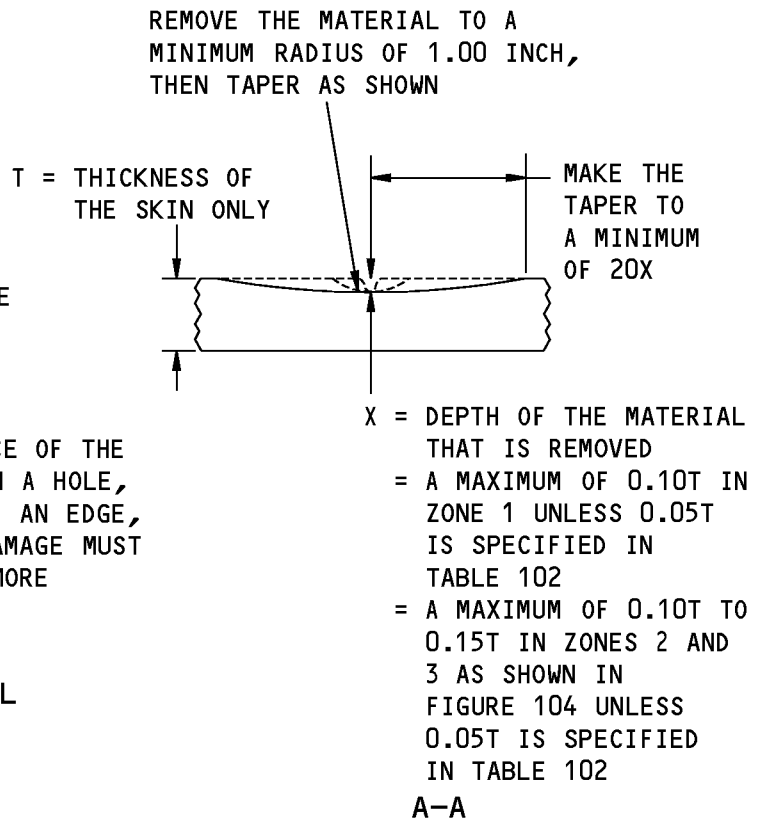
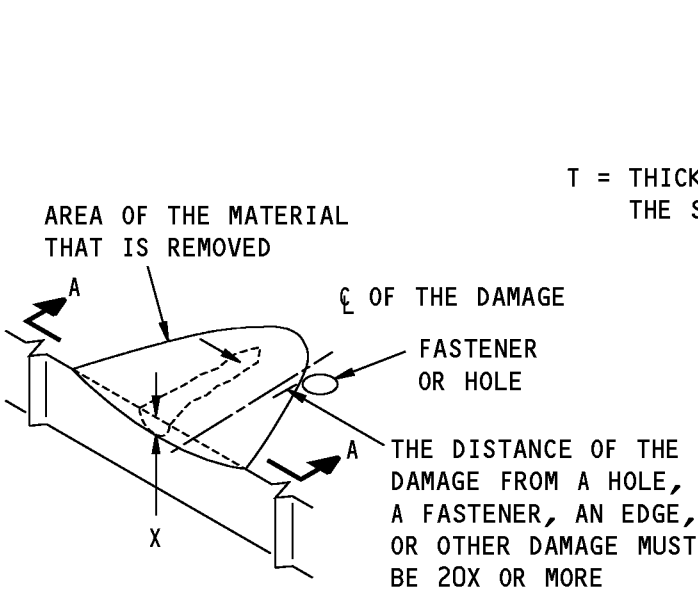
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



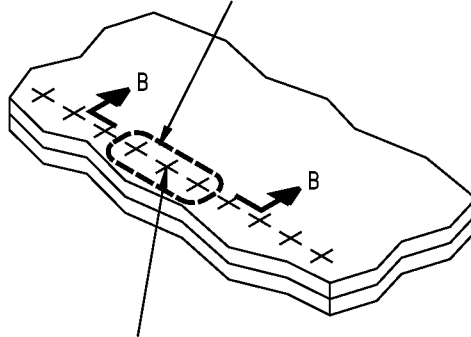
REMOVAL OF DAMAGED MATERIAL ON A SURFACE

(C)

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 17)**

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



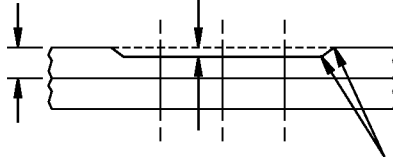
REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON A SURFACE**



X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10T IN ZONE 1 UNLESS 0.05T IS SPECIFIED IN TABLE 102  
 = A MAXIMUM OF 0.10T TO 0.15T IN ZONES 2 AND 3 AS SHOWN IN FIGURE 104 UNLESS 0.05T IS SPECIFIED IN TABLE 102

T = THICKNESS OF THE MATERIAL



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

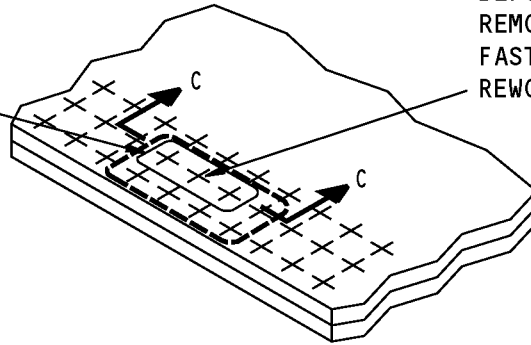
B-B

**Allowable Damage Limits  
 Figure 103 (Sheet 2 of 17)**

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STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF EIGHT (3RD FASTENER ROW NOT INCLUDED) IS PERMITTED TO A MAXIMUM DEPTH OF X

REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE



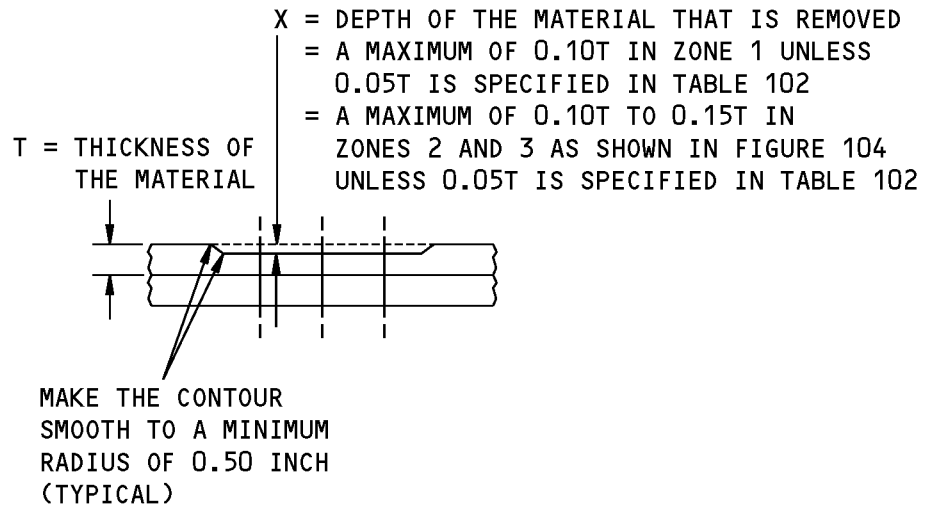
**NOTE:** DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE. DAMAGE REMOVAL IS PERMITTED ON THE OTHER SURFACES AS SHOWN IN FIGURE 104.

MATERIAL REMOVAL IS NOT PERMITTED IN THE 3RD ROW FROM THE EDGE ON LAP SPLICE.

BUTT SPLICE IS SIMILAR EXCEPT: MATERIAL REMOVAL IS NOT PERMITTED IN THE 2ND ROW OF A 2-ROW BUTT. MATERIAL REMOVAL IS NOT PERMITTED IN THE 3RD ROW OF A 3-ROW BUTT.

**REMOVAL OF DAMAGE AROUND THE FASTENERS  
OF AN EDGE OR A SURFACE AT A LAP SPLICE**

E



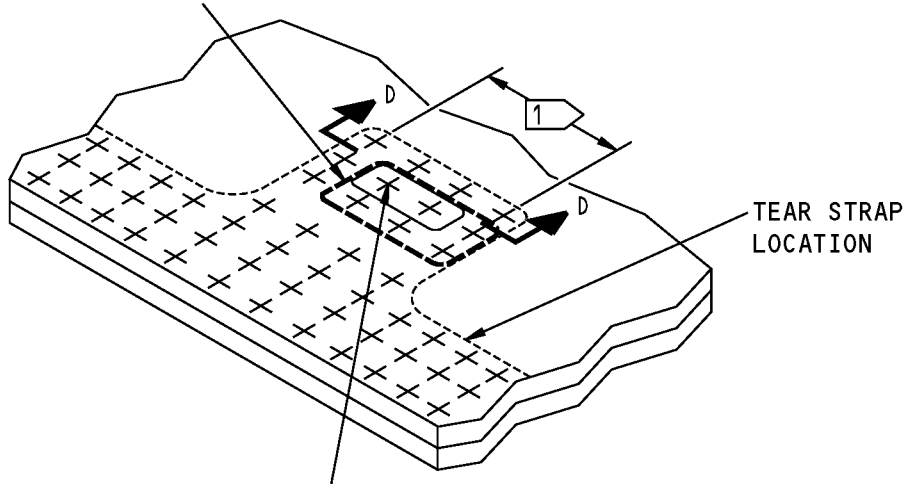
**NOTE:** REFER TO TABLE 102

C-C

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 17)**

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND TWO FASTENERS IN ALL GROUPS OF SIX (FIRST FASTENER ROW NOT INCLUDED) IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

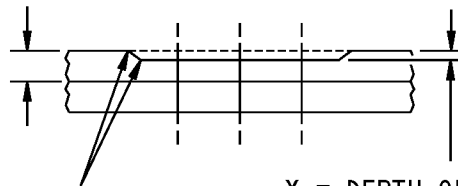
**NOTE:** MATERIAL REMOVAL NOT PERMITTED IN THE FIRST FASTENER ROW FROM THE EDGE OF THE TEAR STRAP TAB. DAMAGE REMOVAL IS SHOWN ON THE OUTER SURFACE.

**1** THERE ARE TEAR STRAPS THAT HAVE FIVE FASTENERS ACROSS INSTEAD OF FOUR.

**REMOVAL OF DAMAGE AROUND THE FASTENERS AT A TEAR STRAP TAB**

**F**

T = THICKNESS OF THE MATERIAL



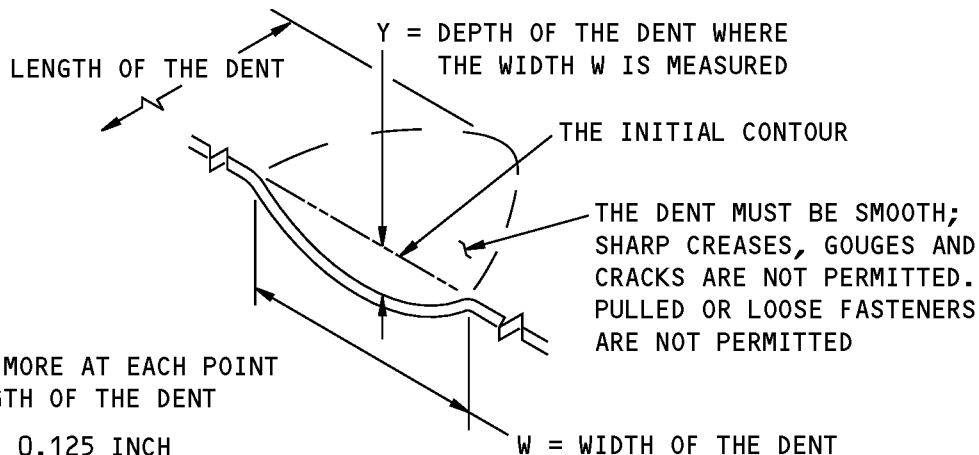
MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

X = DEPTH OF THE MATERIAL THAT IS REMOVED = A MAXIMUM OF 0.10T IN ZONE 1 UNLESS 0.05T IS SPECIFIED IN TABLE 102

D-D

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 17)**

**STRUCTURAL REPAIR MANUAL**



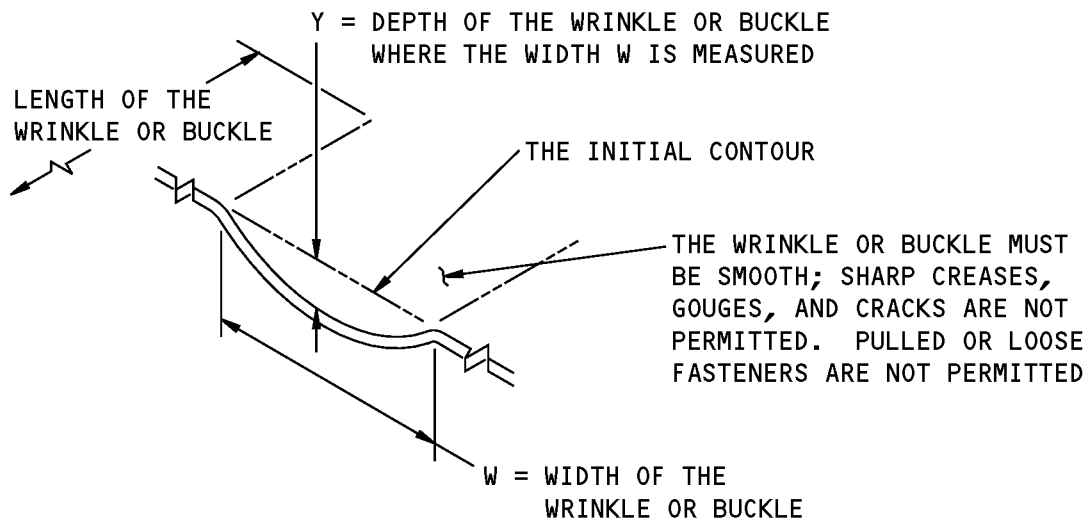
$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE DENT

Y = A MAXIMUM OF 0.125 INCH

**NOTE:** IF YOU HAVE AN "OILCAN" CONDITION YOU CAN PUT THE SKIN BACK TO ITS INITIAL CONDITION ONLY IF THE SKIN MOVES UNDER NORMAL HAND PRESSURE.

**DENT THAT IS PERMITTED**

(G)



Y = A MAXIMUM OF 0.15 INCH

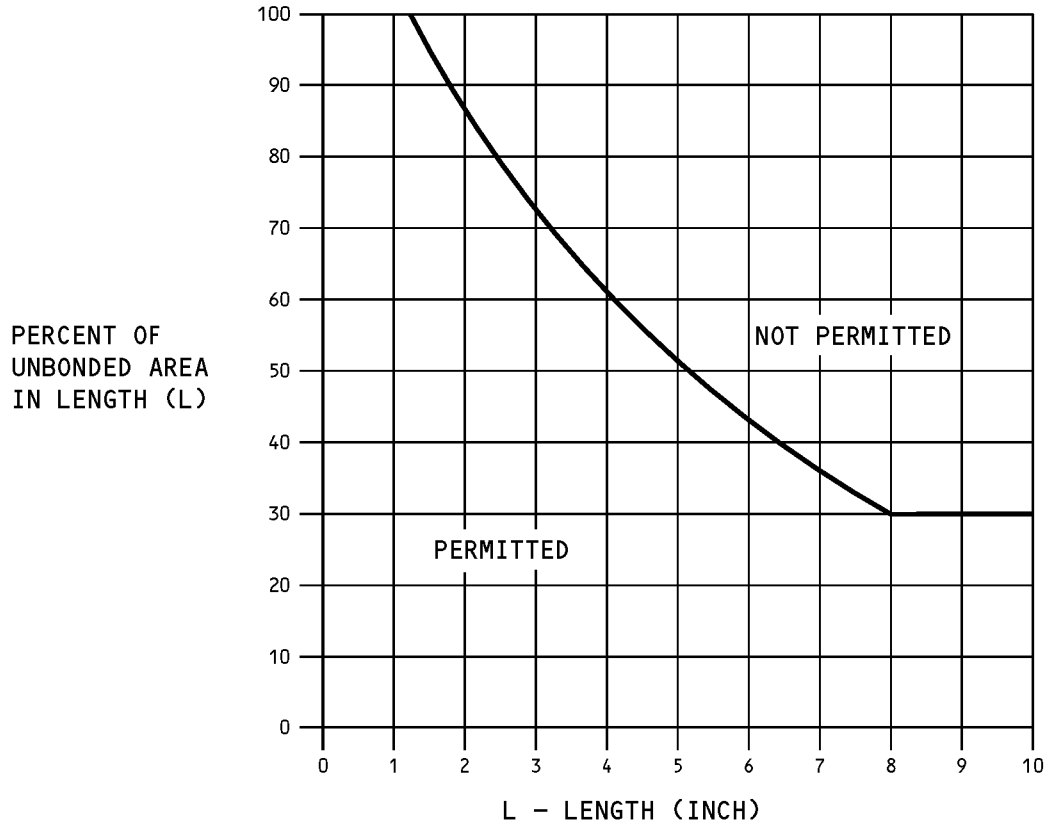
$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE WRINKLE OR BUCKLE

**WRINKLES OR BUCKLES THAT ARE PERMITTED**

(H)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 17)**

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STRUCTURAL REPAIR MANUAL**



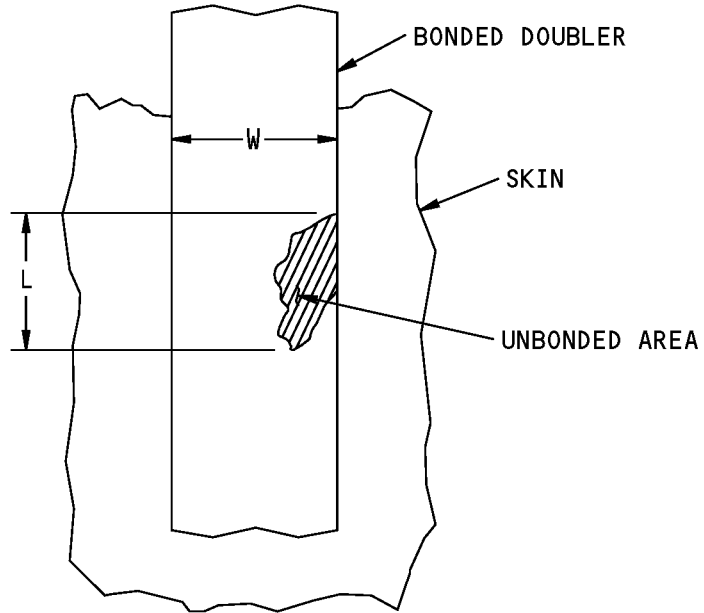
**NOTE:** REFER TO DETAILS J AND K FOR THE DEFINITIONS OF THE LENGTH (L) AND THE UNBONDED AREA.

**UNBONDED AREAS IN BONDED DOUBLERS**



**Allowable Damage Limits  
Figure 103 (Sheet 6 of 17)**

**737-800  
STRUCTURAL REPAIR MANUAL**



$$\text{PERCENT OF UNBONDED AREA IN LENGTH (L)} = \frac{\text{UNBONDED AREA}}{W \times L} \times 100$$

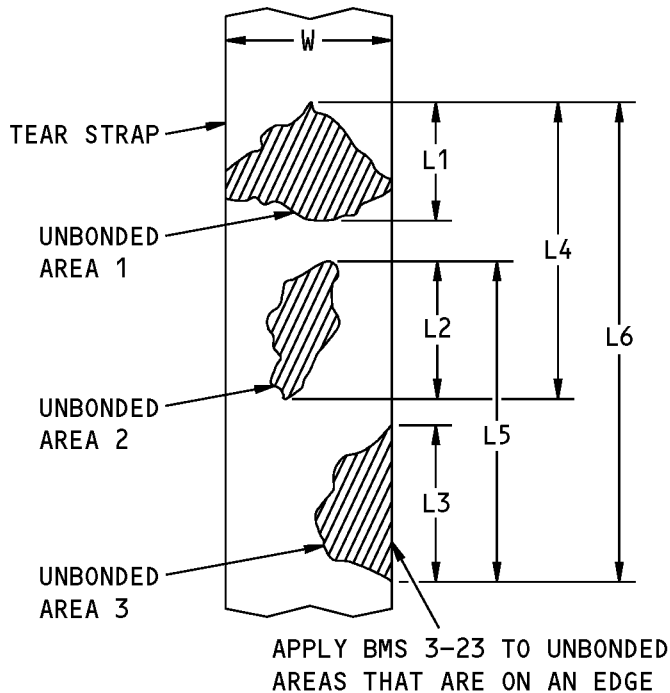
ONE UNBONDED AREA



**Allowable Damage Limits  
Figure 103 (Sheet 7 of 17)**



**737-800  
STRUCTURAL REPAIR MANUAL**



PERCENT OF UNBONDED AREA IN LENGTH L

$$= \frac{\text{AREA 1}}{W \times L_1} \times 100$$

$$= \frac{\text{AREA 2}}{W \times L_2} \times 100$$

$$= \frac{\text{AREA 3}}{W \times L_3} \times 100$$

$$= \frac{\text{AREA 1} + \text{AREA 2}}{W \times L_4} \times 100$$

$$= \frac{\text{AREA 2} + \text{AREA 3}}{W \times L_5} \times 100$$

$$= \frac{\text{AREA 1} + \text{AREA 2} + \text{AREA 3}}{W \times L_6} \times 100$$

THE PERCENT OF UNBONDED AREA IN ANY LENGTH (L1 THROUGH L6 IN THIS EXAMPLE) SHOULD BE BELOW THE CURVE.

**MORE THAN ONE UNBONDED AREA**



**Allowable Damage Limits  
Figure 103 (Sheet 8 of 17)**



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**STRUCTURAL REPAIR MANUAL**

DAMAGE DESCRIPTION	LIGHTNING STRIKE DAMAGE RATING (LSDR)
EXPOSED COUNTERSINK (WHERE PART OF THE RIVET HEAD MATERIAL IS MISSING) OR MISSING FASTENER. FOR A MISSING FASTENER BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13.	15
IF THERE ARE MORE THAN FIVE (5) CONSECUTIVE DAMAGED FASTENERS IN A ROW, <ul style="list-style-type: none"> <li>• APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT</li> </ul>	15
IF THERE ARE BETWEEN 3 AND 5 CONSECUTIVE DAMAGED FASTENERS, <ul style="list-style-type: none"> <li>• APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT</li> </ul> IF THERE ARE MORE THAN EIGHT (8) CONSECUTIVE DAMAGED FASTENERS, <ul style="list-style-type: none"> <li>• APPLIES TO LAP JOINT NON-CRITICAL ROW</li> </ul>	5
IF THERE ARE 1 TO 2 CONSECUTIVE DAMAGED FASTENERS, <ul style="list-style-type: none"> <li>• APPLIES TO LAP JOINT CRITICAL ROW, BUTT JOINT, SKIN/STRINGER ATTACHMENT</li> </ul> IF THERE ARE 1 TO 8 CONSECUTIVE DAMAGED FASTENERS, <ul style="list-style-type: none"> <li>• APPLIES TO LAP JOINT NON-CRITICAL ROW</li> </ul>	2

**LIGHTNING STRIKE DAMAGE RATING (LSDR)  
(SEE EXAMPLE IN DETAILS N AND O)**



DETAIL LEVEL	MAXIMUM LSDR FOR 10 FLIGHT CYCLE REPAIR LIMIT	MAXIMUM LSDR FOR 350 FLIGHT CYCLE REPAIR LIMIT
SINGLE SKIN PANEL	10 OR MORE	9
AIRPLANE SECTION (SUCH AS 41 SECTION)	15 OR MORE	14

**AIRPLANE ALLOWABLE DAMAGE LIMIT FOR LSDR  
(LIGHTNING STRIKE DAMAGE RATING)  
(SEE EXAMPLE IN DETAILS N AND O)**



**Allowable Damage Limits  
Figure 103 (Sheet 9 of 17)**



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STRUCTURAL REPAIR MANUAL

DAMAGE	SCORE (USE FROM DETAIL L)	REPAIR INTERVAL (USE FROM DETAIL M)
FOR: • LAP JOINT NON-CRITICAL ROW, 11 FASTENERS • BUTT JOINT, 2 FASTENERS	7	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR: • SKIN/STRINGER, 2 FASTENERS • LAP JOINT CRITICAL ROW, 5 FASTENERS • LAP JOINT NON-CRITICAL ROW, 4 FASTENERS	9	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR 1 MISSING FASTENER	15	BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13
FOR: • LAP JOINT NON-CRITICAL ROW, 5 FASTENERS • LAP JOINT CRITICAL ROW, 3 FASTENERS • SKIN/STRINGER, 8 FASTENERS	22	REPAIR IN 10 FLIGHT CYCLES OR LESS

PANEL SECTION DAMAGE RATING  
(SAMPLE CALCULATION)

N

Allowable Damage Limits  
Figure 103 (Sheet 10 of 17)

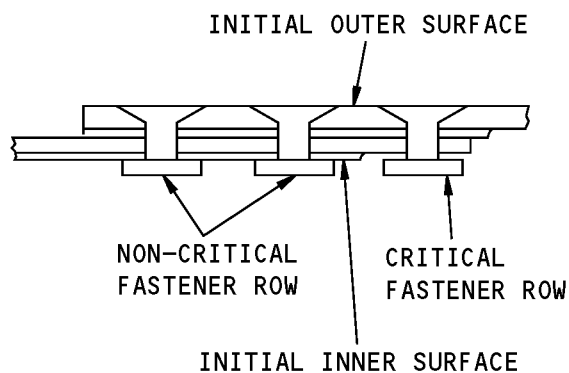
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ALLOWABLE DAMAGE 1  
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STRUCTURAL REPAIR MANUAL**

DAMAGE	SCORE (USE FROM DETAIL L)	REPAIR INTERVAL (USE FROM DETAIL M)
FOR SECTION 41 - 2 PANELS • LAP JOINT NON-CRITICAL ROW, 7 FASTENERS • BUTT JOINT, 4 FASTENERS	7	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR SECTION 48, - 3 PANELS • SKIN/STRINGER, 5 FASTENERS • LAP JOINT CRITICAL ROW, 4 FASTENERS • LAP JOINT NON-CRITICAL ROW, 4 FASTENERS	12	REPAIR IN 350 FLIGHT CYCLES OR LESS
FOR SECTION 41 - 1 PANEL • 1 MISSING FASTENER	15	BEFORE ANY REVENUE FLIGHTS ACCOMPLISH SRM 53-00-01, REPAIR 13

**MAJOR SECTION DAMAGE RATING  
(SAMPLE CALCULATION)**

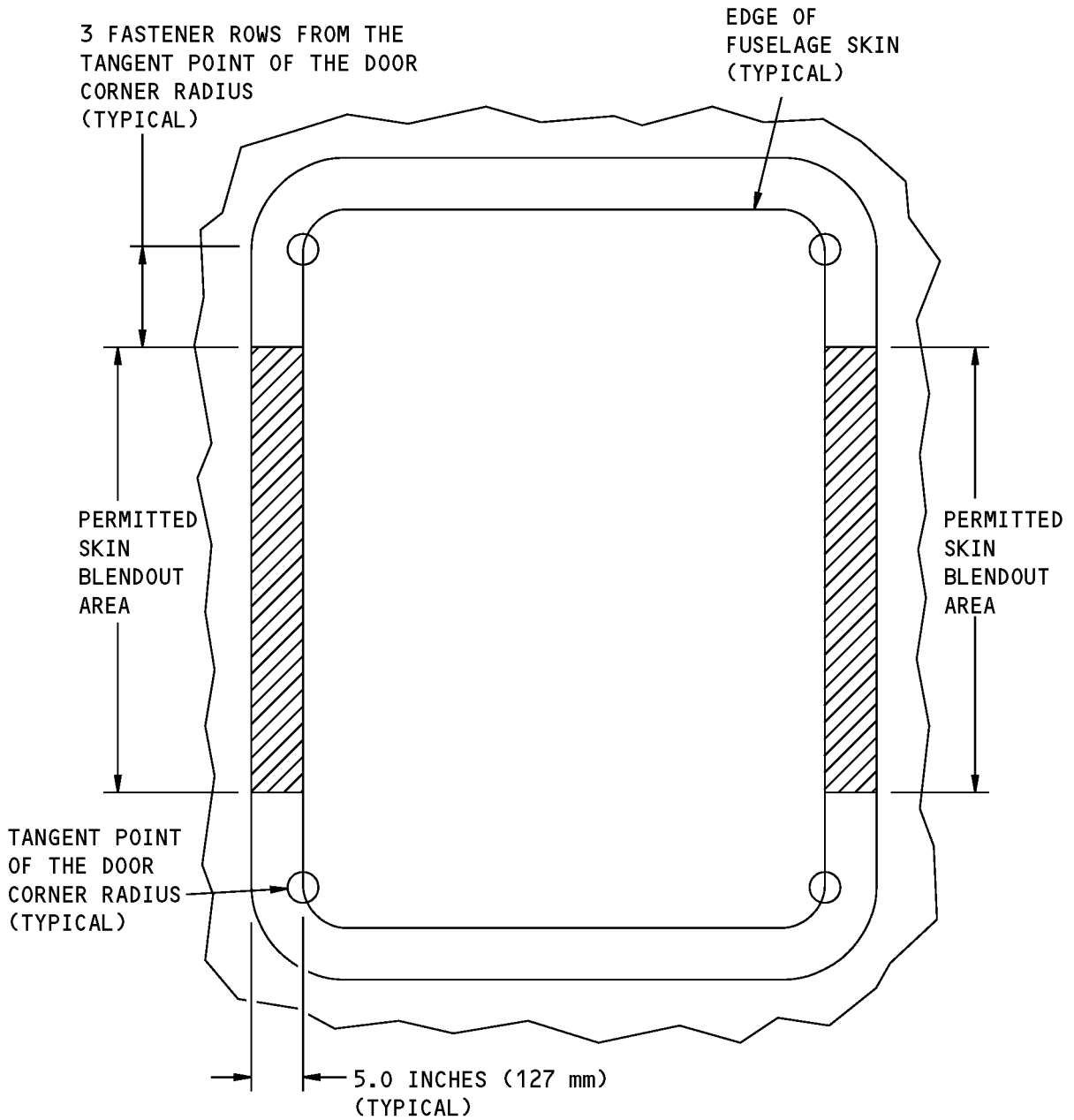


**DEFINITION OF CRITICAL FASTENER ROW**



**Allowable Damage Limits  
Figure 103 (Sheet 11 of 17)**

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STRUCTURAL REPAIR MANUAL**



 ALLOWABLE DAMAGE BLENDOUT AREA

**FORWARD AND AFT CARGO DOOR CUTOUT BLENDOUT ZONES**

**P**

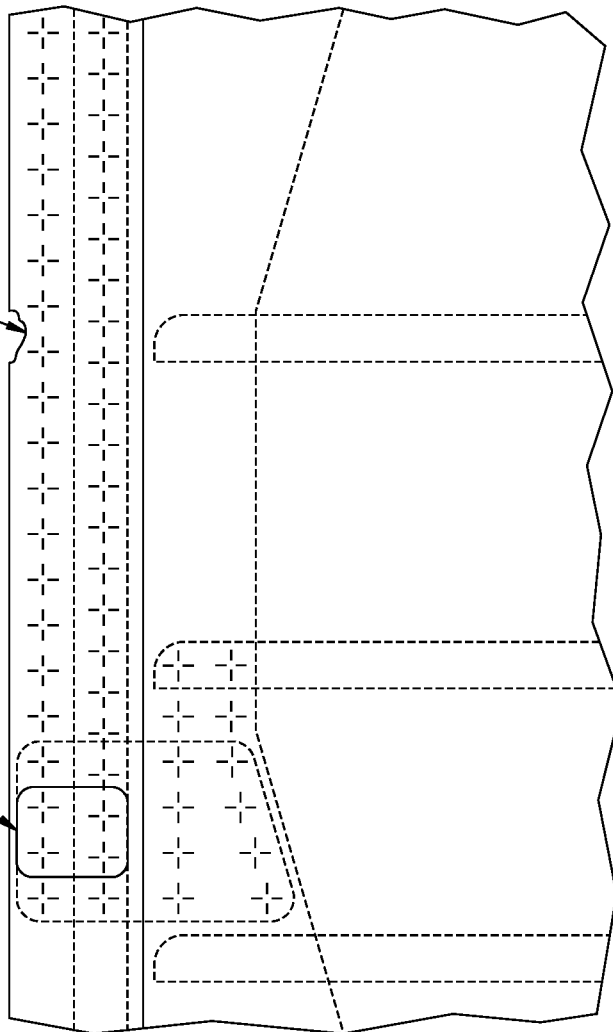
**Allowable Damage Limits  
Figure 103 (Sheet 12 of 17)**

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STRUCTURAL REPAIR MANUAL**

SEE **(C)** FOR DAMAGE AT THE EDGE OR BETWEEN FASTENERS WHERE THE DEPTH OF THE MATERIAL THAT IS REMOVED IS GIVEN IN X BELOW.

SEE **(E)** DAMAGE AT FASTENERS VIEW C-C WITH THE EXCEPTION AS FOLLOWS:  
REMOVAL OF MATERIAL AROUND FOUR FASTENERS IN ALL GROUPS OF SIXTEEN (MAXIMUM OF TWO FASTENERS FOR EACH ROW) TO A MAXIMUM DEPTH OF X AS GIVEN BELOW. THIS DOES NOT APPLY AT THE SKIN LAP JOINT.

X = DEPTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM DEPTH OF 0.30T FOR THE FORWARD CARGO DOOR CUTOUT  
= A MAXIMUM DEPTH OF 0.20T FOR THE AFT CARGO DOOR CUTOUT  
T = THICKNESS OF SKIN ONLY



**FASTENER SYMBOLS**

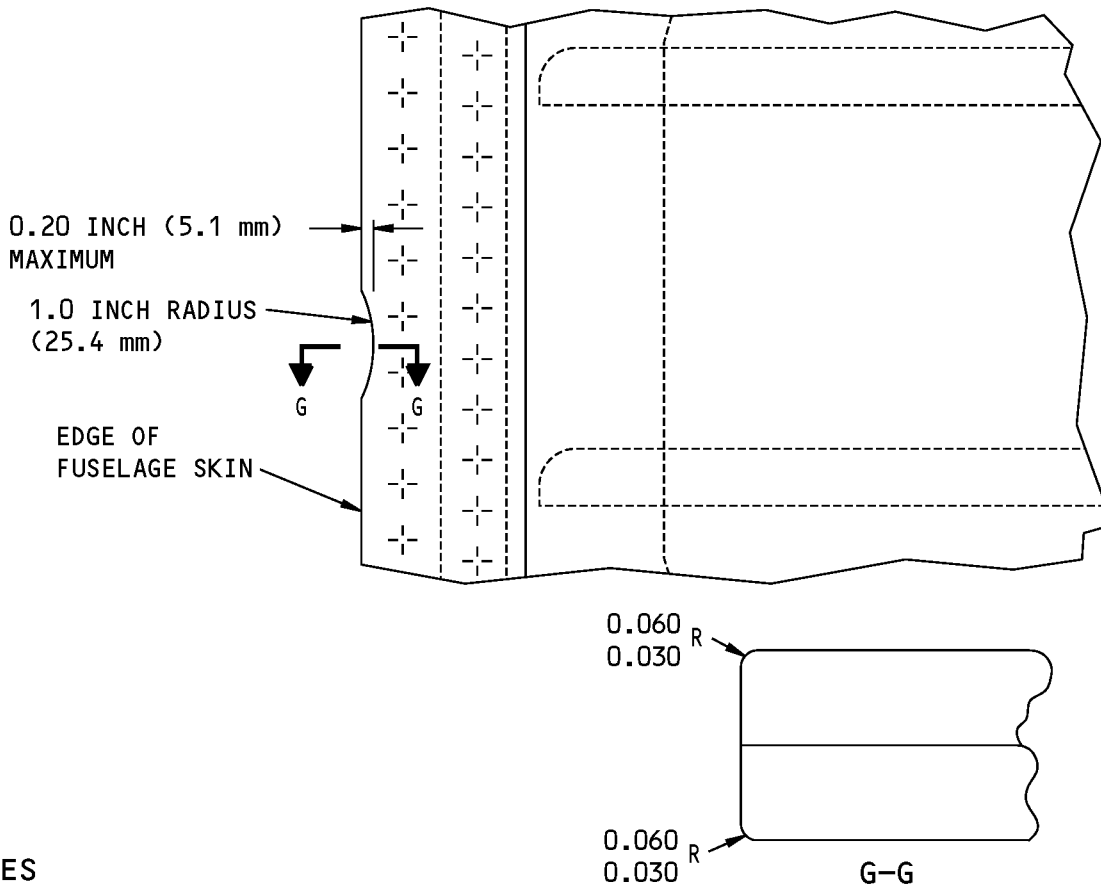
⊕ REFERENCE FASTENER LOCATION.

**FUSELAGE SKIN ADJACENT TO THE FORWARD AND AFT CARGO DOOR CUTOUT**



**Allowable Damage Limits  
Figure 103 (Sheet 13 of 17)**

STRUCTURAL REPAIR MANUAL



NOTES

- TRIM OUT THE DAMAGE AS SHOWN:
  - PERFORM A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION ALONG THE EDGE OF THE SKIN AND/OR BEARSTRAP TRIM.
  - IF NO DAMAGE IS FOUND PERFORM AN 0.04 INCH INSURANCE CUT ALONG THE EDGE OF THE TRIM.
  - THE EDGE FINISH SHOULD BE 63Ra OR BETTER. MAINTAIN THE DRAWING EDGE CONFIGURATION AS SHOWN IN G-G.
- THE SKIN, BEAR STRAP, OR BOTH MAY BE BLENDED OUT TO A MAXIMUM DEPTH OF 0.20 INCH (5.1 mm) USING A 1.0 INCH (25.4 mm) RADIUS, AS SHOWN.
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS.

FASTENER SYMBOLS

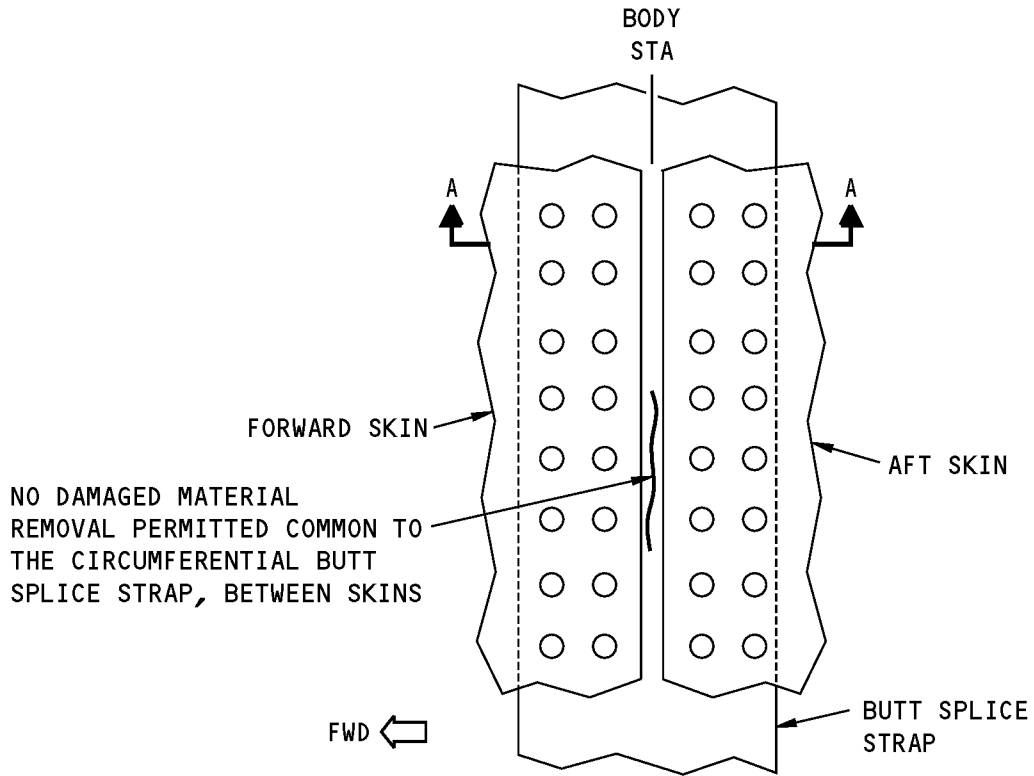
⊕ REFERENCE FASTENER LOCATION.

FUSELAGE SKIN ADJACENT TO THE FORWARD AND AFT CARGO DOOR CUTOUT

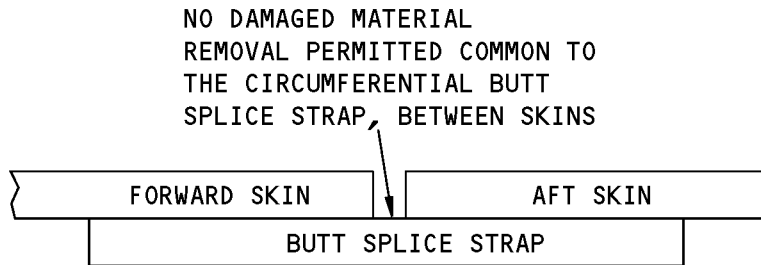


Allowable Damage Limits  
Figure 103 (Sheet 14 of 17)

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STRUCTURAL REPAIR MANUAL**



**TYPICAL SKIN BUTT JOINT**



A-A

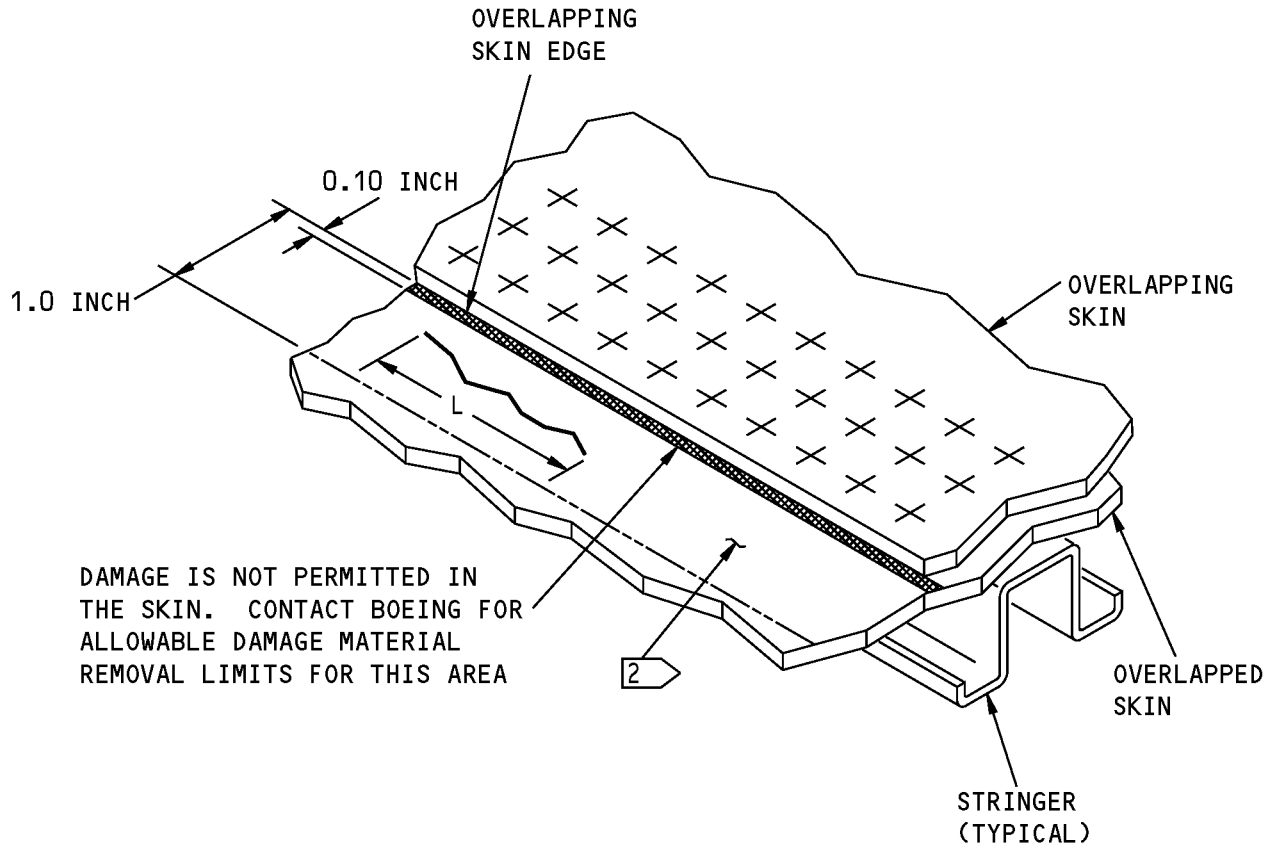
**CIRCUMFERENTIAL BUTT SPLICE LIMITS**



**Allowable Damage Limits  
Figure 103 (Sheet 15 of 17)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTES**

2 BETWEEN 0.10 AND 1.0 INCHES FROM OVERLAPPING SKIN EDGE, DAMAGE UP TO 2.0 INCHES IN LENGTH (L) CAN BE REMOVED AS SHOWN IN DETAIL C. DAMAGED MATERIAL REMOVAL BOUNDARY CAN EXTEND INTO THE 0.0 TO 0.10 INCHES ZONE FROM OVERLAPPING SKIN EDGE. CONTACT BOEING IF THE PROPER 20:1 BLEND RATIO CANNOT BE ACHIEVED. DAMAGED MATERIAL REMOVAL MUST BE A MINIMUM OF 40 INCHES FROM THE NEAREST ADJACENT DAMAGED MATERIAL REMOVAL OR REPAIR ALONG THE SAME LAP SPLICE. IF FILLET SEALING IS ADDED AFTER THE REMOVAL OF DAMAGED MATERIAL, THE FILLET SEAL MUST NOT COVER THE AREA OF THE ORIGINAL DAMAGE.

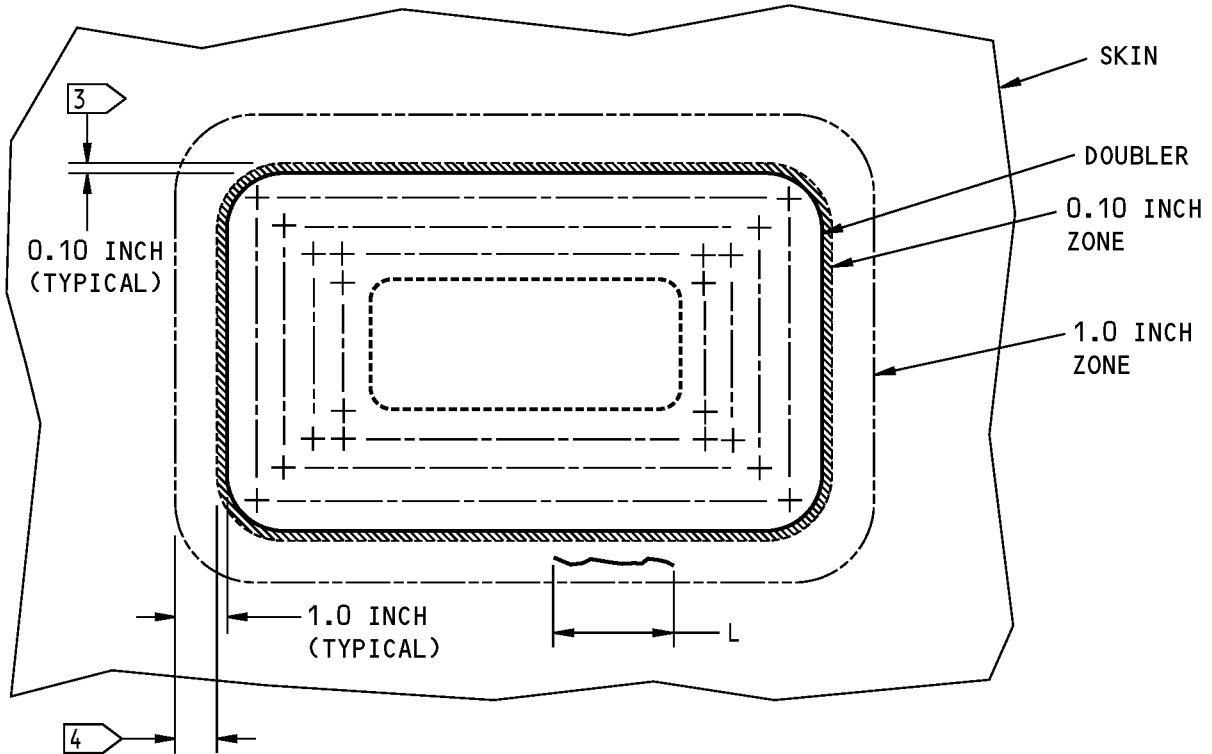
**NOTE:** KEEP ALL OTHER LIMITS AND CRITERIA AS GIVEN IN THIS ALLOWABLE DAMAGE SRM 53-00-01.

**SKIN LAP JOINT**



**Allowable Damage Limits  
Figure 103 (Sheet 16 of 17)**

STRUCTURAL REPAIR MANUAL



NOTES

**3** WITHIN 0.10 INCH FROM THE EDGE OF DOUBLER, NO DAMAGE IS PERMITTED IN THE SKIN. CONTACT BOEING FOR ALLOWABLE DAMAGE MATERIAL REMOVAL LIMITS FOR THIS AREA.

**4** BETWEEN 0.10 AND 1.0 INCHES FROM THE EDGE OF DOUBLER, DAMAGE UP TO 2.0 INCHES IN LENGTH (L) CAN BE REMOVED AS GIVEN IN DETAIL C. DAMAGED MATERIAL REMOVAL BOUNDARY CAN EXTEND INTO THE 0.0 TO 0.10 INCHES ZONE FROM THE DOUBLER EDGE. REMOVE DOUBLER IF NECESSARY TO ACHIEVE TAPER RATIO AS GIVEN IN DETAIL C. REINSTALL DOUBLER AND FASTENERS AS GIVEN IN APPROPRIATE SRM FIGURE OR CONTACT BOEING FOR ASSISTANCE. DAMAGED MATERIAL REMOVAL MUST BE A MINIMUM OF 40 INCHES FROM THE NEAREST AREA OF DAMAGED MATERIAL REMOVAL ADJACENT TO THE SAME DOUBLER. IF FILLET SEALING IS ADDED AFTER REMOVAL OF DAMAGED MATERIAL, THE FILLET SEAL MUST NOT COVER THE AREA OF THE ORIGINAL DAMAGE.

**NOTE:** KEEP ALL OTHER LIMITS AND CRITERIA AS GIVEN IN THIS ALLOWABLE DAMAGE SRM 53-00-01.

SKIN EXTERNAL DOUBLER



Allowable Damage Limits  
Figure 103 (Sheet 17 of 17)



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### STRUCTURAL REPAIR MANUAL

#### 5. Airplane Operation Limits

A. If there is fuselage skin damage, airplane operation limits can be necessary.

- (1) Find the applicable area in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 for the length and depth of the damage in all 20-inch by 20-inch square areas of the fuselage skin.
  - (a) The depth of the damage shown in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is given as a percentage of the initial skin thickness.
    - 1) When you calculate the damage depth, use the skin thickness given in the applicable engineering drawings. Do not include doublers. Include only the single layer of a bonded skin assembly from which material is removed.
  - (b) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1, Detail A is applicable to damage in fuselage skin allowable damage Zone 1. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the fuselage skin zones.
  - (c) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1, Detail B is applicable to damage in fuselage skin allowable Zones 2 and 3. Refer to Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the fuselage skin zones.
  - (d) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is applicable to:
    - 1) Cracks
    - 2) Nicks, Scratches, Gouges, and Corrosion
    - 3) Holes and Punctures.
  - (e) Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1 is not applicable to:
    - 1) Dents
    - 2) Wrinkles or Buckles.
- (2) Refer to Table 103/ALLOWABLE DAMAGE 1 to find the damage treatment and permitted airplane operations for the area you found in Damage Dimensions for the Fuselage Skin, Figure 104/ALLOWABLE DAMAGE 1.

Table 103:

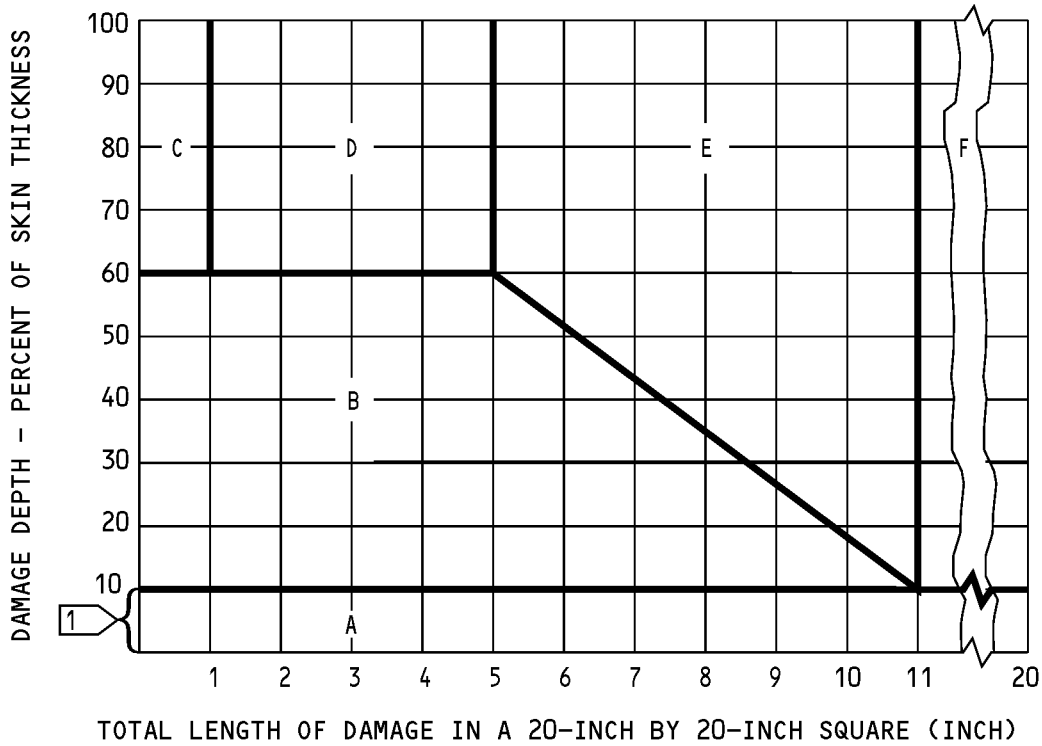
PERMITTED AIRPLANE OPERATIONS		
FIGURE 104 CHART AREA	DAMAGE TREATMENT	PERMITTED AIRPLANE OPERATIONS
A	Clean up the damage as given in Figure 103	There are no airplane operation limits
B	Clean up the damage as given in Figure 103	Up to 50 revenue flight hours are permitted
	Do a permanent repair	There are no airplane operation limits



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STRUCTURAL REPAIR MANUAL**

PERMITTED AIRPLANE OPERATIONS		
FIGURE 104 CHART AREA	DAMAGE TREATMENT	PERMITTED AIRPLANE OPERATIONS
C	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing.  The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do an optional time-limited repair as given in SRM 53-00-01, Repair 5	Revenue flights are permitted as given in SRM 53-00-01, Repair 5
	Do a permanent repair	There are no airplane operation limits
D	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing.  The maximum cabin pressure differential is limited to 5.0 PSIG unless the skin is repaired. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
E	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	A non-revenue flight to a repair station is permitted if the applicable regulatory authority gives approval before the flight. It is recommended that the proposed repair procedure be given to Boeing.  The maximum cabin pressure differential is limited to zero PSIG. Cabin pressure limits are for skin damage to the pressurized fuselage skin only.
	Do a permanent repair	There are no airplane operation limits
F	Drill 0.25 inch diameter stop holes at the end of the cracks. Clean up other damage as given in Figure 103	Operation is not permitted before Boeing and the applicable regulatory authority give approval.
	Do a permanent repair	There are no airplane operation limits

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STRUCTURAL REPAIR MANUAL**



**DAMAGE DIMENSIONS FOR FUSELAGE SKIN  
ALLOWABLE DAMAGE ZONE 1**

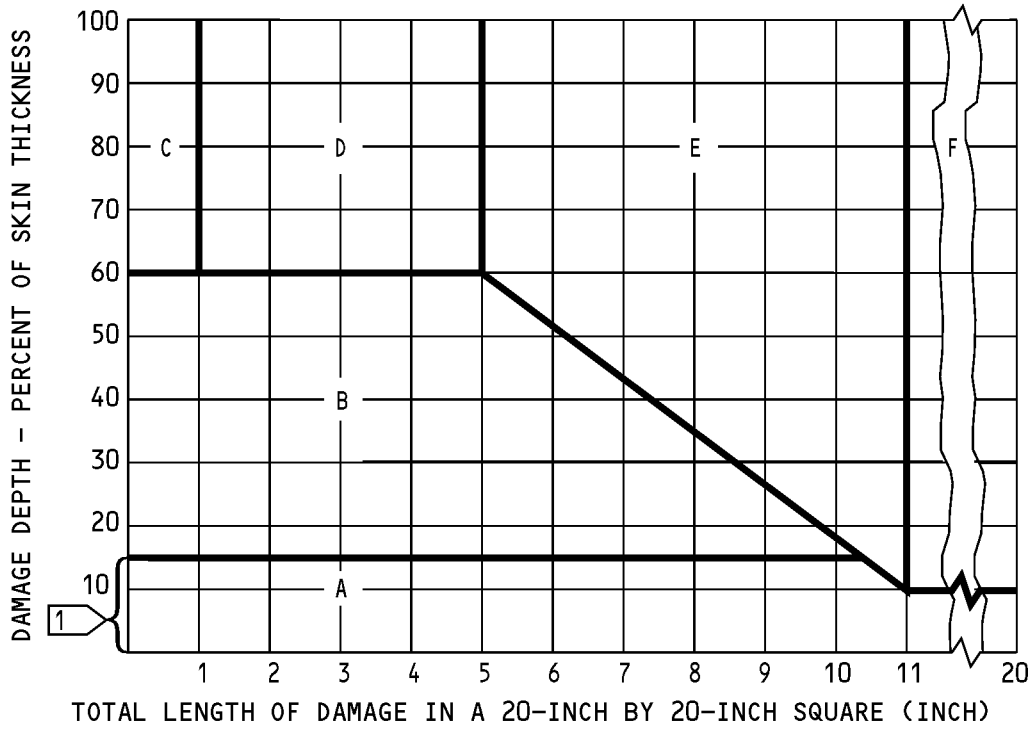
**A**

**NOTES**

**1** SOME LOCATIONS HAVE A 5 PERCENT DAMAGE DEPTH. REFER TO TABLE 102

**Damage Dimensions for the Fuselage Skin  
Figure 104 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**DAMAGE DIMENSIONS FOR FUSELAGE SKIN  
ALLOWABLE DAMAGE ZONES 2 AND 3**

**(B)**

**Damage Dimensions for the Fuselage Skin  
Figure 104 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 1 - EXTERNAL REPAIR OF FUSELAGE SKIN AT A STRINGER WITH SOLID RIVETS

#### 1. Applicability

- A. Repair 1 is applicable to fuselage skin damage at a stringer between frames where the stringer is not joggled.
- B. Repair 1 is not applicable to damage:
  - (1) That goes to more than one stringer
  - (2) That goes to a frame
  - (3) At a skin splice
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
  - (7) At 10 inches (254 mm) or less away from the edge of an existing repair.
    - (a) If damage occurs in this area, then remove the existing repair and make one repair that includes the two areas of damage.
- C. Do not use Repair 1 near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

#### 2. General

- A. Repair 1 gives the instructions for a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 1 gives the instructions for a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 1 is:
  - (1) A replacement repair for Repair 2, which is an external repair with blind rivets
  - (2) An alternative repair to Repair 7, which is a flush repair.

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL P/B GENERAL	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING

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(Continued)

Reference	Title
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 53-30-00 Figure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-00, Figure 6	Subsurface Crack Inspection of Faying Surface

#### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 1. Refer to 51-40-02.
- B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 1. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Make the repair parts.
  - (1) Make the part [1] doubler, part [2] filler, and, if necessary, the part [3] strap. Refer to Table 201/REPAIR 1.
    - (a) The part [3] strap is necessary only if the damage is between stringers S-10L and S-10R.
  - (2) Make the countersink washers for the initial fastener locations in the initial skin. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 1.
- F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 1 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 201 to find the length and width.
[2]	Filler	1	Use the same material and heat treat condition as the initial skin. Use the same thickness as the initial skin or skin assembly below the stringer.
[3]	Strap	1	Use clad or bare 2024-T3 sheet.

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING <sup>[1]</sup>					
INITIAL SKIN THICKNESS (INCHES)	PART [1] DOUBLER THICKNESS (INCHES)	FASTENER TYPE AND DIAMETER (PREFERRED ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING IN INCHES (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	BACR15BB5D BACR15CE5D (BACR15GF5D)	4	4	0.63 - 0.78 (16.00 - 19.81)





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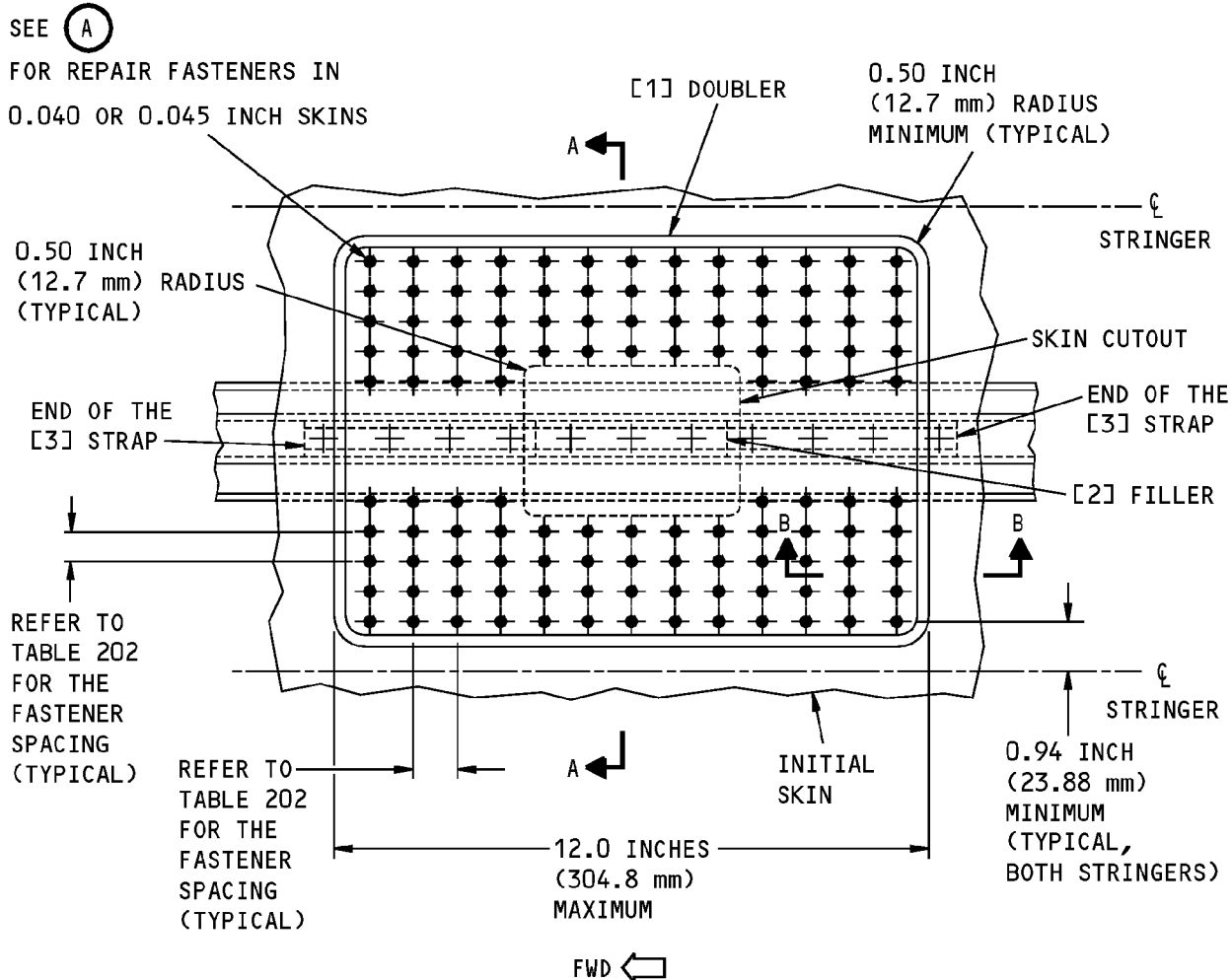
STRUCTURAL REPAIR MANUAL

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING <sup>*[1]</sup>					
INITIAL SKIN THICKNESS (INCHES)	PART [1] DOUBLER THICKNESS (INCHES)	FASTENER TYPE AND DIAMETER (PREFERRED ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING IN INCHES (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.045	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 - 0.78 (16.00 - 19.81)
0.050	0.063	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.056	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.063	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.071	0.080	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.080	0.090	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)
0.090	0.100	BACR15CE6D (BACR15GF6D)	4	4	0.75 - 0.94 (19.05 - 23.88)

\*[1] Note: If this repair is being used as a permanent repair to replace SRM 53-00-01, Repair 2 then oversize the fasteners installed from SRM 53-00-01, Repair 2 by 0.03 inch and use the fastener spacing as given in SRM 53-00-01, Repair 2.

- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- N. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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STRUCTURAL REPAIR MANUAL**



**NOTE**

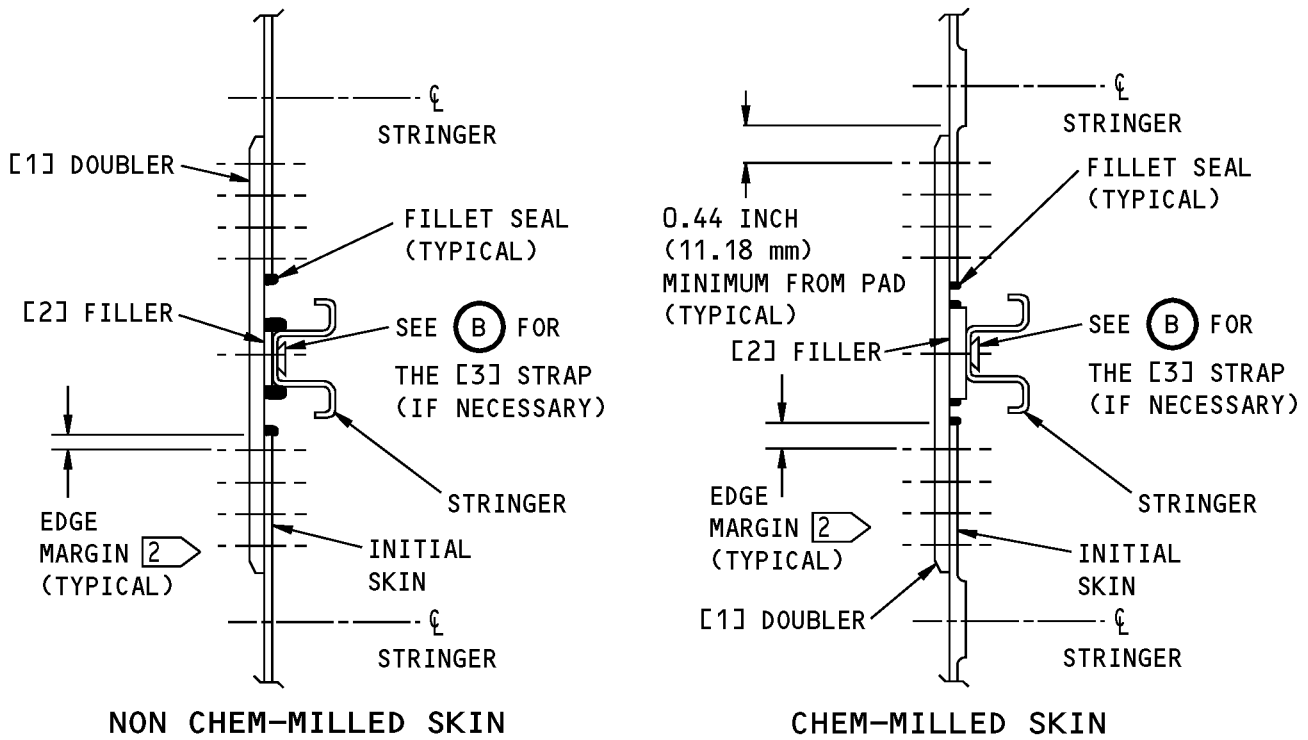
- 1 ALL REPAIR FASTENERS IN 0.040 OR 0.045 INCH SKINS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.
- 2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

**FASTENER SYMBOLS**

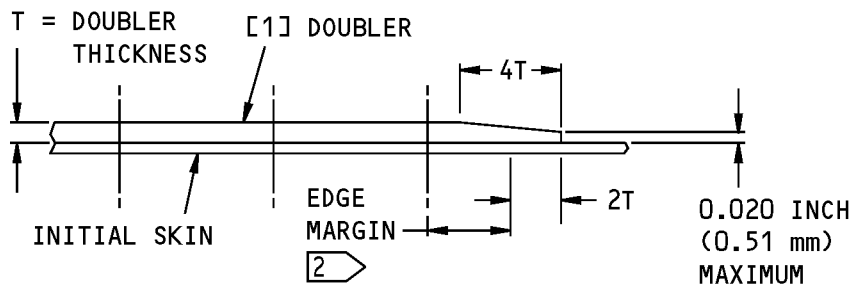
- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND UP TO 1/32 INCH IN DIAMETER LARGER THAN THE INITIAL FASTENER. REFER TO SRM 51-40-08 TO MAKE A 100 DEGREE HEAD WASHER, OR TO USE THE HEAD OF THE INITIAL MODIFIED HEAD RIVET AS A REPAIR WASHER.
- ◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE.

**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



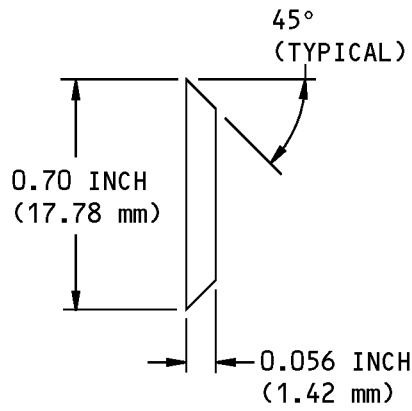
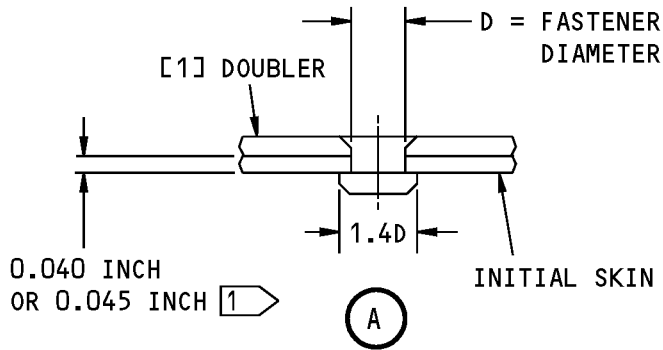
A-A



B-B

**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 4)**

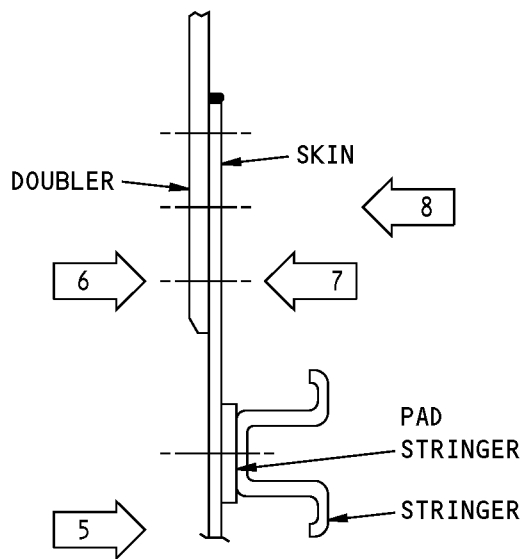
**737-800  
STRUCTURAL REPAIR MANUAL**



[3] STRAP

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



**REPAIR DOUBLER DOES NOT  
OVERLAP THE STRINGER**

**Layout of the Repair Parts  
Figure 201 (Sheet 4 of 4)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**5. Inspection Requirements**

- A. The inspections as given below are applicable to airplanes that have completed Service Bulletin 737-21-1149. The inspections as given below are not applicable to airplanes that have not completed Service Bulletin 737-21-1149.
- B. Refer to STRUCTURAL REPAIR DEFINITIONS, PAGEBLOCK 51-00-06, GENERAL for the definition of terms. Refer to Table 203 for the inspection requirements.

**Table 203:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS</b>			
<b>INSPECTION THRESHOLD</b>	<b>REPEAT INSPECTION ALTERNATIVES</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
22,500 flight cycles	External detailed visual (arrow 5)	4,000 flight cycles	
22,500 flight cycles	External LFEC inspect (arrow 6)	4,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
22,500 flight cycles	Internal detailed visual (arrow 8)	24,000 flight cycles	
22,500 flight cycles	Internal HFEC inspect (arrow 7)	24,000 flight cycles	NDT Part 6, 53-30-00, Fig 6

**NOTE:** Refer to Figure 201, Sheet 4 for the arrow inspection locations.



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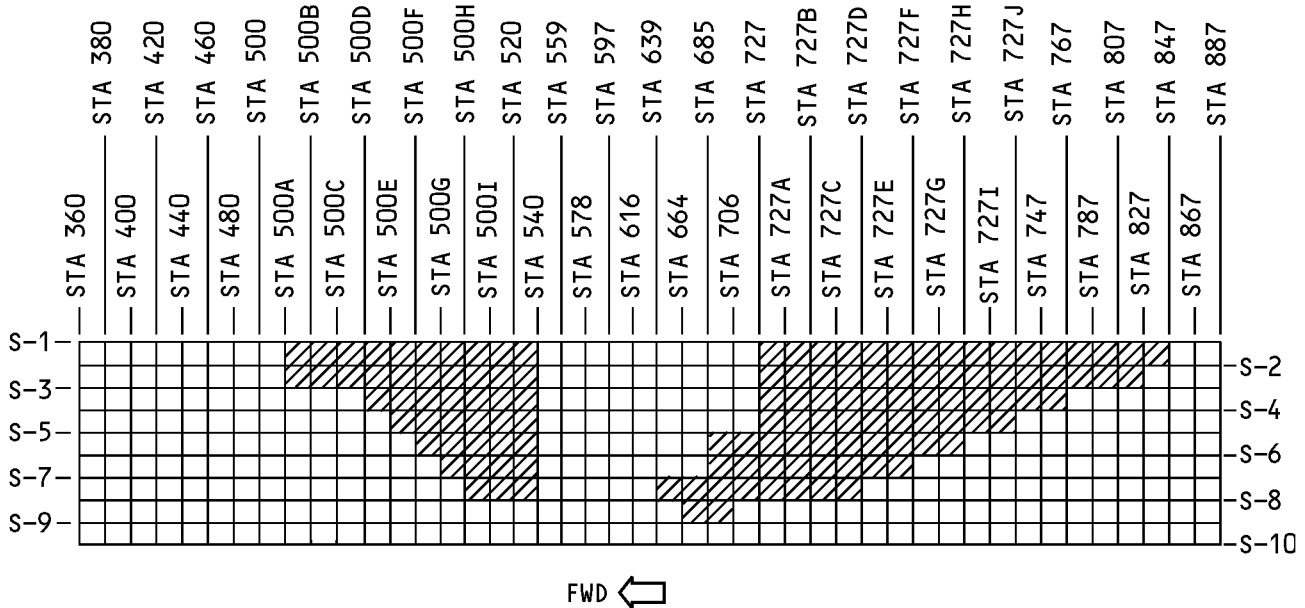
## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - EXTERNAL REPAIR OF FUSELAGE SKIN AT A STRINGER WITH BLIND RIVETS

#### 1. Applicability

- A. Repair 2 is applicable to fuselage skin damage at a stringer location between frames where the stringer is not joggled.
- B. For airplanes with a dome aft pressure bulkhead, Repair 2 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:
  - (1) You do inspections of the repair as given in Paragraph 5
  - (2) You replace Repair 2 with Repair 1 as given in Paragraph 5
  - (3) You replace Repair 2 with Repair 1 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.
    - (a) For all other skin panels, Repair 2 limit is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.
    - (b) For all other skin panels, Repair 2 limit is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
- C. For airplanes with a flat aft pressure bulkhead, Repair 2 is applicable to fuselage skin damage between BS 259.5 and BS 1042 if:
  - (1) You do inspections of the repair as given in Paragraph 5
  - (2) You replace Repair 2 with Repair 1 as given in Paragraph 5
  - (3) You replace Repair 2 with Repair 1 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.
    - (a) For all other skin panels, Repair 2 limit is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.
    - (b) For all other skin panels, Repair 2 limit is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
- D. Repair 2 is not applicable to damage:
  - (1) That goes to more than one stringer
  - (2) That goes to a frame
  - (3) At skin splices
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
- E. Do not use Repair 2 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.
- F. Repair 2 can be used only if you make sure that the blind rivets can be seated correctly in the internal structure.

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STRUCTURAL REPAIR MANUAL**



- THE LIMIT FOR THE REPAIR IS 1,600 FLIGHT CYCLES. 1
- THE LIMIT FOR THE REPAIR IS 3,700 FLIGHT CYCLES. 2
- THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES. 2

**NOTES**

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
- THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES. 2

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Flight Cycle Limits for Crown Skin Panel  
Figure 201**





## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. Repair 2 is a time-limited repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 2 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 2 is an alternative to:
  - (1) Repair 1 which is an external repair with solid rivets for damage at a stringer
  - (2) Repair 7 which is a flush repair for damage at a stringer.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 202/REPAIR 2. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Make the repair parts.
  - (1) Make the part [1] doubler, part [2] filler, and, if necessary, the part [3] strap as given in Table 201/REPAIR 2.
    - (a) The part [3] strap is necessary only if the damage is between stringers S-10L and S-10R.
  - (2) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 202/REPAIR 2.
- F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 2 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
- G. Disassemble the repair parts.

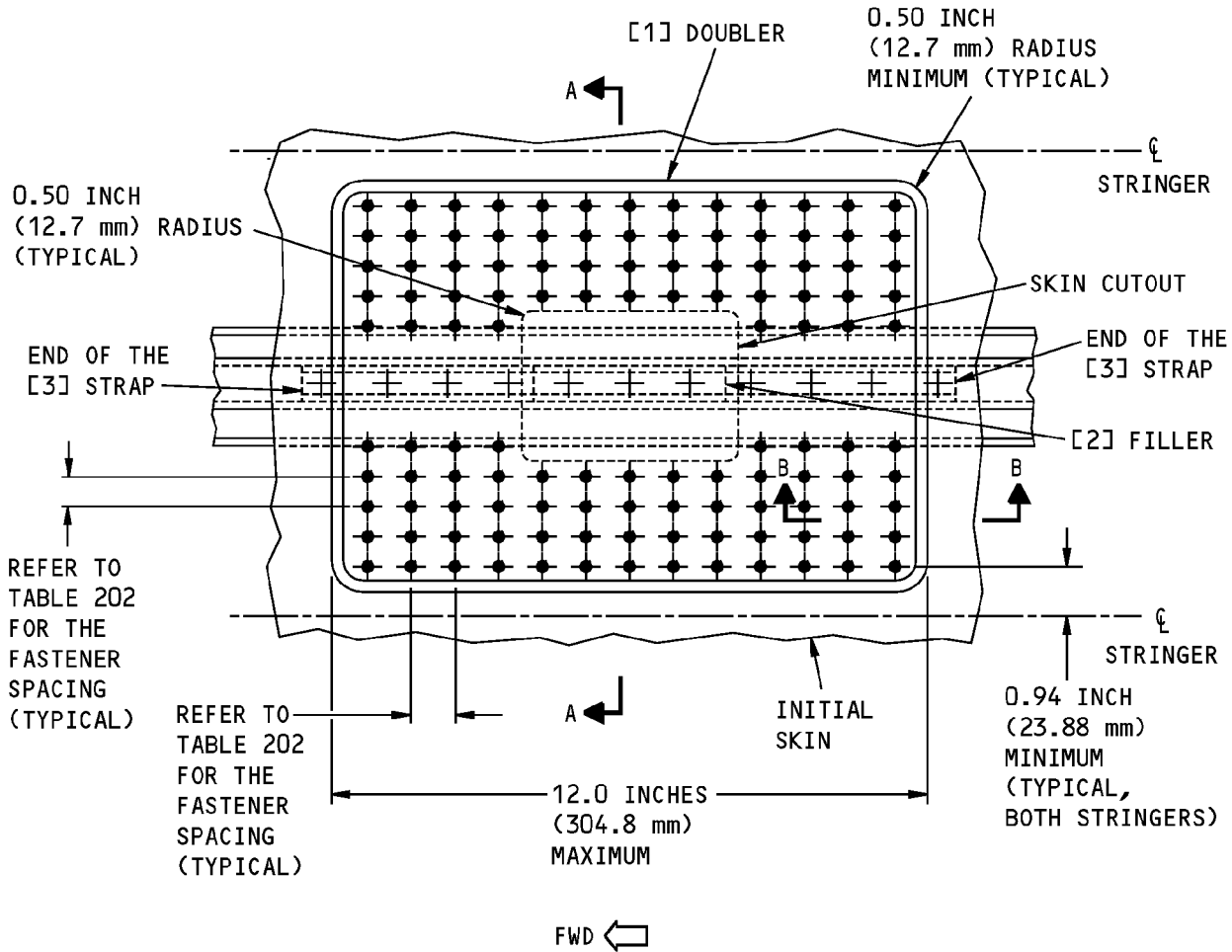


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## **STRUCTURAL REPAIR MANUAL**

- H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts. Refer to 51-20-05.
  - (1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
  - (3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

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STRUCTURAL REPAIR MANUAL**



**NOTE**

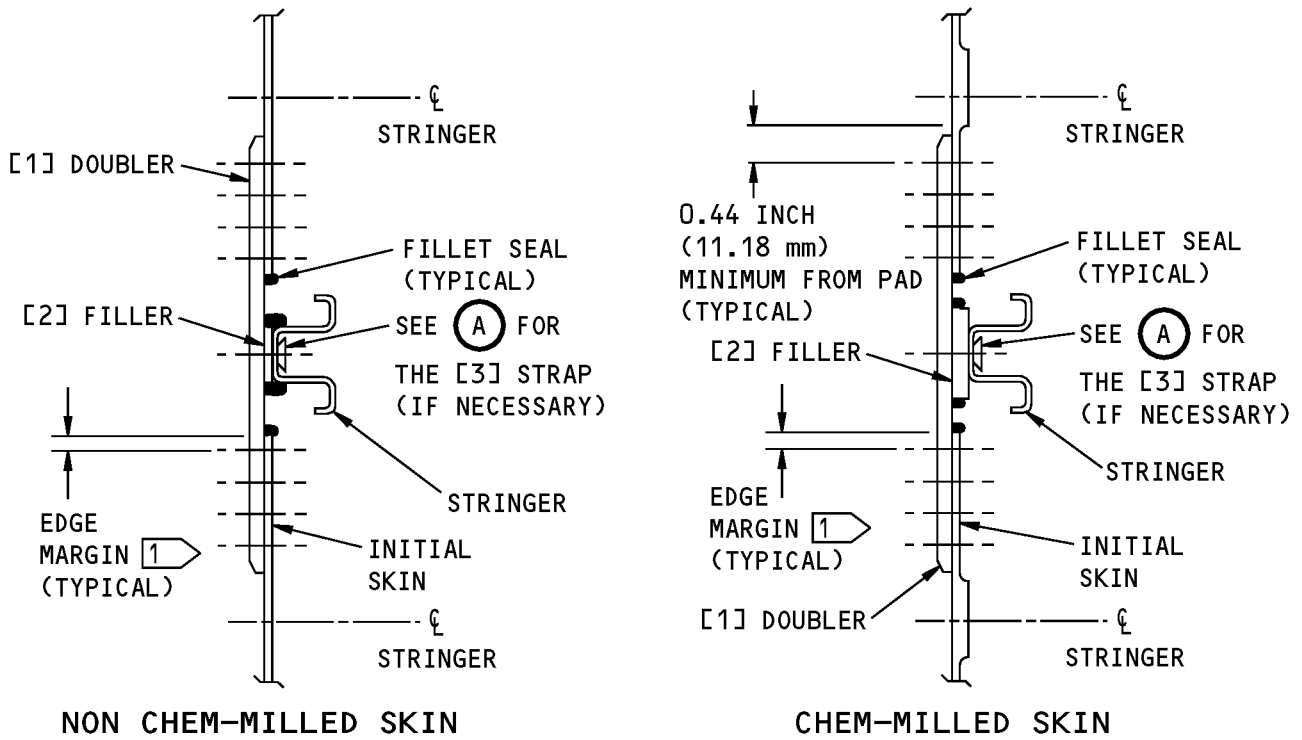
- 1 MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2.5 (D).
- 2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

**FASTENER SYMBOLS**

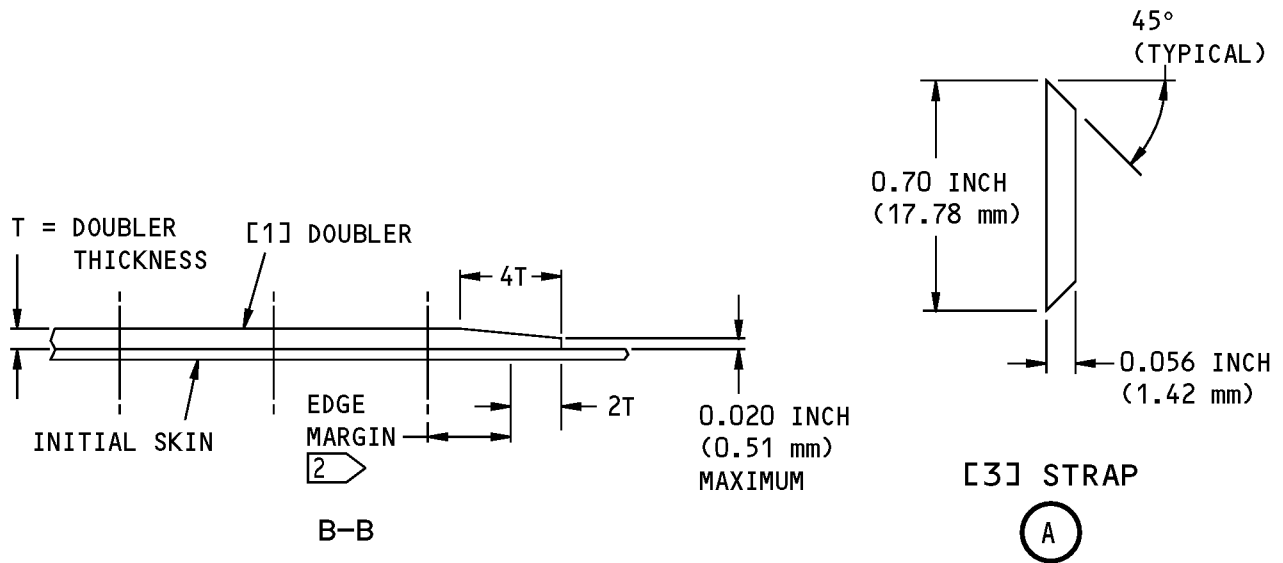
- + INITIAL FASTENER LOCATION. INSTALL A NAS1738E( ) REPAIR FASTENER OF THE SAME DIAMETER AS THE INITIAL SOLID RIVET. IF INITIAL FASTENERS ARE HEX DRIVE BOLTS THEN REFER TO SRM 53-00-01, REPAIR 1. REFER TO SRM 51-40-08 TO MAKE A 100 DEGREE HEAD WASHER, OR TO USE THE HEAD OF THE INITIAL MODIFIED HEAD RIVET AS A REPAIR WASHER.
- ◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



A-A



**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 2)**

## 737-800 STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements and Replacement Instructions

- A. Do a detailed visual inspection of the repair doubler and fasteners every 1,300 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.
- B. Do a detailed visual inspection of the repair doubler and fasteners every 500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.
- C. Replace Repair 2 with Repair 1 no later than the flight cycle limits given in Flight Cycle Limits for Crown Skin Panel, Figure 201/REPAIR 2.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 202 to find the length and width.
[2]	Filler	1	Use the same material and heat treat condition as the initial skin. Use the same thickness as the initial skin or skin assembly below the stringer.
[3]	Strap	1	Use clad or bare 2024-T3 sheet that is 0.056 inch thick. As an alternative, you can make the part from a BAC1511-3770 2024-T3511 extrusion.

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCHES)	PART [1] DOUBLER THICKNESS (INCHES)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING IN INCHES (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.045	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.050	0.063	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.056	0.071	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.063	0.071	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.071	0.080	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.080	0.090	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)
0.090	0.100	NAS1738E6	4	4	0.88 - 1.09 (22.35 - 27.69)



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 3 - EXTERNAL REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS WITH SOLID RIVETS

#### 1. Applicability

- A. Repair 3 is applicable to fuselage skin damage between stringers.
- B. Repair 3 is not applicable to damage:
  - (1) That goes to a stringer
  - (2) That goes to a frame
  - (3) At a skin splice
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
- C. Do not use Repair 3 near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

#### 2. General

- A. Repair 3 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 3 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 3 is:
  - (1) A replacement for Repair 4 which is an external repair with blind rivets for damage between stringers
  - (2) An alternative for Repair 8 which is a flush repair for damage between stringers.

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 53-30-00 Figure 5	Inspection of External Fuselage Repairs
737 NDT Part 6, 53-30-00, Figure 6	Subsurface Crack Inspection of Faying Surface

#### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.

**STRUCTURAL REPAIR MANUAL**

- B. Cut and remove the damaged part of the fuselage skin as shown in Layout of the Repair Parts, Figure 201/REPAIR 3. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Make the repair parts.
  - (1) Make the part [1] doubler. Refer to Table 201/REPAIR 3.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 201 to find the length and width because of the necessary fastener spacing, number of rows, and edge margins

- (2) Make the countersink washers for the initial fastener locations in the initial skin. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 3.
- F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 3 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- N. Apply a finish if necessary. Refer to AMM 51-21-00/701.



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STRUCTURAL REPAIR MANUAL**

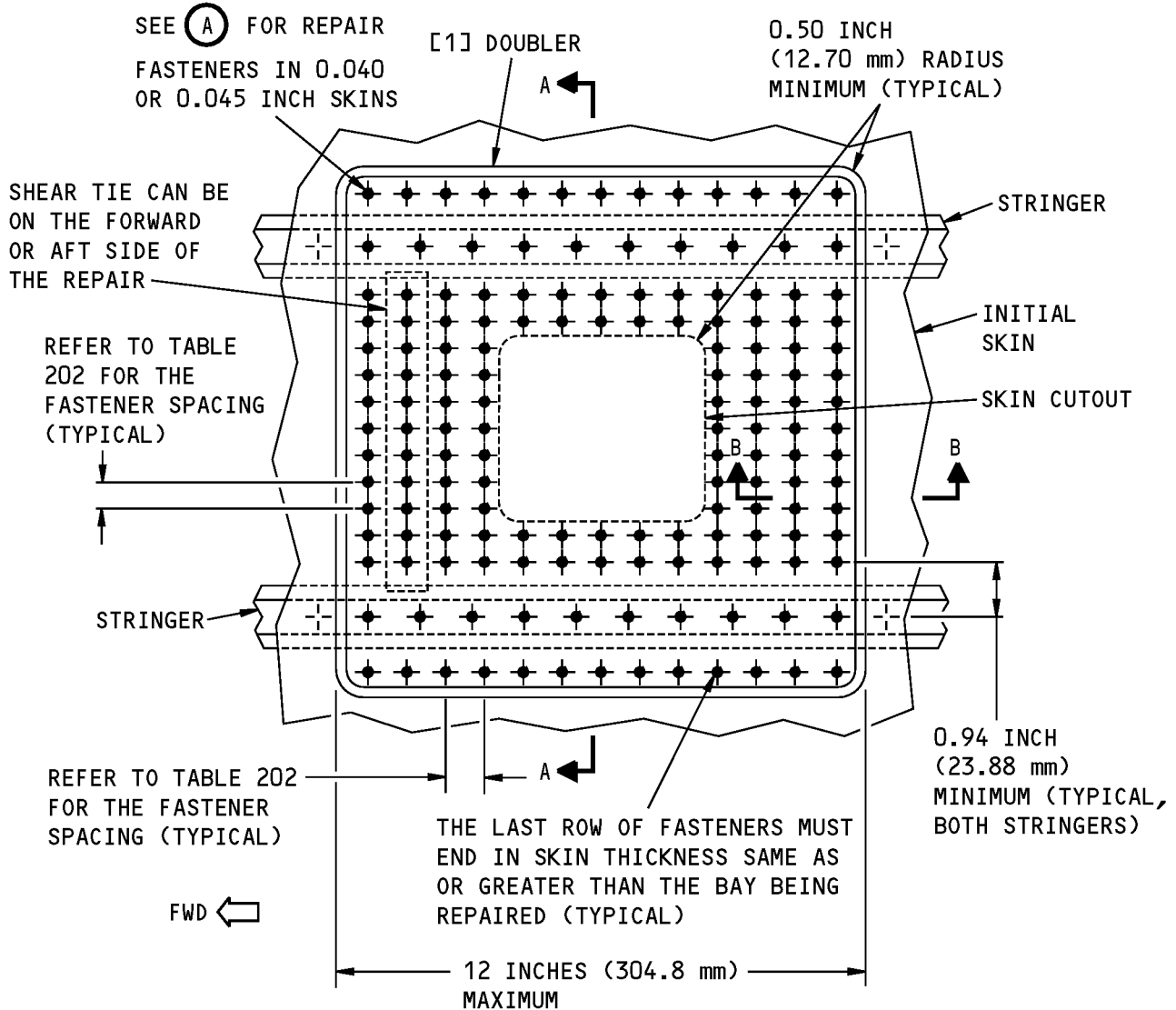
**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING <sup>*[1]</sup>					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 to 0.78 (16.00 TO 19.81 mm)
0.045	0.063	BACR15CE5D (BACR15GF5D)	4	4	0.63 to 0.78 (16.00 TO 19.81 mm)
0.050	0.063	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.056	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.071	0.080	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.080	0.090	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)
0.090	0.100	BACR15CE6D (BACR15GF6D)	4	4	0.75 to 0.94 (19.05 TO 23.88 mm)

\*[1] Note: If this repair is being used as a permanent repair to replace SRM 53-00-01, Repair 4 then oversize the fasteners installed from SRM 53-00-01, Repair 4 by 0.03 inch and use the fastener spacing as given in SRM 53-00-01, Repair 4.



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**NOTES**

- DO NOT END THE PART [1] DOUBLER ON A STRINGER. IT IS PERMITTED TO INSTALL THE PART [1] DOUBLER BETWEEN STRINGERS PROVIDED A MINIMUM OF 4 REPAIR FASTENER ROWS CAN BE INSTALLED AROUND THE DAMAGE.

1 ALL REPAIR FASTENERS IN 0.040 OR 0.045 INCH SKINS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

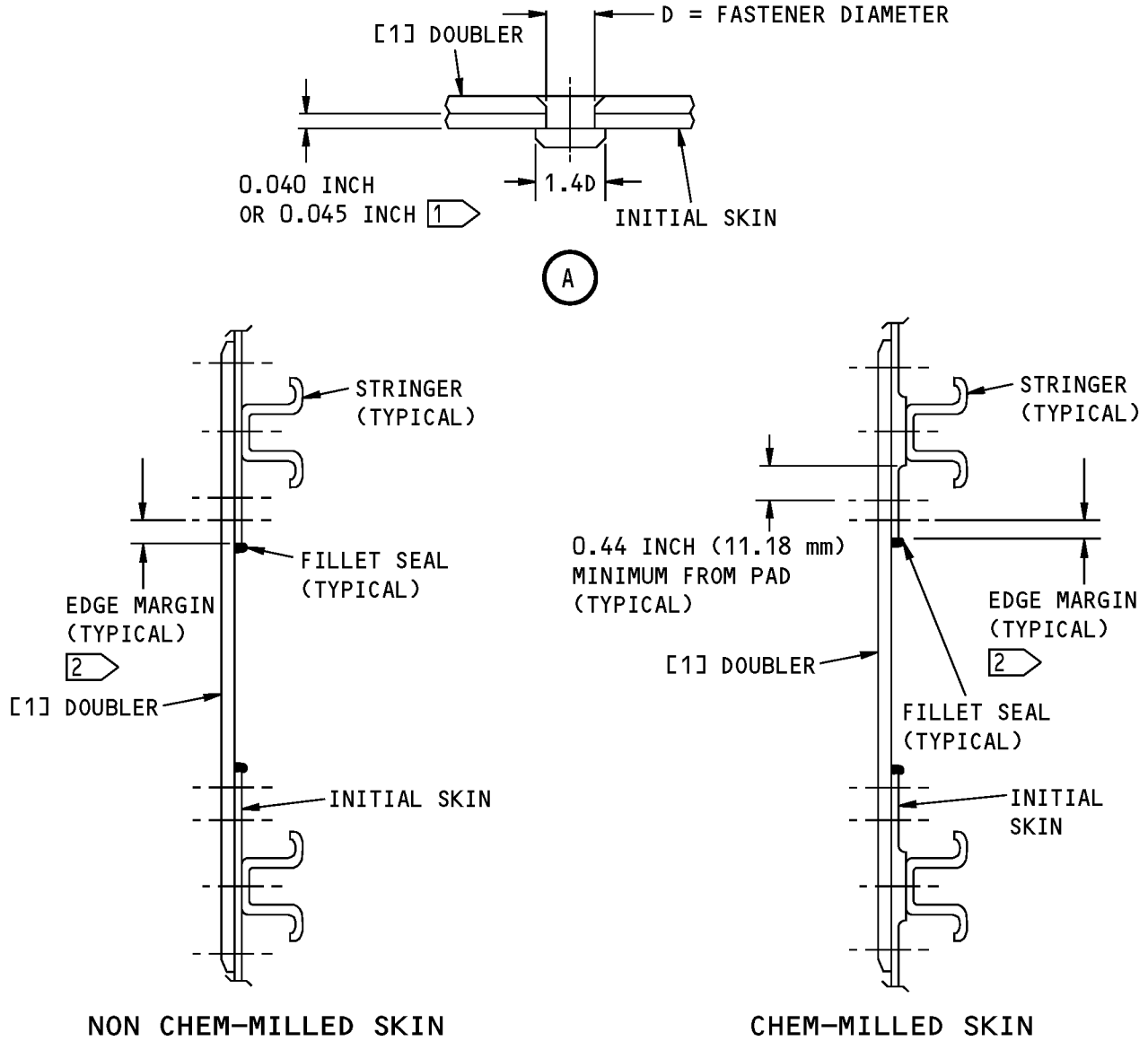
**FASTENER SYMBOLS**

—+— REFERENCE FASTENER LOCATION.

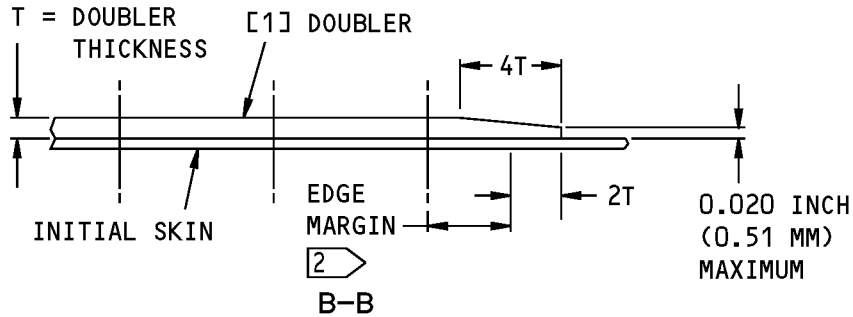
◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 2)**

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A-A



B-B

**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 2)**



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**5. Inspection Instructions**

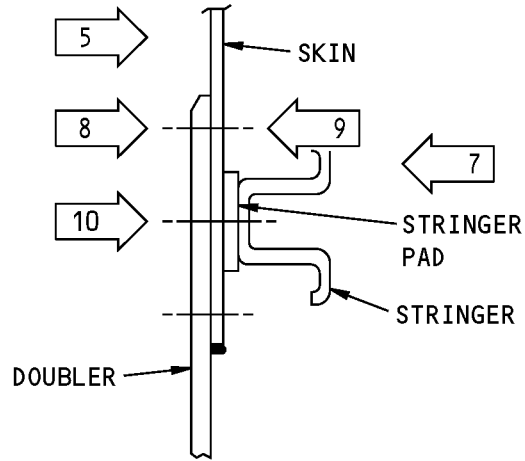
- A. The inspections as given below are applicable to airplanes that have completed Service Bulletin 737-21-1149. Inspections as given below are not applicable to airplanes that have not completed Service Bulletin 737-21-1149.
- B. Refer to 51-00-06 for the definition of terms. Refer to Figure 202 (Sheet 1) for the inspection requirements.

**Table 203:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS</b>			
<b>INSPECTION THRESHOLD</b>	<b>REPEAT INSPECTION ALTERNATIVES</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
22,500 flight cycles	External LFEC inspect (arrow 8)	4,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
22,500 flight cycles	Internal HFEC inspect (arrow 9)	36,000 flight cycles	NDT Part 6, 53-30-00, Fig 6
56,000 flight cycles	External LFEC inspect (arrow 10)	36,000 flight cycles	NDT Part 6, 53-30-00, Fig 5
22,500 flight cycles	External detailed visual (arrow 5)	2,500 flight cycles	
22,500 flight cycles	Internal detailed visual (arrow 7)	36,000 flight cycles	

**NOTE:** Refer to Figure 202 for the arrow inspection locations. Arrow 7 is applicable to areas of the skin as defined in Figure 202.

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**REPAIR DOUBLER EXTENDS  
BEYOND STRINGER**

**Inspection Requirements  
Figure 202**



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 4 - EXTERNAL REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS WITH BLIND RIVETS

#### 1. Applicability

- A. Repair 4 is applicable to fuselage skin damage between stringers.
- B. For airplanes with a dome aft pressure bulkhead, Repair 4 is applicable to fuselage skin damage from BS 259.5 and BS 1016 if:
  - (1) You do inspections of the repair as given in Paragraph 5
  - (2) You replace Repair 4 with Repair 3 as given in Paragraph 5
  - (3) You replace Repair 4 with Repair 3 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.
    - (a) For all other skin panels, the limit for Repair 4 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.
    - (b) For all other skin panels, the limit for Repair 4 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
- C. For airplanes with a flat aft pressure bulkhead, Repair 4 is applicable to fuselage skin damage from BS 259.5 and BS 1042 if:
  - (1) You do inspections of the repair as given in Paragraph 5
  - (2) You replace Repair 4 with Repair 3 as given in Paragraph 5
  - (3) You replace Repair 4 with Repair 3 before you reach the number of flight cycles as given in Figure 201 for the crown skin panel.
    - (a) For all other skin panels, the limit for Repair 4 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.
    - (b) For all other skin panels, the limit for Repair 4 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
- D. Repair 4 is not applicable to damage:
  - (1) That goes to a stringer
  - (2) That goes to a frame
  - (3) At skin splices
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
- E. Do not use Repair 4 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.
- F. Repair 4 can be used only if you make sure that the blind rivets can be seated correctly in the internal structure.

#### 2. General

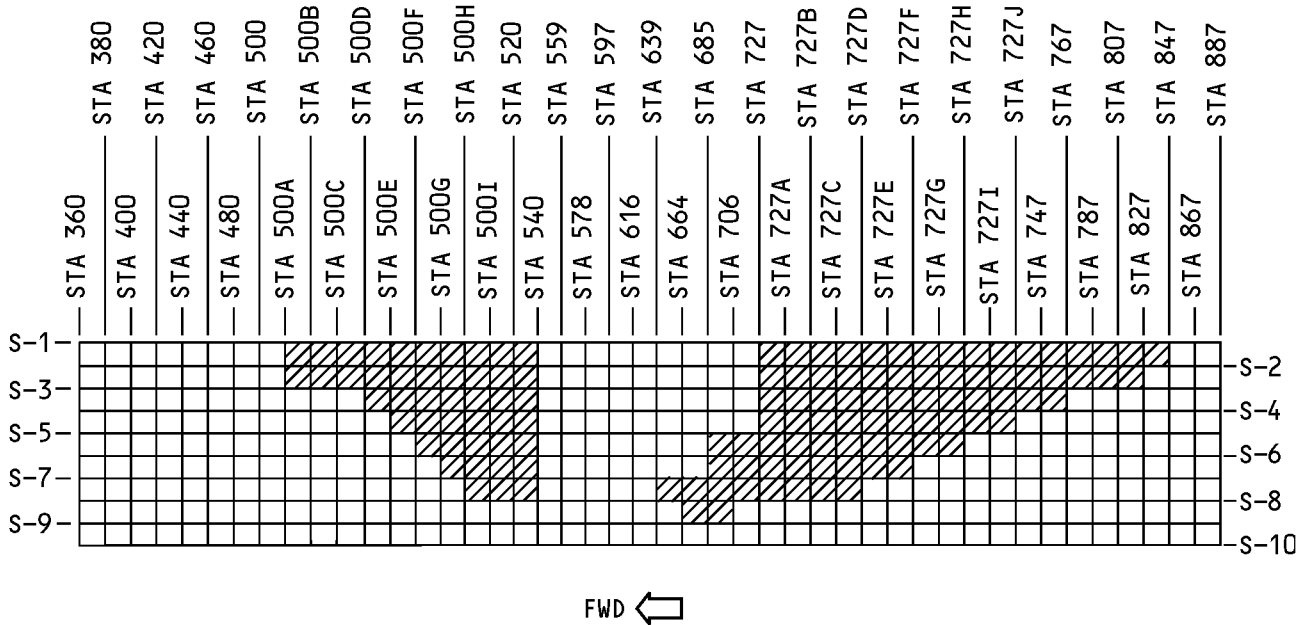
- A. Repair 4 is a Time- Limited repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 4 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 4 is an alternative to:
  - (1) Repair 3 which is an external repair with solid rivets for damage between stringers



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**STRUCTURAL REPAIR MANUAL**

(2) Repair 8 which is a flush repair for damage between stringers.

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STRUCTURAL REPAIR MANUAL**



- THE LIMIT FOR THE REPAIR IS 1,600 FLIGHT CYCLES.
- THE LIMIT FOR THE REPAIR IS 3,700 FLIGHT CYCLES.
- THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES.
- THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES.

**NOTES**

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
- THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES.
- THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES.

- FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Flight Cycle Limits for Crown Skin Panel  
Figure 201**



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STRUCTURAL REPAIR MANUAL**

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Repair Instructions**

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
- C. Put the skin around the cut back to the initial contour.
- D. Make the repair parts.
  - (1) Make the part [1] doubler as given in Table 201/REPAIR 4.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness. Refer to Figure 202 to find the length and width because of the necessary fastener spacing, number of rows, and edge margins

- (2) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 202/REPAIR 4.
- F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 4 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.





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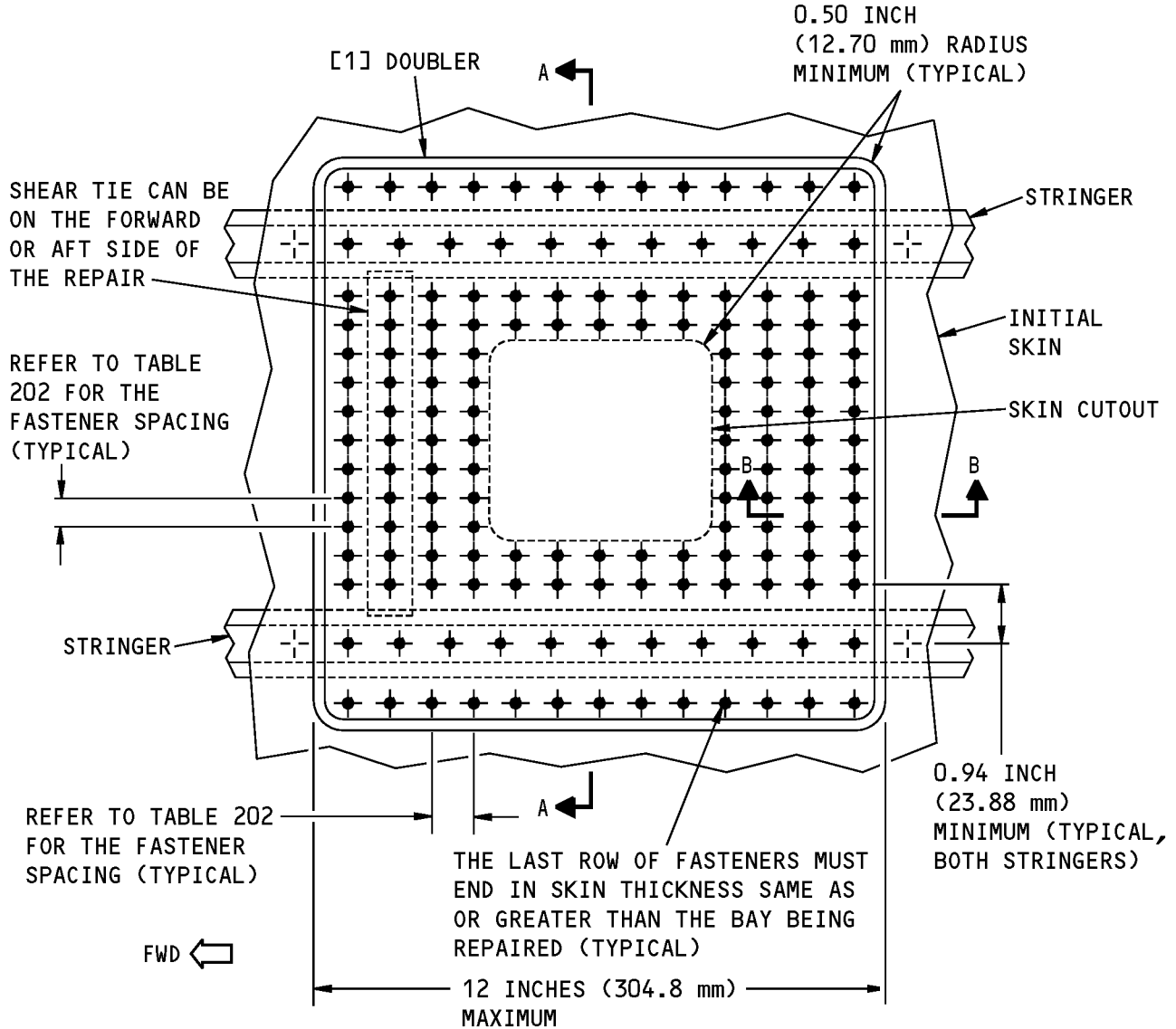
**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER <sup>[1]</sup>	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.063	NAS1738E5	4	4	0.75 - 0.94 (19.05 - 23.88)
0.045	0.063	NAS1738E5	4	4	0.75 TO 0.94 (19.05 - 23.88)
0.050	0.063	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.056	0.071	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.063	0.071	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.071	0.080	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.080	0.090	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)
0.090	0.100	NAS1738E6	4	4	0.88 TO 1.09 (22.35 - 27.69)

\*[1] NOTE: Fasteners common to stringers or shear ties must be NAS1738E() of the same diameter as the initial rivet.

- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts. Refer to 51-20-05
  - (1) Apply BMS 5-95 or equivalent sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
  - (3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (4) Restore the aircraft exterior paint system in the repair area, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



**NOTES**

- DO NOT END THE PART [1] DOUBLER ON A STRINGER. IT IS PERMITTED TO INSTALL THE PART [1] DOUBLER BETWEEN STRINGERS PROVIDED A MINIMUM OF 4 REPAIR FASTENER ROWS CAN BE INSTALLED AROUND THE DAMAGE.

1 MAKE SURE THERE IS A MINIMUM OF 2.5D EDGE MARGIN.

2 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN.

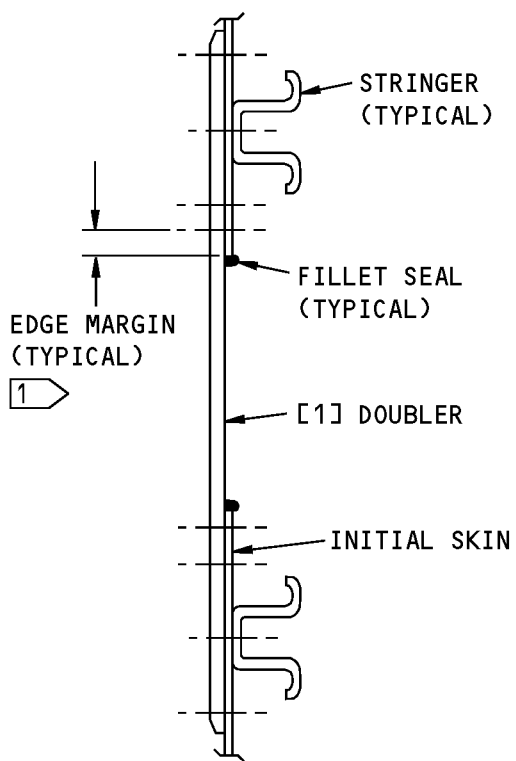
**FASTENER SYMBOLS**

—+— REFERENCE FASTENER LOCATION.

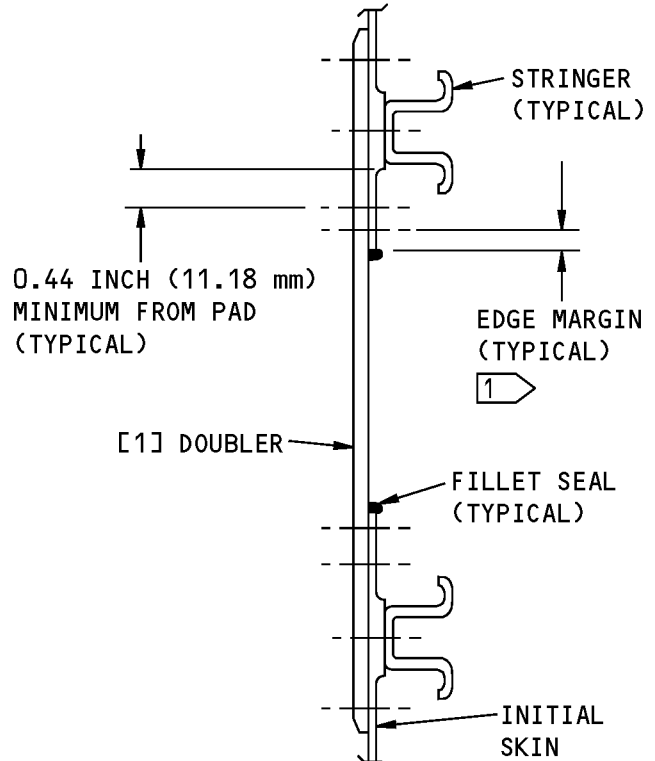
◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.

**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**

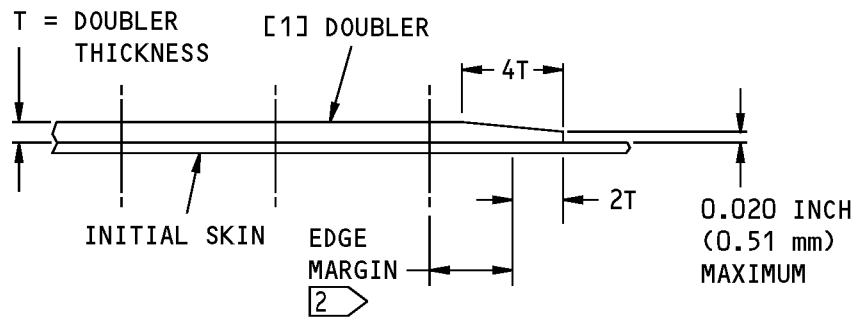


**NON CHEM-MILLED SKIN**



**CHEM-MILLED SKIN**

A-A



B-B

**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection and Replacement Instructions

- A. Do a detailed visual inspection of the repair doubler and fasteners every 1,300 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced. Remove and replace with permanent fasteners as shown in Figure 201.
- B. Do a detailed visual inspection of the repair doubler and fasteners every 500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced. Remove and replace with permanent fasteners as shown in Figure 201.
- C. Replace Repair 4 with Repair 3 no later than the flight cycle limits given in Figure 201.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 5 - EXTERNAL TIME-LIMITED REPAIR OF A SMALL HOLE

#### 1. Applicability

- A. Repair 5 is applicable to damage on the fuselage skin that:
  - (1) Can be drilled out to a maximum of 1.00 inch in diameter.
  - (2) Is in an area of constant thickness.
  - (3) Is in an area that is less than or equal to 0.125 inch thick.
- B. For airplanes with a dome aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage crown area between BS 259.5 and BS 1016 and between stringers S-10L and S-10R if:
  - (1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.
  - (2) You replace Repair 5 with a permanent repair before 1000 flight cycles have occurred for airplanes that have not completed Service Bulletin 737-21-1149.
  - (3) You replace Repair 5 with a permanent repair before 400 flight cycles have occurred for airplanes that have completed Service Bulletin 737-21-1149.
- C. For airplanes with a flat aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage crown area between BS 259.5 and BS 1042 and between stringers S-10L and S-10R if:
  - (1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.
  - (2) You replace Repair 5 with a permanent repair before 1000 flight cycles have occurred for airplanes that have not completed Service Bulletin 737-21-1149.
  - (3) You replace Repair 5 with a permanent repair before 400 flight cycles have occurred for airplanes that have completed Service Bulletin 737-21-1149.
- D. For airplanes with a dome aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage skin between BS 259.5 to BS 1016, minus the pressurized fuselage crown area if:
  - (1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.
  - (2) You replace Repair 5 with a permanent repair before 2500 flight hours have occurred.
- E. For airplanes with a flat aft pressure bulkhead, Repair 5 is applicable to the pressurized fuselage skin between BS 259.5 to BS 1042, minus the pressurized fuselage crown area if:
  - (1) You do inspections of the repair as given in Paragraph 5./REPAIR 5.
  - (2) You replace Repair 5 with a permanent repair before 2500 flight hours have occurred.
- F. Repair 5 is not applicable for use near static ports or angle of attack sensors. Refer to 51-10-01 for areas near static ports or angle of attack sensors where an external repair is not permitted.

#### 2. General

- A. Repair 5 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 5 is a Time Limited repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from an edge, fastener location, or skin cutout.



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers

### 4. Repair Instructions

- A. Do an inspection of the repair area to find the amount of damage as given in 51-10-02.
- B. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.
- C. Make the repair parts.
  - (1) Refer to Table 201/REPAIR 5 for the material and the thickness of the repair parts.
  - (2) Refer to Layout of the Repair Parts, Figure 201/REPAIR 5 for the dimensions of the repair parts.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doublers	1	Use 2024-T3, -T4, or -T42 that is two times the thickness of the skin that was removed
[2]	Doublers	1	Use 2024-T3, -T4, or -T42 that is two times the thickness of the skin that was removed
[3]	Filler	1	Use 2024-T3, -T4 or -T42 that is the same thickness as the skin thickness that was removed

- D. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 5.
- E. Drill the necessary fastener holes.
  - (1) Drill the holes to 0.2495 to 0.2505 inch diameter (close ream hole).
- F. Disassemble the repair parts.
- G. Remove all the nicks, scratches, gouges, burrs, sharp edges and corners from the repair parts and the skin.
- H. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the skin. Refer to 51-20-01.
- I. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the fuselage skin. Refer to SOPM 20-41-02.
- J. If you do the Option 2 repair:



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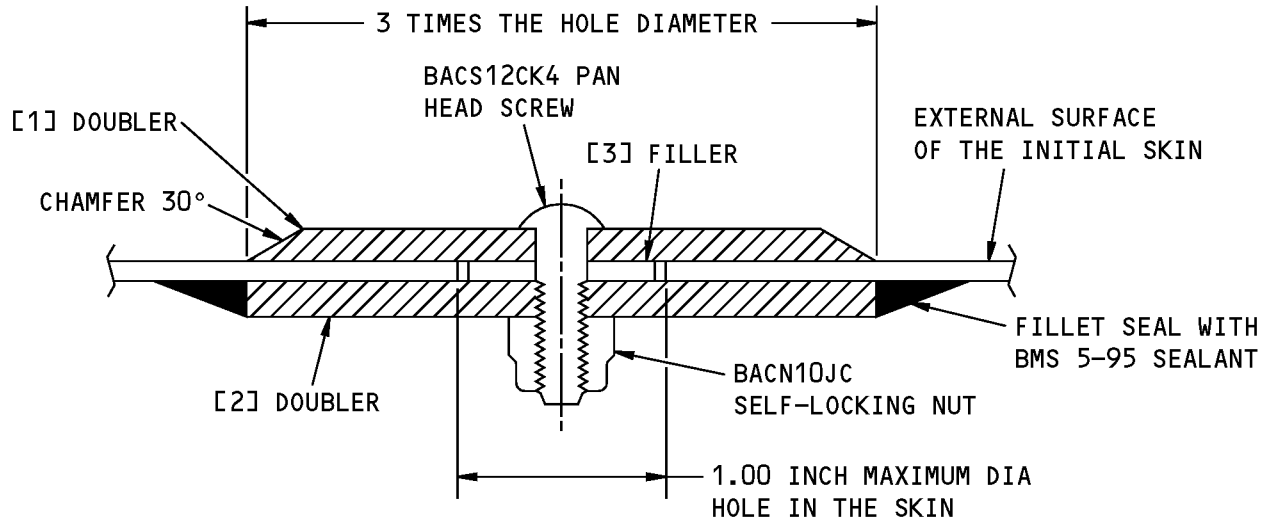
## STRUCTURAL REPAIR MANUAL

- (1) Install a BACN10JP4A nutplate with BACR15BA3AD() or MS20426AD3() countersink rivets to the [2] doubler as shown in Layout of the Repair Parts, Figure 201/REPAIR 5.
  - (2) Refer to 51-40-02, 51-40-03, and 51-40-05.
- K. Install the repair parts.
- (1) Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.
  - (2) Install the pan head screw wet with sealant. Refer to 51-40-02.
- L. Apply one layer of BMS 10-11, Type I primer to the fasteners. Refer to SOPM 20-44-04.
- M. Apply a fillet seal to the repair area. Refer to 51-20-05.
- N. Apply the decorative finish to the repair area if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- O. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the internal structure in the repair area.

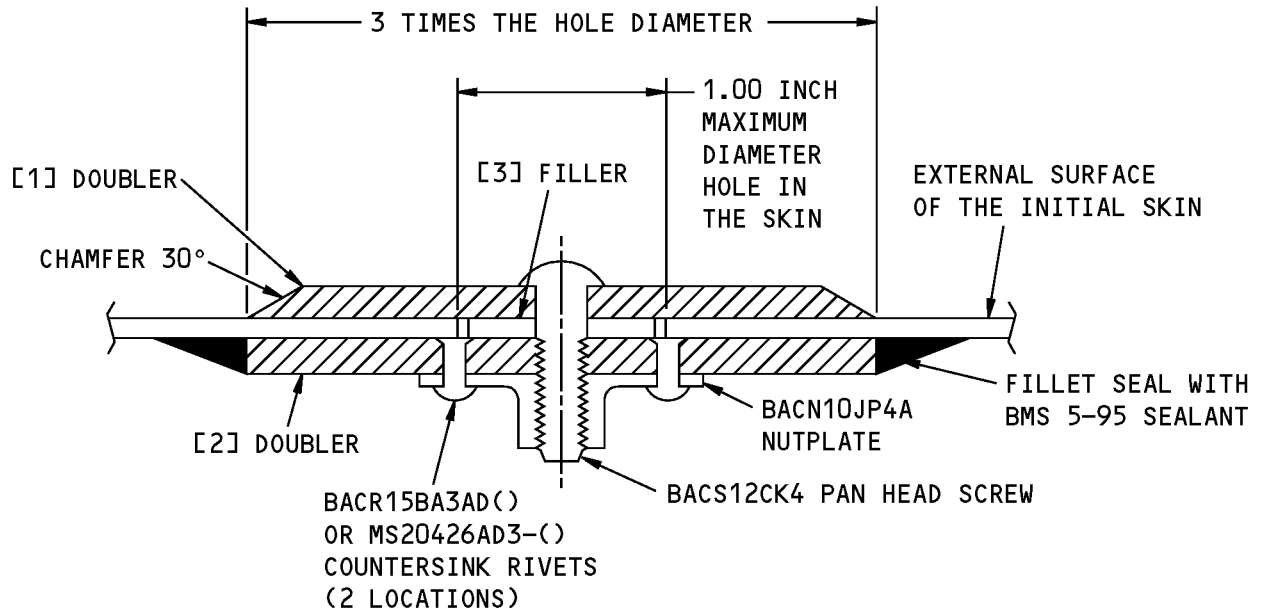
### 5. Inspection Instructions

- A. Do a detailed visual inspection of the repair area at each 250 flight hour interval until the permanent repair is installed.

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STRUCTURAL REPAIR MANUAL**



**ALTERNATIVE 1**



**ALTERNATIVE 2**

**Layout of the Repair Parts  
Figure 201**





## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 6 - FLUSH REPAIR OF A SMALL HOLE

#### 1. Applicability

- A. Repair 6 is applicable to damage that:
  - (1) Can be drilled out to a maximum of 1.00 inch in diameter
  - (2) Is in an area where the skin is a constant thickness
  - (3) Is between the stringers and the frames.
- B. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from a fastener location.
- C. When protruding head fasteners are used, Repair 6 is not applicable for use near static ports or angle of attack sensors where external repairs are not permitted. Refer to 51-10-01.
  - (1) Protruding head fasteners are used when the skin thickness is 0.056 inch or less.

#### 2. General

- A. Repair 6 gives the instructions for a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 6 gives the instructions for a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 6 is a replacement repair for Repair 5 which is an external repair with blind rivets.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

#### 4. Repair Instructions

- A. Drill out the damage up to a maximum of 1.00 inch in diameter as shown in Layout of the Repair Parts, Figure 201/REPAIR 6.
- B. Make the repair parts:
  - (1) Refer to Table 201/REPAIR 6 for the material and the thickness of the repair parts.
  - (2) Refer to Table 202/REPAIR 6 for the dimensions of the part [1] Doubler.
- C. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 6.

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STRUCTURAL REPAIR MANUAL**

- D. Drill the fastener holes. Refer to Table 202/REPAIR 6 for the fastener type, diameter, and spacing.
- E. Disassemble the repair parts.
- F. Remove all the nicks, scratches, gouges, burrs, from the initial and the repair parts.
- G. Apply a chemical conversion coating to the repairs parts and the bare surfaces of the fuselage skin. Refer to 51-20-01.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use 2024-T3 that is one standard aluminum sheet metal gage thicker than the initial skin
[2]	Filler	1	Use 2024-T3 that is the same thickness as the initial skin

**Table 202:**

NUMBER, TYPE, AND DIAMETER OF REPAIR FASTENERS							
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION			NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER-PREFERRED (ALTERNATE)
	A (INCH)	B (INCH)	C (INCH)	B DIA	C DIA		
0.040	3.80	1.80	3.10	9	15	BACR15BB5D	
0.045	3.80	1.80	3.10	9	15	BACR15BB5D	
0.050	3.80	1.80	3.10	9	15	BACR15BB5D	
0.056	4.30	2.00	3.50	8	14	BACR15BB6D	
0.063	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)	
0.071	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)	
0.080	4.30	2.00	3.50	8	14	BACR15CE6D (OPTIONAL: BACR15GF6D, BACR15BB6D)	

- H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- I. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- J. Seal the repair area. Refer to 51-20-05.
  - (1) Apply a fillet seal to the part [1] doubler.
  - (2) Put the sealant into the space between the part [2] filler and the skin.
- K. Apply the decorative finish to the repair area if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

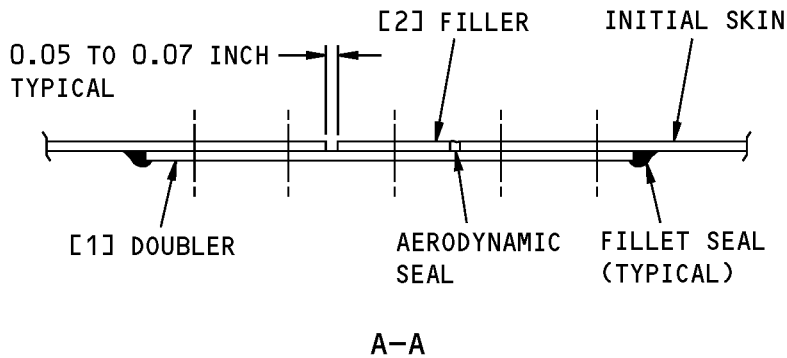
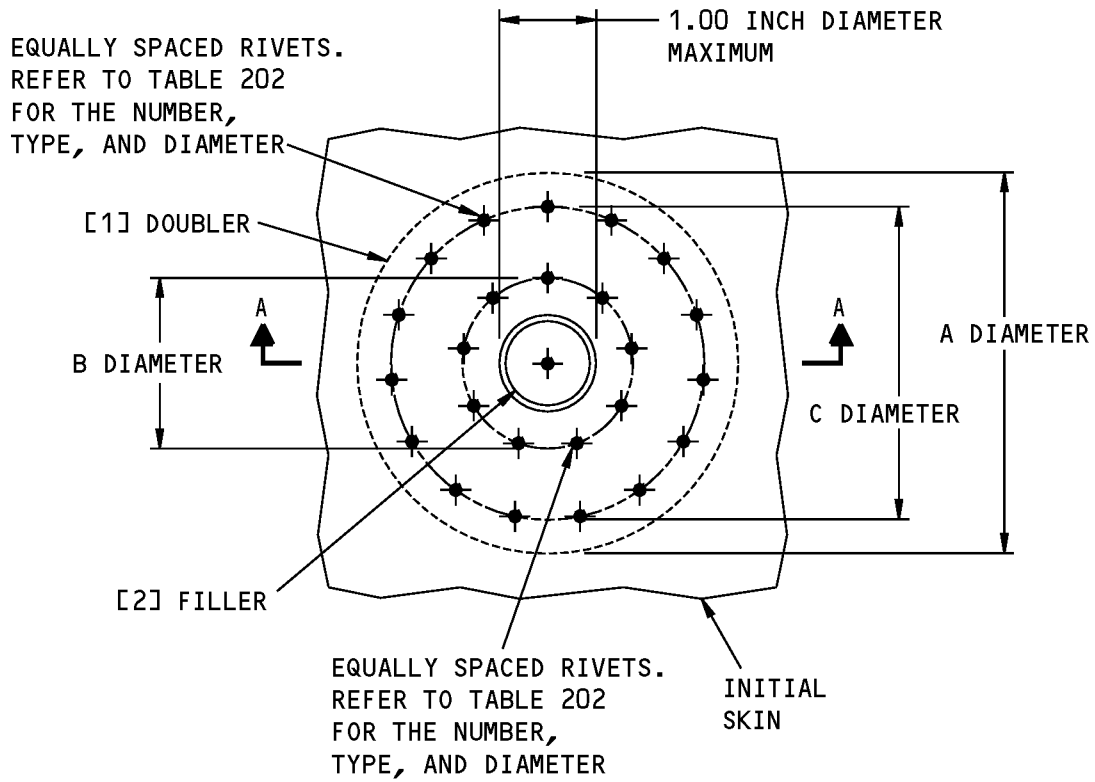


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- L. Apply one layer of BMS 3-23, corrosion inhibiting compound to all the internal structure in the repair area.

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**NOTE:** REFER TO TABLE 202 FOR THE DIMENSIONS.

**FASTENER SYMBOLS**

✦ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE TYPE AND DIAMETER.

**Layout of the Repair Parts  
Figure 201**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. The inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 7 - FLUSH REPAIR OF CROWN SKIN AND BONDED DOUBLER AT A STRINGER

#### 1. Applicability

- A. Repair 7 is a flush repair that is applicable to damage:
  - (1) In a 0.040 inch or 0.050 inch thick crown skin that has a bonded "waffle" doubler
  - (2) At a stringer location.
- B. Repair 7 is not applicable to damage:
  - (1) That goes to more than one stringer
  - (2) At a skin splice
  - (3) At window belts
  - (4) At skin cutouts
  - (5) In major body joint bays.

#### 2. General

- A. Repair 7 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 7 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 7 can be used to replace an external repair with a maximum damage area of 10 inches x 10 inches.
- D. Repair 7 is:
  - (1) An alternative repair for Repair 1 which is an external repair with solid rivets, where applicable
  - (2) A replacement repair for Repair 2 which is an external repair with blind rivets, where applicable.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
53-00-03	FUSELAGE STRINGERS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

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**4. Repair Instructions**

- A. Get access to the damaged area.
  - (1) If Repair 7 will replace an external repair, remove the repair fasteners and the repair parts.
- B. Remove the necessary fasteners in the area of the damaged skin.
- C. Cut and remove the damaged part of the stringer.
- D. Cut and remove the damaged part of the skin.
  - (1) Make the repair cutout in the shape of a rectangle with the edge parallel to the position of the stringer as shown in Layout of the Repair Parts, Figure 201/REPAIR 7.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- E. Put the skin around the cut back to the initial contour.
- F. Make the repair parts given in Table 201/REPAIR 7.
 

**NOTE:** Repair the stringer as given in 53-00-03.
- G. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 7.
- H. Drill the necessary fastener holes. Refer to Layout of the Repair Parts, Figure 201/REPAIR 7 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) If Repair 7 will replace an external repair, then:
    - (a) Use the same fastener holes as the external repair
    - (b) Use the same fastener spacing as the external repair if you drill more fastener holes.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use clad 2024-T3. Use a thickness that is same thickness as the initial skin
[2]	Filler	1	Use clad 2024-T3 that is the same thickness as the initial doubler
[3]	Filler	1	Use clad 2024-T3 that is the same thickness as the initial skin

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE DOUBLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	4	4	0.78 TO 0.81
0.050	0.050	BACR15BB5D	4	4	0.78 TO 0.81

**Table 203:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	FILLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE FILLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	5	5	0.78 TO 0.81
0.050	0.050	BACR15BB5D	5	5	0.78 TO 0.81



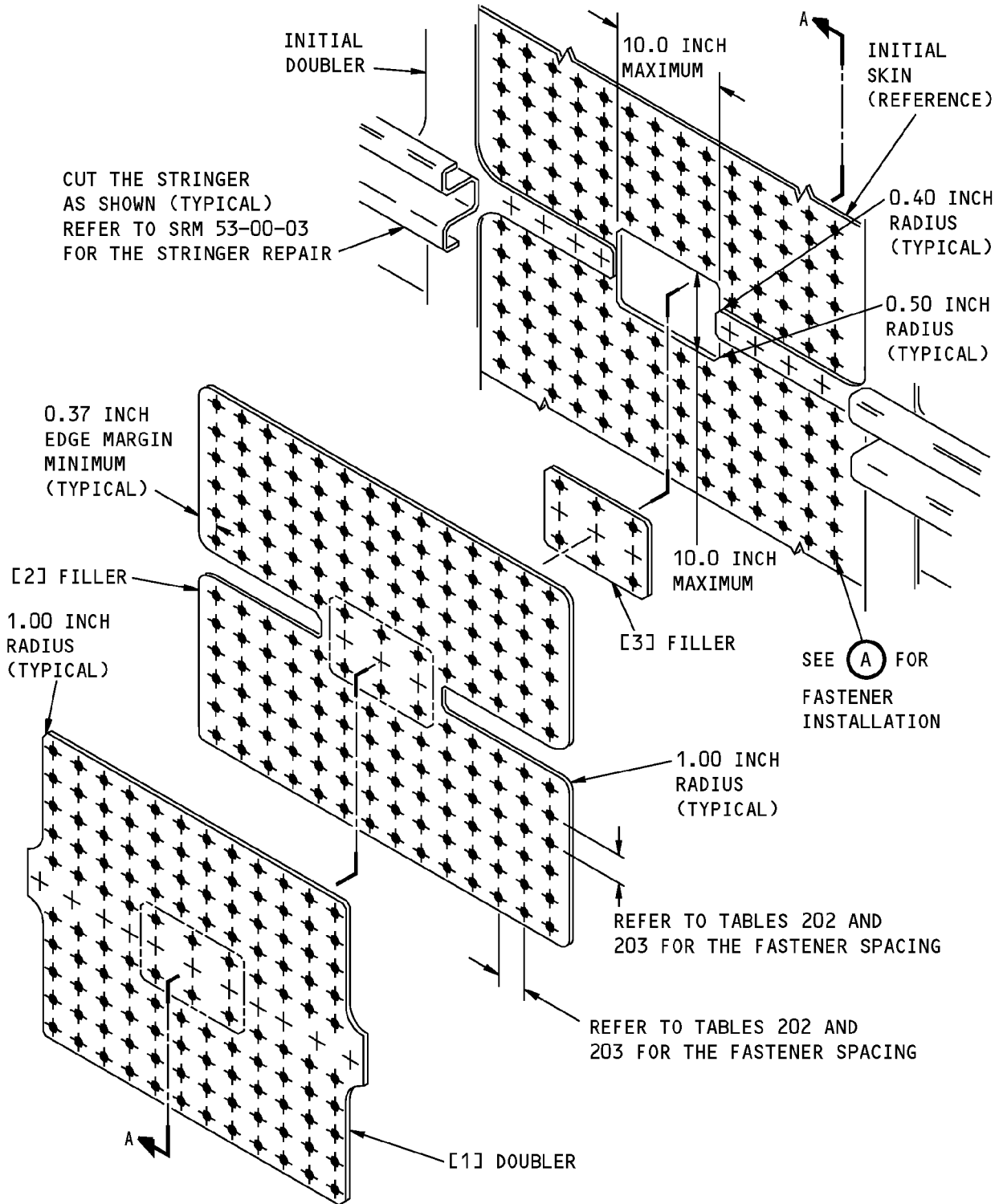
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- I. Disassemble the repair parts.
- J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Install the countersink repair washers with BMS 5-95 sealant at the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 7. Refer to 51-40-08.
- M. Apply two layers of BMS 10-11, Type I primer to the repair parts, the bare surfaces of the initial parts and the internal surfaces of the repair area. Refer to SOPM 20-41-02.
- N. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- O. Apply BMS 5-95 sealant to the repair as follows:
  - (1) Apply a fillet seal to the repair parts on the internal and external sides of the repair area. Refer to 51-20-05
  - (2) Put sealant into the space between the part [3] filler and the skin. Refer to 51-20-05.
- P. Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- Q. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the interior structure of the repair area.

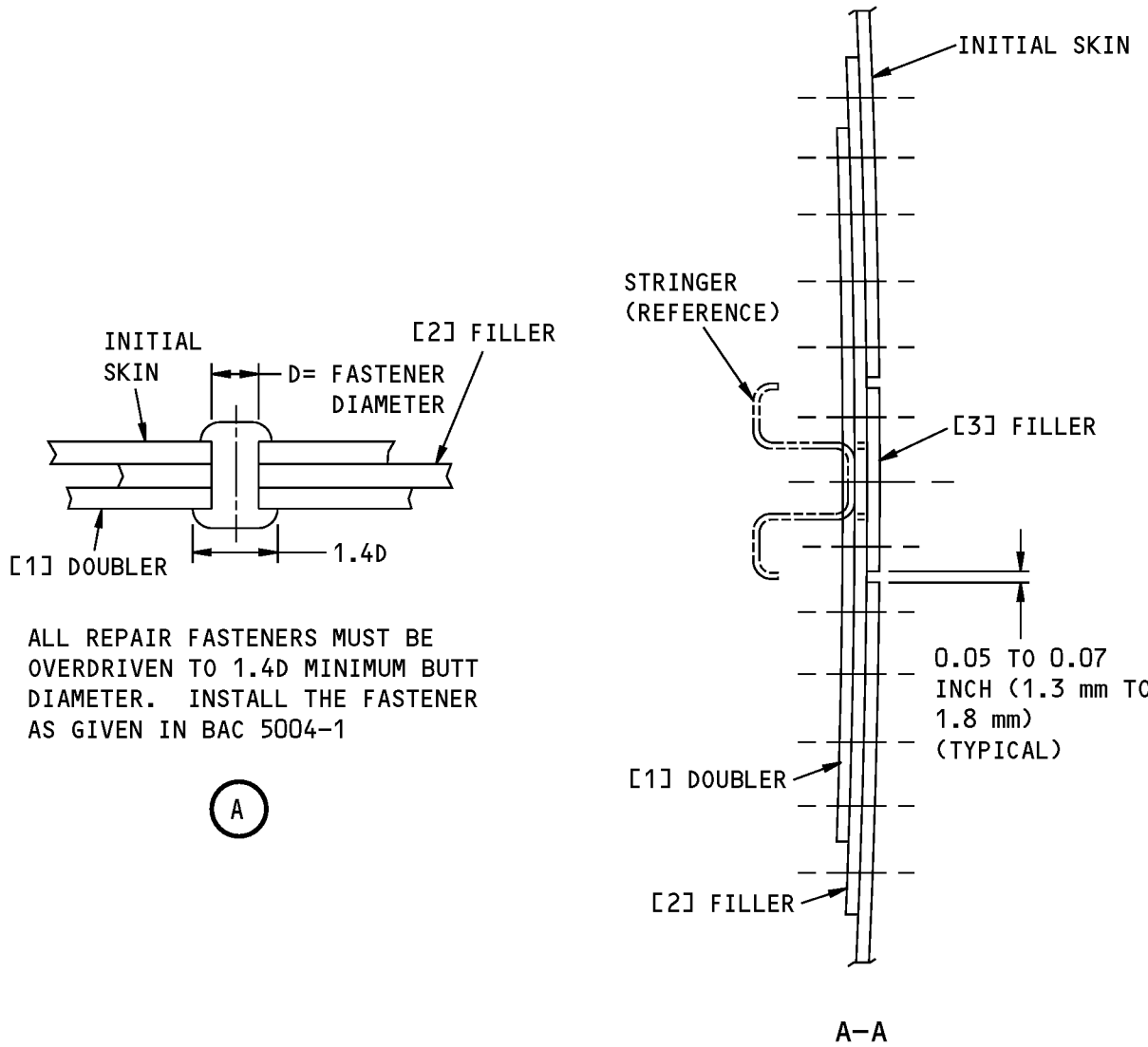


**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

(A)

**FASTENER SYMBOLS**

- ✚ INITIAL FASTENER LOCATION. INSTALL THE FASTENER WHEN YOU DO THE SUBSEQUENT STRINGER REPAIR.
- ✦ REPAIR FASTENER LOCATION. REFER TO TABLES 202 AND 203 FOR THE FASTENER TYPE AND DIAMETER.

**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 2)**



**737-800**

## **STRUCTURAL REPAIR MANUAL**

### **5. Inspection Requirements**

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements that are given below. The inspection requirements as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 8 - FLUSH REPAIR OF CONSTANT THICKNESS SKIN BETWEEN STRINGERS

#### 1. Applicability

- A. Repair 8 is a flush repair that is applicable to fuselage skin damage between stringers where the skin is a constant thickness.
- B. Repair 8 is not applicable to damage:
  - (1) That goes to more than one stringer
  - (2) That goes to a frame
  - (3) At skin splices
  - (4) At window belts
  - (5) Closer than 20 inches (508 mm) to skin cutouts
  - (6) At major body joint bay
  - (7) At 10 inches (254 mm) or less away from the edge of an existing repair.
    - (a) If damage occurs in this area, then remove the existing repair and make one repair that includes the two areas of damage.
- C. When protruding head fasteners are used, Repair 8 is not applicable near static ports or angle of attack sensors. External repairs are not permitted in these locations. Refer to 51-10-01.

#### 2. General

- A. Repair 8 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 8 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the Inspection Requirements.
- C. Repair 8 can be used to replace an external repair.
- D. Repair 8 is an alternative to:
  - (1) Repair 3 which is an external repair with solid rivets for damage between stringers
  - (2) Repair 4 which is an external repair with blind rivets for damage between stringers.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING



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**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts
737 NDT Part 6, 51-00-00, Figure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Figure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

**4. Repair Instructions**

- A. Get access to the damaged area.
  - (1) Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02, GENERAL
  - (2) If Repair 8 will replace an external repair, remove the repair fasteners and the repair parts.
- B. Cut and remove the damaged part of the fuselage skin, if necessary. Refer to 51-10-02, GENERAL.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame as shown in Layout of the Repair Parts, Figure 201/REPAIR 8.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Figure 4, 737 NDT Part 6, 51-00-00, Figure 8 and 737 NDT Part 6, 51-00-00, Figure 9.
- E. Make the repair parts as given in Table 201.
- F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.
- G. Assemble the repair parts as shown in Figure 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 to find the length, width, necessary fastener spacing, number of rows, and edge margins. Refer to Table 202 for the thickness.
[2]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[3]	Tapered Shim	As necessary	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 and Table 202 for the thickness.

- H. Drill the necessary fastener holes. Refer to Table 202 for the fastener type, diameter and spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) Do not countersink the fastener holes more than 76 percent of the initial skin thickness.
    - (a) This will prevent a knife-edge condition of the initial skin.
  - (2) If Repair 8 will replace an external repair, then:
    - (a) Use the same fastener holes as the external repair
    - (b) Use the same fastener spacing as the external repair if you drill more fastener holes.
- I. Disassemble the repair parts.

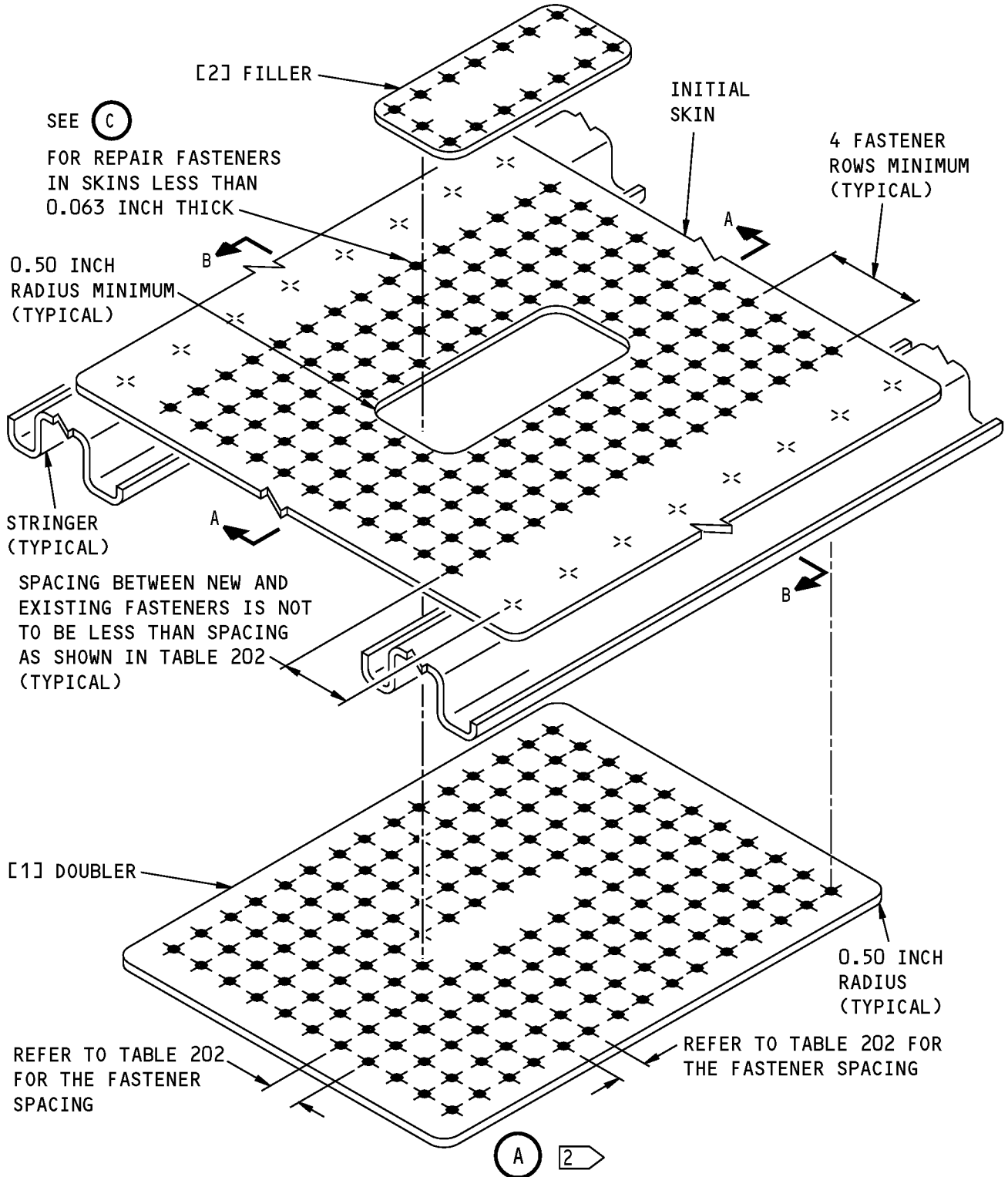
**737-800  
STRUCTURAL REPAIR MANUAL**

- J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
- N. Apply a fillet seal to the repair. Refer to 51-20-05.
  - (1) Apply a fillet to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant.
  - (2) Put sealant into the space between the part [2] filler and the skin.
- O. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- P. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area.

**Table 202:**

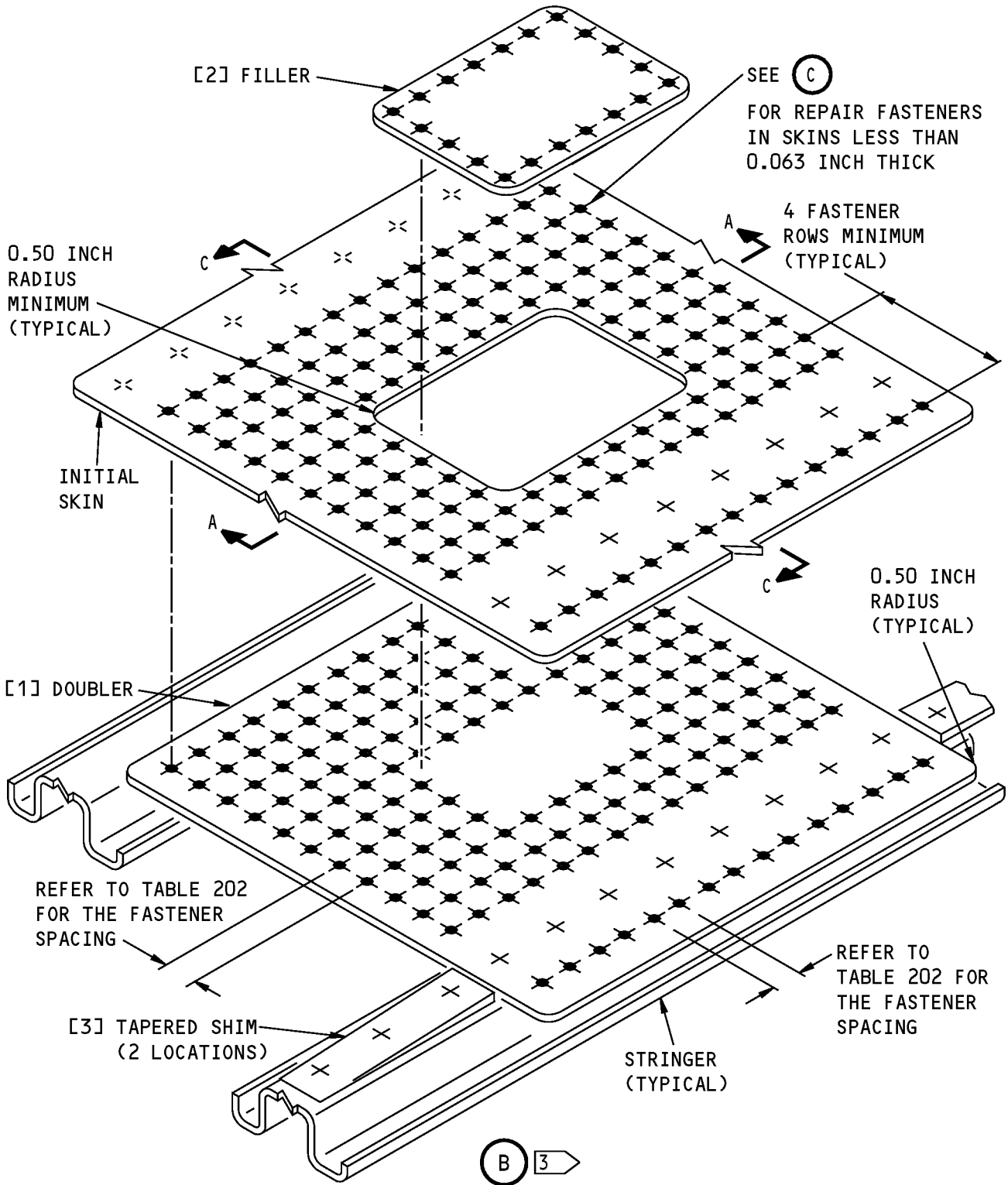
REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.045	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.045	0.050	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.050	0.056	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.056	0.063	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.071	0.080	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.080	0.090	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.090	0.100	BACR15CE8D (BACR15GF8D)	4	4	1.0 TO 1.2 (25.4 TO 30.5 mm)

**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 6)**

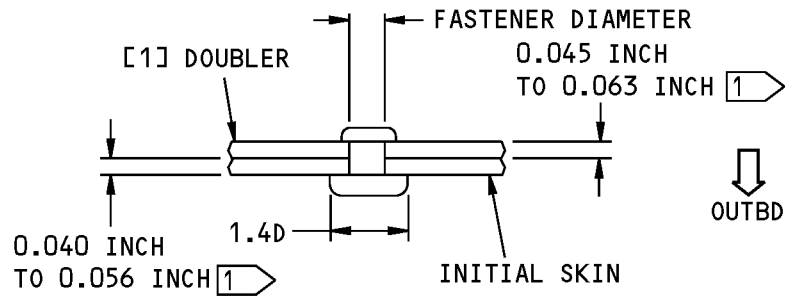
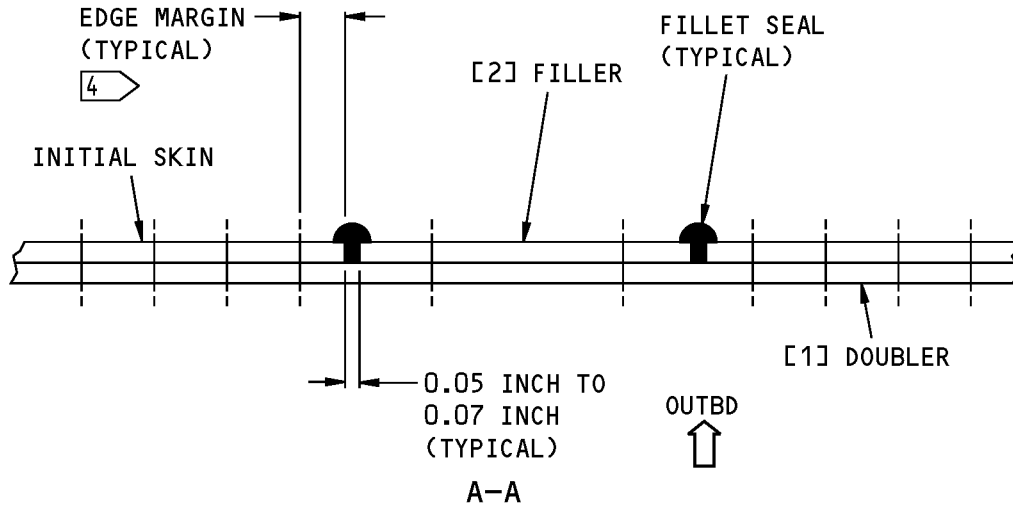
**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 6)**



**737-800  
STRUCTURAL REPAIR MANUAL**

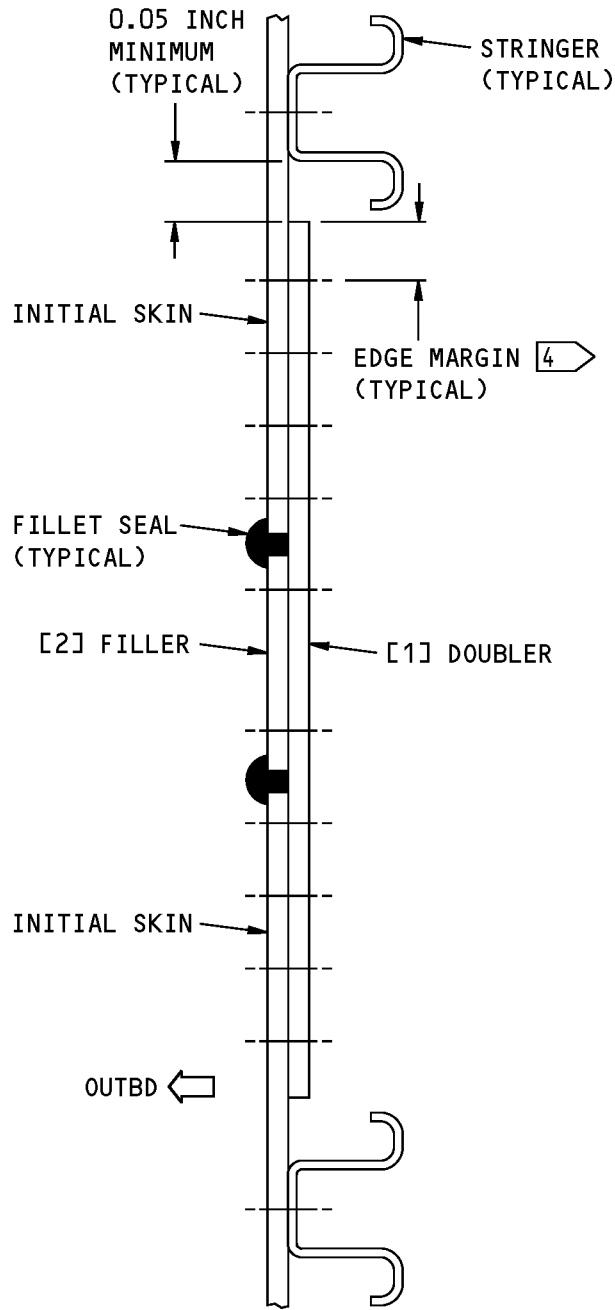


**NOTE:** FOR REPAIRS DONE TO ALL SKINS LESS THAN 0.063 INCH THICK, ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

C

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 6)**

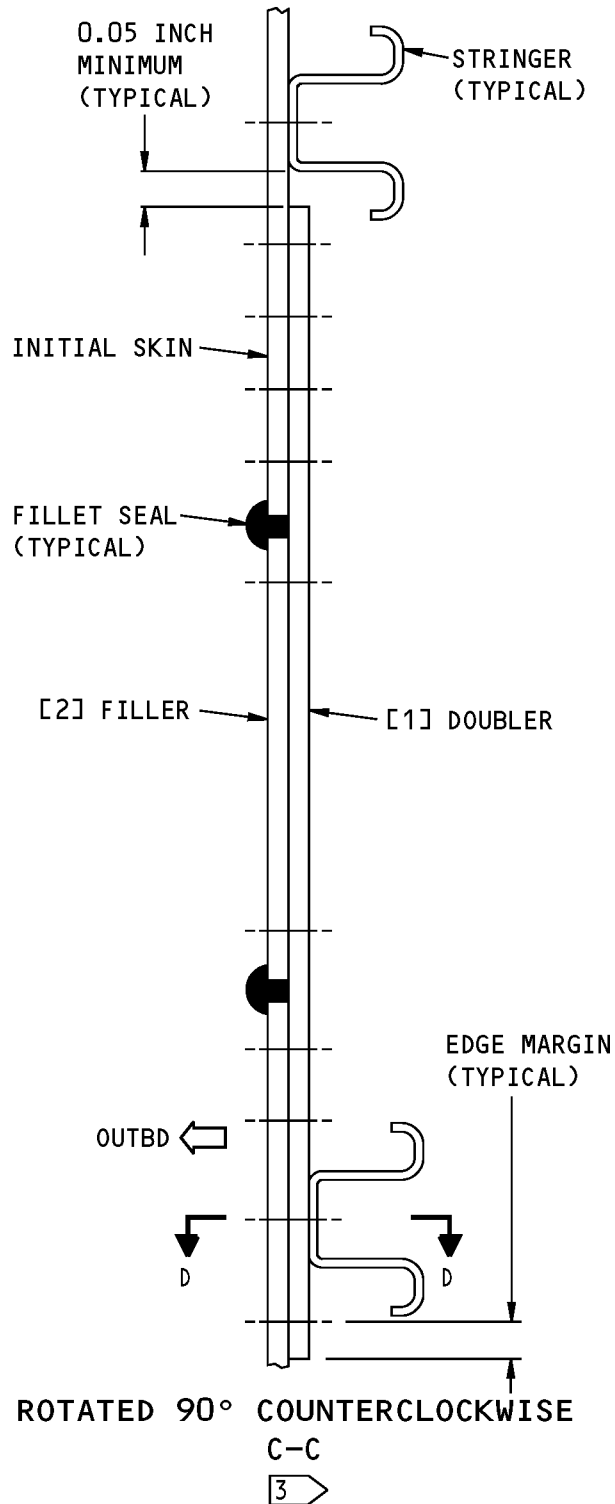
**737-800  
STRUCTURAL REPAIR MANUAL**



ROTATED 90° COUNTERCLOCKWISE  
B-B  
2

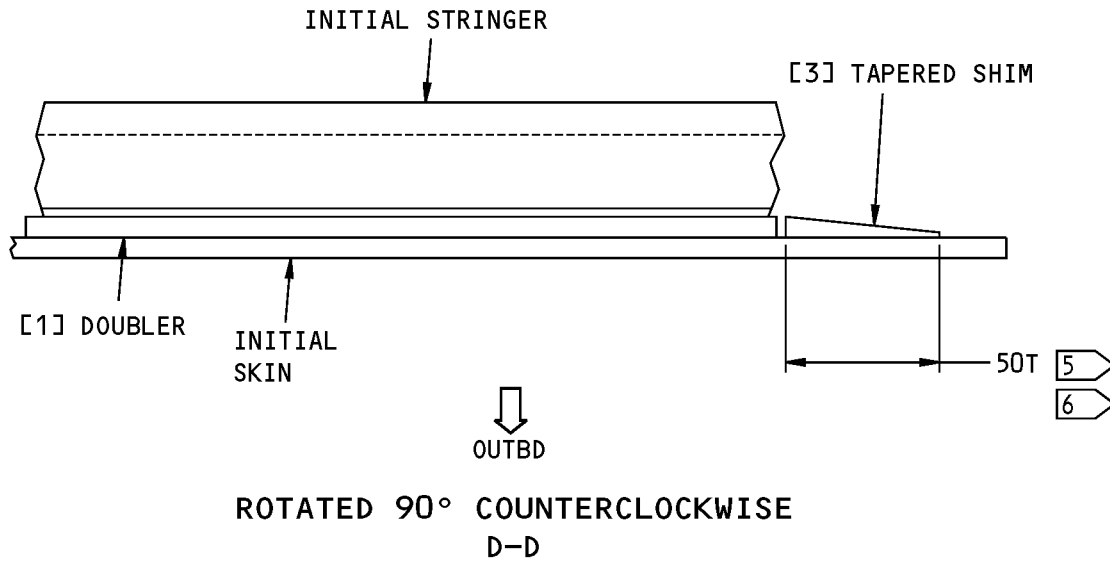
**Layout of the Repair Parts  
Figure 201 (Sheet 4 of 6)**

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STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

- [1] REFER TO TABLE 202
- [2] REPAIR AS SHOWN DOES NOT EXTEND ACROSS A STRINGER.
- [3] REPAIR AS SHOWN DOES EXTEND ACROSS A STRINGER. THE REPAIR MUST INCLUDE ONE ADDITIONAL ROW OF FASTENERS BEYOND THE STRINGER AS SHOWN.
- [4] REFER TO SRM 51-40-06 FOR THE EDGE MARGIN. FOR A BACR15CE7D OR BACR15GF7D RIVET, THE EDGE MARGIN IS 0.50 ±0.05 INCH.
- [5] T = DOUBLER THICKNESS.
- [6] TAPER SHIM THICKNESS FROM T TO  $\begin{matrix} 0.02 \\ 0.01 \end{matrix}$  INCH OVER SHIM LENGTH OF 50T.

**FASTENER SYMBOLS**

- ✦ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.
- ✚ INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY.
- ⊖ REFERENCE FASTENER LOCATION.

**Layout of the Repair Parts  
Figure 201 (Sheet 6 of 6)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. Inspections as given below are applicable to airplanes that have completed Service Bulletin 737-21-1149. Inspections as given below are not applicable to airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



# 737-800 STRUCTURAL REPAIR MANUAL

## REPAIR 9 - FLUSH REPAIR OF FUSELAGE SKIN BETWEEN STRINGERS

### 1. Applicability

- A. Repair 9 is a flush repair that is applicable to fuselage skin damage between stringers at:
  - (1) Areas of bonded doublers
  - (2) Areas of chem-milled pads.
- B. Repair 9 is not applicable to damage:
  - (1) That goes to more than one stringer or a frame
  - (2) At skin splices
  - (3) At window belts
  - (4) Closer than 20 inches (508 mm) to skin cutouts
  - (5) At major body joint bays
  - (6) At 10 inches (254 mm) or less away from the edge of an existing repair
    - (a) If damage occurs in this area, then remove the existing repair and make one repair that includes the two areas of damage.
- C. When protruding head fasteners are used, Repair 9 is not applicable near static ports or angle of attack sensors. External repairs are not permitted in these locations. Refer to 51-10-01.
  - (1) Protruding head fasteners are used for a skin thickness of 0.056 inch or less.

### 2. General

- A. Repair 9 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 9 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the Inspection Requirements.
- C. Repair 9 can be used to replace an external repair.
- D. Repair 9 is an alternative to:
  - (1) Repair 3 which is an external repair with solid rivets for damage between stringers
  - (2) Repair 4 which is an external repair with blind rivets for damage between stringers.

### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures

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**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts
737 NDT Part 6, 51-00-00, Figure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Figure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

**4. Repair Instructions**

- A. Get access to the damaged area.
  - (1) Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02, GENERAL.
  - (2) If Repair 9 will replace an external repair, remove the repair fasteners and the repair parts.
- B. Cut and remove the damaged part of the fuselage skin, if necessary. Refer to 51-10-02, GENERAL.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame as shown in Layout of the Repair Parts, Figure 201/REPAIR 9.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Figure 4, 737 NDT Part 6, 51-00-00, Figure 8 and 737 NDT Part 6, 51-00-00, Figure 9.
- E. Make the repair parts as given in Table 201.
- F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.
- G. Assemble the repair parts as shown in Figure 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201 to find the length, width, necessary fastener spacing, number of rows, and edge margins. Refer to Table 202 for the thickness.
[2]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[3]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[4]	Filler	1	Use the same material, heat treat and thickness as the initial skin.
[5]	Tapered Shim	As necessary	Use the same material, heat treat and thickness as the initial skin.

- H. Drill the necessary fastener holes. Refer to Table 202 for the fastener type, diameter and spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) Do not countersink the fastener holes more than 76 percent of the initial skin thickness.
    - (a) This will prevent a knife-edge condition of the initial skin.
  - (2) If Repair 9 will replace an external repair, then:
    - (a) Use the same fastener holes as the external repair.

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STRUCTURAL REPAIR MANUAL**

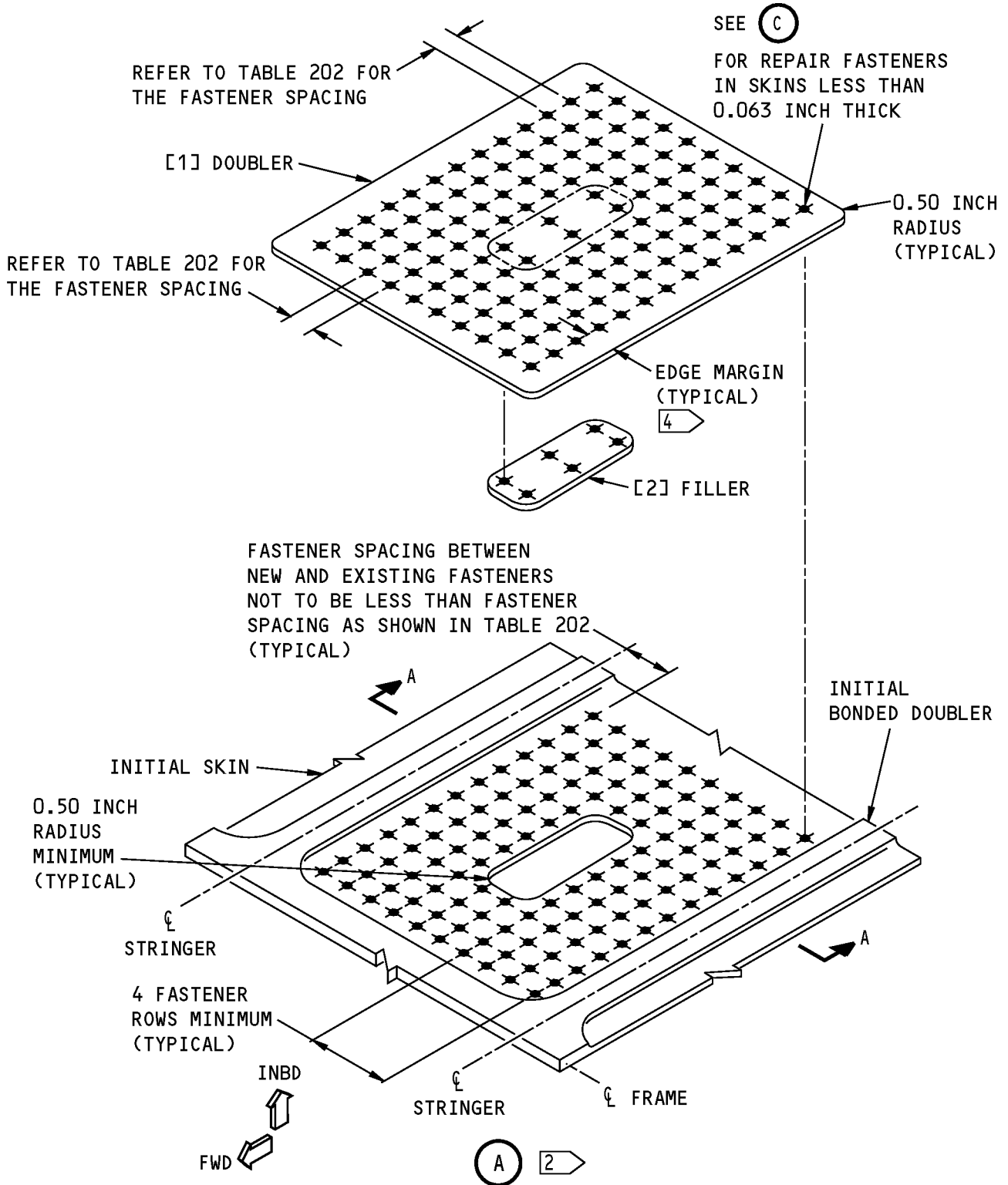
- (b) Use the same fastener spacing as the external repair if you drill more fastener holes.
- I. Disassemble the repair parts.
- J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
- N. Apply a fillet seal to the repair. Refer to 51-20-05.
  - (1) Apply a fillet to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant.
  - (2) Put sealant into the space between the part [2] filler and the skin.
- O. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- P. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area.

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER PREFERRED (ALTERNATIVE)	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH) (mm)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.045	BACR15BB5D	4	4	0.78 TO 0.81 (19.8 TO 20.6 mm)
0.045	0.050	BACR15BB5D	4	4	0.63 TO 0.78 (16.00 TO 19.81 mm)
0.050	0.056	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.056	0.063	BACR15BB6D	4	4	0.75 TO 0.94 (19.05 TO 23.88 mm)
0.063	0.071	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.071	0.080	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.080	0.090	BACR15GF7D	4	4	0.87 TO 1.0 (22.1 TO 25.4 mm)
0.090	0.100	BACR15CE8D (BACR15GF8D)	4	4	1.0 TO 1.2 (25.4 TO 30.5 mm)

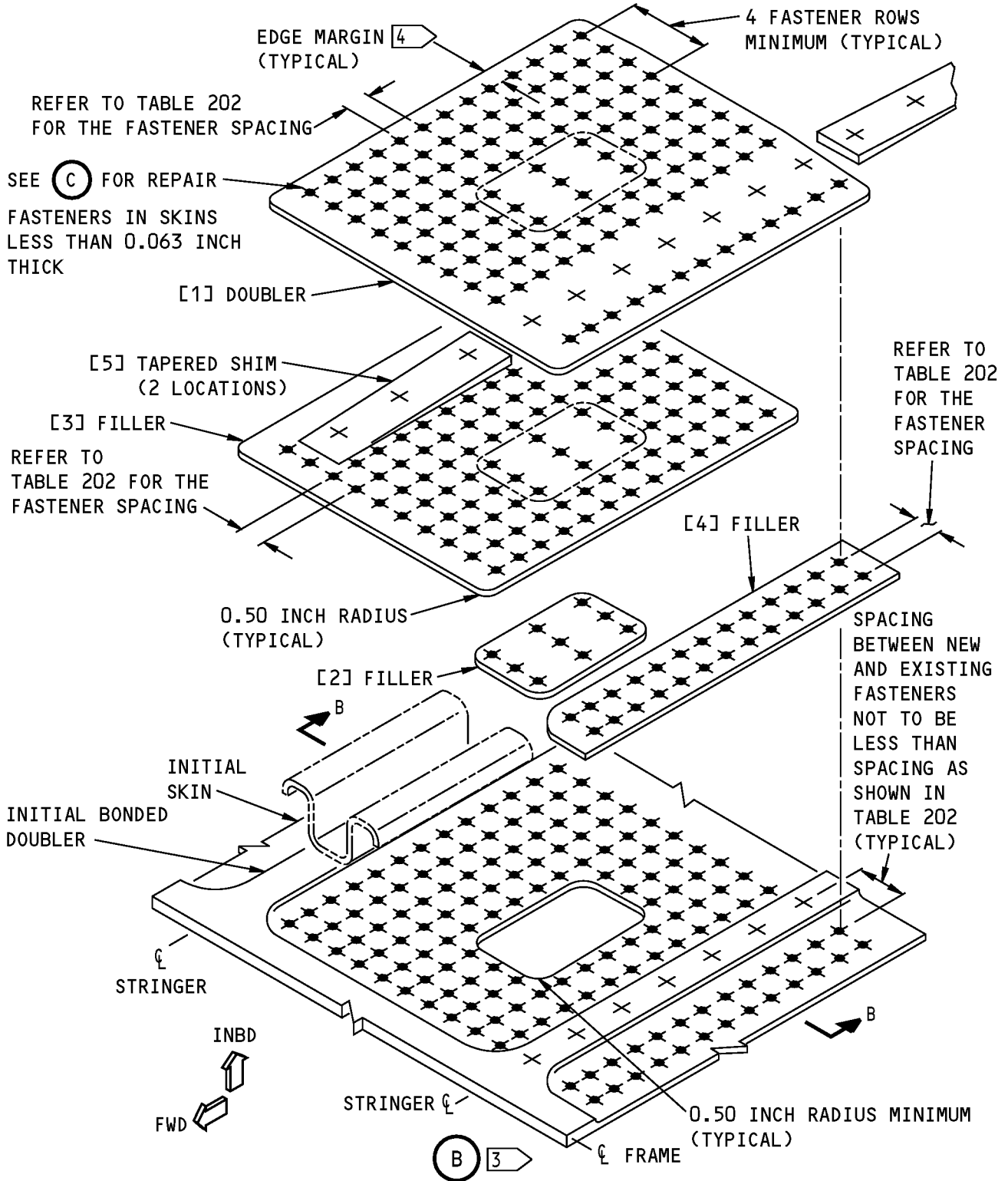


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STRUCTURAL REPAIR MANUAL**



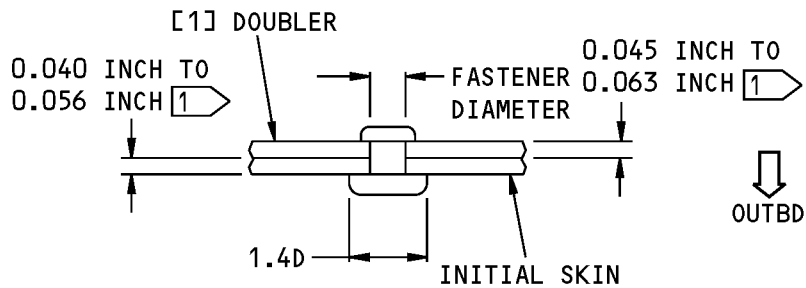
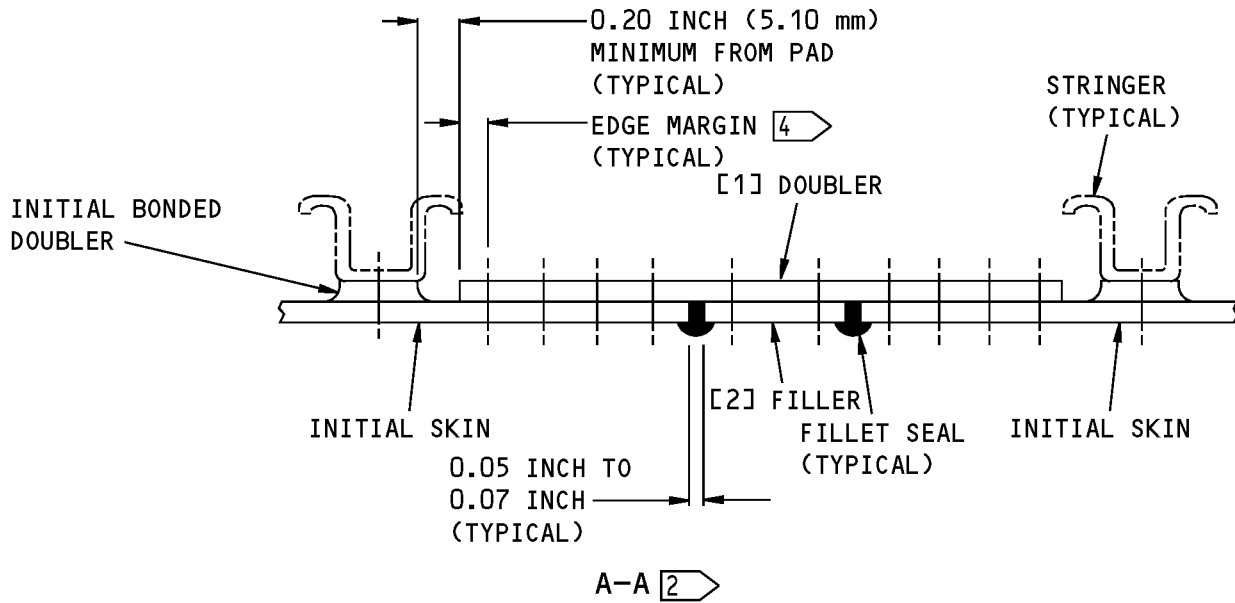
**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**

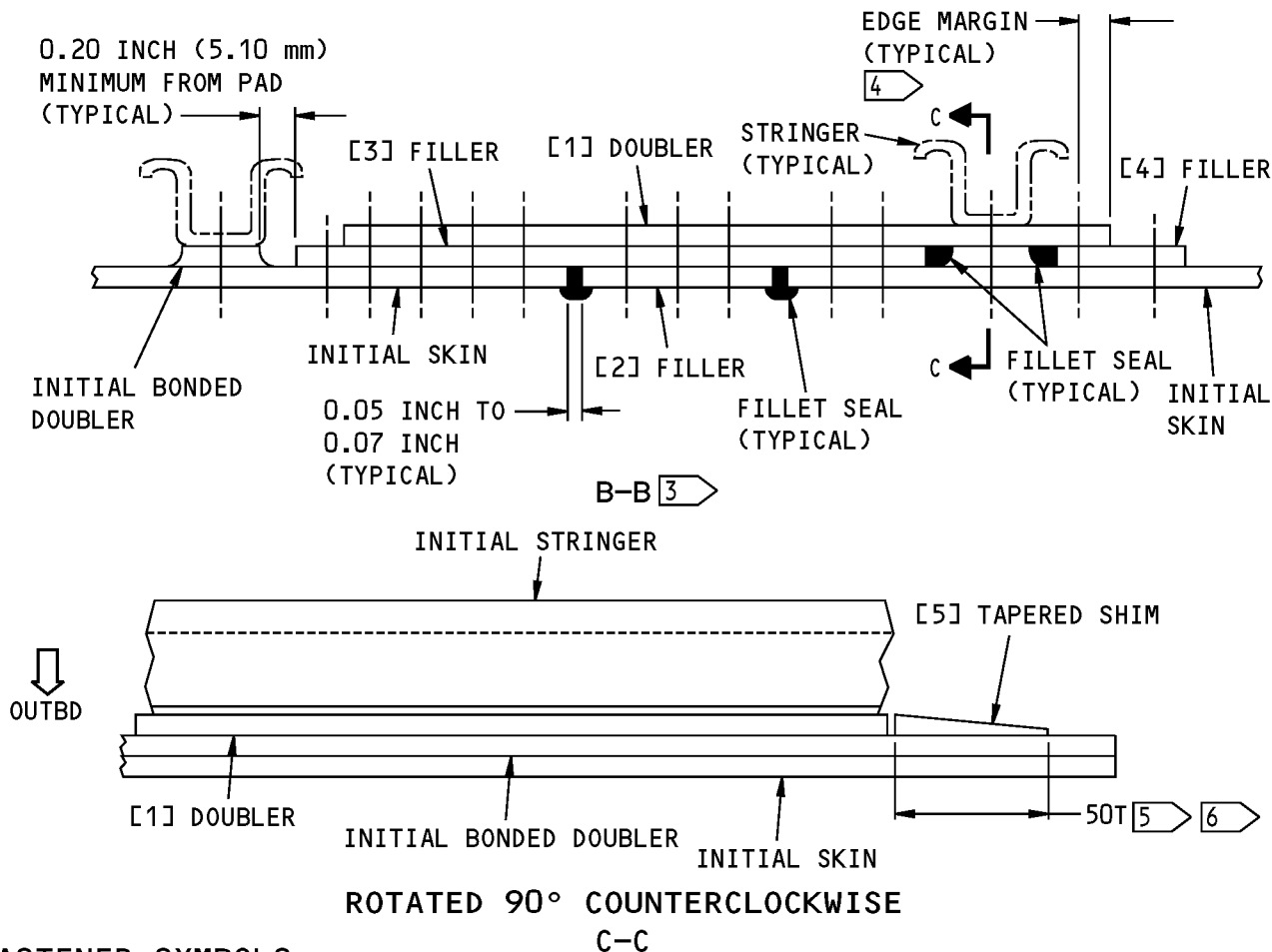


**NOTE:** FOR REPAIRS DONE TO ALL SKINS LESS THAN 0.063 INCH THICK, ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

C

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 4)**

STRUCTURAL REPAIR MANUAL



FASTENER SYMBOLS

- ◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER TYPE AND DIAMETER.
- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY.

NOTES

- [1] REFER TO TABLE 202
- [2] REPAIR DOES NOT EXTEND ACROSS A STRINGER.
- [3] REPAIR DOES EXTEND ACROSS A STRINGER. REPAIR MUST INCLUDE ONE ADDITIONAL ROW OF FASTENERS AS SHOWN. REPAIR USE IS RESTRICTED TO 0.040 INCH INITIAL SKIN THICKNESS IN BOTH POCKETS WITH A 0.040 INCH BONDED DOUBLER.
- [4] REFER TO SRM 51-40-06 FOR THE EDGE MARGIN. FOR A BACR15CE7D OR BACR15GF7D RIVET, THE EDGE MARGIN IS 0.50 ±0.05 INCH.
- [5] T = DOUBLER THICKNESS.
- [6] TAPER SHIM THICKNESS FROM T TO 0.02 INCH OVER SHIM LENGTH OF 50T.  
0.01

Layout of the Repair Parts  
Figure 201 (Sheet 4 of 4)



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. Inspections as given below are applicable to airplanes that have completed Service Bulletin 737-21-1149. Inspections as given below do not apply to airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 10 - FLUSH REPAIR OF 0.040 INCH THICK CROWN SKIN AND BONDED DOUBLER AT A FRAME

#### 1. Applicability

- A. Repair 10 is applicable to damage to the fuselage skin and bonded doubler at a frame.
- B. Repair 10 is applicable to damage:
  - (1) In a 0.040 inch thick crown skin
  - (2) To the fuselage skin and bonded doubler at a frame.
- C. Repair 10 is not applicable to damage:
  - (1) At a location where there is a shear tie
  - (2) That goes to more than one frame
  - (3) That goes to a stringer
  - (4) At a skin splice
  - (5) At window belts
  - (6) At skin cutouts
  - (7) In major body joint bays
  - (8) The crown skin panel between BS 540 and BS 727.
    - (a) For a repair to this 0.050 inch thick skin area, refer to Repair 18.

#### 2. General

- A. Repair 10 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 10 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 10 can be used to replace an external repair.
- D. Repair 10 is an alternative to Repair 7, which is a flush repair for damage at a stringer and bonded doubler.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

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STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

- A. Get access to the damaged area.
  - (1) If Repair 10 will replace an external repair, remove the repair fasteners and the repair parts.
- B. Remove the necessary fasteners in the area of the damaged skin.
- C. If necessary, cut and remove the damaged part of the skin.
  - (1) Make the repair cutout in the shape of a rectangle with the edge parallel or perpendicular to the frame or stringer.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- D. Put the skin around the cut back to the initial contour.
- E. Make the repair parts given in Table 201/REPAIR 10.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material, heat treat condition, and the same thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat condition and the same thickness as the initial doubler
[3]	Filler	1	Use the same material, heat treat condition, and the same thickness as the initial skin

- F. Make the contour of the repair parts the same as the contour of the initial skin, as necessary.
- G. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 10.
- H. Drill the necessary fastener holes. Refer to Layout of the Repair Parts, Figure 201/REPAIR 10, Tables 202 and 203 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) If Repair 10 will replace an external repair, then:
    - (a) Use the same fastener holes as the external repair.
    - (b) Use the same fastener spacing as the external repair if you drill more fastener holes.

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING IN THE DOUBLER					
INITIAL SKIN THICKNESS (INCH)	INITIAL DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	4	4	0.78 TO 0.81

**NOTE:** These fasteners must be overdriven to a minimum of 1.4 d (d = fastener shank diameter) as given in BAC 5004-1.



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Table 203:

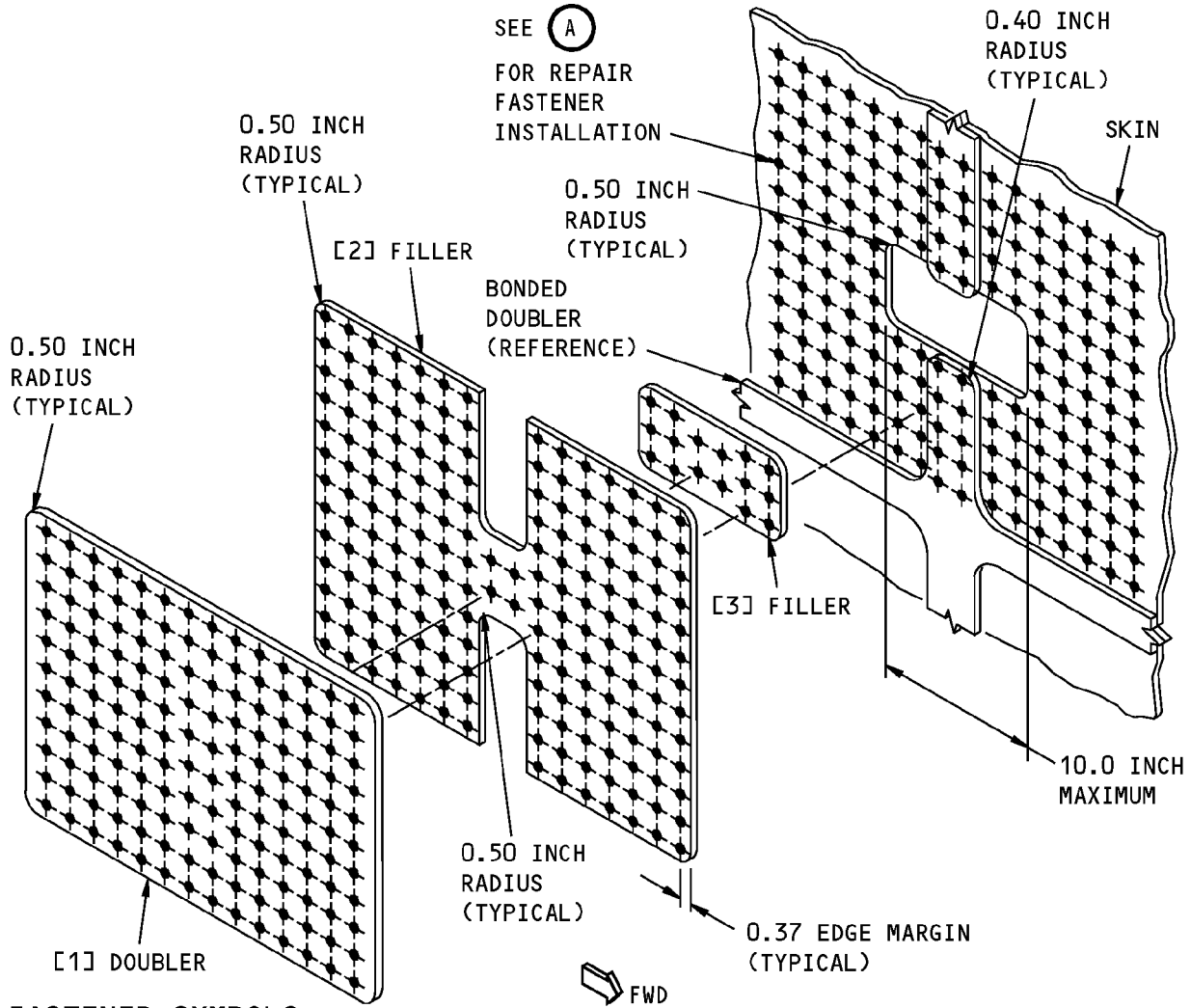
REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING IN THE FILLER					
INITIAL SKIN THICKNESS (INCH)	FILLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.040	0.040	BACR15BB5D	5	5	0.78 TO 0.81

**NOTE:** These fasteners must be overdriven to a minimum of 1.4 d (d = fastener shank diameter) as given in BAC 5004-1.

- I. Disassemble the repair parts.
- J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply two layers of BMS 10-11, Type I primer to the repair parts, the bare surfaces of the initial parts and the internal surfaces of the repair area. Refer to SOPM 20-41-02.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- N. Apply BMS 5-95 sealant to the repair as follows:
  - (1) Apply a fillet seal to the repair parts on the internal and external sides of the repair area. Refer to 51-20-05
  - (2) Put sealant into the space between the part [1] filler and the skin. Refer to 51-20-05.
- O. Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- P. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the interior structure of the repair area.

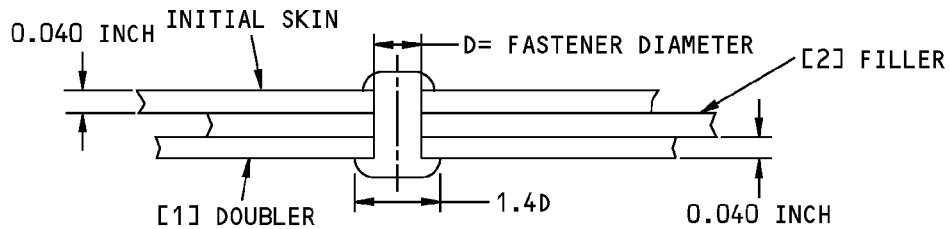


**STRUCTURAL REPAIR MANUAL**



**FASTENER SYMBOLS**

◆ REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D RIVET.



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENERS AS GIVEN IN BAC 5004-1.

(A)

**Layout of the Repair Parts  
Figure 201**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspections requirements as given below. The inspection requirements as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 11 - EXTERNAL REPAIR FOR DAMAGE AT A LOWER LOBE LAP SPLICE ADJACENT TO A CARGO DOOR

#### 1. Applicability

- A. Repair 11 is applicable to fuselage skin damage in the lower lobe lap splice at:
- (1) Stringer S-23L and Stringer S-23R in fuselage section 46
  - (2) Stringer S-24L and Stringer S-24R in fuselage section 43
  - (3) The areas that are adjacent to the forward or aft cargo door cutout where the skin thickness is 0.090 inch.
- B. Repair 11 is not applicable to damage:
- (1) In major body joint bays
  - (2) At other lower lobe lap splice locations where the skin thickness is not 0.090 inch
  - (3) Nearer than 9.0 inches (22.8 cm) to the forward or aft cargo door cutouts.

#### 2. General

- A. Repair 11 is an Interim Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- (1) For airplanes that have not completed Service Bulletin 737-21-1149, you must do an inspection of the row of fasteners at the lap splice joint cutout at 34,000 flight cycles or sooner after you install the repair.
    - (a) Refer to Figure 201 for the location of this row.
    - (b) Refer to Paragraph 5.A. for the inspection instructions.
- B. Repair 11 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5.B. and Figure 202 for the inspection instructions.
- (1) For airplanes that have completed Service Bulletin 737-21-1149, you must do an inspection of the row of fasteners at the lap splice joint cutout at 16,800 flight cycles (external) and 22,500 flight cycles (internal) or sooner after you install the repair.
    - (a) Refer to Figure 202 for the location of this row.
    - (b) Refer to Paragraph 5.B. for the inspection instructions.
- C. Do not use Repair 11 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins



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**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General

**4. Repair Instructions**

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
  - (1) Make the contour of the repair parts the same as the contour of the initial skin as necessary.
- D. Make the repair parts as given in Table 201. Refer to Layout of the Repair Parts, Figure 201/REPAIR 11 for the parts configurations.
  - (1) Make the countersink repair washers for the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 11. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 11.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Use a thickness of 0.100 inch
[2]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.180 inch
[3]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.045 inch
[4]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.045 inch

- F. Drill the necessary fastener holes. Refer to Table 202/REPAIR 11 and Figure 201 for the fastener type, size, and spacing. Refer to 51-40-05 for the fastener hole sizes.

**NOTE:** Do not drill fastener holes into a chem milled radius. Blend out of chem milled area is not permitted.

- (1) Use the same spacing as the initial fastener holes.
- (2) You are permitted to use a fastener that is 1/32 inch oversize and is the same type as given in Table 202/REPAIR 11.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts.
  - (1) Make the surface texture roughness for all cut surfaces 125 microinches Ra or smoother.



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**STRUCTURAL REPAIR MANUAL**

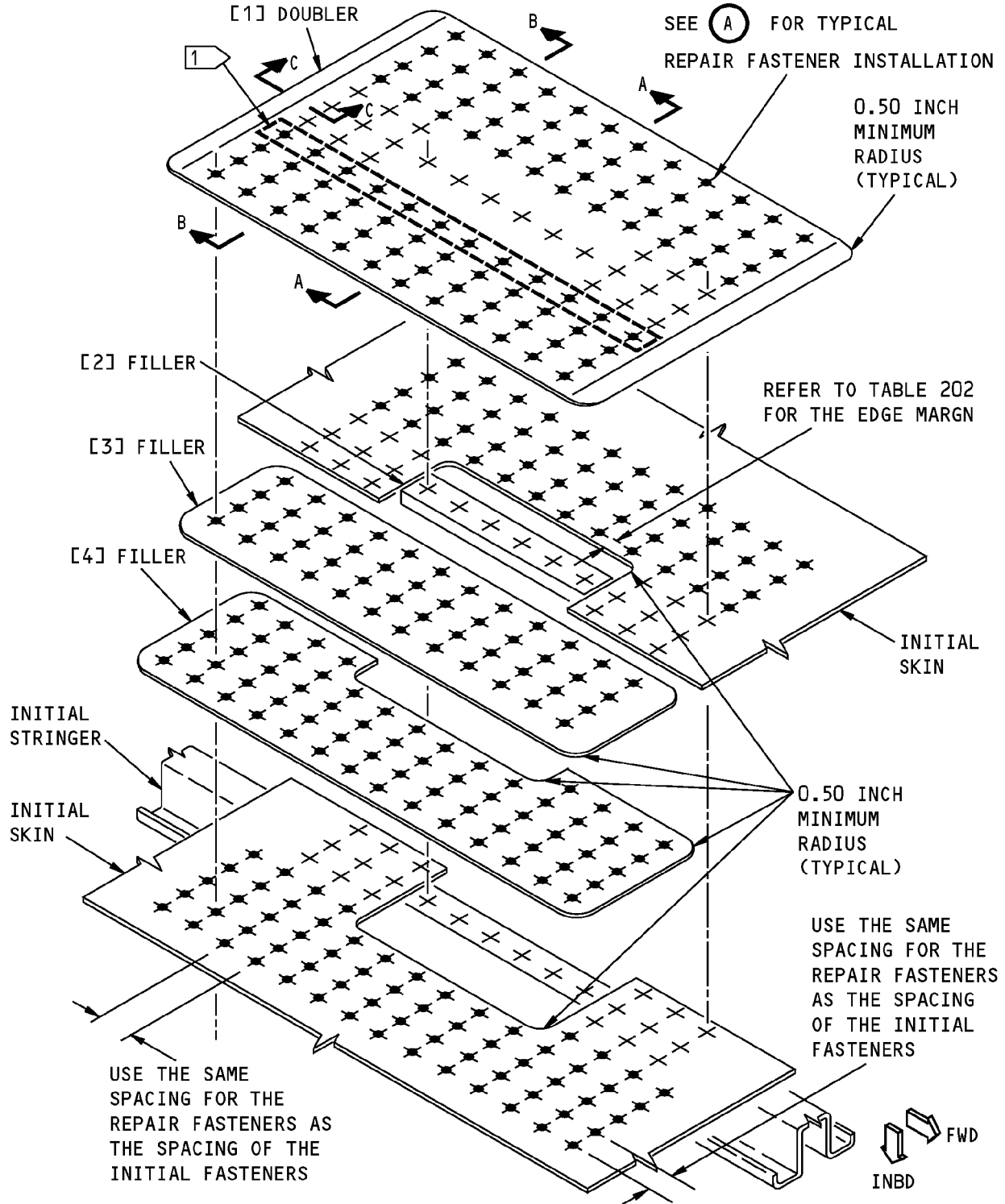
- I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

**Table 202:**

REPAIR FASTENER TYPE AND DIAMETER		
RECOMMENDED	ALTERNATIVE	EDGE MARGIN (INCH)
BACR15FT6D	MS20470D6 or BACR15BB6D	0.40

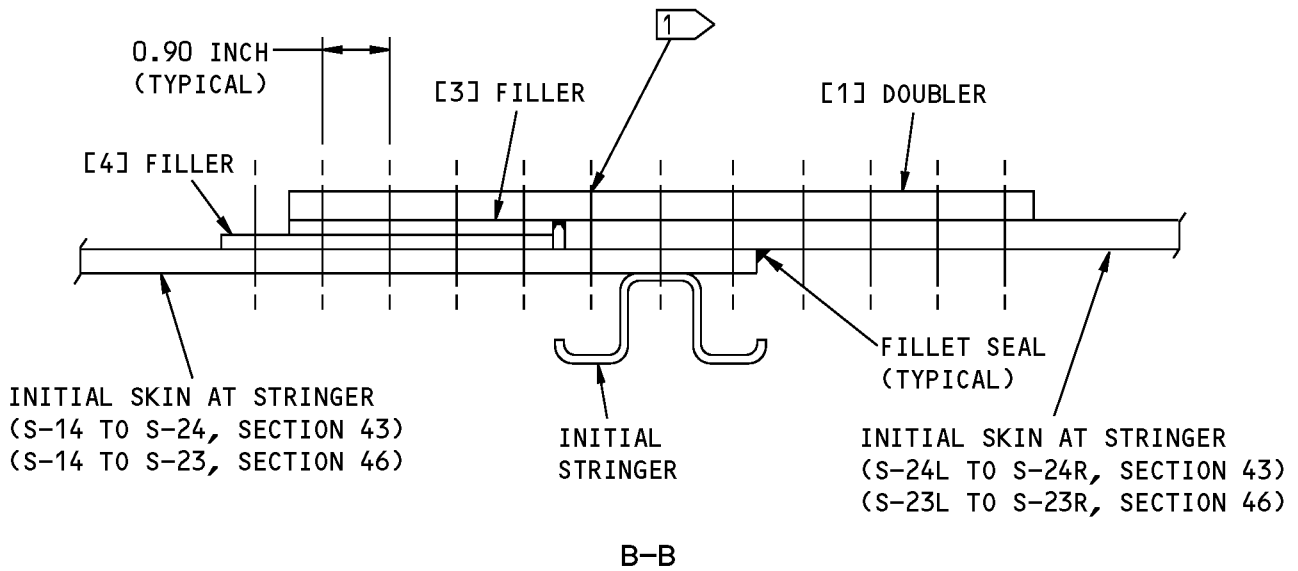
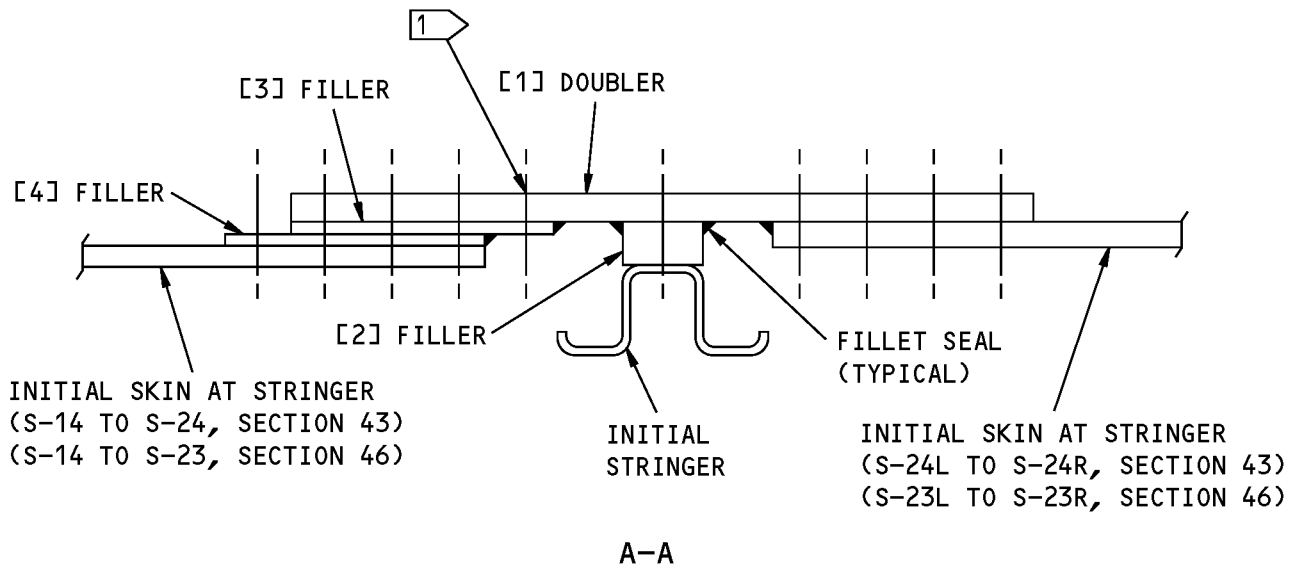
- J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.
- K. Apply two layers of BMS 10-79, Type II primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.
- L. Install the repair parts. Refer to 51-20-05.
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
  - (3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



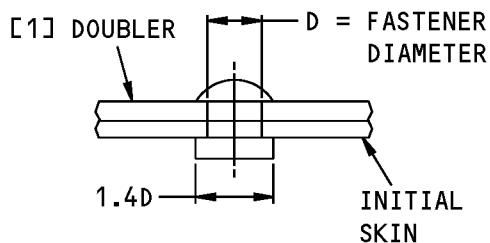
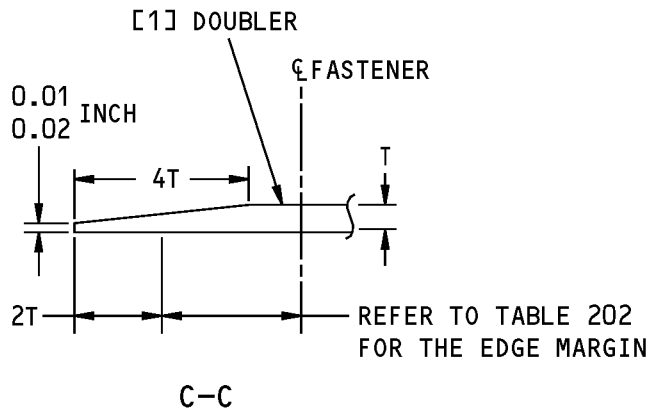
**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

A

**NOTES**

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149, DO AN INSPECTION OF THIS ROW OF FASTENERS AT 16,800 FLIGHT CYCLES OR SOONER. REFER TO PARAGRAPH 5 FOR THE INSTRUCTIONS.

FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149, DO AN INSPECTION OF THIS ROW OF FASTENERS AT 34,000 FLIGHT CYCLES OR SOONER. REFER TO PARAGRAPH 5 FOR THE INSTRUCTIONS.

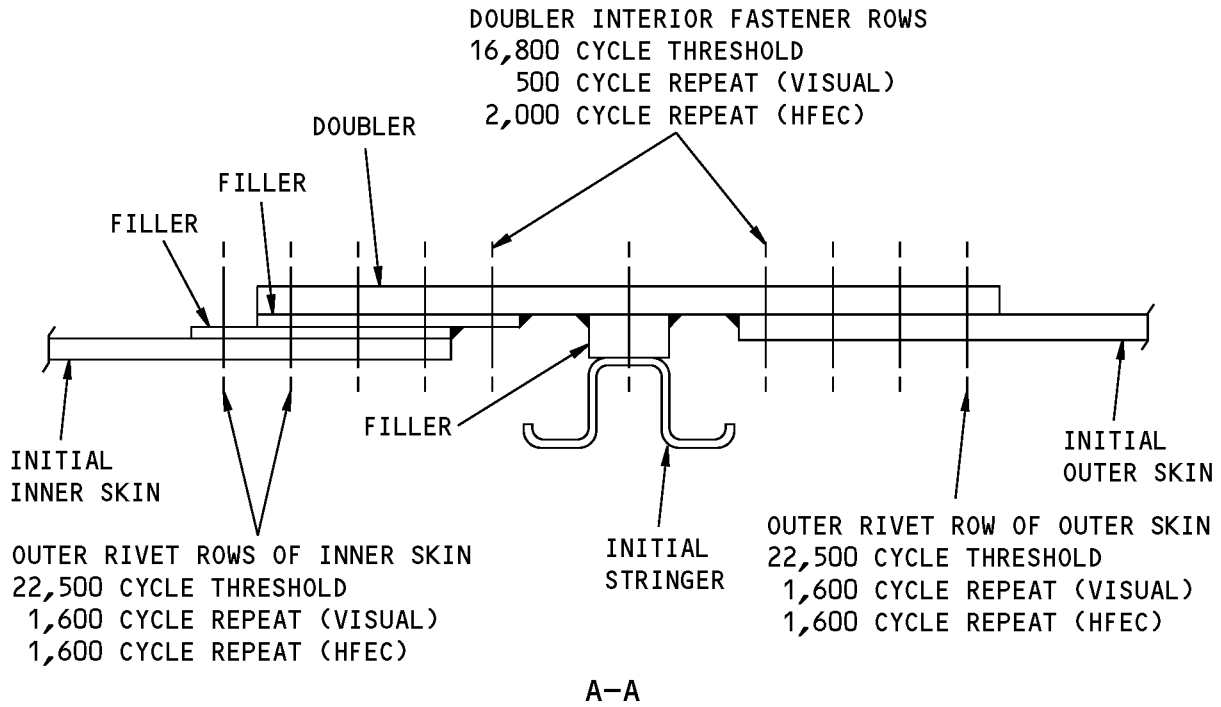
**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. YOU ARE PERMITTED TO USE A FASTENER THAT IS 1/32 INCH OVERSIZE AND IS THE SAME TYPE AS IN TABLE 202. USE COUNTERSINK REPAIR WASHERS IN THE MOST OUTBOARD INITIAL SKIN.
- ◆ REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER. USE A BACR15FT6D RIVET. AS AN ALTERNATIVE, USE AN MS20470D RIVET OR BACR15BB6D RIVET.

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 3)**



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STRUCTURAL REPAIR MANUAL**



**NOTE:** THE INSPECTION REQUIREMENTS APPLY TO AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

**Inspection Requirements  
Figure 202**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have not completed Service Bulletin 737-21-1149, do one of the two inspections at 34,000 flight cycles after you install the repair. Refer to Figure 201 for the inspection location.
- (1) Do a detailed visual inspection of the repair doubler.
    - (a) After you do the initial inspection, do the detailed visual inspection again at each 3800 flight cycles intervals.
  - (2) Do a high frequency eddy current inspection of the repair doubler. Refer to 737 NDT Part 6, 51-00-00, Figure 4 for the procedures.
    - (a) After you do the initial inspection, do the inspection again at each 35,000 flight cycles intervals.
- B. For airplanes that have completed Service Bulletin 737-21-1149, do the inspections with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
- (1) The threshold for the start of supplemental inspections is 16,800 flight cycles (external) and 22,500 flight cycles (internal) after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external detailed visual inspection of the doubler, the filler, and the skins around the doubler at each subsequent 500 flight cycles.
  - (3) Do an external HFEC inspection around the rivet heads of two interior fastener rows at each subsequent 2,000 flight cycles (Refer to Figure 202).
  - (4) Do an internal detailed visual inspection of the repair area at each subsequent 1,600 flight cycles.
  - (5) Do an internal High Frequency Eddy Current (HFEC) inspection at each subsequent 1,600 flight cycles around the rivet heads of (Refer to Figure 202):
    - (a) The two outer rivet rows of the inner skin
    - (b) The outer rivet row of the outer skin.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 12 - EXTERNAL REPAIR FOR DAMAGE TO FUSELAGE SKIN AT A LOWER LOBE LAP SPLICE

#### 1. Applicability

- A. Repair 12 is applicable to fuselage skin damage in the lower lobe lap splice in these areas:
  - (1) Stringer S-23L and Stringer S-23R in fuselage section 46
  - (2) Stringer S-24L and Stringer S-24R in fuselage section 43.
- B. Repair 12 is not applicable to damage:
  - (1) At skin cutouts
  - (2) In major body joint bays.

#### 2. General

- A. Repair 12 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 12 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Do not use Repair 12 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers

#### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- C. Put the skin around the cut back to the initial contour.
  - (1) Make the contour of the repair parts the same as the contour of the initial skin as necessary.
- D. Make the repair parts as given in Table 201. Refer to Layout of the Repair Parts, Figure 201/REPAIR 12 for the parts configurations.

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**STRUCTURAL REPAIR MANUAL**

- (1) Make the countersink repair washers for the locations shown in Layout of the Repair Parts, Figure 201/REPAIR 12. Refer to 51-40-08.
- E. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 12.
- F. Drill the necessary fastener holes. Refer to Table 202 and Figure 201 for the fastener type, size, and spacing. Refer to 51-40-05 for the fastener hole sizes.

**NOTE:** Do not drill fastener holes into a chem-milled radius. Blending of chem-milled area is not permitted.

- (1) Use the same spacing as the initial fastener holes, except at chem- milled areas.
  - (a) The fastener spacing must be a minimum of 0.28 inch from a chem- milled area.
- (2) You are permitted to use a fastener that is 1/32 inch oversize and is the same type as given in Table 202.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Use a thickness that is one standard aluminum sheet gage thicker than the initial skin with the larger thickness. Minimum gage is 0.063 inch. Form the doubler the same as the contour of the initial skin
[2]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness that is the same as the total thickness of the two skins of the splice
[3]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness that is equal to the thickness of the outer skin minus the thickness of the part [4] filler
[4]	Filler	1	Use the same material and heat treat as the initial skin. Use a thickness of 0.030 inch

- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs and sharp edges from the repair parts and the bare surfaces of the initial parts. Make the surface texture roughness for all cut surfaces 125 microinches Ra or smoother.
- I. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Install the countersink repair washers with BMS 5-95 adhesive at the initial fastener locations. Refer to 51-40-08.

**Table 202:**

REPAIR FASTENER TYPE AND DIAMETER		
RECOMMENDED	ALTERNATIVE	EDGE MARGIN (INCH)
BACR15BB6D	MS20470D6	0.40
BACR15CE6D	BACR15GF6D	0.44

- K. Apply two layers of BMS 10-79, Type II primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.
- L. Install the repair parts. Refer to 51-20-05

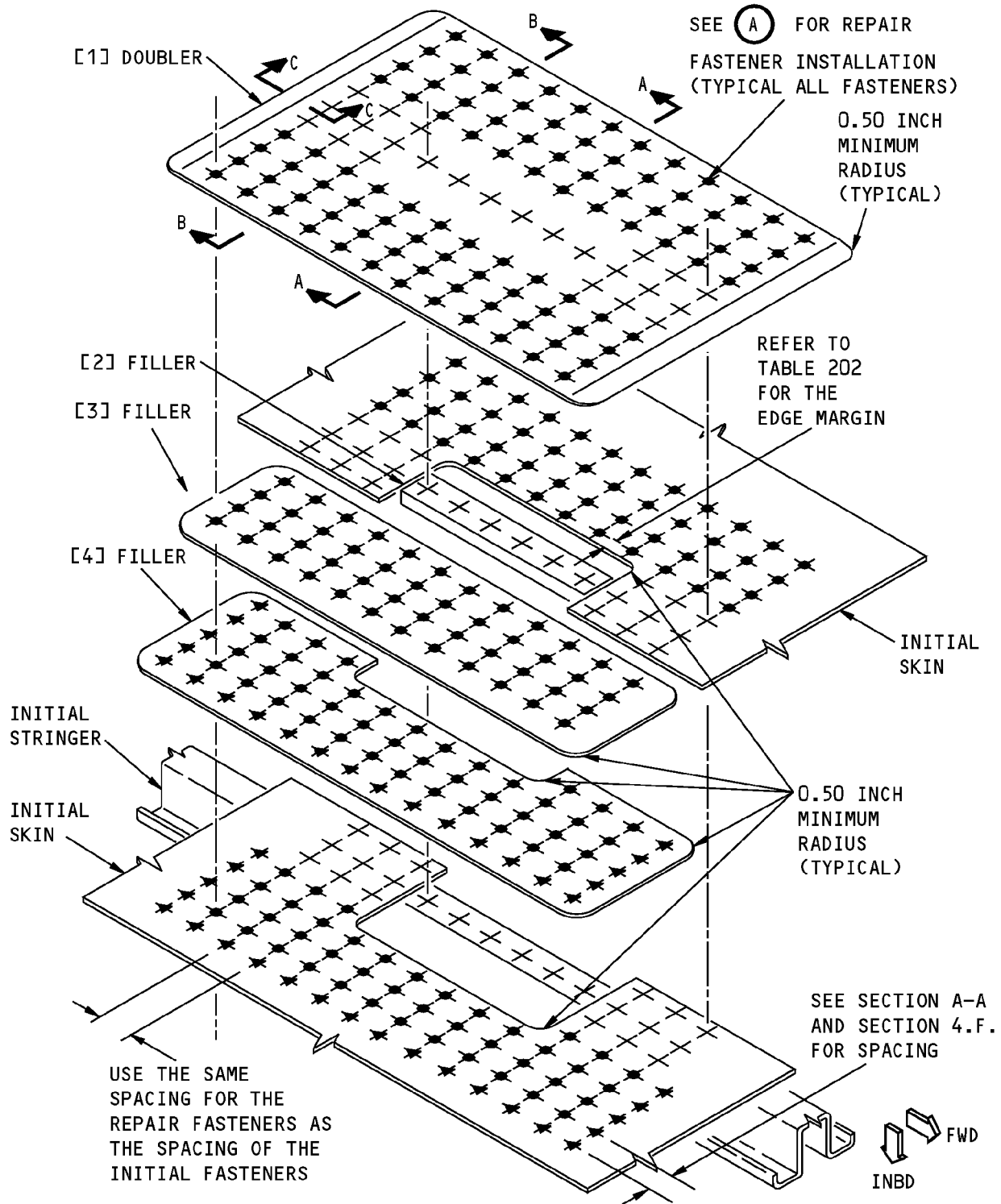


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**STRUCTURAL REPAIR MANUAL**

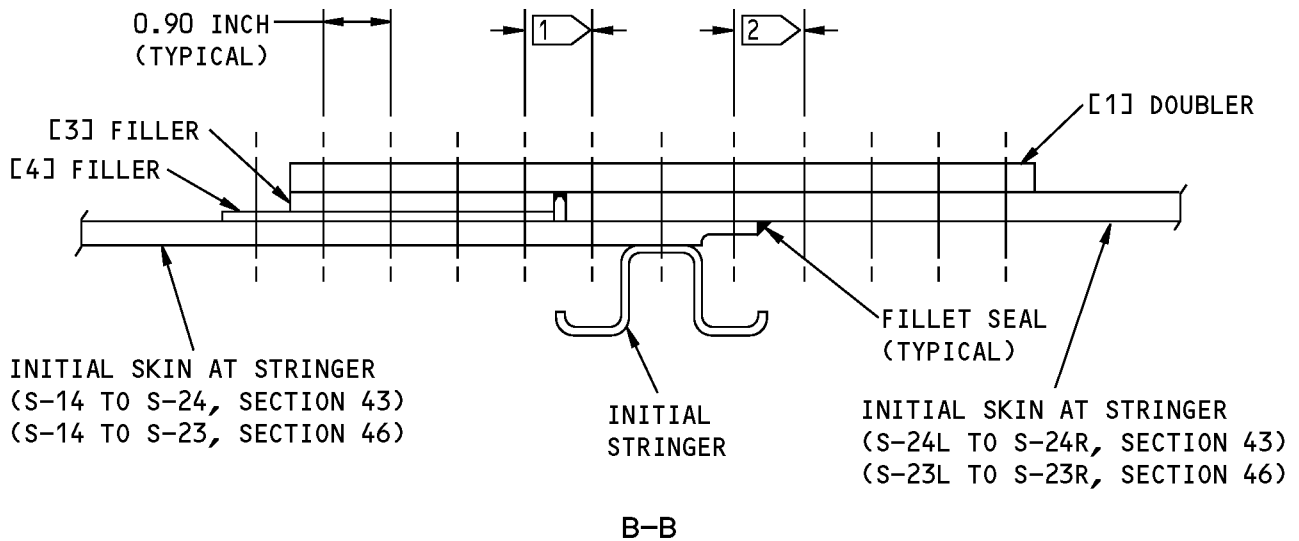
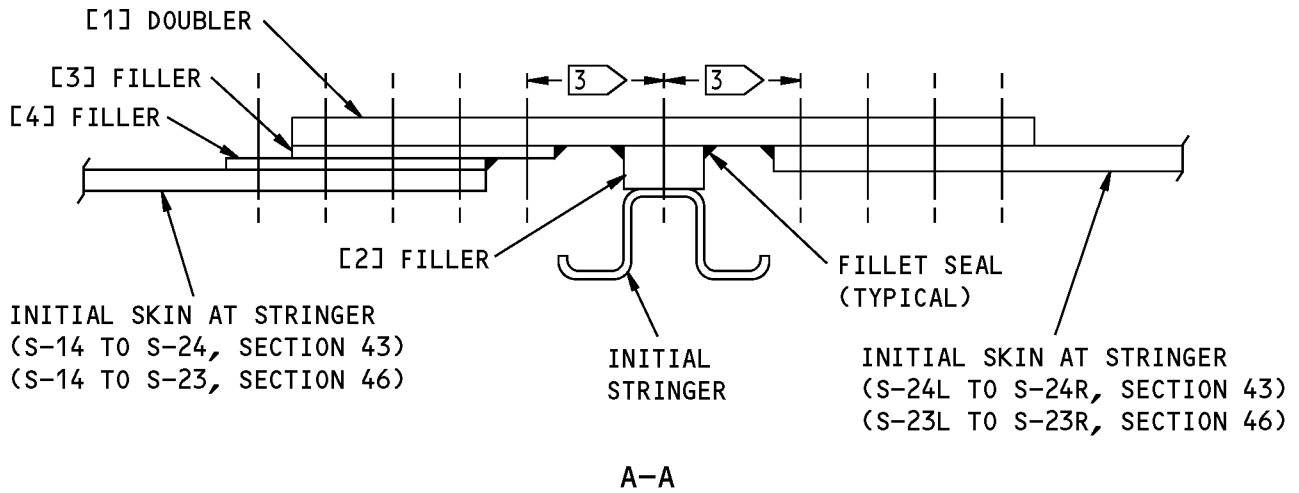
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
- (2) Install the fasteners without sealant.
- (3) Apply a fillet seal to the repair parts on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- (4) Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



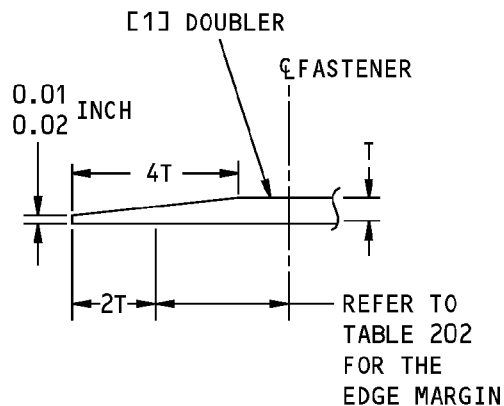
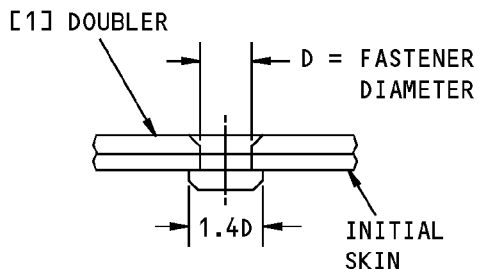
**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1. ALSO APPLIES TO PROTRUDING HEAD FASTENERS

A

C-C

**NOTES**

- 1 SPACING UP TO 1.05 INCH IS PERMITTED TO AVOID THE CHEM-MILLED STEPS IF NECESSARY
- 2 SPACING UP TO 1.35 INCH IS PERMITTED TO AVOID THE CHEM-MILLED STEPS IF NECESSARY
- 3 SPACE AS REQUIRED TO KEEP A STRAIGHT ROW OF FASTENERS

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER. YOU ARE PERMITTED TO USE A FASTENER THAT IS 1/32 INCH OVERSIZE AND IS THE SAME TYPE AS GIVEN IN TABLE 202. USE COUNTERSINK REPAIR WASHERS IN OUTBOARD INITIAL SKIN.
- REPAIR FASTENER LOCATION. REFER TO TABLE 202 FOR THE FASTENER.
- ▲ REPAIR FASTENER LOCATION. REFER TO TABLE 202. USE A BACR15BB6D RIVET. AS AN ALTERNATIVE, USE AN MS20470D6 RIVET.

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 3)**





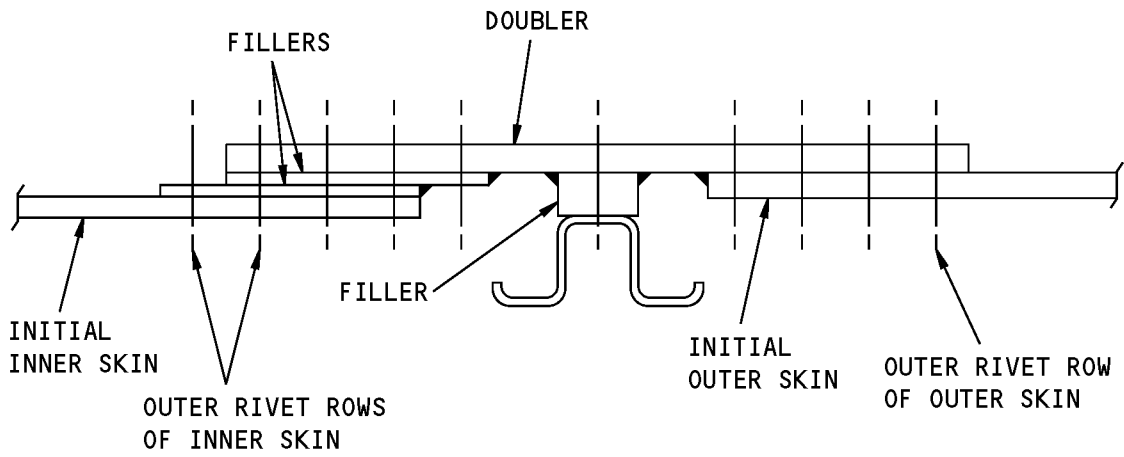
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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. Inspections as given below are only applicable to airplanes that have completed Service Bulletin 737-21-1149. The inspections as given below do not apply to airplanes that have not completed Service Bulletin 737-21-1149.
- B. Do the inspections with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149 after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external detailed visual inspection of the doubler, the filler, and the skins around the doubler at each subsequent 4000 flight cycles.
  - (3) Do an internal detailed visual inspection of the repair area at each subsequent 11,500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
  - (4) Do an internal High Frequency Eddy Current (HFEC) inspection at each subsequent 11,500 flight cycles for airplanes that have completed Service Bulletin 737-21-1149 around the rivet heads of (Refer to Figure 202):
    - (a) The two outer rivet rows of the inner skin
    - (b) The outer rivet row of the outer skin.

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**Inspection Requirements  
Figure 202**



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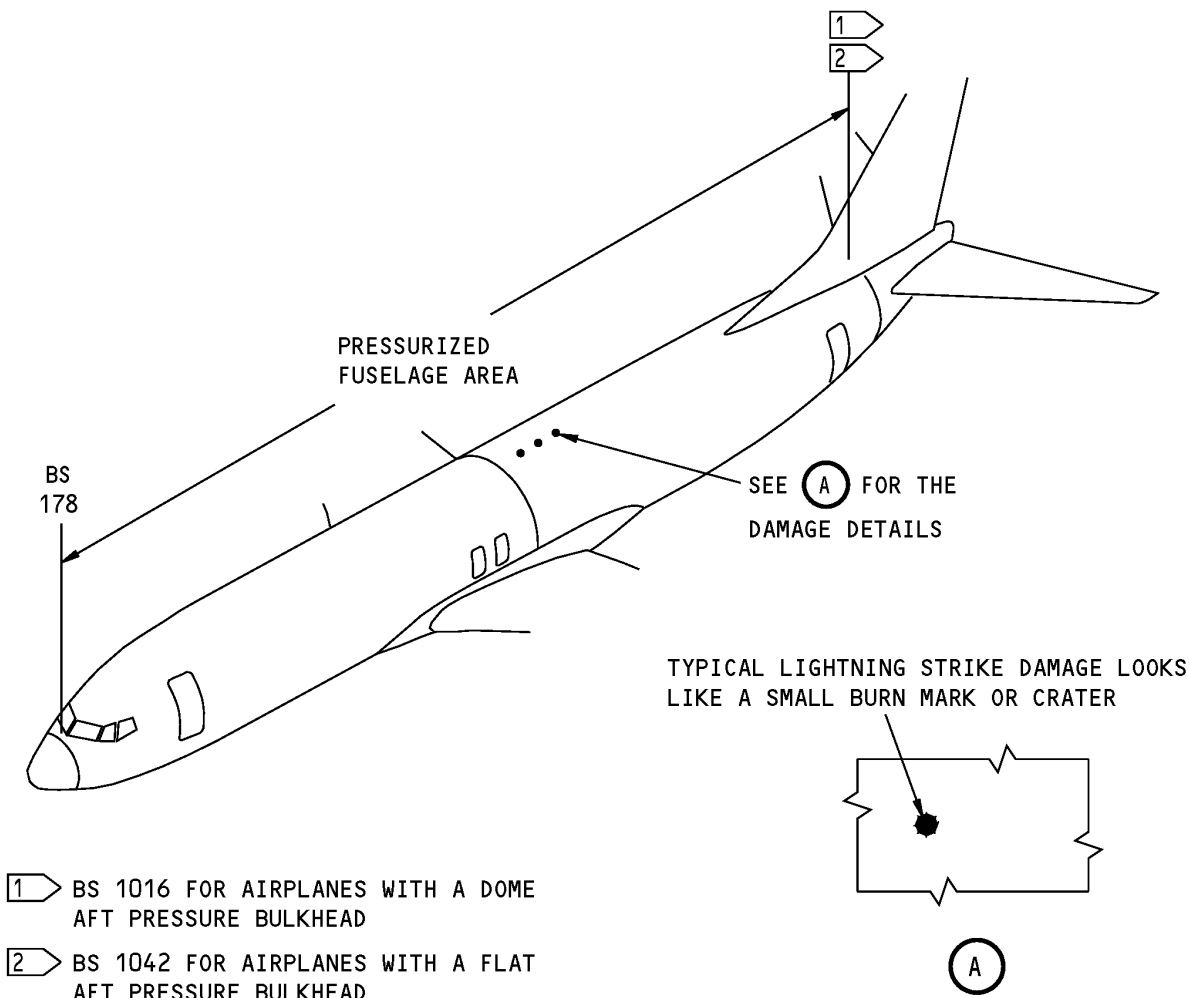
## STRUCTURAL REPAIR MANUAL

### REPAIR 13 - REPAIR OF LIGHTNING STRIKE DAMAGE IN FUSELAGE SKIN

#### 1. Applicability

- A. Repair 13 is applicable to lightning strike damage to the pressurized fuselage skin shown in Pressurized Fuselage Lightning Strike Damage, Figure 201/REPAIR 13.
  - (1) The pressure vessel on airplanes with a dome aft pressure bulkhead is from BS178 and BS 1016.
  - (2) The pressure vessel on airplanes with a flat aft pressure bulkhead is from BS 178 and BS 1042.
- B. Repair 13 is applicable to lightning strike damage on the fuselage skin that is away from an initial fastener location and is:
  - (1) A maximum length of 0.3125 inch (7.94 mm) on the fuselage skin
  - (2) In an area where the skin thickness is constant
  - (3) A minimum of 1.5 times the length of the damage away from a chem-milled radius.
  - (4) Not at a lap splice, stringer, a frame or in a location that already has a repair.
  - (5) A minimum of 4D (D = The diameter of the hole) away from other holes, fasteners, or an edge.
- C. Repair 13 is applicable to lightning strike damage that is at an initial fastener location, as given in Paragraph 5./REPAIR 13, and is:
  - (1) A minimum of 1.5 times the length of the damage away from a chem-milled radius
  - (2) In an area where the skin thickness is constant.
  - (3) A maximum length of 0.3125 inch (9.94 mm) on the fuselage skin.

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**Pressurized Fuselage Lightning Strike Damage  
Figure 201**

**2. General**

- A. Repair 13 is a Permanent or Interim Repair for airplanes that have not completed Service Bulletin 737-21-1149 when you use solid rivets. Repair 13 is a Time Limited Repair when you use blind rivets. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 13 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149 when you use solid rivets. Repair 13 is a Category C repair when you use blind rivets. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 13 permits you to use blind rivets. If you use blind rivets, you must:
  - (1) Inspect the rivets as given in Paragraph 6./REPAIR 13
  - (2) Replace the blind rivets with solid rivets as given in Paragraph 6./REPAIR 13



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## STRUCTURAL REPAIR MANUAL

- D. When protruding head fasteners are used, Repair 13 is not applicable near static ports or angle of attack sensors. External repairs are not permitted in these locations. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.
- E. After fastener installation, apply a surface finish to the repair as necessary. Refer to SOPM 20-44-04 for the application of BMS 10-79, Type II primer. Refer to AMM 51-21-00/701 for the application of other finishes.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-03	SKIN WAVINESS INSPECTION FOR RVSM OPERATION
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-02, GENERAL	Heat Treat Verification - Hardness and Conductivity Testing
51-20-03	HEAT DAMAGE EVALUATION
51-20-05, GENERAL	Repair Sealing
51-40-00	FASTENERS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06	FASTENER EDGE MARGINS
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
51-40-08, GENERAL P/B GENERAL	COUNTERSINKING
53-00-01	FUSELAGE SKIN
53-00-01, ALLOWABLE DAMAGE 1	Fuselage Skin
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 3	Investigation of Fire Damage on Aircraft Structure

### 4. Repair Instructions For Lightning Strike Damage Away From a Fastener Location

- A. Find the dimensions of the damage.
- (1) Do an inspection of the skin for damage caused by heat if the visible damage is more than 0.5 inch in diameter.
    - (a) Refer to 737 NDT Part 6, 51-00-00, Figure 3 , SRM 51-20-02 and 51-20-03.
  - (2) If there is damage, operation limits can be necessary. Refer to Allowable Damage 1.



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- (3) Refer to Repair Procedure Flow Chart, Figure 202/REPAIR 13 for a flow chart of the steps that follow:
  - (a) If the damage is less than the limits given in Allowable Damage 1, do one of the steps that follow:
    - 1) Remove the damage with the steps given in Paragraph 4.B./REPAIR 13
    - 2) Drill out the damage as given in Paragraph 4.C./REPAIR 13
  - (b) Drill out the damage with the steps given in Paragraph 4.C./REPAIR 13 if the damage agrees with the two conditions that follow:
    - 1) The damage is more than the limits given in Allowable Damage 1
    - 2) The length of the damage is less than 0.3125 inch (7.94 mm).
  - (c) Do one of the repairs given in Table 201/REPAIR 13 if the damage agrees with the two conditions that follow:
    - 1) The damage is more than the limits given in Allowable Damage 1
    - 2) The length of the damage is more than 0.3125 inch (7.94 mm).

Table 201:

FUSELAGE SKIN REPAIRS	
LENGTH OF THE DAMAGE (INCHES)	REPAIR PROCEDURE
0.3125 to 1.00	Repair 5, 6, 14, or 15
Larger than 1.00	External or flush doubler repair as given in SRM 53-00-01

B. Remove the damage.

- (1) Do the steps that follow only if the damage agrees with the conditions given in Paragraph 4.A.(3)(a)/REPAIR 13
  - (a) Blend out the damage as given in Allowable Damage 1.
  - (b) Do one of the inspections that follows to make sure there are no cracks:
 

**NOTE:** Other inspection procedures that have been examined and found to be satisfactory by the operator can be used.

    - 1) Do a High Frequency Eddy Current (HFEC) inspection procedure on the surface for cracks. Refer to 737 NDT Part 6, 51-00-00.
    - 2) As an alternative on the outer skin, you can do a penetrant inspection procedure for cracks. Refer to SOPM 20-20-02.
    - 3) As an alternative on the outer skin, you can do a detailed close visual inspection with a minimum 10X magnification for cracks as follows:
      - a) Do an inspection of the skin as given in Paragraph 6./REPAIR 13
  - (c) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to SRM 51-21-01 .
  - (d) Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 for the application of BMS 10-79, Type II primer. Refer to AMM 51-21-00/701 for the application of other finishes.

C. Drill out the damage only if the damage agrees with the conditions given in Paragraph 4.A.(3)(a)/REPAIR 13 or Paragraph 4.A.(3)(b)/REPAIR 13 Refer to 51-10-02.

## STRUCTURAL REPAIR MANUAL

- (1) The hole you drill must be a minimum of 4D (D = the diameter of the hole) away from other holes or an edge.

- (a) Do one of the inspections that follows to make sure there are no cracks:

**NOTE:** Other inspection procedures that have been examined and found to be satisfactory by the operator can be used.

- 1) Do a High Frequency Eddy Current (HFEC) inspection procedure of the open fastener hole for cracks. Refer to 737 NDT Part 6, 51-00-00.
- 2) As an alternative on the outer skin, you can do a penetrant inspection procedure for cracks. Refer to SOPM 20-20-02.
- 3) As an alternative on the outer skin, you can do a detailed close visual inspection with a minimum 10X magnification for cracks as follows:
  - a) Do an inspection of the skin as given in Paragraph 6./REPAIR 13

**CAUTION:** USE CARE WHEN YOU INSTALL RIVETS IN THIN SKINS. RIVET TOOLS CAN CAUSE DENTS, SCRATCHES, GOUGES, OR BUCKLES IN THE FUSELAGE SKIN. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

- (b) Install a solid rivet. Refer to Rivet Installation, Figure 203/REPAIR 13.

- 1) For the permanent repair; do not install 1100F or 5056 aluminum rivets into 2024 aluminum skin.
- 2) For the time-limited repair; if you cannot get access to the inner side of the fuselage skin to install a solid rivet, you can install a blind rivet. Refer to 51-40-02 and Rivet Installation, Figure 203/REPAIR 13, Detail B .
  - a) The blind rivet must be replaced with an oversize solid rivet by the time-limit given in Paragraph 6./REPAIR 13
  - b) Refer to 51-40-02 for other conditions on the use of blind rivets.

**CAUTION:** DO NOT COUNTERSINK A HOLE MORE THAN 70 PERCENT OF THE SKIN THICKNESS. IF YOU DO NOT OBEY, YOU CAN CAUSE THE RIVET INSTALLATION TO BE UNSATISFACTORY.

- 3) You can install a flush rivet where it is necessary as given in 51-10-01.
  - a) Refer to 51-10-01 for the necessary flushness of the rivet.
  - b) Countersink the hole as necessary. Refer to 51-40-08.
  - c) If you install a flush blind rivet, do not microshave the rivet.
  - d) Do not microshave a BACR15CE or BACR15GF rivet.
- 4) Remove all nicks, gouges, and sharp edges from the repair area. Refer to 51-10-02.
- 5) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to SRM 51-21-01 .
- 6) If you use a blind rivet, do the steps that follow. Refer to Rivet Installation, Figure 203/REPAIR 13, Detail B .

**NOTE:** If you use blind rivets, you must do the inspections given in Paragraph 6./REPAIR 13



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## STRUCTURAL REPAIR MANUAL

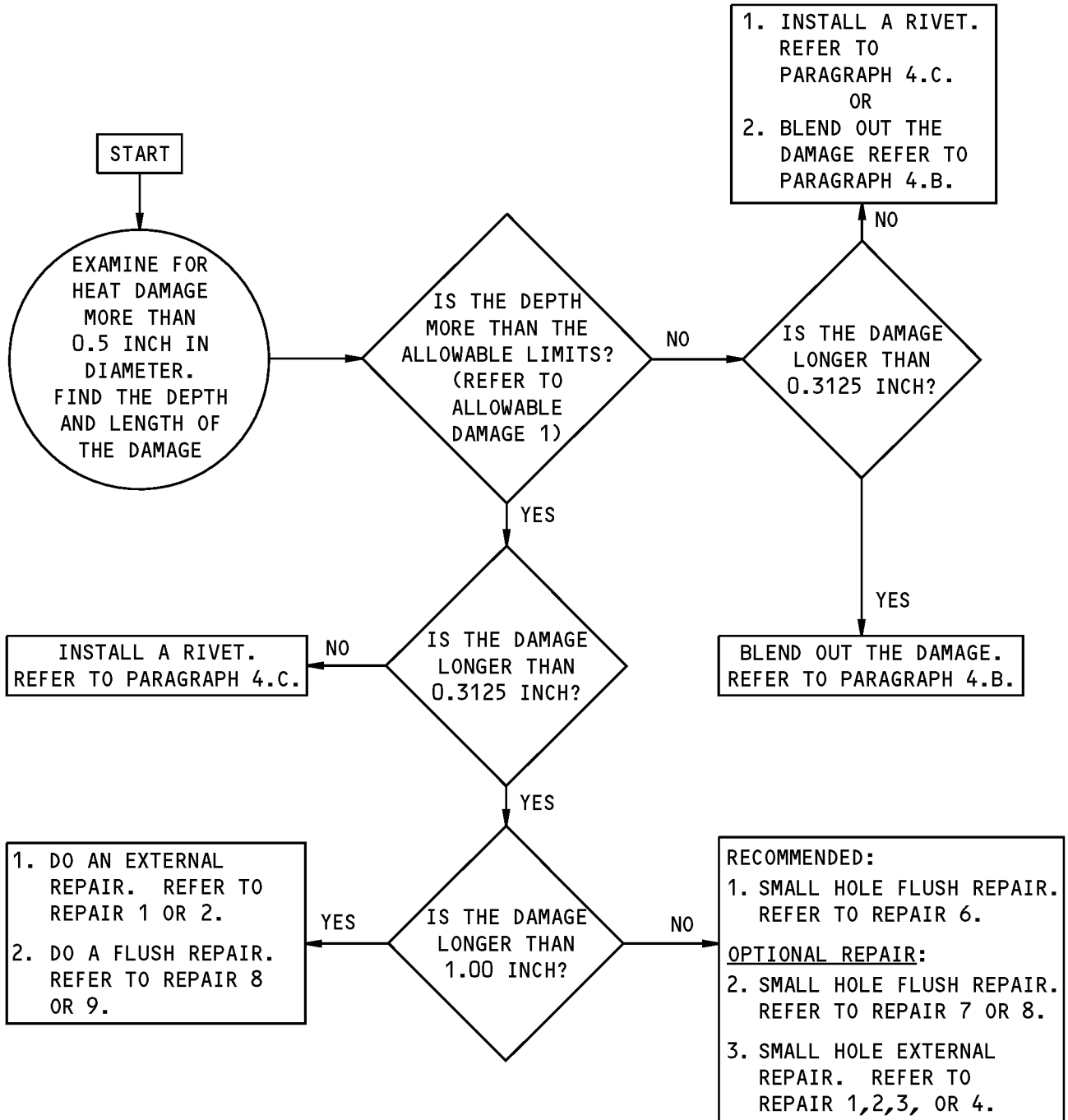
- a) Install an NAS1398D()A protruding head blind rivet wet with BMS 5-95 sealant. As an alternative, install an NAS1399D()A flush head blind rivet wet with BMS 5-95 sealant if the countersink depth is less than 70 percent of the skin thickness. Refer to 51-20-05.
  - b) Make sure the rivet is seated correctly in the internal structure.
  - c) Do an inspection of the rivet as given in Paragraph 6./REPAIR 13
  - d) Replace the blind rivet with a solid rivet as given in Paragraph 6./REPAIR 13
- 7) If you use a solid rivet, do the steps that follow. Refer to 51-40-02 and Rivet Installation, Figure 203/REPAIR 13, Detail A .

**NOTE:** If you use solid rivets, you must do the inspections given in Paragraph 6./REPAIR 13

- a) Install a protruding head or flush head rivet made of 2117-T4 "AD" aluminum alloy.
  - b) Install the rivet without sealant.
- (c) Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 for the application of BMS 10-79, Type II primer.
- (d) Refer to AMM 51-21-00/701 for the application of other finishes.

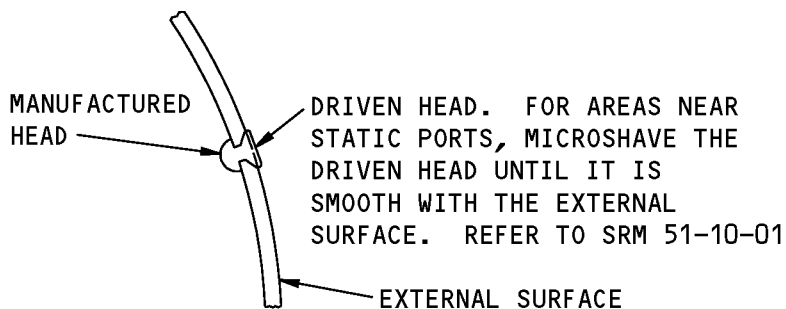


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STRUCTURAL REPAIR MANUAL**

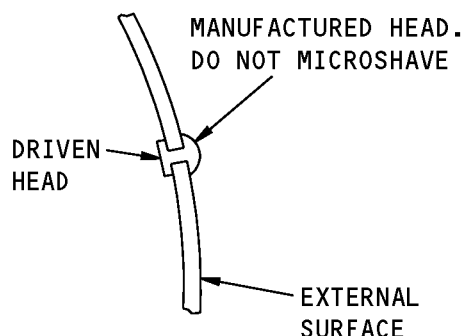


**Repair Procedure Flow Chart  
Figure 202**

**STRUCTURAL REPAIR MANUAL**

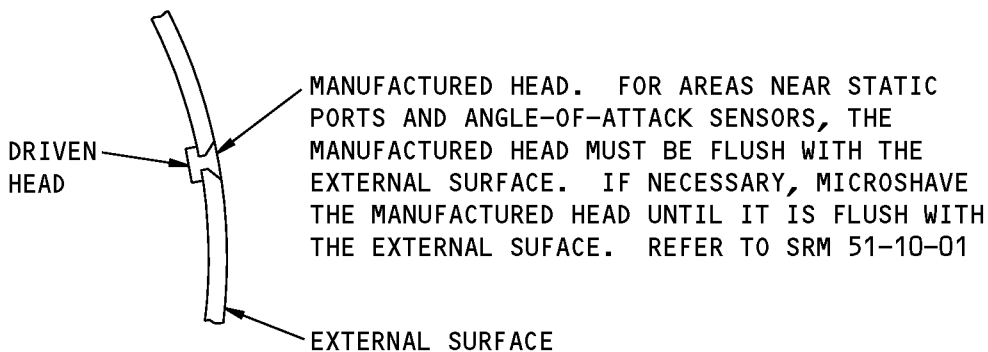


**RECOMMENDED  
INSTALLATION**



**ALTERNATIVE INSTALLATION  
(DO NOT USE THE ALTERNATIVE  
INSTALLATION FOR AREAS  
NEAR STATIC PORTS AND  
ANGLE-OF-ATTACK SENSORS)**

**SOLID 2117-T4 PROTRUDING HEAD RIVET**



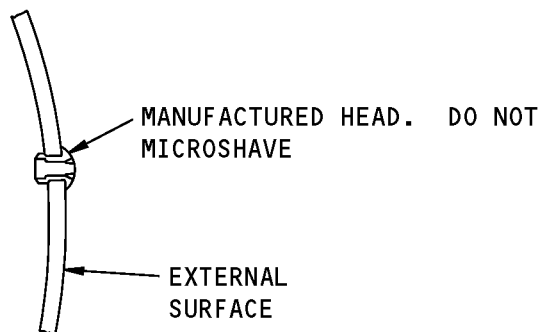
**SOLID 2117-T4 FLUSH HEAD RIVET**

**SOLID RIVET INSTALLATION**

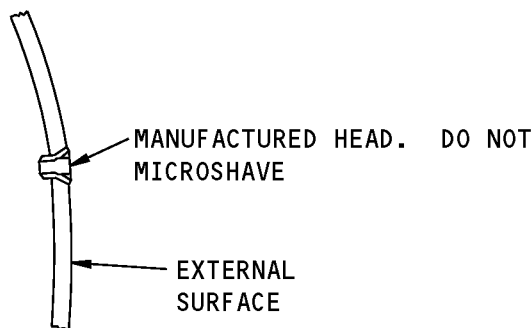


**Rivet Installation  
Figure 203 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL





NAS 1398D( )A PROTRUDING HEAD BLIND RIVET



NAS 1399D( )A FLUSH HEAD BLIND RIVET

BLIND RIVET INSTALLATION  



-  IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, RIVET HEADS MUST BE FLUSH WITH THE EXTERNAL SURFACE. BLIND RIVET HEADS CAN NOT BE MICROSHAVED. THUS, BLIND RIVETS CAN NOT BE USED IN AREAS NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS UNLESS THE HEAD CAN BE INSTALLED FLUSH WITH THE EXTERNAL SURFACE.
-  DO NOT COUNTERSINK A HOLE MORE THAN 70 PERCENT OF THE SKIN THICKNESS. FOR SKIN THICKNESSES WHICH REQUIRE A PROTRUDING HEAD FASTENER AND ARE LOCATED NEAR STATIC PORTS AND ANGLE-OF-ATTACK SENSORS, INSTALL A SOLID RIVET AS SHOWN IN DETAIL A.

Rivet Installation  
Figure 203 (Sheet 2 of 2)



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## STRUCTURAL REPAIR MANUAL

### 5. Repair Instructions For Lightning Strike Damage at a Fastener Location

- A. Do an inspection of the fastener location. Look for damage caused by heat if the visible damage is more than 0.5 inch (12.7 mm) in diameter. Refer to NDT Part 6, 51-00-00.
- B. For a time limited repair of a damaged fastener refer to paragraph 5.D. for airplanes that have not completed Service Bulletin 737-21-1149. For a Category C repair of a damaged fastener refer to paragraph 5.D for airplanes that have completed service Bulletin 737-21-1149.
- C. For a permanent repair of a damaged fastener refer to paragraph 5.E. for airplanes that have not completed Service Bulletin 737-21-1149. For a Category B repair of a damaged fastener refer to paragraph 5.E for airplanes that have completed service Bulletin 737-21-1149.
- D. If you find a damaged fastener, do the steps that follow for a time limited repair for airplanes that have not completed Service Bulletin 737-21-1149. If you find a damaged fastener, do the steps that follow for a Category C repair for airplanes that have completed Service Bulletin 737-21-1149:
- (1) You can do a time limited repair with blind fasteners if the following conditions are met:
    - (a) The damaged fastener is a BACR15CE(\*)D or a BACR15GF(\*)D rivet
    - (b) There are no existing repairs within 10 inches (254.0 mm) of the lightning strike location
    - (c) There will be only 3 blind rivet repairs within 20 inches (508.0 mm) span. The blind rivets must not be adjacent to each other.
  - (2) Remove the fastener as given in 51-40-02.
  - (3) Do a detailed visual inspection with a minimum 10X magnification to make sure there is no hole damage.
  - (4) Install an NAS1399(\*)D blind rivet if the countersink depth is less than 70 percent of the skin thickness. Refer to Figure 203. As an alternative, you can install an NAS1398(\*)D protruding head blind rivet, if you install a countersink repair washer. Refer to COUNTERSINKING, PAGEBLOCK 51-40-08, GENERAL.
  - (5) Do an inspection of the fastener location as given in Paragraph 6.E.
  - (6) Replace the blind fastener at the cycle limit given in Paragraph 6.E.
- E. If you find a damaged fastener, do the steps that follow for a permanent repair for airplanes that have not completed Service Bulletin 737-21-1149. If you find a damaged fastener, do the steps that follow for a Category B repair for airplanes that have completed Service Bulletin 737-21-1149:
- (1) Remove the fastener as given in FASTENER INSTALLATION AND REMOVAL, PAGEBLOCK 51-40-02, GENERAL
  - (2) Do a High Frequency Eddy Current (HFEC) inspection to make sure there is no hole damage. As an alternative, you can do a dye penetrant inspection procedure as given in SOPM 20-20-02.
  - (3) If you find damage that is 0.3125 inch (7.94 mm) or less in diameter, drill out the damage and do the inspection again. Use a drill bit that is one size larger than the diameter of the damage.
  - (4) If you find damage that is more than 0.3125 inch (7.94 mm) in diameter, repair the damage with an applicable doubler repair as given in 53-00-01
  - (5) If all the damage is removed and the hole is 0.3125 inch (7.94 mm) or less in diameter:
    - (a) Drill the hole 1/32 inch (0.80 mm) oversized. Refer to 51-40-05 for the hole sizes.  
**NOTE:** Make sure the minimum edge margin with the oversized holes are at least 1.75D (D=fastener diameter) or as specified in 51-40-06 whichever is more.
    - (b) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**

- (c) Install a solid fastener. Use the same fastener type as the initial fastener or use an equivalent fastener as given in 51-40-03.

**NOTE:** If you install a protruding head fastener, use a countersink repair washer to fill the initial countersink in the skin. Do not use protruding head fasteners in aerodynamically extra-critical areas as specified in 51-10-01 and 51-10-03

**NOTE:** A mixture of 3/16 inch fasteners and 1/4 inch fasteners is not permitted in lap or butt splices. You are permitted to replace initial 3/16 inch fasteners with 7/32 inch oversize fasteners on lap and butt splices.

**6. Inspection Instructions**

- A. For temporary blind rivets installed away from an initial solid fastener location, do a detailed visual inspection of the blind rivets every 500 flight cycles. Refer to 51-40-00
- (1) Inspect the blind rivets carefully.
  - (2) Replace blind rivets that are loose or missing with solid rivets as given in Paragraph 6.A.(3) that follows.
  - (3) Replace blind rivets with solid rivets or do a doubler repair no more than 20,000 flight cycles after installation of the blind rivets.
    - (a) Remove the blind rivet.
    - (b) Do a High Frequency Eddy Current (HFEC) inspection of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter.
      - 1) If the hole diameter is larger than 0.3125 inch (7.94 mm) after you oversize the hole, do a doubler repair as given in Table 201/REPAIR 13.
    - (c) Remove all nicks, gouges, and sharp edges from the repair area. Refer to 51-10-02.
    - (d) Apply a chemical conversion coating to the bare surfaces of the repair area. Refer to 51-20-01.
    - (e) Install a solid rivet.
    - (f) Apply a surface finish to the repair area as necessary. Refer to SOPM 20-44-04 for the application of BMS 10-79, Type II primer.
    - (g) Refer to AMM 51-21-00/701 for the application of other finishes.
- B. For airplanes that have completed Service Bulletin 737-21-1149 and if solid rivets are used in this repair, do the inspection as follows. The inspection as follows does not apply for airplanes that have not completed Service Bulletin 737-21-1149:
- (1) The threshold for the start of supplemental inspections is 22,500 flight cycles after the installation of this repair.
  - (2) Do an external HFEC inspection of the skin around the rivet heads at each subsequent 18,000 flight cycles.
- C. For areas of blendouts, do a detailed visual inspection with a minimum 10X magnification of the reworked skin every 500 flight cycles. Do the visual inspections until a High Frequency Eddy Current (HFEC) or dye penetrant inspection for cracks can be done.
- D. For solid fasteners installed after a detailed visual inspection only was done, do inspections as follows:
- (1) Do a detailed visual inspection with a minimum 10X magnification of the skin every 500 flight cycles. Do the visual inspections until you do an inspection as follows:



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**STRUCTURAL REPAIR MANUAL**

- (a) Do a High Frequency Eddy Current (HFEC) inspection procedure of the open fastener hole for cracks as given in 737 NDT Part 6, 51-00-00. If no cracks are found, drill the hole 1/16 inch oversize to the next larger size fastener diameter and install a solid fastener.
  - 1) If the hole diameter is larger than 0.3125 inch (7.94 mm) after you oversize the hole, do a doubler repair as given in Table 201/REPAIR 13.
- E. For blind fasteners installed at initial fastener locations, do inspections as follows:
  - (1) Do a detailed visual inspection with 10X magnification every 500 flight cycles and replace blind fasteners with solid fasteners, as given in Paragraph 5.E, within 6000 flight cycles.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 14 - FLUSH REPAIR OF A SMALL HOLE AWAY FROM A DOUBLER IN 0.040 INCH THICK SKIN

#### 1. Applicability

- A. Repair 14 is a flush repair that is applicable to damage that is:
- (1) In 0.040 inch thick fuselage skin
  - (2) 1.00 inch or less in diameter
  - (3) 2.25 inches or more away from a doubler.

#### 2. General

- A. Repair 14 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 14 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 14 is an alternative to:
- (1) Repair 5 which is an external repair for a small hole.
  - (2) Repair 6 which is a flush repair for a small hole between stringers.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

#### 4. Repair Instructions

- A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.
- B. Make the repair parts.
- (1) Refer to Table 201/REPAIR 14 for the material and the thickness of the repair parts.
  - (2) Refer to Layout of the Repair Parts, Figure 201/REPAIR 14 for the dimensions of the repair parts.
  - (3) Make the contour of the repair parts the same as the contour of the initial skin as necessary.



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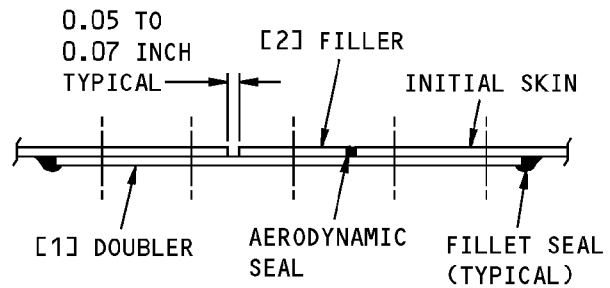
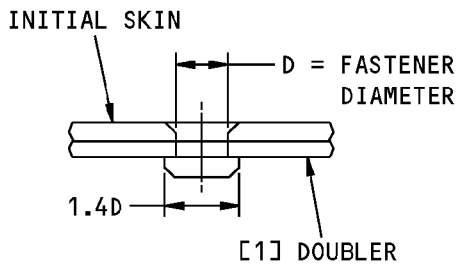
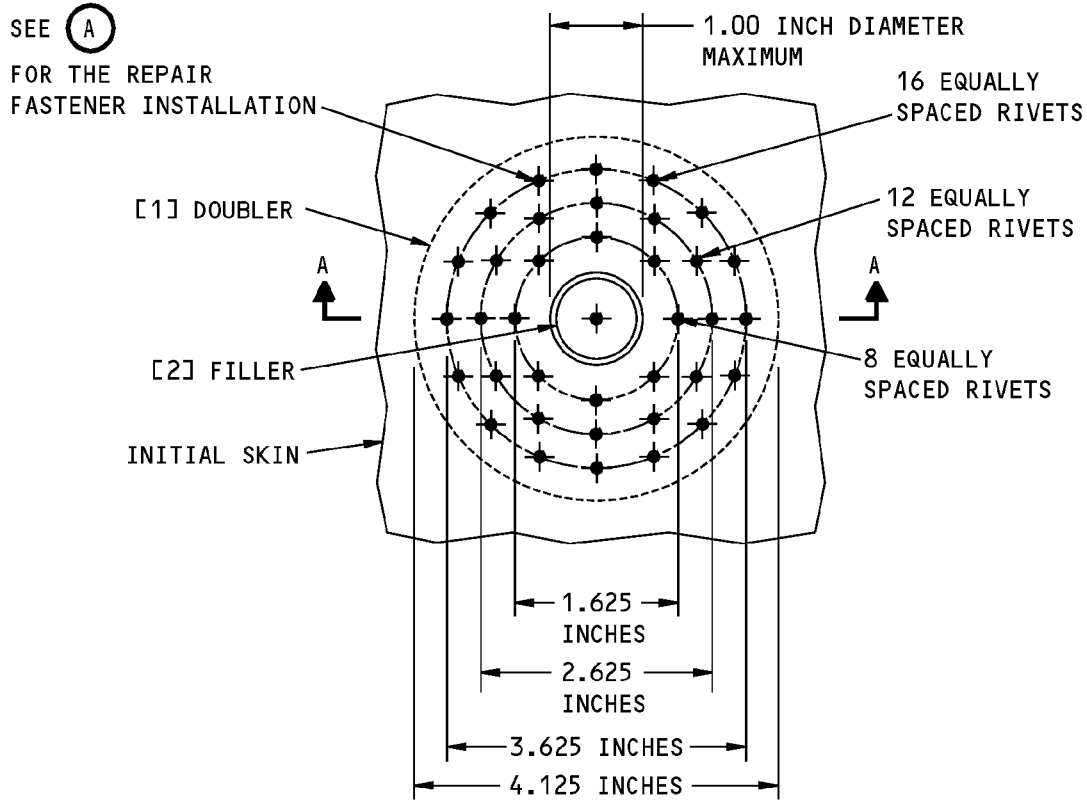
**Table 201:**

<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART</b>	<b>QUANTITY</b>	<b>MATERIAL</b>
[1]	Doubler	1	Use the same material, heat treat and same thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat and same thickness as the initial skin

- C. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 14.
- D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.
- E. Disassemble the repair parts.
- F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
- H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- I. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
- J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

(A)

**FASTENER SYMBOLS**

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D(C) RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.

**Layout of the Repair Parts  
Figure 201**



737-800

## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 15 - FLUSH REPAIR OF A SMALL HOLE NEAR A BONDED DOUBLER IN 0.040 INCH THICK SKIN

#### 1. Applicability

- A. Repair 15 is a flush repair that is applicable to damage in the fuselage skin:
  - (1) That is 0.040 inch thick
  - (2) That is 1.00 inch or less in diameter
  - (3) Where the edge of the damage is a minimum of 0.625 inch away from the doubler
  - (4) Where the damage is a maximum of 2.25 inches away from a doubler.
- B. Repair 15 is not applicable to the crown skin panel between BS 540 and BS 727.
  - (1) For a repair to this 0.050 inch thick skin area, refer to Repair 10.

#### 2. General

- A. Repair 15 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 15 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 15 is an alternative to:
  - (1) Repair 5, which is an external repair for a small hole.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

#### 4. Repair Instructions

- A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.
- B. Make the repair parts.
  - (1) Refer to Table 201/REPAIR 15 for the material and the thickness of the repair parts.
  - (2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 15 for the dimensions of the repair parts.
  - (3) Make the contour of the repair parts the same as the contour of the initial skin, as necessary.

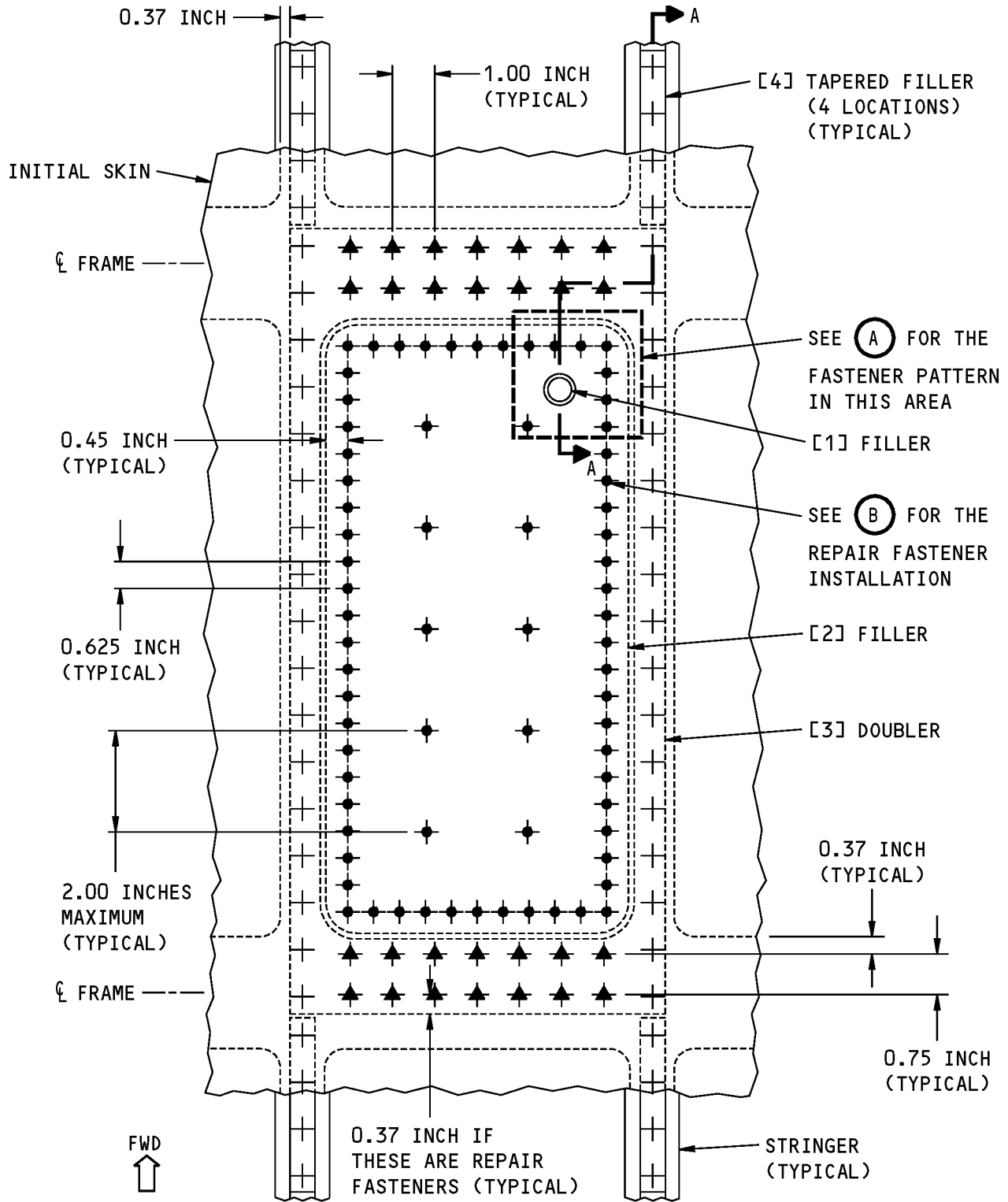
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 201:**

<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART</b>	<b>QUANTITY</b>	<b>MATERIAL</b>
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial doubler
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the [3] doubler
[4]	Tapered Shim	4	Use the same material, heat treat condition and thickness as the [3] doubler. The length must not be less than 2.50 inches

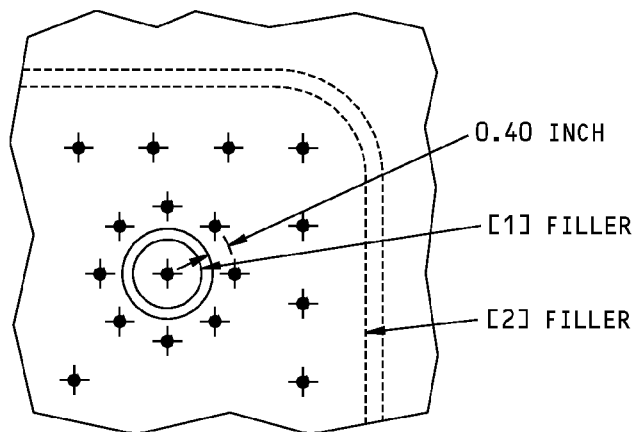
- C. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 15.
- D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.
- E. Disassemble the repair parts.
- F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01
- H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- I. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**

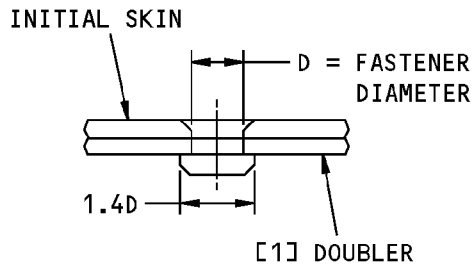


**Layout of the Repair Parts for a Typical Fuselage Skin Section**  
**Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



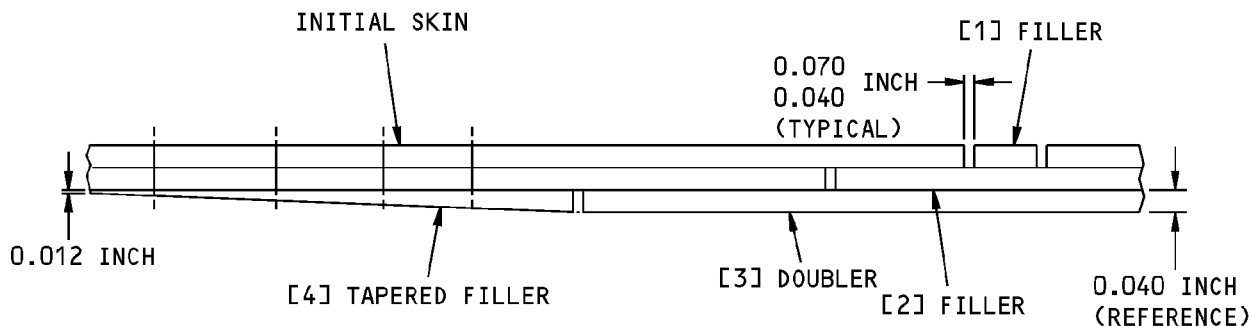
A



[1] DOUBLER

**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

B



**NOTE:** THE STRINGER IS NOT SHOWN.

**ROTATED 90° COUNTERCLOCKWISE**

A-A

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER. IF NECESSARY, INSTALL A FASTENER THAT IS UP TO 1/32 INCH DIAMETER OVERSIZE.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

**Layout of the Repair Parts for a Typical Fuselage Skin Section  
Figure 201 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 16 - FLUSH REPAIR OF 0.040 INCH THICK CROWN SKIN BETWEEN STRINGERS AND BONDED DOUBLERS

#### 1. Applicability

- A. Repair 16 is applicable to damage to 0.040 inch thick fuselage skin and bonded doublers between stringers 10L and 10R.
- B. Repair 16 is not applicable to damage:
  - (1) That goes to a stringer
  - (2) That goes to a frame
  - (3) At a skin splice
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays
  - (7) To the crown skin panel between BS 540 and BS 727.
    - (a) For a repair to the 0.050 inch thick skin in this area, refer to Repair 18.

#### 2. General

- A. Repair 16 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 16 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 16 is an alternative to:
  - (1) Repair 9 which is a flush repair for skin damage between stringers and bonded doublers.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

#### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.



**STRUCTURAL REPAIR MANUAL**

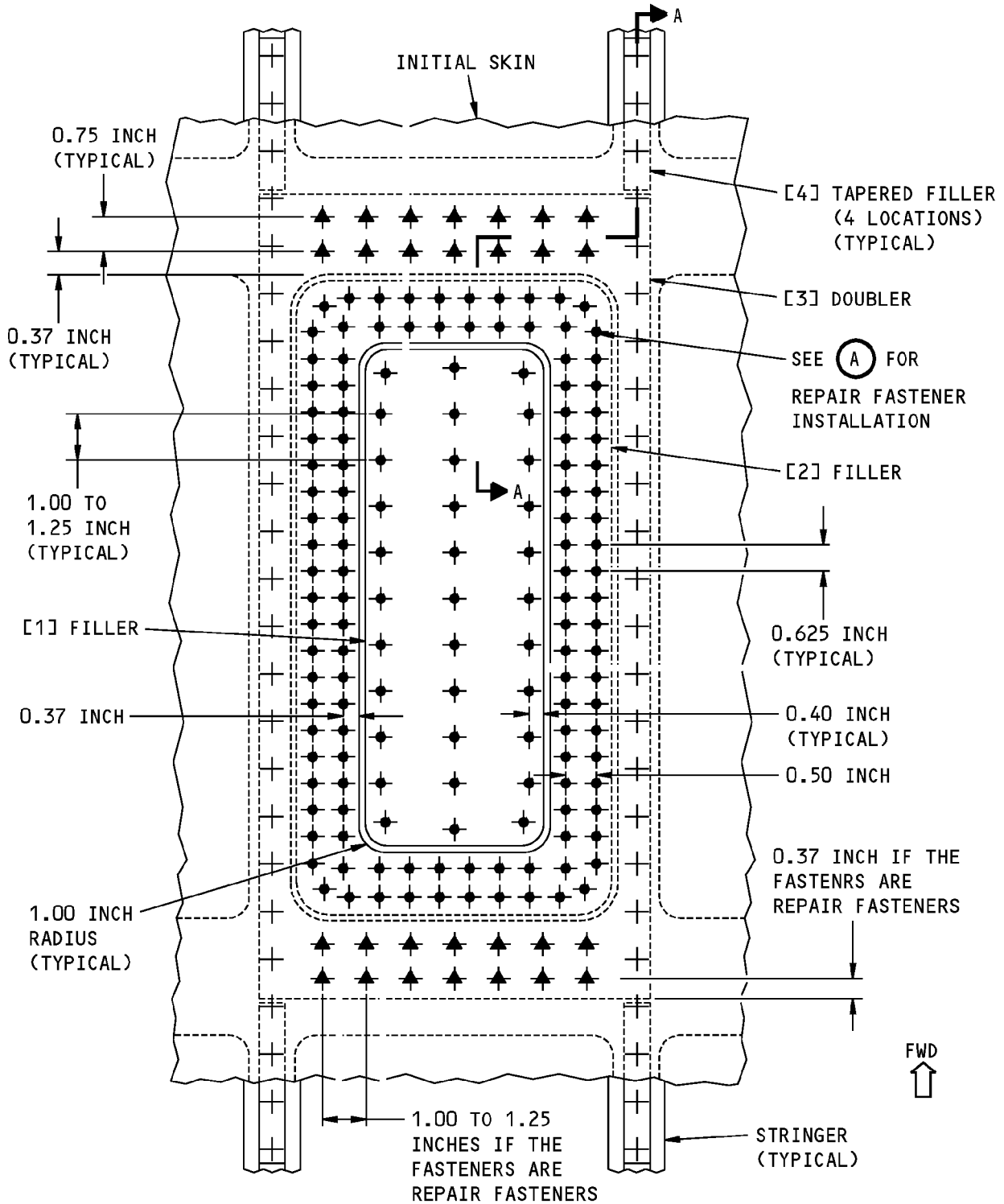
- B. Cut and remove the damaged part of the fuselage skin. Refer to 51-10-02.
  - (1) Make the cut in the shape of a rectangle with the sides parallel or perpendicular to the stringer or frame.
  - (2) Make the corner radii of the cut a minimum of 1.00 inch.
- C. Put the skin around the cut back to the initial contour.
- D. Make the repair parts.
  - (1) Refer to Table 201/REPAIR 16 for the material and the thickness of the repair parts.
  - (2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16 for the dimensions of the repair parts.
- E. Make the contour of the repair parts the same as the contour of the initial skin, as necessary.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the initial skin
[4]	Tapered Shim	4	Use the same material, heat treat condition and thickness as the initial skin. The length must not be less than 2.50 inches

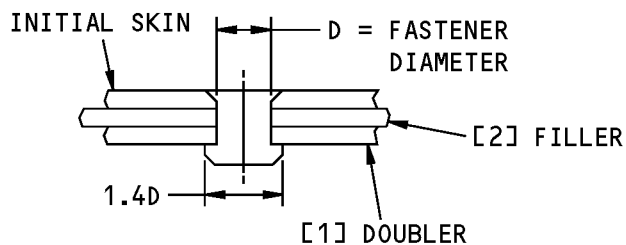
- F. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16.
- G. Drill the necessary fastener holes. Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 16 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
- H. Disassemble the repair parts.
  - I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
  - J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
  - K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- M. Seal the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (1) Apply a fillet seal to the repair parts on the internal of the repair area.
  - (2) Put sealant into the space between the skin and the part [1] filler.
- N. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



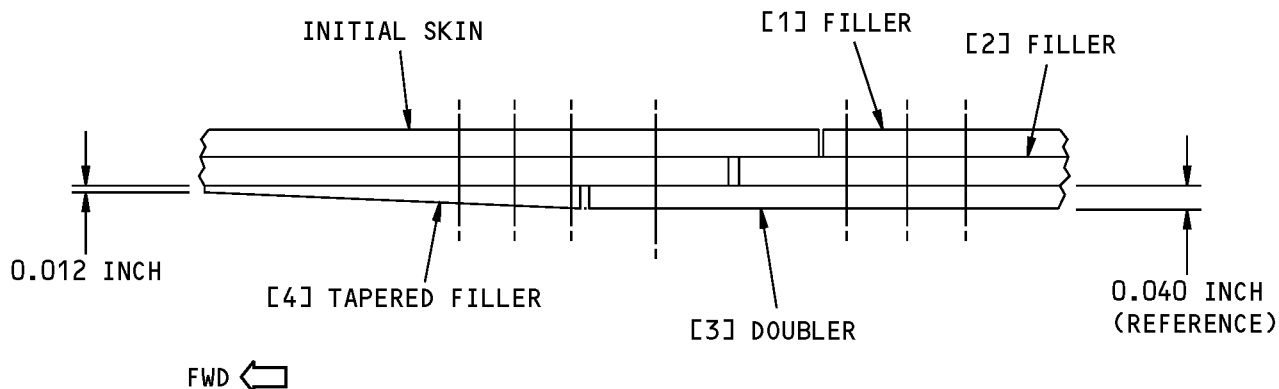
**Layout of the Repair Parts for a Typical Fuselage Skin Section**  
**Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1.

A



**NOTE:** THE STRINGER IS NOT SHOWN.

**ROTATED 90° COUNTERCLOCKWISE  
A-A**

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.
- IF THE BONDED "WAFFLE" DOUBLER IS DISBONDED, THEN THIS REPAIR IS NOT ACCEPTABLE
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

**Layout of the Repair Parts for a Typical Fuselage Skin Section  
Figure 201 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 17 - FLUSH REPAIR OF A SMALL HOLE IN 0.050 INCH THICK SKIN NEAR A BONDED DOUBLER

#### **1. Applicability**

- A. Repair 17 is a flush repair that is applicable to damage in the crown skin:
  - (1) That is in 0.050 inch thick between BS 540 and BS 727
  - (2) That is 1.00 inch or less in diameter
  - (3) Where the edge of the damage is a minimum of 0.625 inches away from the doubler
  - (4) Where the damage is a maximum of 2.25 inches away from a doubler.

#### **2. General**

- A. Repair 17 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 17 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 17 is an alternative to:
  - (1) Repair 5 which is an external repair for a small hole.

#### **3. References**

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers

#### **4. Repair Instructions**

- A. Drill out the damage to a maximum of 1.00 inch in diameter. Refer to 51-10-02.
- B. Make the repair parts.
  - (1) Refer to Table 201/REPAIR 17 for the material and the thickness of the repair parts.
  - (2) Refer to Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 17 for the dimensions of the repair parts.
  - (3) Make the contour of the repair parts the same as the contour of the initial skin, as necessary.



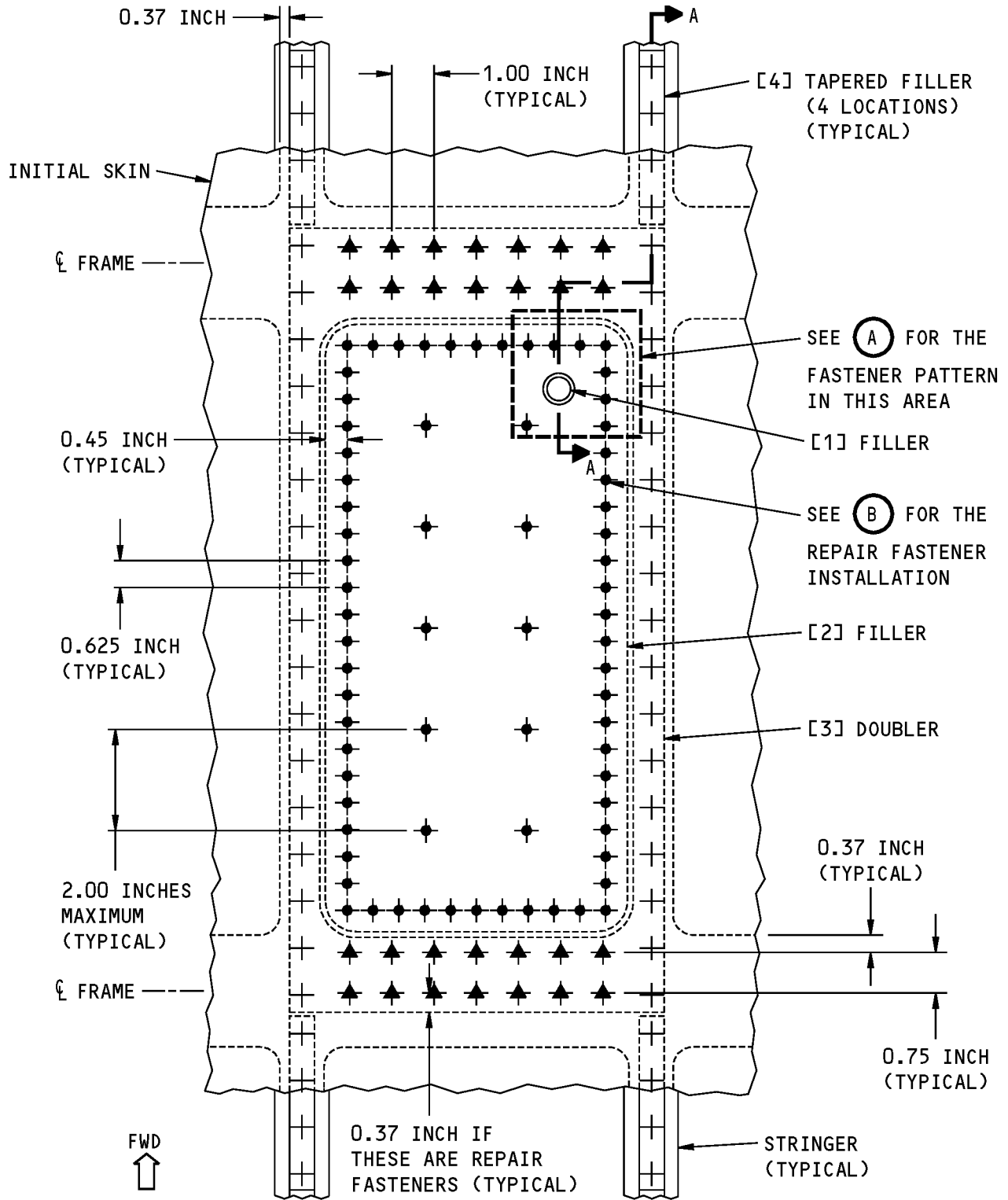
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 201:**

<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART</b>	<b>QUANTITY</b>	<b>MATERIAL</b>
[1]	Filler	1	Use the same material, heat treat condition and thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat condition and thickness as the initial doubler
[3]	Doubler	1	Use the same material, heat treat condition and thickness as the initial skin
[4]	Tapered Filler	4	Use the same material, heat treat condition and thickness as the part [3] doubler. The length must not be less than 2.50 inches

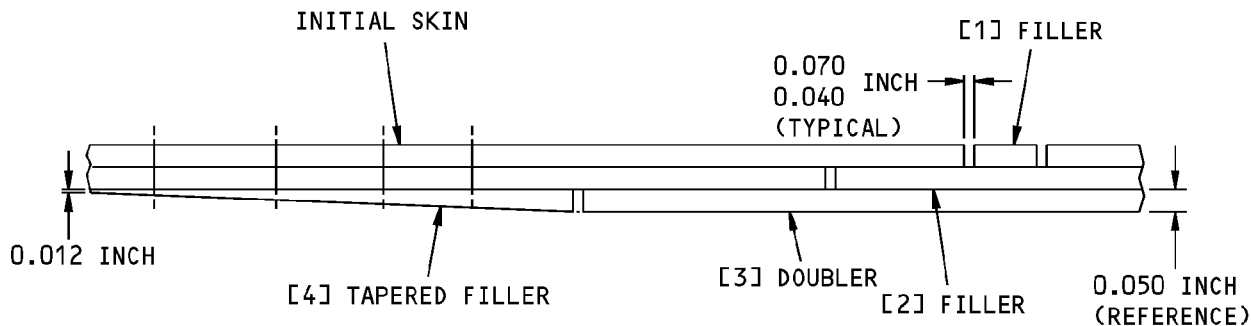
- C. Assemble the repair parts as shown in Layout of the Repair Parts for a Typical Fuselage Skin Section, Figure 201/REPAIR 17.
- D. Drill the necessary fastener holes. Refer to 51-40-05 for the fastener hole dimensions.
- E. Disassemble the repair parts.
- F. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- G. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01
- H. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-44-04.
- I. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- J. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- K. Apply a decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts for a Typical Fuselage Skin Section**  
**Figure 201 (Sheet 1 of 2)**

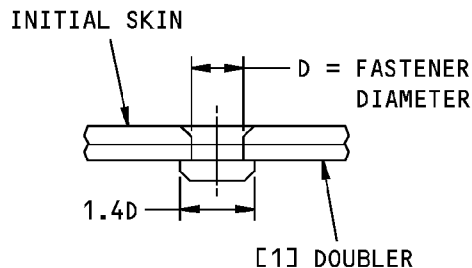
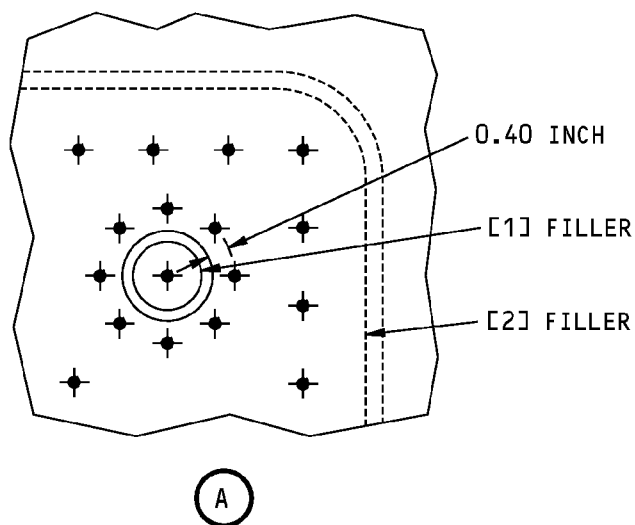
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** THE STRINGER IS NOT SHOWN.

**ROTATED 90° COUNTERCLOCKWISE**

A-A



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENER AS GIVEN IN BAC 5004-1

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER. IF NECESSARY, INSTALL A FASTENER THAT IS UP TO 1/32 INCH DIAMETER OVERSIZE.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE4D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF4D RIVET.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D RIVET.

**Layout of the Repair Parts for a Typical Fuselage Skin Section  
Figure 201 (Sheet 2 of 2)**





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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



## 737-800 STRUCTURAL REPAIR MANUAL

### REPAIR 18 - FLUSH REPAIR OF 0.050 INCH THICK CROWN SKIN WITH A BONDED DOUBLER

#### 1. Applicability

- A. Repair 18 is applicable to damage to the fuselage skin and bonded doubler.
- B. Repair 18 is applicable to damage:
  - (1) In a 0.050 inch thick crown skin between BS 540 and BS 727
  - (2) To the fuselage skin and bonded doubler at a frame.
- C. Repair 18 is not applicable to damage:
  - (1) At a location where there is a shear tie
  - (2) That goes to more than one frame
  - (3) That goes to a stringer
  - (4) At a skin splice
  - (5) At window belts
  - (6) At skin cutouts
  - (7) In major body joint bays

#### 2. General

- A. Repair 18 is a Permanent Repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 18 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to Paragraph 5 for the inspection requirements.
- C. Repair 18 can be used to replace an external repair.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers

#### 4. Repair Instructions

- A. Get access to the damaged area.
  - (1) If Repair 18 will replace an external repair, remove the repair fasteners and the repair parts.

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STRUCTURAL REPAIR MANUAL**

- B. Remove the necessary fasteners in the area of the damaged skin.
- C. If necessary, cut and remove the damaged part of the skin.
  - (1) Make the repair cutout in the shape of a rectangle with the edge parallel or perpendicular to the frame or stringer.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch.
- D. Put the skin around the cut back to the initial contour.
- E. Make the repair parts given in Table 201/REPAIR 18.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material, heat treat condition, and the same thickness as the initial skin
[2]	Filler	1	Use the same material, heat treat condition and the same thickness as the initial doubler
[3]	Filler	1	Use the same material, heat treat condition, and the same thickness as the initial skin

- F. Make the contour of the repair parts the same as the contour of the initial skin, as necessary.
- G. Assemble the repair parts as shown in Layout of the Repair Parts, Figure 201/REPAIR 18.
- H. Drill the necessary fastener holes. Refer to Layout of the Repair Parts, Figure 201/REPAIR 18, Tables 202 and 203 for the fastener type, diameter, and spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) If Repair 18 will replace an external repair, then:
    - (a) Use the same fastener holes as the external repair.
    - (b) Use the same fastener spacing as the external repair if you drill more fastener holes.

**Table 202:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	INITIAL DOUBLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE DOUBLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.050	0.050	BACR15BB5D	4	4	0.78 TO 0.81

**Table 203:**

REPAIR FASTENER TYPE, DIAMETER, AND MINIMUM NUMBER OF ROWS AND SPACING					
INITIAL SKIN THICKNESS (INCH)	FILLER THICKNESS (INCH)	FASTENER TYPE AND DIAMETER	NECESSARY NUMBER OF FASTENER ROWS COMMON TO THE FILLER		FASTENER SPACING (INCH)
			CIRCUMFERENTIAL	LONGITUDINAL	
0.050	0.050	BACR15BB5D	5	5	0.78 TO 0.81

- I. Disassemble the repair parts.
- J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

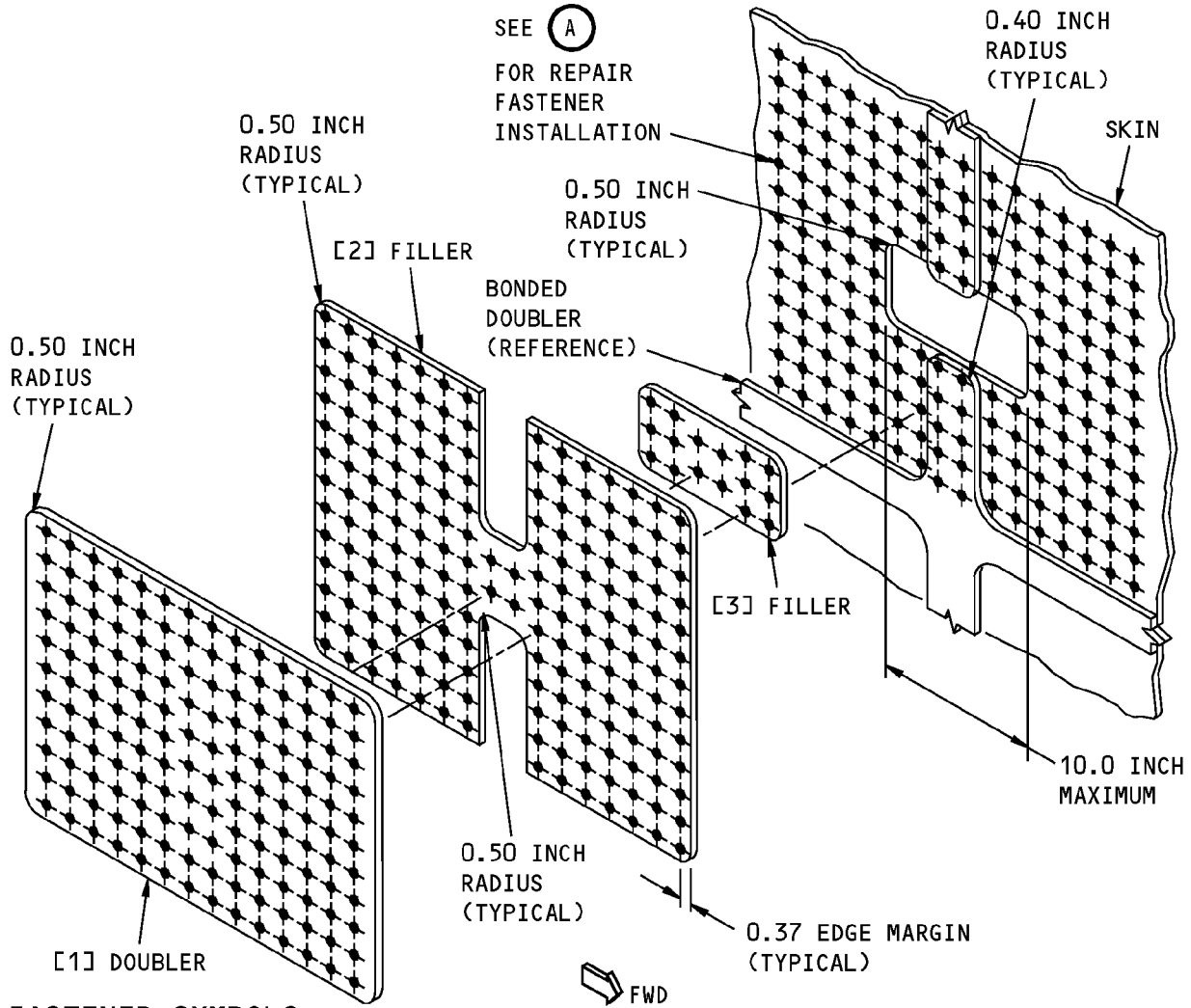


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**STRUCTURAL REPAIR MANUAL**

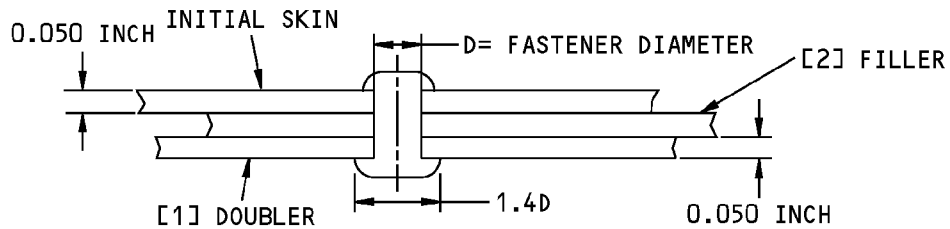
- L. Apply two layers of BMS 10-11, Type I primer to the repair parts, the bare surfaces of the initial parts and the internal surfaces of the repair area. Refer to SOPM 20-44-04.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the rivets without sealant.
- N. Apply BMS 5-95 sealant to the repair as follows:
  - (1) Apply a fillet seal to the repair parts on the internal and external sides of the repair area. Refer to 51-20-05.
  - (2) Put sealant into the space between the part [1] filler and the skin. Refer to 51-20-05.
- O. Apply the decorative finish if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- P. Apply a layer of BMS 3-23, corrosion inhibiting compound to all the interior structure of the repair area.

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**FASTENER SYMBOLS**

◆ REPAIR FASTENER LOCATION. INSTALL A BACR15BB5D RIVET.



**NOTE:** ALL REPAIR FASTENERS MUST BE OVERDRIVEN TO 1.4D MINIMUM BUTT DIAMETER. INSTALL THE FASTENERS AS GIVEN IN BAC 5004-1.

(A)

**Layout of the Repair Parts  
Figure 201**



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### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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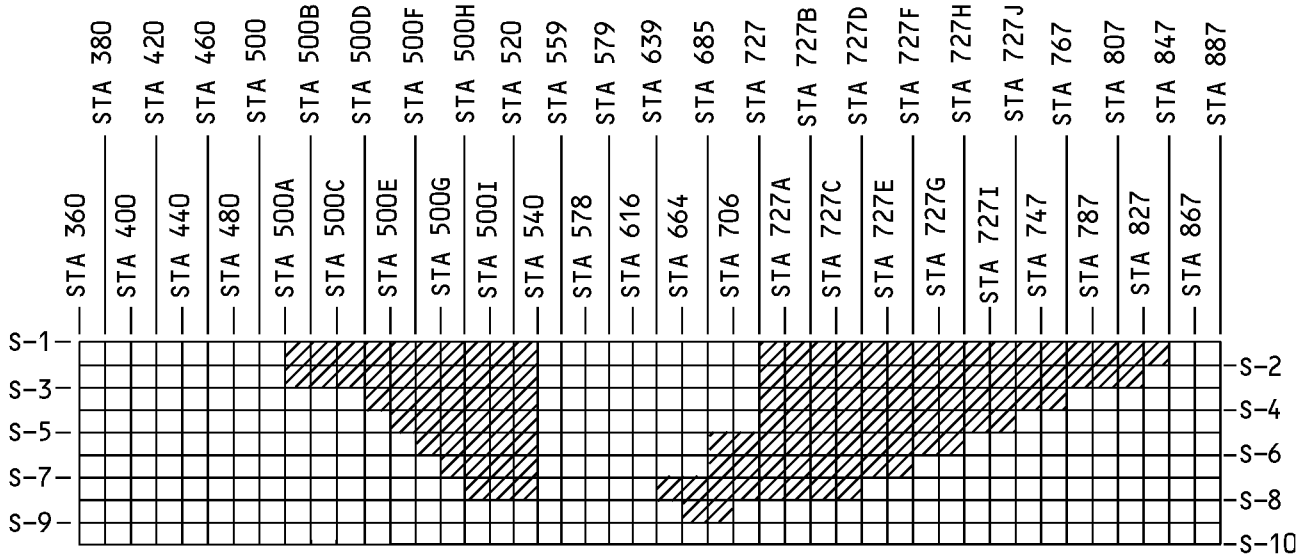
## STRUCTURAL REPAIR MANUAL

### REPAIR 19 - SMALL EXTERNAL REPAIR WITH BLIND FASTENERS

#### 1. Applicability

- A. Repair 19 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:
  - (1) You do inspections of the repair as given in Paragraph 5./REPAIR 19
  - (2) The damage can be drilled out to a maximum of 1.00 inch in diameter
  - (3) You replace Repair 19 with a permanent repair as given in Paragraph 5./REPAIR 19
  - (4) You replace Repair 19 with a permanent repair before you reach the number of flight cycles as given in Flight Cycle Limits for Crown Skin Panel, Figure 201/REPAIR 19 for the crown skin panel.
    - (a) For all other skin panels, the limit for Repair 19 is 20,000 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149.
    - (b) For all other skin panels, the limit for Repair 19 is 9,800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149.
- B. Repair 19 is not applicable to damage:
  - (1) That goes to a stringer
  - (2) That goes to a frame
  - (3) At skin splices
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
- C. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from:
  - (1) The edge of the skin
  - (2) An initial fastener location
  - (3) A cutout in the skin.
- D. Do not use Repair 19 near static ports and angle-of-attack sensors. Refer to 51-10-01 for areas near static ports and angle-of-attack sensors where external repairs are not permitted.
- E. Repair 19 can be used only if you make sure that the blind rivets can be installed flush against the internal structure.

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- THE LIMIT FOR THE REPAIR IS 2,300 FLIGHT CYCLES. 1
- THE LIMIT FOR THE REPAIR IS 7,300 FLIGHT CYCLES. 2
- THE LIMIT FOR THE REPAIR IS 9,800 FLIGHT CYCLES. 1
- THE LIMIT FOR THE REPAIR IS 20,000 FLIGHT CYCLES. 2

NOTES

- THIS REPAIR IS ONLY APPLICABLE FOR DAMAGE TO 1 STRINGER BAY.
  - THE LIMIT FOR ALL OTHER AREAS IS 9,800 FLIGHT CYCLES. 1
  - THE LIMIT FOR ALL OTHER AREAS IS 20,000 FLIGHT CYCLES. 2
- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

Flight Cycle Limits for Crown Skin Panel  
Figure 201





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### 2. General

- A. Repair 19 is a Time-Limited repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 19 is a Category C repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. Repair 19 is an alternative to:
  - (1) Repair 4 which is an external repair with blind fasteners for damage between stringers.
  - (2) Repair 6 which is an internal repair with solid rivets for damage between stringers.
  - (3) Repair 20 which is an external repair with solid rivets and a replacement for Repair 19.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Drill out the damaged part of the skin up to a maximum of 1.00 inch in diameter as shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19. Refer to 51-10-02.
- C. Put the skin around the hole back to the initial contour.
- D. Make the part [1] doubler as shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19.
  - (1) Refer to Table 201/REPAIR 19 and Table 202/REPAIR 19 for the necessary material and thickness of the part [1] doubler.
  - (2) Refer to Table 203/REPAIR 19 for the fasteners and dimensions of the part [1] doubler.
- E. Make the countersink repair washers for the locations shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19 as necessary. Refer to 51-40-08.

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**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness.

**Table 202:**

REPAIR PART THICKNESSES	
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)
0.040	0.045 OR 0.050
0.045	0.050
0.050	0.056
0.056	0.063
0.063	0.071
0.071	0.080
0.080	0.090
0.090	0.100

**Table 203:**

REPAIR FASTENERS NUMBER, TYPE, AND DIAMETER							
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION			NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER PREFERRED AND ALTERNATE
		A (INCH)	B (INCH)	C (INCH)	B DIA	C DIA	
0.040	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R	
0.045	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R	
0.050	3.80	1.80	3.10	9	15	NAS1738MW4 OR BACR15FR4MP()R	
0.056	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R	
0.063	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R	
0.071	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R	
0.080	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R	
0.090	4.30	2.00	3.50	8	14	NAS1738MW5 OR BACR15FR5MP()R	

F. Assemble the part [1] doubler as shown in Fuselage Skin - Small External Repair with Blind Fasteners, Figure 202/REPAIR 19.



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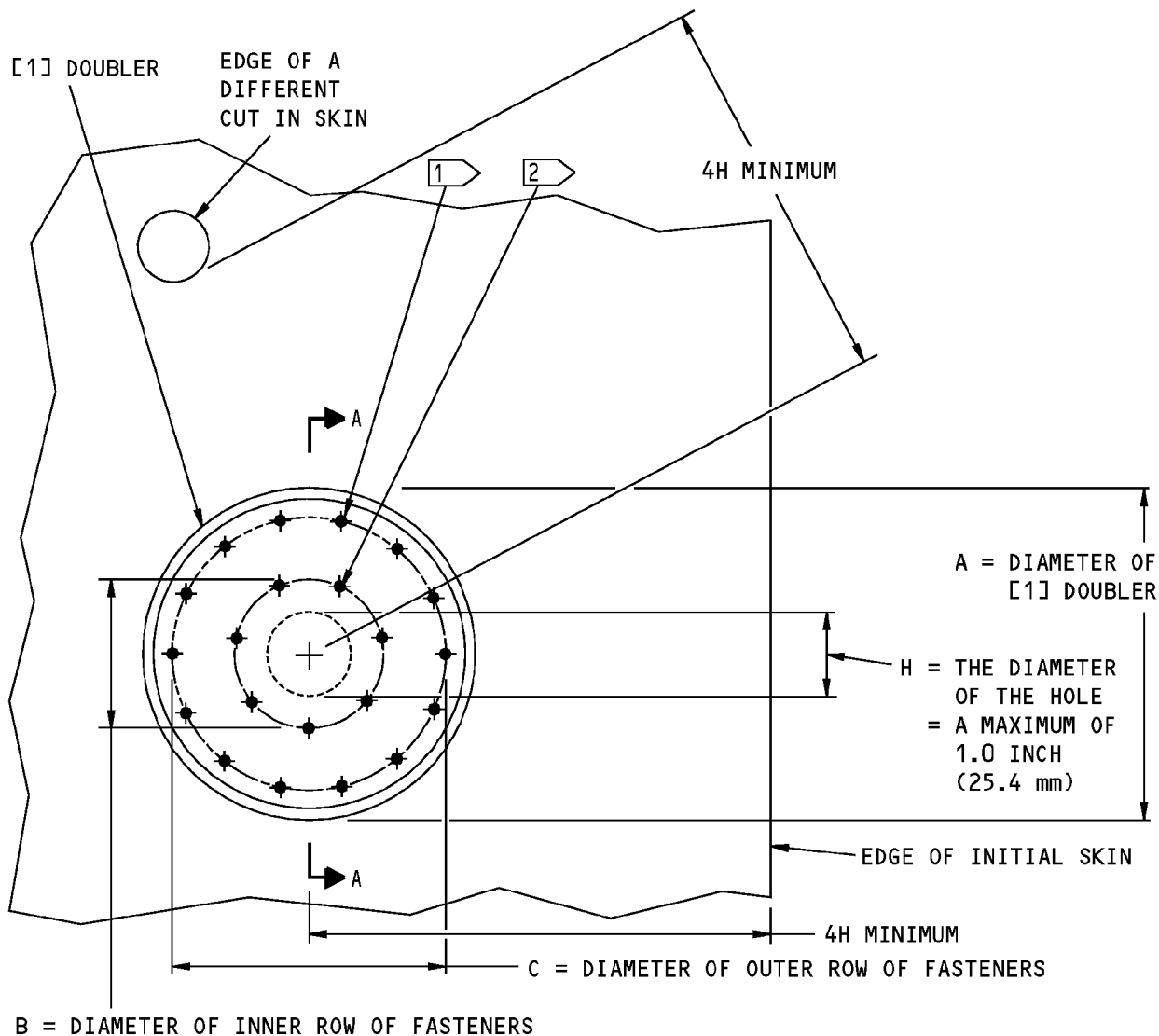
## STRUCTURAL REPAIR MANUAL

- G. Drill the fastener holes. Refer to Table 203/REPAIR 19 for the fastener type, diameter, and distance between fasteners. Refer to 51-40-05 for the fastener hole dimensions.

**NOTE:** Do not drill fastener holes into a chem-milled radius or edge of initial doubler as shown in Fastener Repair Locations and Bonded Doublers, Figure 203/REPAIR 19. The fastener centerline must be a minimum of 0.28 inch away from the edge of the chem-milled area.

- H. Disassemble the part [1] doubler.
- I. Remove all the nicks, scratches, burrs and sharp edges from the part [1] doubler and the bare surfaces of the initial parts.
- J. Apply a chemical conversion coating to the part [1] doubler and the bare surfaces of the initial parts. Refer to 51-20-01.
- K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.
- L. Apply two layers of BMS 10-11, Type I primer to the part [1] doubler and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Install the part [1] doubler. Refer to 51-20-05.
- (1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.
  - (3) Apply a fillet seal to the part [1] doubler on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (4) Apply a fillet seal to the part [1] doubler on the interior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
  - (5) Apply the decorative finish if necessary. Refer to AMM 51-21-00/701.

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B = DIAMETER OF INNER ROW OF FASTENERS

**NOTES**

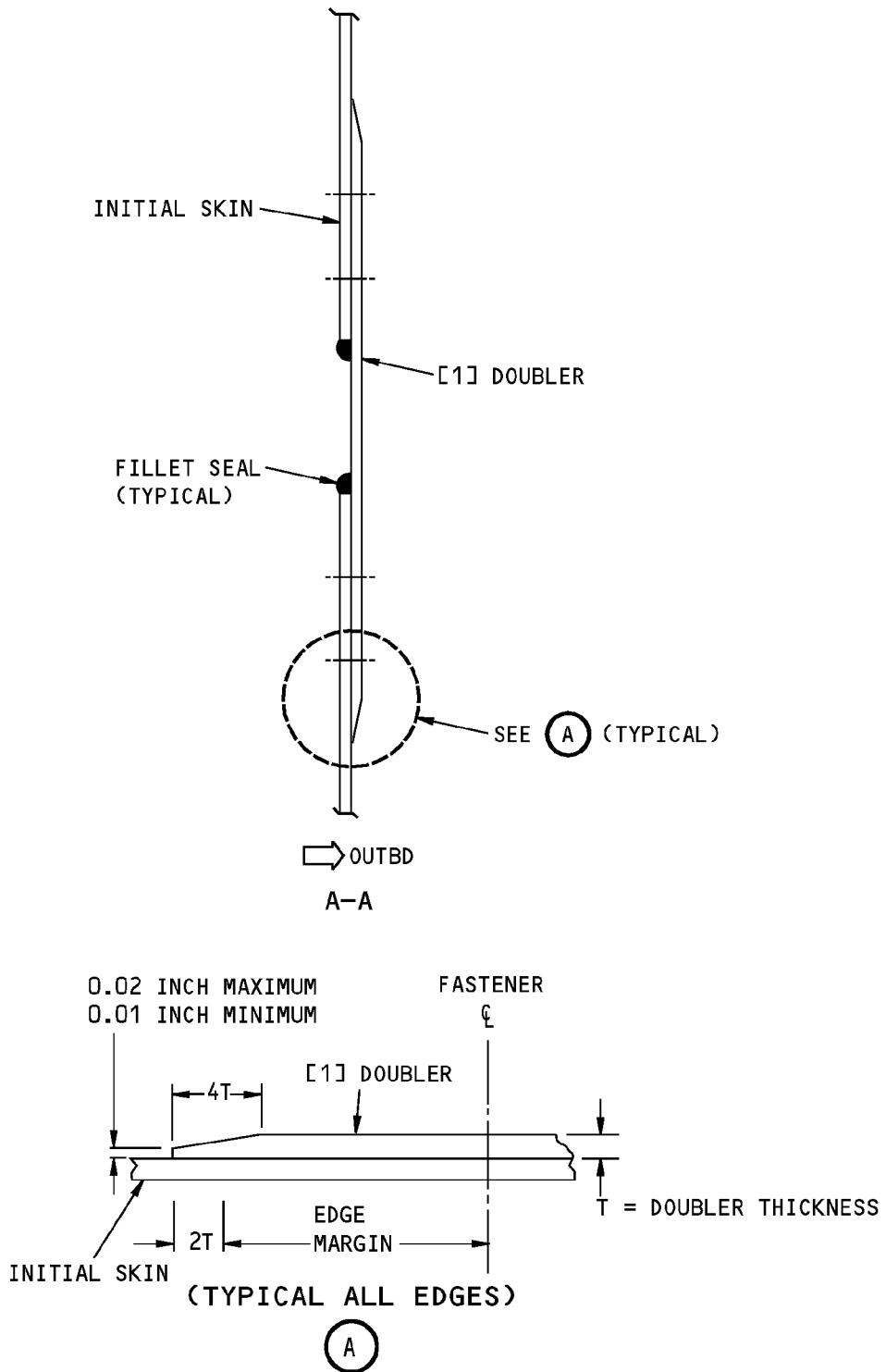
- 1 THE DISTANCE BETWEEN FASTENERS IN THE OUTER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.
- 2 THE DISTANCE BETWEEN FASTENERS IN THE INNER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

**FASTENER SYMBOLS**

- ✦ REPAIR FASTENER LOCATION. REFER TO TABLE 203 FOR THE TYPE OF FASTENER AND THE DISTANCE BETWEEN FASTENERS. REFER TO SRM 51-40-00 THROUGH SRM 51-40-06 FOR THE FASTENER DATA.

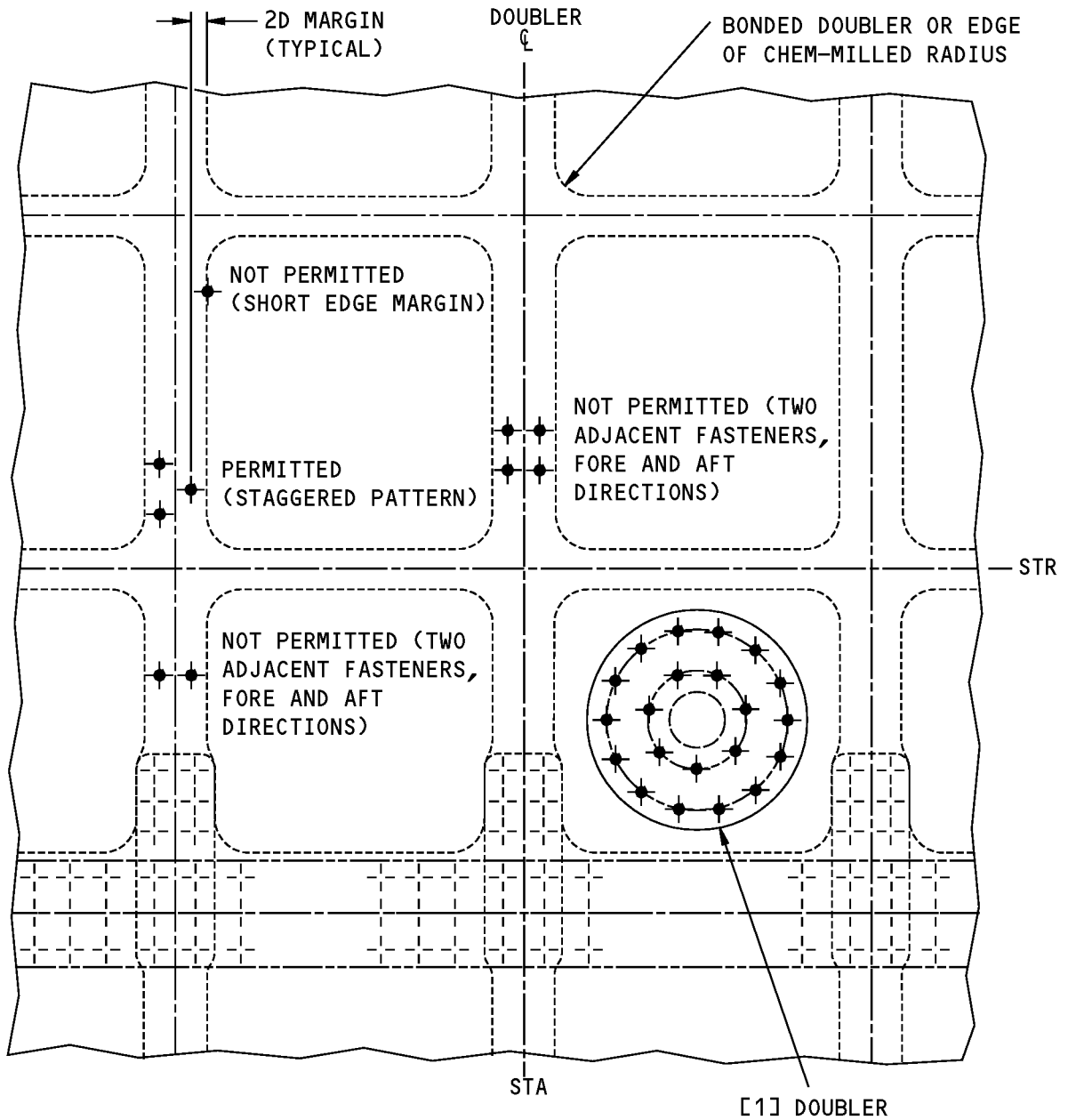
**Fuselage Skin - Small External Repair with Blind Fasteners  
Figure 202 (Sheet 1 of 2)**

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**Fuselage Skin - Small External Repair with Blind Fasteners  
Figure 202 (Sheet 2 of 2)**

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**NOTE:** (D) IS THE DIAMETER OF THE REPAIR FASTENER. USE (D) TO CALCULATE EDGE MARGINS AND THE DISTANCE BETWEEN FASTENERS.

**Fastener Repair Locations and Bonded Doublers  
Figure 203**



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### 5. Inspection and Replacement Instructions

- A. Do a detailed visual inspection of the repair every 2,500 flight cycles for airplanes that have not completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.
- B. Do a detailed visual inspection of the repair every 800 flight cycles for airplanes that have completed Service Bulletin 737-21-1149. Inspect the blind rivets carefully. Rivets that are loose or missing must be replaced.
- C. Replace the Time-Limited or Category C repair in Repair 19 with a permanent or Category A repair no later than the flight cycle limits given in Figure 201.



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### REPAIR 20 - FUSELAGE SKIN - SMALL EXTERNAL REPAIR WITH SOLID FASTENERS

#### 1. Applicability

- A. Repair 20 is applicable to fuselage skin damage between BS 259.5 and BS 1016 if:
  - (1) The damage can be drilled out to a maximum of 1.00 inch in diameter
- B. Repair 20 is not applicable to damage:
  - (1) That goes to a stringer
  - (2) That goes to a frame
  - (3) At skin splices
  - (4) At window belts
  - (5) At skin cutouts
  - (6) In major body joint bays.
- C. The center of the hole drilled to remove the damage must be a minimum of 4 hole diameters away from:
  - (1) The edge of the skin
  - (2) An initial fastener location
  - (3) A cutout in the skin.
- D. Do not use Repair 20 near static ports and angle of attack sensors. Refer to 51-10-01 for areas near static ports and angle of attack sensors where external repairs are not permitted.
- E. Repair 20 can be used only if you make sure that the rivets can be installed flush against the internal structure.

#### 2. General

- A. Repair 20 is a permanent repair for airplanes that have not completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs.
- B. Repair 20 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the definitions of the different types of repairs. Refer to paragraph 5 for the inspection requirements.
- C. Repair 20 is an alternative to:
  - (1) Repair 4 which is an external repair with blind fasteners for damage between stringers.
  - (2) Repair 6 which is an internal repair with solid rivets for damage between stringers.
  - (3) Repair 19 which is an external repair with blind rivets.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution





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(Continued)

Reference	Title
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Repair Instructions**

- A. Remove the necessary fasteners in the area of the damaged skin. Refer to 51-40-02.
- B. Drill out the damaged part of the skin up to a maximum of 1.00 inch in diameter as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20. Refer to 51-10-02.
- C. Put the skin around the hole back to the initial contour.
- D. Make the part [1] doubler as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20.
  - (1) Refer to Table 201/REPAIR 20 and Table 202/REPAIR 20 for the necessary material and thickness of the part [1] doubler.
  - (2) Refer to Table 203/REPAIR 20 for the fasteners and dimensions of the part [1] doubler.
- E. Make the countersink repair washers for the locations shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20 as necessary. Refer to 51-40-08.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Table 202 for the necessary thickness.

**Table 202:**

REPAIR PART THICKNESSES	
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER THICKNESS (INCH)
0.040	0.045 OR 0.050
0.045	0.050
0.050	0.056
0.056	0.063
0.063	0.071
0.071	0.080
0.080	0.090
0.090	0.100

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**Table 203:**

REPAIR FASTENERS NUMBER, TYPE, AND DIAMETER						
INITIAL SKIN THICKNESS (INCH)	PART [1] DOUBLER DIAMETER	DIAMETER OF THE FASTENER LOCATION		NUMBER OF FASTENERS		FASTENER TYPE AND DIAMETER PREFERRED AND ALTERNATE
		A (INCH)	B (INCH)	C (INCH)	B DIA	
0.040	3.80	1.80	3.10	9	15	BACR15BB5D
0.045	3.80	1.80	3.10	9	15	BACR15BB5D
0.050	3.80	1.80	3.10	9	15	BACR15BB5D
0.056	4.30	2.00	3.50	8	14	BACR15BB6D
0.063	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.071	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.080	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D
0.090	4.30	2.00	3.50	8	14	BACR15CE6D OR BACR15GF6D OR BACR15BB6D

F. Assemble the part [1] doubler as shown in Fuselage Skin - Small External Repair with Solid Fasteners, Figure 201/REPAIR 20.

G. Drill the fastener holes. Refer to Table 203/REPAIR 20 for the fastener type, diameter, and distance between fasteners. Refer to 51-40-05 for the fastener hole dimensions.

**NOTE:** Do not drill fastener holes into a chem-milled radius or edge of initial doubler as shown in Fastener Repair Locations and Bonded Doublers, Figure 202/REPAIR 20. The fastener centerline must be a minimum of 0.28 inch away from the edge of the chem-milled area.

H. Disassemble the part [1] doubler.

I. Remove all the nicks, scratches, burrs and sharp edges from the part [1] doubler and the bare surfaces of the initial parts.

J. Apply a chemical conversion coating to the part [1] doubler and the bare surfaces of the initial parts. Refer to 51-20-01.

K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08.

L. Apply two layers of BMS 10-11, Type I primer to the part [1] doubler and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

M. Install the part [1] doubler. Refer to 51-20-05.

(1) Apply BMS 5-95 or sealant to the mating surfaces. Refer to 51-20-05.

(2) Install the fasteners without sealant.

(3) Apply a fillet seal to the part [1] doubler on the exterior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.

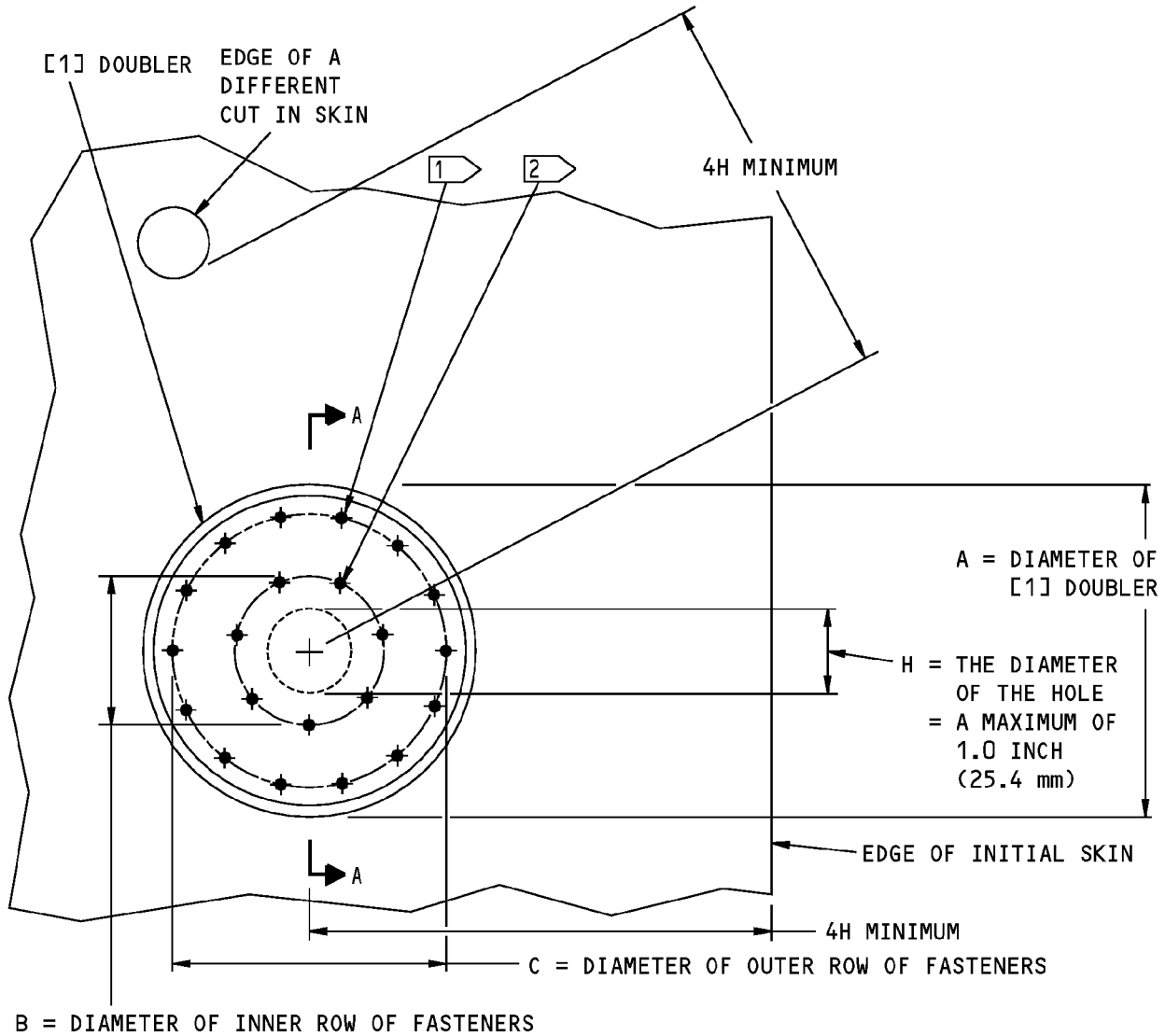


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- (4) Apply a fillet seal to the part [1] doubler on the interior side of the repair area with BMS 5-95 sealant. Refer to 51-20-05.
- (5) Apply the decorative finish if necessary. Refer to AMM 51-21-00/701.

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**NOTES**

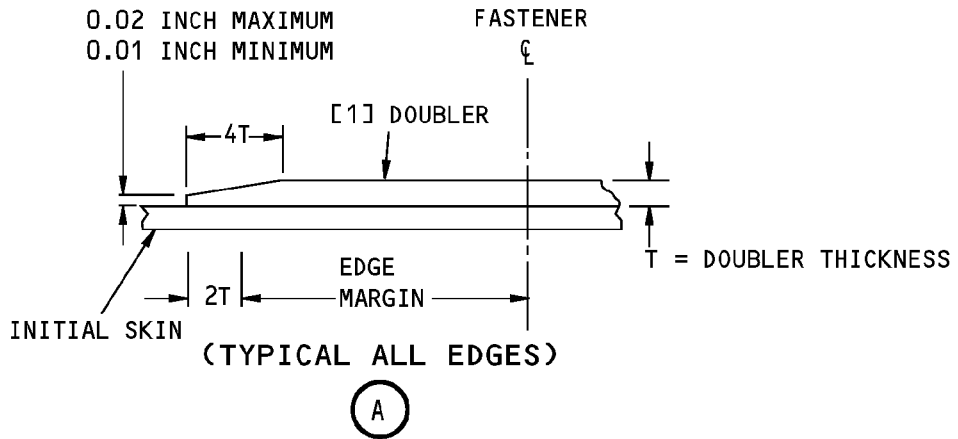
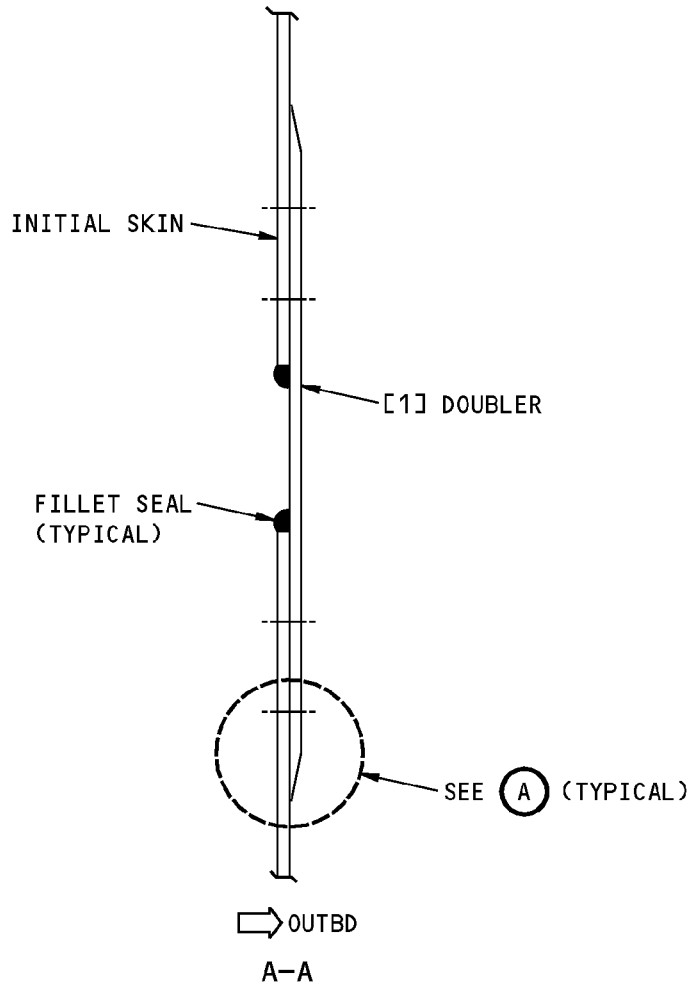
- 1 THE DISTANCE BETWEEN FASTENERS IN THE OUTER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.
- 2 THE DISTANCE BETWEEN FASTENERS IN THE INNER ROW IS THE SAME FOR ALL FASTENERS IN THAT ROW.

**FASTENER SYMBOLS**

- ✦ REPAIR FASTENER LOCATION. REFER TO TABLE 203 FOR THE TYPE OF FASTENER AND THE DISTANCE BETWEEN FASTENERS. REFER TO SRM 51-40-00 THROUGH SRM 51-40-06 FOR THE FASTENER DATA.

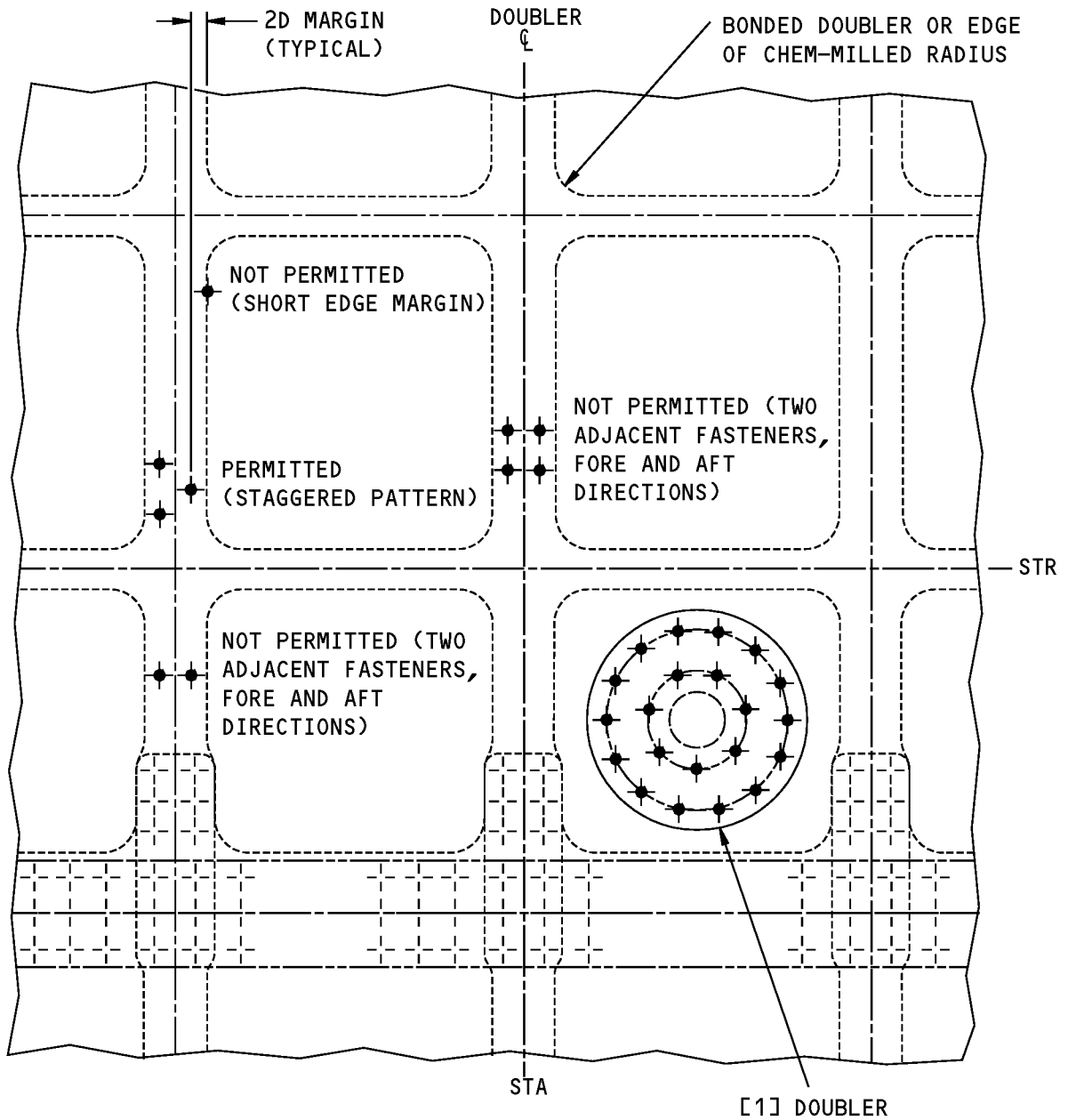
**Fuselage Skin - Small External Repair with Solid Fasteners  
Figure 201 (Sheet 1 of 2)**

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**Fuselage Skin - Small External Repair with Solid Fasteners  
Figure 201 (Sheet 2 of 2)**

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**NOTE:** (D) IS THE DIAMETER OF THE REPAIR FASTENER. USE (D) TO CALCULATE EDGE MARGINS AND THE DISTANCE BETWEEN FASTENERS.

**Fastener Repair Locations and Bonded Doublers  
Figure 202**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) refer to 51-00-04:
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of the repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 21 - FORWARD AND AFT CARGO DOOR SURROUND CORNER REPAIR

#### 1. Applicability

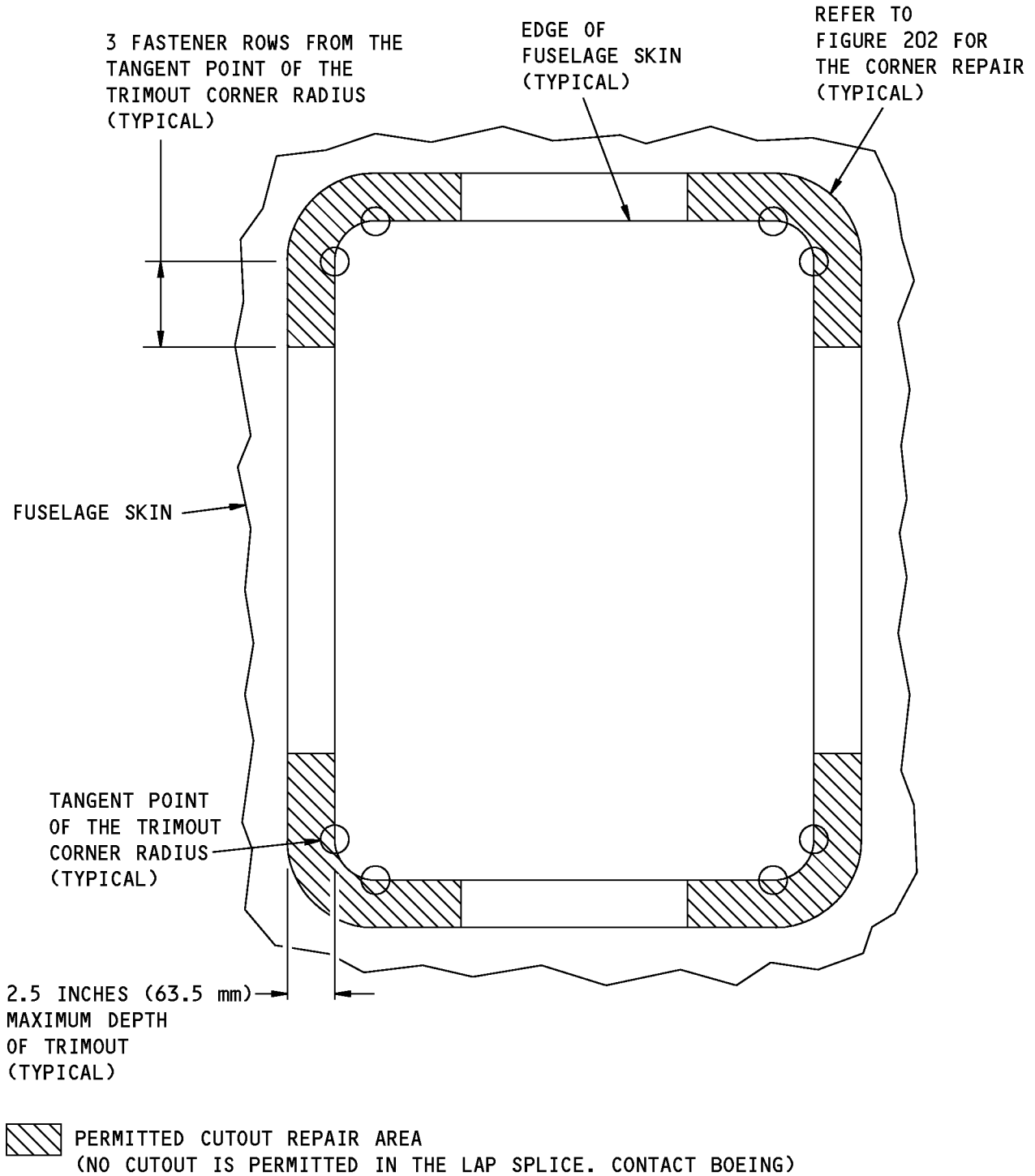
- A. Repair 21 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 21.
- B. Repair 21 is applicable to fuselage damage to the skin or to the skin and bearstrap.

#### 2. General

- A. Repair 21 gives instructions for a Category B Repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 21 for the inspection requirements.



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**Forward and Aft Cargo Door Cutout Repair Zones  
Figure 201**

## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING

### 4. Repair Instructions

- A. Get access to the damaged area.
- B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 21. Refer to 51-40-02, GENERAL.
- C. Cut and remove the damaged part of the fuselage skin or the skin and bearstrap as shown in Figure 202/REPAIR 21. Refer to 51-10-02, GENERAL.

**NOTE:** Make sure you protect the bearstrap when you only remove skin damage.

- (1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.
  - (2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 21.
  - (3) Put the skin around the cut back to the initial contour.
  - (4) Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. If no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.
  - (5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.
- D. Make the repair parts as shown in Table 201. Do not terminate the repair parts on a stringer or frame fastener row.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).



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REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[4]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the cutout material.
[5]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the maximum gap to 0.01 inch (0.25 mm).

- (1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL.
- E. Assemble the repair parts as shown in Figure 202/REPAIR 21.
- F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 21 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.
- (1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.
- (2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- (3) Make sure that there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.
- O. Repair the threshold/scuff plate as given in Figure 203/REPAIR 21.
- (1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:
- NOTE:** The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.
- (a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 21 for typical repair details.
- (b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.
- (c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.



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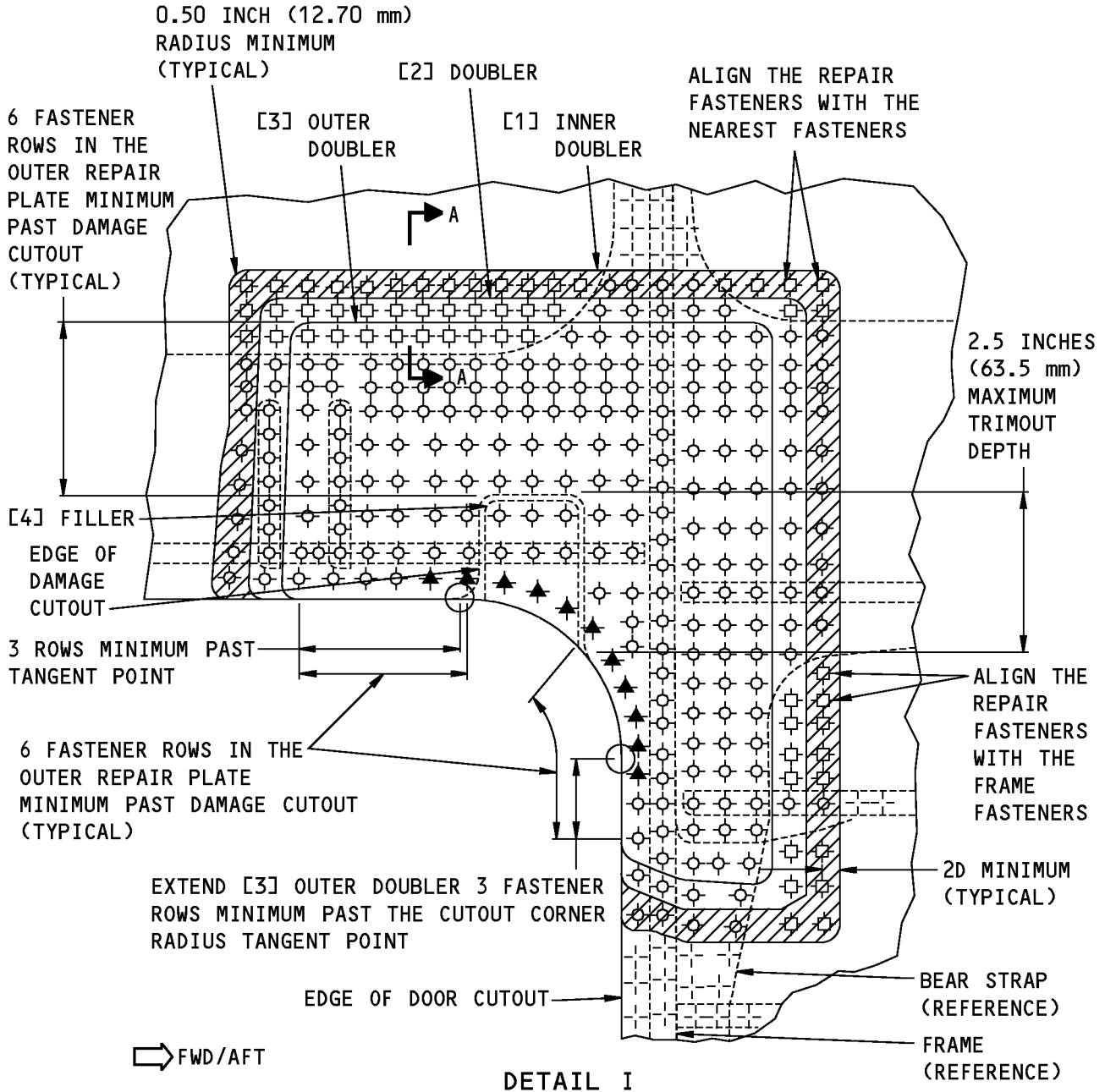
## STRUCTURAL REPAIR MANUAL

- (d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.
- (e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.
- (f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.
- (g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.
- (h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

**NOTE:** There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

- (i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 21.

**STRUCTURAL REPAIR MANUAL**



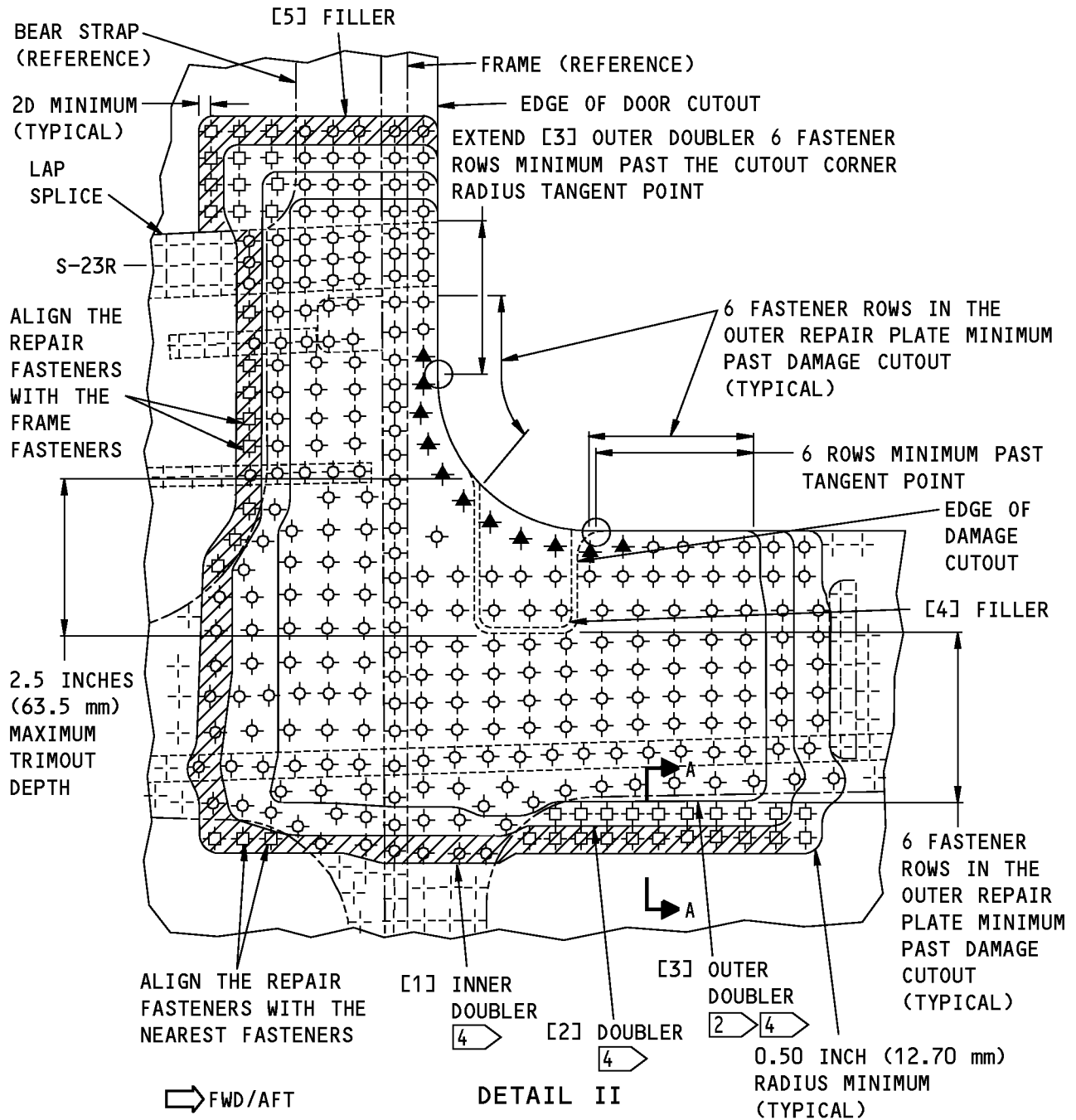
**NOTE:** THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE.

CRITICAL FASTENER ROW MUST BE INSPECTED AS GIVEN IN PARAGRAPH 5 INSTRUCTIONS.

TYPICAL CARGO DOOR UPPER CORNER REPAIR IS SHOWN,  
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE SIMILAR

**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 5)**

**STRUCTURAL REPAIR MANUAL**

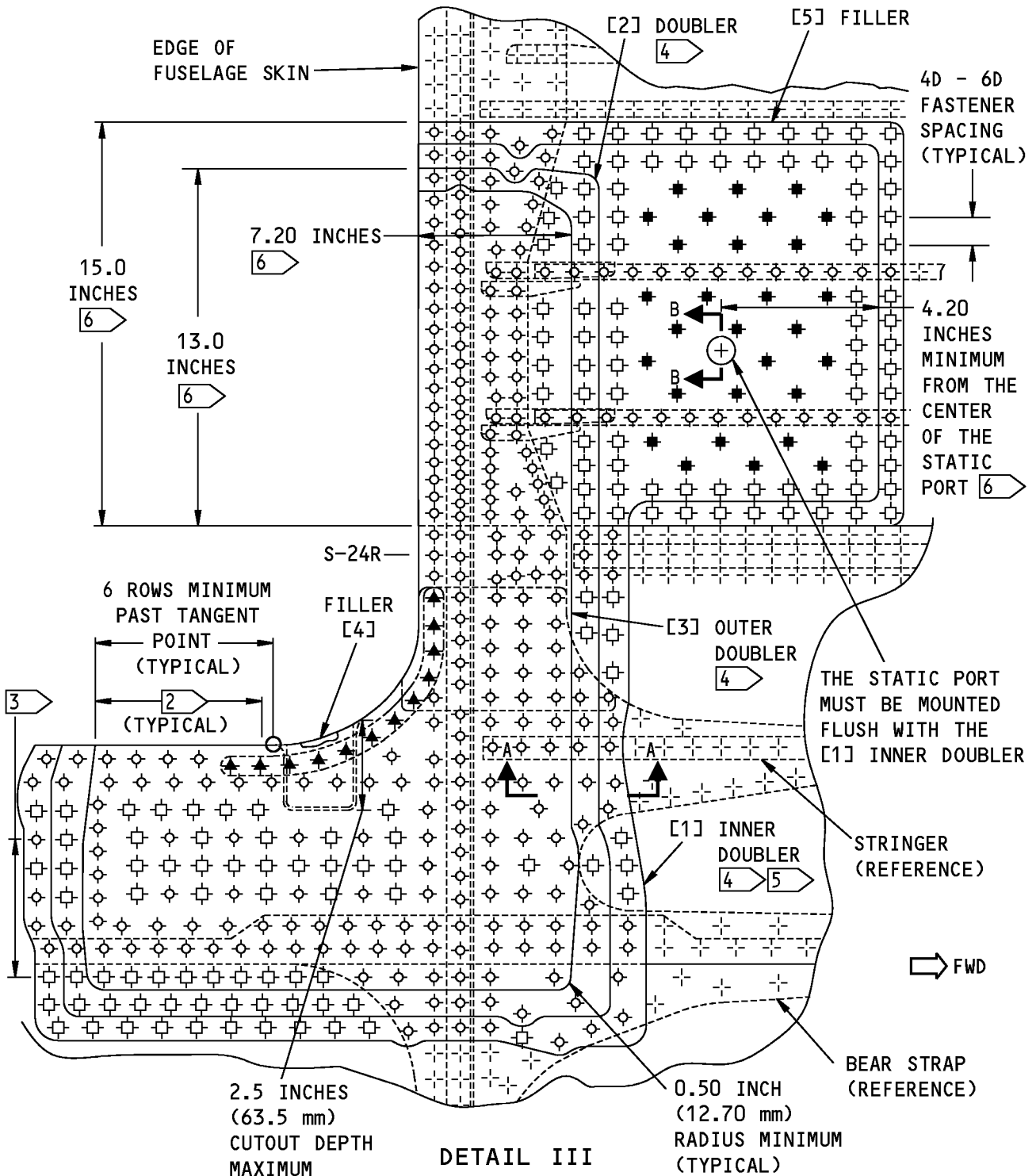


 CRITICAL FASTENER ROW MUST BE INSPECTED AS GIVEN IN PARAGRAPH 5 INSTRUCTIONS.

AFT CARGO DOOR LOWER CORNER REPAIR AT A LAP SPLICE IS SHOWN, OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE SIMILAR

Layout of the Repair Parts  
Figure 202 (Sheet 2 of 5)

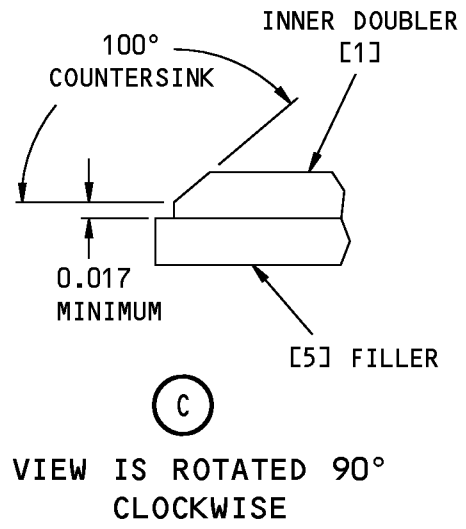
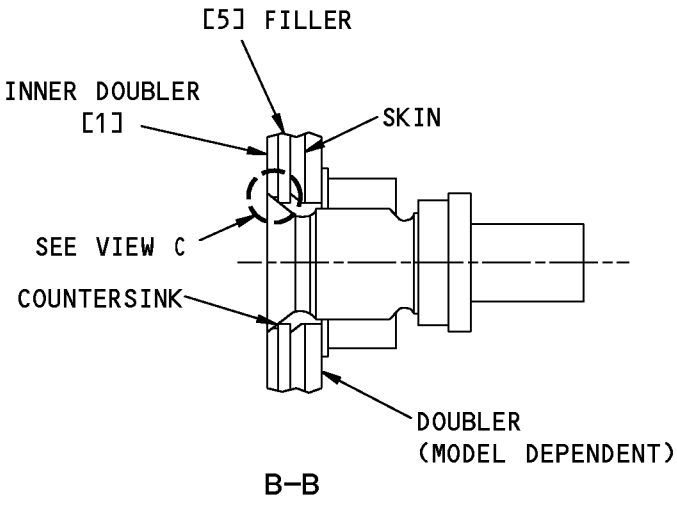
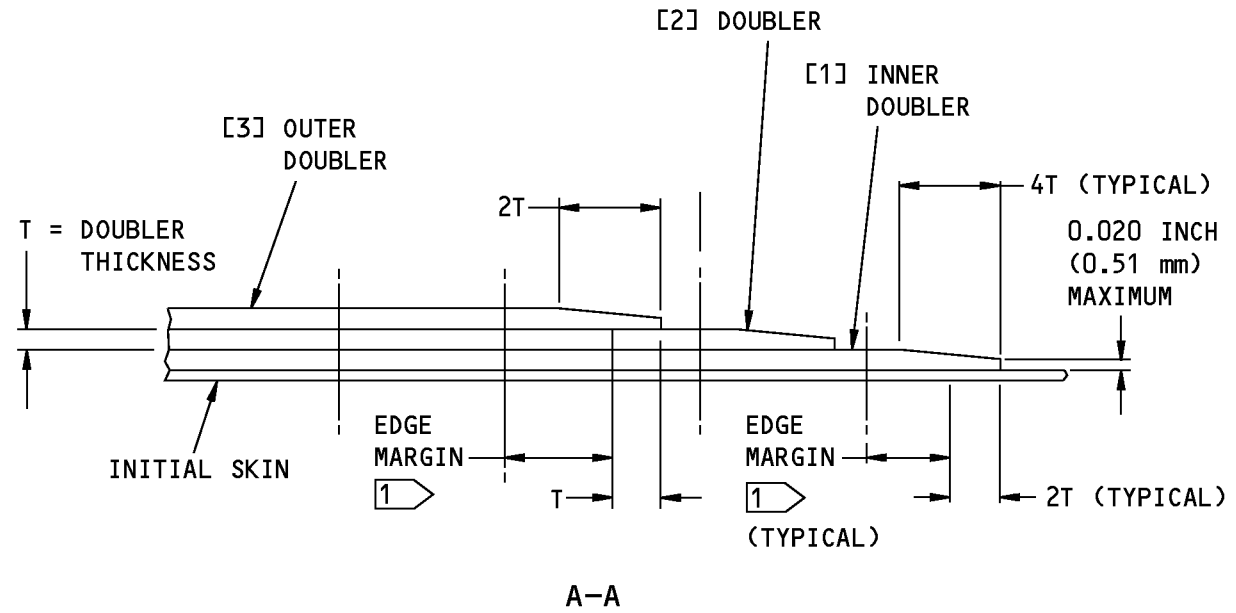
**STRUCTURAL REPAIR MANUAL**



**DETAIL III**  
**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

**Layout of the Repair Parts**  
**Figure 202 (Sheet 3 of 5)**

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STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 202 (Sheet 4 of 5)**



**STRUCTURAL REPAIR MANUAL**

**FASTENER SYMBOLS**

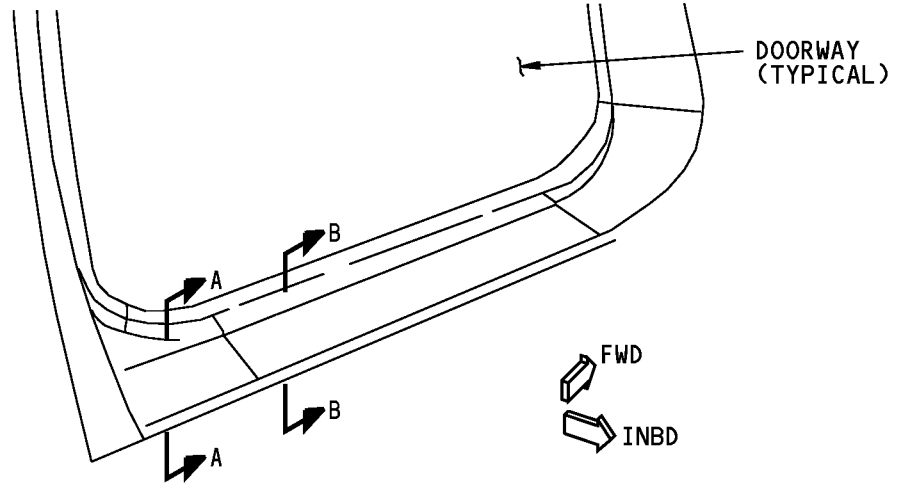
- ⊕ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ▲ COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

**NOTES**

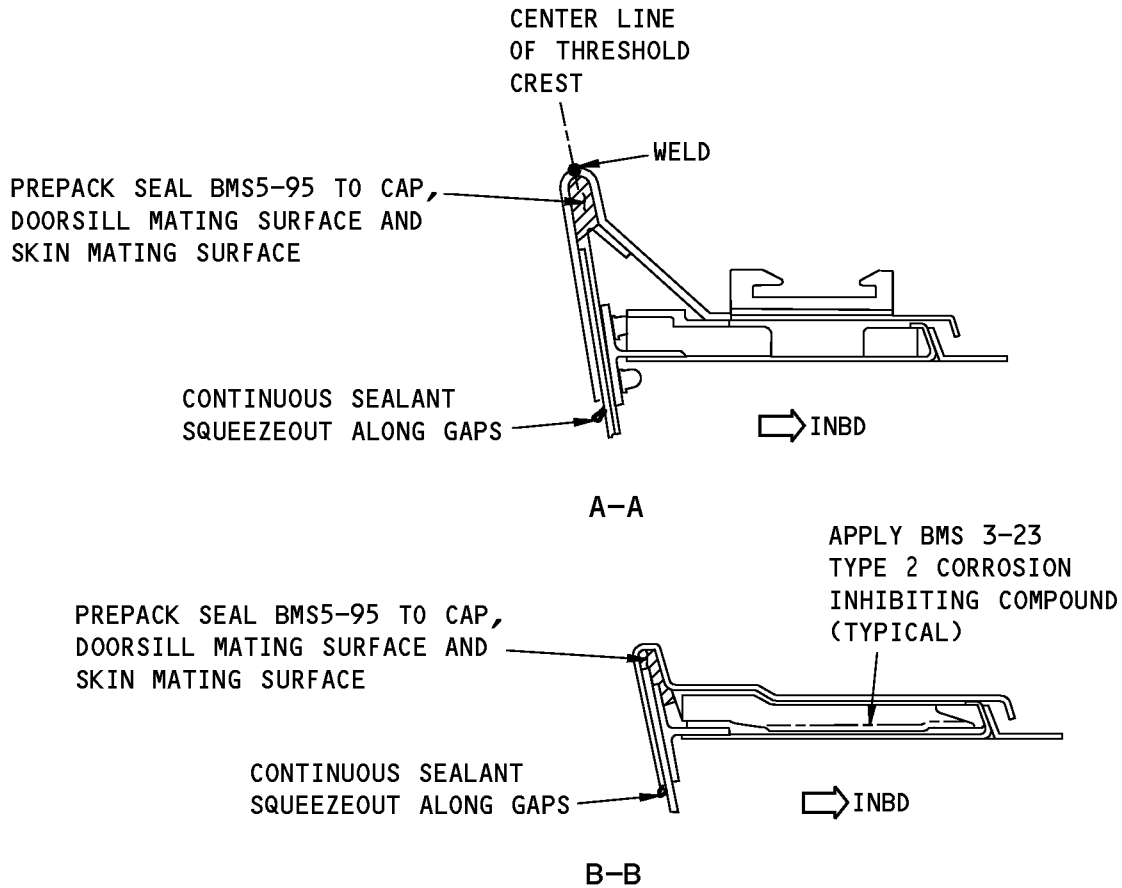
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.
- 1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.
- 2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM PAST THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.
- 3 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM PAST THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.
- 4 DO NOT TERMINATE THE [3] OUTER DOUBLER, [2] DOUBLER OR [1] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.
- 5 AT THE LOWER AFT CORNER THE [1] INNER DOUBLER WILL ONLY EXTEND PAST THE [2] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.
- 6 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

**Layout of the Repair Parts  
Figure 202 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

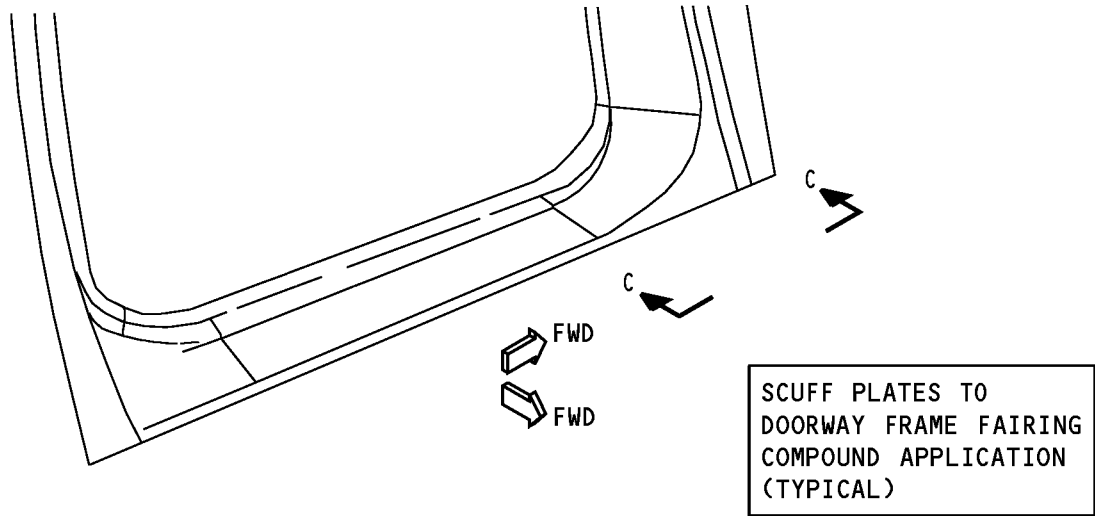


**THRESHOLD INSTALLATION (TYPICAL)**

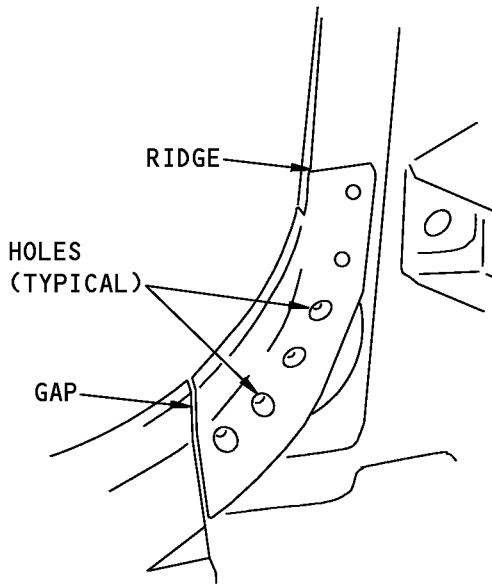


**Skin, Doubler, and Bear Strap at Door Cutouts  
Figure 203 (Sheet 1 of 2)**

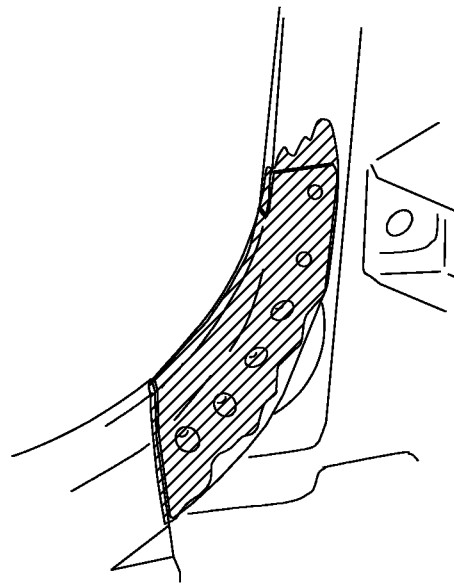
**737-800  
STRUCTURAL REPAIR MANUAL**



**FAIRING COMPOUND APPLICATION**



**BEFORE APPLICATION  
OF FAIRING COMPOUND**



 **FAIRING COMPOUND**

**AFTER APPLICATION  
OF FAIRING COMPOUND**

**C-C**

**Skin, Doubler, and Bear Strap at Door Cutouts  
Figure 203 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

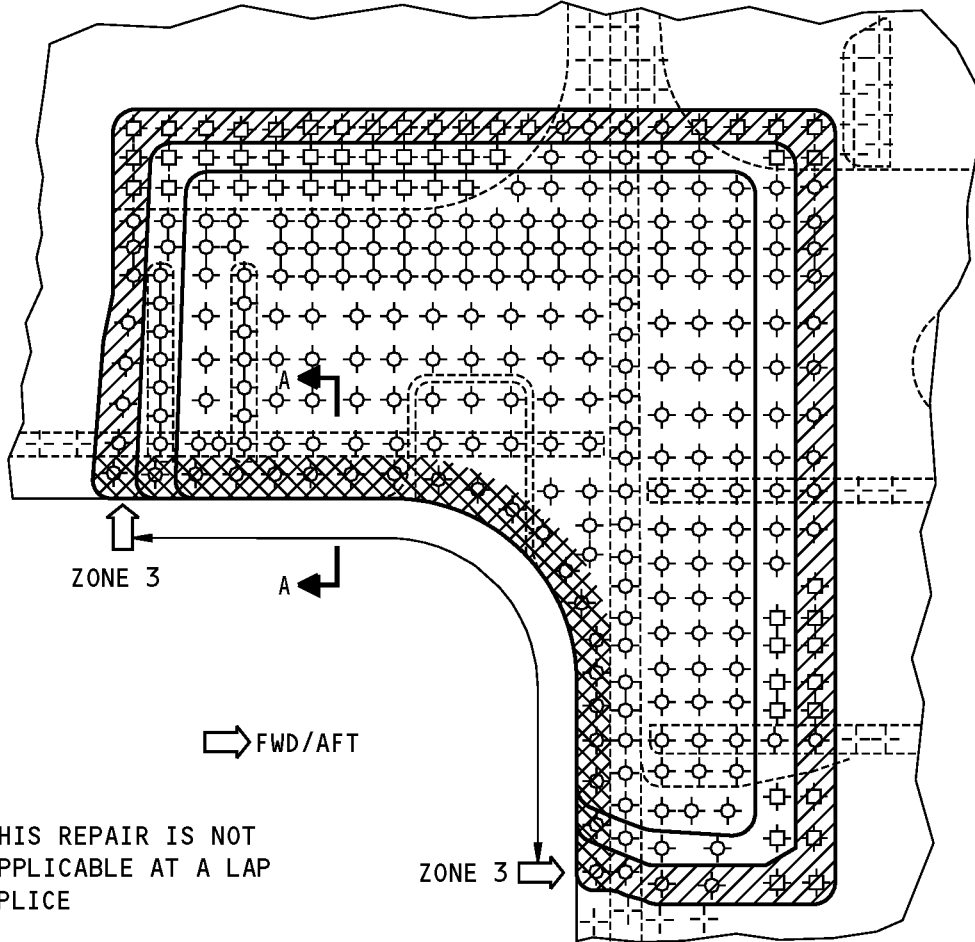
### 5. Inspection Requirements

A. Do the inspections as shown in Figure 204/REPAIR 21 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):




- (1) The threshold for the start of supplemental inspections is 56,000 flight cycles after the installation of this repair if all fastener holes in the repair are:
  - (a) New,
  - (b) Oversized, or
  - (c) Not changed from their initial condition.

**NOTE:** Remove the scuff plate as necessary to complete the Figure 204/REPAIR 21 inspection requirements.

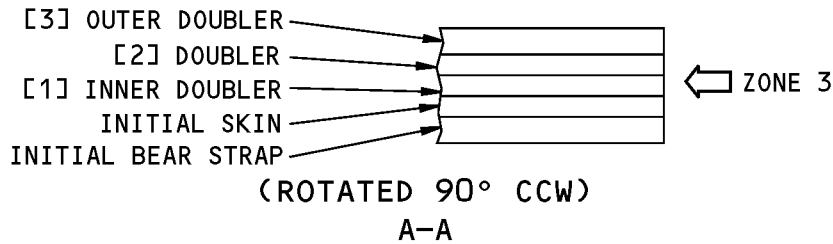
**STRUCTURAL REPAIR MANUAL**



**NOTE:** THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE

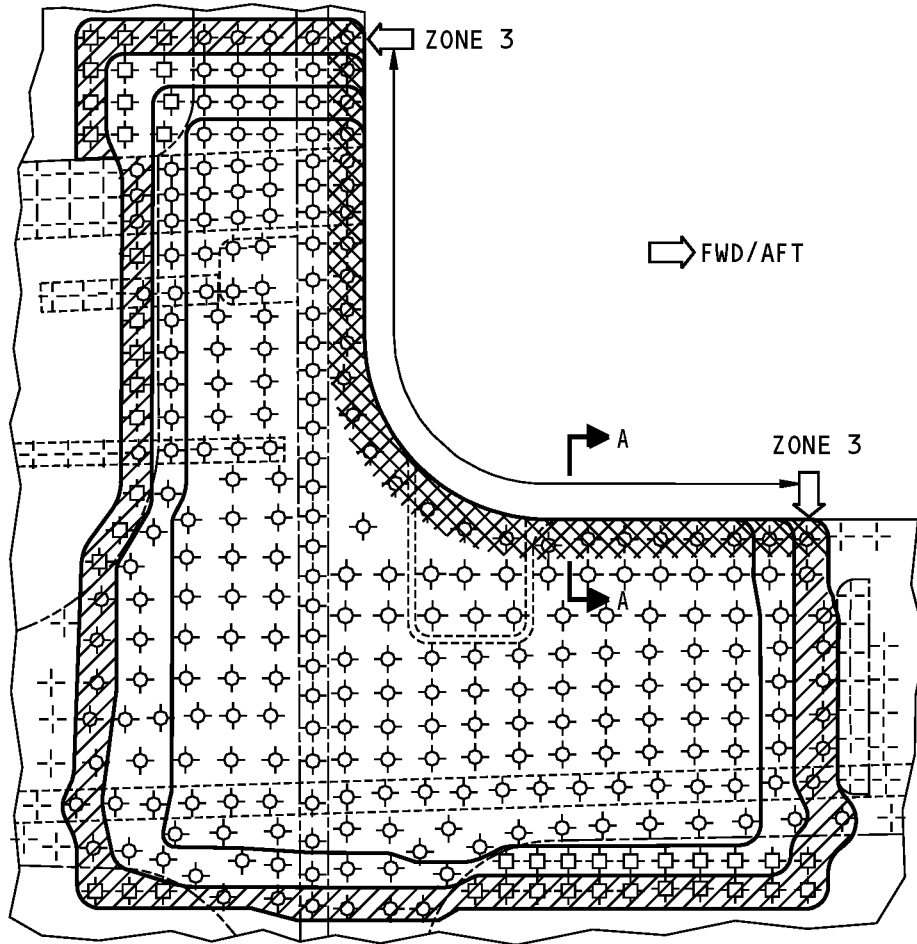
-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF SKIN AND DOUBLER EDGES ALONG DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.




**CARGO DOOR CORNER REPAIR  
SUPPLEMENTAL INSPECTION REQUIREMENTS**



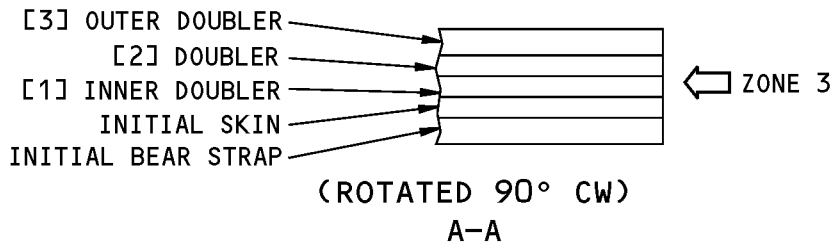
**Repair Inspection Requirements  
Figure 204 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



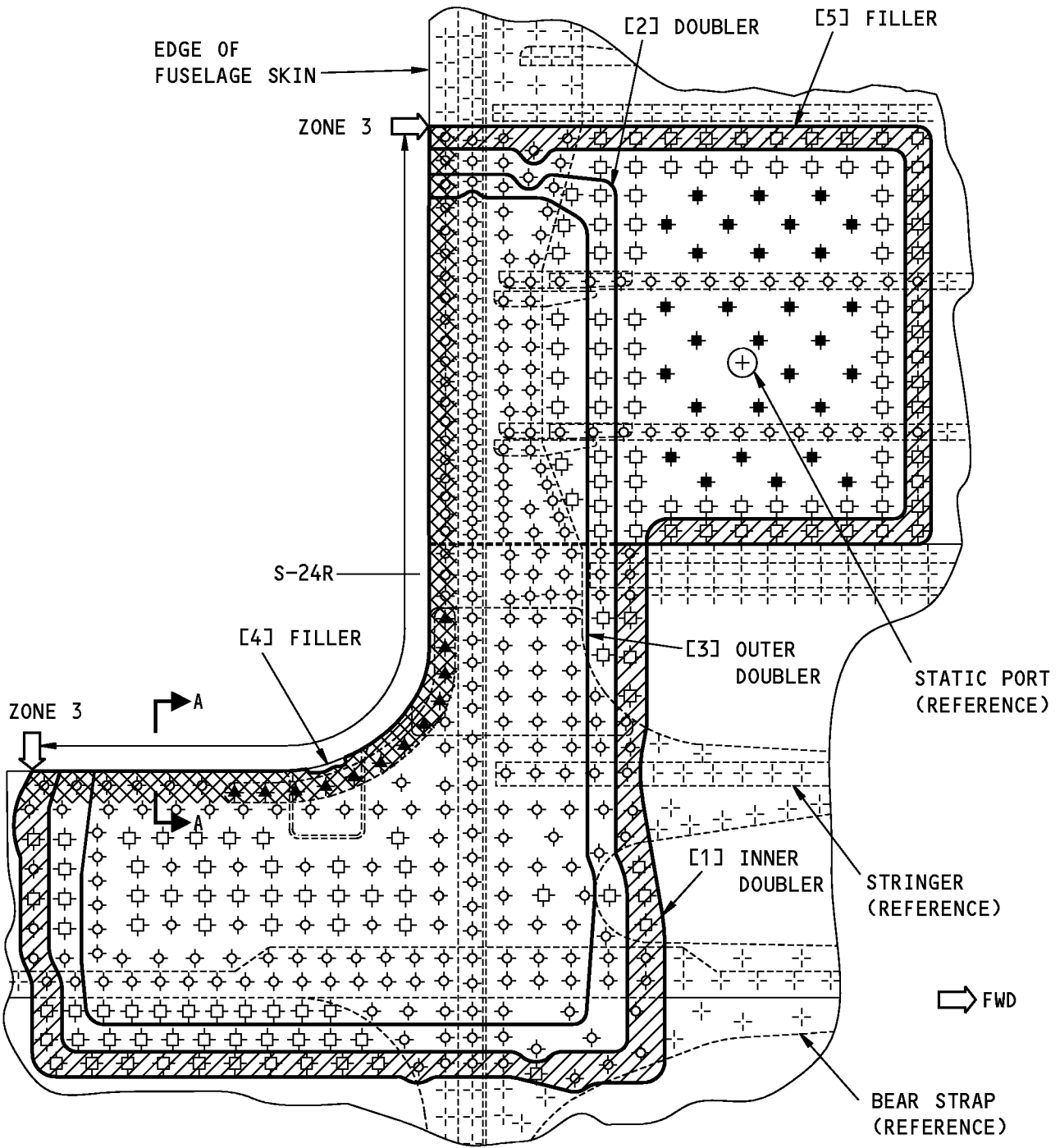
-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF SKIN AND DOUBLER EDGES ALONG DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**CARGO DOOR CORNER REPAIR SUPPLEMENTAL INSPECTION REQUIREMENTS**



**Repair Inspection Requirements  
Figure 204 (Sheet 2 of 4)**

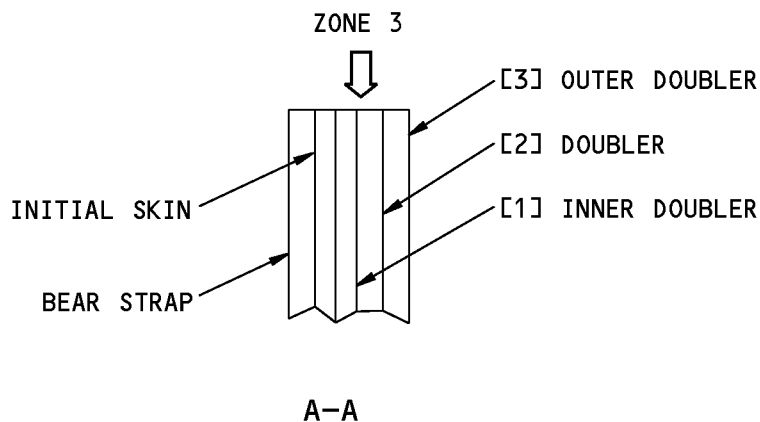
**737-800  
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


**DETAIL III  
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS**

**Repair Inspection Requirements  
Figure 204 (Sheet 3 of 4)**

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-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**Repair Inspection Requirements  
Figure 204 (Sheet 4 of 4)**



**STRUCTURAL REPAIR MANUAL**

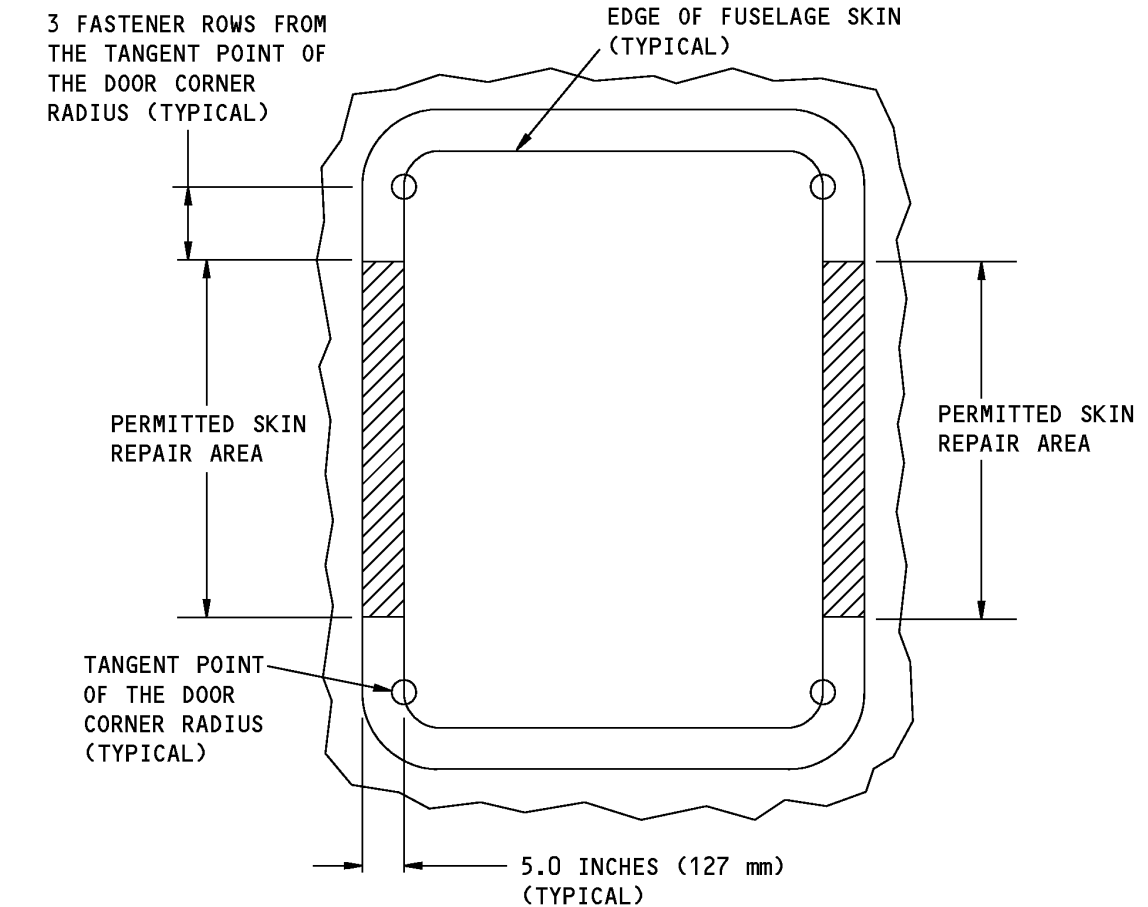
**REPAIR 22 - FORWARD AND AFT CARGO DOOR SURROUND EDGE BLENDOUT REPAIR**


**1. Applicability**

A. Repair 22 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 22.

**2. General**

A. Repair 22 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 22 for the inspection requirements.



 **PERMITTED BLENDOUT REPAIR AREA**  
 (CAUTION: IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, THEN THE REQUIREMENTS OF SRM 51-10-01 MUST BE SATISFIED.)

**FORWARD AND AFT CARGO DOOR SURROUND BLENDOUT REPAIR ZONES**

**Forward and Aft Cargo Door Surround Blendout Repair Zones  
 Figure 201**

## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-01, REPAIR P/B REPAIR	REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING

### 4. Repair Instructions

- A. Get access to the damaged area.
- B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 22. Refer to 51-40-02, GENERAL.
- C. Blend out the damaged part of the fuselage skin as shown in Figure 202/REPAIR 22. Refer to 51-10-02, GENERAL.
  - (1) Make sure there is a minimum surface finish of 63 Ra at all blendout locations. Refer to 51-20-13, GENERAL.
- D. Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT part 6, 51-00-00, Figure 16.
- E. Make the repair part as shown in Table 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Filler	1(If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to 0.01 inch (0.25 mm).

- (1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL
- F. Assemble the repair parts as shown in Figure 202/REPAIR 22.
  - G. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 22 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.
    - (1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.



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## STRUCTURAL REPAIR MANUAL

- H. Disassemble the repair parts.
- I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial skin.
- J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial skin. Refer to 51-20-01, GENERAL.
- K. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.
- L. Fill the blended area as given in REPAIRS FOR MINOR DENTS IN METALLIC SHEET MATERIALS, PAGEBLOCK 51-70-01, REPAIR.
- M. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial skin. Refer to SOPM 20-41-02.
- N. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.
  - (2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
  - (3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.
- O. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- P. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.
- Q. Repair the threshold/scuff plate as given Figure 203/REPAIR 22.
  - (1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

**NOTE:** The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

- (a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 22 for typical repair details.
- (b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.
- (c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.
- (d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.
- (e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.
- (f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.
- (g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.



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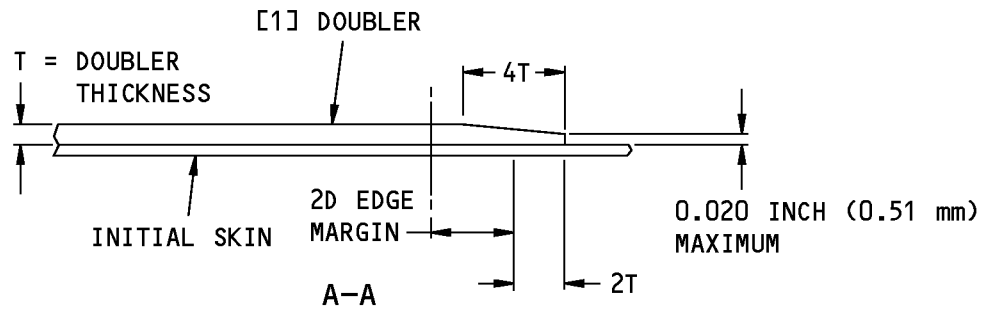
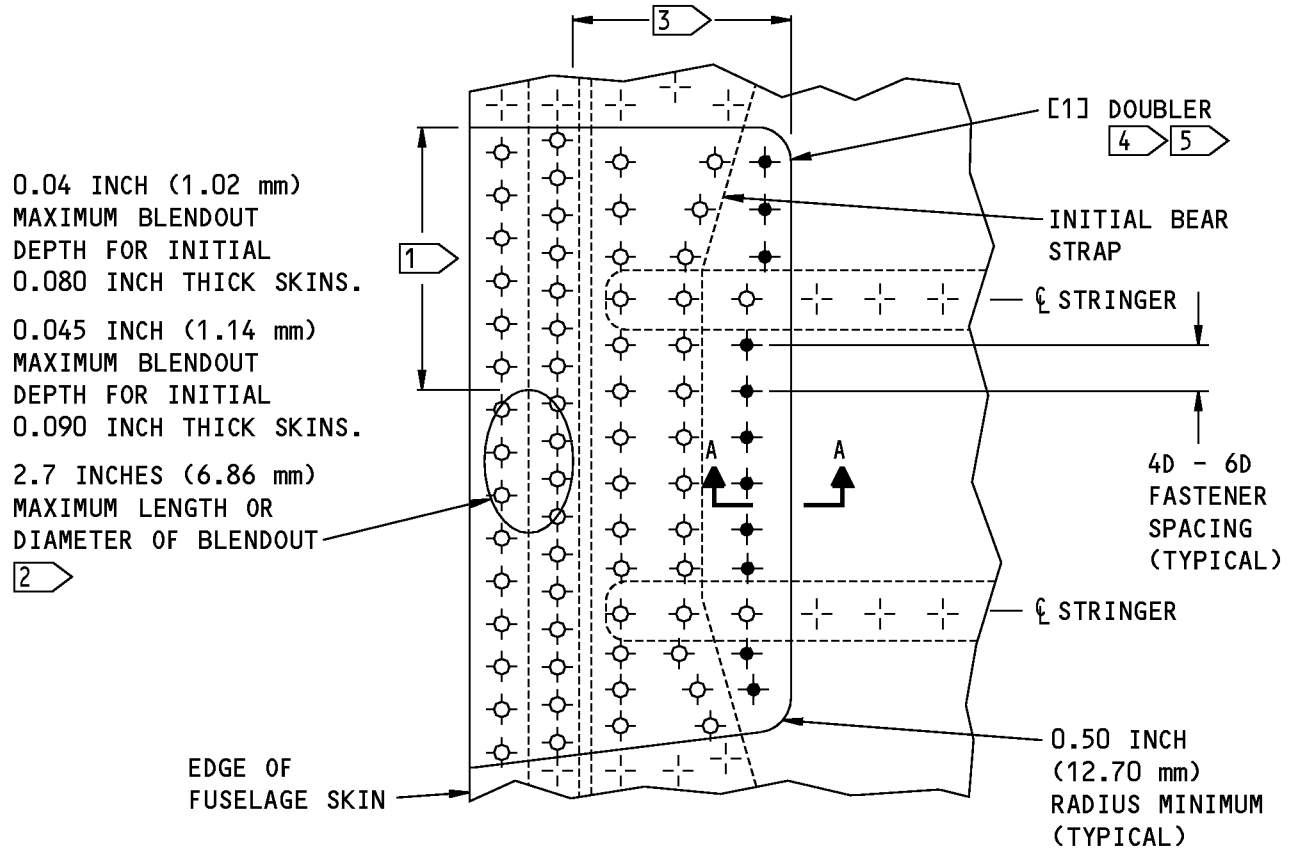
## STRUCTURAL REPAIR MANUAL

- (h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

**NOTE:** There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

- (i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 22.

STRUCTURAL REPAIR MANUAL

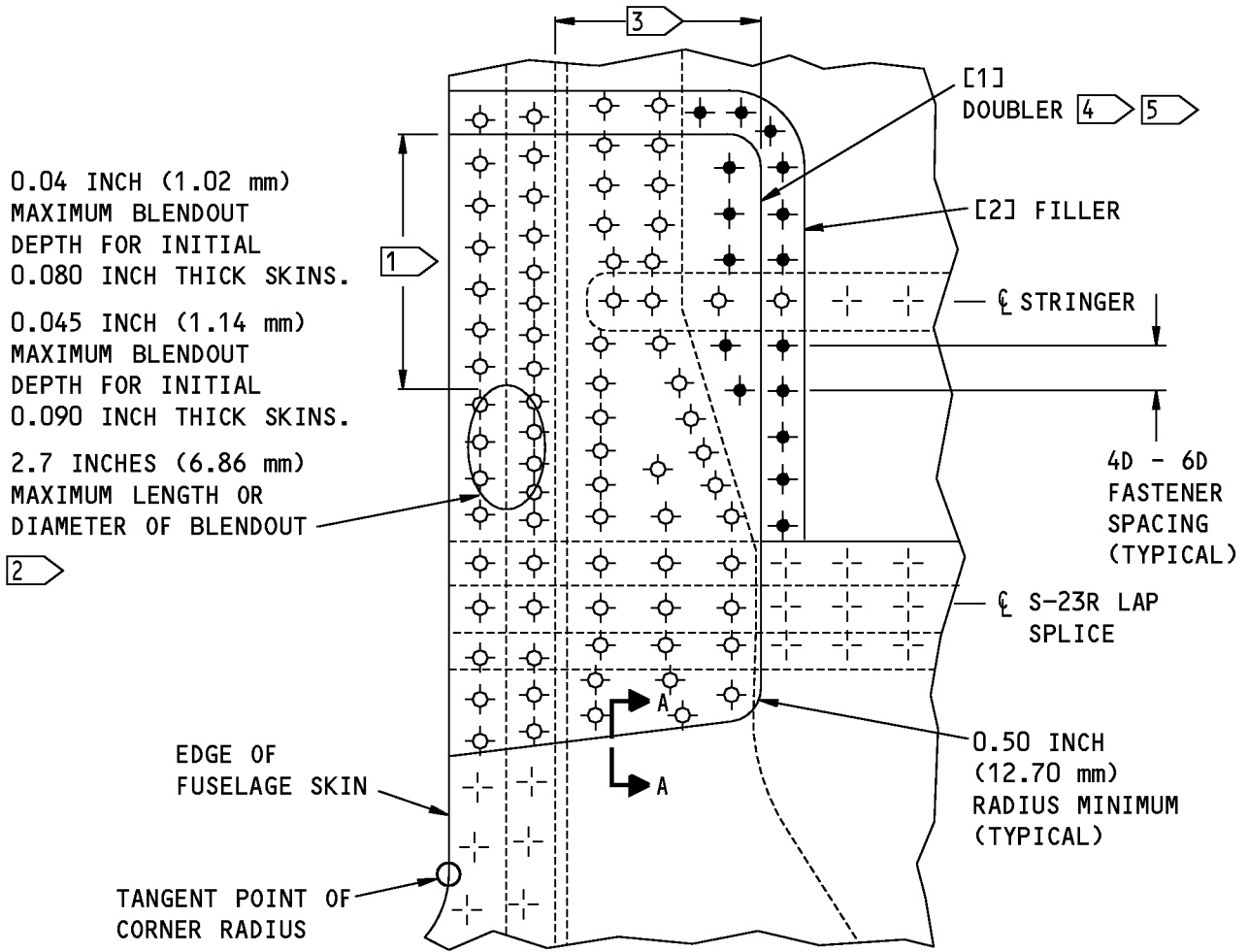


NOTES

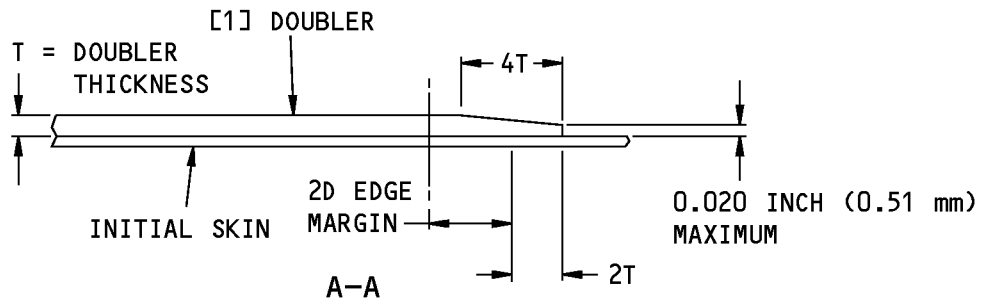
1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [1] DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

Layout of the Repair Parts  
Figure 202 (Sheet 1 of 5)

**737-800  
STRUCTURAL REPAIR MANUAL**



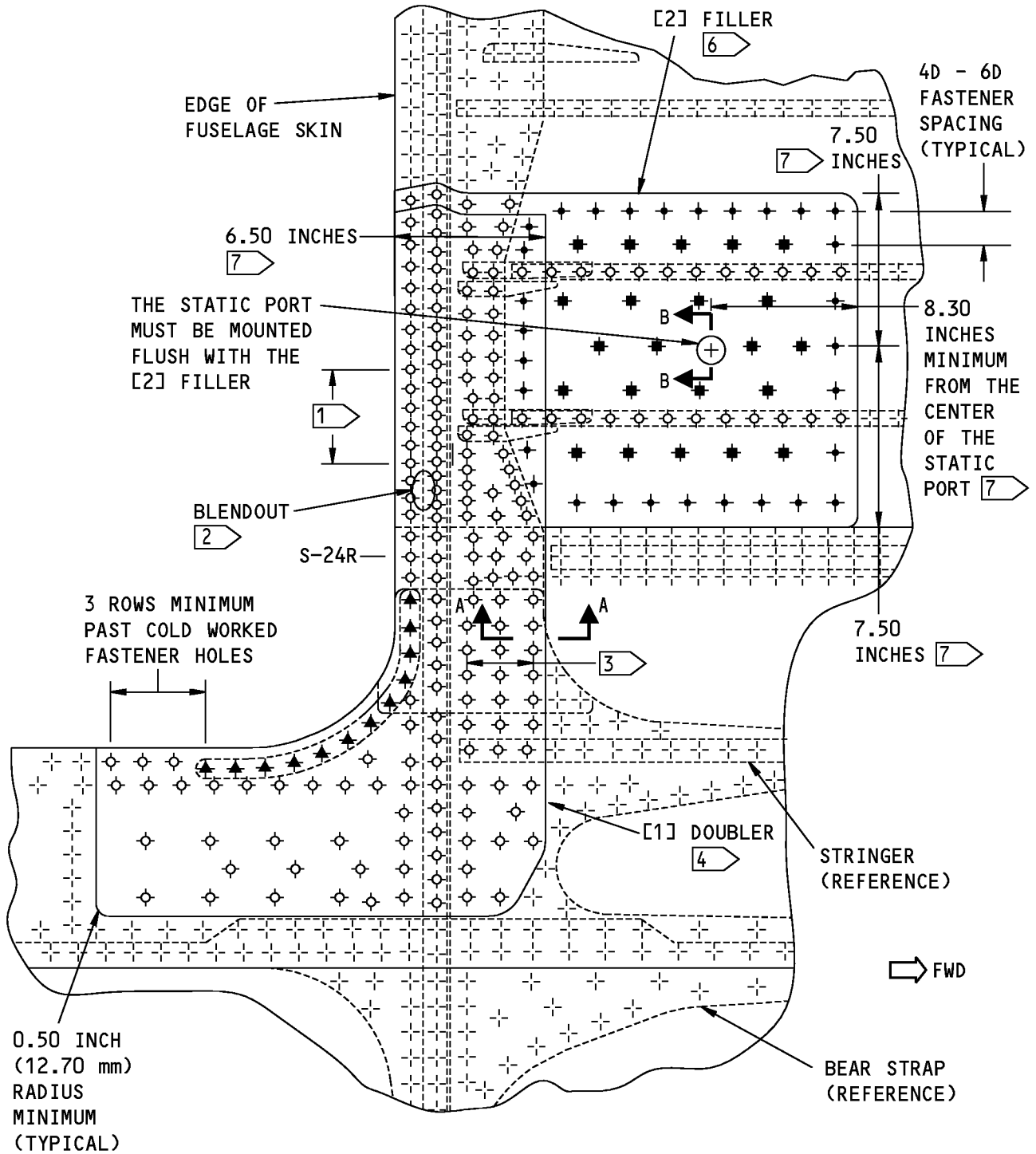
**DETAIL II**



**AFT CARGO DOOR REPAIR AT A LAP SPLICE**

**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 5)**

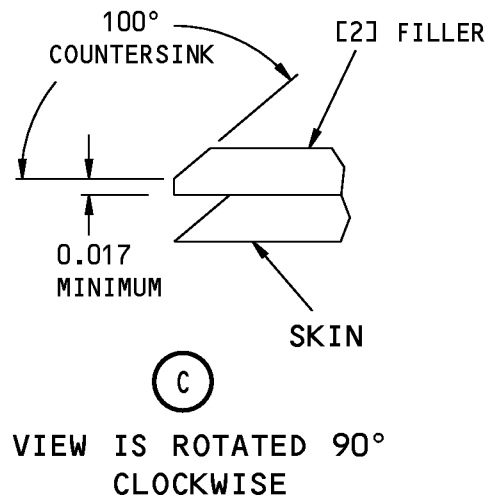
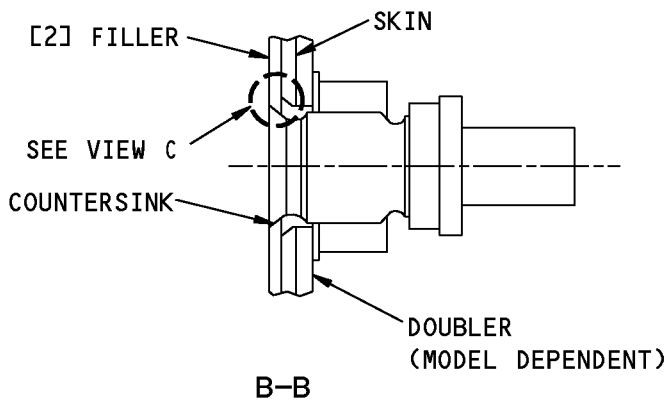
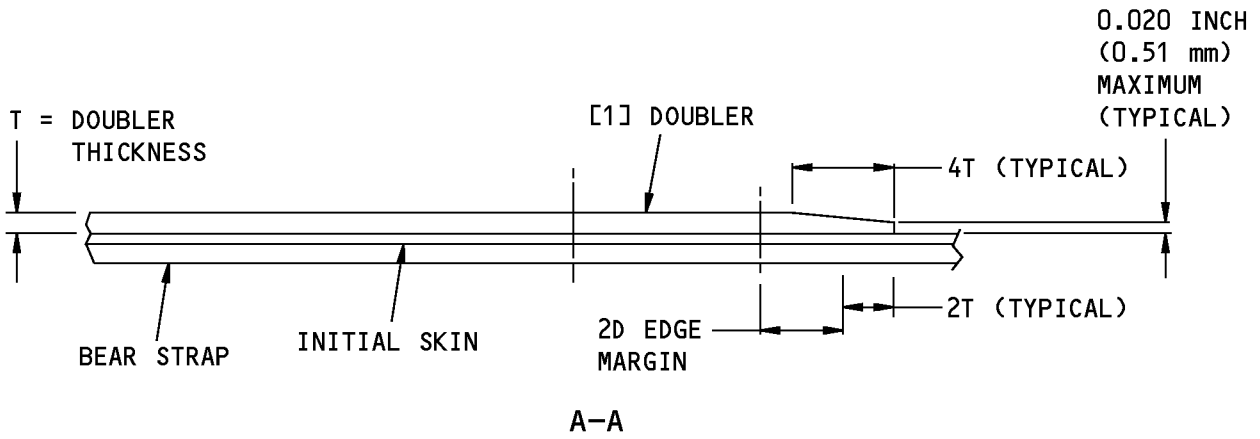
**STRUCTURAL REPAIR MANUAL**



**DETAIL III**  
**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

**Layout of the Repair Parts**  
**Figure 202 (Sheet 3 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 202 (Sheet 4 of 5)**



**STRUCTURAL REPAIR MANUAL**

**FASTENER SYMBOLS**

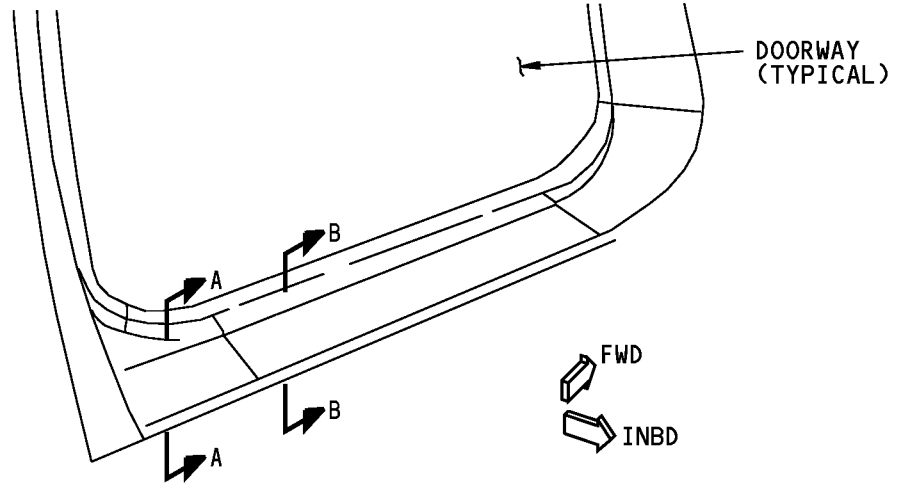
- ⊕ REFERENCE FASTENER LOCATION.
- ⊙ INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊕ COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

**NOTES**

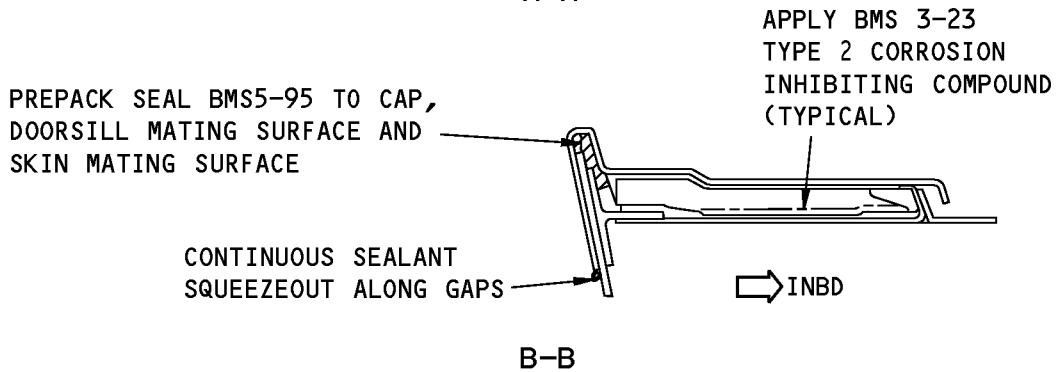
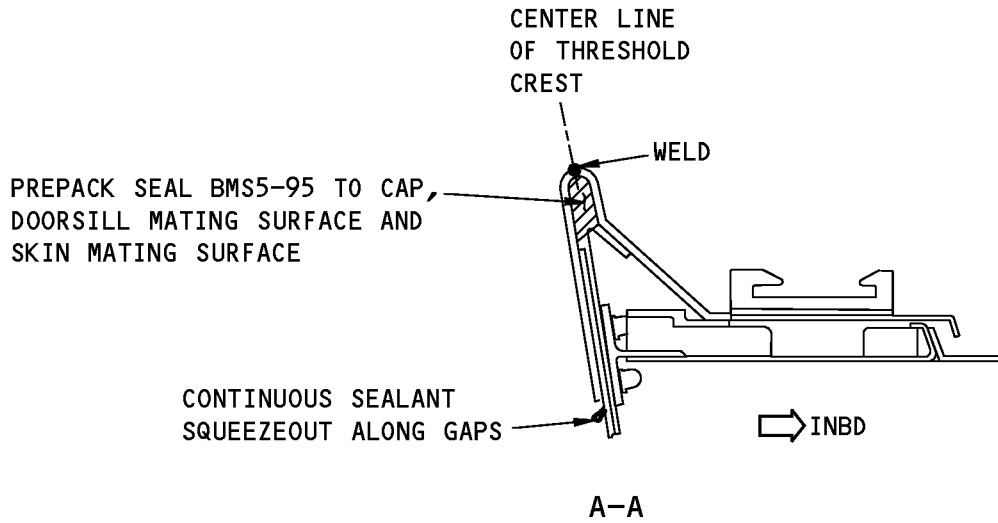
- MAKE SURE YOU BLEND THE SKIN TO A MAXIMUM 30:1 BLENDOUT AT ALL LOCATIONS.
  - MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.
- 1 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE BLENDOUT LOCATION.
  - 2 MAKE SURE THE SKIN BLENDOUT IS MORE THAN 20 PERCENT BUT LESS THAN 50 PERCENT OF THE INITIAL SKIN THICKNESS FOR ALL AFT CARGO DOOR LOCATIONS.  
MAKE SURE THE SKIN BLENDOUT IS MORE THAN 30 PERCENT BUT LESS THAN 50 PERCENT OF THE INITIAL SKIN THICKNESS FOR ALL FORWARD CARGO DOOR LOCATIONS.
  - 3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE BLENDOUT.
  - 4 DO NOT TERMINATE THE [1] DOUBLER ON THE LAP SPLICE.  
DO NOT TERMINATE THE DOUBLER AT A COLDWORKED FASTENER HOLE LOCATION.
  - 5 THE [1] DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.
  - 6 AT THE LOWER AFT CORNER THE [2] FILLER WILL ONLY EXTEND PAST THE [1] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.
  - 7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOR ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

**Layout of the Repair Parts  
Figure 202 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

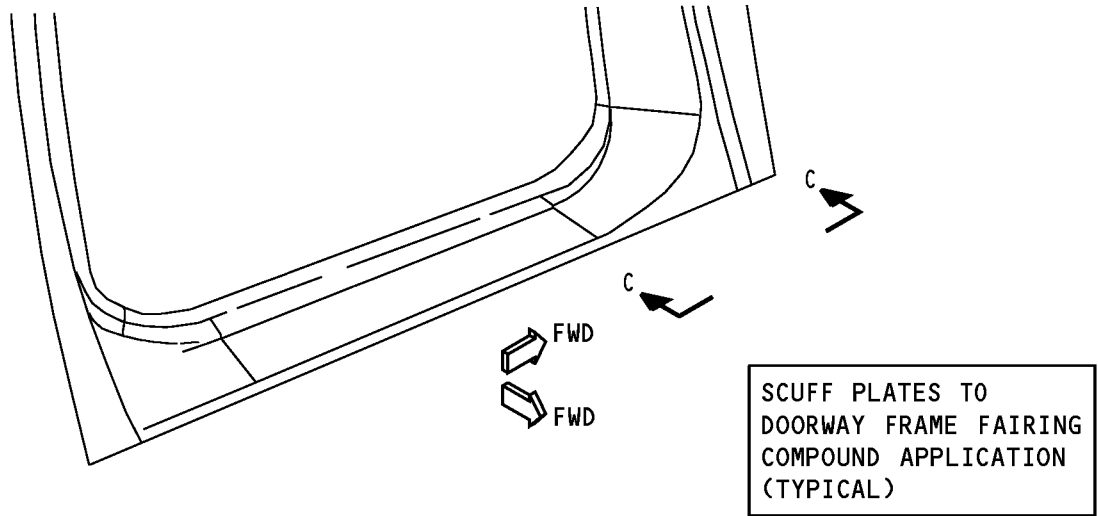


**THRESHOLD INSTALLATION (TYPICAL)**

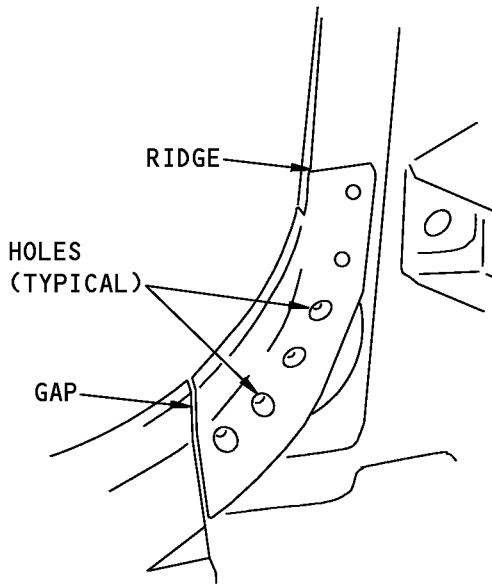


**Skin, Doubler, and Bear Strap Repair at Door Cutouts  
Figure 203 (Sheet 1 of 2)**

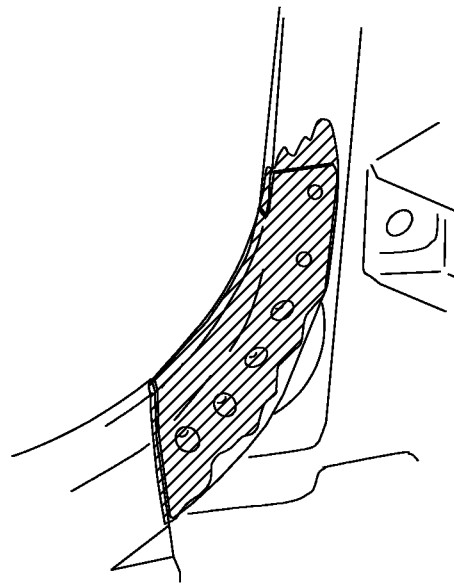
**737-800  
STRUCTURAL REPAIR MANUAL**



**FAIRING COMPOUND APPLICATION**



**BEFORE APPLICATION  
OF FAIRING COMPOUND**



**AFTER APPLICATION  
OF FAIRING COMPOUND**

C-C

**Skin, Doubler, and Bear Strap Repair at Door Cutouts  
Figure 203 (Sheet 2 of 2)**



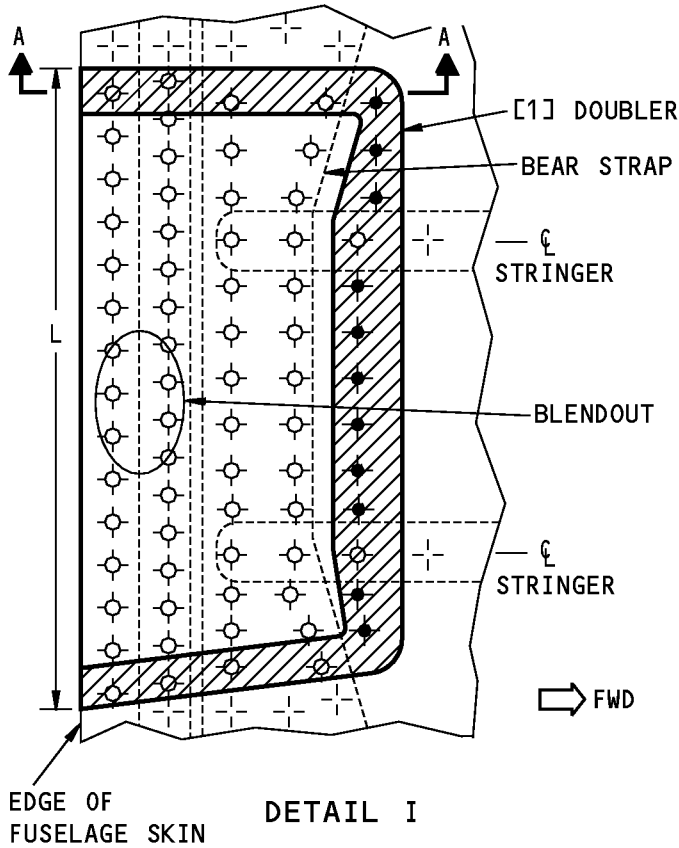
737-800

## STRUCTURAL REPAIR MANUAL

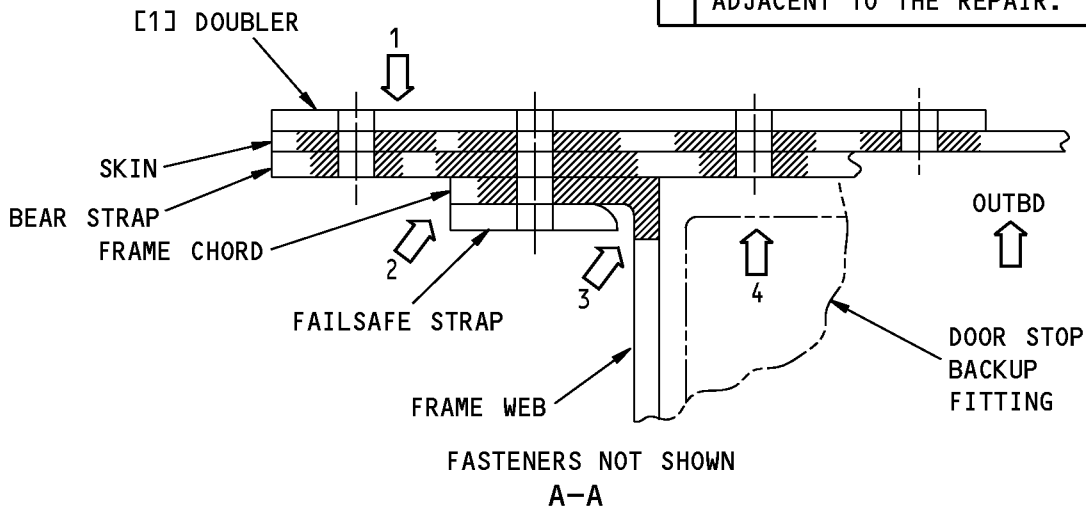
### 5. Inspection Requirements

- A. Do the inspections as shown in Figure 204/REPAIR 22 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
- (1) The threshold for the start of supplemental inspections is 56,000 flight cycles after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently.
  - (3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently.
  - (4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair.
    - (b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair.
  - (5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners common to the repair.
    - (b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair.
- B. For repair doublers that go around the corner as shown in Figure 202/REPAIR 22 Detail III, accomplish the inspection requirements in Figure 204/REPAIR 22, Detail III.

**STRUCTURAL REPAIR MANUAL**

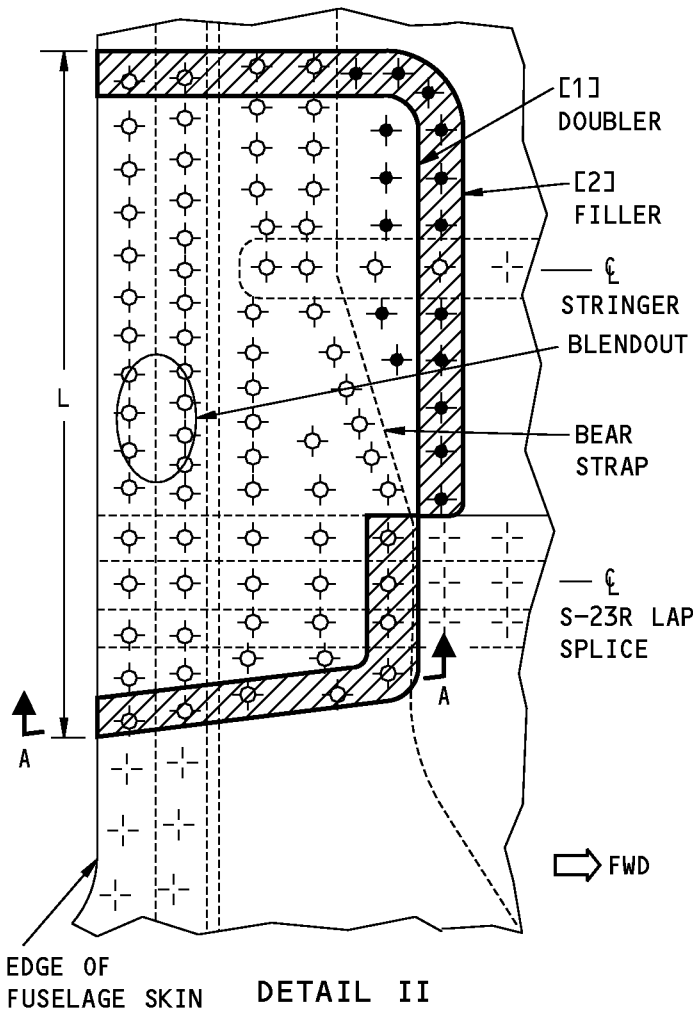



INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.  UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR.  UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

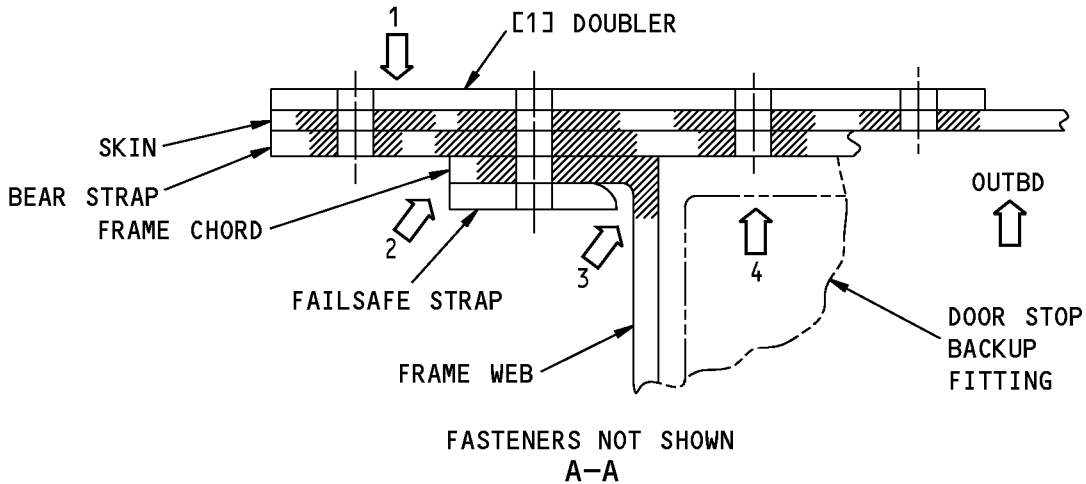


**Repair Inspection Requirements  
Figure 204 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**

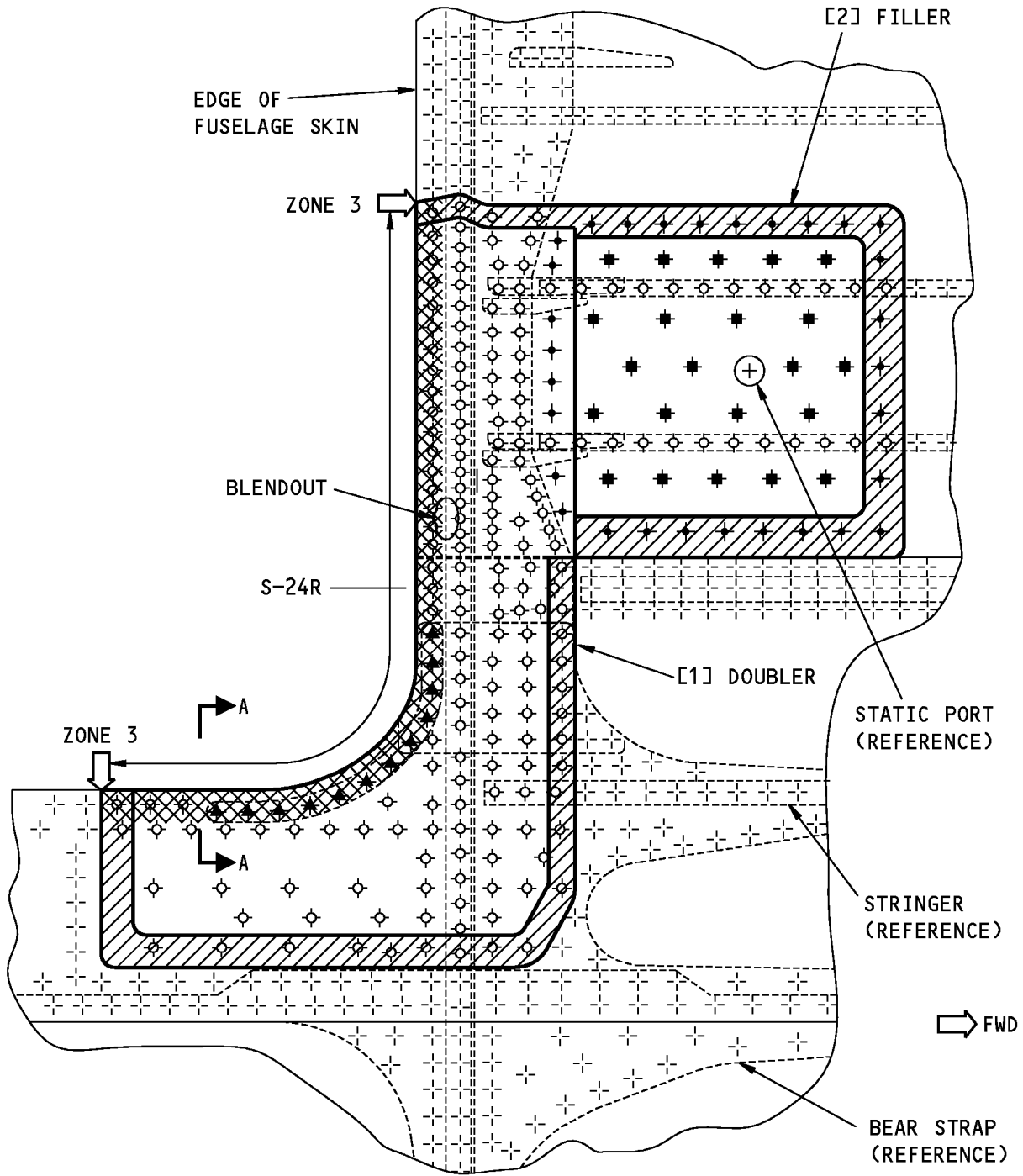


INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL II.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.  UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR.  UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.



**Repair Inspection Requirements  
Figure 204 (Sheet 2 of 4)**

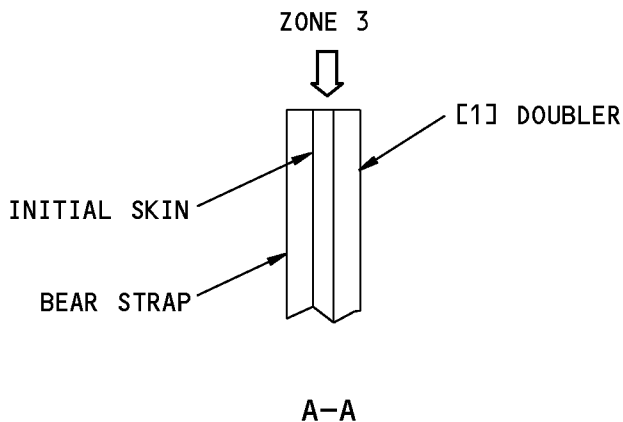
**737-800  
STRUCTURAL REPAIR MANUAL**






**DETAIL III  
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS**

**Repair Inspection Requirements  
Figure 204 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



- 
**ZONE 1** - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
- 
**ZONE 2** - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
- 
**ZONE 3** - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**Repair Inspection Requirements  
Figure 204 (Sheet 4 of 4)**



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STRUCTURAL REPAIR MANUAL**

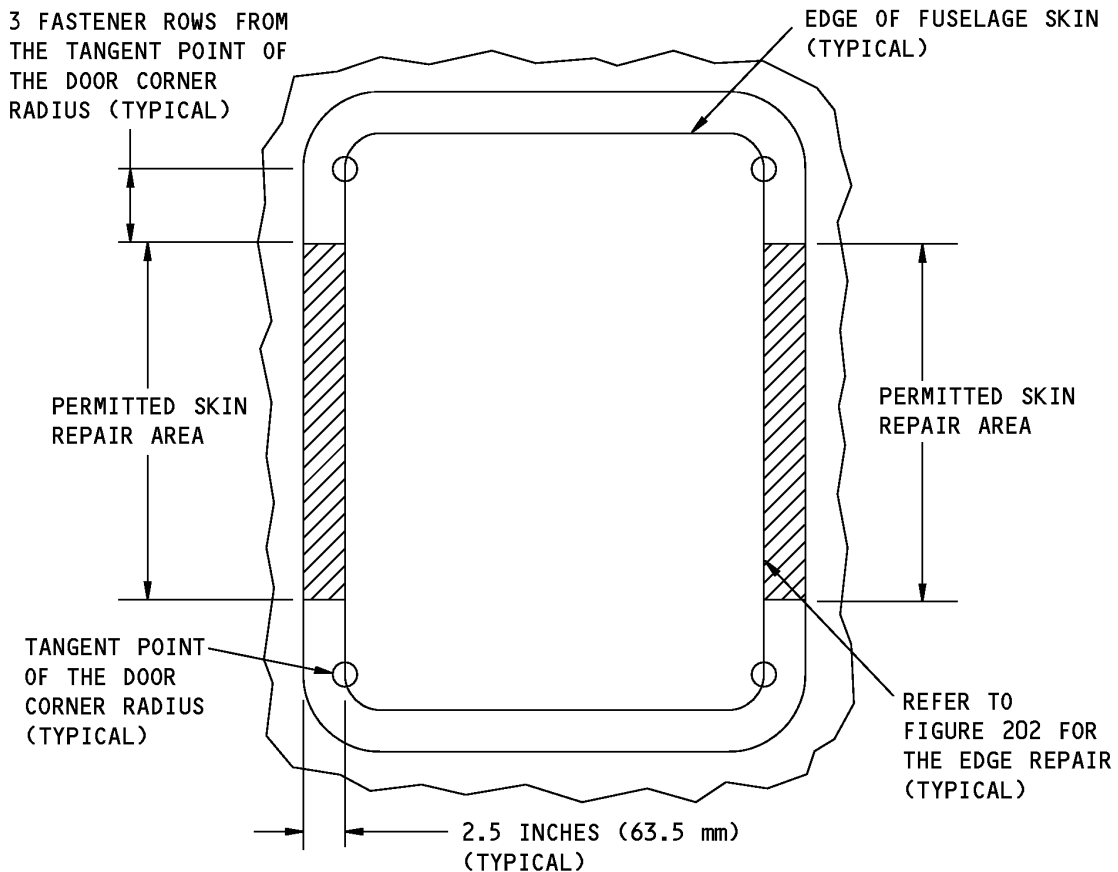
**REPAIR 23 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN UP TO 2.5 INCHES DEPTH**

**1. Applicability**

A. Repair 23 is applicable to fuselage skin damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 23.

**2. General**

A. Repair 23 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 23 for the inspection requirements.



**PERMITTED TRIMOUT REPAIR AREA**  
 (CAUTION: IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, THEN THE REQUIREMENTS OF SRM 51-10-01 MUST BE SATISFIED. NO TRIMOUT IS PERMITTED IN THE LAP SPLICE. CONTACT BOEING.)

**FORWARD AND AFT CARGO DOOR SURROUND REPAIR ZONES**

**Forward and Aft Cargo Door Surround Repair Zones  
Figure 201**

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### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING

### 4. Repair Instructions

A. Get access to the damaged area.

**NOTE:** This repair is for damage only to the skin.

B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 23. Refer to 51-40-02, GENERAL.

C. Cut and remove the damaged part of the fuselage skin as shown in Figure 202/REPAIR 23. Refer to 51-10-02, GENERAL.

**NOTE:** Make sure you protect the bearstrap when you only remove damage from the skin.

- (1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.
- (2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 23.
- (3) Put the skin around the cut back to the initial contour.
- (4) Do a High Frequency Eddy Current (HFEC) inspection of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. If no damage is found then do a 0.040 inch (1.02 mm) insurance cut along the edge of the trim.
- (5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.

D. Make the repair parts as shown in Table 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin.



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REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[4]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to a maximum 0.01 inch (0.25 mm).

- (1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL
- E. Assemble the repair parts as shown in Figure 202/REPAIR 23.
- F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 23 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.
- (1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.
- (2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- (3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.
- O. Repair the threshold/scuff plate as given Figure 203/REPAIR 23.
- (1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:
- NOTE:** The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.
- (a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 23 for typical repair details.
- (b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.
- (c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.
- (d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate.



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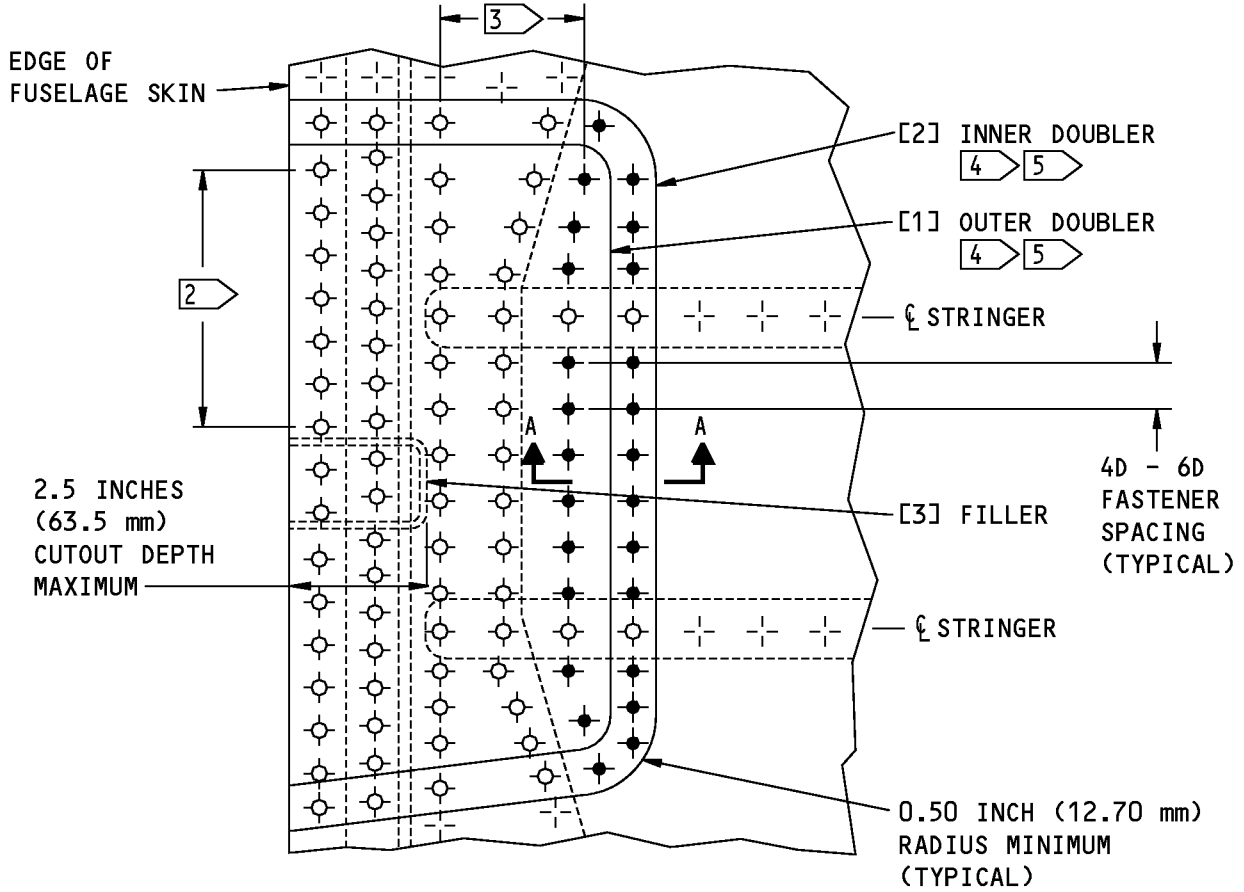
## STRUCTURAL REPAIR MANUAL

- (e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.
- (f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.
- (g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing.
- (h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

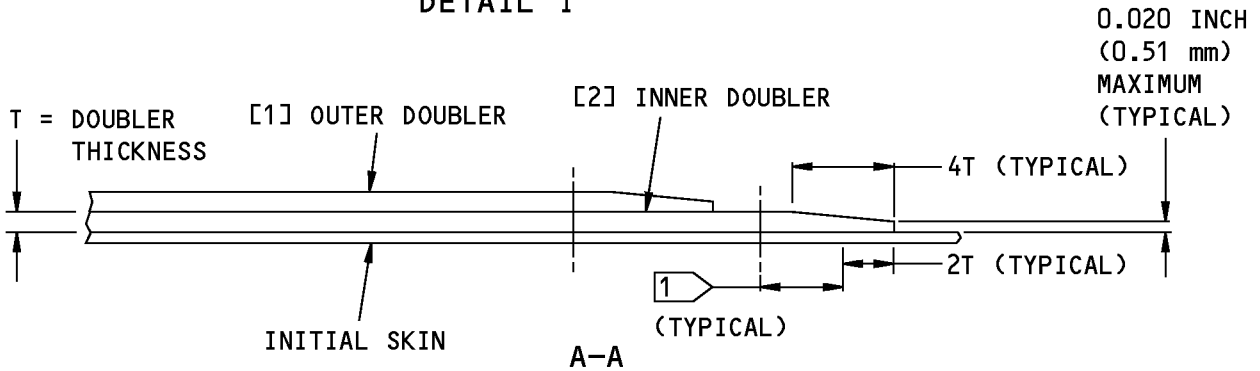
**NOTE:** There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

- (i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer Figure 203/REPAIR 23.

**STRUCTURAL REPAIR MANUAL**



**DETAIL I**

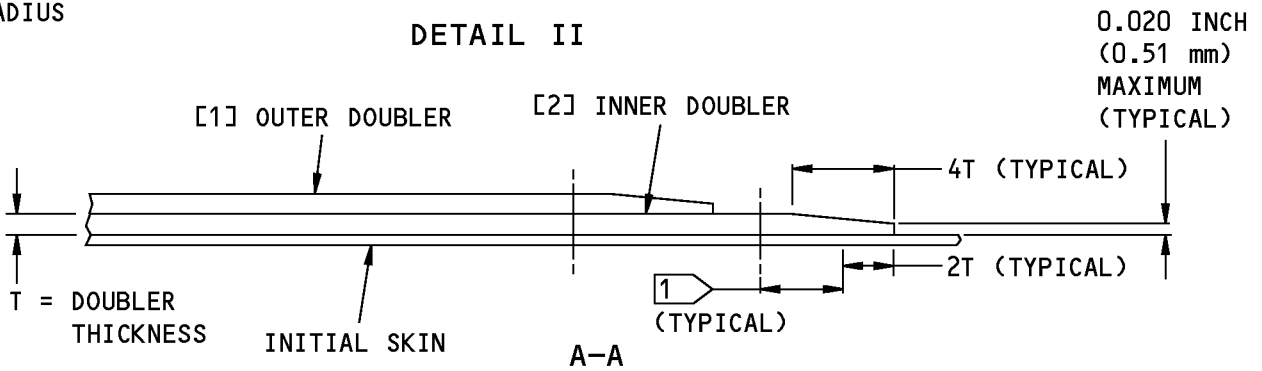
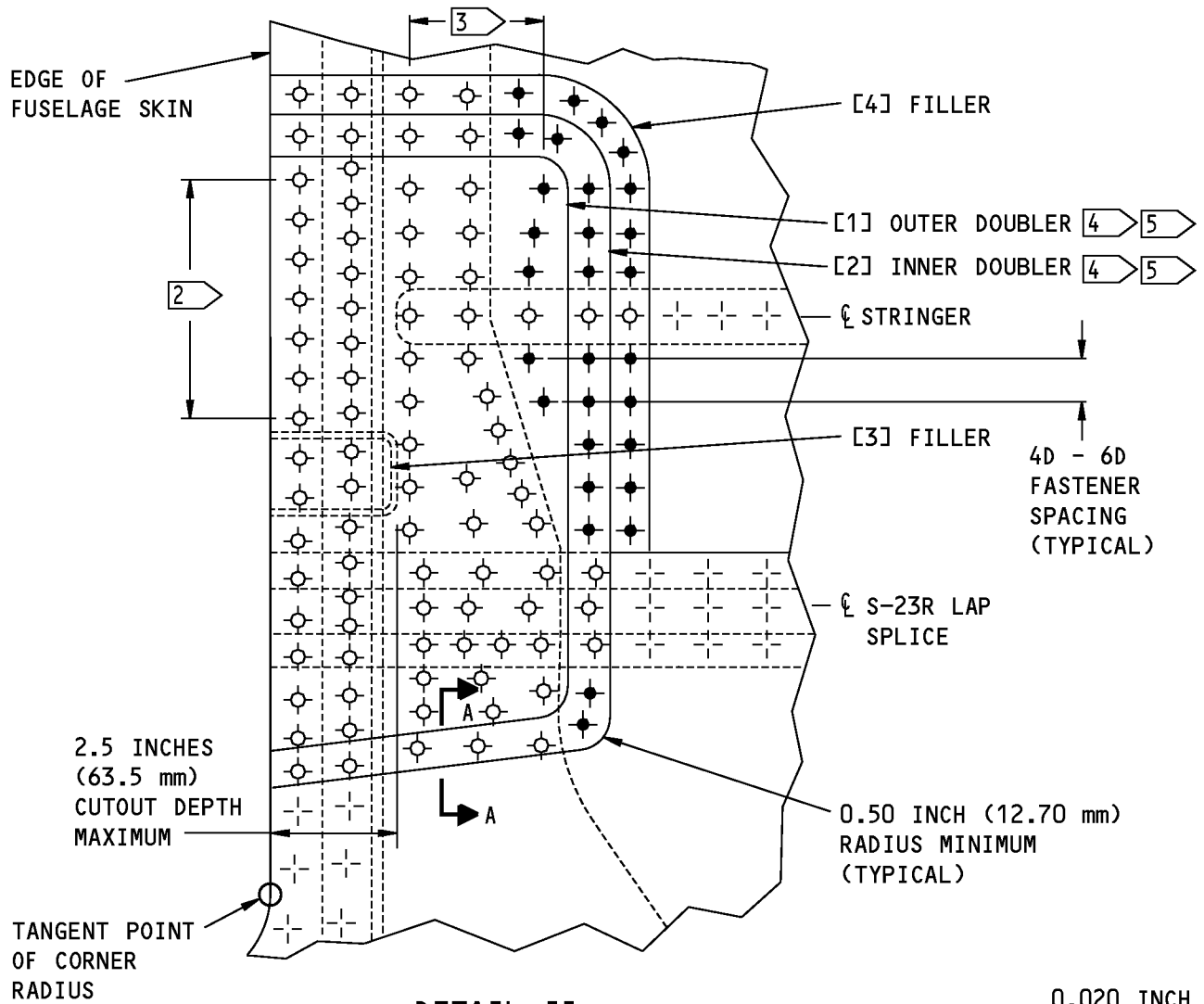


**NOTES**

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [2] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 5)**

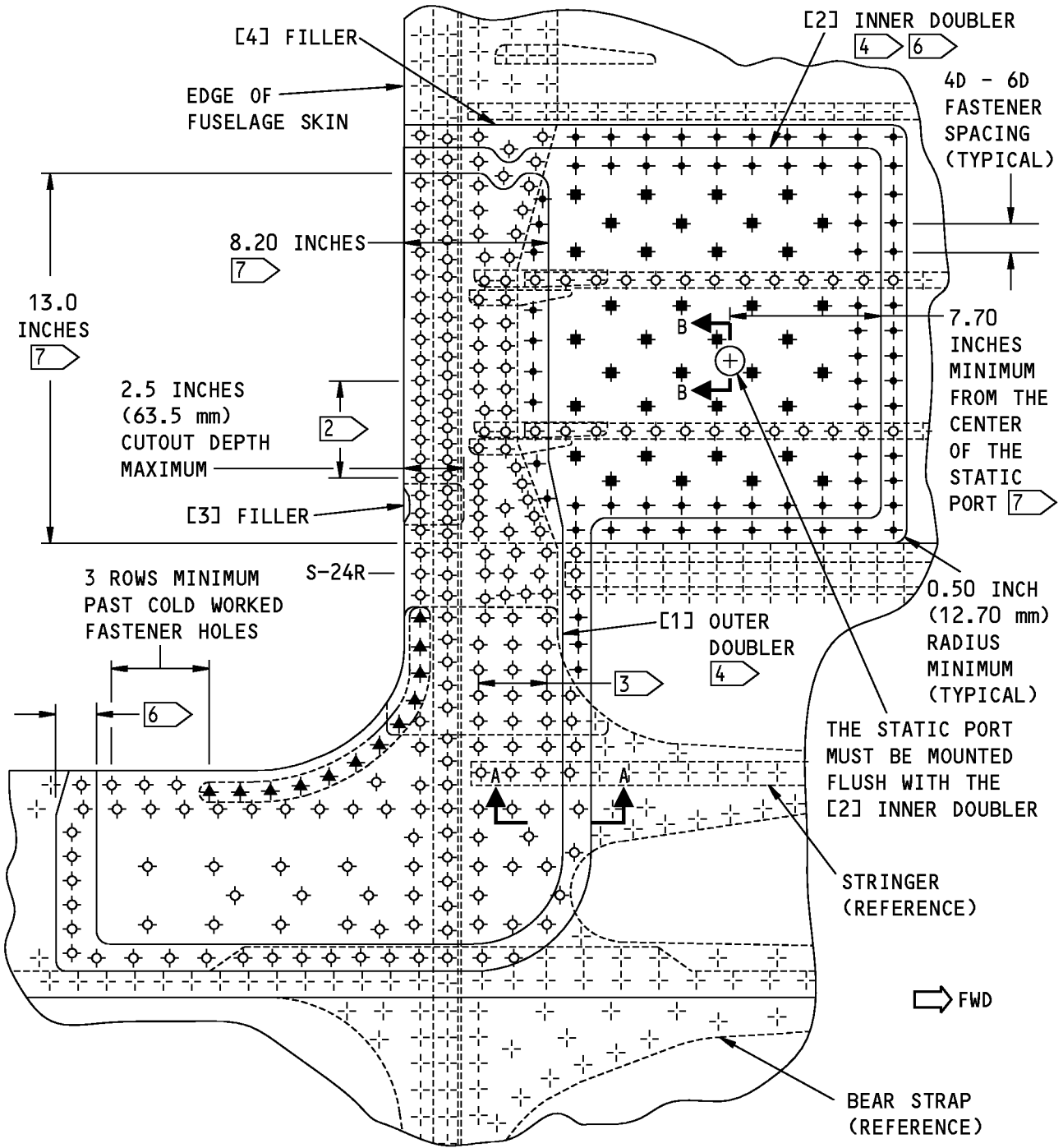
**737-800  
STRUCTURAL REPAIR MANUAL**



**AFT CARGO DOOR REPAIR AT A LAP SPLICE**

**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 5)**

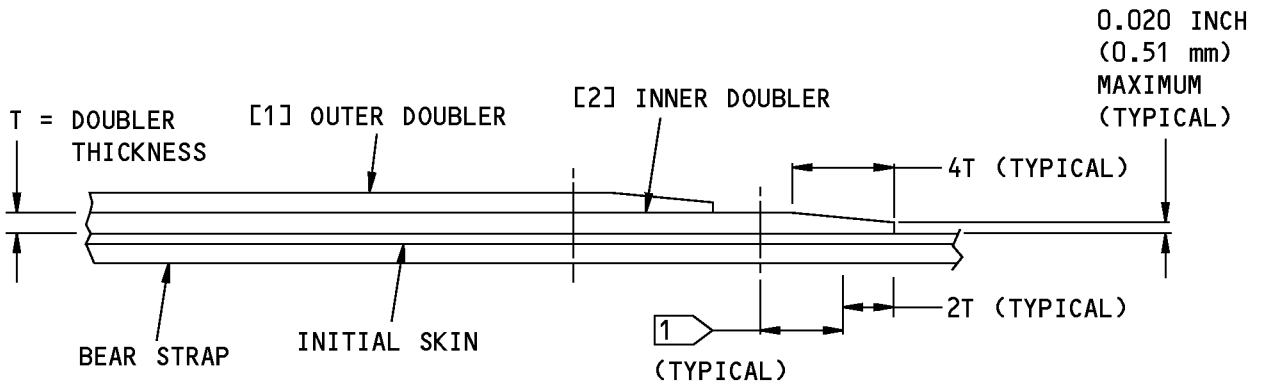
**STRUCTURAL REPAIR MANUAL**



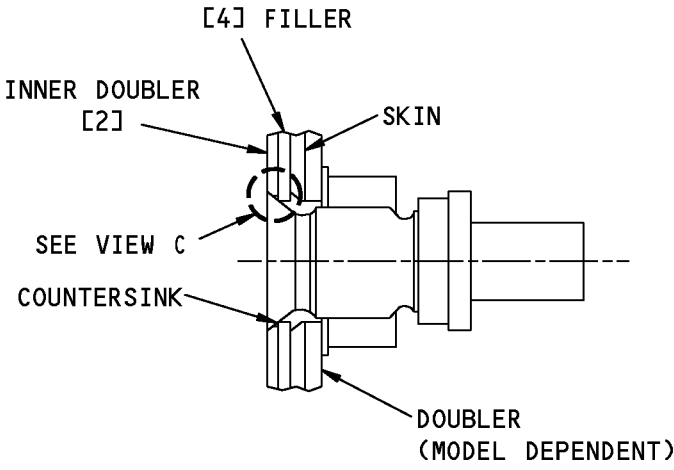
**DETAIL III**  
**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

**Layout of the Repair Parts**  
**Figure 202 (Sheet 3 of 5)**

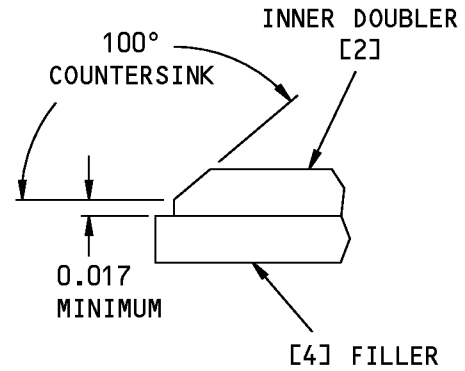
**737-800  
STRUCTURAL REPAIR MANUAL**



A-A



B-B



C

VIEW IS ROTATED 90°  
CLOCKWISE

**Layout of the Repair Parts  
Figure 202 (Sheet 4 of 5)**



**STRUCTURAL REPAIR MANUAL**

**FASTENER SYMBOLS**

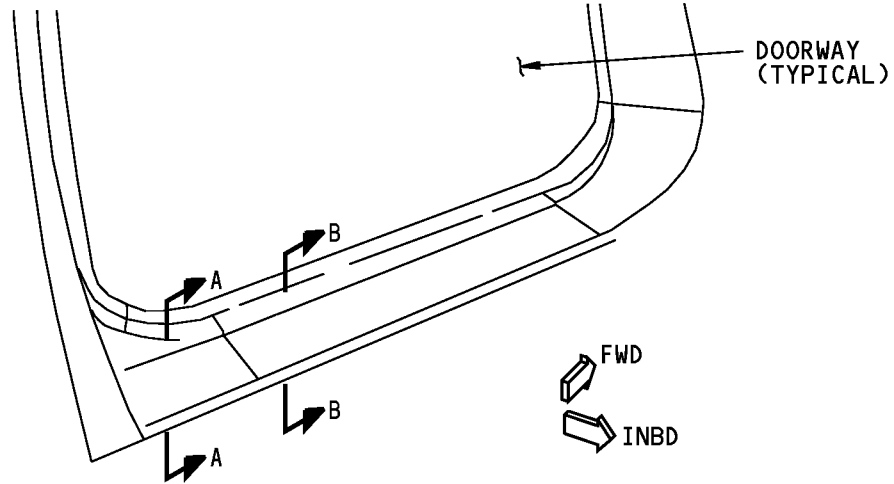
- |- REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ▲ COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

**NOTES**

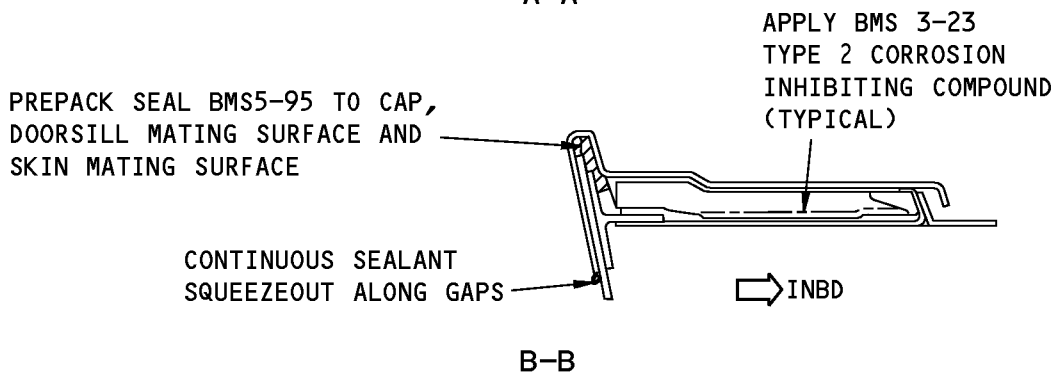
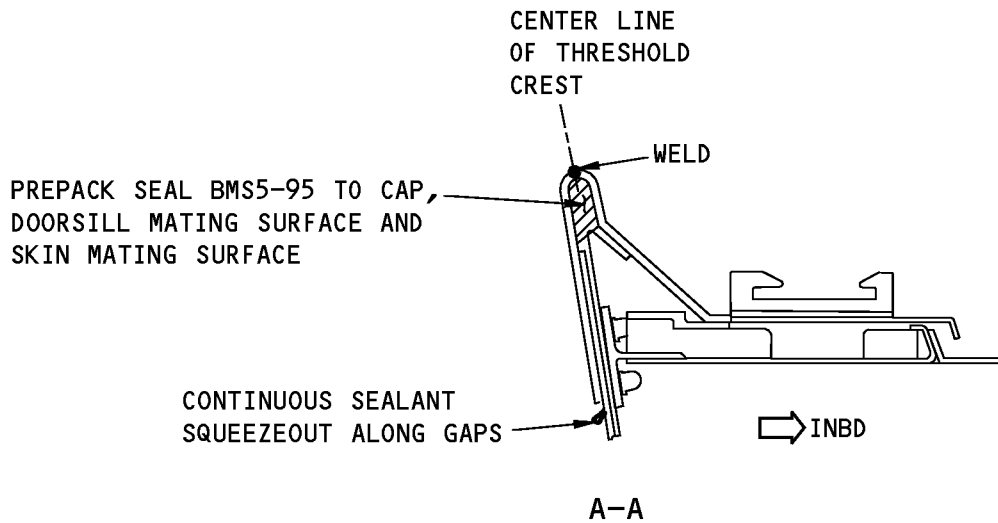
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.
- 1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.
- 2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.
- 3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.
- 4 DO NOT TERMINATE THE [1] OUTER DOUBLER OR [2] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.
- 5 THE [2] INNER DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] OUTER DOUBLER AND [2] INNER DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.
- 6 AT THE LOWER AFT CORNER THE [2] INNER DOUBLER WILL ONLY EXTEND PAST THE [1] OUTER DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.
- 7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

**Layout of the Repair Parts  
Figure 202 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

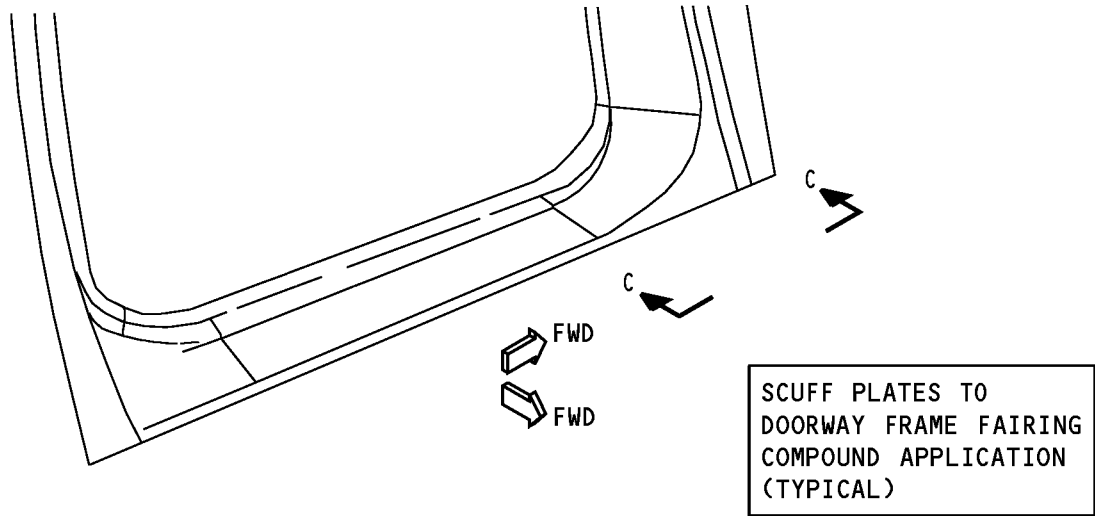


**THRESHOLD INSTALLATION (TYPICAL)**

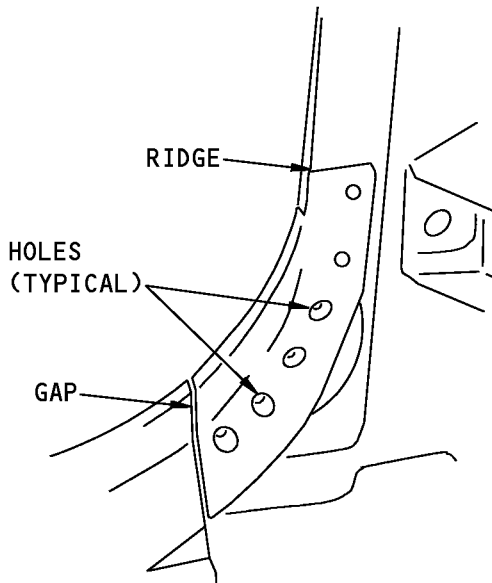


**Skin, Doubler, and Bear Strap Repair at Door Cutouts  
Figure 203 (Sheet 1 of 2)**

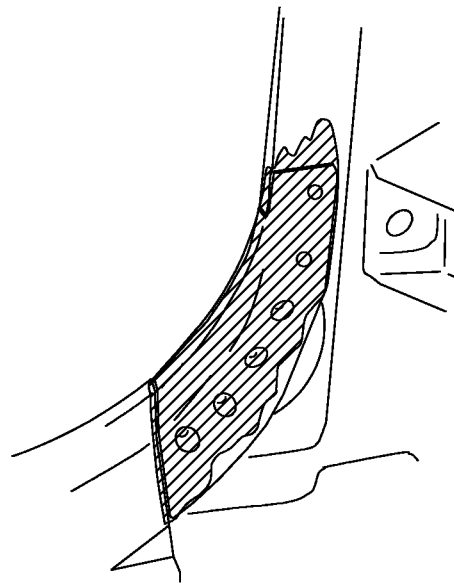
**737-800  
STRUCTURAL REPAIR MANUAL**



**FAIRING COMPOUND APPLICATION**



**BEFORE APPLICATION  
OF FAIRING COMPOUND**



 **FAIRING COMPOUND**

**AFTER APPLICATION  
OF FAIRING COMPOUND**

**C-C**

**Skin, Doubler, and Bear Strap Repair at Door Cutouts  
Figure 203 (Sheet 2 of 2)**



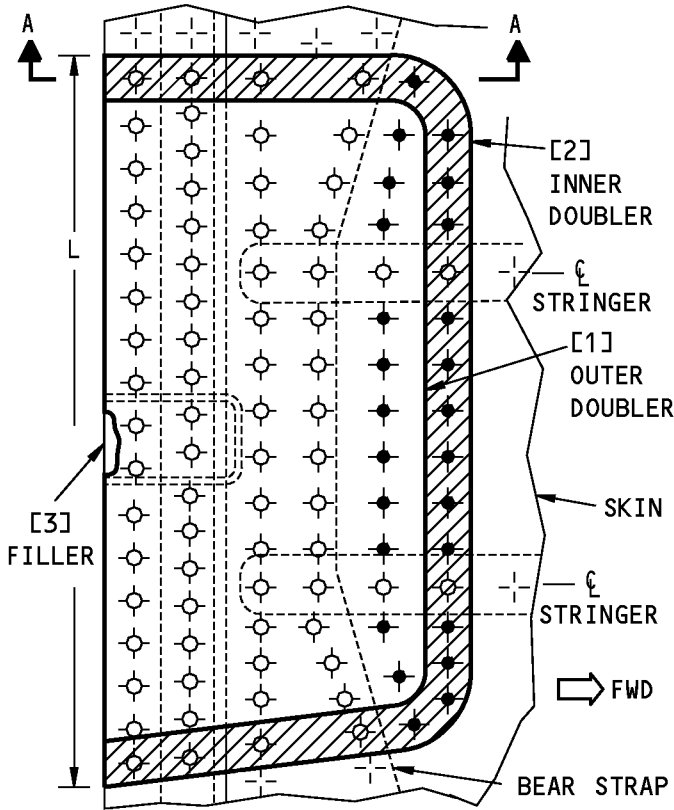
737-800

## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements


- A. Do the inspections as shown in Figure 204/REPAIR 23 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
- (1) The threshold for the start of supplemental inspections is 56,000 flight cycles after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently.
  - (3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently.
  - (4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair.
    - (b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair.
  - (5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners common to the repair.
    - (b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair.
- B. For repair doublers that go around the corner as shown in Figure 202/REPAIR 23, Detail III, accomplish the inspection requirements in Figure 204/REPAIR 23, Detail III.

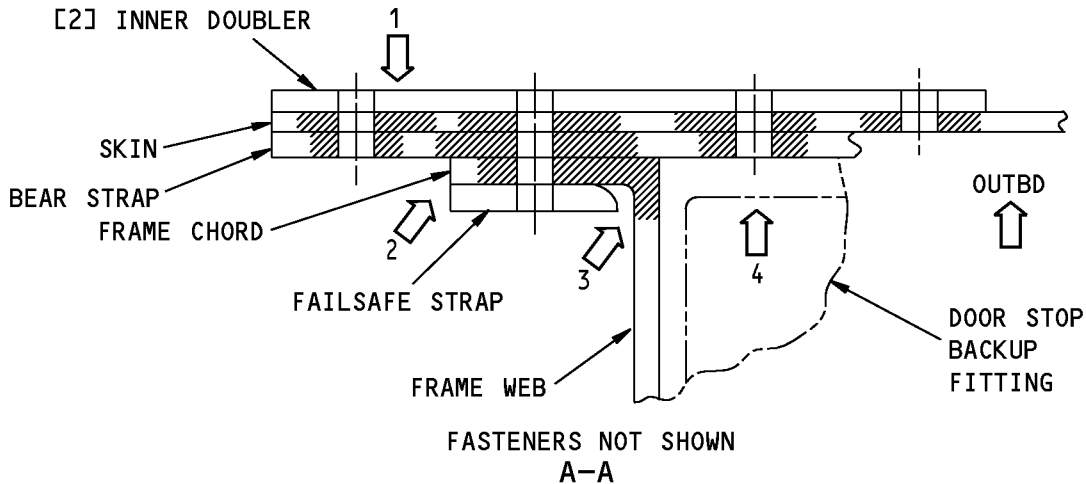
**STRUCTURAL REPAIR MANUAL**



NOT APPLICABLE AT A LAP SPLICE

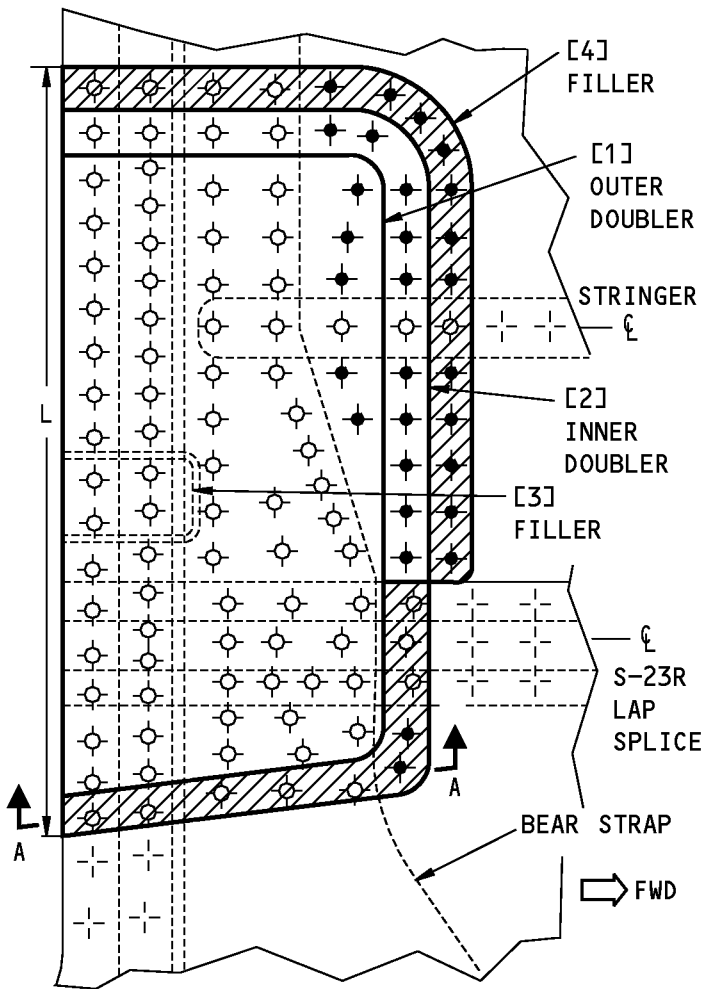
**DETAIL I**

INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.  UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR.  UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.



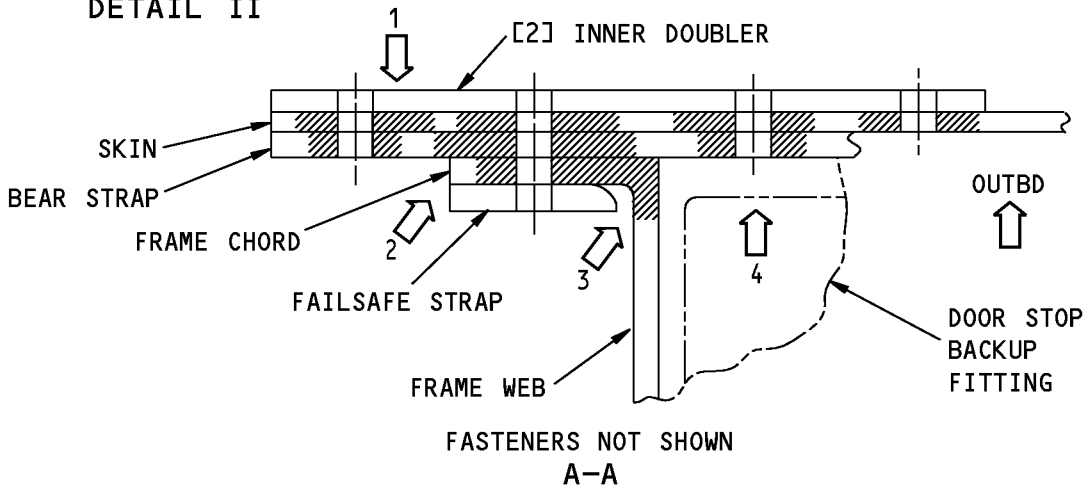
**Repair Inspection Requirements  
Figure 204 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



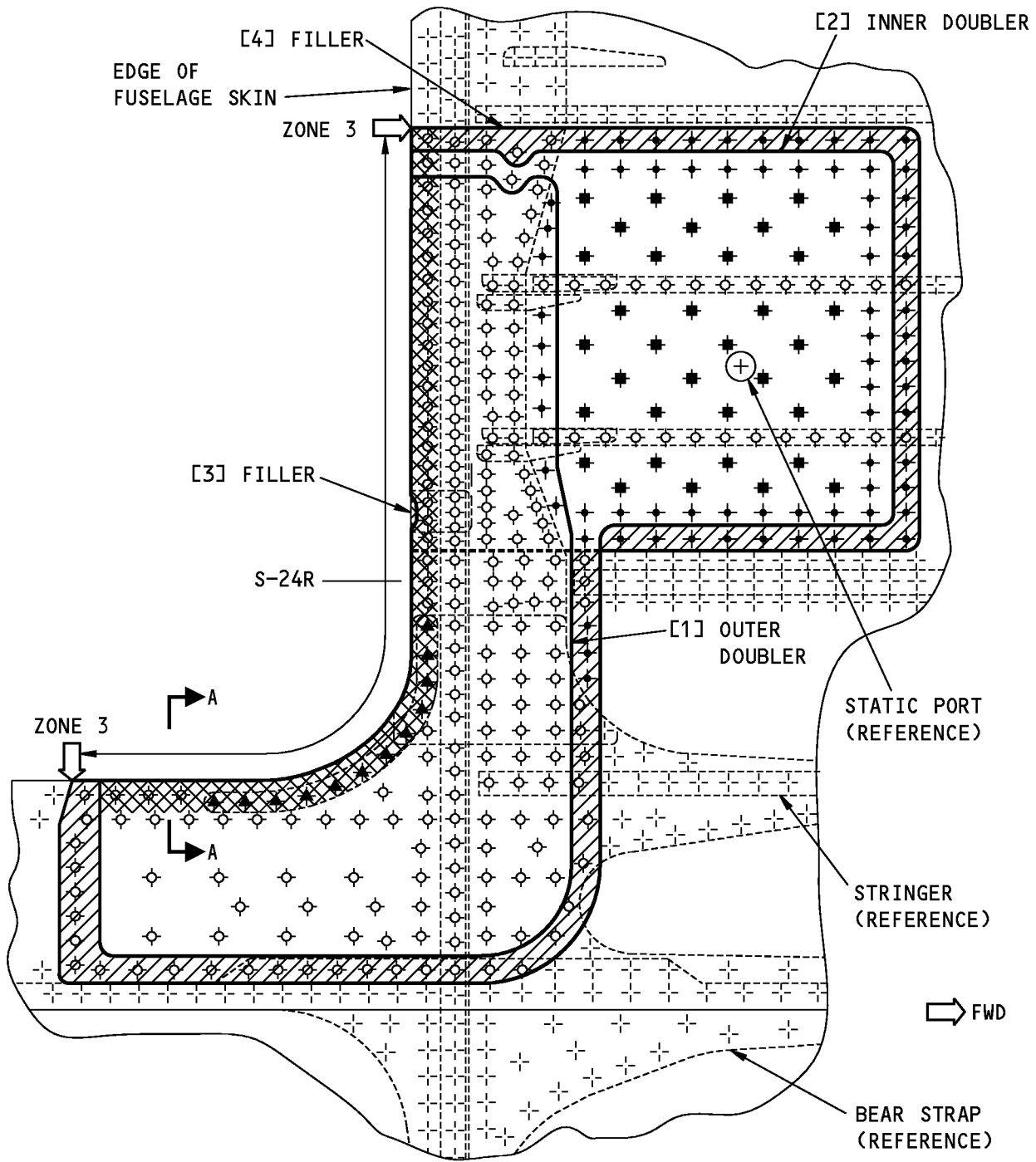
INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL II.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.  UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR.  UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.

DETAIL II



Repair Inspection Requirements  
Figure 204 (Sheet 2 of 4)

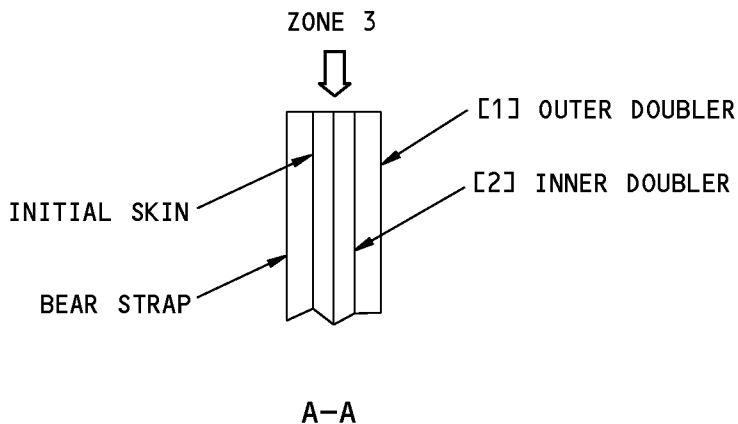
**737-800  
STRUCTURAL REPAIR MANUAL**






**DETAIL III  
FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS**

**Repair Inspection Requirements  
Figure 204 (Sheet 3 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**Repair Inspection Requirements  
Figure 204 (Sheet 4 of 4)**



**STRUCTURAL REPAIR MANUAL**

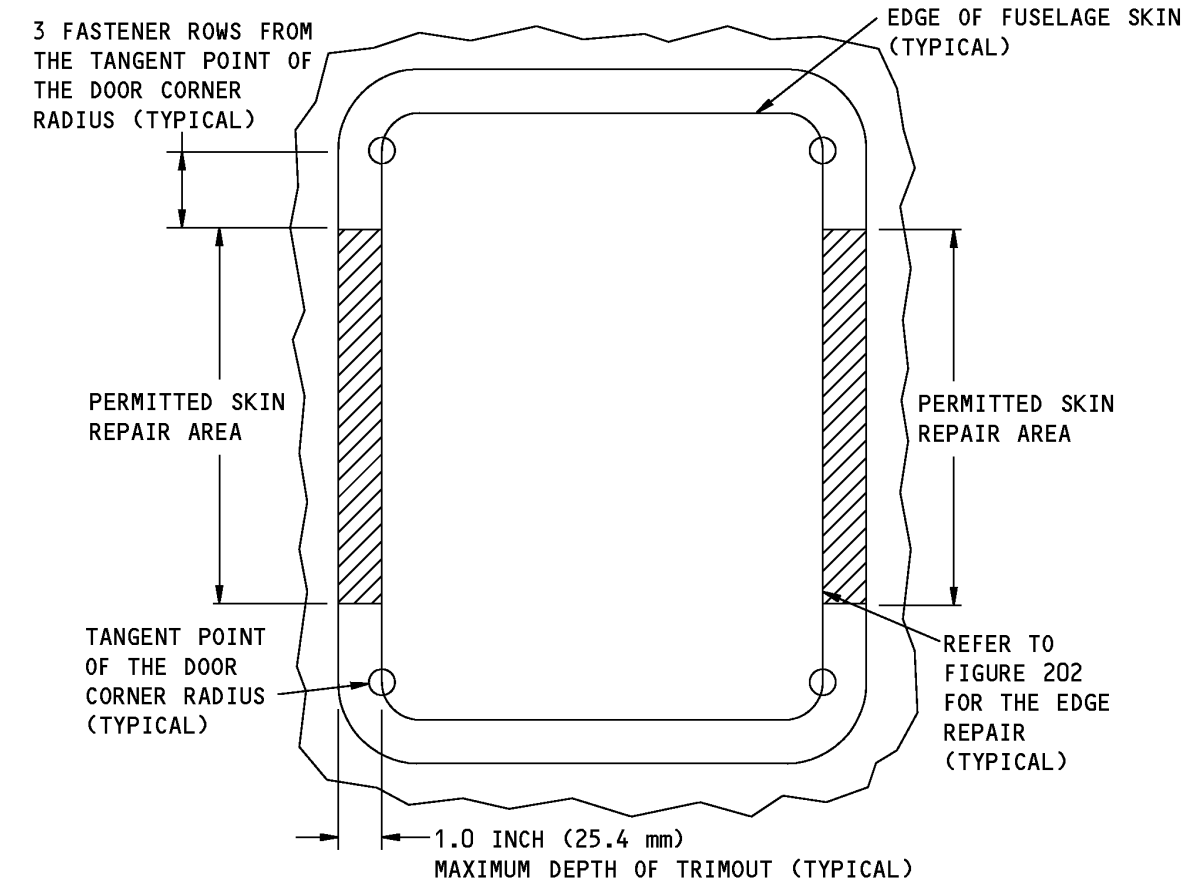
**REPAIR 24 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN AND BEARSTRAP UP TO A 1 INCH DEPTH**


**1. Applicability**

A. Repair 24 is applicable to fuselage skin and bearstrap damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 24.

**2. General**

A. Repair 24 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 24 for the inspection requirements.



 PERMITTED TRIMOUT REPAIR AREA  
 (CAUTION: IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, THEN THE REQUIRMENTS OF SRM 51-10-01 MUST BE SATISFIED. NO TRIMOUT IS PERMITTED IN THE LAP SPLICE. CONTACT BOEING.)

**FORWARD AND AFT CARGO DOOR SURROUND REPAIR ZONES**

**Forward and Aft Cargo Door Surround Repair Zones  
 Figure 201**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING

### 4. Repair Instructions

- A. Get access to the damage area.
- B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 24. Refer to 51-40-02, GENERAL.
- C. Cut and remove the damaged part of the fuselage skin and bearstrap as shown in Figure 202/REPAIR 24. Refer to 51-10-02, GENERAL.
  - (1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.
  - (2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 24.
  - (3) Put the skin around the cut back to the initial contour.
  - (4) Do a High Frequency Eddy Current (HFEC) inspection of the damaged area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. If no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.
  - (5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.
- D. Make the repair parts as shown in Table 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).
[2]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin and bearstrap.
[4]	Filler	1 (if applicable)	Use 2024-T3 clad sheet with a thickness to limit the maximum gap to 0.01 inch (0.25 mm).

## STRUCTURAL REPAIR MANUAL

- (1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL
- E. Assemble the repair parts as shown in Figure 202/REPAIR 24.
- F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 24 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.
  - (1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.
  - (2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
  - (3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.
- O. Repair the threshold/scuff plate as given Figure 203/REPAIR 24.
  - (1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:

**NOTE:** The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.

    - (a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 24 for typical repair details.
    - (b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.
    - (c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.
    - (d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.
    - (e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.
    - (f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.
    - (g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.



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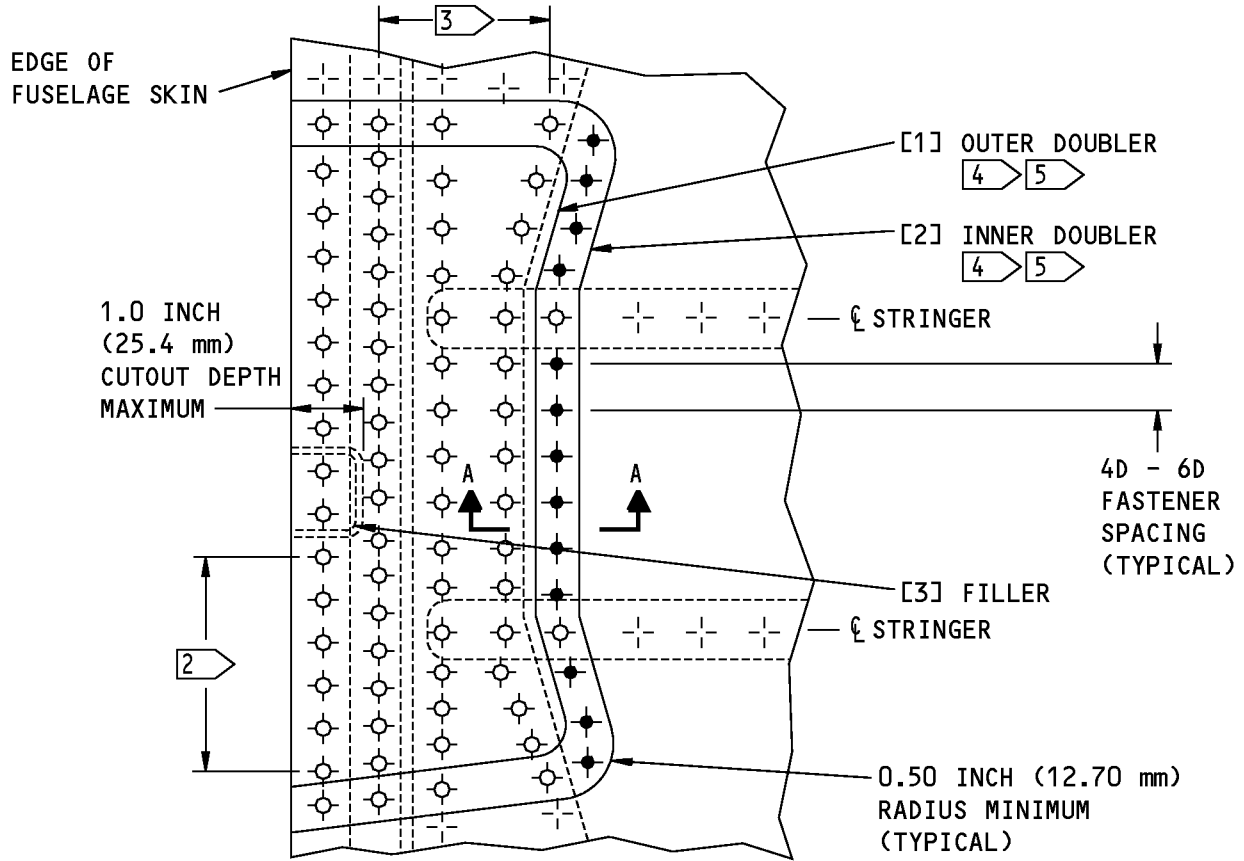
## STRUCTURAL REPAIR MANUAL

- (h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

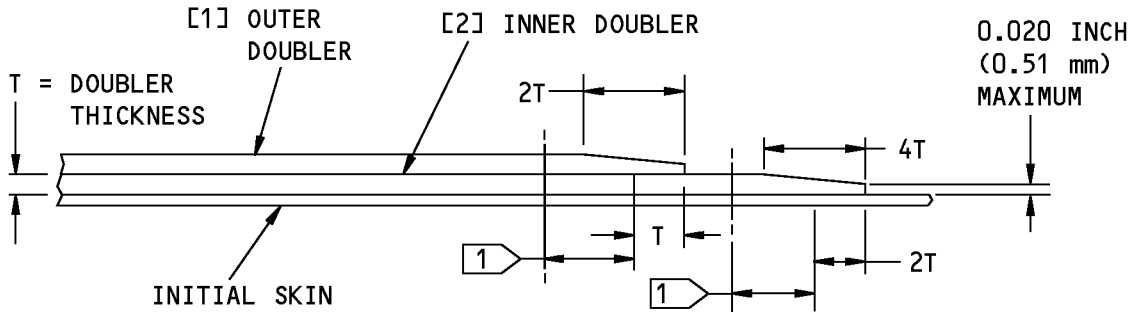
**NOTE:** There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

- (i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 24.

**STRUCTURAL REPAIR MANUAL**



**DETAIL I**



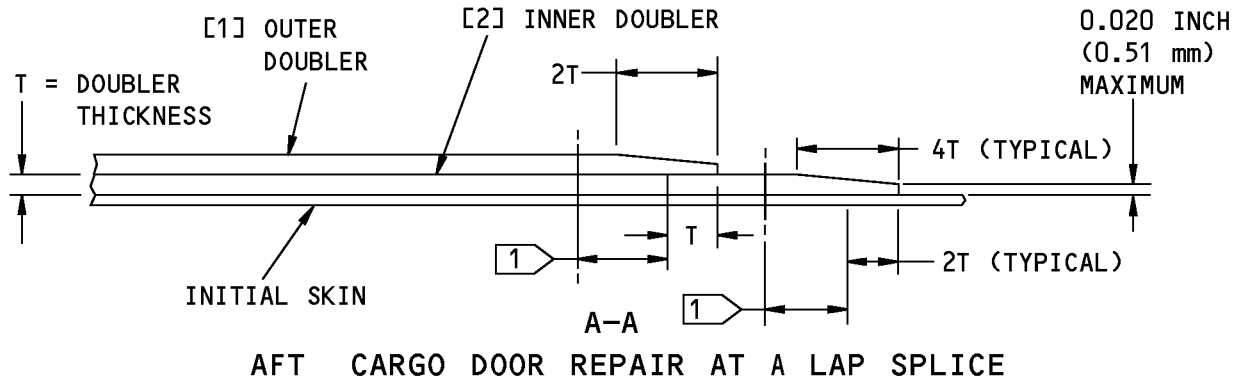
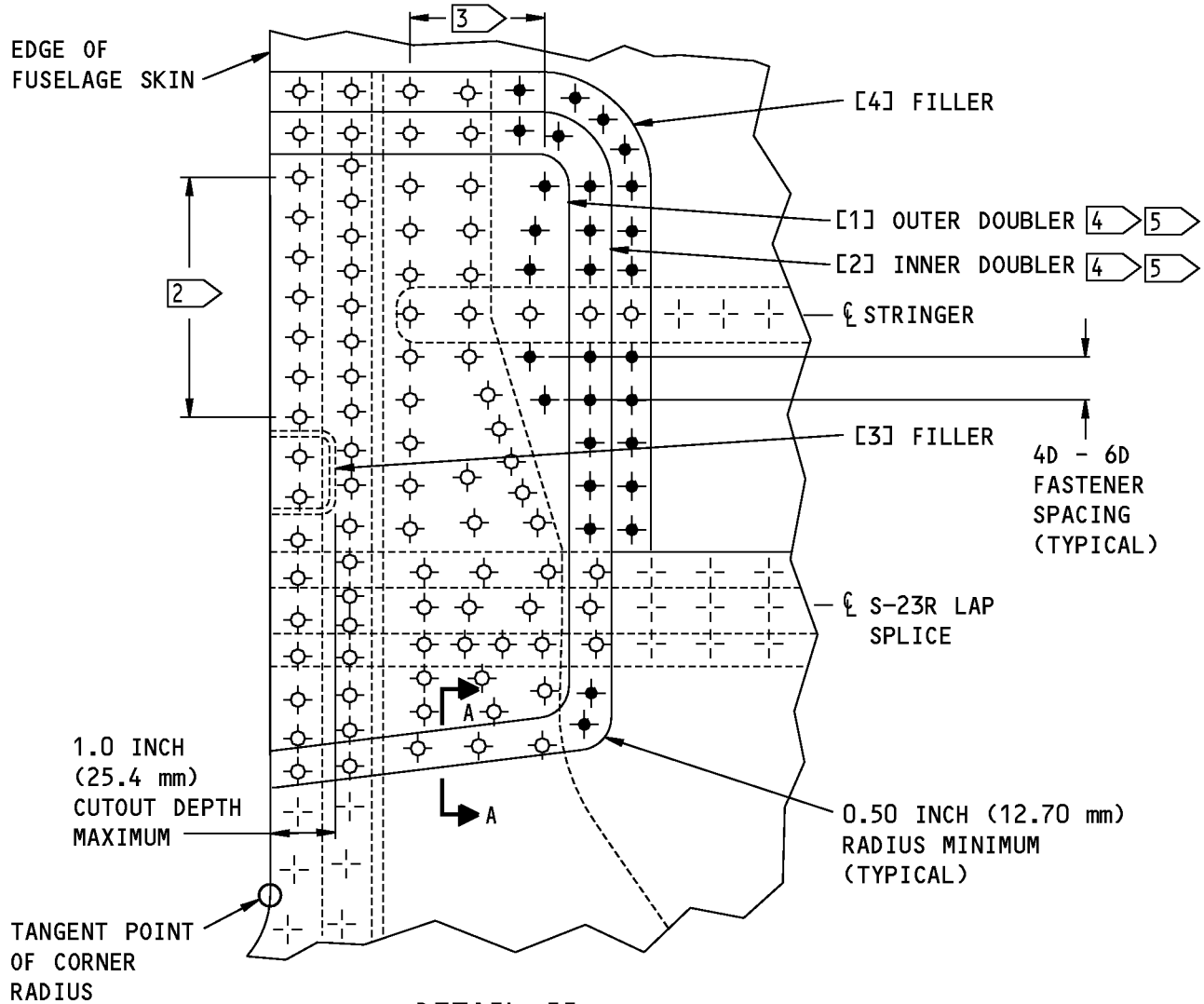
**A-A**

**NOTES**

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [2] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

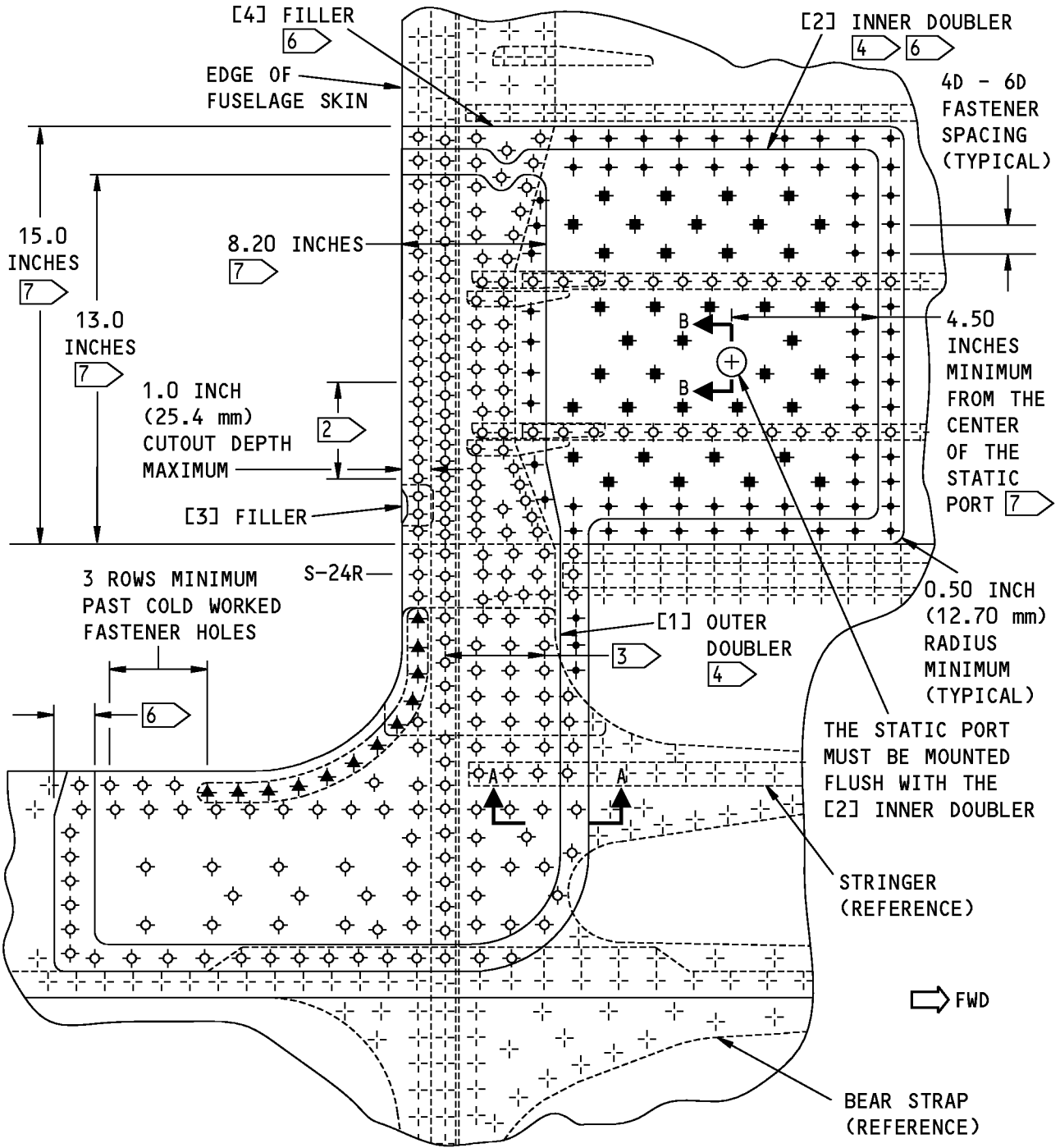
**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 5)**

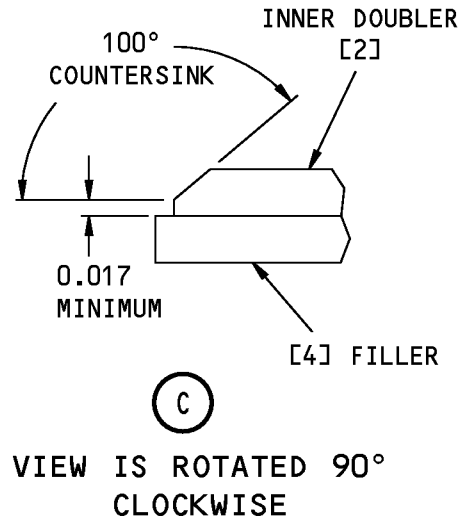
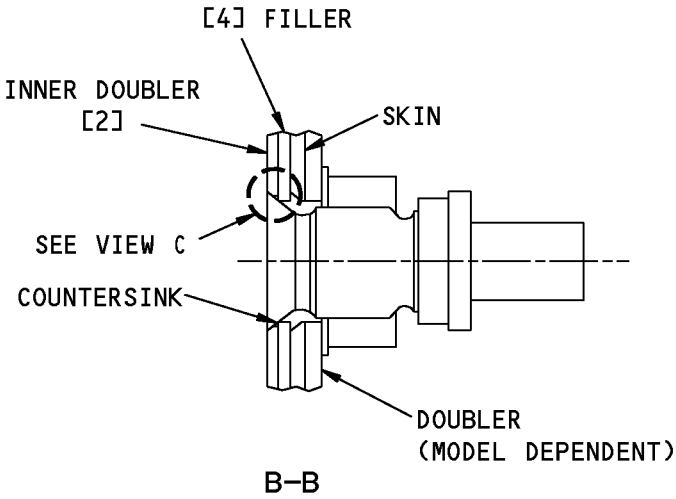
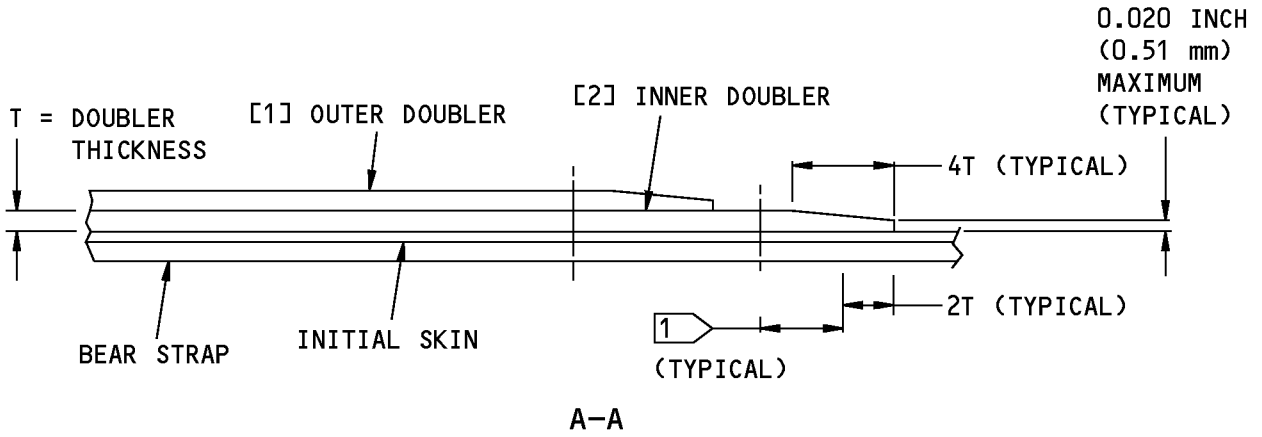
**STRUCTURAL REPAIR MANUAL**



**DETAIL III**  
**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

**Layout of the Repair Parts**  
**Figure 202 (Sheet 3 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Parts  
Figure 202 (Sheet 4 of 5)**



**STRUCTURAL REPAIR MANUAL**

**FASTENER SYMBOLS**

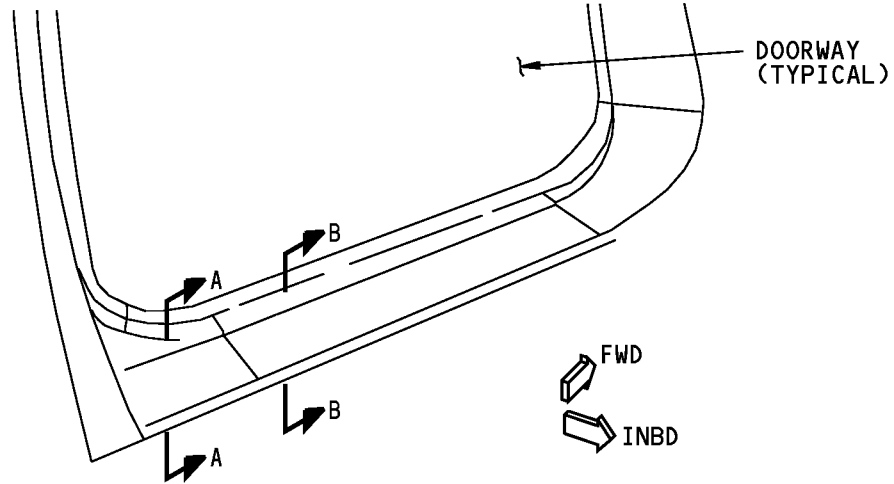
- |- REFERENCE FASTENER LOCATION.
- ⊙ INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊞ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊠ COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

**NOTES**

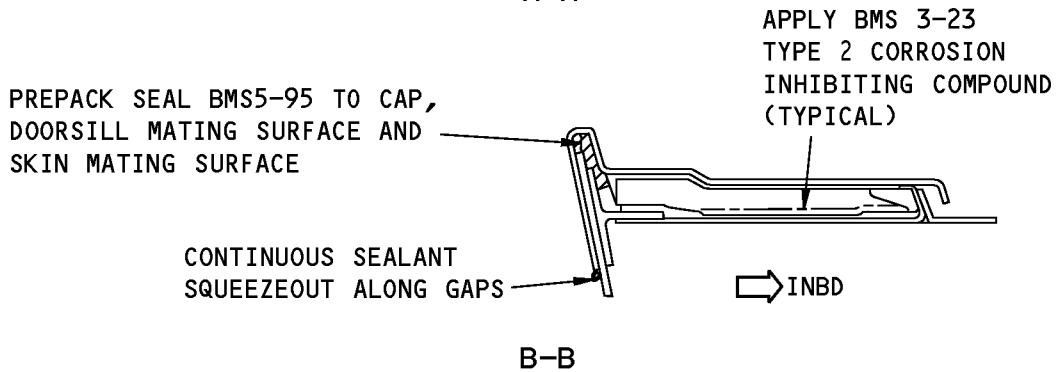
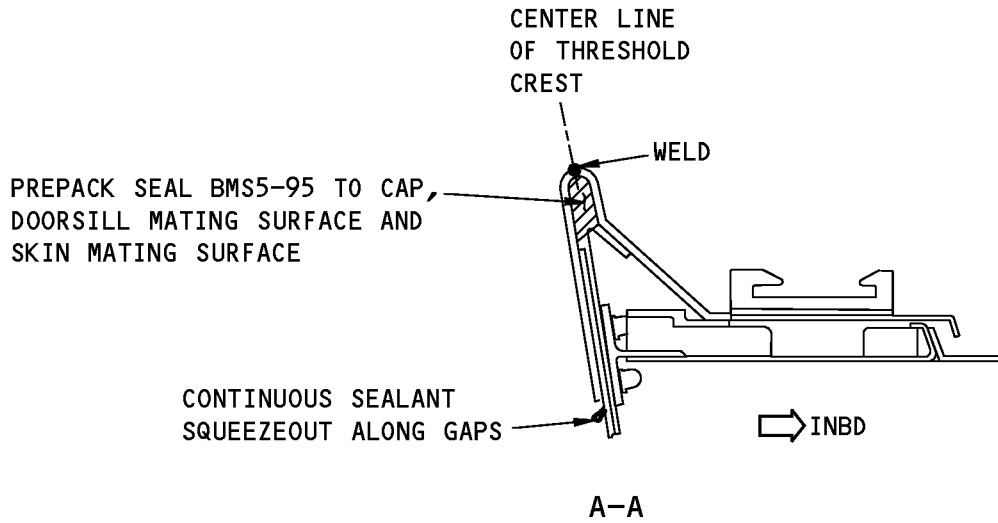
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.
- 1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.
- 2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.
- 3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [1] OUTER DOUBLER.
- 4 DO NOT TERMINATE THE [1] OUTER DOUBLER OR [2] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.
- 5 THE [1] INNER DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE [1] OUTER DOUBLER AND [2] INNER DOUBLER NEEDS TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.
- 6 AT THE LOWER AFT CORNER THE [2] INNER DOUBLER WILL ONLY EXTEND PAST THE [1] OUTER DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.
- 7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

**Layout of the Repair Parts  
Figure 202 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

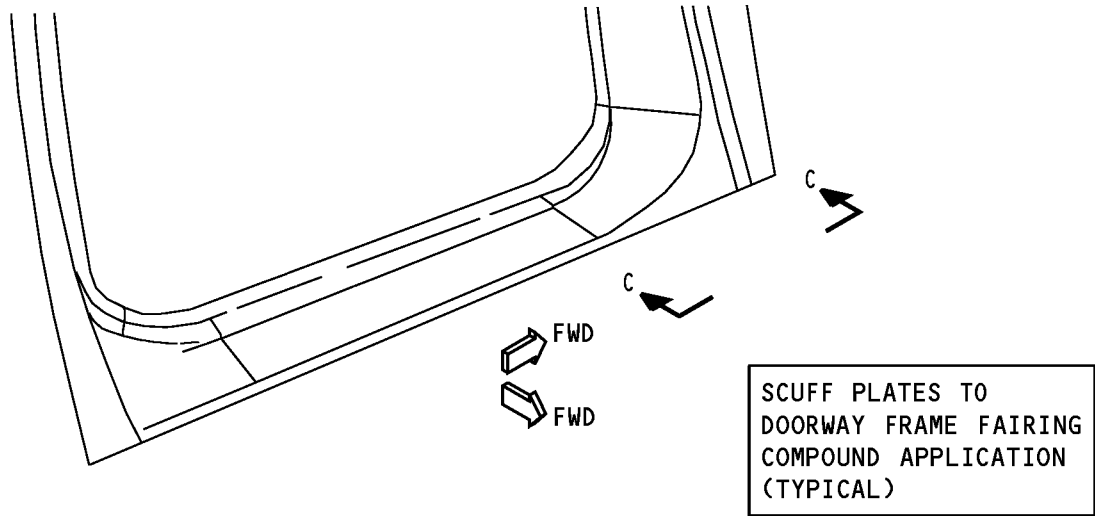


**THRESHOLD INSTALLATION (TYPICAL)**

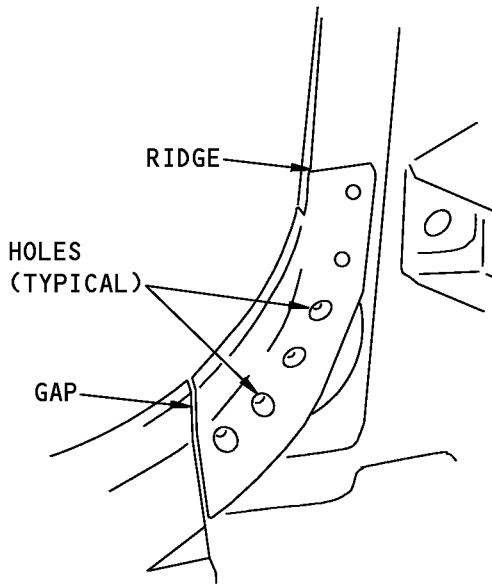


**Skin, Doubler, and Bear Strap Repair at Door Cutouts**  
**Figure 203 (Sheet 1 of 2)**

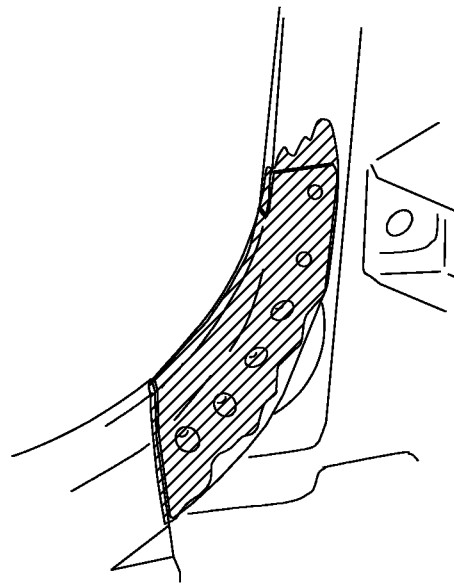
**737-800  
STRUCTURAL REPAIR MANUAL**



**FAIRING COMPOUND APPLICATION**



**BEFORE APPLICATION  
OF FAIRING COMPOUND**



**AFTER APPLICATION  
OF FAIRING COMPOUND**

C-C

**Skin, Doubler, and Bear Strap Repair at Door Cutouts  
Figure 203 (Sheet 2 of 2)**



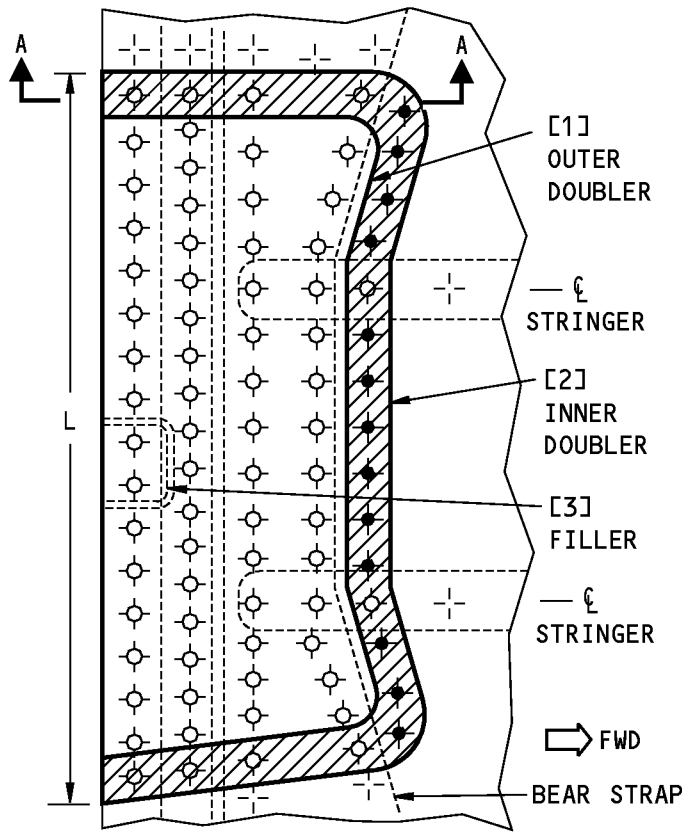
737-800

## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

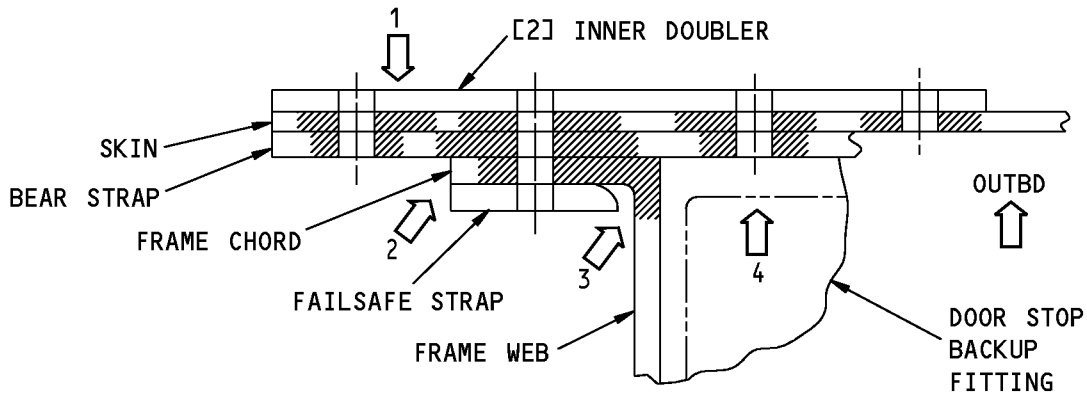
- A. Do the inspections as shown in Figure 204/REPAIR 24 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
- (1) The threshold for the start of supplemental inspections is 56,000 flight cycles after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently.
  - (3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently.
  - (4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair.
    - (b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair.
  - (5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners and skin edge common to the repair.
    - (b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair.
- B. For repair doublers that go around the corner in Figure 202/REPAIR 24, Detail III, accomplish the inspection requirements in Figure 204/REPAIR 24, Detail III.

**STRUCTURAL REPAIR MANUAL**



**DETAIL I**

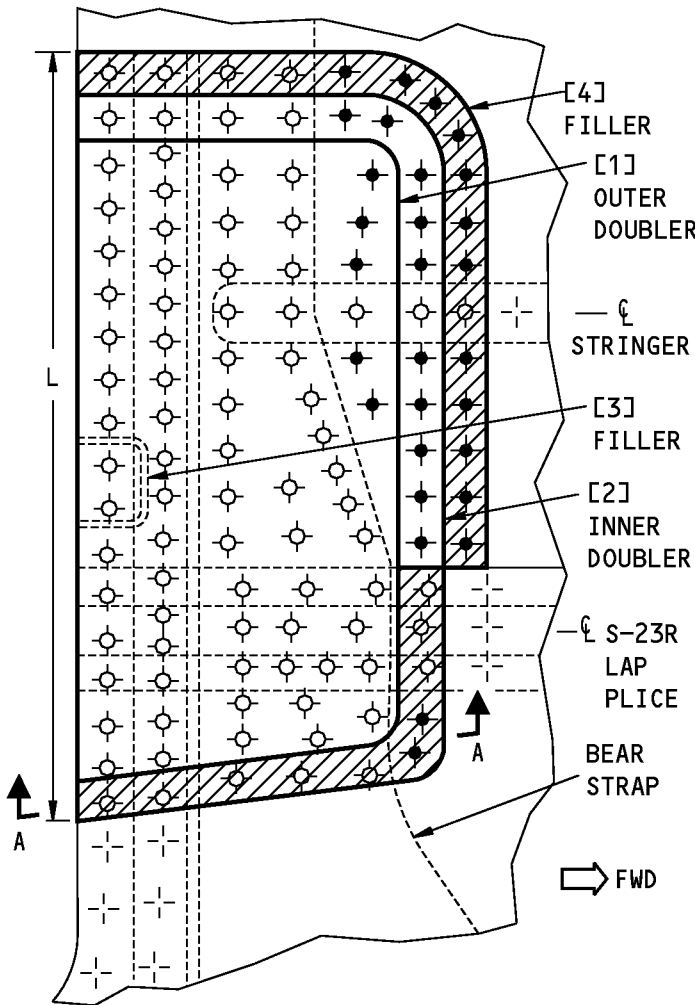
INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL I.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.  UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.
4	DO A HFEC INSPECTION FOR DAMAGE IN THE BEAR STRAP AROUND THE FASTENERS COMMON TO THE REPAIR.  UT INSPECTION AREA. DO A UT INSPECTION OF THE BEAR STRAP UNDER THE DOOR STOP BACKUP FITTING, IF ADJACENT TO THE REPAIR.




FASTENERS NOT SHOWN  
A-A

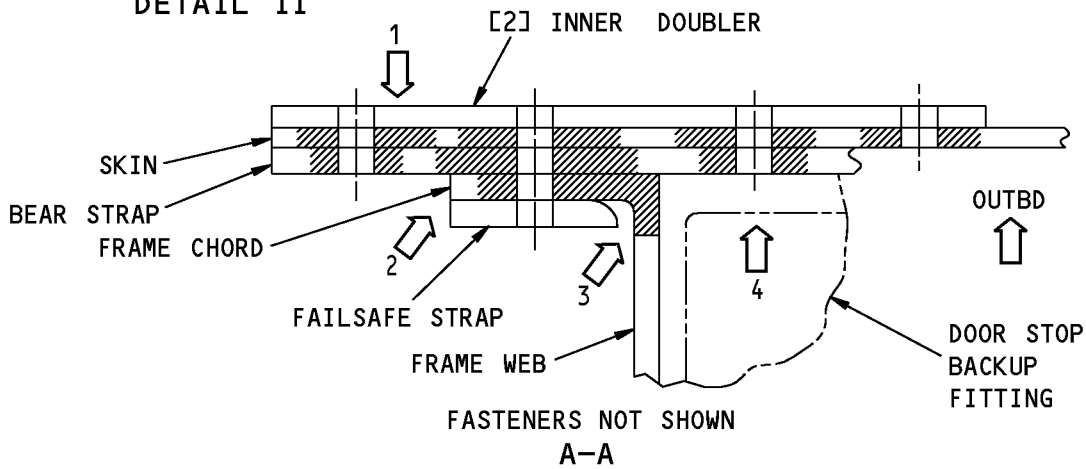
**Repair Inspection Requirements**  
**Figure 204 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



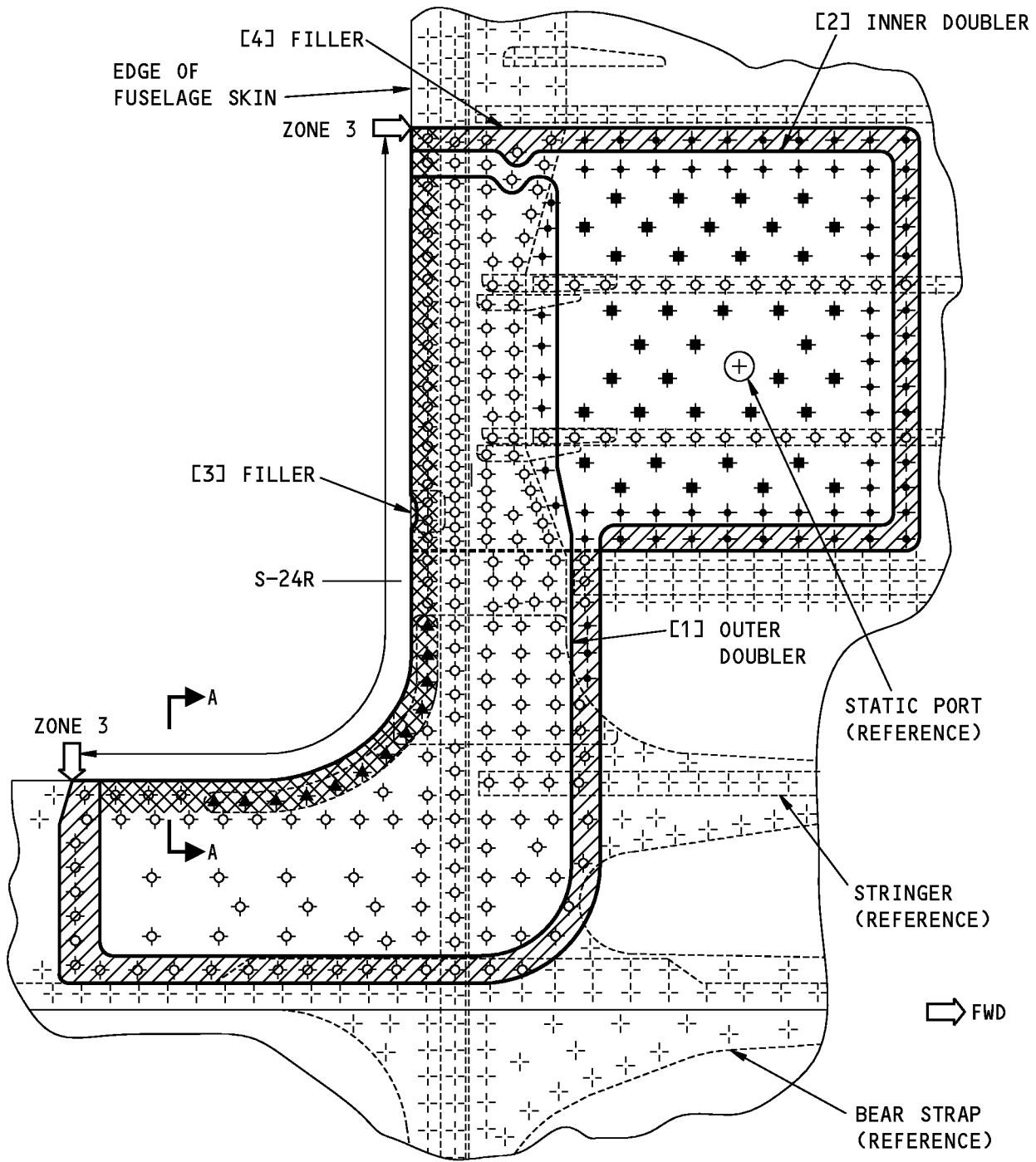
INSPECTION REQUIREMENTS	
1	LFEC INSPECTION AREA. DO A LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION FOR DAMAGE IN THE SKIN AROUND THE FASTENERS COMMON TO THE REPAIR DOUBLER. REFER TO THE SHADED AREA  IN DETAIL II.
2	HFEC INSPECTION AREA. DO A HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION FOR DAMAGE IN THE BEAR STRAP, ALONG THE FRAME CHORD, FOR THE LENGTH (L) OF THE REPAIR.
3	HFEC INSPECTION AREA. DO A HFEC INSPECTION FOR DAMAGE IN THE FRAME WEB FOR THE LENGTH (L) OF THE REPAIR.
4	UT INSPECTION AREA. DO A ULTRASONIC TESTING (UT) INSPECTION OF THE FRAME WEB UNDER THE DOOR STOP FITTINGS, IF ADJACENT TO THE REPAIR.

DETAIL II



Repair Inspection Requirements  
Figure 204 (Sheet 2 of 4)

**STRUCTURAL REPAIR MANUAL**

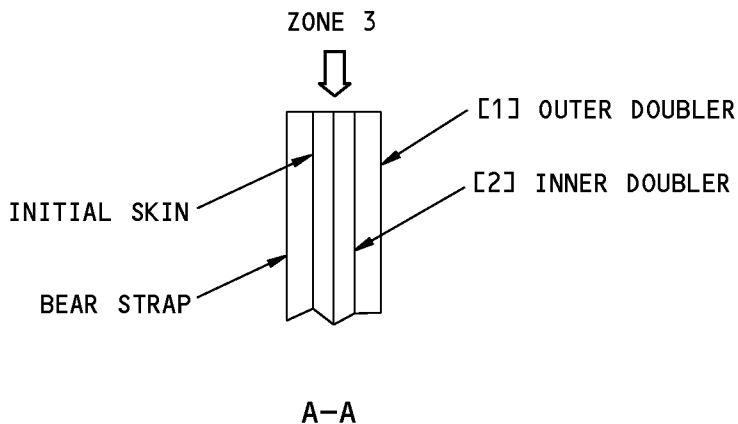





**DETAIL III**

**FORWARD CARGO DOOR, LOWER FORWARD CORNER INSPECTION REQUIREMENTS**

**Repair Inspection Requirements  
Figure 204 (Sheet 3 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**Repair Inspection Requirements  
Figure 204 (Sheet 4 of 4)**





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## STRUCTURAL REPAIR MANUAL

### REPAIR 25 - FORWARD AND AFT CARGO DOOR SURROUND EDGE REPAIR OF SKIN AND BEARSTRAP UP TO A 2.5 INCH DEPTH

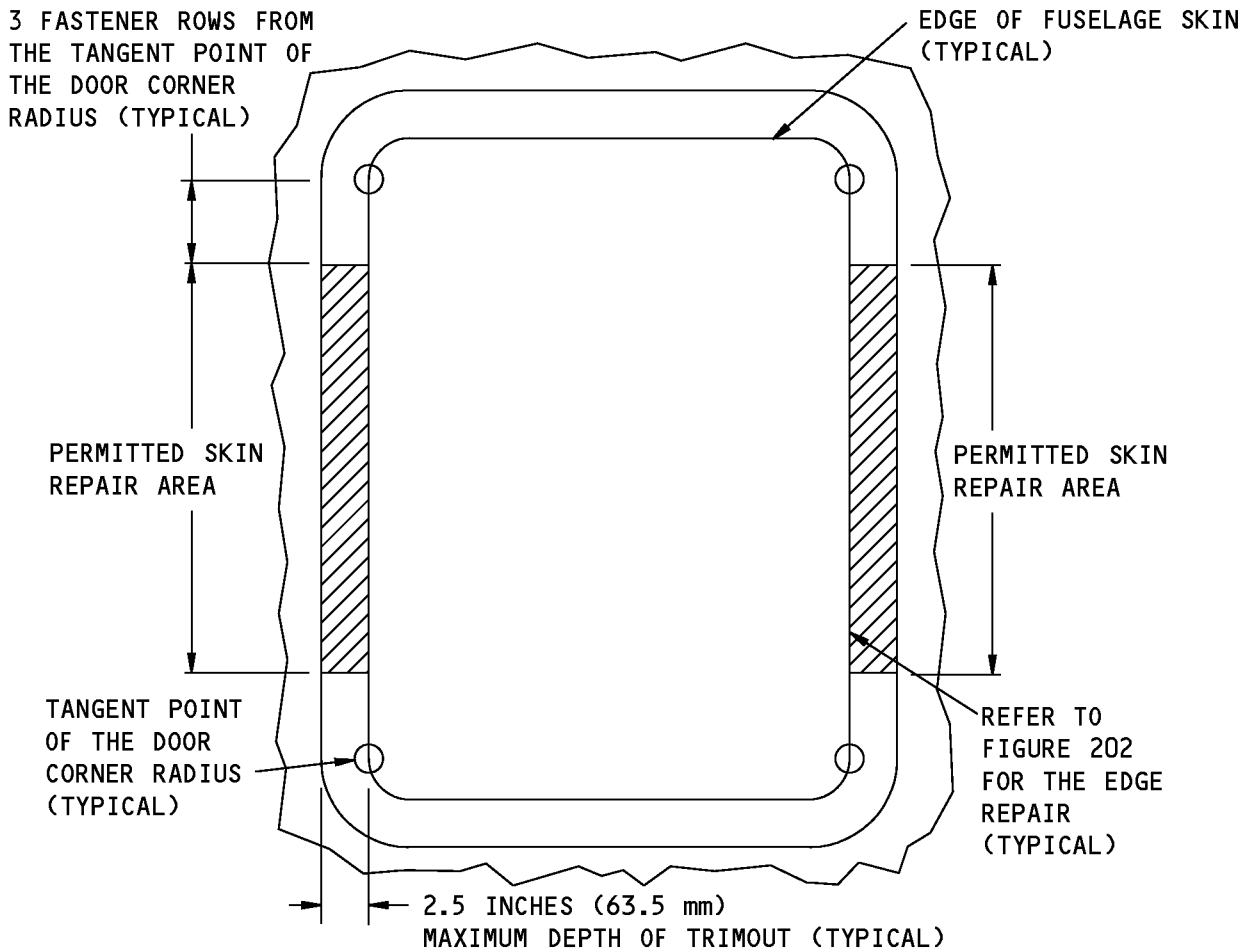
#### 1. Applicability

- A. Repair 25 is applicable to fuselage skin and bearstrap damage adjacent to the forward and aft cargo doors as shown in Figure 201/REPAIR 25.

#### 2. General

- A. Repair 25 gives instructions for a Category B repair. Refer to 51-00-06, GENERAL for the definitions of the different types of repairs. Refer to Paragraph 5./REPAIR 25 for the inspection requirements.

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STRUCTURAL REPAIR MANUAL**



**PERMITTED TRIMOUT REPAIR AREA**

(CAUTION: IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, THEN THE REQUIRMENTS OF SRM 51-10-01 MUST BE SATISFIED. NO TRIMOUT IS PERMITTED IN THE LAP SPLICE. CONTACT BOEING.)

**FORWARD AND AFT CARGO DOOR SURROUND REPAIR ZONES**

**Forward and Aft Cargo Door Surround Repair Zones**

**Figure 201**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-00-06, GENERAL	Structural Repair Definitions
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING

### 4. Repair Instructions

- A. Get access to the damaged area.
- B. Remove the necessary fasteners in the area of the damaged skin as shown in Figure 202/REPAIR 25. Refer to 51-40-02, GENERAL.
- C. Cut and remove the damaged part of the fuselage skin and bearstrap as shown in Figure 202/REPAIR 25. Refer to 51-10-02, GENERAL.
  - (1) Make the corner radii of the cut a minimum of 0.75 inch (19.05 mm) at all trimmout locations.
  - (2) Make the cut in the shape of a rectangle with the sides parallel as shown in Figure 202/REPAIR 25.
  - (3) Put the skin around the cut back to the initial contour.
  - (4) Do a High Frequency Eddy Current (HFEC) inspection (HFEC) of the damage area and the fastener holes that were removed to make sure there is no further damage. Refer to NDT Part 6, 51-00-00, Figure 16. if no damage is found then do a 0.04 inch (1.02 mm) insurance cut along the edge of the trim.
  - (5) Make sure there is a minimum surface finish of 63 Ra at all trimmout locations. Refer to 51-20-13, GENERAL.
- D. Make the repair parts as shown in Table 201.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Inner Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[2]	Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.080 inch (2.03 mm).
[3]	Outer Doubler	1	Use 2024-T3 clad sheet that has a thickness of 0.160 inch (4.06 mm).
[4]	Filler	1	Use 2024-T3 clad sheet that is the same thickness as the initial skin and bearstrap.
[5]	Filler	1 (If applicable)	Use 2024-T3 clad sheet with a thickness to limit the gap to a maximum 0.01 inch (0.25 mm).

## STRUCTURAL REPAIR MANUAL

- (1) Make the countersink repair washers for the initial fastener locations in the initial skin. Refer to 51-40-08, GENERAL.
- E. Assemble the repair parts as shown in Figure 202/REPAIR 25.
- F. Drill the necessary fastener holes. Refer to Figure 202/REPAIR 25 for the fastener type, size, diameter, and spacing. Refer to 51-40-05, GENERAL for the fastener hole dimensions.
- (1) Do not countersink the fastener holes more than 76 percent of the initial doubler thickness. This will prevent a knife-edge condition of the initial doubler.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.
- J. Install the countersink repair washers with BMS 5-95 sealant at the initial fastener locations. Refer to 51-40-08, GENERAL.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05, GENERAL.
- (2) Install the hex drive bolts wet with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- (3) Make sure there is a maximum 0.01 inch (0.25 mm) gap prior to fastener pullup.
- M. Apply a fillet seal to the repair parts on the internal and external sides of the repair area with BMS 5-95 sealant. Refer to 51-20-05, GENERAL.
- N. Apply a finish if necessary. Refer to AMM PAGEBLOCK 51-21-00/701.
- O. Repair the threshold/scuff plate as given Figure 203/REPAIR 25.
- (1) If the threshold/scuff plates were removed to install the repair parts, repair the threshold/scuff plate as necessary and install as follows:
- NOTE:** The scuff plate is not a structural part. You can do your own repair procedure to repair or do correct installation of the scuff plate. Incorrect installation of the scuff plate could cause a pressure leak around the door edges.
- (a) Cut the crest of the threshold/scuff plates as necessary to fit over the repair parts. Refer to Figure 203/REPAIR 25 for typical repair details.
- (b) Weld the threshold/scuff plates. Refer to BAC 5975 using base metal or ER 4043 material as given in AWS A5.10. Penetrant inspect the weld as given in BAC 5423. Radiographic inspection, post weld heat treat, or age hardening are not necessary.
- (c) Sand the edges and outer surfaces, in a constant direction, with 120-grit abrasive.
- (d) Apply one layer of BMS 10-11, Type I primer to the inner surfaces of the threshold/scuff plate. Refer to SOPM 20-41-02.
- (e) Apply a coat of strippable parting agent to all faying surfaces of the threshold/scuff plates and fuselage skin/repair parts.
- (f) Apply BMS 3-23, Type 2 corrosion inhibiting compound to the surfaces under the threshold where no parting agent was applied.



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## STRUCTURAL REPAIR MANUAL

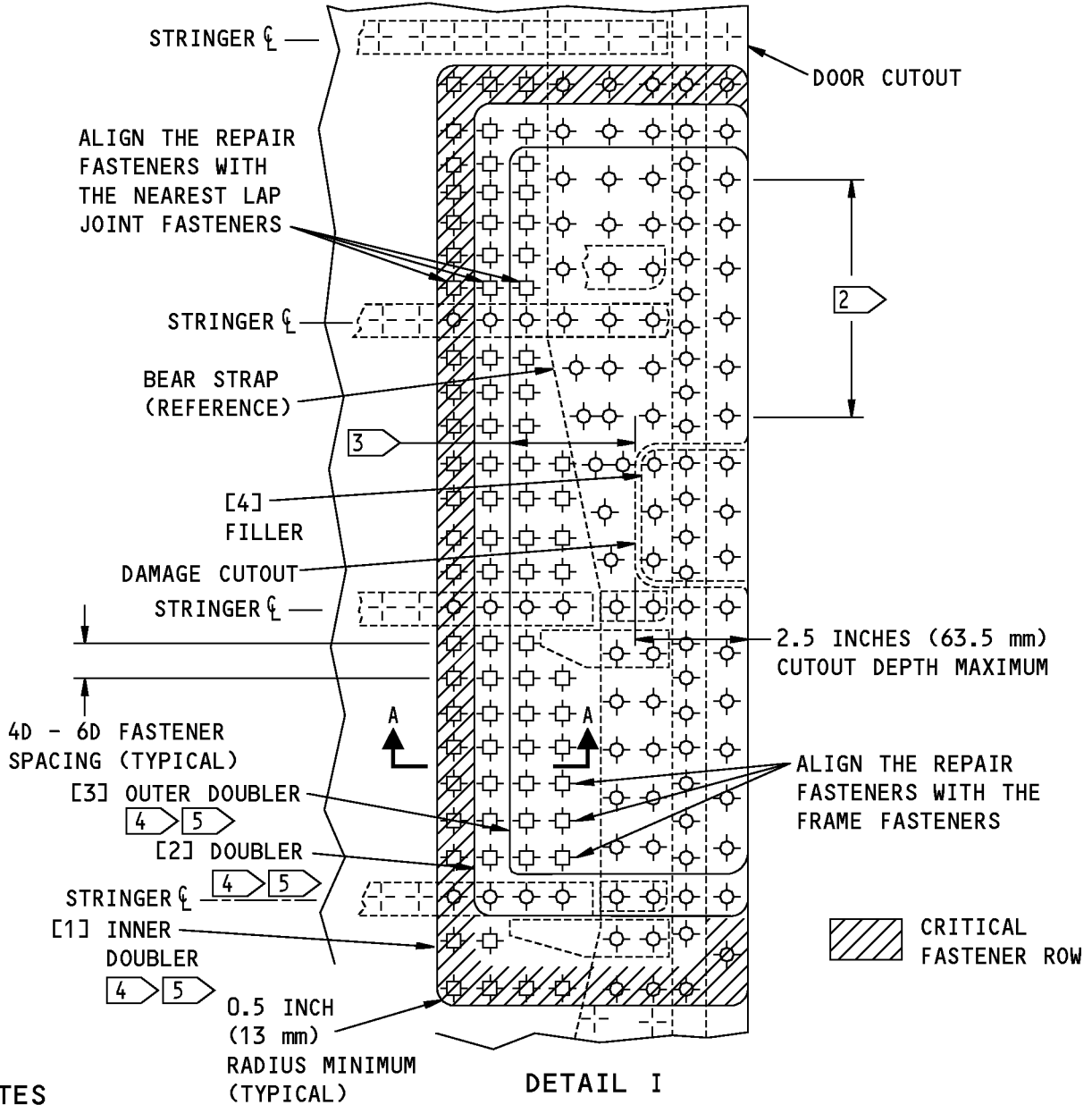
(g) Pack BMS 5-95 sealant into the threshold/scuff plates before installing. Refer to 51-20-05, GENERAL.

(h) Install the threshold/scuff plates with the same type fasteners as the initial fasteners. Make sure the fasteners have the correct grip length. Make sure that the sealant that squeezes out along the bottom of the threshold/scuff plates is a constant with no gaps. Remove any extra sealant.

**NOTE:** There can be cabin noise and air leaks which are not acceptable if there are sealant gaps along the bottom of the threshold/scuff plates.

(i) Make a ramp of fairing compound in the upper corners of the scuff plates to the doorway frame to give a smooth transition for the door seal. Refer to 51-70-01, REPAIR GENERAL for the fairing compounds. Protect the threshold with tape and sand the seal ramp smooth. Refer to Figure 203/REPAIR 25.

**STRUCTURAL REPAIR MANUAL**



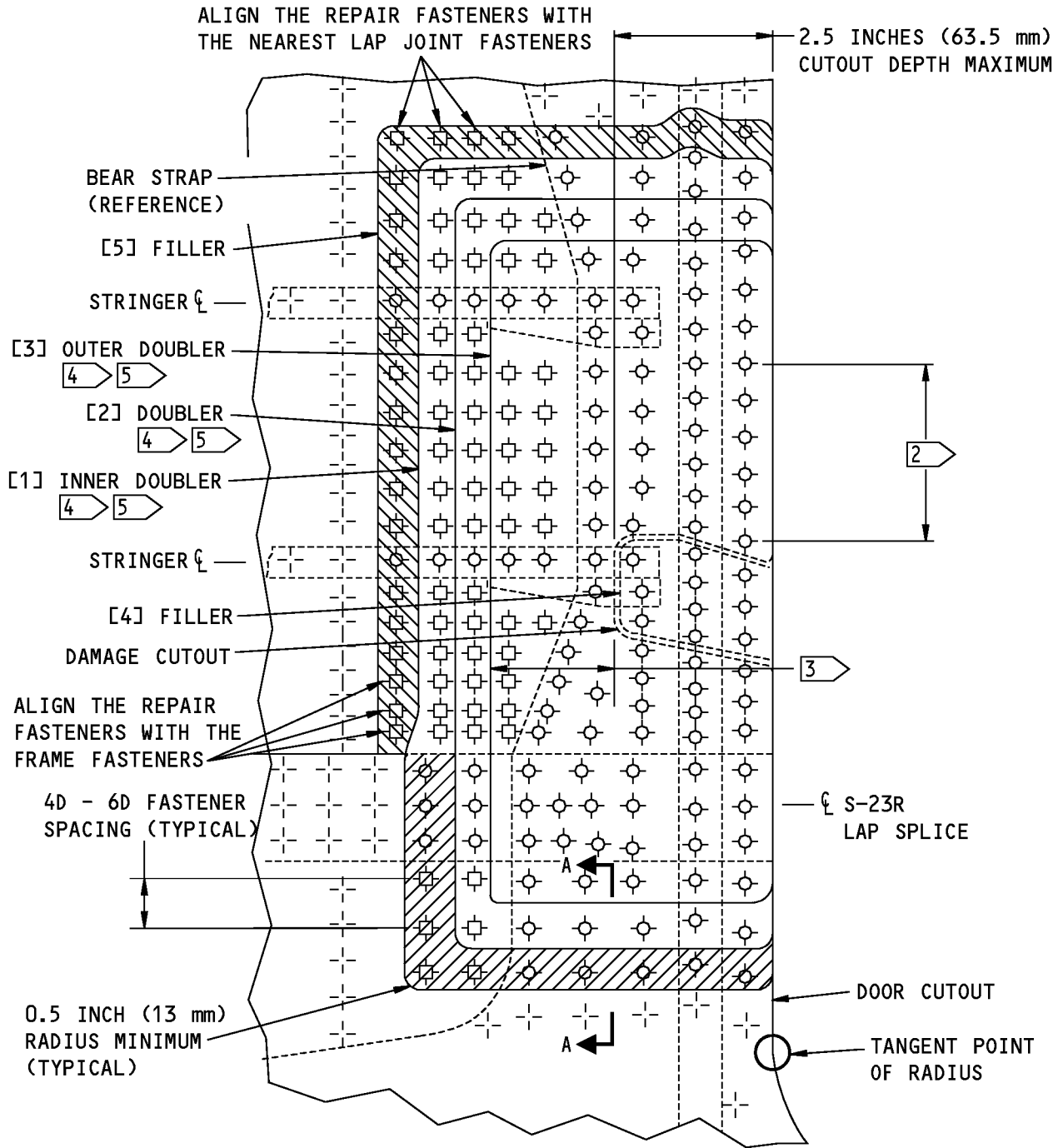
**NOTES**

1. THIS REPAIR IS NOT APPLICABLE AT A LAP SPLICE (THE [1] INNER DOUBLER MUST END ABOVE THE LAP SPLICE). FOR REPAIRS AT OR ADJACENT TO A LAP SPLICE REFER TO DETAILS II AND III.
2. IF THE REPAIR IS ALONG THE FORWARD EDGE OF THE FORWARD CARGO DOOR SURROUND SKIN, MAKE SURE THAT ALL OF THE REQUIREMENTS OF SRM 51-10-01 ARE SATISFIED.

FORWARD CARGO DOOR EDGE IS SHOWN,  
OTHER LOCATIONS AS GIVEN IN FIGURE 201 ARE SIMILAR  
FORWARD CARGO DOOR EDGE REPAIR

**Layout of the Repair Parts  
Figure 202 (Sheet 1 of 5)**

**STRUCTURAL REPAIR MANUAL**



**DETAIL II**

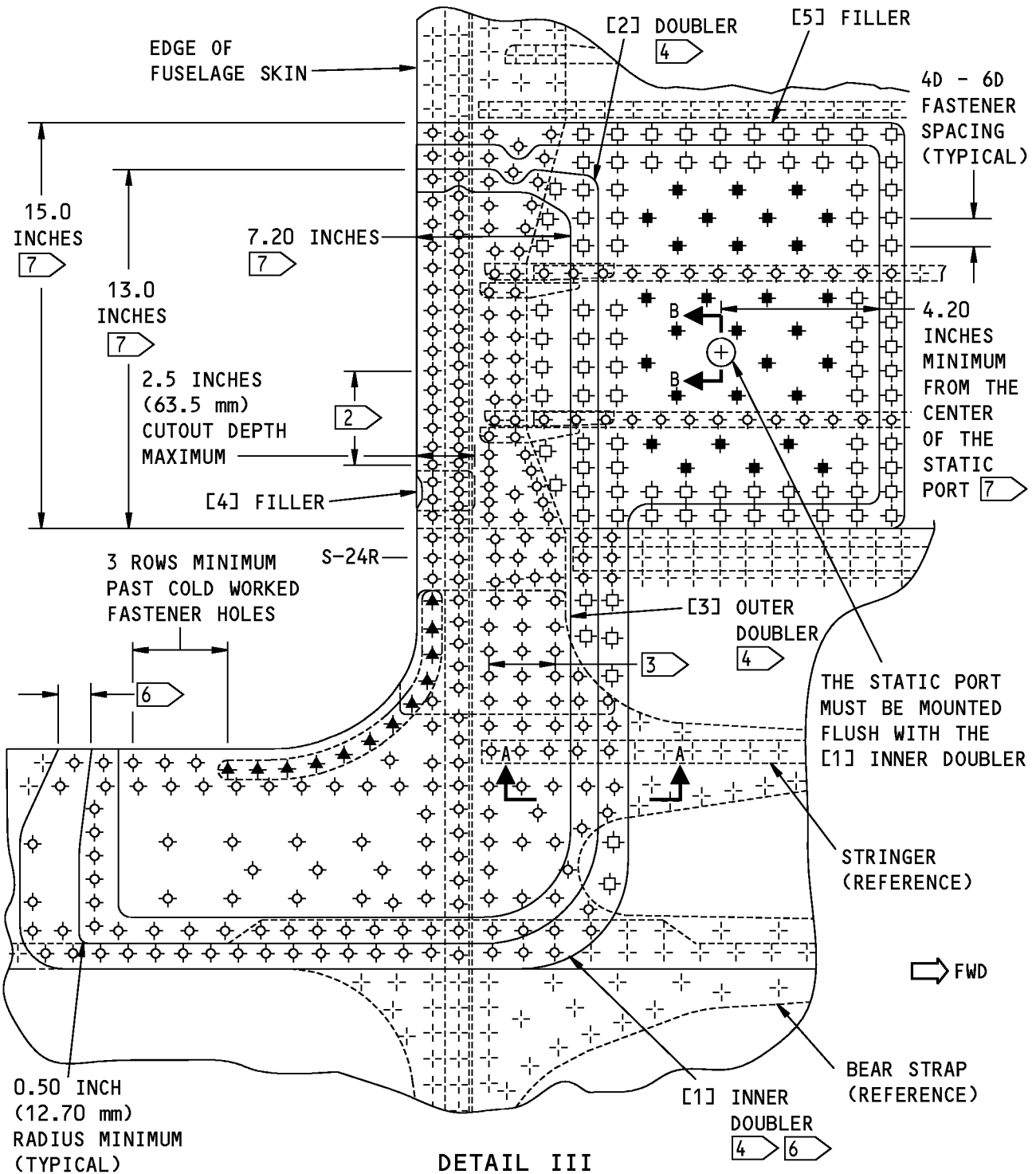


CRITICAL FASTENER ROW

**AFT CARGO DOOR REPAIR AT A LAP SPLICE**

**Layout of the Repair Parts  
Figure 202 (Sheet 2 of 5)**

**STRUCTURAL REPAIR MANUAL**

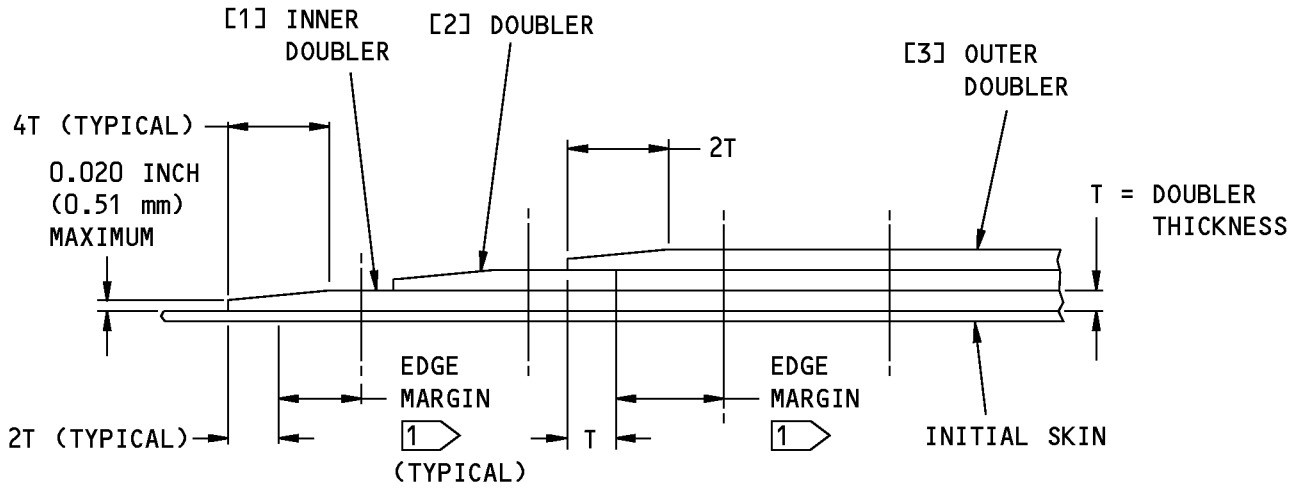


**DETAIL III**  
**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

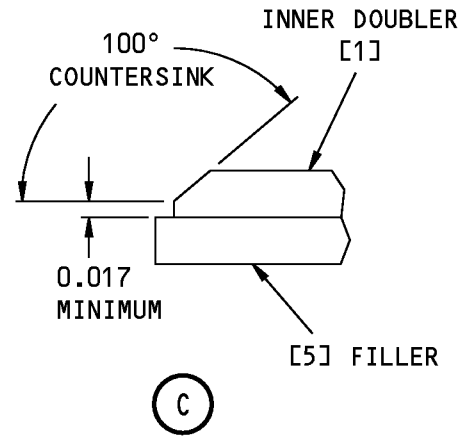
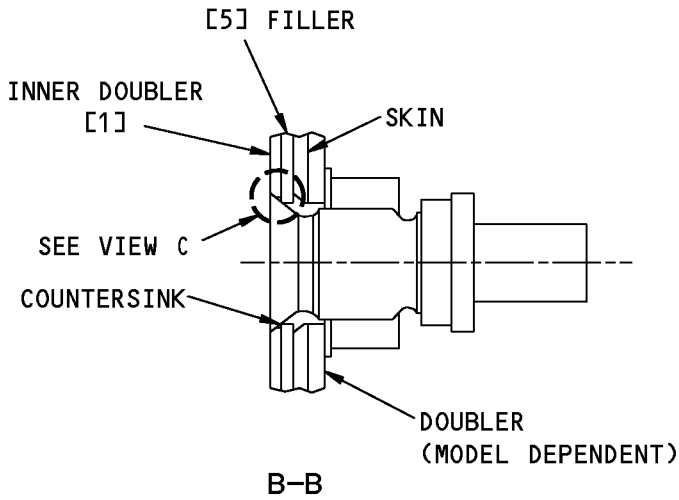
**Layout of the Repair Parts**  
**Figure 202 (Sheet 3 of 5)**



**STRUCTURAL REPAIR MANUAL**



A-A



VIEW IS ROTATED 90° CLOCKWISE

**Layout of the Repair Parts  
Figure 202 (Sheet 4 of 5)**

**STRUCTURAL REPAIR MANUAL**

**FASTENER SYMBOLS**

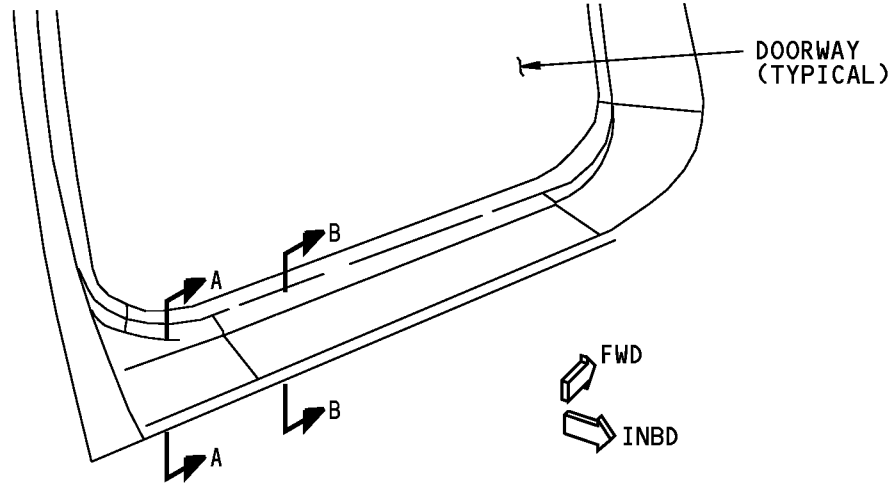
- |- REFERENCE FASTENER LOCATION.
- ⊙ INITIAL FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES. INSTALL THE SAME INITIAL RIVET AT ALL INITIAL DOUBLE FLUSH RIVET LOCATIONS (A 1/32 INCH OVERSIZE FASTENER IS PERMITTED). INSTALL SRM APPROVED HEX DRIVE BOLTS AND NUTS COMMON TO THE FRAME OUTER CHORD ALONG THE AFT EDGE OF THE CUTOUT IN SHIFTED TRANSITION FIT HOLES. TORQUE AS GIVEN IN BAC5004-2 IF THE FAY SURFACE SEALANT HAS BEEN APPLIED AGAIN BETWEEN THE FRAME CHORD AND THE MATING SKIN. INSTALL HEX-DRIVE BOLTS WET WITH BMS 5-95 SEALANT.
- ⊕ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 4D-6D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ⊖ REPAIR FASTENER LOCATIONS. INSTALL A BACB30NW6K( )Y HEX-DRIVE BOLT WITH A BACC30R COLLAR IN TRANSITION FIT HOLES AT 8D-10D SPACING. INSTALL WET WITH BMS 5-95 SEALANT.
- ▲ COLDWORKED FASTENER HOLES. INSTALL THE SAME COUNTERSUNK RIVETS AS THE INITIAL FASTENERS. IF 0.030 INCH DIAMETER OVERSIZE RIVETS ARE NECESSARY, THEN COLDWORK THE HOLES AS GIVEN IN BAC 5973, CLASS I.

**NOTES**

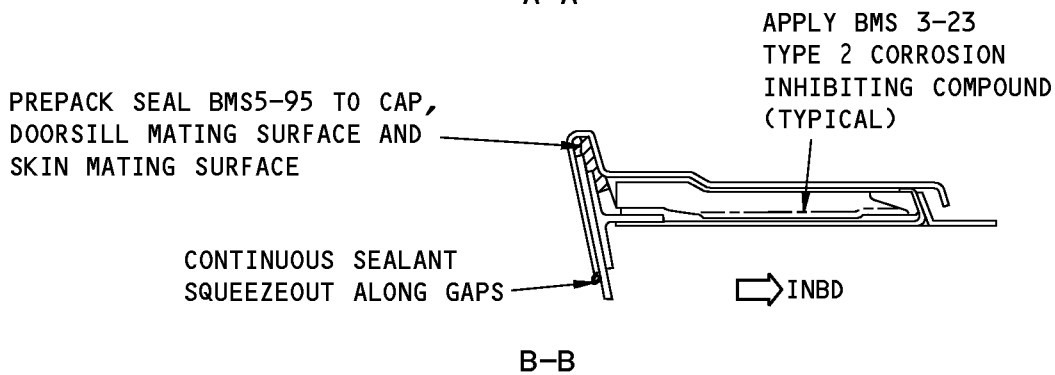
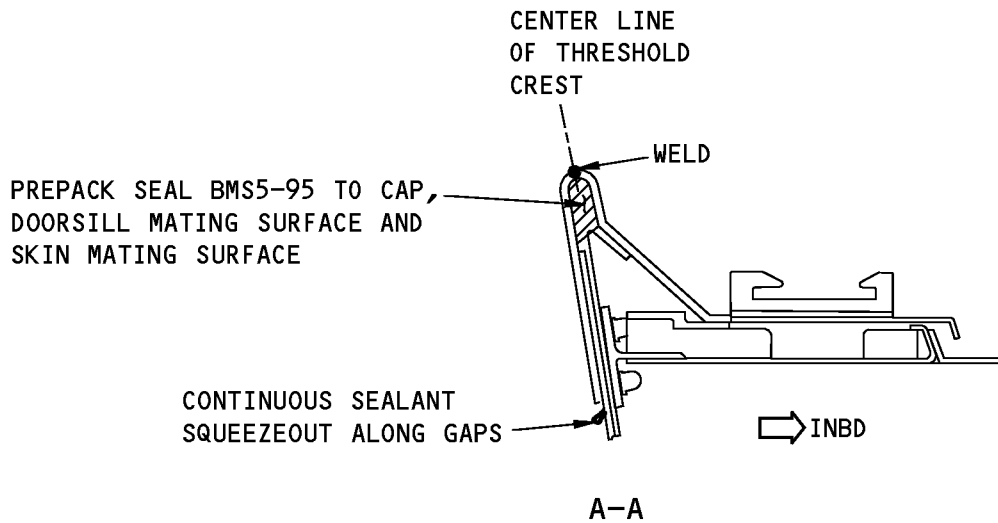
- MAKE SURE THERE IS A MINIMUM EDGE MARGIN OF 2D (WHERE D = FASTENER DIAMETER) AT ALL LOCATIONS. MAKE SURE THE REPAIR PARTS DO NOT END ON A STRINGER OR A FRAME.
- 1 REFER TO SRM 51-40-06 FOR THE EDGE MARGIN FOR A 100 DEGREE HEAD HEX DRIVE BOLT.
- 2 MAKE SURE THERE ARE 6 FASTENER ROWS MINIMUM ABOVE AND BELOW THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.
- 3 MAKE SURE THERE ARE 3 FASTENER ROWS MINIMUM BEYOND THE TRIMOUT LOCATION IN THE [3] OUTER DOUBLER.
- 4 DO NOT TERMINATE THE [3] OUTER DOUBLER, [2] DOUBLER OR [1] INNER DOUBLER ON THE LAP SPLICE. DO NOT TERMINATE THE DOUBLERS AT A COLDWORKED FASTENER HOLE LOCATION.
- 5 THE [1] INNER DOUBLER MUST STOP A MINIMUM OF 3 FASTENER ROWS BEFORE THE TANGENT POINT OF THE CORNER RADIUS. IF THE DOUBLERS NEED TO BE EXTENDED TO GO AROUND THE CORNER, THEN REFER TO DETAIL III.
- 6 AT THE LOWER AFT CORNER THE [1] INNER DOUBLER WILL ONLY EXTEND PAST THE [2] DOUBLER BY ONE FASTENER ROW. REFER TO DETAIL III.
- 7 IT IS IMPORTANT TO KEEP THIS DIMENSION (+/-0.50 INCH) WHEN YOU ARE ADJACENT TO THE SECONDARY STATIC PORT. REFER TO DETAIL III.

**Layout of the Repair Parts  
Figure 202 (Sheet 5 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**

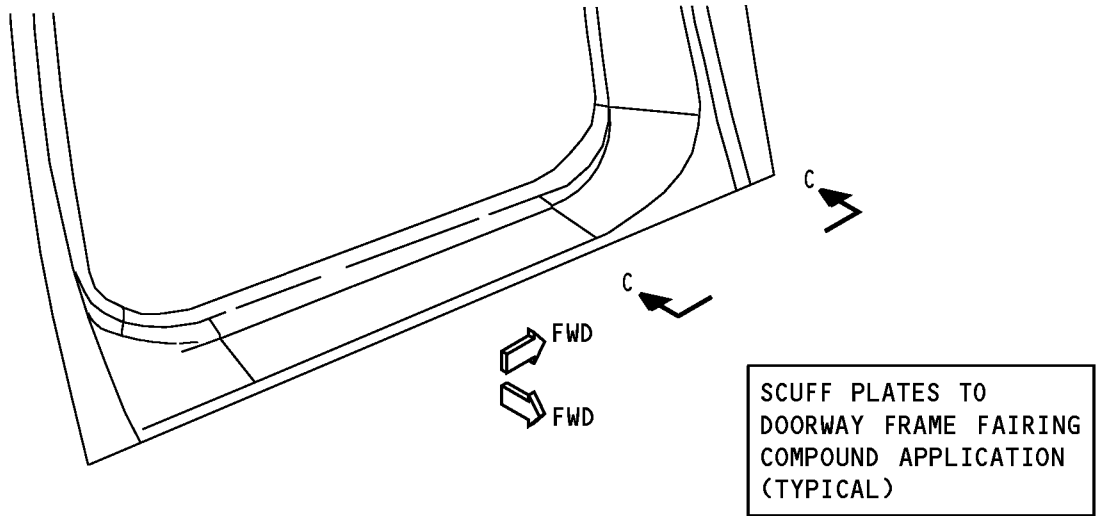


**THRESHOLD INSTALLATION (TYPICAL)**

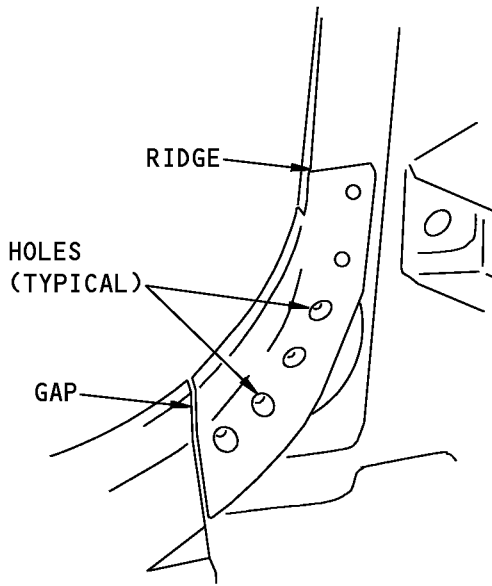


**Skin, Doubler, and Bear Strap at Door Cutouts  
Figure 203 (Sheet 1 of 2)**

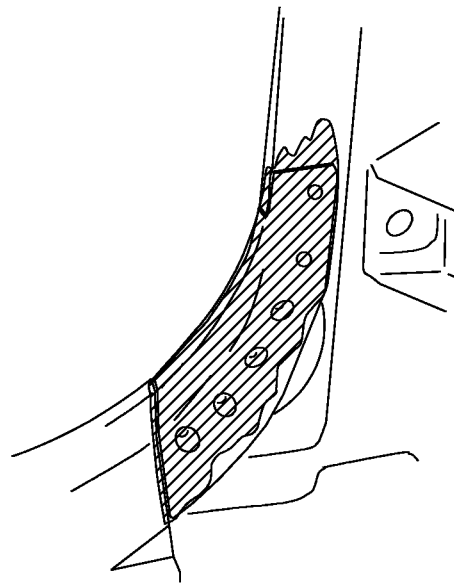
**737-800  
STRUCTURAL REPAIR MANUAL**



**FAIRING COMPOUND APPLICATION**



**BEFORE APPLICATION  
OF FAIRING COMPOUND**



**AFTER APPLICATION  
OF FAIRING COMPOUND**

C-C

**Skin, Doubler, and Bear Strap at Door Cutouts  
Figure 203 (Sheet 2 of 2)**



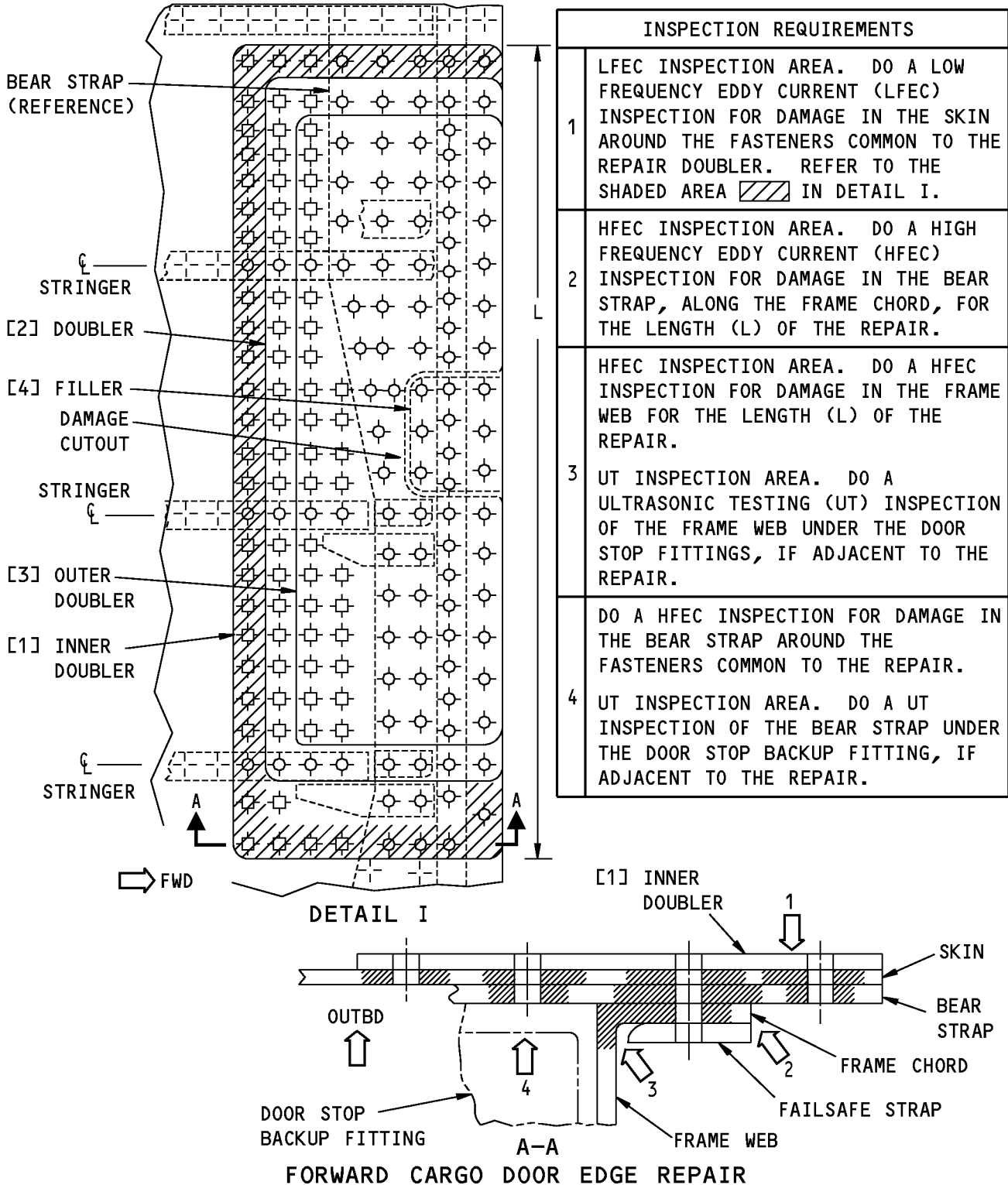
737-800

## STRUCTURAL REPAIR MANUAL

### 5. Inspection Requirements

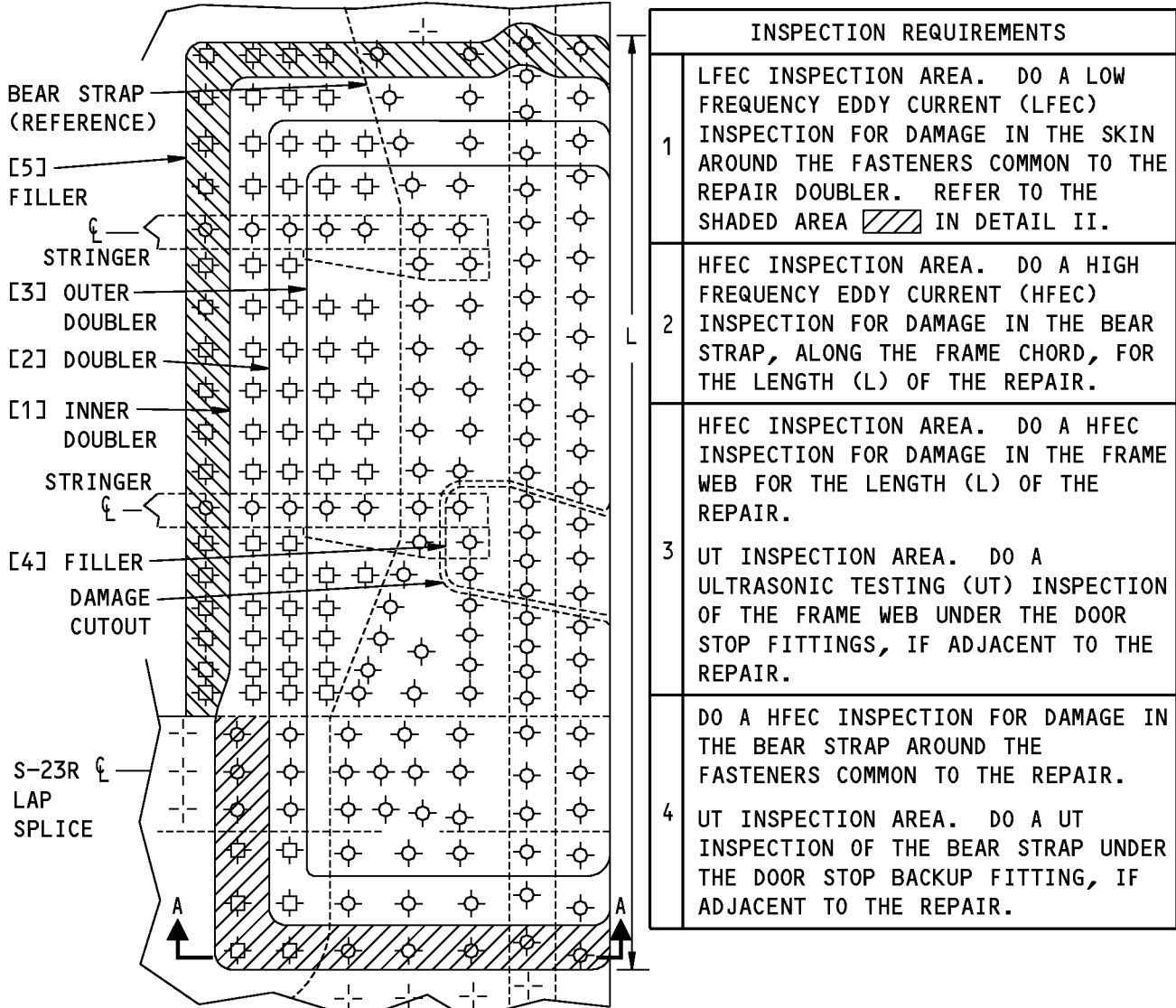
- A. Do the inspections as shown in Figure 204/REPAIR 25 with the steps that follow (Refer to 51-00-06 for the different categories of repairs.):
- (1) The threshold for the start of supplemental inspections is 56,000 flight cycles after the installation of this repair if all fastener holes in the repair are:
    - (a) New,
    - (b) Oversized, or
    - (c) Not changed from their initial condition.
  - (2) Do an external Low Frequency Eddy Current inspection (LFEC) for damage in the skin around the fasteners at each 3,500 flight cycle interval, or more frequently.
  - (3) Do an internal High Frequency Eddy Current inspection (HFEC) for damage in the bearstrap along the frame chord along the length of the repair at each 3,500 flight cycle interval, or more frequently.
  - (4) Do the inspections that follow for damage in the frame web at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the frame web along the length of the repair.
    - (b) Ultrasonic inspect the frame web under the door stop fittings if common with the repair.
  - (5) Do the inspections that follow for damage in the bearstrap at each 3,500 flight cycles, or more frequently.
    - (a) High Frequency Eddy Current (HFEC) inspect the bearstrap around fasteners common to the repair.
    - (b) Ultrasonic inspect the bearstrap under the door stop backup fitting if common with the repair.
- B. For repair doublers that go around the corner in Figure 202/REPAIR 24, Detail III, accomplish inspection requirements in Figure 204/REPAIR 25, Detail III.

**STRUCTURAL REPAIR MANUAL**

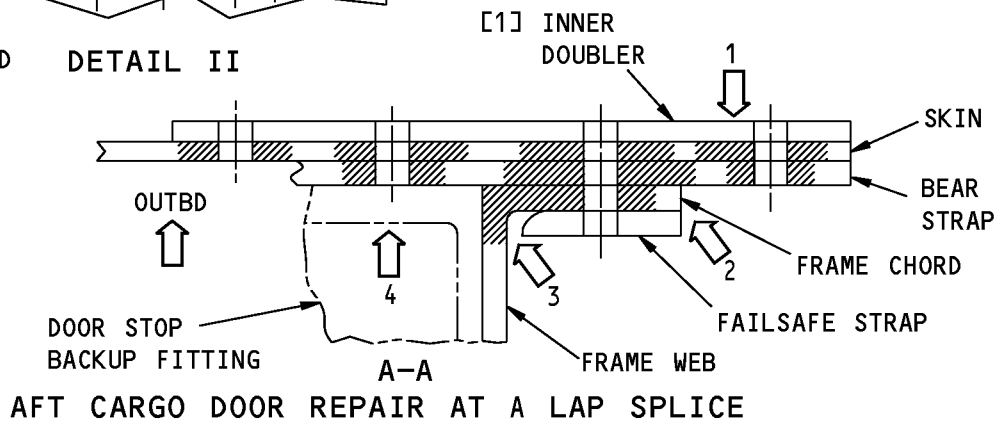


**Repair Inspection Requirements  
Figure 204 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



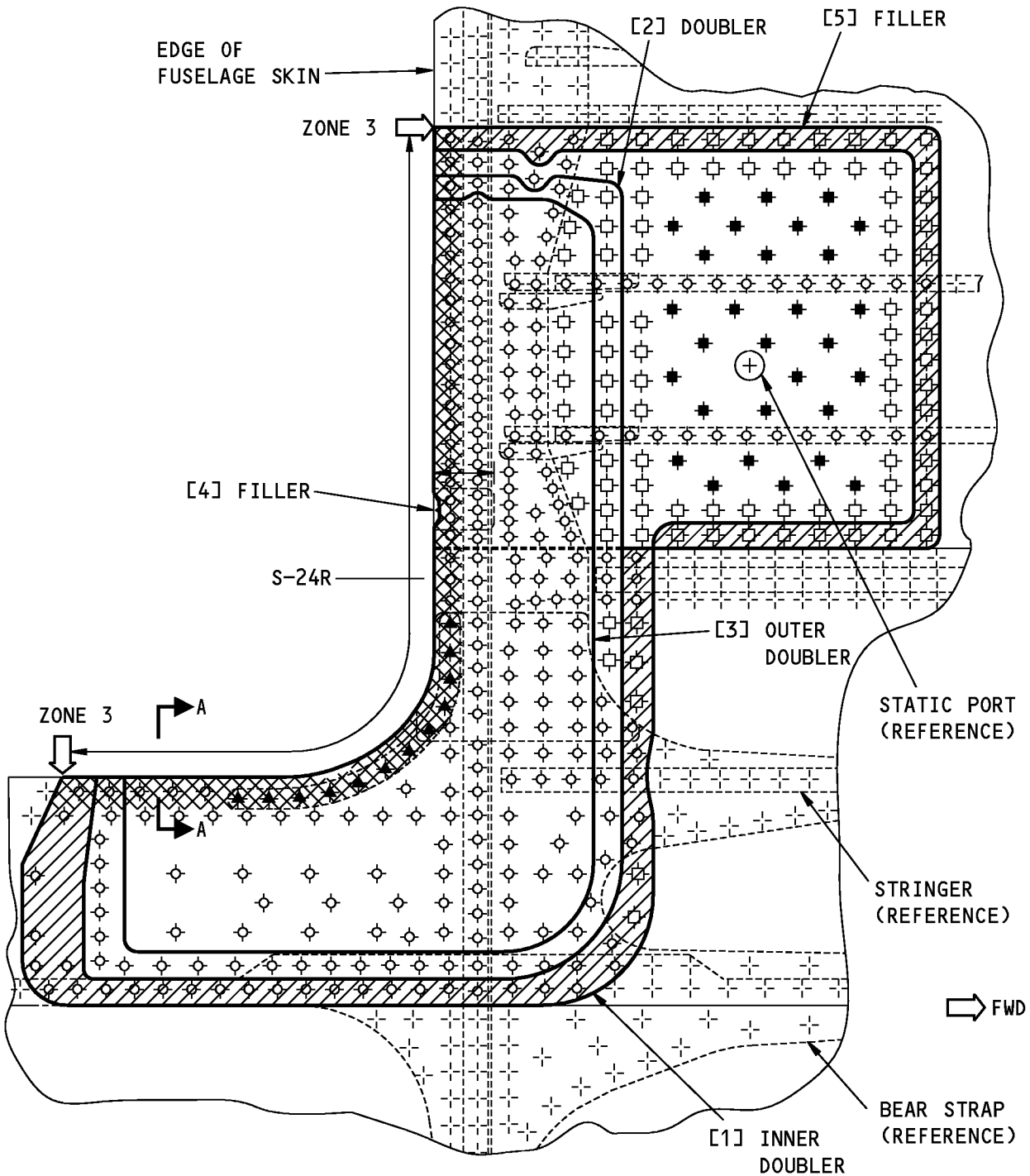
FWD **DETAIL II**



**AFT CARGO DOOR REPAIR AT A LAP SPLICE**

**Repair Inspection Requirements  
Figure 204 (Sheet 2 of 4)**

**STRUCTURAL REPAIR MANUAL**



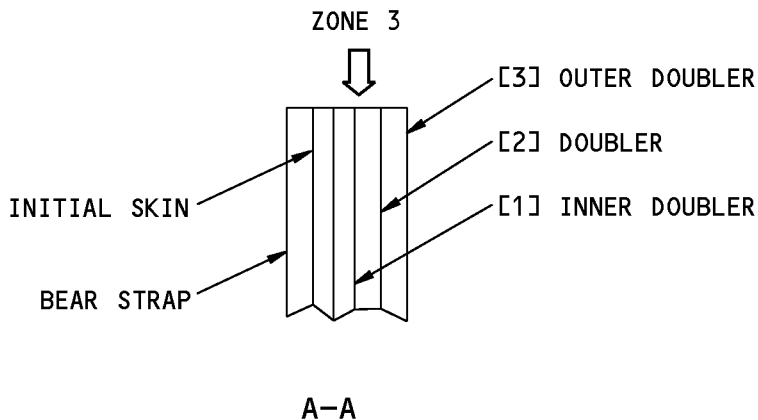
**DETAIL III**




**FORWARD CARGO DOOR REPAIR AT THE LAP SPLICE**

**Repair Inspection Requirements  
Figure 204 (Sheet 3 of 4)**



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STRUCTURAL REPAIR MANUAL**



-  ZONE 1 - LOW FREQUENCY EDDY CURRENT (LFEC) INSPECTION OF THE SKIN AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.
-  ZONE 2 - DETAIL VISUAL INSPECTION OF THE EXTERNAL DOUBLER AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY
-  ZONE 3 - HIGH FREQUENCY EDDY CURRENT (HFEC) INSPECTION OF THE SKIN AND THE DOUBLER EDGES, ALONG THE DOOR CORNER RADIUS AT EACH 3500 FLIGHT CYCLE INTERVAL, OR MORE FREQUENTLY.

**Repair Inspection Requirements  
Figure 204 (Sheet 4 of 4)**



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**STRUCTURAL REPAIR MANUAL**

**REPAIR 28 - DELETED**

**1. Repair 28**

- A. The data for Repair 28 has been moved to Repair 19.



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**STRUCTURAL REPAIR MANUAL**

**REPAIR 29 - DELETED**

**1. Repair 29**

- A. The data for Repair 29 has been moved to Repair 20.



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## STRUCTURAL REPAIR MANUAL

### ALLOWABLE DAMAGE 1 - FUSELAGE STRINGERS

#### 1. Applicability

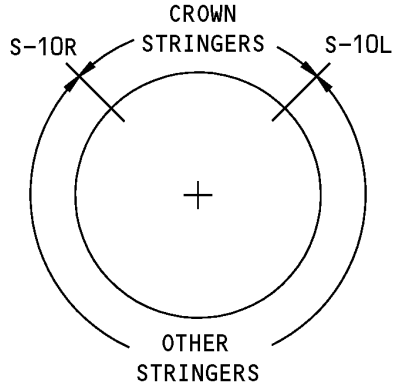
A. Allowable Damage 1 is applicable to damage to formed or extruded fuselage stringers.

#### 2. General

- A. Refer to Fuselage Stringer Locations, Figure 101/ALLOWABLE DAMAGE 1 for the damage of crown stringers and other stringers along the fuselage.
- B. Refer to Stringer Types and Allowable Damage Zones, Figure 102/ALLOWABLE DAMAGE 1 for the definition of the different stringer types allowable damage zones.
- C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- D. Remove the damage as necessary.
- (1) Refer to 51-10-02 for the inspection and the removal of the damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- E. After you remove the damage, do as follows:
- (1) Refer to 51-20-01. Apply a chemical conversion layer to the reworked area.
  - (2) Refer to SOPM 20-41-02. Apply one layer of BMS 10-11, Type I primer to the reworked area.



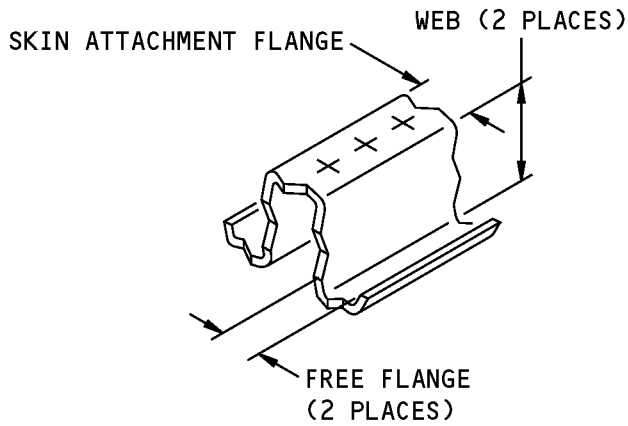
**737-800**  
**STRUCTURAL REPAIR MANUAL**



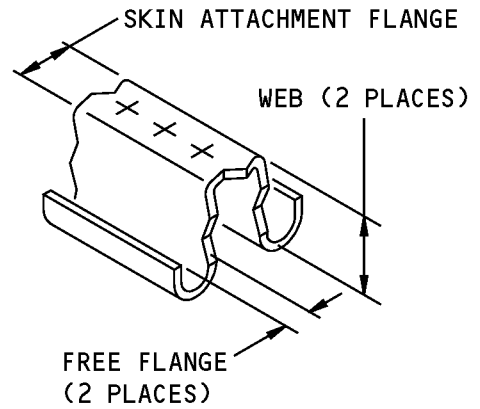
**SECTION THROUGH THE  
CENTER OF THE FUSELAGE**

**Fuselage Stringer Locations  
Figure 101**

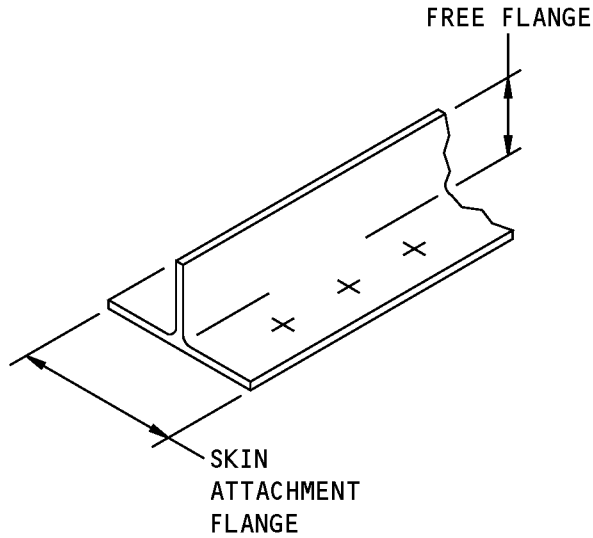
**737-800  
STRUCTURAL REPAIR MANUAL**



**TYPICAL STRINGER  
SECTION (FORMED)**



**TYPICAL CROWN  
STRINGER SECTION (FORMED)**



**TYPICAL EXTRUDED  
STRINGER SECTION**

**Stringer Types and Allowable Damage Zones  
Figure 102**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Formed Stringers

##### (1) Webs

##### (a) Cracks:

- 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .

##### (b) Nicks, Scratches, Gouges, and Corrosion:

- 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A , B , and C .

##### (c) Dents are permitted as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail D .

##### (d) Holes and Punctures:

- 1) Damage is not permitted in the Crown Stringers.
- 2) Damage in other stringers is permitted if:
  - a) It is a maximum of 0.25 inch diameter
  - b) It is a minimum of 1.0 inch from other damage
  - c) It is a minimum of 0.50 inch from a hole, flange edge, or a radius
  - d) You install a 2117-T3 or 2117-T4 aluminum rivet without sealant.
    - Install a protruding head rivet if there are no mating surfaces.
    - Install a countersunk head rivet if there are mating surfaces. Make sure the depth of the countersink is not more than 67% of the material thickness.

**NOTE:** Do not join two parts when you install the rivet.

##### (2) Skin Attachment Flange

##### (a) Cracks:

- 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .

##### (b) Nicks, Scratches, Gouges, and Corrosion:

- 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C .

##### (c) Dents are not permitted.



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STRUCTURAL REPAIR MANUAL**

- (d) Holes and Punctures are not permitted.
- (3) Free Flange
  - (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Detail A .
  - (b) Nicks, Scratches, Gouges, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits - Formed Stringer Section, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures:
    - 1) Damage is not permitted in the Crown Stringers.
    - 2) Damage in other stringers is permitted if:
      - a) It is a maximum of 0.25 inch diameter
      - b) It is a minimum of 1.0 inch from other damage
      - c) It is a minimum of 0.50 inch from a hole, flange edge, or a radius.
      - d) You install a 2117-T3 or 2117-T4 aluminum rivet without sealant.
        - Install a protruding head rivet if there are no mating surfaces.
        - Install a countersunk head rivet when there are mating surfaces. Make sure the depth of the countersink is not more than 67% of the material thickness.

**NOTE:** Do not join two parts when you install the rivet.

**Table 101:**

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
41	S-1 to S-28	Sta 178 to Sta 360	No Limit	0.10T





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STRUCTURAL REPAIR MANUAL**

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH					
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)	
43	S-1 to S-7	Sta 360 to Sta 540	No Limit	0.10T	
		Sta 360 to Sta 500	No Limit	0.10T	
	S-8	Sta 500 to Sta 500B	10 inches	0.10T	
		Sta 500B to Sta 540	No Limit	0.10T	
		Sta 360 to Sta 500C	No Limit	0.10T	
		Sta 500C to Sta 500G	10 inches	0.10T	
	S-9	Sta 500G to Sta 540	No Limit	0.10T	
		S-10	Sta 360 to Sta 500E	No Limit	0.10T
			Sta 500E to Sta 500H	10 inches	0.10T
	43	S-10	Sta 500H to Sta 540	No Limit	0.10T
S-11 to S-13			Sta 360 to Sta 540	No Limit	0.15T
S-14 to S-15 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)			Sta 360 to Sta 500G	No Limit	0.15T
		Sta 500G to Sta 540	10 inches	0.10T	
S-14 (For Airplanes That Have Completed Service Bulletin 737-21-1149)		Sta 360 to Sta 500G	No Limit	0.15T	
		Sta 500G to Sta 540	10 inches	0.10T	
S-15 (For Airplanes That Have Completed Service Bulletin 737-21-1149)		Sta 360 to Sta 500E	No Limit	0.15T	
		Sta 500E to Sta 540	10 inches	0.10T	
S-16		Sta 360 to Sta 500D	No Limit	0.15T	
		Sta 500D to Sta 540	10 inches	0.10T	
S-17 (Crease Beam)		Sta 360 to Sta 540	Refer to 53-30-13 for the allowable damage limits		



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STRUCTURAL REPAIR MANUAL**

<b>MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH</b>				
<b>BODY SECTION</b>	<b>STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)</b>	<b>BODY STATION</b>	<b>MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)</b>	<b>MAXIMUM DAMAGE DEPTH PERMITTED (X)</b>
43	S-18 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500G	10 inches	0.10T
		Sta 500G to Sta 540	No Limit	0.15T
	S-18 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500I	10 inches	0.10T
		Sta 500I to Sta 540	No Limit	0.15T
	S-19	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500D	No Limit	0.15T
		Sta 500D to Sta 500I	10 inches	0.10T
		Sta 500I to Sta 540	No Limit	0.15T
	S-20 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 520	10 inches	0.10T
		Sta 520 to Sta 540	No Limit	0.15T
	S-20 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 520	10 inches	0.10T
		Sta 520 to Sta 540	No Limit	0.15T
	S-21 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T
		Sta 480 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.15T
S-21 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 480	No Limit	0.15T	
	Sta 480 to Sta 500B	10 inches	0.10T	
	Sta 500B to Sta 500D	No Limit	0.15T	
	Sta 500D to Sta 500H	10 inches	0.10T	
	Sta 500H to Sta 540	No Limit	0.15T	

ALLOWABLE DAMAGE 1

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MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
43	S-22	Sta 360 to Sta 500E	No Limit	0.15T
		Sta 500E to Sta 500H	10 inches	0.10T
		Sta 500H to Sta 540	No Limit	0.15T
	S-23 to S-24 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 540	No Limit	0.15T
		S-23 to S-24 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500E	No Limit
	Sta 500E to Sta 500G		10 inches	0.10T
	Sta 500G to Sta 540		No Limit	0.15T
	S-25 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500	No Limit	0.15T
		Sta 500 to Sta 500B	10 inches	0.10T
		Sta 500B to Sta 540	No Limit	0.15T
	S-25 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 360 to Sta 500	No Limit	0.15T
		Sta 500 to Sta 500F	10 inches	0.10T
		Sta 500F to Sta 540	No Limit	0.15T
	S-26 to S-27	Sta 360 to Sta 540	No Limit	0.15T
	S-28	Sta 360 to Sta 500H	No Limit	0.15T
Keel Beam	Sta 500H to Sta 540	Refer to 53-30-12 for the allowable damage limits		
44	S-1 to S-10	Sta 540 to Sta 727	No Limit	0.10T
46	S-1 to S-2	Sta 727 to Sta 727J	No Limit	0.10T
		Sta 727J to Sta 887	10 inches	0.10T
	S-3	Sta 727 to Sta 787	No Limit	0.10T
		Sta 787 to Sta 887	10 inches	0.10T
	S-4	Sta 727 to Sta 767	No Limit	0.10T
		Sta 767 to Sta 827	10 inches	0.10T
Sta 827 to Sta 887		No Limit	0.10T	



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STRUCTURAL REPAIR MANUAL**

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
46	S-5 to S-8	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 887	10 inches	0.10T
	S-9 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 747	10 inches	0.10T
		Sta 747 to Sta 867	No Limit	0.10T
		Sta 867 to Sta 887	10 inches	0.10T
	S-9 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727G	No Limit	0.10T
		Sta 727G to Sta 767	10 inches	0.10T
		Sta 767 to Sta 867	No Limit	0.10T
		Sta 867 to Sta 887	10 inches	0.10T
	S-10	Sta 727 to Sta 887	No Limit	0.10T
	S-11 to S-13	Sta 727 to Sta 887	No limit	0.15T
	S-14 to S-15	Sta 727 to Sta 807	No Limit	0.15T
		Sta 807 to Sta 887	10 inches	0.10T
	S-16	Sta 727 to Sta 887	No Limit	0.15T
	S-17 (Crease Beam)	Sta 727 to Sta 887	Damage is not permitted	
	S-18	Sta 727 to Sta 727C	10 inches	0.10T
		Sta 727C to Sta 887	No Limit	0.15T
	S-19	Sta 727 to Sta 727B	Damage is not permitted	
		Sta 727B to Sta 887	No Limit	0.15T
	S-20 to S-21	Sta 727 to Sta 747	No Limit	0.15T
Sta 747 to Sta 807		10 inches	0.10T	
Sta 807 to Sta 887		No Limit	0.15T	



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STRUCTURAL REPAIR MANUAL**

MAXIMUM DAMAGE DIMENSION AND MAXIMUM REMOVAL DEPTH				
BODY SECTION	STRINGERS (LEFT AND RIGHT SIDES OF THE FUSELAGE)	BODY STATION	MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED (D)	MAXIMUM DAMAGE DEPTH PERMITTED (X)
46	S-22 to S-24	Sta 727 to Sta 887	No Limit	0.15T
	S-25	Sta 727 to Sta 727D	No Limit	0.15T
		Sta 727D to Sta 727G	10 inches	0.10T
		Sta 727G to Sta 887	No Limit	0.15T
	S-26 (For Airplanes That Have Not Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727F	No Limit	0.15T
		Sta 727F to Sta 727H	10 inches	0.10T
		Sta 727H to Sta 887	No Limit	0.15T
	S-26 (For Airplanes That Have Completed Service Bulletin 737-21-1149)	Sta 727 to Sta 727B	No Limit	0.15T
		Sta 727B to Sta 727H	10 inches	0.10T
		Sta 727H to Sta 887	No Limit	0.15T
	Keel Beam	Sta 727 to Sta 827	Refer to 53-60-12 for the allowable damage limits	
	S-27	Sta 827 to Sta 887	No Limit	0.15T
47	S-1 TO S-28	Sta 887 to 1016	No Limit	0.10T
48	S-1 to S2	Sta 1016 to Sta 1156	No limit	0.10T
	S-3	Sta 1016 to Sta 1040	10 inches	0.10T
		Sta 1040 to Sta 1156	No Limit	0.10T
	S-4 TO S-10	Sta 1016 to Sta 1156	No Limit	0.10T
	S-11 to S-14	Sta 1016 to Sta 1156	No Limit	0.15T
	S-15	Sta 1016 to Sta 1138	No Limit	0.10T
		Sta 1138 to Sta 1156	10 inches	0.10T
S-16 TO S-27	Sta 1016 to Sta 1156	No Limit	0.15T	

**B. Extruded Stringers**

(1) Skin Attachment Flange

(a) Cracks

1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A .

(b) Nicks, Scratches, Gouges, and Corrosion:

1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , D , and E .

(c) Dents are not permitted.

(d) Holes and Punctures are not permitted.

(2) Free Flange

(a) Cracks:

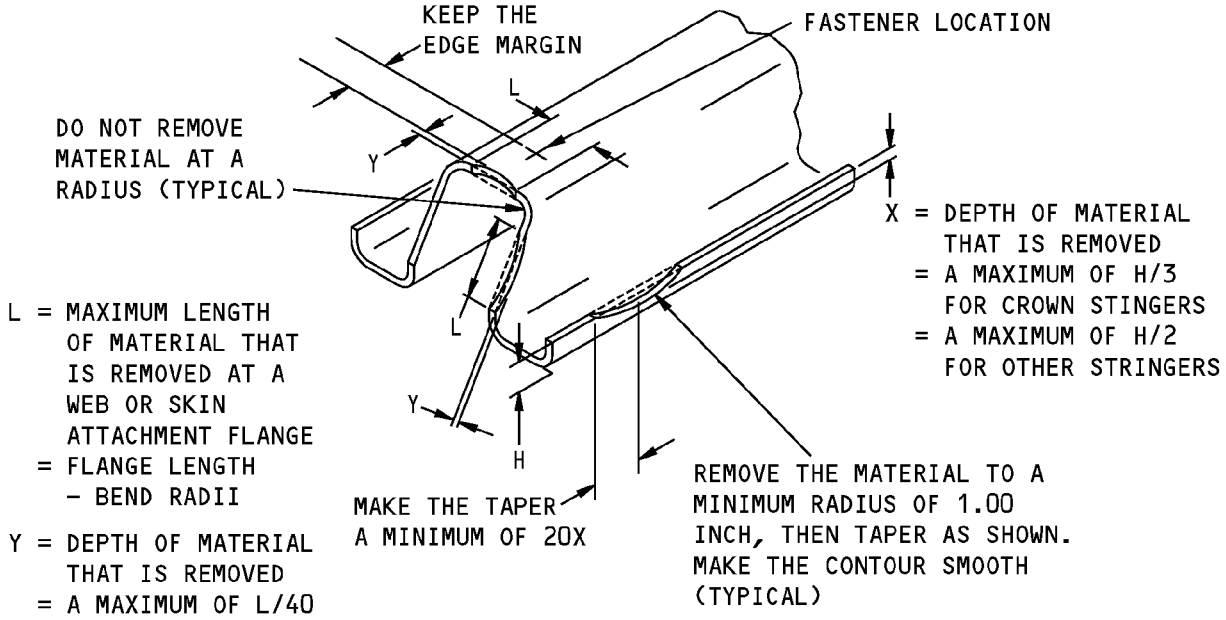


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## **STRUCTURAL REPAIR MANUAL**

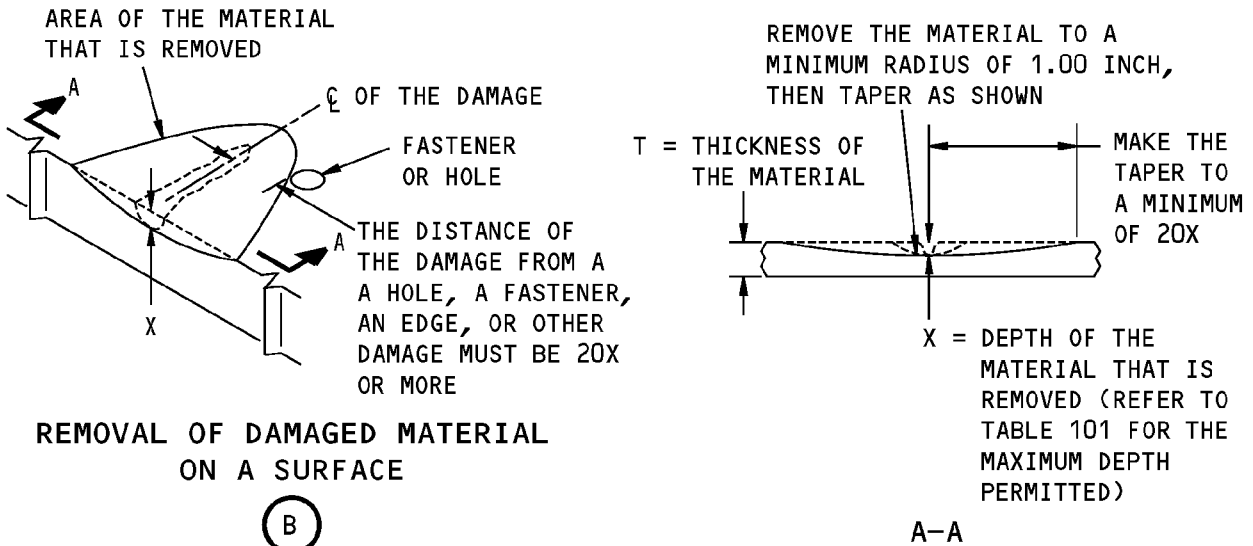
- 1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and C .
- (b) Nicks, Scratches, Gouges, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Extruded Stringer Section, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE ON AN EDGE**

(A)

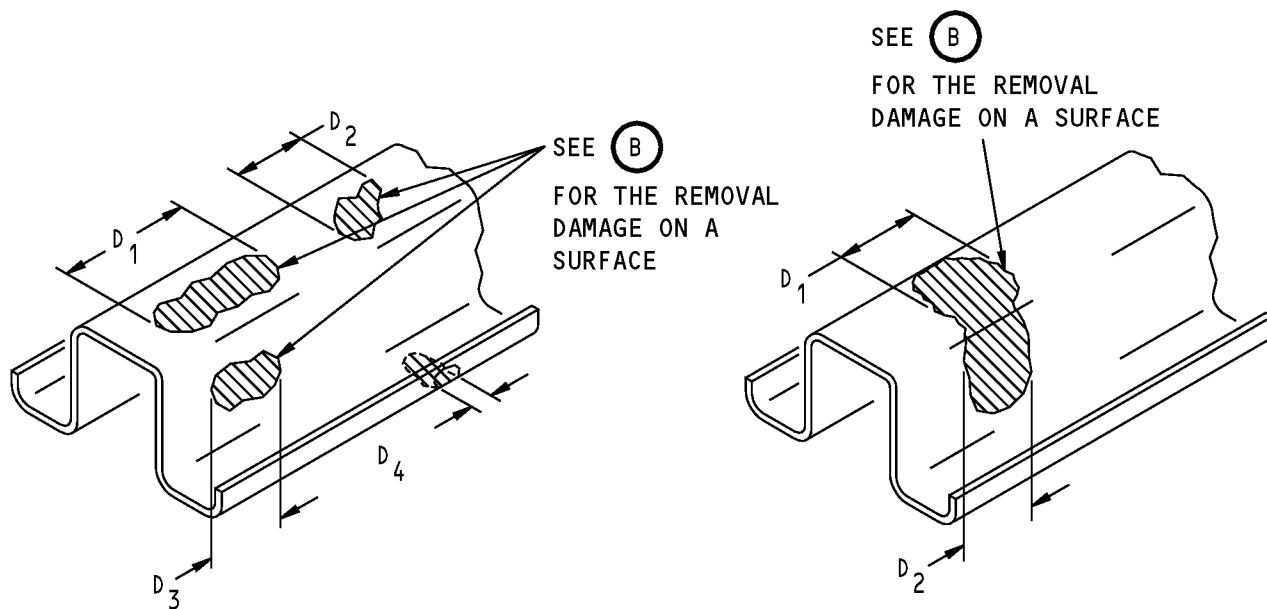


**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(B)

**Allowable Damage Limits - Formed Stringer Section**  
**Figure 103 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**DAMAGE REMOVAL IN MORE THAN ONE AREA**

**DAMAGE REMOVAL IN ONE CONTINUOUS AREA FOR MORE THAN ONE FLANGE**

- $D_1$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 1
- $D_2$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 2
- $D_3$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 3
- $D_4$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 4
- $D_T$  = TOTAL DIMENSION OF DAMAGE THAT IS REMOVED IN ONE FRAME BAY  
 $= D_1 + D_2 + D_3 + D_4$

- $D_1$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 1 ON ONE STRINGER SURFACE
- $D_2$  = DIMENSION OF THE DAMAGE THAT IS REMOVED AT LOCATION 2 ON A DIFFERENT STRINGER SURFACE
- $D_T$  = TOTAL DIMENSION OF DAMAGE THAT IS REMOVED IN ONE FRAME BAY  
 $= D_1 + D_2$

(REFER TO THE TABLE 101 FOR THE MAXIMUM TOTAL DAMAGE DIMENSION PERMITTED)

**NOTE:** YOU CAN HAVE MORE DAMAGE LOCATIONS THAN IS SHOWN IF YOU KEEP THE ALLOWABLE DAMAGE LIMITS.

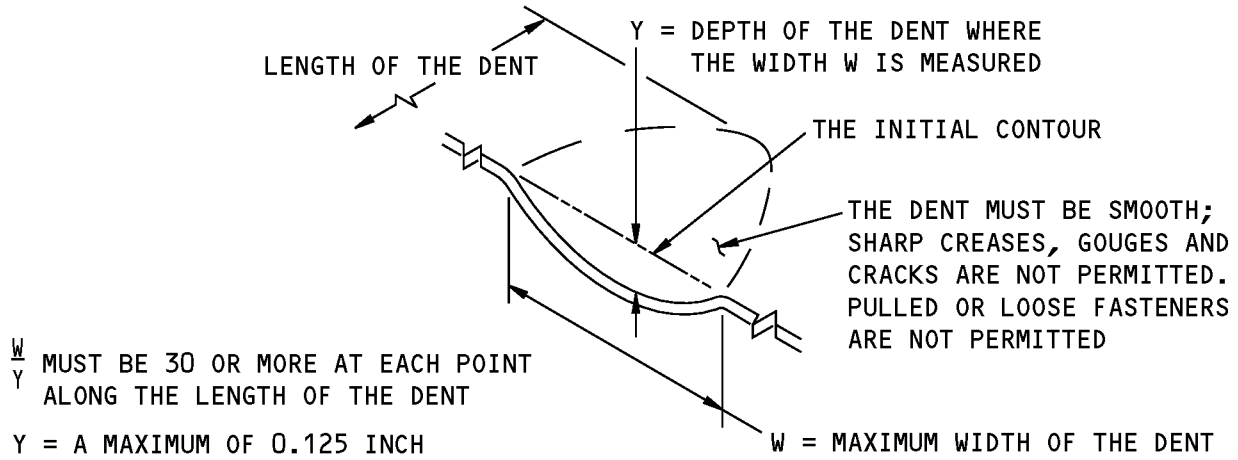
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**



**Allowable Damage Limits - Formed Stringer Section  
Figure 103 (Sheet 2 of 3)**



**737-800  
STRUCTURAL REPAIR MANUAL**

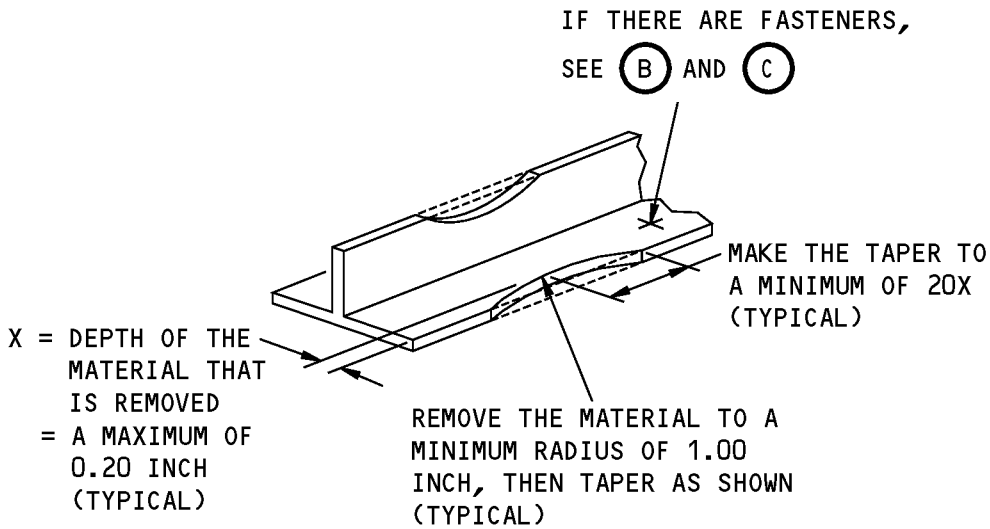


**DENT THAT IS PERMITTED**



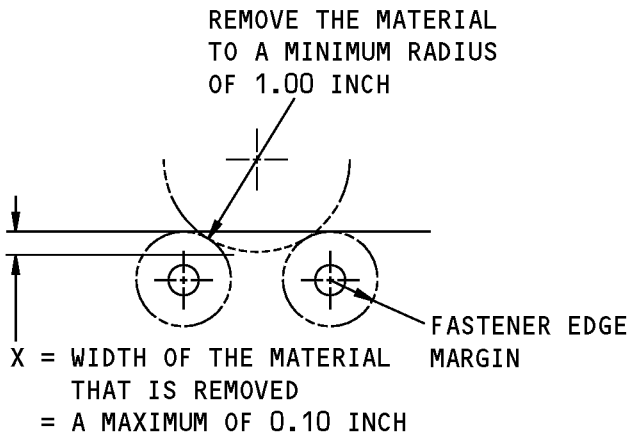
**Allowable Damage Limits - Formed Stringer Section  
Figure 103 (Sheet 3 of 3)**

**STRUCTURAL REPAIR MANUAL**



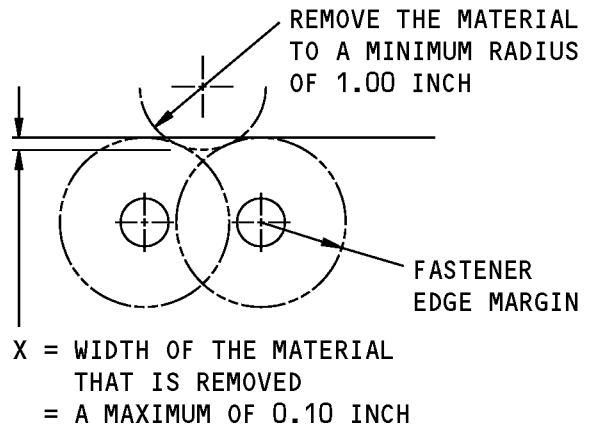
**REMOVAL OF DAMAGE ON AN EDGE**

(A)



**REMOVAL OF DAMAGED MATERIAL AT  
EDGES WHERE THE FASTENER EDGE  
MARGINS DO NOT HAVE AN OVERLAP**

(B)

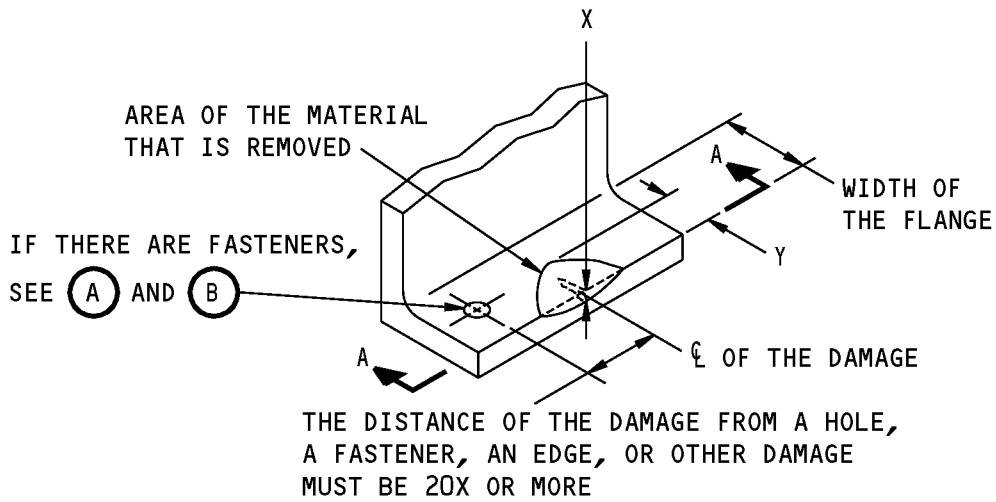


**REMOVAL OF DAMAGED MATERIAL AT  
EDGES WHERE THE FASTENER EDGE  
MARGINS HAVE AN OVERLAP**

(C)

**Allowable Damage Limits - Extruded Stringer Section  
Figure 104 (Sheet 1 of 3)**

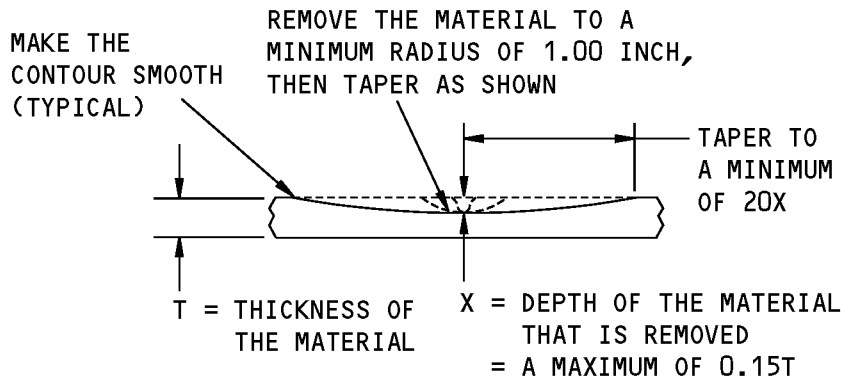
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART**

(D)

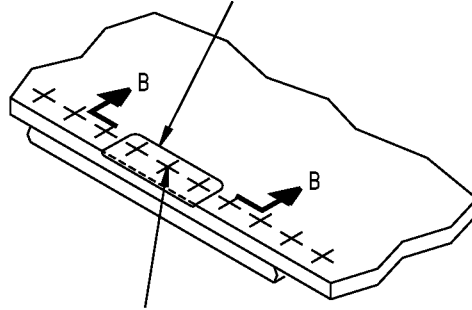


A-A

**Allowable Damage Limits - Extruded Stringer Section  
Figure 104 (Sheet 2 of 3)**

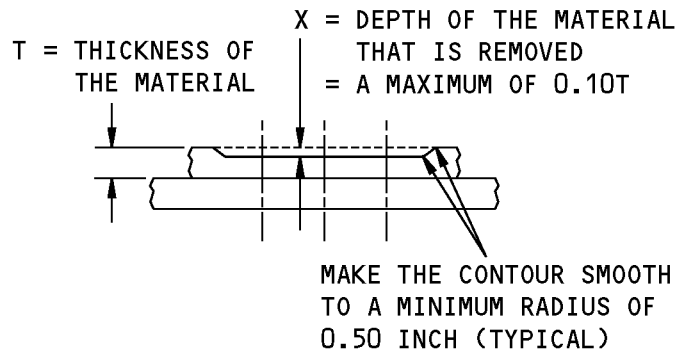
**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**



B-B

**Allowable Damage Limits - Extruded Stringer Section  
Figure 104 (Sheet 3 of 3)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR GENERAL - FORMED FUSELAGE STRINGERS

**1. Applicability**

A. Repair General gives repair data for fuselage stringers made from formed hat sections, only if it is specified in the applicable SRM section.

**2. General**

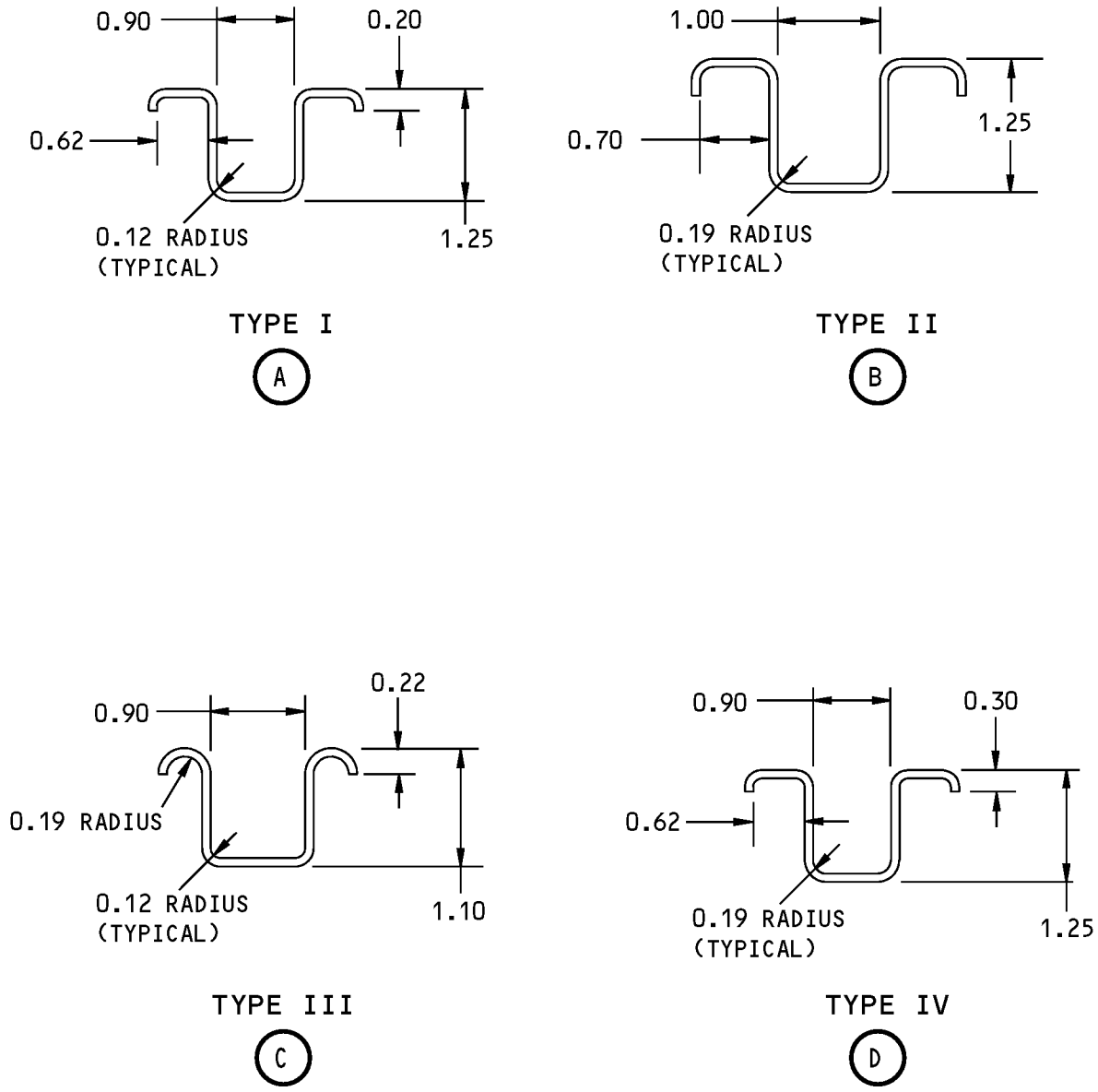
A. Refer to Table 201/REPAIR GENERAL for an index of the different numbered repairs found in this subject.

**Table 201:**

REPAIR INDEX	
REPAIR NUMBER	TITLE
1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
2	Repair for a Type I, Type II, or Type IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
3	Repair for a Type III Fuselage Stringer with General Damage
4	Repair for a Type III Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange

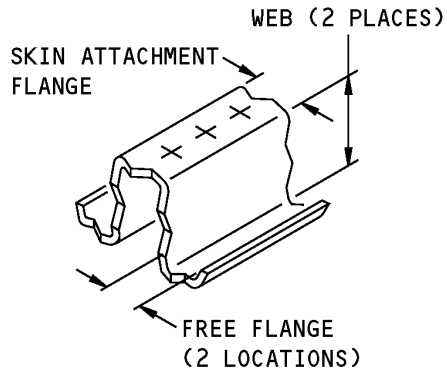
- B. Refer to Stringer Type Identification, Figure 201/REPAIR GENERAL for the definition of the initial stringer types.
- C. Refer to Stringer Repair Zones, Figure 202/REPAIR GENERAL for the definition of stringer repair zones.
- D. On some stringers, channels are installed across the flanges of the stringer at locations between the frames. Keep the channels and install them again when a repair is made. Install the repair fasteners in the initial fastener locations of the channels.

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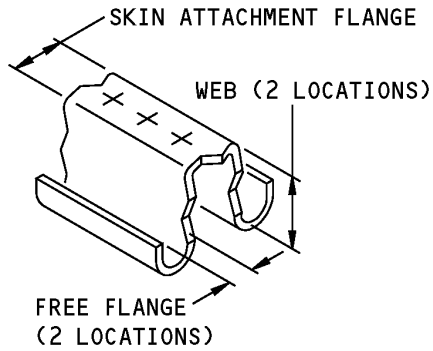


**Stringer Type Identification  
Figure 201**

**737-800**  
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**TYPE I, II, OR IV STRINGER**



**TYPE III STRINGER**

**Stringer Repair Zones**  
**Figure 202**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 1 - REPAIR FOR A TYPE I, TYPE II, OR TYPE IV FUSELAGE STRINGER WITH GENERAL DAMAGE

#### 1. Applicability

- A. Refer to Repair General for the definition of the different types of stringers.
- B. Repair 1 is applicable to Type I, Type II, or Type IV fuselage stringers with:
  - (1) Nicks, scratches, gouges, corrosions, dents, holes, punctures and edge damage.
- C. Repair 1 is not applicable to:
  - (1) Damage that is less than 20 inches from an initial or repair stringer splice
  - (2) Longitudinal cracks in the formed corners
    - (a) Refer to Repair 2 for the repair of longitudinal crack damage.
  - (3) Type III fuselage stringers.
    - (a) Refer to Repair 3 for the repair of general damage.
    - (b) Refer to Repair 4 for the repair of longitudinal cracks.

#### 2. General

- A. Repair 1 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the different categories of repairs. Refer to paragraph 5 for the inspection requirements.
- B. The repair of a 0.040 inch, thick stringer is shown in Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, and Stringer Repair Locations for Damage Across Frame Stations, Figure 204/REPAIR 1.
- C. Refer to Repair for Damage to a Free Flange, Figure 201/REPAIR 1 for the repair of damage to one free flange.
- D. Refer to Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1 for the repair of damage:
  - (1) To both free flanges
  - (2) To vertical webs
  - (3) To the attachment flange
  - (4) In locations where full section repair or replacement is necessary.
- E. Refer to Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1 for an alternative repair to Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1.
- F. Refer to Stringer Repair Locations for Damage Across Frame Stations, Figure 204/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, and Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1 for the repair of damage that is across one or more frame stations.
  - (1) Do not put the repair parts in the area of an initial stringer clip.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage





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(Continued)

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41-00	Airframe Drainage
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

#### 4. Repair Instructions

- A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.
- B. Cut and remove the damaged part of the stringer as shown in the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1).
  - (1) Make sure you do not damage the skin adjacent to the stringer or other adjacent parts.
- C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
- D. Make the repair parts.
  - (1) Calculate the lengths that are needed for the repair parts.
    - (a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 1.
      - 1) A BACR15GF()D fastener can be used as an alternative to a BACR15CE()D fastener.
      - 2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener
    - (b) Refer to the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1) for the fastener locations and edge margins.
  - (2) Refer to Table 202/REPAIR 1 for the repair part materials.

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- E. Assemble the repair parts as shown in the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1).
  - (1) Make sure that the space between the mating surfaces is less than 0.010 inch.
  - (2) If the space is more than 0.010 inch, install shims that have thickness less than 15 percent of the fastener diameter.
- F. Drill the fastener holes.
  - (1) Refer to the applicable figure (Repair for Damage to a Free Flange, Figure 201/REPAIR 1, Repair for Damage to the Full Stringer Section, Figure 202/REPAIR 1, Repair for Damage to the Full Stringer Section (Alternative Method) , Figure 203/REPAIR 1, Splice Repair for Damage to the Full Stringer Section, Figure 205/REPAIR 1, or Splice Repair for Damage to the Full Stringer Section (Alternative Method), Figure 206/REPAIR 1) for the fastener locations.
  - (2) Refer to Table 201/REPAIR 1 for the minimum diameter and the number of fasteners you need.
- G. Disassemble the repair parts.
- H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

**Table 201:**

<b>MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE CUTOUT</b>				
<b>INITIAL STRINGER THICKNESS INCHES</b>	<b>FASTENERS</b>			
	<b>INITIAL BACR15CE()D or BACR15GF()D</b>		<b>REPAIR BACR15FT()D or MS20470D()</b>	
	<b>MINIMUM DIAMETER INCHES</b>	<b>MINIMUM NUMBER</b>	<b>MINIMUM DIAMETER INCHES</b>	<b>MINIMUM NUMBER IN EACH LONGITUDINAL</b>
0.028	5/32	5	5/32	4
0.032	5/32	5	5/32	4
0.036	5/32	5	5/32	4
0.040	5/32	5	5/32	4
0.045	5/32	5	3/16	4
0.050	5/32	6	3/16	5
0.056	5/32	6	3/16	5
0.063	5/32	7	3/16	6
0.071	5/32	7	3/16	6
0.080	5/32	8	3/16	7
0.090	5/32	8	3/16	7



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**Table 202:**

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Hat section splice	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203 (Type I) or Table 204 (Type II), or  - Make the repair part as shown in Figure 207 and one gage thicker than the damaged section of the initial stringer section that was removed  (This option is necessary for Type IV stringers or if no section is given in Table 203 or 204)
2	Channel	1	
3	Angle	1	
4	Shim (Tapered or not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet. Use a maximum shim thickness of 15 percent of the fastener diameter
5	Hat section filler	1	7075-T6 clad sheet that is the same gage as the damaged section of the initial stringer section that was removed
6	Filler	1	
7	Replacement Stringer Section	1	7075-T6 bare or clad sheet. Use the same gage as the damaged section that was remove (including tapers) of the fastener diameter

**Table 203:**

TYPE I STRINGER REPAIR SECTIONS				
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS		
SECTION	THICKNESS INCHES	HAT SECTION	ANGLE SECTION	C SECTION
BAC1498-155 or Type I Formed Sheet	0.028	69-78188-10	-	-
BAC1498-156 or Type I Formed Sheet	0.032	69-78188-11 or BAC1498-117	BAC1493-659	BAC1493-249
BAC1498-157 or Type I Formed Sheet	0.036	69-78188-12 or BAC1498-117	BAC1493-659	BAC1493-249
BAC1498-158 or Type I Formed Sheet	0.040	69-78188-13 or BAC1498-117	BAC1493-574	BAC1493-249
BAC1498-159 or Type I Formed Sheet	0.045	69-78188-14 or BAC1498-116	BAC1493-574	BAC1493-249
BAC1498-160 or Type I Formed Sheet	0.050	69-78188-15	BAC1493-574	BAC1493-248
BAC1498-161 or Type I Formed sheet	0.056	69-78188-16	BAC1493-574	BAC1493-248
BAC1498-162 or Type I Formed Sheet	0.063	69-78188-17	-	BAC1493-715
BAC1498-163 or Type I Formed Sheet	0.071	69-78188-18	-	-

**NOTE:** If the C section BAC1493-715 is used, cut the flanges so that they are each only 1.00 inch long.

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**Table 204:**

TYPE II STRINGER REPAIR SECTIONS				
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS		
SECTION	THICKNESS INCHES	HAT SECTION	ANGLE SECTION	C SECTION
BAC1498-138 or Type II Formed Sheet	0.032	69-78188-1	BAC1493-547	BAC1493-412
BAC1498-139 or Type II Formed Sheet	0.036	69-78188-1	BAC1493-547	BAC1493-412
BAC1498-140 or Type II Formed Sheet	0.040	69-78188-2	BAC1493-547	BAC1493-209
BAC1498-141 or Type II Formed Sheet	0.045	69-78188-3 or BAC1498-132	BAC1493-547	BAC1493-209
BAC1498-142 or Type II Formed Sheet	0.050	69-78188-4 or BAC1498-132	-	BAC1493-133
BAC1498-143 or Type II Formed Sheet	0.056	69-78188-5 or BAC1498-132	-	BAC1493-133
BAC1498-144 or Type II Formed Sheet	0.063	69-78188-6	-	BAC1493-246
BAC1498-145 or Type II Formed Sheet	0.071	69-78188-7	-	-
BAC1498-146 or Type II Formed Sheet	0.080	69-78188-8	-	-
BAC1498-147 or Type II Formed Sheet	0.090	69-78188-9	-	-

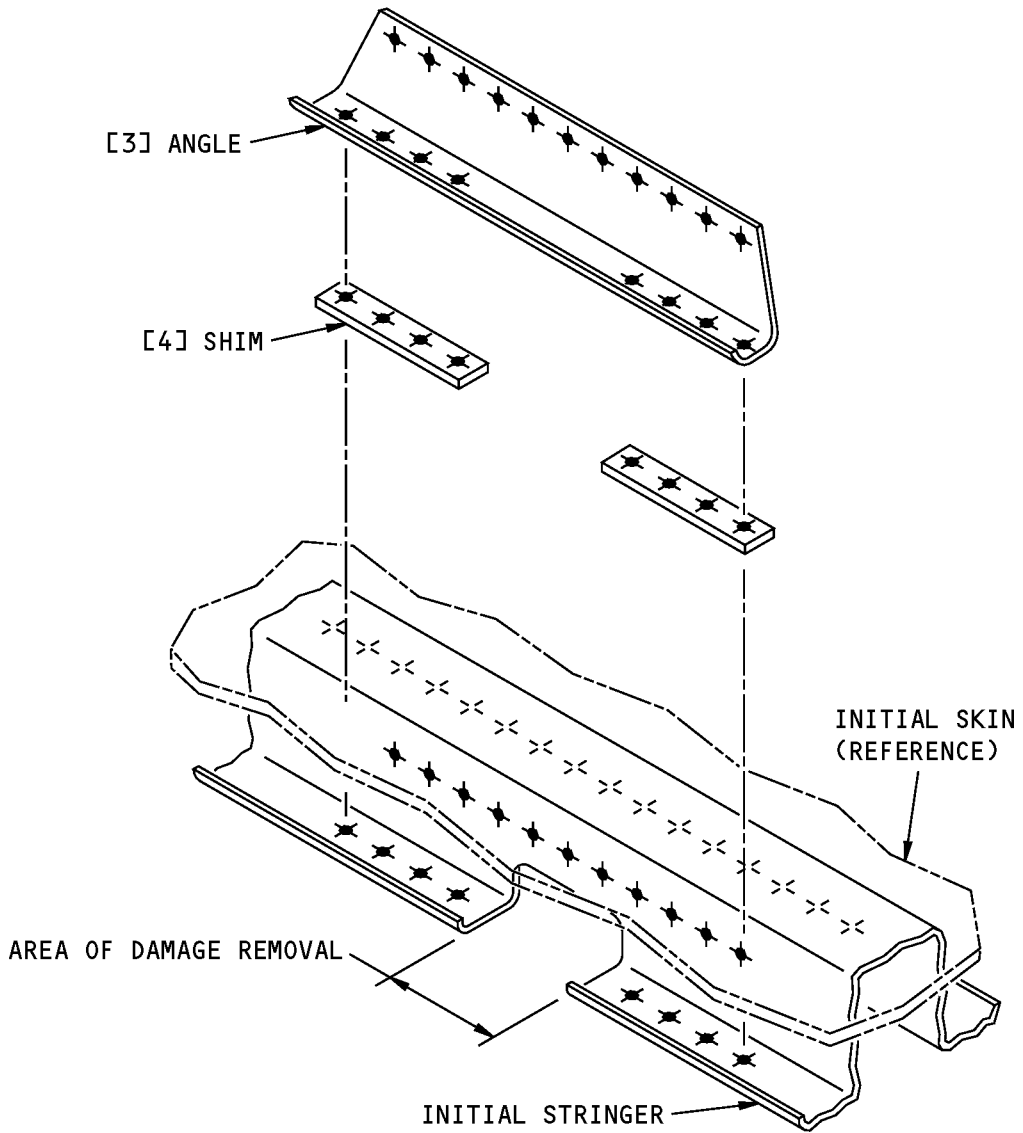
K. Install the repair parts.

**NOTE:** On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
- (2) Install the fasteners. Refer to 51-40-02.
  - (a) Install non-aluminum fasteners wet with BMS 5-95 sealant.
- (3) Make sure that the stringer drainage holes are not blocked. Refer to AMM 51-41-00 for the stringer drainage hole locations.

L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

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**NOTES**

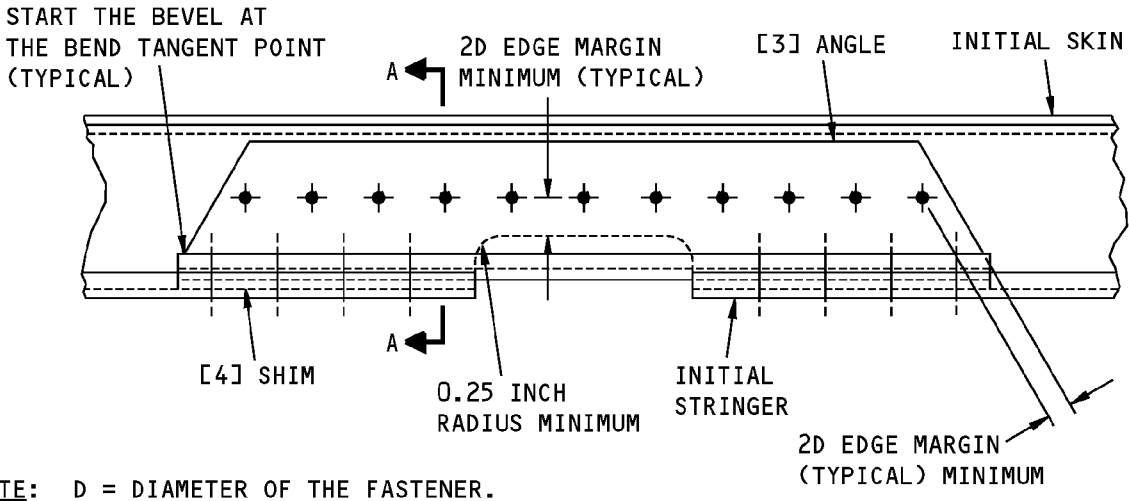
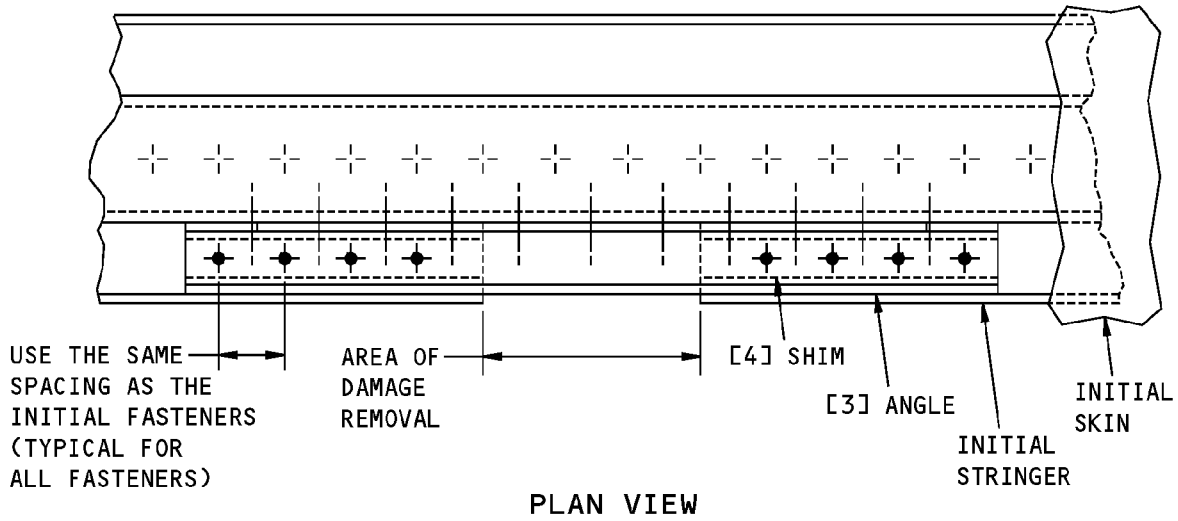
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

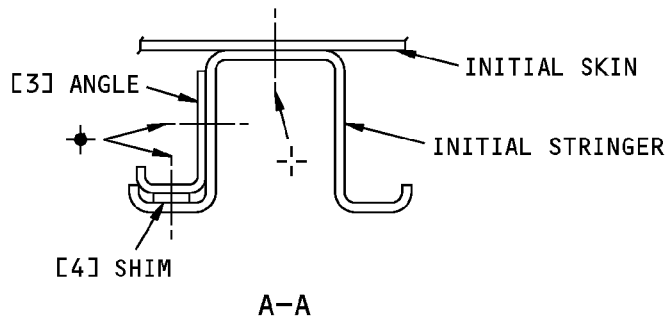
- |- REFERENCE FASTENER LOCATION.
- ◆ REPAIR FASTENER LOCATION.

**Repair for Damage to a Free Flange  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

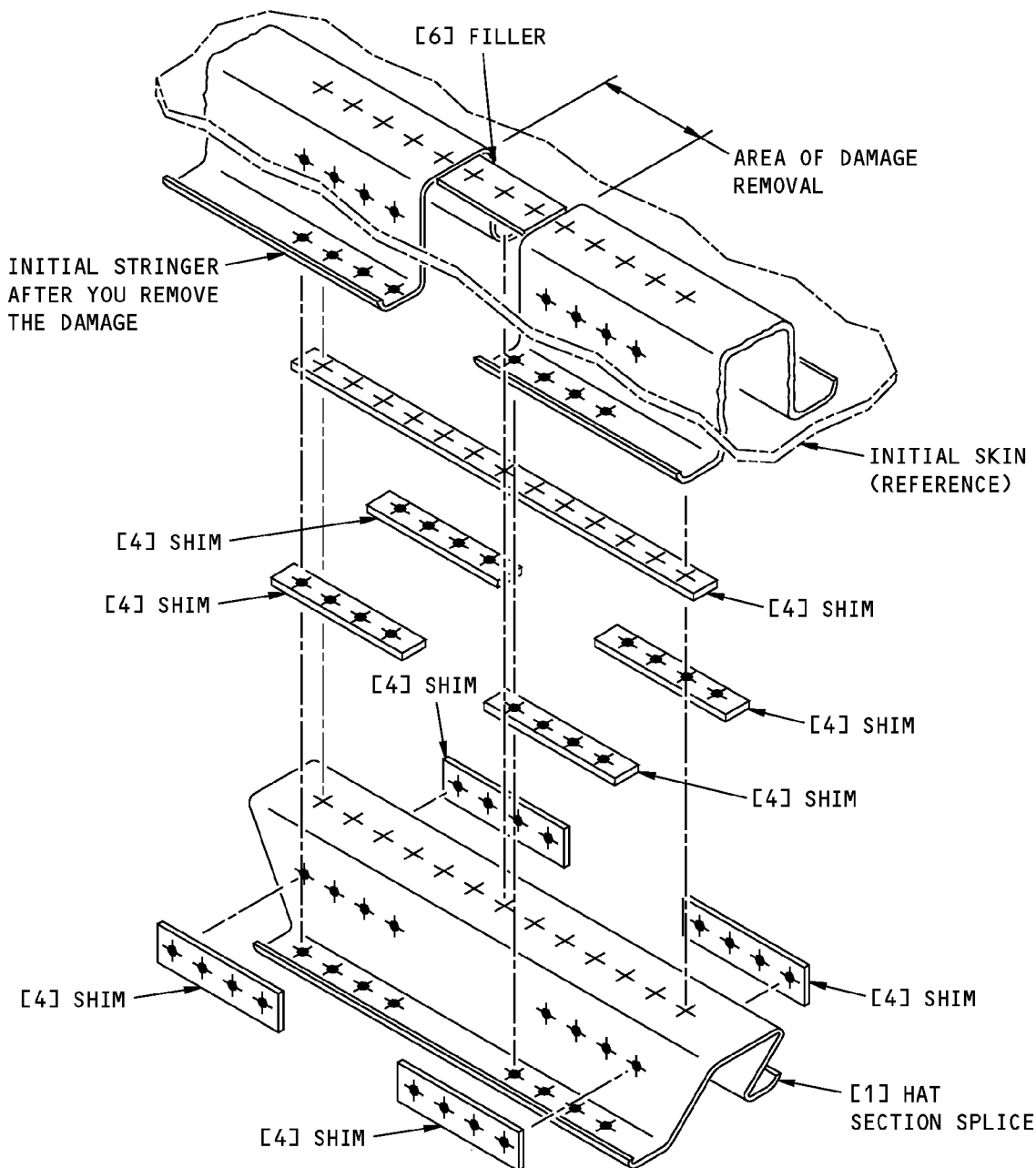


**NOTE:** D = DIAMETER OF THE FASTENER.



**Repair for Damage to a Free Flange  
Figure 201 (Sheet 2 of 2)**

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**NOTES**

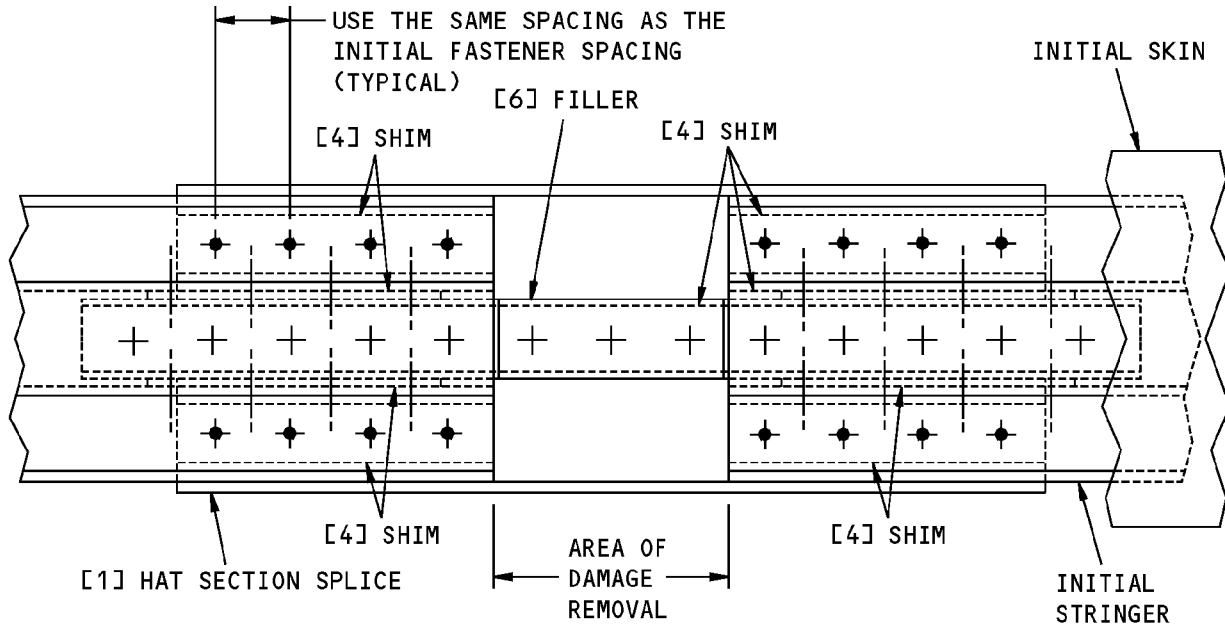
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

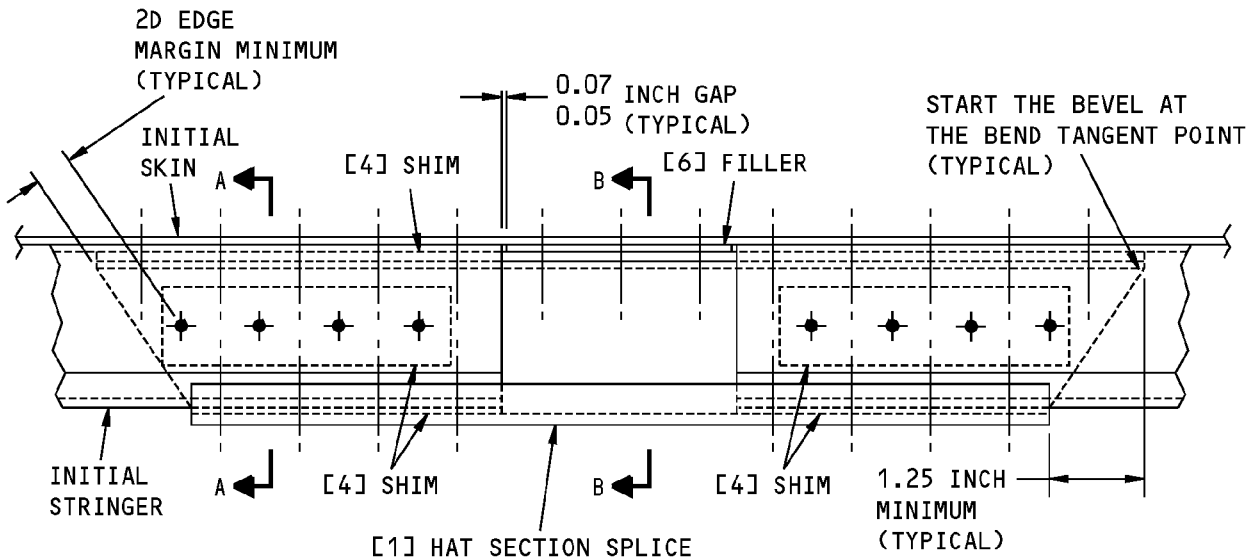
- + INITIAL FASTENER LOCATION.
- ★ REPAIR FASTENER LOCATION.

**Repair for Damage to the Full Stringer Section  
Figure 202 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**PLAN VIEW**

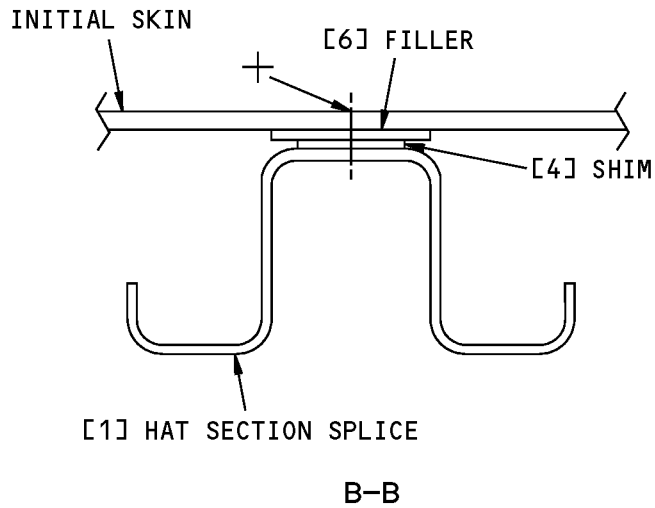
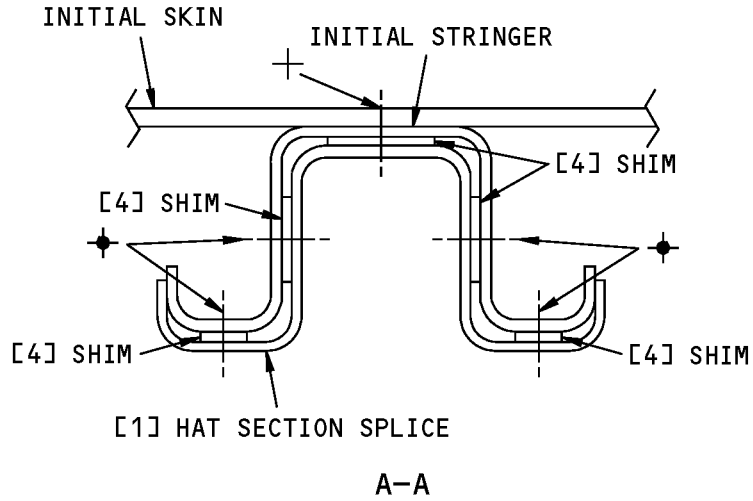


**SIDE VIEW**

**Repair for Damage to the Full Stringer Section  
Figure 202 (Sheet 2 of 3)**

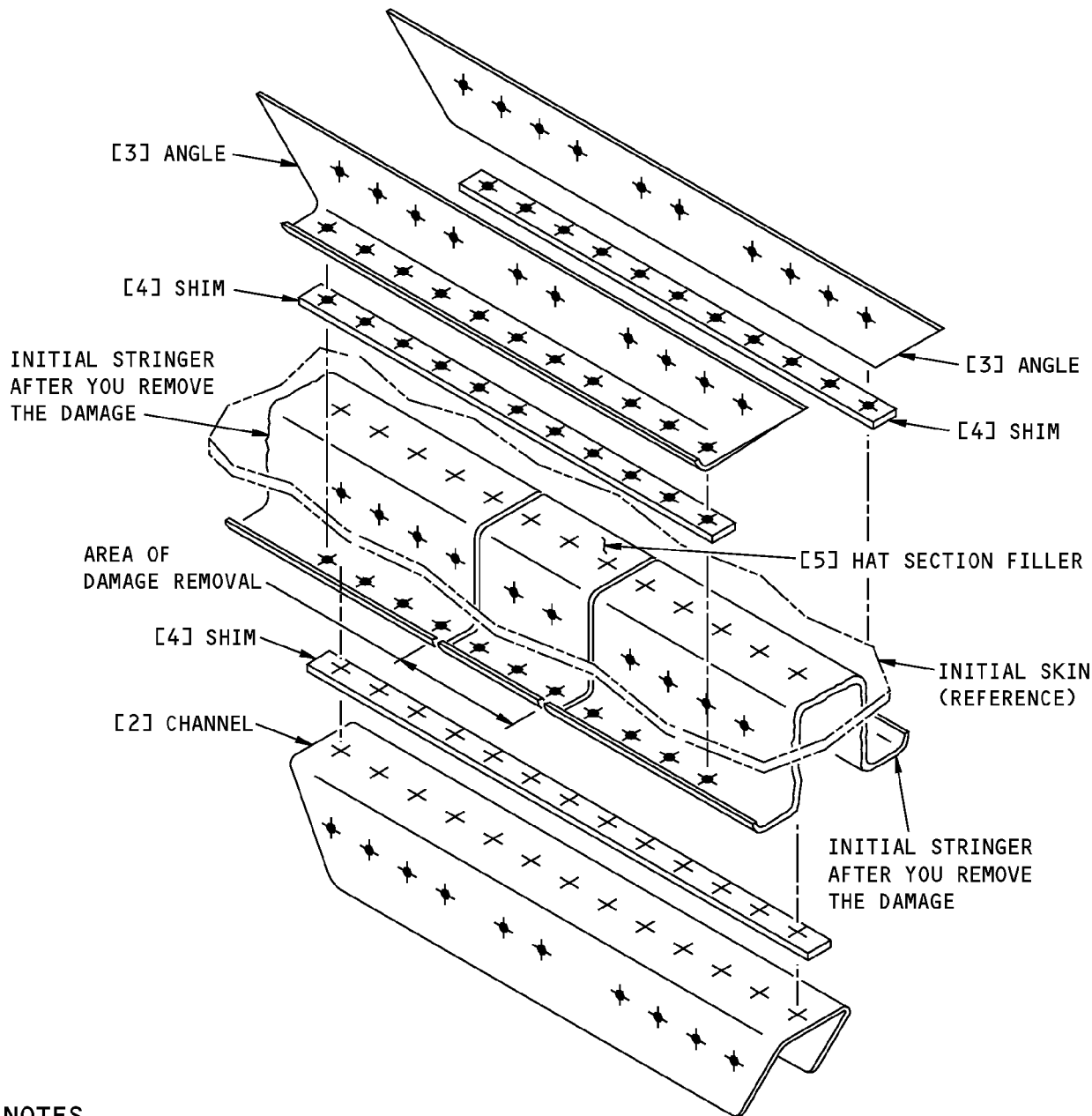


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**Repair for Damage to the Full Stringer Section  
Figure 202 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

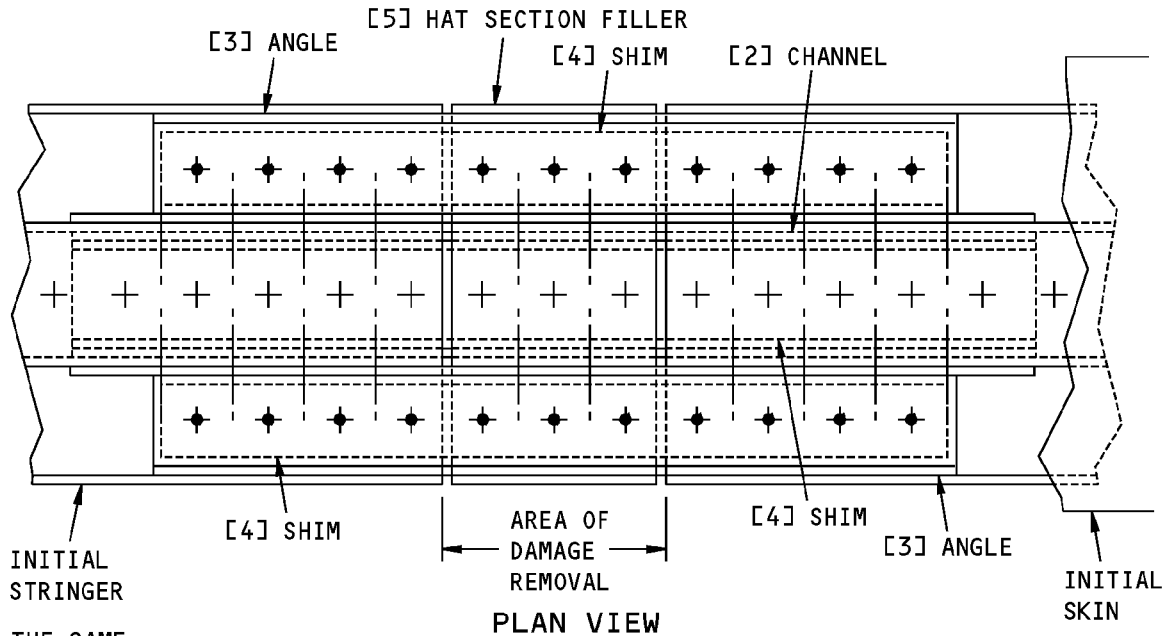
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

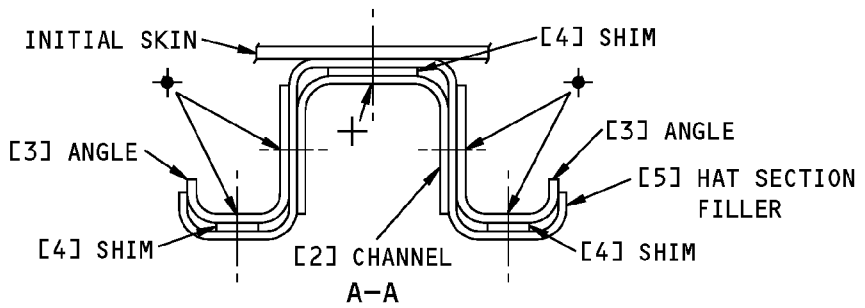
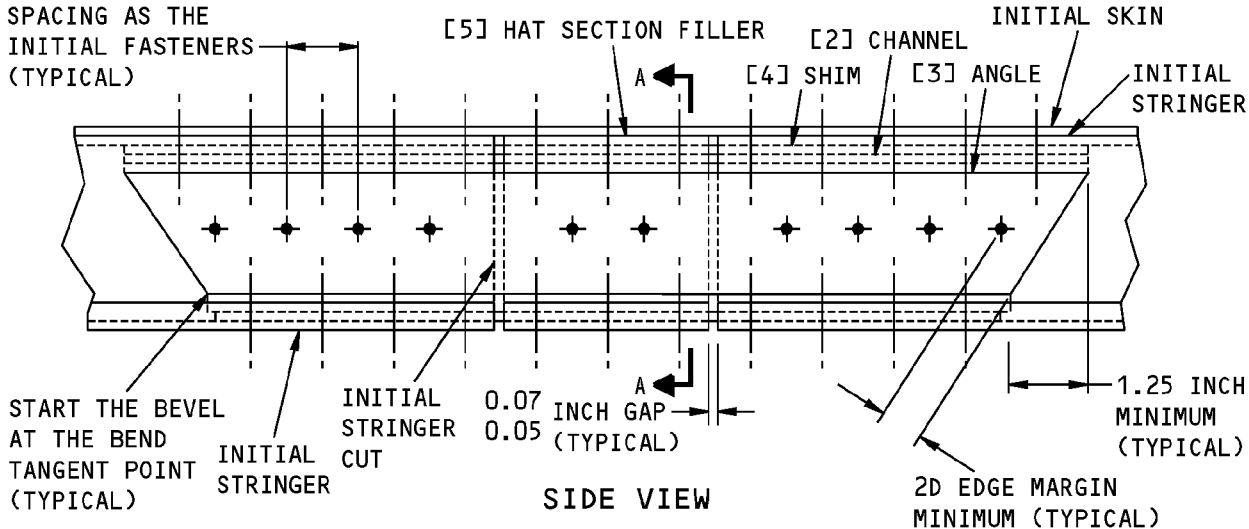
- + INITIAL FASTENER LOCATION.
- ✦ REPAIR FASTENER LOCATION.

**Repair for Damage to the Full Stringer Section (Alternative Method)  
Figure 203 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

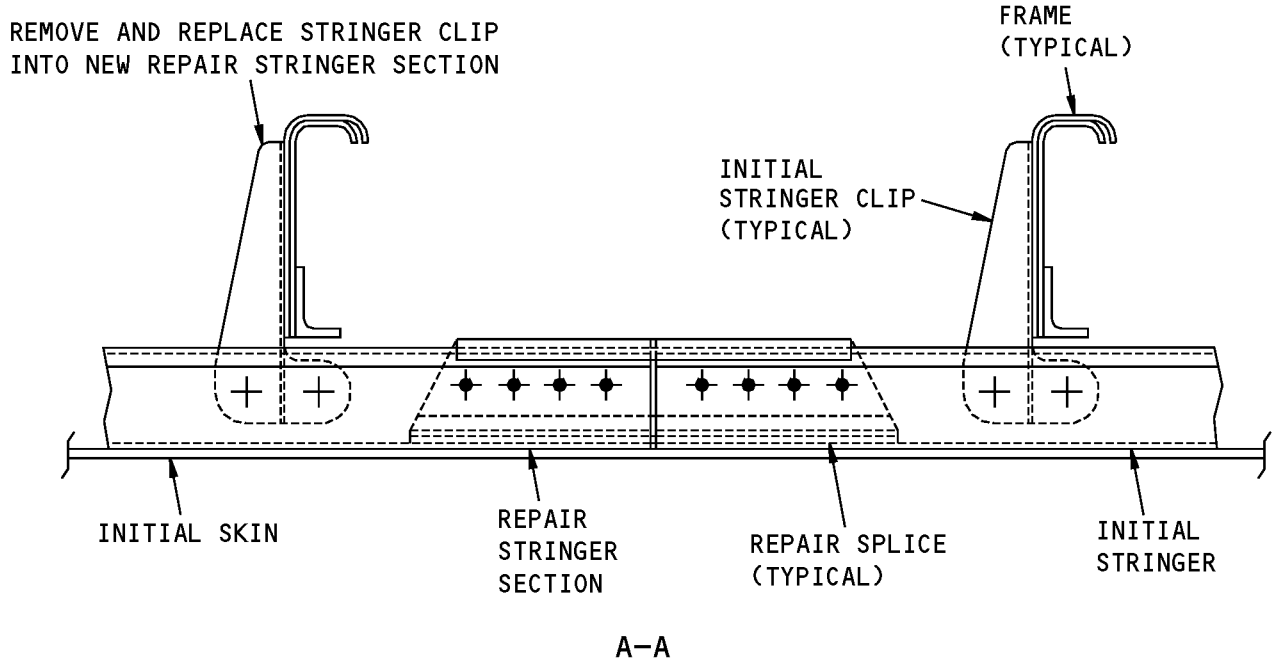
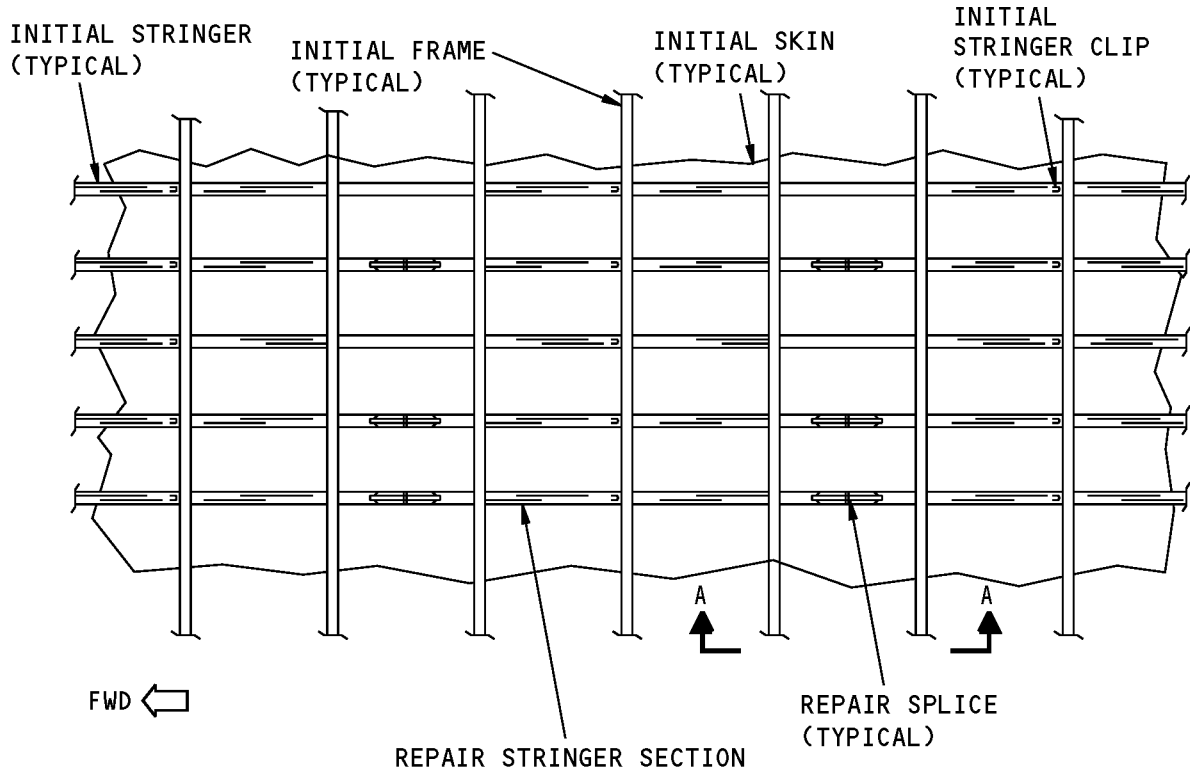


USE THE SAME SPACING AS THE INITIAL FASTENERS (TYPICAL)



**Repair for Damage to the Full Stringer Section (Alternative Method)  
Figure 203 (Sheet 2 of 2)**

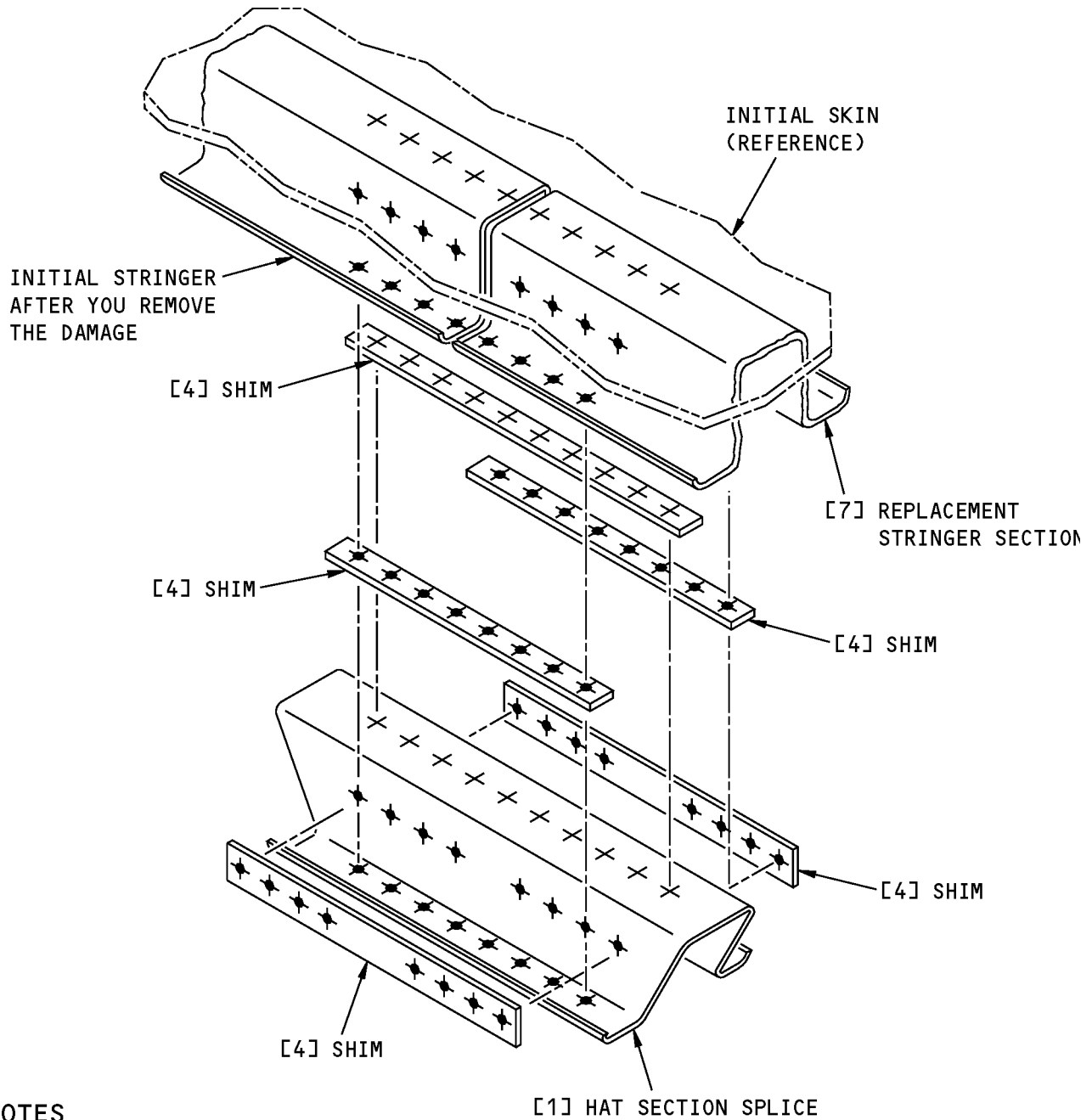
**STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO 205 FOR A REPAIR. REFER TO FIGURE 206 FOR AN ALTERNATIVE REPAIR TO FIGURE 205.

**Stringer Repair Locations for Damage Across Frame Stations  
Figure 204**

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**NOTES**

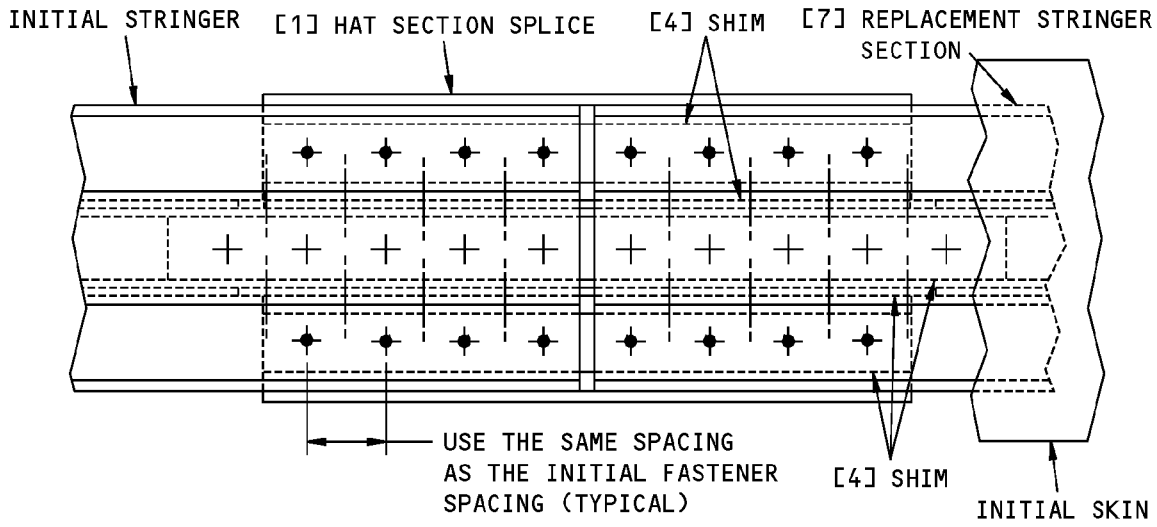
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

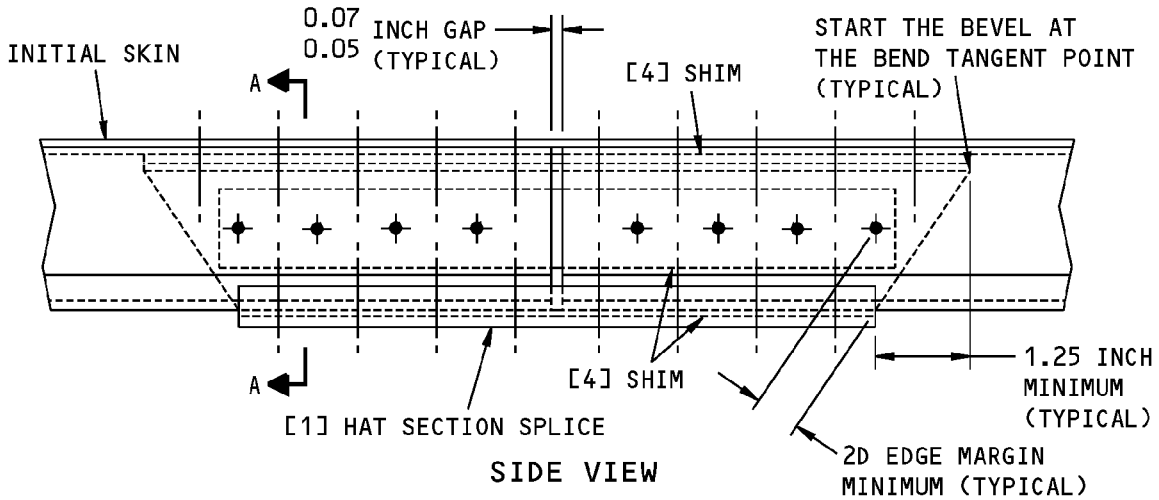
- + INITIAL FASTENER LOCATION.
- ★ REPAIR FASTENER LOCATION.

**Splice Repair for Damage to the Full Stringer Section  
Figure 205 (Sheet 1 of 2)**

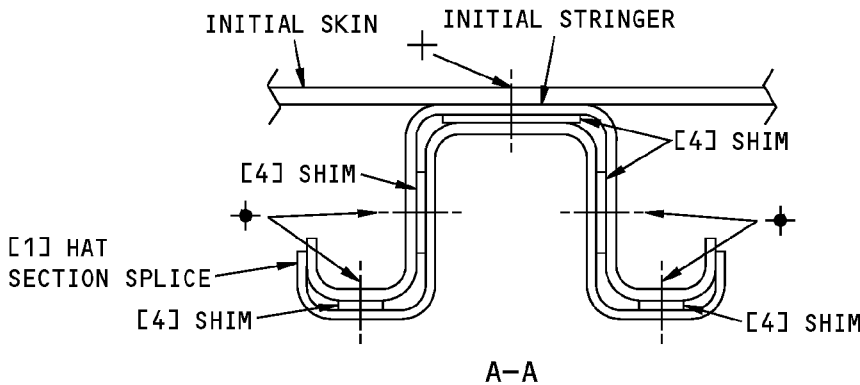
**STRUCTURAL REPAIR MANUAL**



**PLAN VIEW**



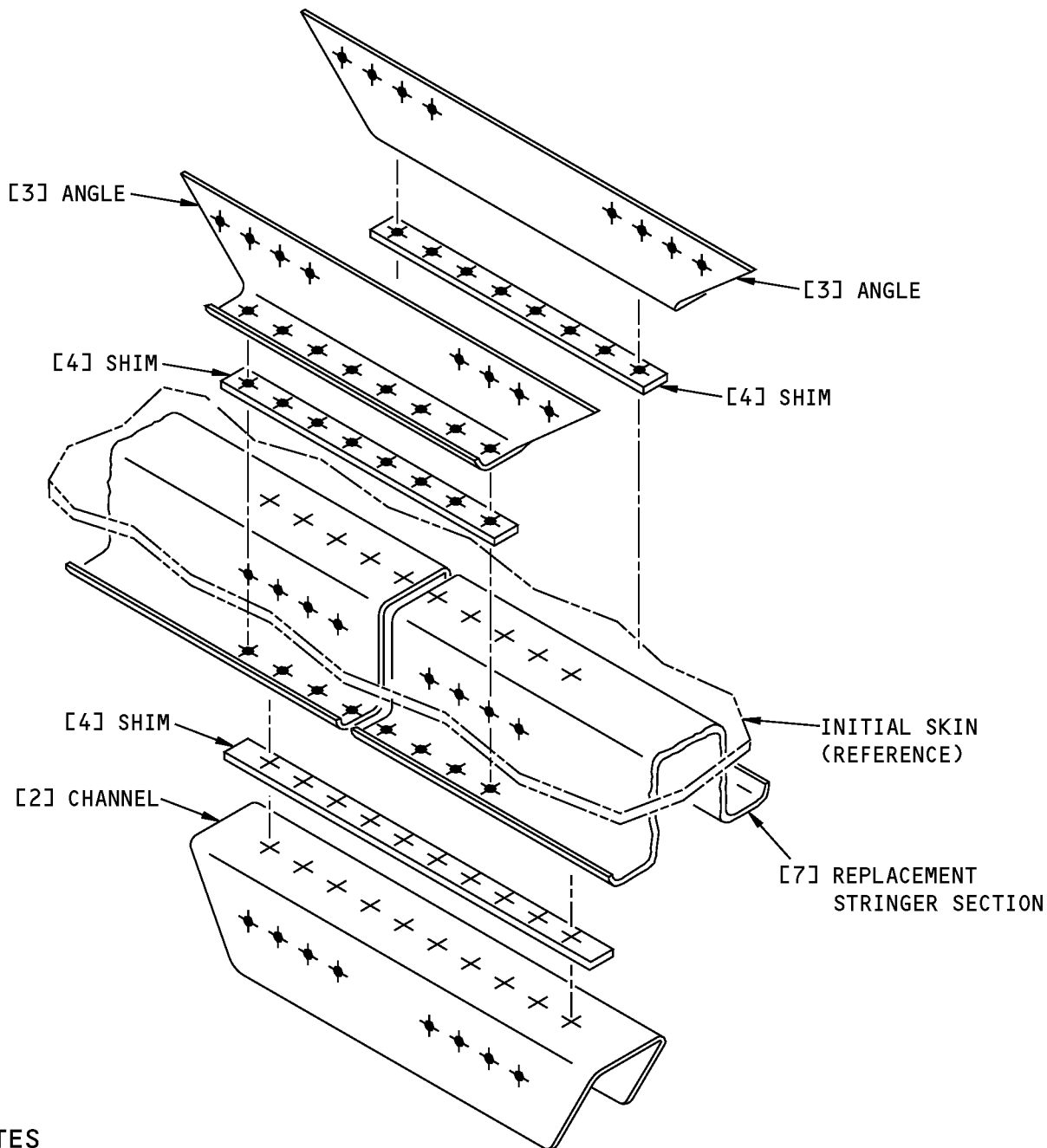
**SIDE VIEW**



**A-A**

**Splice Repair for Damage to the Full Stringer Section  
Figure 205 (Sheet 2 of 2)**

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**NOTES**

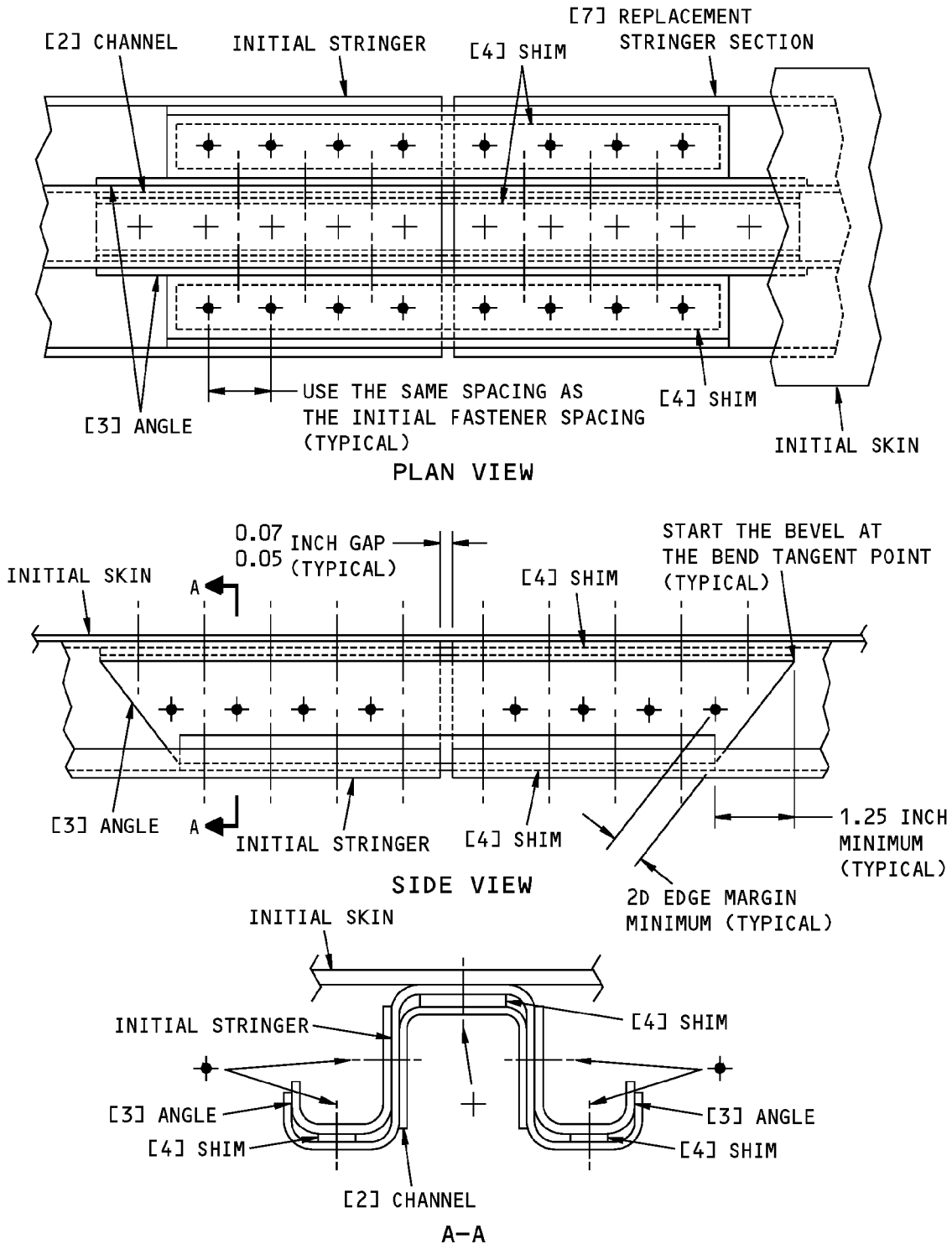
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION.
- ★ REPAIR FASTENER LOCATION.

**Splice Repair for Damage to the Full Stringer Section (Alternative Method)  
Figure 206 (Sheet 1 of 2)**

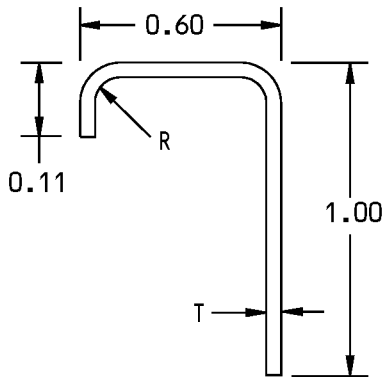
**STRUCTURAL REPAIR MANUAL**



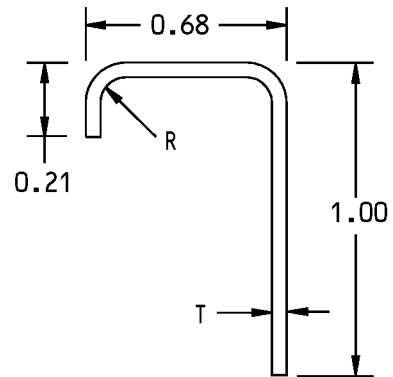
**Splice Repair for Damage to the Full Stringer Section (Alternative Method)**  
**Figure 206 (Sheet 2 of 2)**



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ANGLE FOR REPAIR OF  
A TYPE I STRINGER



ANGLE FOR REPAIR OF  
A TYPE II STRINGER

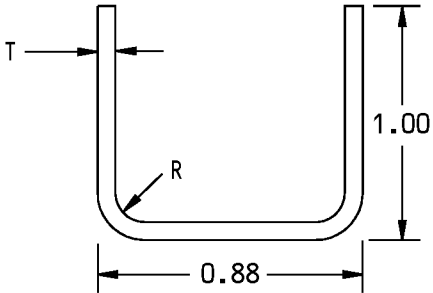
**NOTE:** A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-0 MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

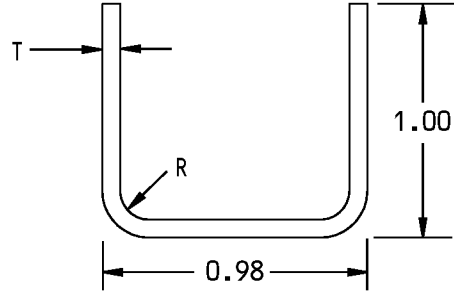
R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

Repair Parts Necessary for Type I, II, and IV Stringers  
Figure 207 (Sheet 1 of 2)

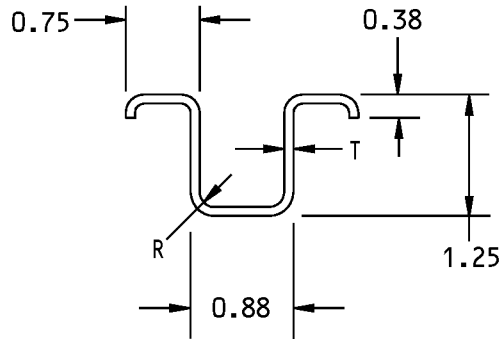
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CHANNEL FOR REPAIR OF  
A TYPE I STRINGER



CHANNEL FOR REPAIR OF  
A TYPE II STRINGER



CHANNEL FOR REPAIR OF  
A TYPE IV STRINGER

Repair Parts Necessary for Type I, II, and IV Stringers  
Figure 207 (Sheet 2 of 2)



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## **STRUCTURAL REPAIR MANUAL**

### **5. Inspection Instructions**

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) (Refer to 51-00-04):
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of this repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - REPAIR FOR A TYPE I, II OR IV FUSELAGE STRINGER WITH LONGITUDINAL CRACK DAMAGE IN A FORMED CORNER OF A SKIN ATTACHMENT FLANGE

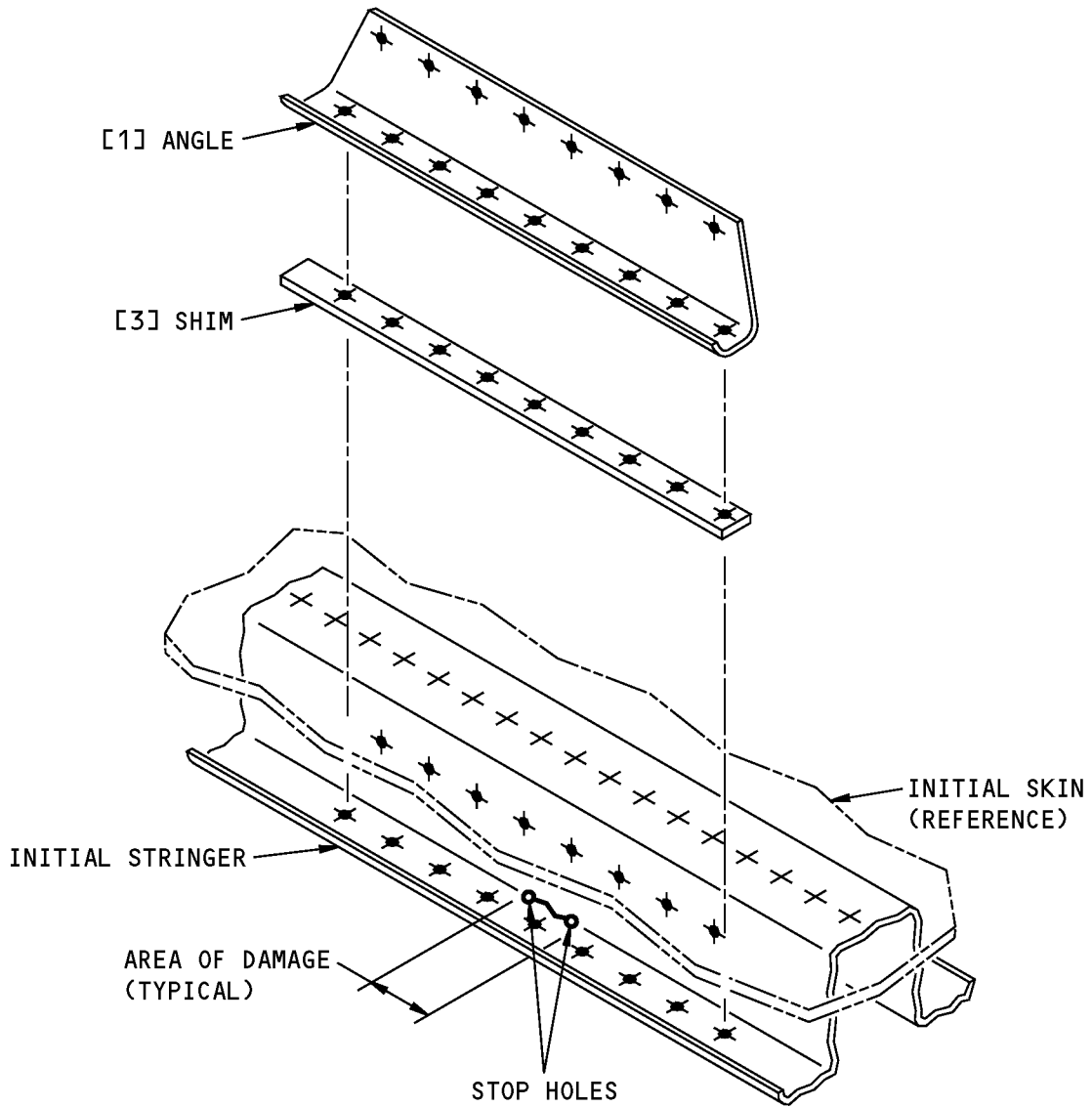
#### 1. Applicability

- A. Refer to Repair General for the definition of the different types of stringers.
- B. Repair 2 is applicable to Type I, Type II or, Type IV fuselage stringers with:
  - (1) Longitudinal cracks in the formed corners.
- C. Repair 2 is not applicable to:
  - (1) Damage that is less than 20 inches, from an initial or repair stringer splice
  - (2) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage
    - (a) Refer to Repair 1 for the repair of general damage.
  - (3) Type III fuselage stringers.
    - (a) Refer to Repair 3 for the repair of general damage.
    - (b) Refer to Repair 4 for the repair of longitudinal cracks.

#### 2. General

- A. Repair 2 is a Category B repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the different categories of repairs. Refer to paragraph 5 for the inspection requirements.
- B. Refer to Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 for the repair of damage to one free flange.
- C. Refer to Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2 for the repair of damage to the attachment flange.
  - (1) Do not locate the repair parts in the area of an initial stringer clip.

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**NOTES**

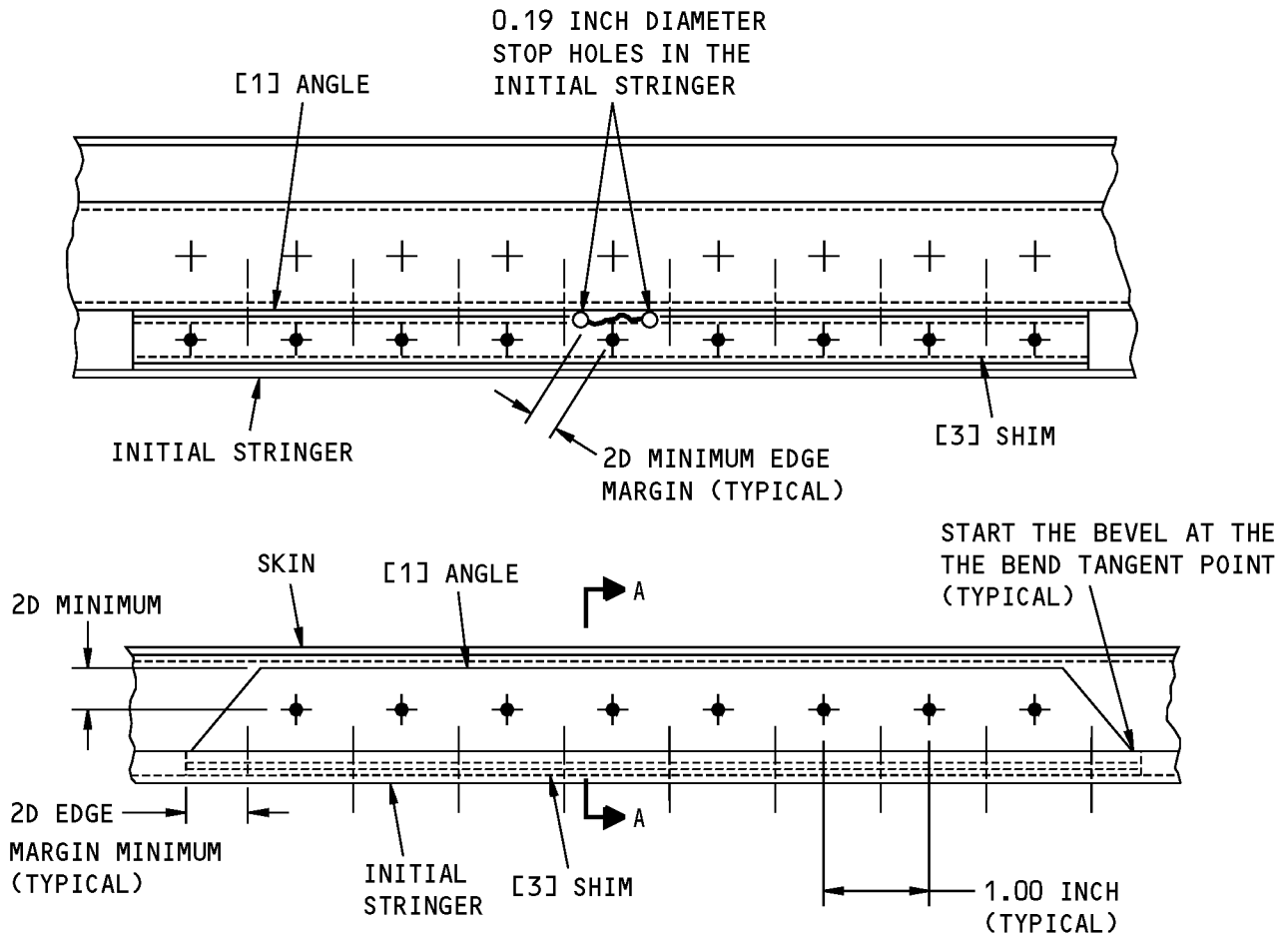
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN

**FASTENER SYMBOLS**

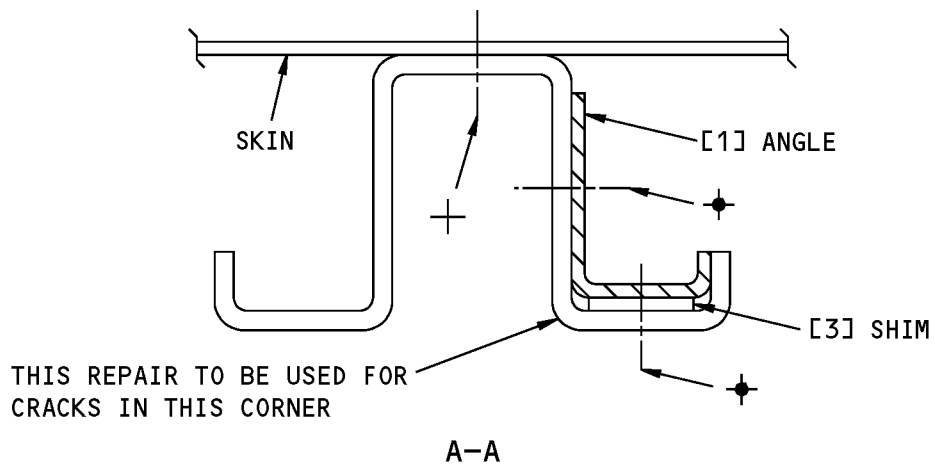
- + INITIAL FASTENER LOCATION.
- ◆ REPAIR FASTENER LOCATION.

**Repair for Longitudinal Cracks in a Free Flange  
Figure 201 (Sheet 1 of 2)**

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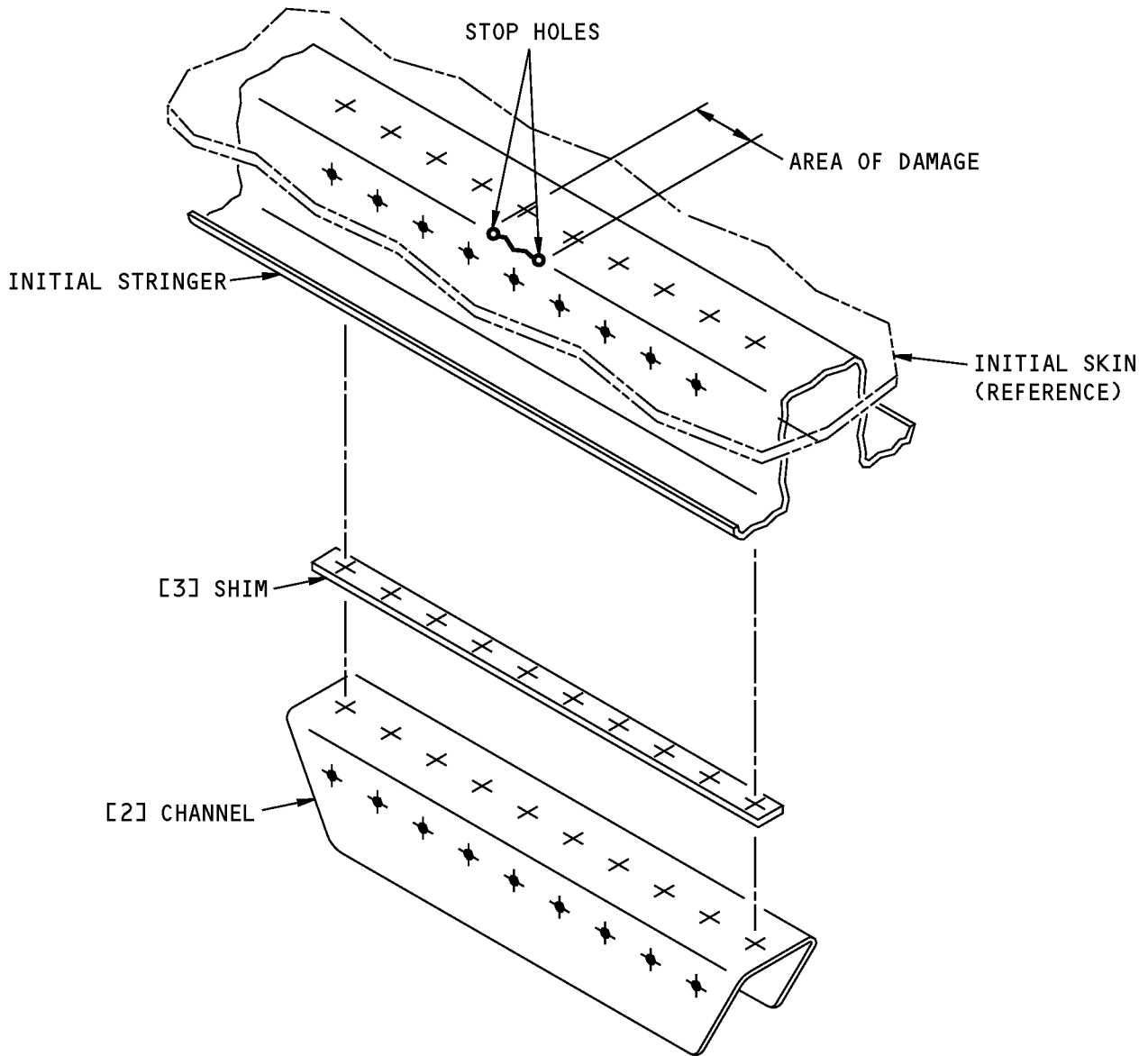


**NOTE:** D = DIAMETER OF THE FASTENER.



**Repair for Longitudinal Cracks in a Free Flange  
Figure 201 (Sheet 2 of 2)**

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**NOTES**

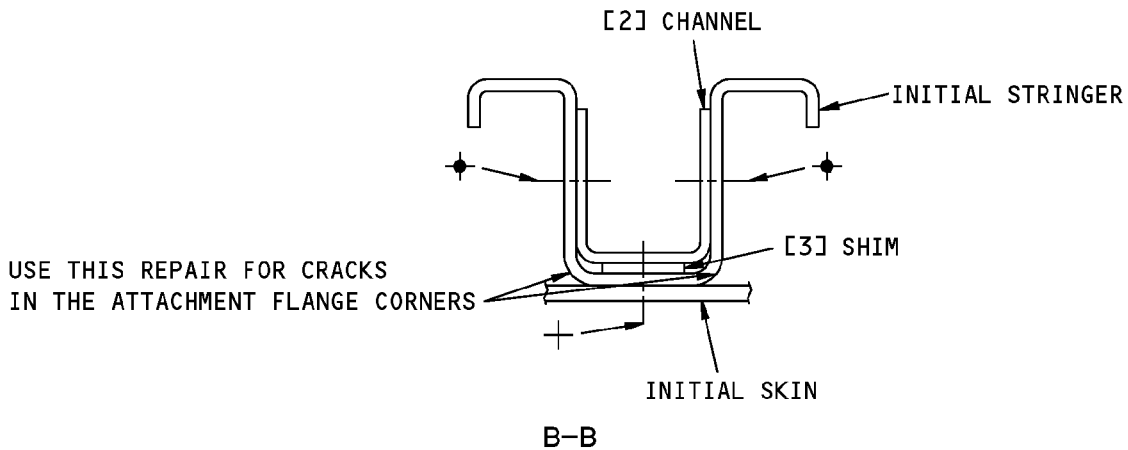
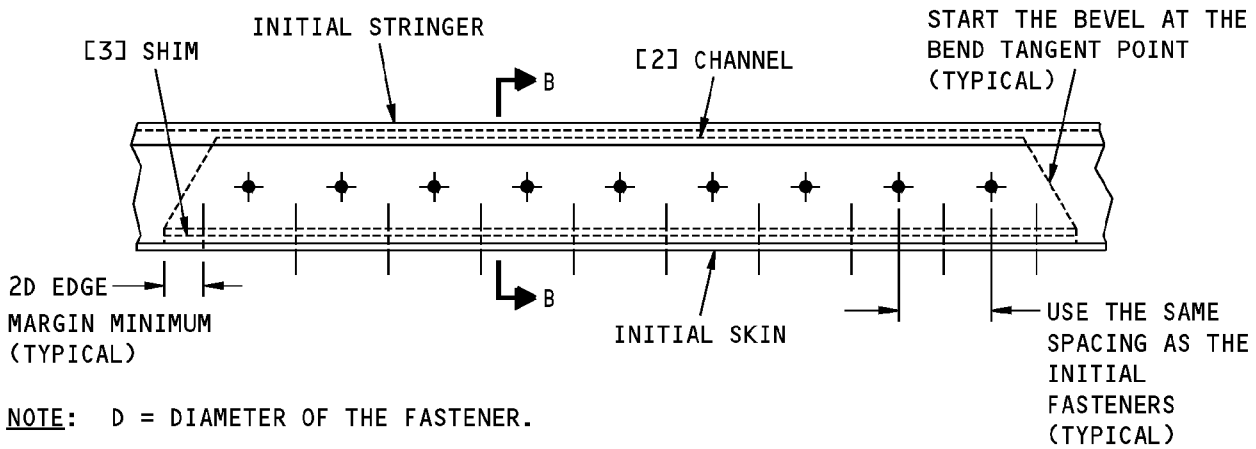
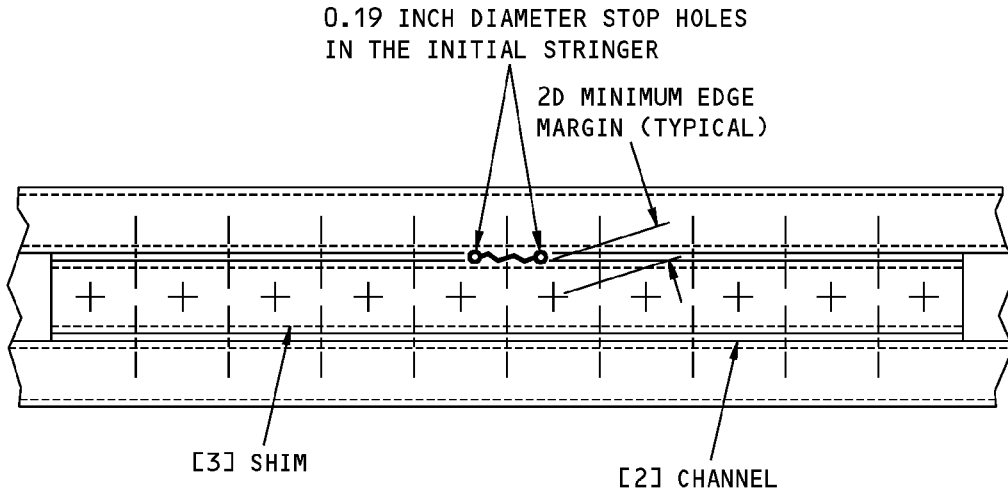
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION.
- ★ REPAIR FASTENER LOCATION.

**Repair for Longitudinal Cracks in an Attachment Flange  
Figure 202 (Sheet 1 of 2)**

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**Repair for Longitudinal Cracks in an Attachment Flange  
Figure 202 (Sheet 2 of 2)**





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### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41-00	Airframe Drainage
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers

### 4. Repair Instructions

- A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.
- B. Drill a stop hole at the ends of the crack if they do not end at a fastener hole. Refer to 51-10-02.
- C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure the crack does not continue past the stop hole. Refer to 51-10-02.
- D. Make the repair parts.
  - (1) Calculate the lengths that are needed for the repair parts.
    - (a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 2.
      - 1) A BACR15GF() D fastener can be used as an alternative to a BACR15CE()D fastener.
      - 2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener.
    - (b) Refer to the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2) for the fastener locations and edge margins.

**Table 201:**

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL ROW
0.028	5/32	4	5/32	4



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MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE()D or BACR15GF()D		REPAIR BACR15FT()D or MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH LONGITUDINAL ROW
0.032	5/32	4	5/32	4
0.036	5/32	4	5/32	4
0.040	5/32	4	5/32	4
0.045	5/32	5	5/32	5
0.050	5/32	5	3/16	5
0.056	5/32	5	3/16	5
0.063	5/32	5	3/16	5
0.071	5/32	5	3/16	5
0.080	5/32	5	3/16	5
0.090	5/32	5	3/16	5

(2) Refer to Table 202/REPAIR 2 for the repair part materials.

**Table 202:**

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Angle	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203 (Type I) or Table 204 (Type II), or  - Make the repair parts as shown in Figure 203 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary for Type IV stringers or if no section is given in Table 203 Or 204
2	Channel	1	
3	Shim (Tapered or not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet. Maximum shim thickness is 15 percent of the fastener diameter of the fastener diameter

**Table 203:**

TYPE I STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS (INCH)	ANGLE SECTION	C SECTION
BAC1498-155 or Type I Formed Sheet	0.028	-	-
BAC1498-156 or Type I Formed Sheet	0.032	BAC1493-659	BAC1493-249
BAC1498-157 or Type I Formed Sheet	0.036	BAC1493-659	BAC1493-249
BAC1498-158 or Type I Formed Sheet	0.040	BAC1493-574	BAC1493-249



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TYPE I STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS (INCH)	ANGLE SECTION	C SECTION
BAC1498-159 or Type I Formed Sheet	0.045	BAC1493-574	BAC1493-249
BAC1498-160 or Type I Formed Sheet	0.050	BAC1493-574	BAC1493-248
BAC1498-161 or Type I Formed Sheet	0.056	BAC1493-574	BAC1493-248
BAC1498-162 or Type I Formed Sheet	0.063	-	BAC1493-715
BAC1498-163 or Type I Formed Sheet	0.071	-	-

**NOTE:** If the C section BAC1493-715 is used, cut the flanges so that they are each only 1.00 inch long.

**Table 204:**

TYPE II STRINGER REPAIR SECTIONS			
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS	
SECTION	THICKNESS INCHES	ANGLE SECTION	C SECTION
BAC1498-138 or Type II Formed Sheet	0.032	BAC1493-547	BAC1493-412
BAC1498-139 or Type II Formed Sheet	0.036	BAC1493-547	BAC1493-412
BAC1498-140 or Type II Formed Sheet	0.040	BAC1493-547	BAC1493-209
BAC1498-141 or Type II Formed Sheet	0.045	BAC1493-574	BAC1493-209
BAC1498-142 or Type II Formed Sheet	0.050	-	BAC1493-133
BAC1498-143 or Type II Formed Sheet	0.056	-	BAC1493-133
BAC1498-144 or Type II Formed Sheet	0.063	-	BAC1493-246
BAC1498-145 or Type II Formed Sheet	0.071	-	-
BAC1498-146 or Type II Formed Sheet	0.080	-	-
BAC1498-147 or Type II Formed Sheet	0.090	-	-

- E. Assemble the repair parts as shown in the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2).
- (1) Make sure that the space between the mating surfaces is less than 0.010 inch.
  - (2) If the space is more than 0.010 inch, install shims that have thickness less than 15 percent of the fastener diameter.



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F. Drill the fastener holes.

(1) Refer to the applicable figure (Repair for Longitudinal Cracks in a Free Flange, Figure 201/REPAIR 2 or Repair for Longitudinal Cracks in an Attachment Flange, Figure 202/REPAIR 2) for the fastener locations.

(2) Refer to Table 201/REPAIR 2 for the minimum diameter and the number of fasteners you need.

G. Disassemble the repair parts.

H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.

I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.

J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.

K. Install the repair parts.

**NOTE:** On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

(1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

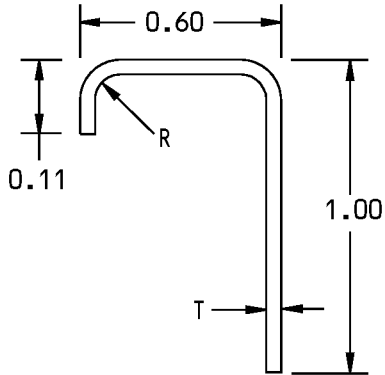
(2) Install the fasteners. Refer to 51-40-02.

(a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

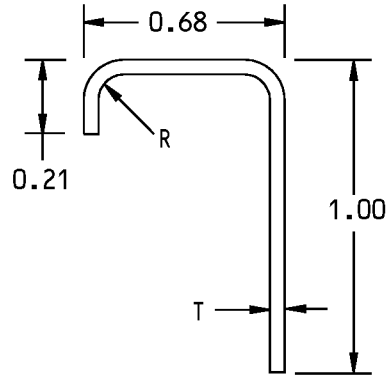
(3) Make sure that the stringer drainage holes are not blocked. Refer to AMM 51-41-00 for the stringer drainage hole locations.

L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

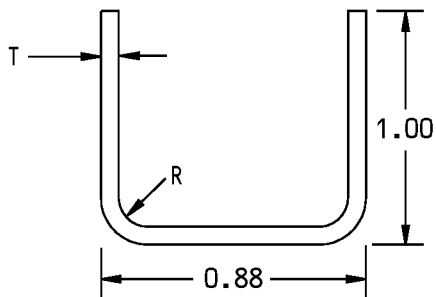
**STRUCTURAL REPAIR MANUAL**



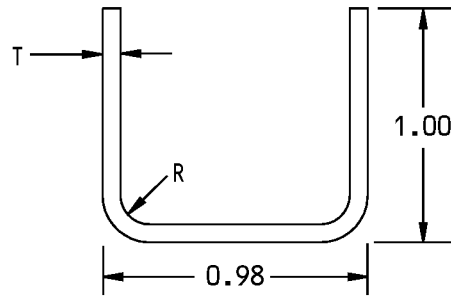
**ANGLE FOR REPAIR  
OF A TYPE I STRINGER**



**ANGLE FOR REPAIR  
OF A TYPE II STRINGER**



**CHANNEL FOR REPAIR  
OF A TYPE I STRINGER**



**CHANNEL FOR REPAIR  
OF A TYPE II STRINGER**

**NOTE:** A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-0 MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

**Repair Parts Necessary for Type I and II Stringers  
Figure 203**



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### 5. Inspection Instructions

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) (Refer to 51-00-04):
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of this repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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### REPAIR 3 - REPAIR FOR A TYPE III FUSELAGE STRINGER WITH GENERAL DAMAGE

#### 1. Applicability

- A. Refer to Repair General for the definition of the different types of stringers.
- B. Repair 3 is applicable to Type III fuselage stringers with:
  - (1) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage.
- C. Repair 3 is not applicable to:
  - (1) Damage that is less than 20 inches from an initial or repair stringer splice
  - (2) Longitudinal cracks in the formed corners
    - (a) Refer to Repair 4 for the repair of longitudinal crack damage in Type III stringers.
  - (3) Type I or II fuselage stringers
    - (a) Refer to Repair 1 for the repair of general damage.
    - (b) Refer to Repair 2 for the repair of longitudinal cracks.
  - (4) Stringers above the overwing escape hatches at the locations that follow:
    - (a) At stringers S-8 and S-9, from BS 597 to BS 664 on the left and right sides of the airplane
    - (b) At stringers S10, from BS 664 to BS 727B on the left and right sides of the airplane.

#### 2. General

- A. Repair 3 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the different categories of repairs. Refer to Paragraph 5 for the inspection requirements.
- B. Refer to Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 for the repair of damage:
  - (1) To one or both free flanges
  - (2) To vertical webs
  - (3) To the attachment flange
  - (4) In locations where full section repair or replacement is necessary.
- C. Refer to Repair of Type III Crown Stringers That Go Across Frame Stations, Figure 202/REPAIR 3 and Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3 for the repair of damage that is across one or more frame stations.
  - (1) Do not locate the repair parts in the area of an initial stringer clip.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution



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(Continued)

Reference	Title
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

#### 4. Repair Instructions

- A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.
- B. Cut and remove the damaged part of the stringer as given in the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3).
  - (1) Make sure you do not damage the skin adjacent to the stringer or other adjacent parts.
- C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
- D. Make the repair parts.
  - (1) Calculate the lengths that are needed for the repair parts.
    - (a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 3.
      - 1) A BACR15GF()D Fastener can be used as an alternative to a BACR15CE()D fastener.
      - 2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener
    - (b) Refer to the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3) for the fastener locations and edge margins.
  - (2) Refer to Table 202/REPAIR 3 for the material of the repair parts.
- E. Assemble the repair parts as shown in the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3).
  - (1) Make sure that the space between the mating surfaces is less than 0.010 inch thick.
  - (2) If the space is more than 0.010 inch, install shims that have thickness less than 0.028 inch thick.
- F. Drill the fastener holes.
  - (1) Refer to the applicable figure (Repair for Damage to the Full Stringer Section, Figure 201/REPAIR 3 or Splice Repair for Damage to the Full Stringer Section, Figure 203/REPAIR 3) for the fastener locations.
  - (2) Refer to Table 201/REPAIR 3 for the minimum diameter and the number of fasteners you need.
- G. Disassemble the repair parts.
- H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.





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- I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- K. Install the repair parts.

**NOTE:** On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

- (1) Apply BMS 5-95 sealant to the mating surfaces on stringers S-4 and S-10, left and right sides of the airplane. Refer to 51-20-05.
  - (a) Do not apply sealant to the mating surfaces of the other crown stringers.
- (2) Install the fasteners. Refer to 51-40-02.
  - (a) Install non-aluminum fasteners wet with BMS 5-95 sealant.

- L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.

**Table 201:**

MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE CUTOUT				
INITIAL STRINGER THICKNESS INCHES	FASTENERS			
	INITIAL BACR15CE(D) OR BACR15GF(D)		REPAIR BACR15FT(D) OR MS20470D()	
	MINIMUM DIAMETER INCHES	MINIMUM NUMBER	MINIMUM DIAMETER INCHES	MINIMUM NUMBER IN EACH WEB
0.028	3/16	6	3/16	4
0.032	3/16	6	3/16	4
0.036	3/16	6	3/16	4
0.040	3/16	6	3/16	4
0.045	3/16	6	3/16	4
0.050	3/16	6	3/16	4
0.056	3/16	7	3/16	5
0.063	3/16	7	3/16	5
0.071	3/16	8	3/16	6

**NOTE:** All fasteners must be overdriven a minimum of 1.4D (D = Diameter of the rivet shank).

**Table 202:**

REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
1	Zee Section Splice	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203, or - Make the repair part as shown in Figure 204 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary if no section is given in Table 203)
2	Zee Section Splice	1	
3	Filler (Tapered or, not tapered)	As necessary	7075-T6 or 2024-T4 bare or clad sheet that has the same thickness as the damaged section of the initial stringer that was removed



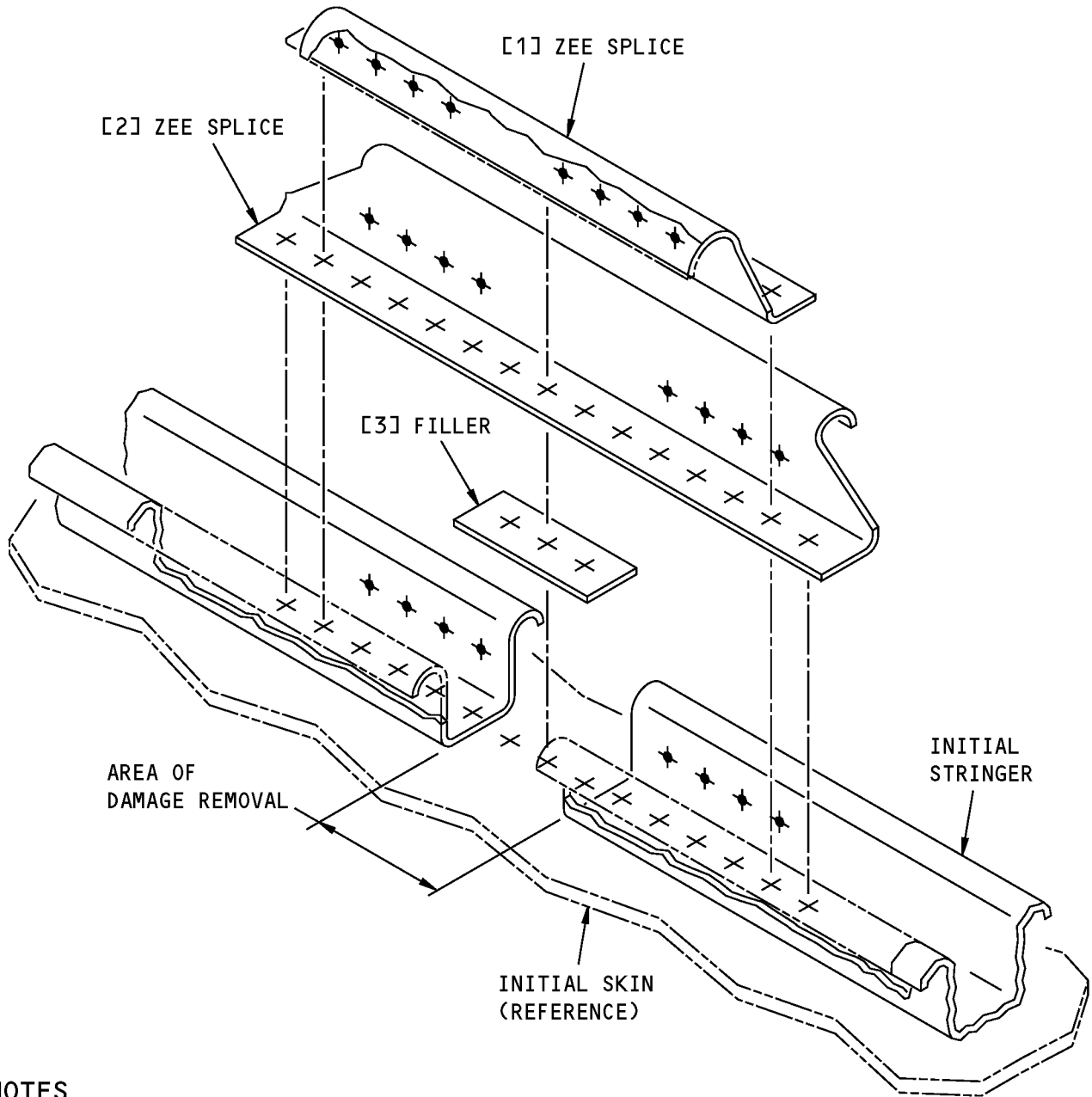
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REPAIR MATERIAL			
ITEM	PART NAME	QTY	MATERIAL
4	Repair Stringer Section	1	7075-T6 bare or clad sheet. Use same gage as the damaged stringer that was removed (including tapers)

**Table 203:**

TYPE III STRINGER REPAIR SECTIONS		
DAMAGED SECTION OF THE INITIAL STRINGER		REPAIR SECTIONS
SECTION	THICKNESS INCHES	ZEE SECTION
BAC1498-150 or Type III Formed Sheet	0.028	69-78188-30 and 69-78188-31
BAC1498-151 or Type III Formed Sheet	0.032	69-78188-32 and 69-78188-33
BAC1498-152 or Type III Formed Sheet	0.036	69-78188-34 and 69-78188-35
BAC1498-153 or Type III Formed Sheet	0.040	69-78188-36 and 69-78188-37
BAC1498-154 or Type III Formed Sheet	0.045	69-78188-36 and 69-78188-37
BAC1498-164 or Type III Formed Sheet	0.050	69-78188-38 and 69-78188-39
BAC1498-165 or Type III Formed Sheet	0.056	Refer to Table 202
BAC1498-166 or Type III Formed Sheet	0.063	69-78188-108 and 69-78188-109
BAC1498-167 or Type III Formed Sheet	0.071	69-78188-108 and 69-78188-109

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**NOTES**

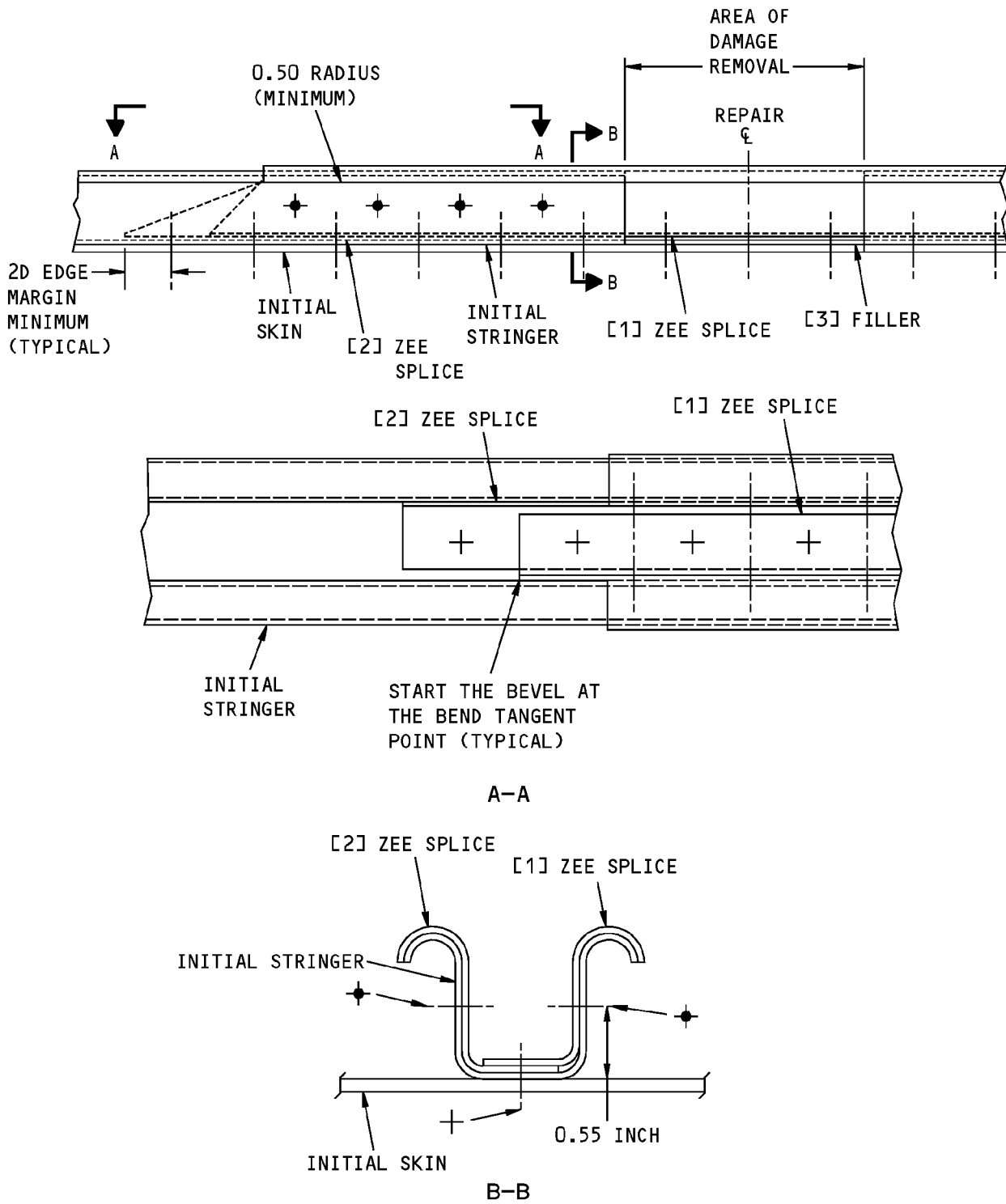
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION.
- ✦ REPAIR FASTENER LOCATION.

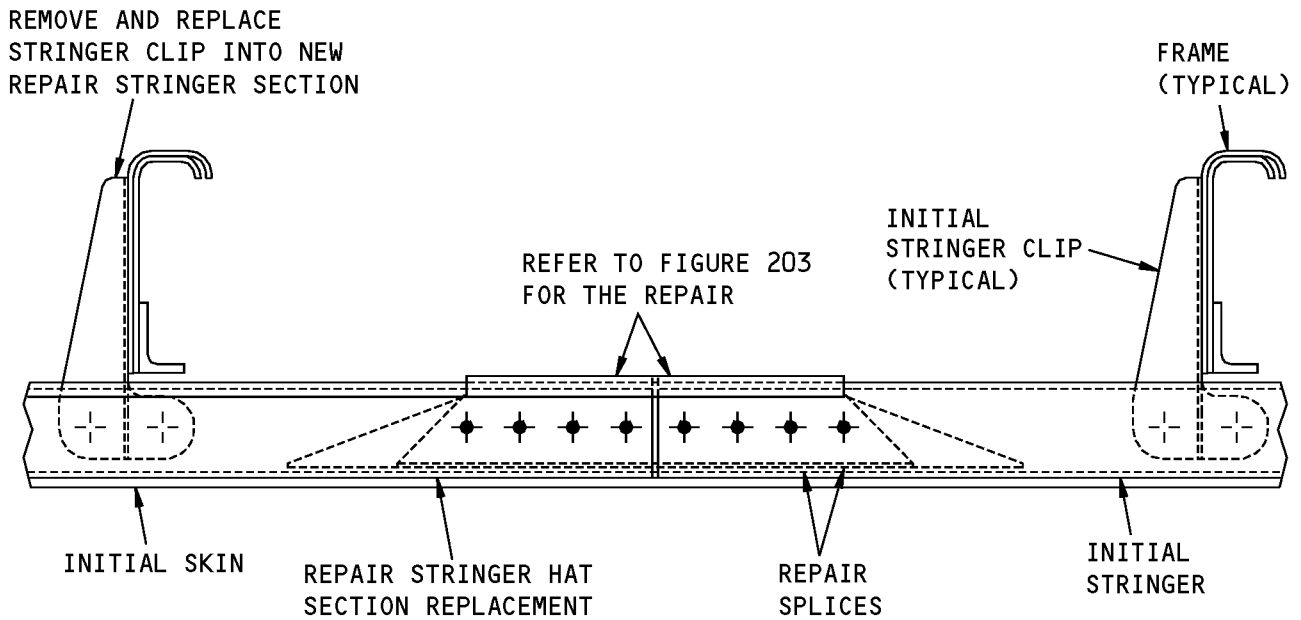
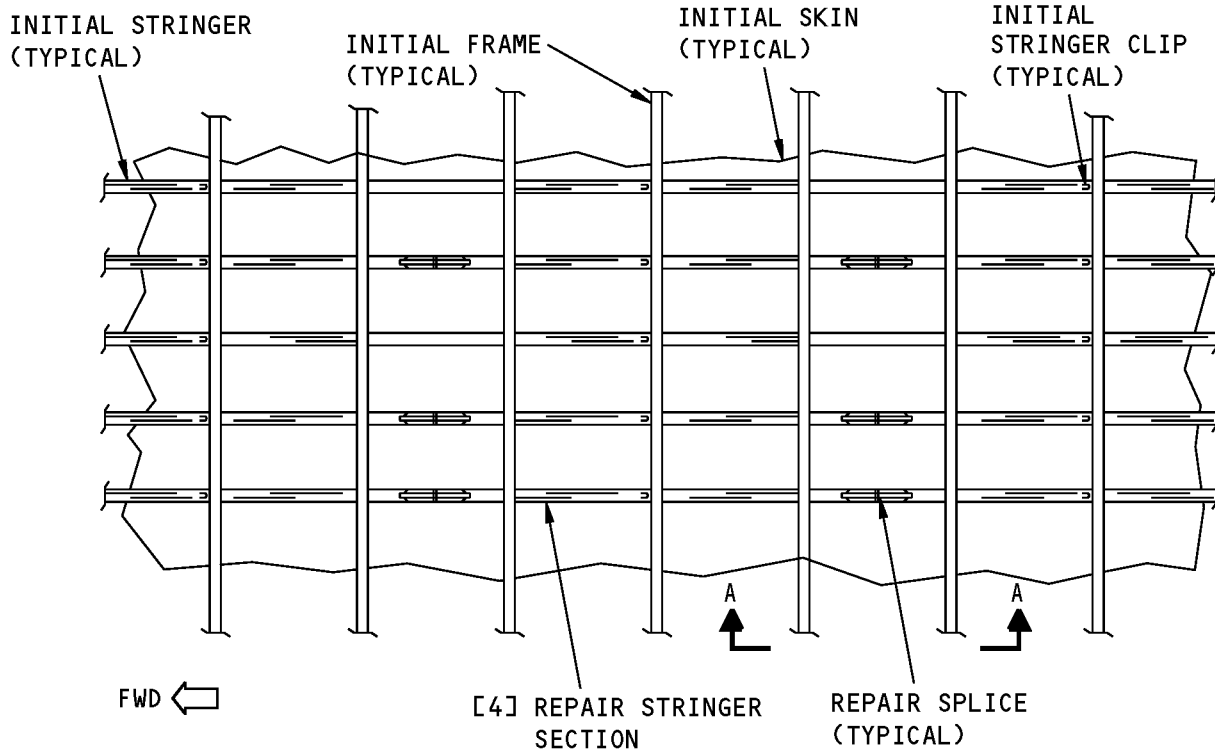
**Repair for Damage to the Full Stringer Section  
Figure 201 (Sheet 1 of 2)**

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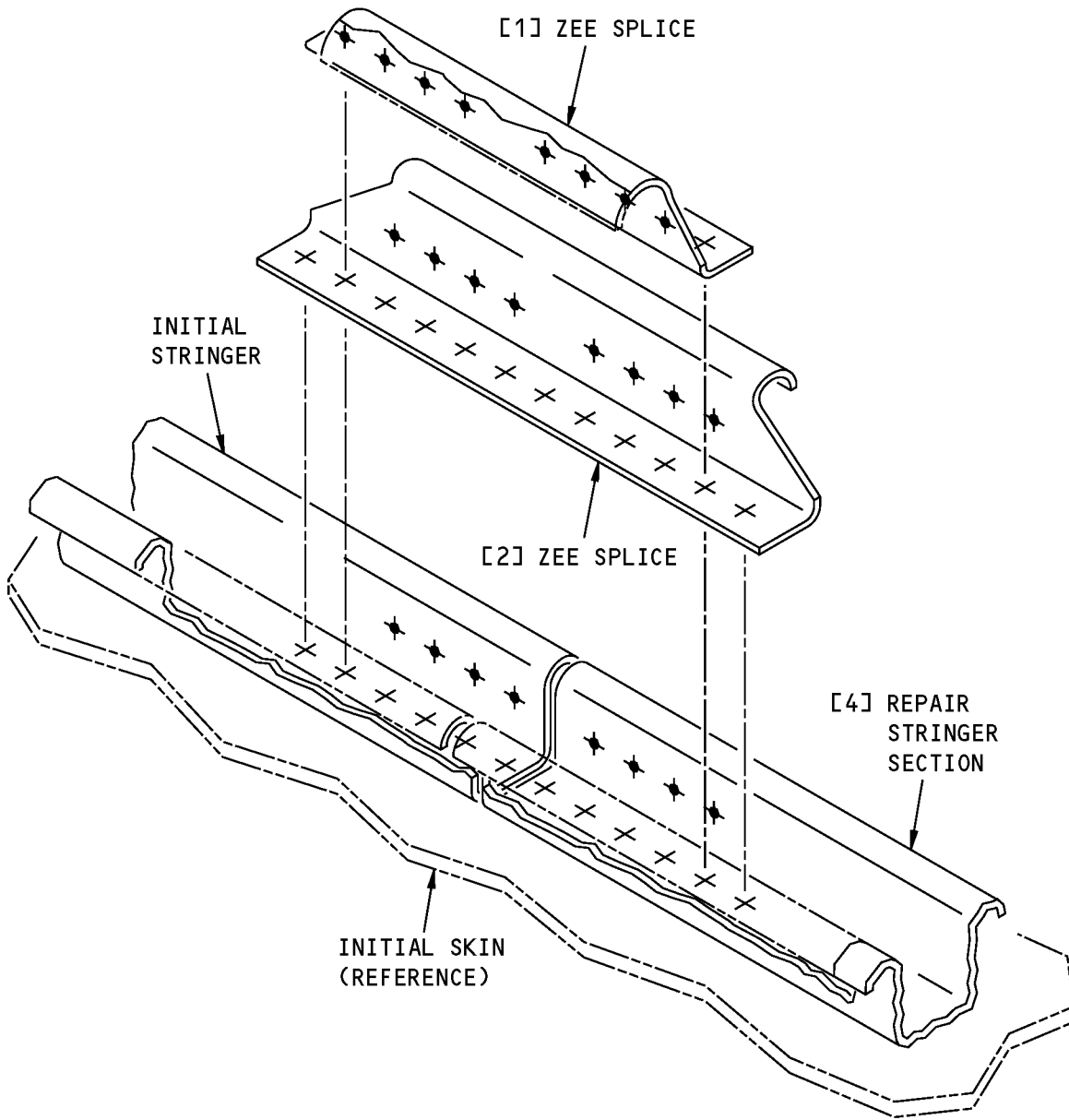
**Repair for Damage to the Full Stringer Section  
Figure 201 (Sheet 2 of 2)**

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**Repair of Type III Crown Stringers That Go Across Frame Stations  
Figure 202**

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**NOTES**

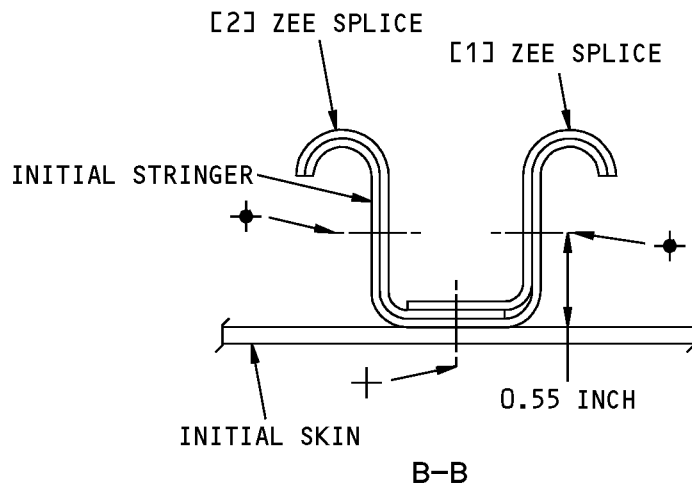
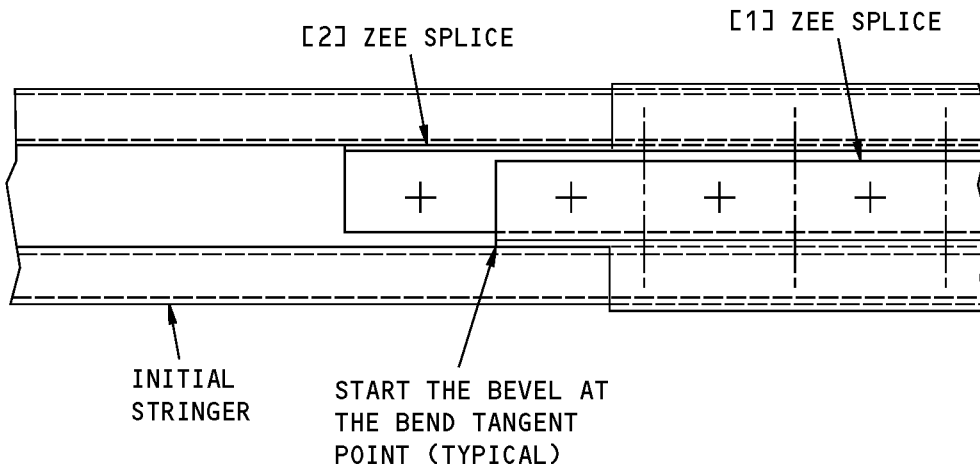
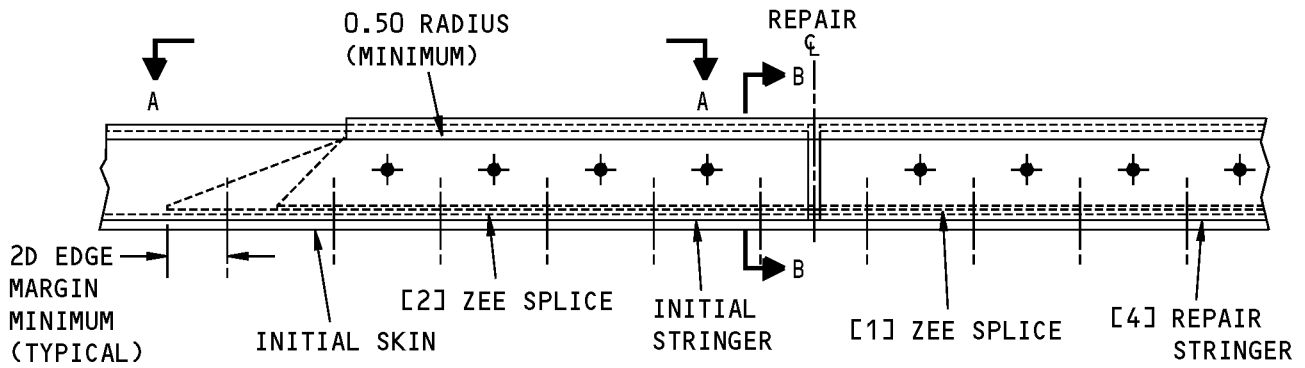
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION.
- ✦ REPAIR FASTENER LOCATION.

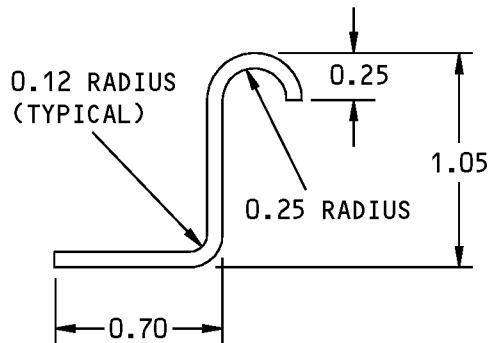
**Splice Repair for Damage to the Full Stringer Section  
Figure 203 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



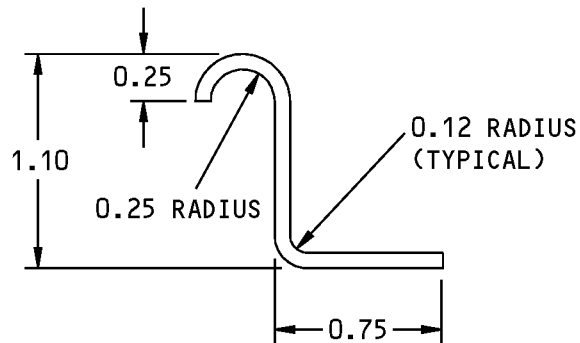
**Splice Repair for Damage to the Full Stringer Section  
Figure 203 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL



[1] ZEE SPLICE

(A)



[2] ZEE SPLICE

(B)

**NOTE:** A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-O MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

Repair Parts Necessary for Type III Crown Stringers  
Figure 204





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## **STRUCTURAL REPAIR MANUAL**

### **5. Inspection Instructions**

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) (Refer to 51-00-04):
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of this repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 4 - REPAIR FOR A TYPE III FUSELAGE STRINGER WITH LONGITUDINAL CRACK DAMAGE IN A FORMED CORNER OF A SKIN ATTACHMENT FLANGE

#### 1. Applicability

- A. Refer to Repair General for the definition of the different types of stringers.
- B. Repair 4 is applicable to Type III fuselage stringers with:
  - (1) Longitudinal cracks in the formed corners.
- C. Repair 4 is not applicable to:
  - (1) Damage that is less than 20 inches from an initial or repair stringer splice
  - (2) Nick, scratch, gouge, corrosion, dent, hole, puncture and edge damage
    - (a) Refer to Repair 3 for the repair of general damage to Type III stringers.
  - (3) Type I or II fuselage stringers
    - (a) Refer to Repair 1 for the repair of general damage.
    - (b) Refer to Repair 2 for the repair of longitudinal cracks.
  - (4) Stringer S-9 above the overwing escape hatches on the left and right sides of the airplane, from BS 597 to BS 664.

#### 2. General

- A. Repair 4 is a Category B Repair for airplanes that have completed Service Bulletin 737-21-1149. Refer to 51-00-06 for the different categories of repairs. Refer to paragraph 5 for the inspection requirements.
- B. Refer to Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the repair of damage.
  - (1) Do not locate the repair parts in the area of an initial stringer clip.

#### 3. References

Reference	Title
51-00-04	STRUCTURAL CLASSIFICATION
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-41	AIRFRAME DRAINAGE
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers

## STRUCTURAL REPAIR MANUAL

**4. Repair Instructions**

- A. Find the limits of the damage and remove the necessary fasteners in the area of the damaged stringer.
- B. Drill a stop hole at the ends of the crack if they do not end in a fastener hole. Refer to 51-10-02.
- C. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure the crack does not continue past the stop hole. Refer to 51-10-02.
- D. Make the repair parts.
  - (1) Calculate the lengths that are needed for the repair parts.
    - (a) Find the minimum number of fasteners that are needed as given in Table 201/REPAIR 4.
      - 1) A BACR15GF() D fastener can be used as an alternative to a BACR15CE()D fastener.
      - 2) An MS20470D() fastener can be used as an alternative to a BACR15FT()D fastener.
    - (b) Refer to the Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the fastener locations and edge margins.
  - (2) Refer to Table 202/REPAIR 4 for the material of the repair parts.
- E. Assemble the repair parts as shown in Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4.
  - (1) Make sure that the space between the mating surfaces is less than 0.010 inch thick.
  - (2) If the space is more than 0.010 inch, install shims that have thickness less than 0.028 inch thick.
- F. Drill the fastener holes.
  - (1) Refer to Repair of Longitudinally Cracked Type III Crown Stringers, Figure 201/REPAIR 4 for the fastener locations.
  - (2) Refer to Table 201/REPAIR 4 for the minimum diameter and the number of fasteners you need.
- G. Disassemble the repair parts.
- H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- I. Apply a chemical conversion layer to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- K. Install the repair parts.

**NOTE:** On some airplanes, channel strips are installed across the flanges of the stringer, between frames. You must install these channel strips again after a repair is made. Install the repair fasteners in the initial fastener locations of the channel strips.

  - (1) Apply BMS 5-95 sealant to the mating surfaces for a repair on stringers S-4 or S-10, on the left and right sides of the airplane. Refer to 51-20-05.
    - (a) Do not apply sealant to the mating surfaces of all other crown stringers.
  - (2) Install the fasteners. Refer to 51-40-02.
    - (a) Install non-aluminum fasteners wet with BMS 5-95 sealant.
- L. Apply corrosion inhibiting compound to the reworked areas. Refer to 51-20-01 for materials and locations.



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STRUCTURAL REPAIR MANUAL**

**Table 201:**

<b>MINIMUM DIAMETER AND NUMBER OF FASTENERS THAT ARE NEEDED ON EACH SIDE OF THE DAMAGE AREA</b>				
<b>INITIAL STRINGER THICKNESS INCHES</b>	<b>FASTENERS</b>			
	<b>INITIAL BACR15CE()D or BACR15GF()D</b>		<b>REPAIR BACR15FT()D or MS20470D()</b>	
	<b>MINIMUM DIAMETER INCHES</b>	<b>MINIMUM NUMBER</b>	<b>MINIMUM DIAMETER INCHES</b>	<b>MINIMUM NUMBER IN EACH WEB</b>
0.028	3/16	5	3/16	3
0.032	3/16	5	3/16	3
0.036	3/16	5	3/16	3
0.040	3/16	5	3/16	3
0.045	3/16	5	3/16	3
0.050	3/16	5	3/16	3
0.056	3/16	5	3/16	3
0.063	3/16	5	3/16	3
0.071	3/16	5	3/16	3

**NOTE:** All fasteners must be overdriven a minimum of 1.4D (D = Diameter of the rivet shank).

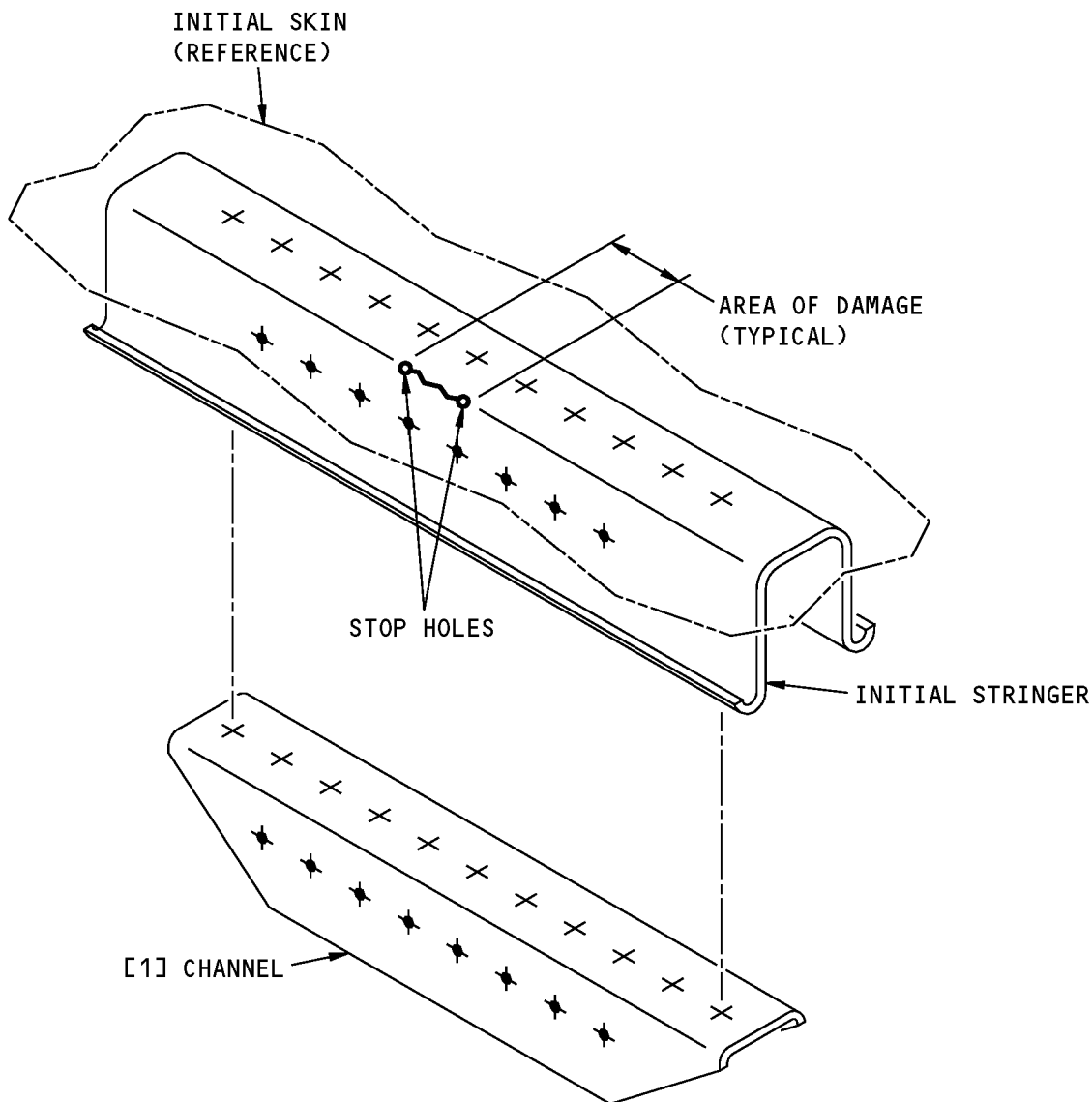
**Table 202:**

<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART NAME</b>	<b>QTY</b>	<b>MATERIAL</b>
1	Channel	1	7075-T6 bare or clad sheet and one of the options that follows: - Use the applicable repair section given in Table 203, or - Make the repair part as shown in Figure 202 and one gage thicker than the damaged section of the initial stringer that was removed. (This option is necessary if no section is given in Table 203)

**Table 203:**

<b>TYPE III STRINGER REPAIR SECTIONS</b>		
<b>DAMAGED SECTION OF THE INITIAL STRINGER</b>		<b>REPAIR SECTION</b>
<b>SECTION</b>	<b>THICKNESS INCHES</b>	<b>C SECTION</b>
BAC1498-150 or Type III Formed Sheet	0.028	————
BAC1498-151 or Type III Formed Sheet	0.032	BAC1493-249
BAC1498-152 or Type III Formed Sheet	0.036	BAC1493-249
BAC1498-153 or Type III Formed Sheet	0.040	BAC1493-249
BAC1498-154 or Type III Formed Sheet	0.045	BAC1493-249
BAC1498-164 or Type III Formed Sheet	0.050	BAC1493-248
BAC1498-165 or Type III Formed Sheet	0.056	BAC1493-248
BAC1498-166 or Type III Formed Sheet	0.063	BAC1493-247
BAC1498-167 or Type III Formed Sheet	0.071	————

**STRUCTURAL REPAIR MANUAL**



**NOTES**

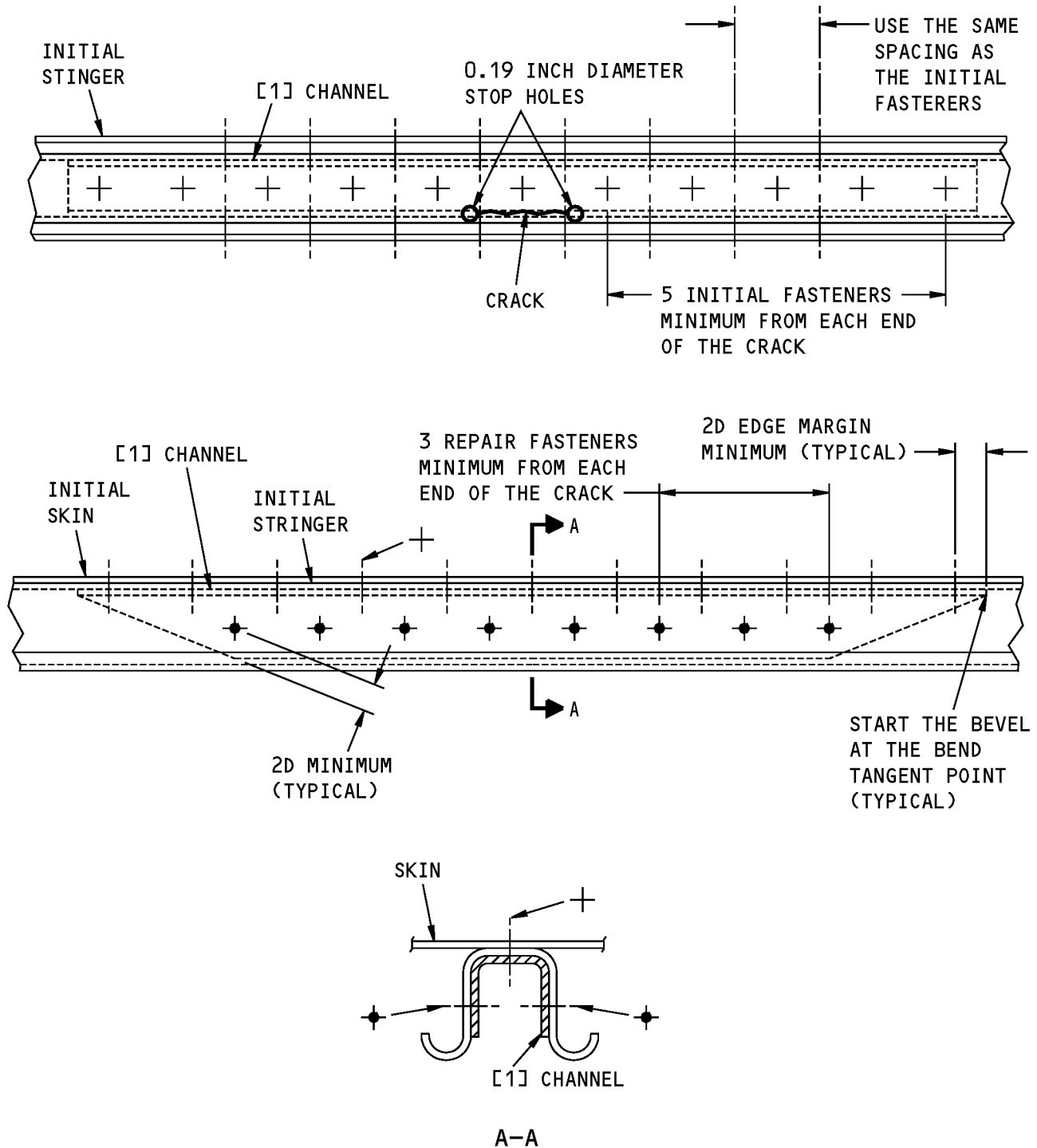
- THE REPAIR OF A 0.040 INCH THICK STRINGER IS SHOWN
- D = DIAMETER OF THE FASTENER

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION.
- ★ REPAIR FASTENER LOCATION.

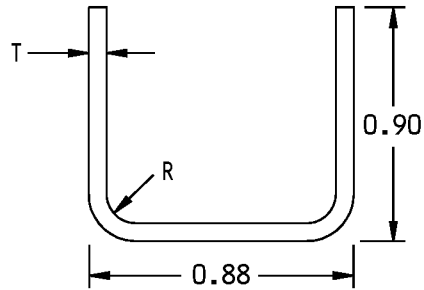
**Repair of Longitudinally Cracked Type III Crown Stringers  
Figure 201 (Sheet 1 of 2)**

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**Repair of Longitudinally Cracked Type III Crown Stringers  
Figure 201 (Sheet 2 of 2)**

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**NOTE:** A REPAIR PART CAN BE MADE FROM BARE OR CLAD 7075-0 MATERIAL AND HEAT TREATED TO THE 7075-T6 CONDITION AFTER IT IS FORMED.

T = THE MATERIAL THICKNESS.

R = THE BEND RADIUS WHICH WILL ALLOW THE REPAIR PART TO FIT TO THE INITIAL STRINGER. REFER TO SRM 51-30-01 FOR THE MINIMUM BEND RADIUS.

**Repair Part Necessary for Type III Crown Stringers  
Figure 202**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection Instructions

- A. For airplanes that have completed Service Bulletin 737-21-1149 follow the inspection requirements as given below. Inspections as given below do not apply for airplanes that have not completed Service Bulletin 737-21-1149.
- B. For all Principal Structural Elements (PSE's) (Refer to 51-00-04):
  - (1) The threshold for the start of supplemental inspections is 22,500 flight cycles or 6 years after the installation of this repair.
  - (2) Tell The Boeing Company not more than 30 days after the installation of this repair to receive specific inspection methods and intervals. This assessment requires that The Boeing Company review a complete technical description of the actual installation.
- C. Supplemental inspections are not required for non-PSE structure. Refer to 51-00-04.





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# STRUCTURAL REPAIR MANUAL

## ALLOWABLE DAMAGE 1 - FUSELAGE INTERCOSTALS

### 1. Applicability

- A. This subject gives the allowable damage limits for fuselage intercostals.
- B. This subject does not give allowable damage limits for intercostals in the door surround areas. Refer to the applicable chapter-section-subject for intercostals in the door surrounds.

### 2. General

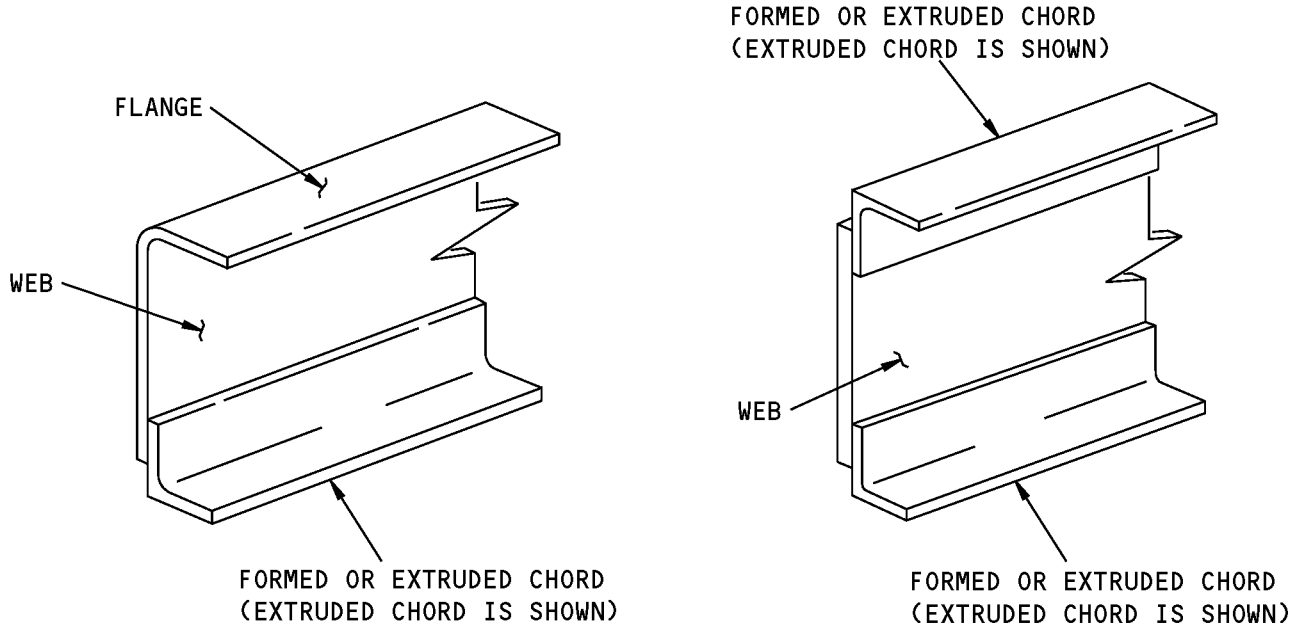
- A. Refer to Intercostal Type Identification, Figure 101/ALLOWABLE DAMAGE 1 for the definition of the different intercostal types.
- B. Remove the parts as necessary to get access to the damaged area.
- C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

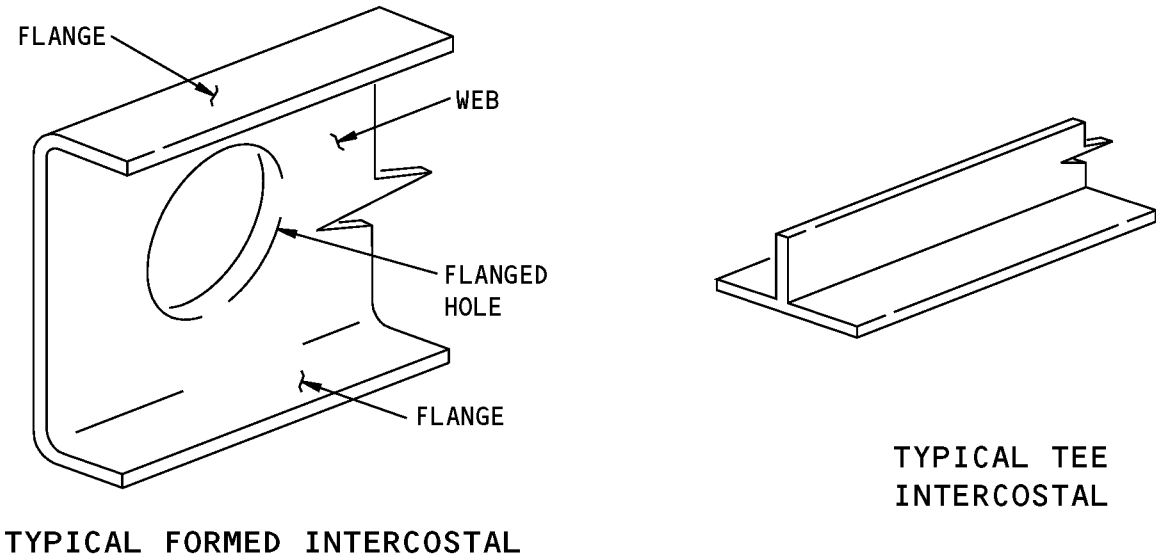
PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	STRUCTURE PART	PARAGRAPH
Built-up Intercostal	Extruded Chord	4.A
	Formed Chord	4.B
	Web or Web/Doubler Combination	4.B
	Flange	4.B
Formed Intercostal	Web	4.B
	Flange	4.B
Tee Intercostal		4.A
Machined Intercostal		4.C

- D. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- E. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the reworked area. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**



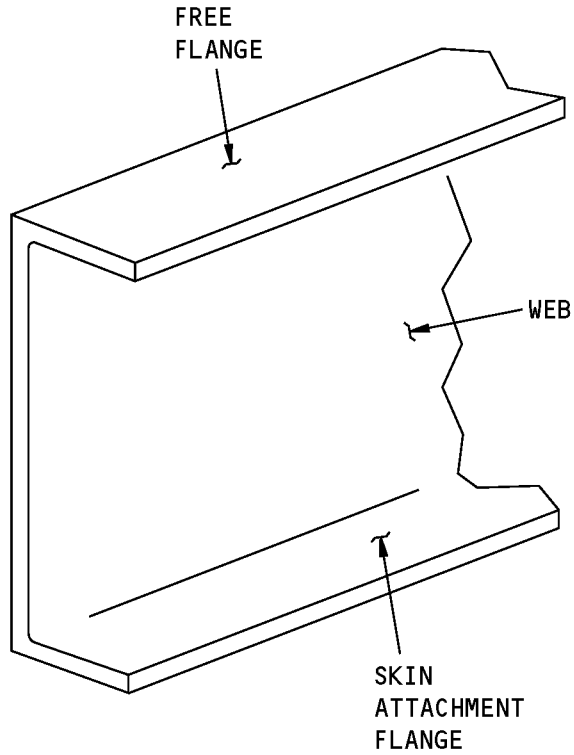
**TYPICAL BUILT-UP INTERCOSTALS**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Intercostal Type Identification  
Figure 101 (Sheet 1 of 2)**

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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**TYPICAL MACHINED INTERCOSTAL**

**Intercostal Type Identification  
Figure 101 (Sheet 2 of 2)**



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### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Tee Intercostal and Extruded Chord of a Built-up Intercostal

##### (1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , C , and D .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 102, Details A , B , C , D , E , and F .

2) Drill out the damage as given in Holes and Punctures for this type of structure. Refer to Paragraph 4.A.(4)/ALLOWABLE DAMAGE 1

(3) Dents are not permitted.

##### (4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 1.0 inch away from a fastener hole or other damage

3) A minimum of 2D (D = largest damage dimension) from the edge of the part

4) Filled with a 2117-T3 or 2117-T4 protruding head rivet installed without sealant.

#### B. Formed Intercostal and Built-up Intercostal (This does not include the Extruded Chord)

##### (1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , and H .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follow:

1) Remove the damage as shown in Figure 102, Details A , B , G , H , and I .

2) Drill out the damage as given in Holes and Punctures for this type of structure. Refer to Paragraph 4.B.(4)/ALLOWABLE DAMAGE 1

##### (3) Dents:

(a) The damage is permitted as shown in Figure 102, Detail J only for the web of the intercostal.

##### (4) Holes and Punctures:

(a) The damage is permitted if it is:

1) A maximum of 0.25 inch in diameter

2) A minimum of 1.0 inch away from a fastener hole or other damage



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**STRUCTURAL REPAIR MANUAL**

- 3) A minimum of 2D (D = largest damage dimension) from the edge of the part
- 4) A minimum of 1.5 inch away from the edge of a flanged hole
- 5) Filled with a 2117-T3 or 2117-T4 protruding head rivet installed without sealant.

C. Machined Intercostal

(1) Cracks:

(a) Remove the damage as shown in Figure 102, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

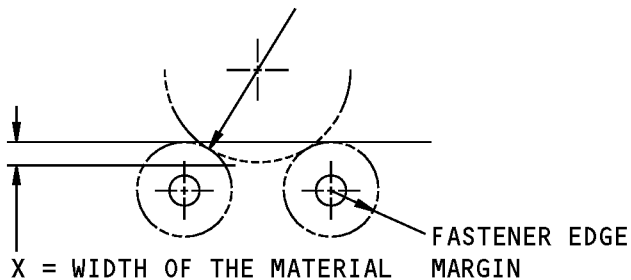
(a) Remove the damage as shown in Figure 102, Details A , B , C , E , and I .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**

REMOVE THE MATERIAL TO A MINIMUM  
RADIUS OF 1.00 INCH (25.4 mm)

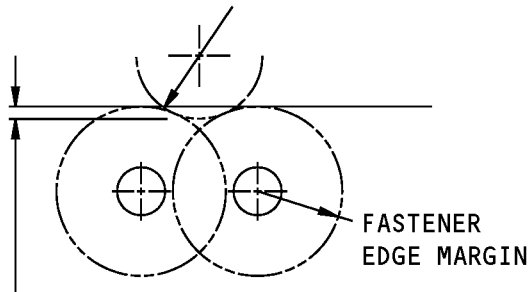


X = WIDTH OF THE MATERIAL MARGIN  
THAT IS REMOVED  
= 5 PERCENT OF THE FLANGE (OR WEB) WIDTH OR  
0.05 INCH (1.27 mm), THAT WHICH IS LESS 1  
= 10 PERCENT OF THE FLANGE (OR WEB) WIDTH OR  
0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER  
EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)

REMOVE THE MATERIAL TO A MINIMUM  
RADIUS OF 1.00 INCH (25.4 mm)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= 5 PERCENT OF THE FLANGE (OR WEB) WIDTH OR  
0.05 INCH (1.27 mm), THAT WHICH IS LESS 1  
= 10 PERCENT OF THE FLANGE (OR WEB) WIDTH OR  
0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

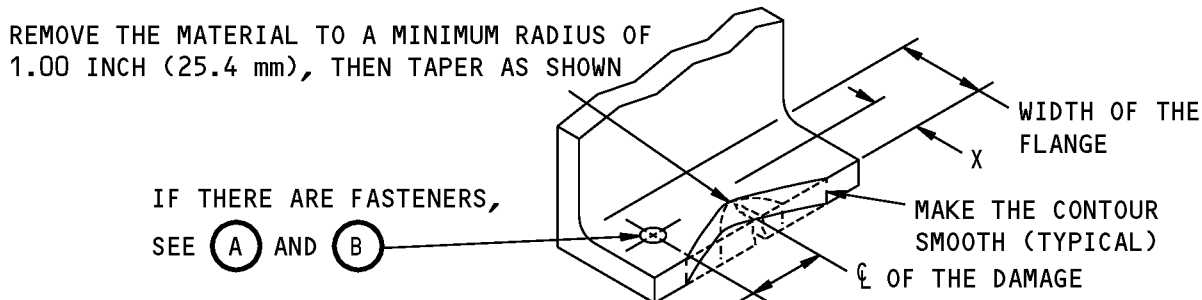
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER  
EDGE MARGINS HAVE AN OVERLAP**

(B)

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Intercostals Allowable Damage Limits  
Figure 102 (Sheet 1 of 6)**

**STRUCTURAL REPAIR MANUAL**

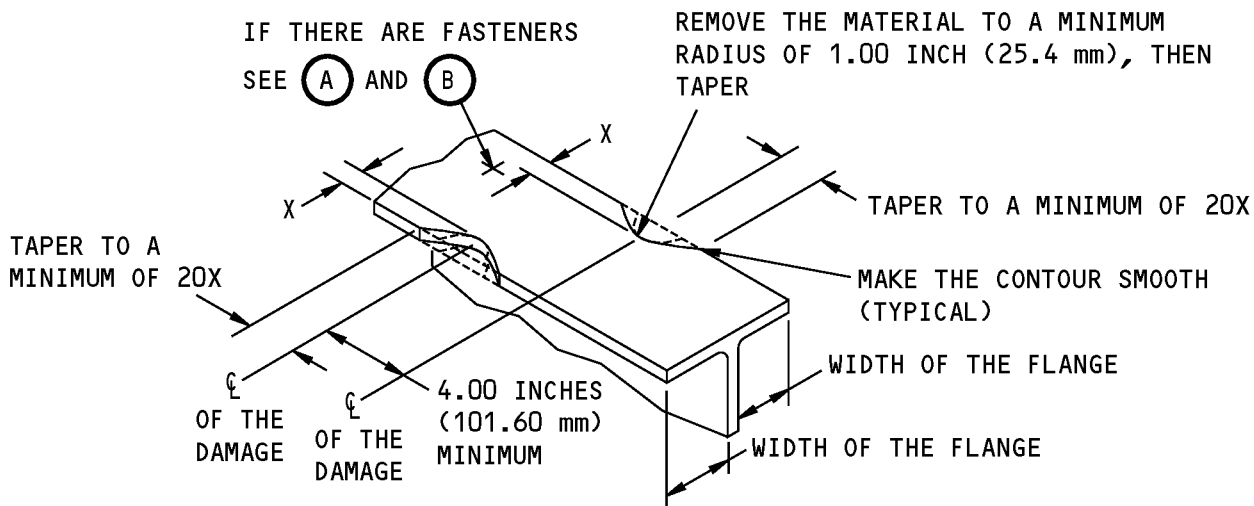


TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

- X = WIDTH OF THE MATERIAL REMOVED
- = THE SMALLER VALUE OF 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS **1**
- = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS **2**

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED OR EXTRUDED PART**

**(C)**



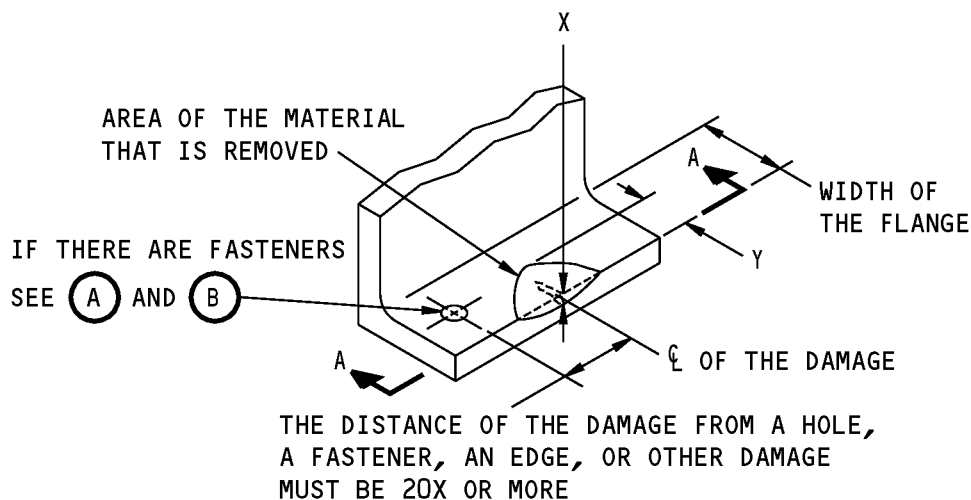
- X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
- = 5 PERCENT OF THE WIDTH OF THE FLANGE OR 0.05 INCH (1.27mm), THAT WHICH IS LESS **1**
- = 10 PERCENT OF THE WIDTH OF THE FLANGE OR 0.10 INCH (2.54mm), THAT WHICH IS LESS **2**

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(D)**

**Intercostals Allowable Damage Limits  
Figure 102 (Sheet 2 of 6)**

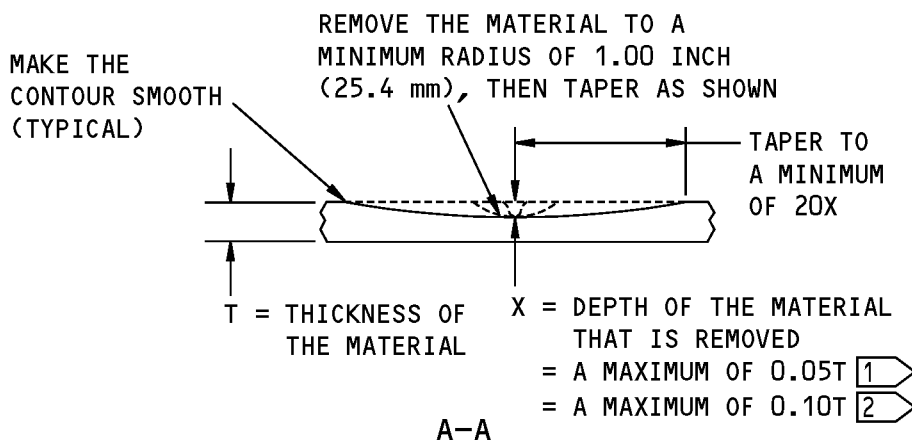
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
  - = 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

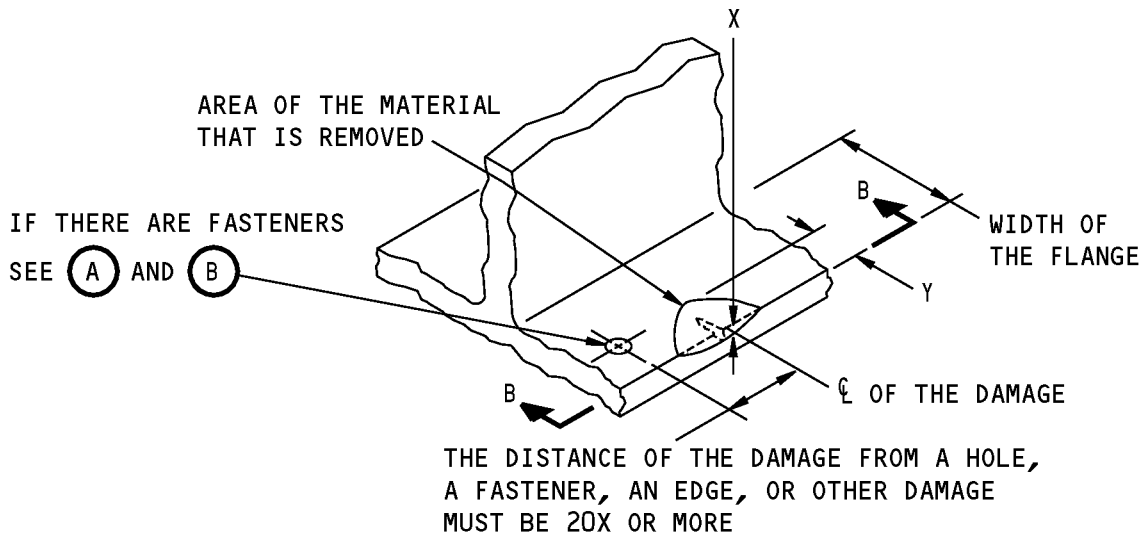
(E)



**Intercostals Allowable Damage Limits  
Figure 102 (Sheet 3 of 6)**



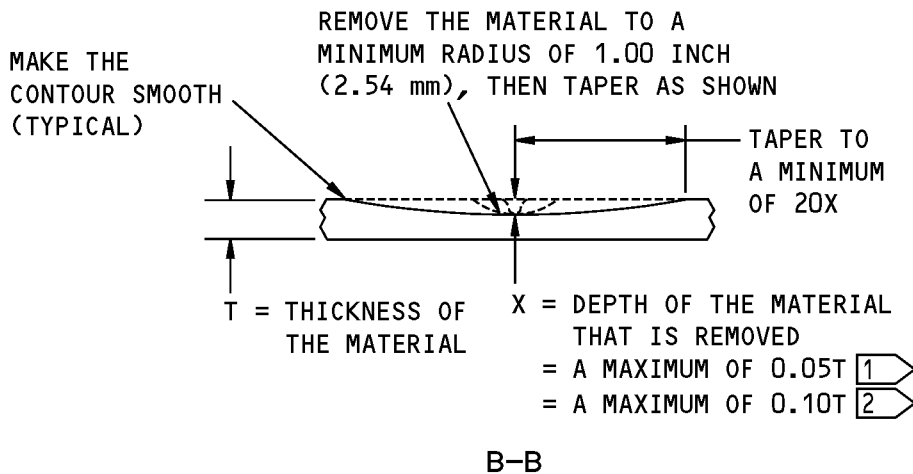
**STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm), THAT WHICH IS LESS 1
- = 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm), THAT WHICH IS LESS 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE**

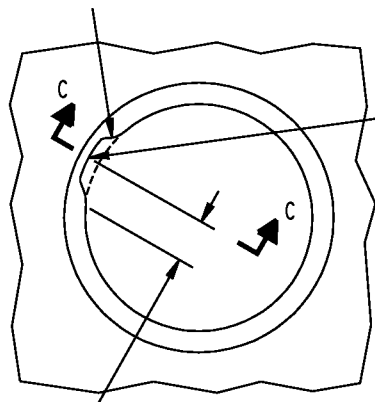
(F)



**Intercostals Allowable Damage Limits**  
**Figure 102 (Sheet 4 of 6)**

**STRUCTURAL REPAIR MANUAL**

REMOVAL OF MATERIAL IS PERMITTED IN ONE LOCATION ONLY

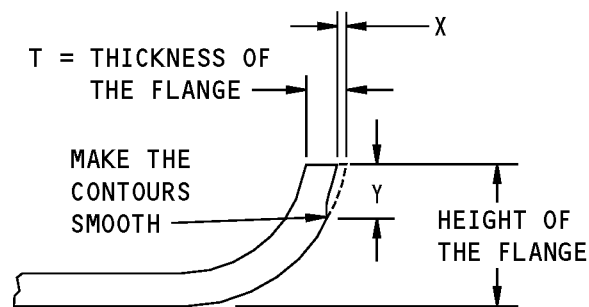


REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm)

TAPER TO A MINIMUM OF 20X

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE

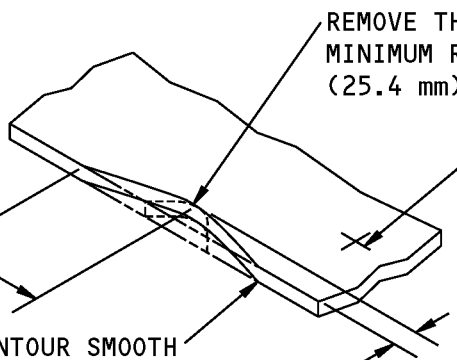
**G**



X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T **1**  
 = A MAXIMUM OF 0.10T **2**  
 Y = LENGTH OF THE MATERIAL THAT IS REMOVED  
 = THE SMALLER VALUE OF 50 PERCENT OF THE FLANGE HEIGHT OR 0.10 INCHES (2.54 mm)

C-C

TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN

IF THERE ARE FASTENERS, SEE **(A)** AND **(B)**

MAKE THE CONTOUR SMOOTH (TYPICAL)

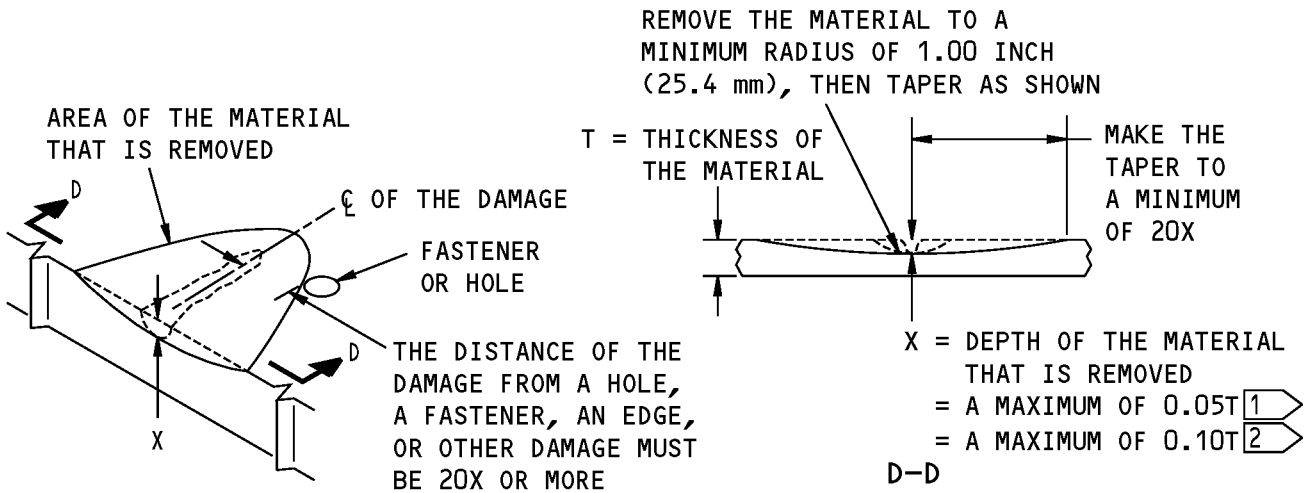
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = THE SMALLER VALUE OF 5 PERCENT OF THE FLANGE WIDTH OR 0.05 INCH (1.27 mm) **1**  
 = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH (2.54 mm) **2**

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

**H**

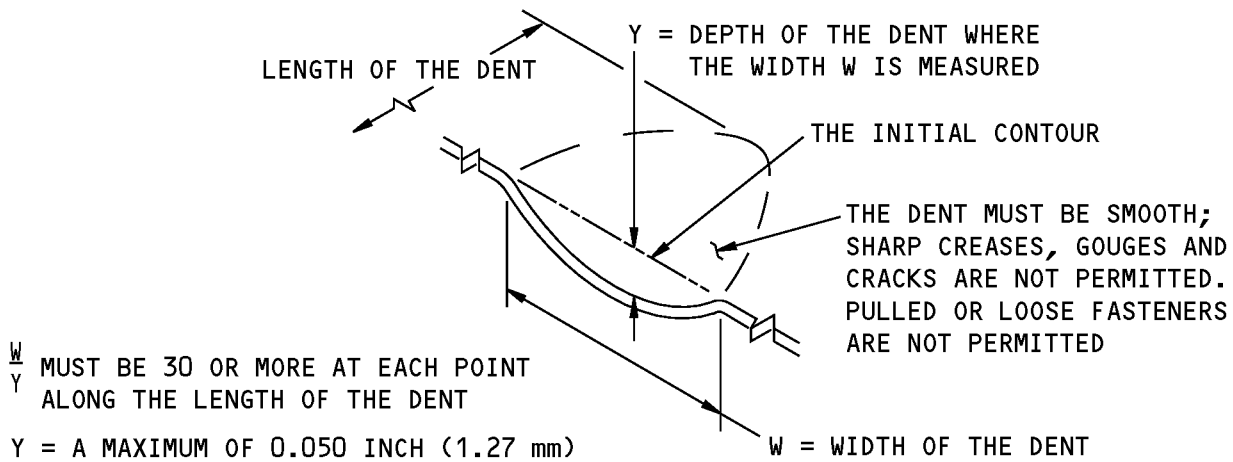
**Intercostals Allowable Damage Limits  
 Figure 102 (Sheet 5 of 6)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**I**



**DENT THAT IS PERMITTED**

**J**

**Intercostals Allowable Damage Limits  
Figure 102 (Sheet 6 of 6)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - TYPICAL FUSELAGE FRAMES**

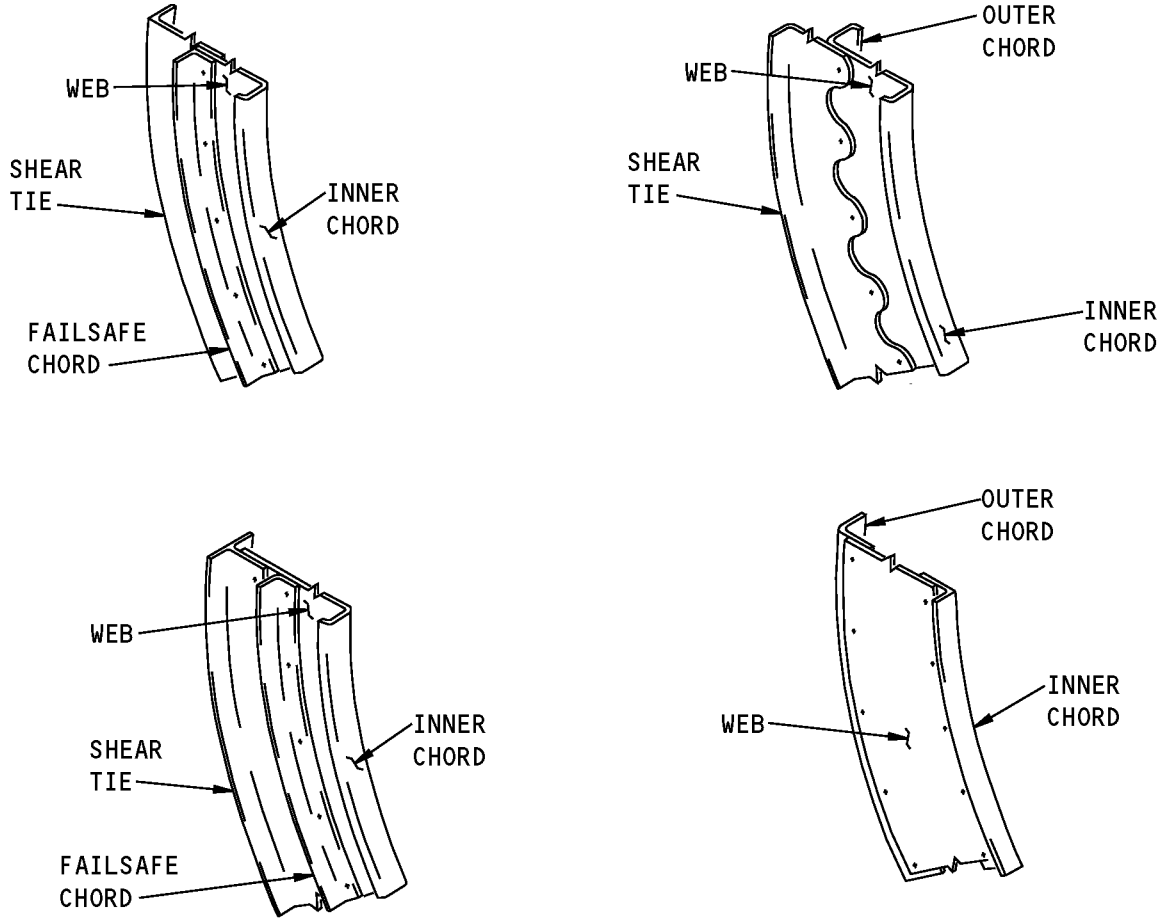
**1. Applicability**

- A. This subject gives the allowable damage limits for the fuselage frames in body sections 41, 43, 46, 47 and 48. Typical frame sections are shown in Allowable Damage - Typical Fuselage Frames, Figure 101/ALLOWABLE DAMAGE 1.
- B. This subject is not applicable to what follows:
  - (1) Edge frames or auxiliary frames. Refer to the applicable SRM section for the door surround structure.
  - (2) Frame sections where the floor beams are attached
  - (3) Body Section 44 (STA 540 thru STA 727). Refer to 53-40-07.

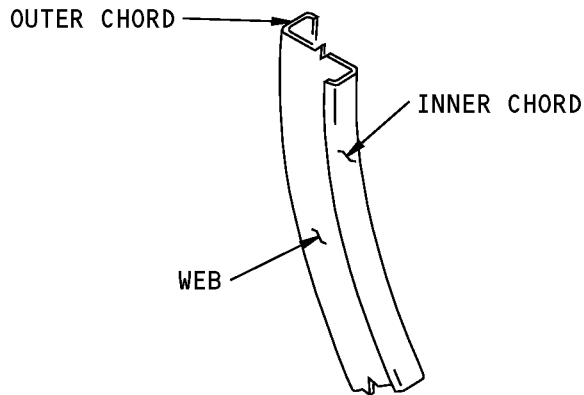
**2. General**

- A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- B. Remove the damaged material as necessary.
  - (1) Make sure that the material to be removed is less than or equal to the allowable damage limits.
  - (2) Refer to 51-10-02 for the inspection and removal of damage.
  - (3) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (4) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove damage.
- C. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the reworked areas. Refer to SOPM 20-41-02.
  - (3) Apply corrosion inhibiting compounds, BMS 3-23, Type II, and BMS 3-26, Type II, to the reworked areas, as necessary. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**



**TYPICAL BUILT-UP FRAME SECTIONS (ALUMINUM)**



**TYPICAL ZEE FRAME (ALUMINUM)**

**Allowable Damage - Typical Fuselage Frames  
Figure 101**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-40-07	FUSELAGE FRAMES - SECTION 44
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits for Typical Fuselage Frames

- A. Inner Chord
- (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Figure 102, Detail C .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- B. Failsafe Chord
- (1) Cracks:
    - (a) Remove damage as shown in Figure 102, Details A and B .
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Figure 102, Details A , B , and C .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- C. Outer Chord and Shear Ties
- (1) Cracks:
    - (a) Remove damage as shown in Figure 102, Details A , B , and D .
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Figure 102, Details A , B , C , and D .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- D. Webs (Does not include chord flanges, shear tie flanges or the area under those flanges)
- (1) Cracks:
    - (a) Remove damage as shown in Figure 102, Details A , B , and E .
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Figure 102, Details A , B , C , and E .
  - (3) Dents:
    - (a) Refer to Figure 102, Detail G for damage that is permitted.
  - (4) Holes and Punctures:

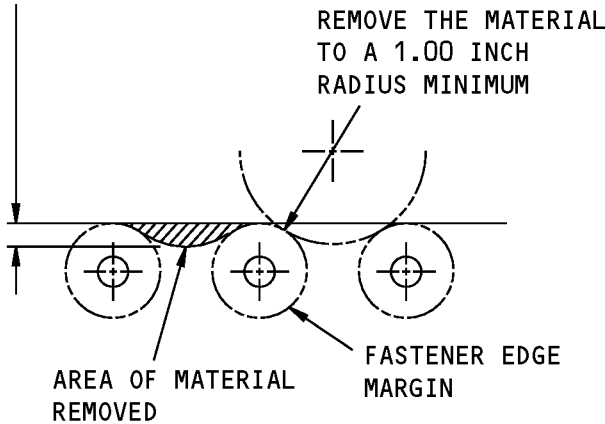


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**STRUCTURAL REPAIR MANUAL**

- (a) Rework the damage as shown in Figure 102, Detail F .

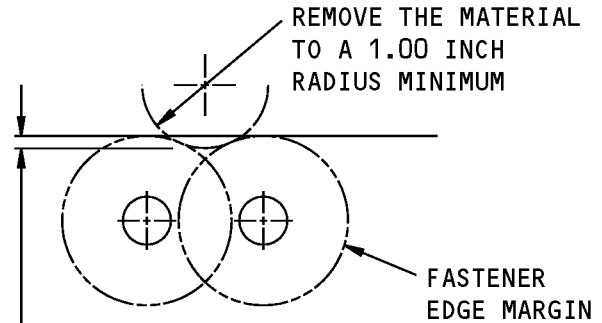
**STRUCTURAL REPAIR MANUAL**

X = THE WIDTH OF THE MATERIAL REMOVED  
 = 0.05 INCH OR 5% OF FLANGE WIDTH,  
 WHICHEVER IS LESS **1**  
 = 0.10 INCH MAXIMUM **2**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

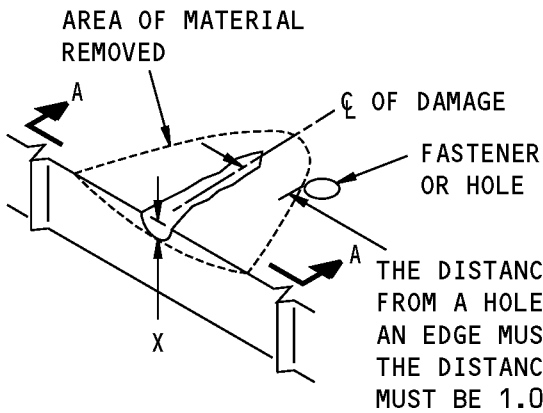
**(A)**



X = THE WIDTH OF THE MATERIAL REMOVED  
 = 0.05 INCH OR 5% OF FLANGE WIDTH,  
 WHICH EVER IS LESS **1**  
 = 0.10 INCH MAXIMUM **2**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

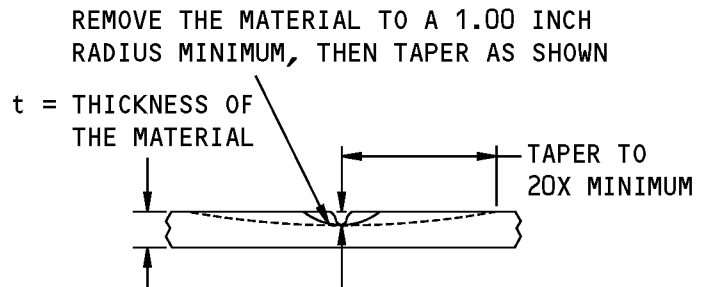
**(B)**



THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER OR AN EDGE MUST BE 20X OR MORE. THE DISTANCE TO OTHER DAMAGE MUST BE 1.0 INCH OR MORE

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**(C)**



X = THE DEPTH OF THE MATERIAL REMOVED  
 = 0.05t MAXIMUM **1**  
 = 0.10t MAXIMUM **2**

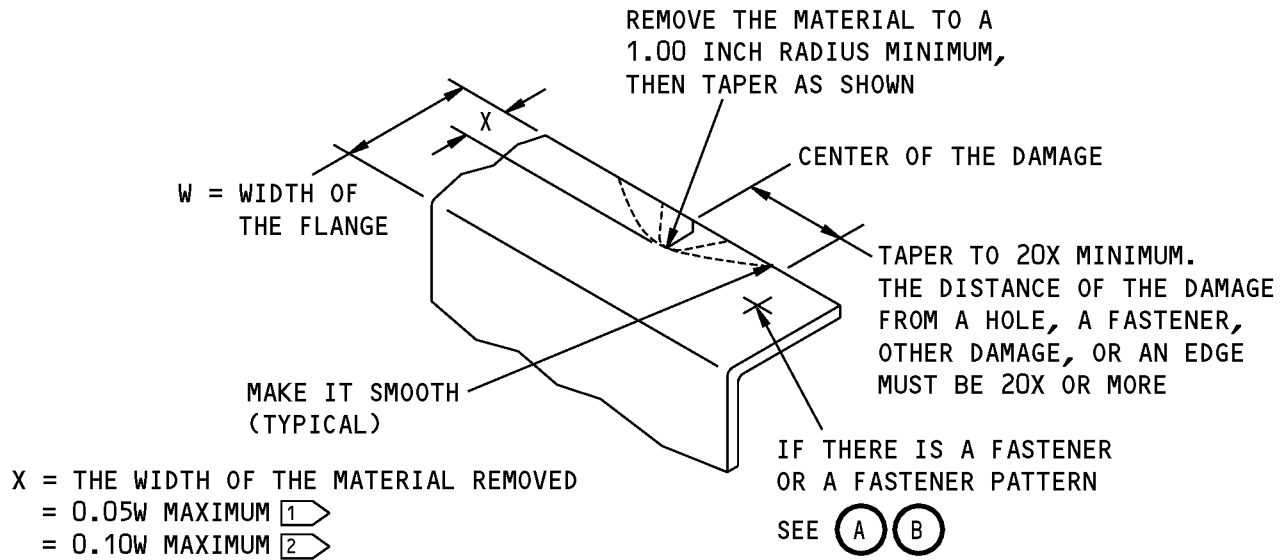
A-A

- 1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
 Figure 102 (Sheet 1 of 4)**

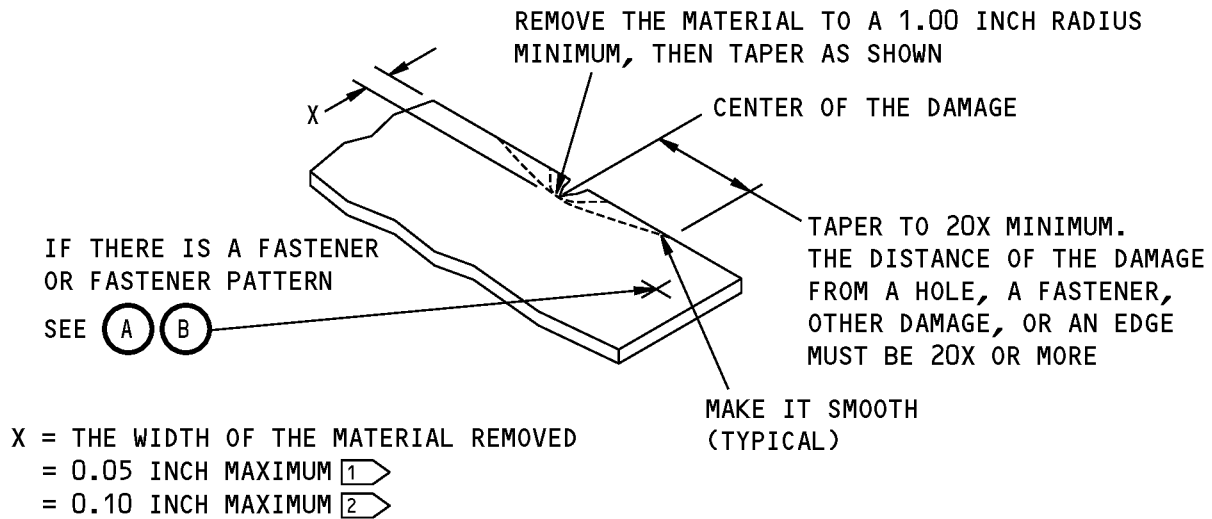


**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(D)

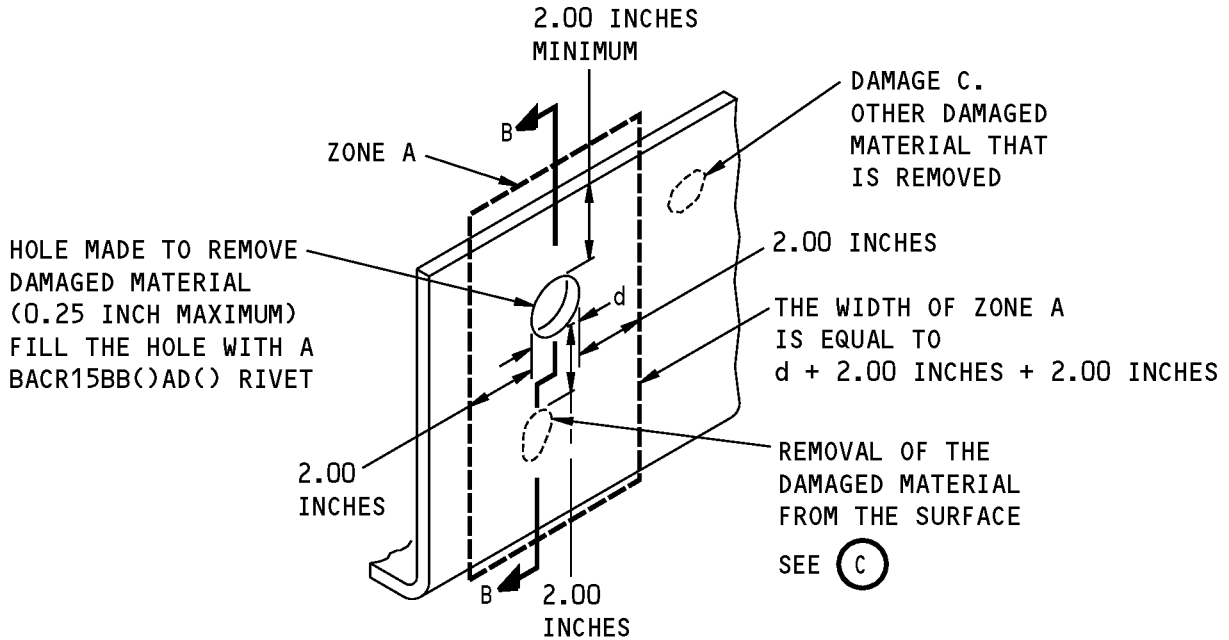


**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(E)

**Allowable Damage Limits  
 Figure 102 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** DAMAGE C IS NOT LOCATED IN ZONE A AND SHOULD NOT BE INCLUDED TO CALCULATE THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IN THE EXAMPLE GIVEN IN B-B.

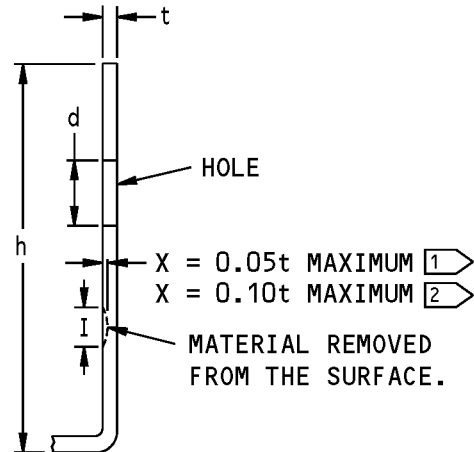
**CROSS-SECTIONAL AREA REMOVAL IN A WEB**

F

**EXAMPLE:** THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IS

$$td + XI \leq 0.05th \quad \boxed{1}$$

$$td + XI \leq 0.10th \quad \boxed{2}$$



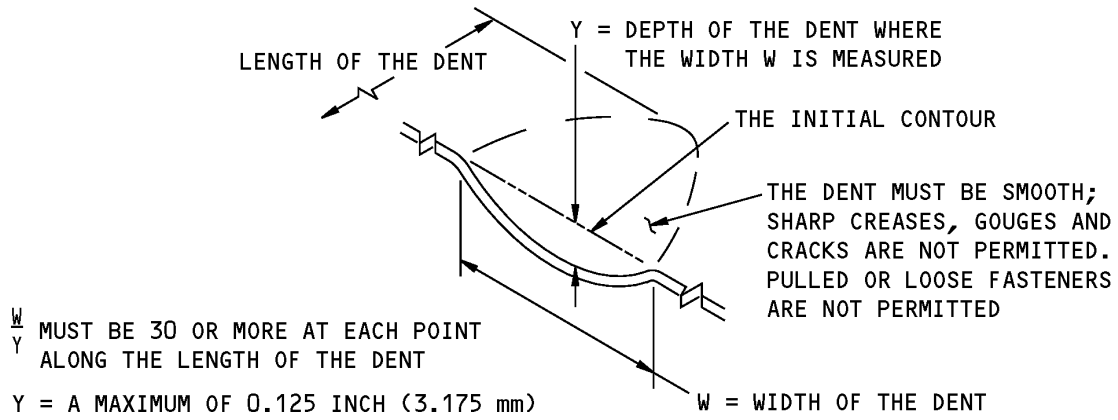
**NOTES**

- THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECREASE MORE THAN 5 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES.  $\boxed{1}$
- THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECREASE MORE THAN 10 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES.  $\boxed{2}$

B-B

**Allowable Damage Limits  
Figure 102 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL



$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT  
ALONG THE LENGTH OF THE DENT

Y = A MAXIMUM OF 0.125 INCH (3.175 mm)

W = WIDTH OF THE DENT

DENT THAT IS PERMITTED



Allowable Damage Limits  
Figure 102 (Sheet 4 of 4)



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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - FUSELAGE ZEE FRAMES**

**1. Applicability**

- A. This repair is applicable to fuselage frames that are made from formed zee sections.
- B. This repair is not applicable at the locations that follow:
  - (1) Edge frames or auxiliary frames (Refer to the applicable SRM section for the door surround structure)
  - (2) Frame sections where the floor beams are attached
  - (3) Frame sections that include doublers, other repair parts, or support structure for auxiliary fuel tanks.

**2. References**

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
51-50-02, GENERAL	Support of the Airplane for Repair
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

**3. Repair Instructions**

- A. Remove the necessary fasteners in the area of the damaged frame.
- B. Cut and remove the damaged part of the frame as shown in Fuselage Zee Frame Repair, Figure 201/REPAIR 1.
- C. Do a high frequency eddy current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
- D. Make the edges smooth with a surface finish of 125 microinches Ra.
- E. Make the repair parts. Refer to Table 201/REPAIR 1.

**NOTE:** The repair parts are available from the Boeing Spares Department. The repair parts can also be made from aluminum sheet to dimensions as given in the production drawing.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Channel	1	Use clad 7075-0 that is the same thickness as the initial frame. Heat treat the part to T6 after it is formed  You can get the channel repair part, Boeing Drawing Number 69-78188, from the Boeing Spares Department. Refer to Table 202



**737-800  
STRUCTURAL REPAIR MANUAL**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[2]	Channel	1	Use clad 7075-0 that is the same thickness as the initial frame. Heat treat the part to T6 after it is formed  You can get the channel repair part, Boeing Drawing Number 69-78188, from the Boeing Spares Department. Refer to Table 202
[3]	Filler	1	Use clad 7075-T6 that is the same thickness as the initial frame

**Table 202:**

INITIAL ZEE SECTION	REPAIR PART 69-78188 DASH NUMBERS	
	PART [1] CHANNEL	PART [2] CHANNEL
BAC1517-1470	-105	-104
BAC1517-1491	-105	-104
BAC1517-1147	-105	-104
BAC1517-705	-105	-104
BAC1517-1062	-107	-106
BAC1517-706	-107	-106

- F. Assemble the repair parts as shown in Fuselage Zee Frame Repair, Figure 201/REPAIR 1.
- G. Make sure that gaps between mating surfaces of repair parts are not larger than 0.010 inch. If shims are necessary to close the gaps, make sure the shims are not more than 0.030 inch thick.
- H. Drill the necessary fastener holes. Refer to Fuselage Zee Frame Repair, Figure 201/REPAIR 1 and Table 203. Refer to 51-40-05 for the fastener hole size. Refer to 51-40-03 and 51-40-06 for more fastener data.

**Table 203:**

MINIMUM NUMBER OF FASTENERS NECESSARY IN EACH ROW ON EACH SIDE OF THE DAMAGE			
INITIAL ZEE SECTION	THICKNESS (INCHES)	FASTENER	QUANTITY
BAC1517-1470	0.040	BACR15BB5D	5
BAC1517-1491	0.040	BACR15BB5D	5
BAC1517-1147	0.045	BACR15BB5D	5
BAC1517-705	0.051	BACR15BB6D	5
BAC1517-1062	0.056	BACR15BB6D	5
BAC1517-706	0.064	BACR15BB6D	5

- I. Disassemble the repair parts.
- J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.

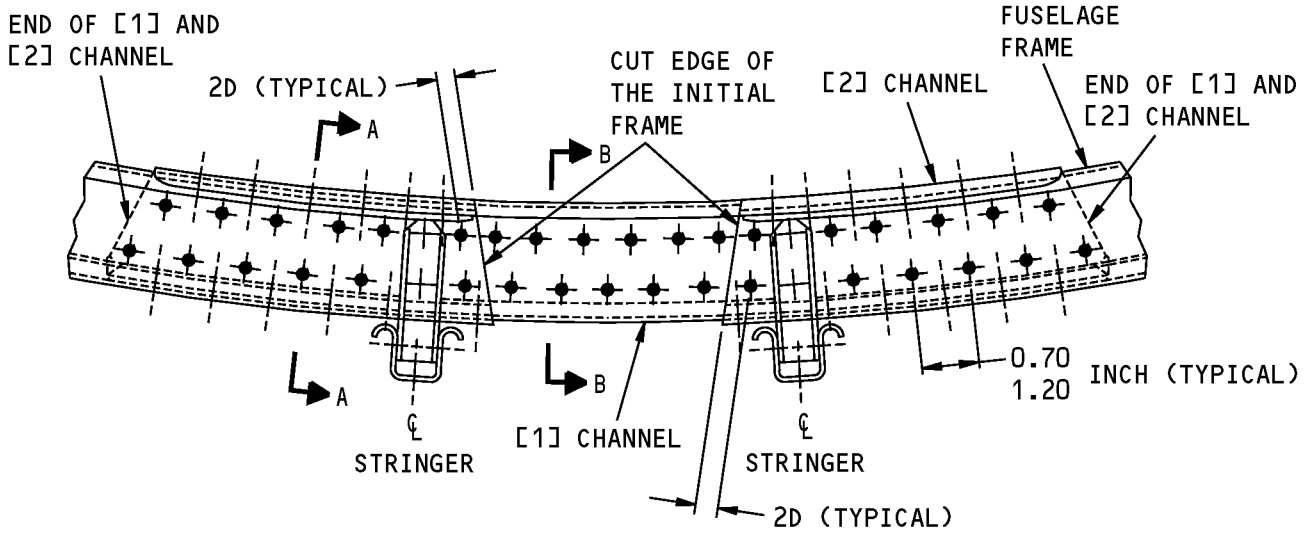


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**STRUCTURAL REPAIR MANUAL**

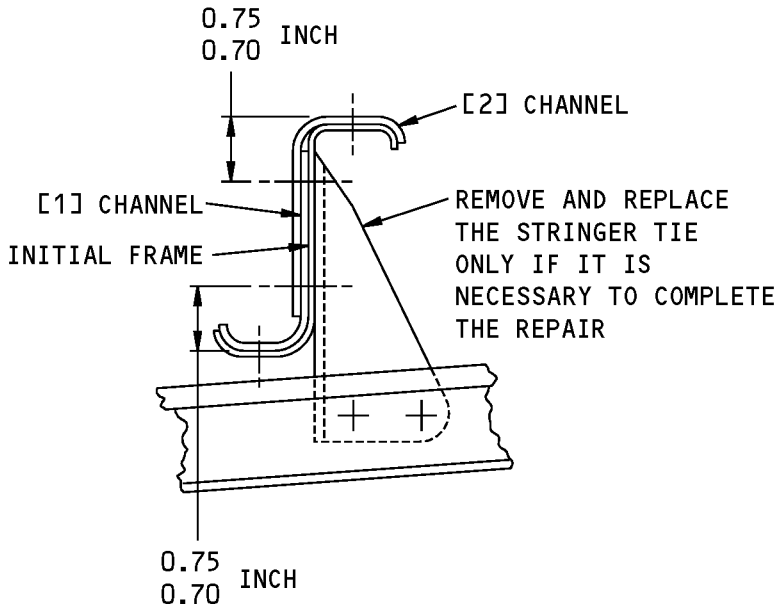
- (2) Install the fasteners. Refer to Table 203/REPAIR 1 and SRM 51-40-02.
- N. Apply corrosion inhibiting compound to the reworked areas, as necessary. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**

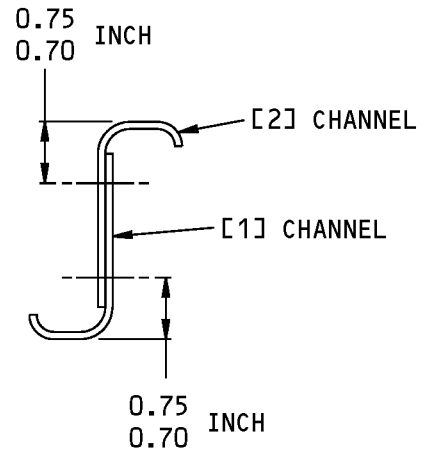


**DAMAGE BETWEEN STRINGERS**

(A)



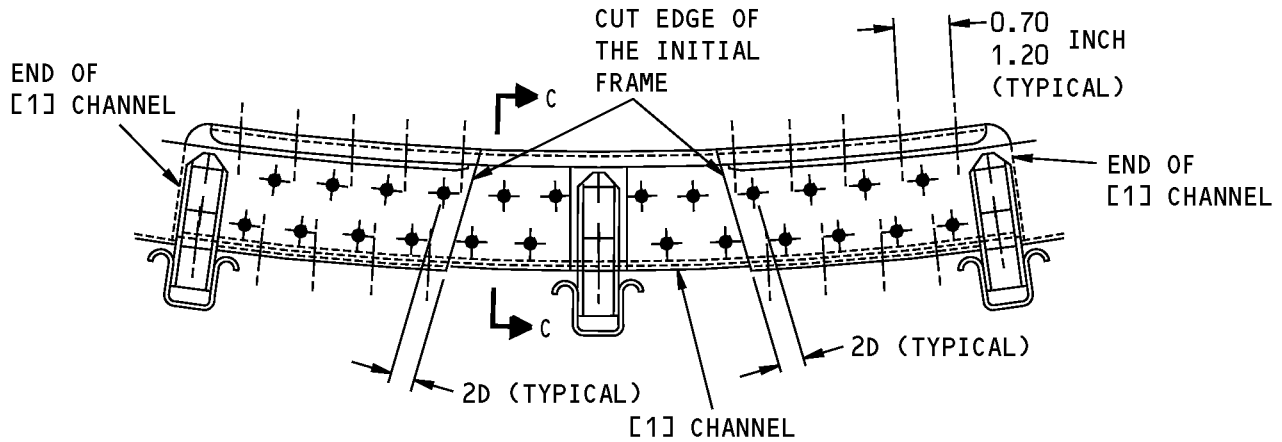
A-A



B-B

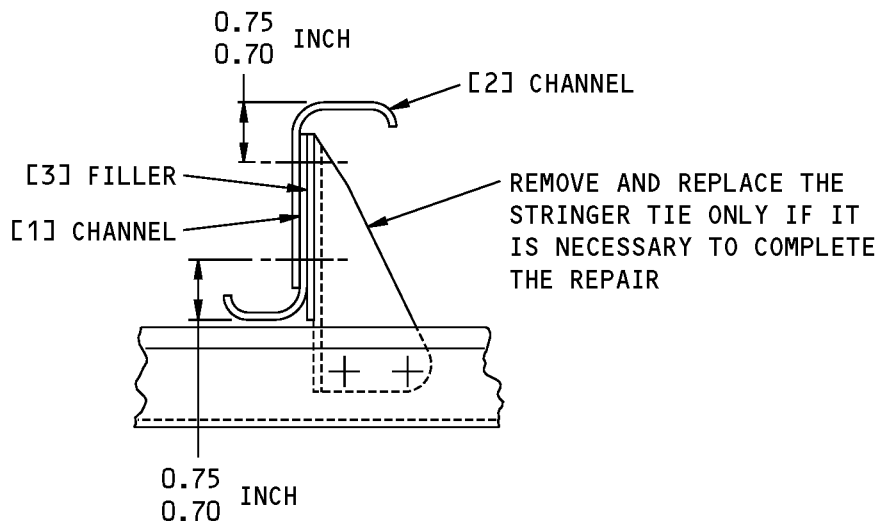
**Fuselage Zee Frame Repair  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**DAMAGE AT A STRINGER**

(B)



C-C

**NOTES**

- D = FASTENER DIAMETER

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. USE A RIVET THAT IS THE SAME AS THE INITIAL RIVET IF IT IS NECESSARY TO REMOVE AND REPLACE THE STRINGER TIE.
- ◆ REPAIR FASTENER LOCATION. REFER TO TABLE 203 FOR FASTENER TYPE, SIZE AND QUANTITY.

**Fuselage Zee Frame Repair  
Figure 201 (Sheet 2 of 2)**





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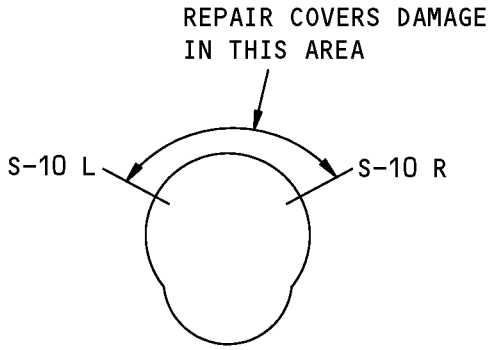
## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - FUSELAGE CROWN FRAMES

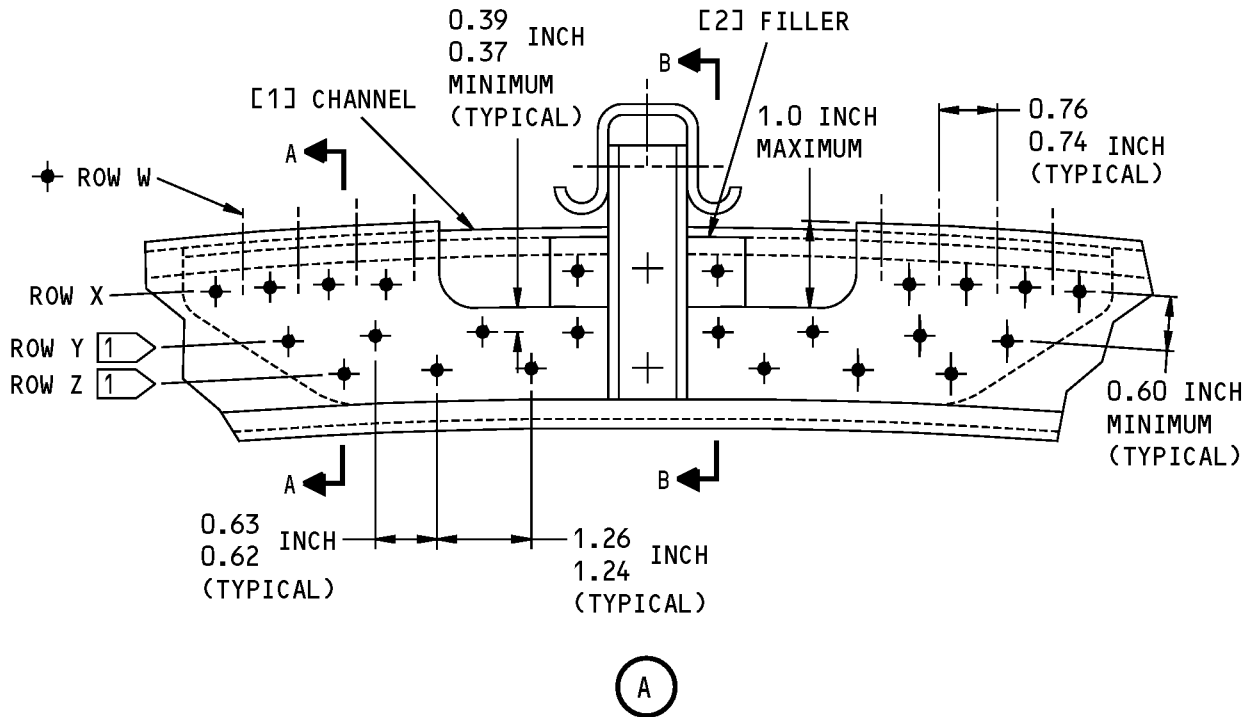
#### 1. Applicability

- A. This repair is applicable to damaged frames that are made from formed zee sections, and located in the upper fuselage between stringers S-10L and S-10R. The damage to these frames must not be more in the vertical direction, than that shown in Figure 201. For damage that is more than that shown in Figure 201, refer to Repair 1.
- B. This repair is not applicable at the locations that follow:
  - (1) Frame sections that include doublers or other repair parts.

**STRUCTURAL REPAIR MANUAL**



**CROWN AREA OF FUSELAGE**




**NOTES**

 INSTALL FASTENERS ALONG THE FULL LENGTH OF THE REPAIR.

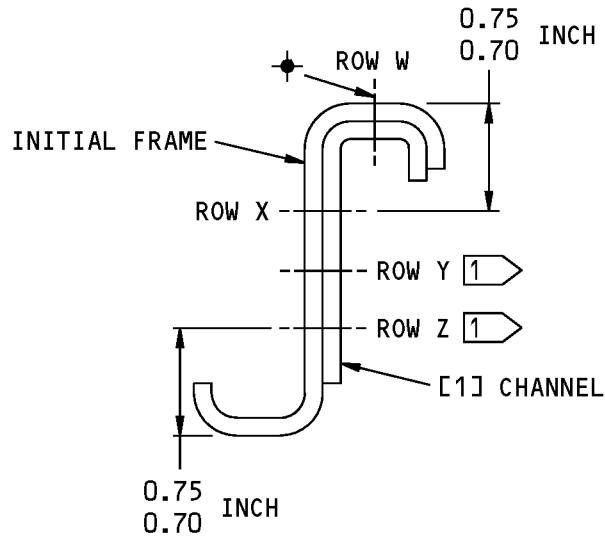
**FASTENER SYMBOLS**

 INITIAL FASTENER LOCATION. USE A RIVET THAT IS THE SAME AS THE INITIAL RIVET IF IT IS NECESSARY TO REMOVE AND REPLACE THE STRINGER TIE.

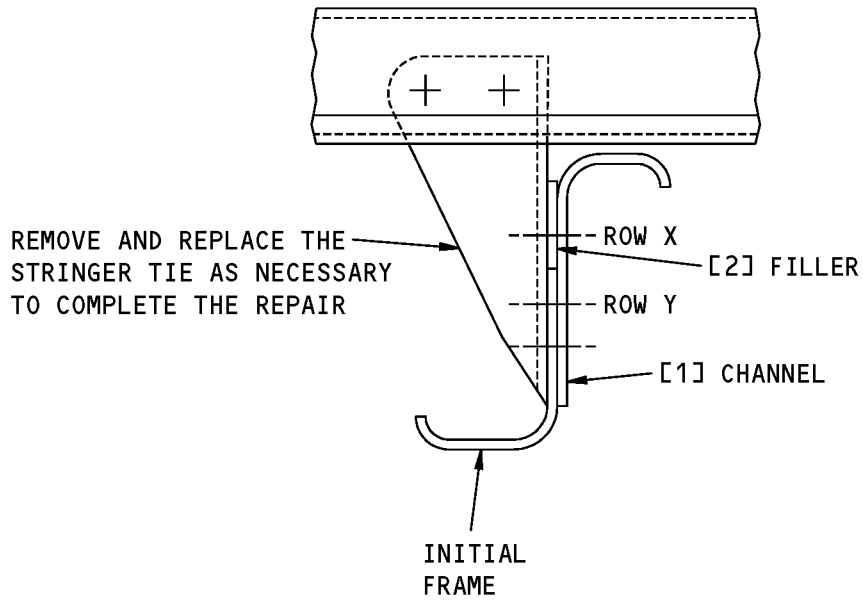
 REPAIR FASTENER LOCATION. USE A BACR15BB6D RIVET AND REFER TO TABLE 202 FOR THE QUANTITY.

**Fuselage Crown Frame Repair  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



A-A



B-B

**Fuselage Crown Frame Repair  
Figure 201 (Sheet 2 of 2)**

## 737-800 STRUCTURAL REPAIR MANUAL

### 2. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03	FASTENER SUBSTITUTION
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
51-50-02, GENERAL	Support of the Airplane for Repair
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

### 3. Repair Instructions

- A. Remove the necessary fasteners in the area of the damaged frame.
- B. Cut and remove the damaged part of the frame as shown in Figure 201.
- C. Do a high frequency eddy current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
- D. Make the edges smooth with a surface finish of 125 microinches Ra.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Channel	1	Use clad 7075-0 that is the one gage thicker than the initial frame. Heat treat the part to T6 after it is formed.
[2]	Filler	1	Use clad 7075-T6 that is the same thickness as the initial frame.

- E. Make the repair parts given in Table 201/REPAIR 2 and shown in Figure 201.
- F. Assemble the repair parts as shown in Figure 201.
- G. Make sure that gaps between mating surfaces of repair parts are not larger than 0.010 inch. If shims are necessary to close the gaps, make sure the shims are not more than 0.030 inch thick.
- H. Drill the necessary fastener holes. Refer to Figure 201 and Table 202. Refer to 51-40-05 for the fastener hole size. Refer to 51-40-03 and 51-40-06 for more fastener data.

**Table 202:**

MINIMUM NUMBER OF FASTENERS NECESSARY IN ROWS W AND X ON EACH SIDE OF THE DAMAGE		
FRAME THICKNESS (INCHES)	ROW W	ROW X
0.040	4	4
0.045	4	4
0.051	4	4



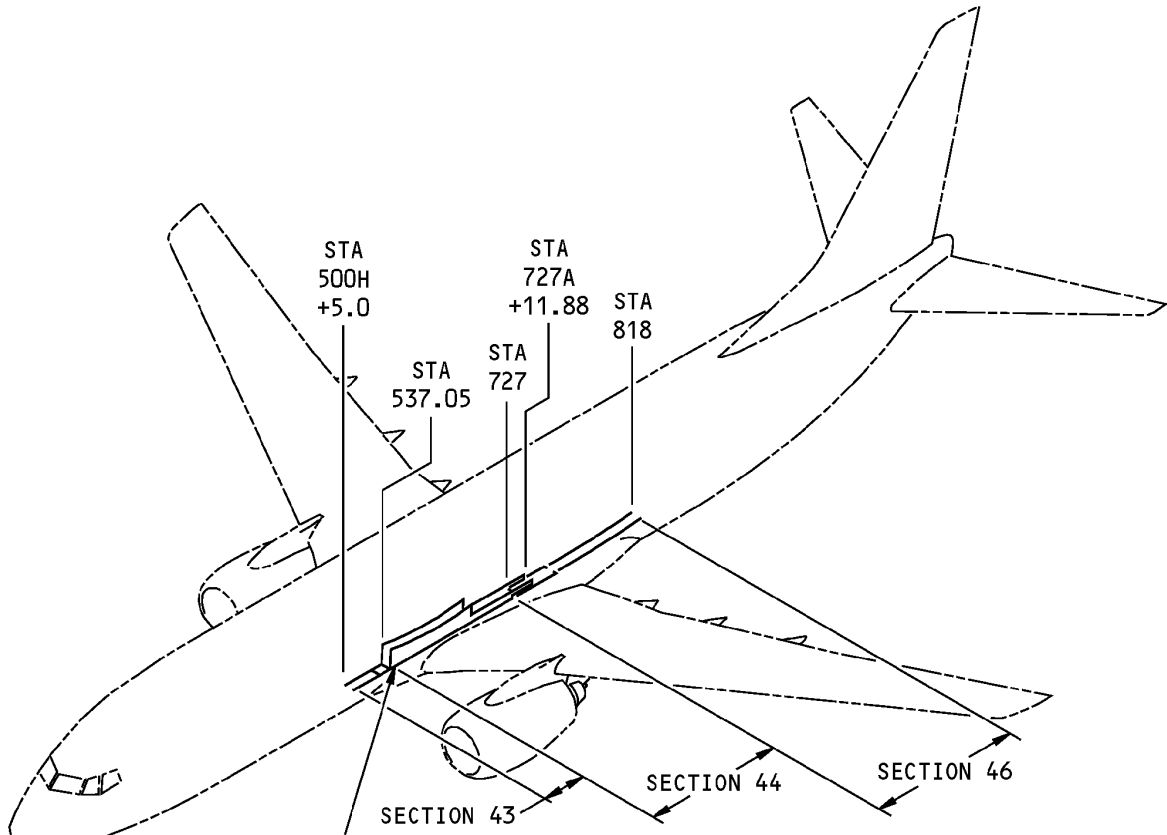
**737-800**  
**STRUCTURAL REPAIR MANUAL**

<b>MINIMUM NUMBER OF FASTENERS NECESSARY IN ROWS W AND X ON EACH SIDE OF THE DAMAGE</b>		
<b>FRAME THICKNESS (INCHES)</b>	<b>ROW W</b>	<b>ROW X</b>
0.056	4	4
0.063	4	4
0.072	5	5

- I. Disassemble the repair parts.
- J. Remove the nicks, scratches, gouges, burrs, and sharp edges from the initial and the repair parts.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to 51-20-05.
  - (2) Install the fasteners. Refer to Table 202/REPAIR 2 and SRM 51-40-02.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - KEEL BEAM STRUCTURE**



REFER TO FIGURE 2 FOR THE IDENTIFICATION OF THE KEEL BEAM STRUCTURE THAT IS LOCATED IN SECTIONS 43, 44, AND 46

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43, 44, and 46 Keel Beam Structure Location  
Figure 1**

**Table 1:**

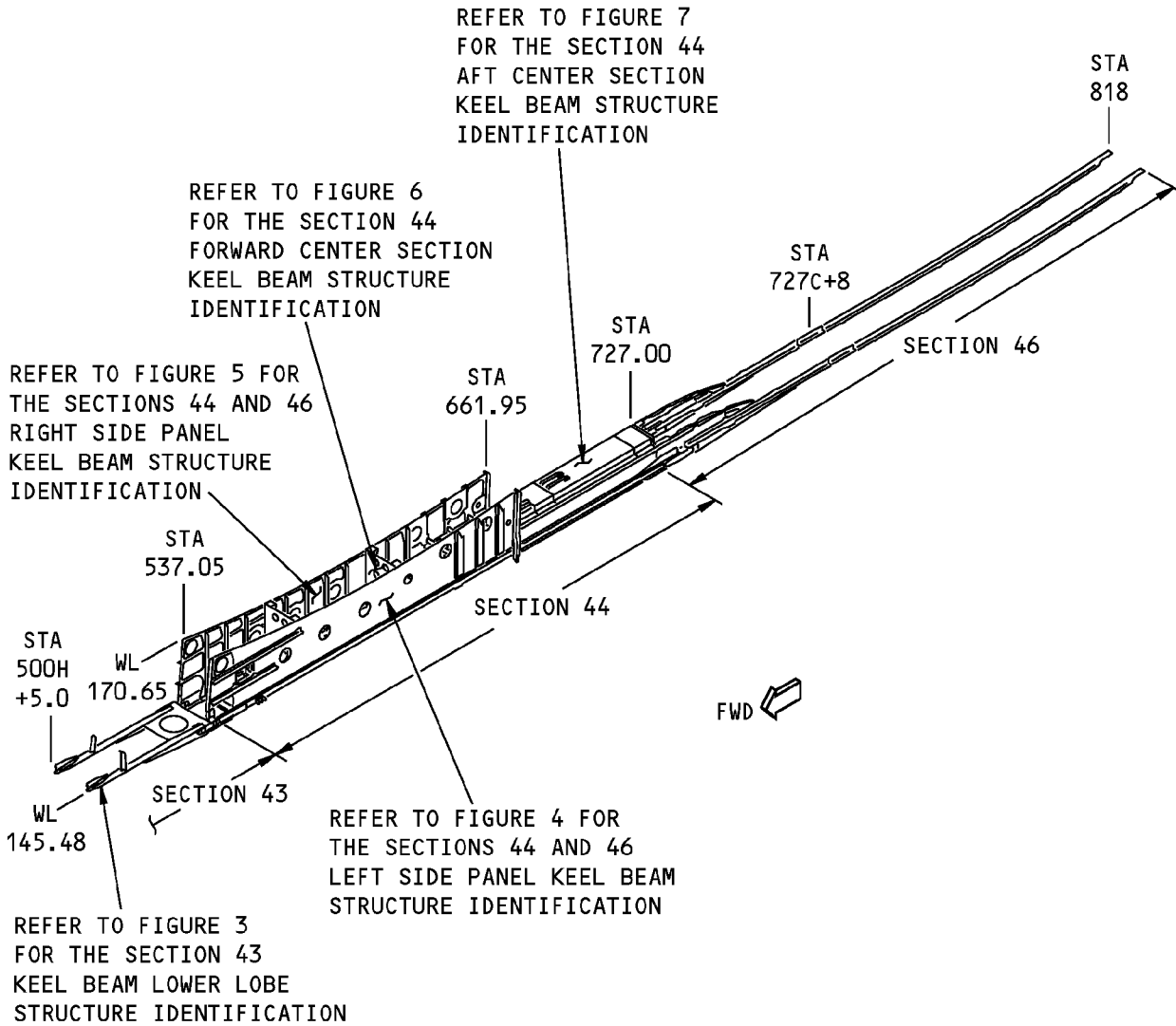
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A0060	Section 43/44 Lower Lobe Integration
143A7810	Keel Beam Installation, Section 43
143A7811	Chord Details - Keel Beam
143A7812	Splice Plate - Keel Beam
144A7100	Keel Beam Installation
144A7110	Keel Beam Assembly



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**STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
144A7120	Side Panel Assembly - Keel Beam
146A0061	Body Integration Installation - Section 44/46
146A7810	Keel Chord Installation
146A7812	Keel Chord - Channel Details, Section 46
146A7813	Keel Chord - Details, Section 46

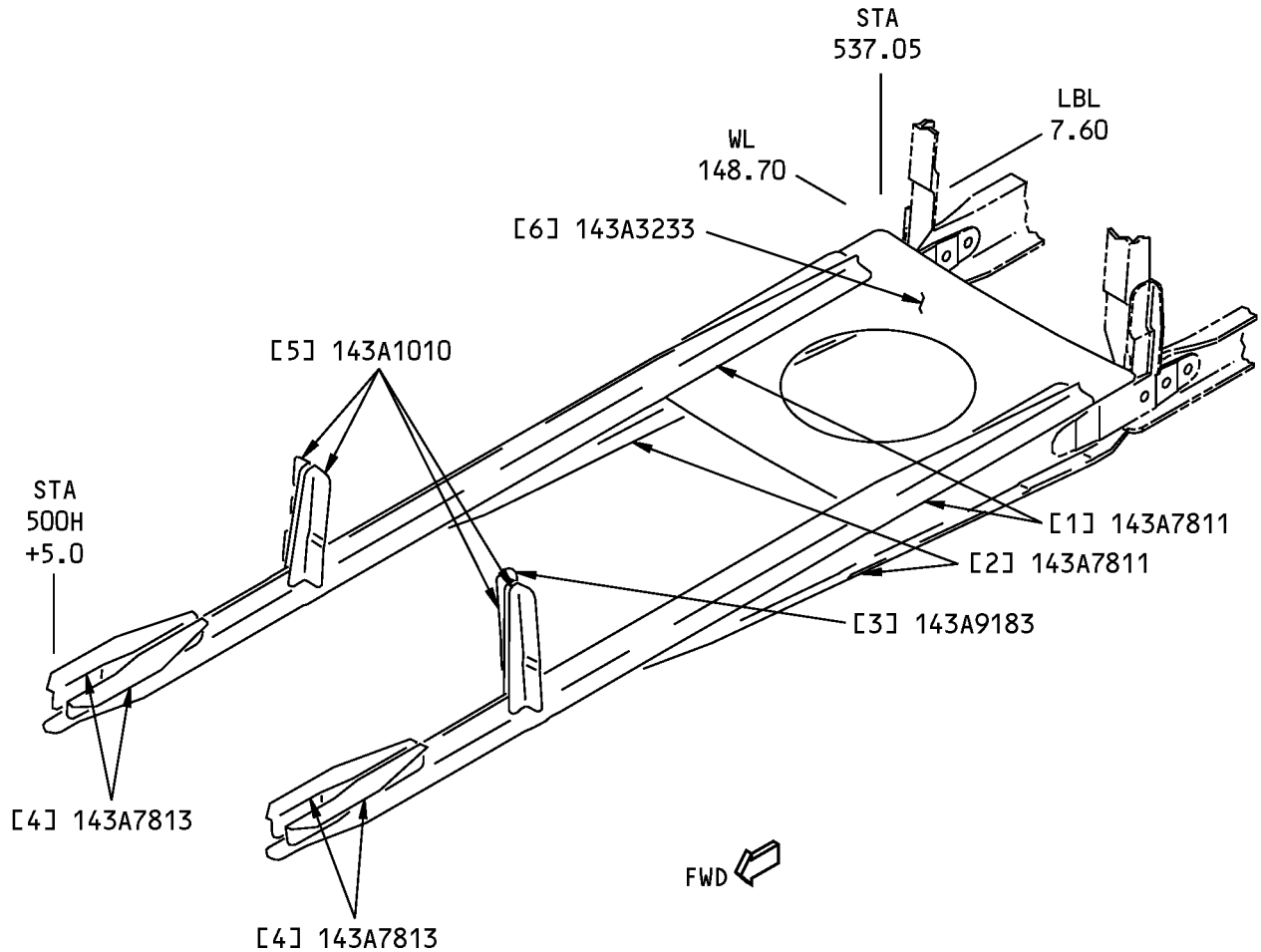
**737-800  
STRUCTURAL REPAIR MANUAL**



**Sections 43, 44, and 46 Keel Beam Structure Locations  
Figure 2**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Keel Beam Lower Lobe Structure Identification  
Figure 3**



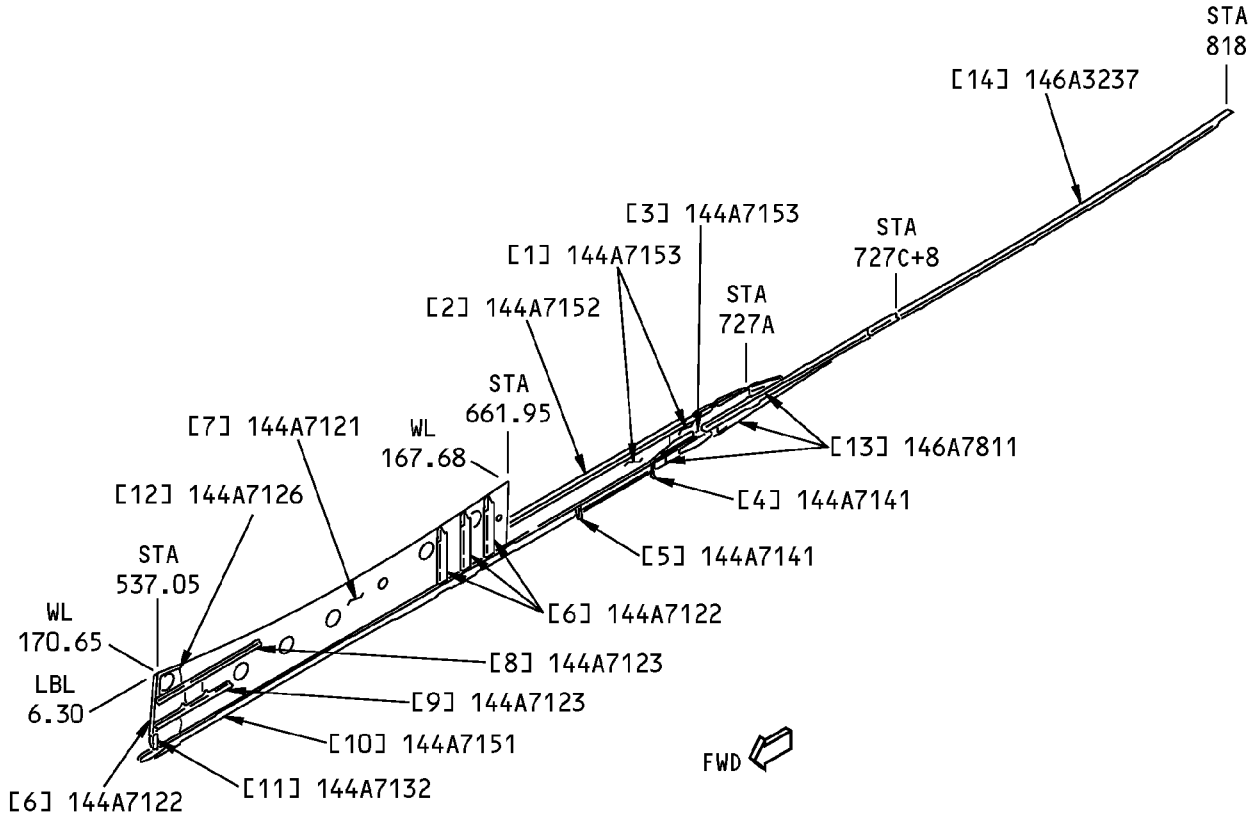
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Inner Chord, Upper		BAC1506-4451 7150-T77511 extrusion as given in BMS 7-306. Refer to the engineering drawing for the machined areas and the grain direction	
[2]	Outer Chord, Lower		7050-T7541 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Engine Burst Bracket	0.050 (1.27)	7075-T62 clad sheet	
[4]	Splice Angle		BAC1503-101064 7075-T73511 extrusion	
[5]	Clip		BAC1503-101057 7075-T73511 extrusion	
[6]	Doubler	0.080 (2.03)	2024-T3 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 44, and 46 Left Side Panel Keel Beam Structure Identification  
Figure 4**



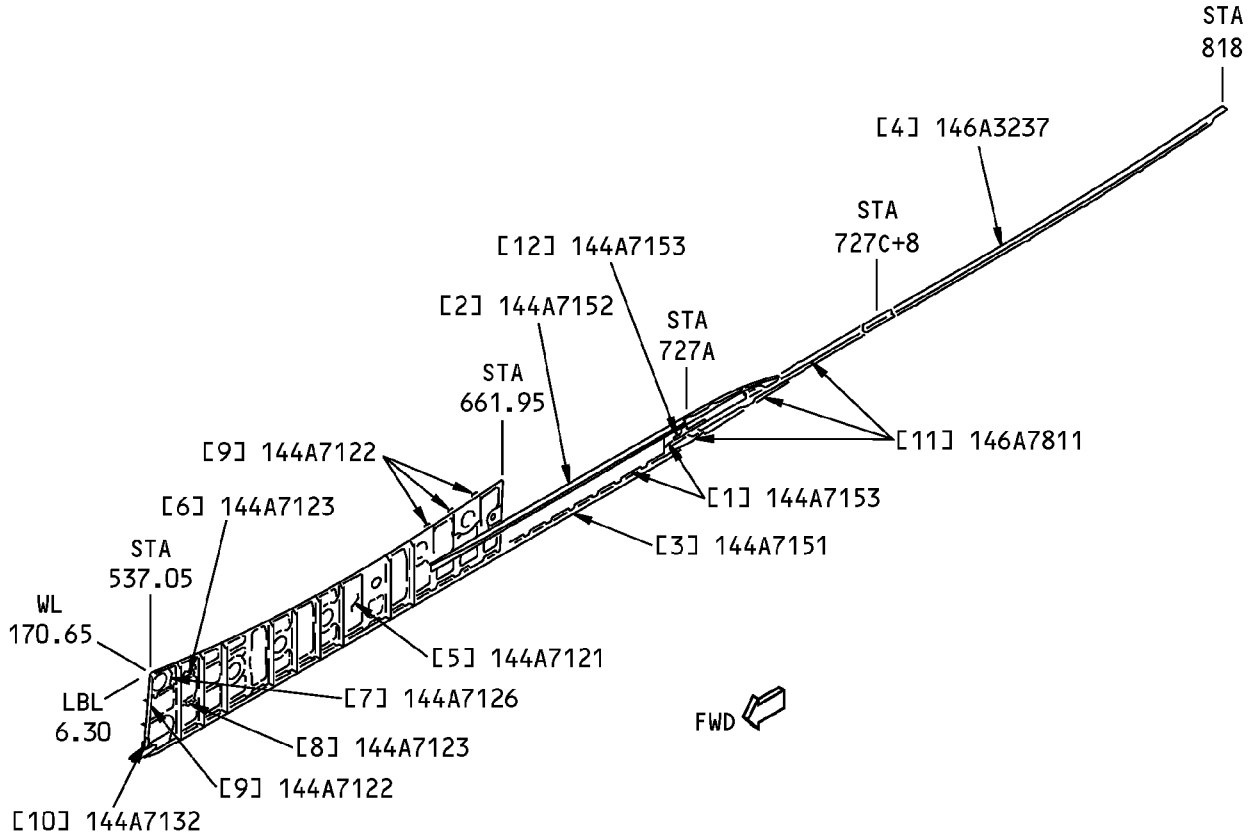
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.071 (1.80)	7075-T6 clad sheet	
[2]	Upper Chord		BAC1506-3701 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Strap	0.125 (3.18)	7075-T6 clad sheet	
[4]	Shear Clip		BAC1503-5814 7075-T73511 extrusion	
[5]	Shear Clip		BAC1503-100852 7075-T73511 extrusion	
[6]	Vertical Stiffener		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[7]	Side Panel		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[8]	Horizontal Stiffener		BAC1517-1851 7075-T6511 extrusion	
[9]	Horizontal Stiffener		BAC1517-1446 7075-T6511 extrusion	
[10]	Lower Chord Assembly Lower Chord  Splice Plate (2)	0.375 (9.53)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Heat Shield	0.032 (0.81)	2024-T3 clad sheet	
[13]	Chord Assembly External Chord  Internal Chord  Splice Plate (2)	0.500 (12.7)	BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[14]	Keel Chord Stringer 27L		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Sections 44, and 46 Right Side Panel Keel Beam Structure Identification  
Figure 5**



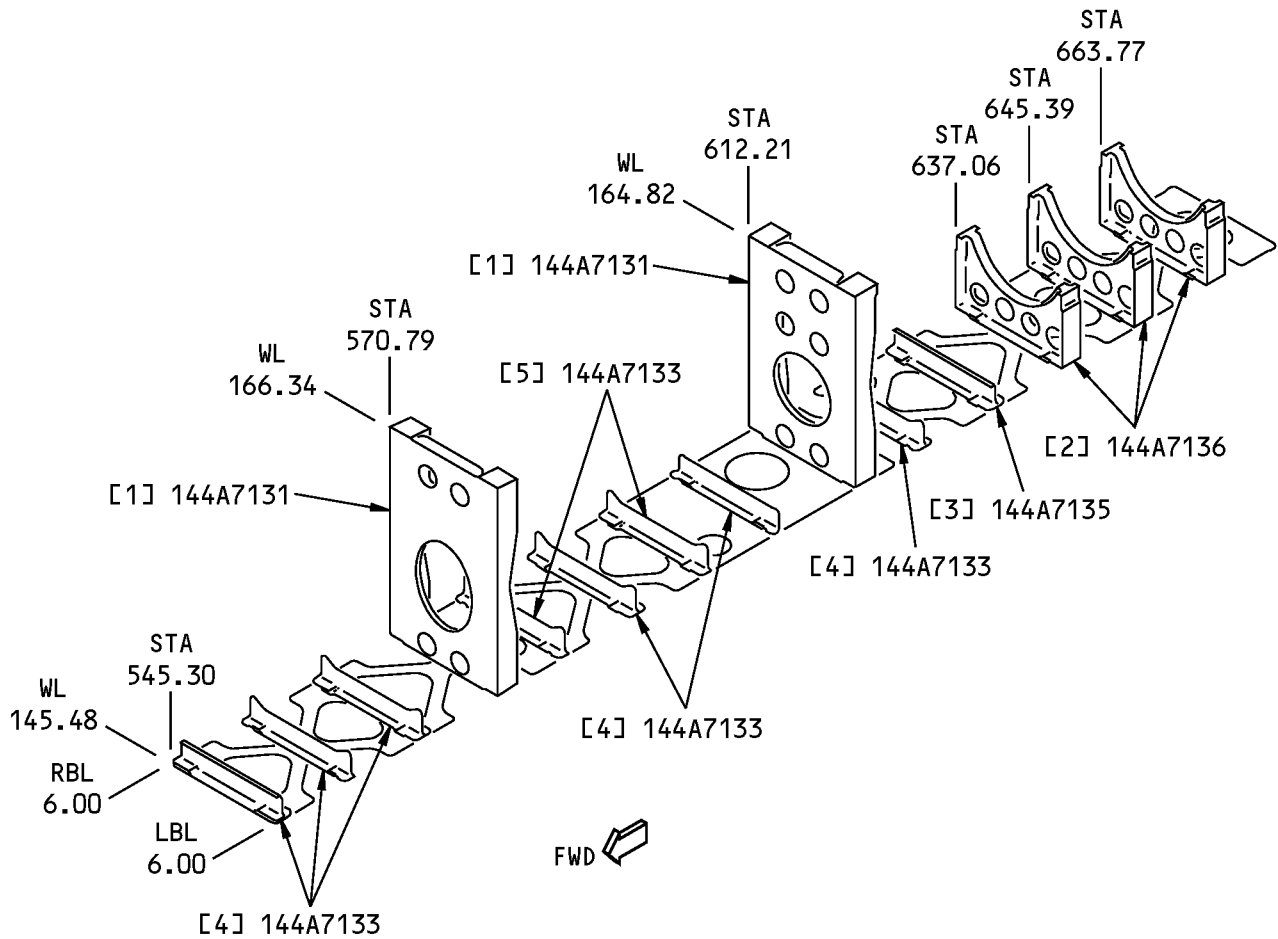
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.071 (1.80)	7075-T6 clad sheet	
[2]	Upper Chord		7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Lower Chord Assembly Lower Chord  Splice Plate (2)	0.375 (9.53)	7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[4]	Keel Chord Stringer 27L		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	
[5]	Side Panel		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[6]	Horizontal Stiffener		BAC1517-1446 7075-T6511 extrusion	
[7]	Heat Shield	0.032 (0.81)	2024-T3 clad sheet	
[8]	Horizontal Stiffener		BAC1517-1851 7075-T6511 extrusion	
[9]	Vertical Stiffener		7050-T7541 plate as given in AMS 4050. Refer to the engineering drawing for the machined areas and the grain direction	
[10]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Chord Assembly External Chord  Internal Chord  Splice Plate (2)	0.500 (12.7)	BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  BAC1505-101365 7150-T77511 extrusion as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction  7150-T77511 bar as given in BMS 7-306, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Strap	0.200 (5.08)	7075-T6 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**Section 44 Forward Center Section Keel Beam Structure Identification  
Figure 6**



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**STRUCTURAL REPAIR MANUAL**

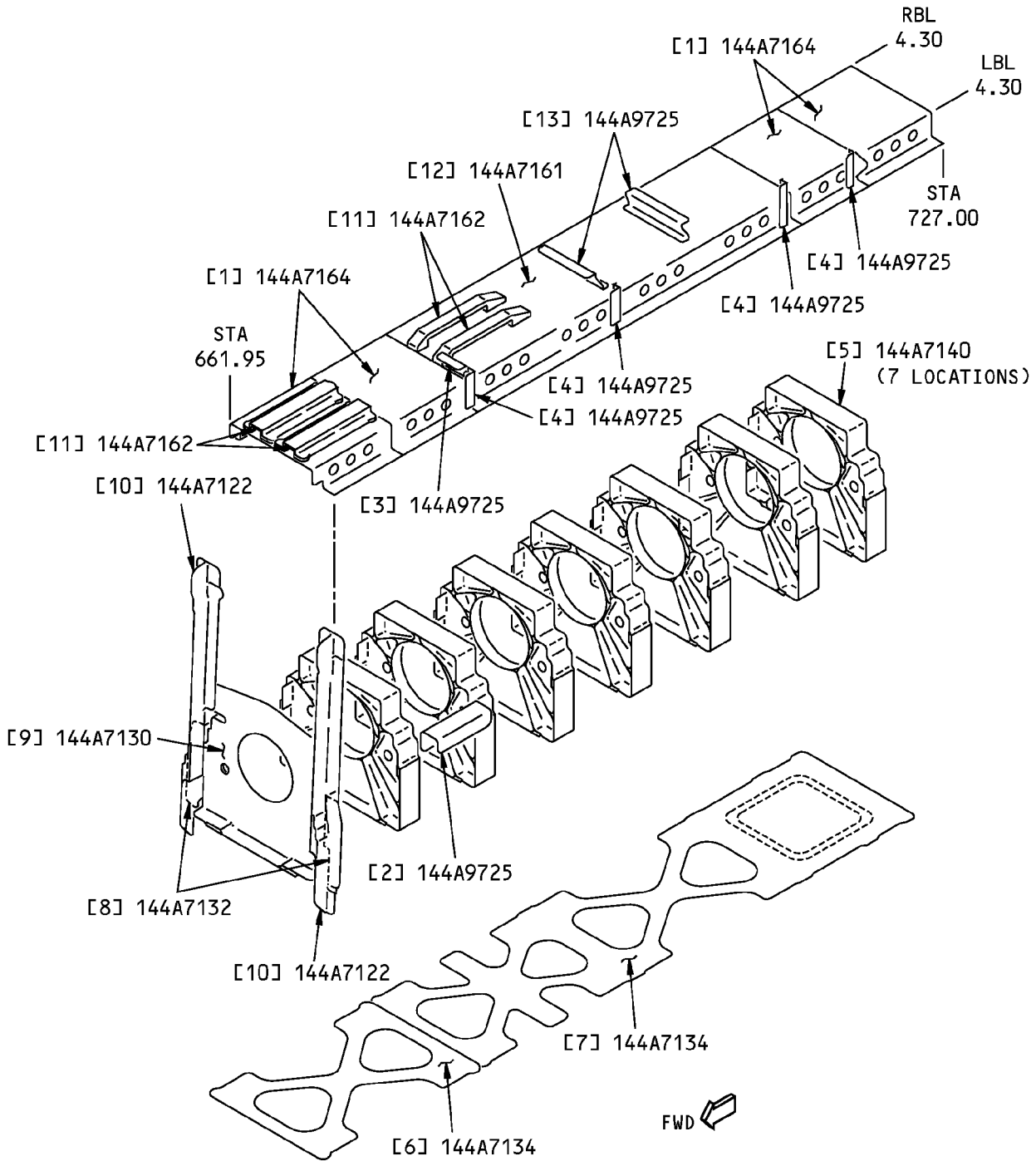
**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Underwing Former		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the engineering drawing for the machined areas and the grain direction	
[2]	Intercostal		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[3]	Intercostal		BAC1505-101009 7075-T73511 extrusion	
[4]	Intercostal		BAC1505-100003 7075-T73511 extrusion	
[5]	Intercostal		BAC1503-100342 7075-T73511 extrusion	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Section 44 Aft Center Section Keel Beam Structure Identification  
Figure 7**



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STRUCTURAL REPAIR MANUAL**

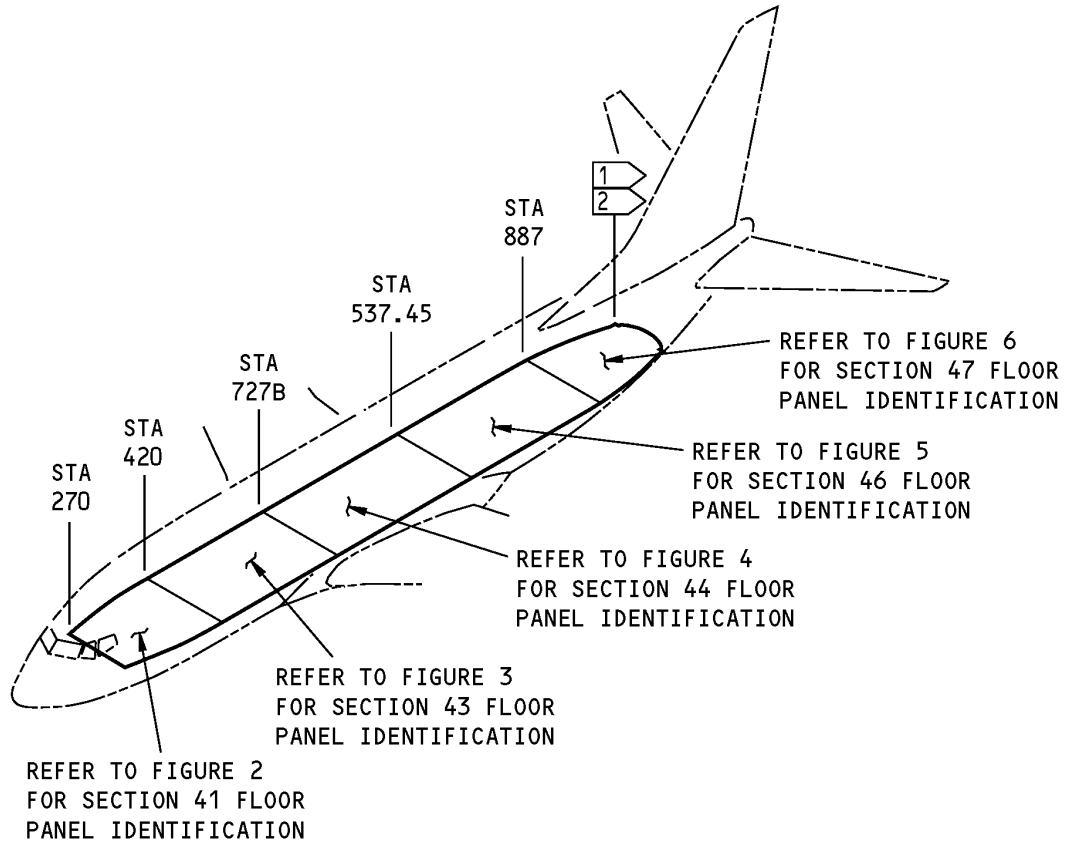
**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Duct Cover	0.050 (0.13)	7075-T62 clad sheet	
[2]	Bracket	0.063 (1.6)	7075-T62 clad sheet	
[3]	Bracket	0.063 (1.60)	BAC1517-2838 2024-T3 clad sheet	
[4]	Support Bracket		AND10138-0505 7075-T73511 extrusion. (Optional: 7075-T7451 plate). Refer to the engineering drawing for the machined areas	
[5]	Former		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[6]	Truss Web	0.140 (3.56)	7075-T6 sheet. Refer to the engineering drawing for the chem-milled areas	
[7]	Truss Web	0.125	7075-T6 sheet	
[8]	Attach Angle		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[9]	Bulkhead Attach Fitting		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[10]	Vertical Stiffeners		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[11]	Support		7050-T7451 plate as given in AMS 4050, Class A. Refer to the engineering drawing for the machined areas and the grain direction	
[12]	Mounting Cover	0.050 (0.13)	7075-T62 clad sheet	
[13]	Support Bracket		BAC1517-1167 7075-T73511 extrusion. (Optional: 7075-T7451 plate as given in AMS 4050, Class A). Refer to the engineering drawing for the machined areas	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 1 - MAIN DECK FLOOR PANELS**



**NOTES**

- A BASELINE FLOOR PANEL IS SHOWN.
- FOR EACH MAIN DECK FLOOR PANEL, REFER TO BOEING DRAWING 140A0342.

1 → STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.

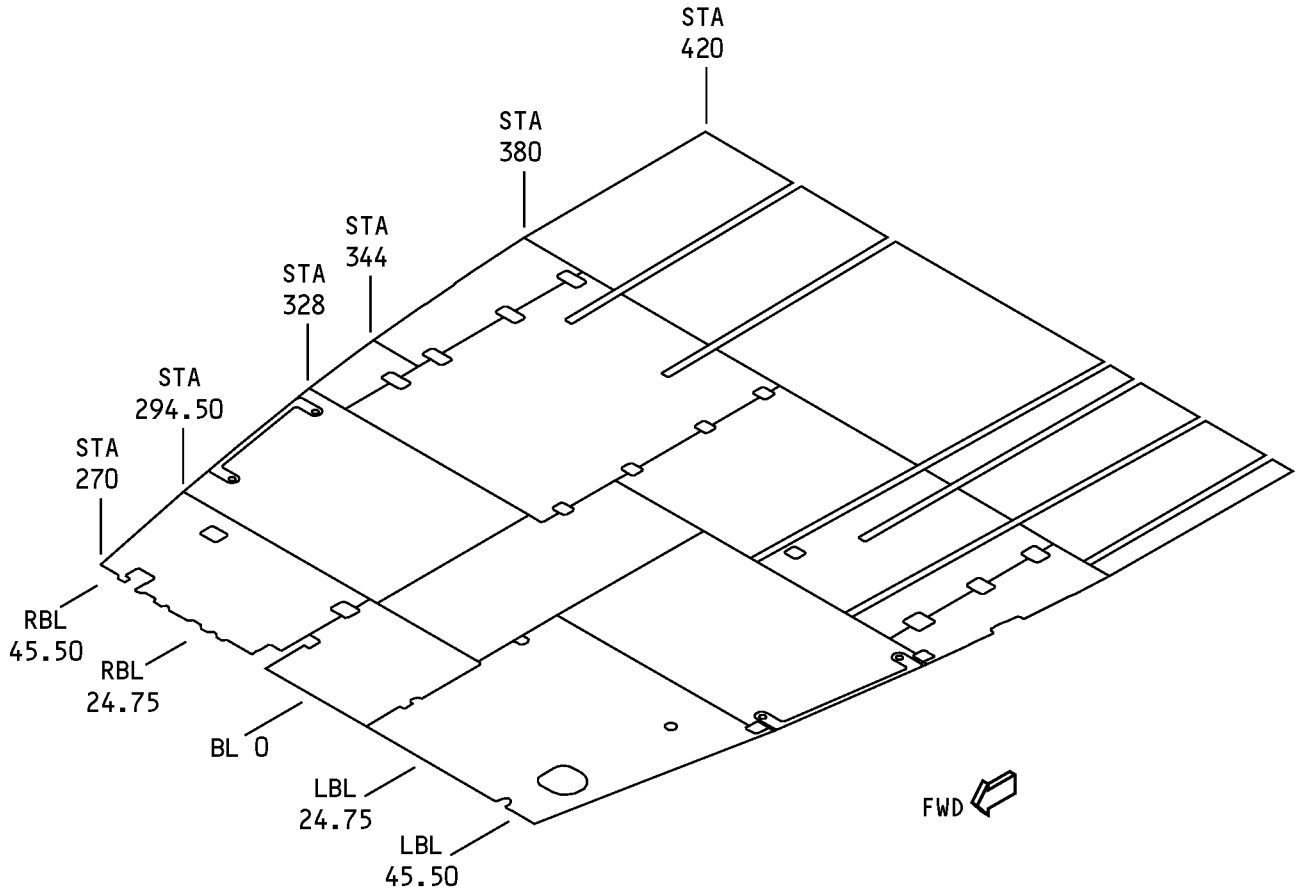
2 → STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

**Main Deck Floor Panel Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0342	Fuselage Floor Panel Functional Collector
141A5800	Floor Panel Installation - Section 41
143A5800	Floor Panel Installation - Section 43
144A5800	Floor Panel Installation - Section 44
146A5800	Floor Panel Installation - Section 46
147A5800	Floor Panel Installation - Section 47

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**SECTION 41**

**Section 41 Main Deck Floor Panel Identification  
Figure 2**

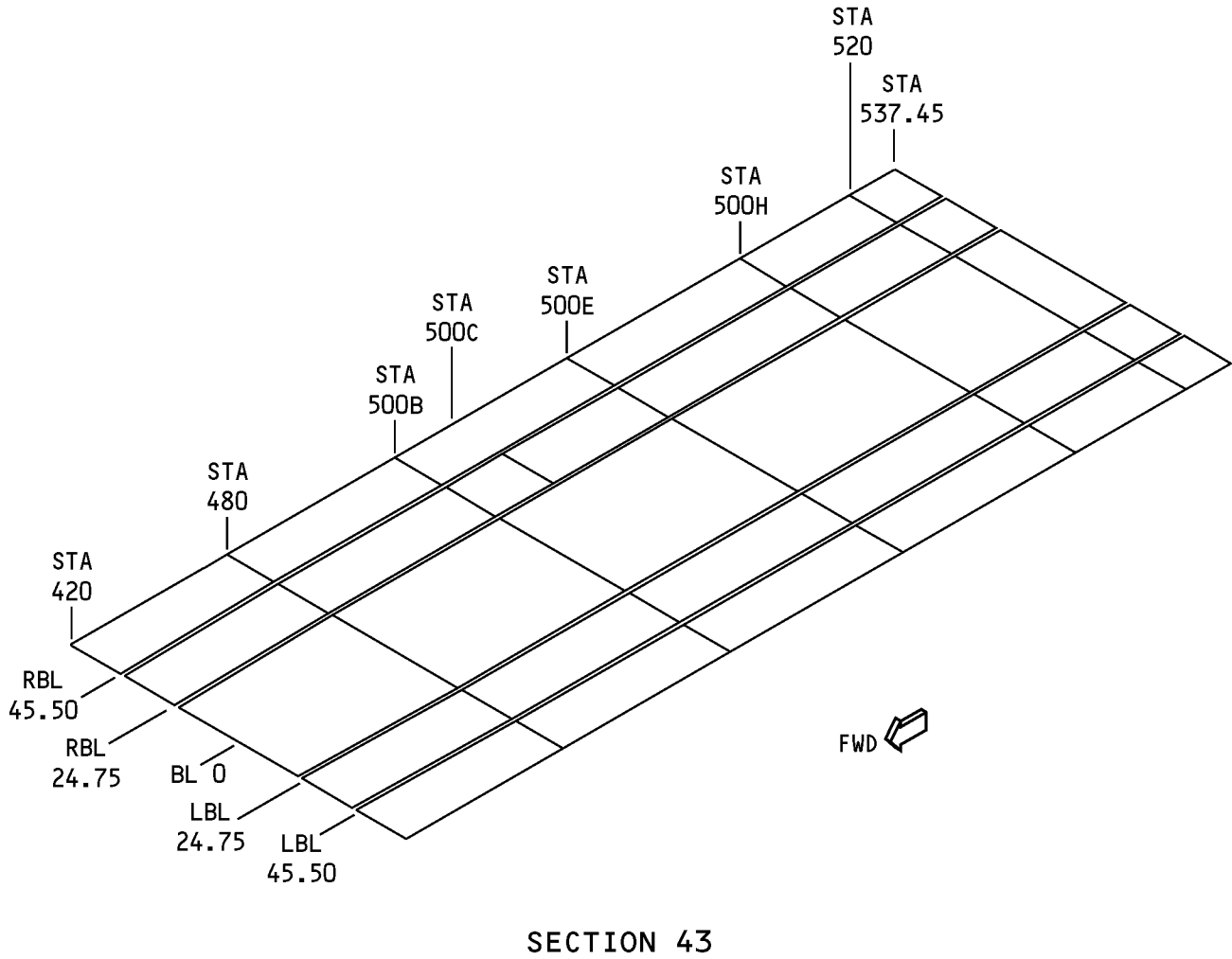


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STRUCTURAL REPAIR MANUAL**

**Table 2:**

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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**Section 43 Main Deck Floor Panel Identification  
Figure 3**

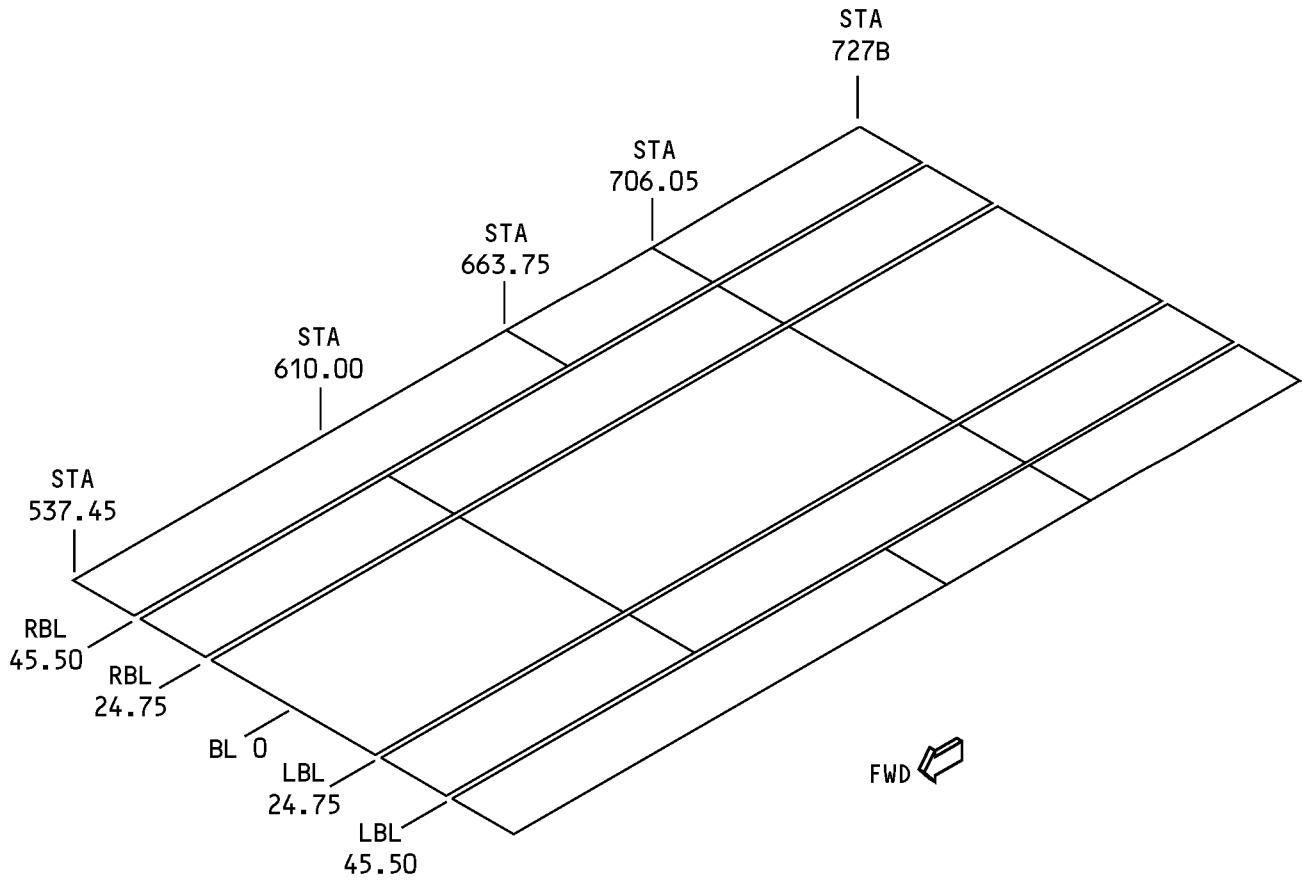


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**STRUCTURAL REPAIR MANUAL**

**Table 3:**

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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SECTION 44

Section 44 Main Deck Floor Panel Identification  
Figure 4



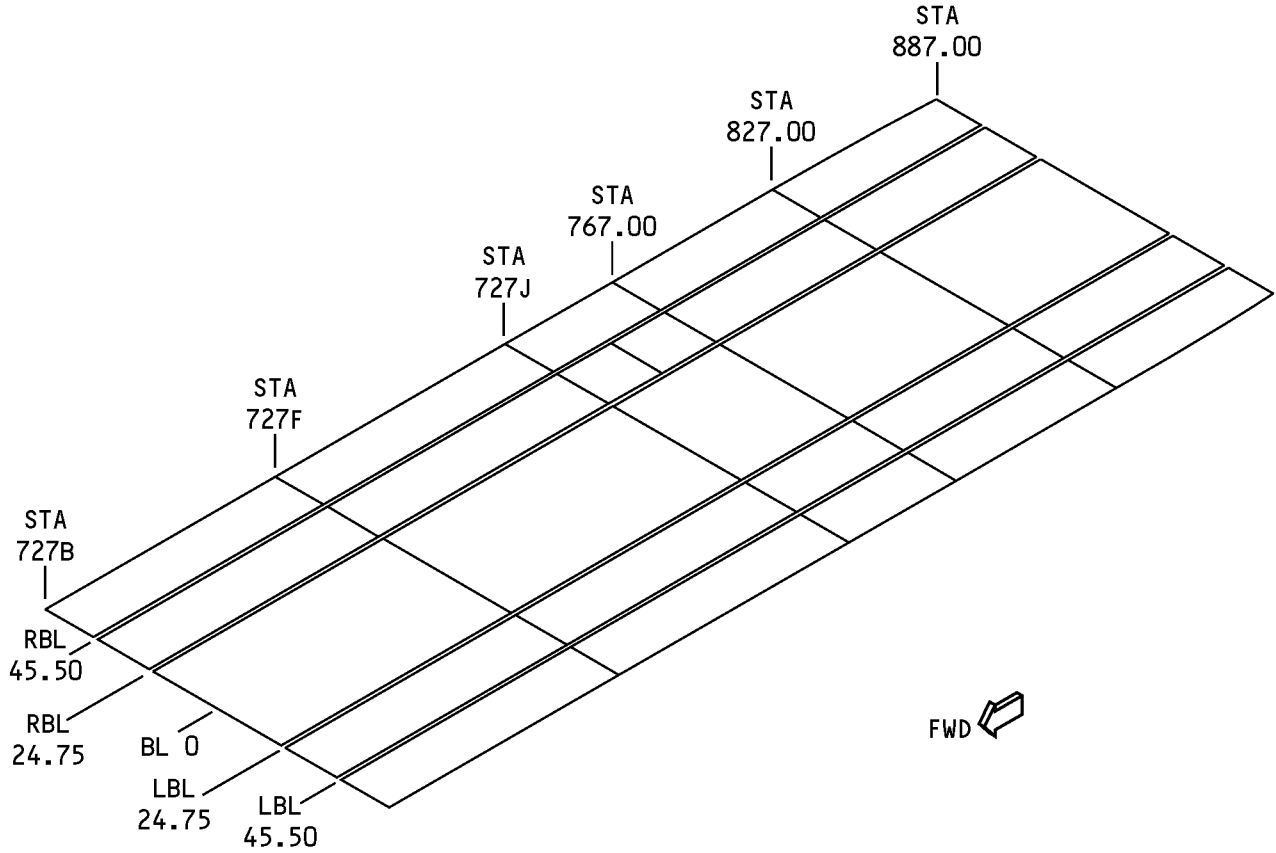


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STRUCTURAL REPAIR MANUAL**

**Table 4:**

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
AISLES AND ENTRIES		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE III	
AISLES AND ENTRIES		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE V	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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**STRUCTURAL REPAIR MANUAL**



**SECTION 46**

**Section 46 Main Deck Floor Panel Identification**  
**Figure 5**

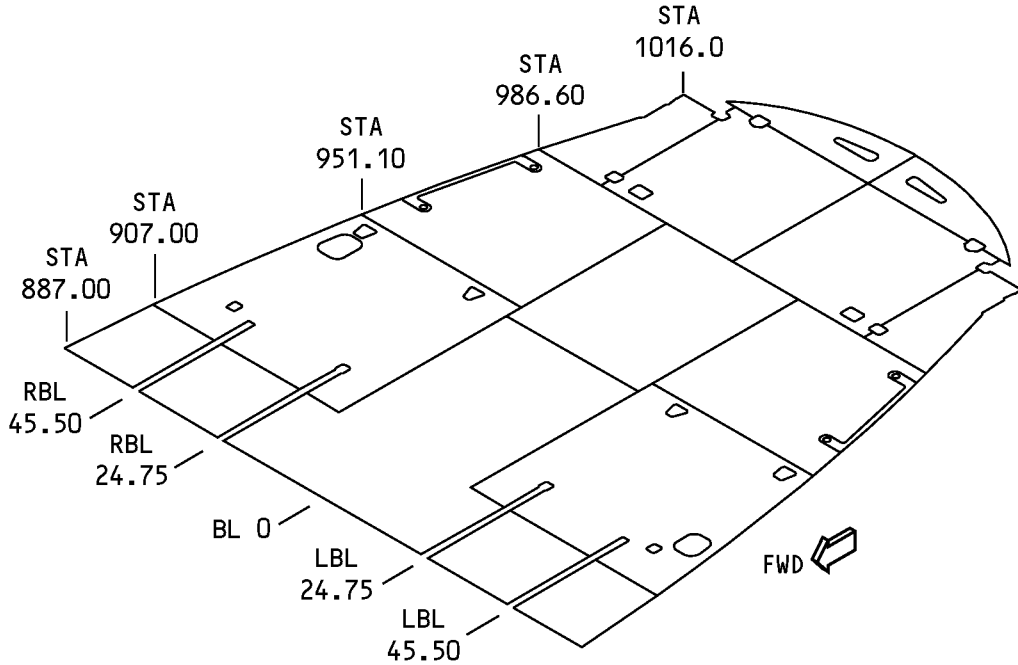


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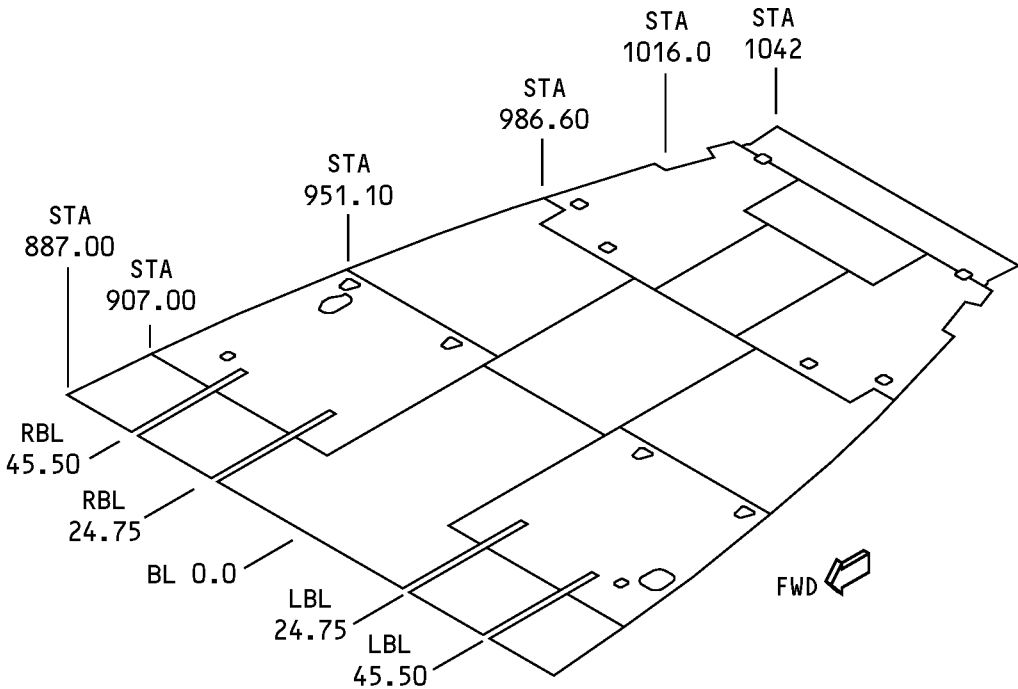
**Table 5:**

PANEL LOCATION	PANEL FACESHEET AND CORE COMPOSITION		
	SINGLE DENSITY CORE		
	LOW	MEDIUM	HIGH
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
UNDER SEATS LOW TRAFFIC	FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
AISLES AND ENTRIES		FIBERGLASS FACED ALUMINUM HONEYCOMB CORE AS GIVEN IN BMS 4-23, TYPE II	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

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**AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD AT STA 1016**



**AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD AT STA 1042**

**Section 47 Main Deck Floor Panel Identification  
Figure 6**



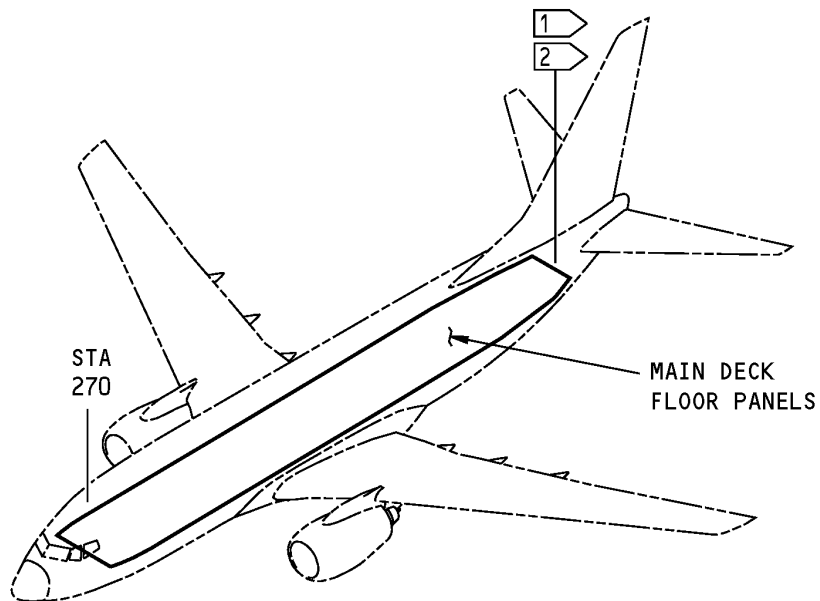
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**STRUCTURAL REPAIR MANUAL**

**Table 6:**

<b>PANEL LOCATION</b>	<b>PANEL FACESHEET AND CORE COMPOSITION</b>		
	<b>SINGLE DENSITY CORE</b>		
	<b>LOW</b>	<b>MEDIUM</b>	<b>HIGH</b>
LOW TRAFFIC	FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE I		
HIGH TRAFFIC		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE II	
GALLEYS		FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE III	
GALLEYS			FIBERGLASS FACED NON-METALLIC CORE AS GIVEN IN BMS 4-17, TYPE VI

**STRUCTURAL REPAIR MANUAL****ALLOWABLE DAMAGE 1 - MAIN DECK FLOOR PANELS****1. Applicability**

- A. Allowable Damage 1 is applicable to damage on the main deck floor panels as shown in Location of Main Deck Floor Panels, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits given are only applicable to the strength properties of the main deck floor panels. It is possible that the damage in a floor panel is less than the allowable damage limits, but the panel does not function satisfactorily. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.

**NOTES**

- 1 STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD
- 2 STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD

**Location of Main Deck Floor Panels  
Figure 101**



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## STRUCTURAL REPAIR MANUAL

### 2. General

A. Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to NDT, Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

(1) Refer to Definitions of the Damage Size, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.

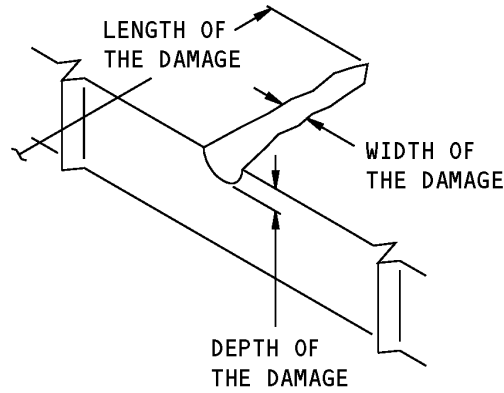
(2) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of the honeycomb core panels.

B. Remove all the contamination and water from the structure. Refer to 53-00-50 for the cleanup procedures.

C. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

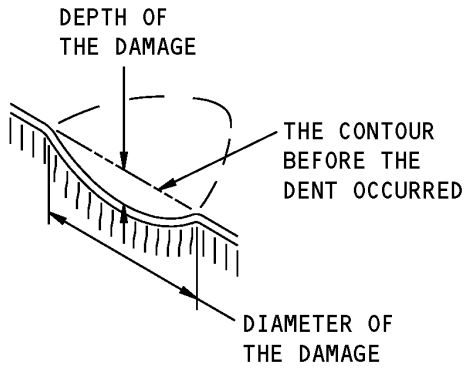
D. Seal the damaged areas with aluminum foil tape (speed tape).

**STRUCTURAL REPAIR MANUAL**



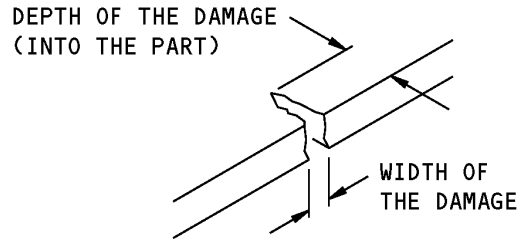
**SIZE DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE**

**A**



**SIZE DEFINITIONS FOR DENT DAMAGE**

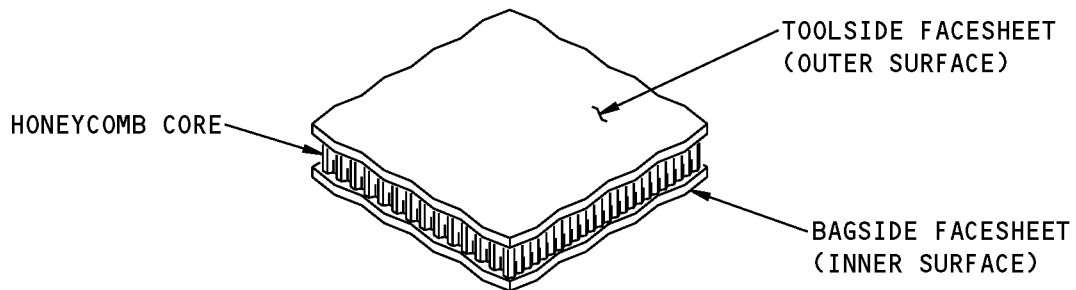
**B**



**SIZE DEFINITIONS FOR EDGE DAMAGE**

**C**

**Definitions of the Damage Size  
Figure 102**



**Definitions of the Facesheets  
Figure 103**





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## STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
53-00-50	FUSELAGE FLOOR PANELS
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

### 4. Allowable Damage Limits

- A. Nicks, Gouges, and Scratches that do not cause damage to the fibers are permitted.
- B. Nicks, Gouges, and Scratches that cause damage to the fibers are permitted if they are:
- (1) A maximum of one ply in depth
- NOTE:** Use the limits for holes and punctures if the damage is more than one ply in depth.
- (2) A maximum of 2.0 inches (50.8 mm) in length
  - (3) A maximum of 0.25 inch (6.35 mm) in width
  - (4) A minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, the edge of other damage, or a galley fitting.
- C. Dents are permitted if:
- (1) They are a maximum of 4.0 square inches (25.8 square cm) in area
  - (2) They are a minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, or a galley fitting
  - (3) They are a minimum distance away from other damage as shown in Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:
    - (a) Do not cause damage to the fibers
    - (b) Are sealed as given in Paragraph 2.
  - (4) There is a maximum of one damage area in each 20 inch (508 mm) length of the panel.
- D. Holes and Punctures:
- (1) Damage is not permitted in the floor panels that are:
    - (a) Between STA 328 and STA 380, outboard of the outboard seat track, and on the left and right sides of the airplane
  - (2) Damage in other floor panels is permitted if:
    - (a) The damage is a maximum of 4.0 square inches (25.8 square cm) in area
    - (b) The damage is a minimum of 3.0 inches (76.2 mm) away from the edge of the panel, the edge of a panel cutout, or a galley fitting. area
    - (c) The damage is a minimum distance away from other damage as shown in Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:
      - 1) Do not cause damage to the fibers
      - 2) Are sealed as given in Paragraph 2.
    - (d) There is a maximum of one damage area in each 20 inch (508 mm) length of the panel.
- E. Delaminations are permitted if:
- (1) They are a maximum of 4.0 square inches (25.8 square cm) in area

ALLOWABLE DAMAGE 1

**53-00-50**

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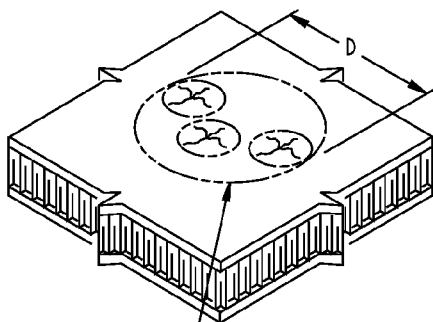


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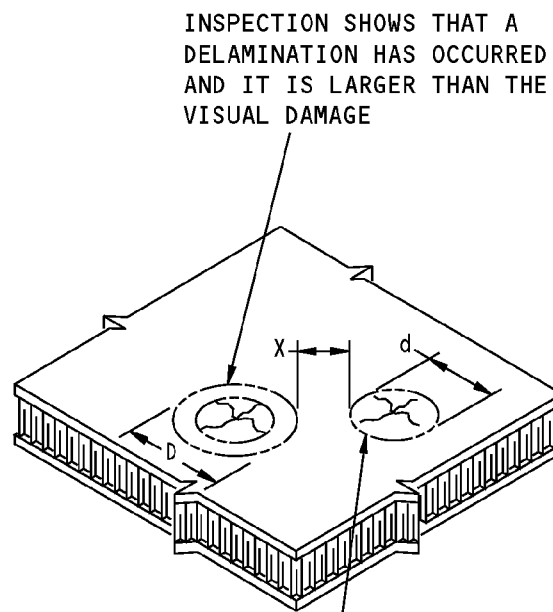
## **STRUCTURAL REPAIR MANUAL**

- (2) They are a minimum of 3.0 inches (76.2 mm) away from the edge of the panel or the edge of a panel cutout
- (3) They are a minimum distance away from other damage as shown in Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1. Other damage does not include nicks, gouges, and scratches that:
  - (a) Do not cause damage to the fibers
  - (b) Are sealed as given in Paragraph 2.
- (4) There is a maximum of one damage area in each 20 inch (508 mm) length of the panel.

STRUCTURAL REPAIR MANUAL



A GROUP OF SMALL DAMAGE AREAS THAT ARE NEAR EACH OTHER WILL BE SEEN AS ONE DAMAGE AREA



INSPECTION SHOWS THAT THERE IS ONLY VISUAL DAMAGE

**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

X IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM X THAT IS PERMITTED IS THE LARGER OF 0.75D OR 2d.

**Damage Size and Spacing Limits**  
**Figure 104**



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# STRUCTURAL REPAIR MANUAL

## REPAIR GENERAL - COMPOSITE FLOOR PANELS

### 1. Applicability

A. This subject contains repair data for floor panels that are made of one layer of non-metallic honeycomb core bonded between two facesheets in a sandwich construction. The facesheets are reinforced with carbon or glass fibers. The repair procedures for the floor panels made from carbon or glass fibers are the same.

### 2. General

A. Repair General gives the repair data that are the same for all of the floor panel repairs. Refer to Table 201/REPAIR GENERAL for an index of the different numbered repairs found in this subject.

**Table 201:**

REPAIR INDEX	
REPAIR NUMBER	TITLE
1	Repair of Damage to One Facesheet in Composite Floor Panels
2	Repair of Damage Less Than 1.0 Inch in Diameter to One Facesheet and the Core in Composite Floor Panels
3	Repair of Damage to One Facesheet and the Core in Composite Floor Panels
4	Repair of Damage Less Than 4 Square Inches in Area to One Facesheet and the Core at an Edge or Corner in Composite Floor Panels
5	Repair of Damage to One Facesheet and the Core at an Edge or Corner in Composite Floor Panels
6	Repair of Damage to Two Facesheets and the Core in Composite Floor Panels
7	Repair of Delamination Damage Less Than 16 Square Inches in Area to a Facesheet in Composite Floor Panels
8	Repair of Delamination Damage Less Than 4 Square Inches in Area to a Facesheet at an Edge in Composite Floor Panels
9	Repair of Delamination Damage to One Facesheet at an Edge or Corner in Composite Floor Panels
10	Repair of Damage to the Core on an Edge in Composite Floor Panels

- B. Make sure that you do repairs in a clean location. Make sure that the air in the area has no oil, mist, exhaust fumes, gasses, soot, rain, dust, or other unwanted materials.
- C. Prevent repair surface contamination. Do not touch the cleaned parts or the adhesives with your bare hands. Wear clean lint-free gloves when you work with these parts.
- D. Refer to Table 202/REPAIR GENERAL for the materials used in these repairs.
- E. Refer to Table 203/REPAIR GENERAL for the resin, adhesive, and potting compound data.

**Table 202:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Honeycomb core for panels with initial facesheets made of glass fiber reinforced plastic	BMS 8-124, Type I, Grade 12.0, Class 1



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FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Honeycomb core for panels with initial facesheets made of carbon fiber reinforced plastic	BMS 8-124, Type V, Grade 9.0, Class 4
Adhesive for the inserts	BMS 5-107, Class 1

**Table 203:**

RESIN, ADHESIVE, AND POTTING COMPOUND DATA				
RESIN TYPE	COMPONENTS	PARTS BY WEIGHT	POT LIFE	CURE TIME AND TEMPERATURE
BMS 5-28, Type 19 (Potting compound)	Epocast 1619 Part A Epocast 1619 Part B	Refer to the manufacturer's data	60 minutes	7 days at 77°F (25°C) +/- 5°F or 5 hours at 125°F (52°C) +/- 5°F
BMS 5-92, Type I (Adhesive)	EC2216 Part A EC2216 Part B	Refer to the manufacturer's data	120 minutes	16 hours at room temperature or 3 hours at 150°F (66°C) +/- 10°F
BMS 5-107, Class 1 (Adhesive)	Redux 420 Part A Redux 420 Part B	Refer to the manufacturer's data	45 minutes	1 hour at 150° to 175°F (66° to 77°C)
BMS 5-107, Class 1 (Adhesive)	Epibond 420 Part A Epibond 420 Part B	Refer to the manufacturer's data	45 minutes	1 hour at 150° to 175°F (66° to 77°C)
BMS 8-201, Type I (Laminating resin)	Epocast 50-A Epocast 9816	Refer to the manufacturer's data	30 minutes	Refer to Figure 207
BMS 8-201, Type II (Laminating resin)	Epocast 50-A Epocast 946	Refer to the manufacturer's data	10 minutes	Refer to Figure 207
BMS 8-201, Type II (Laminating resin)	Epocast 50-A Epocast 9449	Refer to the manufacturer's data	10 minutes	Refer to Figure 207
BMS 8-201, Type II (Laminating resin)	Changed resin component number (Part A) from CG-1302 to CG-1304. CG-1304 Part B	Refer to the manufacturer's data	10 minutes	Refer to Figure 207

F. Keep the resin systems and potting compounds between 40°F (4°C) and 80°F (27°C) in sealed containers.

(1) Identify the material container with a label that contains the data that follows:

- (a) Boeing Material Specification (BMS)
- (b) Type
- (c) Class
- (d) Supplier name
- (e) Batch number
- (f) Date of preparation.

G. The definitions of terms related to these repairs are as follows:

(1) Bond Line: The adhesive that is between two parts after the cure.

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- (2) Core: Nomex honeycomb structure that is bonded between two facesheets in a sandwich construction.
- (3) Cure Cycle: The temperature, pressure, temperature increase rate and temperature decrease rate that is applied over a length of time to cure the resin, potting compound, or adhesive.
- (4) Cure Temperature: The temperature that is applied to the bond assembly during the cure cycle.
- (5) Cure Time: The length of time that a part is at the cure temperature and under vacuum.
- (6) Damage: A change to a surface that comes from corrosion, erosion, dents, gouges, scratches, punctures and holes.
- (7) Delamination: A separation of a facesheet from the core in a sandwich construction.
- (8) Edge Delamination: A separation of the parts along an edge.
- (9) Facesheet: The outer skin that is bonded to the core in a sandwich construction
- (10) Instrumented NDT: An inspection that uses approved instrumentation to find the type and size of internal defects or flaws in a material.
- (11) Non-Destructive Test (NDT): An inspection procedure that does not cause damage to the part or the structure.
- (12) Part Temperature: The actual temperature of the repair part that is measured by a pyrometer (thermocouples or other probe devices) during the cure cycle.
- (13) Porosity: A cluster of small voids in the adhesive.
- (14) Pot Life: The time that a resin system, potting compound, or adhesive can be applied.
- (15) Room Temperature: Ambient temperature conditions. For Engineering functions, this temperature is 68°F (18°C) to 90°F (32°C).
- (16) Void: An empty unoccupied space in a laminate. This is normally associated with resin starved areas.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-30-03	NON-METALLIC MATERIALS
AMM 20-30-97 P/B 201	AIRPLANE STRUCTURE CLEANING SOLVENTS (Series 97) - MAINTENANCE PRACTICES
SOPM 20-30-03	Standard Overhaul Practices Manual
SOPM 20-30-97	Solvents For Final Cleaning Before Structural Bonding (Series 97)
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure
737 NDT Part 2, 51-00-01	Water Detection in Honeycomb Structure
737 NDT Part 4, 51-00-05	Bondline Delamination Inspection in Honeycomb Structure
737 NDT Part 9, 51-00-02	Inspection for Water in Honeycomb with Liquid Crystal Sheets

**4. Repair Procedures That Are the Same For the Different Repairs**

A. Find the limits of the damage.

**WARNING:** DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.



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(WARNING PRECEDES)

**CAUTION:** DO NOT USE CHEMICAL PAINT STRIPPERS TO CLEAN AWAY THE DAMAGE. THESE CHEMICALS CAN CAUSE DAMAGE TO THE RESIN SYSTEMS. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

- (1) Clean the damaged area with a soft cloth moist with methyl isobutyl ketone (MIBK), or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for a source of the solvents. Remove all the contamination.
- (2) Do an inspection to find the amount of damage.
  - (a) Do a inspection of the floor panel for the entry of water, dirt, or other unwanted materials.
  - (b) Do an inspection for water as given in 737 NDT Part 2, 51-00-01.
  - (c) Do an inspection for delamination as given in 737 NDT Part 4, 51-00-05.

**NOTE:** If NDT equipment is not available, do a tap test as given in 737 NDT Part 1, 51-05-01.

B. Remove the damaged area of the facesheets.

**WARNING:** DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE VAPOR IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURY. USE A VACUUM TABLE OR A PORTABLE VACUUM WHEN YOU REMOVE THE DAMAGED MATERIAL. DO NOT BREATHE THE DUST. WHEN YOU SAND THE PLY LAYERS, A FINE DUST IS MADE THAT CAN BE HAZARDOUS. THE DUST CAN CAUSE SKIN AND EYE IRRITATION OR RESPIRATORY PROBLEMS.

- (1) Apply masking tape to the area that is 1.0 inch from the edge of where the largest repair ply will be applied. Refer to the applicable numbered repair figure.
- (2) Remove the inserts that are in the damaged area.
- (3) Remove the damaged area of the facesheets in a smooth circular or oval shape with No. 180-grit or smaller abrasive paper. Be careful not to cause damage to the facesheet and core which are not damaged.
- (4) Remove the finish inside the taped off area and make the surfaces rough with No. 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.
- (5) If the initial core in the damage area will not be removed, then sand the adhesive that is over the core cells to open the core cells. Use No. 240-grit or smaller abrasive paper. It is not necessary to remove the adhesive fillets from the core.
- (6) Remove the tape.

C. Remove the damaged area of the honeycomb core.

**CAUTION:** DO NOT REMOVE THE INITIAL ADHESIVE ON THE UNDAMAGED FACESHEET THAT REMAINS. IF YOU DO NOT OBEY, YOU CAN CAUSE AN UNSATISFACTORY BOND.

- (1) Remove the damaged area of the core with a router. Refer to 51-10-02 for the instructions to use the router and template.
- (2) Remove the core to the same dimensions as the hole in the damaged facesheet.
- (3) Be careful not to cause damage to the other facesheet if it is not damaged.
- (4) Do not remove the initial adhesive from the other facesheet if it is not damaged.

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**CAUTION:** YOU MUST REMOVE THE WATER THAT HAS BEEN ABSORBED INTO THE PART BEFORE A HOT BONDED REPAIR IS MADE. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

D. Remove all of the water and other unwanted material. The area of the damage cleanup must be fully dry.

- (1) Remove all the water and other unwanted material that you can with a vacuum or with compressed air that is free from oil.
- (2) Put a heat blanket below the damage area of the floor panel.
- (3) An option to remove the water more quickly is to use a vacuum bag as shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL and as follows:
  - (a) Put a layer of glass fabric or the equivalent (breather cloth) or a metal mesh screen over the area of the water contamination.
    - 1) Use masking tape to hold the fabric or the screen in position.
    - 2) Make sure the cloth or the screen is large enough to go below the vacuum line and gage. The vacuum line and gage must be located outside of the area of the water contamination.
  - (b) Put a thermocouple at the center of the area that has the water contamination as shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL.
    - 1) If the glass fabric breather cloth is used, put the thermocouple below the cloth.
    - 2) If you the metal mesh screen, put the thermocouple above the screen.
  - (c) Put a heat blanket on the surface of the facesheet that is not damaged or at the alternative location shown in Water Removal From The Honeycomb Sandwich, Figure 201/REPAIR GENERAL.
  - (d) Put a thermocouple adjacent to the heat blanket (on the facesheet side), at the center of the area that has the water contamination.
  - (e) Put the bases for the vacuum line and the vacuum gage into position. Make sure they touch the breather cloth (or metal screen) but do not go over the area that has the water contamination.
  - (f) Apply the vacuum sealing compound to the damaged facesheet around the layup.
  - (g) Seal the location with the vacuum bag material.
  - (h) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

**NOTE:** Use a desiccant indicator in the vacuum line to verify that the water removal is complete.
  - (i) Apply a minimum vacuum of 22 inches mercury.
- (4) Increase the temperature at a rate between 1°F and 5°F (0.5°C and 3°C) for each minute until the temperature is between 150°F (65°C) and 170°F (76°C).
- (5) Hold the temperature between 150°F (65°C) and 170°F (76°C) for 1 hour minimum.
- (6) Decrease the temperature at a maximum rate of 5°F (3°C) for each minute.
- (7) Do Step (3) again if there is still water in the damage area.

**NOTE:** If the water cannot be removed, the material that has the contamination must be removed.





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E. Clean the damage area.

**WARNING:** DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

**CAUTION:** DO NOT SOAK THE PARTS IN SOLVENT. DO NOT LET THE SOLVENT STAY ON THE PARTS FOR MORE THAN 60 SECONDS. IF YOU DO NOT OBEY, YOU CAN CAUSE DAMAGE TO THE FLOOR PANELS.

- (1) Clean the repair area with a soft cloth moist with MIBK, or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for a source of the solvents.
  - (a) Clean the surface again until a new moist cloth is clean after it is used.
  - (b) Remove the solvent from the surface before it can dry.
  - (c) Remove the remaining solvent film before you continue the repair.

F. Make the repair parts.

- (1) Find which numbered repair from Table 201/REPAIR GENERAL is necessary for the type and size of damage that was found. Refer to the specified numbered repair for the type of repair parts that are necessary.

**WARNING:** DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE FUMES IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURIES.

- (2) If repair plies are necessary, do as follows:
  - (a) Make the repair plies from BMS 9-3, Type H-2 or H-3 glass fiber fabric or BMS 8-100 precured fiberglass sheet. Refer to Table 202/REPAIR GENERAL.
  - (b) Impregnate the BMS 9-3 repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
- (3) If a repair core is necessary, do as follows:
  - (a) Make the repair core from the materials given in Table 202/REPAIR GENERAL.
  - (b) Cut the repair core to have the same perimeter dimension as the core you removed. Refer to 51-10-02 for the instructions to use the router and template.

**NOTE:** A maximum clearance of 0.125 inch is permitted between the repair core and the core hole.

- (c) Cut the repair core to the thickness necessary to be a small distance higher than the outer surface of the initial facesheet.
- (d) Clean the honeycomb repair core.
  - 1) Soak the non-metallic repair core in isopropyl alcohol (IPA) for a maximum of 60 seconds. Flush clean the metallic honeycomb core using

**NOTE:** If the non-metallic core is still not clean, you can soak it again up to three more times for a maximum of 60 seconds each.

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**CAUTION:** DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

G. Install the honeycomb repair core.

- (1) Apply a layer of BMS 5-28, Type 19 potting compound on the sides of the initial core edges that will touch when the plug is installed.

**NOTE:** If the two sides of the floor panel are damaged, use a caul plate to support the repair. Use clamps, tape, or vacuum bag to hold the caul plate in position.

- (2) If one surface of the repair core will touch an undamaged facesheet when the repair core is installed, do the step that follows:
  - (a) Apply a layer of BMS 5-28, Type 19 potting compound to the surface of the repair core that touches the undamaged facesheet.
- (3) Align the ribbon direction of the core repair plug with that of the initial core.
- (4) Carefully compress the repair core and put it into the core hole.

**NOTE:** Make sure that the core repair plug has a tight interference fit in the core hole.

- (5) Fill the core cells adjacent to the bond line with BMS 5-28, Type 19 potting compound.

H. Do the vacuum bag procedure or the alternate procedure to impregnate the BMS 9-3 repair plies with BMS 8-201, Type I or II laminating resin.

- (1) To impregnate the BMS 9-3 repair plies with the vacuum bag procedure, refer to Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin, Figure 202/REPAIR GENERAL and do the steps that follow.
  - (a) Cut two pieces of vacuum bag material. Make the bag material a minimum of 6 inches larger than the fabric that will be impregnated.
  - (b) Cut one piece of breather cloth that is two inches smaller than the vacuum bag material.
  - (c) Cut two pieces of solid parting film. Make them a minimum of 3 inches larger than the fabric.
    - 1) Put one piece of vacuum bag material on a smooth surface. Hold the vacuum bag material in position with tape.
    - 2) Apply vacuum sealing compound to the edge of the vacuum bag material.
    - 3) Place the second piece of vacuum bag material over the first and seal one edge.
    - 4) Install a vacuum probe and gage.
  - (d) Put one piece of the solid parting film on the first piece of vacuum bag material.
  - (e) Weigh the fabric to be impregnated.
    - 1) Multiply the weight by 1.3. The result gives you the weight of the laminating resin necessary to impregnate the fabric.

**NOTE:** The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

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- (f) Mix the BMS 8-201 laminating resin as given in Table 203/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.
  - (g) Put the fabric over the parting film. Make sure the fabric is smooth.
  - (h) Put the resin in the center of the fabric.
  - (i) Put the second piece of solid parting film above the fabric. Make sure the parting film is smooth.
  - (j) Put the breather cloth over the parting film.
  - (k) Seal the vacuum bag.
  - (l) Apply full vacuum to the vacuum bag.
  - (m) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.
  - (n) Release the vacuum from the vacuum bag.
  - (o) Remove the vacuum bag.
  - (p) Cut the repair plies. Do not remove the solid parting film.
- (2) To impregnate the BMS 9-3 repair plies with the alternate procedure, refer to Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin, Figure 203/REPAIR GENERAL and do the steps that follow.
- (a) Cut two pieces of solid parting film. Make them 3 inches larger than the fabric.
  - (b) Put one piece of solid parting film on a smooth surface. Hold it in position with tape.
  - (c) Weigh the fabric to be impregnated.
    - 1) Multiply the weight by 1.3. The result gives you the weight of the laminating resin necessary to impregnate the fabric.
- NOTE:** The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.
- (d) Mix the laminating resin as given in Table 203/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.
  - (e) Put half of the resin in the center of the solid parting film.
  - (f) Put the fabric above the solid parting film and the laminating resin.
  - (g) Put the laminating resin that remains over the fabric in the center.
  - (h) Put the second piece of solid parting film above the fabric. Make sure that the parting film is smooth.
  - (i) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.
  - (j) Cut the repair plies. Do not remove the solid parting film at this time.
- I. Apply the BMS 8-100 precured fiberglass patch.
- (1) Cut the repair patch from a sheet of BMS 8-100, Type 40 fiberglass.
  - (2) Lightly sand the mating surface of the patch to remove the Tedlar film.
  - (3) Clean the patch as given in Paragraph 4.E./REPAIR GENERAL
  - (4) Apply a layer of BMS 5-92, Type I adhesive prepared as given in Table 203/REPAIR GENERAL.
  - (5) Apply the adhesive to the mating surfaces of the floor panel and the patch.
    - (a) Make the layer of adhesive from 0.005 to 0.010 inch thick.

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(6) Apply the patch to the mating surface of the floor panel.

J. Apply the BMS 9-3 repair plies.

**CAUTION:** DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- (1) Remove the first piece of parting film.
- (2) Put the ply on the repair. Make the ply smooth and free from wrinkles.
- (3) Remove the second piece of parting film.
- (4) Do steps (1) through (3) for each repair ply.

K. Assemble the vacuum bag system that will be used to cure the repair.

- (1) Do steps (a) through (f) that follow and refer to Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp, Figure 204/REPAIR GENERAL if you will cure the repair at room temperature or at a temperature that is higher than room temperature with heat lamps or an oven.
  - (a) Put a layer of perforated parting film that is a minimum of 1.0 inch larger all around the repair area, above the repair area.
  - (b) If you cure the repair at a temperature that is higher than room temperature, put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp, Figure 204/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.
  - (c) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder.
  - (d) Put a layer of solid parting film over the surface bleeder that is 0.5 inch less all around than the surface bleeder.
  - (e) Put one layer of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3, Classes 8, 9, 10, 11, 12, or 13 or the equivalent) that is the same size as the surface bleeder above the repair area. This will be the breather cloth.

**NOTE:** Make sure the breather cloth touches the surface bleeder when you put the layup together.

- (f) Seal the repair with the vacuum bag material.
  - 1) Refer to Optional Procedures for the Vacuum Bag, Figure 205/REPAIR GENERAL for optional procedures you can use to seal the repair with the vacuum bag.
  - 2) Put the bases for the vacuum line and the vacuum gage into position.
  - 3) If necessary, apply the vacuum sealing compound around the layup.
  - 4) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.

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- 5) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.
- (2) Do steps (a) through (h) that follow and refer to Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 206/REPAIR GENERAL if you will cure the repair at a temperature that is higher than room temperature with a heat blanket.
  - (a) Put a layer of perforated parting film that is a minimum of 1.0 inch larger all around the repair area, above the repair area.
  - (b) Put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 206/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.
  - (c) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder. The surface bleeder should be a minimum of 2.0 inches larger all around than the heat blanket.
  - (d) Put a layer of solid parting film over the surface bleeder that is 0.5 inch less all around than the surface bleeder.
  - (e) Put a heat blanket above the solid parting film that is a minimum of 2.0 inches larger all around than the largest repair ply.

**CAUTION:** IT IS RECOMMENDED THAT YOU USE A MINIMUM OF ONE THERMOCOUPLE ON THE SIDE OF THE HEAT BLANKET THAT IS NEAREST TO THE REPAIR AREA. HEAT BLANKETS SOMETIMES BECOME DEFECTIVE AND CAN HEAT UP TOO QUICKLY OR GET TOO HOT. THE RESULT CAN BE AN UNSATISFACTORY REPAIR.

- (f) Put one to four thermocouples on the side of the heat blanket that is nearest to the repair area.
- (g) Put four to six layers of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) that are the same size as the surface bleeder above the repair area. These will be the breather cloths.
- (h) Seal the repair with the vacuum bag material.
  - 1) Refer to Optional Procedures for the Vacuum Bag, Figure 205/REPAIR GENERAL for optional procedures you can use to seal the repair with the vacuum bag.
  - 2) Put the bases for the vacuum line and the vacuum gage into position.
  - 3) If necessary, apply the vacuum sealing compound around the layup.
  - 4) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.
  - 5) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.
- L. Do a check of the vacuum bag for leaks.

**NOTE:** A vacuum bag which has a leak can cause porosity in the repair and bond failure.

- (1) Apply a minimum vacuum of 22 inches of mercury.
- (2) Remove the vacuum source.
- (3) Monitor the vacuum gage. After 5 minutes, the total difference in vacuum must be less than 5 inches of mercury.

M. Apply the mechanical pressure for the cure.

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- (1) Use clamps, weights, sand bags, or hydraulic jacks to apply a pressure of 10 to 15 pounds per square inch.

**NOTE:** The pressure must be applied equally to all the areas of the repair.

- (2) Put a layer of solid parting film between the repair and the clamps, weights, sand bags, or hydraulic jacks you use to apply the pressure.
- N. Apply the vacuum pressure for the cure.
- (1) Apply and keep a vacuum to a minimum of 22 inches of mercury in the vacuum bag during the cure cycle.
- O. Apply the temperature for the cure.
- (1) You can cure the repair materials at room temperature or at a temperature that is higher than room temperature.
  - (2) To cure the repair at a temperature that is higher than room temperature, apply the temperature with a heat lamp, oven or heat blanket.
    - (a) Refer to Distance and Temperature Data for the Cure of the Repair with a Heat Lamp, Figure 207/REPAIR GENERAL for distance to put a 250 watt heat lamp from the surface of the repair.
  - (3) Monitor the temperature with the thermocouples. Make sure that the temperature does not increase at a rate more than 7°F (4°C) for each minute.
- P. Cure the BMS 5-28 potting compound.
- (1) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 19 Potting Compound, Figure 208/REPAIR GENERAL.
    - (a) As an alternative, you can cure the potting compound 7 days at 72° to 82°F (22° to 28°C). Do not remove the pressure until the cure is completed.
- Q. Cure the BMS 5-92 adhesive.
- (1) Cure the BMS 5-92 adhesive for 3 hours at 140°F to 160°F (60°C to 71°C) as shown in Cure Cycle for the BMS 5-92 Adhesive, Figure 209/REPAIR GENERAL.
    - (a) As an alternative, cure the bond for 16 hours at room temperature. Do not remove the pressure until the cure is completed.
- R. Cure the BMS 8-201 resin.
- (1) Cure the BMS 8-201 resin as shown in Cure Time and Temperature Data for the BMS 8-201 Resin, Figure 210/REPAIR GENERAL.
- S. Install the inserts.

**WARNING:** DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.



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### STRUCTURAL REPAIR MANUAL

(WARNING PRECEDES)

**CAUTION:** DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

(1) If a Shur-Lok SL5094A4, SL5111A3, or SL5182 insert was removed, do as follows.

- (a) Find the location of the initial insert.
- (b) Drill a hole at the location of the initial insert.

**NOTE:** Do not use liquid coolants or liquid lubricants when you drill the hole.

- 1) Drill a hole through the thickness of the floor panel. Refer to Table 204/REPAIR GENERAL for the diameter of the hole for the different inserts.

**Table 204:**

HOLE DIAMETERS FOR FLOOR PANEL INSERTS	
INSERT NUMBER	HOLE DIAMETER (INCH)
SL618-3CM	0.561 to 0.566
SL2334-3C2	0.562 to 0.565
SL5094A4	0.562 to 0.572
SL5111A3	0.440 to 0.447
SL5182A3	0.500 to 0.510

- 2) Do not damage the floor panel when you drill the hole.
- 3) Make sure there are no loose pieces of core or loose fibers in the hole.
- (c) Make the surface near the hole rough. Make the rough area 0.05 to 0.10 inch larger than the head of the insert.
- (d) Clean the repair area and the inserts as given in Paragraph 4.E./REPAIR GENERAL
- (e) Apply a layer of BMS 5-107, Class 1 adhesive (prepared as given in Table 203/REPAIR GENERAL) to the mating surfaces of the insert and floor panel.
- (f) Assemble the inserts. Push the two parts of the insert together to get the dimensions shown in Installation of a Shur-Lok SL5094, SL5111, or SL5182 Insert, Figure 211/REPAIR GENERAL.
- (g) Remove all of the adhesive from the inner bore of the insert before the adhesive is cured.
  - 1) Adhesive fillets are permitted if they extend less than 0.015 inch from the outer surface of the insert flange. Refer to Cure Cycle for the BMS 5-107 Adhesive, Figure 212/REPAIR GENERAL.
- (h) Cure the adhesive at 150° to 175°F (66° to 77°C) for 1 hour as shown in Cure Cycle for the BMS 5-107 Adhesive, Figure 212/REPAIR GENERAL.



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## STRUCTURAL REPAIR MANUAL

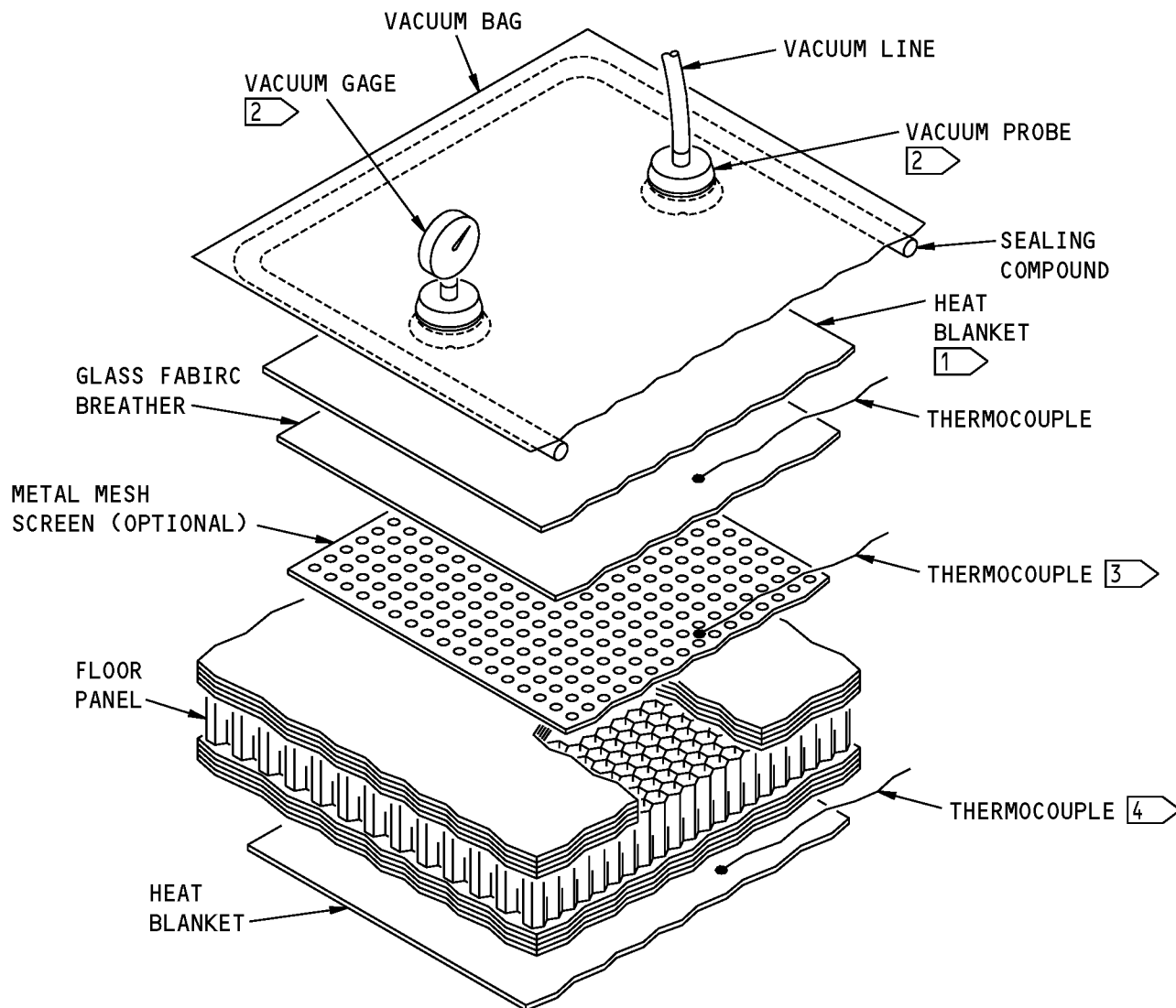
- 1) Let the floor panel stay at room temperature for 12 hours before you install it.
- (2) If a Shur-Lok SL618-3CM or SL2334-3C2 insert was removed, do as follows:
  - (a) Find the location of the initial insert.
  - (b) Drill a hole at the location of the initial insert.

**NOTE:** Do not use liquid coolants or liquid lubricants when you drill the hole.

    - 1) Refer to Table 204/REPAIR GENERAL for the diameter of the hole for the different inserts.
    - 2) Make the depth of the hole 0.04 inch more than the length of the insert.
    - 3) Do not damage the floor panel when you drill the hole.
    - 4) Do not permit the drill to touch the opposite facesheet.
    - 5) Make sure there are no loose pieces of core or loose fibers in the hole.
  - (c) Clean the repair area and the inserts as given in Paragraph 4.E./REPAIR GENERAL
  - (d) Fill the hole 50 percent full with BMS 5-28, Type 19 potting compound prepared as given in Table 203/REPAIR GENERAL.
  - (e) Put the insert in the hole.
  - (f) Inject more potting compound into one hole in the alignment tab of the insert until the potting compound comes out of the other hole. Refer to Installation of a Shur-Lok SL2334 Insert, Figure 213/REPAIR GENERAL.
    - 1) If there is too much potting compound, remove it with a gauze pad that is lightly moist with MIBK, or acetone.
  - (g) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 19 Potting Compound, Figure 208/REPAIR GENERAL.
    - 1) As an alternative, you can cure the potting compound for 7 days at 72° to 82°F (22° to 28°C).
  - (h) Remove the alignment tab.



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STRUCTURAL REPAIR MANUAL**

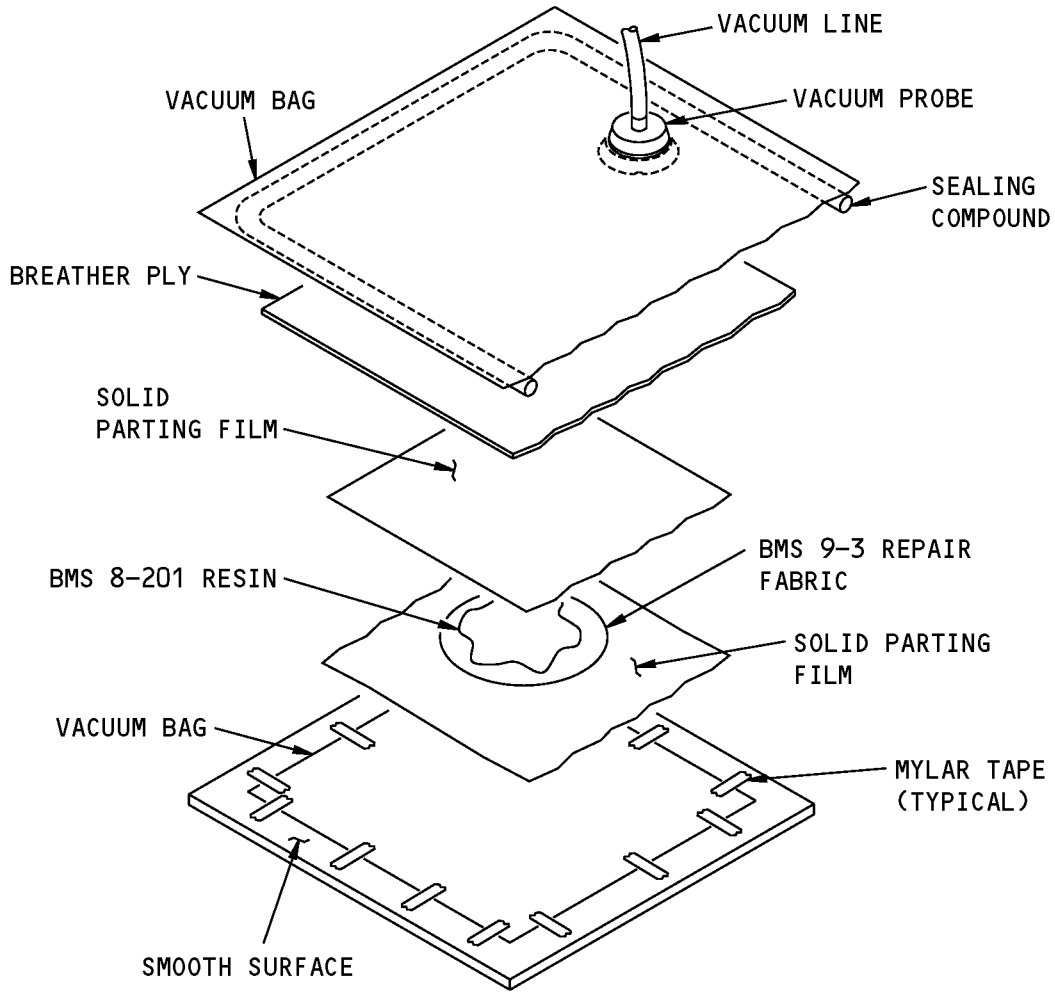


**NOTES**

- 1 THIS LOCATION MAY BE USED FOR A SECOND HEAT BLANKET TO INCREASE THE RATE OF WATER REMOVAL.
- 2 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.
- 3 USE A THERMOCOUPLE AT THIS LOCATION IF YOU USE A GLASS FABRIC BREATHER.
- 4 USE A THERMOCOUPLE AT THIS LOCATION IF YOU USE A METAL MESH SCREEN.

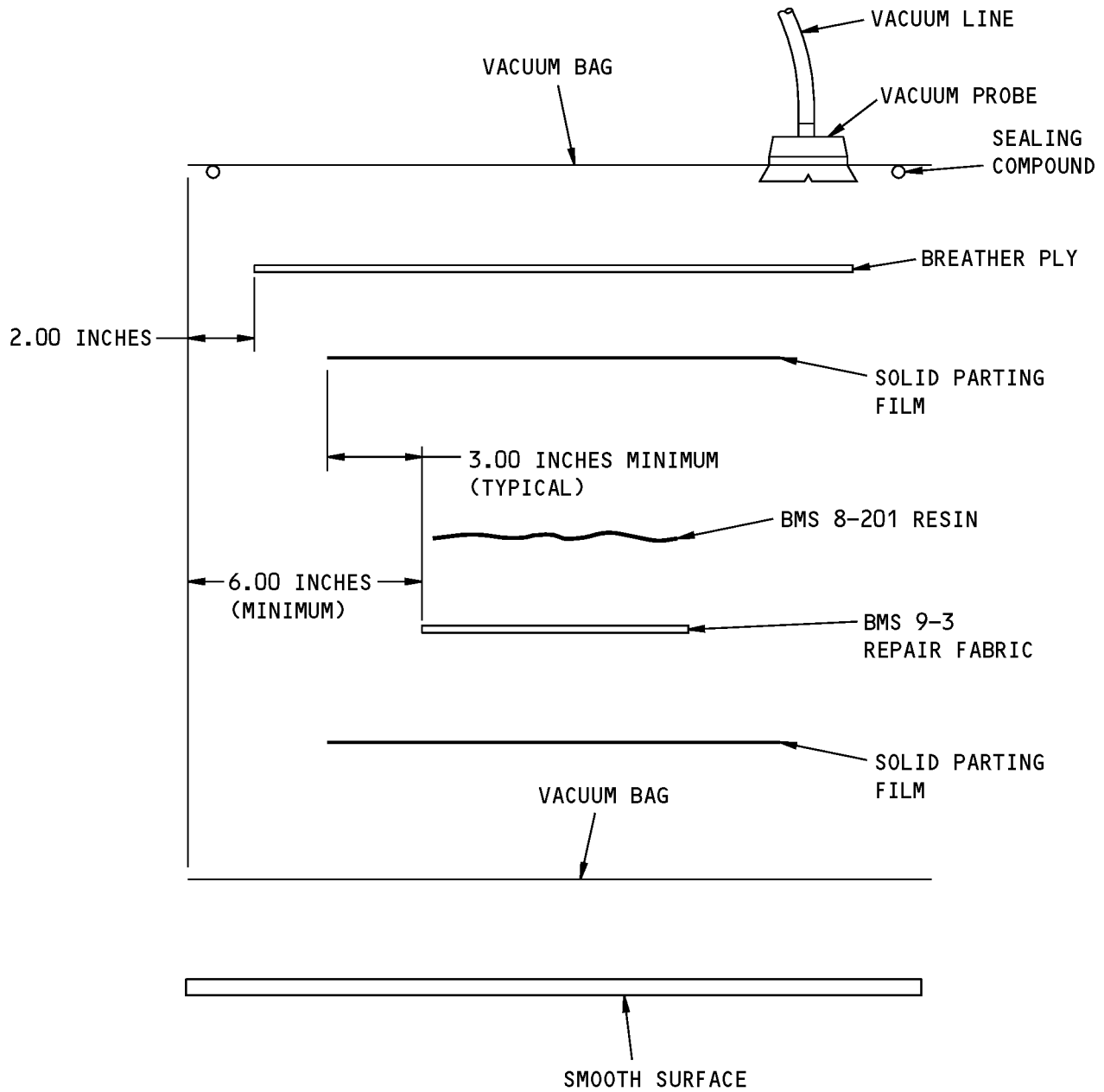
**Water Removal From The Honeycomb Sandwich  
Figure 201**

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**Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin  
Figure 202 (Sheet 1 of 2)**

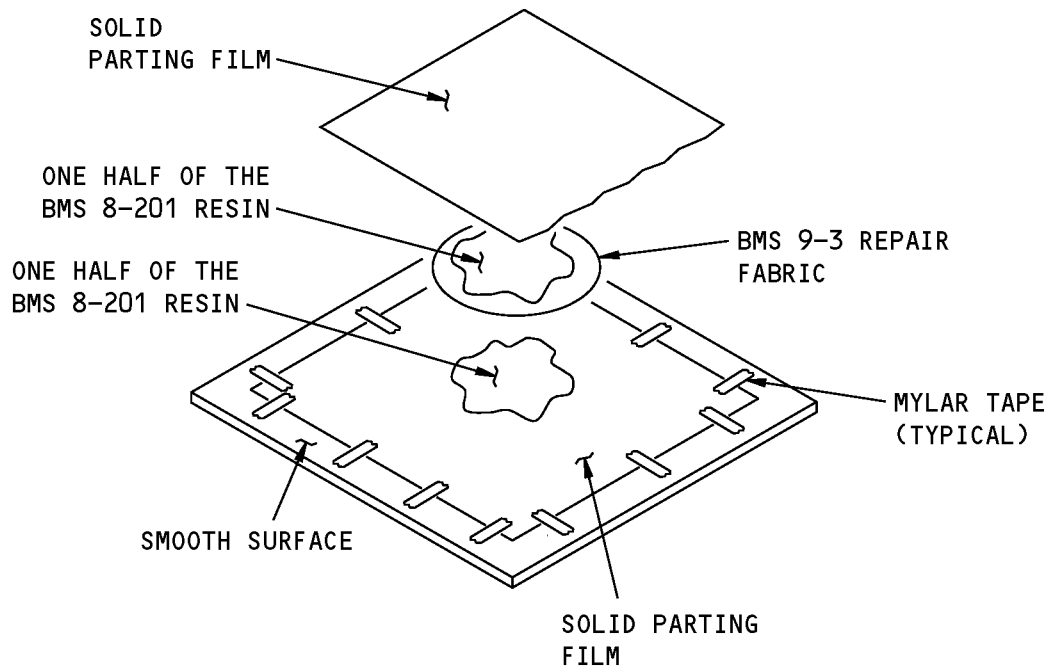
**737-800  
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**SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT**

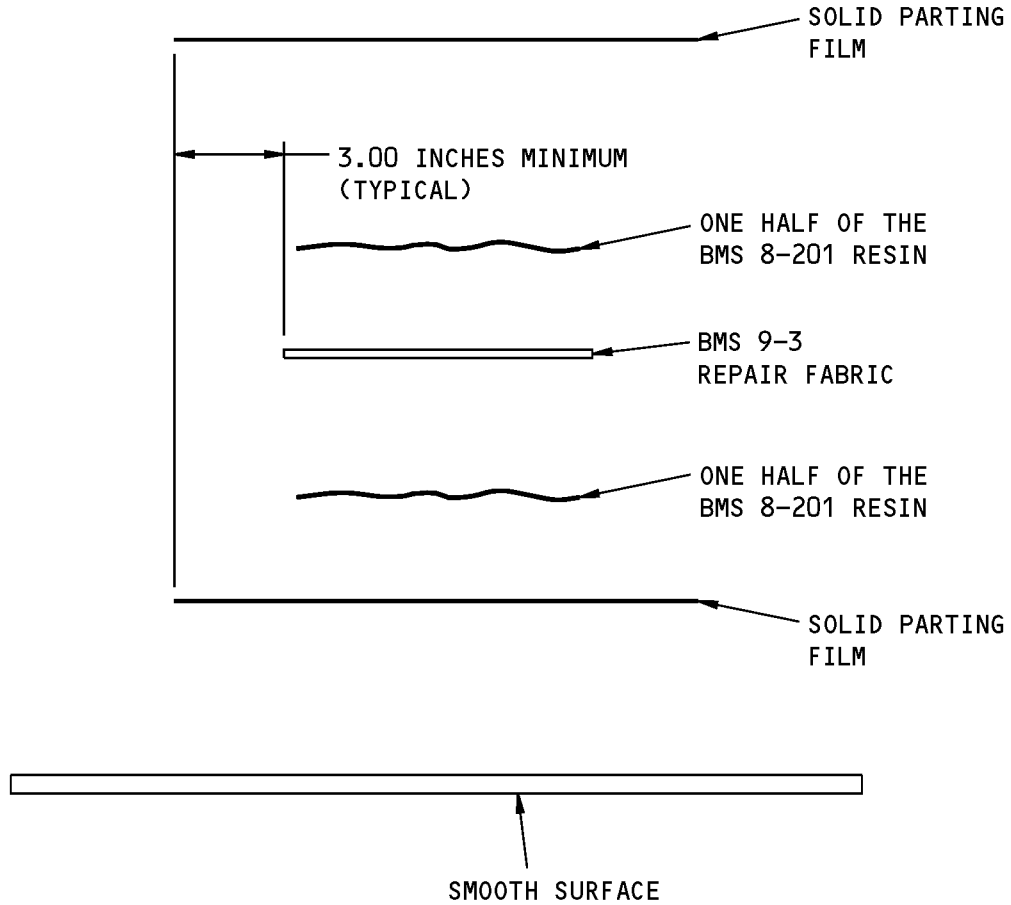
**Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin  
Figure 202 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin  
Figure 203 (Sheet 1 of 2)**

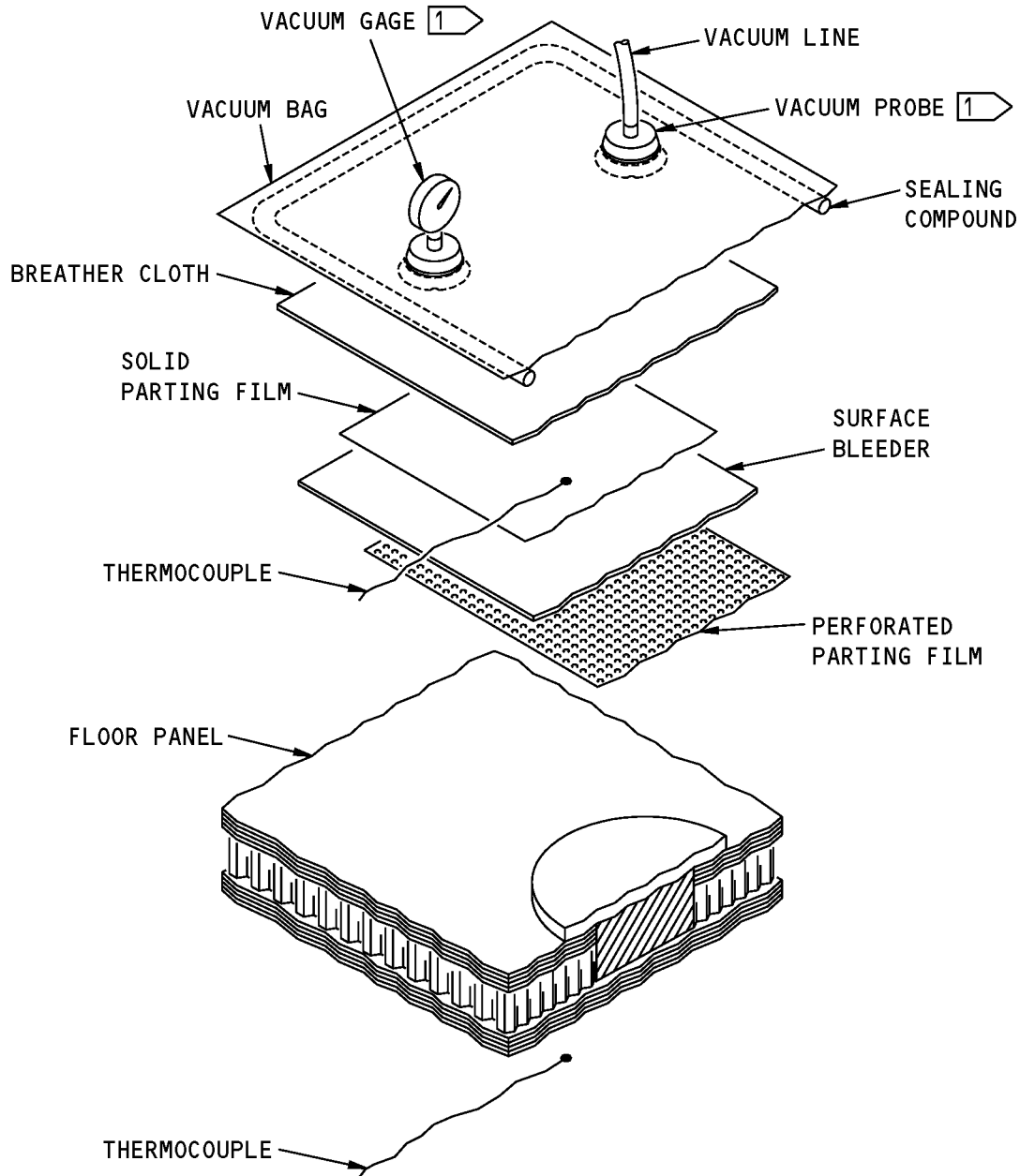
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT**

**Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-201 Resin  
Figure 203 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

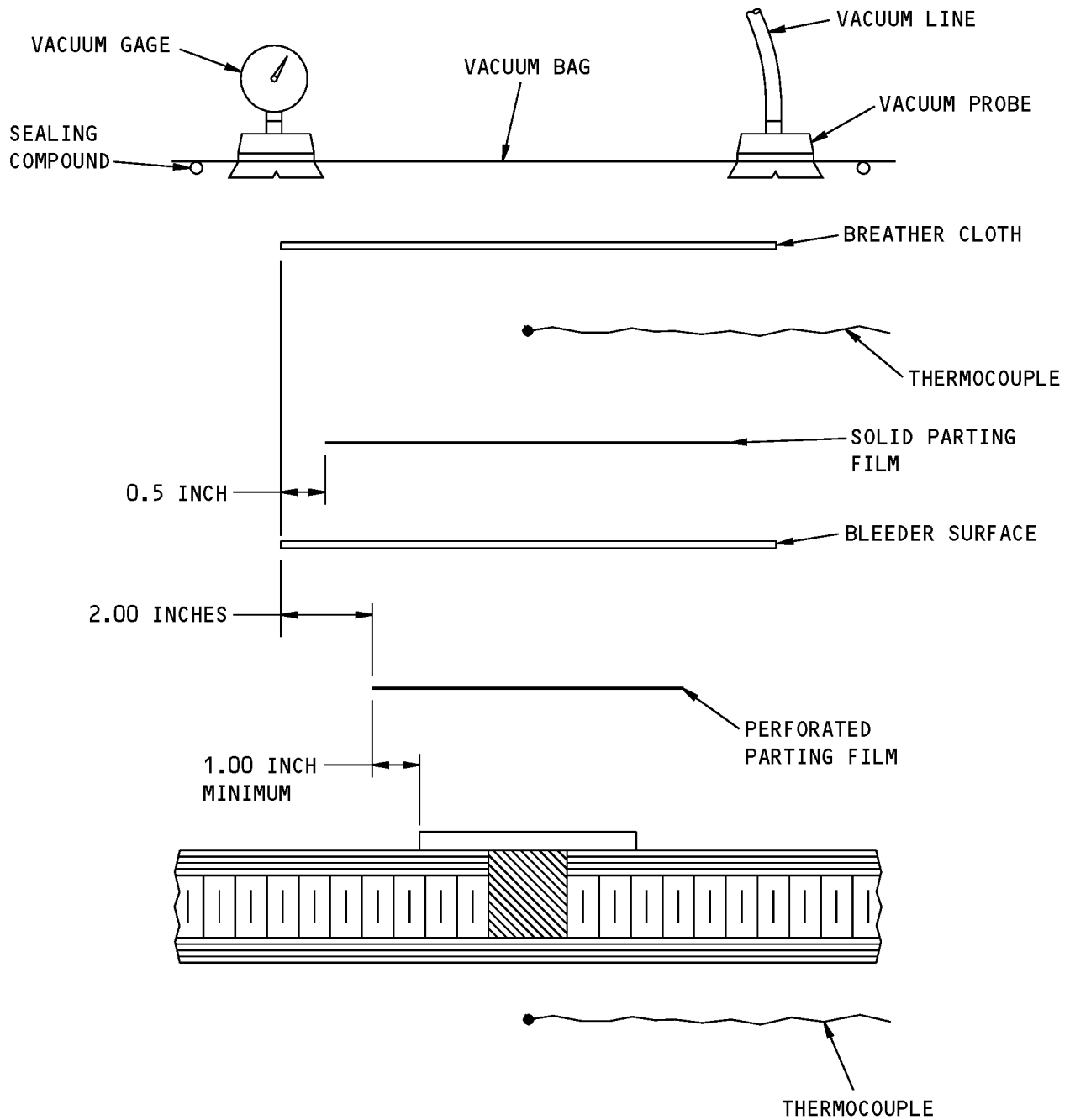


**NOTES**

**1** THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp  
Figure 204 (Sheet 1 of 2)**

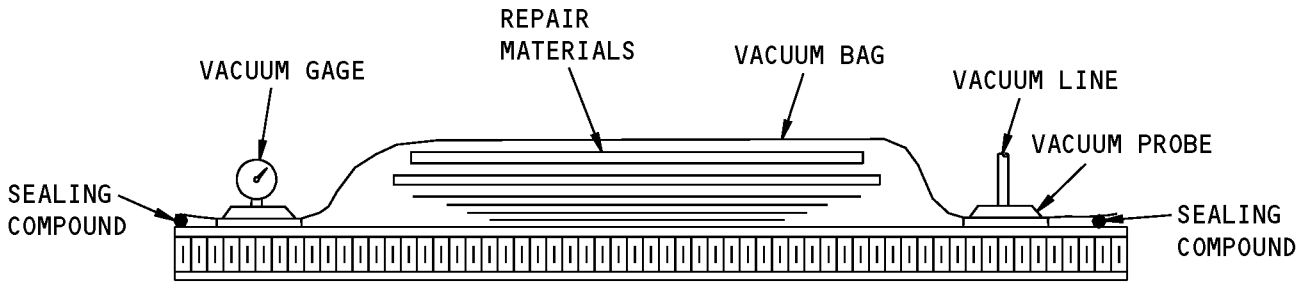
**737-800  
STRUCTURAL REPAIR MANUAL**



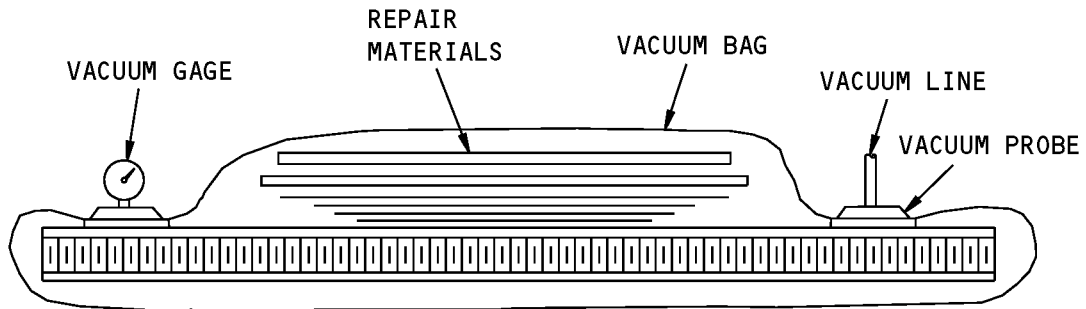
**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Repair with an Oven or Heat Lamp  
Figure 204 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



**SATISFACTORY – VACUUM BAG SEALED TO ONE SIDE ONLY**

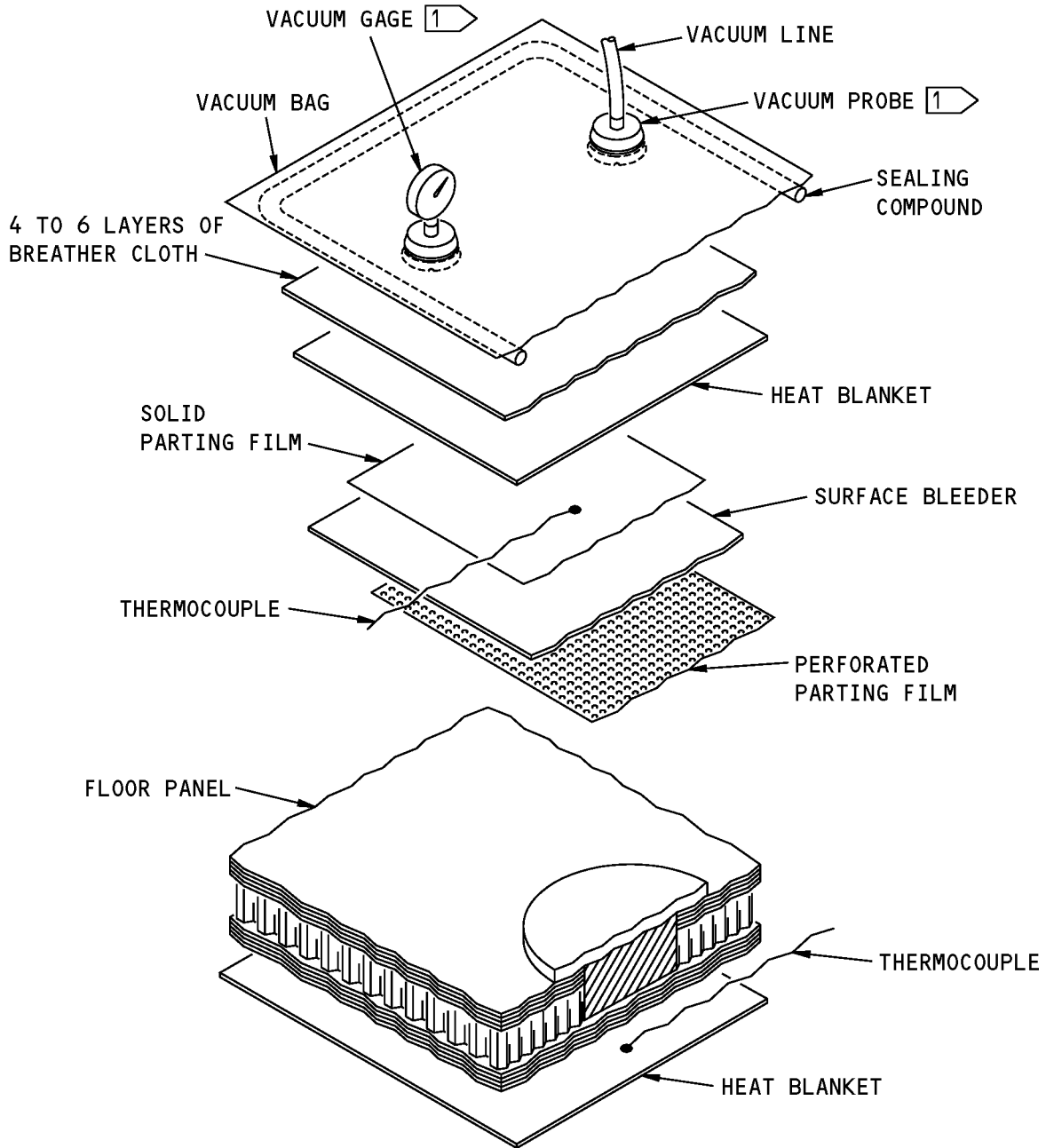


**SATISFACTORY – VACUUM BAG SEALED AROUND ALL OF THE PART**

**Optional Procedures for the Vacuum Bag  
Figure 205**



**STRUCTURAL REPAIR MANUAL**

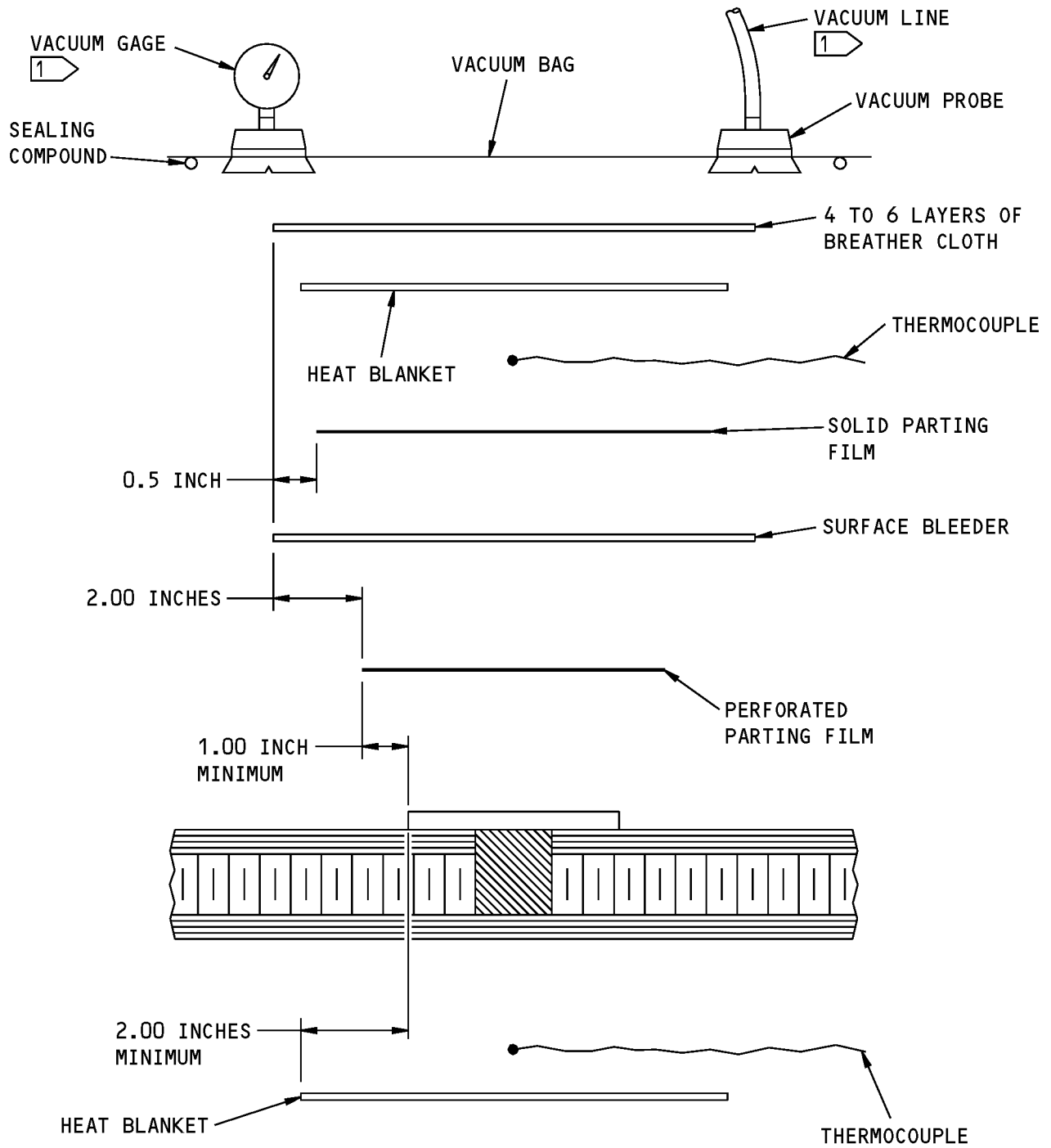


**NOTES**

**1** THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket  
Figure 206 (Sheet 1 of 2)**

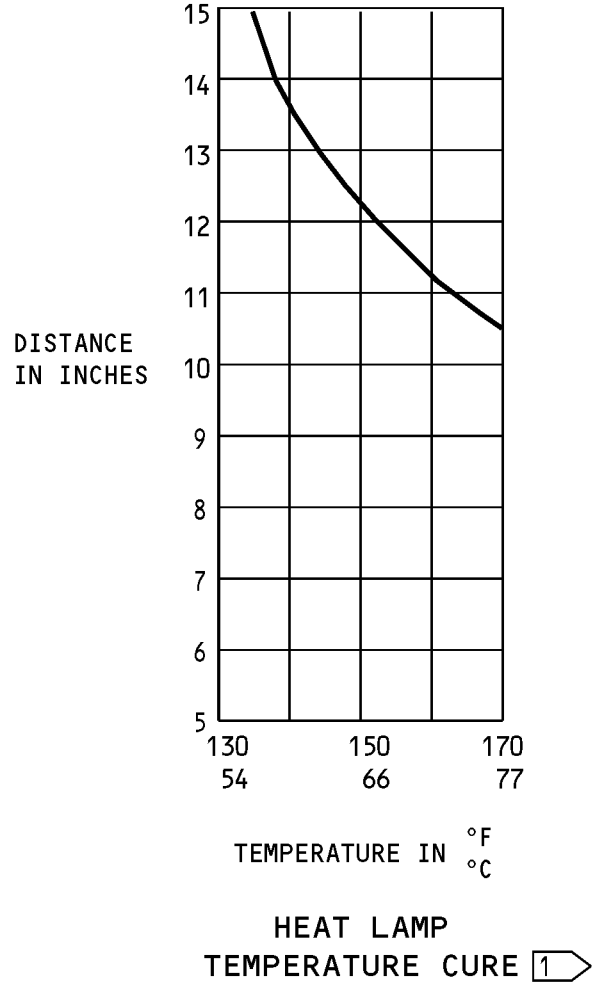
**737-800  
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**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket  
Figure 206 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



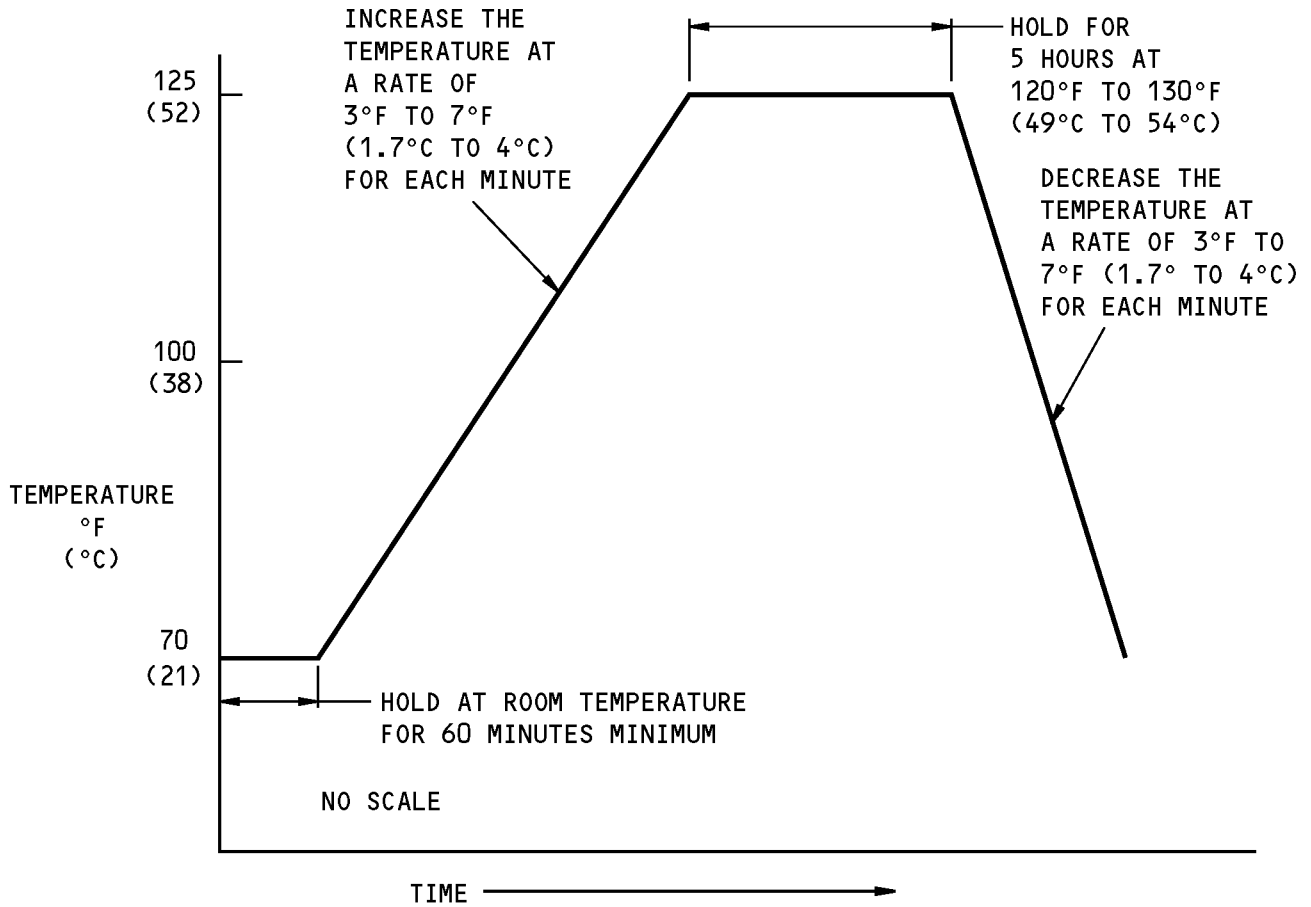
**NOTES**

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.

① THE DISTANCE IN INCHES OF A 250 WATT HEAT LAMP FROM THE SURFACE OF THE REPAIR VS THE TEMPERATURE AT THE SURFACE OF THE REPAIR.

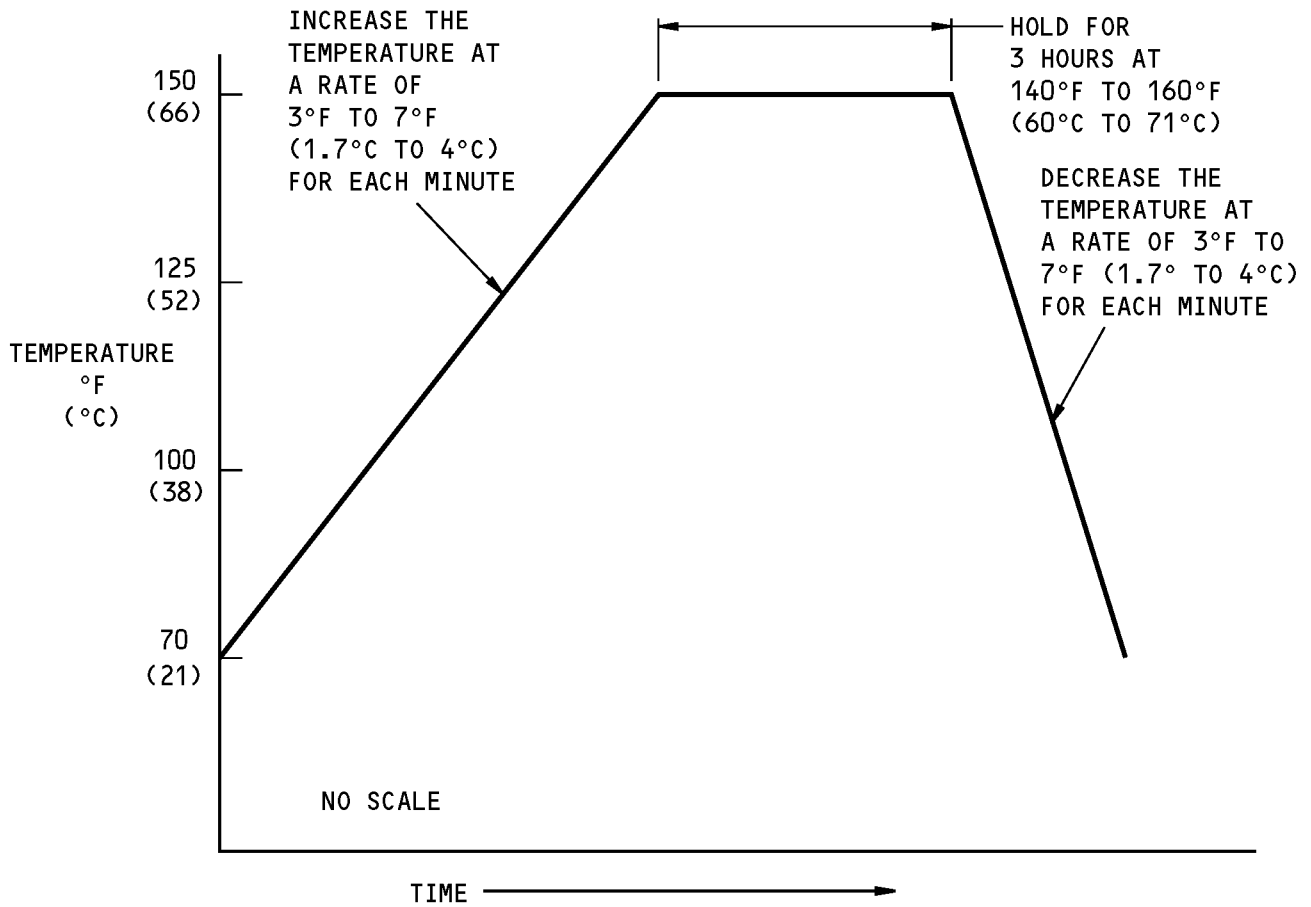
**Distance and Temperature Data for the Cure of the Repair with a Heat Lamp  
Figure 207**

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STRUCTURAL REPAIR MANUAL**



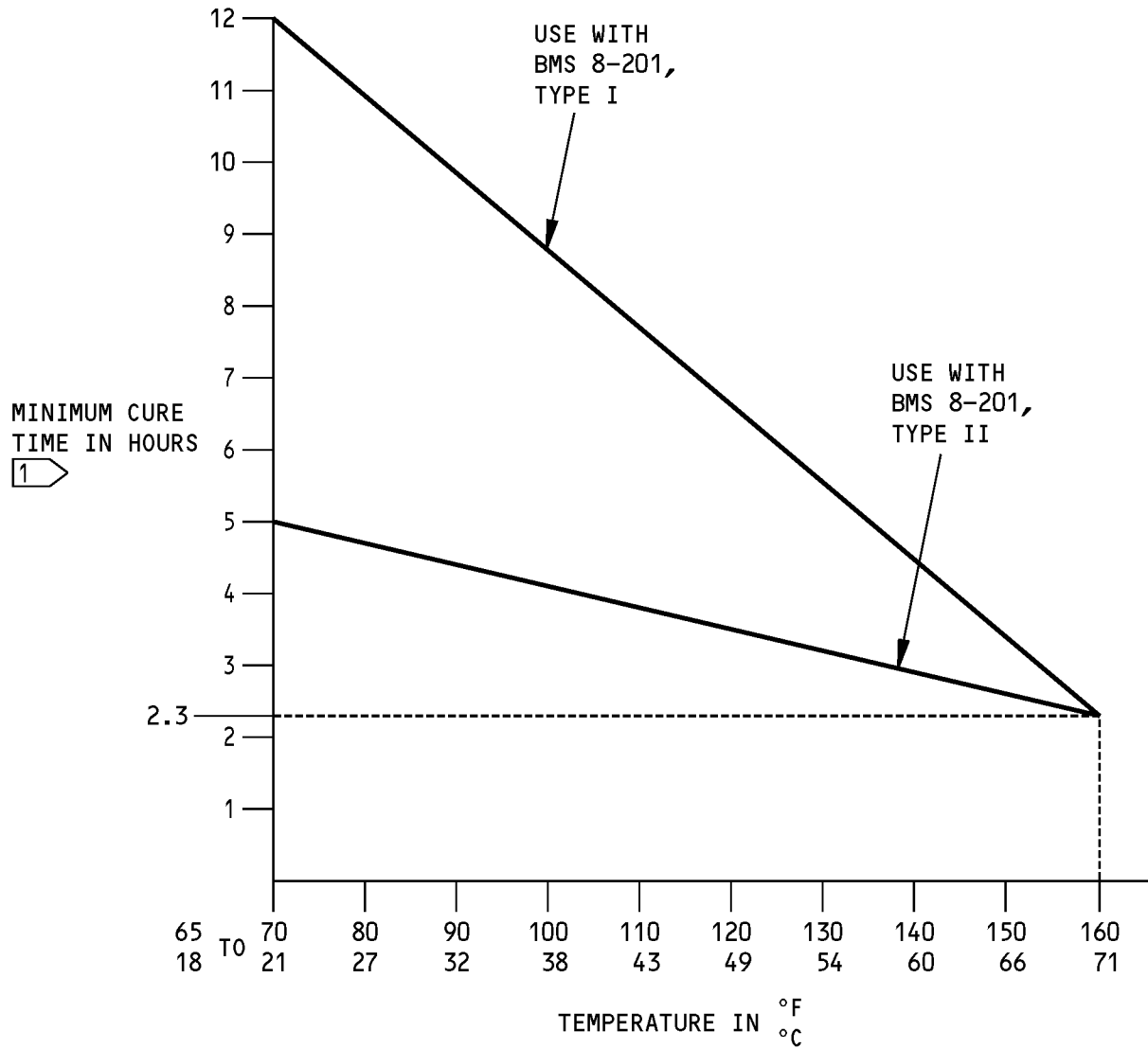
**Cure Cycle for the BMS 5-28, Type 19 Potting Compound  
Figure 208**

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STRUCTURAL REPAIR MANUAL**



**Cure Cycle for the BMS 5-92 Adhesive  
Figure 209**

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STRUCTURAL REPAIR MANUAL**



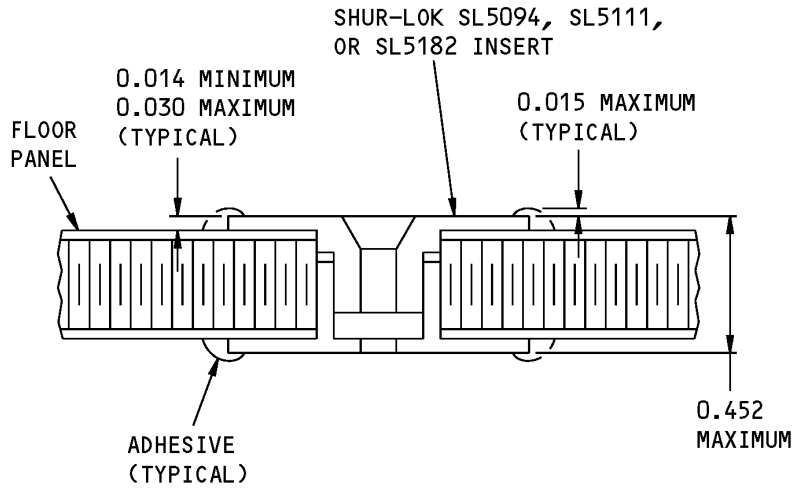
**NOTES**

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.

1 THE TIME BEFORE YOU DRILL HOLES, APPLY FINISHES, OR DO OTHER SUBSEQUENT PROCEDURES.

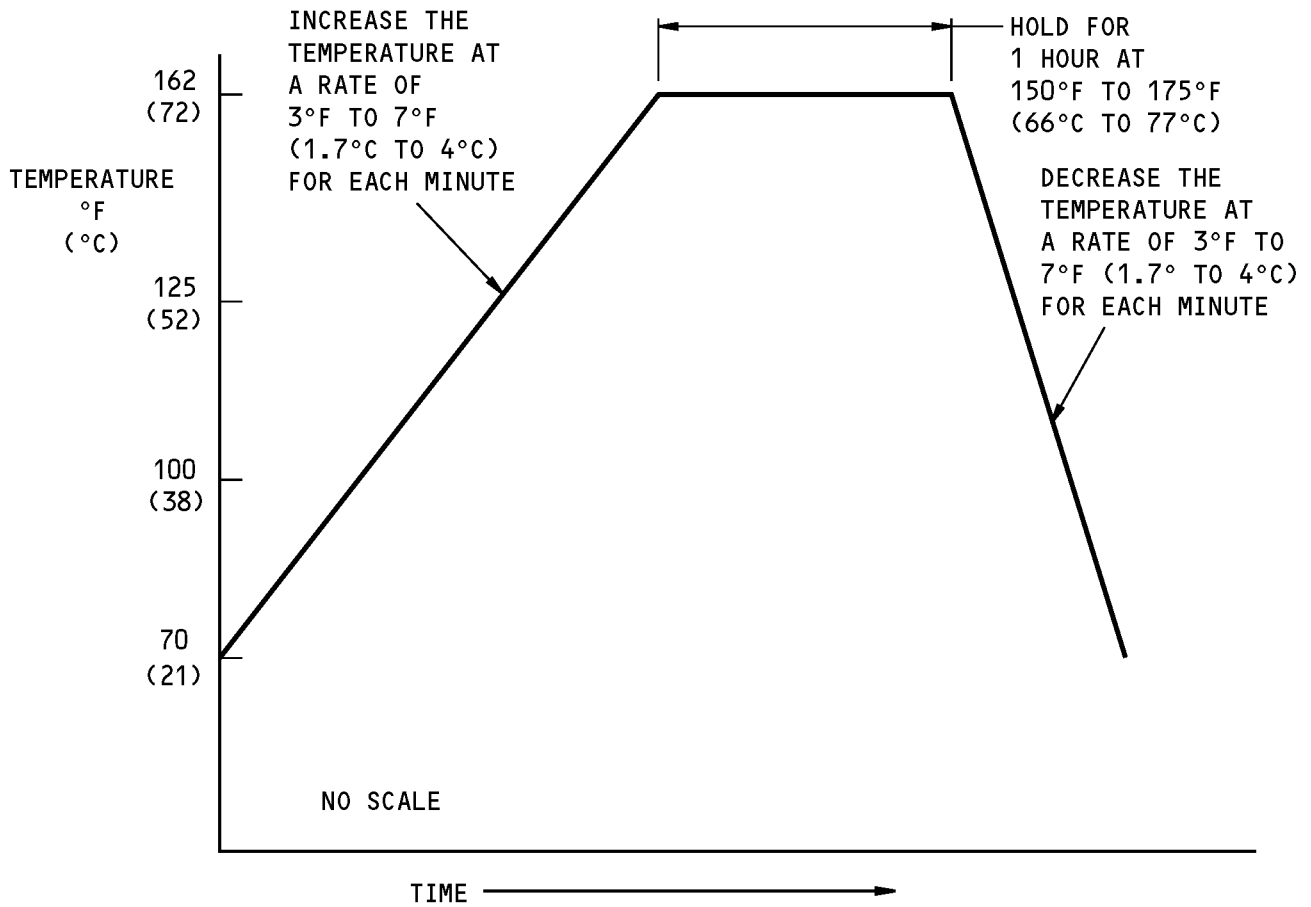
**Cure Time and Temperature Data for the BMS 8-201 Resin  
Figure 210**

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STRUCTURAL REPAIR MANUAL**



**Installation of a Shur-Lok SL5094, SL5111, or SL5182 Insert  
Figure 211**

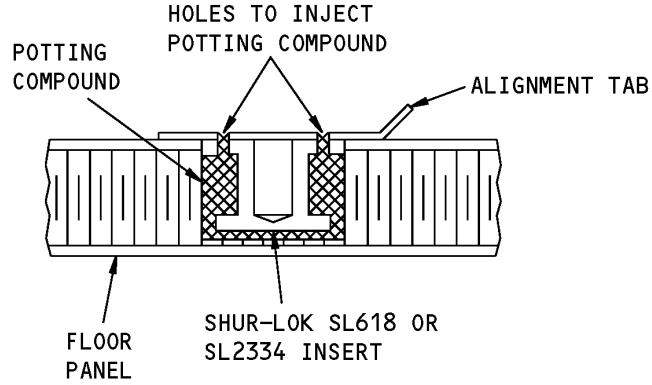
**737-800  
STRUCTURAL REPAIR MANUAL**



**Cure Cycle for the BMS 5-107 Adhesive  
Figure 212**



**737-800  
STRUCTURAL REPAIR MANUAL**



**Installation of a Shur-Lok SL2334 Insert  
Figure 213**

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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - REPAIR OF DAMAGE TO ONE FACESHEET IN COMPOSITE FLOOR PANELS**

**1. Applicability**

- A. Repair 1 is applicable to damage to one facesheet of a floor panel.
- B. Refer to Repair 7 for delamination damage to a facesheet that is less than 16 square inches in area.
- C. Refer to Repair 8 for delamination damage to a facesheet that is less than 4 square inches in area and is at an edge.

**2. General**

- A. The materials necessary for this repair are given in Table 201/REPAIR 1.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

<b>FLOOR PANEL REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Adhesive for the inserts	BMS 5-107, Class 1

**3. Repair Instructions**

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damaged facesheet as shown in Removal of the Damage, Figure 201/REPAIR 1. Refer to Paragraph 4.B./REPAIR GENERAL for the steps to remove the damage.
- D. Remove loose pieces of the core. Do not remove the core that is attached.
- E. Remove all of the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.
- F. Clean the repair area as given in Paragraph 4.E./REPAIR GENERAL
- G. Fill the open honeycomb core cells with BMS 5-28, Type 19 potting compound.
  - (1) Prepare the potting compound as given in Repair General, Table 203 .
  - (2) Fill all open core cells until the level of the potting compound is higher than the outer surface of the facesheet.

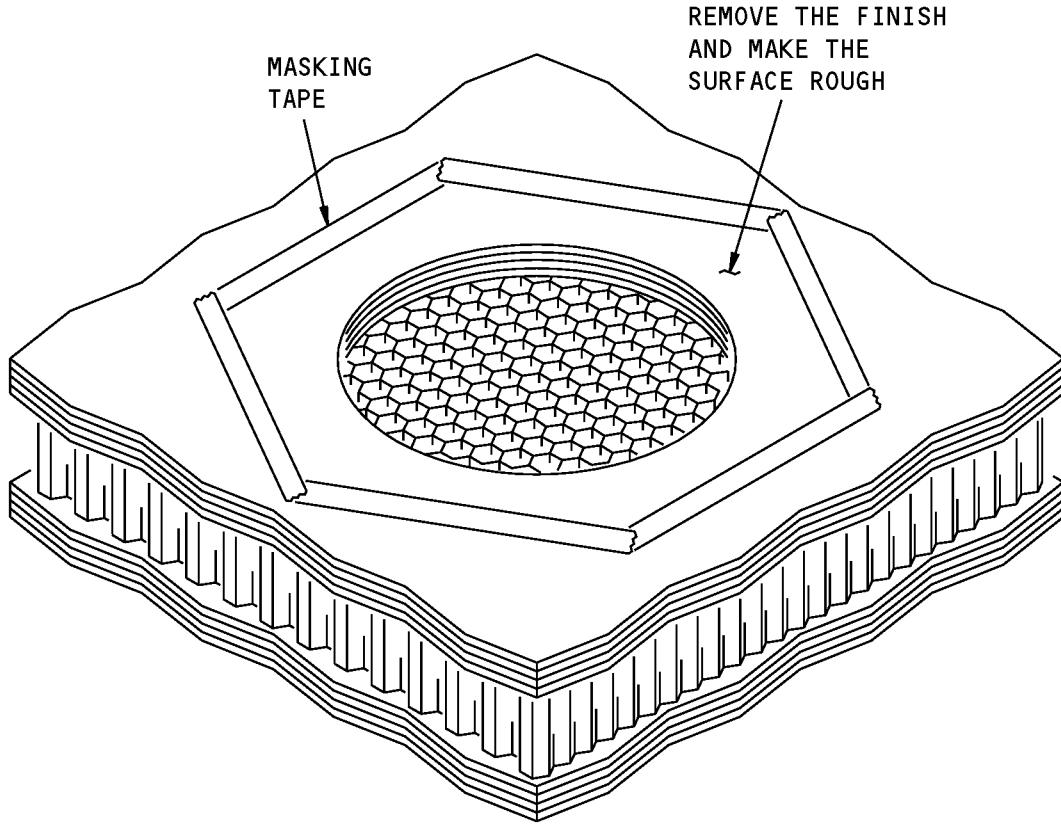
**CAUTION:** DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- H. Cure the potting compound.
  - (1) Cure the potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**

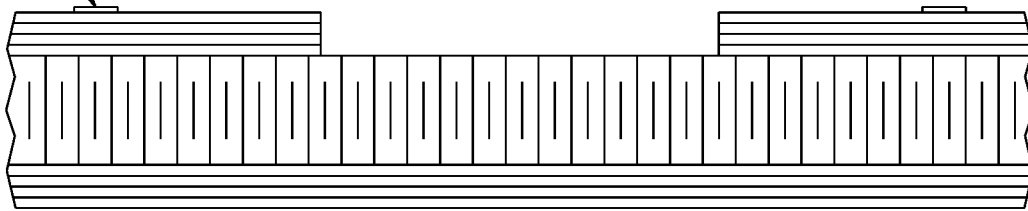
- (a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.
- I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.
- J. Clean the repair area as given in Paragraph 4.E./REPAIR GENERAL
- K. Prepare and apply the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 1 - Layout of the Repair Parts - Glass Fabric Repair, Figure 202/REPAIR 1 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply:
    - (a) Refer to Repair 1 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair, Figure 203/REPAIR 1 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- L. Apply the pressure for the cure of the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- M. Cure the repair.
  - (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
    - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- N. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

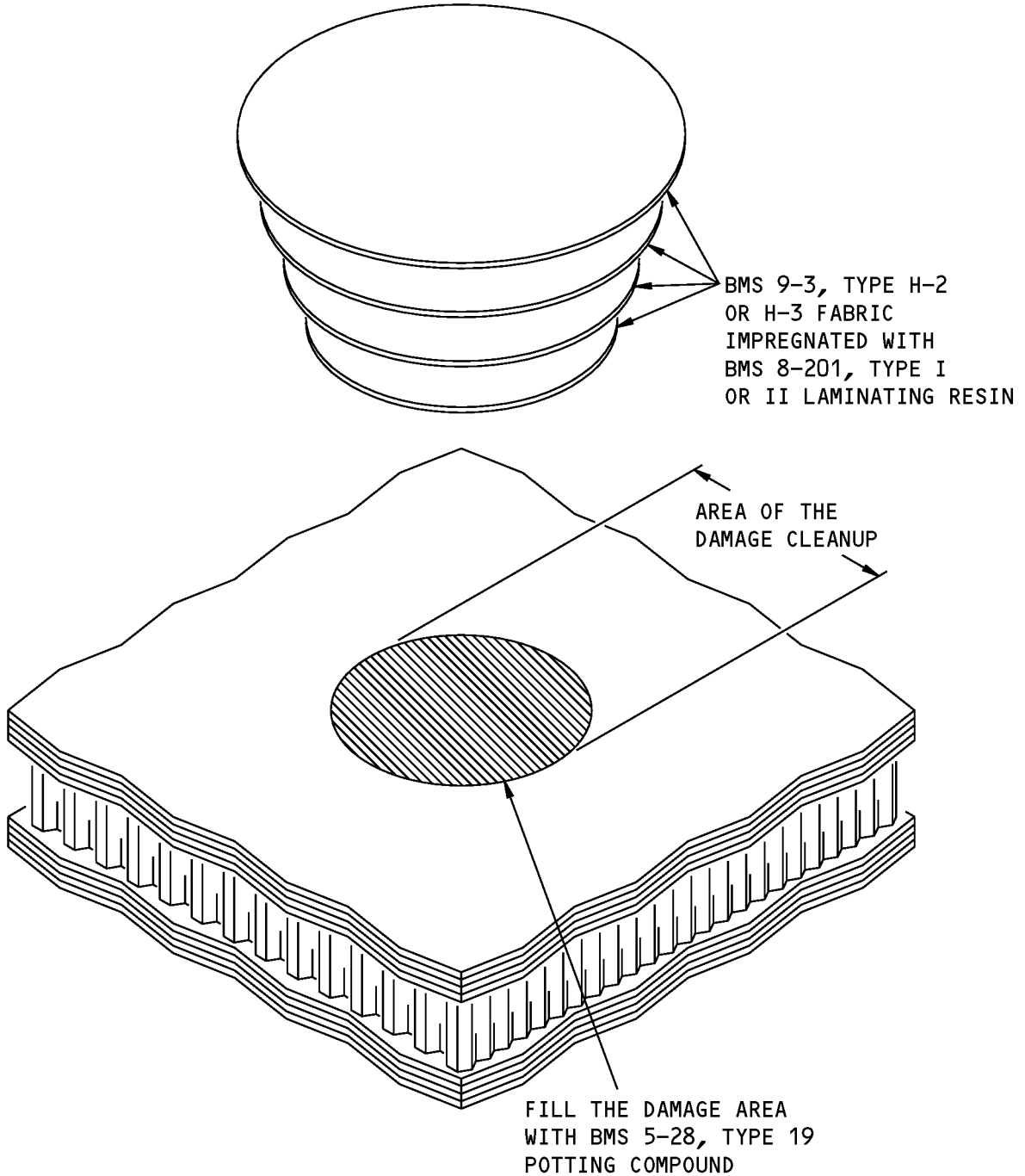
MASKING TAPE  
(REMOVE AFTER  
SANDING)



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

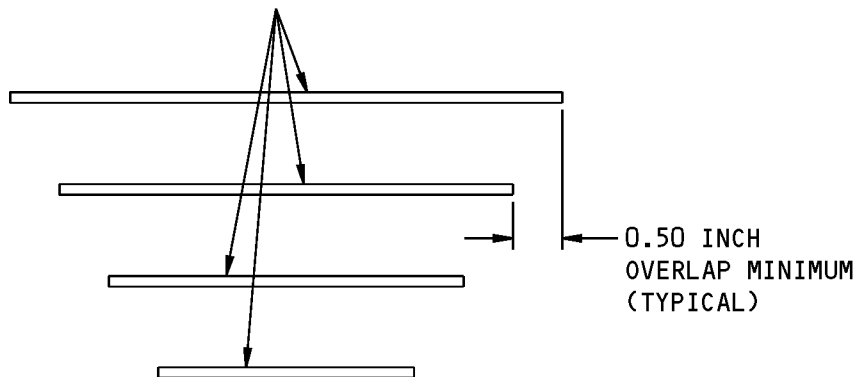


**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

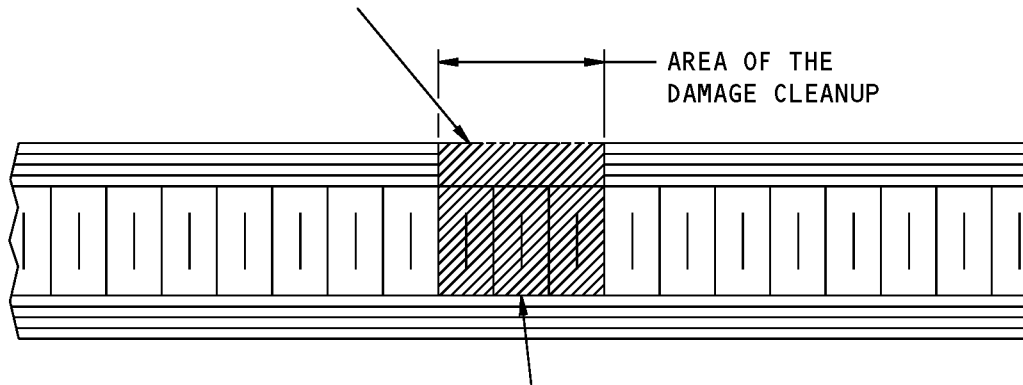
**Repair 1 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 1 of 2)**

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BMS 9-3, TYPE H-2 OR H-3 FABRIC  
IMPREGNATED WITH BMS 8-201,  
TYPE I OR II LAMINATING RESIN



SAND THE POTTING COMPOUND  
TO BE LEVEL WITH THE  
INITIAL FACESHEET

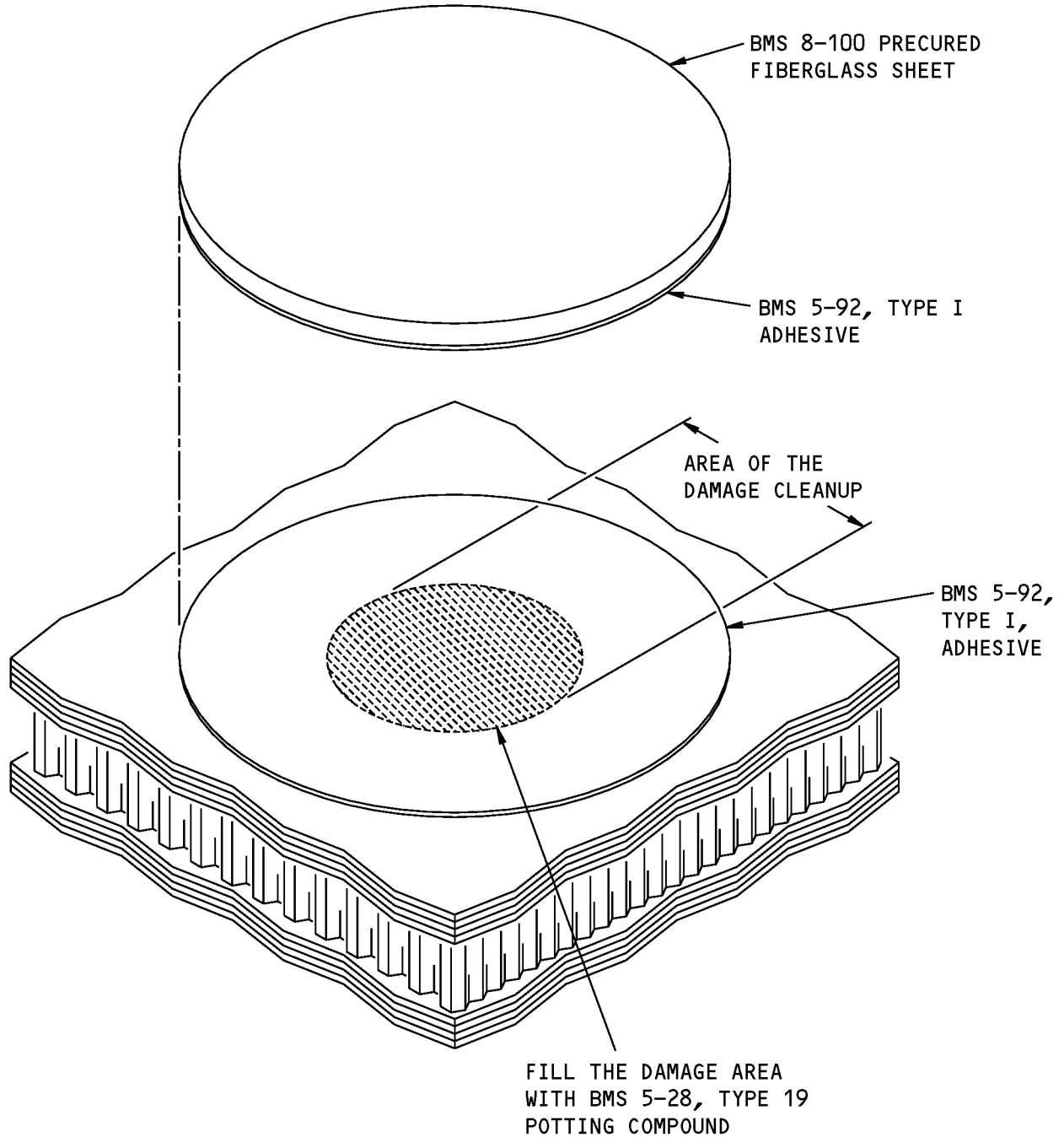


FILL THE DAMAGE AREA  
WITH BMS 5-28, TYPE 19  
POTTING COMPOUND

SECTION THROUGH THE CENTER OF THE REPAIR

Repair 1 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 2 of 2)

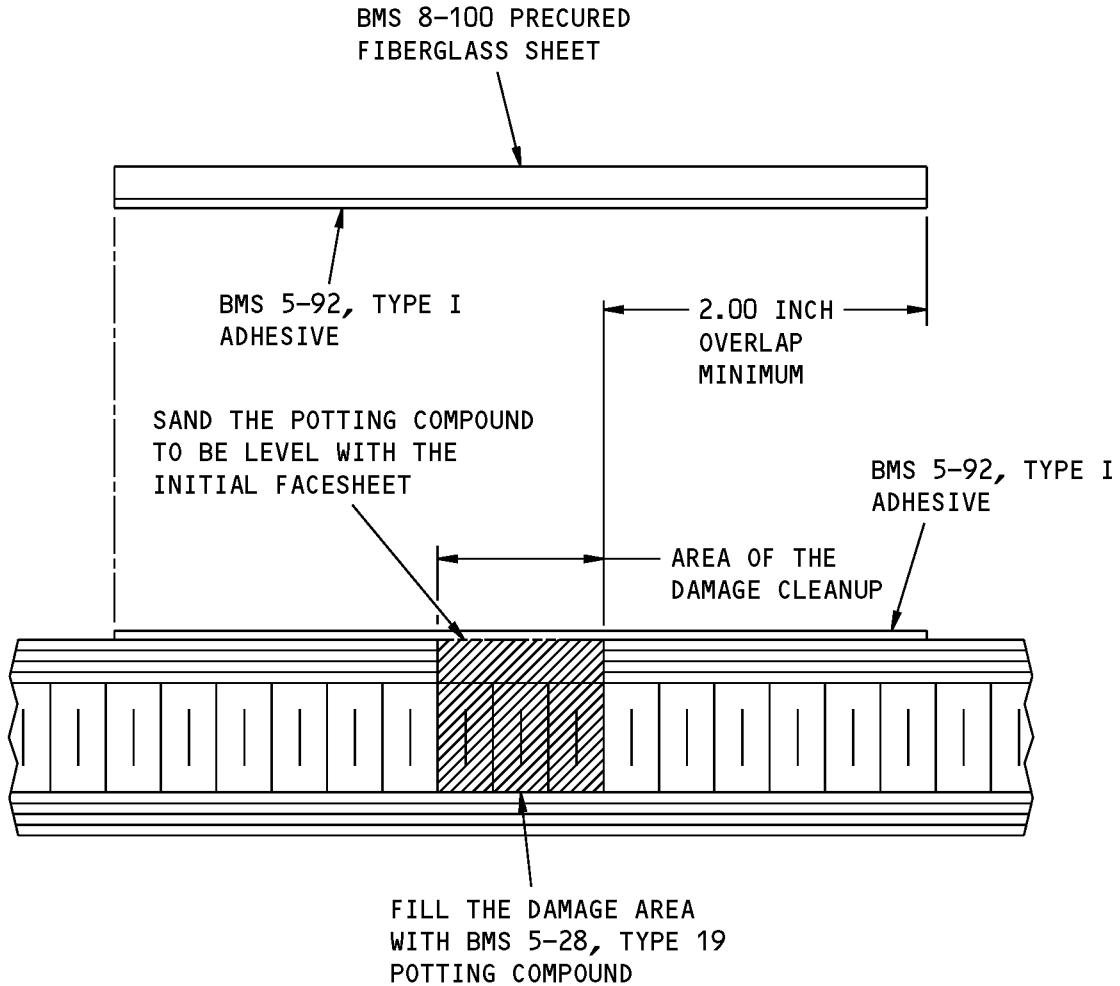
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 1 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 1 of 2)**

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**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 1 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 2 of 2)**





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## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - REPAIR OF DAMAGE LESS THAN 1.0 INCH IN DIAMETER TO ONE FACESHEET AND THE CORE IN COMPOSITE FLOOR PANELS

#### 1. Applicability

- A. Repair 2 is applicable to damage to one facesheet and the core of a floor panel. The damage must be less than 1.0 inch in diameter.
- B. Refer to Repair 3 for damage that is larger than 1.0 inch in diameter.

#### 2. General

- A. The materials necessary for this repair are given in Table 201/REPAIR 2.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Adhesive for the inserts	BMS 5-107, Class 1

#### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damage as shown in Removal of the Damage, Figure 201/REPAIR 2. Refer to Paragraph 4.B./REPAIR GENERAL and Paragraph 4.C./REPAIR GENERAL for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Fill the damage area with BMS 5-28, Type 19 potting compound.
  - (1) Prepare the potting compound as given in Repair General, Table 203 .
  - (2) Fill the damage area until the level of the potting compound is higher than the outer surface of the facesheet.

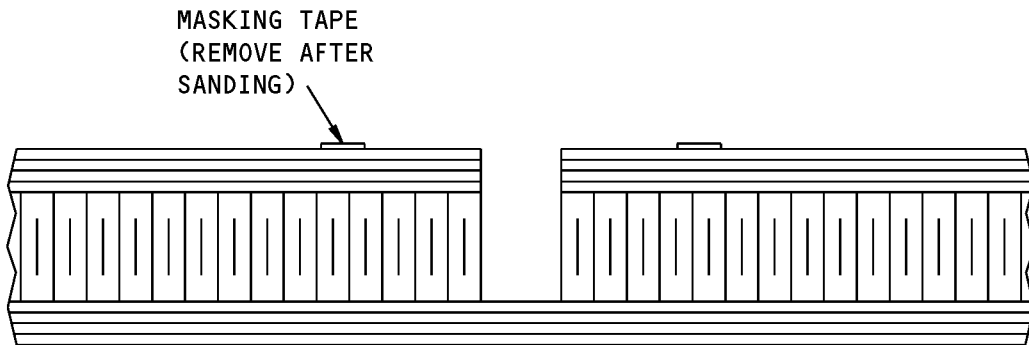
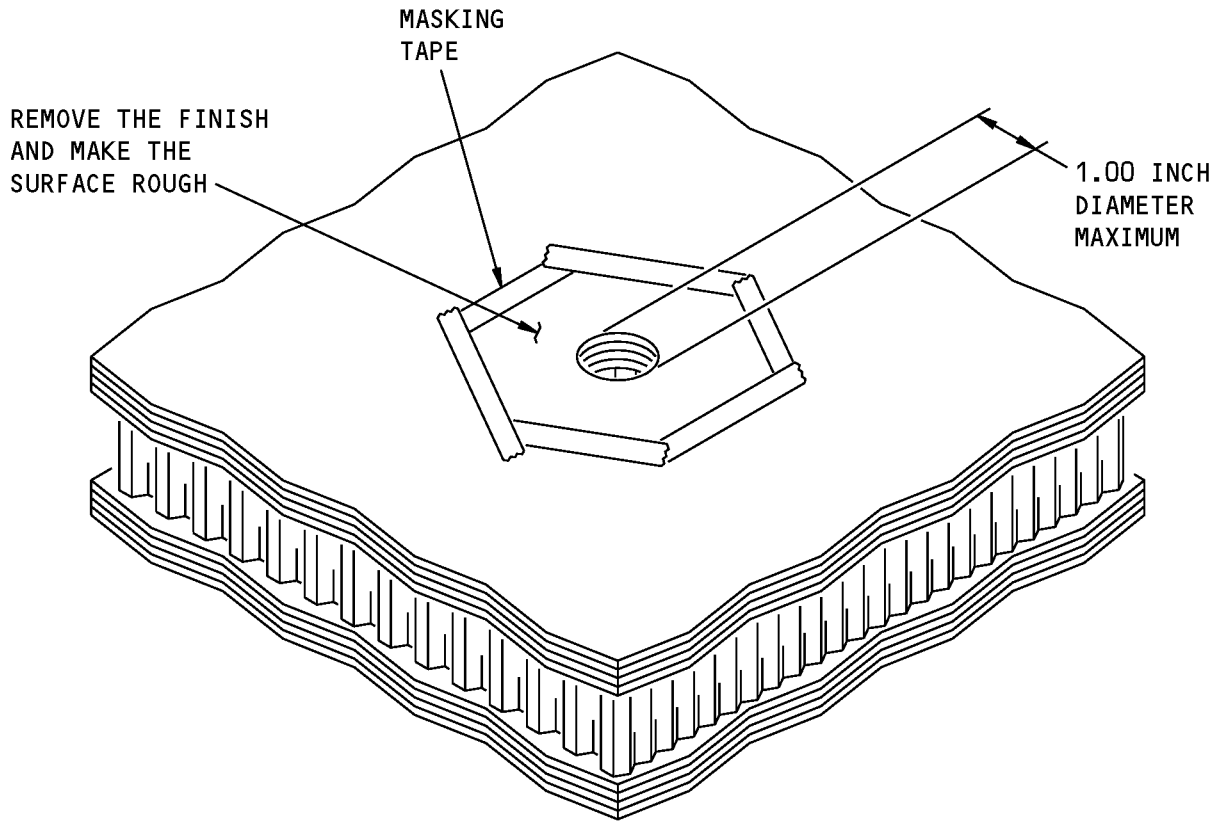
**CAUTION:** DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- G. Cure the potting compound.
  - (1) Cure the potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**

- (a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.
- H. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.
- I. Clean the repair surface as given in Paragraph 4.E./REPAIR GENERAL
- J. Prepare and apply the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 2 - Layout of the Repair Parts - Glass Fabric Repair, Figure 202/REPAIR 2 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 2 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair, Figure 203/REPAIR 2 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- K. Apply the pressure for the cure of the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- L. Cure the repair.
  - (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
    - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- M. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

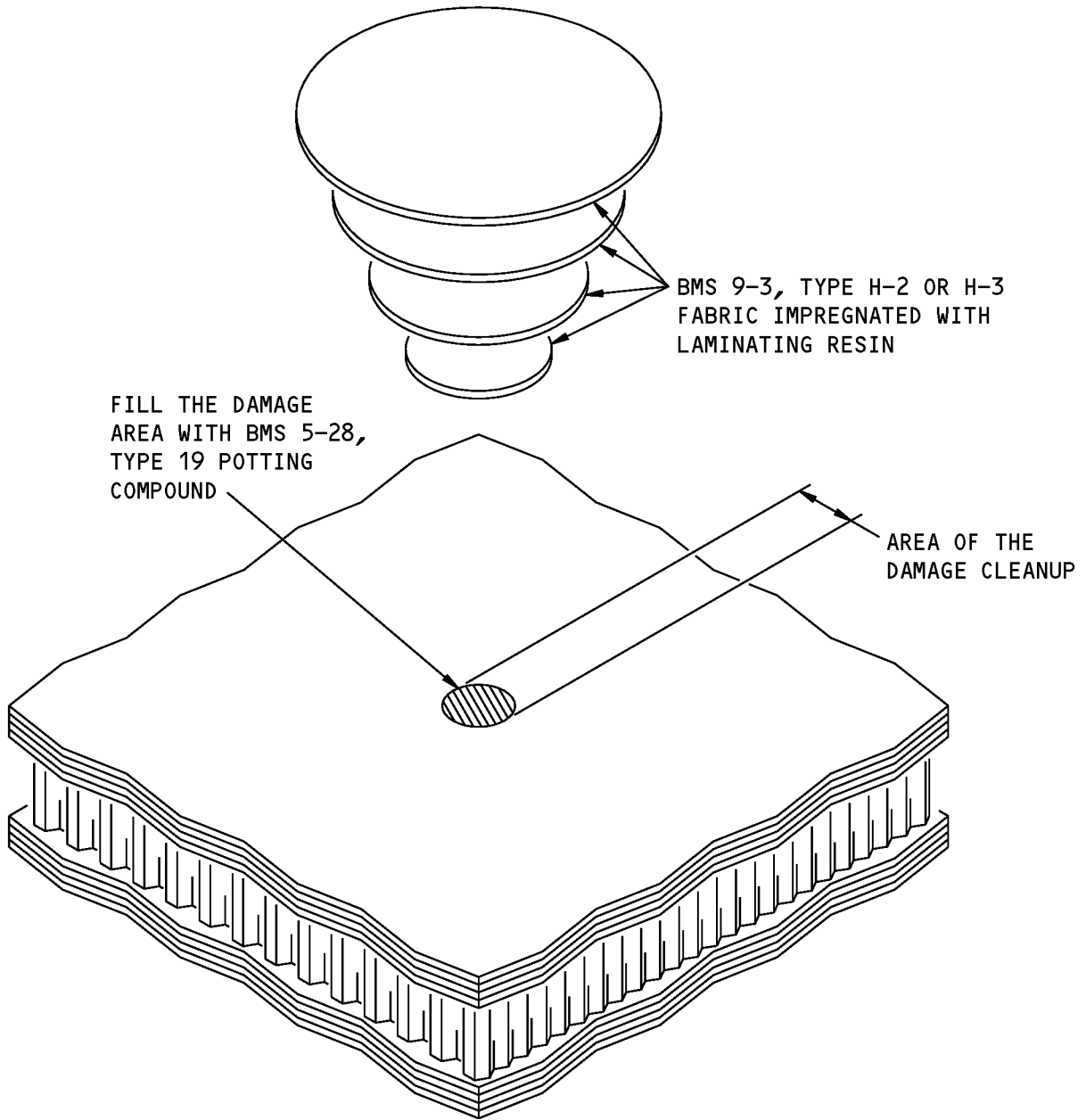
**STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL**

**Removal of the Damage  
Figure 201**

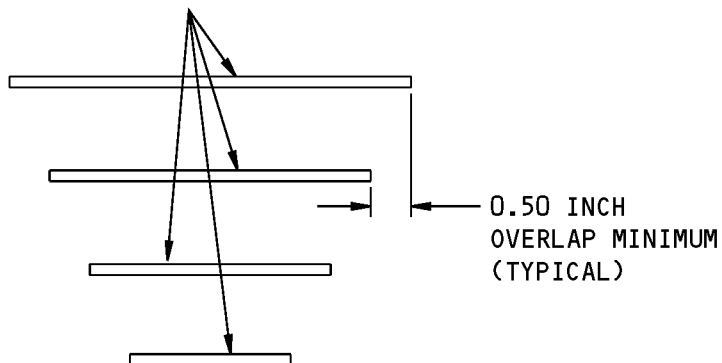
**737-800  
STRUCTURAL REPAIR MANUAL**



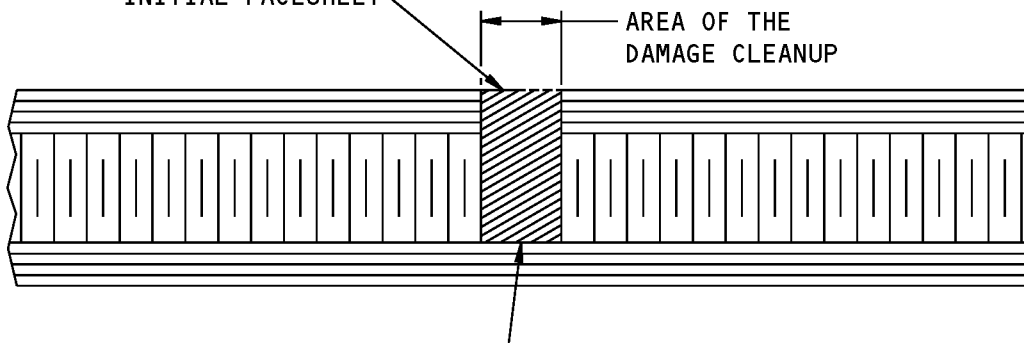
**Repair 2 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3  
FABRIC IMPREGNATED WITH  
LAMINATING RESIN



SAND THE POTTING COMPOUND  
TO BE LEVEL WITH THE  
INITIAL FACESHEET

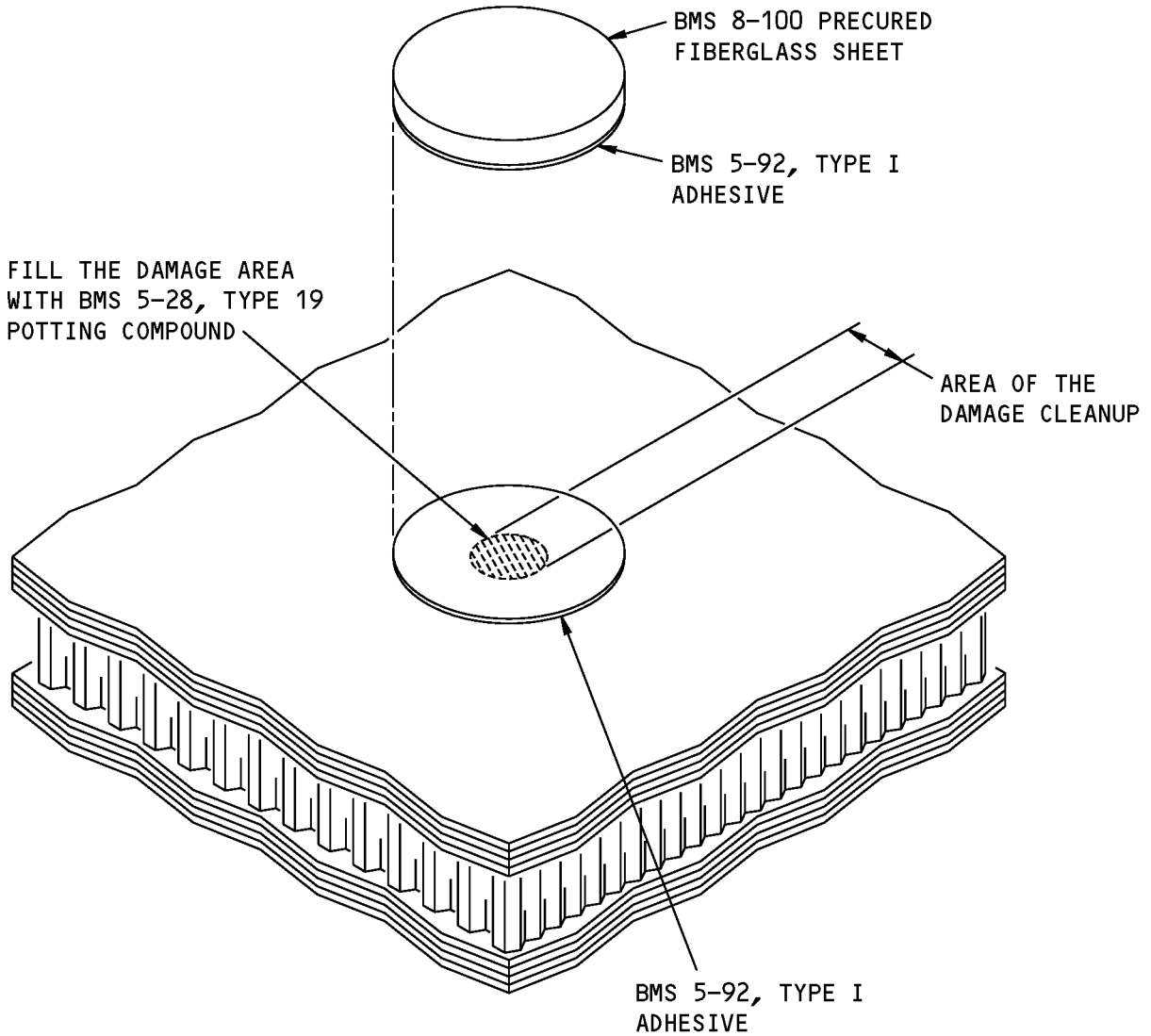


FILL THE DAMAGE  
AREA WITH BMS 5-28,  
TYPE 19 POTTING COMPOUND

**SECTION THROUGH THE CENTER OF THE REPAIR**

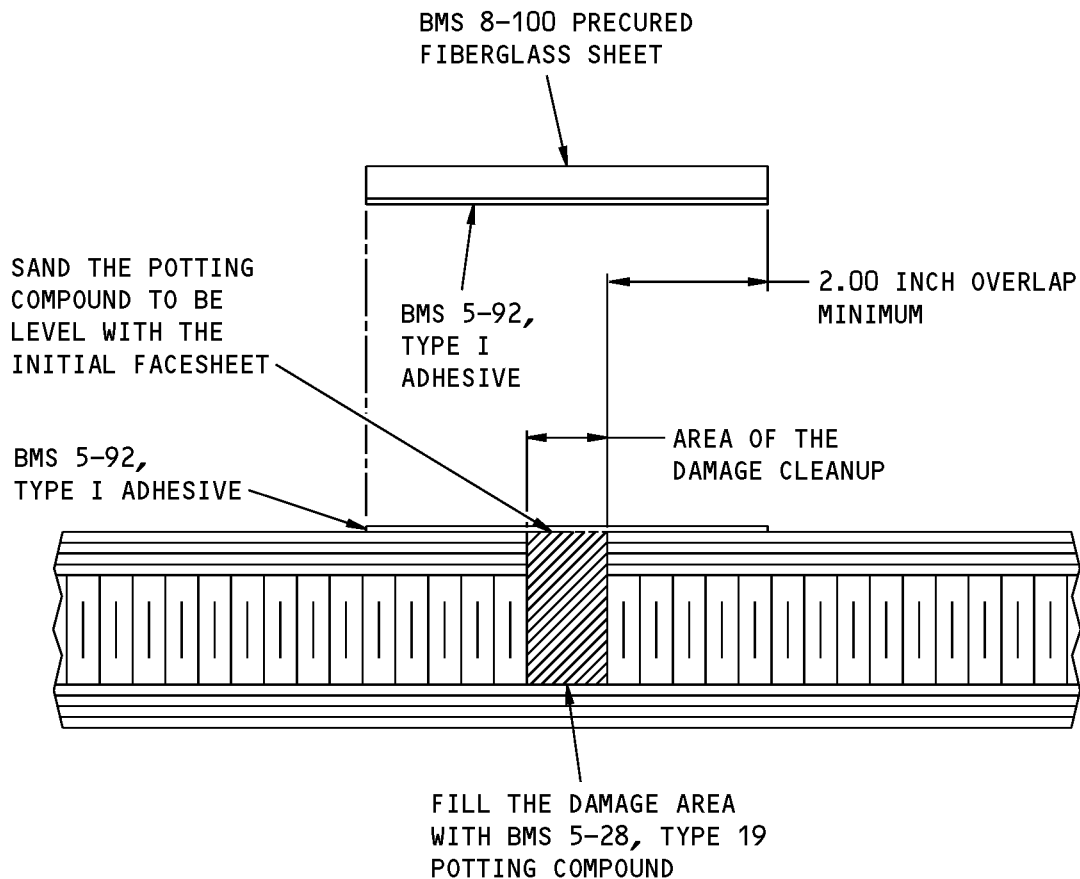
**Repair 2 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Repair 2 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL**

**Repair 2 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 2 of 2)**



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# STRUCTURAL REPAIR MANUAL

## REPAIR 3 - REPAIR OF DAMAGE TO ONE FACESHEET AND THE CORE IN COMPOSITE FLOOR PANELS

### 1. Applicability

- A. Repair 3 is applicable to damage to one facesheet and the core of a floor panel.
- B. Refer to Repair 2 if the damage is less than 1.0 inch in diameter.

### 2. General

- A. The materials necessary for this repair are given in Table 201/REPAIR 3.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Honeycomb core for panels with initial facesheets made of glass fiber reinforced plastic	BMS 8-124, Type I, Grade 12.0, Class 1
Honeycomb core for panels with initial facesheets made of carbon fiber reinforced plastic	BMS 8-124, Type V, Grade 9.0, Class 4
Adhesive for the inserts	BMS 5-107, Class 1

### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damage as shown in Removal of the Damage, Figure 201/REPAIR 3. Refer to Paragraph 4.B./REPAIR GENERAL and Paragraph 4.C./REPAIR GENERAL for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Make, clean, and install the honeycomb core plug as given in Paragraph 4.F./REPAIR GENERAL and Paragraph 4.G./REPAIR GENERAL Make the repair core plug level with the outer surface of the facesheet.
- G. Apply the pressure for the cure of the honeycomb core plug.
  - (1) You can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL





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## STRUCTURAL REPAIR MANUAL

- 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
  - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- H. Cure the honeycomb core plug.
- (1) Cure the BMS 5-28 potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
    - (a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.
- I. Sand the honeycomb core plug to be level with the outer surface of the facesheet.
- J. Prepare and apply the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 3 - Layout of the Repair Parts - Glass Fabric Repair, Figure 202/REPAIR 3 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 3 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair, Figure 203/REPAIR 3 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- K. Apply the pressure for the cure of the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- L. Cure the repair.
- (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:

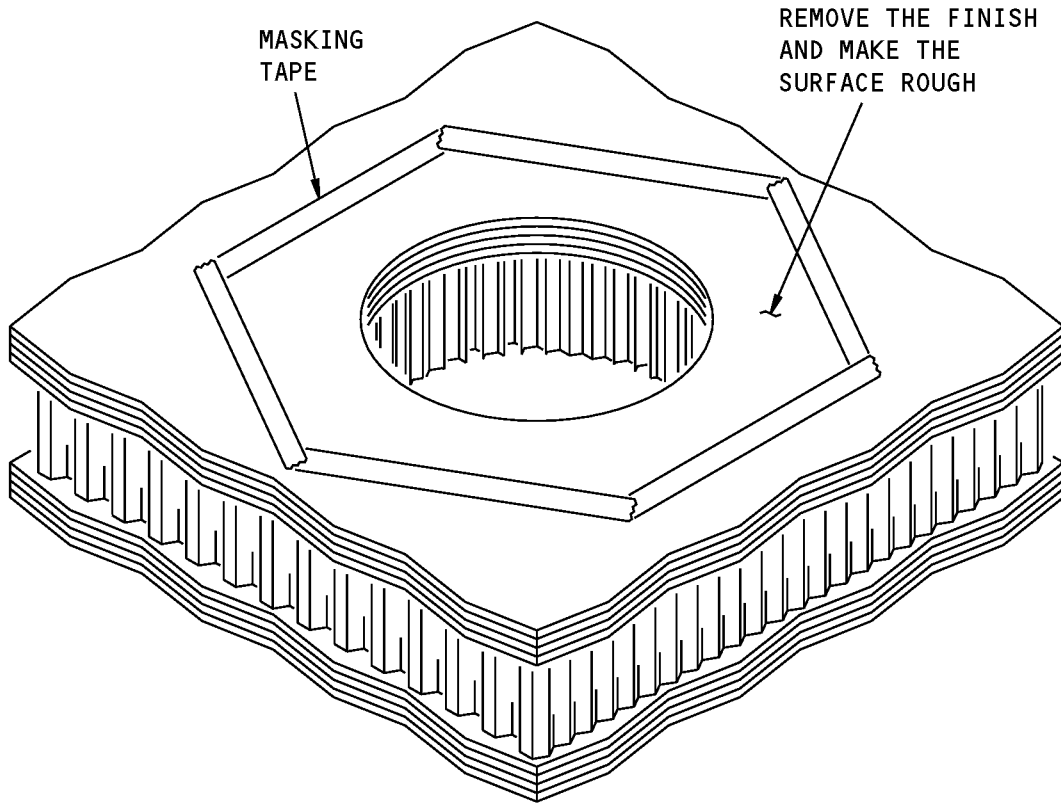


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**STRUCTURAL REPAIR MANUAL**

- (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
  - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- M. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

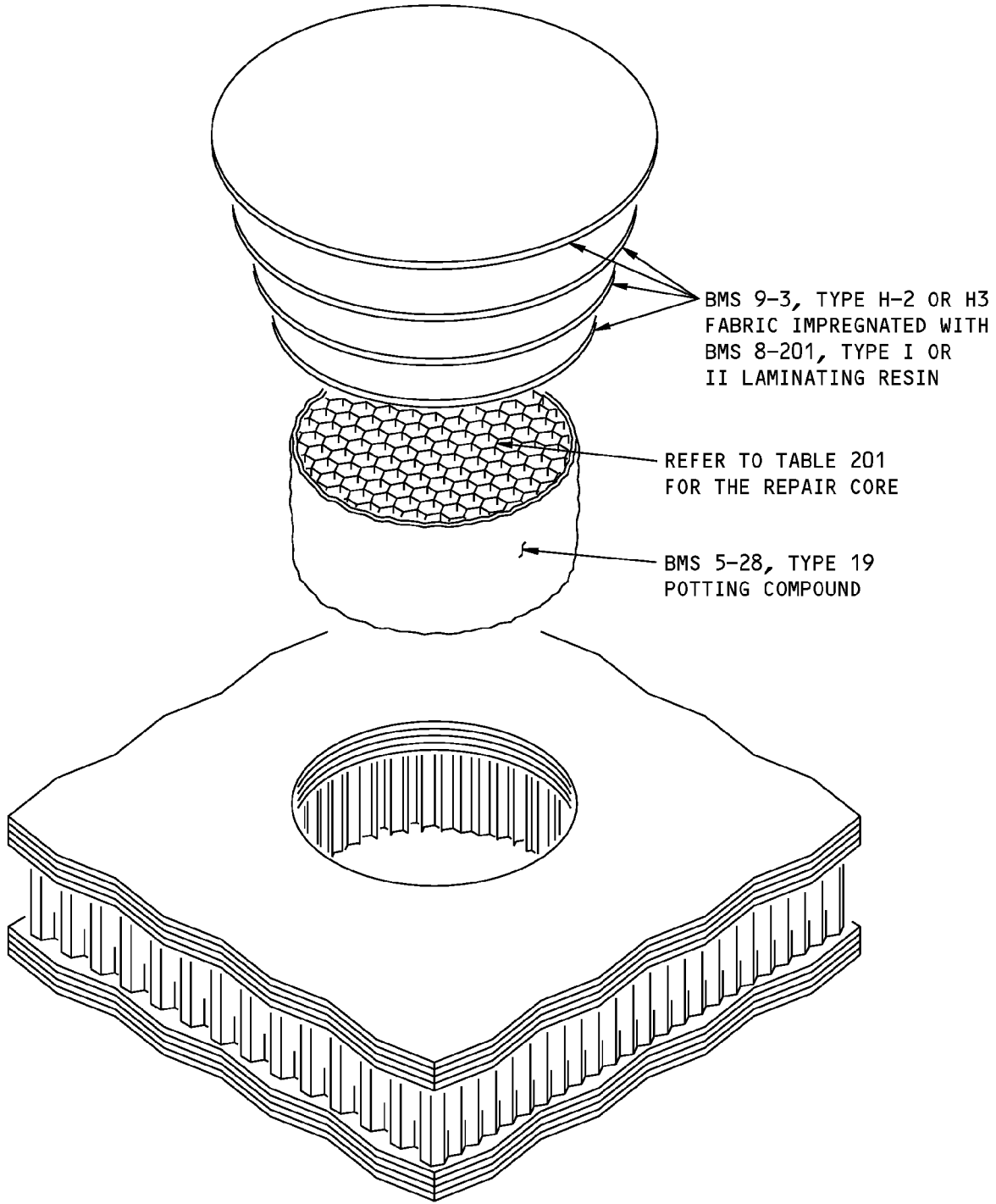
MASKING TAPE  
(REMOVE AFTER  
SANDING)



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage  
Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

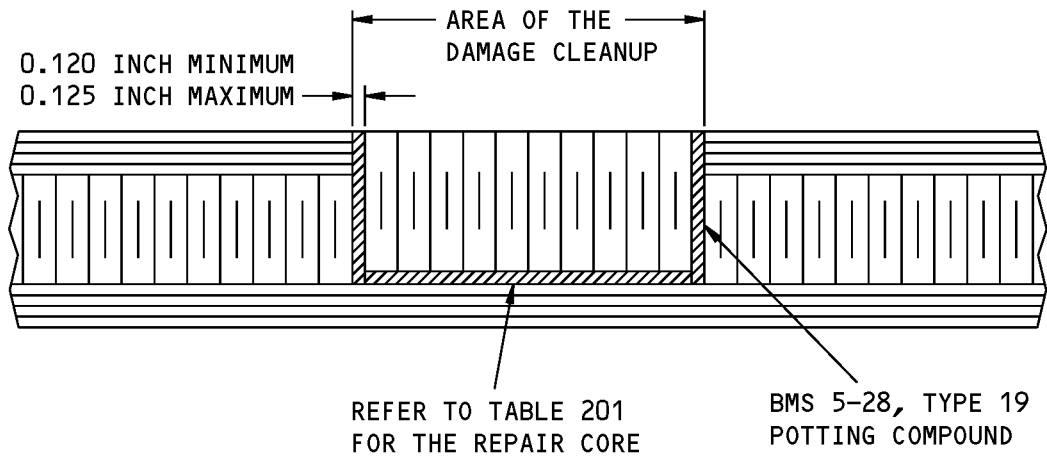
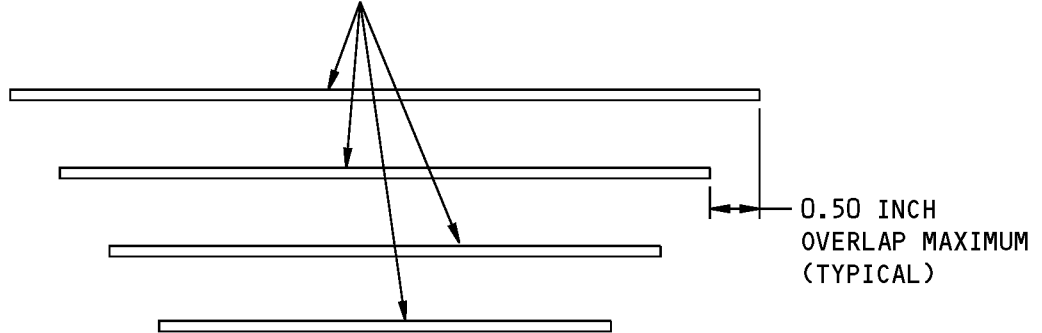


CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 3 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

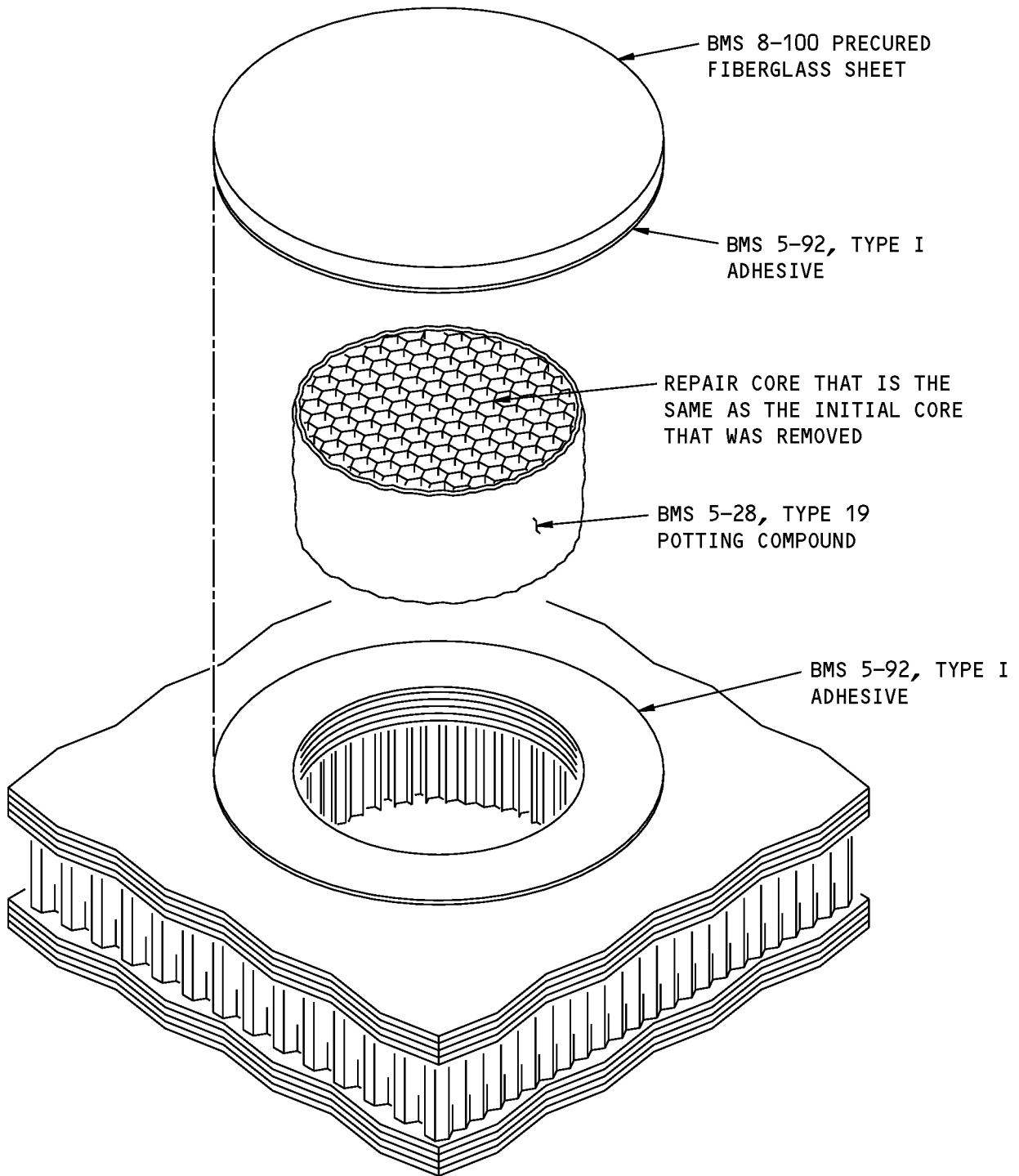
BMS 9-3, TYPE H-2 OR H-3 FABRIC IMPREGNATED  
WITH BMS 8-201, TYPE I OR II LAMINATING RESIN



**SECTION THROUGH THE CENTER OF THE REPAIR WITH  
THE CORE AND THE POTTING COMPOUND INSTALLED**

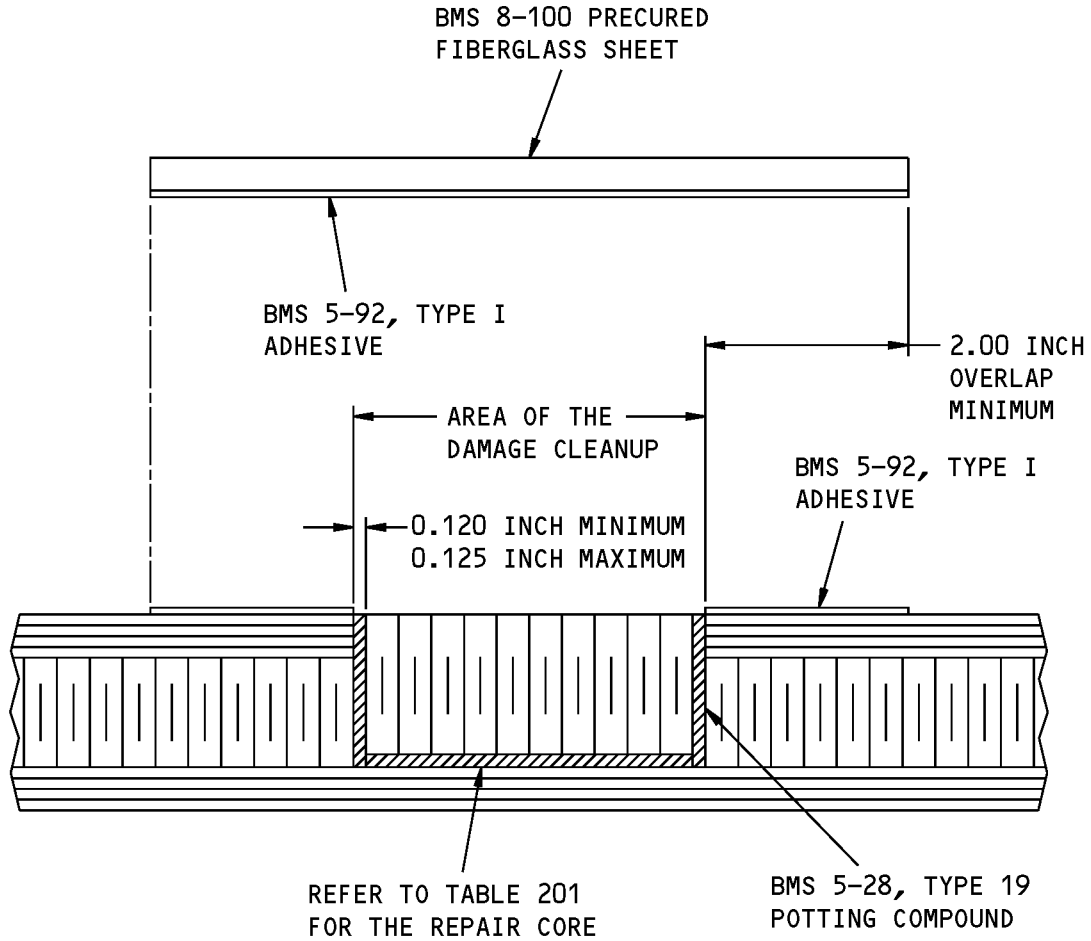
**Repair 3 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Repair 3 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR WITH  
THE CORE AND THE POTTING COMPOUND INSTALLED**

**Repair 3 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 4 - REPAIR OF DAMAGE LESS THAN 4 SQUARE INCHES IN AREA TO ONE FACESHEET AND THE CORE AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

#### 1. Applicability

- A. Repair 4 is applicable to damage to one facesheet and the core at an edge or corner of a floor panel. The damage must be less than 4 square inches in area.
- B. Refer to Repair 5 if the damage is larger than 4 square inches in area.

#### 2. General

- A. The materials necessary for this repair are given in Table 201/REPAIR 4.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Adhesive for the inserts	BMS 5-107, Class 1

#### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damage at an edge as shown in Removal of the Damage at an Edge, Figure 201/REPAIR 4. Remove the damage at a corner as shown in Removal of the Damage at a Corner, Figure 202/REPAIR 4. Refer to Repair General, Paragraphs 4.B. and 4. C. for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Fill the damaged area with BMS 5-28, Type 19 potting compound.
  - (1) Prepare the potting compound as given in Repair General, Table 203 .
  - (2) Make a barrier with wood or metal to keep the potting compound in the damage area. Refer to Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner, Figure 203/REPAIR 4. Do not remove the barrier until the potting compound is cured.
  - (3) Fill the area until the level of the potting compound is higher than the outer surface of the facesheet.

**CAUTION:** DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- G. Cure the potting compound.



**STRUCTURAL REPAIR MANUAL**

- (1) Cure the potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
    - (a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.
- H. Remove the potting compound barrier.
- I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.
- J. Clean the repair surface as given in Paragraph 4.E./REPAIR GENERAL
- K. Prepare and apply the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at an Edge, Figure 204/REPAIR 4 and Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at a Corner, Figure 205/REPAIR 4 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge, Figure 206/REPAIR 4 and Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner, Figure 207/REPAIR 4 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- L. Apply the pressure for the cure of the repair plies.
- (1) If you use BMS 9-3 fabric for the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- M. Cure the repair.
- (1) If you use BMS 9-3 as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL

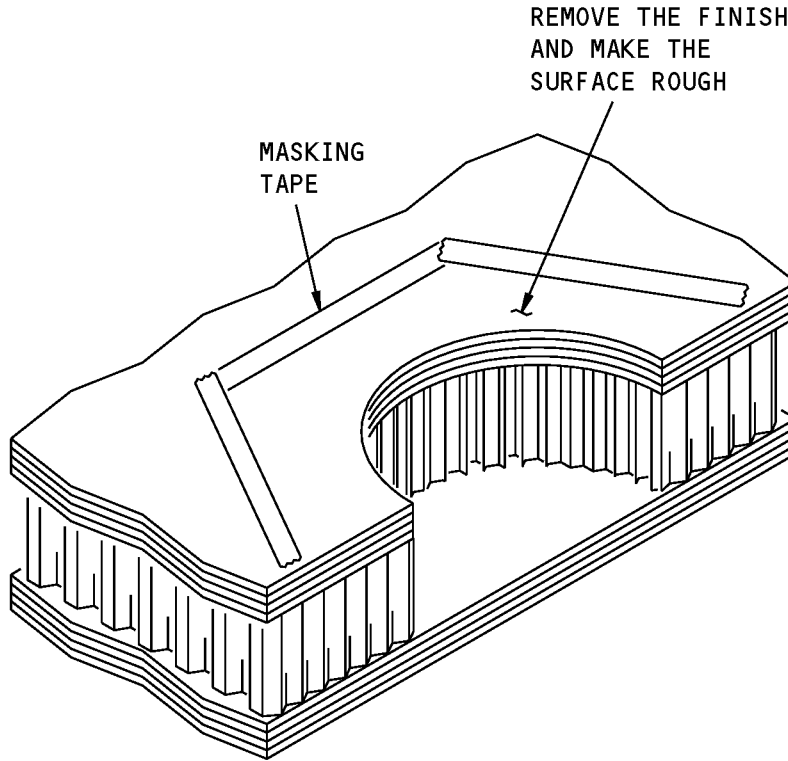


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**STRUCTURAL REPAIR MANUAL**

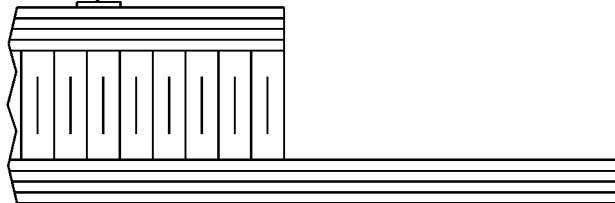
- (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:
  - (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
  - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- N. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

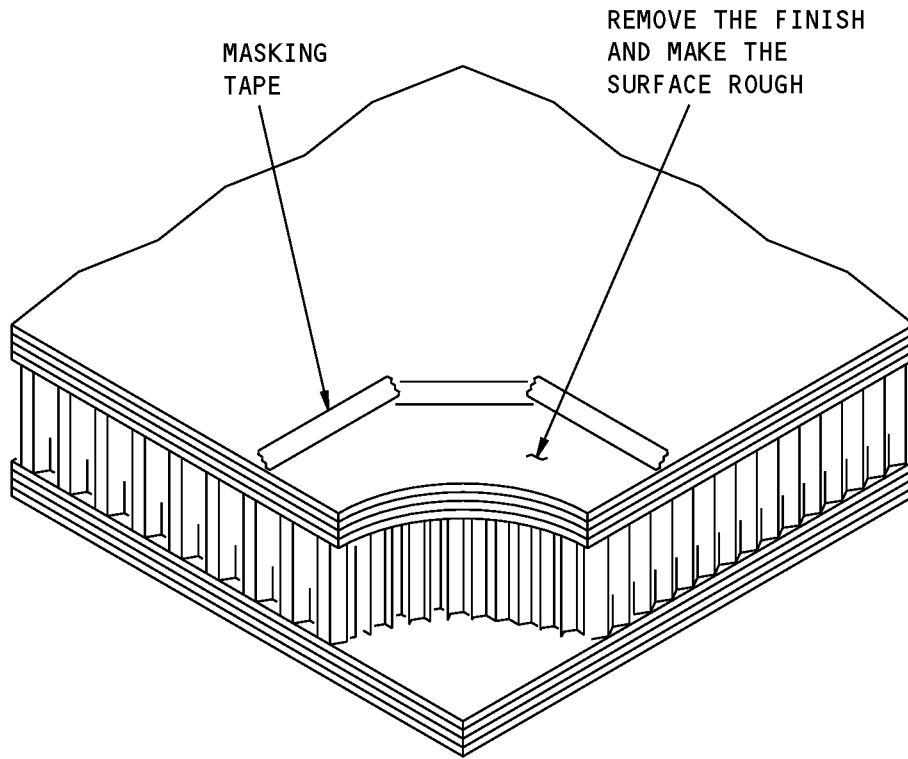
MASKING TAPE  
(REMOVE AFTER  
SANDING)



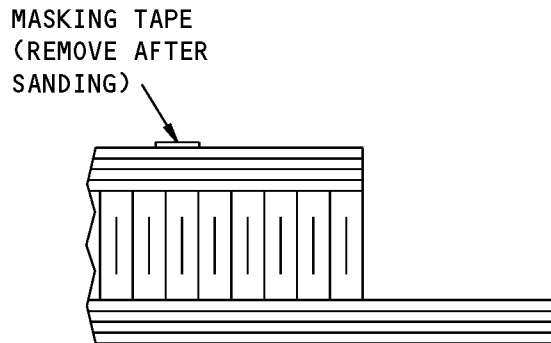
SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage at an Edge**  
**Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**



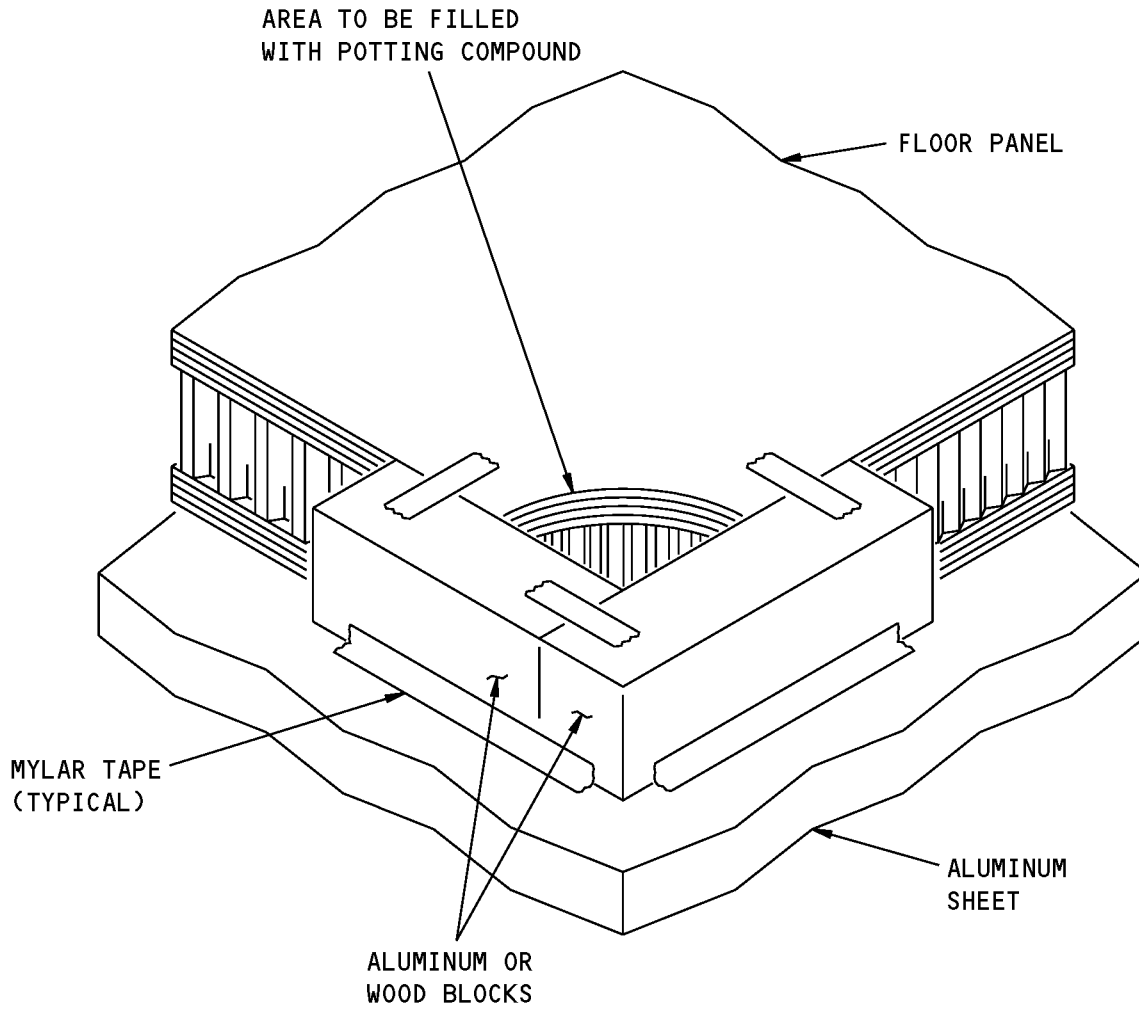
CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

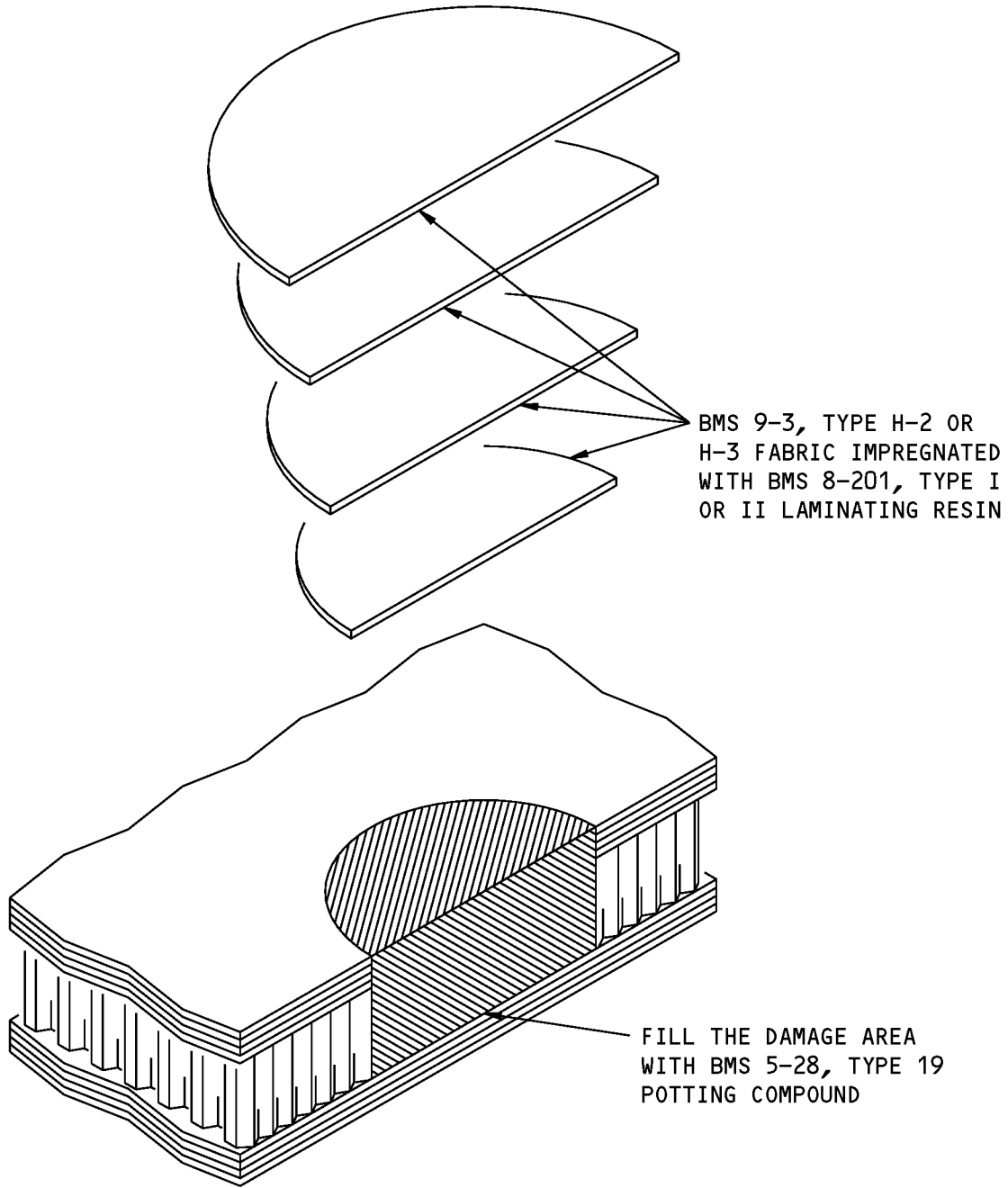
**Removal of the Damage at a Corner  
Figure 202**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner  
Figure 203**

**737-800  
STRUCTURAL REPAIR MANUAL**

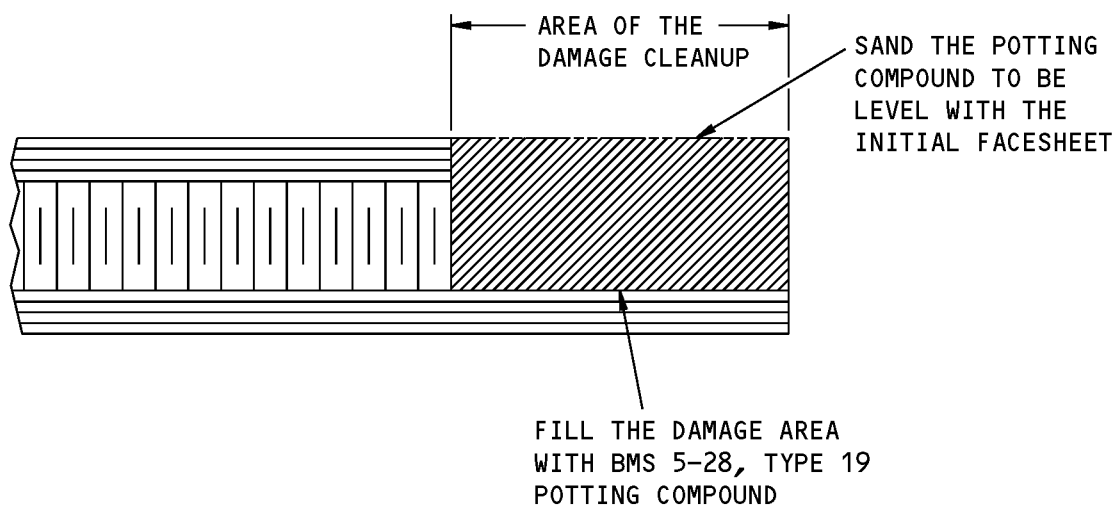
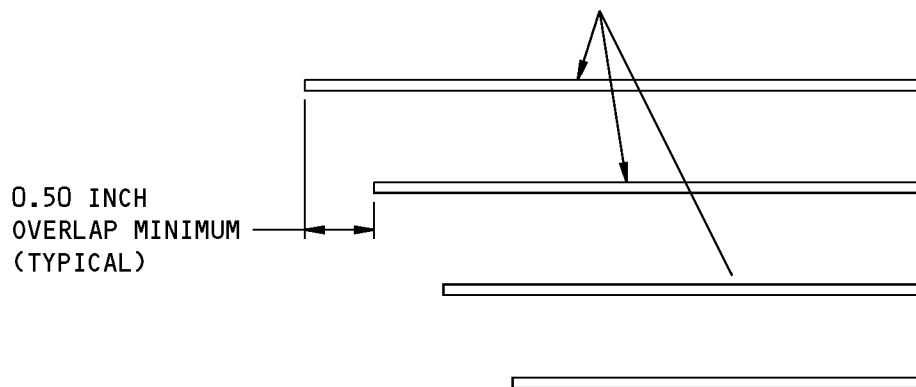


**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

**Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 204 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3 FABRIC  
IMPREGNATED WITH BMS 8-201,  
TYPE I OR II LAMINATING RESIN

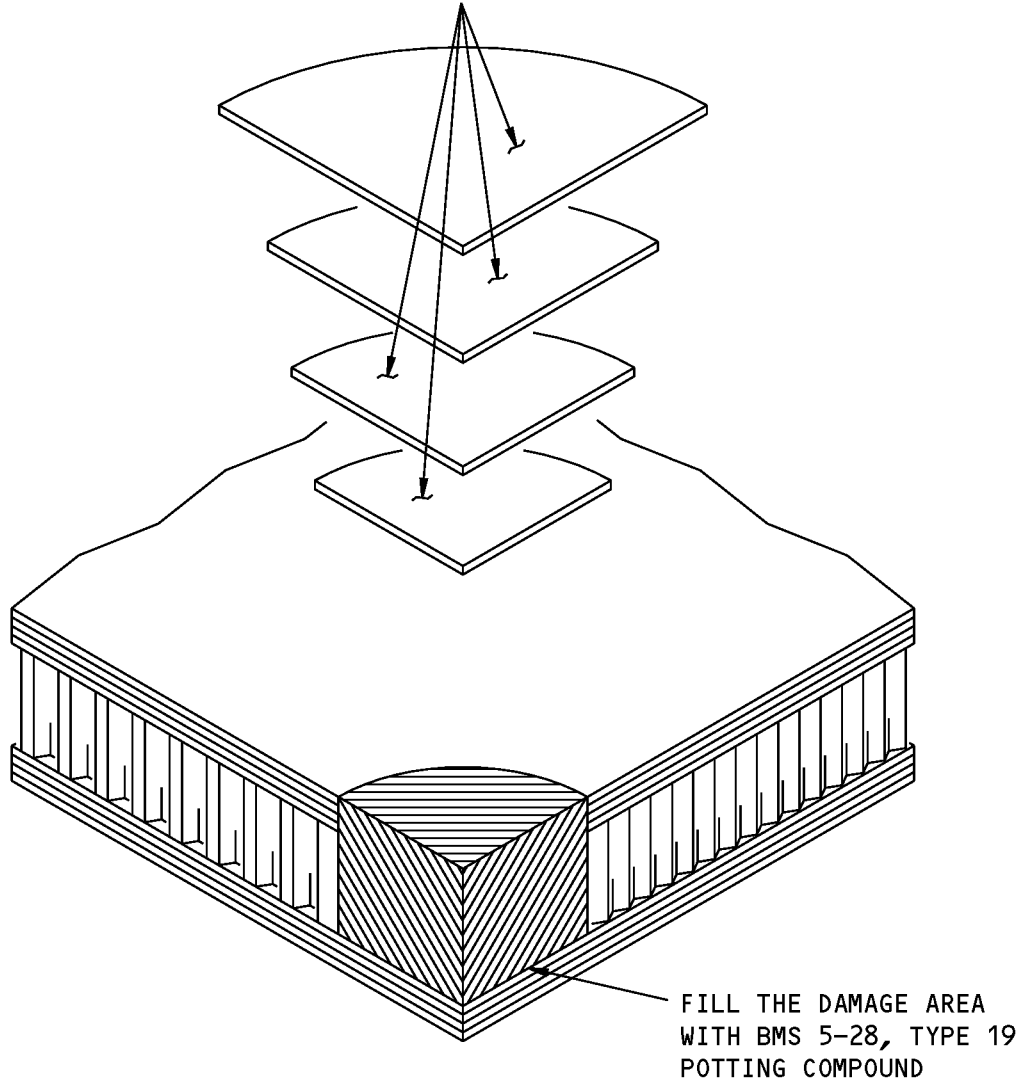


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 204 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR  
H-3 FABRIC IMPREGNATED  
WITH BMS 8-201, TYPE I  
OR II LAMINATING RESIN



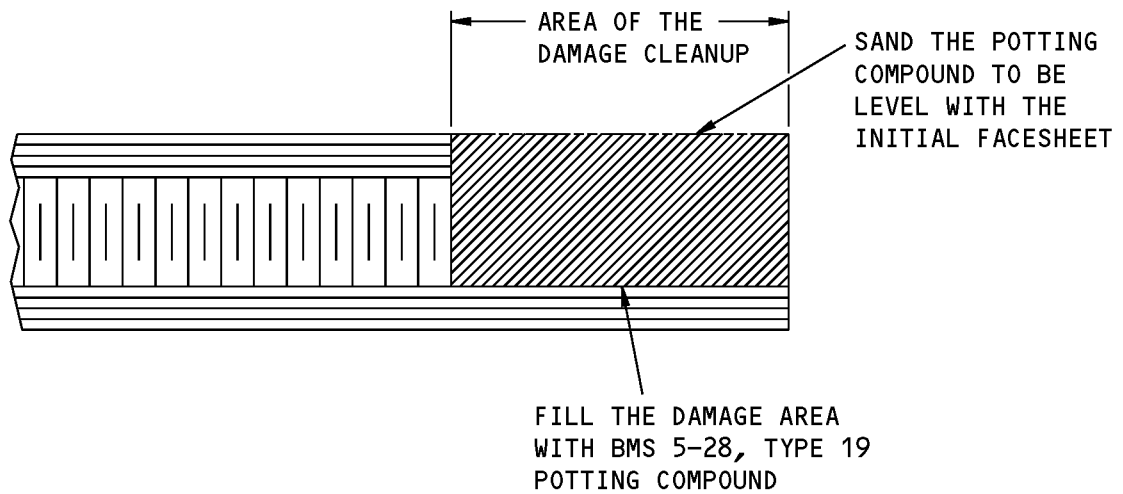
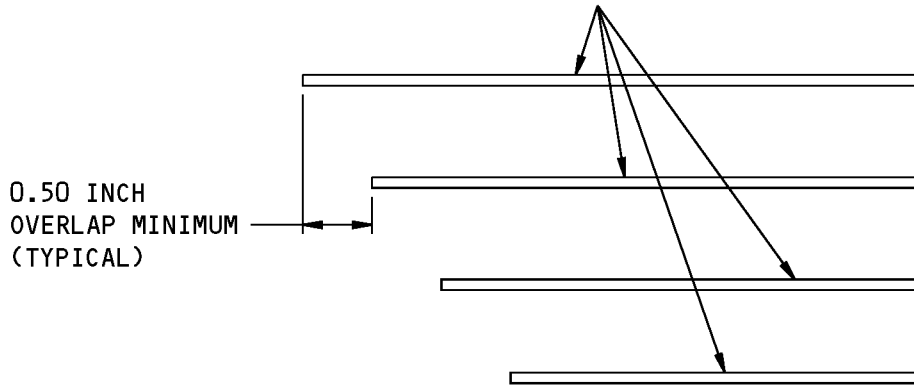
CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at a Corner  
Figure 205 (Sheet 1 of 2)**



**STRUCTURAL REPAIR MANUAL**

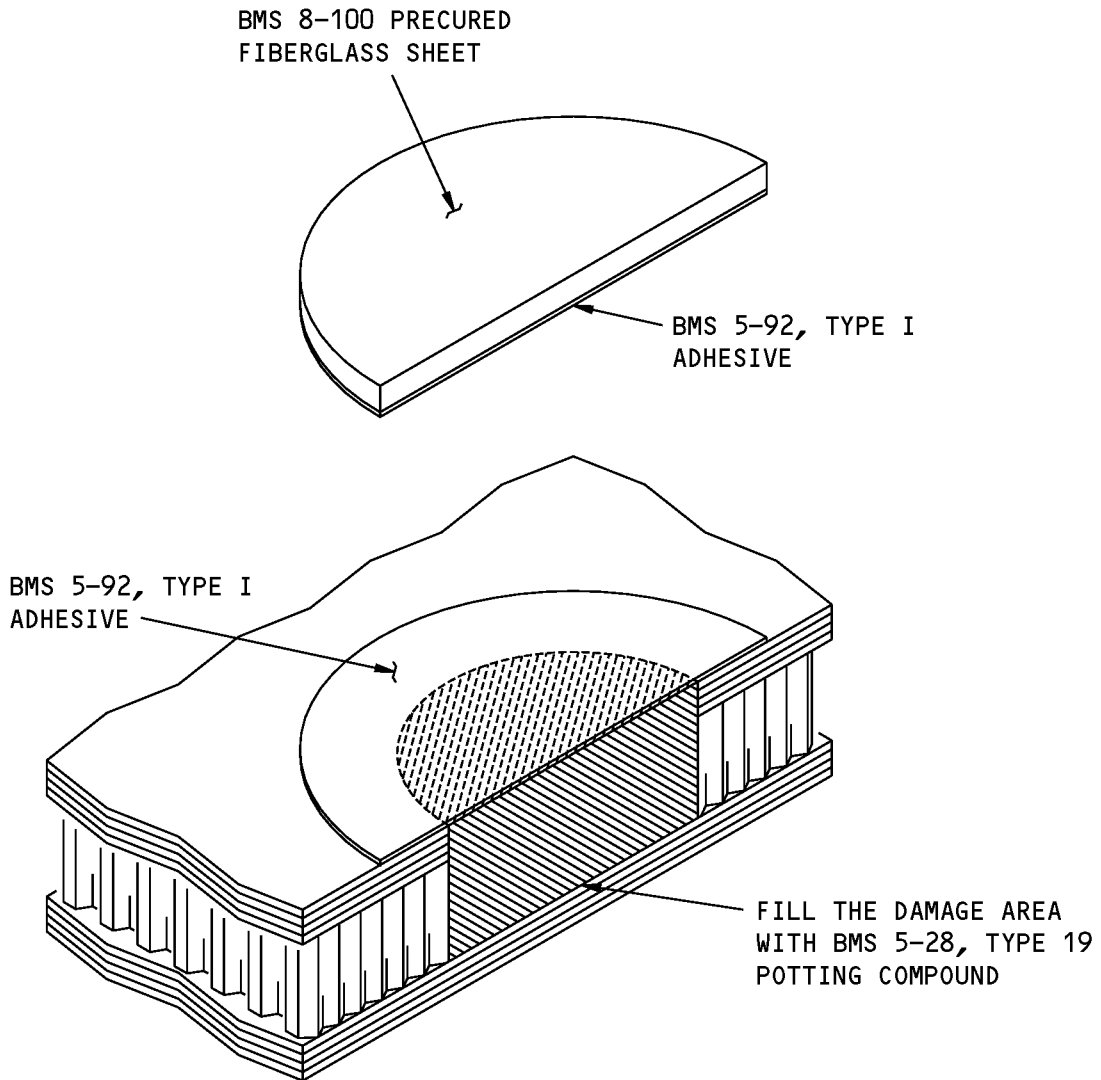
BMS 9-3, TYPE H-2 OR H-3 FABRIC  
IMPREGNATED WITH BMS 8-201,  
TYPE I OR II LAMINATING RESIN



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 4 - Layout of the Repair Parts - Glass Fabric Repair at a Corner  
Figure 205 (Sheet 2 of 2)**

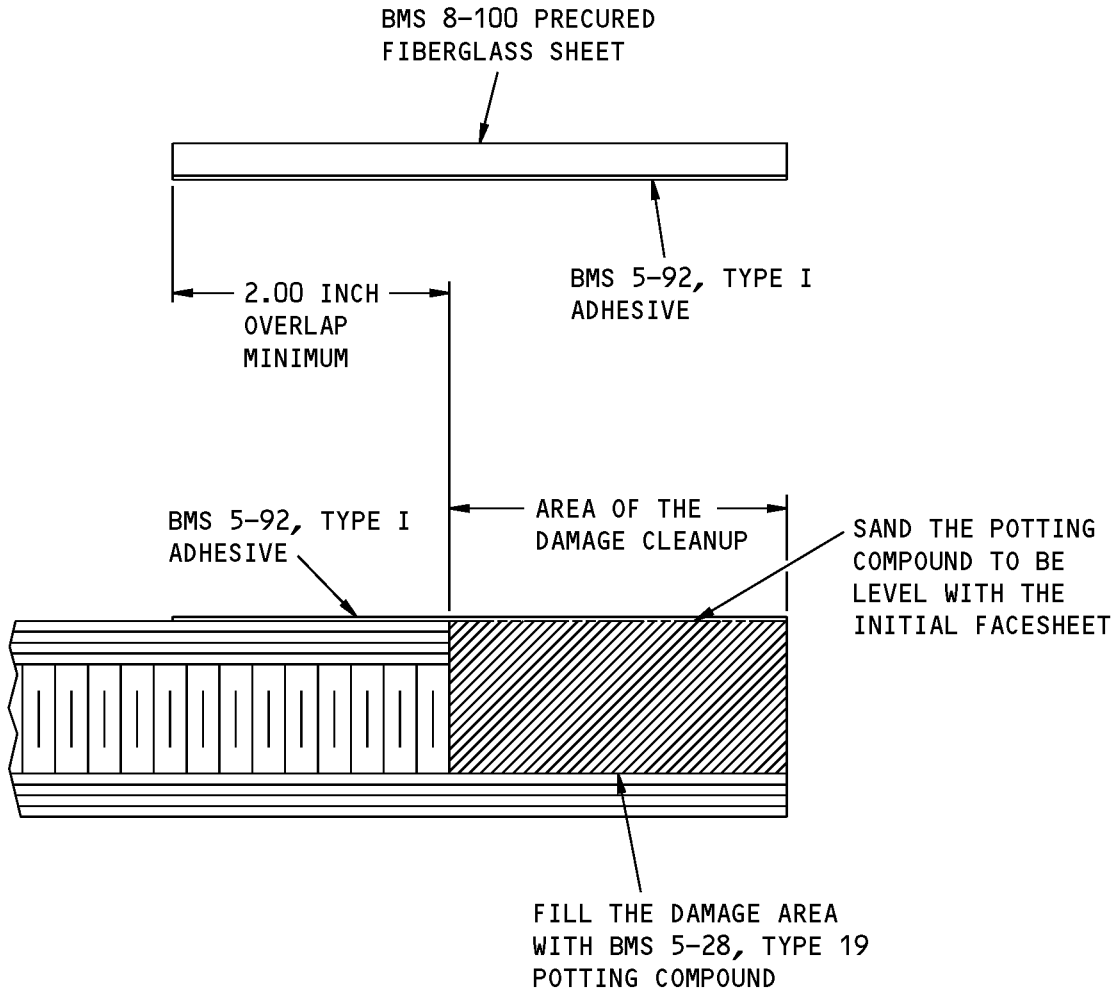
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 206 (Sheet 1 of 2)**

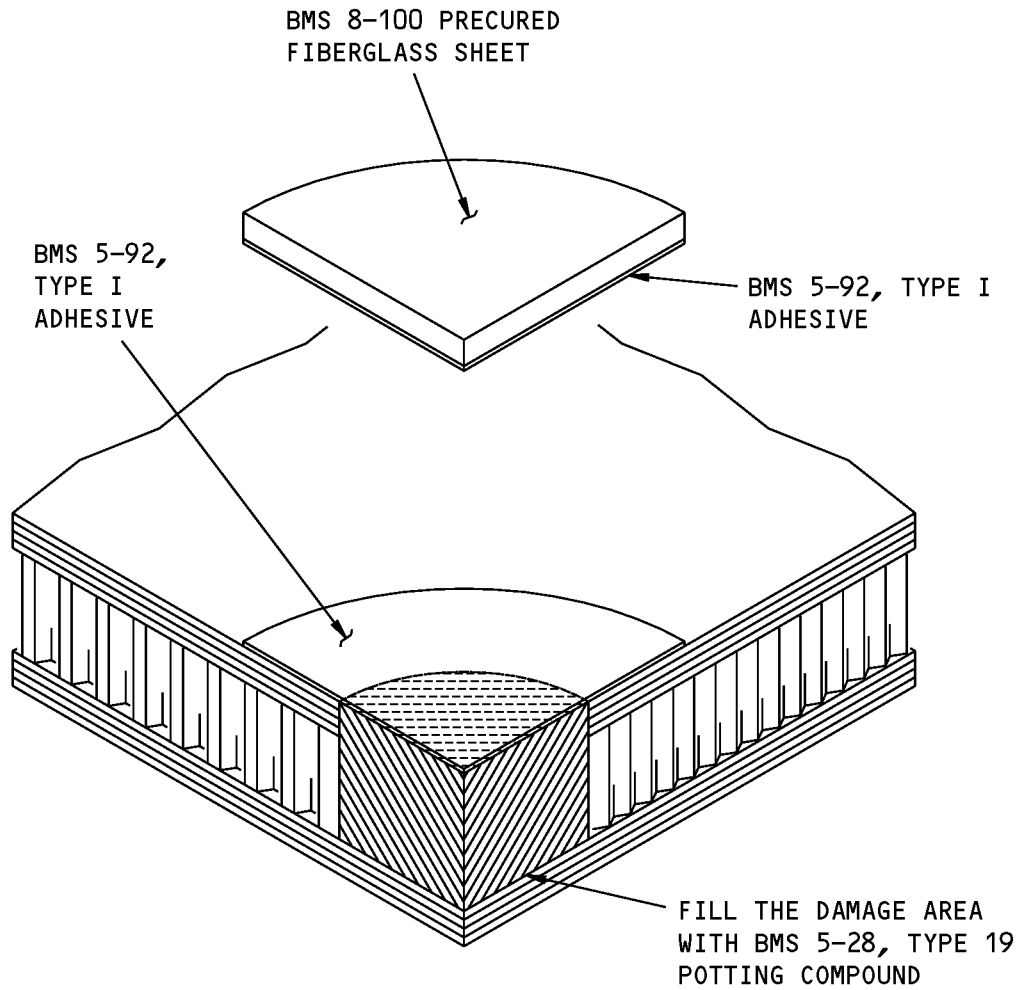
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 206 (Sheet 2 of 2)**

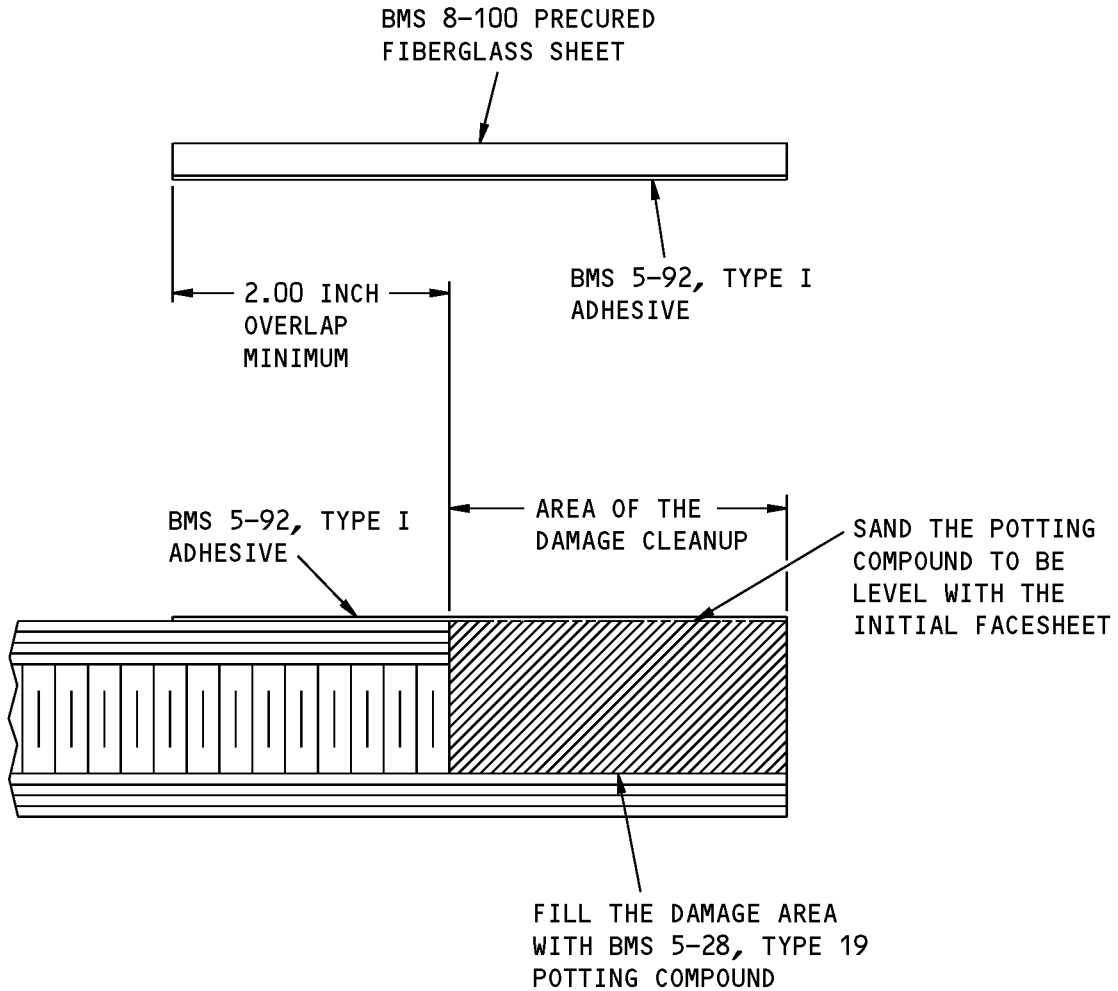
**737-800  
STRUCTURAL REPAIR MANUAL**



**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

**Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 207 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 4 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 207 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 5 - REPAIR OF DAMAGE TO ONE FACESHEET AND THE CORE AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

#### 1. Applicability

- A. Repair 5 is applicable to damage to one facesheet and the core at an edge or corner of a floor panel.
- B. Refer to Repair 4 if the damage is less than 4 square inches in area.

#### 2. General

- A. The materials necessary for this repair are given in Table 201/REPAIR 5.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

#### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damage at an edge as shown in Removal of the Damage at an Edge, Figure 201/REPAIR 5. Remove the damage at a corner as shown in Removal of the Damage at a Corner, Figure 202/REPAIR 5. Refer to Paragraph 4.B./REPAIR GENERAL and Paragraph 4.C./REPAIR GENERAL for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Make, clean, and install the honeycomb core plug as given in Paragraph 4.F./REPAIR GENERAL and Paragraph 4.G./REPAIR GENERAL

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Honeycomb core for panels with initial facesheets made of glass fiber reinforced plastic	BMS 8-124, Type I, Grade 12.0, Class 1
Honeycomb core for panels with initial facesheets made of carbon fiber reinforced plastic	BMS 8-124, Type V, Grade 9.0, Class 4
Adhesive for the inserts	BMS 5-107, Class 1

- G. Apply the pressure for the cure of the honeycomb core plug.
  - (1) You can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL



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## STRUCTURAL REPAIR MANUAL

- 2) Do a check of the vacuum bag as given in Paragraph 4.L./REPAIR GENERAL
  - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- H. Cure the honeycomb core plug.
- (1) Cure the BMS 5-28 potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- I. Sand the honeycomb core plug to be level with the outer surface of the facesheet.
- J. Prepare and apply the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at an Edge, Figure 203/REPAIR 5 and Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at a Corner, Figure 204/REPAIR 5 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge, Figure 205/REPAIR 5 and Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner, Figure 206/REPAIR 5 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- K. Apply the pressure for the cure of the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- L. Cure the repair.
- (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:



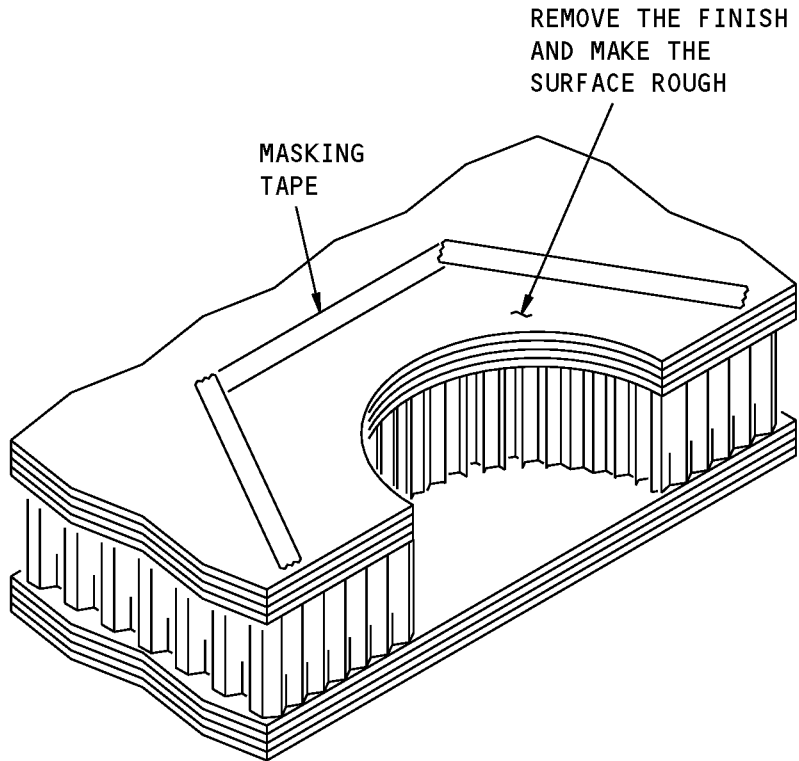
**737-800**

**STRUCTURAL REPAIR MANUAL**

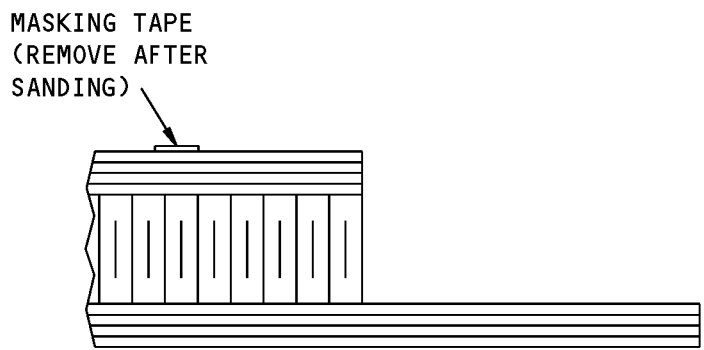
- (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
- (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- M. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- N. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.



**STRUCTURAL REPAIR MANUAL**



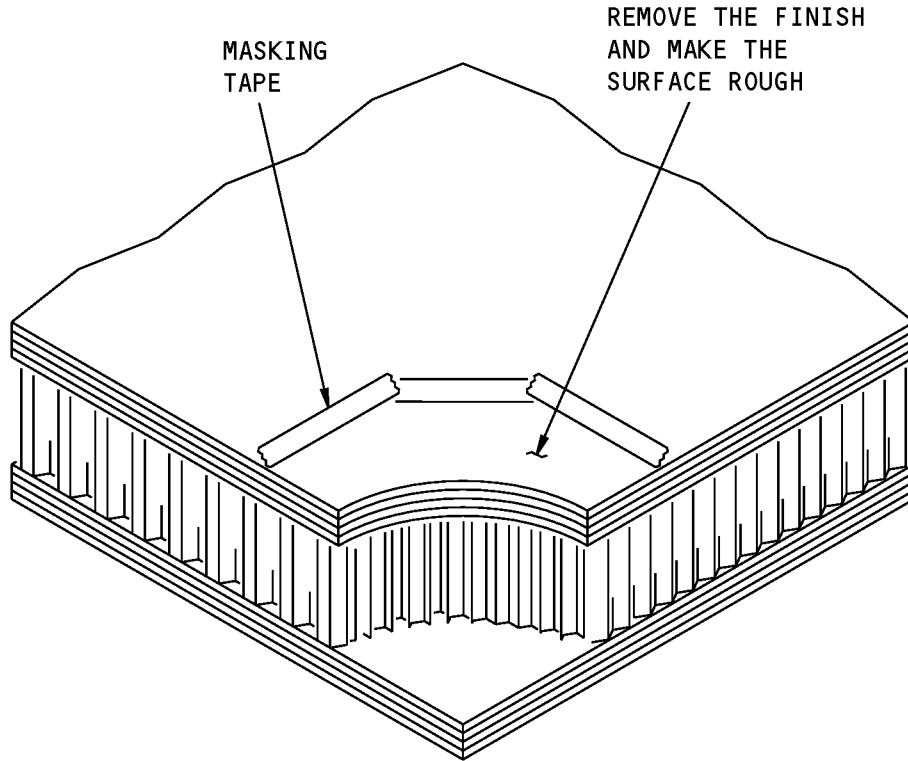
CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

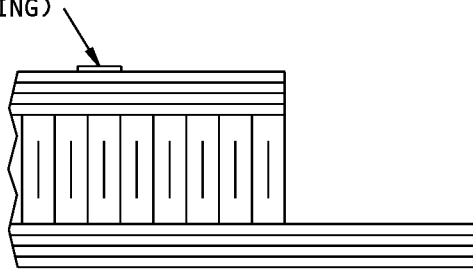
**Removal of the Damage at an Edge**  
**Figure 201**

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

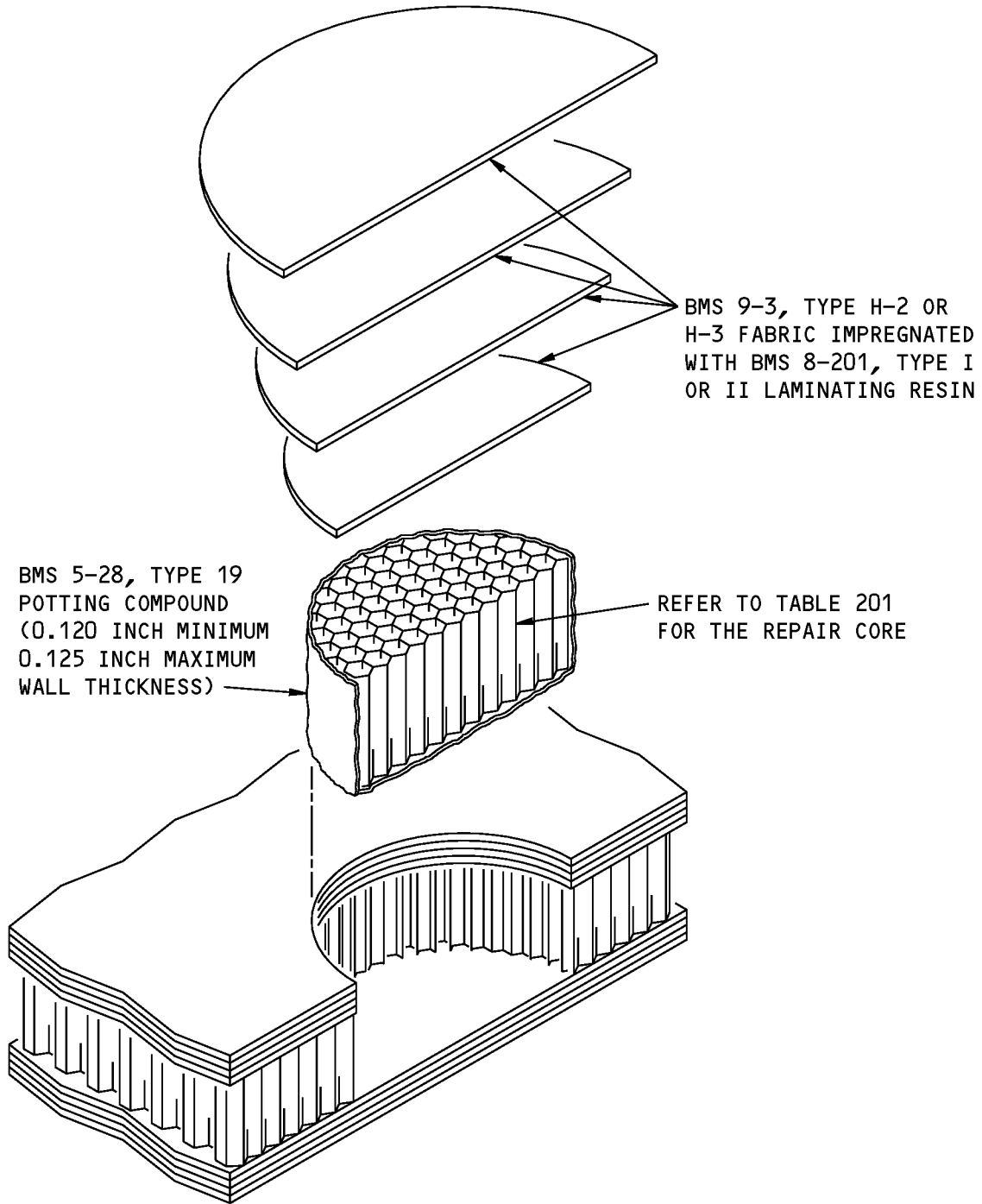
MASKING TAPE  
(REMOVE AFTER  
SANDING)



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage at a Corner**  
**Figure 202**

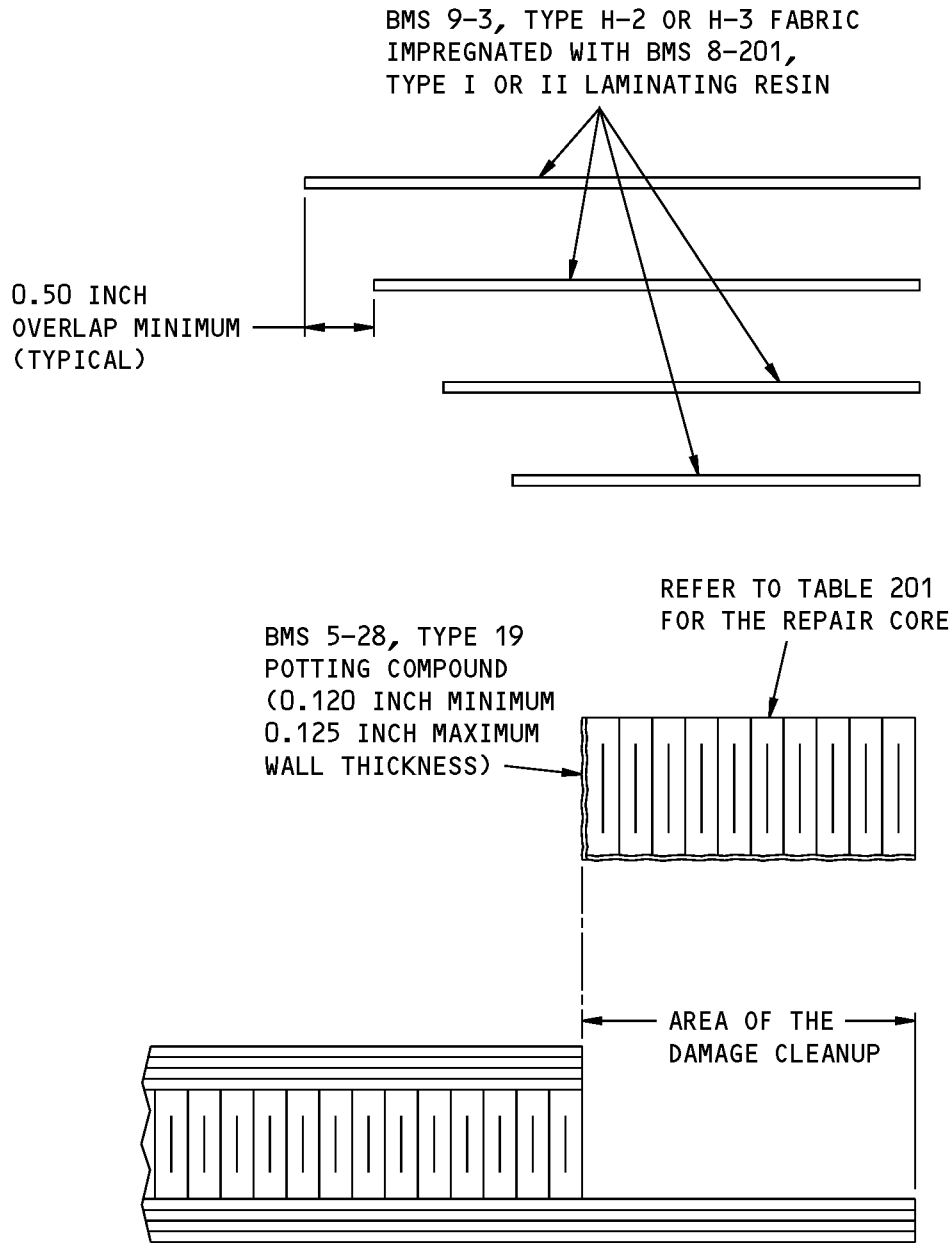
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 203 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

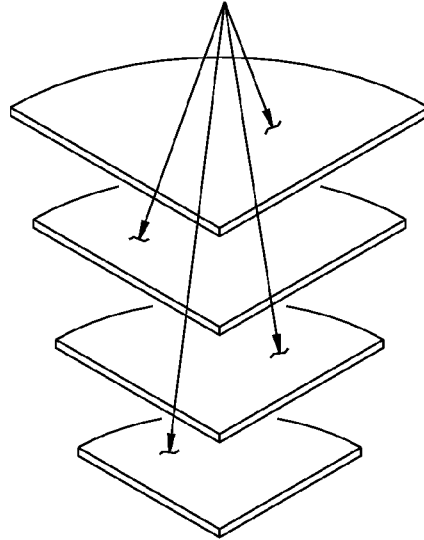


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 203 (Sheet 2 of 2)**

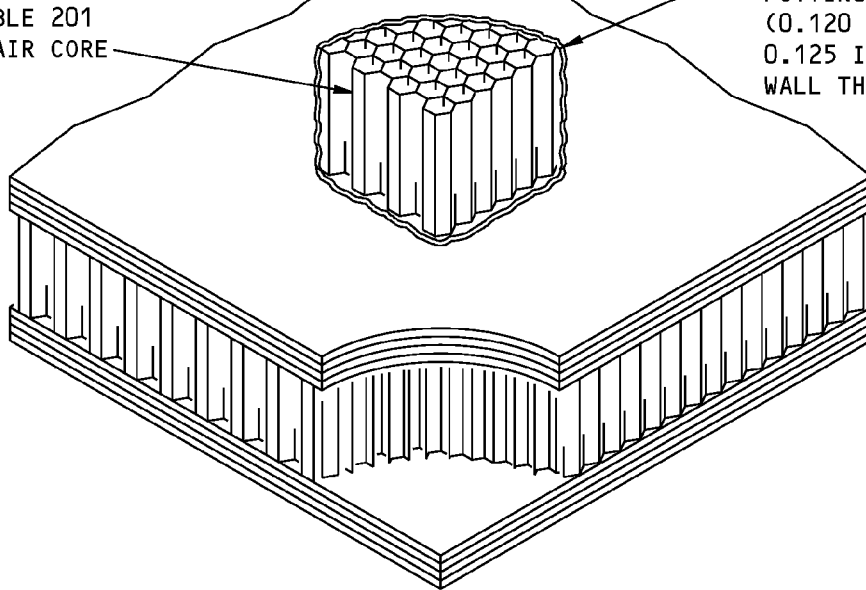
**737-800**  
**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR  
H-3 FABRIC IMPREGNATED  
WITH BMS 8-201, TYPE I  
OR II LAMINATING RESIN



REFER TO TABLE 201  
FOR THE REPAIR CORE

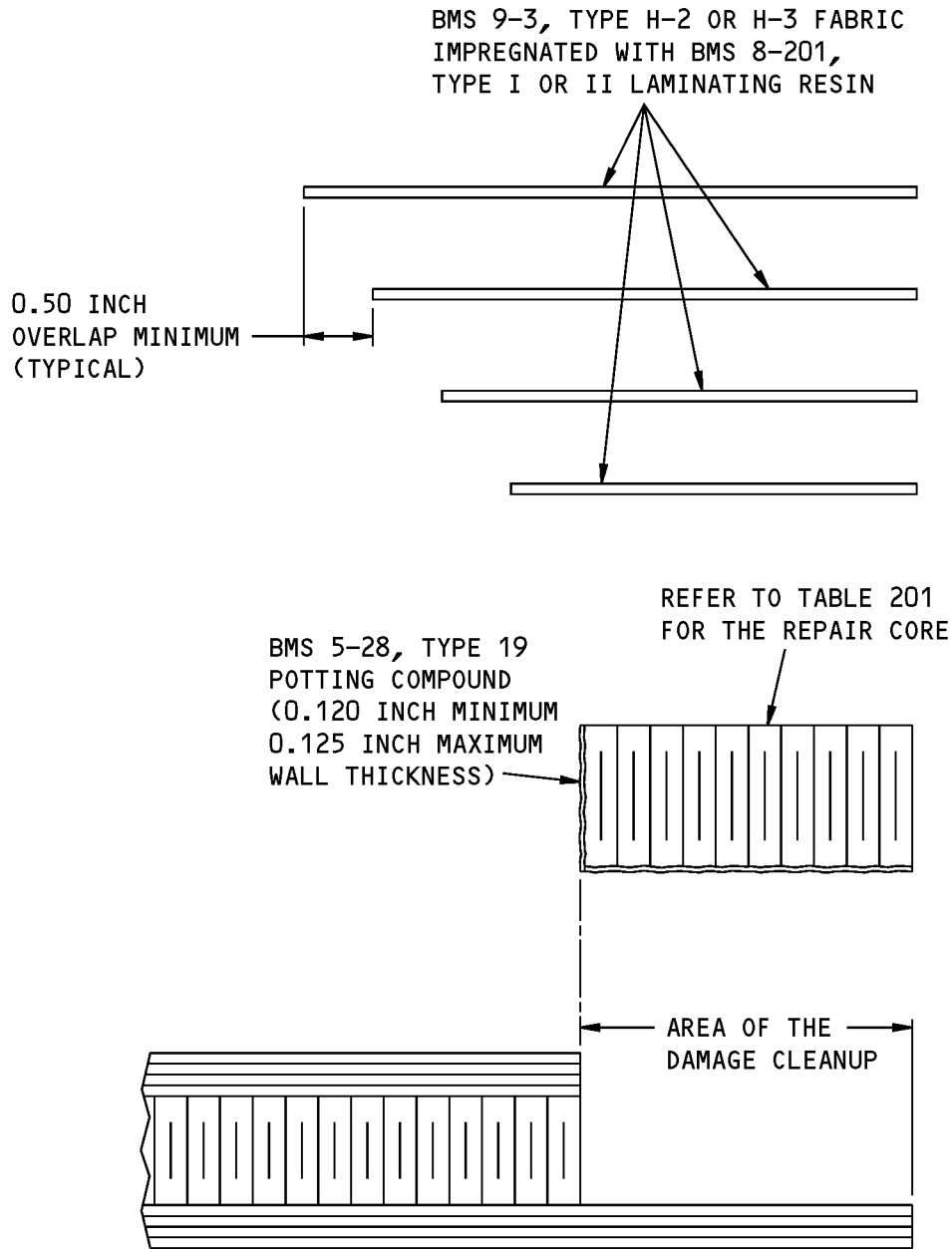
BMS 5-28, TYPE 19  
POTTING COMPOUND  
(0.120 INCH MINIMUM  
0.125 INCH MAXIMUM  
WALL THICKNESS)



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at a Corner**  
**Figure 204 (Sheet 1 of 2)**

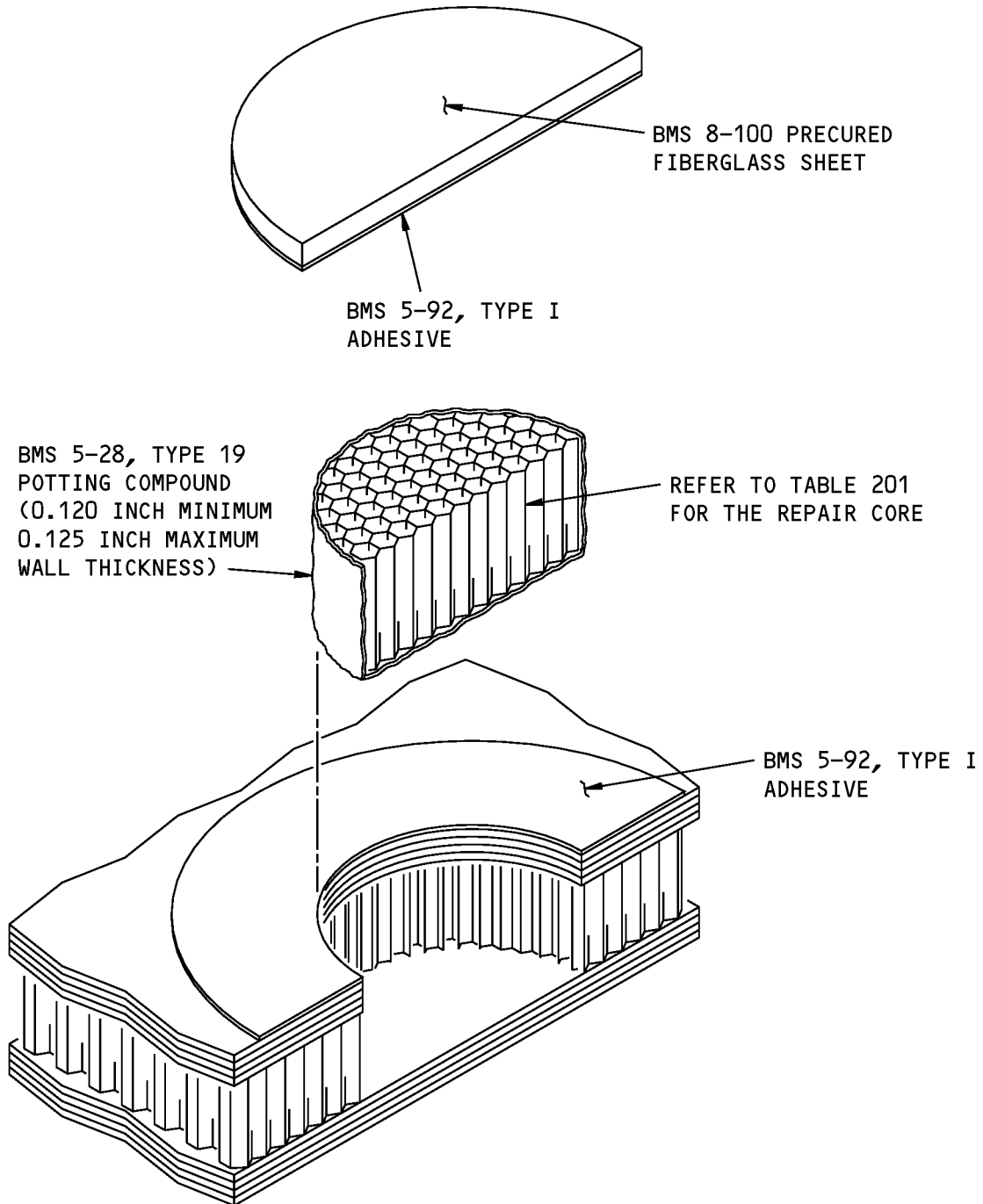
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STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 5 - Layout of the Repair Parts - Glass Fabric Repair at a Corner  
Figure 204 (Sheet 2 of 2)**

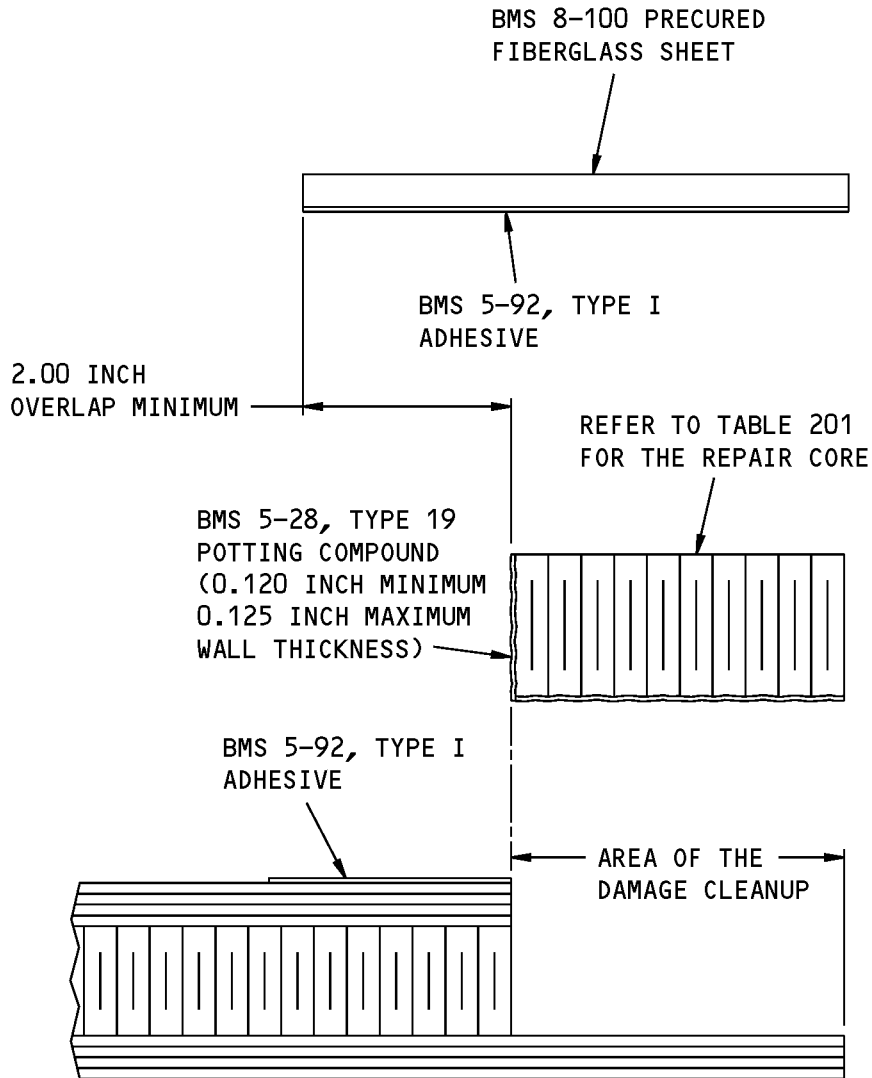
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STRUCTURAL REPAIR MANUAL**



**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

**Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 205 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

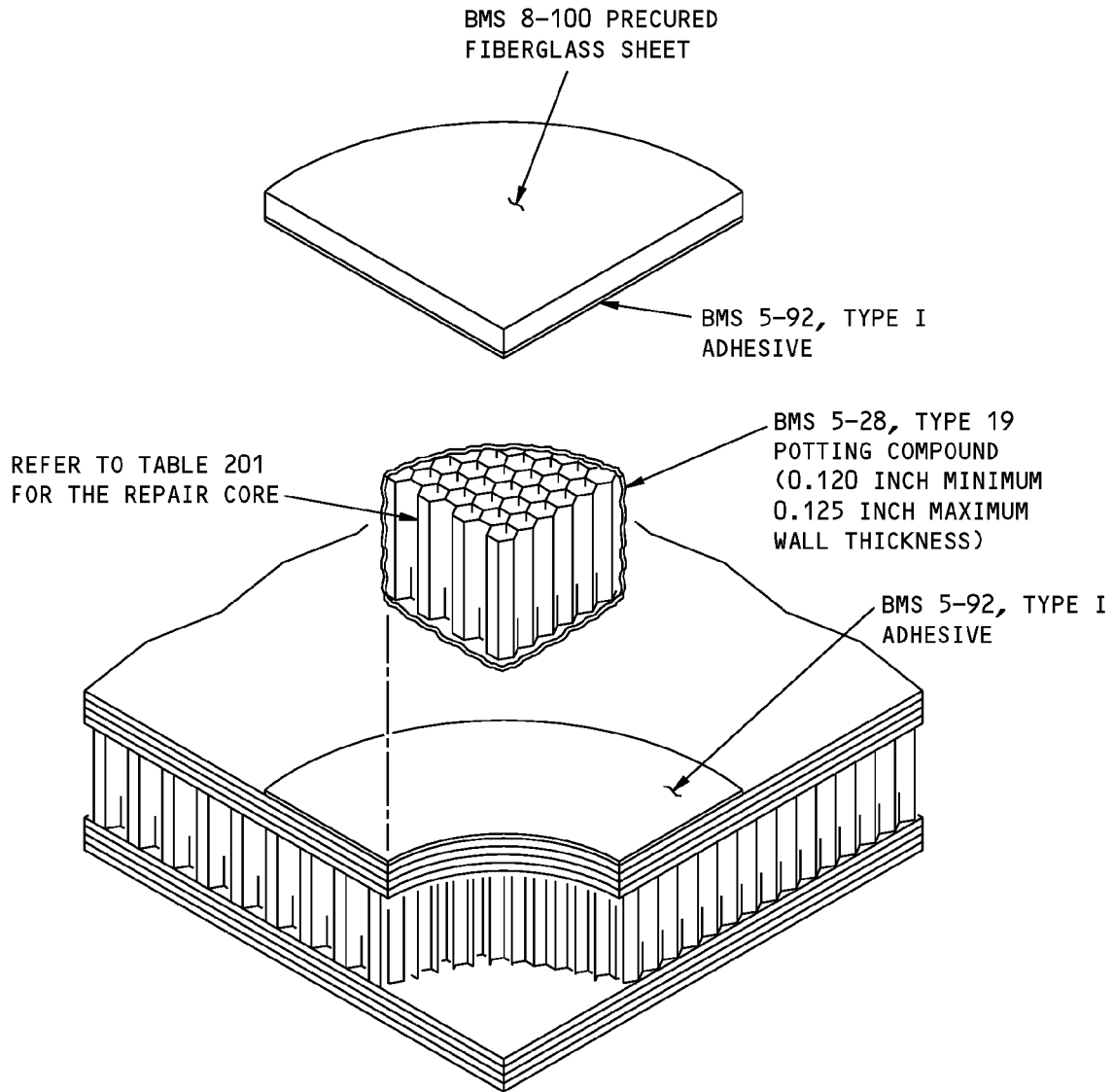


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 205 (Sheet 2 of 2)**



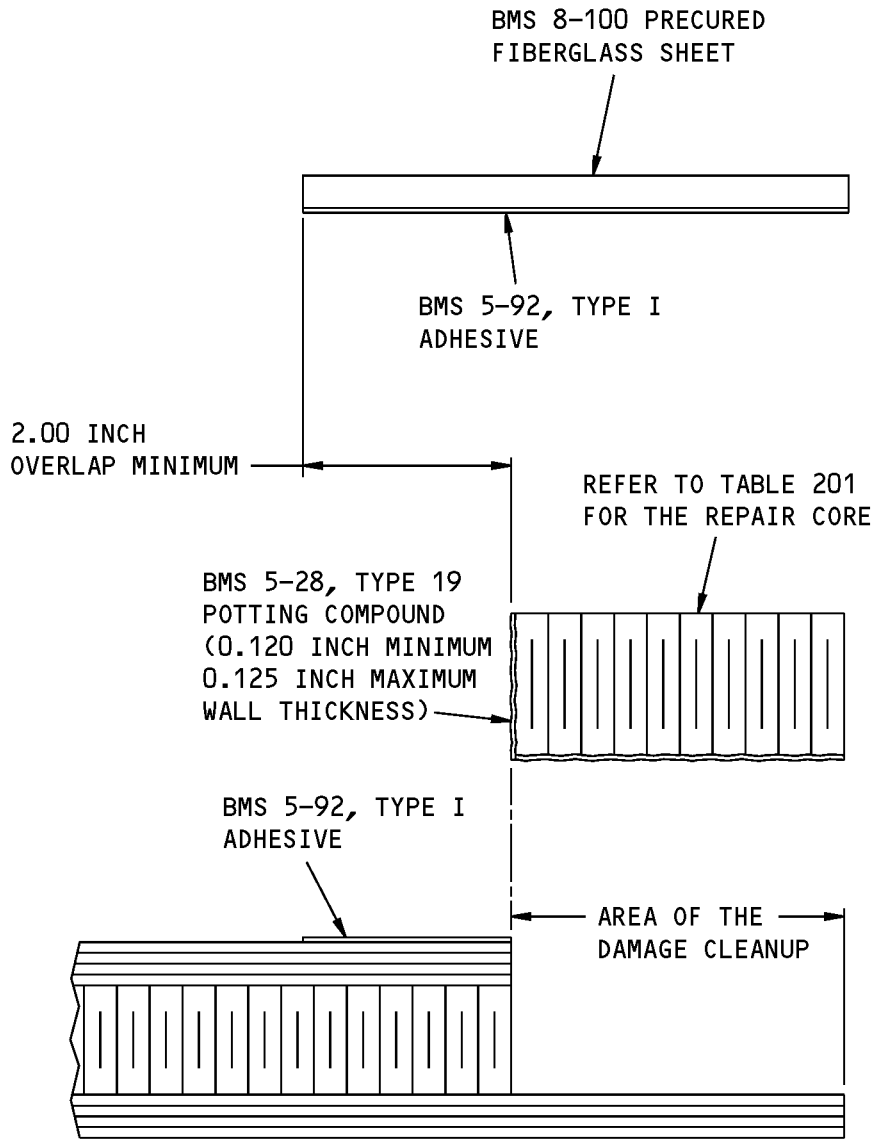
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STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 206 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 5 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 206 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

**REPAIR 6 - REPAIR OF DAMAGE TO TWO FACESHEETS AND THE CORE IN COMPOSITE FLOOR PANELS**

**1. Applicability**

A. Repair 6 is applicable to damage to the two facesheets and the honeycomb core of a floor panel.

**2. General**

A. The materials necessary for this repair are given in Table 201/REPAIR 6.

- (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

<b>FLOOR PANEL REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Honeycomb core for panels with initial facesheets made of glass fiber reinforced plastic	BMS 8-124, Type I, Grade 12.0, Class 1
Honeycomb core for panels with initial facesheets made of carbon fiber reinforced plastic	BMS 8-124, Type V, Grade 9.0, Class 4
Adhesive for the inserts	BMS 5-107, Class 1

**3. Repair Instructions**

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damage as shown in Removal of the Damage, Figure 201/REPAIR 6. Refer to Paragraph 4.B./REPAIR GENERAL and Paragraph 4.C./REPAIR GENERAL for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Make, clean, and install the honeycomb core plug as given in Paragraph 4.F./REPAIR GENERAL and Paragraph 4.G./REPAIR GENERAL Do not cure the honeycomb core plug at this time.
- G. Prepare and apply the repair plies to one surface of the panel. Use a caul plate on the opposite side of the panel to keep the core plug in position.
- (1) If you use BMS 9-3 fabric as the repair ply material:
- (a) Refer to Repair 6 - Layout of the Repair Parts - Glass Fabric Repair, Figure 202/REPAIR 6 for the layout of the repair parts.
- (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
- (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
- (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:



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## STRUCTURAL REPAIR MANUAL

- (a) Refer to Repair 6 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair, Figure 203/REPAIR 6 for the layout of the repair parts.
  - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- H. Apply the pressure for the cure of the repair plies and honeycomb repair plug.
- (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- I. Cure the repair.
- (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
    - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- J. Sand the honeycomb core plug to be level with the outer surface of the facesheet.
- K. Prepare and apply the repair plies to the opposite surface.
- (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 6 - Layout of the Repair Parts - Glass Fabric Repair, Figure 202/REPAIR 6 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 6 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair, Figure 203/REPAIR 6 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- L. Apply the pressure for the cure of the repair plies.
- (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.

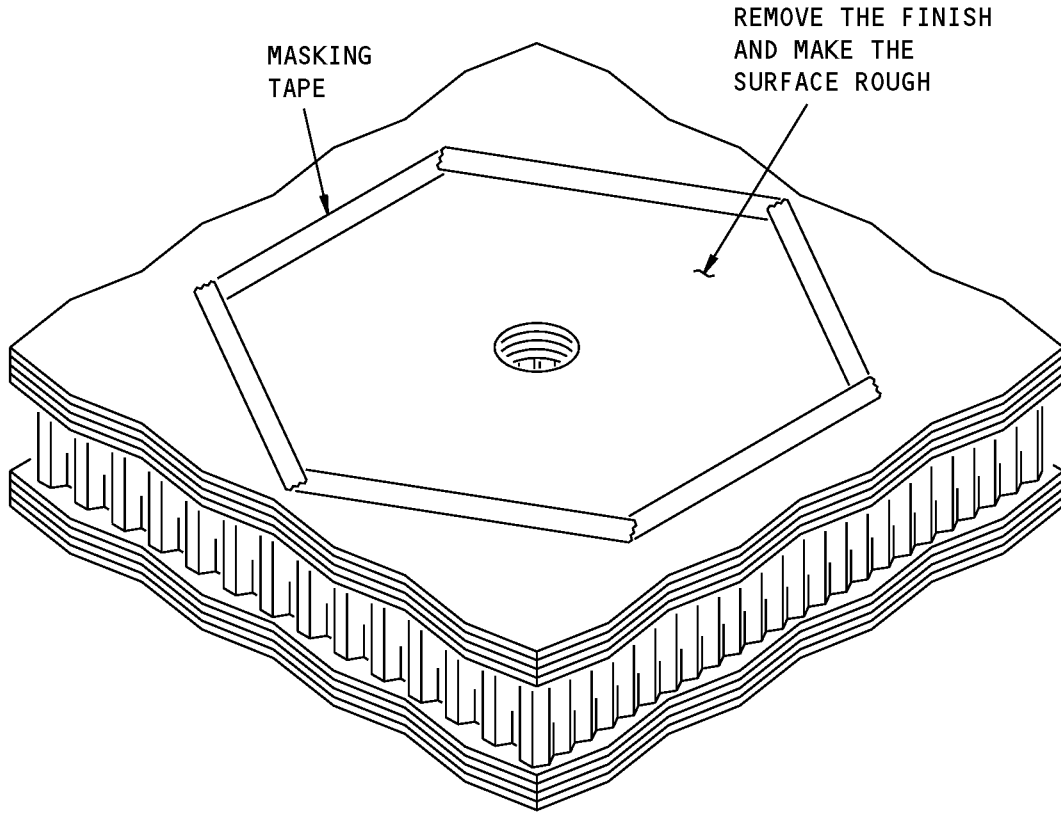


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## STRUCTURAL REPAIR MANUAL

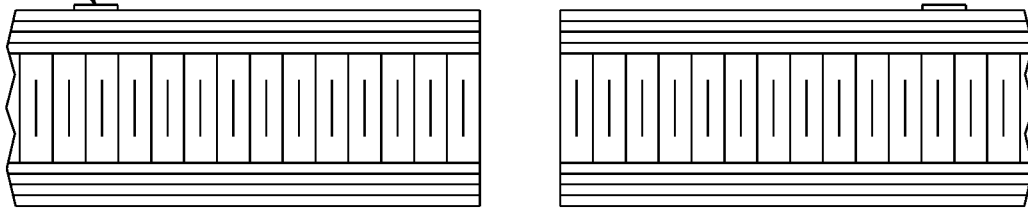
- (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
  - (b) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
  - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
- (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
  - (b) If you apply vacuum pressure, do the steps that follow:
    - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - 2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
    - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- M. Cure the repair.
- (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
    - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- N. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

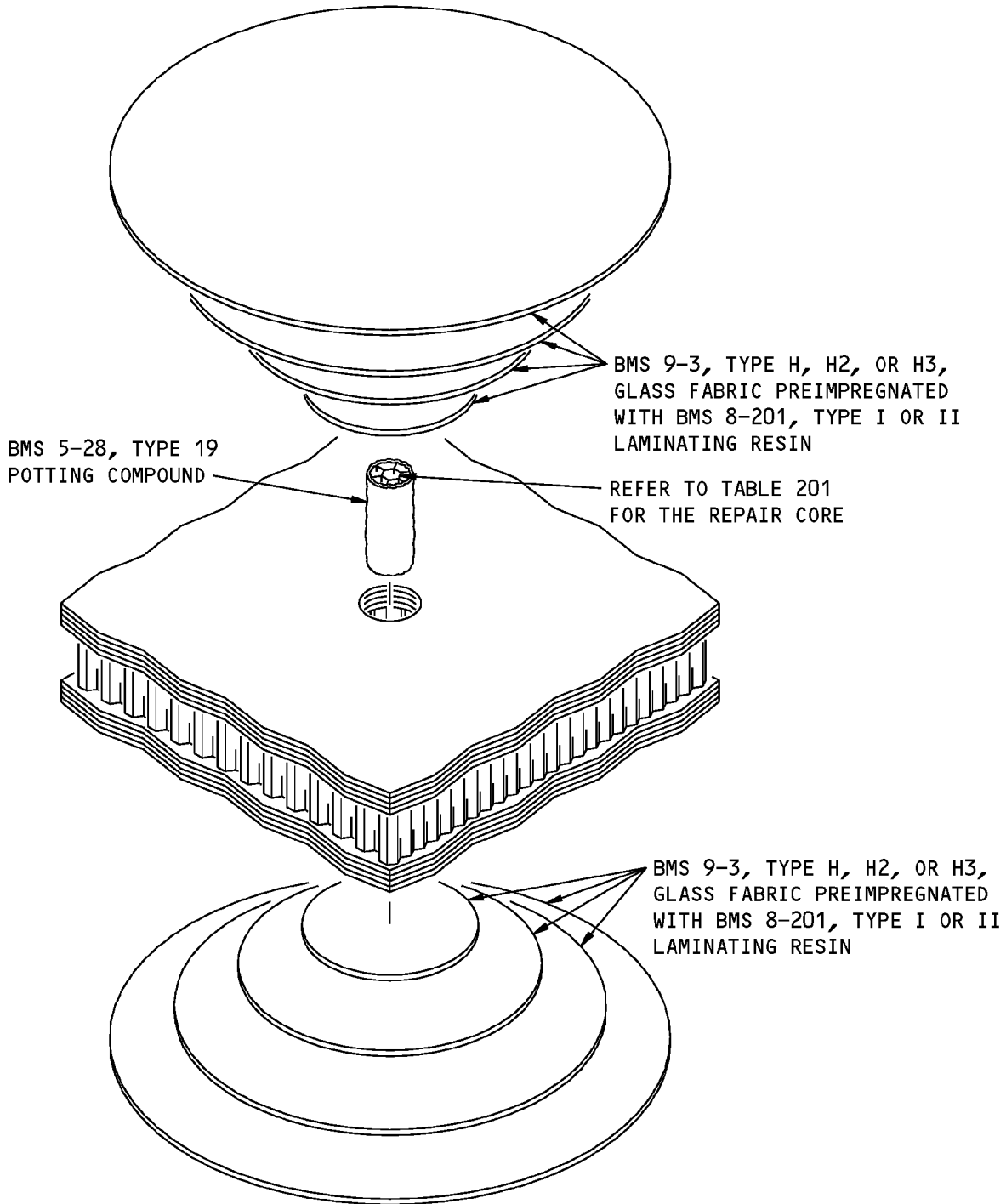
MASKING TAPE  
(REMOVE AFTER  
SANDING)



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

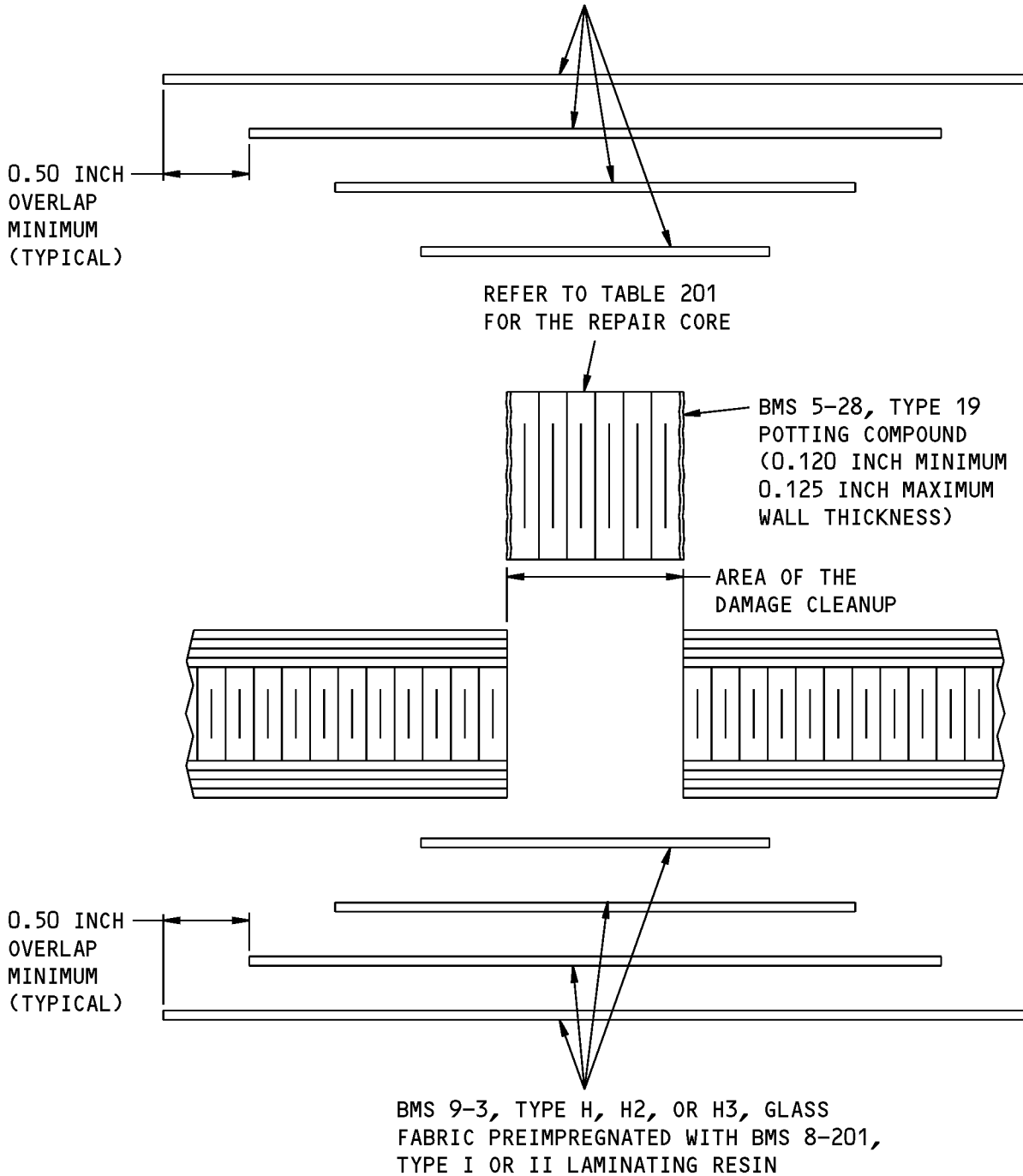


CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 6 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H, H2, OR H3, GLASS  
FABRIC PREIMPREGNATED WITH BMS 8-201,  
TYPE I OR II LAMINATING RESIN

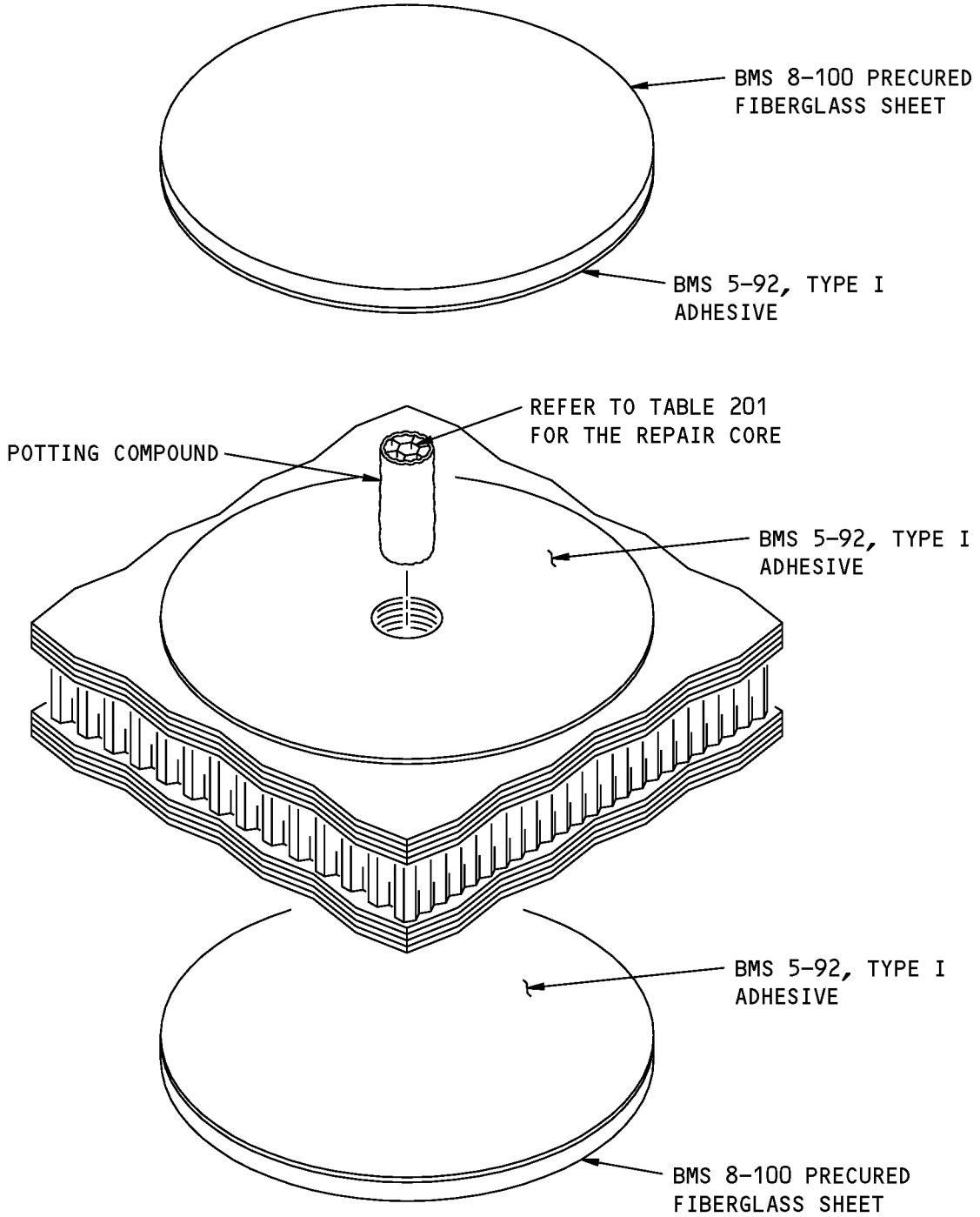


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 6 - Layout of the Repair Parts - Glass Fabric Repair  
Figure 202 (Sheet 2 of 2)**



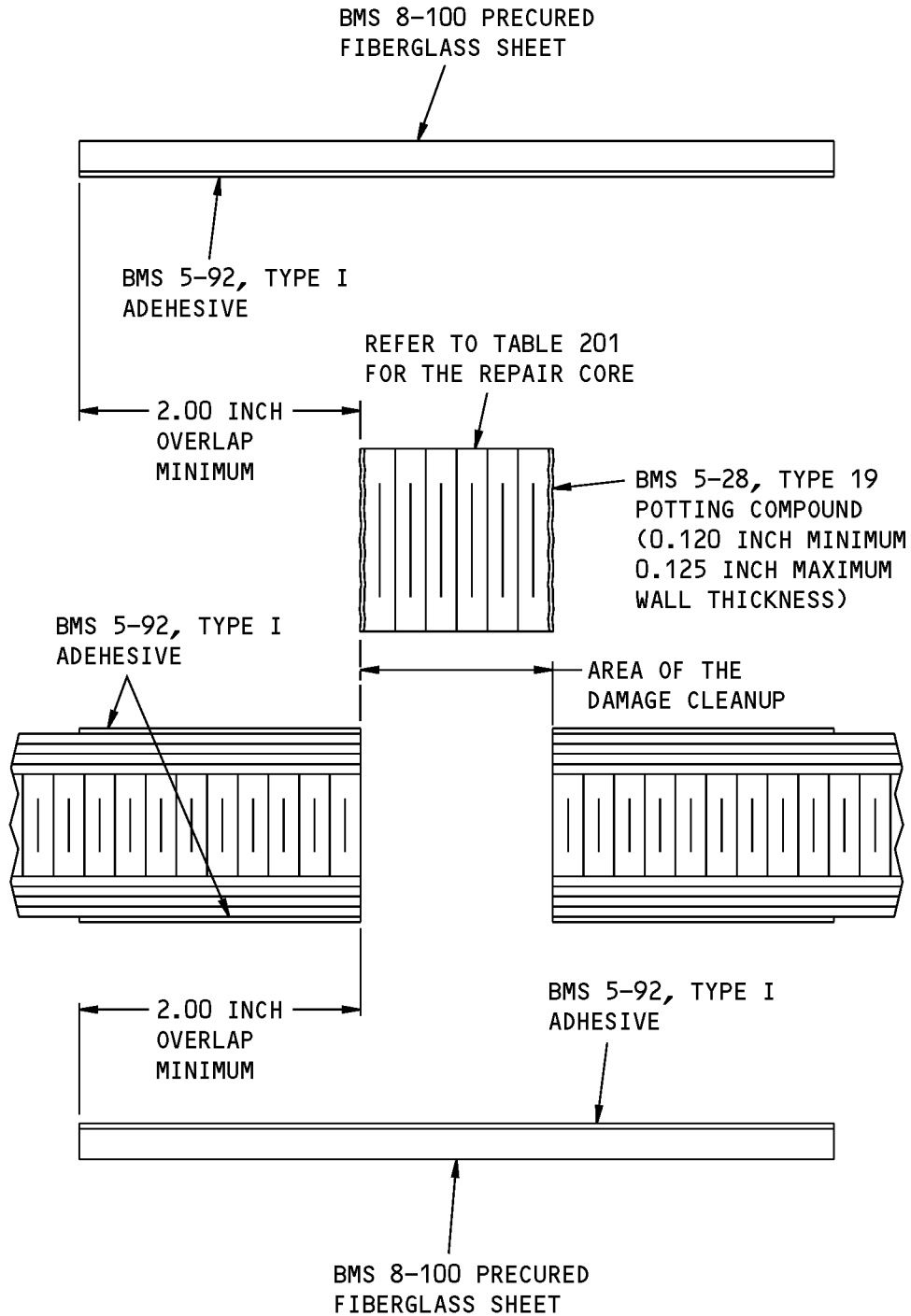
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 6 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 6 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair  
Figure 203 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 7 - REPAIR OF DELAMINATION DAMAGE LESS THAN 16 SQUARE INCHES IN AREA TO A FACESHEET IN COMPOSITE FLOOR PANELS

#### 1. Applicability

- A. Repair 7 is applicable to delamination damage to a facesheet of a floor panel. The delamination damage must be less than 16 square inches in area.
- B. Refer to Repair 1 for delamination damage that is larger than 16 square inches in area.
- C. Refer to Repair 8 for delamination damage on an edge.

#### 2. General

- A. Repair 7 is an alternative repair. Refer to Repair 1 for the preferred repair for delamination damage to a facesheet.
- B. The material necessary for this repair is given in Table 201/REPAIR 7.

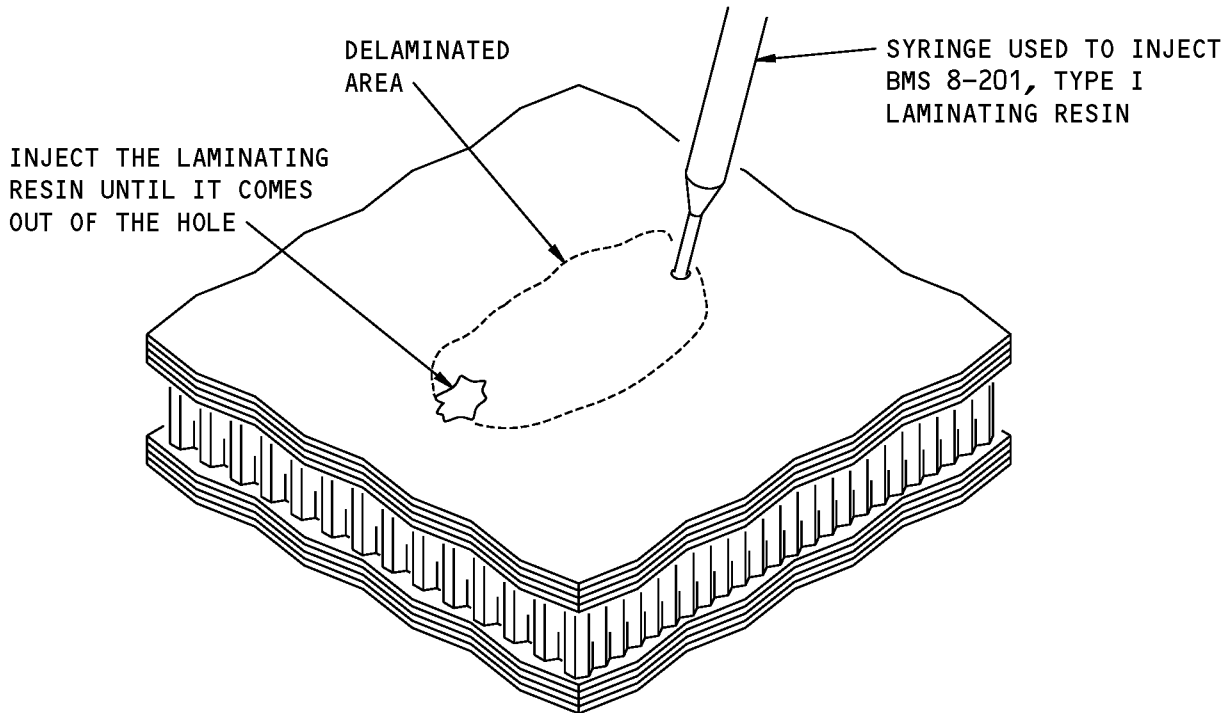
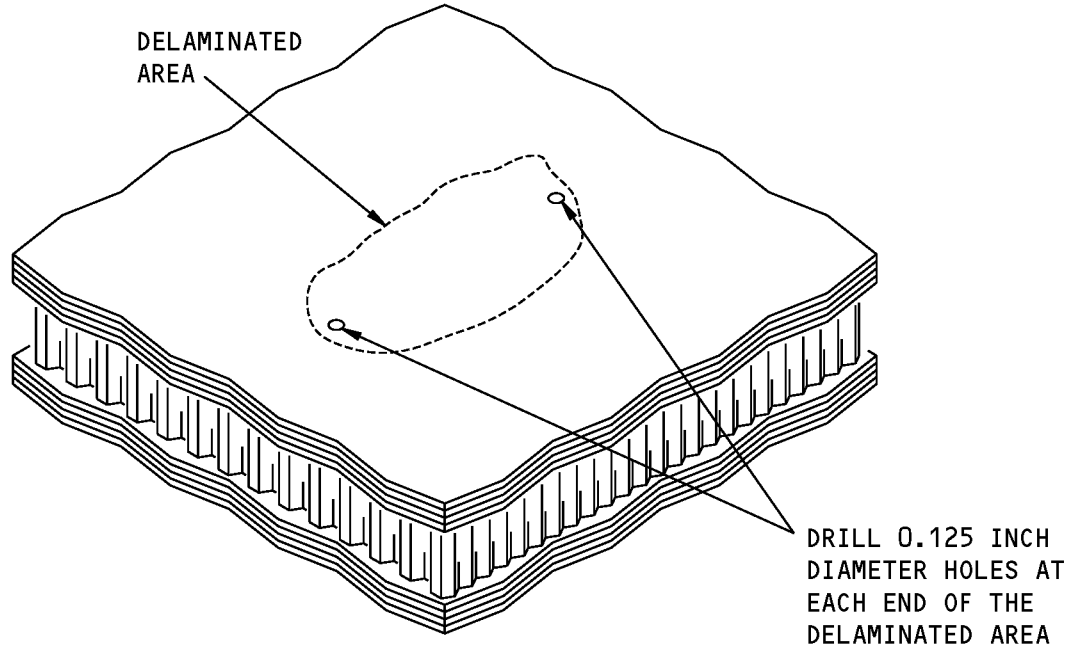
**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Laminating resin	BMS 8-201, Type I or Type II

#### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Drill a 0.125 inch diameter hole at each end of the damage. Drill the holes only through the part of the facesheet that is delaminated. Do not drill through the full facesheet.
- D. Clean the repair area as given in Paragraph 4.E./REPAIR GENERAL
- E. Inject BMS 8-201, Type I laminating resin in one hole until it comes out of the other hole. Fill each hole with the resin as shown in Repair 7 - Procedure to Inject Laminating Resin, Figure 201/REPAIR 7. Refer to Repair General, Table 203 to prepare the laminating resin.
- F. Apply the vacuum pressure for the cure.
  - (1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
  - (2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
  - (3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- G. Cure the repair.
  - (1) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
  - (2) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- H. Sand the cured resin smooth with the outer surface of the facesheet.
- I. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- J. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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STRUCTURAL REPAIR MANUAL**



**Repair 7 - Procedure to Inject Laminating Resin  
Figure 201**



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**STRUCTURAL REPAIR MANUAL**

**REPAIR 8 - REPAIR OF DELAMINATION DAMAGE LESS THAN 4 SQUARE INCHES IN AREA TO A FACESHEET AT AN EDGE IN COMPOSITE FLOOR PANELS**

**1. Applicability**

- A. Repair 8 is applicable to delamination damage to a facesheet of a floor panel. The delamination damage must be less than 4 square inches in area.
- B. Refer to Repair 9 if the damage is larger than 4 square inches in area.

**2. General**

- A. The material necessary for this repair is given in Table 201/REPAIR 8.

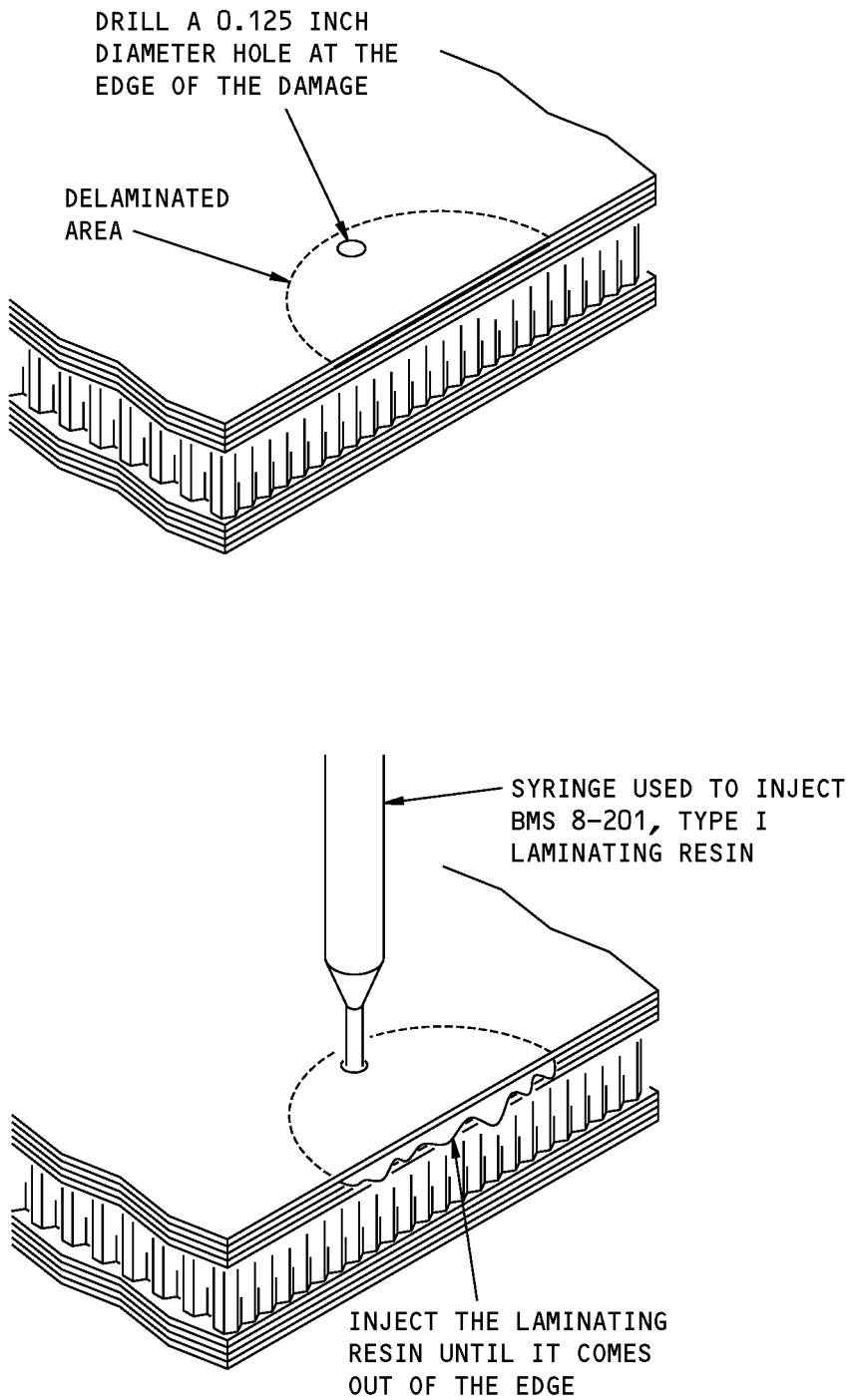
**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Laminating resin	BMS 8-201, Type I or Type II

**3. Repair Instructions**

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Drill a 0.125 inch diameter hole at the edge of the damage away from the edge of the floor panel. Drill the hole only through the part of the facesheet that is delaminated. Do not drill through the full facesheet.
- D. Clean the repair area as given in Paragraph 4.E./REPAIR GENERAL
- E. Inject BMS 8-201, Type I laminating resin in the hole until it comes out of the edge. Fill the hole with the resin as shown in Repair 8 - Procedure to Inject Laminating Resin at an Edge, Figure 201/REPAIR 8. Refer to Repair General, Table 203 to prepare the laminating resin.
- F. Apply the vacuum pressure for the cure.
  - (1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
  - (2) Do a check of the vacuum bag for leaks as given in Paragraph 4.L./REPAIR GENERAL
  - (3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- G. Cure the repair.
  - (1) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
  - (2) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- H. Sand the cured resin smooth with the outer surface of the facesheet.
- I. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- J. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

**STRUCTURAL REPAIR MANUAL**



**Repair 8 - Procedure to Inject Laminating Resin at an Edge  
Figure 201**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 9 - REPAIR OF DELAMINATION DAMAGE TO ONE FACESHEET AT AN EDGE OR CORNER IN COMPOSITE FLOOR PANELS

#### 1. Applicability

- A. Repair 9 is applicable to delamination damage to one facesheet at an edge or corner of a floor panel.
- B. Refer to Repair 8 if the delamination damage is less than 4 square inches in area.

#### 2. General

- A. The materials necessary for this repair are given in Table 201/REPAIR 9.
  - (1) You can use BMS 9-3 repair fabric or BMS 8-100 precured fiberglass sheet to repair the floor panel. The two repair materials are equally satisfactory.

**Table 201:**

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19
Repair fabric	BMS 9-3, Type H-2 or H-3, Classes 7, 9, 10, 11, 13 or 14
Laminating resin for the BMS 9-3 repair fabric	BMS 8-201, Type I or Type II
Precured fiberglass sheet	BMS 8-100, Type 40
Adhesive for the BMS 8-100 precured fiberglass sheet	BMS 5-92, Type I
Adhesive for the inserts	BMS 5-107, Class 1

#### 3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the inserts in the damaged area.
- C. Remove the damaged facesheet at an edge as shown in Removal of the Damage at an Edge, Figure 201/REPAIR 9. Remove the damaged facesheet at a corner as shown in Removal of the Damage at a Corner, Figure 202/REPAIR 9. Refer to Paragraph 4.B./REPAIR GENERAL for the steps to remove the damage.
- D. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL. The area of the damage cleanup must be fully dry.
- E. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- F. Fill the open honeycomb core cells with BMS 5-28, Type 19 potting compound.
  - (1) Prepare the potting compound as given in Repair General, Table 203 .
  - (2) Make a barrier with wood or metal to keep the potting compound in the damage area. Refer to Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner, Figure 203/REPAIR 9. Do not remove the barrier until the potting compound is cured.
  - (3) Fill the open core cells until the level of the potting compound is higher than the outer surface of the facesheet.

**CAUTION:** DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- G. Cure the potting compound.
  - (1) Cure the potting compound as given in Paragraph 4.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**

- (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (a) If you use a heat blanket to apply the temperature, put a layer of solid parting film between the floor panel and the heat blanket.
- H. Remove the potting compound barrier.
- I. Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.
- J. Clean the damaged area as given in Paragraph 4.E./REPAIR GENERAL
- K. Prepare and apply the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material:
    - (a) Refer to Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge, Figure 204/REPAIR 9 or Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner, Figure 205/REPAIR 9 for the layout of the repair parts.
    - (b) Impregnate the repair plies with BMS 8-201 resin as given in Paragraph 4.H./REPAIR GENERAL
    - (c) Apply the repair plies as given in Paragraph 4.J./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material:
    - (a) Refer to Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge, Figure 206/REPAIR 9 or Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner, Figure 207/REPAIR 9 for the layout of the repair parts.
    - (b) Apply the repair ply as given in Paragraph 4.I./REPAIR GENERAL
- L. Apply the pressure for the cure of the repair plies.
  - (1) If you use BMS 9-3 fabric as the repair ply material, you must apply vacuum pressure.
    - (a) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
    - (b) Do a check of the vacuum bag system as given in Paragraph 4.L./REPAIR GENERAL
    - (c) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, you can apply mechanical pressure or vacuum pressure.
    - (a) If you apply mechanical pressure, apply the pressure as given in Paragraph 4.M./REPAIR GENERAL
    - (b) If you apply vacuum pressure, do the steps that follow:
      - 1) Assemble the vacuum bag system as given in Paragraph 4.K./REPAIR GENERAL
      - 2) Do a check of the vacuum bag system as given in Paragraph 4.L./REPAIR GENERAL
      - 3) Apply the vacuum pressure as given in Paragraph 4.N./REPAIR GENERAL
- M. Cure the repair.
  - (1) If you use BMS 9-3 fabric as the repair ply material, do the steps that follow:
    - (a) Cure the BMS 8-201 resin as given in Paragraph 4.R./REPAIR GENERAL
    - (b) If you cure the BMS 8-201 resin at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
  - (2) If you use BMS 8-100 precured fiberglass sheet as the repair ply material, do the steps that follow:



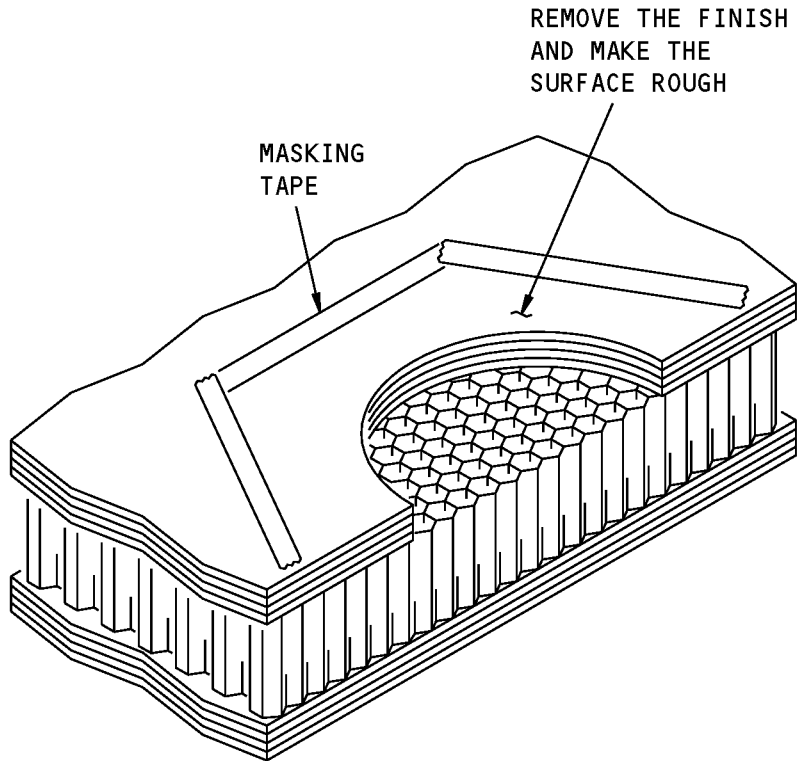


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**STRUCTURAL REPAIR MANUAL**

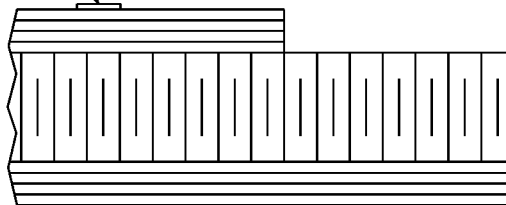
- (a) Cure the BMS 5-92 adhesive as given in Paragraph 4.Q./REPAIR GENERAL
  - (b) If you cure the BMS 5-92 adhesive at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL
- N. Install the inserts, if they were removed, as given in Paragraph 4.S./REPAIR GENERAL
- O. Apply the finish to the repair area. Use the same finish that was used on the initial floor panel.

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CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

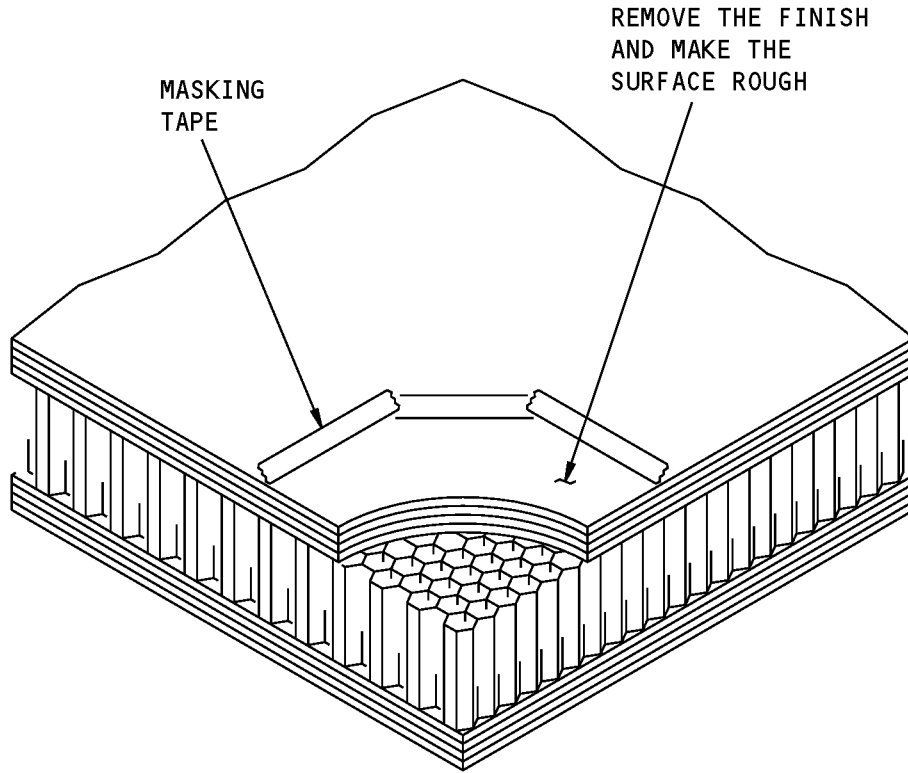
MASKING TAPE  
(REMOVE AFTER  
SANDING)



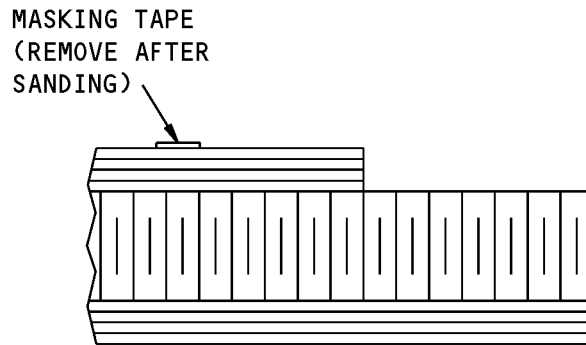
SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

**Removal of the Damage at an Edge**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**



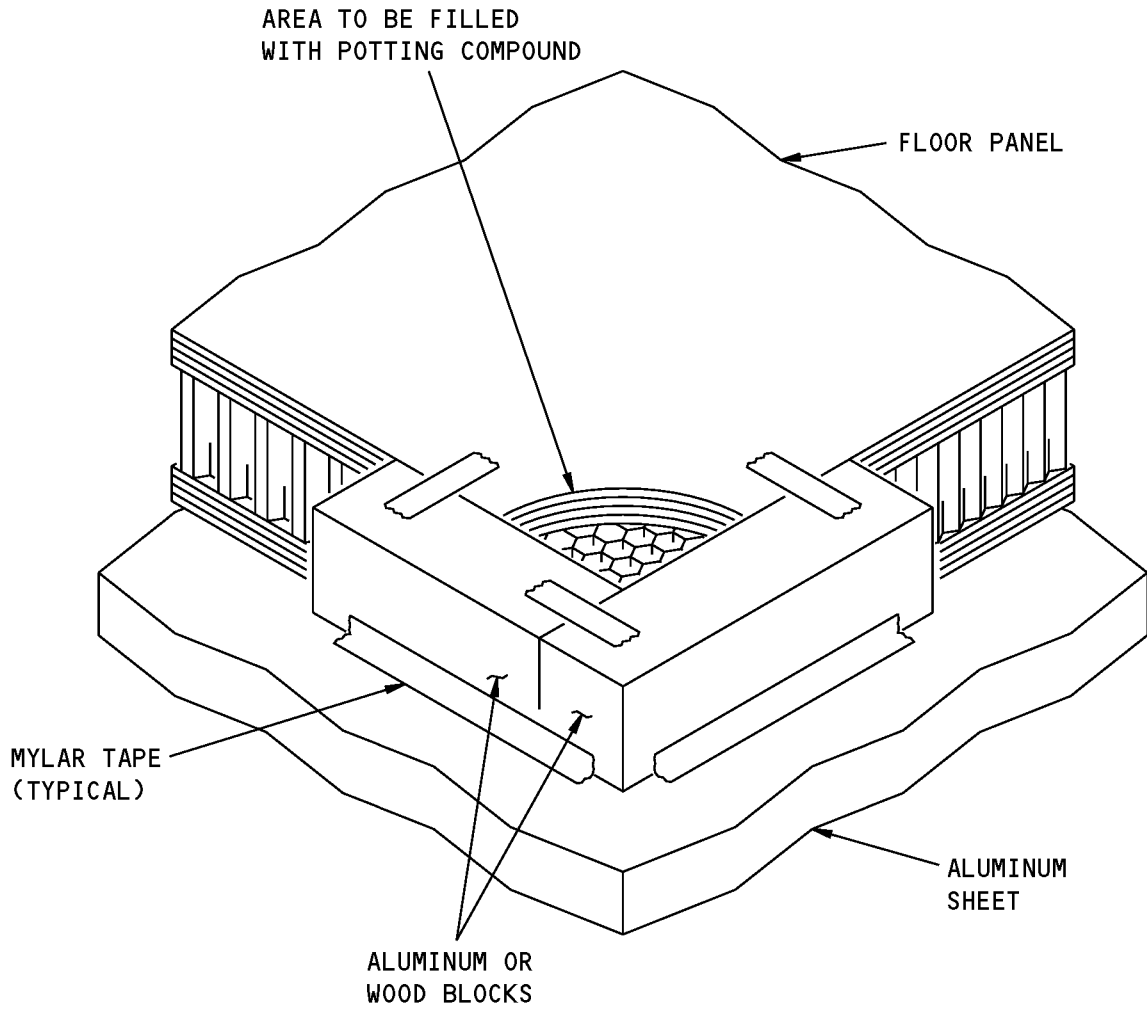
CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED



SECTION THROUGH THE CENTER OF THE DAMAGE REMOVAL

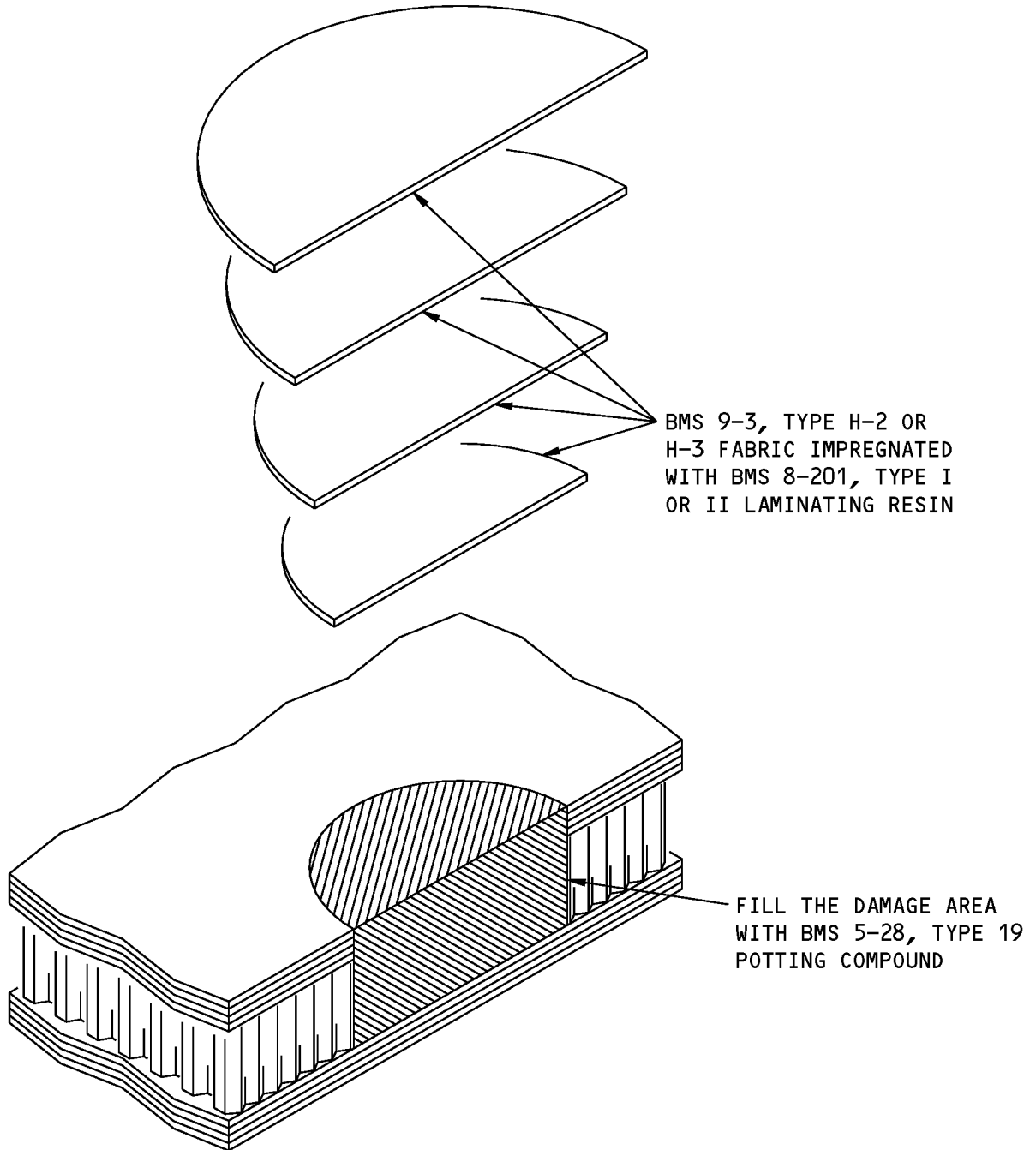
**Removal of the Damage at a Corner  
Figure 202**

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**Procedure to Fill a Damage Area with Potting Compound at an Edge or Corner  
Figure 203**

**737-800  
STRUCTURAL REPAIR MANUAL**

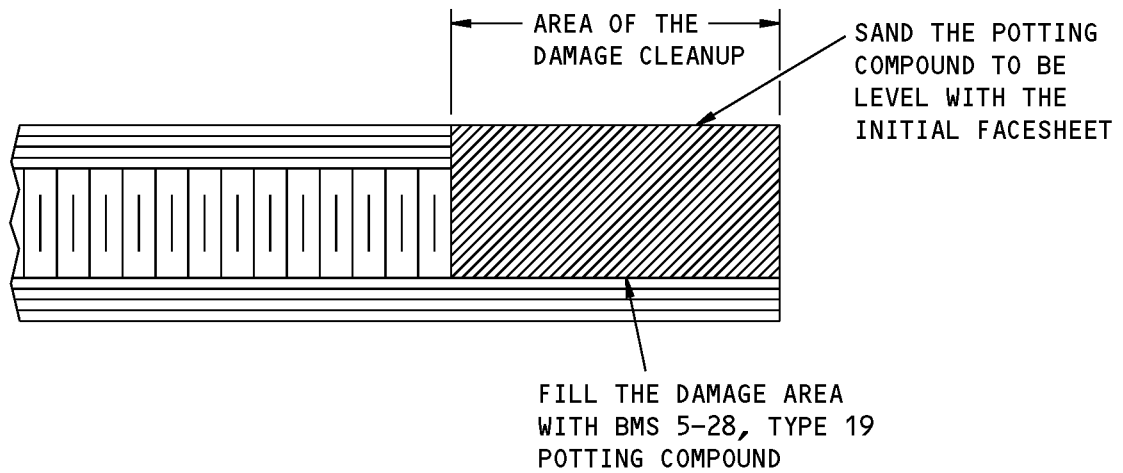
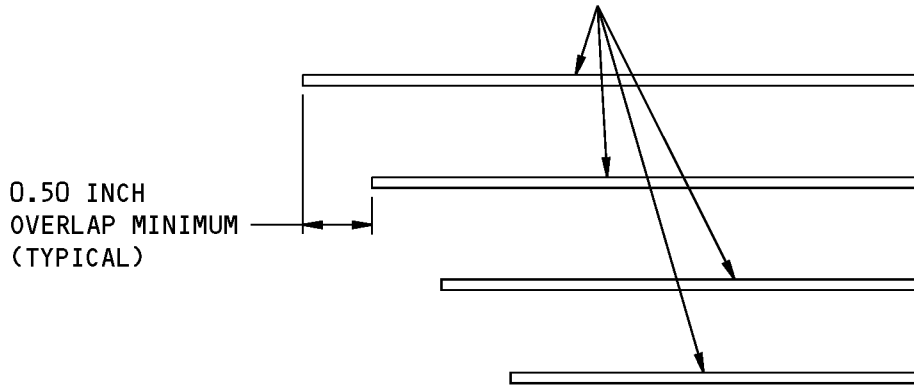


CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 204 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3 FABRIC  
IMPREGNATED WITH BMS 8-201,  
TYPE I OR II LAMINATING RESIN

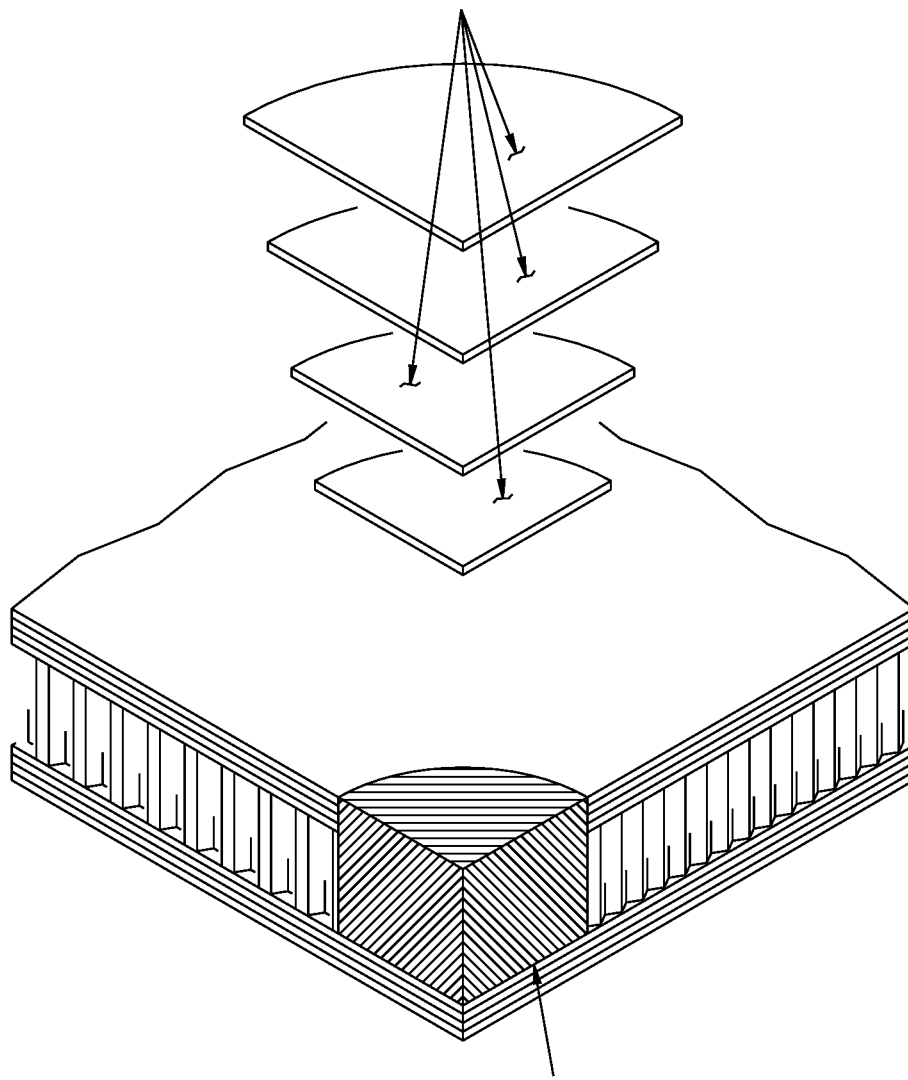


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at an Edge  
Figure 204 (Sheet 2 of 2)**

**737-800**  
**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR  
H-3 FABRIC IMPREGNATED  
WITH BMS 8-201, TYPE I  
OR II LAMINATING RESIN

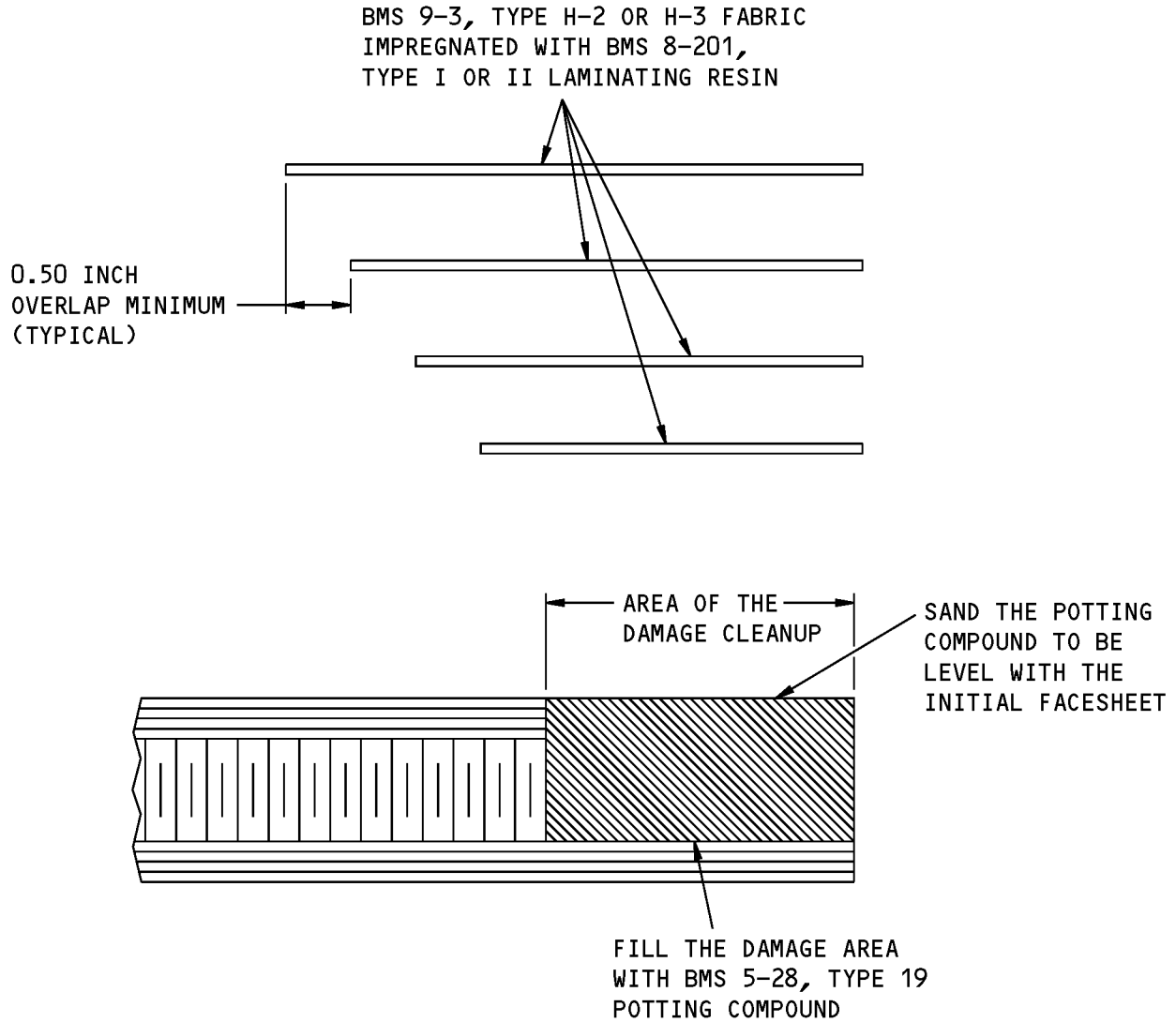


FILL THE DAMAGE AREA  
WITH BMS 5-28, TYPE 19  
POTTING COMPOUND

**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

**Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner**  
**Figure 205 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

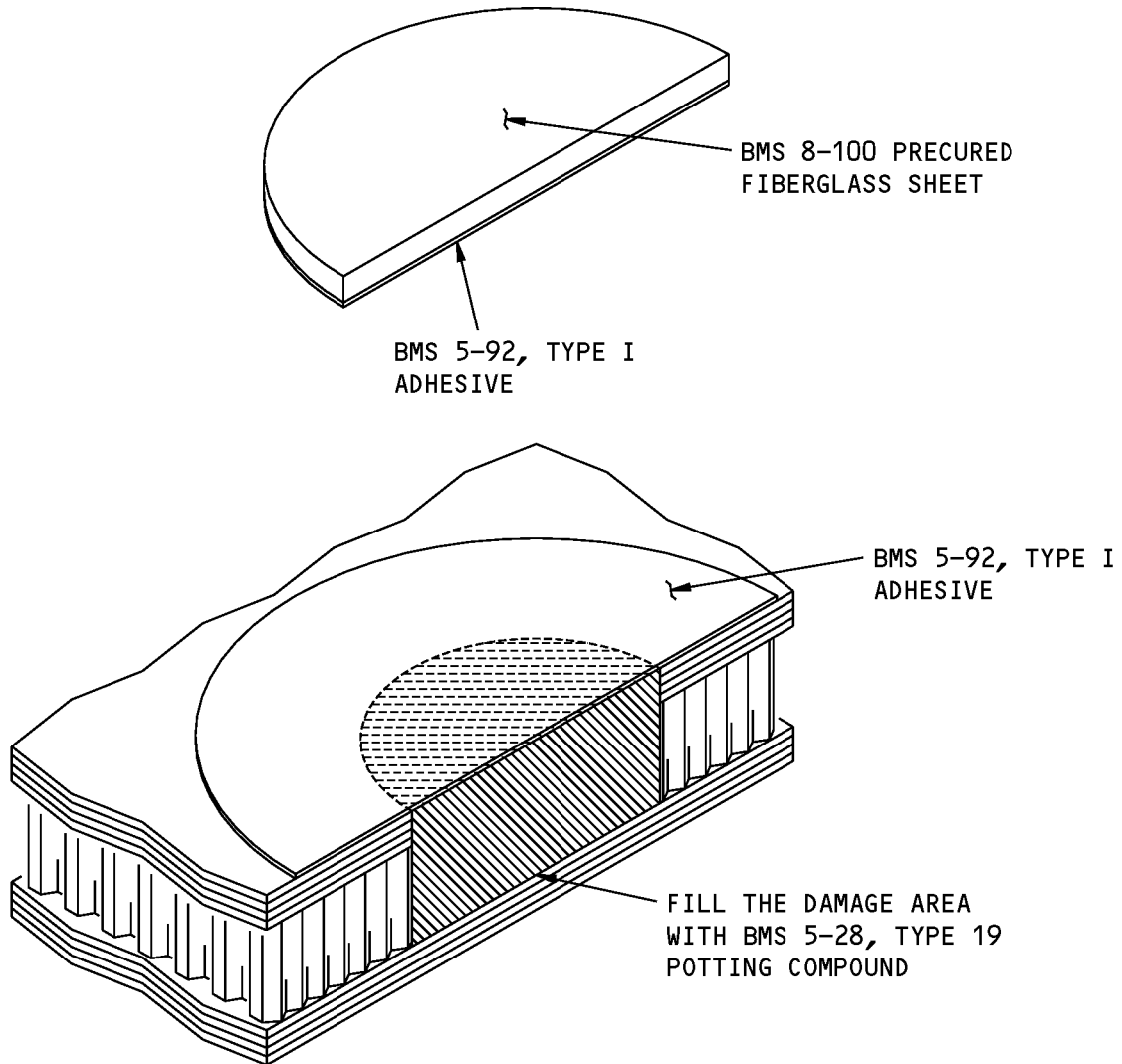


**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 9 - Layout of the Repair Parts - Glass Fabric Repair at a Corner  
Figure 205 (Sheet 2 of 2)**



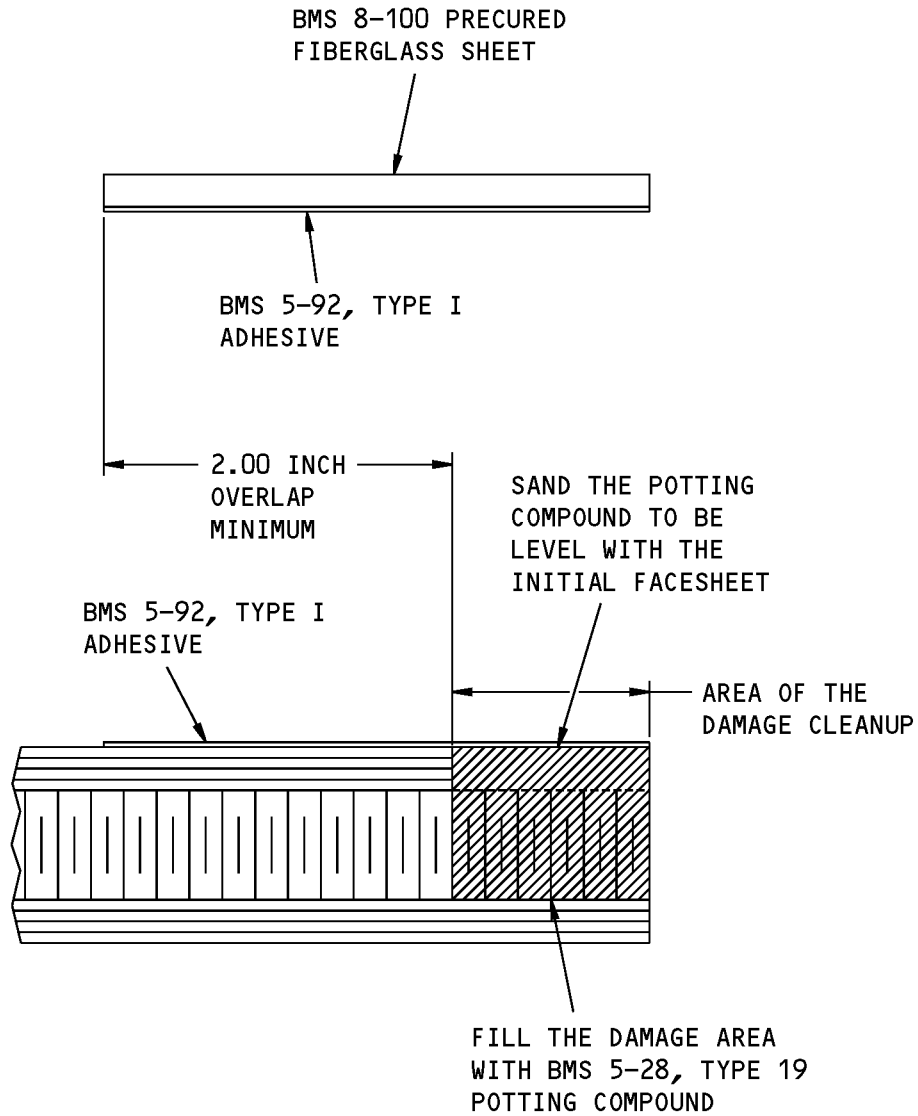
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 206 (Sheet 1 of 2)**

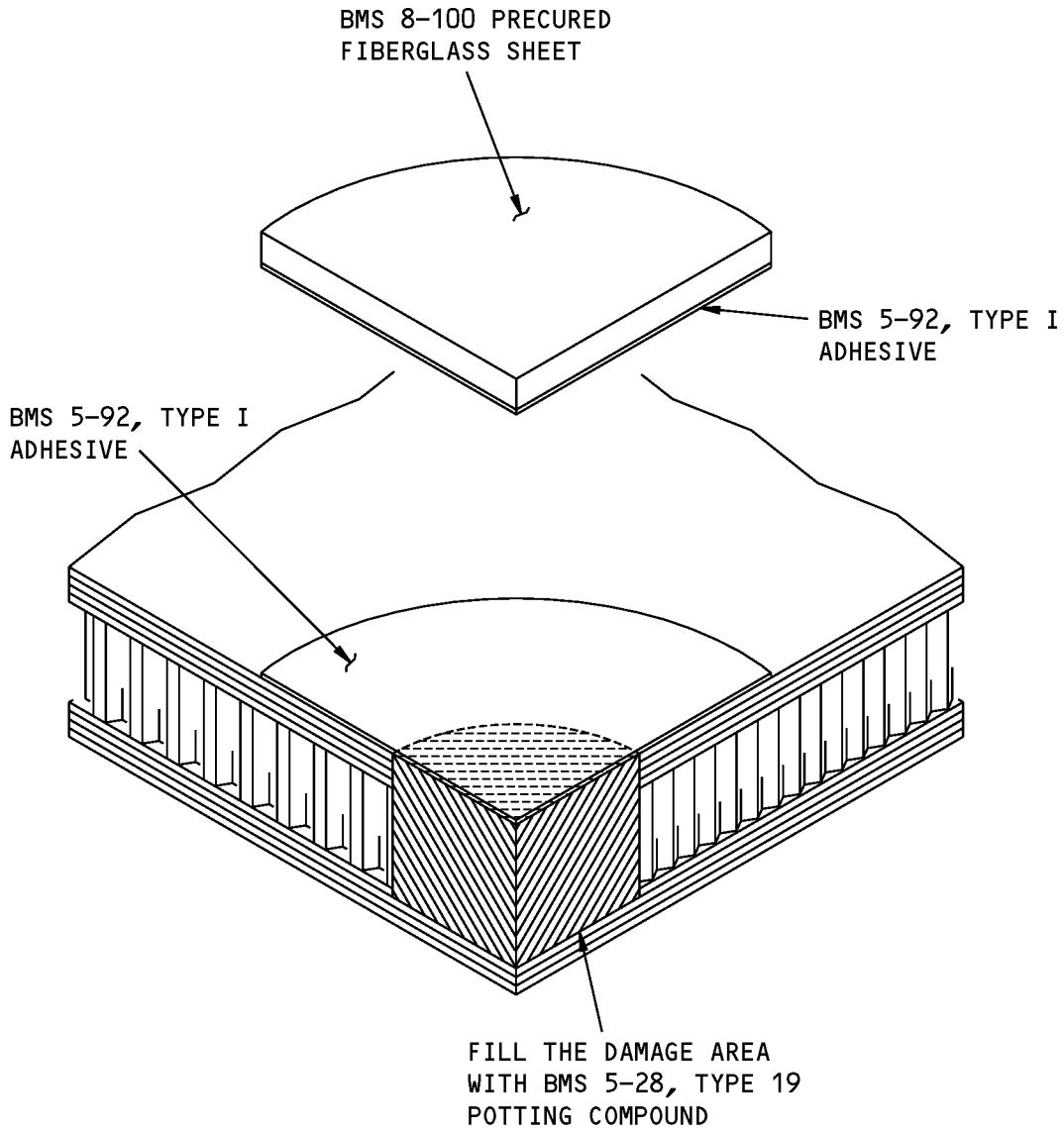
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at an Edge  
Figure 206 (Sheet 2 of 2)**

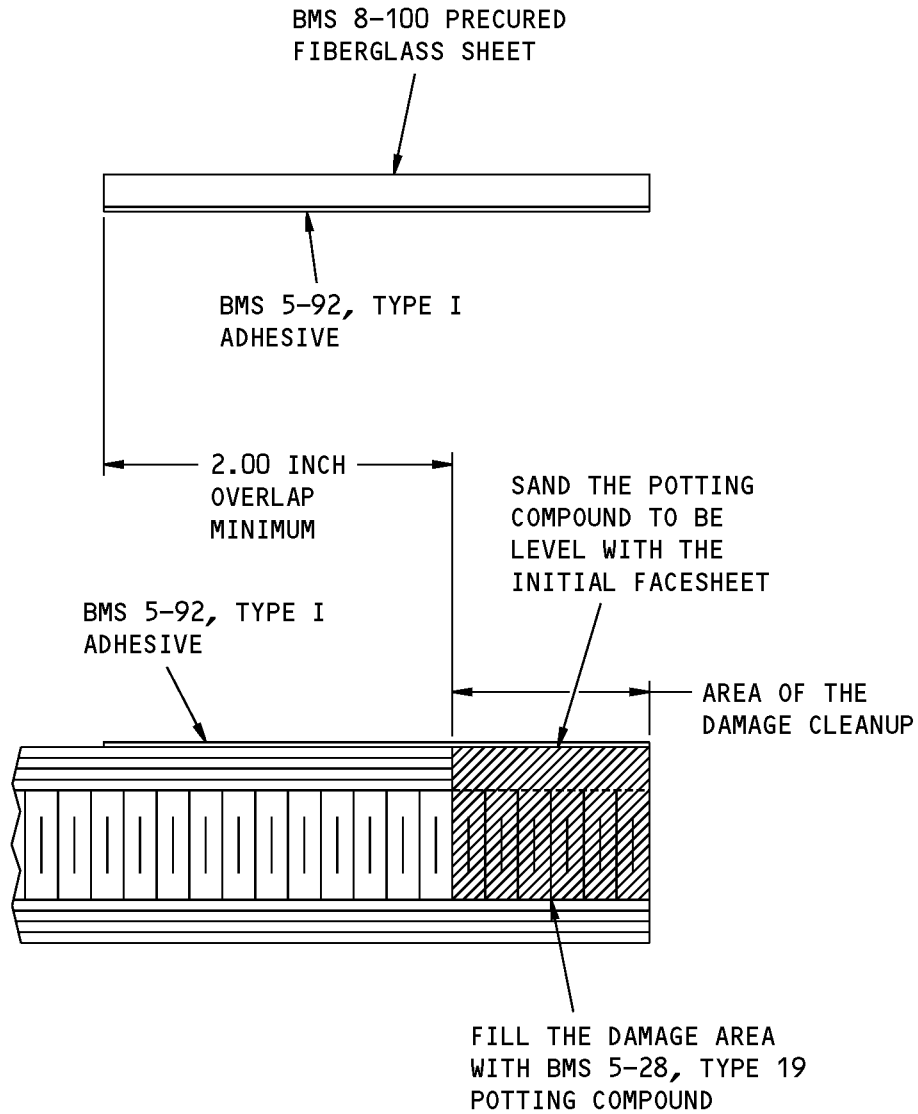
**737-800  
STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

**Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 207 (Sheet 1 of 2)**

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**SECTION THROUGH THE CENTER OF THE REPAIR**

**Repair 9 - Layout of the Repair Parts - Precured Fiberglass Sheet Repair at a Corner  
Figure 207 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL

REPAIR 10 - REPAIR OF DAMAGE TO THE CORE ON AN EDGE IN COMPOSITE FLOOR PANELS

1. Applicability

A. Repair 10 is applicable to damage to the core at an edge of a floor panel.

2. General

A. The repair material necessary for this repair is given in Table 201/REPAIR 10.

Table 201:

FLOOR PANEL REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 19

3. Repair Instructions

- A. Find the limits of the damage. Refer to Paragraph 4.A./REPAIR GENERAL
- B. Remove the damaged core.
- C. Remove the water or other unwanted material as given in Paragraph 4.D./REPAIR GENERAL The area of the damage cleanup must be fully dry.
- D. Clean the repair area as given in Paragraph 4.E./REPAIR GENERAL
- E. Fill the damaged core with BMS 5-28, Type 19 potting compound. Refer to Repair 10 - Procedure to Fill Core Damage on an Edge, Figure 201/REPAIR 10.
  - (1) Prepare the potting compound as given in Repair General, Table 203 .
  - (2) Fill the core until the level of the potting compound is higher than the initial edge of the floor panel.

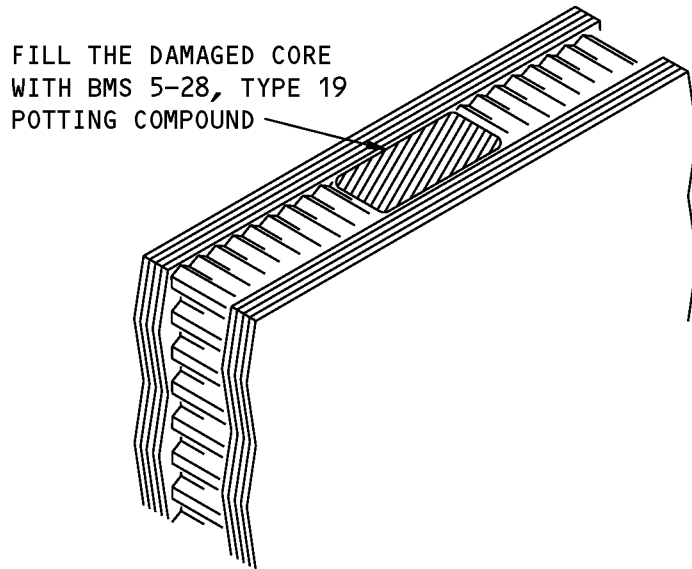
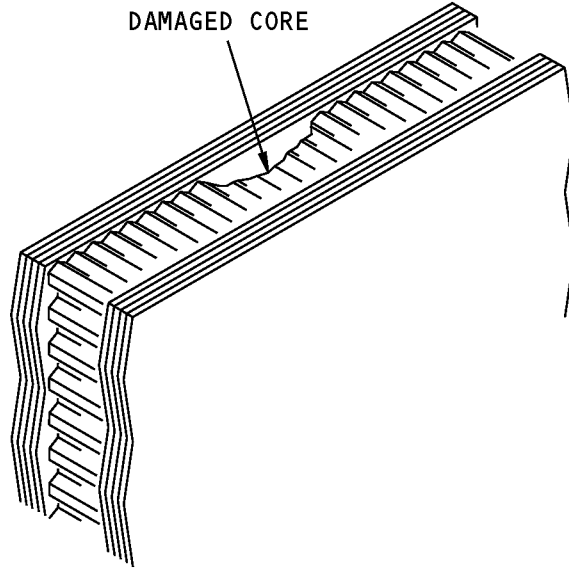
**CAUTION:** DO NOT PERMIT THE SOLVENTS TO TOUCH THE UNCURED POTTING COMPOUND. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- F. Cure the potting compound.
  - (1) Cure the potting compound as given in Paragraph 4.P./REPAIR GENERAL
  - (2) If you cure the potting compound at a temperature that is higher than room temperature, apply the temperature as given in Paragraph 4.O./REPAIR GENERAL

**NOTE:** We do not recommend the use of a heat blanket to apply the temperature for this repair.

- G. Sand the surface of the potting compound until it is smooth with the initial edge of the floor panel.

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**Repair 10 - Procedure to Fill Core Damage on an Edge  
Figure 201**



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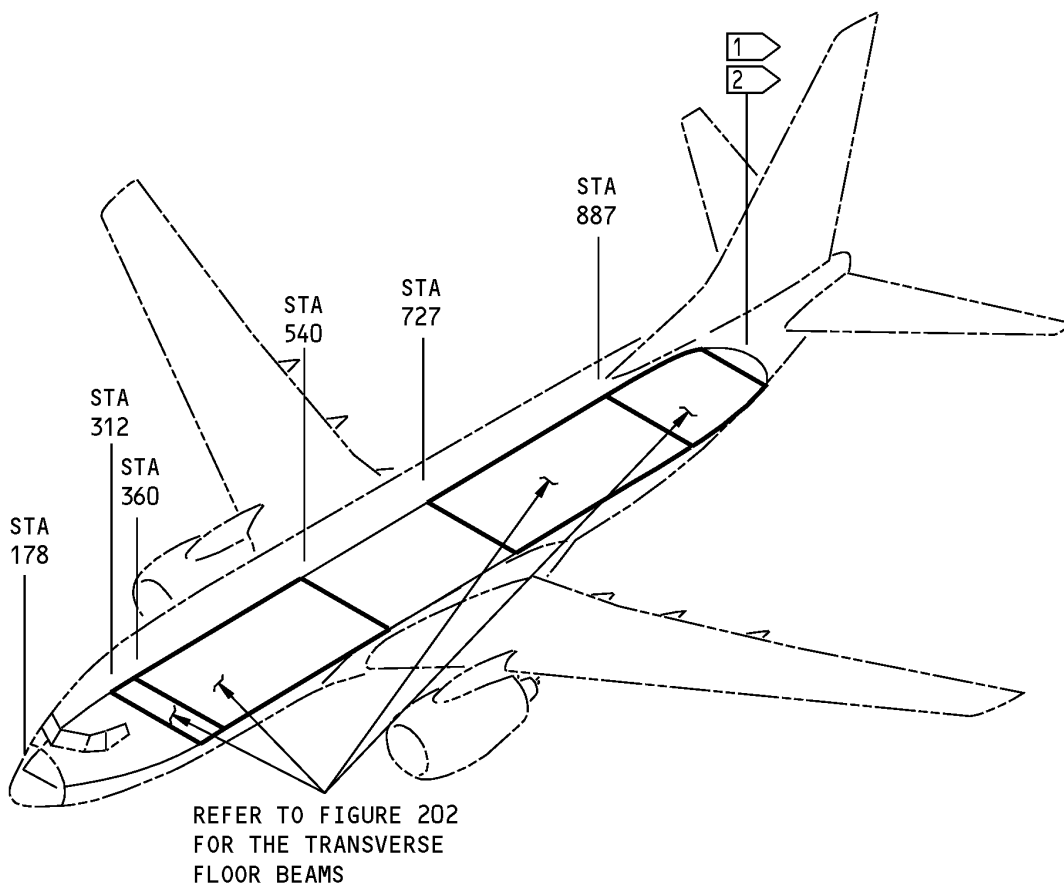
## STRUCTURAL REPAIR MANUAL

### REPAIR 1 - DAMAGE ON ONE FLANGE OF A TRANSVERSE FLOOR BEAM CHORD

#### 1. Applicability

- A. Repair 1 is applicable to damage on the flanges of the upper or lower chords of:
  - (1) The Transverse Floor Beams (I-sections) in Fuselage Sections 41, 43, 46, and 47. Refer to Transverse Floor Beam Location, Figure 201/REPAIR 1.
  - (2) The Transverse Floor Beams that are made from the 7075-T6511 or 7050-T76511 extrusions that follow:
    - (a) Fuselage Section 41: BAC1518-1208, BAC1518-1210, and BAC1518-1218
    - (b) Fuselage Section 43: BAC1518-1213 and BAC1518-1214
    - (c) Fuselage Section 46: BAC1518-1207
    - (d) Fuselage Section 47: BAC1518-1207, BAC1518-1211 and BAC1518-1212.
  - (3) Refer to Table 201/REPAIR 1 for the thicknesses of the chords of the different Transverse Floor Beams.
- B. Repair 1 is not applicable to damage to the floor beam at STA 1030 on airplanes with a flat aft pressure bulkhead at STA 1042.
- C. Repair 1 is not applicable to damage to the floor beam at a seat track location.

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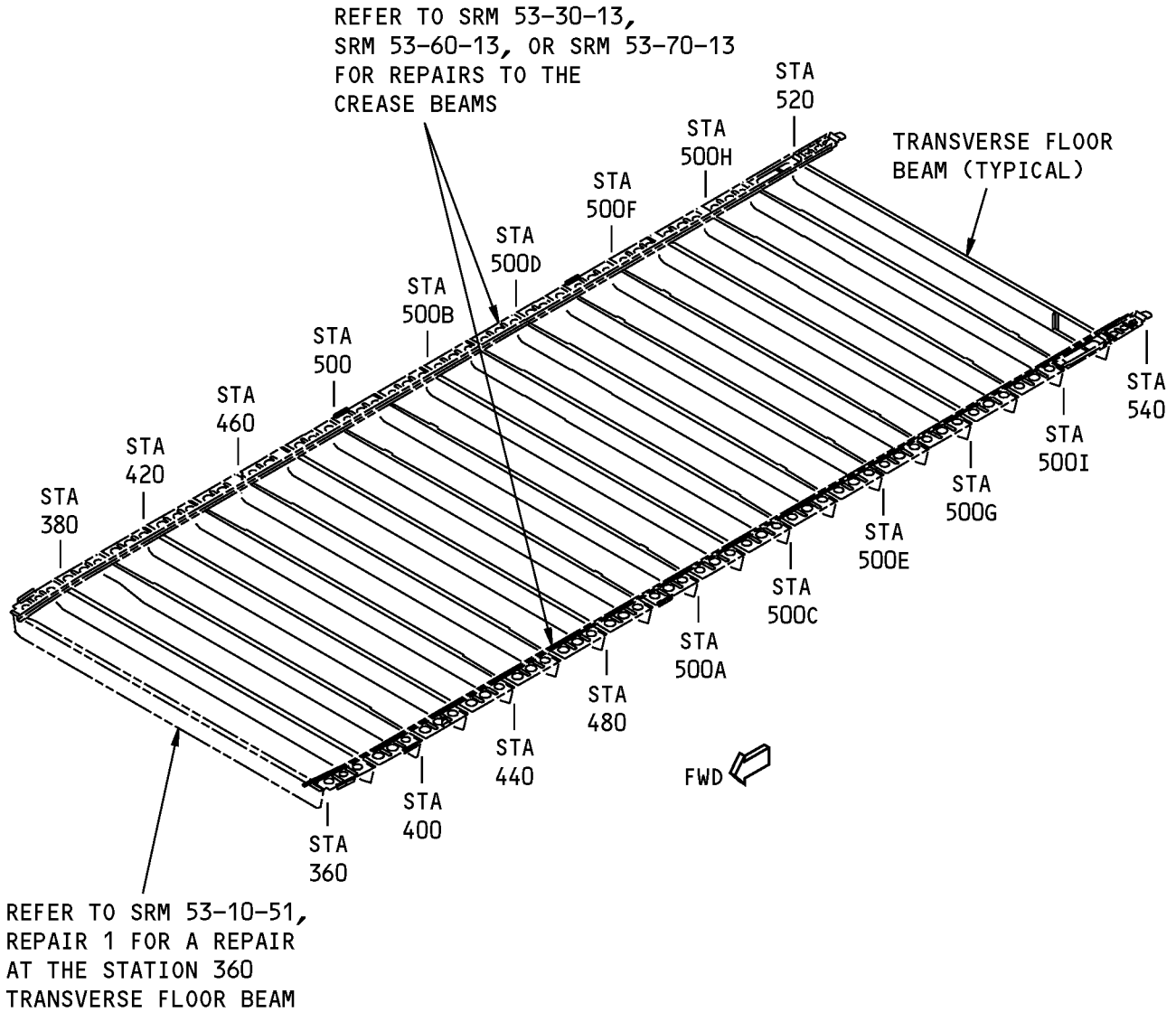
**NOTES**

- 1 STA 1016 FOR AIRPLANES WITH A DOME AFT PRESSURE BULKHEAD.
- 2 STA 1042 FOR AIRPLANES WITH A FLAT AFT PRESSURE BULKHEAD.

**Transverse Floor Beam Location  
Figure 201**



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SECTION 43 TRANSVERSE FLOOR BEAMS ARE SHOWN,  
SECTION 41, 46, AND 47 TRANSVERSE FLOOR BEAMS  
ARE ALMOST THE SAME

**Transverse Floor Beams  
Figure 202**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. This repair gives instructions for a permanent repair of the upper or lower chord of a floor beam made from extruded aluminum. Refer to 51-00-06 for the definitions of the different types of repairs, if necessary.
- B. Refer to the applicable identification subject for the location of the floor beam you want to repair. Refer to 53-10-51, 53-30-51, 53-60-51, or 53-70-51, as necessary.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-10-51	FUSELAGE FLOOR STRUCTURE - SECTION 41
53-10-51, IDENTIFICATION 2	Section 41 Passenger Compartment Floor Structure
53-30-51	FUSELAGE FLOOR STRUCTURE - SECTION 43
53-30-51, IDENTIFICATION 1	Section 43 Transverse Floor Beams
53-60-51	FUSELAGE FLOOR STRUCTURE - SECTION 46
53-60-51, IDENTIFICATION 1	Section 46 Floor Beams
53-70-51	FUSELAGE FLOOR STRUCTURE - SECTION 47
53-70-51, IDENTIFICATION 1	Section 47 Floor Structure
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00	Interior and Exterior Finishes - Cleaning/Painting
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the structure that follows, as necessary:
  - (1) Remove the floor panels and adjacent structure to get access to the damaged floor beam.
  - (2) Remove the clip-on nuts for the floor panel fasteners in the area where the repair angles and strap will be installed.
- B. Cut and remove the damaged parts of the floor beam.
  - (1) Cut the floor beam as shown in Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1.

**NOTE:** If a floor beam is tapered, then keep an edge margin of 1.7D (D = fastener diameter). If this is not possible, then cut the floor beam in a location that does not have a taper.



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## STRUCTURAL REPAIR MANUAL

- (2) The edge of the cut must not be less than 2 inches (50.8 mm) from:
  - (a) The center of a seat track
  - (b) The center of a cargo tie-down fitting.
- C. Make the repair parts. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Tables 201, 202, and 203.

**NOTE:** The repair parts:

  - Can be made from aluminum extrusions to the dimensions given in the production drawing.
  - Should be formed in the annealed condition, then heat treated as shown.
  - (1) Do not permit the repair parts to cause a blockage of the manufactured floor beam holes.
  - (2) If there is a blockage, make cutouts in the repair parts that align with the holes in the floor beam.
- D. Assemble the repair parts.
- E. Drill the fastener holes. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Table 204.
- F. Disassemble the repair parts.
- G. Remove all the nicks, scratches, and sharp edges from the repair parts and cut edges of the floor beam.
- H. Apply a chemical conversion coating to the repair parts and to the cut edges of the floor beam. Refer to 51-20-01.
- I. Apply one of the two finishes that follows:
  - (1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the floor beam. Refer to SOPM 20-41-02.
  - (2) Apply one layer of BMS 10-11, Type I primer and one layer of BMS 10-11, Type II enamel, color 702 white gloss, to the repair parts and the cut edges of the floor beam. Refer to SOPM 20-41-02 and AMM 51-21-00/701.
- J. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the repair as follows (Refer to 51-20-05):
    - (a) Apply BMS 5-95 sealant to the mating surfaces.
    - (b) Install the fasteners wet with BMS 5-95 sealant. Refer to Transverse Floor Beam Upper or Lower Chord - Repair to One Flange, Figure 203/REPAIR 1 and Table 204 for the fasteners you can use.
    - (c) Fill all the spaces with BMS 5-95 sealant.
- K. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
  - (1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.
- L. Install the adjacent structure that was removed.
- M. Install the floor panels.
  - (1) Clean the fastener holes as given in 51-20-01.
  - (2) Apply a chemical conversion coating to the fastener holes as given in 51-20-01.
  - (3) Apply one layer of BMS 10-11, Type I primer to the fastener holes. Refer to AMM 51-21-00.
  - (4) Apply BMS 3-24 grease to the fastener holes.

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- (5) Install the clip-on nuts at each fastener hole.
  - (a) Align the clip-on nuts and the floor panel fastener holes.
- (6) Put the floor panels in position and install the fasteners wet with BMS 3-24 grease. Torque the fasteners to 20-25 lb-in (2.3-2.8 Nm).

**Table 201:**

REPAIR MATERIALS FOR TRANSVERSE FLOOR BEAM EXTRUSIONS			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Angle	1	See Tables 202 and 203 for the material and thickness
[2]	Repair Angle	1	See Tables 202 and 203 for the material and thickness
[3]	Strap	1	See Table 203 for the material and thickness
[4]	Filler	1	Use 7075-T6 plate that is the same thickness as the flange of the initial chord as given in Table 201
[5]	Shim	As necessary at a stiffener	Use 7075-T6 clad sheet that is 0.150 inch thick

**Table 202:**

TRANSVERSE FLOOR BEAM DIMENSIONS			
FLOOR BEAM EXTRUSION	CHORD THICKNESS IN INCHES	PART [1] REPAIR ANGLE - CHORD THICKNESS/MATERIAL	PART [2] REPAIR ANGLE - CHORD THICKNESS/MATERIAL
BAC1518-1207 BAC1518-1210 BAC1518-1213 BAC1518-1214	0.125	0.071 / 7075-T6 PART [1] REPAIR ANGLE CAN BE MADE FROM BAC1490-2811 FORMED ANGLE, 7075-T6	0.080 / 7075-T6 PART [2] REPAIR ANGLE CAN BE MADE FROM BAC1490-2887 FORMED ANGLE, 7075-T6

**Table 203:**

TRANSVERSE FLOOR BEAM DIMENSIONS				
FLOOR BEAM EXTRUSION	CHORD THICKNESS IN INCHES	PART [1] REPAIR ANGLE - CHORD THICKNESS/MATERIAL	PART [2] REPAIR ANGLE - CHORD THICKNESS/MATERIAL	PART [3] STRAP
BAC1518-1208 BAC1518-1211 BAC1518-1212 BAC1518-1218	0.170 0.150 0.180 0.175	0.071 / 7075-T6 PART [1] REPAIR ANGLE CAN BE MADE FROM BAC1490-2811 FORMED ANGLE, 7075-T6	0.080 / 7075-T6 PART [2] REPAIR ANGLE CAN BE MADE FROM BAC1490-2887 FORMED ANGLE, 7075-T6	0.080 7075-T6

**Table 204:**

REPAIR FASTENERS		
INITIAL FASTENER	REPAIR FASTENER TYPE	REPAIR FASTENER (FOR HOLE CLEANUP, USE A MAXIMUM OF 1/32 INCH OVERSIZE)
5/32 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30MY6K() hex drive bolt with a BACC30M collar (Optional: BACB30FM6 hex drive bolt with a BACC30M collar)	BACB30MY6K()Y hex drive bolt with a BACC30M collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)
3/16 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30MY6K()X hex drive bolt with a BACC30M collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)	BACB30MY6K()Y hex drive bolt with a BACC30R collar (Optional: BACB30KK6 hex drive bolt with a BACC30R collar)

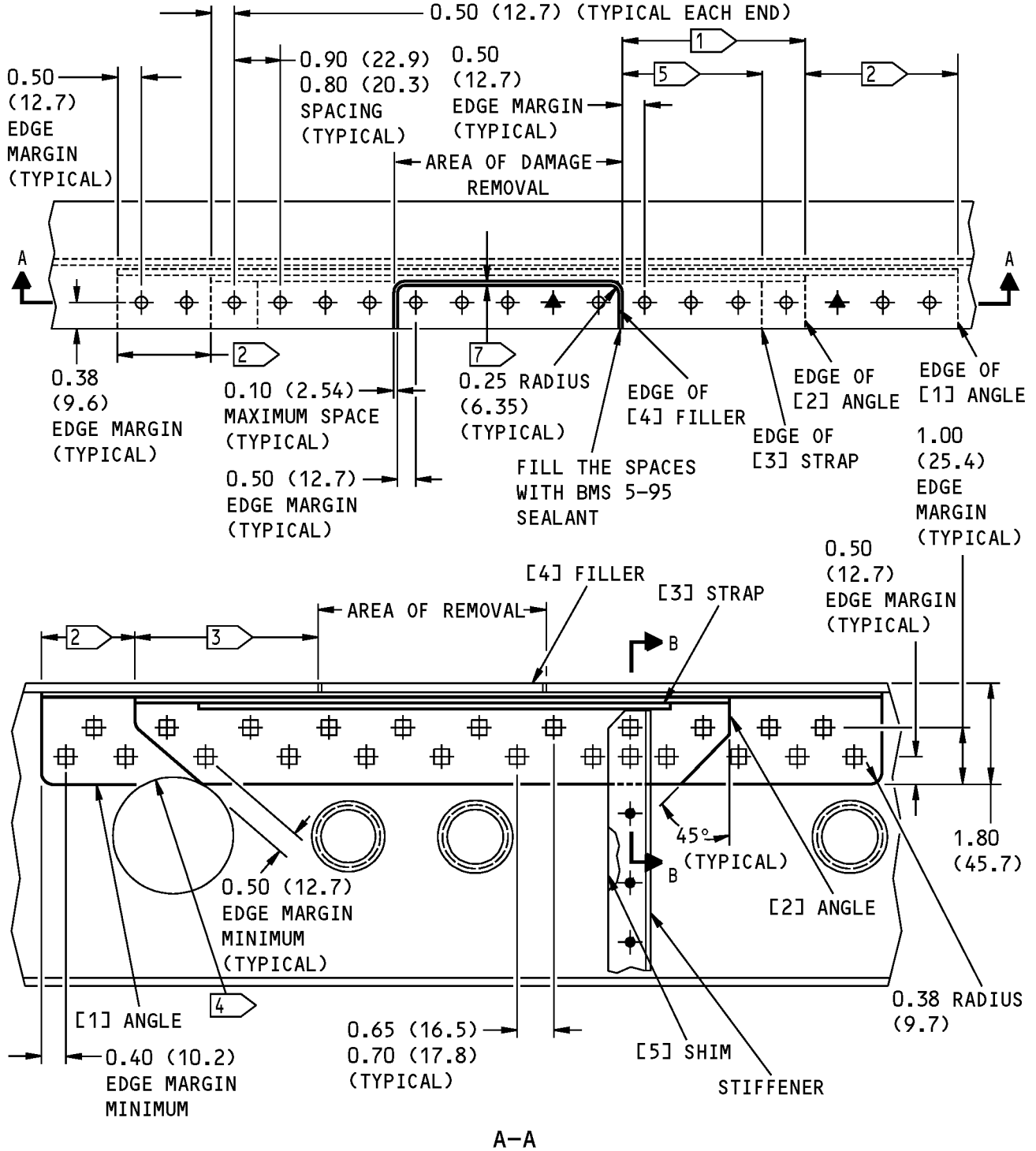


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<b>REPAIR FASTENERS</b>		
<b>INITIAL FASTENER</b>	<b>REPAIR FASTENER TYPE</b>	<b>REPAIR FASTENER (FOR HOLE CLEANUP, USE A MAXIMUM OF 1/32 INCH OVERSIZE)</b>
1/4 INCH DIAMETER PROTRUDING HEAD RIVET	BACB30MY8K()X hex drive bolt with a BACC30M collar (Optional: BACB30FP8 hex drive bolt with a BACC30M collar)	BACB30MY8K()Y hex drive bolt with a BACC30R collar (Optional: BACB30KK8 hex drive bolt with a BACC30R collar)
3/16 INCH DIAMETER HEX DRIVE BOLT OR LOCK BOLT	BACB30MY6K()X hex drive bolt with a BACC30M collar (Optional: BACB30FP6 hex drive bolt with a BACC30M collar)	BACB30MY6K()Y hex drive bolt with a BACC30R collar (Optional: BACB30KK6 hex drive bolt with a BACC30R collar)

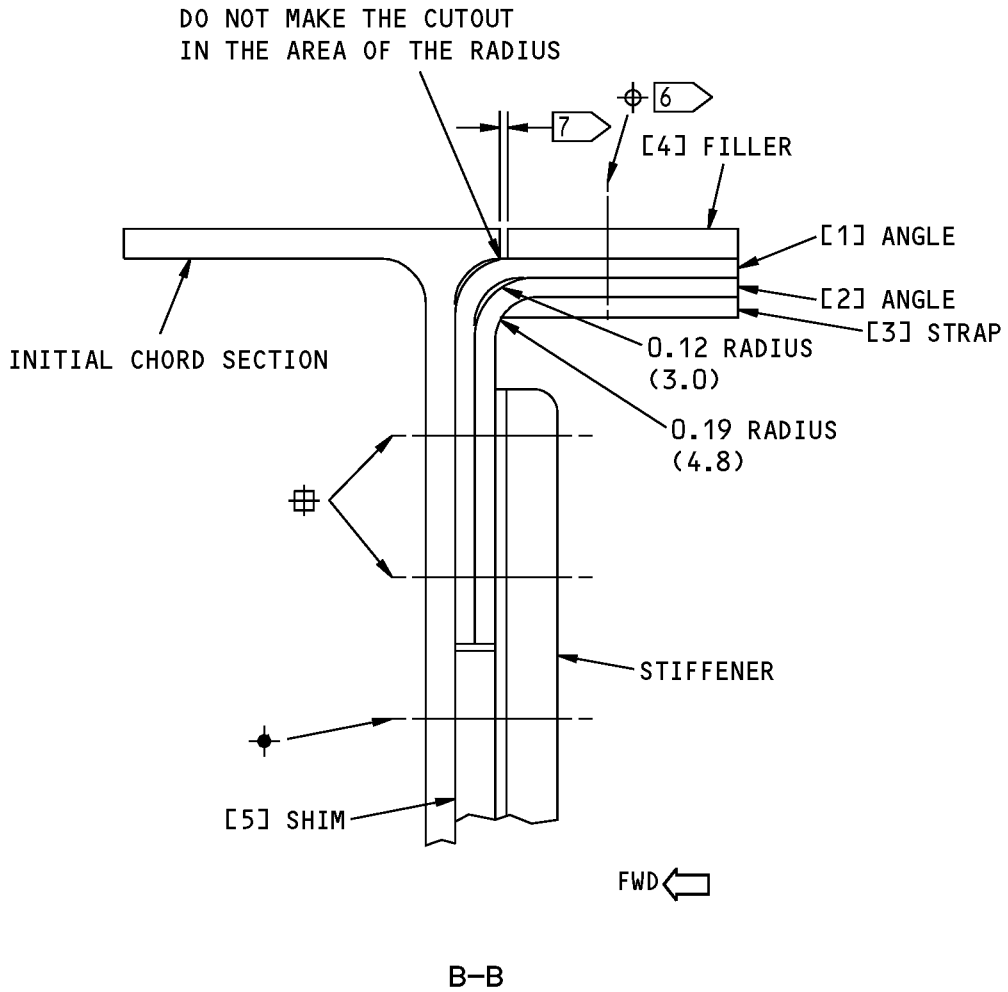
**NOTE:** Use protruding head fasteners only in the floor beam web. Use flush head fasteners [BACB30NW6K()] in the floor beam chord.

**STRUCTURAL REPAIR MANUAL**



**Transverse Floor Beam Upper or Lower Chord - Repair to One Flange**  
**Figure 203 (Sheet 1 of 3)**

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**Transverse Floor Beam Upper or Lower Chord - Repair to One Flange  
Figure 203 (Sheet 2 of 3)**

## STRUCTURAL REPAIR MANUAL

## NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- 1 USE A MINIMUM OF 4 REPAIR FASTENERS THROUGH THE HORIZONTAL FLANGE OF THE PART [2] ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.
- 2 USE A MINIMUM OF 2 REPAIR FASTENERS THROUGH THE HORIZONTAL AND VERTICAL FLANGES AT EACH END OF THE PART [1] SUPPORT ANGLE.
- 3 USE A MINIMUM OF 4 REPAIR FASTENERS THROUGH THE VERTICAL FLANGE OF THE PART [2] ANGLE. THIS DOES NOT INCLUDE FLOOR PANEL OR CARGO LINER FASTENERS.
- 4 DO NOT PERMIT THE REPAIR PARTS TO CAUSE A BLOCKAGE OF THE MANUFACTURED HOLES IN THE FLOOR BEAM WEB. IF THERE IS BLOCKAGE MAKE CUTOUTS IN THE REPAIR PARTS THAT ARE THE SAME SHAPE AS THE HOLES IN THE FLOOR BEAM.
- 5 USE A MINIMUM OF 3 FASTENERS THROUGH THE PART [3] STRAP.
- 6 KEEP A MINIMUM EDGE MARGIN OF 1.7D ON THE EDGES OF THE PARTS [1] AND [2] ANGLES AND THE PART [3] STRAP.
- 7 MAKE SURE THAT THE GAP BETWEEN THE PART [4] FILLER AND THE INITIAL CHORD IS NOT MORE THAN 0.010 INCH (0.12 mm) BEFORE FASTENER INSTALLATION.

## FASTENER SYMBOLS

- ▲ FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10FX() CLIP-ON NUT. INSTALL THE SAME TYPE AND SIZE OF FLOOR PANEL OR CARGO LINER FASTENER AS THE ONE THAT WAS REMOVED.
- ◆ INITIAL FASTENER LOCATION. INSTALL A FASTENER AS GIVEN IN TABLE 203. USE THE DIAMETER NECESSARY TO KEEP TRANSITION FIT HOLES.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() (PREFERRED) OR A BACB30FN6 (ALTERNATIVE) HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊞ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() (PREFERRED) OR A BACB30FM6() (ALTERNATIVE) HEX DRIVE BOLT WITH A BACC30M COLLAR.

Transverse Floor Beam Upper or Lower Chord - Repair to One Flange  
Figure 203 (Sheet 3 of 3)





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## STRUCTURAL REPAIR MANUAL

### ALLOWABLE DAMAGE 1 - SEAT TRACKS

#### 1. Applicability

- A. This subject gives the allowable damage limits for the passenger compartment seat tracks shown in Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1.
- B. This subject gives the allowable damage limits for the cargo/ passenger compartment seat tracks shown in Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1.

#### 2. General

**WARNING:** SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

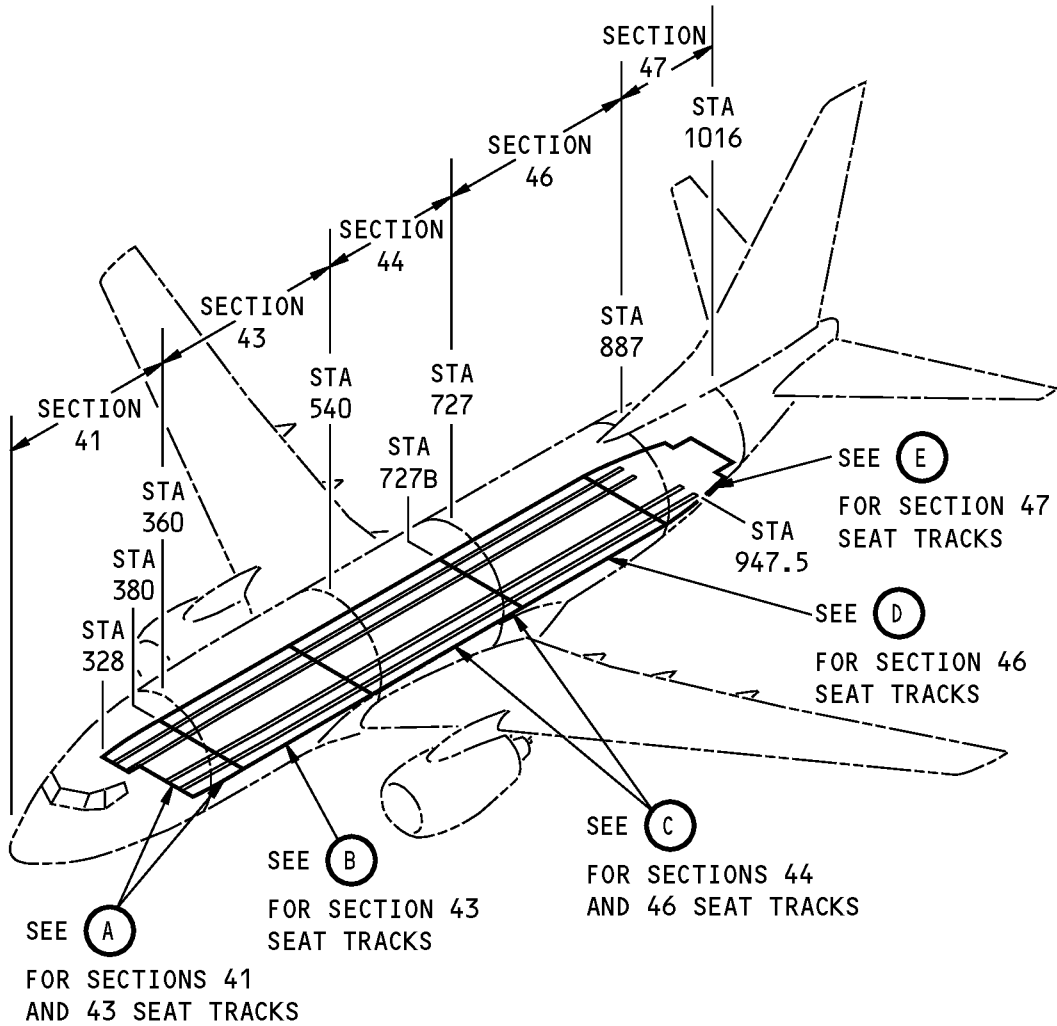
- A. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasive and other materials to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools to remove damage.
  - (4) Refer to SOPM 20-10-07 when you machine titanium seat tracks.
- B. After you have removed the damage from a seat track made of aluminum, do the steps that follow:
  - (1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

**NOTE:** The chemical conversion coating can put a stain on the floor covers that are adjacent to the seat tracks. Put a cover on the floor covers or remove the floor covers if necessary.

- (2) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) to the reworked areas. Refer to SOPM 20-41-04.
- C. After you have removed the damage from a seat track made of titanium, do the step that follows:
  - (1) Apply one layer of BMS 10-11, Type I primer to the reworked areas as shown in Areas of Finish Applications for Titanium Seat Tracks, Figure 102/ALLOWABLE DAMAGE 1. Refer to SOPM 20-40-02

**NOTE:** The primer can put a stain on the floor covers that are adjacent to the seat tracks. Put a cover on the floor covers or remove the floor covers if necessary.

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STRUCTURAL REPAIR MANUAL**

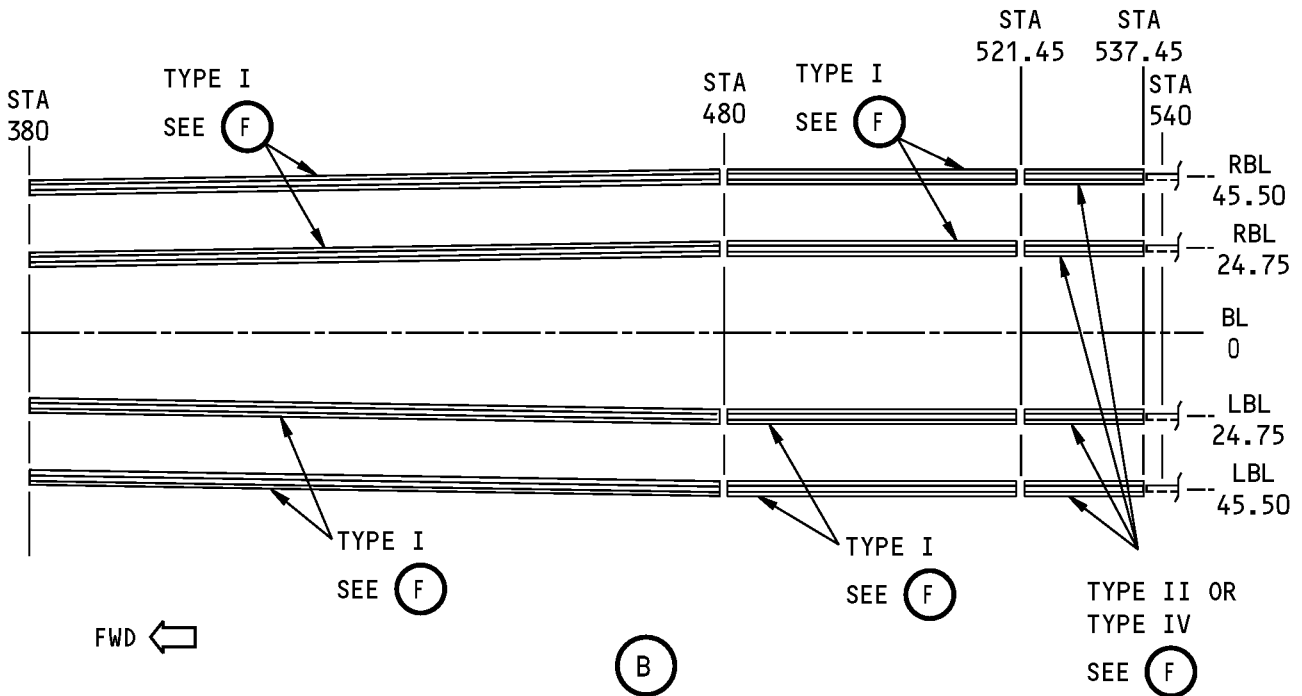
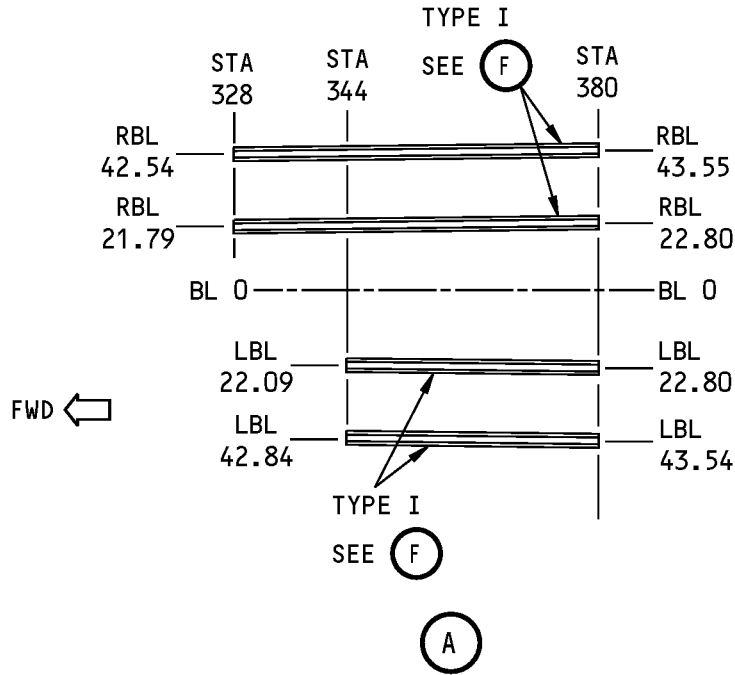


**NOTES**

- THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWINGS 140A0345 (SECTION 41), 140A0346 (SECTION 43), 140A0402 (SECTION 44), 140A0350 (SECTION 46), AND 140A0355 (SECTION 47) TO SEE THE DIFFERENT CONFIGURATIONS.

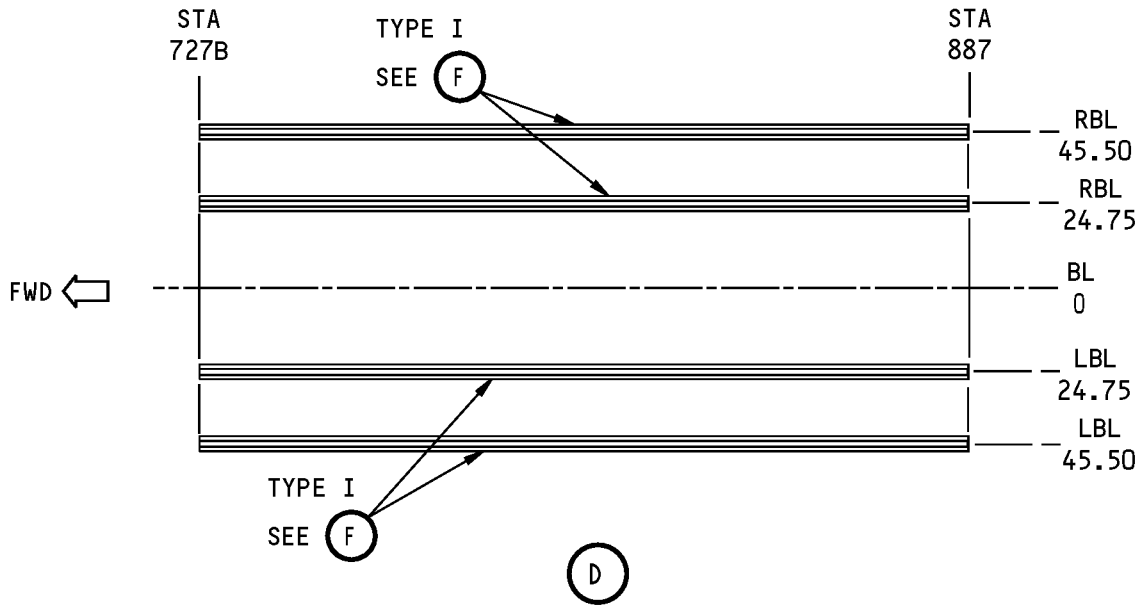
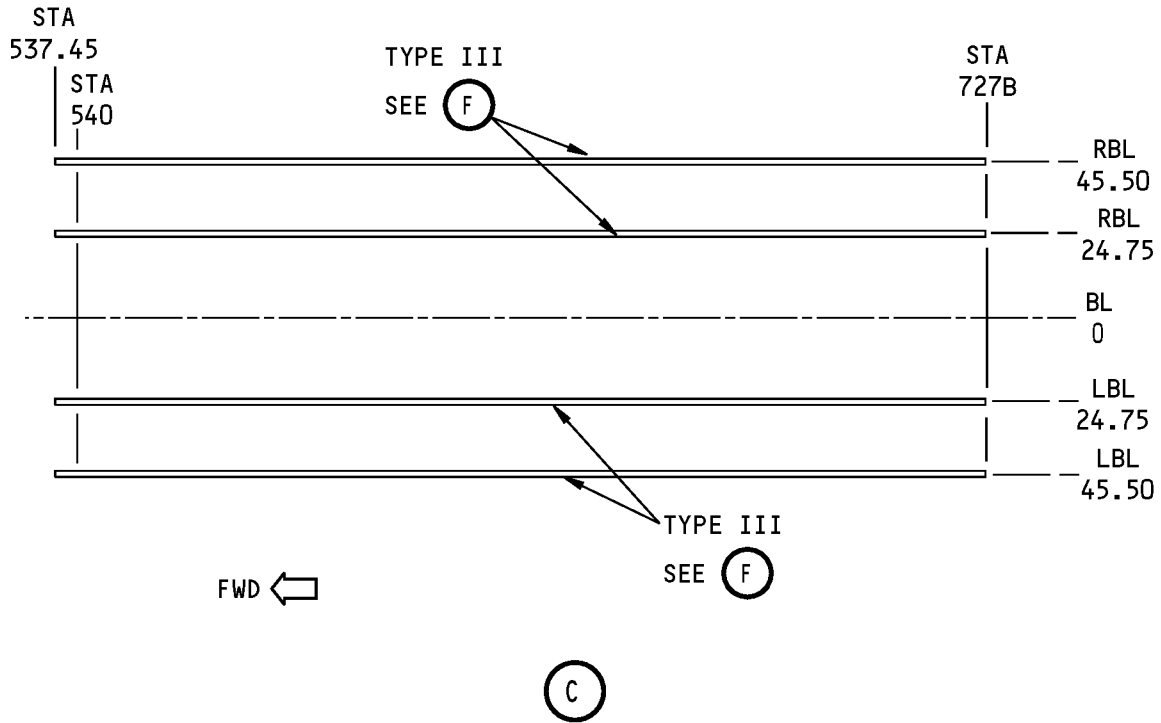
**Seat Track Locations  
Figure 101 (Sheet 1 of 6)**

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STRUCTURAL REPAIR MANUAL**



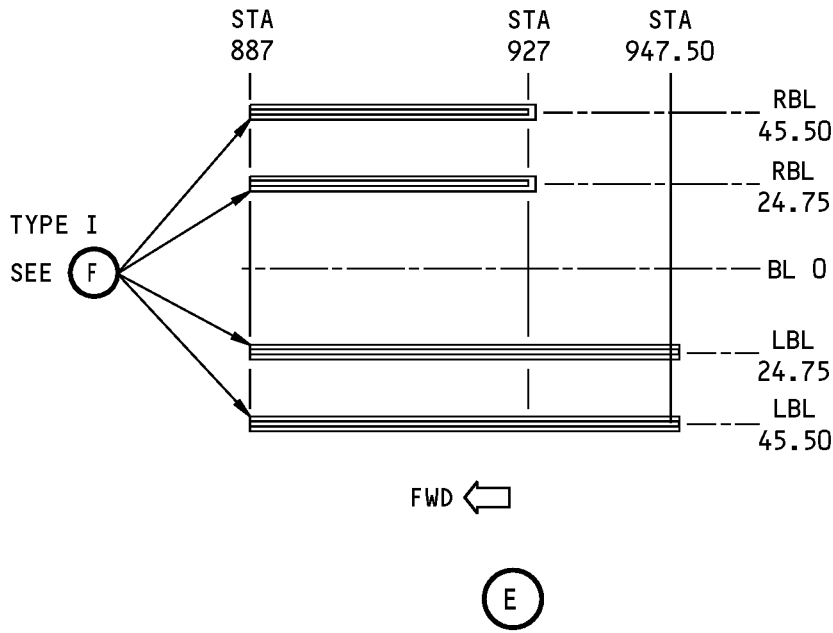
**Seat Track Locations  
Figure 101 (Sheet 2 of 6)**

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STRUCTURAL REPAIR MANUAL**



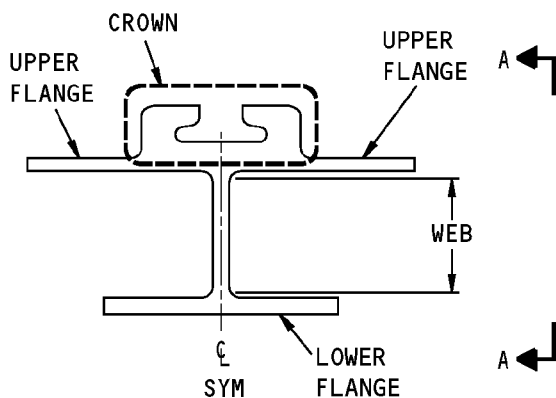
**Seat Track Locations  
Figure 101 (Sheet 3 of 6)**

**737-800  
STRUCTURAL REPAIR MANUAL**

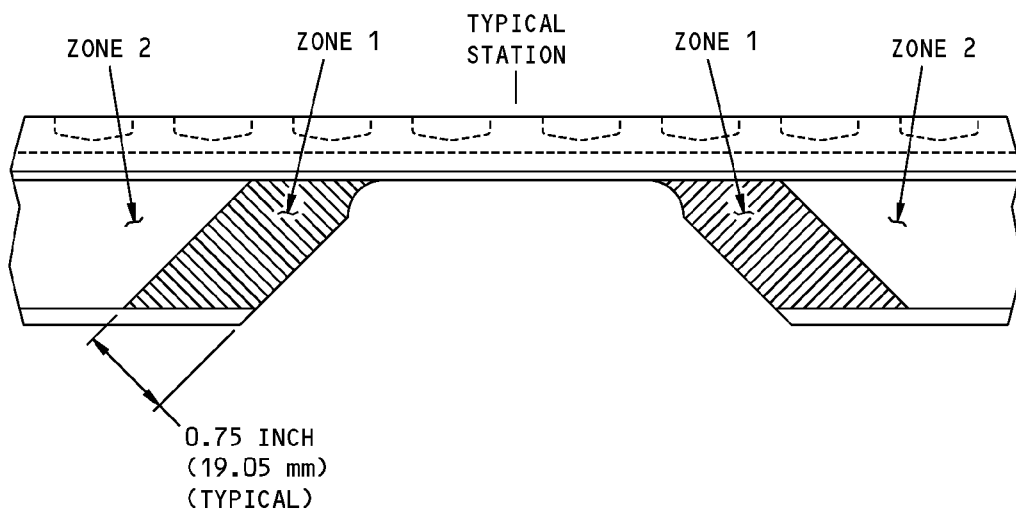


**Seat Track Locations  
Figure 101 (Sheet 4 of 6)**

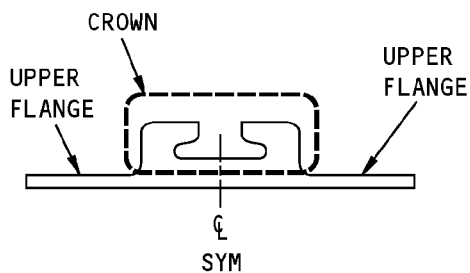
**STRUCTURAL REPAIR MANUAL**



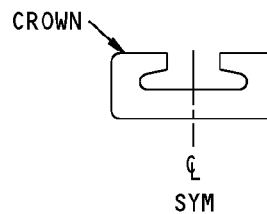
**TYPE I**



**A-A**



**TYPE II**



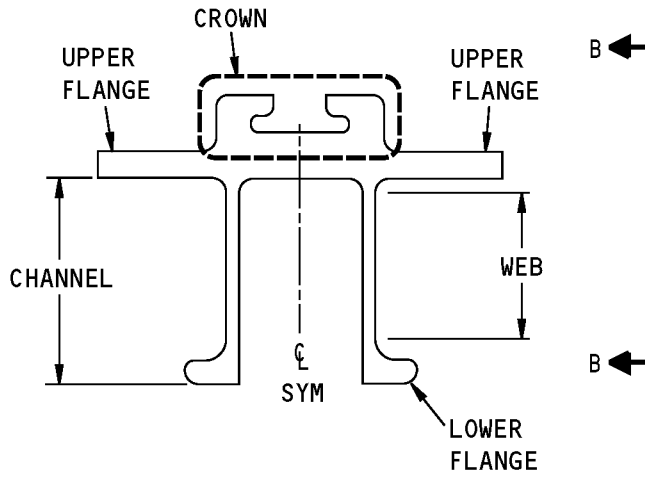
**TYPE III**

**SEAT TRACK CONFIGURATIONS**

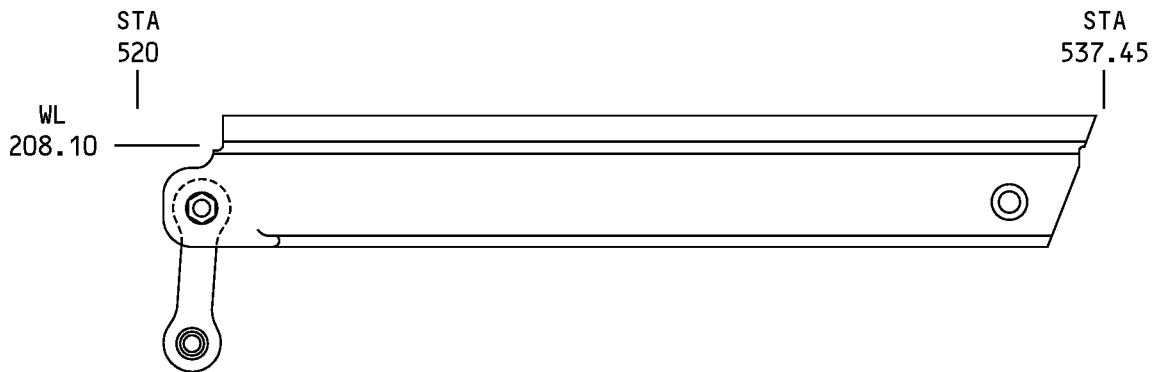


**Seat Track Locations  
Figure 101 (Sheet 5 of 6)**

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STRUCTURAL REPAIR MANUAL**



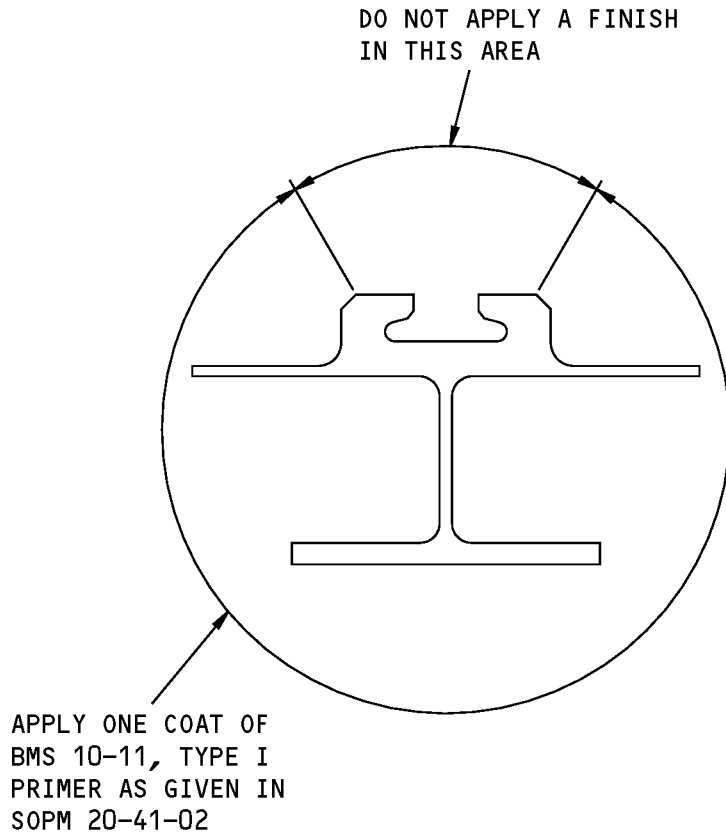
**TYPE IV**



**PIVOT LINK ASSEMBLY  
B-B**

**Seat Track Locations  
Figure 101 (Sheet 6 of 6)**

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STRUCTURAL REPAIR MANUAL**



**Areas of Finish Applications for Titanium Seat Tracks  
Figure 102**





## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-04, GENERAL	Dangerous Materials
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05	FASTENER HOLE SIZES
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
SOPM 20-10-07	Machining of Titanium
SOPM 20-31-04	Application of Interior Decorative Finishes
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes

### 4. Allowable Damage Limits for the Passenger and Cargo Compartment Seat Tracks

#### A. Crown

- (1) Cracks are not permitted.
- (2) Nick, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , and D .
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.

#### B. Web

- (1) Zone 1 - Refer to Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1, Detail F .
  - (a) Damage is not permitted.
- (2) Zone 2 - Refer to Seat Track Locations, Figure 101/ALLOWABLE DAMAGE 1, Detail F .
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) You are permitted to do one of the procedures that follow:
      - a) Remove the damage as given in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details E and F .
      - b) Drill out the damage as given in Holes and Punctures for the web.
  - (c) Dents:
    - 1) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Detail G .
  - (d) Holes and Punctures are permitted as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Detail F if they are:



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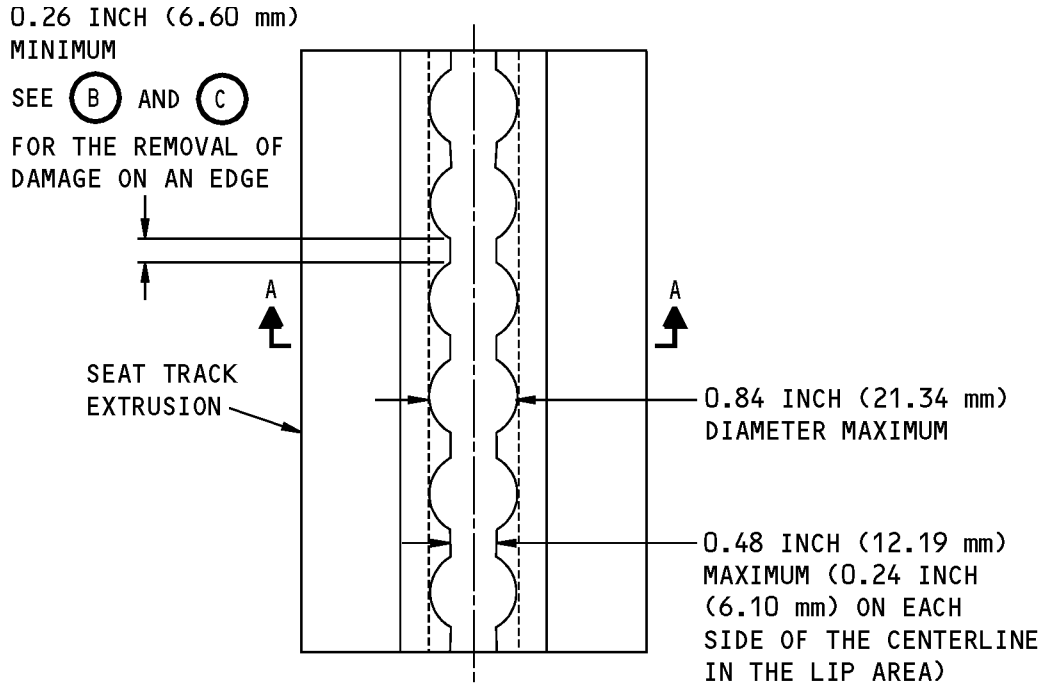
## STRUCTURAL REPAIR MANUAL

- 1) A minimum of 1.0 inch (25.4 mm) away from the edge of a fastener hole, material edge, or other damage
- 2) A minimum of 0.20 inch (5.08 mm) away from a radius
- 3) Not more than 0.25 inch (6.35 mm) in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
  - a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
  - b) Drill the hole to the applicable size as given in 51-40-05.

### C. Flange

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion
  - (a) You are permitted to do one of the procedures that follow:
    - 1) Remove the damage as shown in Seat Track Allowable Damage Details, Figure 103/ALLOWABLE DAMAGE 1, Details E , H , I , J , K , and L .
    - 2) Drill out the damage as given in Holes and Punctures for the flange.
- (3) Dents are not permitted.
- (4) Holes and Punctures are permitted if they are:
  - (a) A minimum of 1.0 inch (25.4 mm) away from the edge of a fastener hole, material edge, or other damage
  - (b) A minimum of 0.20 inch (5.08 mm) away from a radius
  - (c) Not more than 0.25 inch (6.35 mm) in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
    - 1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
    - 2) Drill the hole to the applicable size as given in 51-40-05.

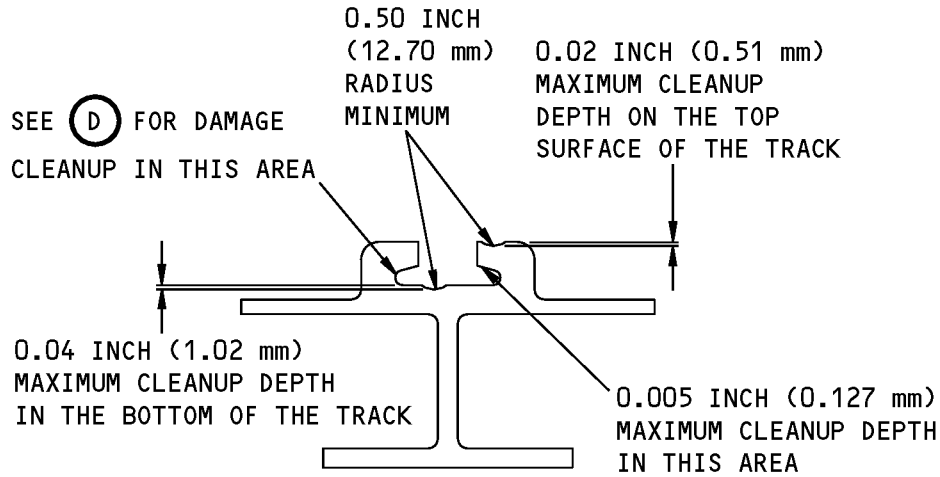
**STRUCTURAL REPAIR MANUAL**



**NOTE:** DAMAGE REMOVAL IS SHOWN FOR A TYPE I SEAT TRACK. DAMAGE REMOVAL FROM THE CROWN OF TYPE II AND TYPE III SEAT TRACKS IS THE SAME.

**DAMAGE CLEANUP**

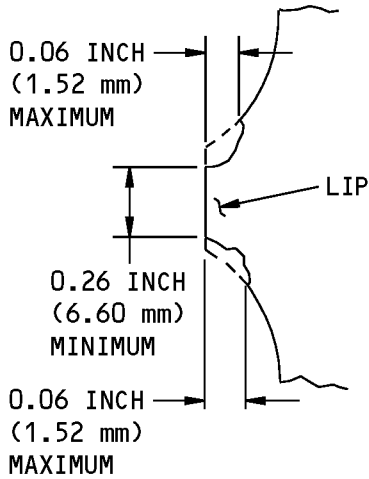
(A)



A-A

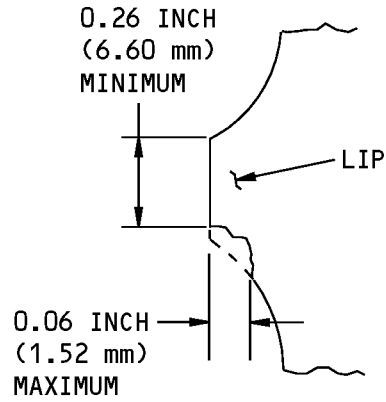
**Seat Track Allowable Damage Details  
Figure 103 (Sheet 1 of 7)**

**STRUCTURAL REPAIR MANUAL**



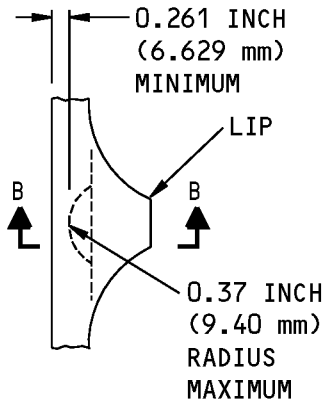
REMOVAL OF DAMAGE  
ON AN EDGE

(B)

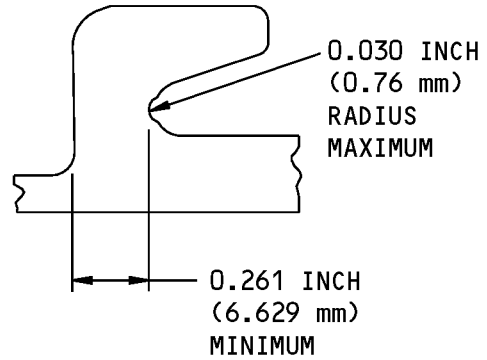


REMOVAL OF DAMAGE  
ON AN EDGE

(C)



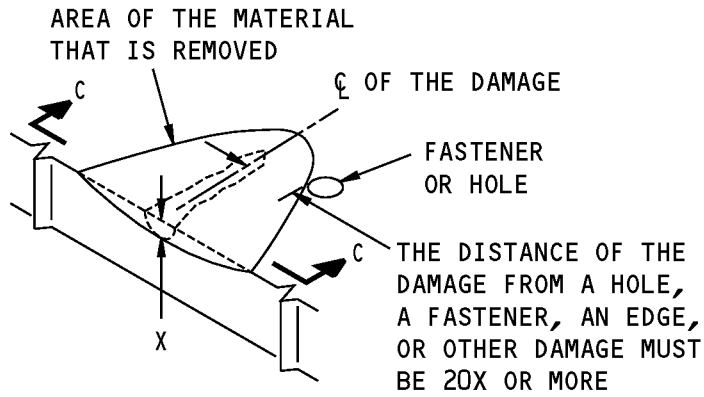
(D)



B-B

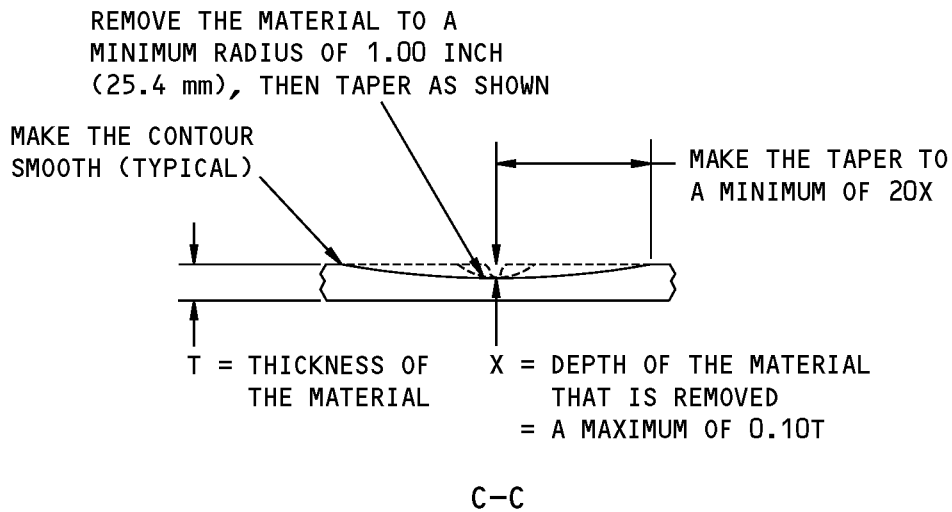
**Seat Track Allowable Damage Details**  
**Figure 103 (Sheet 2 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



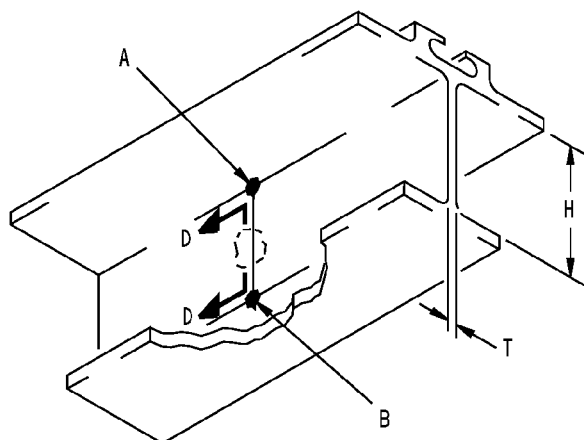
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

E



**Seat Track Allowable Damage Details  
Figure 103 (Sheet 3 of 7)**

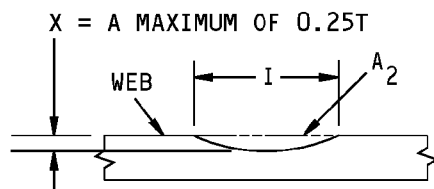
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** THE CROSS-SECTIONAL AREA OF THE DAMAGE WHICH HAS BEEN REMOVED ALONG ANY LINE A-B MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL NET WEB CROSS-SECTIONAL AREA.

**CROSS-SECTIONAL AREA REMOVAL IN  
A WEB OF A TYPE I SEAT TRACK**

(F)



- $X = \text{A MAXIMUM OF } 0.25T$
- $A_1 = \text{INITIAL NET WEB CROSS-SECTIONAL AREA}$   
 $= \text{THE TOTAL CROSS-SECTIONAL AREA MINUS THE INITIAL HOLE}$   
 $\text{CROSS-SECTIONAL AREA MADE BY BOEING, IF APPLICABLE}$   
 $= TH$
- $A_2 = \text{CROSS-SECTIONAL AREA OF THE DAMAGE WHICH HAS BEEN REMOVED}$   
 $= \text{THE DEPTH OF THE DAMAGE REMOVED MULTIPLIED BY THE DIMENSION}$   
 $\text{ACROSS THE DAMAGE REMOVED}$   
 $= XI$

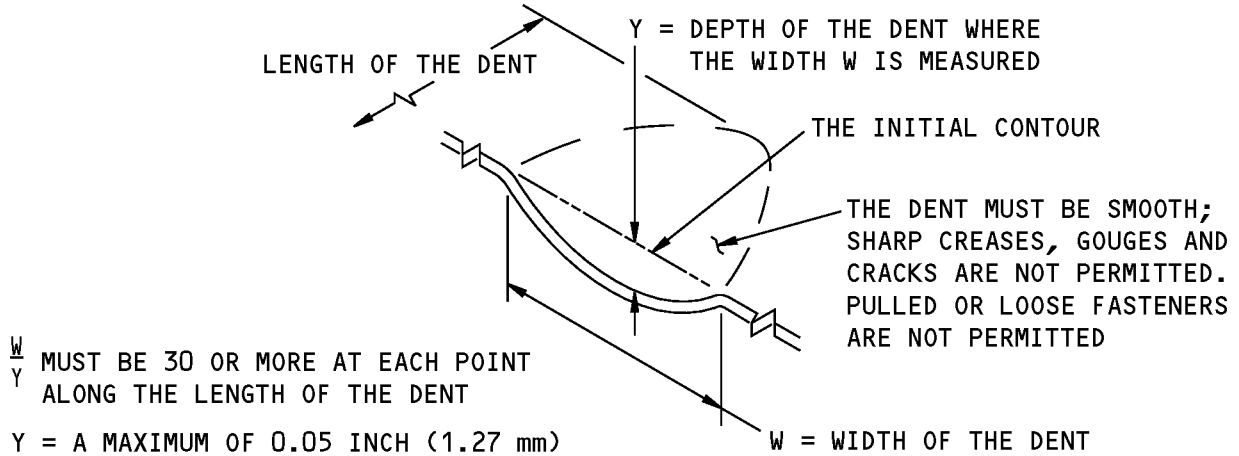
$$\left(\frac{A_2}{A_1}\right) \leq 10\% \text{ MAXIMUM}$$

**SURFACE DAMAGE IS SHOWN,  
HOLES AND PUNCTURES ARE ALMOST THE SAME**

**D-D  
(VIEW IS ROTATED 90° CLOCKWISE)**

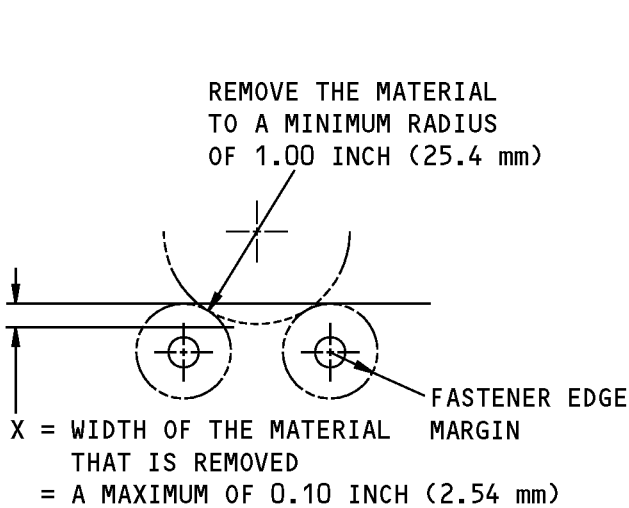
**Seat Track Allowable Damage Details  
Figure 103 (Sheet 4 of 7)**

**STRUCTURAL REPAIR MANUAL**



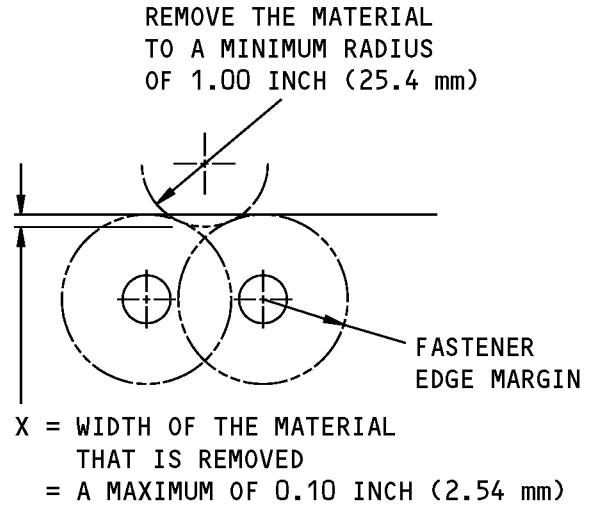
**DENT THAT IS PERMITTED**

**G**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**H**

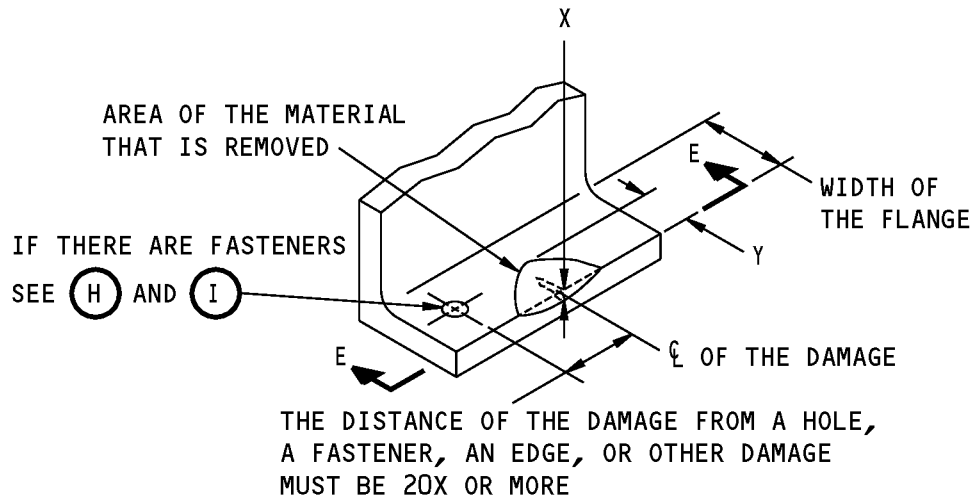


**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**I**

**Seat Track Allowable Damage Details  
Figure 103 (Sheet 5 of 7)**

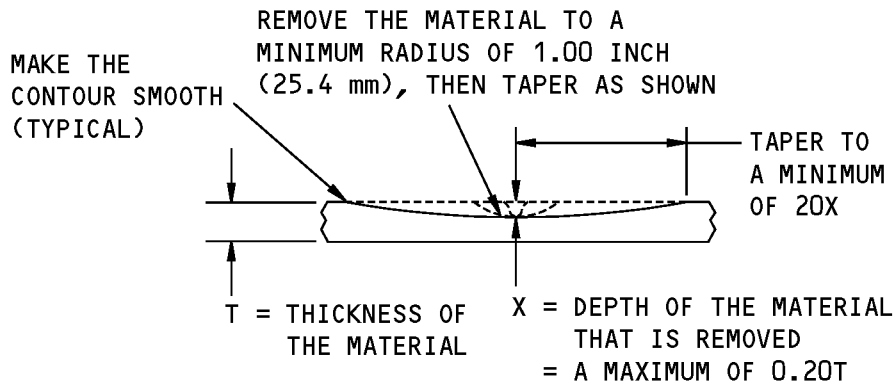
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 20 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(J)

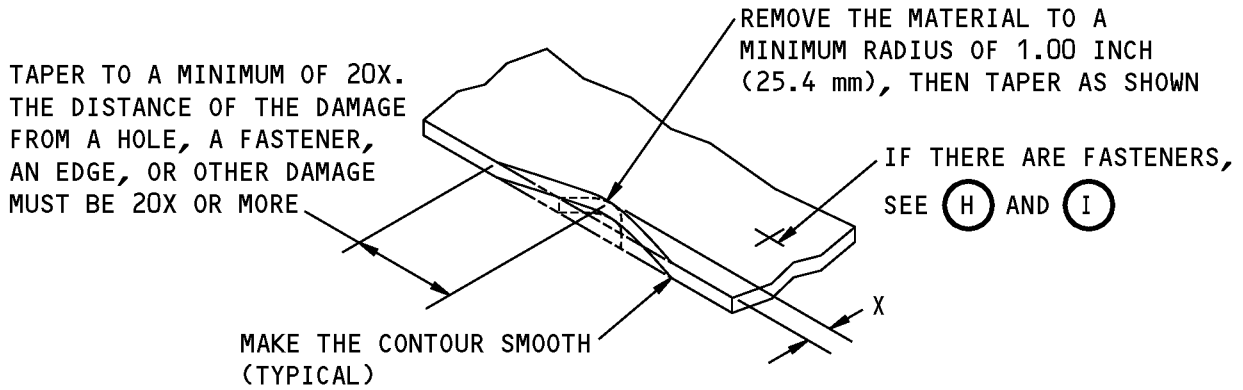


E-E

**Seat Track Allowable Damage Details  
Figure 103 (Sheet 6 of 7)**



**STRUCTURAL REPAIR MANUAL**

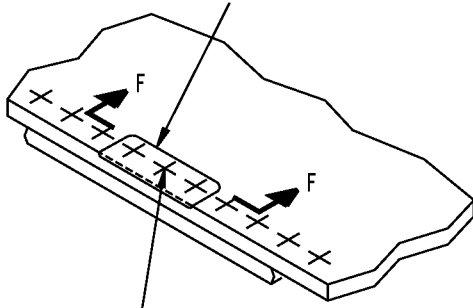


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(K)

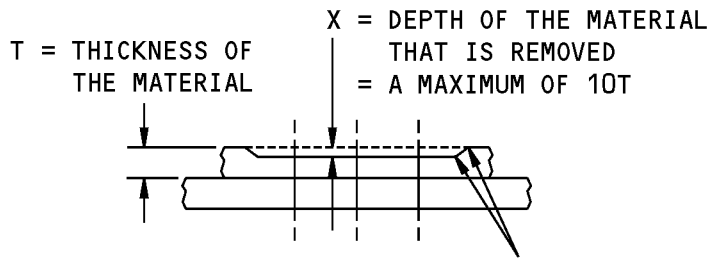
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(L)



**Seat Track Allowable Damage Details  
Figure 103 (Sheet 7 of 7)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SEAT TRACKS**

**1. Applicability**

A. Repair General gives common repair data for seat tracks.

**2. General**

A. Refer to Seat Track Repair Index, Figure 201/REPAIR GENERAL and Table 201 for an index of the different numbered repairs found in this subject.

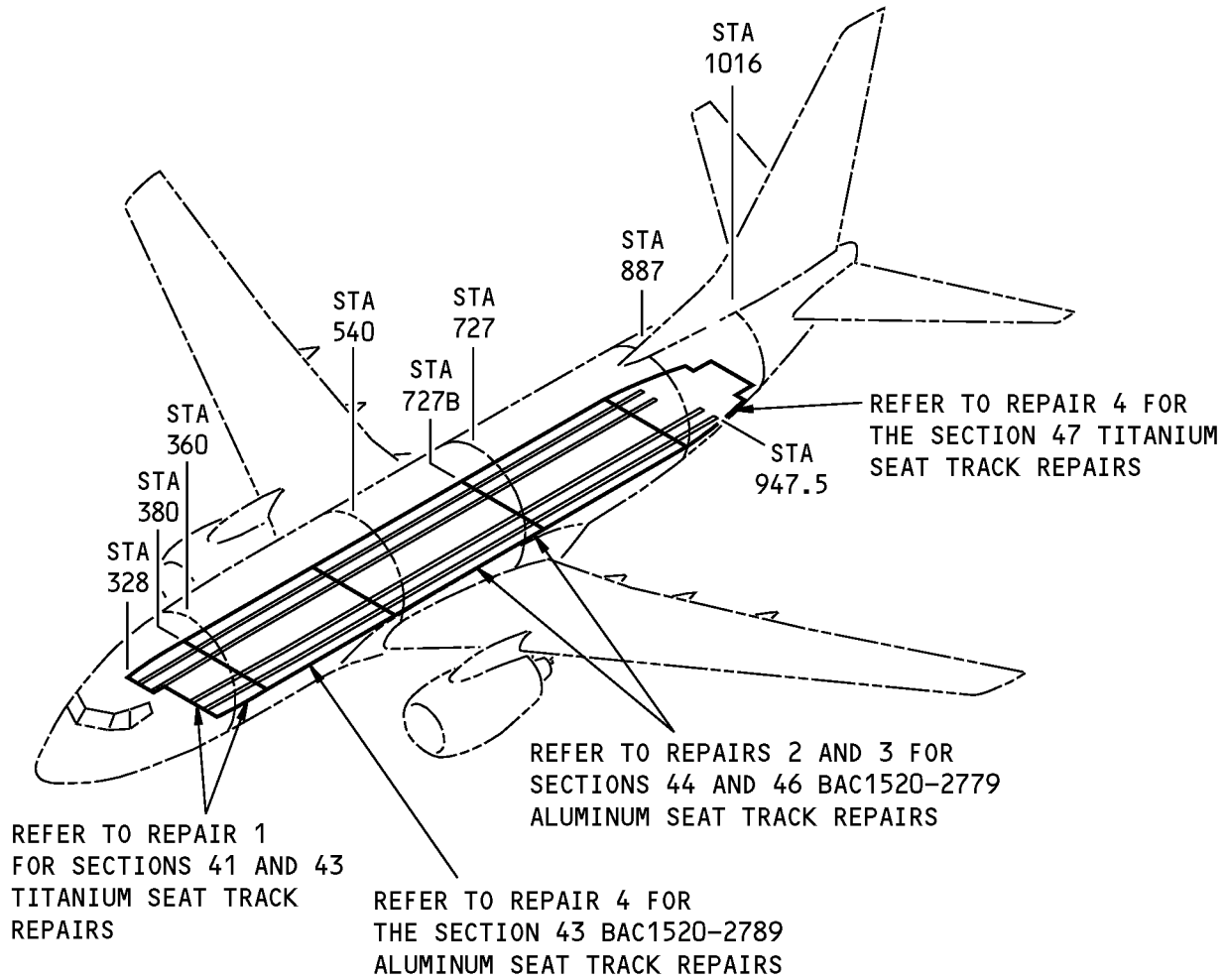
**Table 201:**

<b>REPAIR INDEX</b>	
<b>REPAIR NUMBER</b>	<b>TITLE</b>
1	Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams
2	Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1
3	Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2
4	Sections 43 and 47 Seat Track Repair for Titanium or BAC1520-2789 Aluminum Extrusion Between Floor Beams

B. Call the Boeing Spares Department if:

- (1) The extrusion that is needed for the seat track repair is not available.
- (2) You want a piece of repair extrusion cut from a seat track that has the same part number (stud holes are pre-drilled) as the seat track that was damaged.

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO REPAIR GENERAL, PARAGRAPH 3.A. FOR THE HOLE PATTERN FOR THE SEAT TRACK REPAIR SECTIONS.

**Seat Track Repair Index  
Figure 201**



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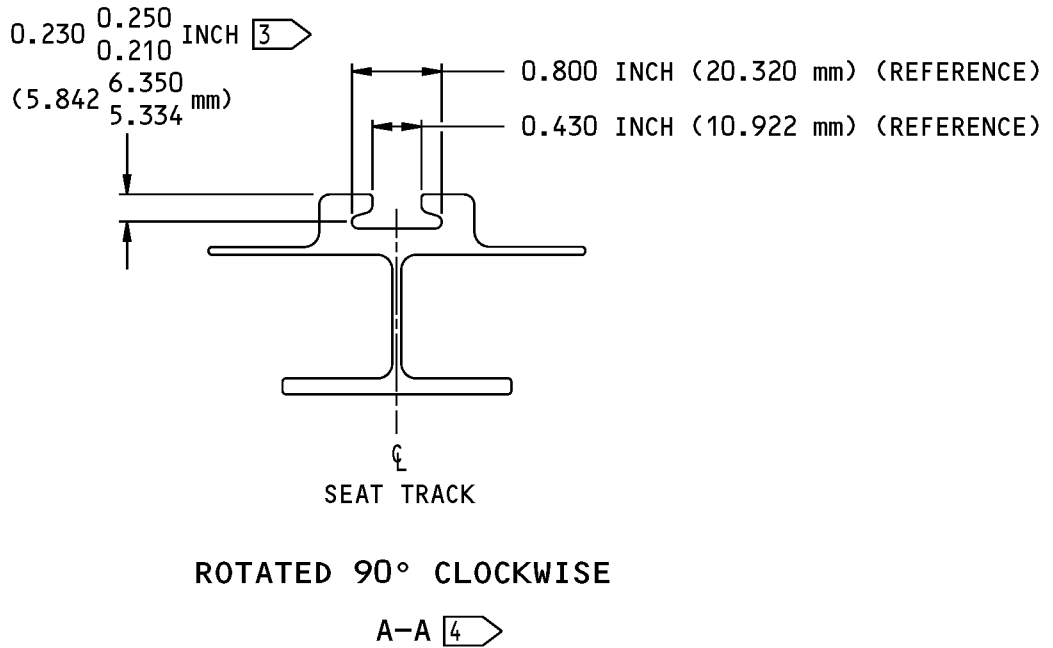
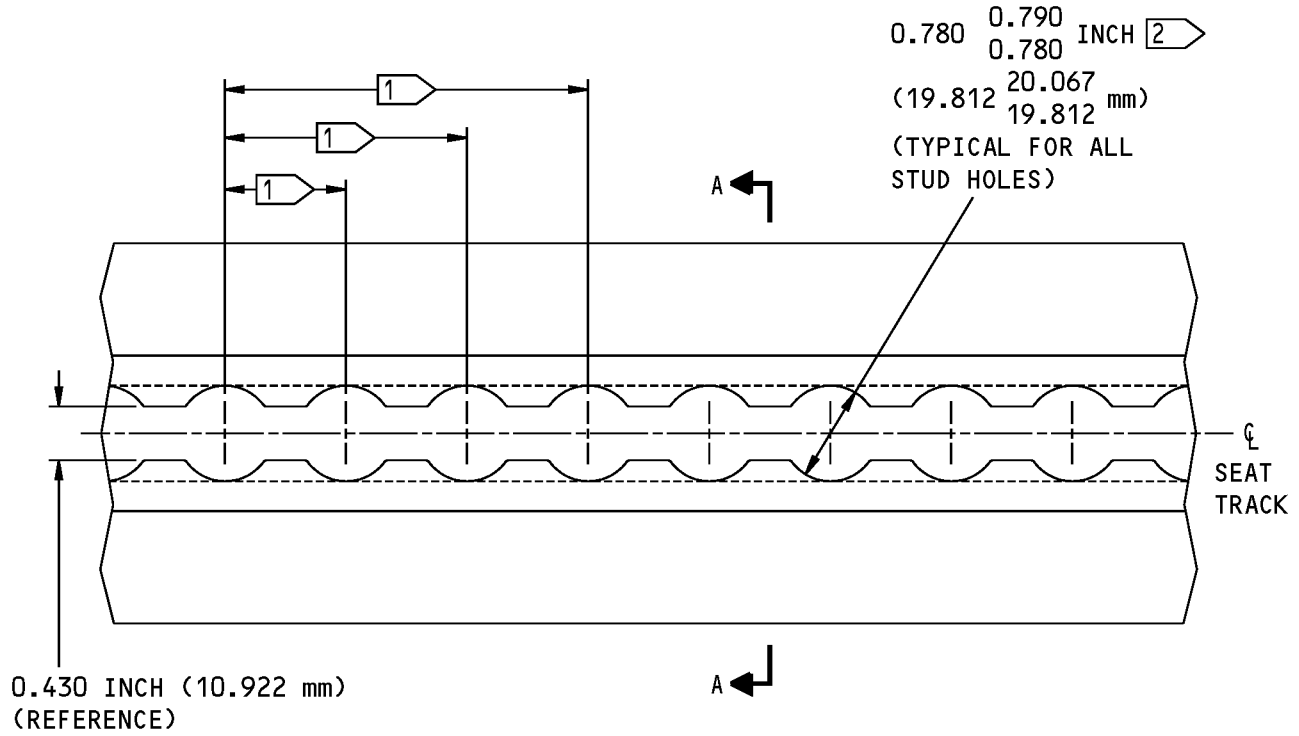
## STRUCTURAL REPAIR MANUAL

### 3. Repair Procedures That Are Common to the Different Repairs

#### A. Hole Pattern for Seat Track Repair Sections

- (1) Refer to Hole Pattern for Seat Track Repair Sections, Figure 202/REPAIR GENERAL for the hole pattern that is necessary for the seat track repair sections that are not pre-drilled.

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STRUCTURAL REPAIR MANUAL**



**Hole Pattern for Seat Track Repair Sections  
Figure 202 (Sheet 1 of 2)**

## STRUCTURAL REPAIR MANUAL

## NOTES

- MACHINE THE CUT SURFACES TO A FINISH OF 125 MICROINCHES  $R_a$ .
- 1 THE DISTANCE BETWEEN THE STUD HOLES AT 70°F  $\pm$ 10°F (21°C  $\pm$ 4.4°C) MUST EQUAL 1.00 INCH (25.40 mm) TIMES THE NUMBER OF HOLES PLUS OR MINUS:
- 0.005 INCH (0.127 mm) FOR TWO STUD HOLES THAT ARE 20 INCHES (508 mm) OR LESS FROM EACH OTHER (CENTERLINE TO CENTERLINE).
  - 0.015 INCH (0.381 mm) FOR TWO STUD HOLES THAT ARE BETWEEN 20 INCHES (508 mm) AND 100 INCHES (2540 mm) FROM EACH OTHER (CENTERLINE TO CENTERLINE).
  - 0.015 INCH (0.381 mm), PLUS 0.00015 INCH (0.00381 mm) FOR EACH INCH (25.4 mm) THAT IS NOT MORE THAN 100 INCHES (2540 mm), FOR TWO STUD HOLES THAT ARE NOT MORE THAN 100 INCHES (2540 mm) FROM EACH OTHER (CENTERLINE TO CENTERLINE).
- 2 THE 0.780 INCH (19.812 mm) DIAMETER HOLE MUST BE LOCATED TO THE CENTERLINE OF THE 0.430 INCH (10.922 mm) REFERENCE DIMENSION WITHIN  $\pm$ 0.005 INCH ( $\pm$ 0.127 mm).
- 3 DEPTH DIMENSION FOR THE 0.780 INCH (19.81 mm) DIAMETER HOLE.
- 4 THE CROSS-SECTION OF THE BAC1520-2789 ALUMINUM SEAT TRACK IS SHOWN. THE DIMENSIONING FOR SEAT TRACK HOLES ALSO APPLIES TO THE TITANIUM AND BAC1520-2779 ALUMINUM SEAT TRACKS.

Hole Pattern for Seat Track Repair Sections  
Figure 202 (Sheet 2 of 2)

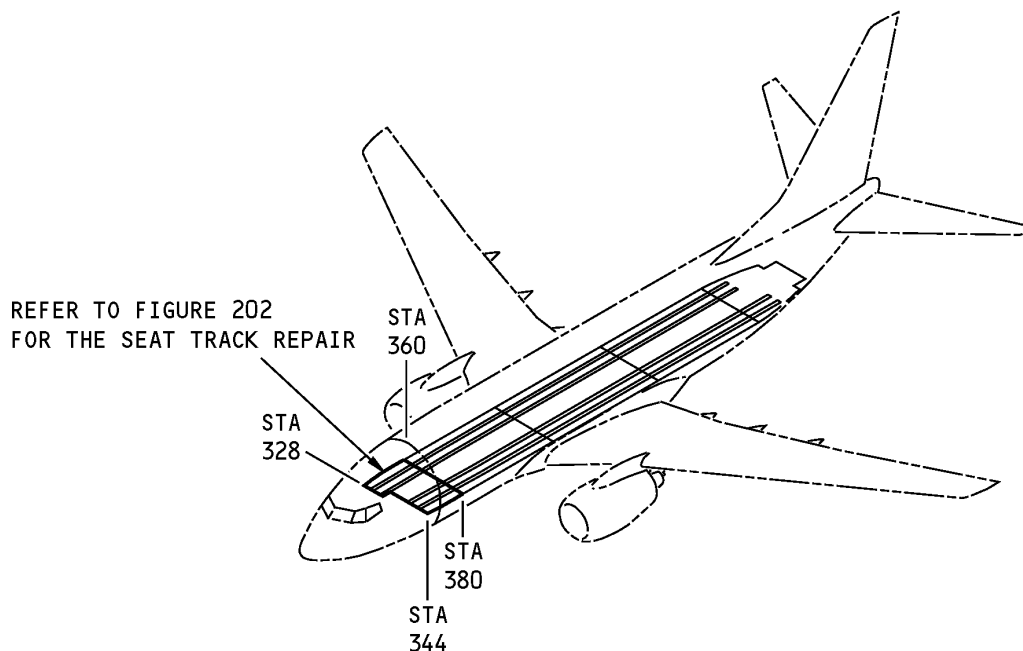
**STRUCTURAL REPAIR MANUAL****REPAIR 1 - TITANIUM SEAT TRACK BETWEEN FLOOR BEAMS - SECTIONS 41 AND 43****1. Applicability**

A. Repair 1 is applicable to:

- (1) Titanium seat tracks in Sections 41 and 43 from STA 328 to STA 380 as shown in Section 41 Seat Track Location, Figure 201/REPAIR 1.
- (2) Seat tracks where the upper horizontal flanges of the initial seat track section are a constant width.
- (3) Seat tracks where the constant width section of the lower horizontal flange is not less than 4.40 inches (111.76 mm).
  - (a) For constant width sections of the lower horizontal flange that are less than 4.40 inches (111.76 mm), use Repair 4.

B. You can use Repair 1 to make a splice to the seat track between floor beams.

- (1) You are permitted to use Repair 1 to replace part of a seat track. Use one of the procedures that follows:
  - (a) Do Repair 1 at each cut end of the initial seat track.
  - (b) Do Repair 1 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.



**Section 41 Seat Track Location  
Figure 201**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

**WARNING:** SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

- A. Repair 1 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-30-04, GENERAL	Dangerous Materials
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.
- B. Cut and remove the damaged part of the seat track. Refer to 51-10-02 as necessary for the inspection and cleanup of damage.
- (1) Make the cut at half the distance between floor beam centerlines as shown in Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1, Detail A.
- (a) Make the cut a minimum of 0.55 inch (13.97 mm) away from the initial fastener attach hole for the floor panel.
- C. Make the repair parts. Refer to Table 201/REPAIR 1.
- (1) The part [1] seat track is available from the Boeing Spares Department or it can be made from titanium plate or extruded bar to dimensions as given in the production drawing.
- (a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.



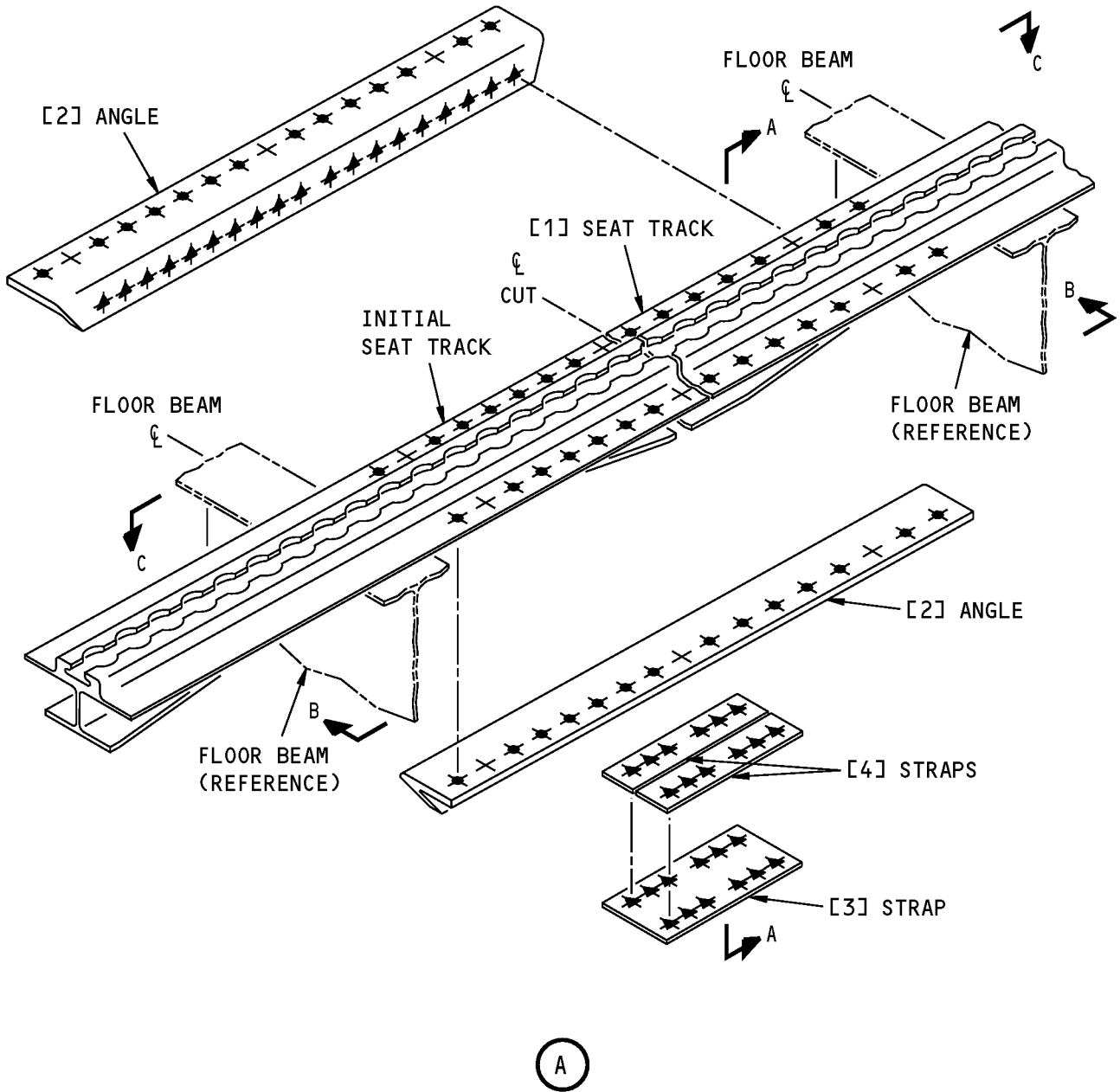
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use Ti-6Al-4V plate or extruded bar
[2]	Angle	2	Use Ti-6Al-4V plate or extruded bar
[3]	Strap	1	Use Ti-6Al-4V plate or extruded bar that is 0.080 inch (2.032 mm) thick
[4]	Strap	2	Use Ti-6Al-4V plate or extruded bar that is 0.080 inch (2.032 mm) thick

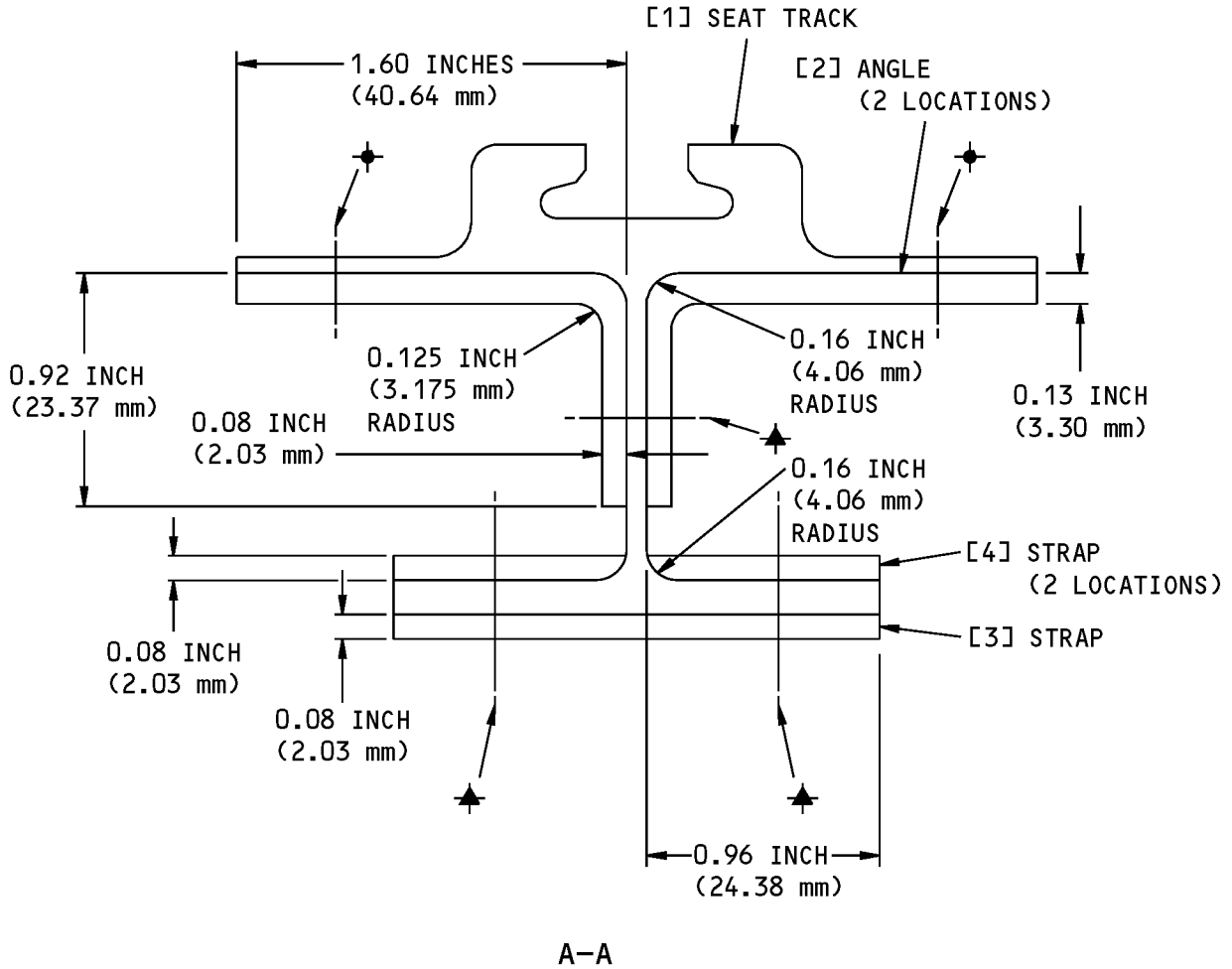
- D. Assemble the repair parts.
- E. Drill the fastener holes. Refer to Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1.
- F. Disassemble the repair parts.
- G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track. Refer to 51-10-02.
- H. Apply a finish.
  - (1) Apply one layer of BMS 10-11, Type I primer as given in SOPM 20-41-02 to the areas that follow:
    - (a) The areas as shown in Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams, Figure 202/REPAIR 1, Detail B for the part [1] seat track
    - (b) The part [2] angle, the part [3] strap, and the part [4] straps
    - (c) The cut edges of the initial seat track
    - (d) The fastener attach holes in the initial seat track where floor panels were removed.
- I. Install the repair parts.
  - (1) Install a countersink repair washer in the fastener hole if the initial seat track is attached to the floor beam through the crown.
    - (a) Install the countersink repair washer wet with BMS 5-95 sealant.
  - (2) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (3) Install the fasteners wet with BMS 5-95 sealant.
  - (4) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95 sealant.
- J. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
- K. Install the floor panels. Refer to AMM 53-21-00/401.

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STRUCTURAL REPAIR MANUAL**



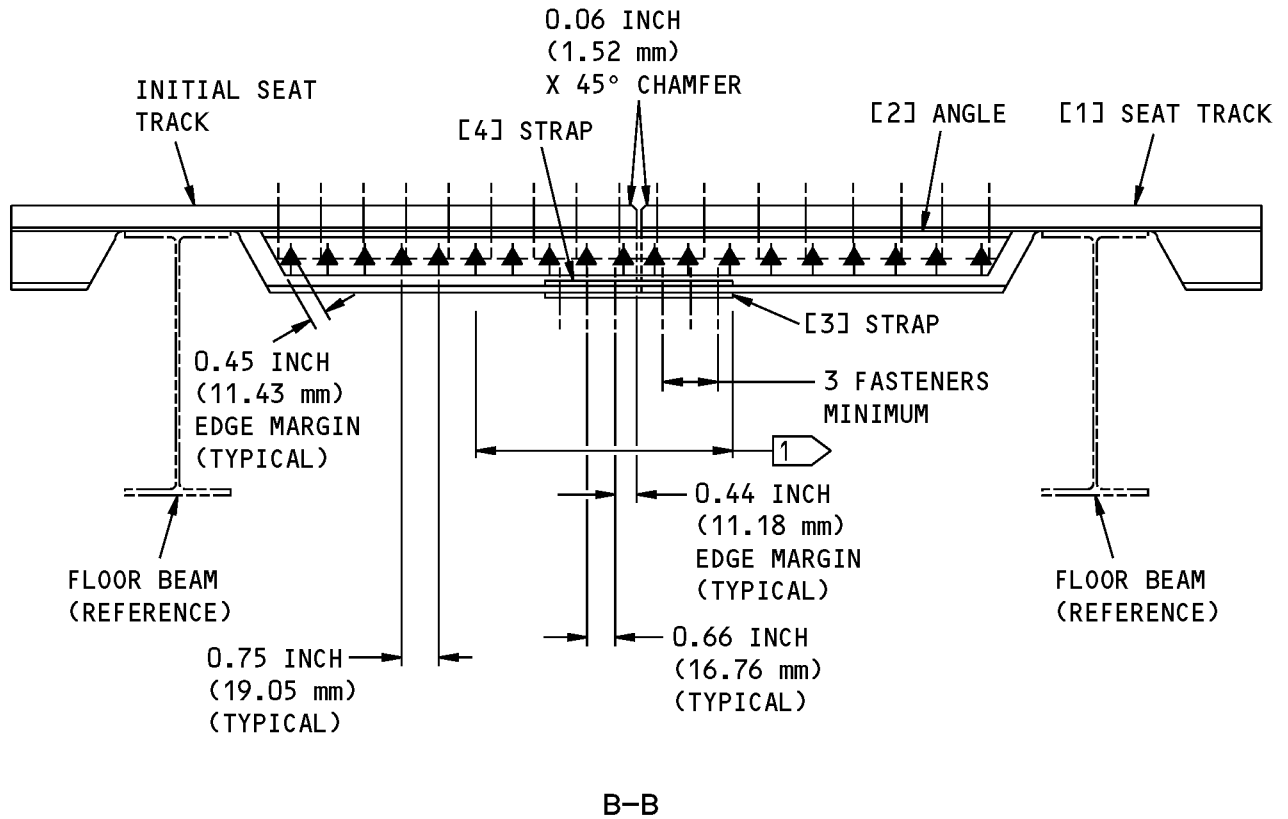
**Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams  
Figure 202 (Sheet 1 of 5)**

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STRUCTURAL REPAIR MANUAL**



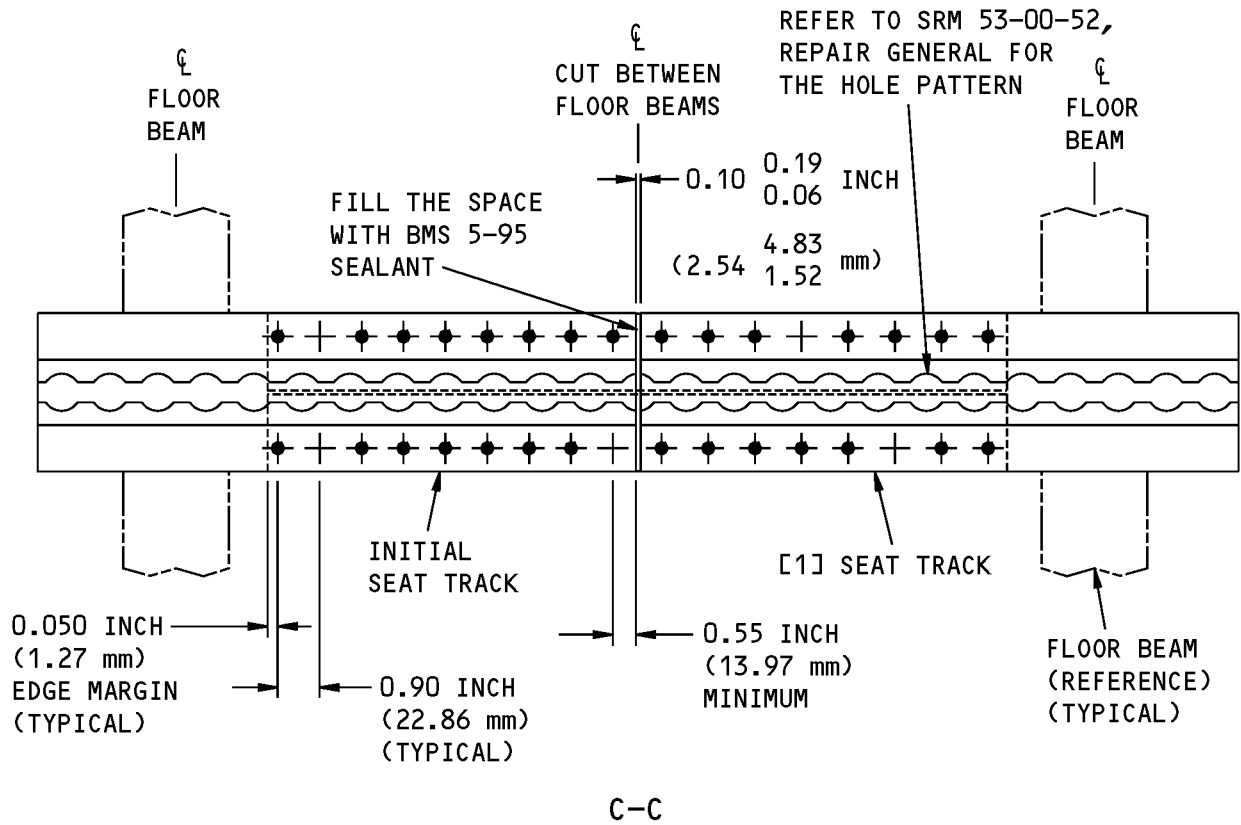
**Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams  
Figure 202 (Sheet 2 of 5)**

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STRUCTURAL REPAIR MANUAL**



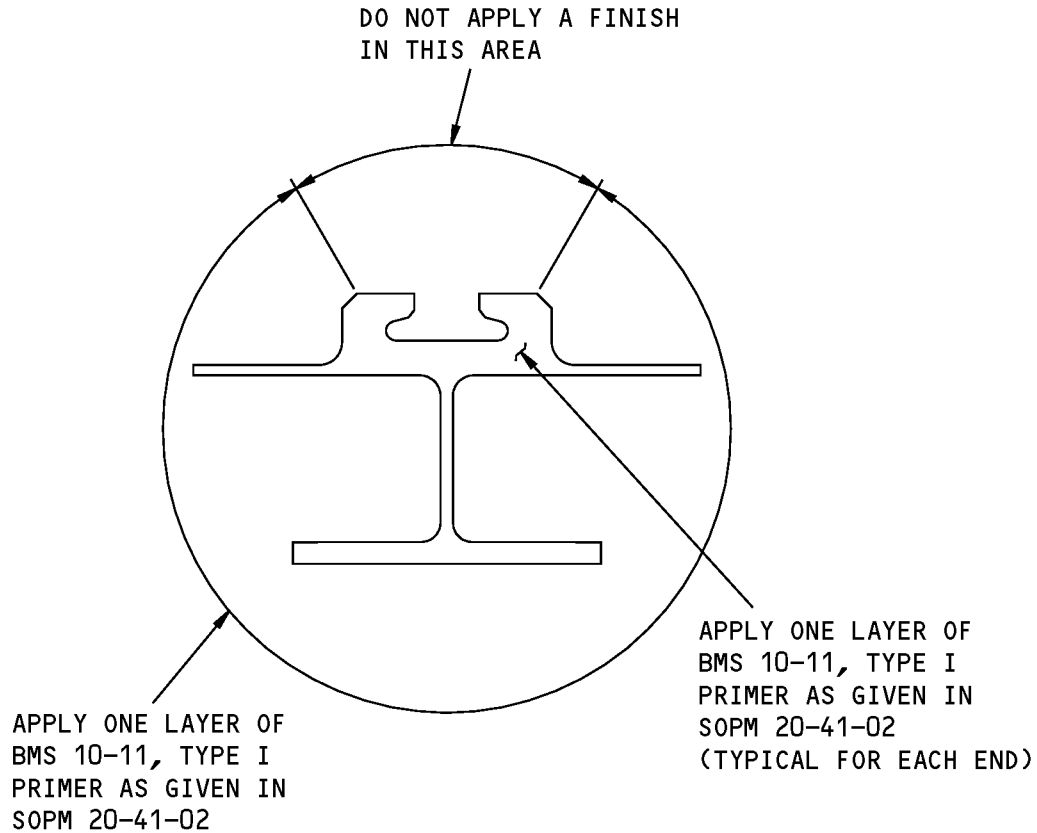
**Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams  
Figure 202 (Sheet 3 of 5)**

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STRUCTURAL REPAIR MANUAL**



**Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams  
Figure 202 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



**AREAS OF FINISH APPLICATIONS FOR TITANIUM SEAT TRACKS**

B

**NOTES**

- ALL DIMENSIONS ARE IN INCHES.

1 IF THE LENGTH OF THE CONSTANT WIDTH SECTION OF THE LOWER HORIZONTAL FLANGE IS LESS THAN 4.40 INCHES (111.76 mm), USE REPAIR 4. IF NOT, MAKE THE LENGTH OF THE [3] AND [4] STRAPS THE SAME LENGTH AS THE CONSTANT WIDTH SECTION.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. USE THE SAME TYPE AND SIZE FASTENER AS THE INITIAL FASTENER.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACB30NW8K HEX DRIVE BOLT WITH A BACC30M8 COLLAR.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K HEX DRIVE BOLT WITH A BACC30M6 COLLAR.

**Sections 41 and 43 Titanium Seat Track Repair Between Floor Beams  
Figure 202 (Sheet 5 of 5)**



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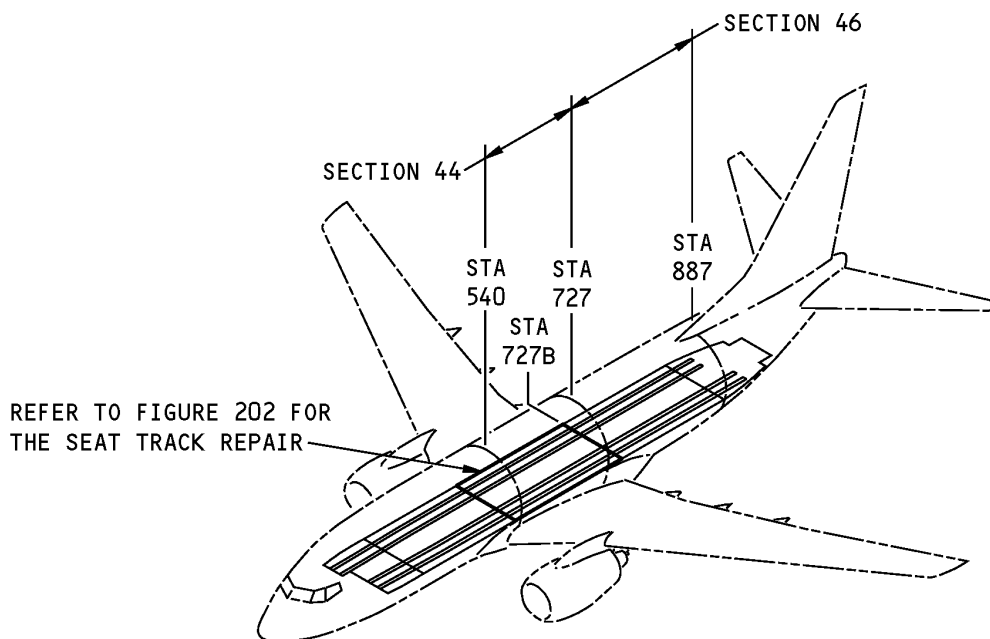
## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - SECTION 44 AND 46 SEAT TRACK REPAIR FOR BAC1520-2779 ALUMINUM EXTRUSION - PROCEDURE 1

#### 1. Applicability

- A. Repair 2 is applicable to seat tracks in Sections 44 and 46 from STA 540 to STA 727B as shown in Seat Track Location, Figure 201/REPAIR 2.
- B. You can use Repair 2 to make a splice to the seat track.
  - (1) You are permitted to use Repair 2 to replace part of a seat track. Use one of the procedures that follows:
    - (a) Do a repair at each cut end of the initial seat track. Use one of the two procedures that follows:
      - 1) Do Repair 2 at each cut end.
      - 2) Do Repair 2 at one cut end and Repair 3 at the other cut end.
    - (b) Do Repair 2 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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STRUCTURAL REPAIR MANUAL**



**Seat Track Location  
Figure 201**

**2. General**

- A. You are not permitted to attach a seat in the seat track hole at the repair cut line where the splice is made.
- B. The repair that follows is an alternative to Repair 2:
  - (1) Repair 3 is a seat track repair that makes the cutout in the floor beam larger to permit you to install a repair fastener.
- C. Repair 2 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE





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**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00	SEALS AND SEALING
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

**4. Repair Instructions**

- A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.
- B. Cut and remove the damaged part of the seat track.
  - (1) Cut the seat track between the attach bolts as shown in Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Details A and B
- C. Make the repair parts. Refer to Table 201/REPAIR 2.
  - (1) The part [1] seat track is available from the Boeing Spares Department or it can be made from aluminum extrusion to dimensions as given in the production drawing.
    - (a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.
  - (2) If there are two stud holes between seat track attach bolts, make parts [2] and [3]. Refer to Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Detail A .
  - (3) If there are three stud holes between seat track attach bolts, make parts [4] and [5]. Refer to Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1, Figure 202/REPAIR 2, Detail B .

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use BAC1520-2779 7178-T6511 aluminum extrusion
[2]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[3]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[4]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick
[5]	Plate	1	Use 2024-T3 or T4 aluminum that is 0.14 inch (3.56 mm) thick

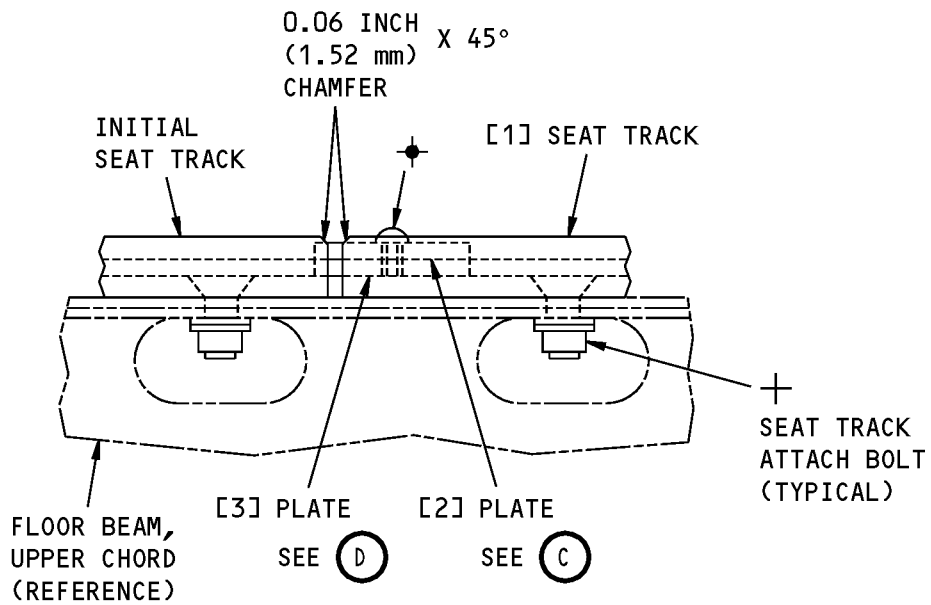
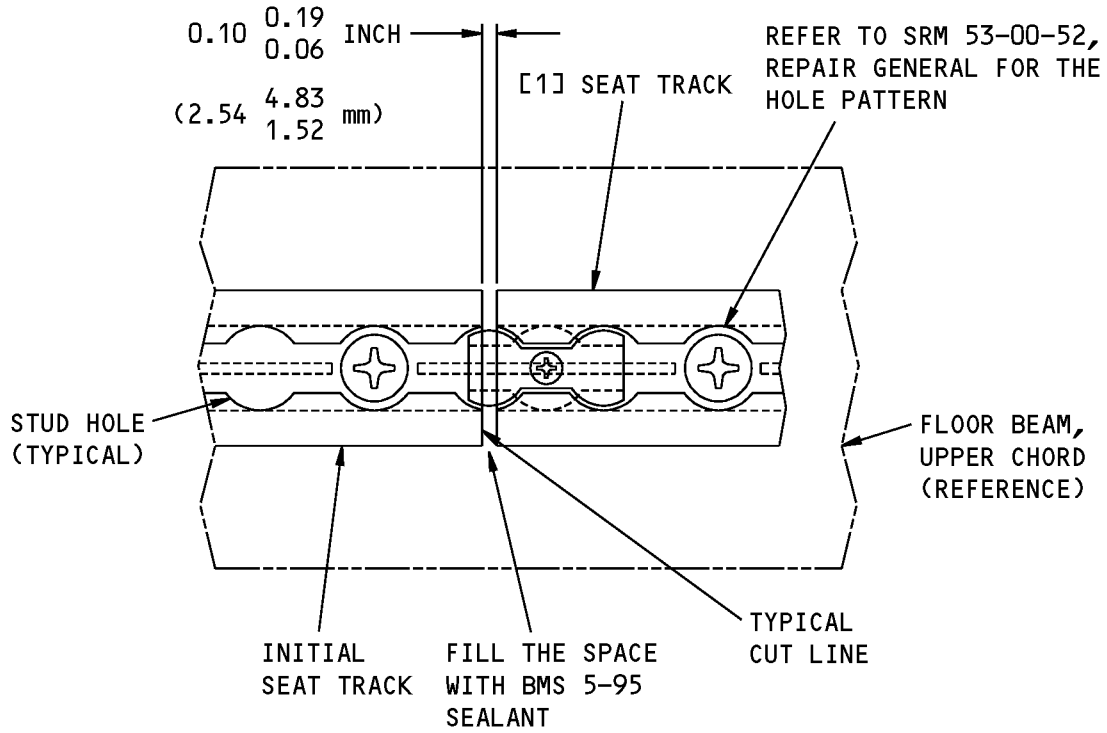


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- D. Assemble the repair parts.
- E. Drill and countersink the fastener holes in the part [1] seat track. Refer to the initial seat track that was removed.
- F. Disassemble the repair parts.
- G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.
- H. Apply a protective coating.
  - (1) Chromic acid anodize the part [1] seat track. Refer to SOPM 20-43-01.
  - (2) Apply a chemical conversion coating as given in 51-20-01 to the following:
    - (a) The part [2] thru part [5] plates, as necessary.
    - (b) The cut edges of the initial seat track.
- I. Apply a finish.
  - (1) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-02 to the following:
    - (a) The part [1] seat track.
      - 1) It is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.
    - (b) The part [2] thru part [5] plates, as necessary.
    - (c) The cut edges of the initial seat track.
- J. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the fasteners wet with BMS 5-95 sealant.
  - (3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.
- K. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
- L. Apply BMS 8-283 tape to the top of the upper chord of the floor beam that is adjacent to the seat track. Make sure that no spaces occur between the ends of the tape. Refer to AMM 53-21-00/401.
- M. Install the floor panels. Refer to AMM 53-21-00/401.

**STRUCTURAL REPAIR MANUAL**

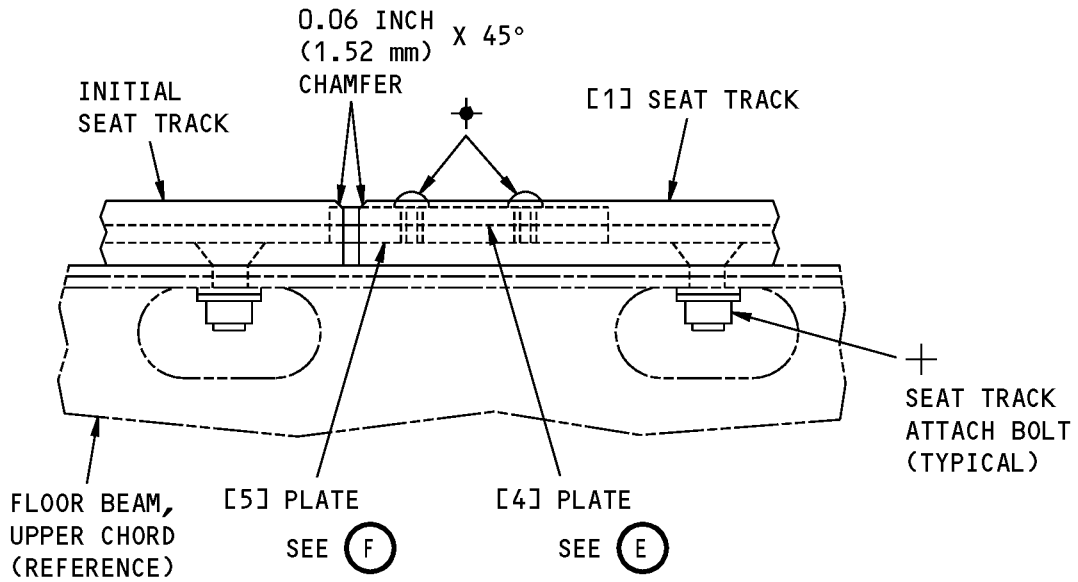
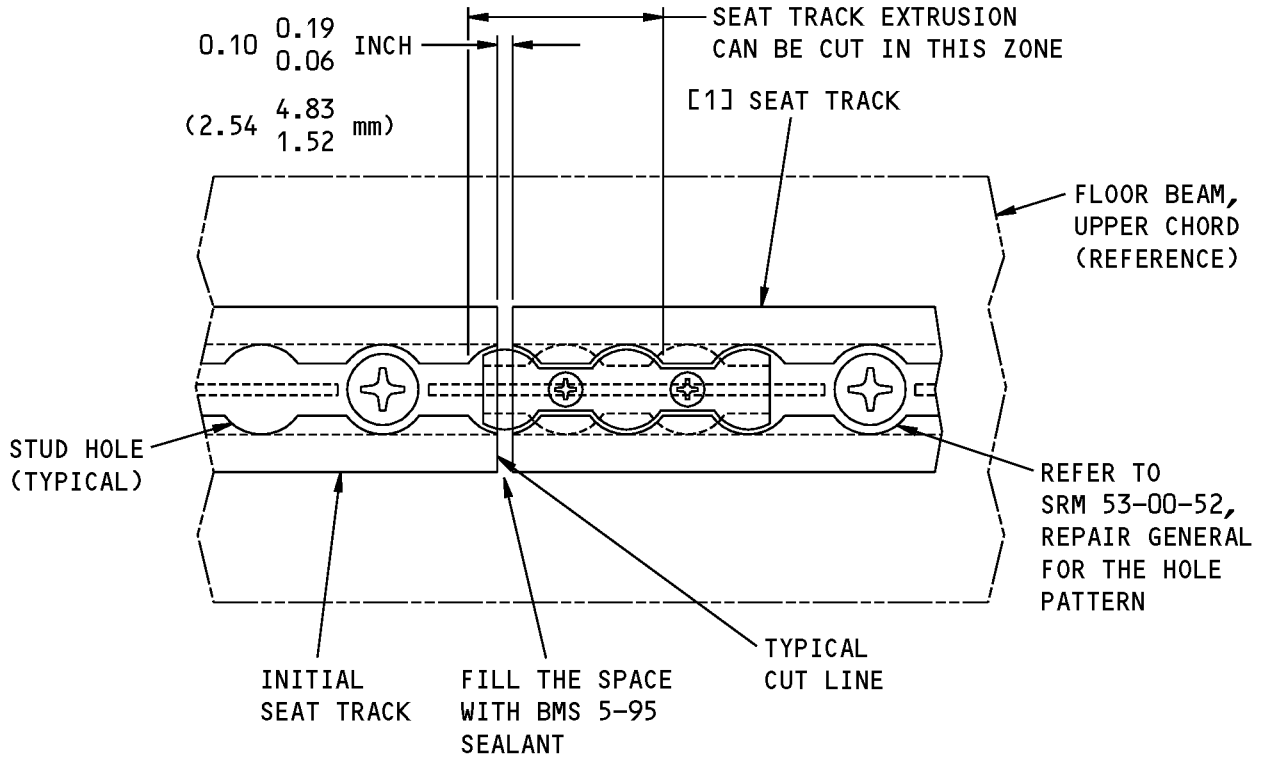


**TWO STUD HOLES BETWEEN SEAT TRACK ATTACH BOLTS**

(A)

**Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1  
Figure 202 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**

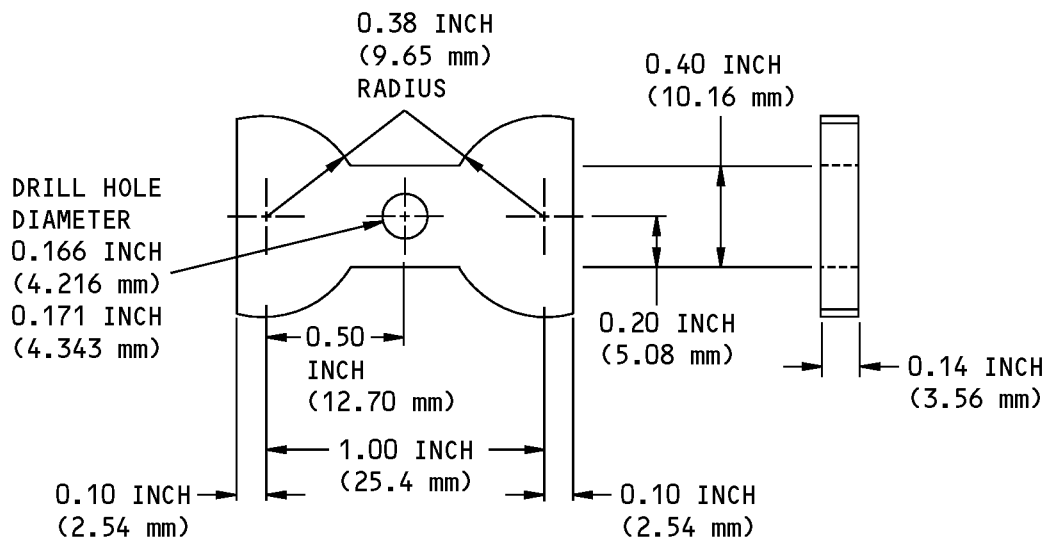


THREE STUD HOLES BETWEEN SEAT TRACK ATTACH BOLTS

(B)

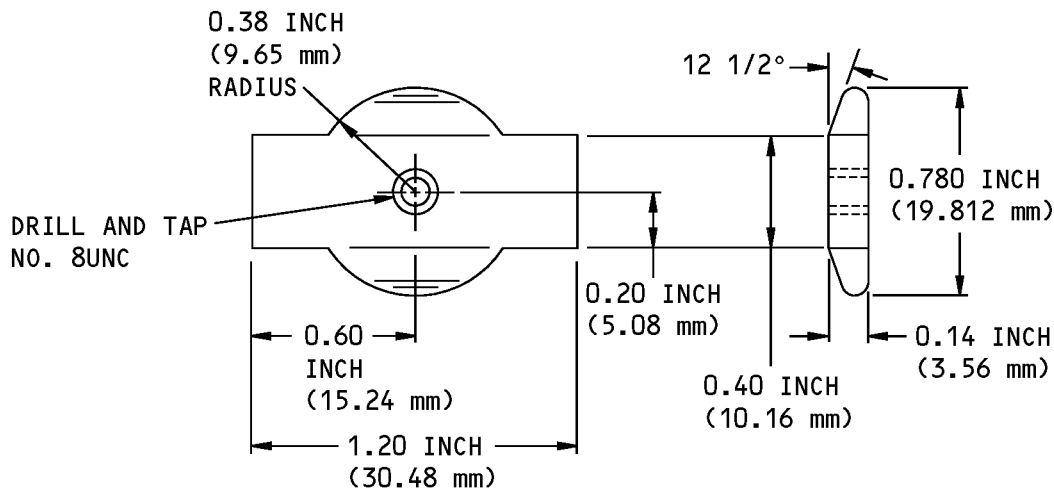
Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1  
Figure 202 (Sheet 2 of 4)

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PART [2] PLATE

(C)



PART [3] PLATE

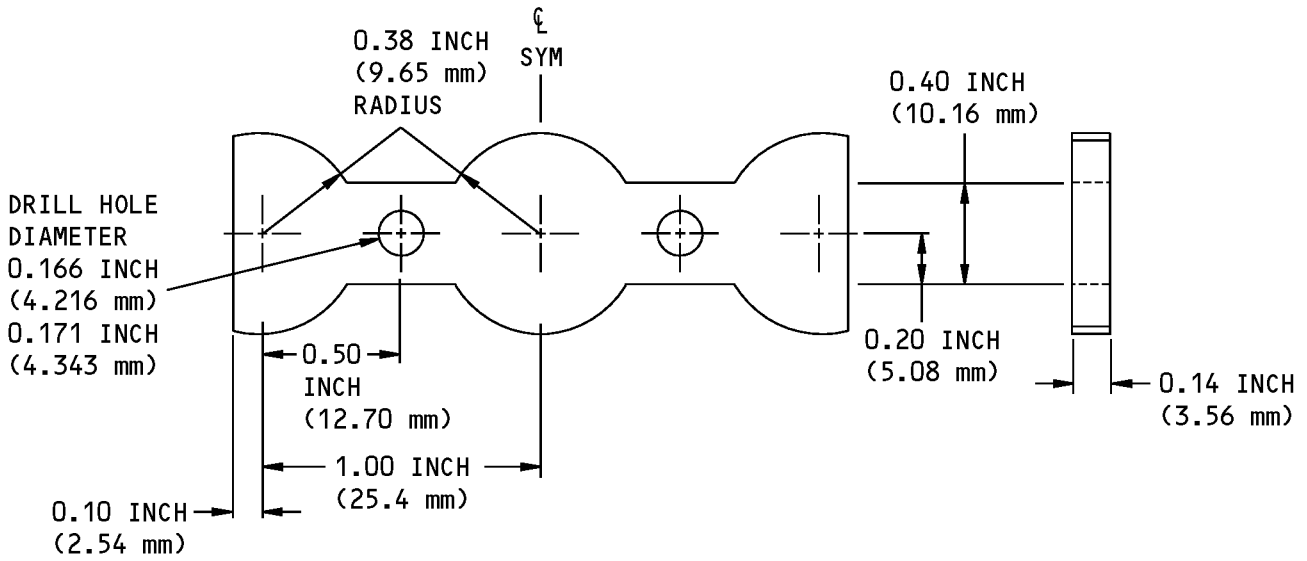
(D)

FASTENER SYMBOLS

- ✚ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.
- ✚ REPAIR FASTENER LOCATION. INSTALL A NAS602-5P SCREW. MAKE THE THREAD 0.28 INCH LONG BEFORE YOU INSTALL THE FASTENER.

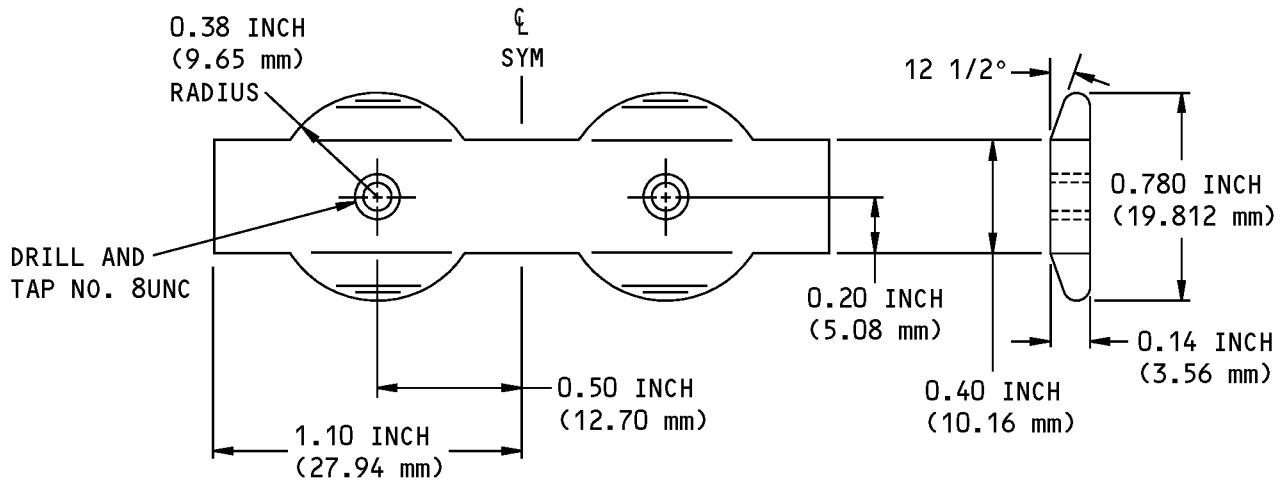
Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1  
Figure 202 (Sheet 3 of 4)

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**PART [4] PLATE**

**(E)**



**PART [5] PLATE**

**(F)**

**Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 1  
Figure 202 (Sheet 4 of 4)**



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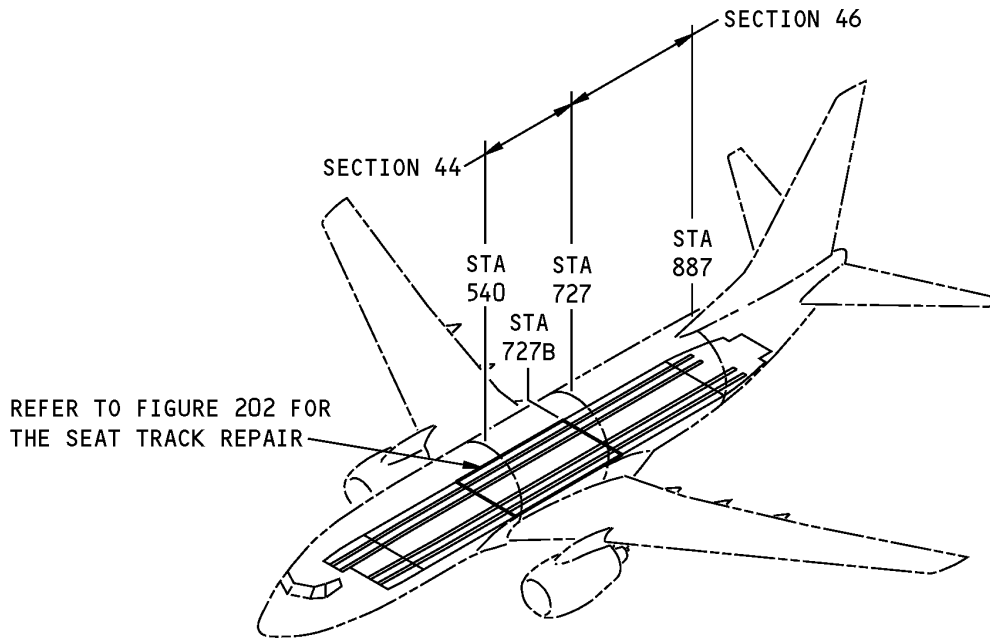
## STRUCTURAL REPAIR MANUAL

### REPAIR 3 - SECTIONS 44 AND 46 SEAT TRACK REPAIR FOR BAC1520-2779 ALUMINUM EXTRUSION - PROCEDURE 2

#### 1. Applicability

- A. Repair 3 is applicable to seat tracks in Sections 44 and 46 from STA 540 to STA 727B that are made of BAC1520-2779 aluminum extrusion. Refer to Seat Track Location, Figure 201/REPAIR 3.
- B. You can use Repair 3 to make a splice to the seat track.
  - (1) You are permitted to use Repair 3 to replace part of a seat track. Use one of the procedures that follows:
    - (a) Do a repair at each cut end of the initial seat track. Use one of the two procedures that follows:
      - 1) Do Repair 3 at each cut end.
      - 2) Do Repair 3 at one cut end and Repair 2 at the other cut end.
    - (b) Do Repair 3 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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**Seat Track Location  
Figure 201**

**2. General**

- A. You are not permitted to attach a seat in the seat track holes adjacent to the repair cut line.
- B. The repair that follows is an alternative to Repair 3:
  - (1) Repair 2 is a seat track repair that makes a splice with repair plates.
- C. Repair 1 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS





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(Continued)

Reference	Title
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
53-00-52	SEAT TRACKS
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00 P/B 401	PASSENGER CABIN FLOORS - REMOVAL/INSTALLATION
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

**4. Repair Instructions**

- A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.
- B. Cut and remove the damaged part of the seat track.
  - (1) Locate the seat track attach bolt in the undamaged section of the seat track that is adjacent to a seat track hole in the damaged section of the seat track.
    - (a) Cut the seat track at half the distance between the two seat track holes as shown in Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A .
- C. Extend the cutout in the upper chord of the floor beam as shown in Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A to permit the installation of the repair fasteners.
- D. Make the repair parts. Refer to Table 201/REPAIR 3.
  - (1) The part [1] seat track is available from the Boeing Spares Department or it can be made from aluminum extrusion to dimensions as given in the production drawing.
    - (a) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use BAC1520-2779 7178-T6511 aluminum extrusion
[2]	Seat Track	1	Use BAC1520-2779 7150-T77511 aluminum extrusion

- E. Assemble the repair parts.
- F. Drill the fastener holes. Refer to Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2, Figure 202/REPAIR 3, Detail A .

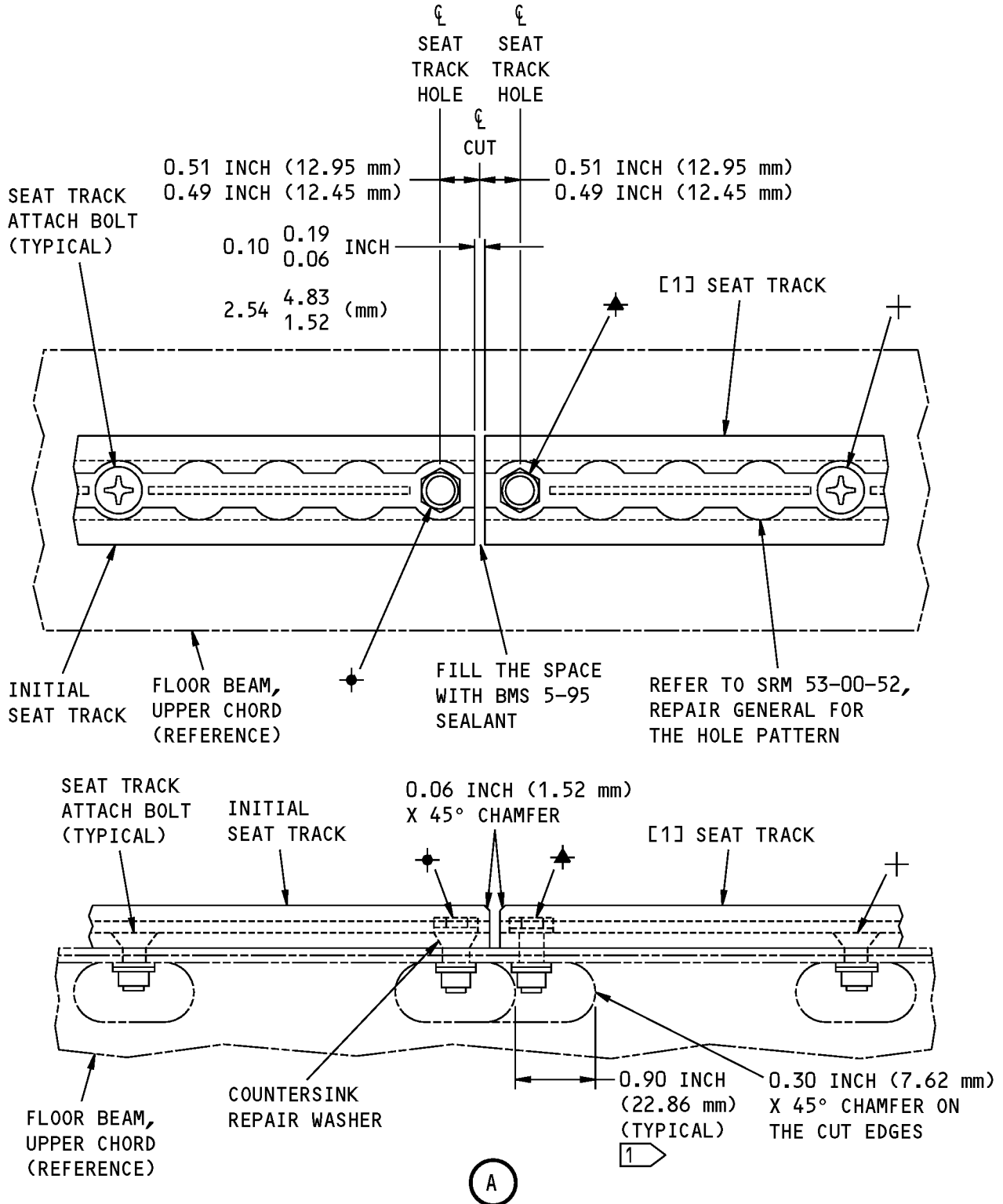


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- (1) Drill the repair fastener hole location on the part [1] seat track that is adjacent to the cut. Do not countersink the hole.
  - (2) Drill and countersink the remaining fastener holes in the part [1] seat track. Refer to the initial seat track that was removed.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.
- I. Apply a protective coating.
- (1) Chromic acid anodize the part [1] seat track. Refer to SOPM 20-43-01.
  - (2) Apply a chemical conversion coating as given in 51-20-01 to the following:
    - (a) The countersink repair washers, if they were used.
    - (b) The cut edges of the initial seat track.
- J. Apply a finish.
- (1) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-02 to the following:
    - (a) The part [1] seat track.
      - 1) It is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.
    - (b) The countersink repair washers, if they were used.
    - (c) The cut edges of the initial seat track.
- K. Install the repair parts.
- (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the fasteners wet with BMS 5-95 sealant.
  - (3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.
- L. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
- M. Apply BMS 8-283 tape to the top of the upper chord of the floor beam that is adjacent to the seat track. Make sure that there are no spaces between the ends of the tape. Refer to AMM 53-21-00/401.
- N. Install the floor panels. Refer to AMM 53-21-00/401.

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**Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2  
Figure 202 (Sheet 1 of 2)**



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**NOTES**

① IF THE CUTOUT THAT IS NECESSARY IS MORE THAN 0.90 INCH (22.86 mm), TELL THE BOEING COMPANY.

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.
- ✦ INITIAL FASTENER LOCATION. INSTALL A NAS6705-( ) BOLT WITH A NAS1805-5 NUT IN A TRANSITION FIT HOLE (0.309 INCH TO 0.313 INCH (7.849 mm TO 7.950 mm) DIAMETER).
- ✦ REPAIR FASTENER LOCATION. INSTALL A NAS6705-( ) BOLT WITH A NAS1805-5 NUT IN A TRANSITION FIT HOLE (0.309 INCH TO 0.313 INCH (7.849 mm TO 7.950 mm) DIAMETER).

**Sections 44 and 46 Seat Track Repair for BAC1520-2779 Aluminum Extrusion - Procedure 2**  
**Figure 202 (Sheet 2 of 2)**



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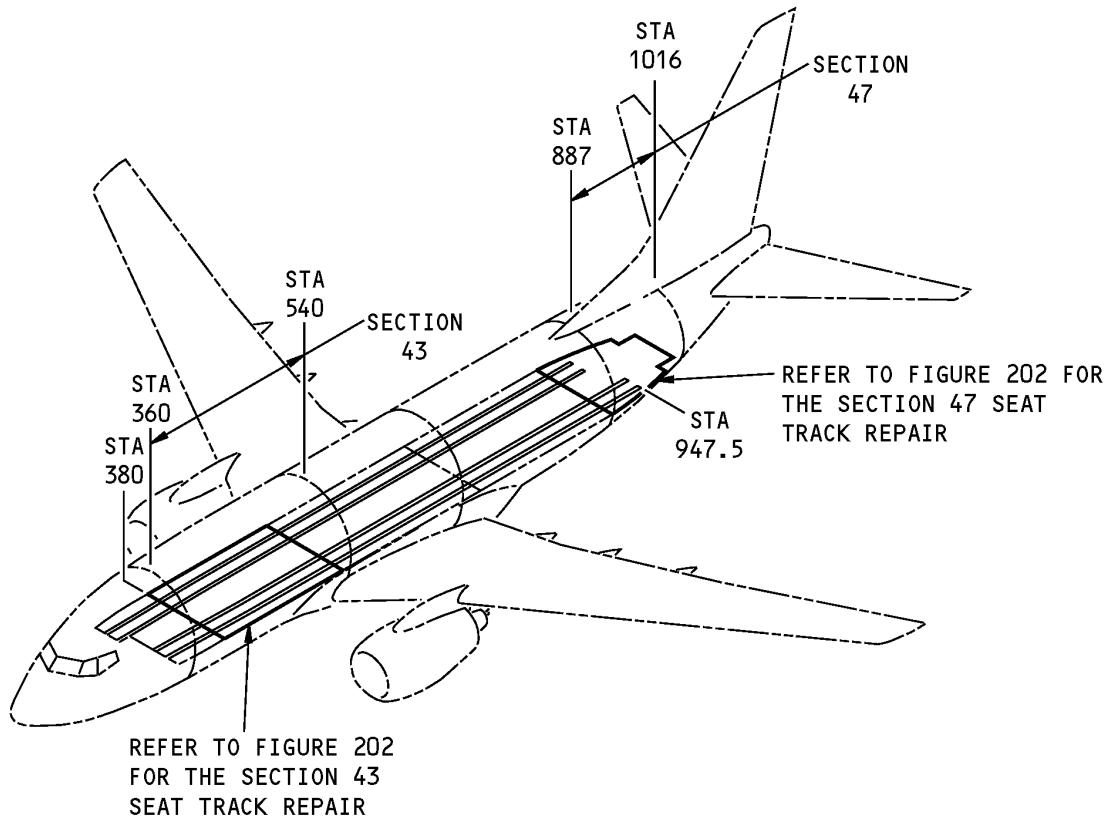
## STRUCTURAL REPAIR MANUAL

### REPAIR 4 - SECTION 43 AND 47 SEAT TRACK REPAIR FOR TITANIUM OR BAC1520-2789 ALUMINUM EXTRUSION BETWEEN FLOOR BEAMS

#### 1. Applicability

- A. Repair 4 is applicable to BAC1520-2789 aluminum seat tracks in Section 43 and titanium seat tracks in Section 47 from STA 907 to STA 947.5. Refer to Seat Track Location, Figure 201/REPAIR 4.
- B. For a repair that is necessary between:
  - (1) STA 380 and STA 400, put the splice between STA 400 and STA 420.
  - (2) STA 887 and STA 907, put the splice between STA 907 and STA 927.
- C. You can use Repair 4 to make a splice to the seat track between floor beams.
  - (1) You are permitted to use Repair 4 to replace part of a seat track. Use one of the procedures that follows:
    - (a) Do Repair 4 at each cut end of the initial seat track.
    - (b) Do Repair 4 at one cut end of the initial seat track. Make the length of the part [1] seat track the same as the initial length of the remaining seat track.

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**Seat Track Location**  
**Figure 201**

**2. General**

**WARNING:** SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

- A. Repair 4 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

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### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-04, GENERAL	Dangerous Materials
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
53-00-52	SEAT TRACKS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-31 P/B 701	CORROSION REMOVAL AND CONTROL - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 53-21-00/401	Passenger Cabin Floors - Removal/Installation
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-41-04	Application of Interior Decorative Finishes
SOPM 20-43-01	Chromic Acid Anodizing

### 4. Repair Instructions

- A. Remove the floor panels in the area of the damaged seat tracks. Refer to AMM 53-21-00/401.
- B. Cut and remove the damaged part of the seat track.
- (1) Make the cut at half the distance between floor beam centerlines as shown in Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail A and View B-B.
    - (a) Make the cut a minimum of 0.55 inch (13.97 mm) away from the initial fastener attach hole for the floor panel.
- C. Make the repair parts. Refer to Table 201/REPAIR 4.
- (1) The part [1] seat track is available from the Boeing Spares Department or it can be made from titanium plate or extruded bar or aluminum extrusion, as applicable, to dimensions as given in the production drawing.
    - (a) If you make the part [1] seat track, do the steps that follow:
      - 1) Cut the web and the lower horizontal flanges of the part [1] seat track to the same contour as the initial seat track section for sections between floor beams where no splices will be made.
      - 2) Cut off the lower horizontal flanges of the seat track sections between the floor beams where the splice will be made. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail D .
      - 3) Refer to 53-00-52, Repair General for the necessary hole pattern for the seat track.

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- (2) Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4 to cut the shape of the part [2] channel.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Seat Track	1	Use the same material as the initial seat track. Use Ti-6Al-4V plate or extruded bar or BAC1520-2789 7178- T6511 extrusion, as applicable
[2]	Channel	1	Use the same material as the initial seat track. Use a BAC1510-1304 extrusion made of Ti-6Al-4V plate or extruded bar or 7075-T6 extrusion, as applicable. It is optional to machine the top of the BAC1510-1304 extrusion from 0.60 inch (15.24 mm) to 0.40 inch (10.16 mm)

- D. Cut off the web and the lower horizontal flanges of the initial seat track section between the floor beams where the splice will be made. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail D .
- E. Assemble the repair parts.
- F. Drill the fastener holes. Refer to Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the seat track.
- I. Apply a protective coating.
- (1) Chromic acid anodize the part [1] seat track that is made of aluminum. Refer to SOPM 20-43-01.
- (a) Do not apply a protective coating to the part [1] seat track that is made of titanium.
- (2) Apply a chemical conversion coating as given in 51-20-01 to the following:
- (a) The part [2] channel.
- (b) The cut edges of the initial seat track.
- (c) The fastener attach holes in the initial aluminum seat track where floor panels were removed.
- J. Apply a finish.
- (1) If you have a seat track made of aluminum, do the steps that follow:
- (a) Apply one layer of aluminized epoxy primer 463-6-4 (Catalyst X-306 and Thinner TL-52) as given in SOPM 20-41-04 to the following:
- 1) The part [1] seat track.
- a) For the part [1] seat track, it is not necessary to apply the aluminized epoxy primer to the lower surface of the track lip.
- 2) The part [2] channel.
- 3) The cut edges of the initial seat track.
- 4) The fastener attach holes in the initial seat track where the floor panels were removed.
- (2) If you have a seat track made of titanium, do the steps that follow:
- (a) Apply one layer of BMS 10-11, Type I primer as given in SOPM 20-41-02 to the following:



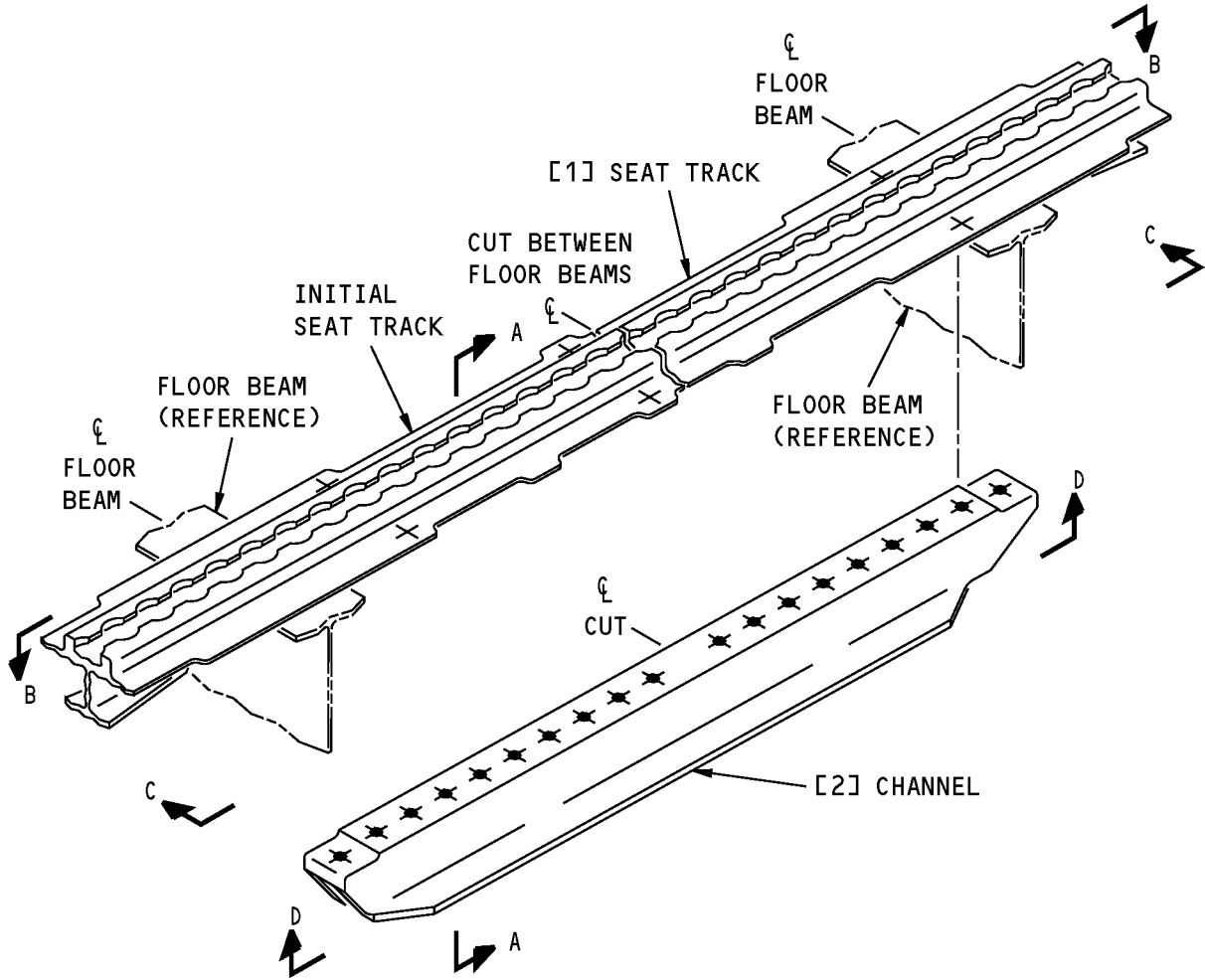


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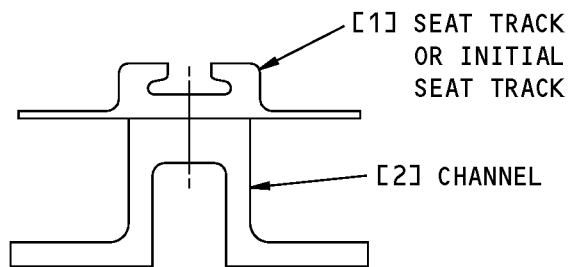
## **STRUCTURAL REPAIR MANUAL**

- 1) The areas as shown in Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams, Figure 202/REPAIR 4, Detail E .
  - 2) The part [2] channel.
  - 3) The cut edges of the initial seat track.
  - 4) The fastener attach holes in the initial seat track where floor panels were removed.
- K. Install the repair parts.
- (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the fasteners wet with BMS 5-95 sealant.
  - (3) Fill the space between the part [1] seat track and the initial seat track with BMS 5-95.
- L. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
- M. Apply BMS 8-283 tape to the top of the upper horizontal flange of the aluminum seat track. Make sure that no spaces occur between the ends of the tape. Refer to AMM 53-21-00/401.
- N. Install the floor panels. Refer to AMM 53-21-00/401.

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(A)



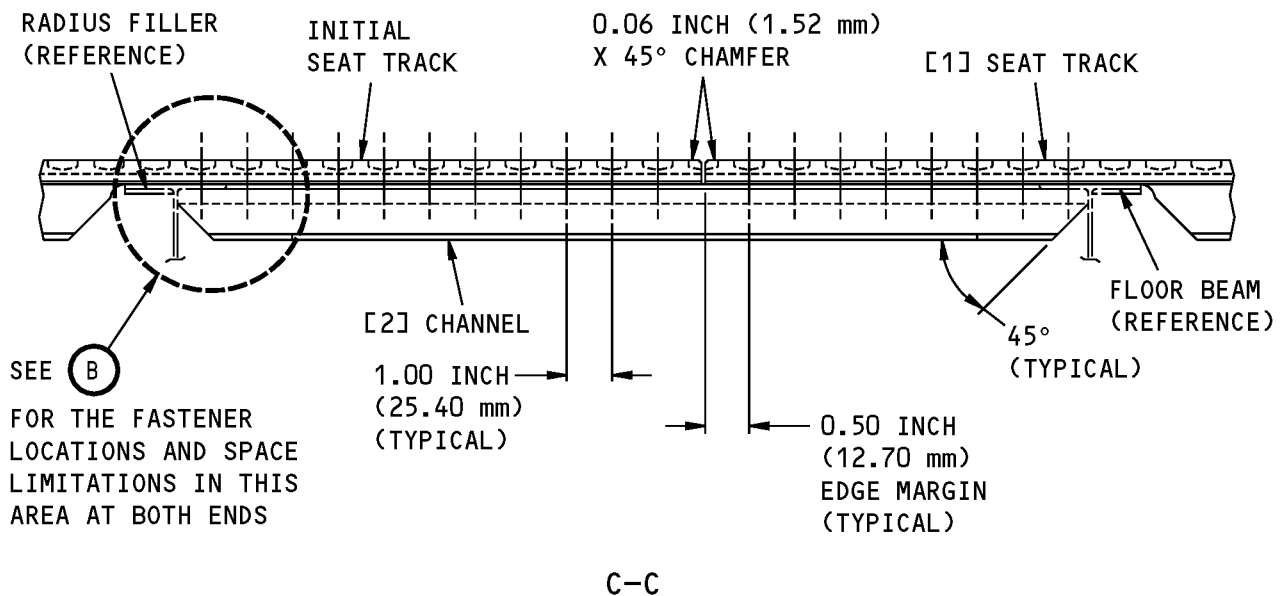
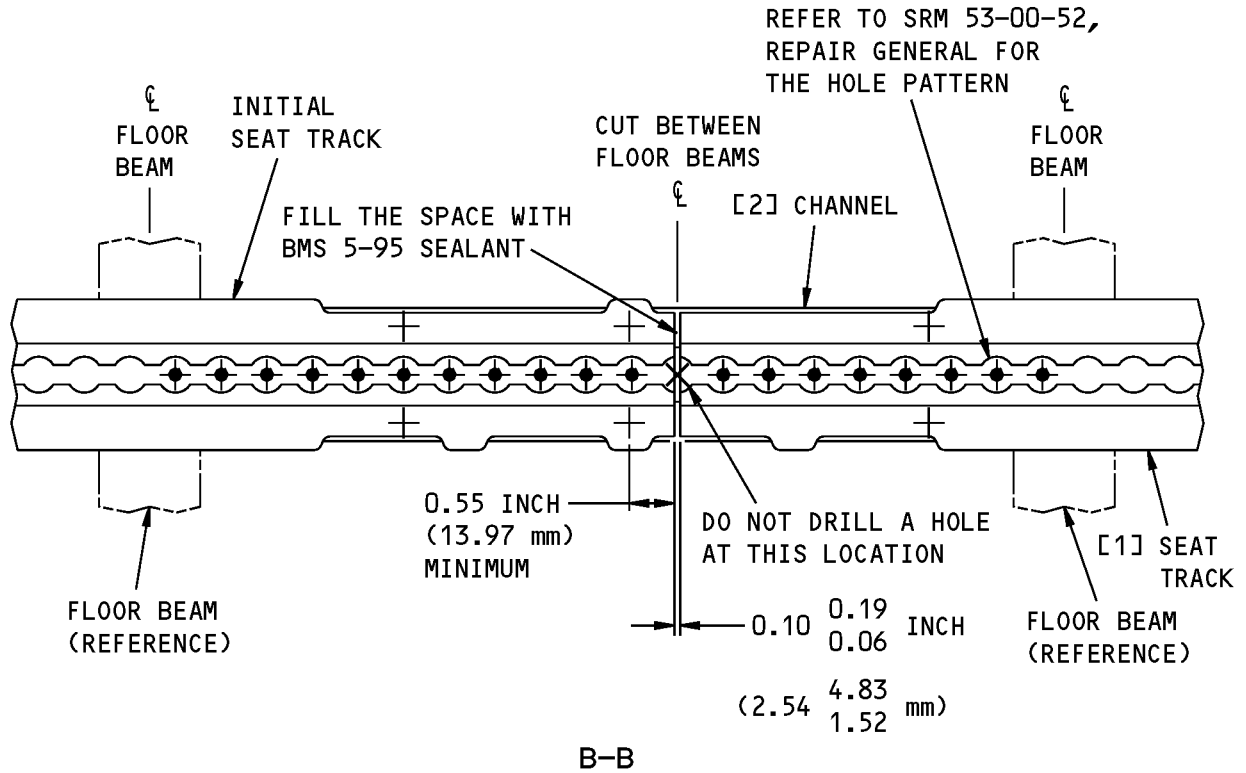
**TYPICAL CROSS-SECTION OF THE SEAT TRACK SPLICE BETWEEN FLOOR BEAMS**

A-A

**Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams**

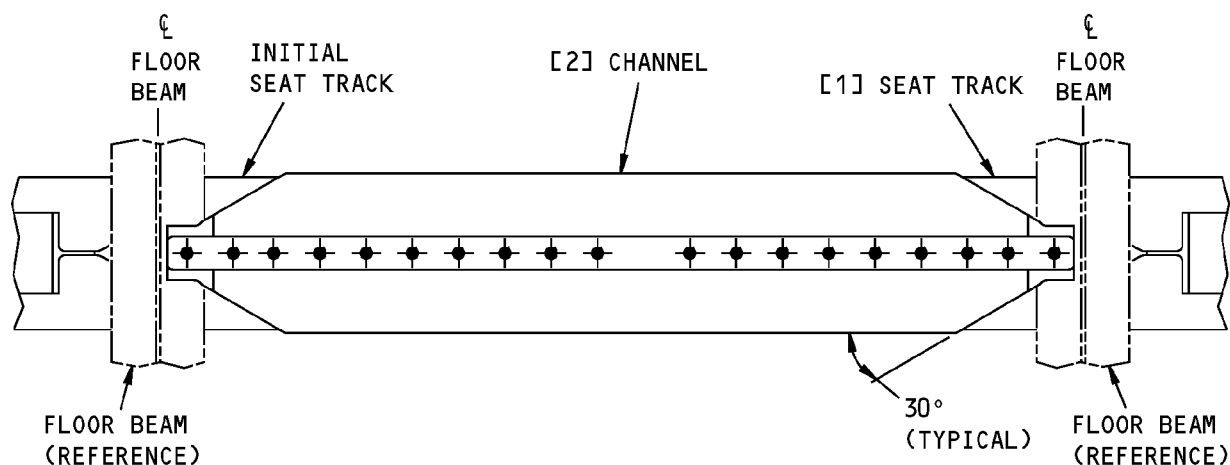
**Figure 202 (Sheet 1 of 5)**

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STRUCTURAL REPAIR MANUAL**

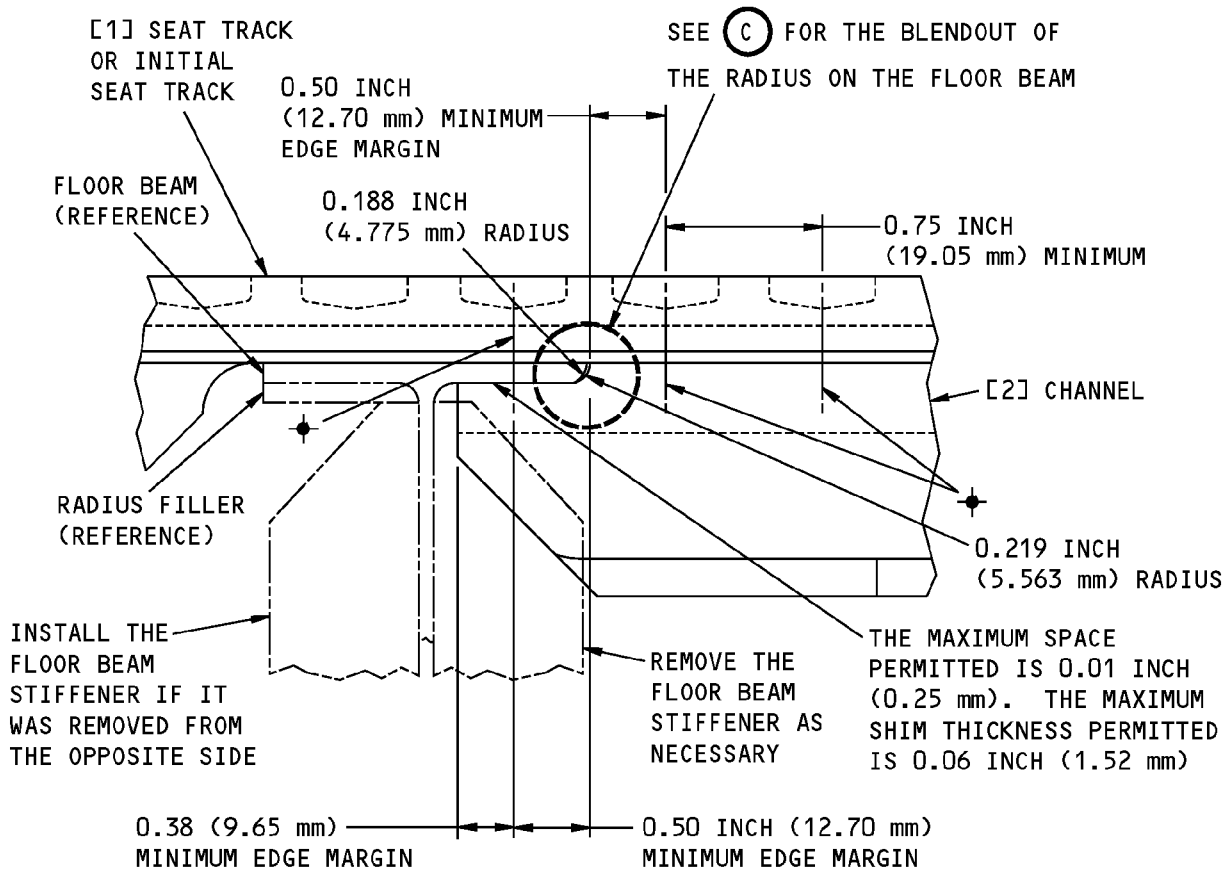


**Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams  
Figure 202 (Sheet 2 of 5)**

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D-D



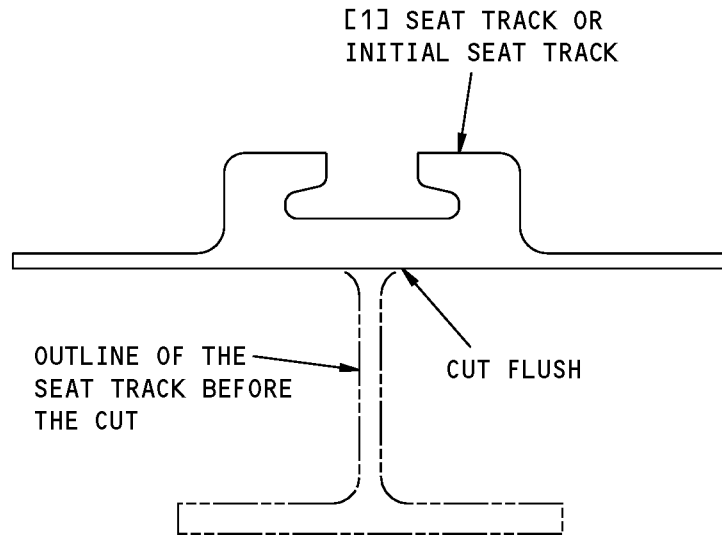
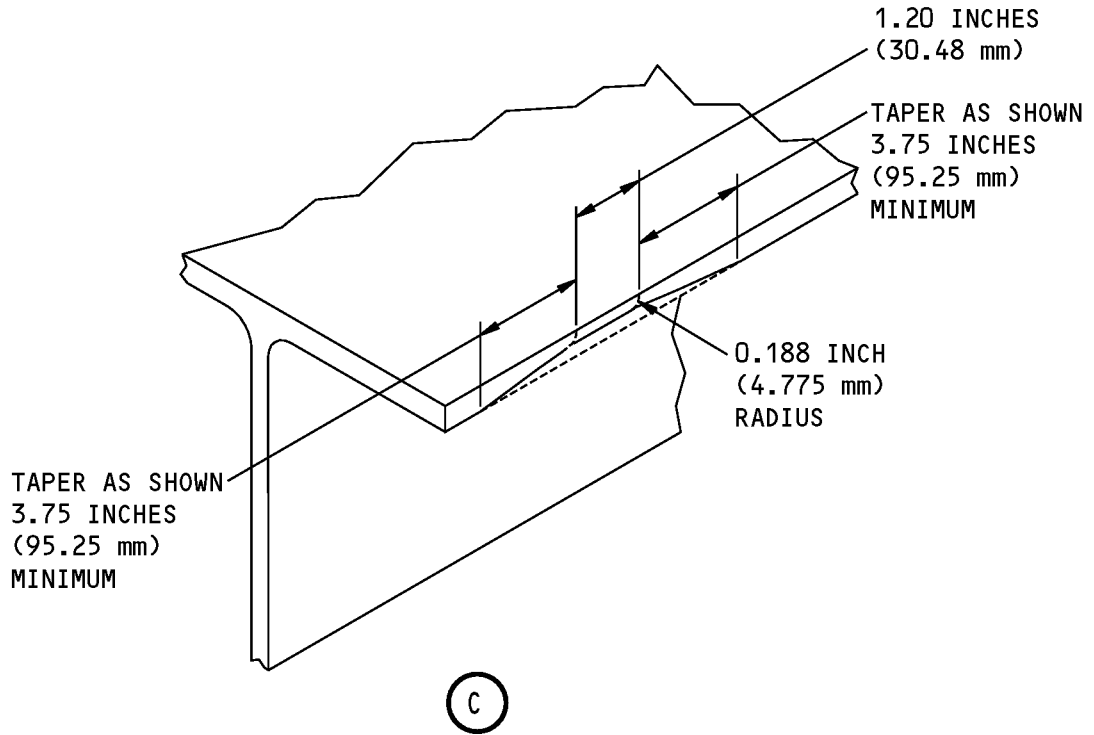
**FASTENER LOCATIONS AND SPACE LIMITATIONS AT A FLOOR BEAM**

(B)

**Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams**

**Figure 202 (Sheet 3 of 5)**

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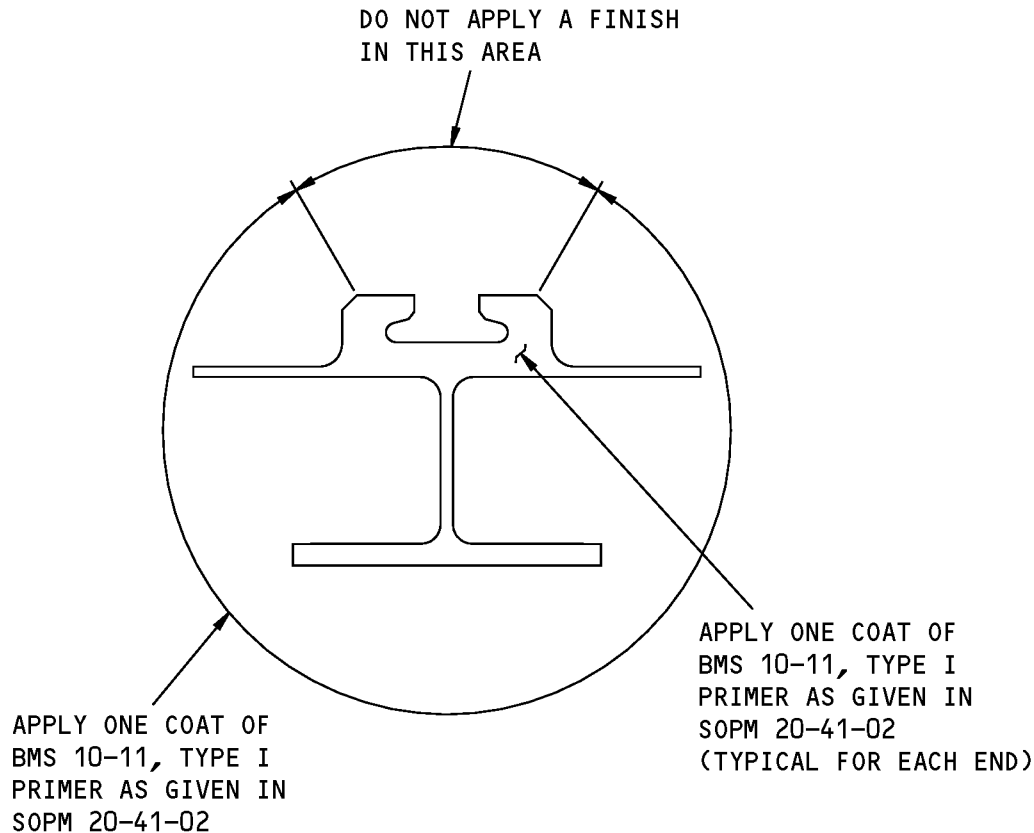


**REMOVAL OF THE WEB AND LOWER HORIZONTAL FLANGES OF  
REPAIR PART [1] SEAT TRACK AND THE INITIAL SEAT TRACK**

(D)

**Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor  
Beams  
Figure 202 (Sheet 4 of 5)**

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**AREAS OF FINISH APPLICATIONS FOR TITANIUM SEAT TRACKS**

**E**

**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND THE SAME SIZE FASTENER AS THE INITIAL FASTENER.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACB30NY10K HEX-DRIVE BOLT WITH A BACC30BH10 COLLAR.

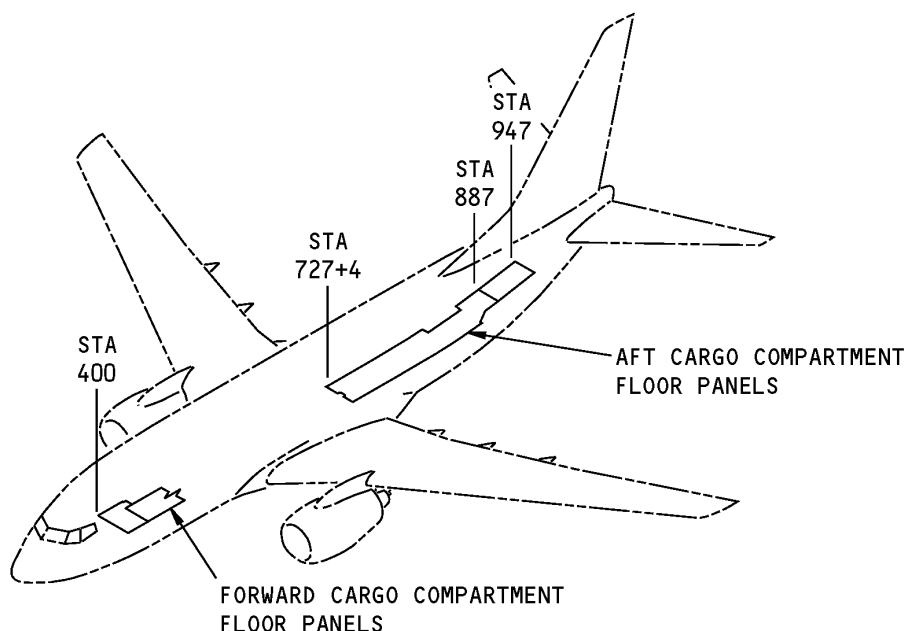
**Sections 43 and 47 Seat Track Repair for Titanium and BAC1520-2789 Aluminum Extrusions Between Floor Beams  
Figure 202 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - FORWARD AND AFT CARGO COMPARTMENT FLOOR PANELS**

**1. Applicability**

- A. This subject gives the allowable damage limits for the forward and aft cargo compartment floor panels shown in Forward and Aft Cargo Compartment Floor Panel Locations, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits given are only applicable to the strength properties of the forward and aft cargo compartment floor panels. It is possible that the damage in a panel is less than the allowable damage limits, but the panel does not function satisfactorily. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.
- C. The allowable damage limits for cracks and holes are only applicable if they are sealed as given in Paragraph 2.



**Forward and Aft Cargo Compartment Floor Panel Locations  
Figure 101**

**2. General**

- A. Seal cracks and holes that go through the floor panel with BMS 5-146, Type I, Class 1, Grade A cargo liner joint sealing tape. As an alternative, you can make the seal with aluminum foil tape (speed tape).

**3. Inspection Requirements**

- A. Do a visual inspection at 400 flight cycles maximum to make sure the sealing tape is in a satisfactory condition. Replace the tape if there are signs of deterioration.
- B. Do a permanent repair at 4,000 flight cycles maximum from the time the tape was applied.



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### 4. References

Reference	Title
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-40-02, GENERAL	Fastener Installation and Removal

### 5. Allowable Damage Limits for the Forward and Aft Cargo Compartment Floor Panels

#### A. Aluminum

- (1) The total damage must not be more than 30 percent of the panel area.
  - (a) Cracks:
    - 1) Cracks are permitted if they are:
      - a) A maximum of 3.0 inches (76.2 mm) in length.
      - b) Sealed as given in Paragraph 2.
    - 2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.
      - a) Install a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
    - 3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.
  - (b) Nicks, Gouges, Scratches, and Corrosion are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in length.
  - (c) Dents are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in diameter.
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 2.0 inches (50.8 mm) in diameter.
    - 2) Sealed as given in Paragraph 2.

#### B. Fiberglass and Glare

- (1) The total damage must not be more than 30 percent of the panel area.
  - (a) Cracks:
    - 1) Cracks are permitted if they are:
      - a) A maximum of 3.0 inches (76.2 mm) in length.
      - b) Sealed as given in Paragraph 2.
    - 2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.
    - 3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.
  - (b) Nicks, Gouges, or Scratches are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in length.
  - (c) Dents are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in diameter.
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 2.0 inches (50.8 mm) in diameter.





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**STRUCTURAL REPAIR MANUAL**

- 2) Sealed as given in Paragraph 2.
- (e) Delaminations are permitted if they are:
  - 1) A maximum of 3.0 inches (76.2 mm) in diameter.



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### ALLOWABLE DAMAGE 2 - FORWARD AND AFT CARGO COMPARTMENT FLOOR STRUCTURE

#### 1. Applicability

- A. This subject gives the allowable damage limits for the forward and aft cargo compartment floor structure as shown in Forward and Aft Cargo Compartment Floor Structure, Figure 101/ALLOWABLE DAMAGE 2.

#### 2. General

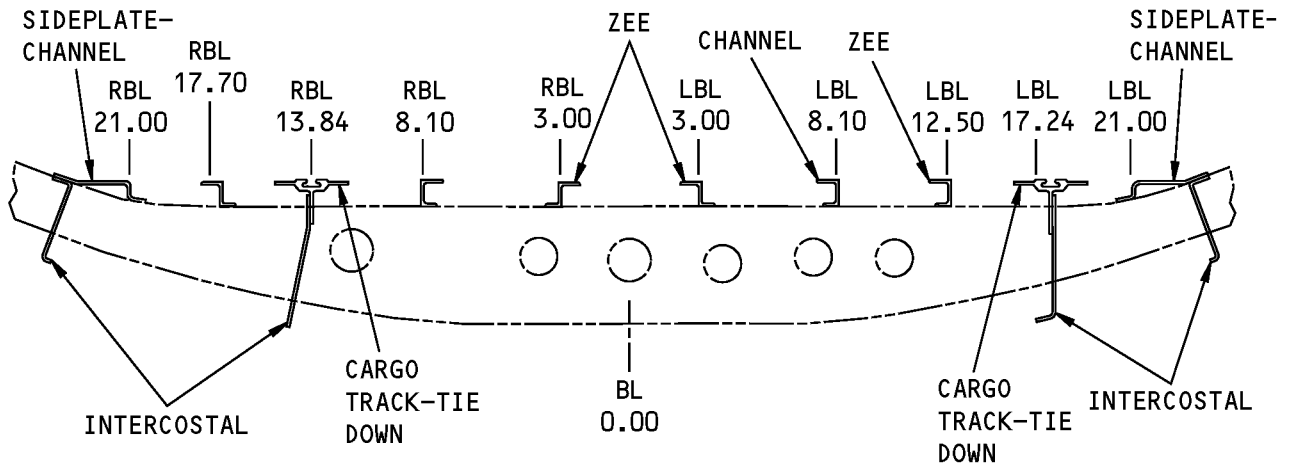
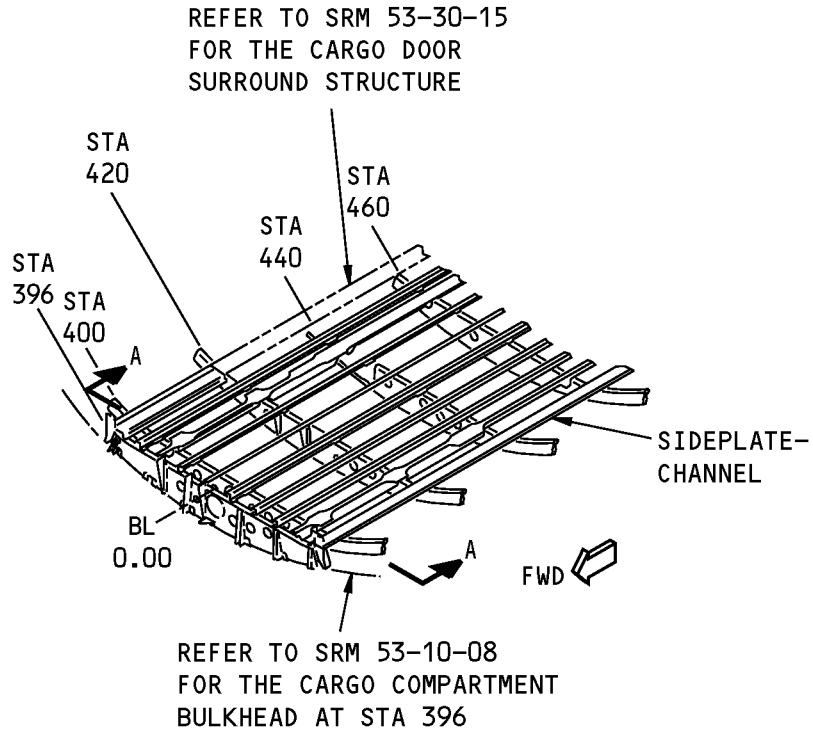
- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Typical Aluminum Cargo Compartment Floor Structure Sections, Figure 102/ALLOWABLE DAMAGE 2 for the definitions of the parts of the cargo compartment floor structure.
- C. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.
- (1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Sideplate - Channel or Support Zee	4.A
Cargo Track - Tie Down	4.B
Rail - Channel	4.A
Zee	4.A
Intercostal	4.C

- D. Remove the damage as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
- (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- E. After you remove the damage, do the steps that follow:
- (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
- (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
- (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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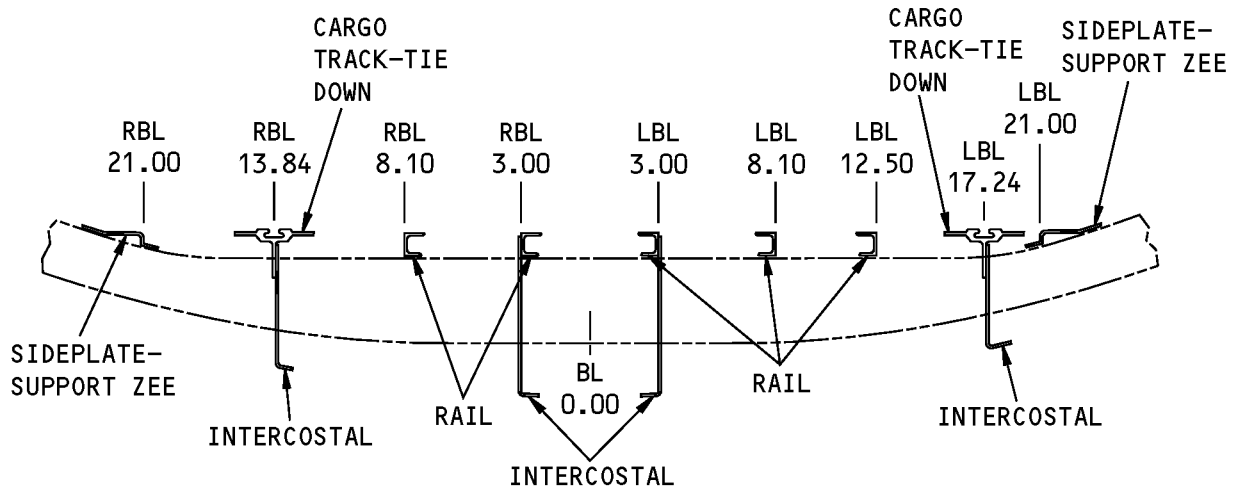
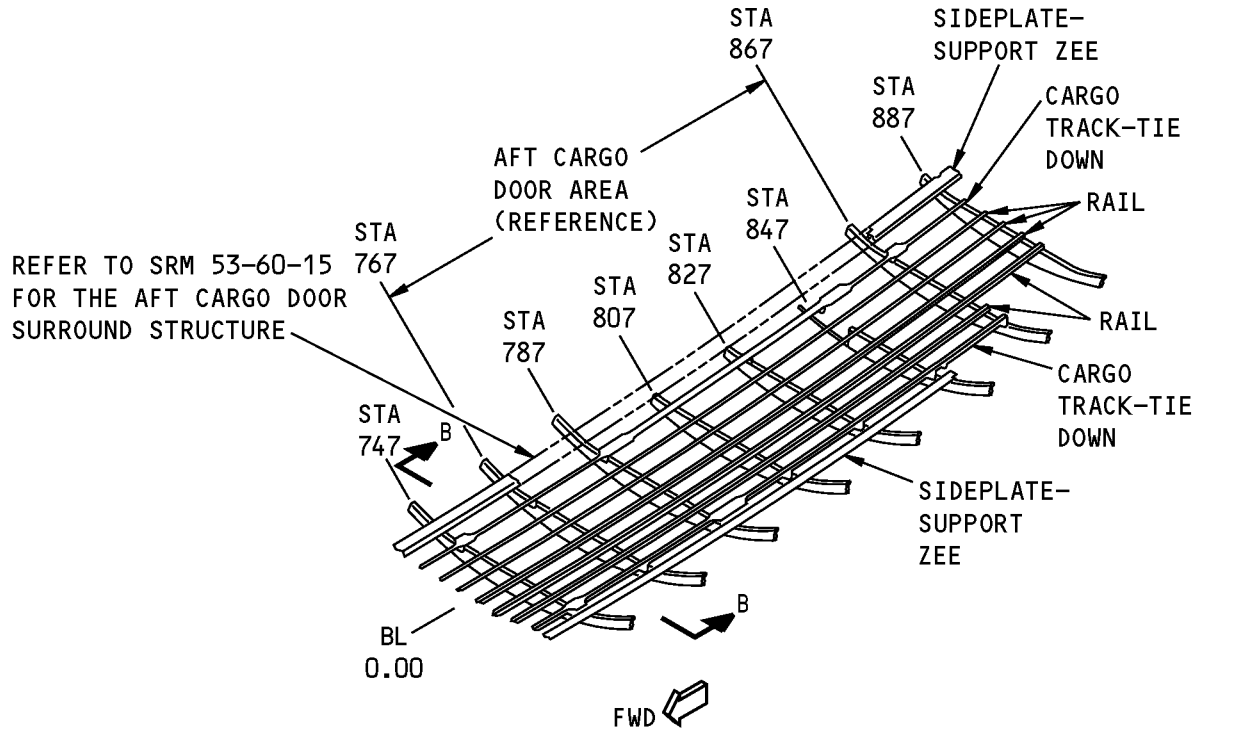


**SECTION 43 - TYPICAL CROSS-SECTION OF THE FORWARD  
CARGO COMPARTMENT FLOOR STRUCTURE**

A-A

**Forward and Aft Cargo Compartment Floor Structure  
Figure 101 (Sheet 1 of 3)**

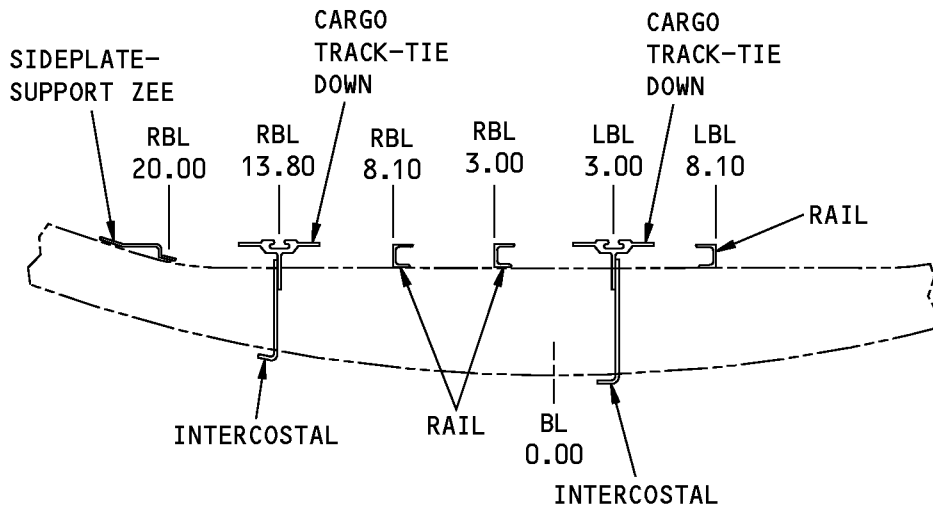
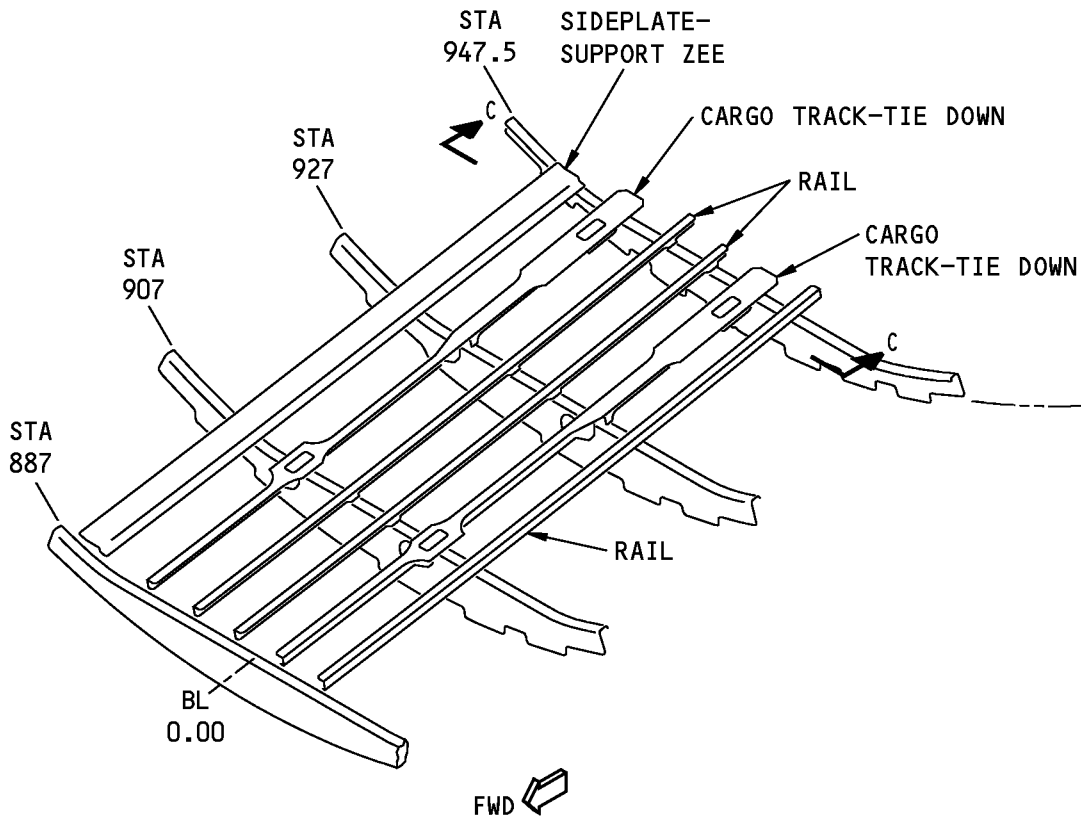
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**SECTION 46 - TYPICAL CROSS-SECTION OF THE AFT  
CARGO COMPARTMENT FLOOR STRUCTURE  
B-B**

**Forward and Aft Cargo Compartment Floor Structure  
Figure 101 (Sheet 2 of 3)**

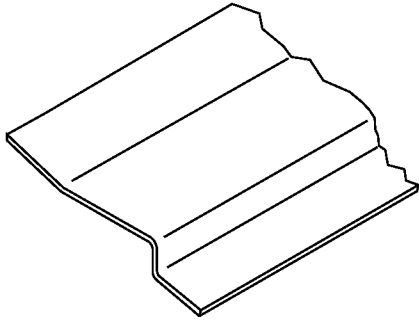
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STRUCTURAL REPAIR MANUAL**



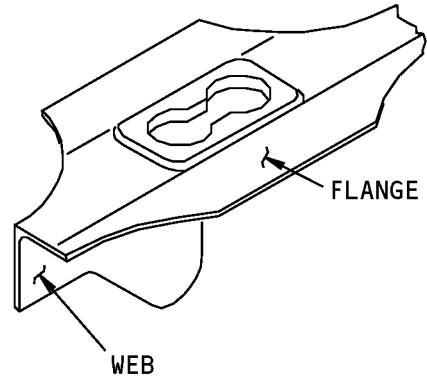
**SECTION 47 - TYPICAL CROSS-SECTION OF THE AFT  
CARGO COMPARTMENT FLOOR STRUCTURE  
C-C**

**Forward and Aft Cargo Compartment Floor Structure  
Figure 101 (Sheet 3 of 3)**

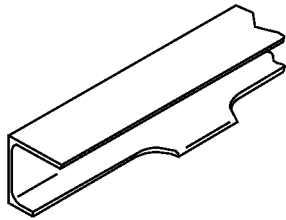
**737-800  
STRUCTURAL REPAIR MANUAL**



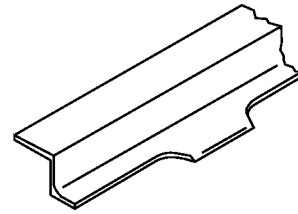
**SIDEPLATE - CHANNEL  
OR SUPPORT ZEE**



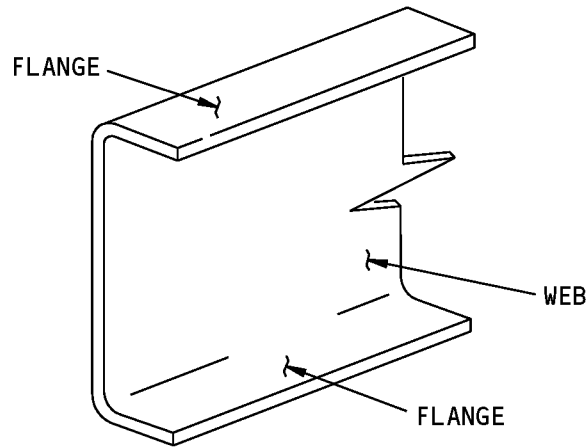
**CARGO TRACK-TIE DOWN**



**RAIL - CHANNEL**



**ZEE**



**FORMED INTERCOSTAL (TYPICAL)**

**Typical Aluminum Cargo Compartment Floor Structure Sections  
Figure 102**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-05	FASTENER HOLE SIZES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Sideplate - Channel or Support Zee, Rail - Channel, or Zee

##### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , and C .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

##### (3) Dents:

- (a) Refer to Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.

##### (4) Holes and Punctures are permitted if they are:

- (a) A minimum of 1.0 inch away from the edge of a fastener hole, other damage, or material edge.
- (b) A minimum of 0.20 inch away from a radius.
- (c) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
  - 1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
  - 2) Drill the holes to the applicable size as given in 51-40-05.

#### B. Cargo Track - Tie Down

##### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details G , H , I , J , and K .

##### (3) Dents:

- (a) Dents are permitted in the web as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F .

##### (4) Holes and Punctures are permitted if they are:



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## STRUCTURAL REPAIR MANUAL

- (a) A minimum of 1.0 inch away from the edge of a fastener hole, other damage, or material edge.
  - (b) A minimum of 0.20 inch away from a radius.
  - (c) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
    - 1) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
    - 2) Drill the holes to the applicable size as given in 51-40-05.
- C. Intercostal
- (1) Web
    - (a) Cracks:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , and C .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .
    - (c) Dents:
      - 1) Refer to Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A minimum of 1.0 inch away from the edge of a fastener hole or other damage.
      - 2) A minimum of 2D (D = the diameter of the damage) away from the edge of the part.
      - 3) A minimum of 0.20 inch away from a radius.
      - 4) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
        - a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
        - b) Drill the holes to the applicable size as given in 51-40-05.
  - (2) Flange
    - (a) Cracks:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , and C .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 2, Details A , B , C , D , and E .
      - 2) Damage that does not go through the clad surface is permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A minimum of 1.0 inch away from the edge of a fastener hole or other damage.
      - 2) A minimum of 2D (D = the diameter of the damage) away from the edge of the part.
      - 3) A minimum of 0.20 inch away from a radius.

ALLOWABLE DAMAGE 2

**53-00-53**

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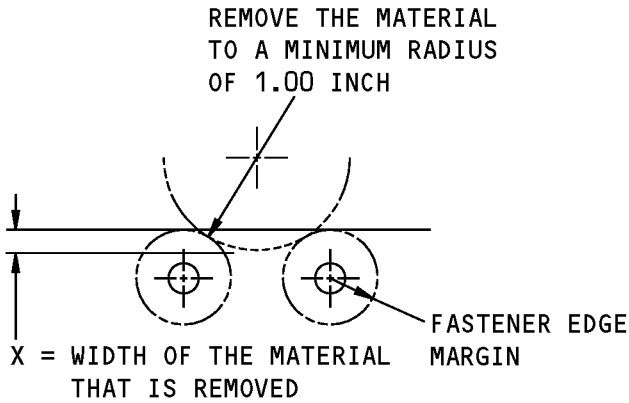


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**STRUCTURAL REPAIR MANUAL**

- 4) Not more than 0.25 inch in diameter before they are drilled and filled with a 1/4 inch diameter or smaller rivet.
  - a) Use a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
  - b) Drill the holes to the applicable size as given in 51-40-05.

**STRUCTURAL REPAIR MANUAL**



SIDEPLATE, CARGO TRACK, RAIL OR ZEE:

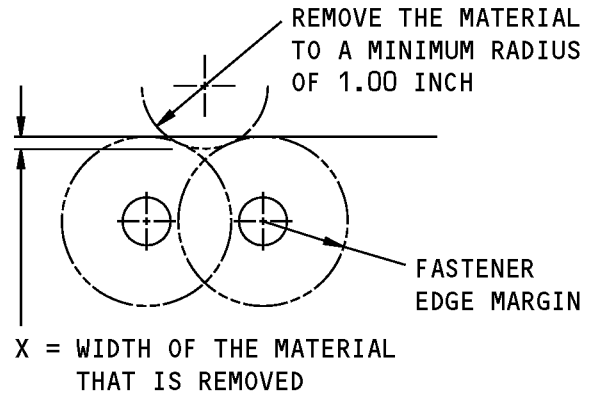
X = A MAXIMUM OF 0.10 INCH

INTERCOSTAL:

X = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE OR WEB WIDTH, OR 0.10 INCH

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**A**



SIDEPLATE, CARGO TRACK, RAIL OR ZEE:

X = A MAXIMUM OF 0.10 INCH

INTERCOSTAL:

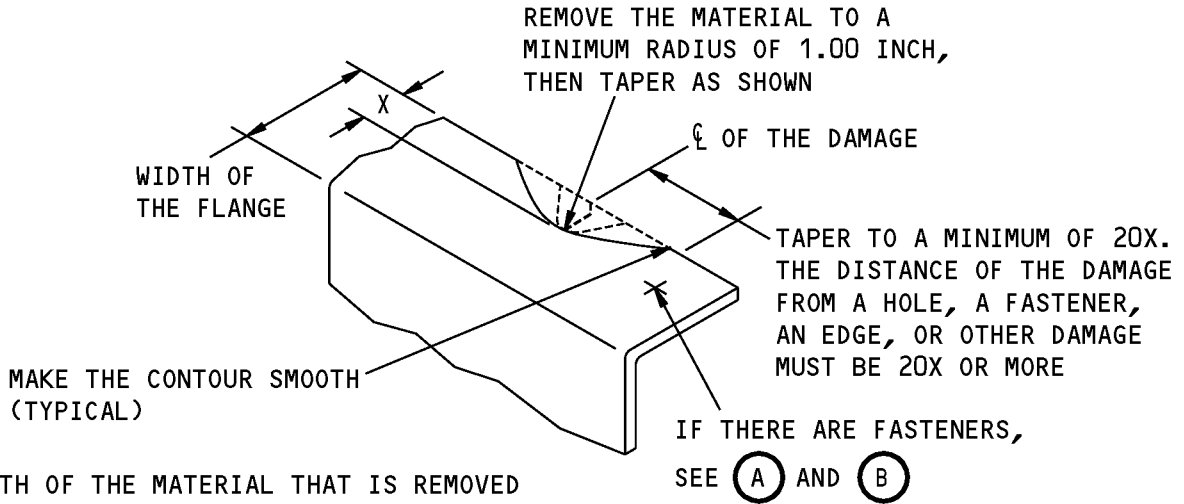
X = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE OR WEB WIDTH, OR 0.10 INCH

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**B**

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 6)**

**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED

SIDEPLATE, CARGO TRACK, RAIL OR ZEE:

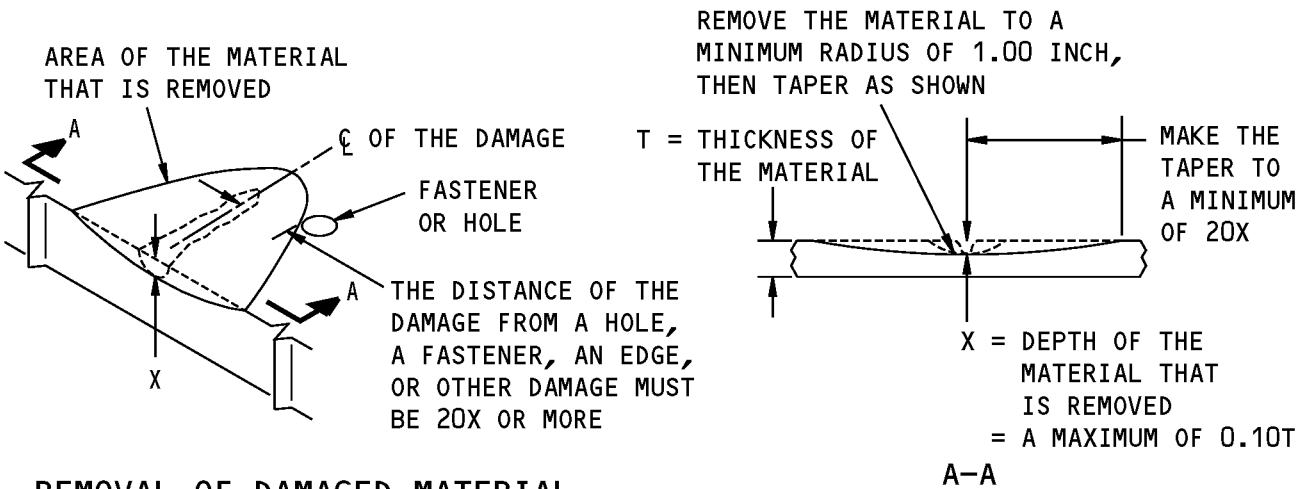
X = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

INTERCOSTAL:

X = THE SMALLER VALUE OF 10 PERCENT OF THE FLANGE WIDTH OR 0.10 INCH

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(C)



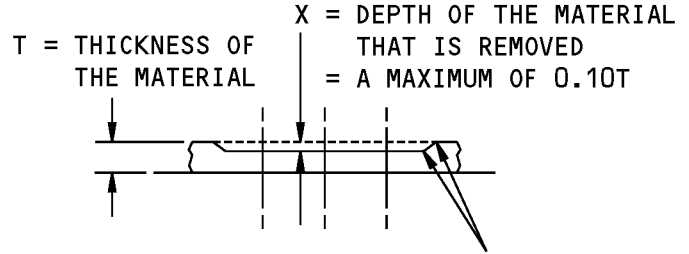
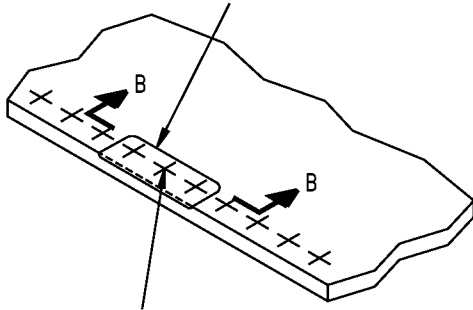
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)

**Allowable Damage Limits  
Figure 103 (Sheet 2 of 6)**

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



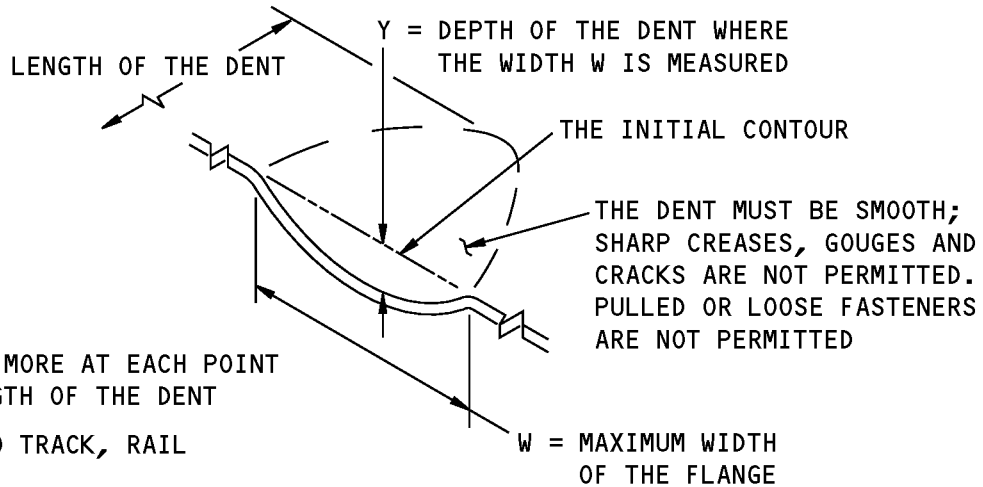
REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

B-B

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(E)



$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE DENT

SIDEPLATE, CARGO TRACK, RAIL OR ZEE:

Y = A MAXIMUM OF 0.125 INCH

INTERCOSTAL:

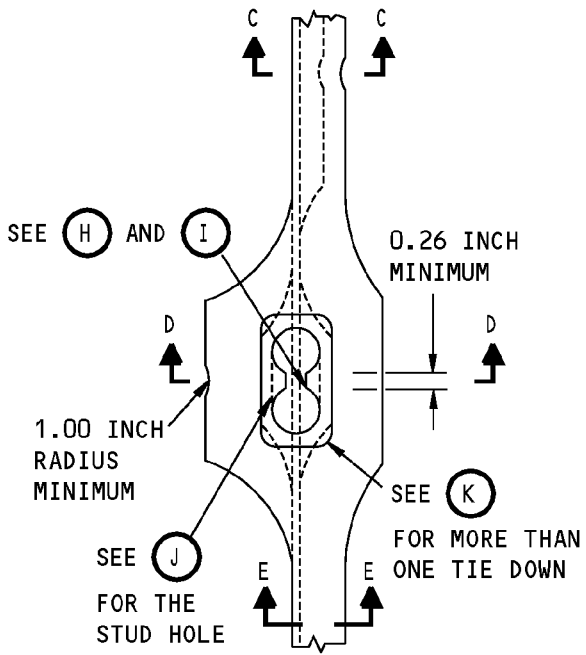
Y = A MAXIMUM OF 0.05 INCH

**DENT THAT IS PERMITTED**

(F)

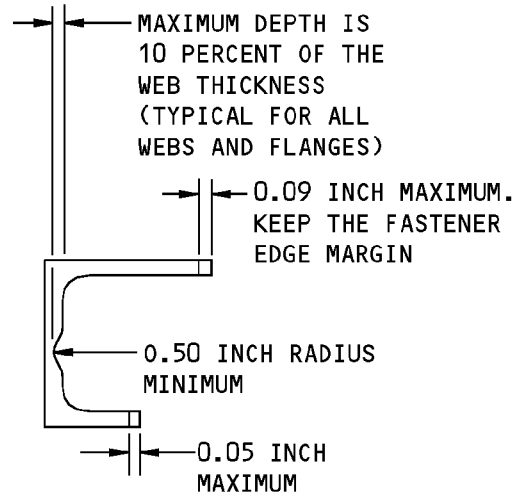
**Allowable Damage Limits  
Figure 103 (Sheet 3 of 6)**

**STRUCTURAL REPAIR MANUAL**



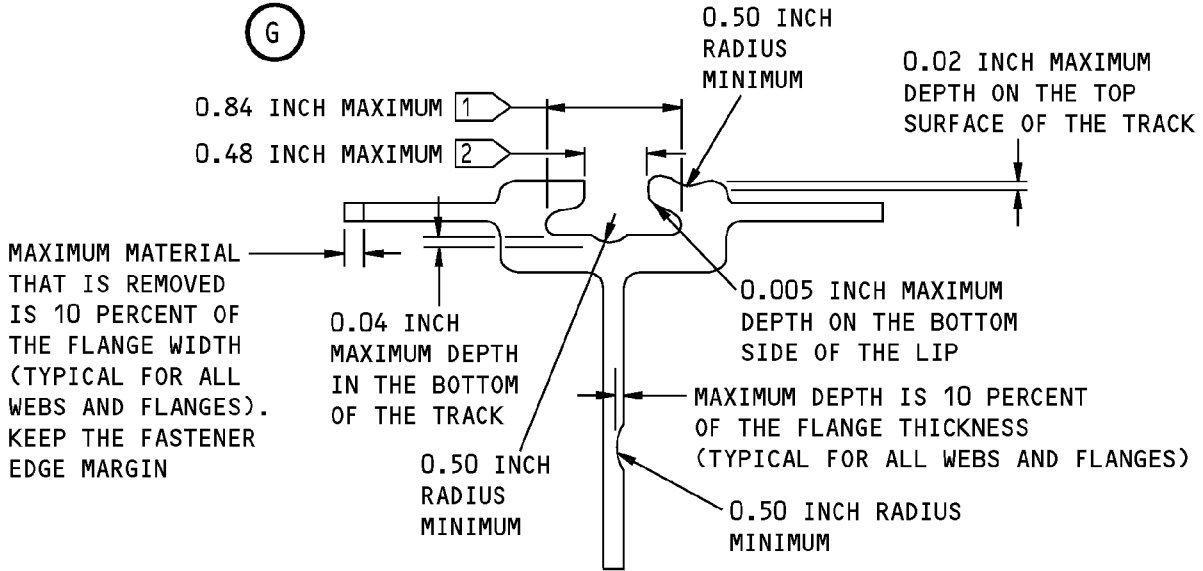
**REMOVAL OF DAMAGED MATERIAL FROM THE CARGO TRACK**

(G)



**TYPICAL CROSS-SECTION BETWEEN FRAMES**

C-C



**TYPICAL CROSS-SECTION AT TIE DOWNS**

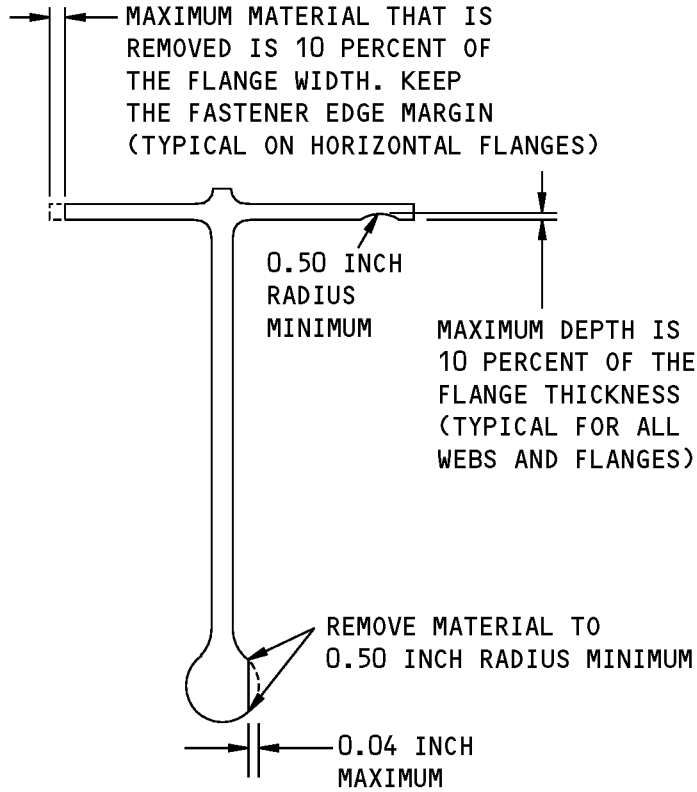
D-D

**NOTES**

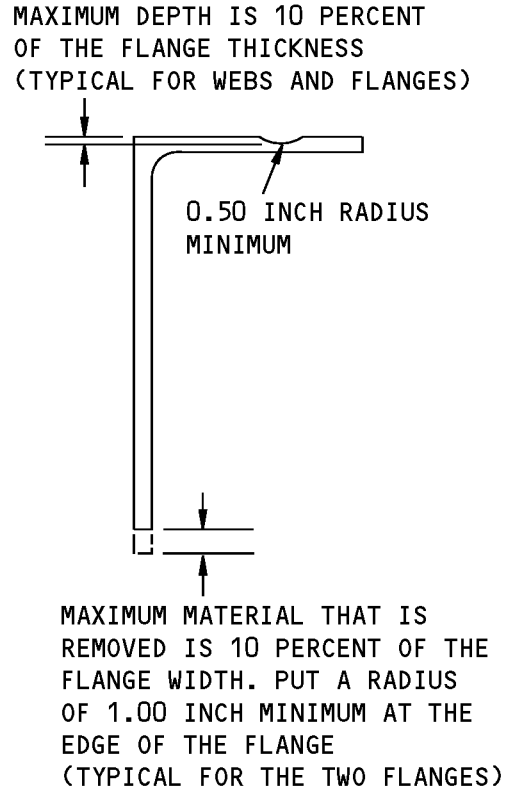
- 1 THIS DIMENSION IS FOR THE STUD HOLE ONLY AND IS NOT APPLICABLE TO THE LIP AREA.
- 2 0.25 INCH MAXIMUM ON EACH SIDE OF THE CENTERLINE OF A STUD HOLE.

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 6)**

**STRUCTURAL REPAIR MANUAL**

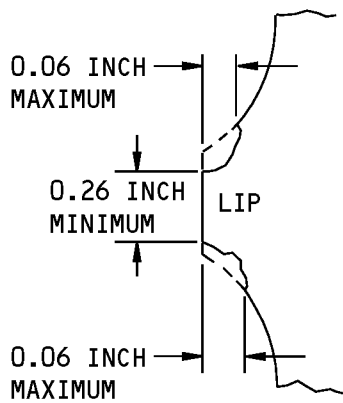


**CROSS-SECTION BETWEEN FRAMES**



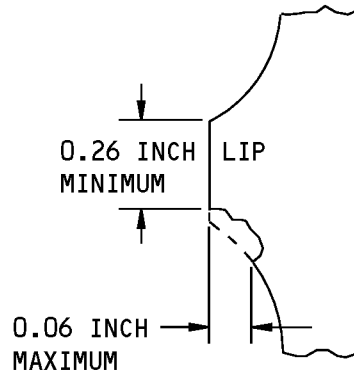
**CROSS-SECTION AT FRAMES**

**REMOVAL OF DAMAGED MATERIAL AT TYPICAL SECTIONS E-E**



**DAMAGE CLEANUP ON LIP**

**H**

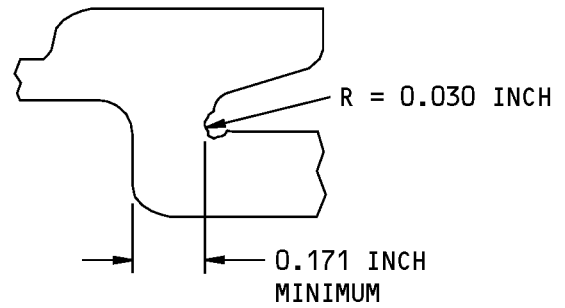
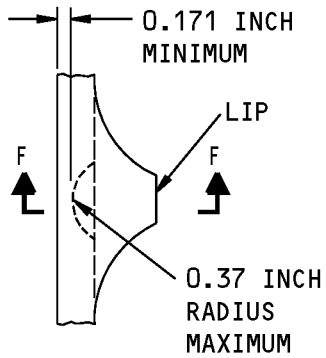


**DAMAGE CLEANUP ON LIP**

**I**

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 6)**

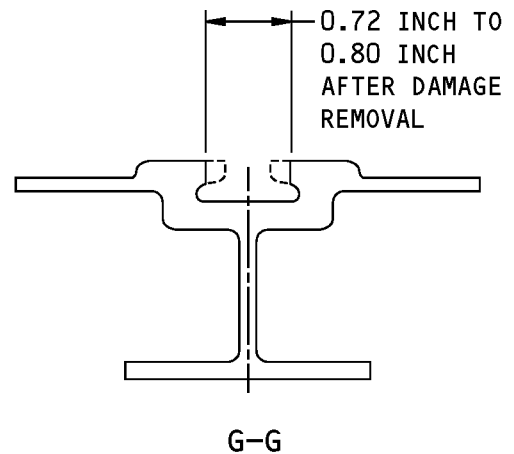
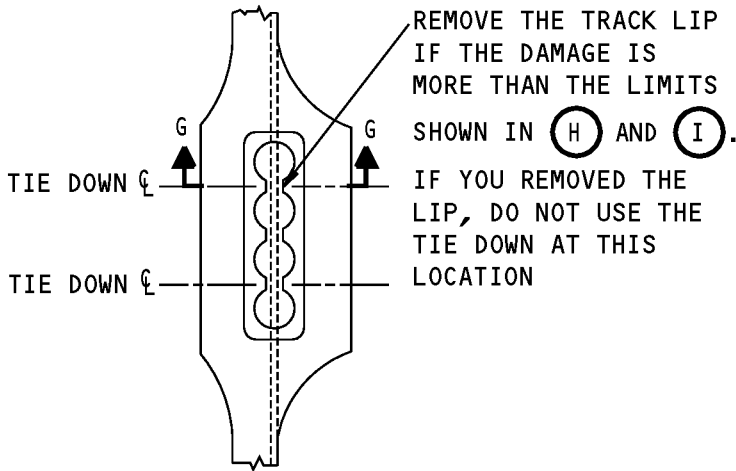
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL  
FROM A STUD HOLE**

F-F

**J**



**REMOVAL OF DAMAGED MATERIAL AT  
LOCATIONS WITH MORE THAN ONE TIE DOWN**

**K**

**Allowable Damage Limits  
Figure 103 (Sheet 6 of 6)**

**737-800**  
**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - FORWARD AND AFT CARGO COMPARTMENT FLOOR PANELS**

**1. References**

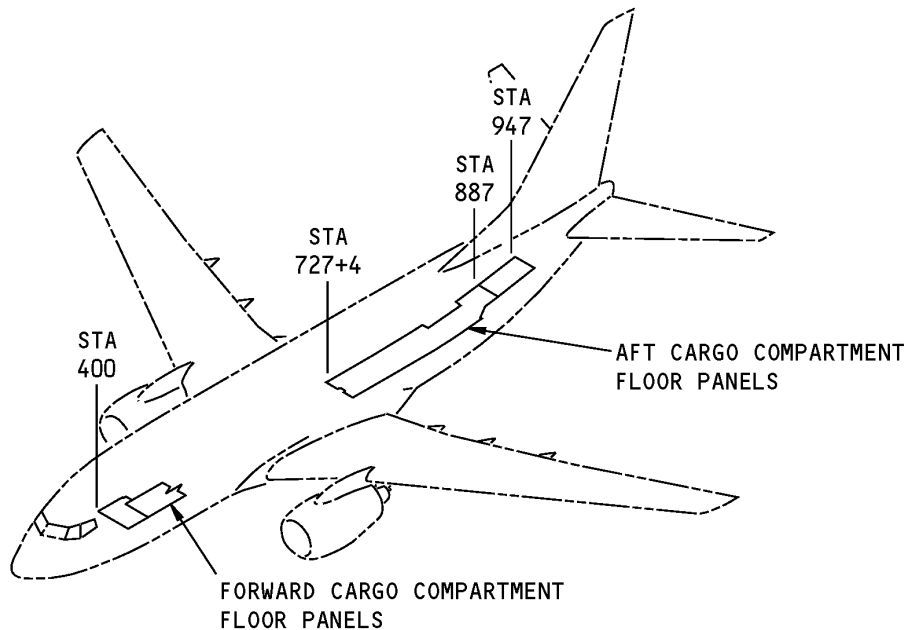
Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-30-05, GENERAL	Equipment and Tools For Repairs
51-40-02, GENERAL	Fastener Installation and Removal

**2. Applicability**

A. Repair 1 is applicable to damage that is on the forward and aft cargo compartment floor panels as shown in Forward and Aft Cargo Compartment Floor Panel Locations, Figure 201/REPAIR 1.

**3. General**

A. A repair that has been used by the operator and found satisfactory is permitted.



**Forward and Aft Cargo Compartment Floor Panel Locations**  
**Figure 201**





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## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - CARGO COMPARTMENT FLOOR BEAM REPAIR BETWEEN ADJACENT FRAMES

#### 1. Applicability

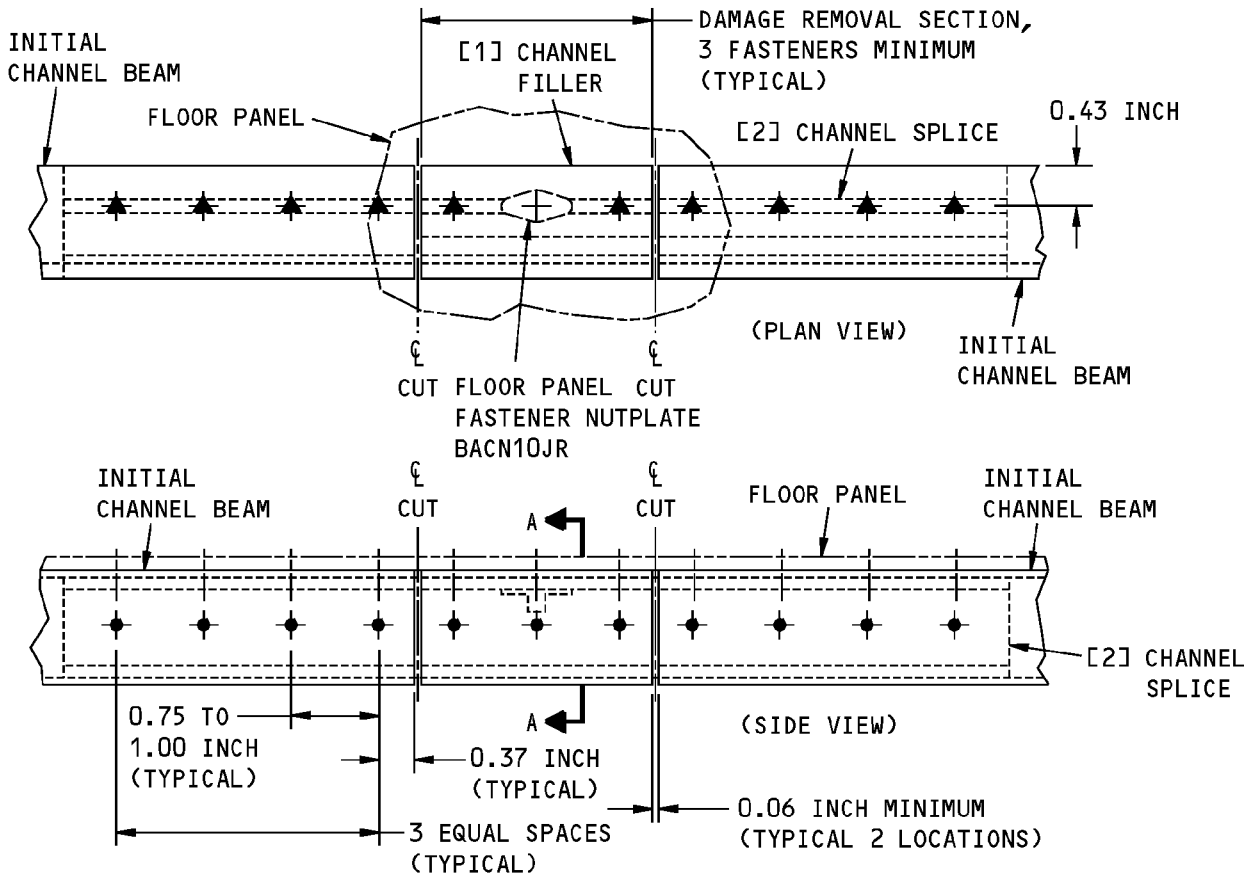
A. Repair 2 is applicable to:

- (1) Channel and zee floor beams in the forward cargo compartment that have the cross-sections shown in Sections A-A and B-B.
- (2) Rail floor beams in the aft cargo compartment that have the cross-section shown in Section A-A .
- (3) A cargo compartment floor beam where the two cut ends of the repair section are made between adjacent floor beams.

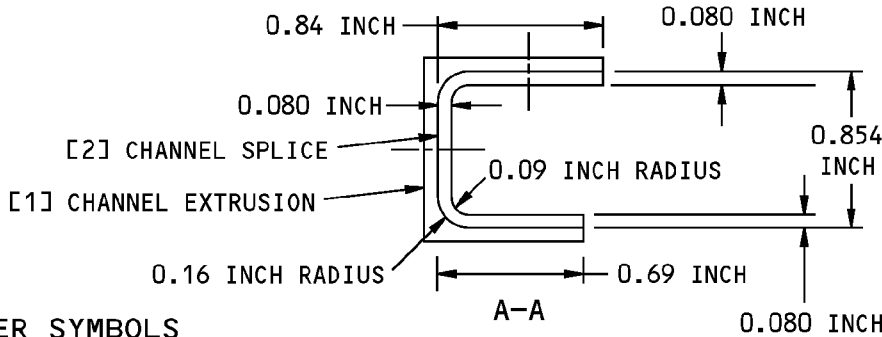
#### 2. General

A. Repair 1 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

**STRUCTURAL REPAIR MANUAL**



**CHANNEL OR RAIL FLOOR BEAM REPAIR**

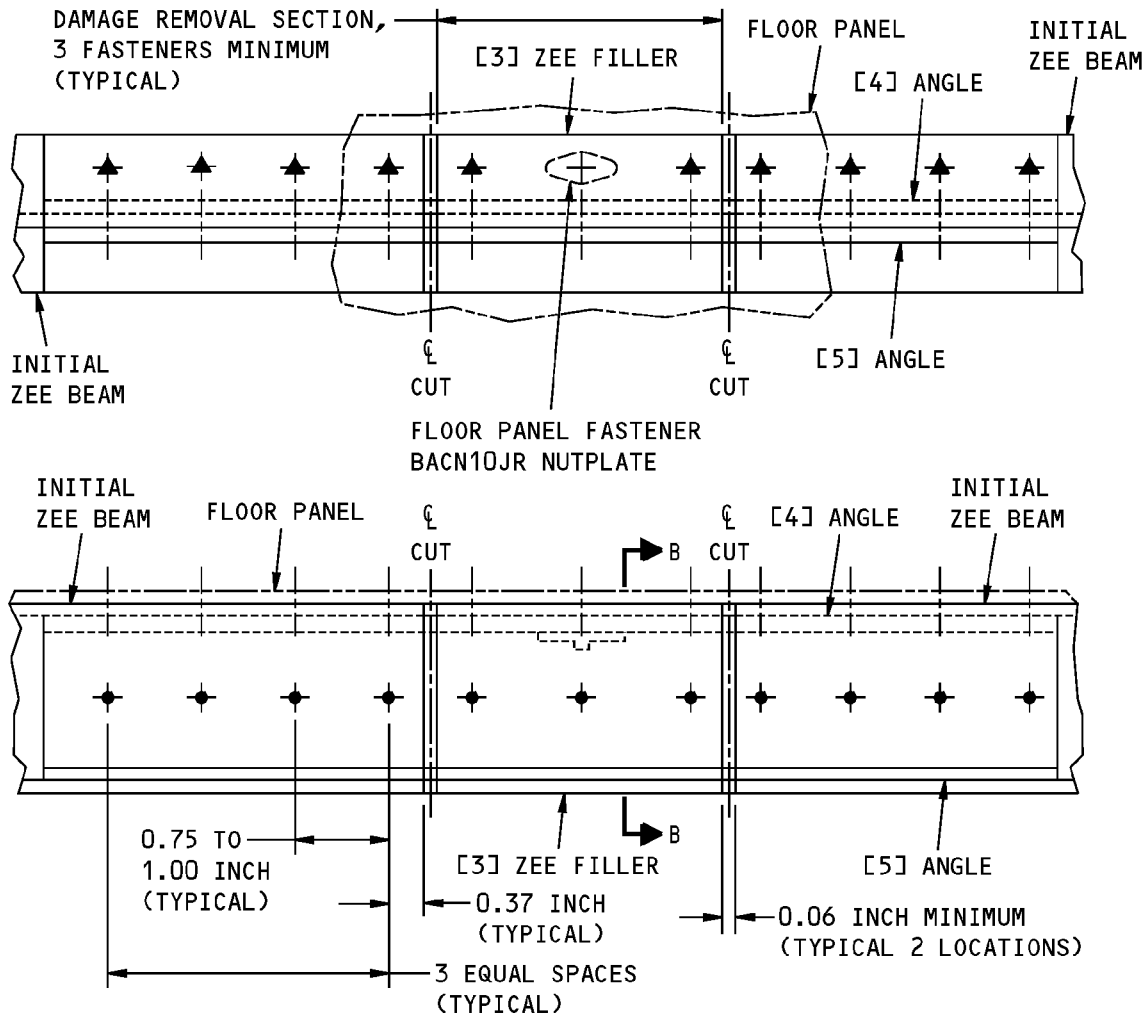


**FASTENER SYMBOLS**

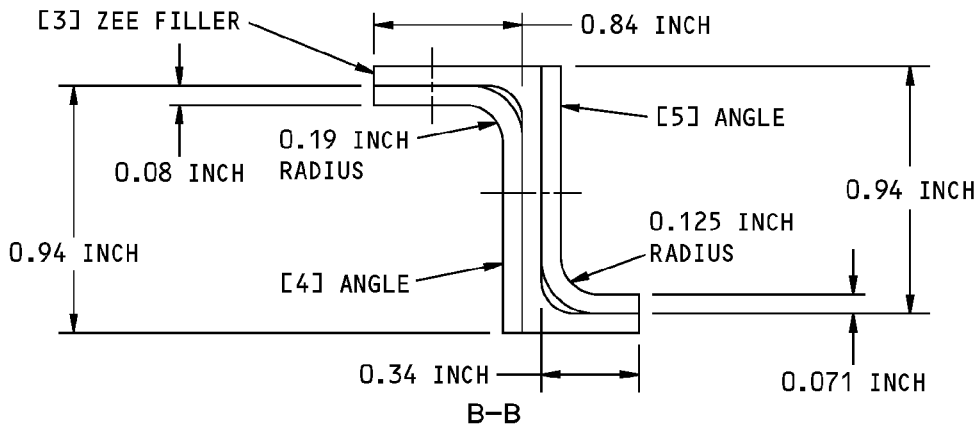
- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FLOOR PANEL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

**Cargo Floor Beam Repair Between Adjacent Frames  
Figure 201 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



**ZEE FLOOR BEAM REPAIR**



**Cargo Floor Beam Repair Between Adjacent Frames  
Figure 201 (Sheet 2 of 2)**

## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL P/B GENERAL	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the floor panels in the area of the damaged cargo compartment floor beam.
- B. Cut and remove the damaged part of the cargo compartment floor beam.
  - (1) Cut the cargo compartment floor beam between adjacent frames.
- C. Remove the nutplates for the floor panel fasteners in the area where the repair angles will be installed, if necessary. Refer to Figure 201.
- D. Make the repair parts. Refer to Table 201/REPAIR 2.

**NOTE:** The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum extrusions to dimensions as given in the production drawing.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Channel Filler	1	Use BAC1509-100146 7050-T76511 aluminum channel extrusion
[2]	Channel Splice	1	Make from BAC1510-1355 7050-T76511 aluminum channel extrusion. Machine the part to dimensions shown in Section A-A
[3]	Zee Filler	1	Use BAC1517-1167 7050-T76511 aluminum zee extrusion
[4]	Angle	1	Use 7075-0 aluminum sheet that is 0.080 inch thick. Heat treat to the T62 condition after you bend the part
[5]	Angle	1	Use 7075-0 aluminum sheet that is 0.071 inch thick. Heat treat to the T62 condition after you bend the part

- E. Assemble the repair parts.
- F. Drill the fastener holes.
- G. Disassemble the repair parts.



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## STRUCTURAL REPAIR MANUAL

- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo compartment floor beam.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo compartment floor beam. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo compartment floor beam. Refer to SOPM 20-41-02.
- K. Install the nutplates on the part [2] channel splice or the part [4] angle, as applicable.
  - (1) Align the nutplate and the floor fastener hole.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:
    - (a) Apply BMS 5-95 sealant to the mating surfaces.
    - (b) Install the fasteners wet with BMS 5-95 sealant.
    - (c) Fill all spaces with BMS 5-95 sealant.
- M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.
- N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
  - (1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.
- O. Install the cargo compartment floor panels.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 3 - CARGO TRACK REPAIR BETWEEN FRAMES

#### 1. Applicability

A. Repair 3 is applicable to:

(1) Cargo tracks in the forward and aft cargo compartments that have the cross-section shown in Cargo Track Repair Between Frames, Figure 201/REPAIR 3, Section A-A .

B. You can use Repair 3 to make a splice to the cargo track between frames.

(1) You are permitted to use Repair 3 to replace part of a cargo track. Use one of the procedures that follow:

(a) Do a repair at each cut end of the initial cargo track. Use one of the two procedures that follow:

1) Do Repair 3 at each cut end.

2) Do Repair 3 at one cut end and Repair 4 at the other cut end.

(b) Do Repair 3 at one cut end of the initial cargo track. Make the length of the part [1] track extrusion the same as the initial length of the remaining cargo track.

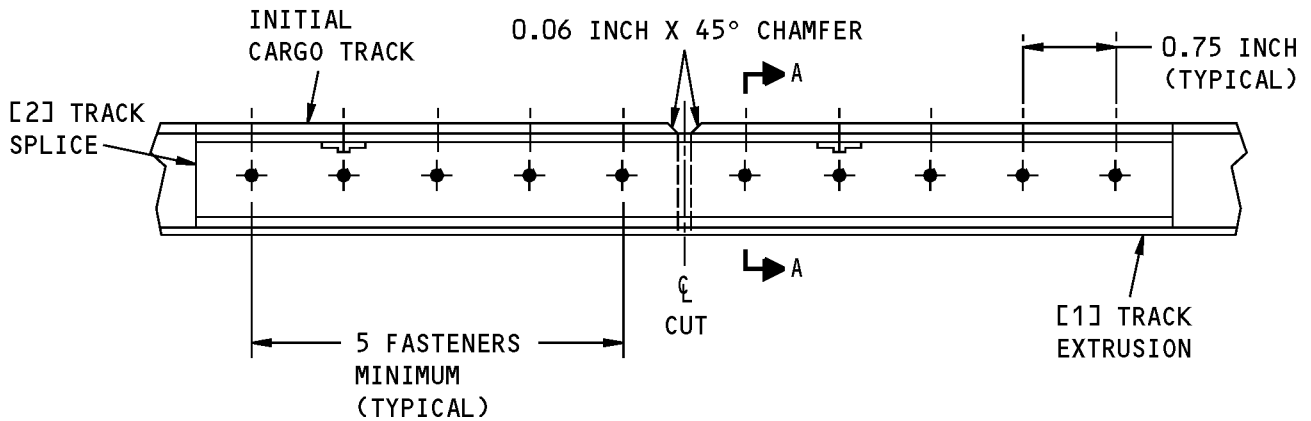
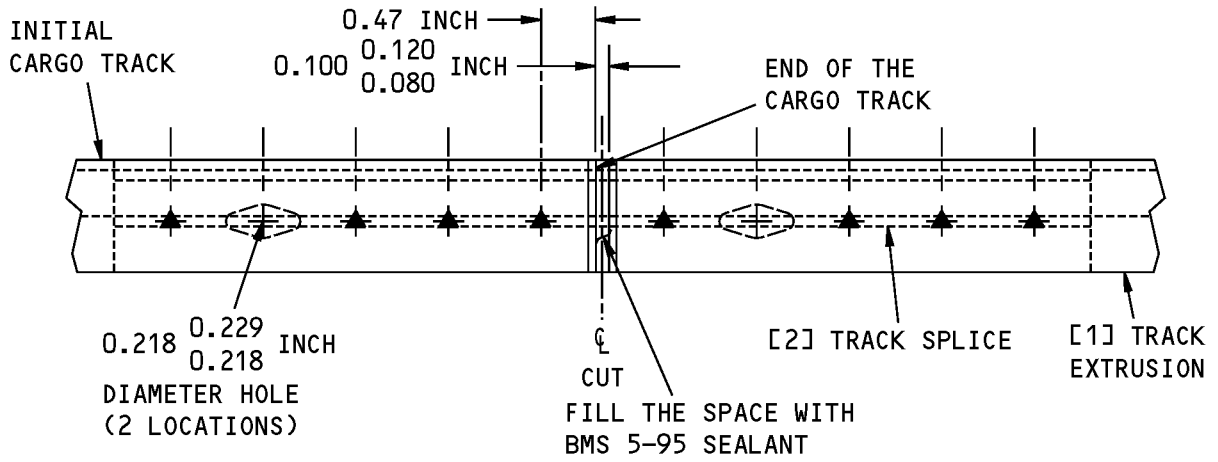
#### 2. General

A. The repair that follows is an alternative to Repair 3:

(1) Repair 4 is a cargo track repair at a frame.

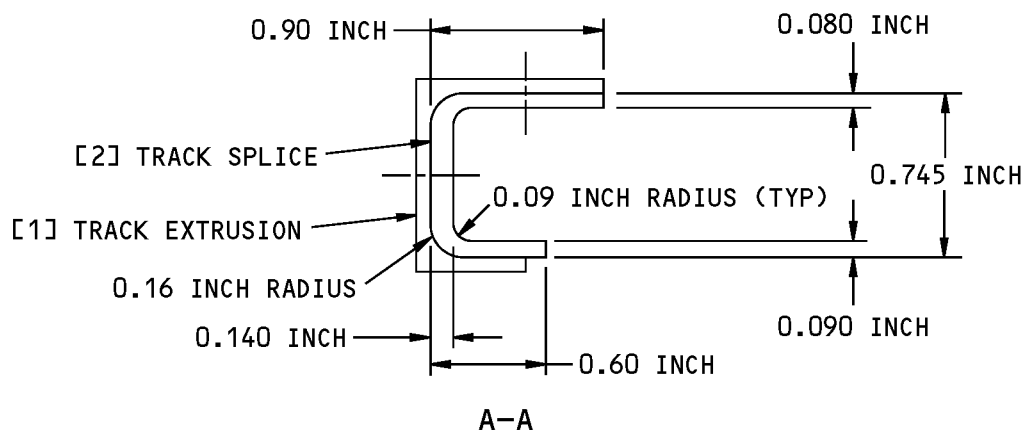
B. Repair 3 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

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STRUCTURAL REPAIR MANUAL**



**Cargo Track Repair Between Frames  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**FASTENER SYMBOLS**

- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FLOOR PANEL FASTENER.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

**Cargo Track Repair Between Frames  
Figure 201 (Sheet 2 of 2)**





## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the floor panels in the area of the damaged cargo track.
- B. Cut and remove the damaged part of the track.
  - (1) Cut the track between floor panel fastener holes.
  - (2) Cut the track between frames. Do not make a cut through a cargo track tie down. Make sure that there is sufficient clearance from the cargo track tie down to install the repair parts.
- C. Remove the nutplates for the floor panel fasteners in the area where the repair angle will be installed.
- D. Remove the clip at each frame in the area of the repair, if necessary.
- E. Make the repair parts. Refer to Table 201/REPAIR 3.

**NOTE:** The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum extrusion to dimensions as given in the production drawing.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Track Extrusion	1	Use BAC1520-1397 7050-T76511 track extrusion You can get the track extrusion repair part from STA 755 to STA 887, Boeing Drawing Number 654A0004, from the Boeing Spares Department Use part number 654A0004-35 for the RBL 13.84 cargo track
[2]	Track Splice	1	Use BAC1509-100688 7050-T76511 channel extrusion. As an alternative you can use Boeing Part number 146A7506-8.

- F. Assemble the repair parts.
- G. Drill the fastener holes.
- H. Disassemble the repair parts.



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## STRUCTURAL REPAIR MANUAL

- I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo track.
- J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo track. Refer to 51-20-01.
- K. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo track. Refer to SOPM 20-41-02.
- L. Install the nutplates on the part [2] track splice for the floor panel fasteners.
  - (1) Align the nutplate and the floor fastener hole.
- M. Install the repair parts.
  - (1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:
    - (a) Apply BMS 5-95 sealant to the mating surfaces.
    - (b) Install the fasteners wet with BMS 5-95 sealant.
    - (c) Apply BMS 5-95 sealant to the space between the initial cargo track and the part [1] track extrusion.
    - (d) Apply fillet seals to fasteners on the pressure side of the seal plane and along the edges of the repair parts.
- N. Apply the initial finish to the repair area. Refer to AMM PAGEBLOCK 51-21-99/701.
- O. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
  - (1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.
- P. Install the clip at the frame if it was removed.
- Q. Install the cargo floor panels.



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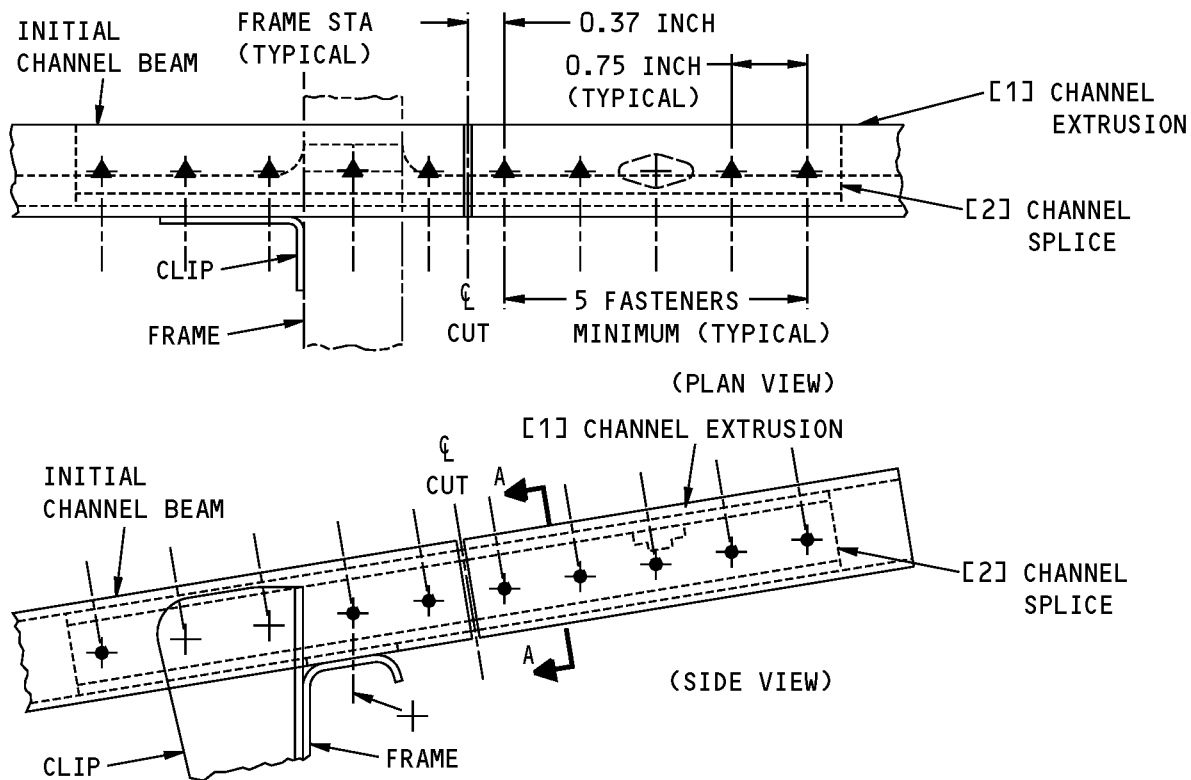
## STRUCTURAL REPAIR MANUAL

### REPAIR 4 - CARGO COMPARTMENT FLOOR BEAM AND TRACK REPAIR AT A FRAME

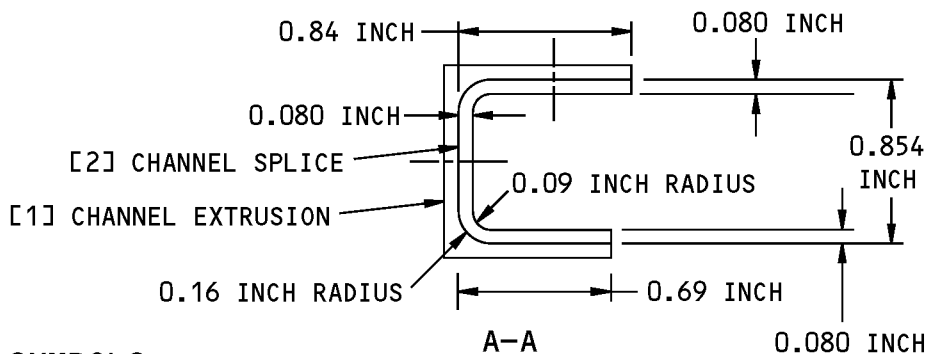
#### 1. Applicability

- A. Repair 4 is applicable to:
  - (1) Channel floor beams and cargo tracks in the forward cargo compartment that have the cross-sections shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Sections A-A and B-B.
  - (2) Rail floor beams and cargo tracks in the aft cargo compartment that have the cross-sections shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Sections A-A and B-B.
- B. You can use Repair 4 to make a splice to the cargo compartment floor beam or track at a frame.
  - (1) Cargo Floor Beam:
    - (a) You are permitted to use Repair 4 to replace part of a cargo compartment floor beam. Use one of the procedures that follow:
      - 1) Do Repair 4 at each cut end of the initial cargo compartment floor beam.
      - 2) Do Repair 4 at one cut end of the initial cargo compartment floor beam. Make the length of the part [1] channel extrusion the same as the initial length of the remaining cargo compartment floor beam.
    - (2) Cargo Track:
      - (a) You are permitted to use Repair 4 to replace part of a cargo track. Use one of the procedures that follow:
        - 1) Do a repair at each cut end of the initial cargo track. Use one of the two procedures that follow:
          - a) Do Repair 4 at each cut end.
          - b) Do Repair 4 at one cut end and Repair 3 at the other cut end.
        - 2) Do Repair 4 at one cut end of the initial cargo track. Make the length of the part [3] track extrusion the same as the initial length of the remaining cargo track.
  - C. Repair 4 is not applicable to a cargo track tie down at a frame.

**STRUCTURAL REPAIR MANUAL**



**CHANNEL OR RAIL FLOOR BEAM REPAIR AT A FRAME  
(TYPICAL FRAME SECTION)**

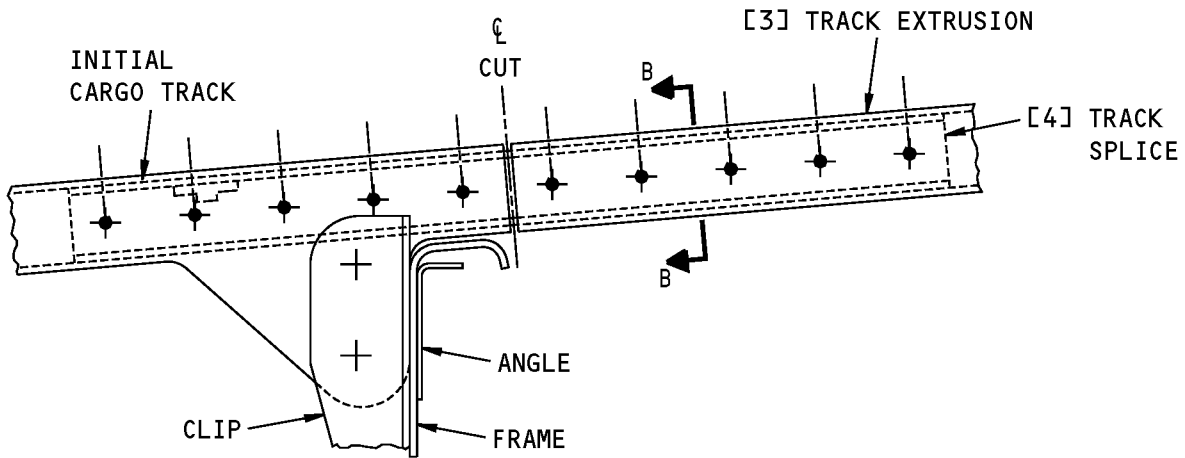
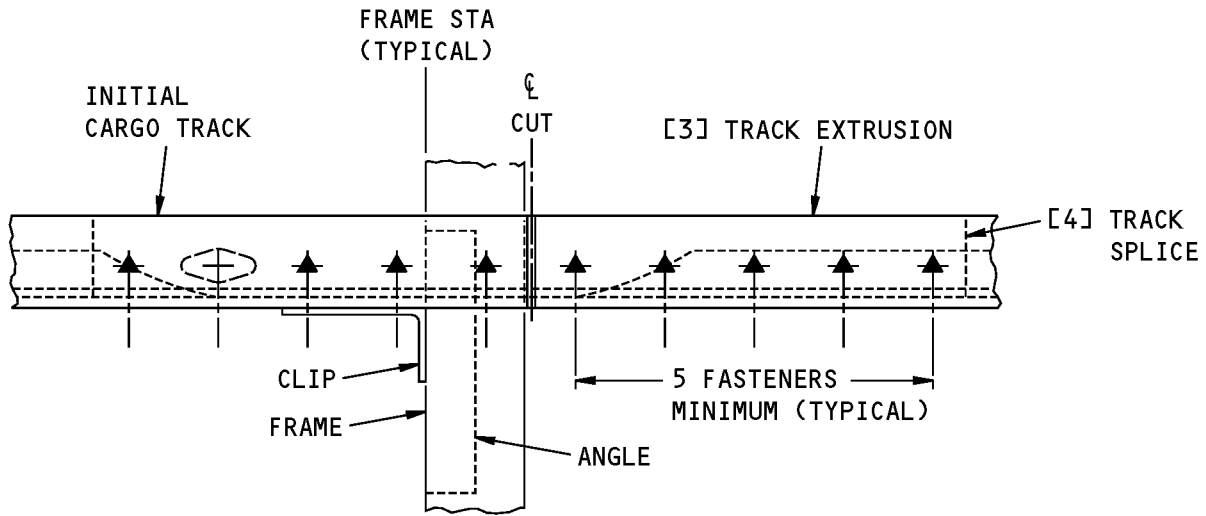


**FASTENER SYMBOLS**

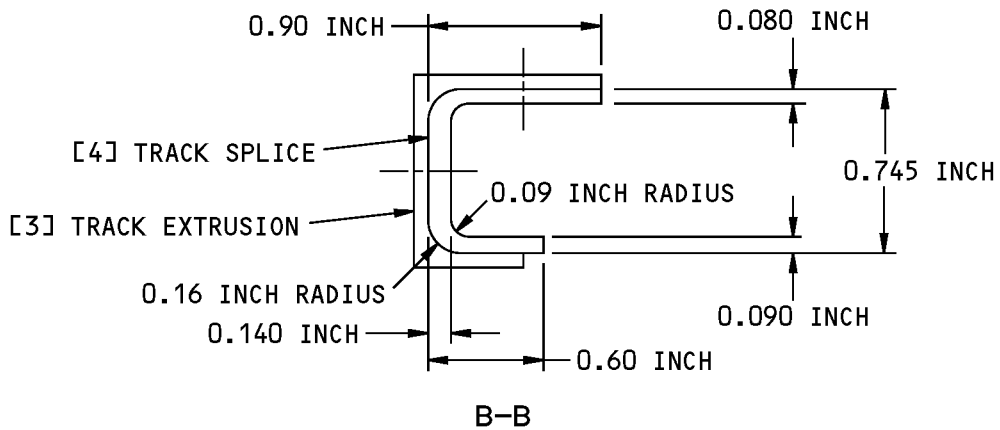
- + INITIAL FASTENER LOCATION. INSTALL THE SAME TYPE AND DIAMETER AS THE INITIAL FASTENER.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACB30VU6K HEX DRIVE BOLT WITH A BACC30BL COLLAR.

**Cargo Floor Beam and Track Repair at a Frame  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**CARGO TRACK REPAIR AT A FRAME  
(TYPICAL FRAME STATION)**



**Cargo Floor Beam and Track Repair at a Frame  
Figure 201 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. The repair that follows is an alternative to the cargo track repair of Repair 4:
- (1) Repair 3 is a cargo track repair between frames.
- B. Repair 4 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the floor panels in the area of the damaged cargo compartment floor beam or track.
- B. Cut and remove the damaged part of the cargo compartment floor beam or track.
- (1) Cargo Floor Beam:
    - (a) Cut the cargo compartment floor beam as shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Channel or Rail Floor Beam Repair at a Frame. Do not cut through the larger width of the flange that attaches to the frame.
  - (2) Cargo Track:
    - (a) Cut the cargo track as shown in Cargo Floor Beam and Track Repair at a Frame, Figure 201/REPAIR 4, Cargo Track Repair at a Frame. Do not cut through a cargo track tie down. Make sure that there is sufficient clearance from the cargo track tie down to install the repair parts.
- C. Remove the clip at each frame in the area of the repair.
- D. Make the repair parts. Refer to Table 201/REPAIR 4.

**NOTE:** The repair parts:

- Are available from the Boeing Spare Department.
- Can be made from aluminum extrusions to dimensions as given in the production drawing.



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**STRUCTURAL REPAIR MANUAL**

**Table 201:**

<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART</b>	<b>QUANTITY</b>	<b>MATERIAL</b>
[1]	Channel Extrusion	1	Use BAC1509-100146 7050-T76511 aluminum channel extrusion.
[2]	Channel Splice	1	Make from BAC1510-1355 7050-T76511 aluminum channel extrusion. Machine the part to dimensions shown in Section A-A.
[3]	Track Extrusion	1	Use BAC1520-1397 7050-T76511 aluminum extrusion.
[4]	Track Splice	1	Use BAC1509-100688 7050-T76511 aluminum channel extrusion.

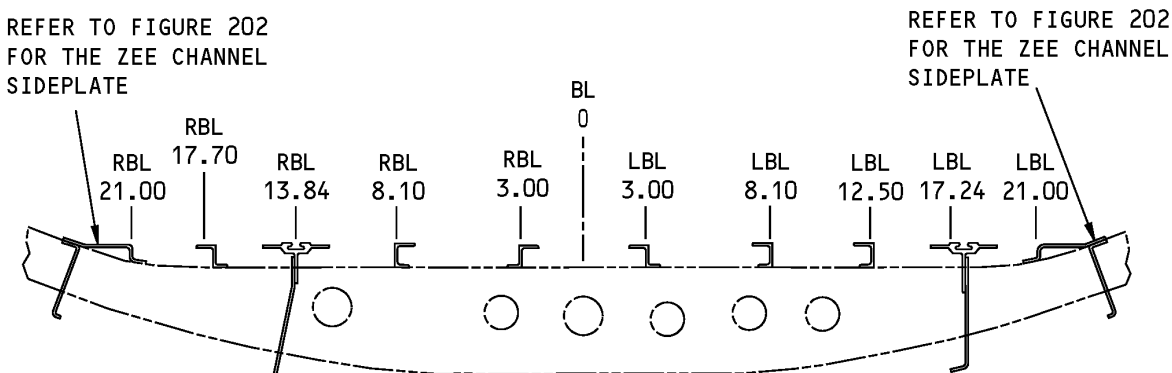
- E. Assemble the repair parts.
- F. Drill the fastener holes. Countersink the holes where necessary.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the cargo compartment floor beam or track.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the cargo compartment floor beam or track. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the cargo compartment floor beam or track. Refer to SOPM 20-41-02.
- K. Install the repair parts.
  - (1) Apply BMS 5-95 sealant as given in 51-20-05 to the repair as follows:
    - (a) Apply BMS 5-95 sealant to the mating surfaces.
    - (b) Install the fasteners wet with BMS 5-95 sealant.
    - (c) Apply BMS 5-95 sealant to the space between the initial cargo floor beam or track and the repair extrusion.
- L. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.
- M. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the surface of the repair area. Refer to 51-10-02.
  - (1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to 51-10-02.
- N. Install the clip at the frame.
- O. Install the cargo floor panels.

**STRUCTURAL REPAIR MANUAL**

**REPAIR 5 - CARGO COMPARTMENT SIDEPLATE REPAIR BETWEEN FLOOR PANEL SPLICES**

**1. Applicability**

- A. Repair 5 is applicable to the zee channel sideplates in the forward and aft cargo compartments shown in Cargo Compartment Sideplate Locations, Figure 201/REPAIR 5.
- B. You can use Repair 5 to make a splice to the sideplate between floor panel splices.
  - (1) You are permitted to use Repair 5 to replace part of a sideplate. Use one of the procedures that follow:
    - (a) Do Repair 5 at each cut end.
    - (b) Do Repair 5 at one cut end and Repair 6 at the other cut end.
  - (2) Do Repair 5 at one cut end of the initial sideplate. Make the length of the part [1] zee channel sideplate the same as the initial length of the remaining sideplate.



**TYPICAL CROSS-SECTION OF THE CARGO COMPARTMENT FLOOR STRUCTURE**

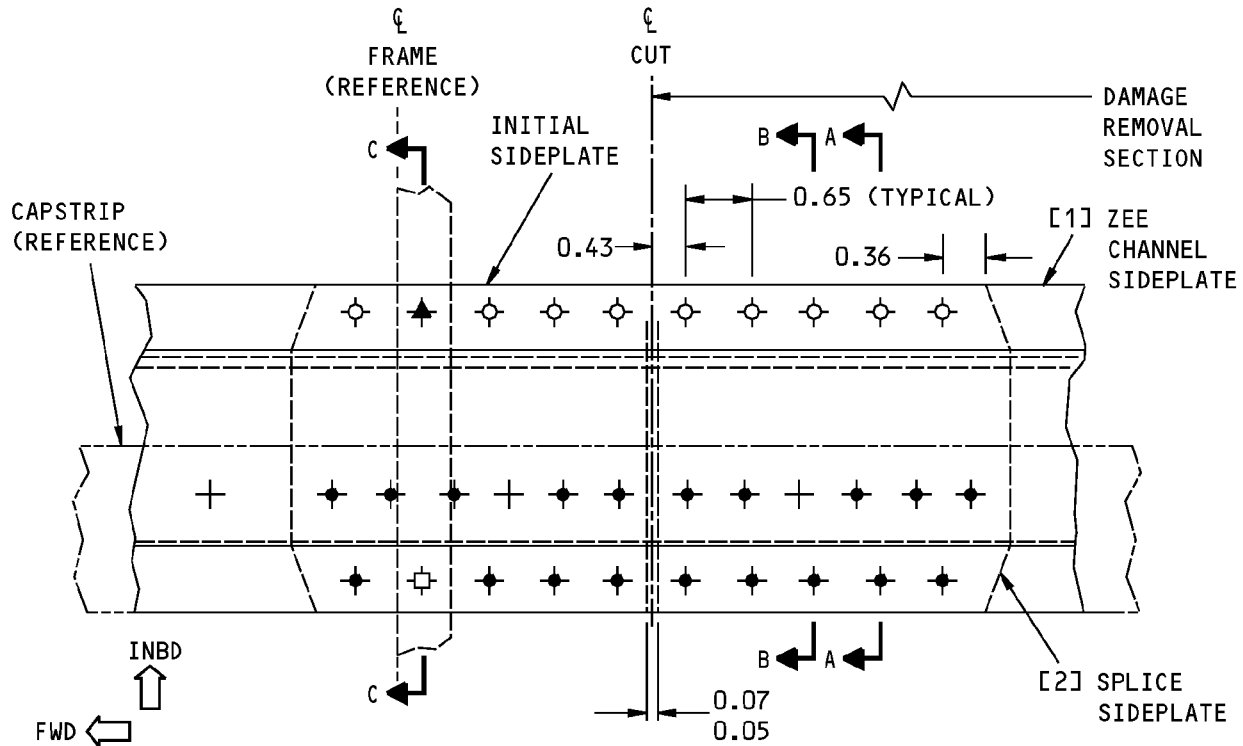
**Cargo Compartment Sideplate Locations  
Figure 201**

**2. General**

- A. Repair 5 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. The repair that follows is an alternative to Repair 5:
  - (1) Repair 6 is a repair of the cargo compartment sideplate at a floor panel splice.



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STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

**NOTES**

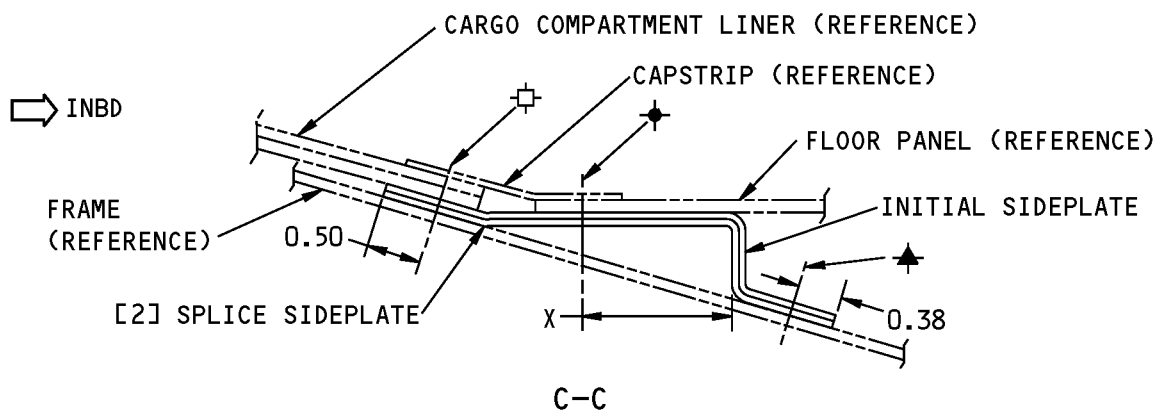
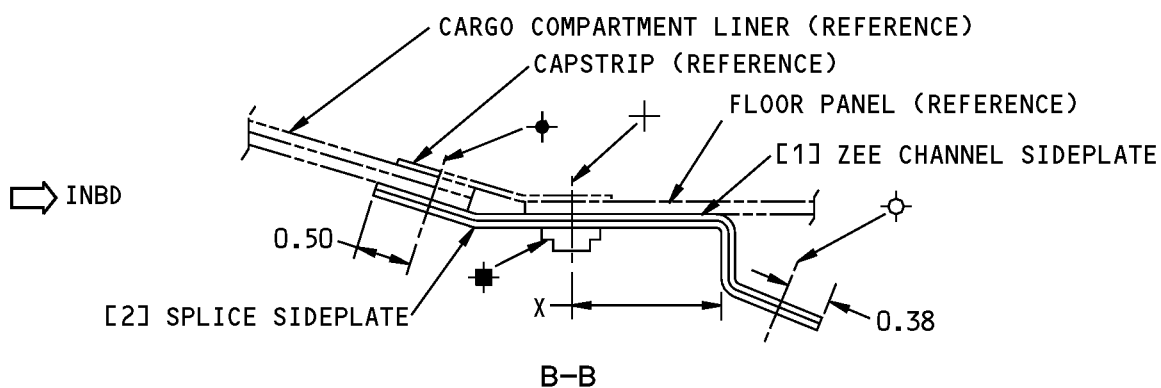
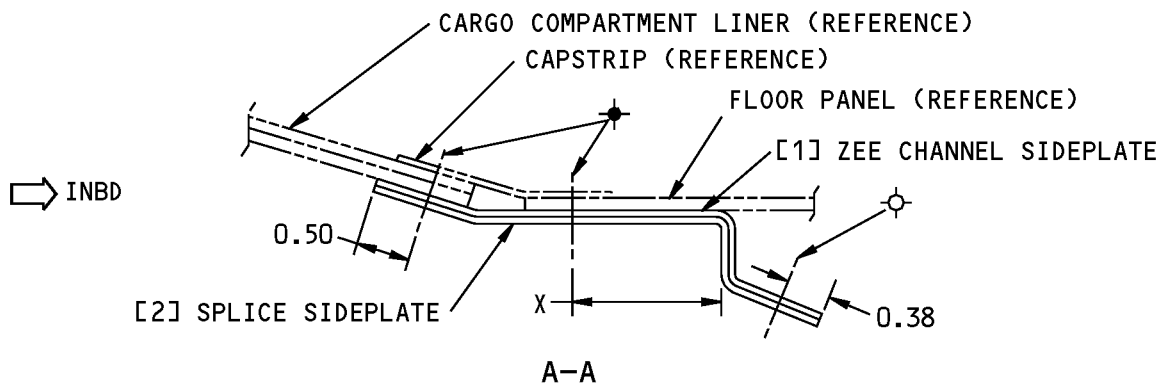
- ALL DIMENSIONS ARE IN INCHES

**FASTENER SYMBOLS**

- + FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.
- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.
- ▲ FRAME ATTACH REPAIR FASTENER LOCATION. INSTALL A MS20470D6 RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT6D RIVET.

**Cargo Compartment Sideplate Repair Between Floor Panel Splices  
Figure 202 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** X = THE DISTANCE OF THE REPAIR FASTENER LOCATION FROM AN EDGE  
 = 1.62 INCH FOR THE FORWARD CARGO COMPARTMENT  
 = 0.74 INCH FOR THE AFT CARGO COMPARTMENT

**Cargo Compartment Sideplate Repair Between Floor Panel Splices  
Figure 202 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the capstrips and floor panels in the area of the damaged sideplate.
- B. Cut and remove the damaged part of the sideplate. Refer to 51-10-02 for the damage removal procedures.
  - (1) Refer to Cargo Compartment Sideplate Repair Between Floor Panel Splices, Figure 202/REPAIR 5 for a typical cutout.
- C. Remove the floor panel nutplates.
- D. Make the repair parts as shown in Cargo Compartment Sideplate Repair Between Floor Panel Splices, Figure 202/REPAIR 5. Refer to Table 201/REPAIR 5 for the repair parts.

**NOTE:** The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum formed channels to dimensions as given in the production drawing.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Zee Channel Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable. Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable.
[2]	Splice Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable. Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable.

- E. Assemble the repair parts.
- F. Drill the fastener holes.



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## STRUCTURAL REPAIR MANUAL

- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial sideplate.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial sideplate. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial sideplate. Refer to SOPM 20-41-02.
- K. Install a nutplate to the part [2] splice sideplate at the floor panel attach fastener locations.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the non-aluminum fasteners wet with BMS 5-95 sealant.
  - (3) Fill the space between the part [1] zee channel sideplate and the initial sideplate with BMS 5-95.
- M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.
- N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area. Refer to 51-10-02.
- O. Install the cargo floor panels and capstrips.



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## STRUCTURAL REPAIR MANUAL

### REPAIR 6 - CARGO COMPARTMENT SIDEPLATE REPAIR AT A FLOOR PANEL SPLICE

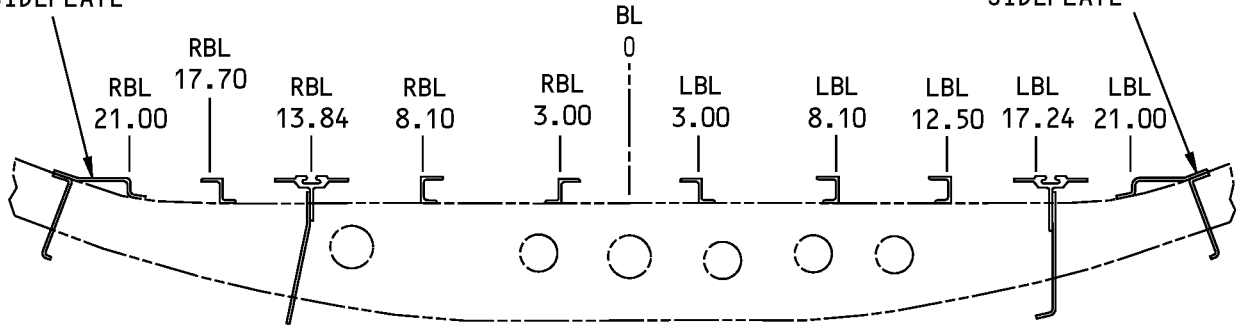
#### 1. Applicability

- A. Repair 6 is applicable to the zee channel sideplates in the forward and aft cargo compartments shown in Cargo Compartment Sideplate Location, Figure 201/REPAIR 6.
- B. You can use Repair 6 to make a splice to the sideplate at a floor panel splice.
  - (1) You are permitted to use Repair 6 to replace part of a sideplate. Use one of the procedures that follow:
    - (a) Do Repair 6 at each cut end.
    - (b) Do Repair 6 at one cut end and Repair 5 at the other cut end.
  - (2) Do Repair 6 at one cut end of the initial sideplate. Make the length of the part [1] zee channel sideplate the same as the initial length of the remaining sideplate.

**STRUCTURAL REPAIR MANUAL**

REFER TO FIGURE 202  
FOR THE ZEE CHANNEL  
SIDEPLATE

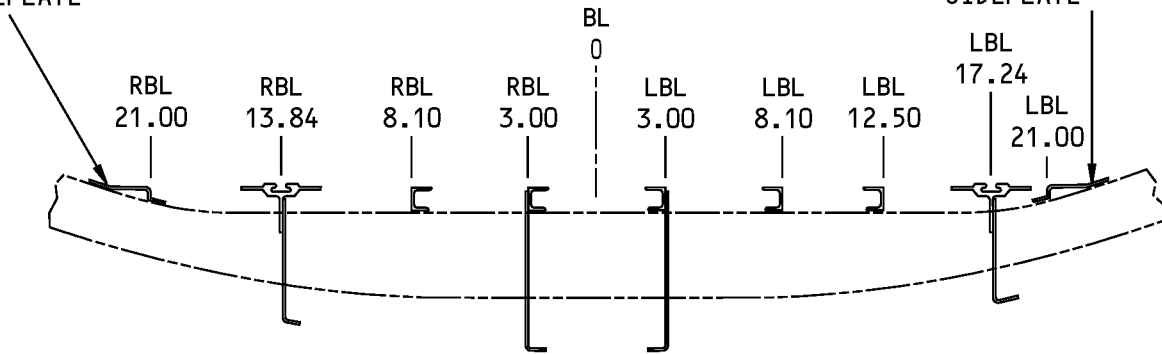
REFER TO FIGURE 202  
FOR THE ZEE CHANNEL  
SIDEPLATE



**TYPICAL CROSS-SECTION OF THE FORWARD  
CARGO COMPARTMENT FLOOR STRUCTURE**

REFER TO FIGURE 203  
FOR THE ZEE CHANNEL  
SIDEPLATE

REFER TO FIGURE 203  
FOR THE ZEE CHANNEL  
SIDEPLATE



**TYPICAL CROSS-SECTION OF THE AFT  
CARGO COMPARTMENT FLOOR STRUCTURE**

**Cargo Compartment Sideplate Location  
Figure 201**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. Repair 6 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. The repair that follows is an alternative to Repair 6:
  - (1) Repair 5 is a repair of the cargo compartment sideplate between floor panel splices.

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Remove the capstrips and floor panels in the area of the damaged sideplate.
- B. Cut and remove the damaged part of the sideplate. Refer to 51-10-02 for the damage removal procedures.
  - (1) Refer to Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice, Figure 202/REPAIR 6 for a typical cutout for the forward cargo compartment.
  - (2) Refer to Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice, Figure 203/REPAIR 6 for a typical cutout for the aft cargo compartment.
- C. Remove the floor panel nutplates.
- D. Make the repair parts as shown in Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice, Figure 202/REPAIR 6. Refer to Table 201/REPAIR 6 for the repair parts.

**NOTE:** The repair parts:

- Are available from the Boeing Spares Department.
- Can be made from aluminum formed channels to dimensions as given in the production drawing.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Zee Channel Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable  Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable



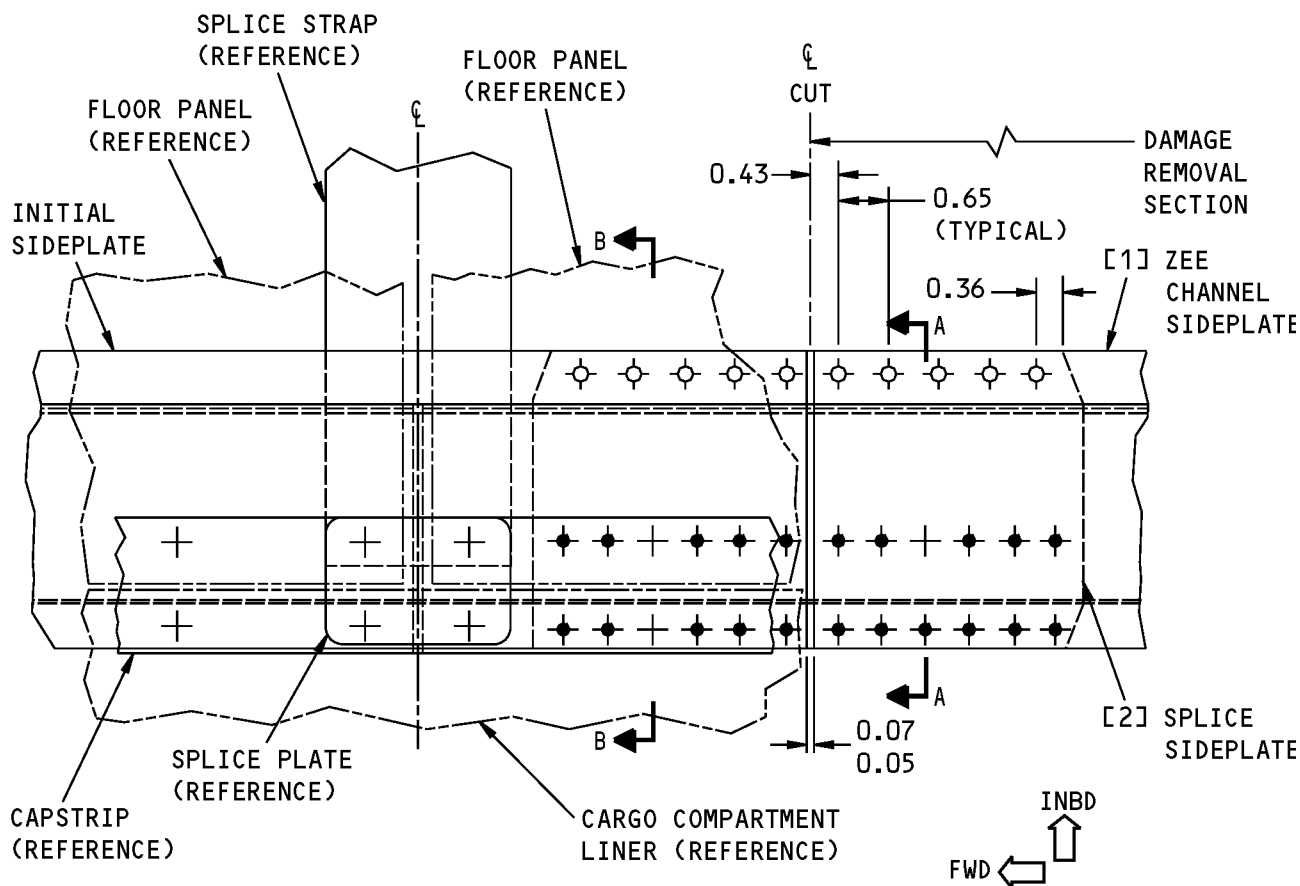
**737-800**  
**STRUCTURAL REPAIR MANUAL**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[2]	Splice Sideplate	1	Forward Cargo Compartment: Use a BAC1496-444 7075-T6 clad formed channel, as applicable Aft Cargo Compartment: Use a BAC1496-377 7075-T62 clad formed channel, as applicable

- E. Assemble the repair parts.
- F. Drill the fastener holes.
- G. Disassemble the repair parts.
- H. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial sideplate.
- I. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial sideplate. Refer to 51-20-01.
- J. Apply one layer of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial sideplate. Refer to SOPM 20-41-02.
- K. Install a nutplate to the part [2] splice sideplate at the floor panel attach fastener locations.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the non-aluminum fasteners wet with BMS 5-95 sealant.
  - (3) Fill the space between the part [1] zee channel sideplate and the initial sideplate with BMS 5-95.
- M. Apply the initial finish to the repair area. Refer to AMM 51-21-00/701.
- N. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the repair area. Refer to 51-10-02.
- O. Install the cargo floor panels and capstrips.



STRUCTURAL REPAIR MANUAL



LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

NOTES

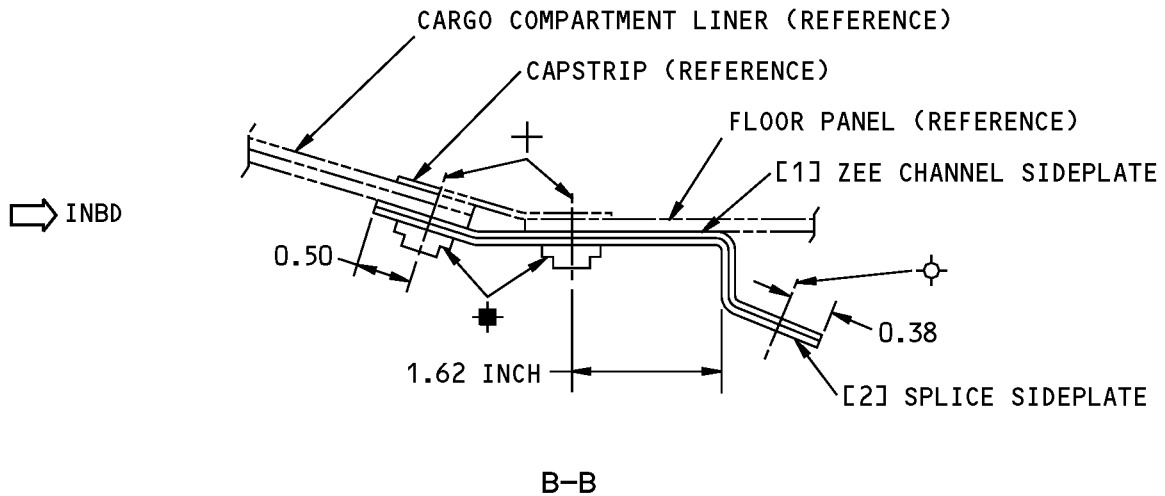
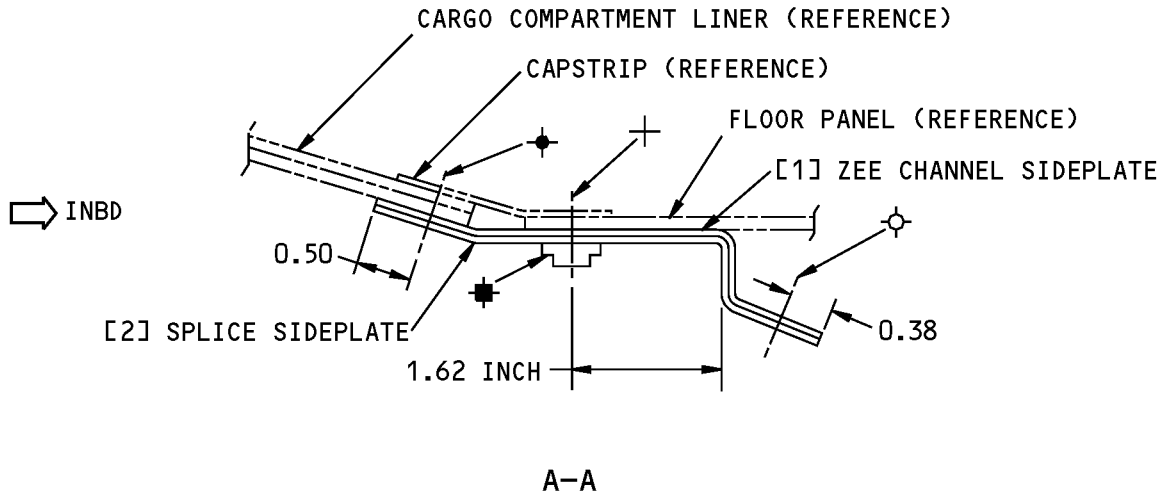
- ALL DIMENSIONS ARE IN INCHES

FASTENER SYMBOLS

- + FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.
- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.
- ⊙ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.

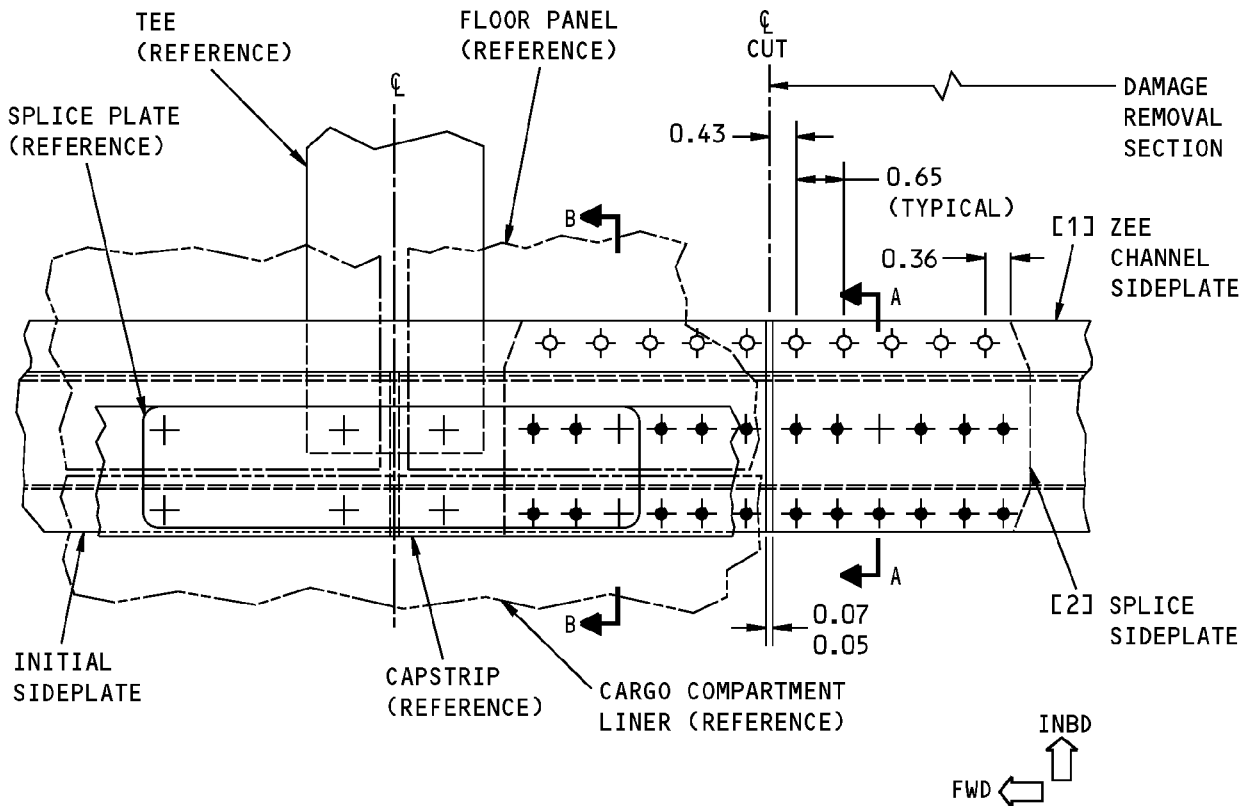
Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice  
Figure 202 (Sheet 1 of 2)

**737-800  
STRUCTURAL REPAIR MANUAL**



**Forward Cargo Compartment Sideplate Repair at a Floor Panel Splice  
Figure 202 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME

**NOTES**

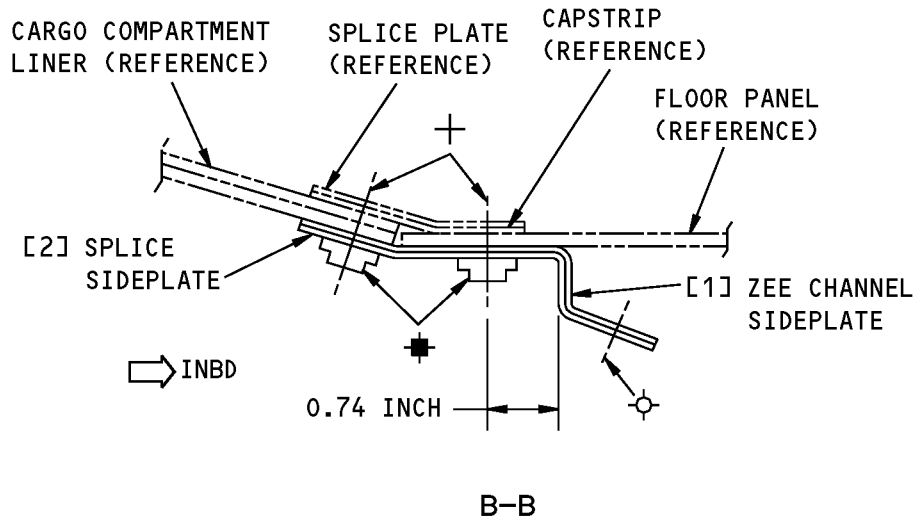
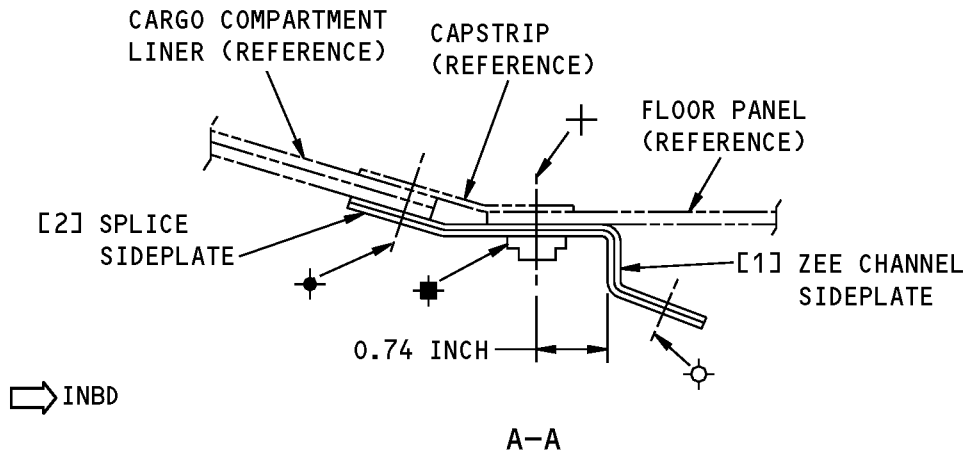
- ALL DIMENSIONS ARE IN INCHES.

**FASTENER SYMBOLS**

- + FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACS12ER3K10 SCREW.
- FLOOR PANEL ATTACH FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE AND TWO BACR15BA3D RIVETS.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET.
- REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET.

**Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice  
Figure 203 (Sheet 1 of 2)**

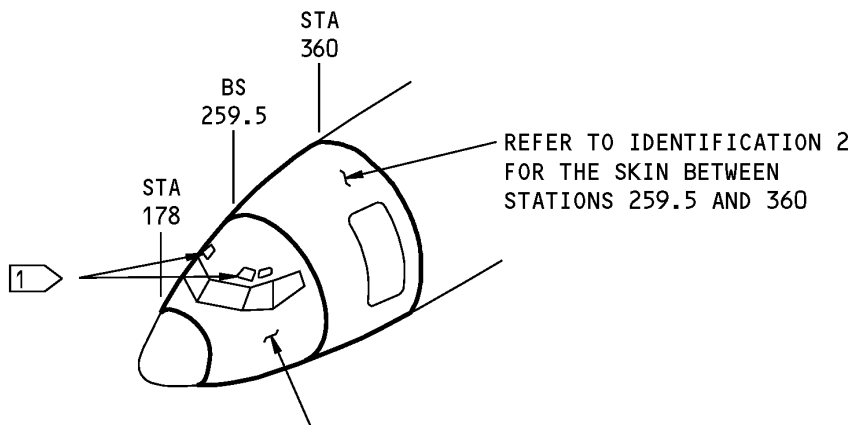
**STRUCTURAL REPAIR MANUAL**



**Aft Cargo Compartment Sideplate Repair at a Floor Panel Splice**  
**Figure 203 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**


**IDENTIFICATION 1 - STATIONS 178 TO 259.5**



REFER TO FIGURE 2 FOR THE SKIN IDENTIFICATION.  
REFER TO FIGURE 3 FOR THE DOUBLER AND STRAP IDENTIFICATION

**NOTES**

•REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

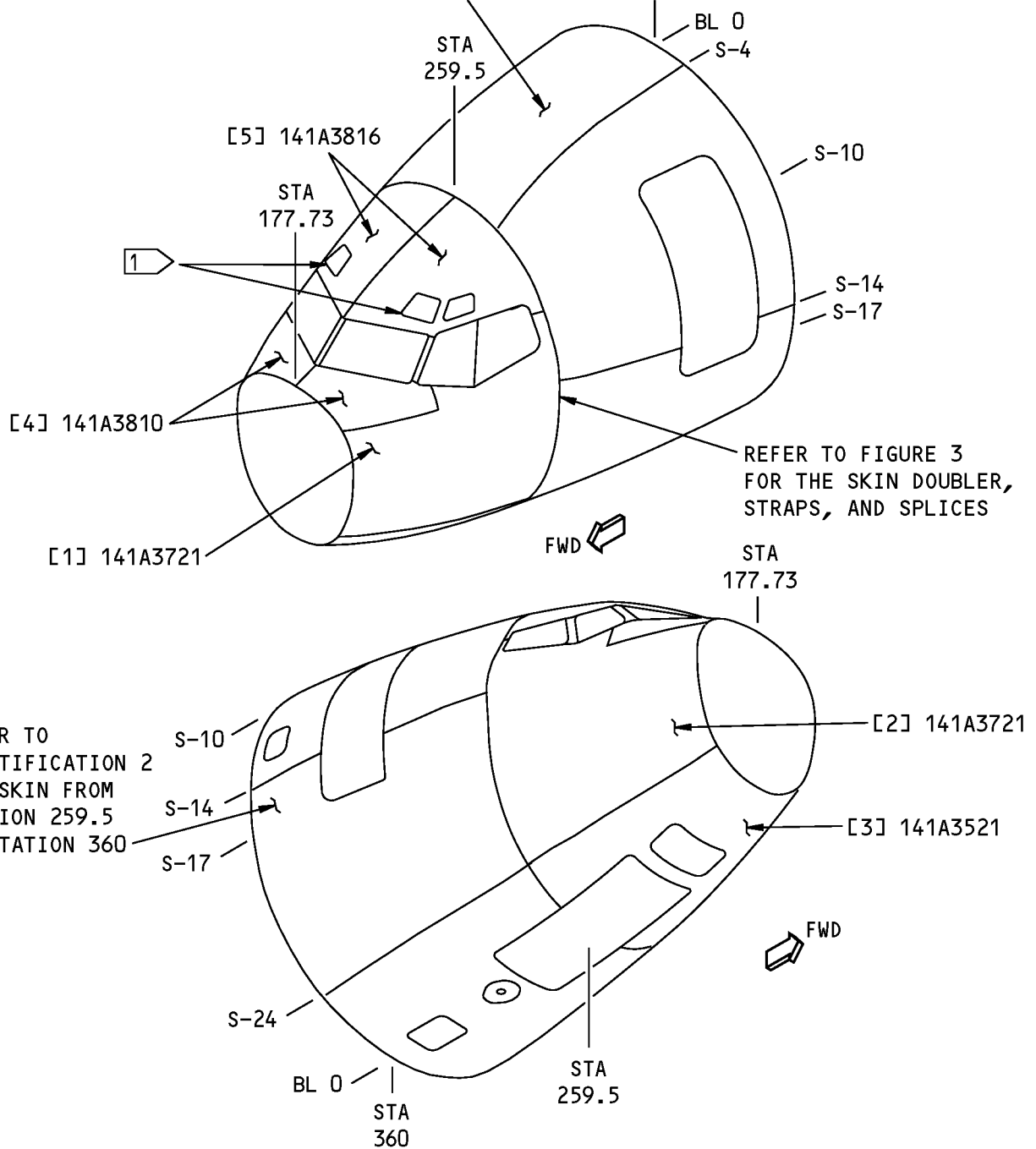
**Section 41 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4104	Functional Collector - Left Side Panel, Section 41
140A4105	Functional Collector - Lower Lobe, Section 41
140A4109	Functional Collector - Right Side Panel, Section 41
140A4111	Section 41 - Cab, Functional Collector
140A4113	Galley Door Panel, Section 41, Functional Collector
140A4114	Section 41 - Functional Collector, Crown
141A3310	Skin Installation - Galley Door Panel
141A3502	Skin Installation - Lower Lobe, Section 41
141A3702	Skin Installation - Side Panel, Section 41
141A3815	Crown Skin Installation - Cab
141A3910	Crown Panel Installation, Section 41

**STRUCTURAL REPAIR MANUAL**

REFER TO IDENTIFICATION 2 FOR SKIN FROM STATION 259.5 TO STATION 360



REFER TO IDENTIFICATION 2 FOR SKIN FROM STATION 259.5 TO STATION 360

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

[1] FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Identification  
Figure 2**



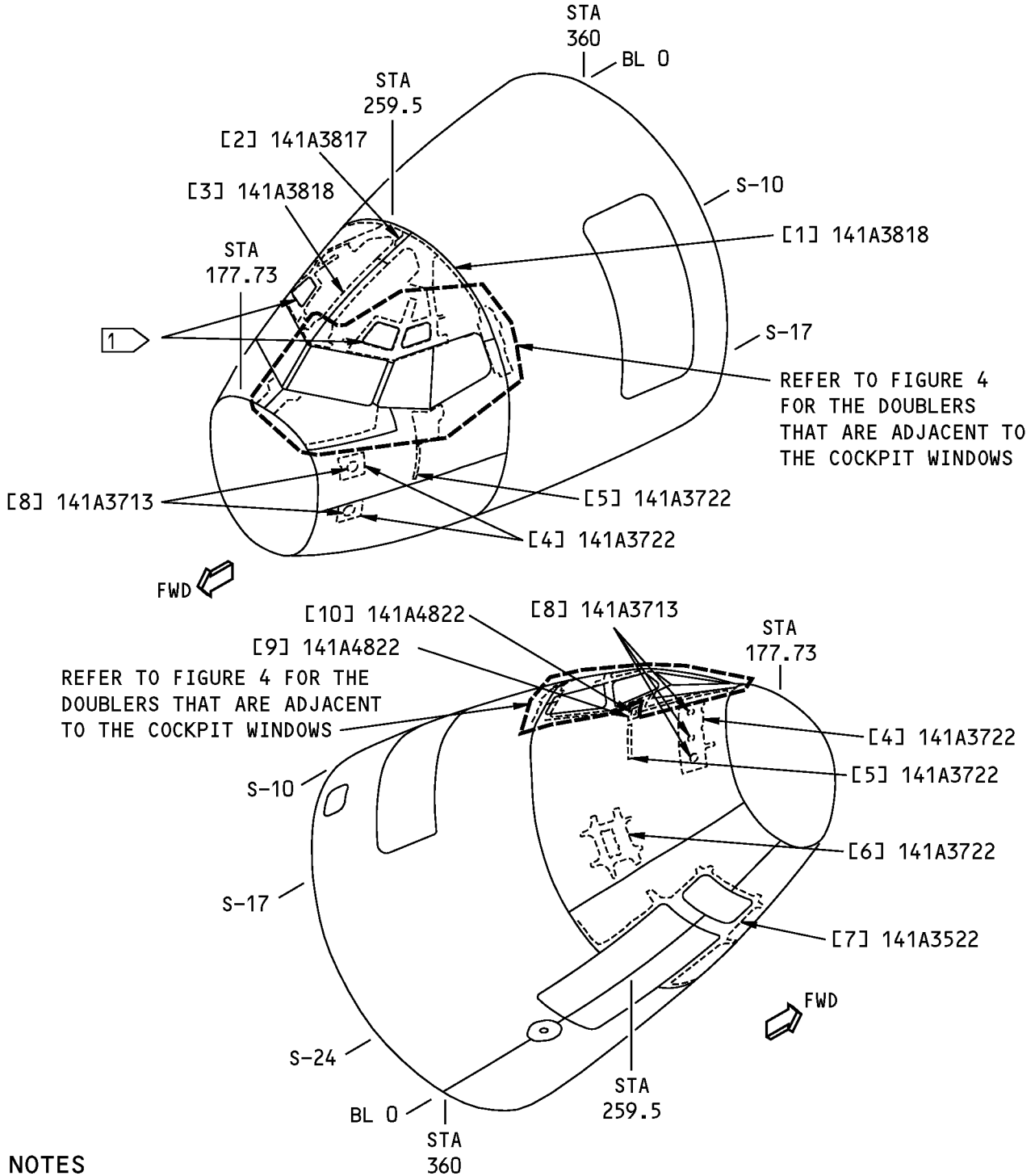
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[2]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[4]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[5]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- 1 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Doubler, Tear Strap, Bear Strap, and Splice Strap Identification  
Figure 3**





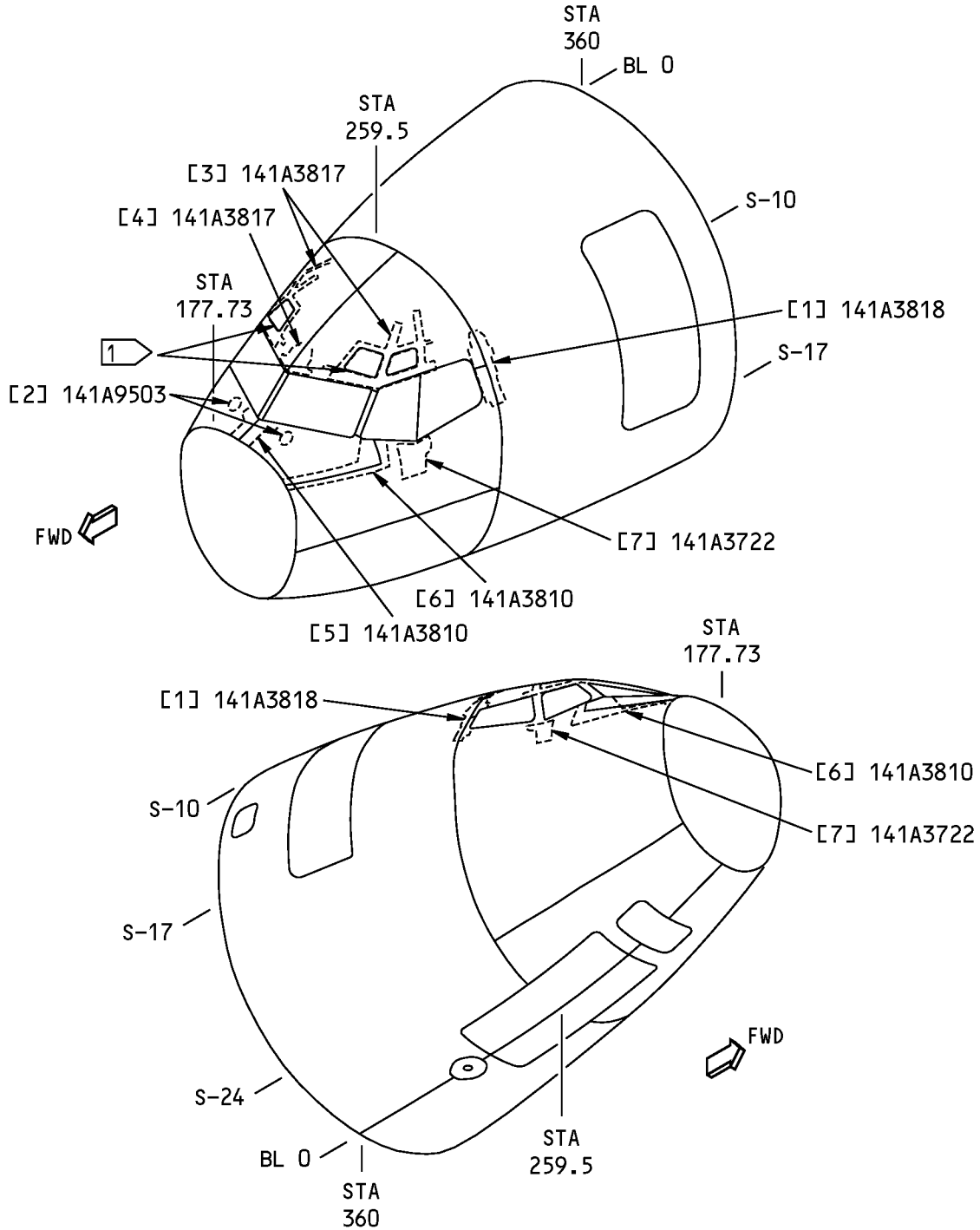
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Splice	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the chem-milled thicknesses	
[3]	Splice	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler (3)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap (2)		BAC1512-3355 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Bear Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for chem-milled thicknesses	
[8]	Mounting Plate (5)	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4	
[9]	Doubler	0.190 (4.83)	2024-T42 clad sheet as given in QQ-A-250/5	For cum line 1 thru 38
[9]	Doubler	0.190 (4.83)	2024-T3 clad sheet as given in QQ-A-250/5	For cum line 39 and on
[10]	Door	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTES**

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**1** FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Doubler and Splice Identification Adjacent to the Cockpit Window Cutout  
Figure 4**



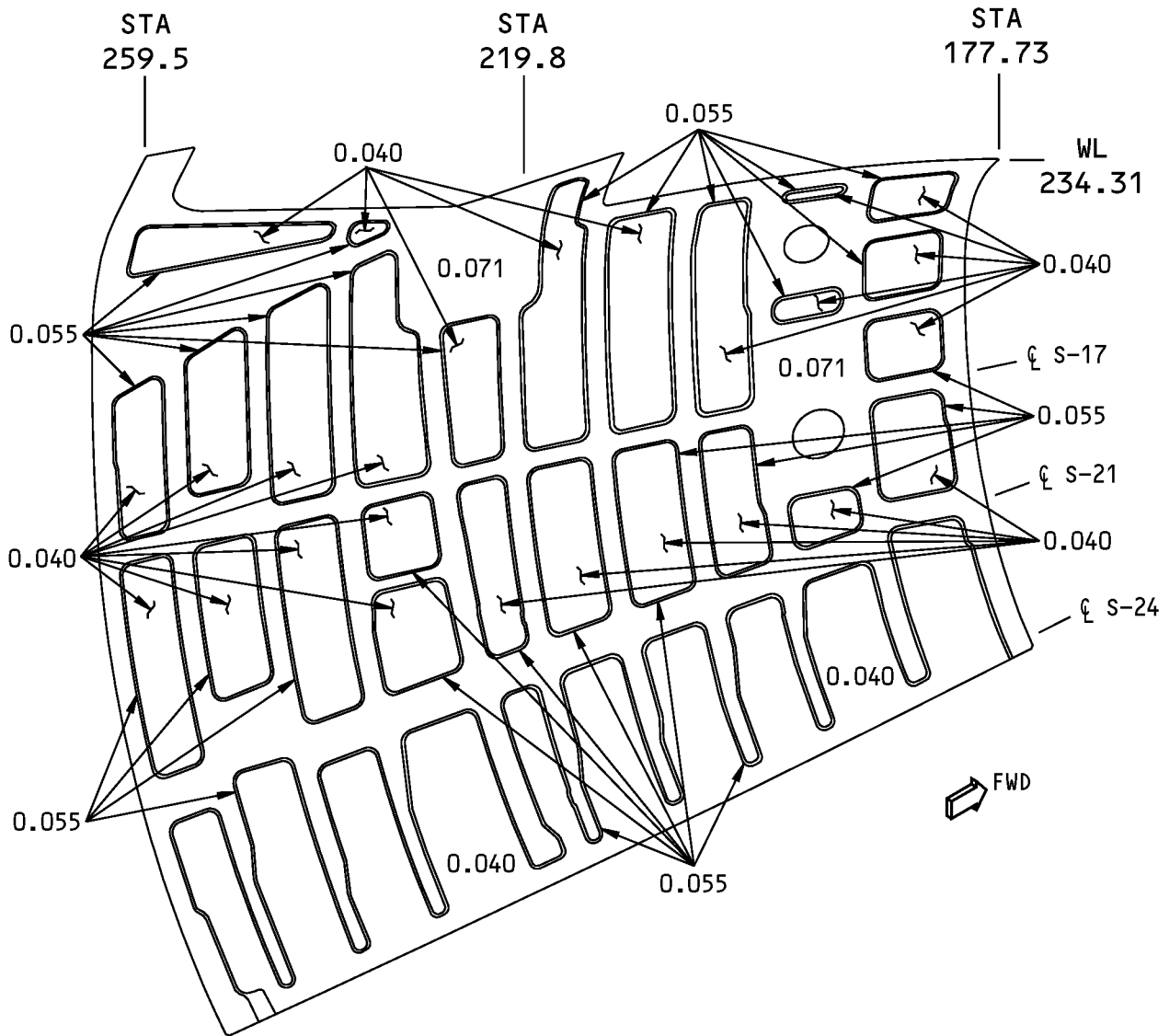
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Splice	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[2]	Doubler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Doubler	0.025 (0.64)	X-750 nickel 625 as given in AMS 5542, annealed. Precipitation heat treated to condition II as given BAC 5616	
[4]	Doubler	0.045 (1.14)	X-750 nickel 625 as given in AMS 5542, annealed. Precipitation heat treated to condition II as given BAC 5616	
[5]	Doubler - Center	0.090 (2.29)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[6]	Doubler	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 annealed	
[7]	Doubler	0.080 (2.03)	15-5PH CRES sheet as given in BMS 7-240, Type I, solution heat treated to 150-170 KSI as given in BAC 5619	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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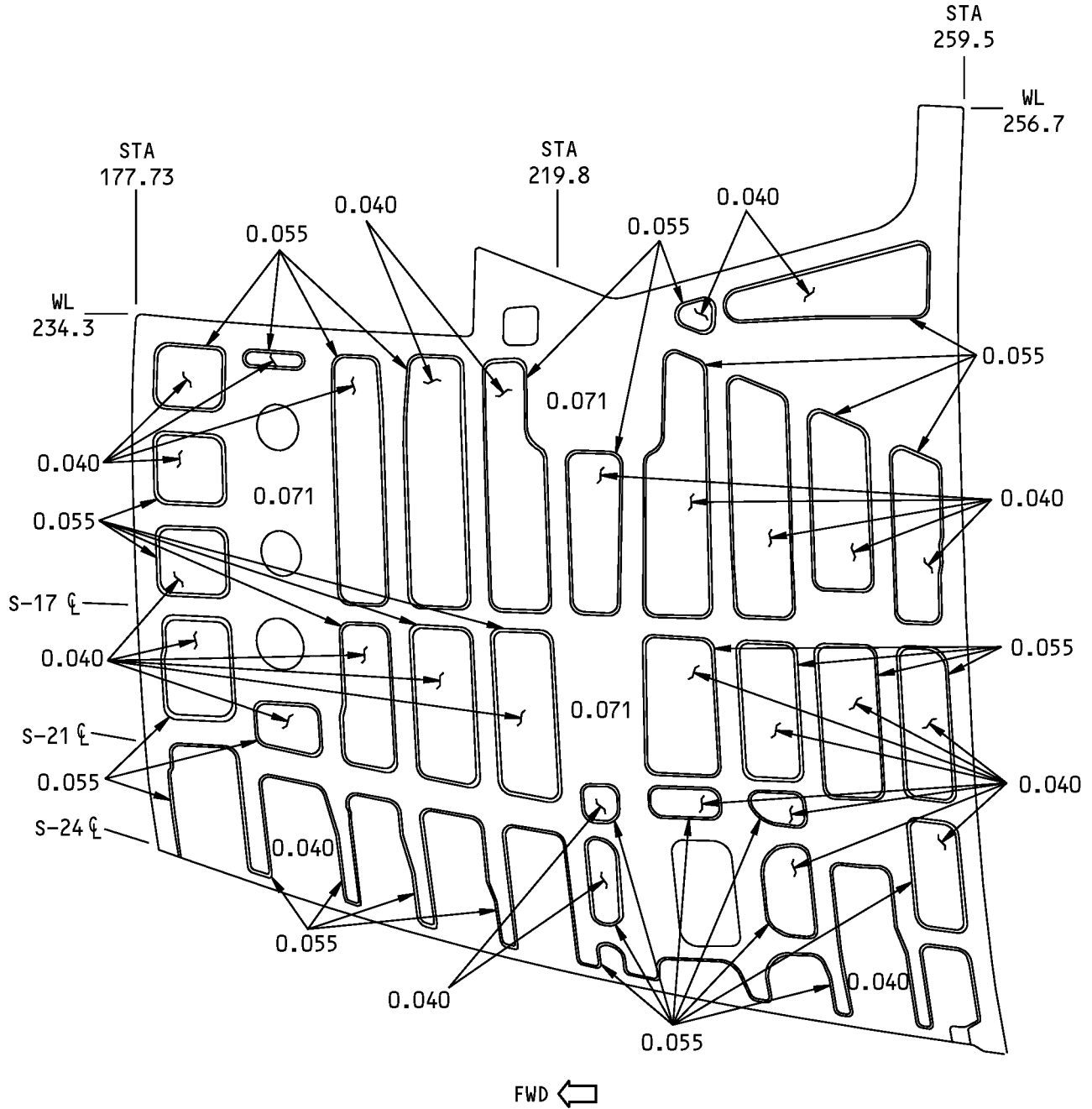


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**LEFT SIDE  
VIEW IS ON INNER SURFACE OF SKIN**

**Chem-Milled Areas of Figure 2, Item [1]  
Figure 5**

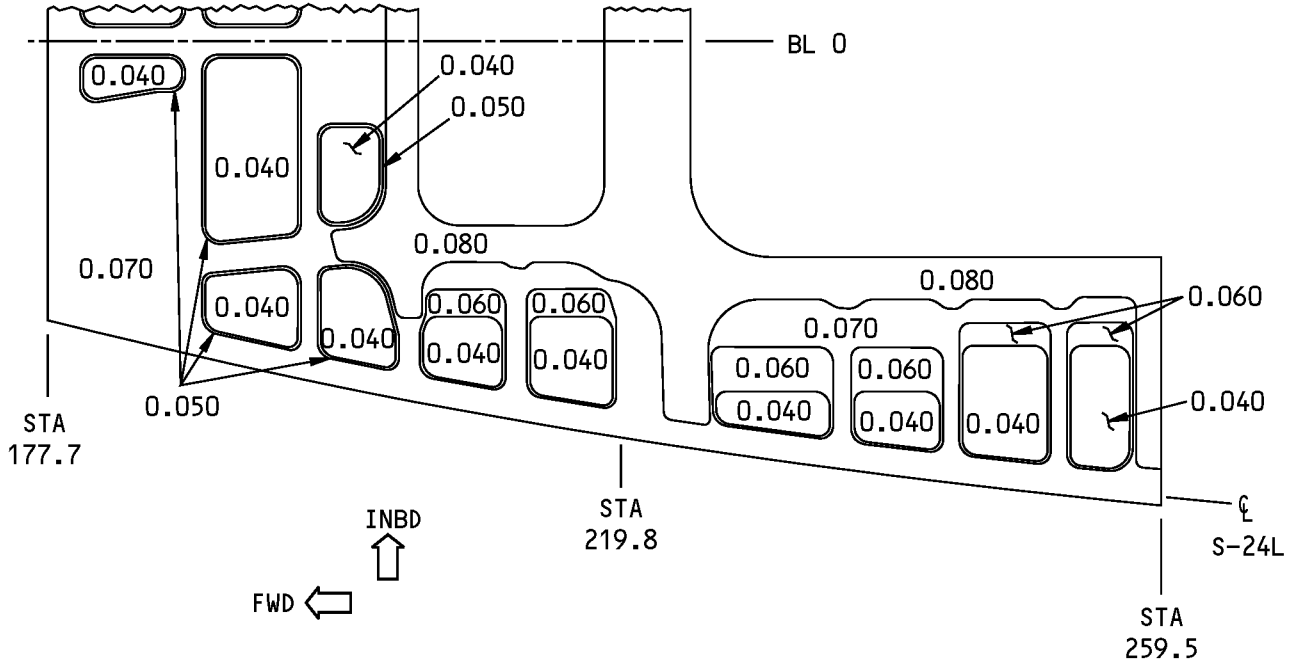
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**RIGHT SIDE  
VIEW IS ON INNER SURFACE OF SKIN  
Chem-Milled Areas of Figure 2, Item [2]  
Figure 6**

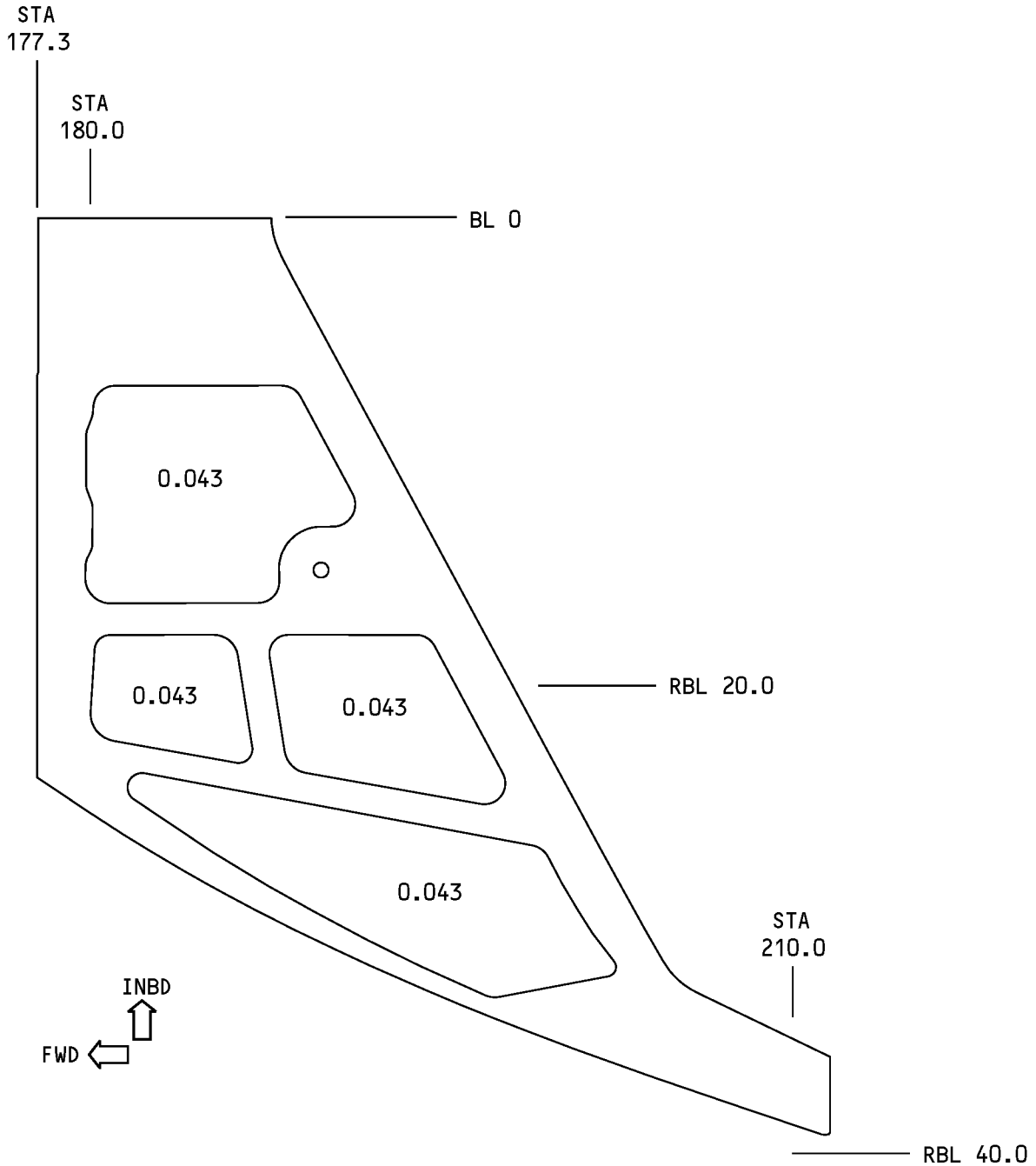
**737-800  
STRUCTURAL REPAIR MANUAL**



VIEW IS ON INNER SURFACE OF SKIN  
LEFT SIDE IS SHOWN,  
RIGHT SIDE IS OPPOSITE

**Chem-Milled Areas of Figure 2, Item [3]  
Figure 7**

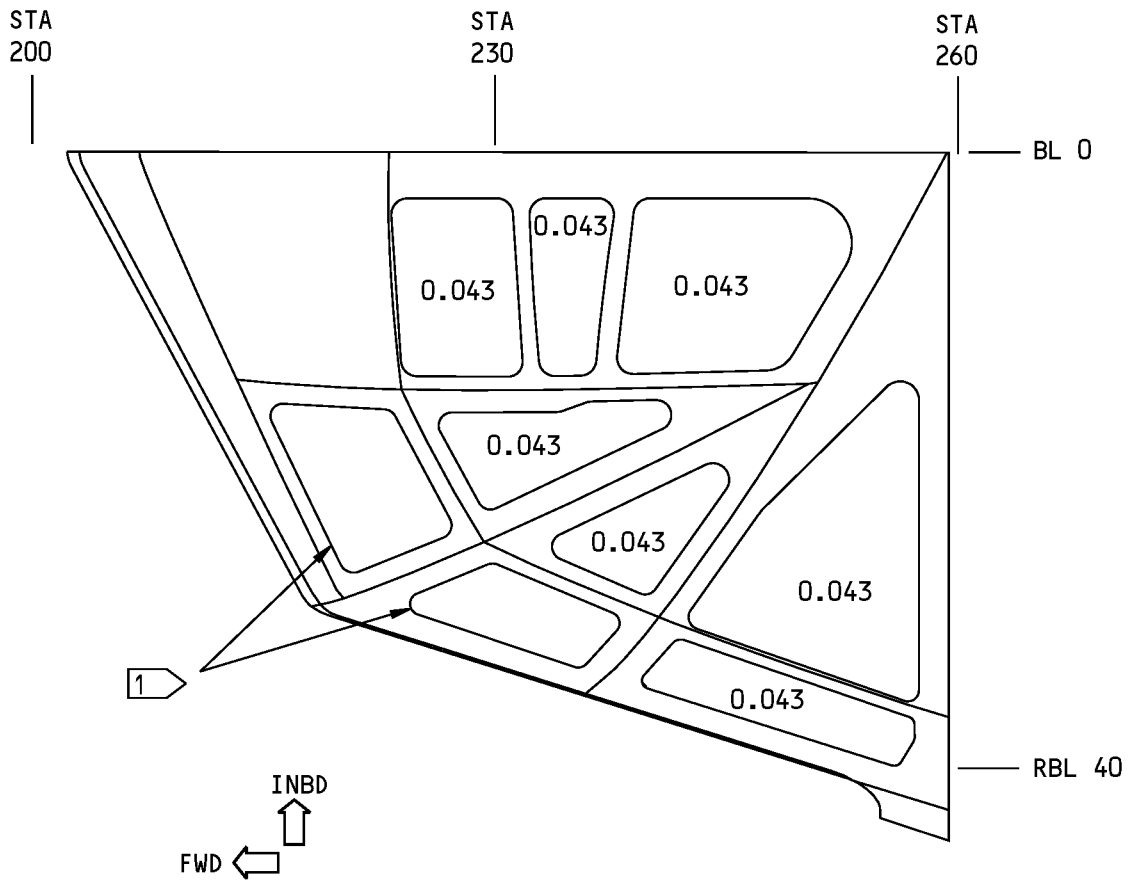
**737-800  
STRUCTURAL REPAIR MANUAL**



**VIEW IS ON INNER SURFACE OF SKIN  
RIGHT SIDE IS SHOWN,  
LEFT SIDE IS OPPOSITE**

**Chem-Milled Areas of Figure 2, Item [4]  
Figure 8**

**737-800  
STRUCTURAL REPAIR MANUAL**



**VIEW IS ON INNER SURFACE OF SKIN  
RIGHT SIDE IS SHOWN,  
LEFT SIDE IS OPPOSITE**

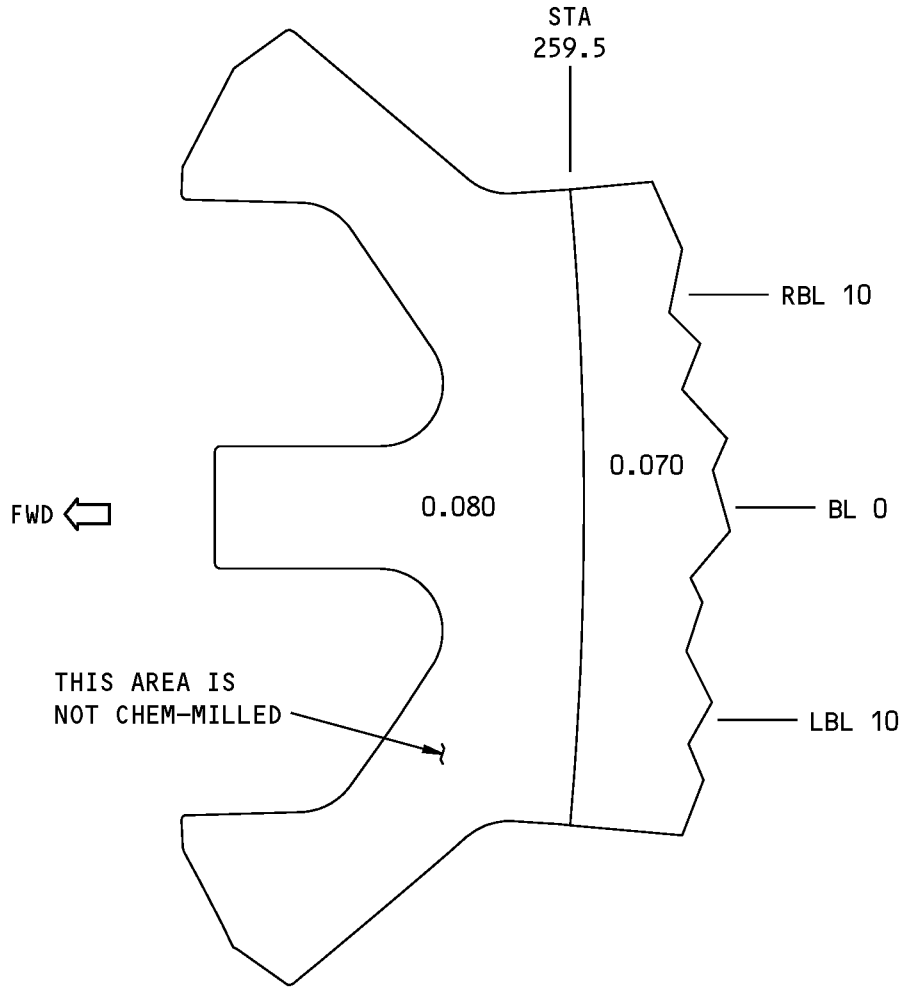
**NOTE:**

**1** FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Chem-Milled Areas of Figure 2, Item [5]  
Figure 9**

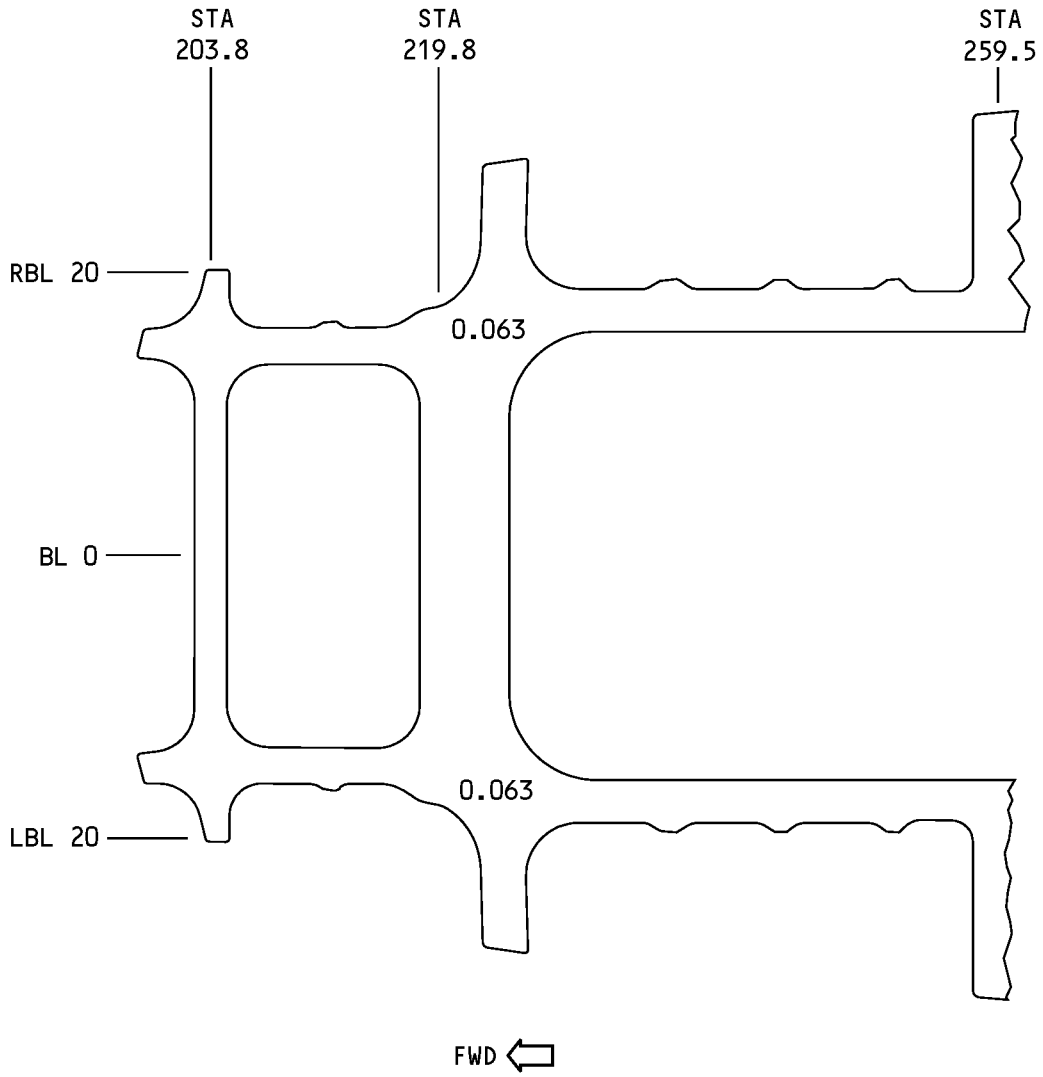


**737-800  
STRUCTURAL REPAIR MANUAL**



**Chem-Milled Areas of Figure 3, Item [2]  
Figure 10**

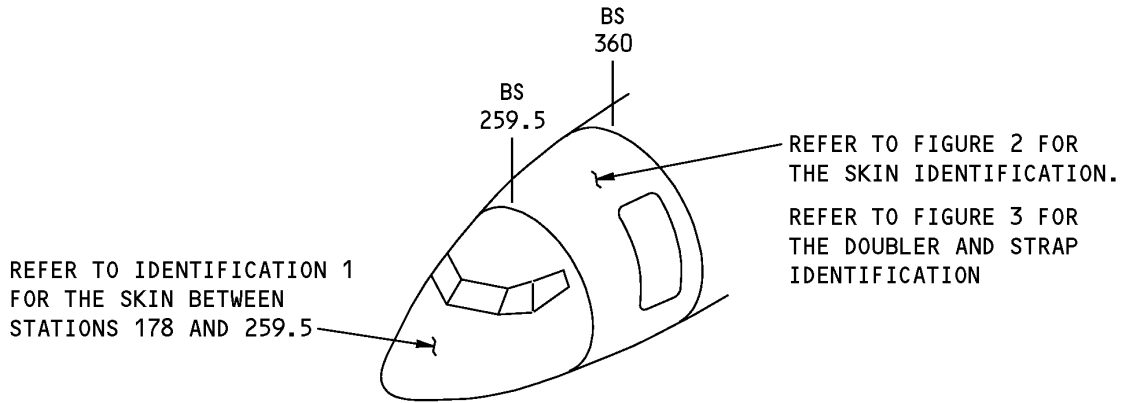
**737-800  
STRUCTURAL REPAIR MANUAL**



**Chem-Milled Areas of Figure 3, Item [7]  
Figure 11**

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**IDENTIFICATION 2 - STATIONS 259.5 TO 360**



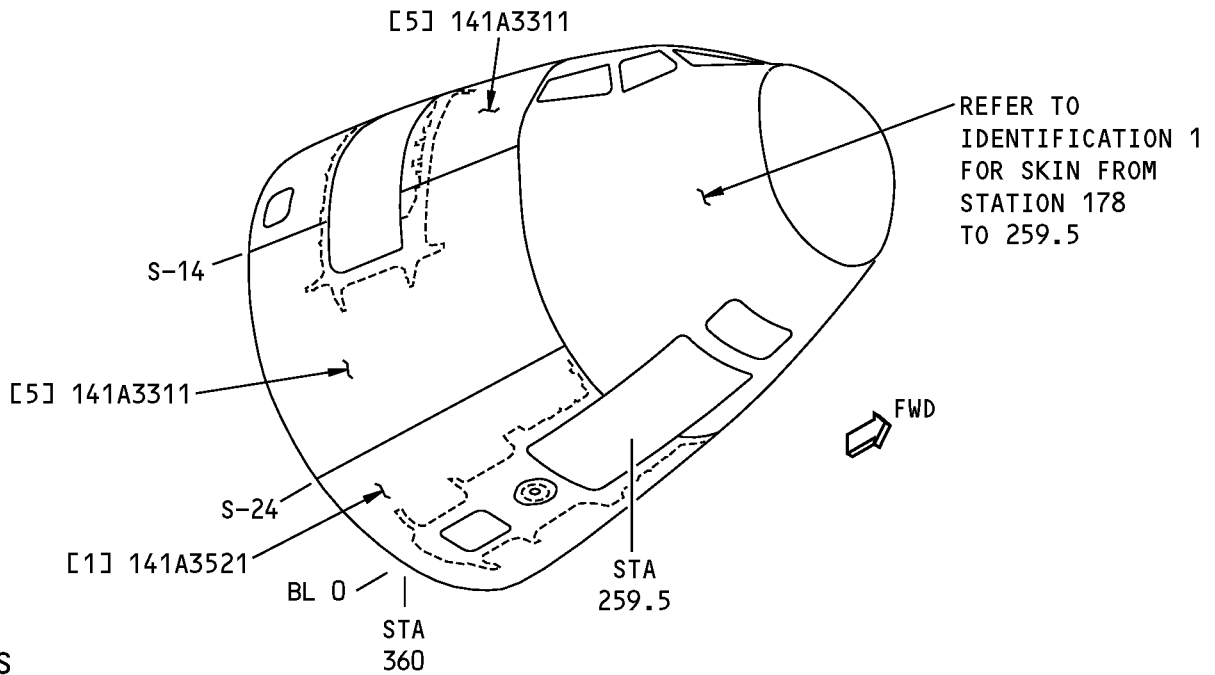
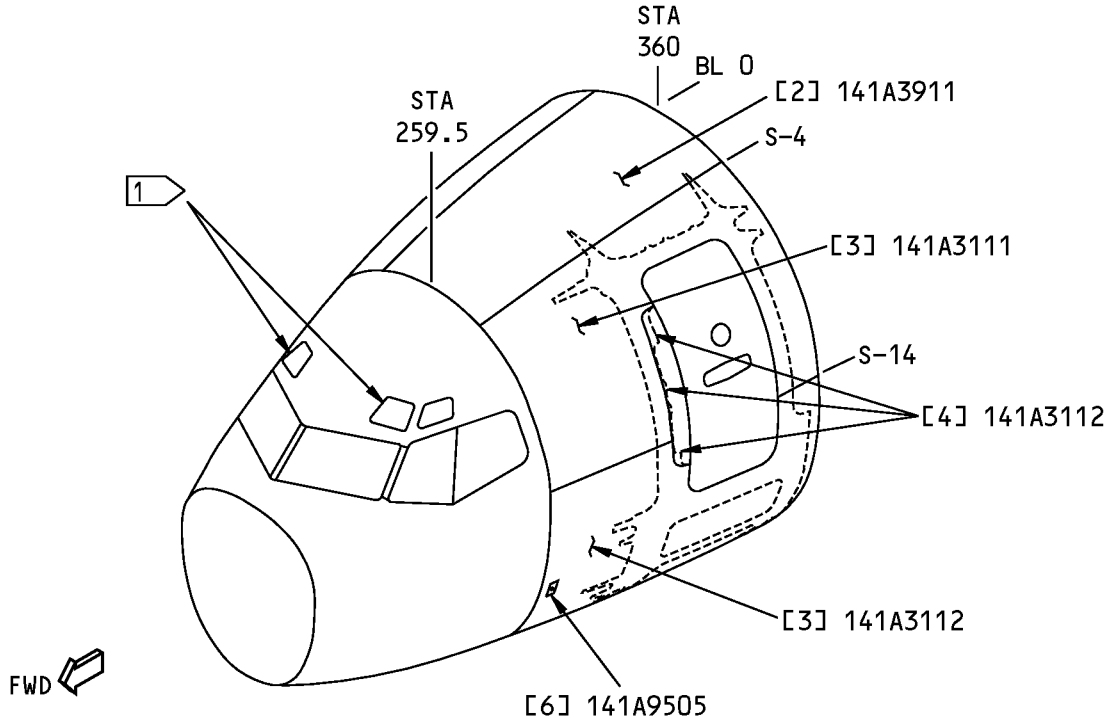
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 41 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4105	Functional Collector - Lower Lobe, Section 41
140A4111	Section 41-Cab Functional Collector
140A4112	Entry Door Panel, Section 41, Functional Collector
140A4113	Section 41 Galley Door Panel
140A4114	Section 41 - Functional Collector, Crown
141A3110	Skin Installation - Entry Door Panel
141A3111	Skin Bond Assembly - Entry Door Panel
141A3310	Skin Installation - Galley Door Panel
141A3311	Skin Bond Assembly - Galley Door Panel
141A3502	Skin Installation - Lower Lobe, Section 41
141A3910	Crown Panel Installation, Section 41

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**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**1** FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Identification  
Figure 2**



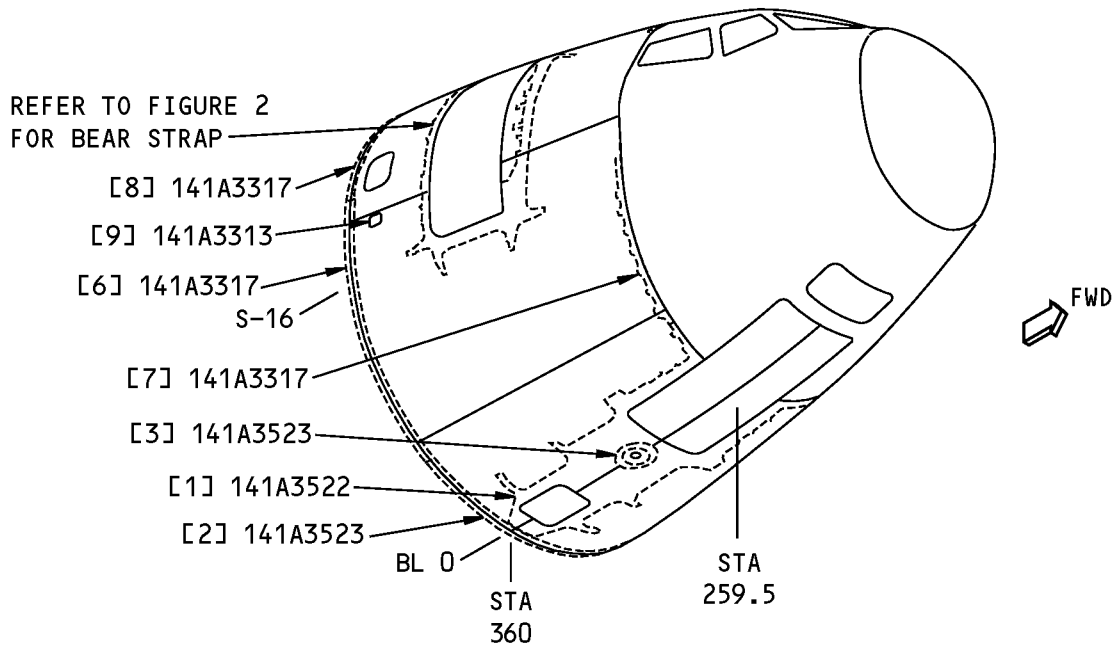
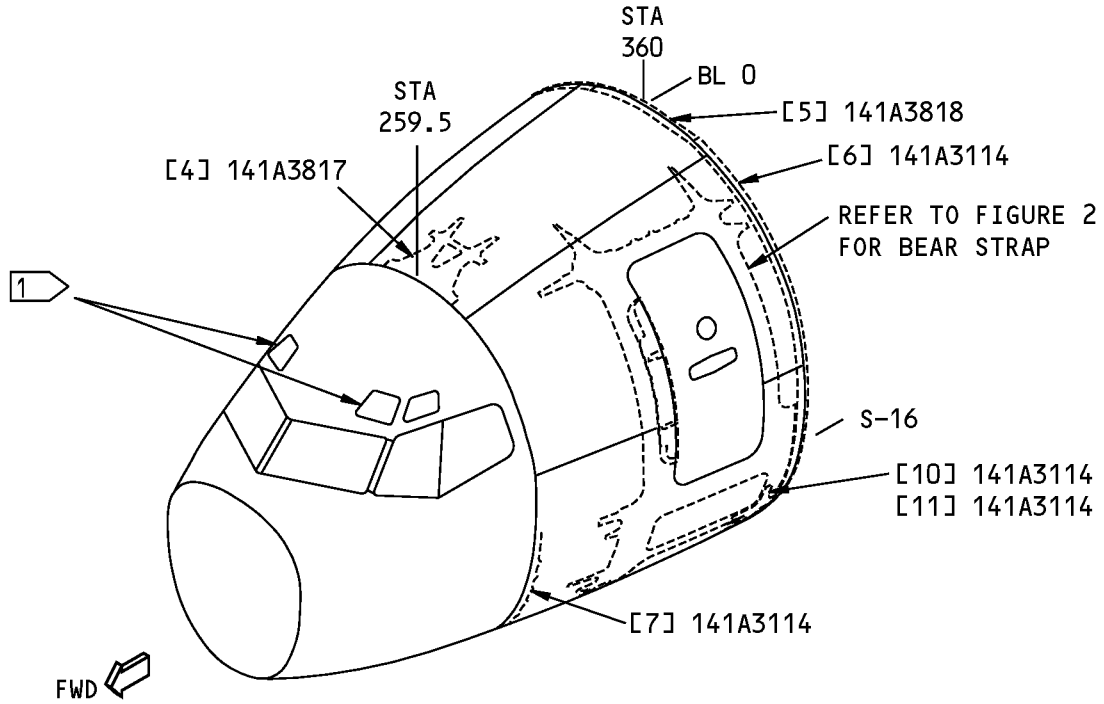
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly - Skin	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the shape	
[3]	Bonded Skin Assembly Upper Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
	Lower Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
	Bear Strap	0.100 (2.54)	2024-T3 as given in QQ-A-250/4	
[4]	Upper, Middle, and Lower Hinge Gap Cover Skins	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Bonded Skin Assembly - Upper Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
	Lower Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	
	Bear Strap	0.090 (2.23)	2024-T3 as given in QQ-A-250/4	
	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**1** FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Doubler, Tripler, Bear Strap, and Splice Strap Identification  
Figure 3**



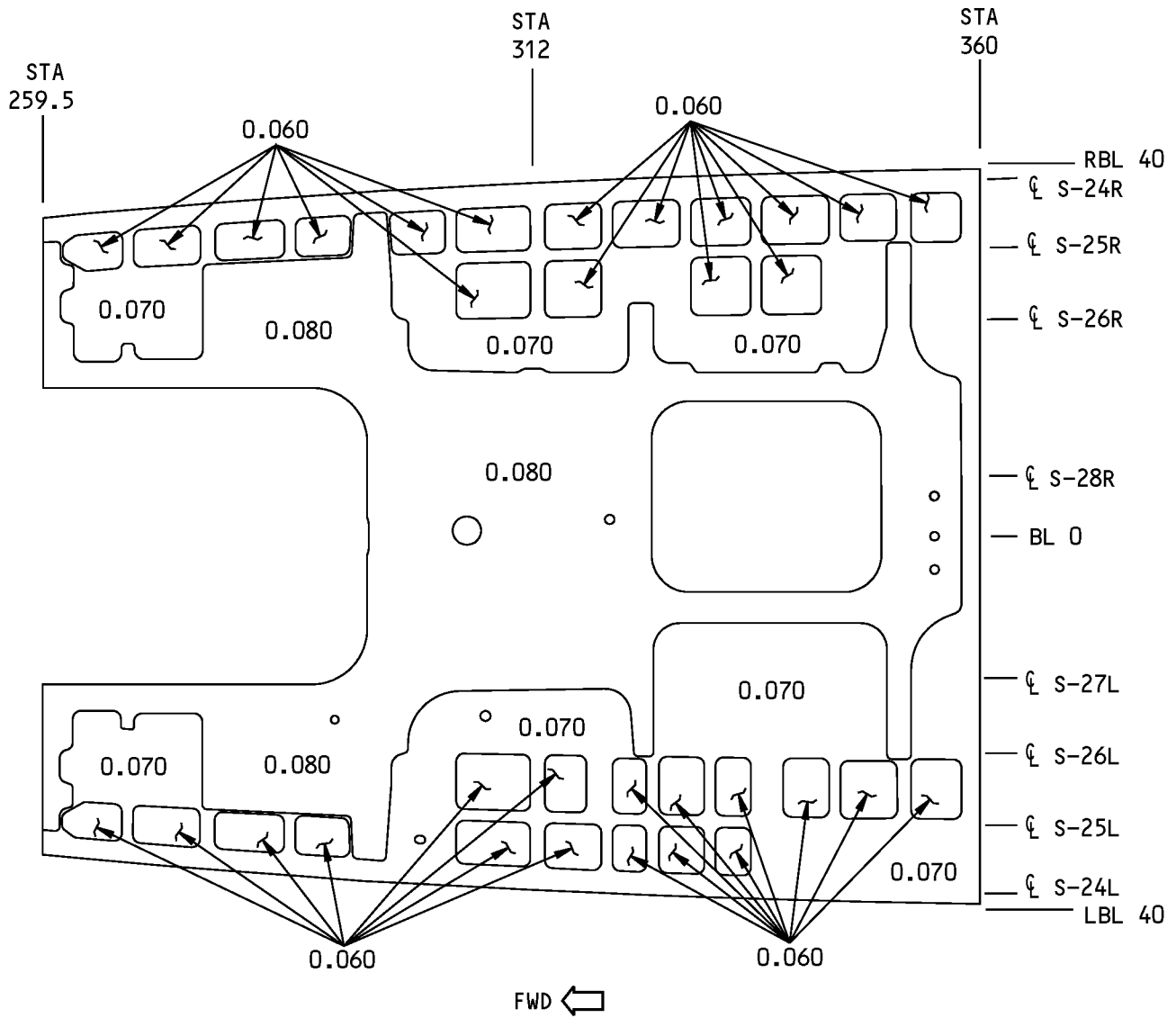
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Bear Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the thicknesses of the chem-milled areas	
[2]	Splice Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Ring Doubler	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for the thicknesses of the chem-milled areas	
[5]	Splice Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Strap	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
[7]	Strap	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Doubler	0.036 (0.91)	2024-T3 clad sheet as given in QQ-A-250/5	
[9]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Tripler	0.063 (1.60)	15-5PH CRES sheet as given in BMS 7-240, Type I, solution heat treated to 150 to 270 KSI	For airplanes with airstairs
[11]	Tripler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	For airplanes without air- stairs

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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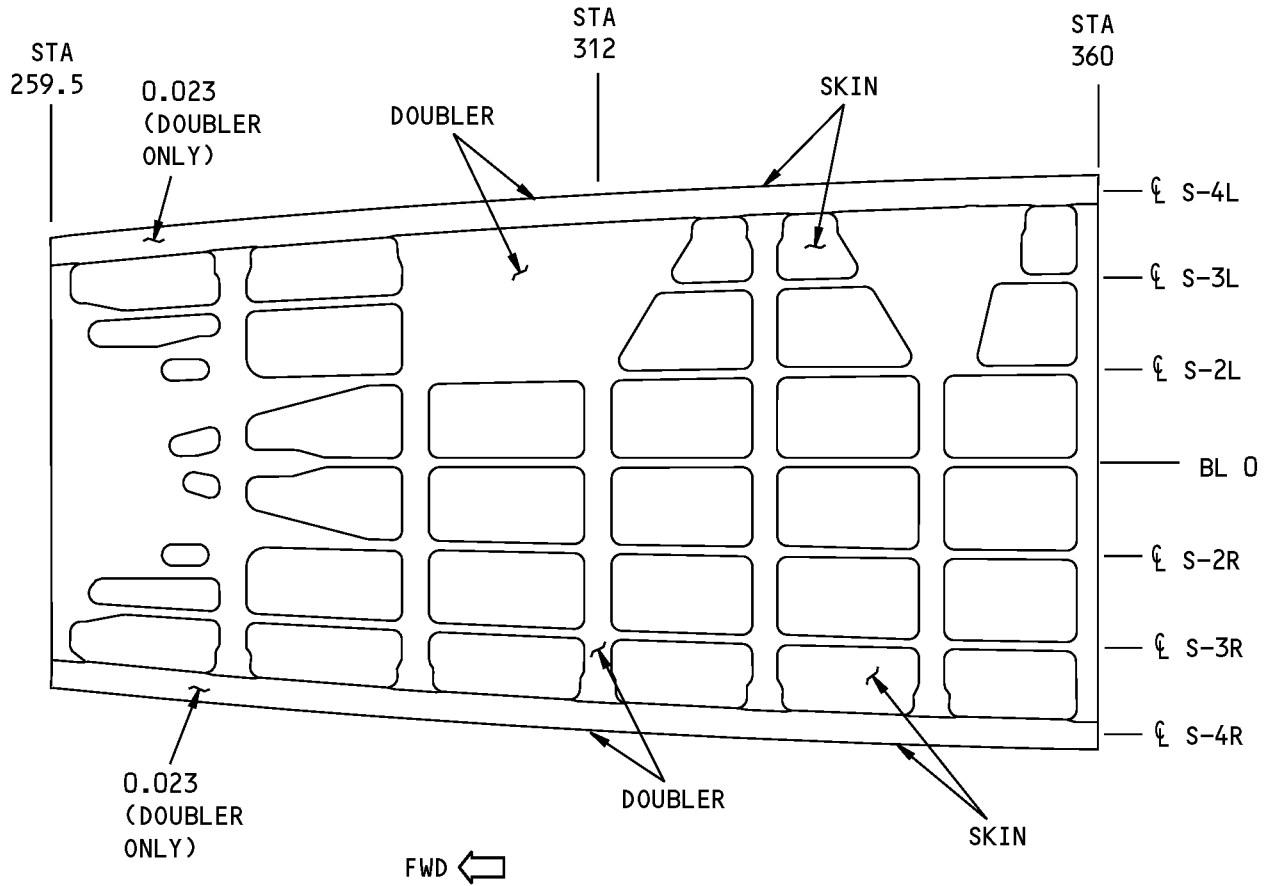


VIEW IS ON INNER SURFACE OF SKIN

**Chem-Milled Areas of Figure 2, Item [1]  
Figure 4**



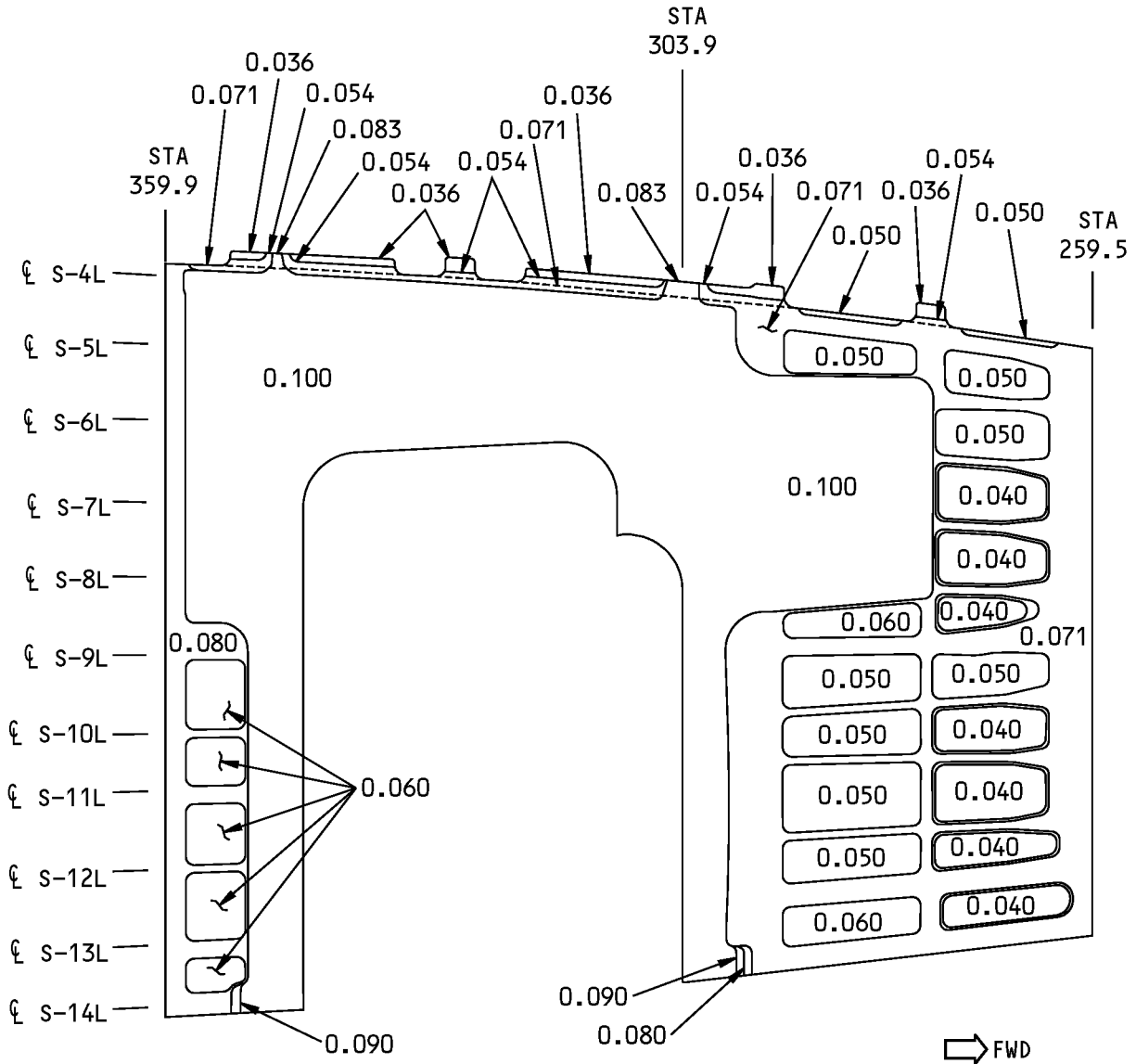
**737-800  
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VIEW IS ON INNER SURFACE OF SKIN AND DOUBLER

**Chem-Milled Areas of Figure 2, Item [2]  
Figure 5**

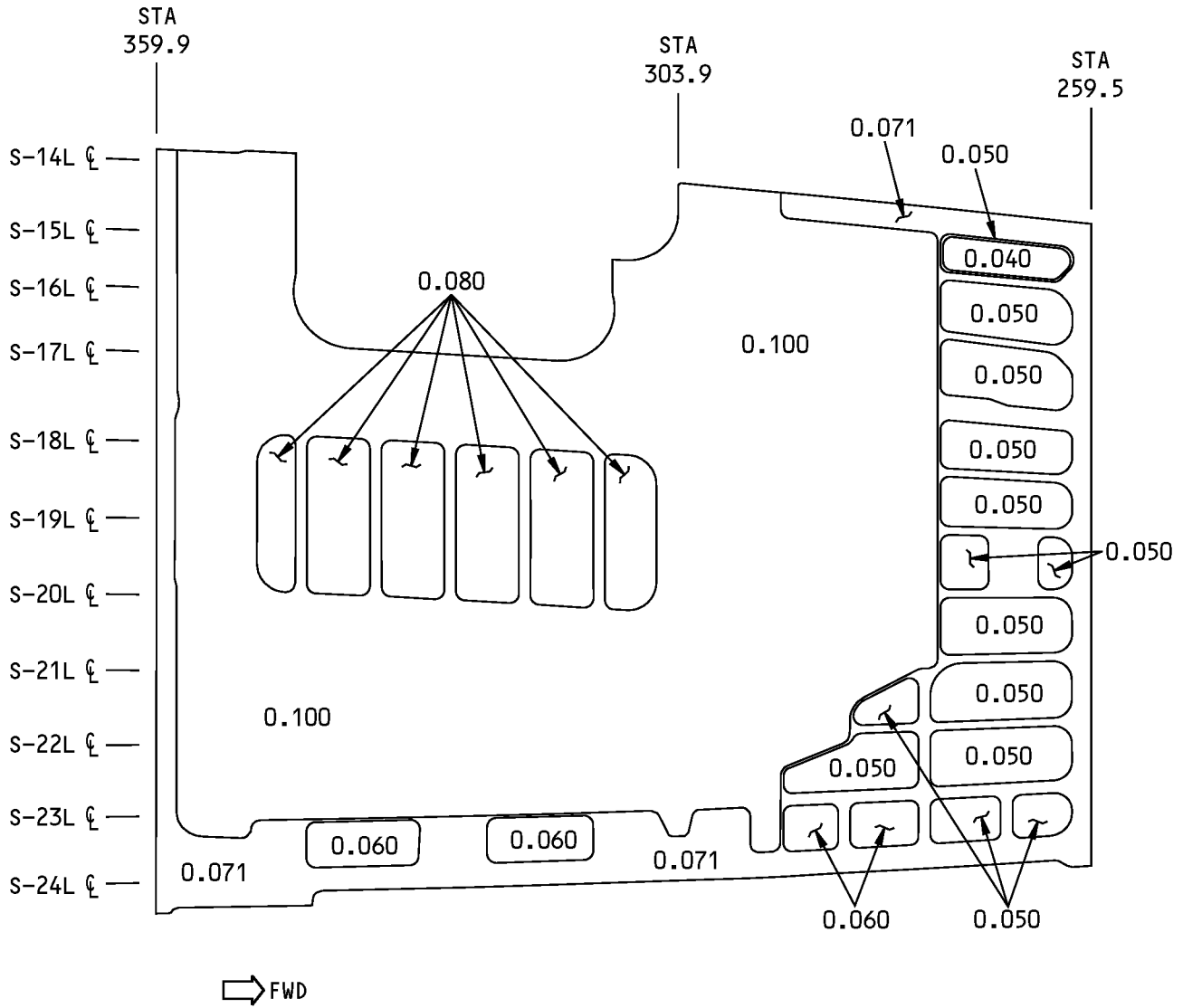
**737-800  
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VIEW IS ON INNER SURFACE OF SKIN

**Chem-Milled Areas of Upper Skin Figure 2, Item [3]  
Figure 6**

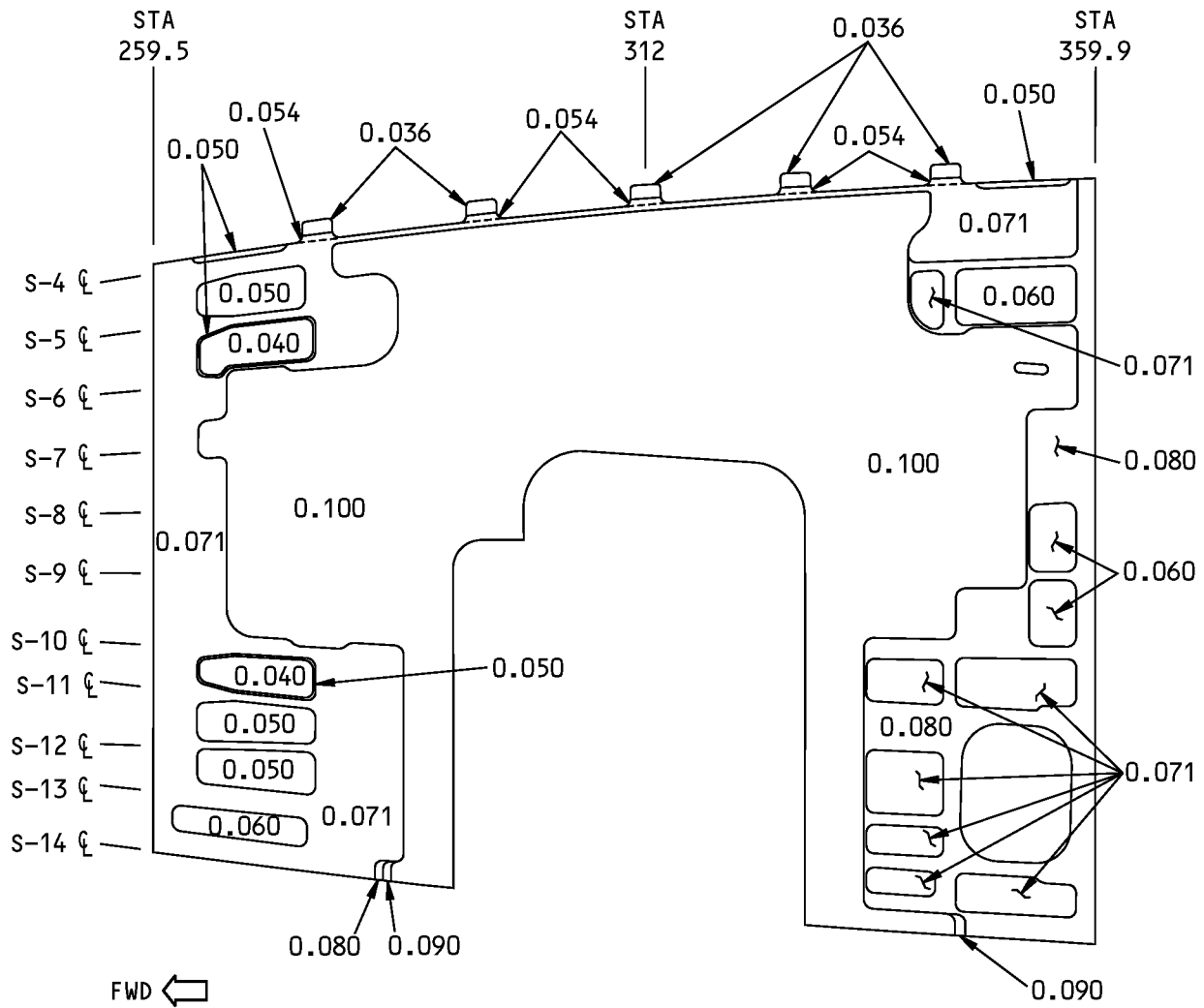
**737-800  
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VIEW IS ON INNER SURFACE OF SKIN

**Chem-Milled Areas of Lower Skin, Figure 2, Item [3]  
Figure 7**

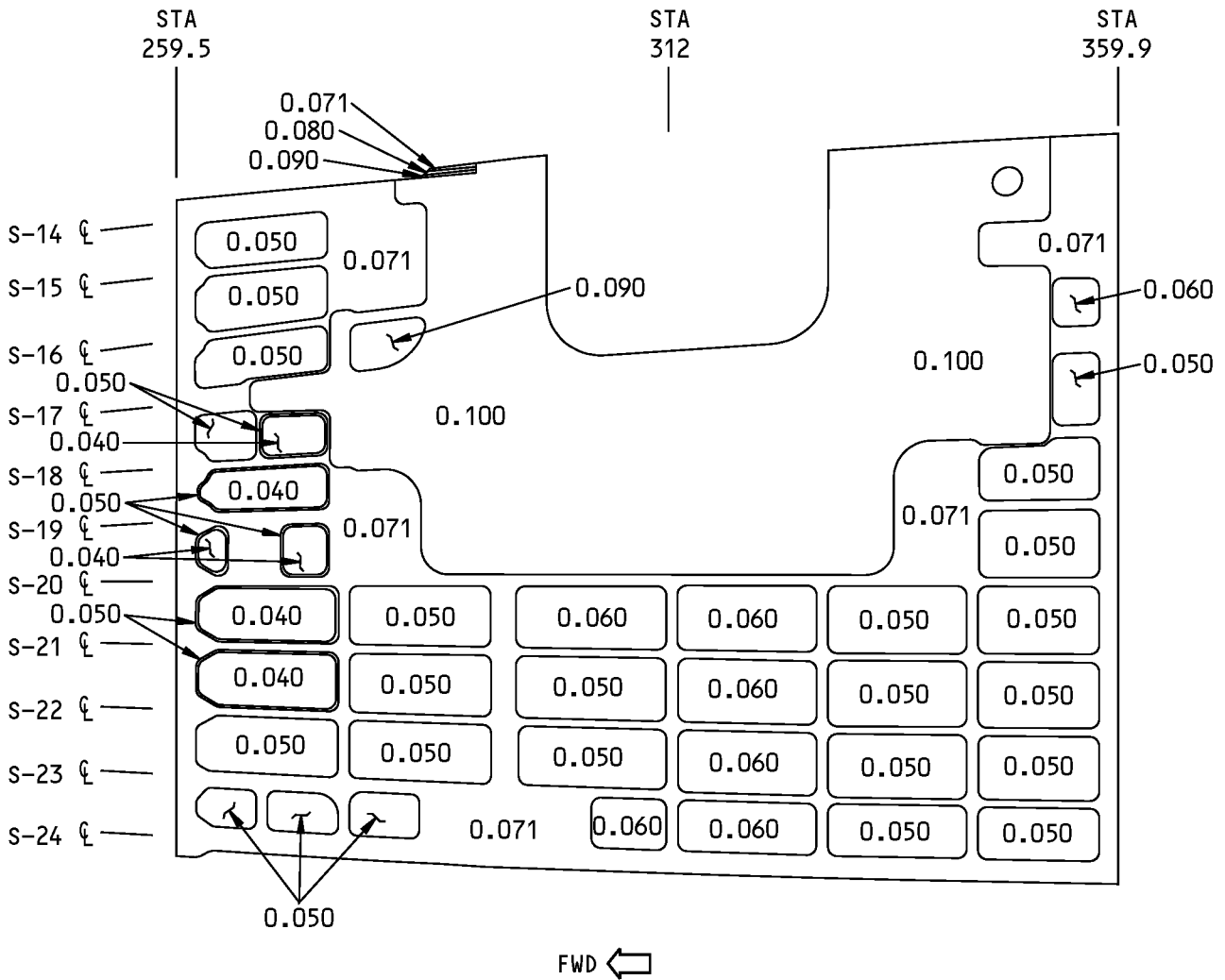
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VIEW IS ON INNER SURFACE OF SKIN

Chem-Milled Areas of Upper Skin, Figure 2, Item [5]  
Figure 8

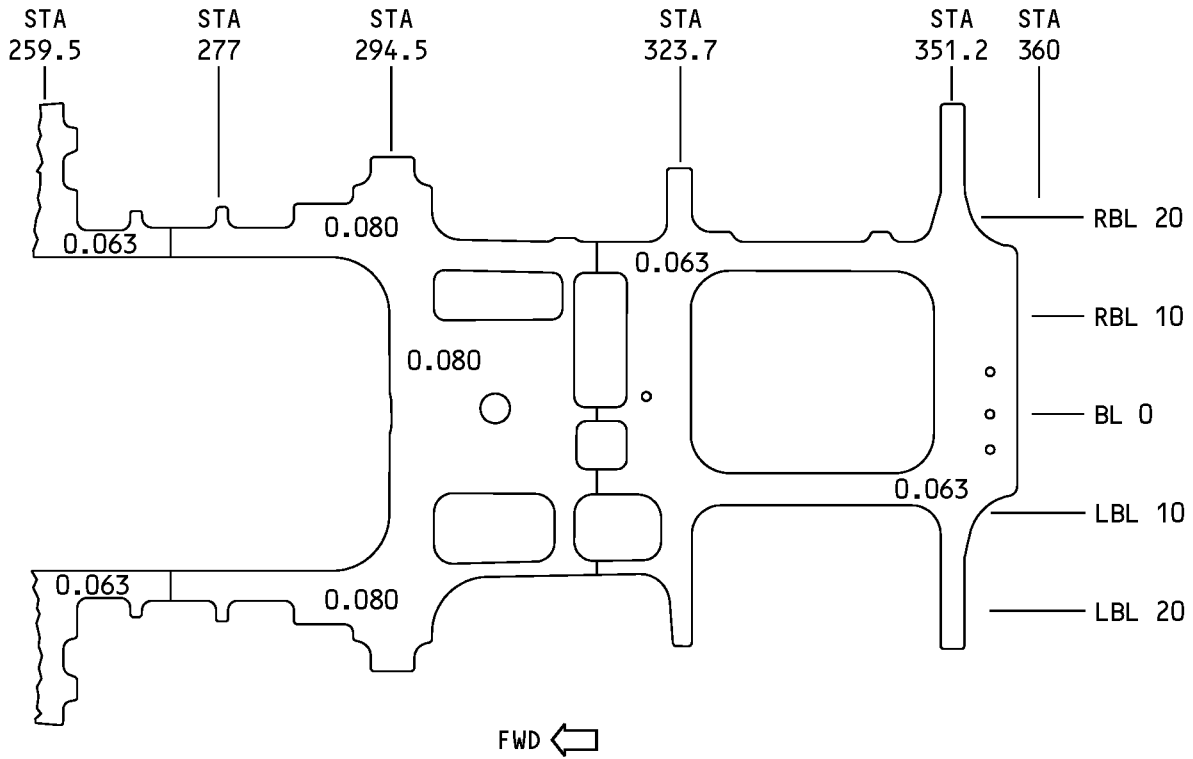
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VIEW IS ON INNER SURFACE OF SKIN

**Chem-Milled Areas of Lower Skin, Figure 2, Item [5]  
Figure 9**

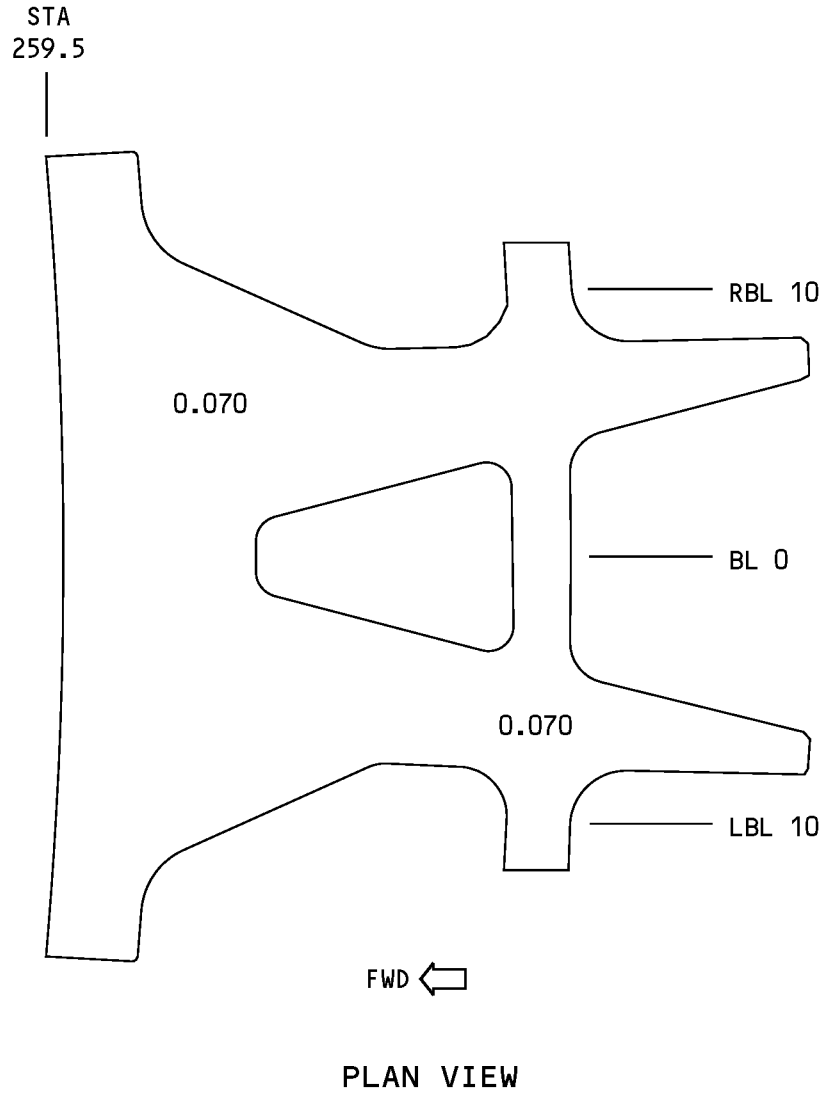
**737-800  
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**VIEW IS ON INNER SURFACE OF SKIN**

**Chem-Milled Areas of Figure 3, Item [1]  
Figure 10**

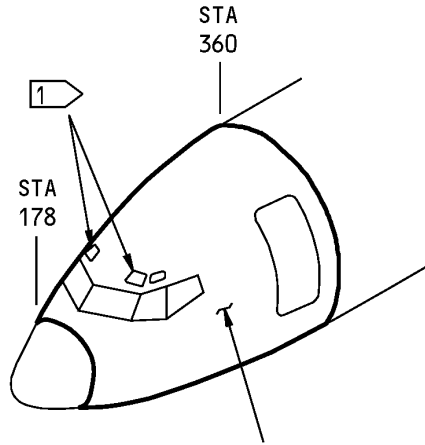
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**Chem-Milled Areas of Figure 3, Item [4]  
Figure 11**

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**ALLOWABLE DAMAGE GENERAL - SECTION 41 FUSELAGE SKIN**



REFER TO SRM 53-00-01 FOR THE  
ALLOWABLE DAMAGE DATA THAT IS  
APPLICABLE TO THE FUSELAGE  
SKIN IN SECTION 41

**NOTE:**

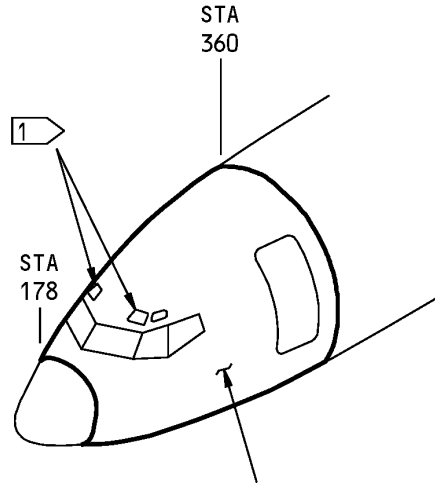
 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Location  
Figure 101**



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**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 41 FUSELAGE SKIN**



REFER TO SRM 53-00-01 FOR THE  
REPAIRS THAT ARE APPLICABLE TO  
THE FUSELAGE SKIN IN SECTION 41

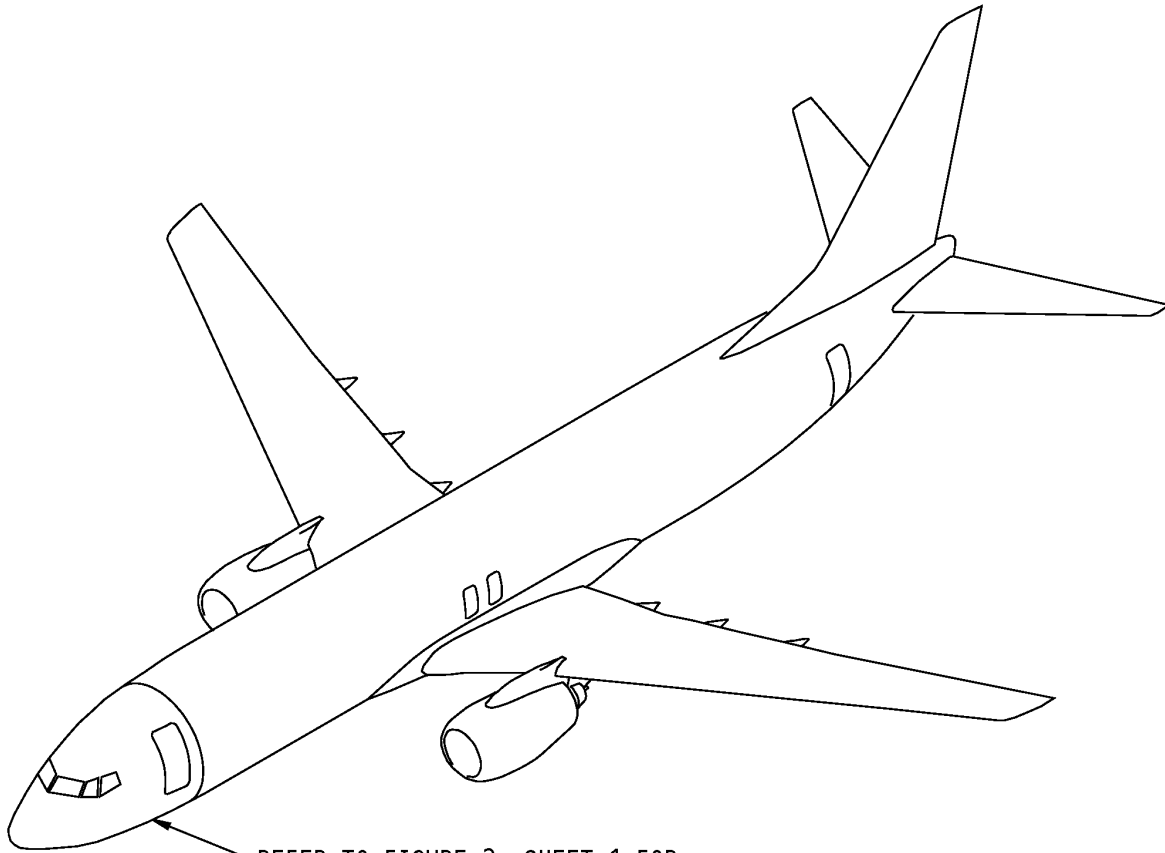
**NOTE:**

 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Skin Location**  
**Figure 201**

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**IDENTIFICATION 1 - SECTION 41 FUSELAGE STRINGERS**



REFER TO FIGURE 2, SHEET 1 FOR  
THE RIGHT SIDE STRINGERS.

REFER TO FIGURE 2, SHEET 2 FOR  
THE LEFT SIDE STRINGERS

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 41 Stringer Location  
Figure 1**

**Table 1:**

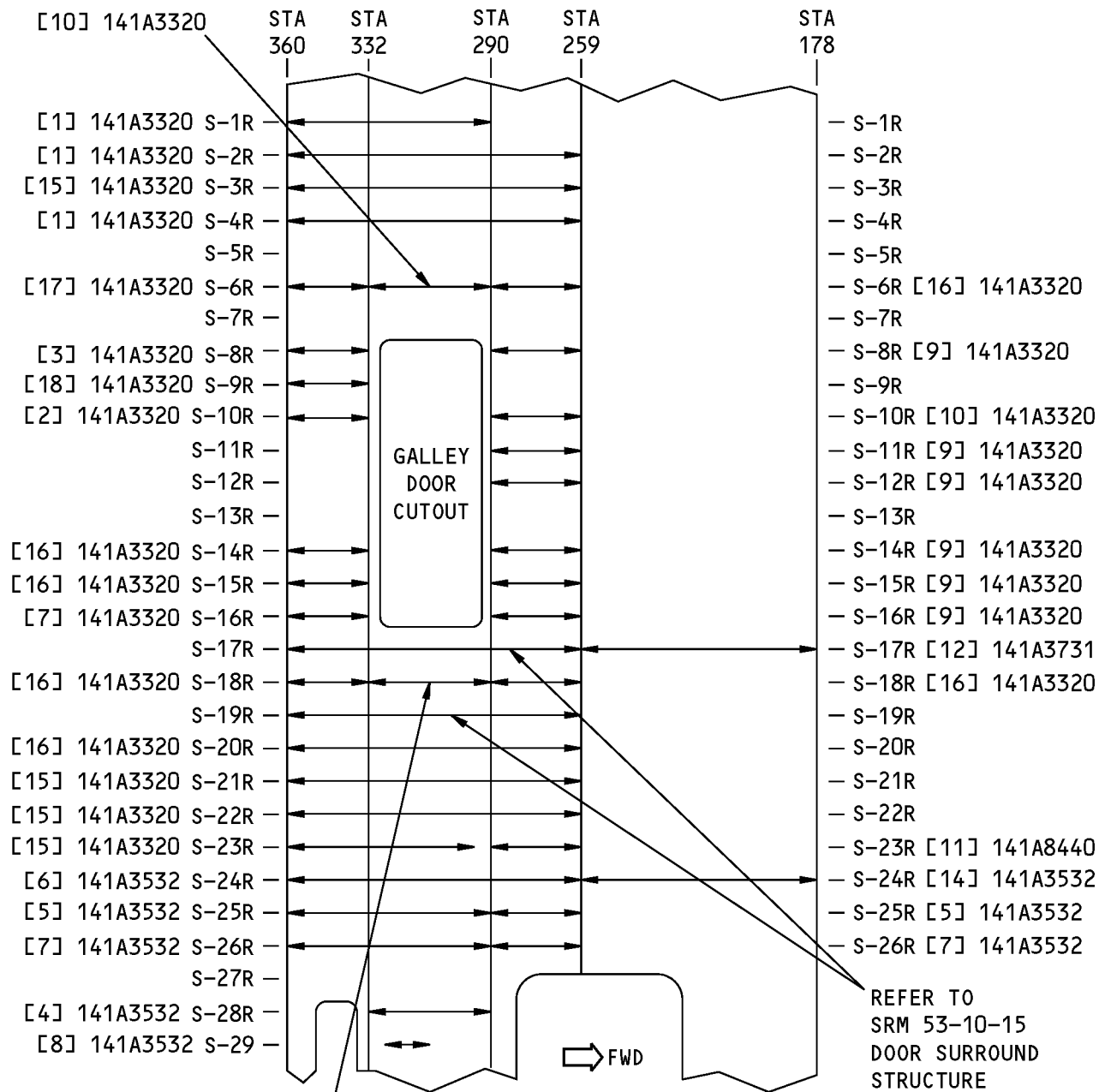
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
141A0742	Integration Installation - Stringer 4, STA 259-360
141A8240	Chord Installation - Entry Door Panel
140A4104	Functional Collector, Left Side Panel - Section 41
141A3702	Skin Installation, Side Panel, Section 41



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4105	Functional Collector - Lower Lobe - Section 41
141A3502	Skin Installation - Lower Lobe - Section 41
140A4109	Functional Collector, Right Side Panel - Section 41
141A3702	Skin Installation - Side Panel - Section 41
140A4112	Entry Door Panel - Section 41 - Functional Collector
141A1360	Frame Installation - Carriage Track Support
141A3120	Stringer Installation - Entry Door Panel
141A8110	Sill Installation - Lower Main, Forward Entry Door
140A4113	Functional Collector, Section 41 - Galley Door Panel
141A3320	Stringer Detail and Installation - Galley Door Panel
141A8440	Chord Detail and Installation - Galley Door Panel
140A4114	Section 41 - Functional Collector - Crown
141A3910	Crown Panel Installation - Section 41

STRUCTURAL REPAIR MANUAL



NOTES

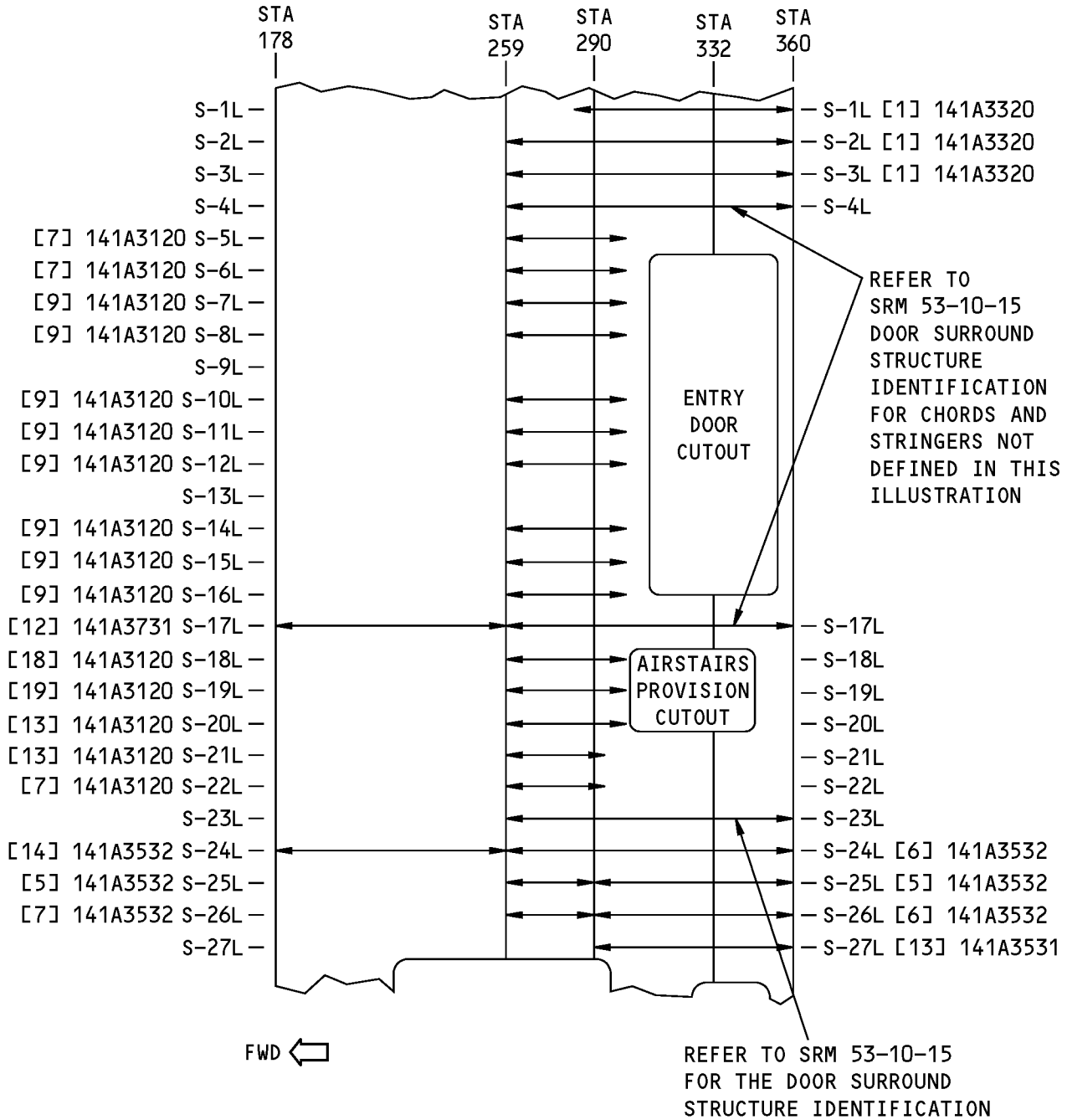
- STATION LOCATIONS SHOWN ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

REFER TO  
SRM 53-10-15  
DOOR SURROUND  
STRUCTURE  
IDENTIFICATION  
FOR CHORDS AND  
STRINGERS NOT  
DEFINED IN THIS  
ILLUSTRATION

RIGHT SIDE VIEW  
STRINGERS S-1R TO S-29

Section 41 Stringer Identification  
Figure 2 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



**LEFT SIDE VIEW  
STRINGERS S-1L TO S-27L**

**Section 41 Stringer Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

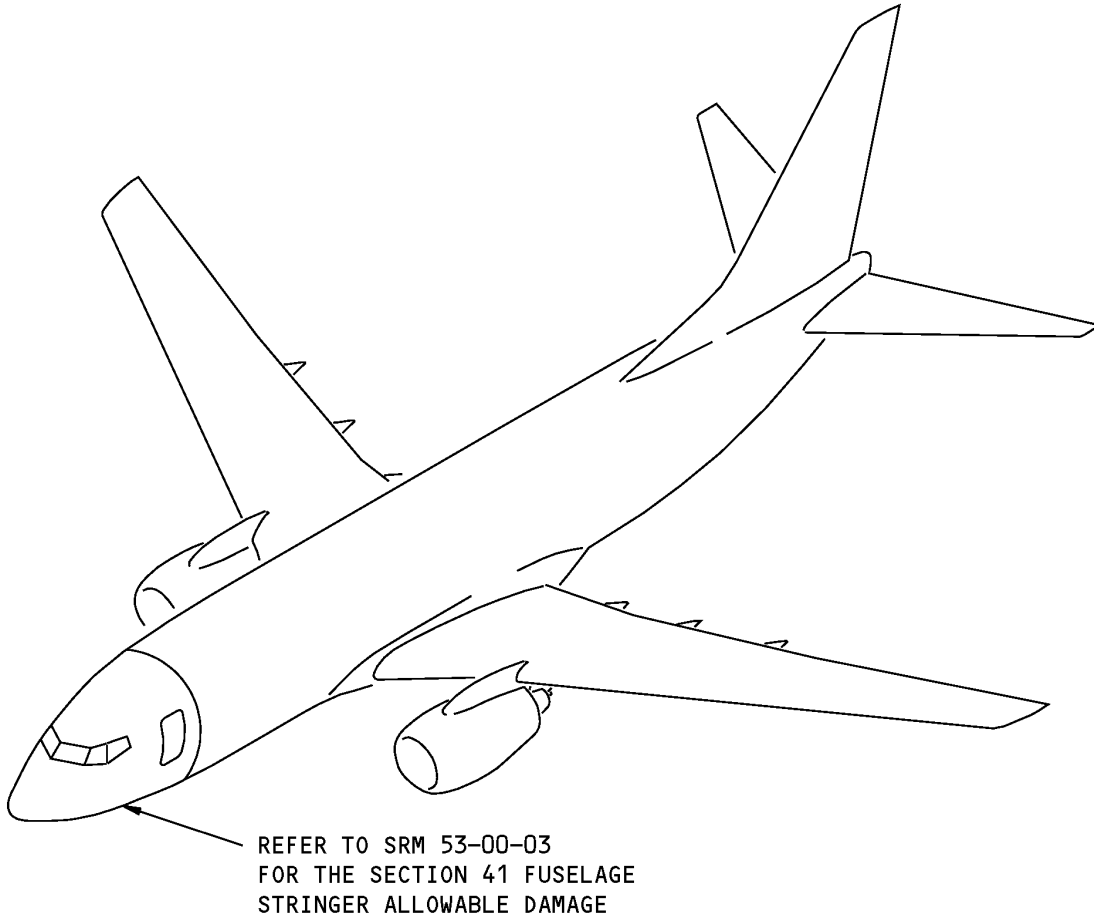
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer		BAC1498-150 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-152 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-153 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer		BAC1498-155 7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer		AND10134-1205 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stringer		BAC1506-1794 7075-T62 extrusion as given in QQ-A-200/11	
[13]	Stringer, machine tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		AND10141-1602 7075-T62 extrusion as given in QQ-A-200/11	
[15]	Stringer, machine tapered	0.040 (1.0)	7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer, machine tapered	0.045 (1.1)	7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer, machine tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[18]	Stringer, machine tapered	0.056 (1.4)	7075-T62 sheet as given in QQ-A-250/12	
[19]	Stringer, machine tapered	0.080 (2.0)	7075-T62 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**ALLOWABLE DAMAGE 1 - SECTION 41 FUSELAGE STRINGERS**



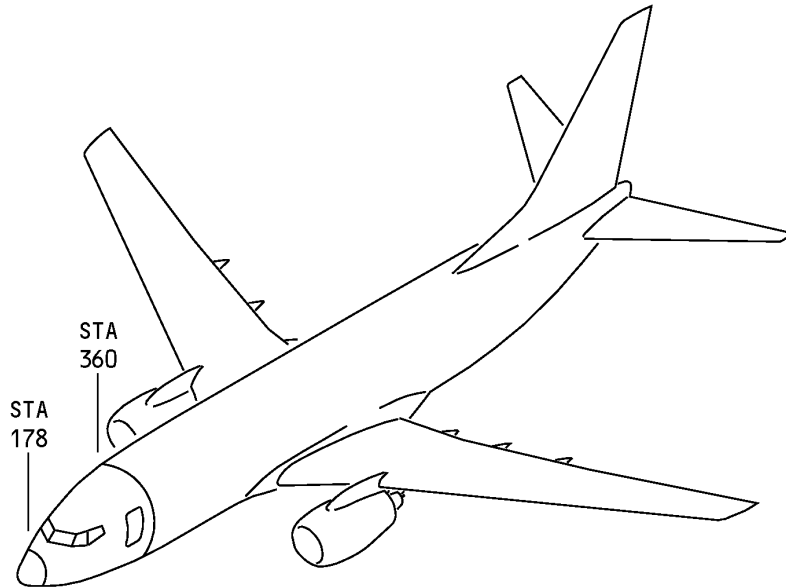
**Section 41 Stringer Allowable Damage**  
**Figure 101**

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**REPAIR 1 - SECTION 41 STRINGERS**

**1. Applicability**

- A. Repair 1 is applicable to damage to the stringers in fuselage Section 41 shown in Section 41 Stringer Repairs, Figure 201/REPAIR 1.



**Section 41 Stringer Repairs  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers





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(Continued)

Reference	Title
53-10-03	FUSELAGE STRINGERS - SECTION 41
53-10-03, IDENTIFICATION 1	Section 41 Fuselage Stringers

**4. Repair Instructions**

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 41 fuselage stringers.

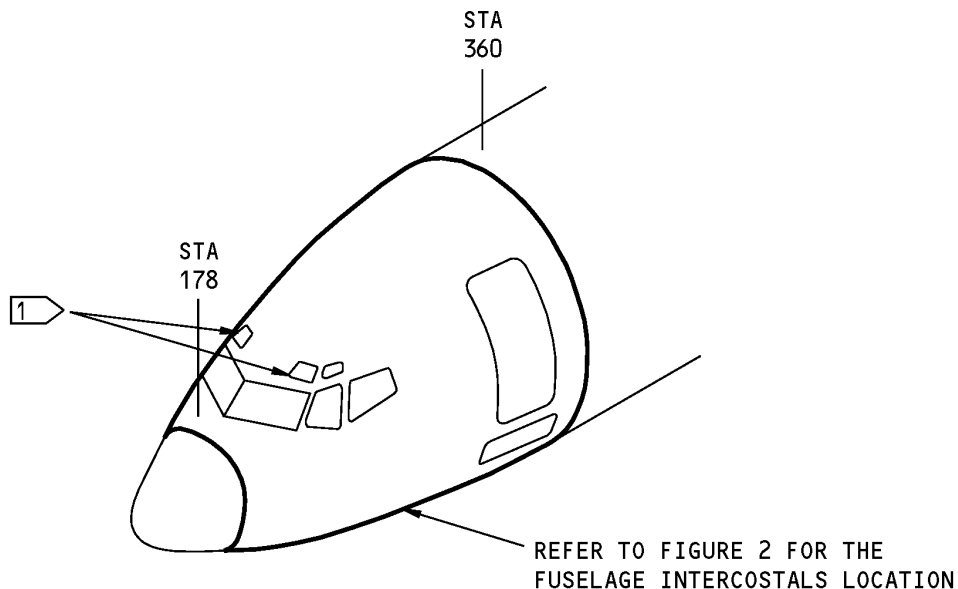
**NOTE:** If necessary, refer to 53-10-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 41 FUSELAGE STRINGERS		
STRINGER	LOCATION	REPAIR
S-24L, S-24R	STA 178 to STA 259	Refer to SRM 51-70-12
S-17L, S-17R,	STA 178 to STA 360	
S-4L	STA 259 to STA 360	
S-13R, S-19R,	STA 259 to STA 290	
S-13L	STA 259 to STA 311	
All Other Stringers	STA 259 to STA 360	Refer to SRM 53-00-03

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**IDENTIFICATION 1 - SECTION 41 FUSELAGE INTERCOSTALS**



**NOTES**

•REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

**Section 41 Fuselage Intercostals  
Figure 1**

**Table 1:**

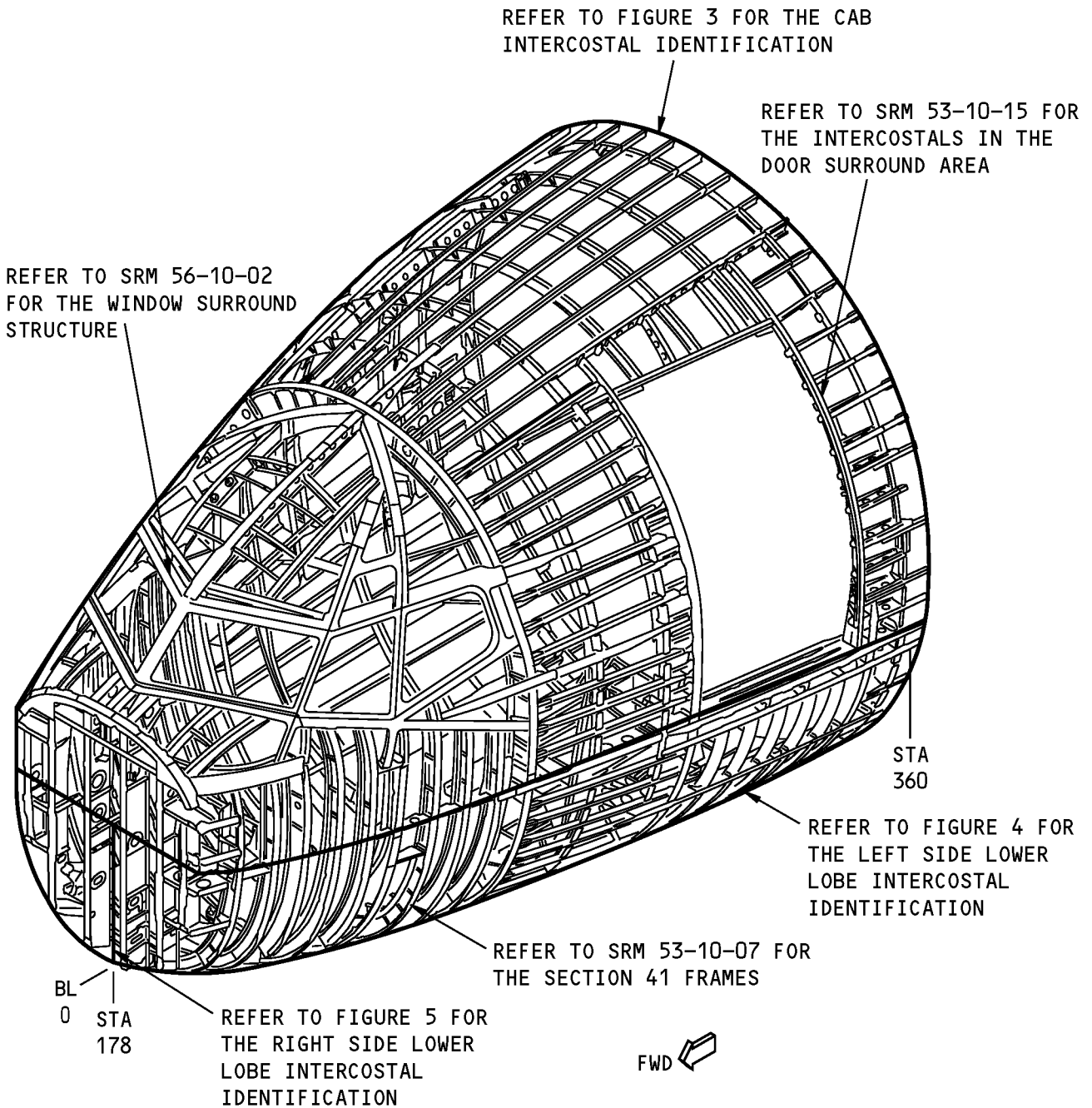
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4111	Section 41 - Cab, Functional Collector
141A1835	Intercostals Installation - Cab Crown
141A1830	Intercostal Installation - STA 235.80, Cab
140A4100	Section 41 - Integration Functional Collector
141A0741	Integration Installation - STA 259-294, Crown
141A0650	Integration Installation - Lower Lobe, Section 41



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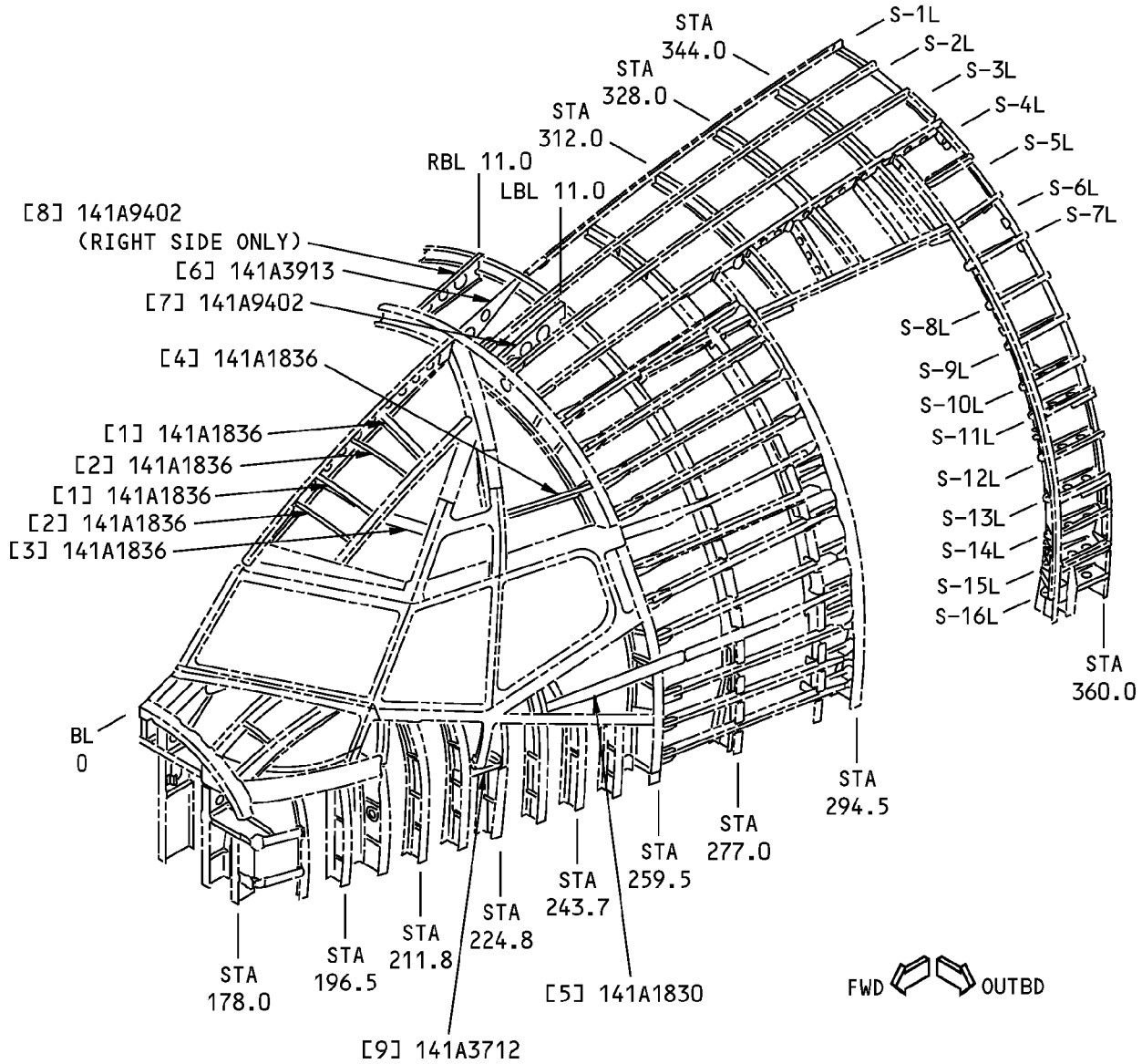
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A1350	Intercostal Installation - Carriage Track Support
140A4100	Section 41 - Integration Functional Collector
141A0640	Integration Installation - Side Panel, Section 41

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**Section 41 Fuselage Intercostal Location  
Figure 2**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
(EXCEPT AS NOTED)**

**Section 41 Cab Fuselage Intercostal Identification  
Figure 3**



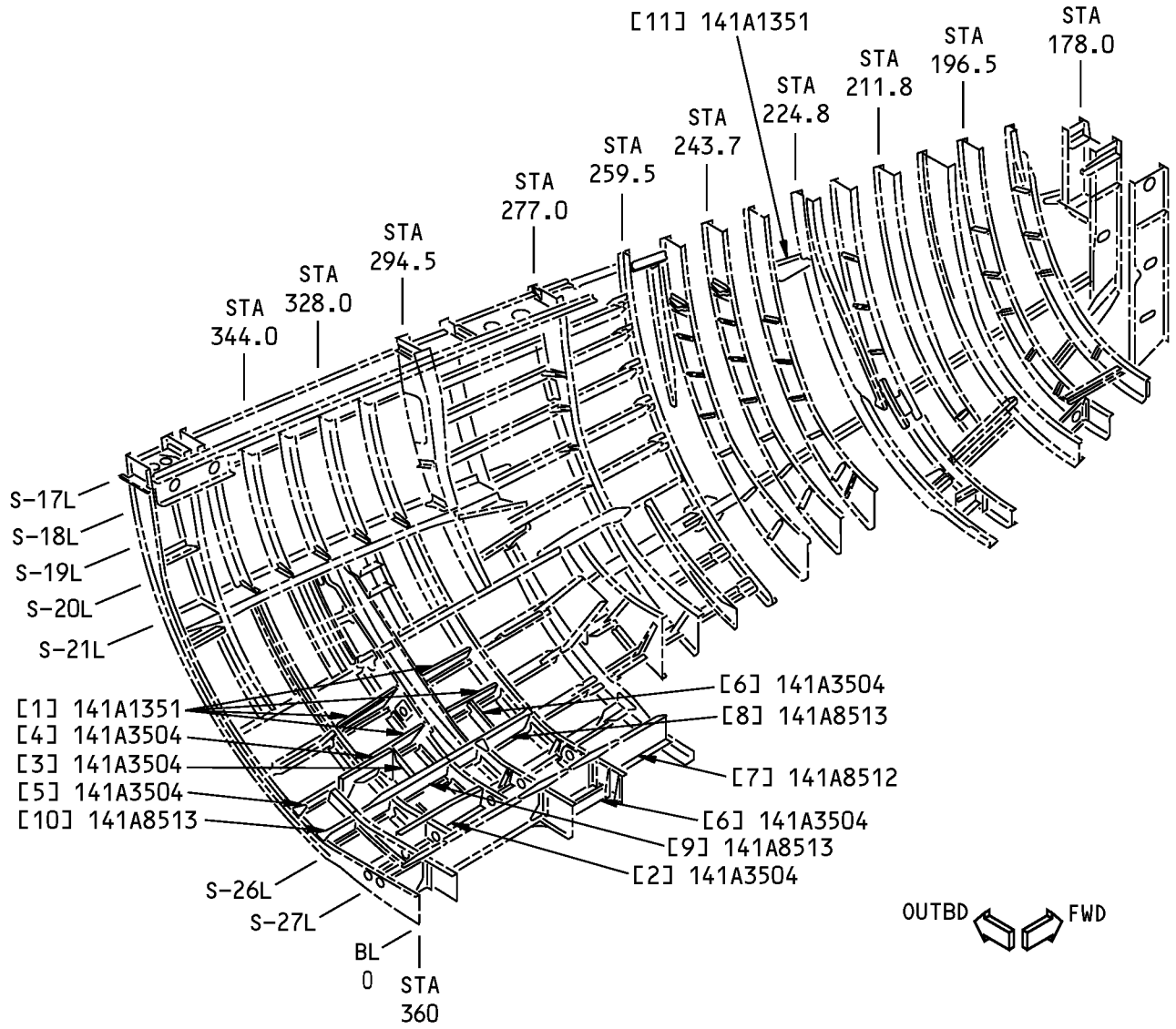
**737-800  
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Crown Intercostal		7050-T7451 plate as given in AMS 4050	
[2]	Crown Intercostal	0.040 (1.016)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Crown Intercostal		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Crown Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal Assembly Tee Chord  Intercostal (2)  Bracket	    0.063 (1.600)	 BAC1505-100588 7075-T73 extrusion as given in QQ-A-200/11  BAC1496-442 7075-T62 clad sheet as given in QQ- A-250/13  6013-T4 sheet as given in AMS 4347	
[6]	Crown Intercostal Assembly at BL 0 Web Outer Chord		 2024-T42 clad sheet as given in QQ-A-250/5  BAC1505-100361 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Crown Intercostal Assembly at LBL 11.0 Web Clevis Backup Fitting Angle		 7075-T62 clad sheet as given in QQ-A-250/13  7075-T7451 plate as given in AMS 4050  7050-T7451 plate as given in AMS 4050  2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Crown Intercostal Assembly at RBL 11.0 Web Channel		 2024-T42 clad sheet as given in QQ-A-250/5  2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Intercostal	0.071 (1.803)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 41 Left Side Lower Lobe Intercostal Identification  
Figure 4**



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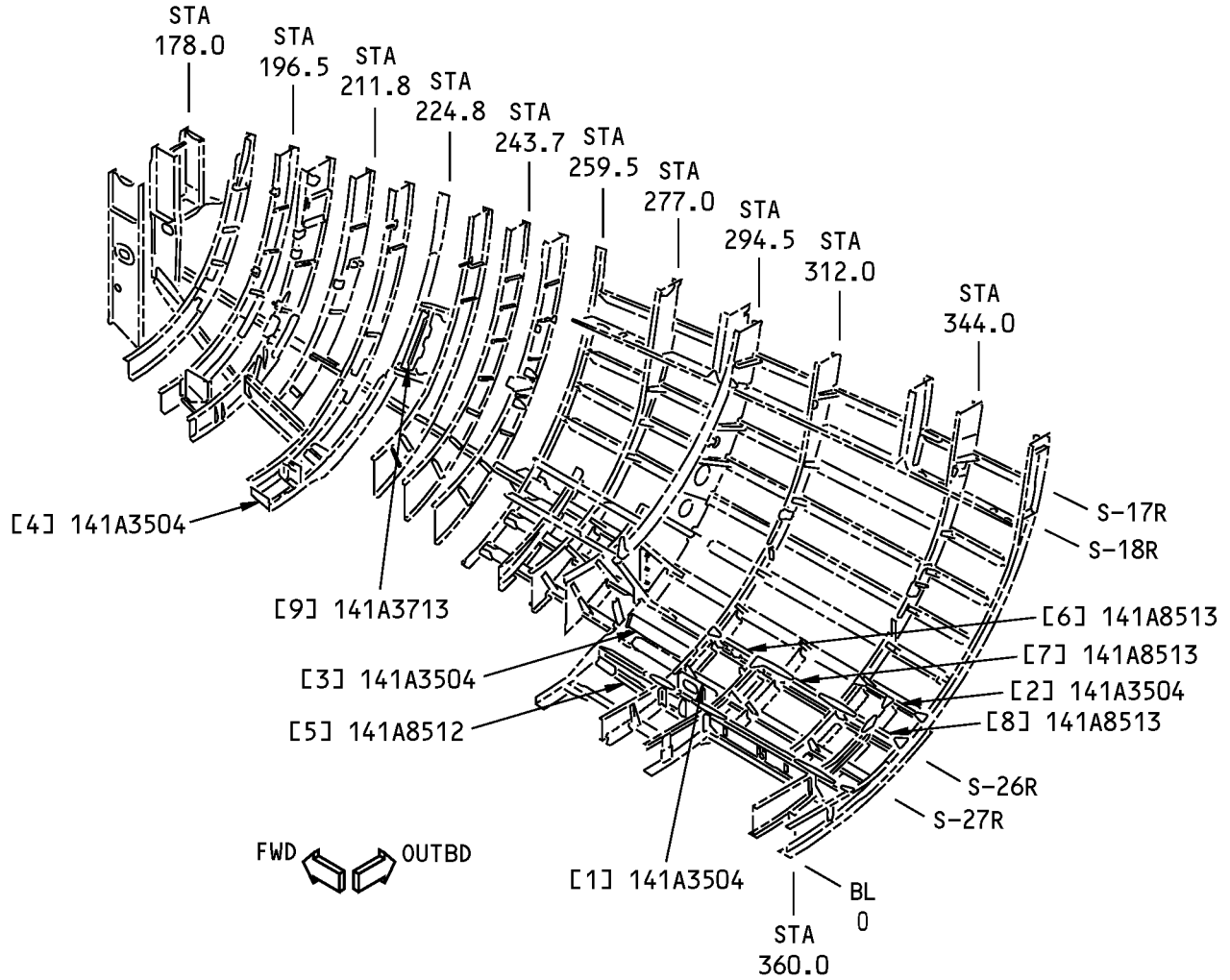
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Intercostal	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Intercostal		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal - Web		BAC1496-443 7075-T62 formed clad sheet as given in QQ-A-250/13	
[6]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal Assembly Web Stiffener Chord Strap	0.120 (3.048)   0.125 (3.175)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11 AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11 2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Intercostal Assembly Web Gusset	  0.050 (1.270)	BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal Assembly Web Strap	  0.050 (1.270)	BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[10]	Intercostal Assembly Web Strap Gusset (2)	  0.050 (1.270) 0.050 (1.270)	BAC1496-439 7075-T62 formed clad sheet as given in QQ-Q-250/13 7075-T6 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[11]	Intercostal	0.040 (1.016)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 41 Right Side Lower Lobe Intercostal Identification  
Figure 5**



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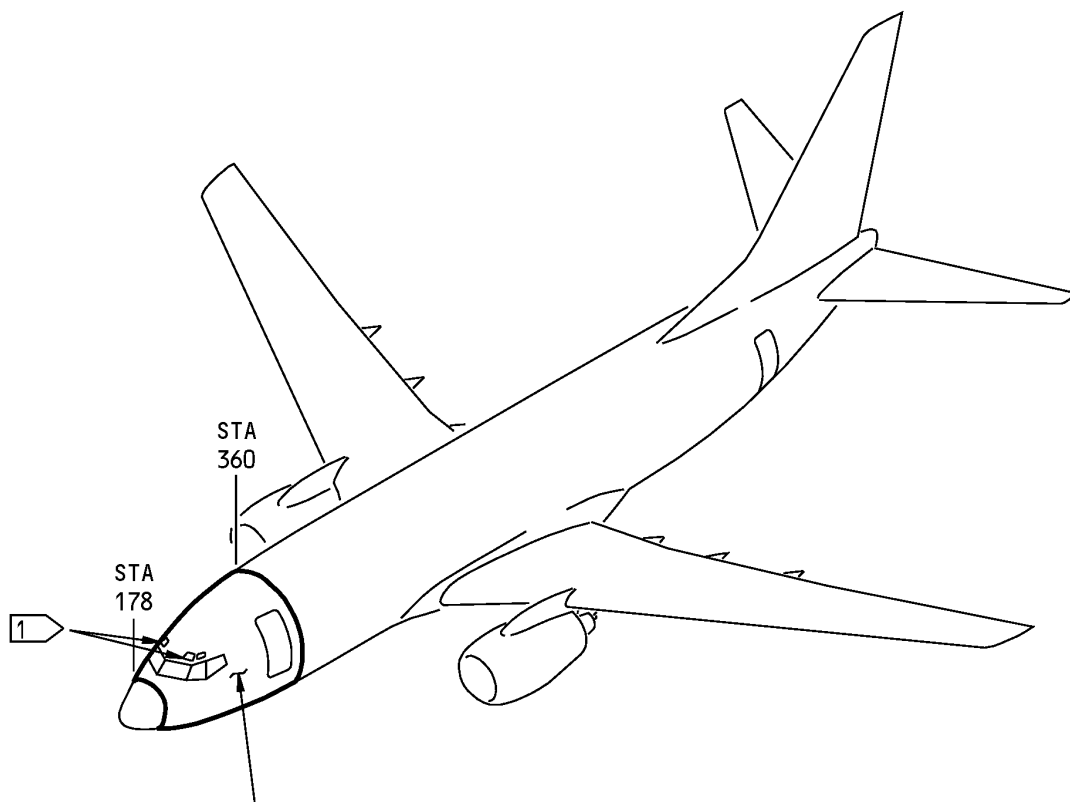
**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal Assembly Intercostal Stiffener	0.050 (1.270)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1490-2619 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Intercostal - Web		BAC1496-443 7075-T62 formed clad sheet as given in QQ-A-250/13	
[3]	Intercostal - Channel		BAC1493-328 7075-T62 formed clad sheet as given in QQ-A-250/13	
[4]	Intercostal - Stiffener	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Intercostal Assembly Web Chord Filler Strap	0.050 (1.270)  0.190 (4.826)  0.125 (3.175)	7075-T6 clad sheet as given in QQ-A-250/13  AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11  7075-T73 bare sheet as given in QQ-A-250/12  7075-T6 clad sheet as given in QQ-A-250/13	
[6]	Intercostal Assembly Web Gusset	0.050 (1.270)	BAC1496-442 7075-T62 formed clad sheet as given in QQ-Q-250/13  7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Intercostal Assembly Web Strap		BAC1496-439 7075-T62 clad sheet as given in QQ-Q-250/13  7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Intercostal Assembly Web Strap Gusset (2)	0.050 (1.270)  0.050 (1.270)	BAC1496-439 7075-T62 formed clad sheet as given in QQ-A-250/13  7075-T6 clad sheet as given in QQ-A-250/13  7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal		7075-T7351 plate as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE GENERAL - SECTION 41 FUSELAGE INTERCOSTALS**



REFER TO SRM 53-00-04 FOR THE  
GENERAL ALLOWABLE DAMAGE DATA  
THAT IS APPLICABLE TO THE  
INTERCOSTALS IN SECTION 41

**NOTE:**

 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

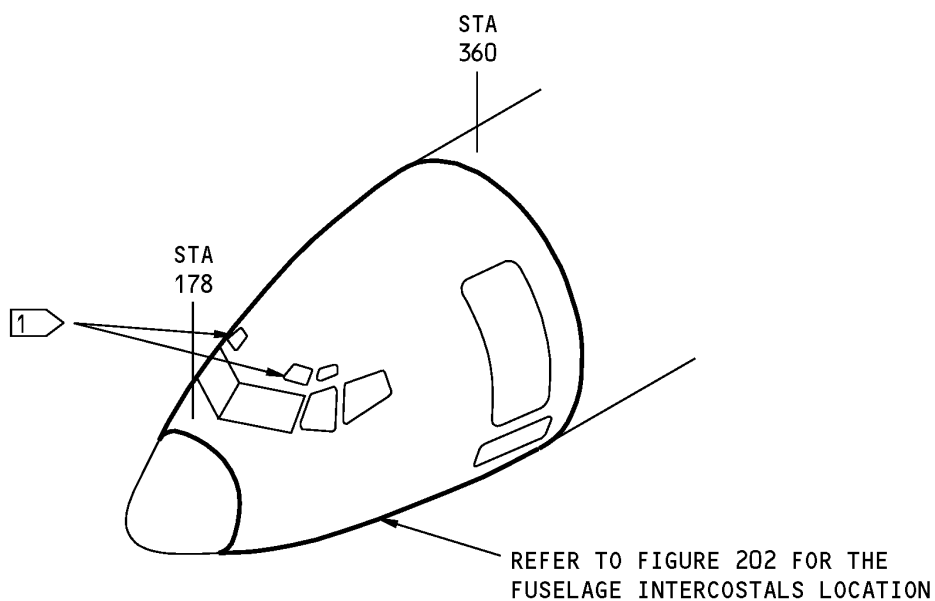
**Section 41 Fuselage Intercostal Locations**  
**Figure 101**

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**REPAIR 1 - SECTION 41 FUSELAGE INTERCOSTALS**

**1. Applicability**

- A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 41 Fuselage Intercostals, Figure 201/REPAIR 1

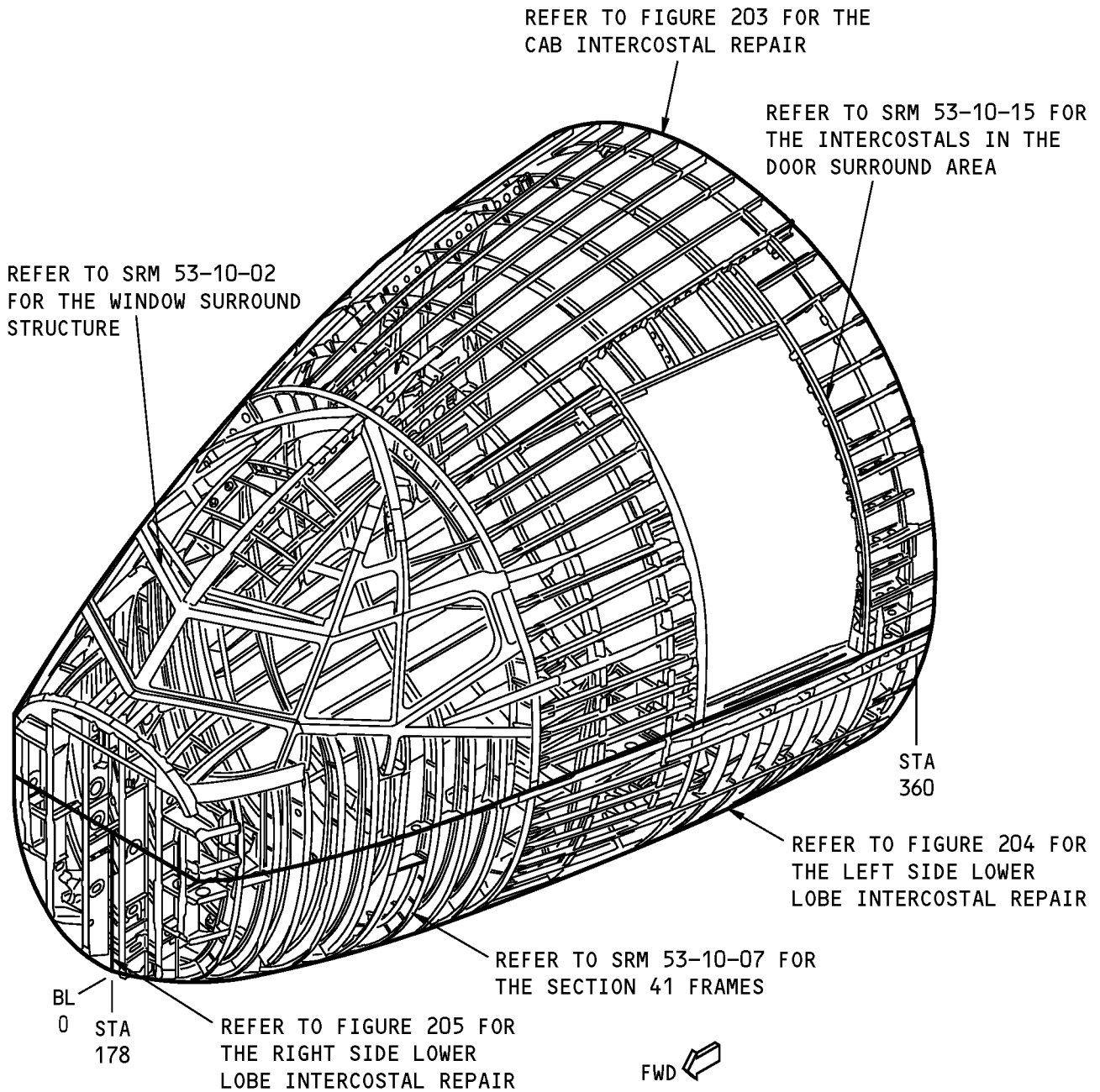


**NOTE:**

 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THROUGH 1649

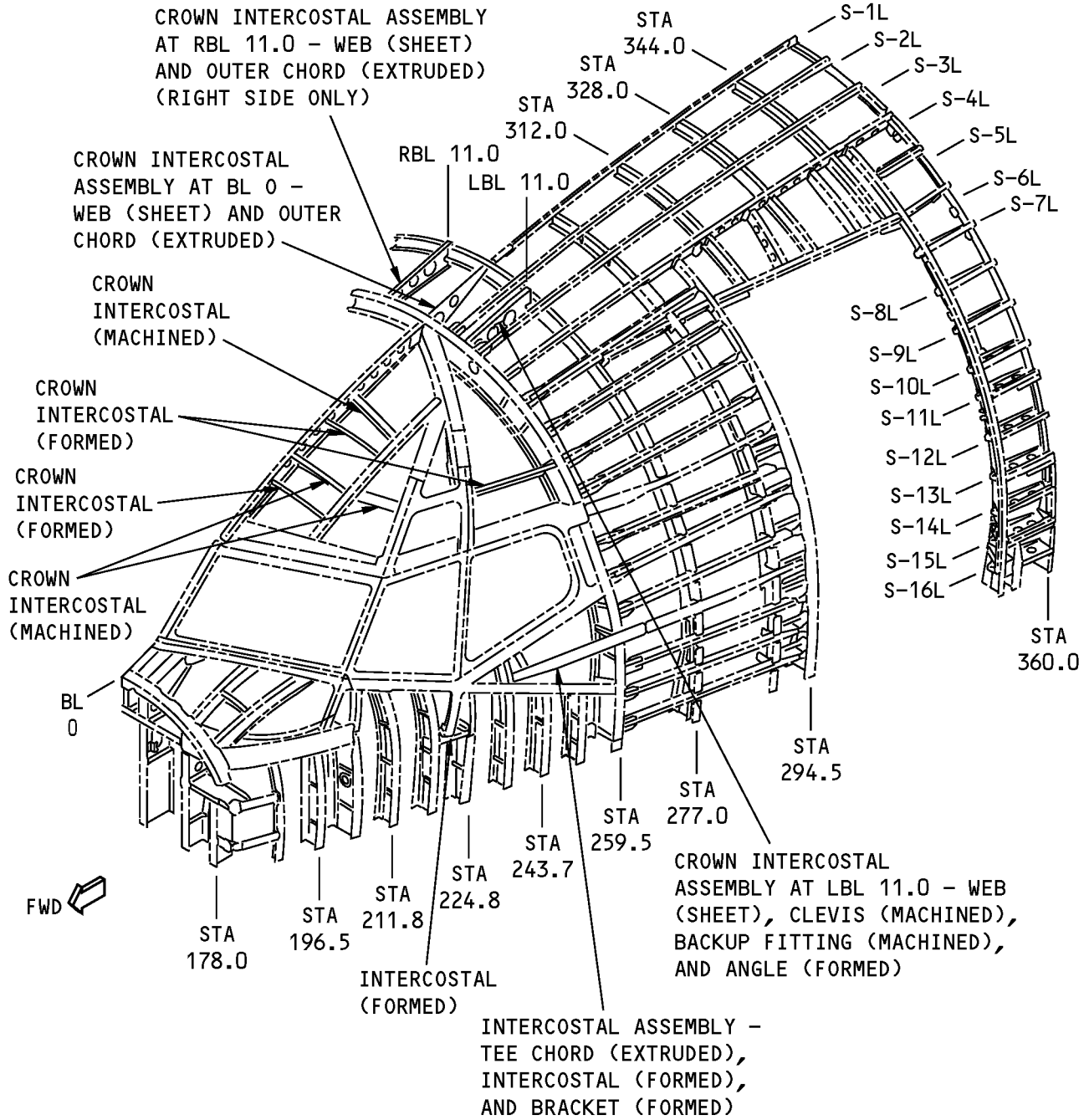
**Section 41 Fuselage Intercostals**  
**Figure 201**

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**Section 41 Fuselage Intercostal Location  
Figure 202**

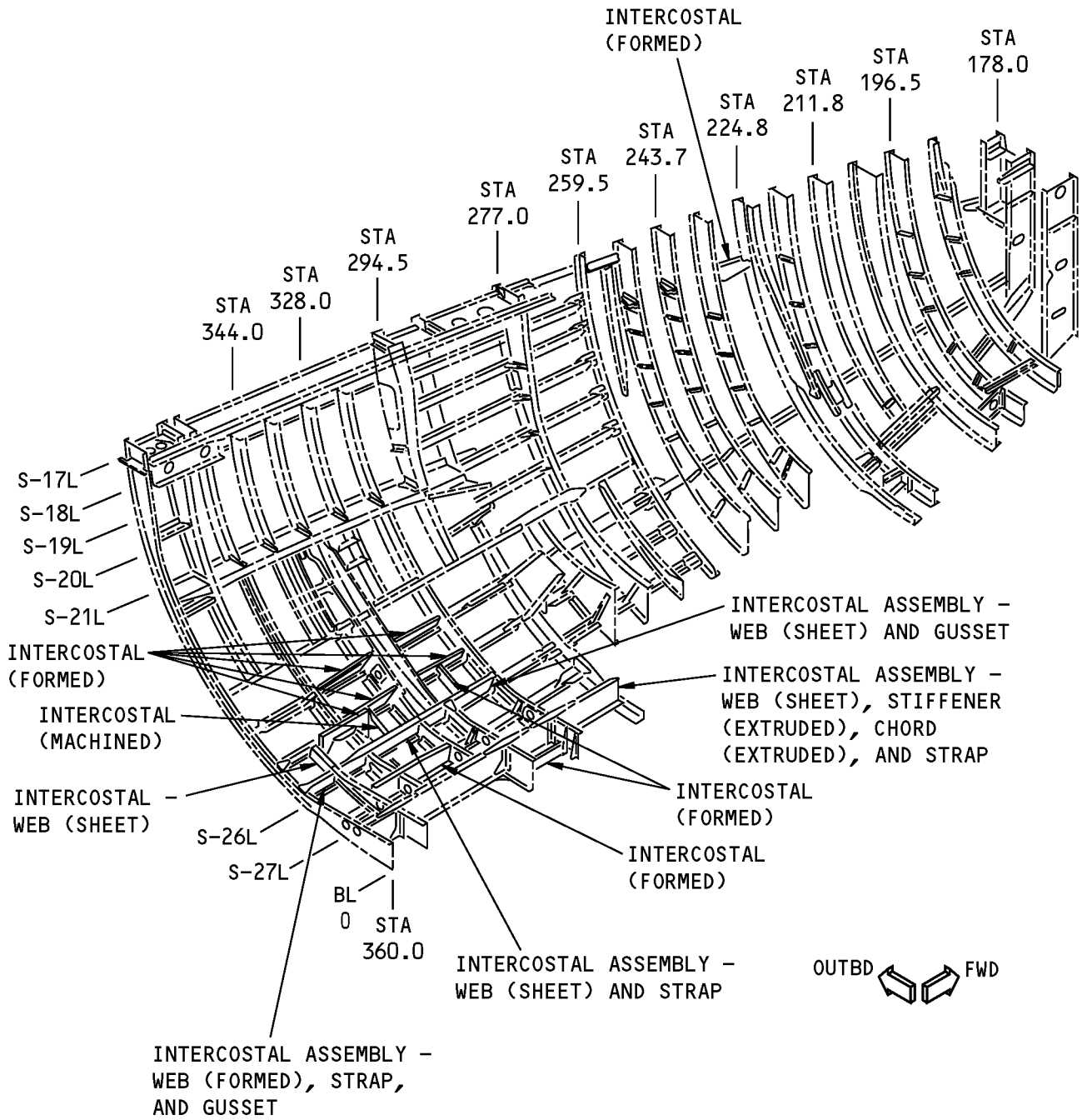
**STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.  
**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
 (EXCEPT AS NOTED)**

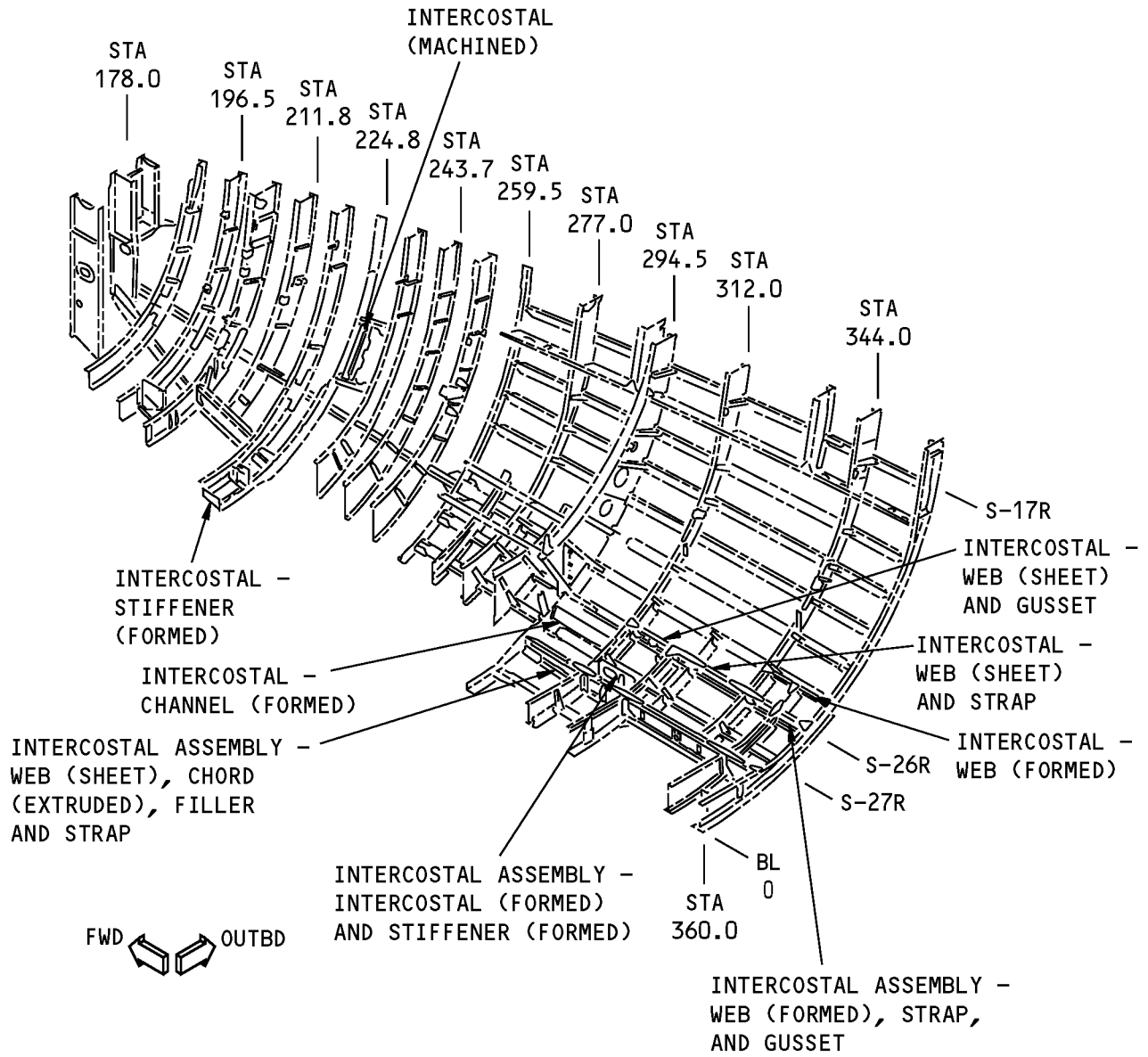
**Section 41 Cab Fuselage Intercostal Structure  
 Figure 203**

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**Section 41 Left Side Lower Lobe Intercostal Structure  
Figure 204**

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**Section 41 Right Side Lower Lobe Intercostal Structure  
Figure 205**





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**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-04	FUSELAGE INTERCOSTALS - SECTION 41
53-10-04, ALLOWABLE DAMAGE GENERAL	Section 41 Fuselage Intercostals
53-10-04, IDENTIFICATION 1	Section 41 Fuselage Intercostals

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 1 and Figures 202, 203, and 204 to find the applicable repair for the part you want to repair.

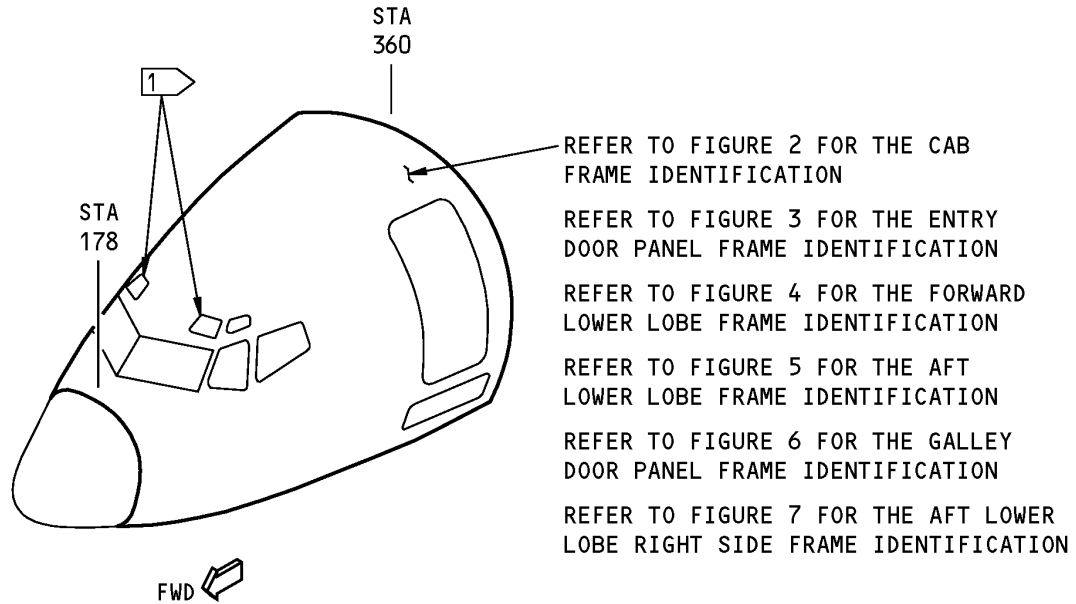
**NOTE:** If necessary, refer to 53-10-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs (Sheet)	Refer to SRM 51-70-13
Straps, Gussets, and Fillers	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part
Crown Intercostals (except at BL 0, LBL 11.0, and RBL 11.0)	There are no repairs for these parts in the Structural Repair Manual at this time.
Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part

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**IDENTIFICATION 1 - SECTION 41 FUSELAGE FRAMES**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Frame Locations  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4104	Functional Collector - Left Side Panel, Section 41
140A4105	Functional Collector - Lower Lobe, Section 41
140A4108	Miscellaneous Functional Collector - Section 41
140A4109	Functional Collector Right Side Panel, Section 41



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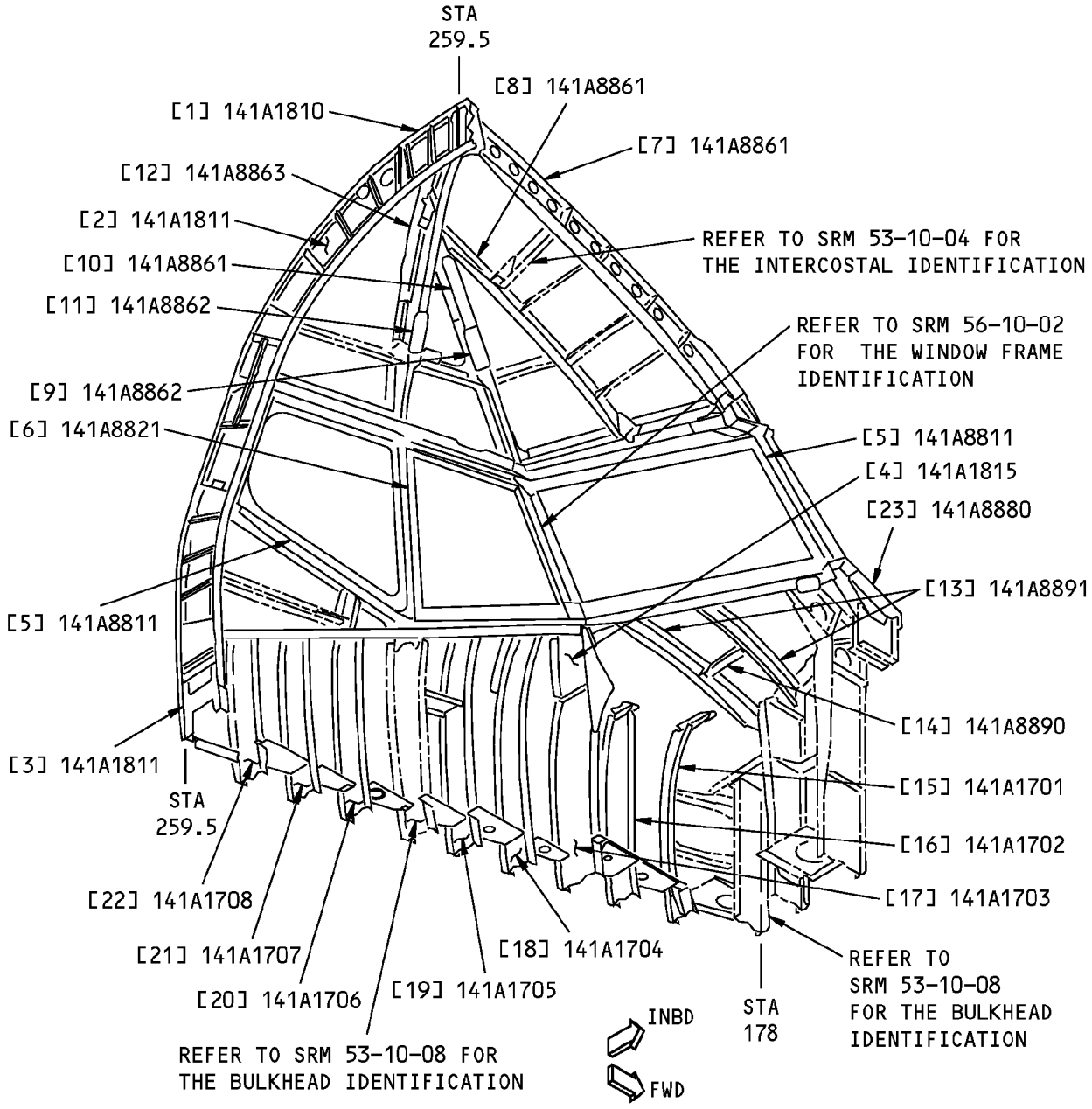
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4111	Section 41 - Cab, Functional Collector
140A4112	Entry Door Panel, Section 41, Functional Collector
140A4113	Section 41 Galley Door Panel
140A9100	Section 41/43 Integration Functional Collector
140A9111	Integration - Section 41/43, Upper
141A0720	Integration - Door Panels
141A1110	Frame Installation - Station 277.00
141A1120	Frame Installation - Station 294.50, Door Panel
141A1130	Frame Installation - Station 312.00
141A1140	Frame Installation - Station 328.00
141A1150	Frame Installation - Station 344.00
141A1160	Frame Installation - Station 360.00
141A1240	Stub Frame Installation - Airstair Cutout, Forward Entry Door
141A1350	Intercostal Installation - Carriage Track Support
141A1360	Frame Installation - Carriage Track Support
141A1501	Frame Installation - Station 188, Lower Lobe
141A1502	Frame Installation - Station 196.5, Lower Lobe
141A1551	Frame Installation - Station 268.25
141A1552	Frame Installation - Station 285.62
141A1561	Frame Installation - Lower Lobe, Station 312
141A1701	Frame Installation - Side Panel, Station 188
141A1702	Frame Installation - Side Panel, Station 196.5
141A1703	Frame Installation - Side Panel, Station 203.8
141A1704	Frame Installation - Side Panel, Station 211.80
141A1705	Frame Installation - Side Panel, Station 219.80
141A1706	Frame Installation - Side Panel, Station 235.8
141A1707	Frame Installation - Side Panel, Station 243.7
141A1708	Frame Installation - Side Panel, Station 251.6
141A1810	Frame Assembly, Station 259.50, Cab
141A1815	Frame Installation, Cab - Station 203.8
141A8140	Sill Installation - Lower Airstair
141A8141	Sill Installation - Upper Airstair
141A8150	Frame Installation - Station 303.9, Entry Door Panel
141A8160	Frame Installation - Station 348.2, Entry Door Panel
141A8170	Frame Installation - Station 351.2, Entry Door Panel
141A8190	Intercostal Installation - Aft Doorstops, Entry Door Panel
141A8220	Reveals, Entry Door Panel



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A8350	Forward Edge Frame Assembly and Installation - Galley Door Panel
141A8360	Aft Edge Frame Installation - Galley Door Panel
141A8363	Aft Door Frame D, Assembly and Installation - Galley Door Panel
141A8370	Stub Frame Assembly and Installation - Galley Door Panel

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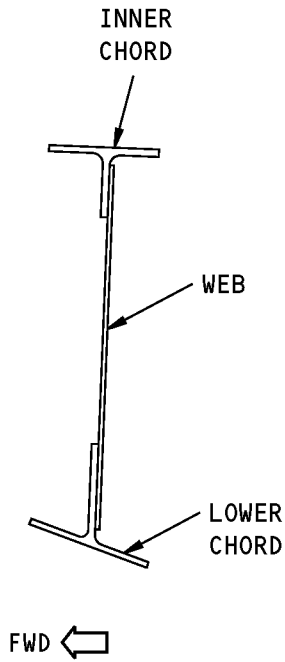
**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU Q FOR THE TYPICAL SECTION CUTS.

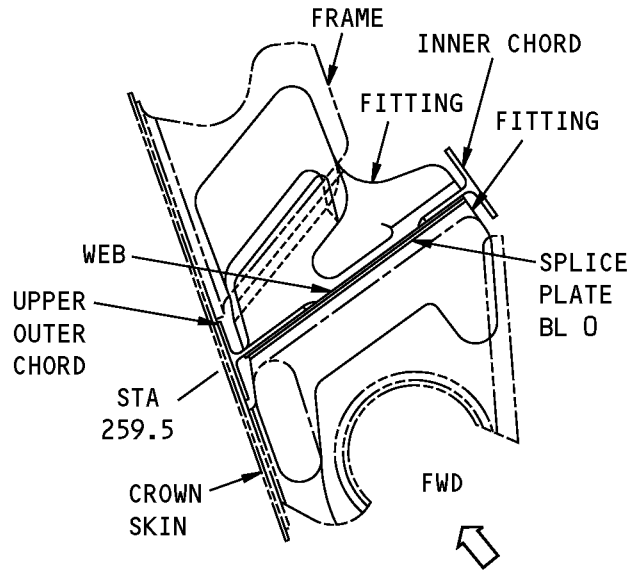
**Section 41 Cab Frame Identification  
Figure 2 (Sheet 1 of 5)**

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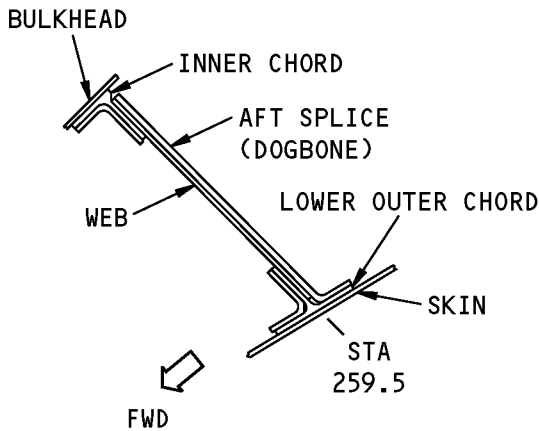
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [1]**

**(A)**



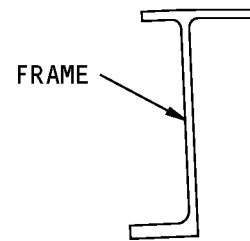
**TYPICAL SECTION THROUGH  
A SPLICE FOR ITEM [2]**

**(B)**



**TYPICAL SECTION THROUGH  
A FRAME SPLICE FOR ITEM [3]**

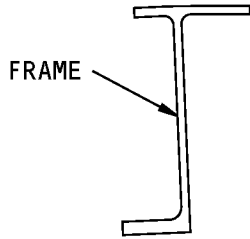
**(C)**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [7]**

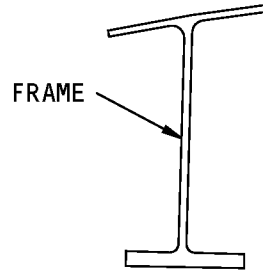
**(D)**

**Section 41 Cab Frame Identification  
Figure 2 (Sheet 2 of 5)**



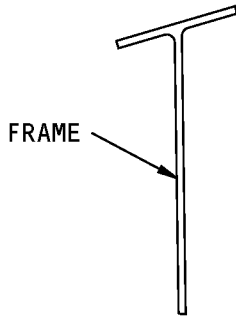
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [8]

(E)



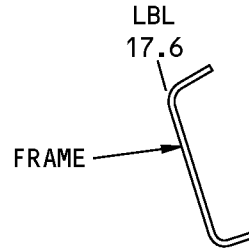
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [10]

(F)



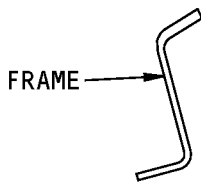
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [12]

(G)



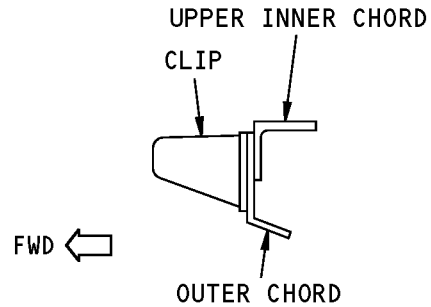
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [13] INBOARD

(H)



TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [14] OUTBOARD

(I)

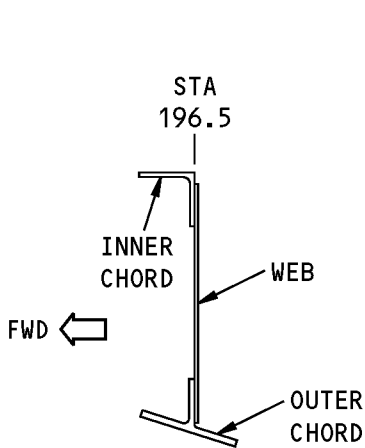


TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [15]

(J)

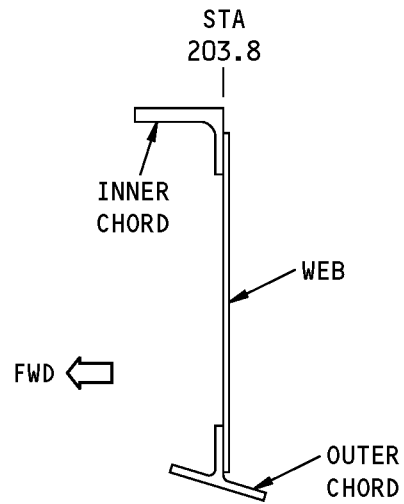
Section 41 Cab Frame Identification  
Figure 2 (Sheet 3 of 5)

**737-800  
STRUCTURAL REPAIR MANUAL**



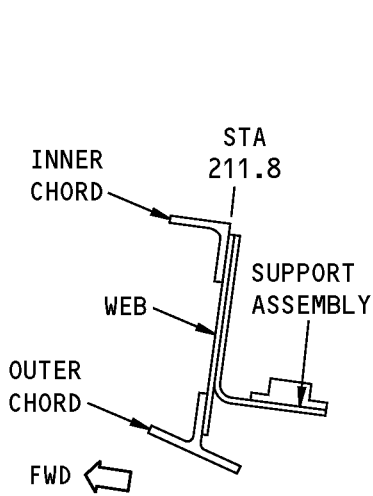
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [16]**

**(K)**



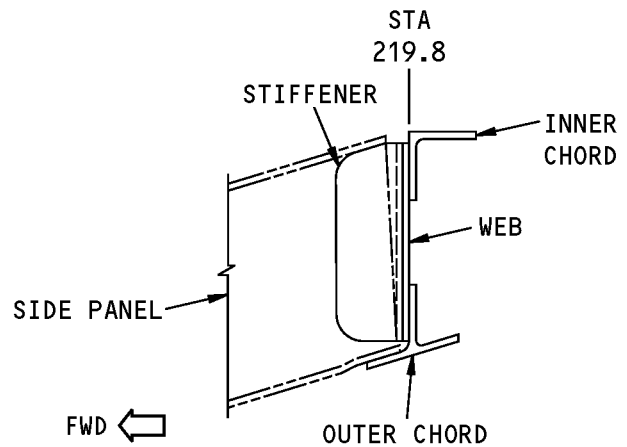
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [17]**

**(L)**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [18]**

**(M)**



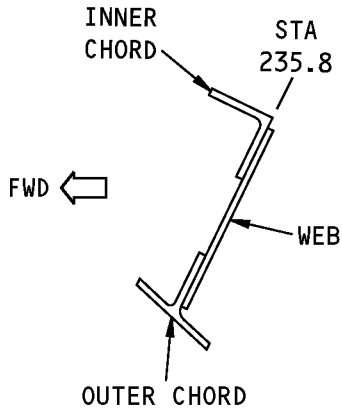
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [19]**

**(N)**

**Section 41 Cab Frame Identification  
Figure 2 (Sheet 4 of 5)**

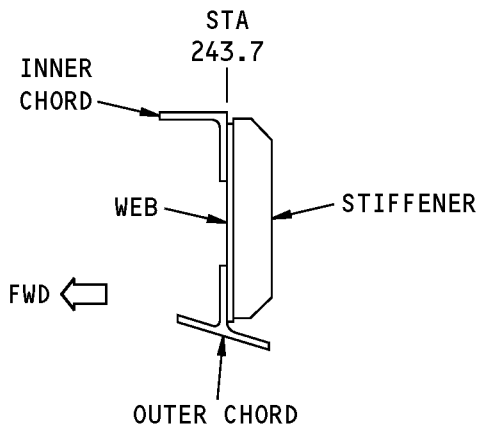


**737-800  
STRUCTURAL REPAIR MANUAL**



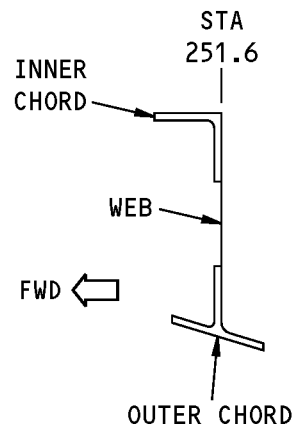
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [20]**

0



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [21]**

P



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [22]**

Q

**Section 41 Cab Frame Identification  
Figure 2 (Sheet 5 of 5)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Web (Left and Right)  Doubler Upper Outer Chord  Lower Outer Chord (Left and Right) Inner Chord	0.080 (2.03)  0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses  7075-T6 clad sheet as given in QQ-A-250/13  BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3  BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3  BAC1505-100542 2024-T42 extrusion as given in QQ-A-200/3	
[2]	Splice Plate	0.050 (1.27)	7075-T6 clad sheet as given QQ-A-250/13	
[3]	Aft Splice	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Frame Assembly Outer Chord  Inner Chord  Web	   0.100 (2.54)	  BAC1514-2812 7075-T73511 extrusion as given in QQ-A-200/11  AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11  7075-T6 clad sheet as given in QQ-A-200/13	
[5]	Frame, Machined		7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the machined thicknesses	
[6]	Frame, Machined		Ti-6Al-4V titanium die forging as given in BMS 7-247. Refer to the production drawings for the machined thicknesses	
[7]	Frame, A-J		7050-T7451 plate as given in BMS 7-323. (Grain Direction controlled part)	
[8]	Frame, W-X		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[9]	Splice Strap	0.250 (6.35)	7075-T7351 plate as given in QQ-A-250/12	
[10]	Frame, M-X		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[11]	Splice Strap	0.150 (3.81)	7075-T7351 plate as given in QQ-A-250/12	
[12]	Frame Assembly, N-J Outer Chord  Inner Chord		7050-T7451 plate as given in BMS 7-323, Type 1. (Grain direction controlled part)  7050-T7451 plate as given in BMS 7-323, Type 1. (Grain direction controlled part)	
[13]	Frame		7075-T73 precision forging as given in BMS 7-186	
[14]	Frame Support	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[15]	Frame Assembly Web	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	



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STRUCTURAL REPAIR MANUAL

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Inner Chord, Lower  Inner Chord, Upper Outer Chord		BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3  AND10134-1206 2024-T42 extrusion as given in QQ-A-200/3  BAC1506-4250 2024-T42 extrusion as given in QQ-A-200/3	
[16]	Frame Assembly Outer Chord  Inner Chord  Web	0.040 (1.02)	BAC1506-1308 2024-T42 extrusion as given in QQ-A-200/3  AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11  7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
[17]	Frame Assembly Web  Outer Chord  Inner Chord	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses  BAC1506-916 2024-T42 extrusion as given in QQ-A-200/3  BAC1514-329 7050-T7451 plate as given in AMS 4050. (Optional: 7075-T73 extrusion as given in QQ-A-200/11)	
[18]	Frame Assembly Web  Outer Chord  Inner Chord	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses  BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3  BAC1503-100228 7075-T62 extrusion as given in QQ-A-200/11	
[19]	Frame Assembly Web  Outer Chord  Inner Chord	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses  BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3  BAC1514-1244 7075-T73 extrusion as given in QQ-A-200/11	
[20]	Frame Assembly Web  Outer Chord  Inner Chord (Left Side)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses  BAC1506-3359 2024-T42 extrusion as given in QQ-A-200/3  AND10133-1001 2024-T42 extrusion as given in QQ-A-200/3	

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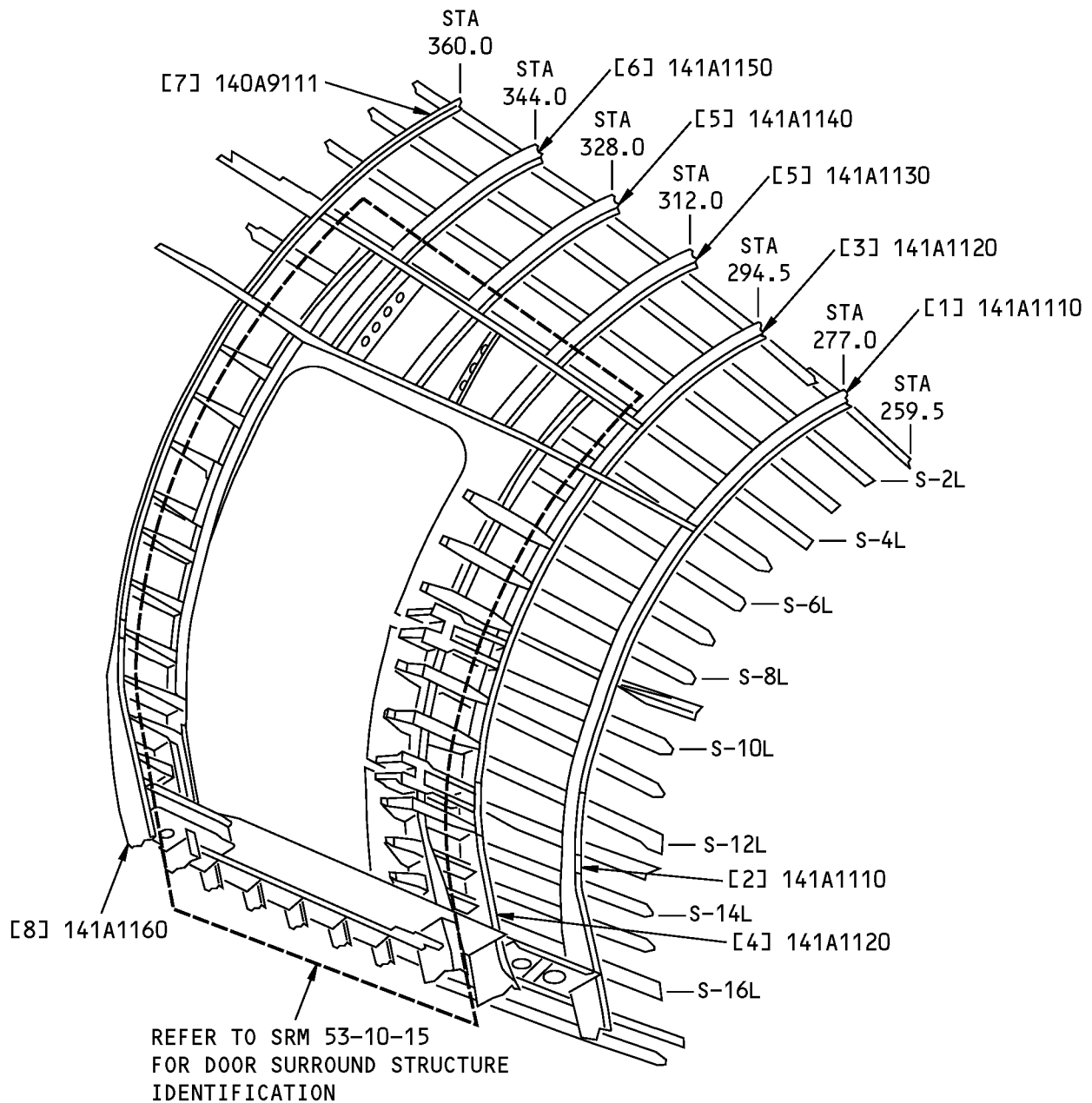


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STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Inner Chord (Right Side)		BAC1503-100179 2024-T42 extrusion as given in QQ-A-200/3	
[21]	Frame Assembly Web  Outer Chord  Inner Chord	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses  BAC1506-2354 2024-T42 extrusion as given in QQ-A-200/3  BAC1503-100018 2024-T42 extrusion as given in QQ-A-200/3	
[22]	Frame Assembly Web  Outer Chord  Inner Chord	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses  BAC1506-4377 2024-T42 extrusion as given in QQ-A-200/3  BAC1514-2819 2024-T42 extrusion as given in QQ-A-200/3	
[23]	Fitting Assembly Tee Fitting  Strap (4)  Nose Fitting (2)		BAC1505-101085 7075-T73511 extrusion as given in QQ-A-200/11  BAC1512-3377 7075-T73511 extrusion as given in QQ-A-200/11  Precision forging 7050-T74 as given in BMS 7-214	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

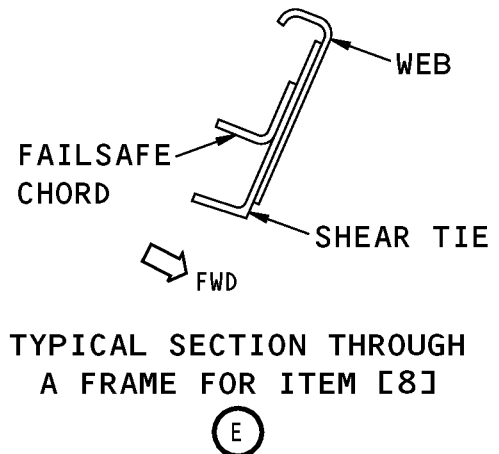
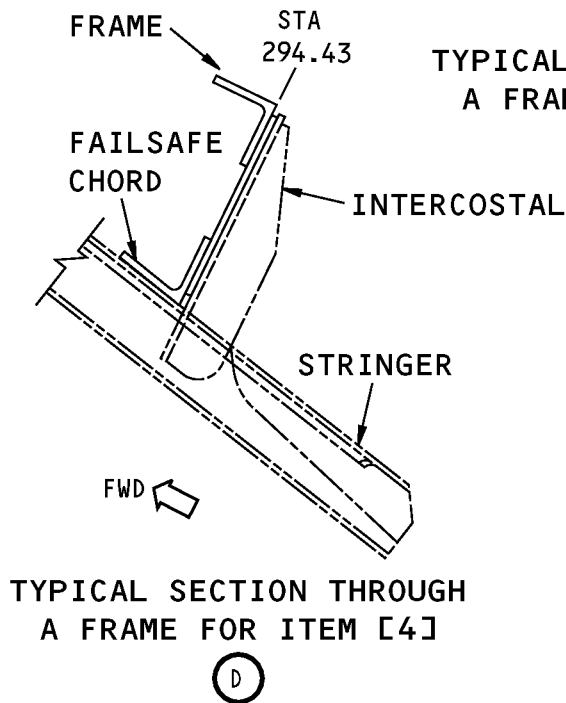
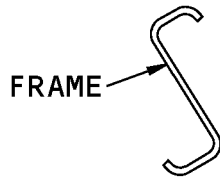
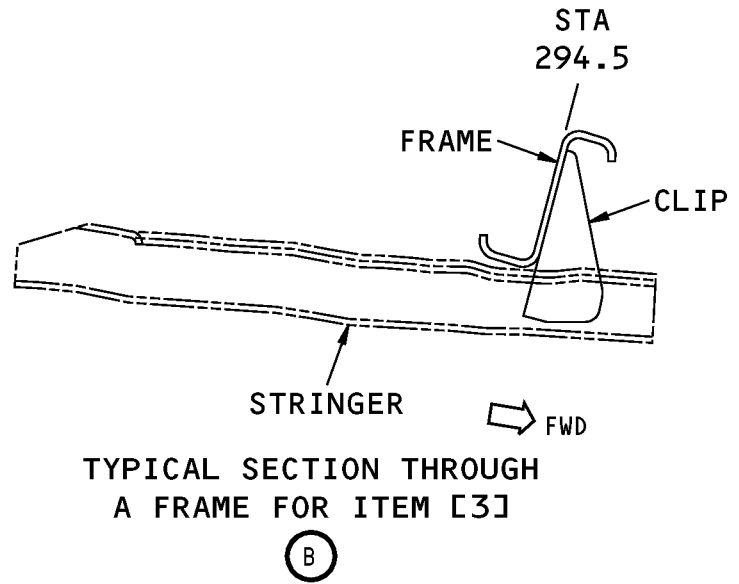
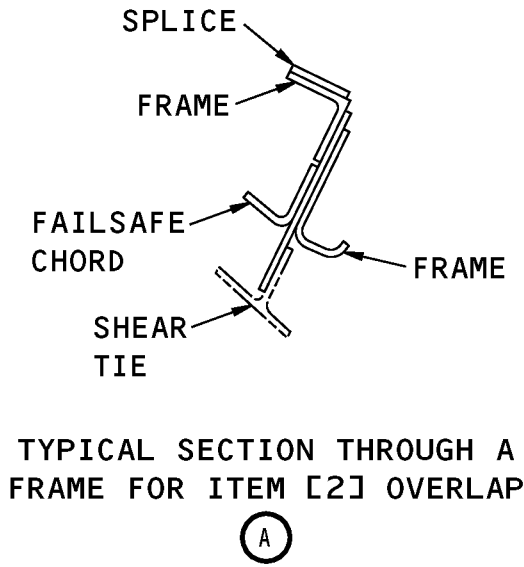
**737-800  
STRUCTURAL REPAIR MANUAL**



- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU E FOR TYPICAL SECTION CUTS.

**Entry Door Panel Frame Identification  
Figure 3 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



**Entry Door Panel Frame Identification  
Figure 3 (Sheet 2 of 2)**



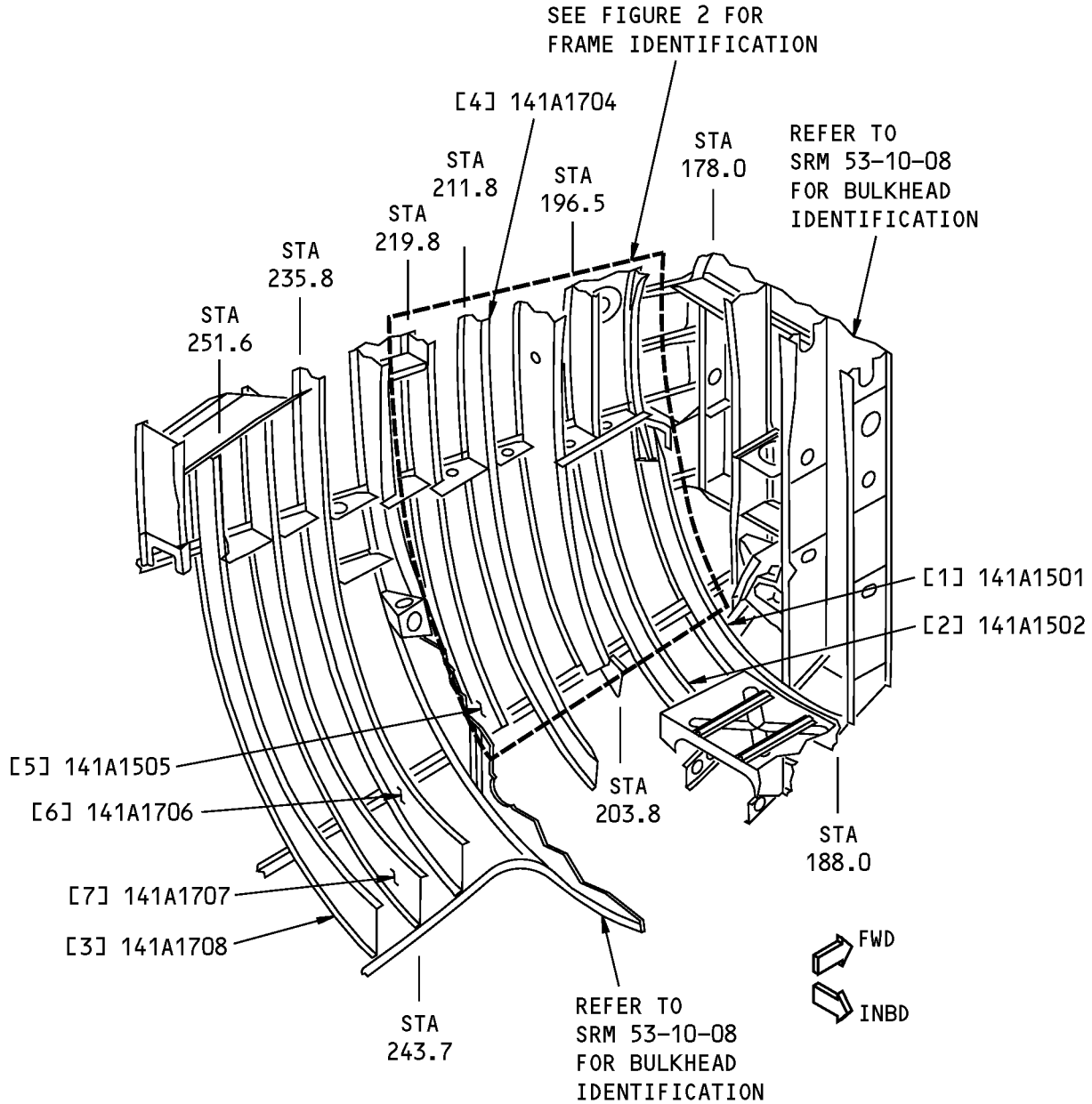
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly (S-2L to S-14L) Splice Frame Splice	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13 BAC1493-512 2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Frame Assembly (S-14L to S-24L) Failsafe Chord Web Inner Chord	0.040 (1.02)	BAC1490-2804 7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly (S-2L to S-14L) Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly (S-14L to S-25L) Fitting Failsafe Chord Web Inner Chord	0.125 (3.18)	7050-T7451 plate as given in BMS 7-323, Type I. (Grain direction controlled part) BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses BAC1505-101418 7075-T73 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly Upper Chord		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Frame Assembly Web		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Frame Assembly Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly Doubler (2) Web (2) Splice Failsafe Chord	0.050 (1.27) 0.050 (1.27) 0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2568 7075-T62 sheet as given in QQ-A-250/12	

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STRUCTURAL REPAIR MANUAL**

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

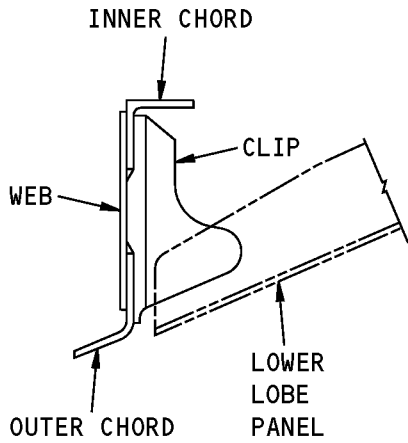
**NOTES**

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU G FOR TYPICAL SECTION CUTS.

**Forward Lower Lobe Frame Identification  
Figure 4 (Sheet 1 of 3)**

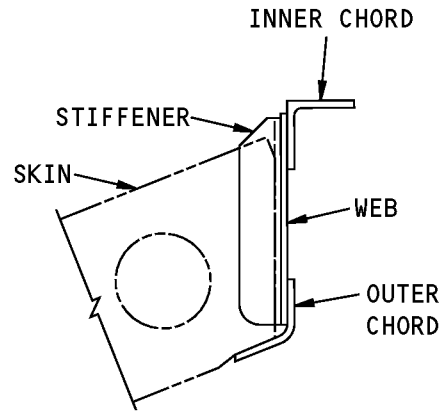


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STRUCTURAL REPAIR MANUAL**



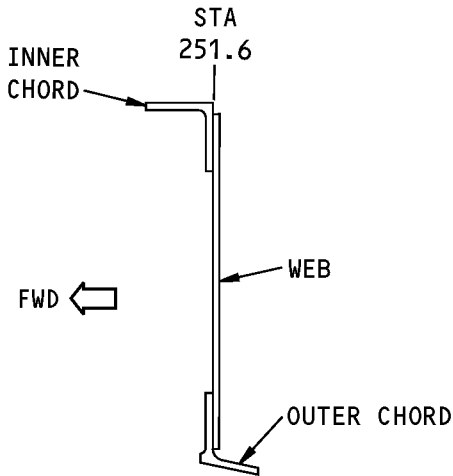
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [1]**

**(A)**



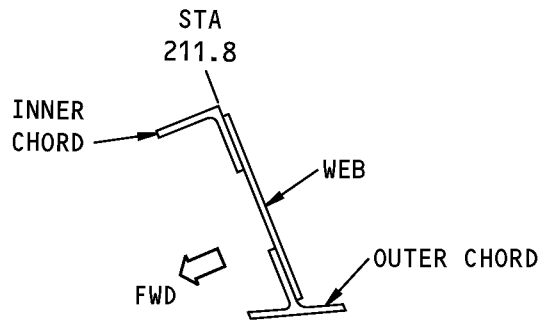
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [2]**

**(B)**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [3]**

**(C)**

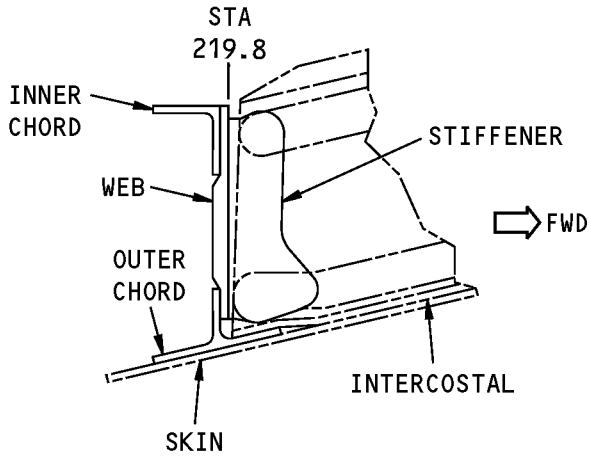


**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [4]**

**(D)**

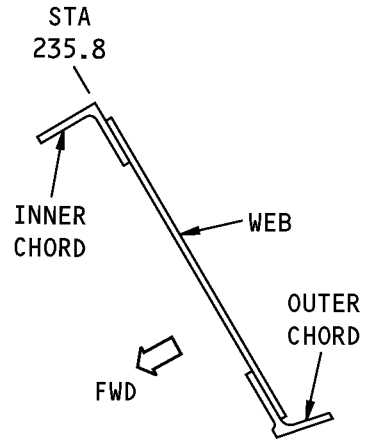
**Forward Lower Lobe Frame Identification  
Figure 4 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



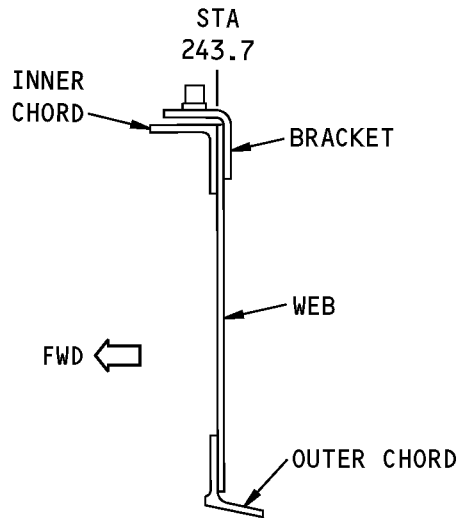
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [5]**

**(E)**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [6]**

**(F)**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [7]**

**(G)**

**Forward Lower Lobe Frame Identification  
Figure 4 (Sheet 3 of 3)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Web Inner Chord Outer Chord	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3 BAC1489-92 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Web Outer Chord Inner Chord	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1489-172 2024-T42 clad sheet as given in QQ-A-250/5 BAC1503-2729 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Frame Assembly Web Inner Chord Outer Chord	0.045 (1.14)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses BAC1514-2819 2024-T42 extrusion as given in QQ-A-200/3 BAC1506-4377 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Frame Assembly Web Inner Chord Outer Chord	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses BAC1503-100228 7075-T62 extrusion as given in QQ-A-200/11 BAC1506-1565 2024-T42 extrusion as given in QQ-A-200/3	
[5]	Frame Assembly Web Inner Chord Outer Chord	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses BAC1505-100274 7075-T62 extrusion as given in QQ-A-200/11 BAC1506-1989 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Frame Assembly Web Inner Chord (Left Side) Inner Chord (Right Side) Outer Chord	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses AND10133-1001 2024-T42 extrusion as given in QQ-A-200/3 BAC1503-100179 2024-T42 extrusion as given in QQ-A-200/3 BAC1506-3359 2024-T42 extrusion as given in QQ-A-200/3	

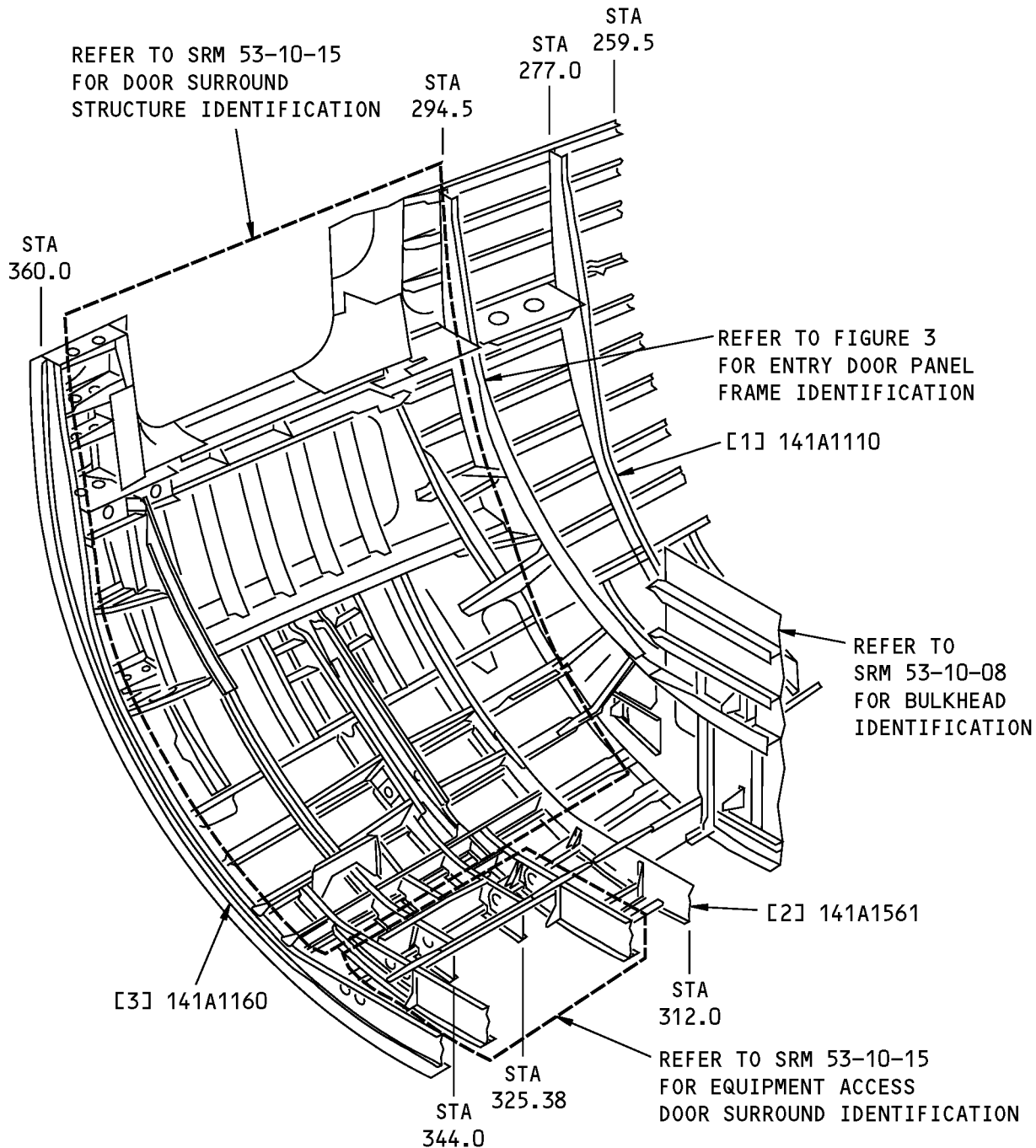


**737-800  
STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[7]	Frame Assembly			
	Web	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1503-100018 2024-T42 extrusion as given in QQ-A-200/3	
	Outer Chord		BAC1506-2354 2024-T42 extrusion as given in QQ-A-200/3	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

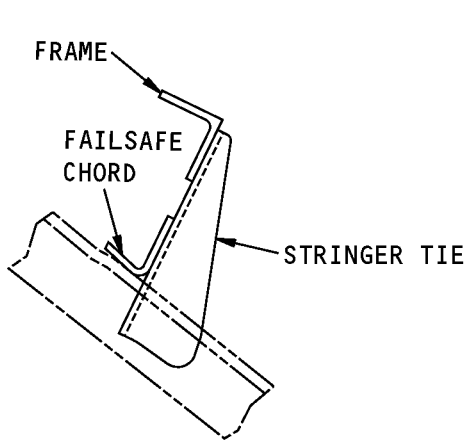


**NOTES:**

- REFER TO TABLE 5 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU C FOR TYPICAL SECTION CUTS.

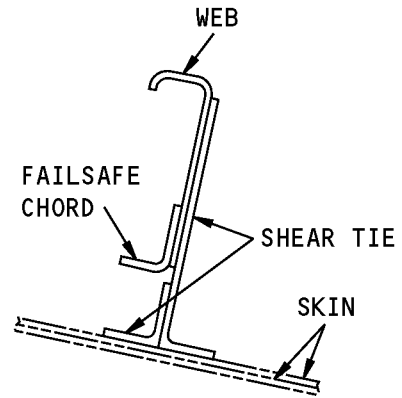
**Aft Lower Lobe Left Side Frame Identification  
Figure 5 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



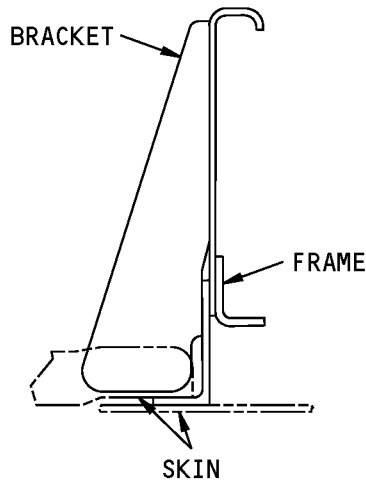
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [1]

(A)



TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [2]

(B)



TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [3]

(C)

**Aft Lower Lobe Left Side Frame Identification  
Figure 5 (Sheet 2 of 2)**



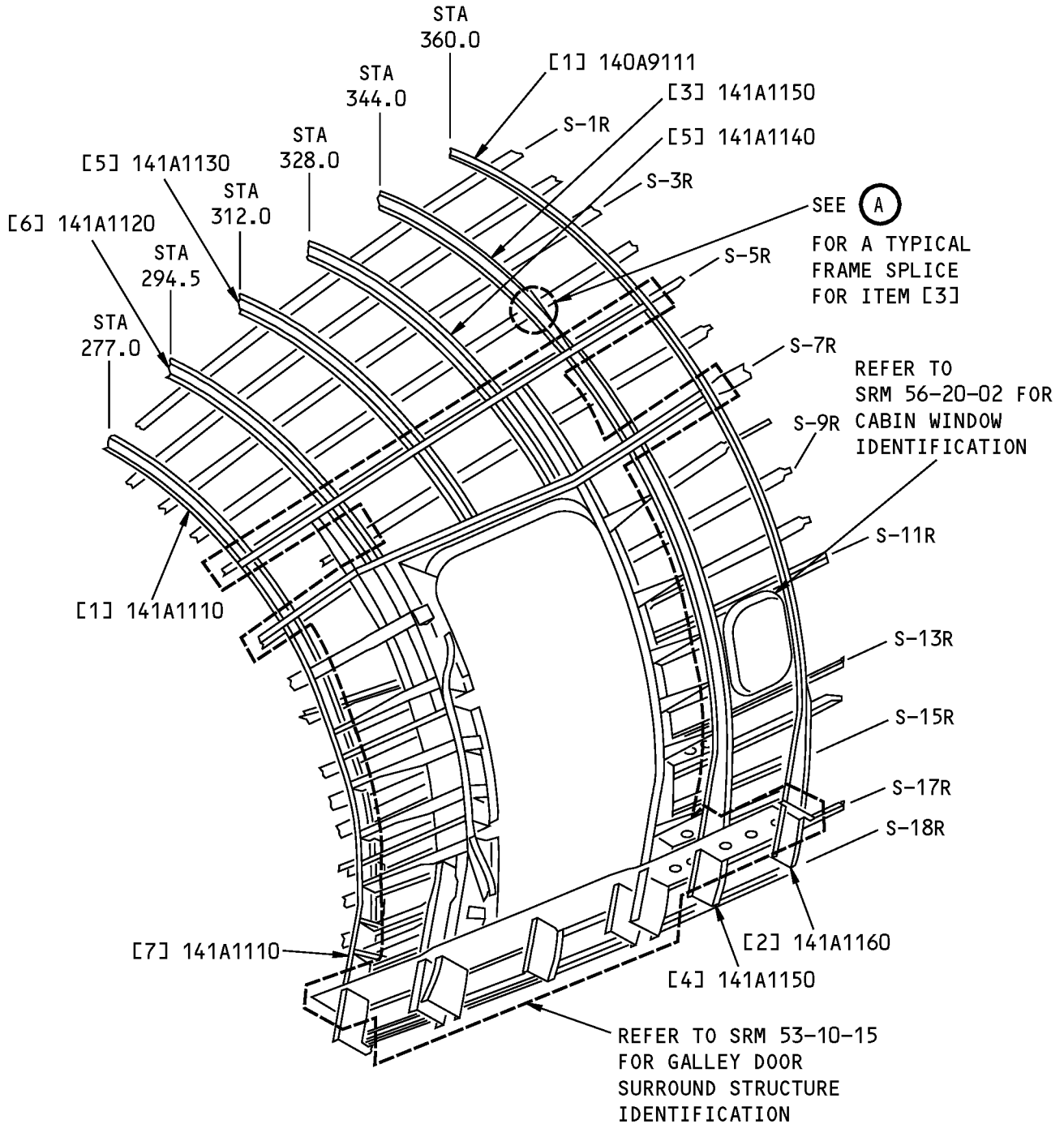
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Web Inner Chord Failsafe Chord	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11 BAC1490-2804 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Web Failsafe Chord	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2818 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly Doubler (2) Web (2) Failsafe Chord	0.050 (1.27) 0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL**



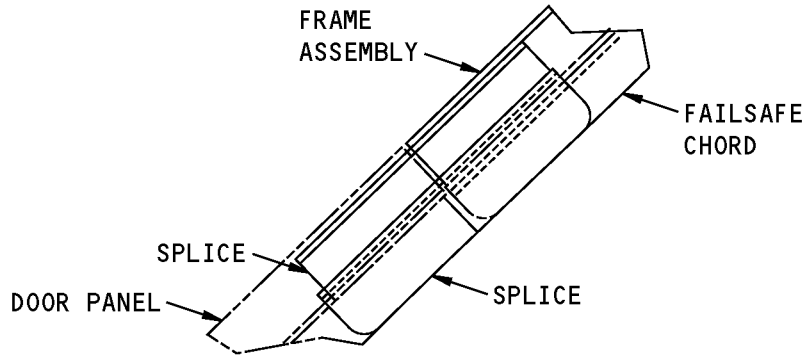
**NOTES:**

- REFER TO TABLE 6 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A AND H FOR TYPICAL SECTION CUTS.

**Galley Door Panel Frame Identification  
Figure 6 (Sheet 1 of 3)**

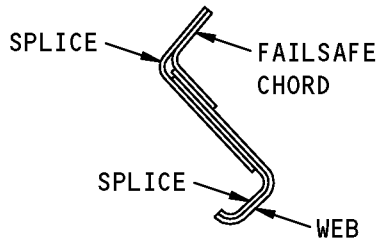


**STRUCTURAL REPAIR MANUAL**



TYPICAL FRAME SPLICE  
BETWEEN STRINGERS S-4R  
AND S-5R FOR ITEM [3]

(A)

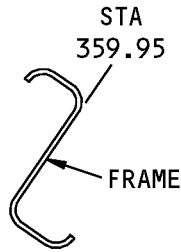


TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [3]

(B)

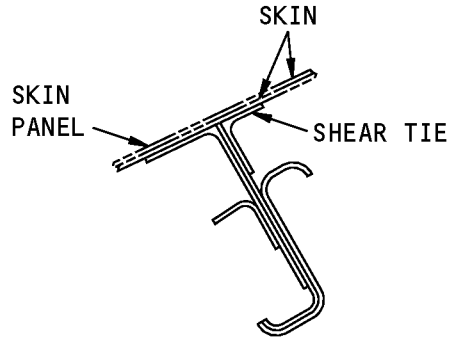
**Galley Door Panel Frame Identification  
Figure 6 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



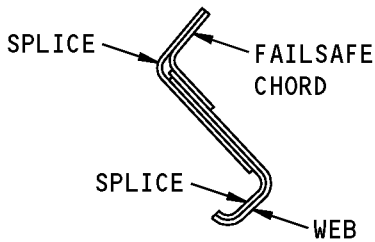
TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [1]

(C)



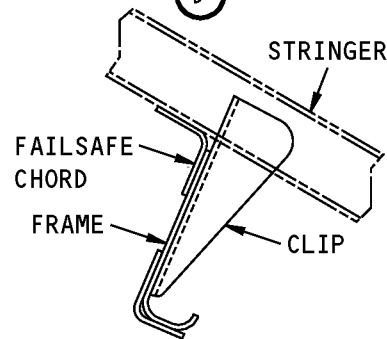
TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [2]

(D)



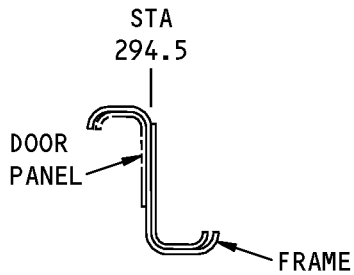
TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [3]

(E)



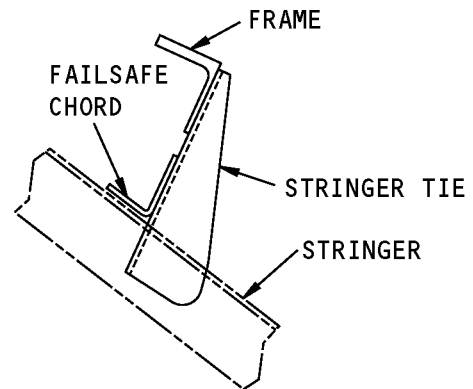
TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [4]

(F)



TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [6]

(G)



TYPICAL SECTION THROUGH A  
FRAME SPLICE FOR ITEM [7]

(H)

**Galley Door Panel Frame Identification  
Figure 6 (Sheet 3 of 3)**



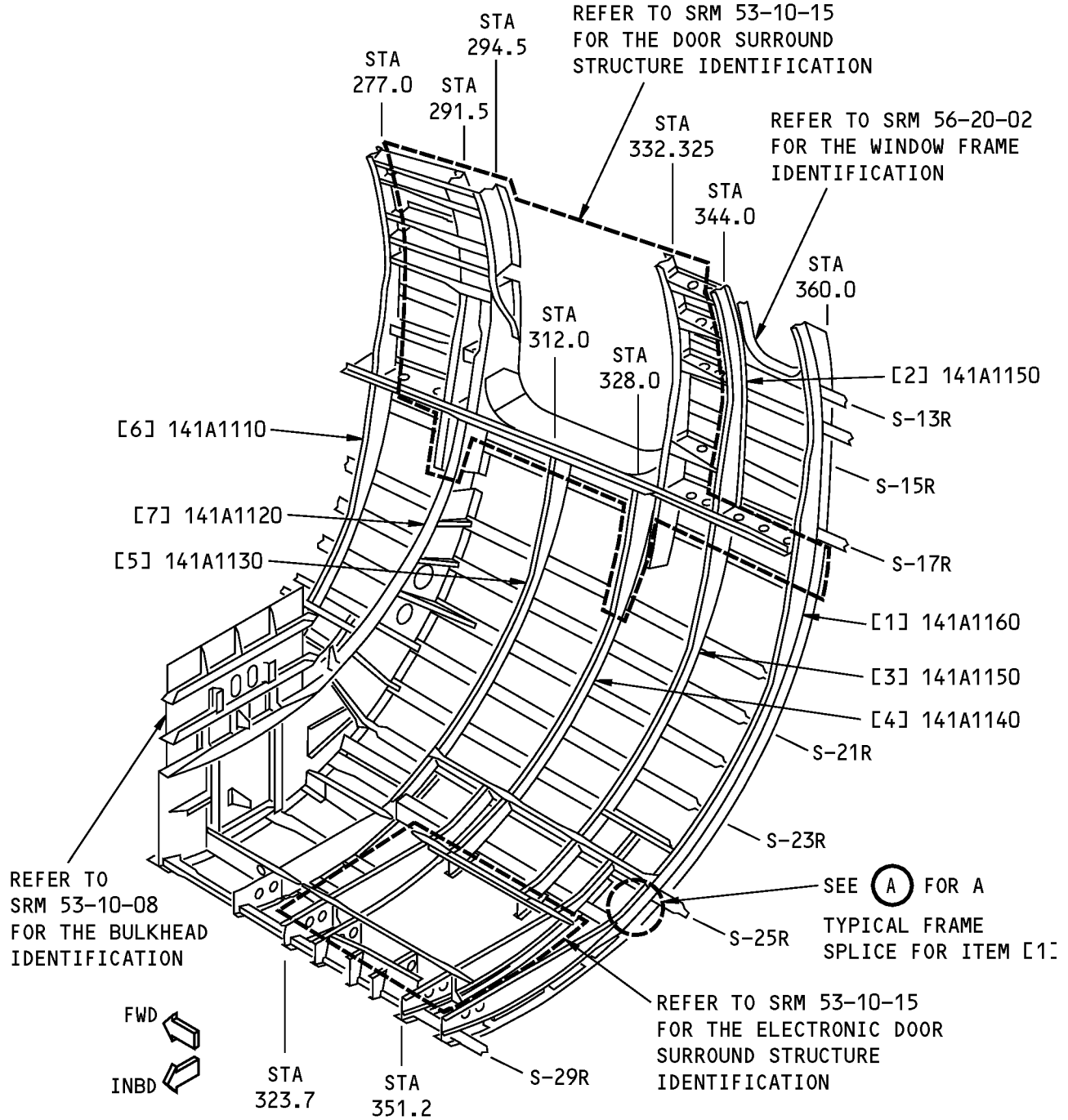
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Doubler (2) Web (2) Failsafe Chord	0.050 (1.27) 0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12	
[3]	Frame Assembly Web Failsafe Chord  Splice Splice	0.050 (1.27)   0.056 (1.42) 0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1489-97 7075-T62 clad sheet as given in QQ-A-250/13  7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly Doubler Failsafe Chord  Web Inner Chord	0.050 (1.27)   0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13  7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100144 2024-T42 extrusion as given in QQ-A-200/3	
[5]	Frame Assembly Upper Chord		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Frame Web		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Frame Assembly Failsafe chord  Web Inner Chord	0.050 (1.27)	BAC1490-2844 7075-T62 clad sheet as given in QQ-A-250/13  7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-5828 7075-T73 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

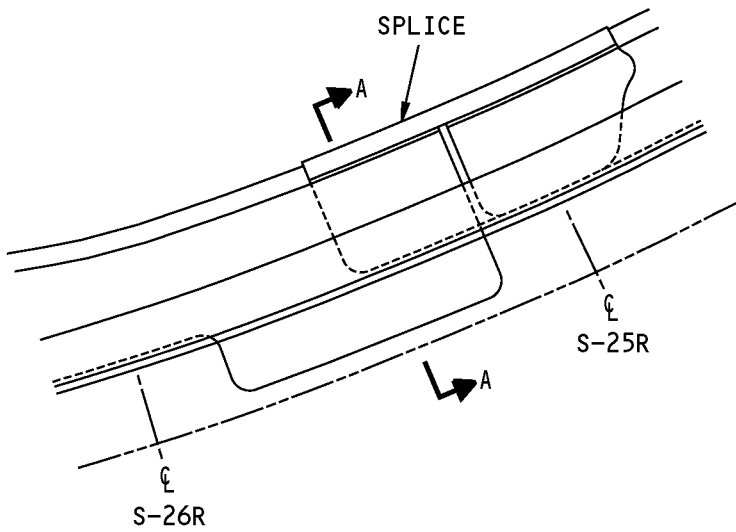
**STRUCTURAL REPAIR MANUAL**



- REFER TO TABLE 7 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU G FOR TYPICAL SECTION CUTS.

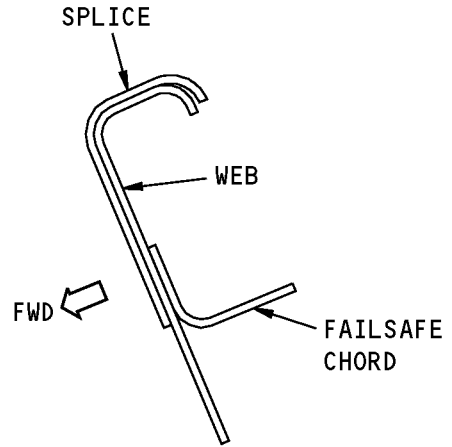
**Aft Lower Lobe Right Side Frame Identification  
Figure 7 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



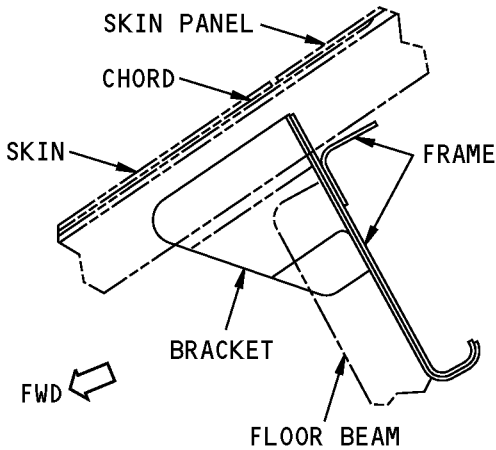
**TYPICAL FRAME SPLICE  
BETWEEN STRINGER S-25R AND  
S-26R FOR ITEM [1]**

**A**



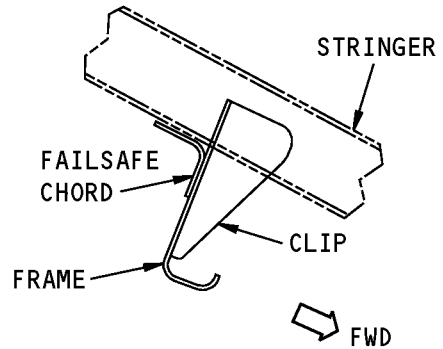
**TYPICAL SECTION THROUGH  
A FRAME SPLICE FOR ITEM [1]**

**A-A**



**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [1]**

**B**

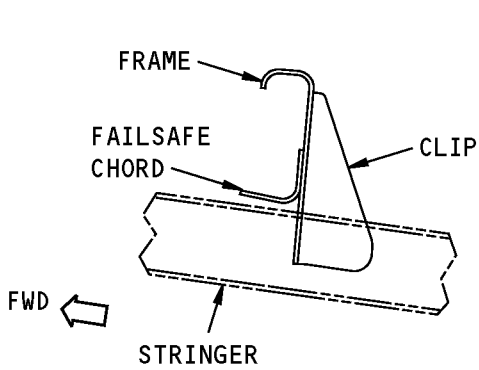


**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [2]**

**C**

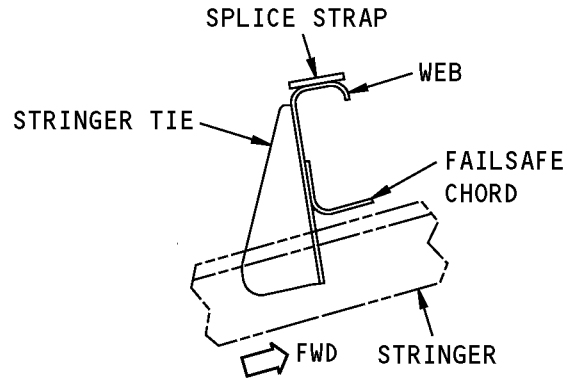
**Aft Lower Lobe Right Side Frame Identification  
Figure 7 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



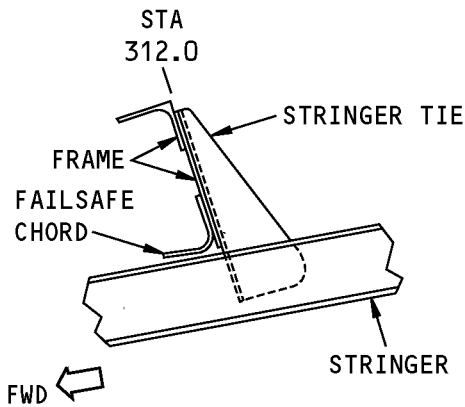
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [3]

(D)



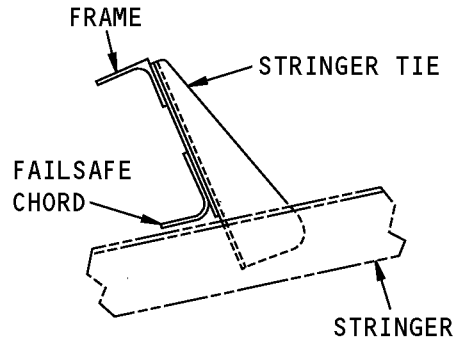
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [4]

(E)



TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [5]

(F)



TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [6]

(G)

**Aft Lower Lobe Right Side Frame Identification  
Figure 7 (Sheet 3 of 3)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 7:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Doubler (2) Web (2) Failsafe Chord Splice	0.050 (1.27) 0.050 (1.27) 0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2568 7075-T62 clad sheet as given in QQ-A-250/12 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Failsafe Chord Failsafe Chord Web	0.050 (1.27)	BAC1489-97 7075-T62 clad sheet as given in QQ-A-250/13 BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly Failsafe Chord Doubler Web Inner Chord	0.050 (1.27) 0.050 (1.27)	BAC1489-376 7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100144 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Frame Assembly Web Failsafe Chord Tee Web Inner Chord	0.050 (1.27) 0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2551 7075-T62 clad sheet as given in QQ-A-250/13 BAC1505-101147 7075-T73511 extrusion as given in QQ-A-200/11. 7075-T6 clad sheet as given in QQ-A-250/13. BAC1503-100607 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly Failsafe Chord Web Inner Chord	0.050 (1.27)	BAC1490-2780 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly Failsafe Chord Web Inner Chord	0.050 (1.27)	BAC1490-2844 7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-5828 7075-T73 extrusion	
[7]	Frame Assembly Doubler Doubler	0.040 (1.02) 0.140 (3.56)	7075-T6 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13	



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**STRUCTURAL REPAIR MANUAL**

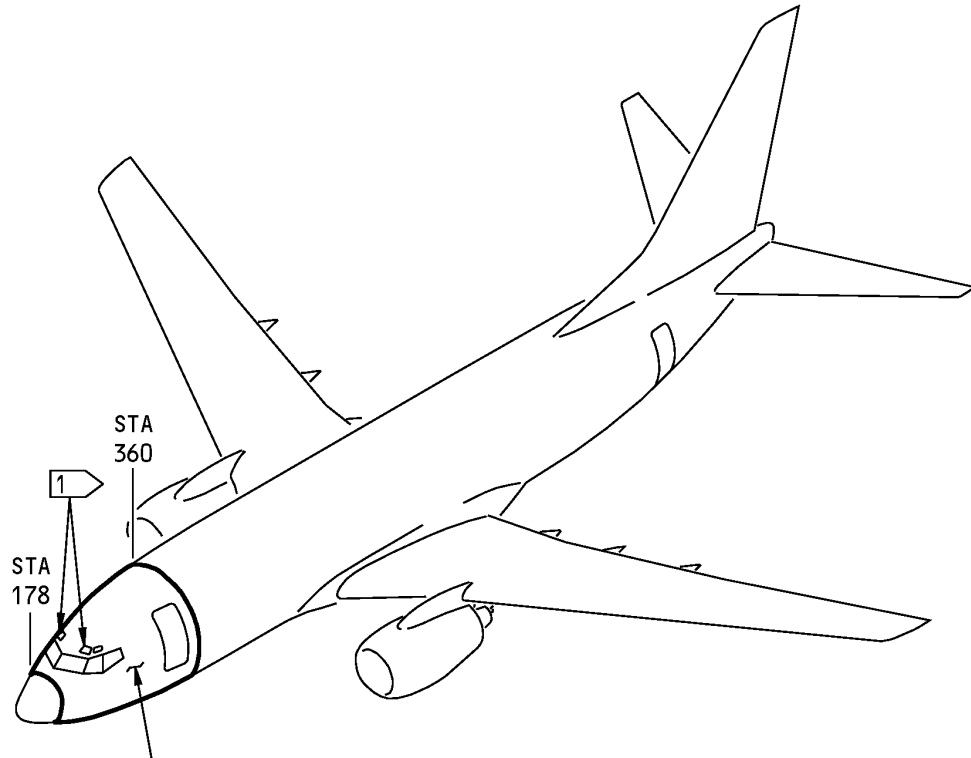
LIST OF MATERIALS FOR FIGURE 7				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Failsafe Chord		BAC1514-850 7075-T62 extrusion	
	Web	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-milled thicknesses	
	Inner Chord		BAC1505-101418 7075-T73 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 41 FUSELAGE FRAMES**



REFER TO SRM 53-00-07 FOR THE ALLOWABLE  
DAMAGE DATA THAT IS APPLICABLE TO THE  
FUSELAGE FRAMES IN SECTION 41

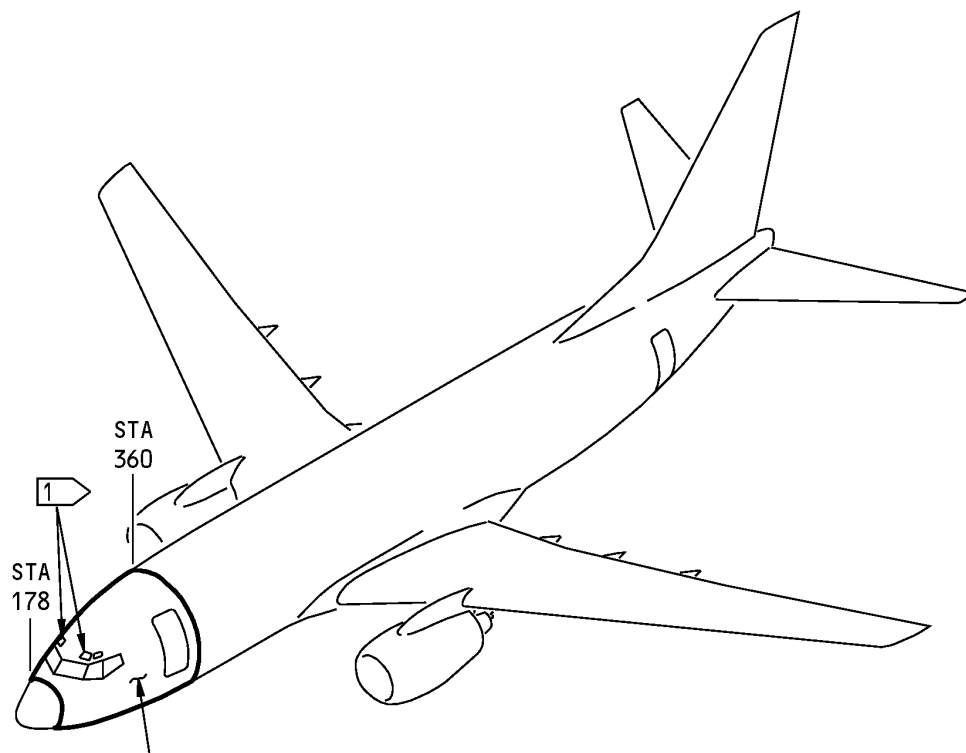
**NOTES**

- 1** NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Fuselage Frame Location**  
**Figure 101**


737-800  
STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - SECTION 41 FUSELAGE FRAMES



REFER TO SRM 53-00-07 FOR THE  
REPAIRS THAT ARE APPLICABLE TO  
THE FUSELAGE FRAMES IN SECTION 41

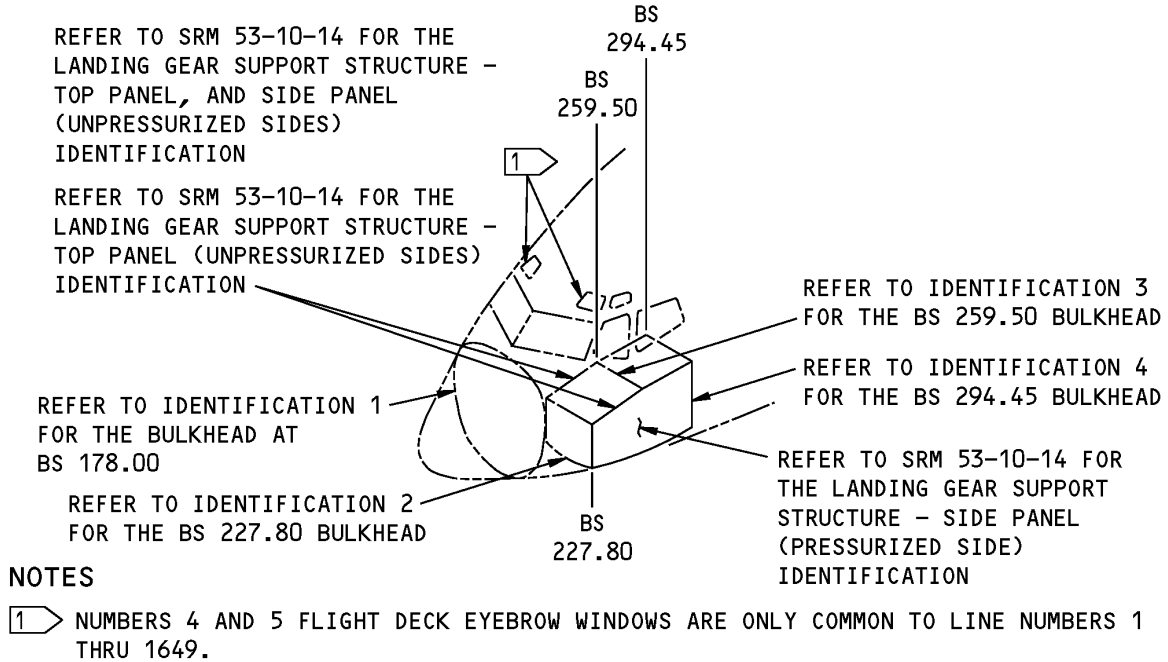
NOTES

-  NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

Section 41 Fuselage Frame Location  
Figure 201

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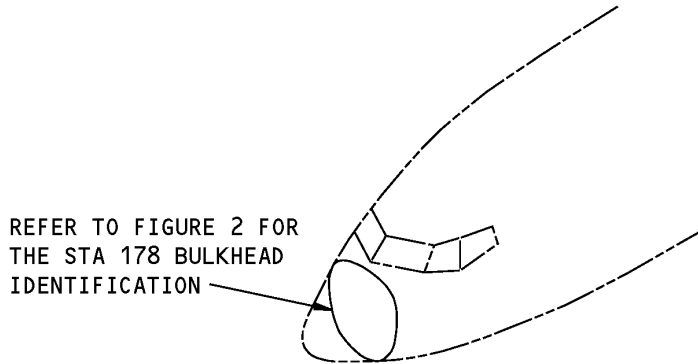
IDENTIFICATION GENERAL - SECTION 41 BULKHEADS



Section 41 Bulkhead Location  
Figure 1

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - STATION 178 FORWARD PRESSURE BULKHEAD**



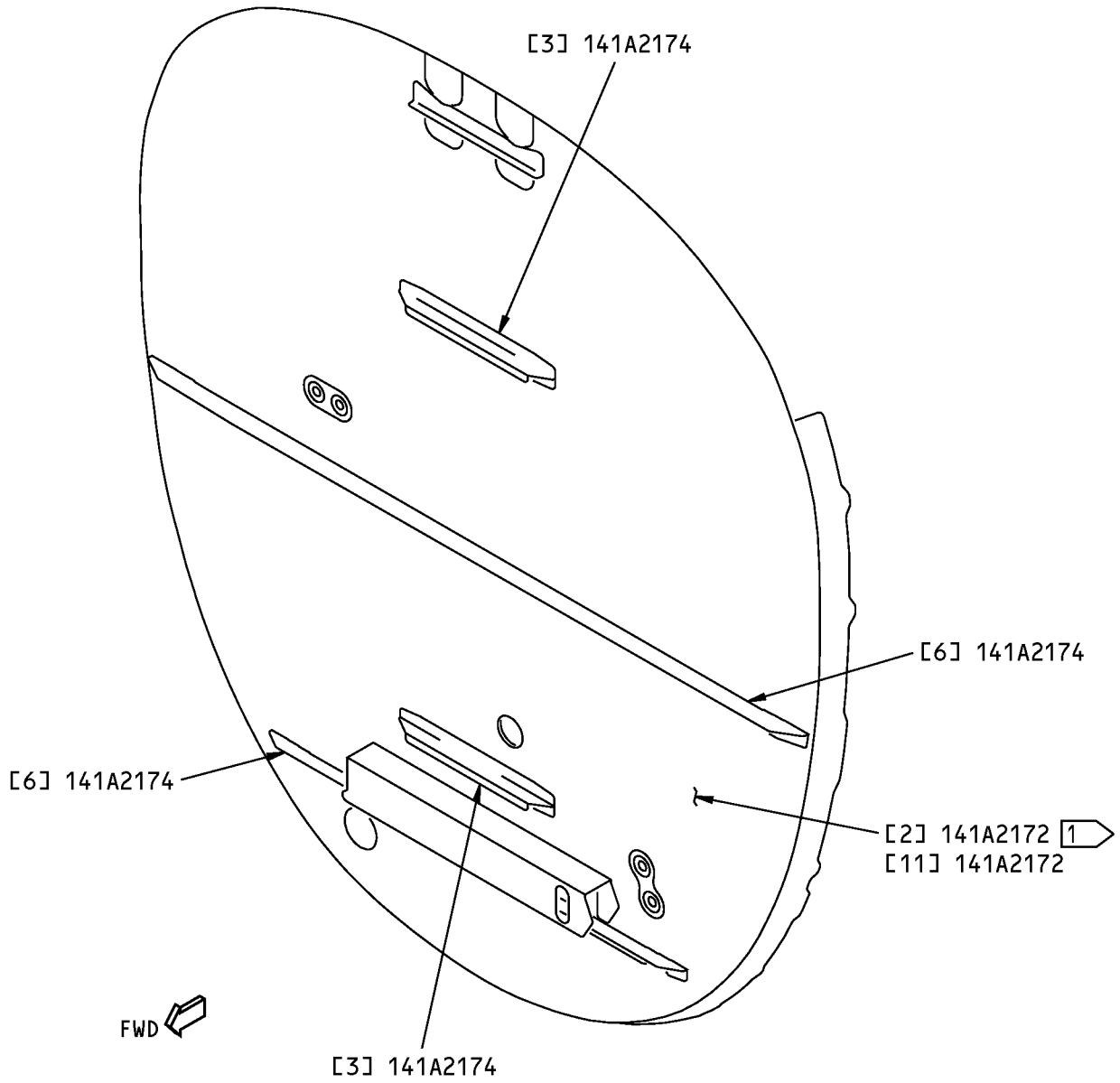
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 41 Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4102	Station 178 Bulkhead Functional Collector
141A2100	Bulkhead Installation - Station 178
141A2171	Chord - Pressure Bulkhead, STA 178
141A2172	Web - Pressure Bulkhead, STA 178
141A2174	Details - Pressure Bulkhead, STA 178
141A2175	Details - Pressure Bulkhead, STA 178
141A2182	Details - Pressure Bulkhead, STA 178

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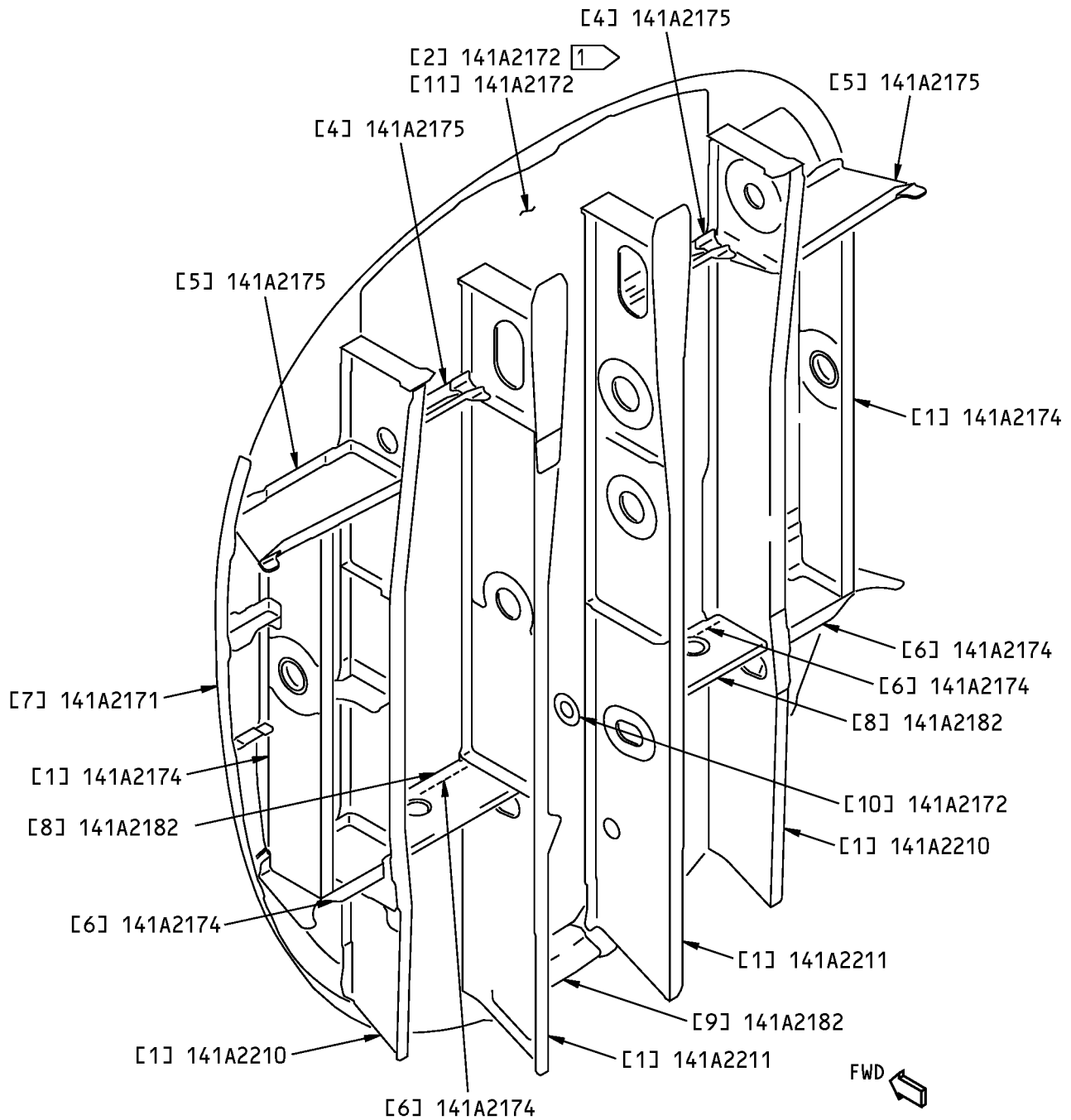
**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**1** REFER TO THE LIST OF MATERIALS FOR THE WEB THICKNESS.

**Station 178 Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL



Station 178 Bulkhead Identification  
Figure 2 (Sheet 2 of 2)



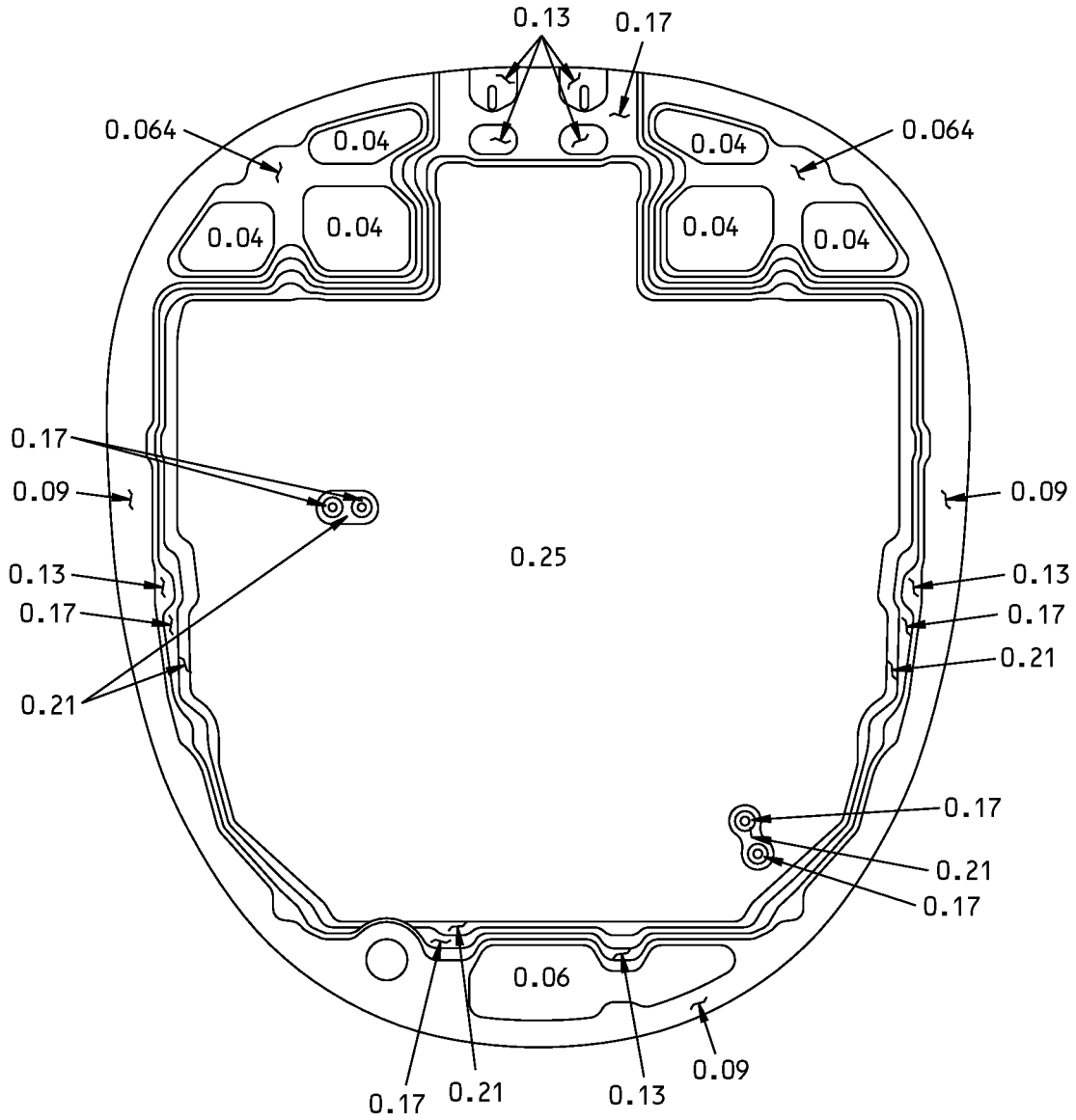
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Beam, Vertical		7050-T7451 plate as given in AMS 4050	
[2]	Web	0.190 (4.83)	2024-T3 bare plate as given in QQ-A-250/4. Refer to Figure 4 for the thicknesses of the chem-milled areas	YC004-YD500
[3]	Stiffener		BAC1506-1885 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Channel		7050-T7451 plate as given in AMS 4050	
[5]	Intercostal		7050-T7451 plate as given in AMS 4050	
[6]	Stiffener		7050-T7451 plate as given in AMS 4050	
[7]	Chord		7075-T73 aluminum precision forging as given in BMS 7-186	
[8]	Intercostal Web	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Splice		BAC1514-3063 7075-T73511 extrusion as given in QQ-A-200/3	
[10]	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[11]	Web	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4. Refer to Figure 3 for the thicknesses of the chem-milled areas	YC001-YC003 ONLY

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



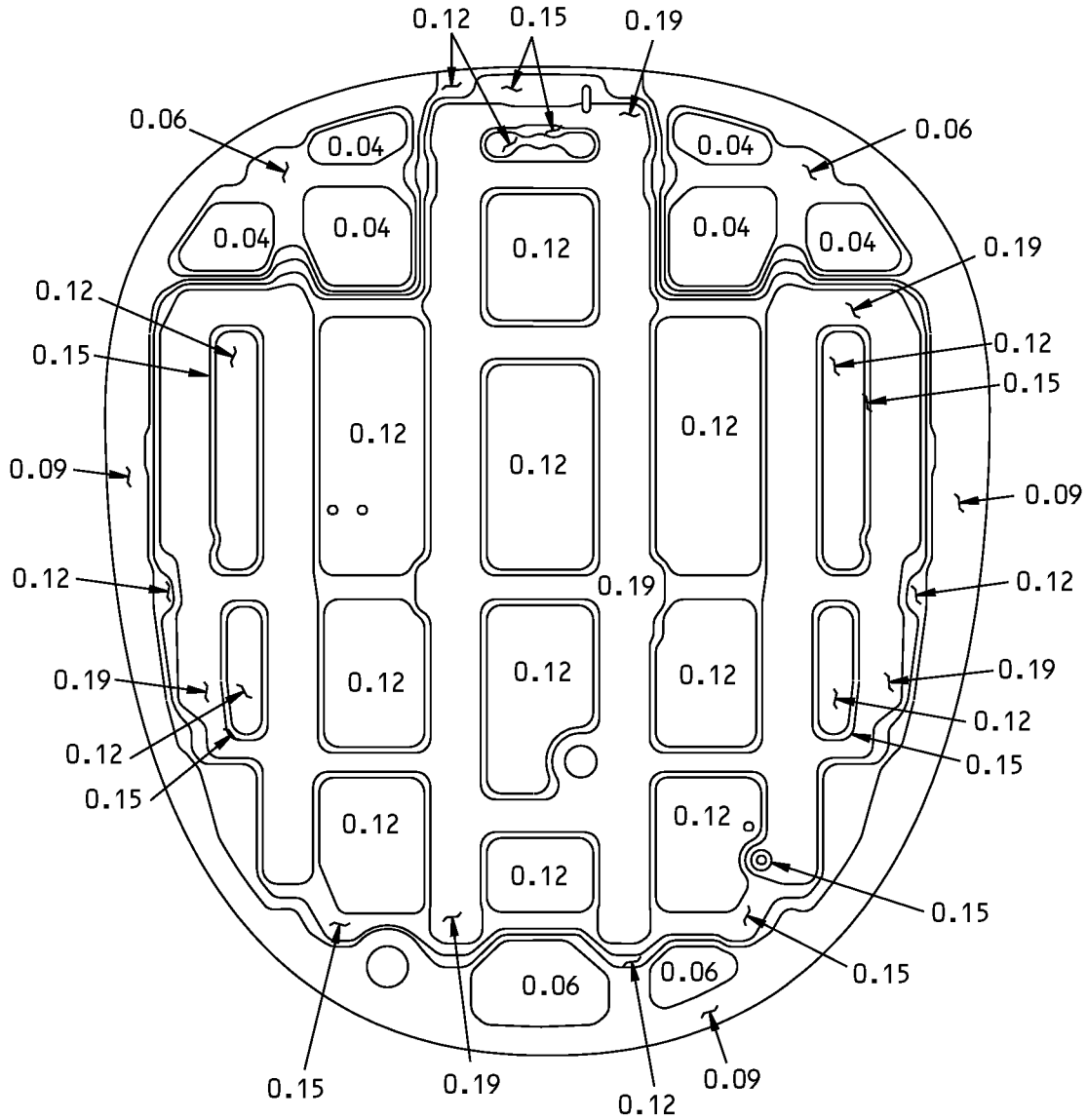
**NOTE:** ALL DIMENSIONS ARE IN INCHES.

**VIEW LOOKING AFT**

**Chem-Milled Areas for Figure 2, Item [11]  
Figure 3**



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STRUCTURAL REPAIR MANUAL**



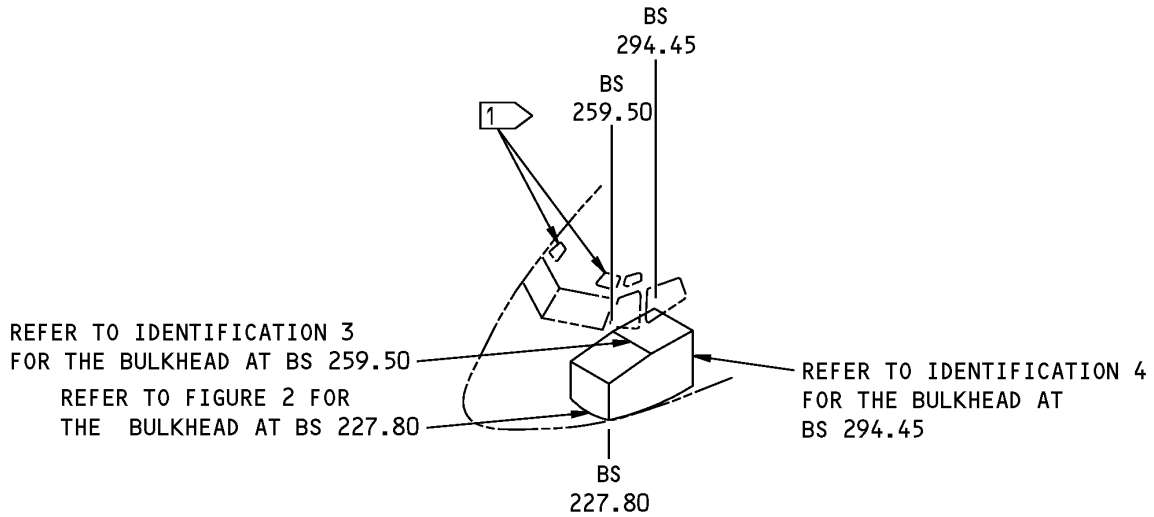
**NOTE:** ALL DIMENSIONS ARE IN INCHES.

**VIEW LOOKING AFT**

**Chem-Milled Areas for Figure 2, Item [2]  
Figure 4**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 2 - STATION 227.8 NOSE WHEEL WELL FORWARD BULKHEAD**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

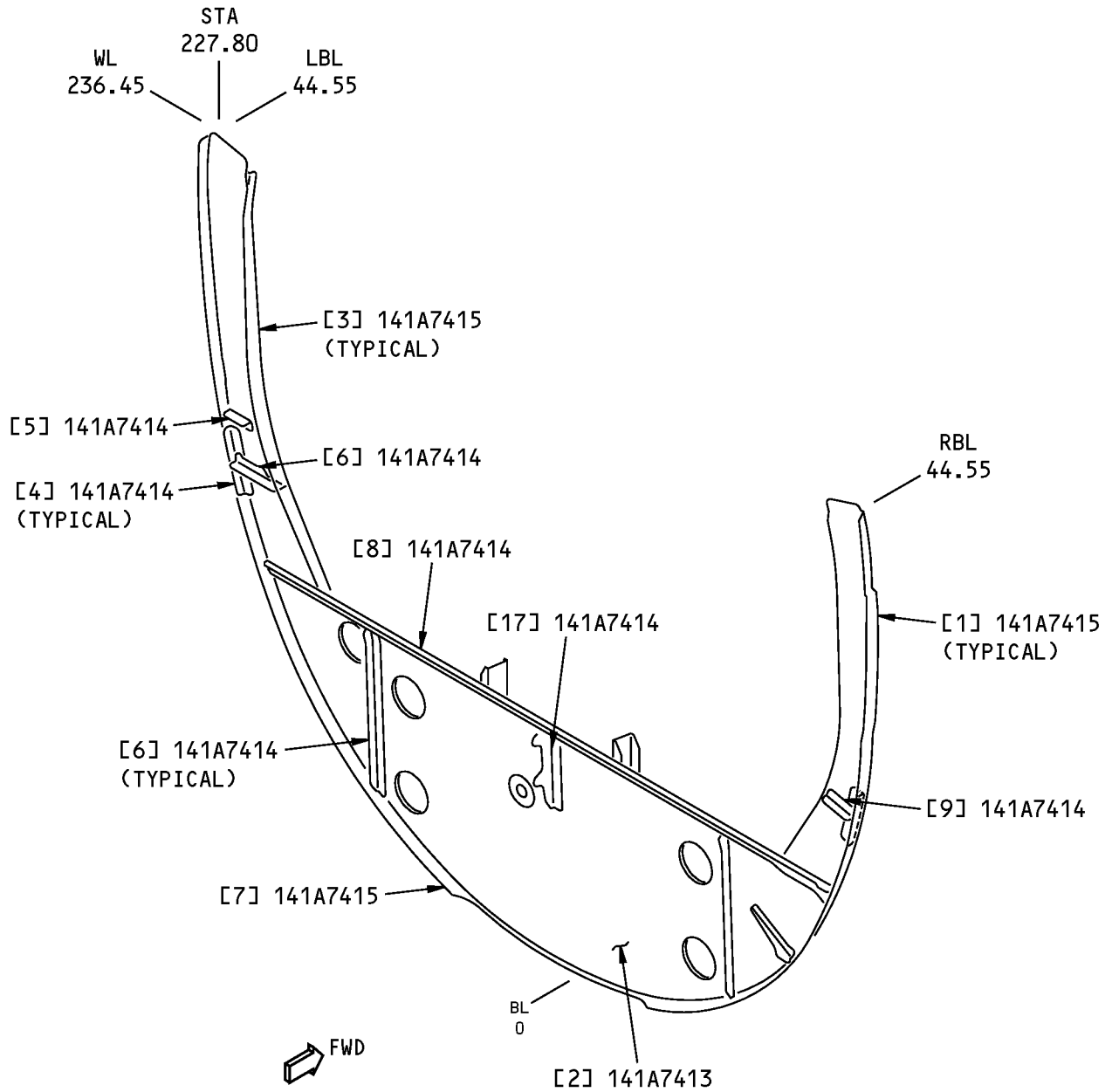
**1** NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Nose Wheel Well Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well - Functional Collector
141A7410	Forward Bulkhead Inst - Nose Wheel Well
141A7411	Sheet Metal Details - FWD Bulkhead, Nose Wheel Well
141A7413	Web, NWW Forward Bulkhead
141A7414	Stiffener Details - FWD Bulkhead, Nose Wheel Well
141A7415	Chords - FWD Bulkhead, Nose Wheel Well

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STRUCTURAL REPAIR MANUAL**

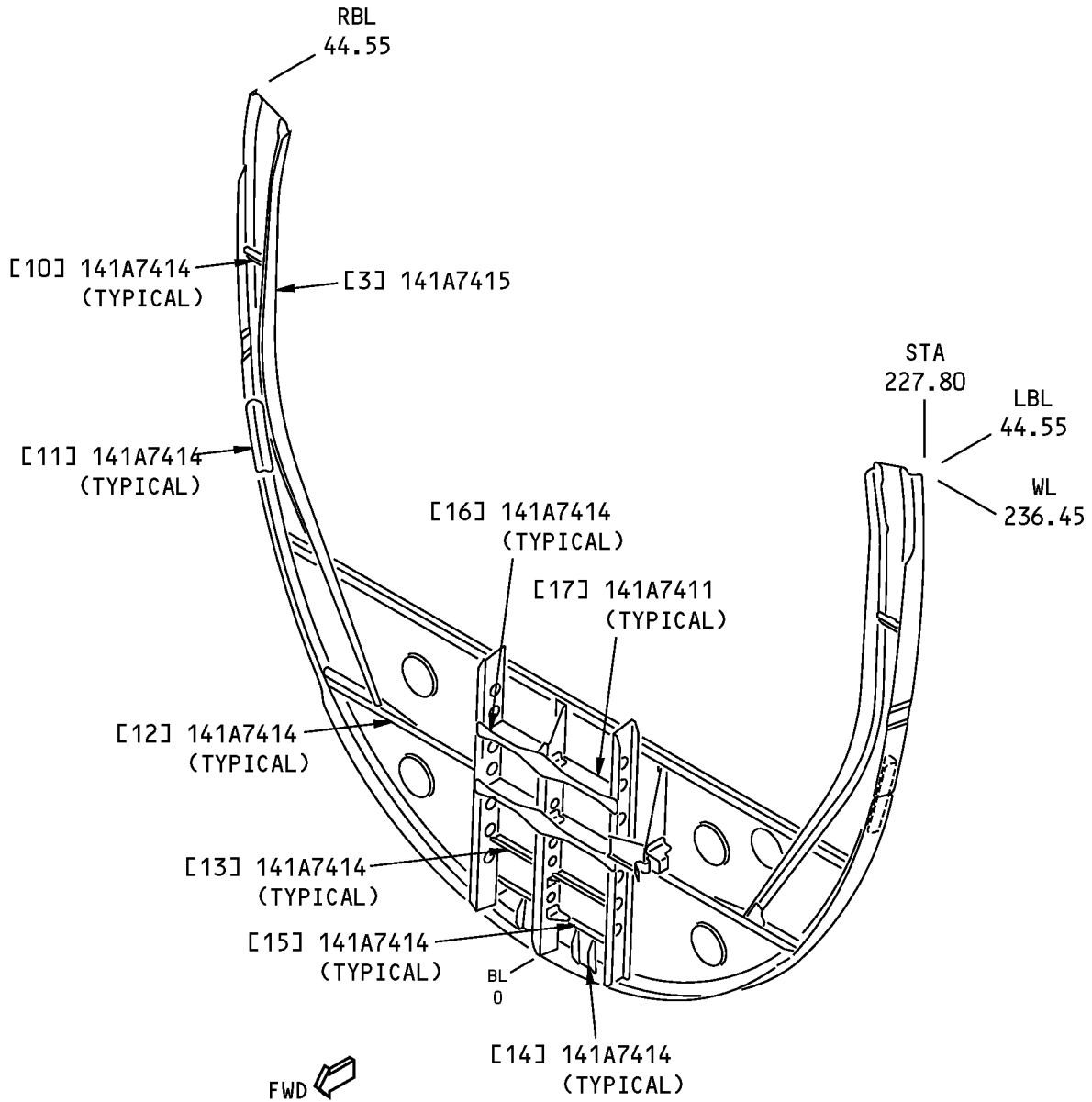


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 227.80 Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Station 227.80 Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



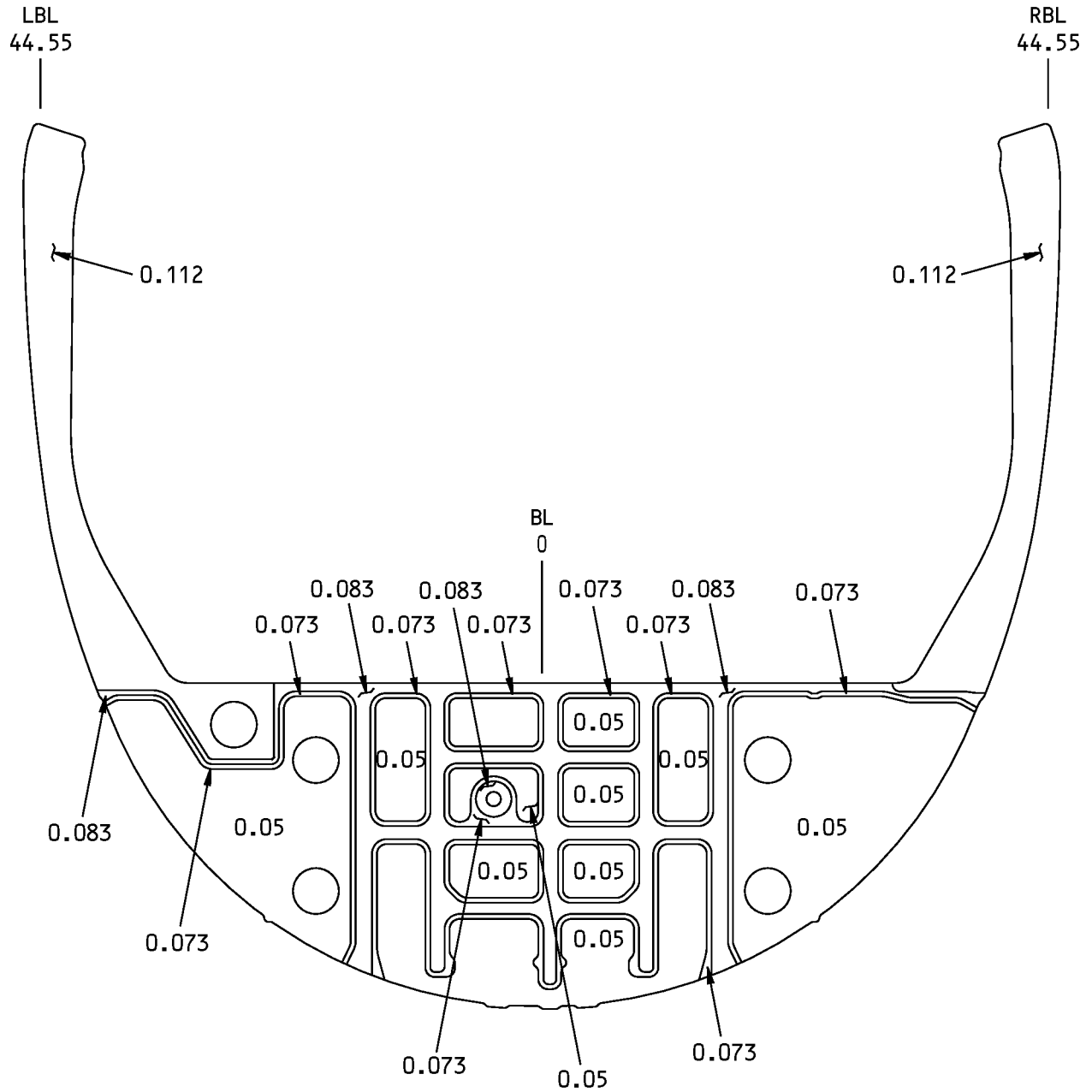
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Chord, Outer		BAC 1514-4272 7075-T73 extrusion as given in QQ-A-200/11	
[2]	Web	0.112 (2.844)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 3 for chem-milled areas	
[3]	Chord, Inner		BAC 1514-2848 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Angle		BAC1503-101035 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1514-3017 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100413 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Chord		BAC1506-1532 2024-T42 extrusion as given in QQ-A-200/3	
[8]	Angle		BAC1503-101033 2024-T35111 extrusion as given in QQ-A-200/11. (Optional extrusion: AND10133-2004 as given in QQ-A-200/11)	
[9]	Tee		BAC1505-101668 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1514-3017 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-101034 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1506-2079 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		AND10137-2201 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1503-2842 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Intercostal		BAC1505-100886 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		BAC1503-101031 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

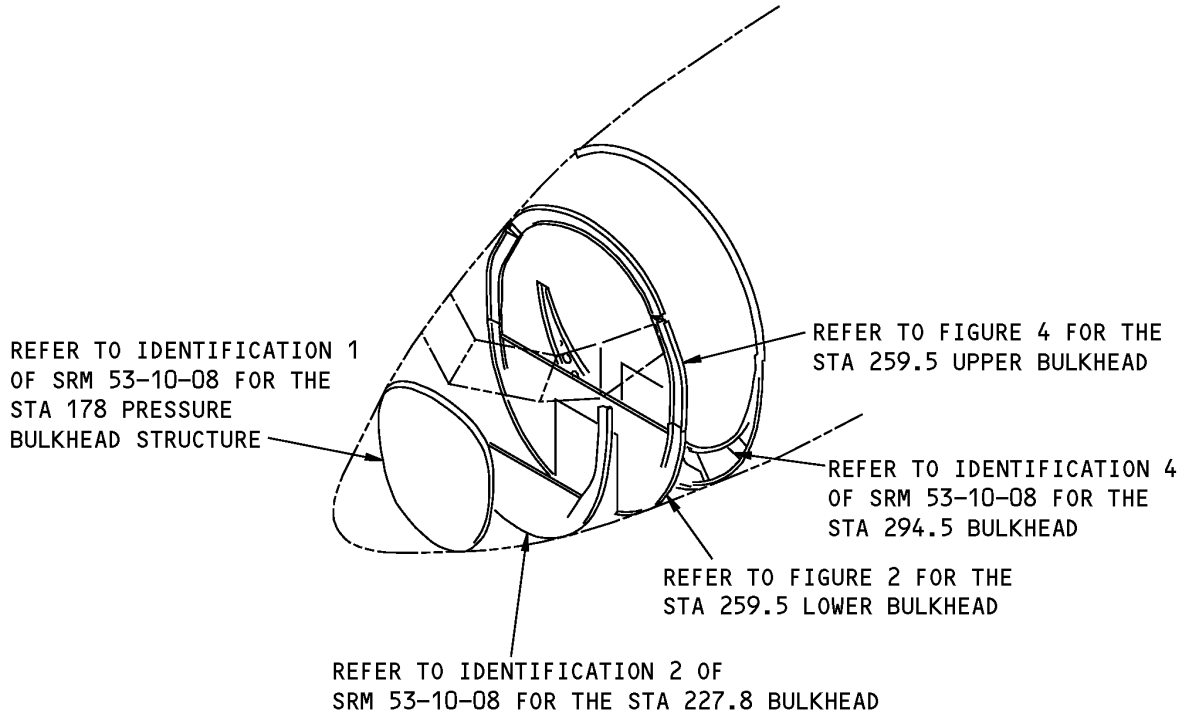


**NOTE:** ALL DIMENSIONS ARE IN INCHES.

**Chem-Milled Areas for Figure 2, Item 2  
Figure 3**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 3 - STATION 259.50 BULKHEAD STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 259.5 Bulkhead Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well Functional Collector
140A4111	Section 41 Cabin, Functional Collector
141A1810	Frame Installation - STA 259.50, Cabin
141A7430	MID Bulkhead Installation - Nose Wheel Well
141A7431	Details - BHD STA 259.50, Nose Wheel Well

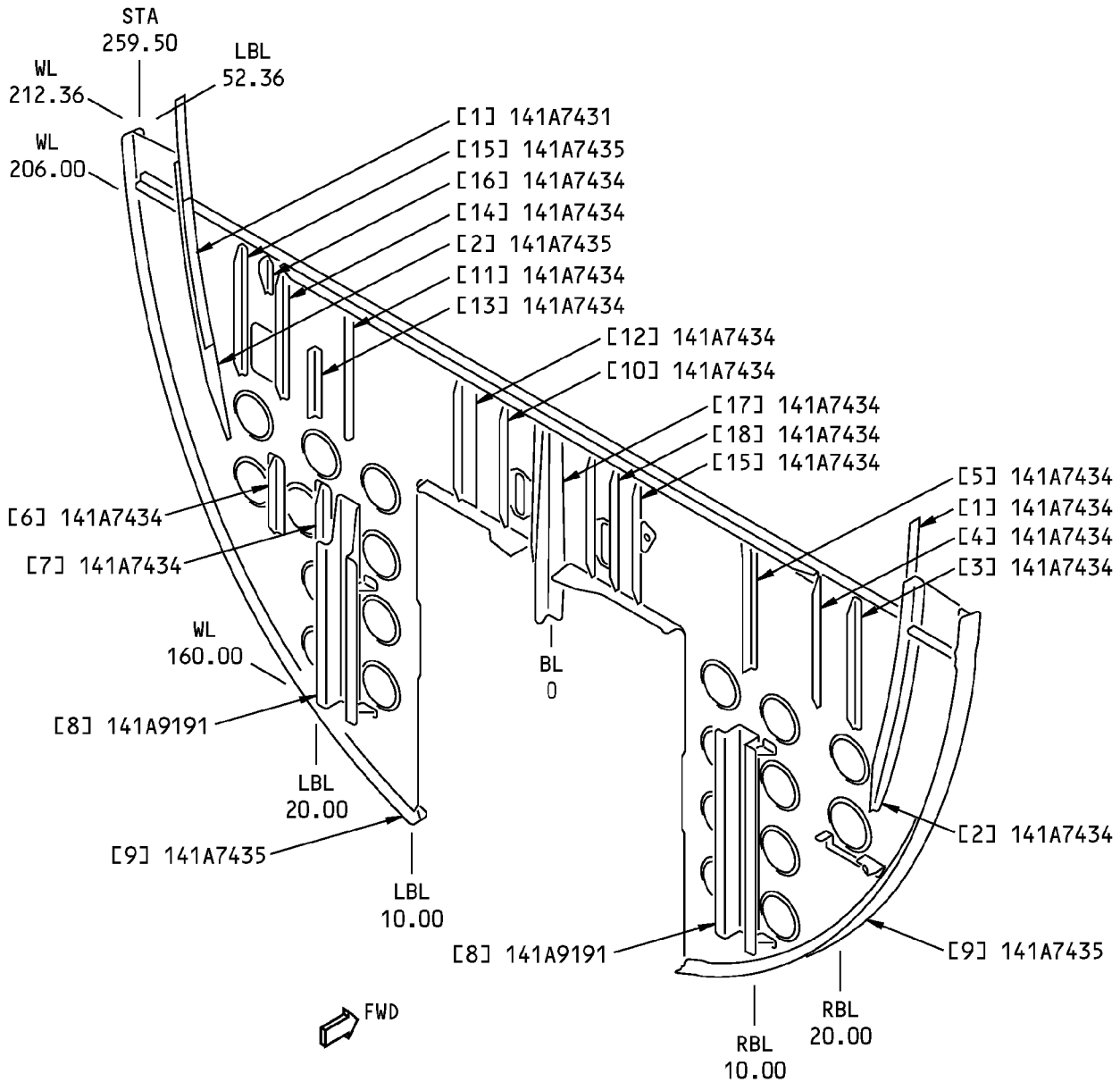


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**STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A7433	Web - Nose Wheel Well MID Bulkhead
141A7434	Stiffener Details - MID Bulkhead - Nose Wheel Well
141A7435	Details - MID Bulkhead - Nose Wheel Well



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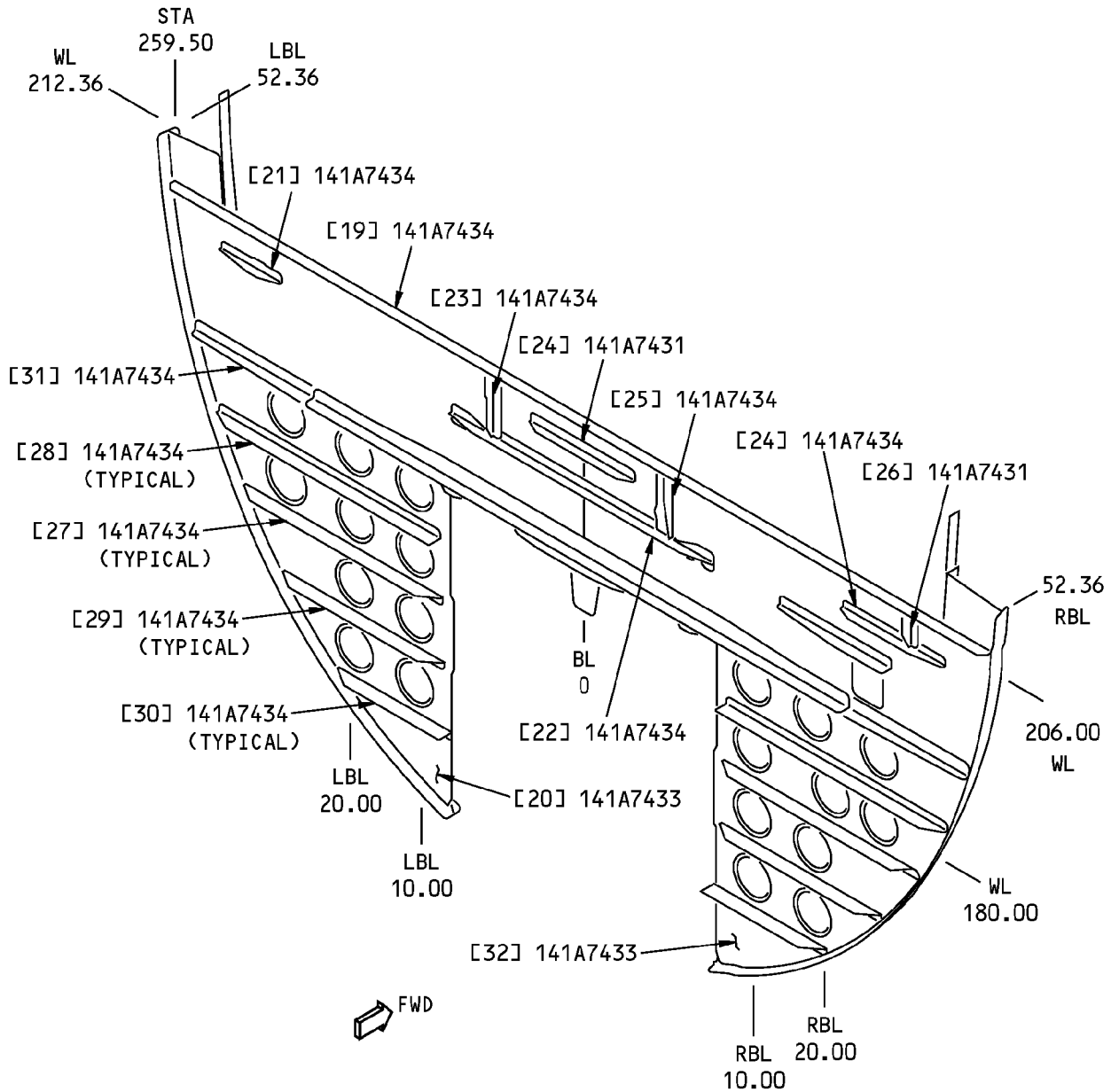


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 259.50 Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 259.50 Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap	0.080 (2.032)	2024-T3 sheet as given in QQ-A-250/4	
[2]	Chord		AND10133-1403 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100171 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1503-100123 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Bracket	0.040 (1.016)	6013-T6 sheet as given in AMS 4347	
[7]	Bracket		BAC1503-100126 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Channel		BAC1498-261 7075-T62 sheet as given in QQ-A-250/13	
[9]	Chord		BAC1506-2061 2024-T42 extrusion as given in QQ-A-200/3	
[10]	Angle		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1503-100123 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle		AND10134-2003 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		AND10133-0701 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Stiffener		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Stiffener		BAC1503-8257 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Tee		BAC1505-101676 7075-T3511 extrusion as given in QQ-A-200/11	
[18]	Stiffener		BAC1493-467 7075-T62 sheet as given in QQ-A-250/2	
[19]	Stiffener		BAC1503-100146 7075-T6511 extrusion as given in QQ-A-200/11	
[20]	Web	0.125 (3.175)	7075-T6 sheet as given in QQ-A-200/11. Refer to Figure 3 for the chem-milled thicknesses.	
[21]	Stiffener		BAC1514-3130 7075-T73511 extrusion as given in QQ-A-200/11	
[22]	Tee		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	

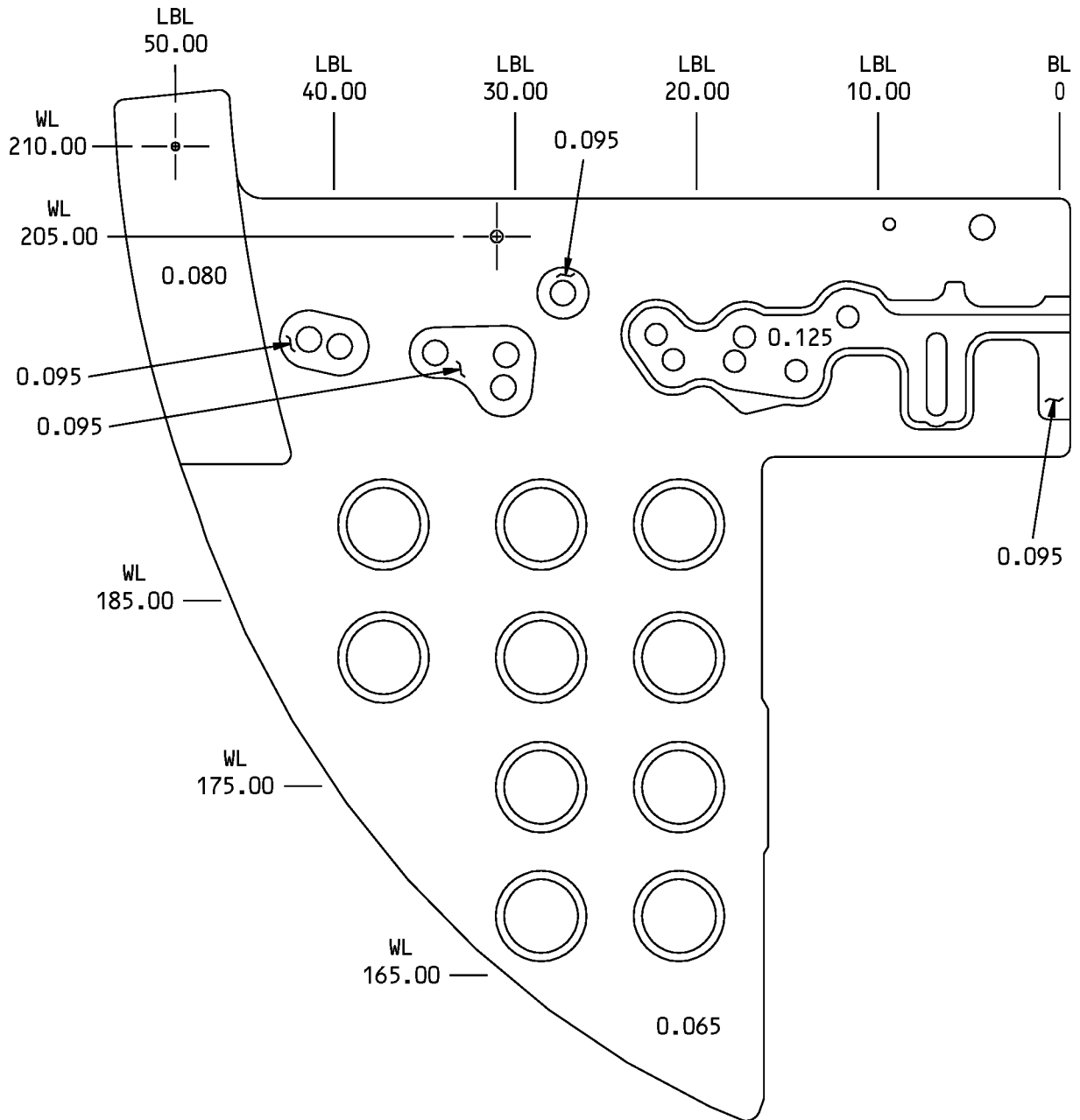


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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[23]	Angle		BAC1503-101045 7075-T3511 extrusion as given in QQ-A-200/11	
[24]	Stiffener		BAC1490-269 2024-T42 clad sheet as given in QQ-A-250/5	
[25]	Stiffener	1.5 (38.1)	7050-T7451 plate as given in AMS 4050	
[26]	Stiffener		BAC1503-101027 7075-T73511 sheet as given in QQ-A-250/5	
[27]	Stiffener		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Stiffener		BAC1504-8257 7075-T6511 extrusion as given in QQ-A-200/11	
[29]	Stiffener		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[30]	Angle		AND10135-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[31]	Chord, Floor Beam		BAC1506-4412 2024-T3511 extrusion as given in QQ-A-200/3	
[32]	Chord, Fail Safe		BAC1498-364 2024-T42 sheet as given in QQ-A-250/4	
[33]	Web	0.125 (3.175)	7075-T6 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

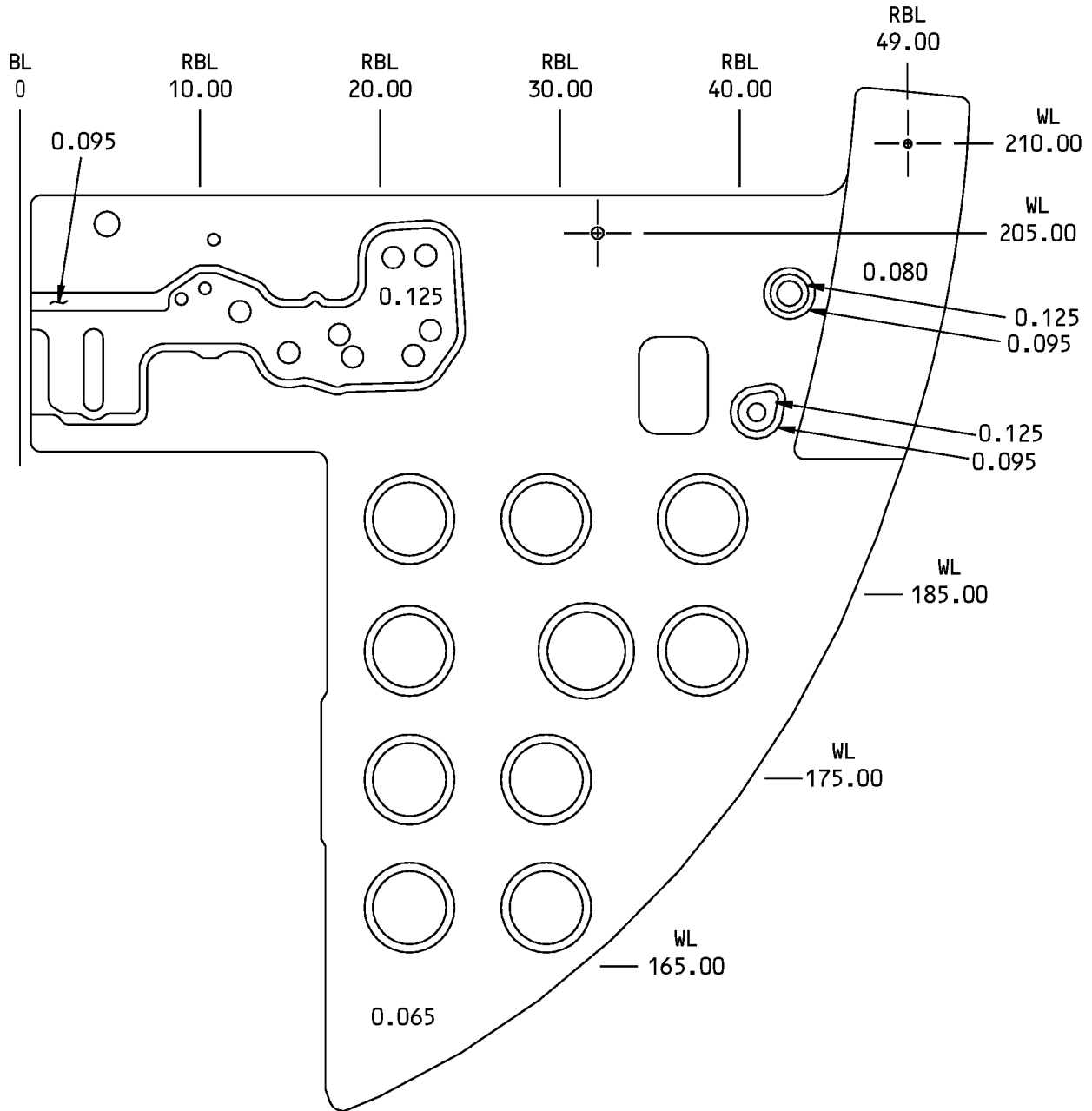
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS ARE IN INCHES.

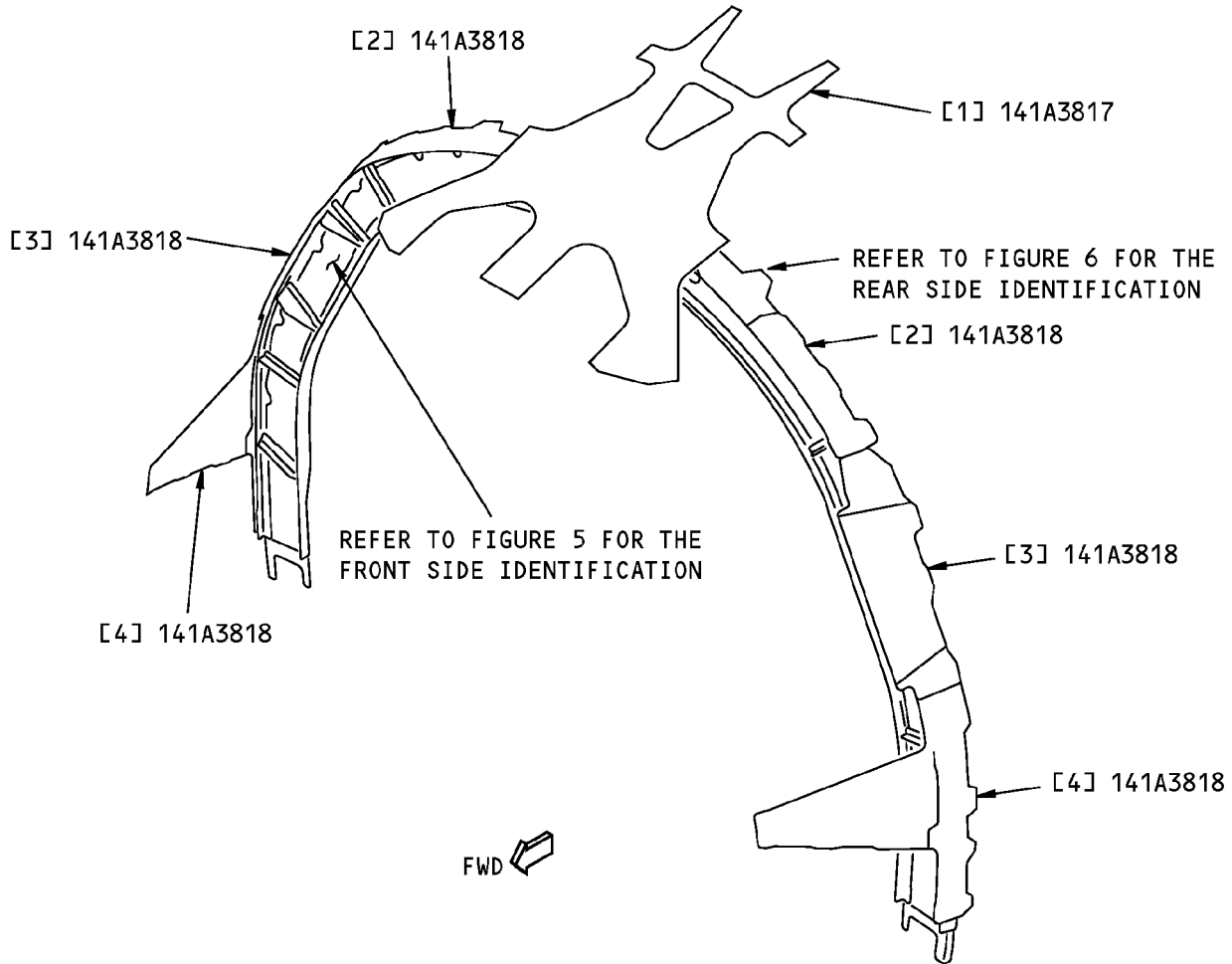
**Chem-Milled Areas for Figure 2, Item 20  
Figure 3 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Chem-Milled Areas for Figure 2, Item 20  
Figure 3 (Sheet 2 of 2)**

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**UPPER BULKHEAD – SPLICES  
VIEW LOOKING AFT**

**Station 259.50 Upper Bulkhead Structure  
Figure 4**



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**STRUCTURAL REPAIR MANUAL**

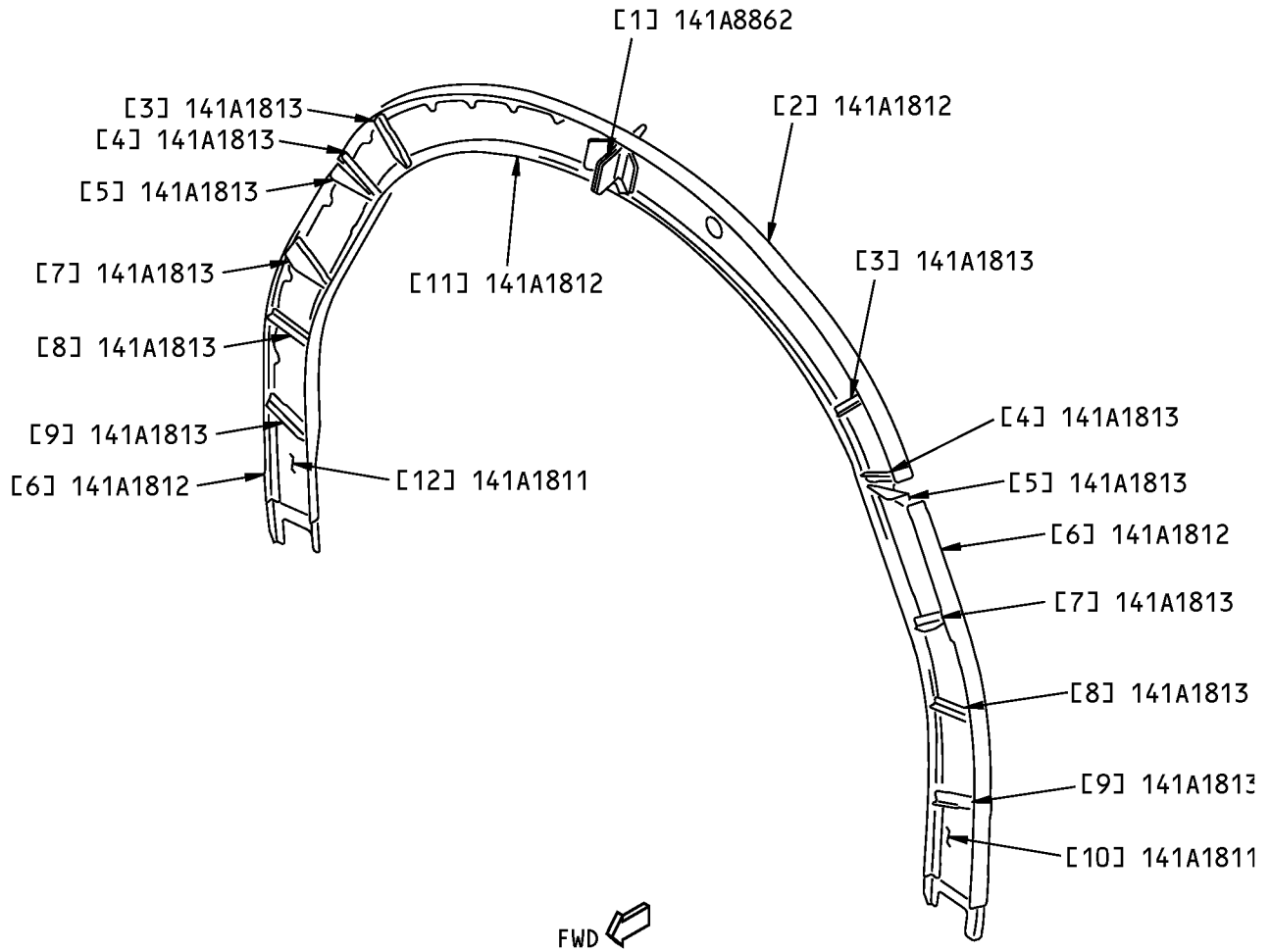
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Doubler	0.080 (2.03)	2024-T42 clad sheet as given in AMS 5542	
[2]	Splice - STA 259.50 (2)	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Splice - No. 3 Window (2)	0.050 (1.3)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1 in the annealed condition	
[4]	Splice - STA 259.50 (2)	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**UPPER BULKHEAD  
VIEW LOOKING AFT**

**Station 259.50 Upper Bulkhead Structure - Forward Side  
Figure 5**



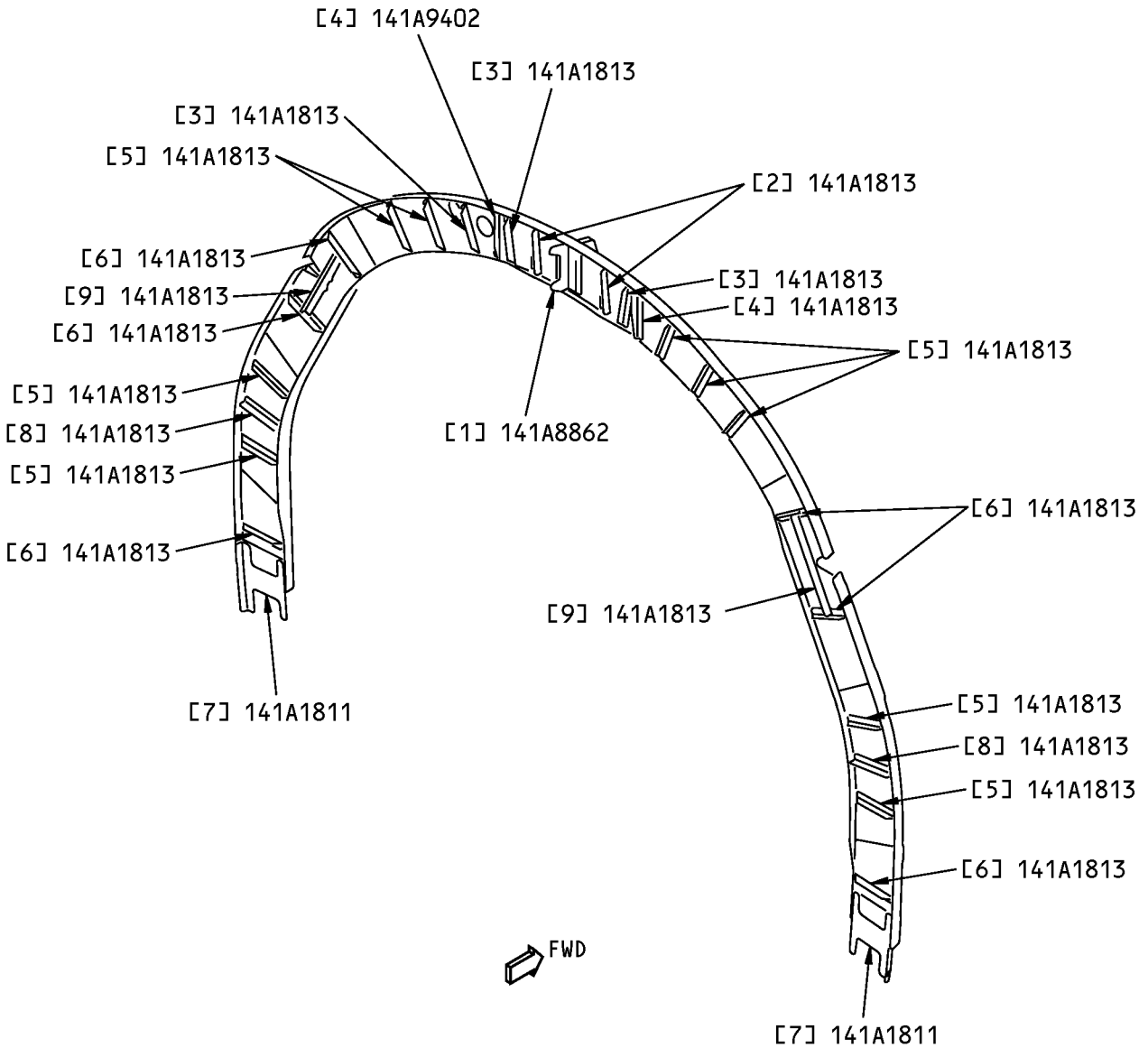
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Forward Fitting, Point J		BAC1514-2782 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Outer Chord, Upper		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Support Angle, N-P (2)		BAC1514-3259 7075-T7351 plate as given in QQ-A-250/12 (Optional: 7075-T7351 bar as given in QQ-A-225/9 or 7075-T73511 extrusion as given in QQ-A-200/11)	
[4]	Stiffener C-E-G Sill (2)		BAC1503-100095 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11, or BAC1514-447 7075-T73511 extruded bar as given in QQ-A-200/11)	
[5]	Stiffener C-E-G Sill (2)		BAC1514-2911 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Outer Chord - Lower Left (2)		BAC1506-1743 2024-T42 extrusion as given in QQ-A-200/3	
[7]	Support Angle - F-H Sill (2)		BC1514-3246 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Support Angle - WL235.8 (2)		BAC1503-100176 7075-T73511 extruded bar as given in QQ-A-200/11	
[9]	Support Angle - Q-R Sill (2)		BAC1514-3247 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[10]	Web, STA 259.5 Left	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[11]	Inner Chord		BAC1505-100542 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Web, STA 259.5 Right	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**UPPER BULKHEAD  
VIEW LOOKING FORWARD**

**Station 259.50 Upper Bulkhead Structure - Rear Side  
Figure 6**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

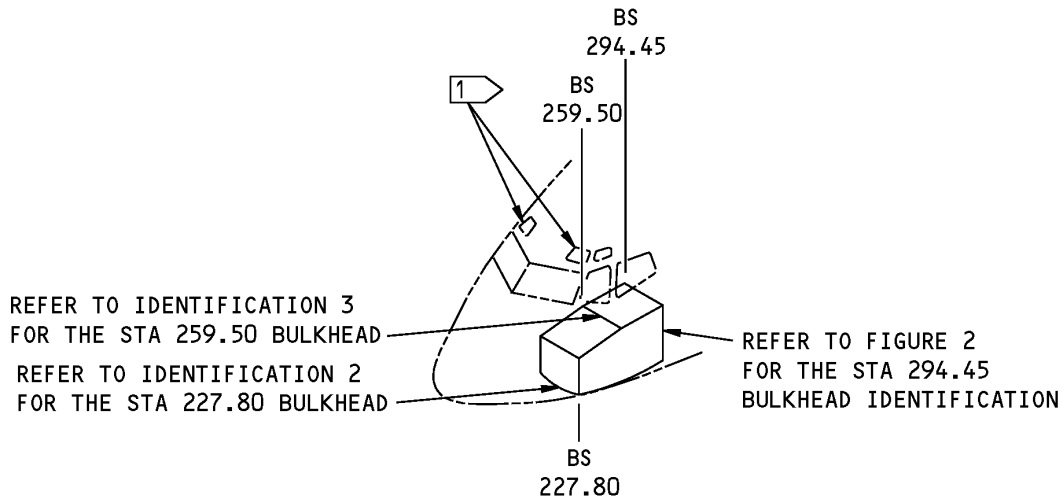
**Table 5:**

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Aft Fitting - Point J		BAC1505-101477 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Support Angle (2)		BAC1503-100131 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (3)		BAC1504-8206 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle (2)		BAC1490-2541 2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Stiffener (9)		BAC1504-8196 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11)	
[6]	Stiffener (5)		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Aft Splice (2)	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Support Angle, S-13 (2)		AND10133-1201 7075-T6511 as given in QQ-A-200/11	
[9]	Stiffener, C-E-G Sill (2)		BAC1503-100095 7075-T73511 extruded bar as given in QQ-A-200/11 (Optional: 7075-T6511 extrusion as given in QQ-A-200/11, or BAC1514-447 7075-T73511 extruded bar as given in QQ-A-200/11)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 4 - STATION 294.5 NOSE WHEEL WELL AFT BULKHEAD**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

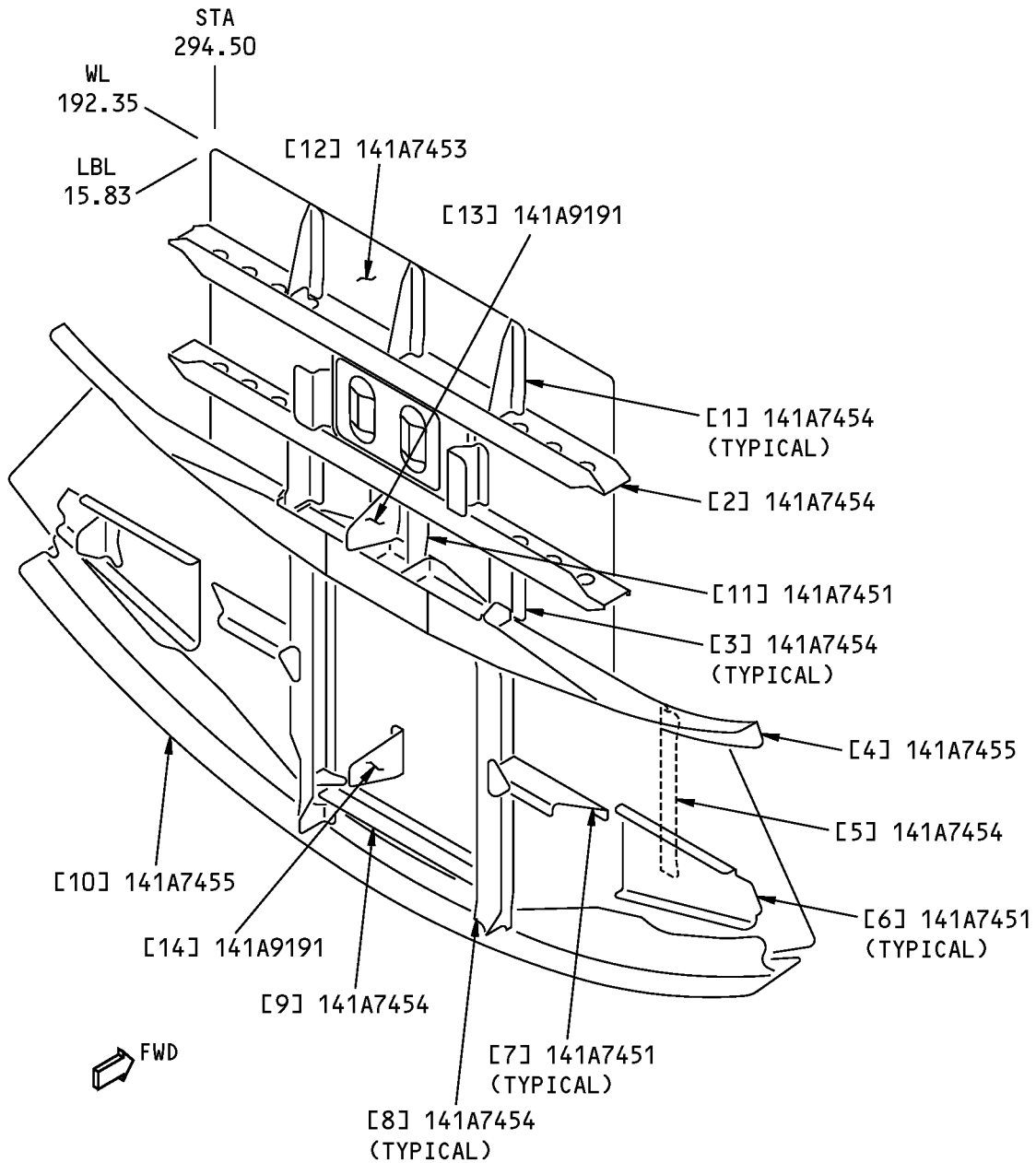
**1** NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Nose Wheel Well Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4101	Nose Wheel Well - Functional Collector
141A7450	Aft Bulkhead Inst - STA 294.5, Nose Wheel Well
141A7451	Stiffener - Sheet Metal, Nose Wheel Well
141A7453	Web - Aft Bulkhead, Nose Wheel Well
141A7454	Stiffener - Aft Bulkhead, Nose Wheel Well
141A7455	Chord - Aft Bulkhead, Nose Wheel Well

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 294.50 Bulkhead Identification  
Figure 2**



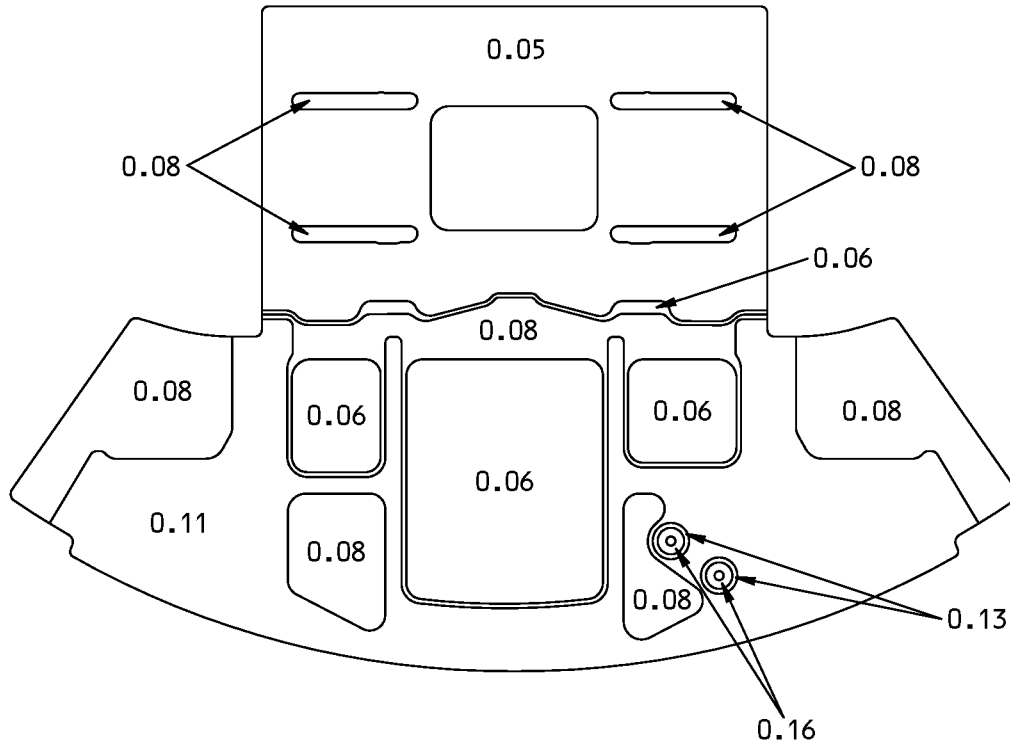
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**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stiffener		BAC1514-330 7050-T73511 extrusion as given in QQ-A-200/11	
[2]	Stiffener		BAC1506-4291 7050-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener		BAC1505-100269 7050-T73511 extrusion as given in QQ-A-200/11	
[4]	Chord, Upper		7050-T7451 plate as given in AMS 4050	
[5]	Stiffener		AND10133-1401 7050-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Stiffener		BAC1506-4291 7050-T6511 extrusion as given in QQ-A-200/11	
[9]	Channel		BAC1493-318 2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Chord, Lower		BAC1506-4293 2024-T42 extrusion as given in QQ-A-250/3	
[11]	Channel		BAC1493-892 2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Web	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 3 for the chem-milled thicknesses	
[13]	Bracket		BAC1503-100898 7075-T37511 extrusion as given in QQ-A-250/11	
[14]	Bracket		BAC1503-100969 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL



NOTE: ALL DIMENSIONS ARE IN INCHES.

Machined Areas of Figure 2, Item [12]  
Figure 3





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# STRUCTURAL REPAIR MANUAL

## ALLOWABLE DAMAGE 1 - STATION 178 PRESSURE BULKHEAD

### 1. Applicability

A. This subject gives the allowable damage limits for the Station 178 pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 1.

### 2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

- (1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	STRUCTURAL PART	PARAGRAPH
Chords (Forged), Inter- costals, and Angles		4.A
Stiffeners and Seal Retainers		4.B
Channels, Brackets, Gus- sets, Brackets, and Clips		4.C
Webs		4.D
Vertical Beams (Machined)	Integral Chord Flanges	4.E.(1)
Vertical Beams (Machined)	Integral Webs	4.E.(2)
Vertical Beams (Machined)	Integral Stiffeners	4.B

C. Remove the damage as necessary.

- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
- (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

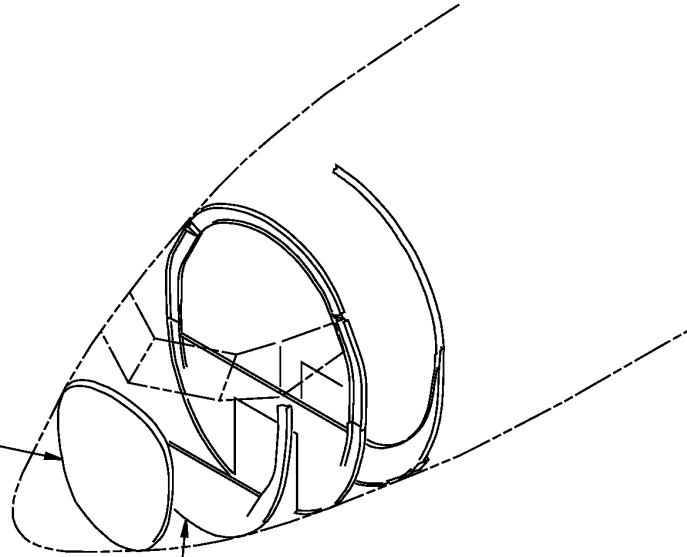
D. After you remove the damage, do the steps that follow:

- (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
- (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
- (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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REFER TO FIGURE 102 FOR  
THE STA 178 PRESSURE  
BULKHEAD STRUCTURE

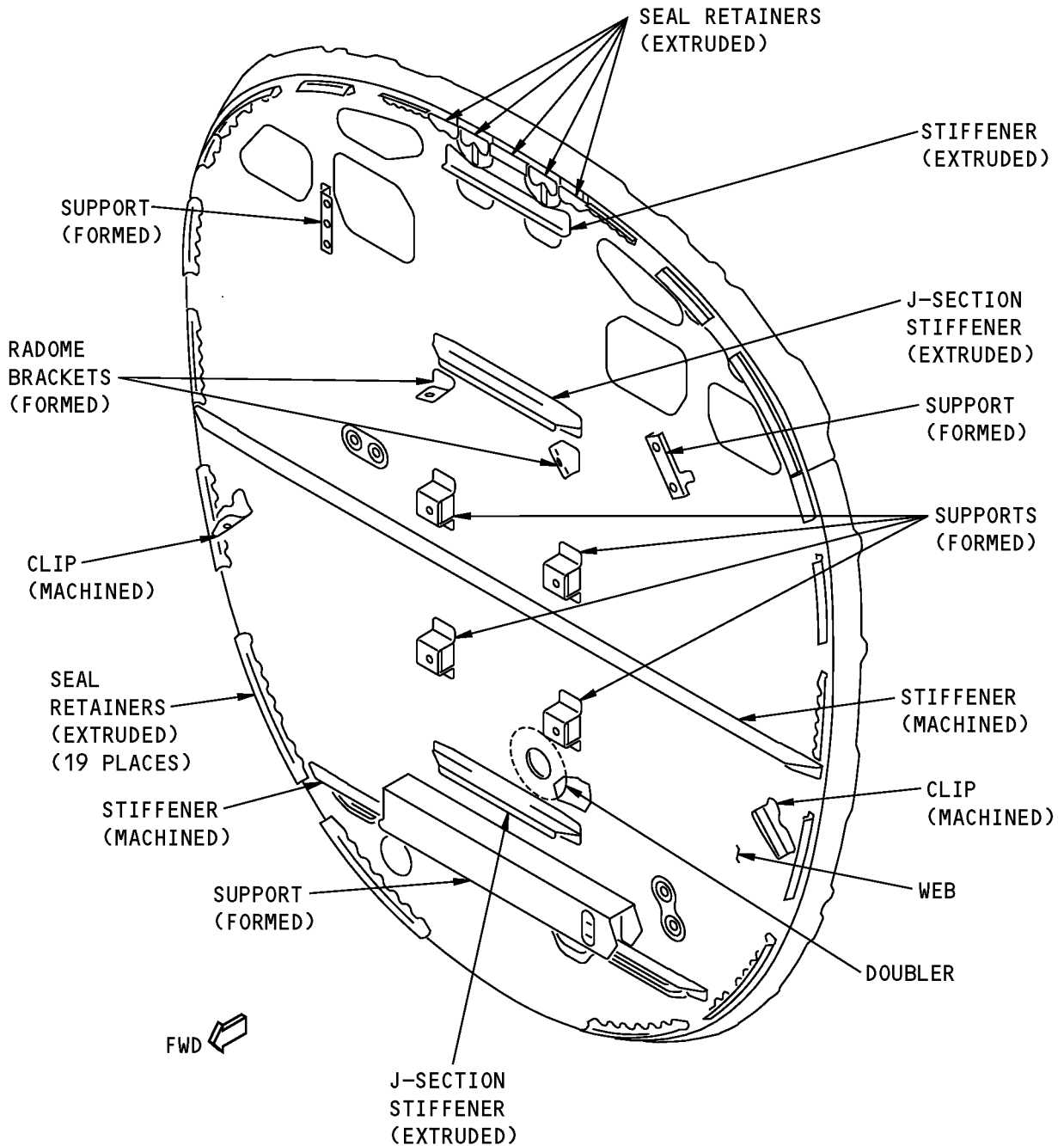
REFER TO FIGURE 103 FOR  
THE STA 178 PRESSURE  
BULKHEAD VERTICAL BEAMS



REFER TO ALLOWABLE  
DAMAGE 2 FOR THE  
STA 227.8 BULKHEAD

**Station 178 Pressure Bulkhead Location  
Figure 101**

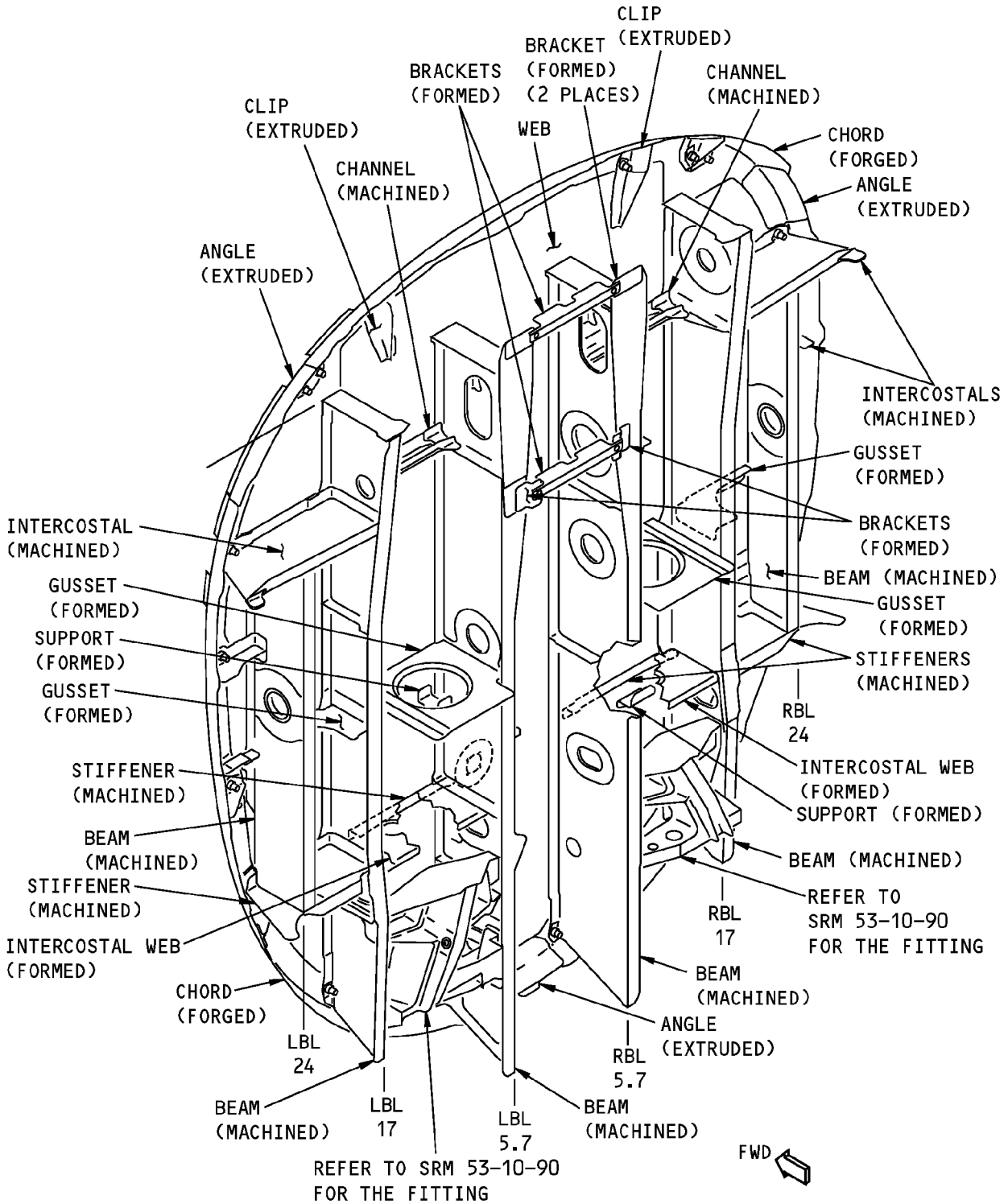
**STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

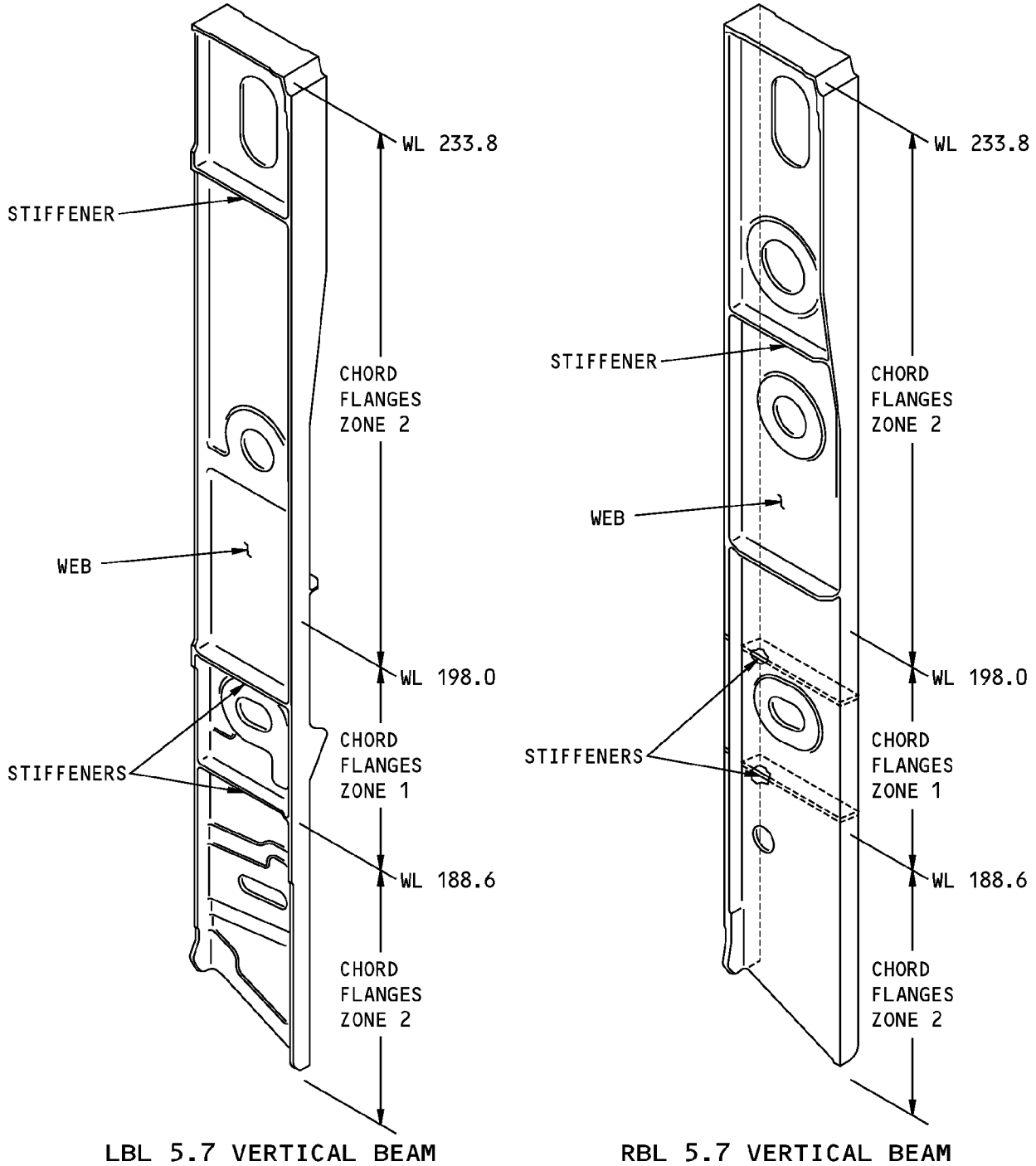
**Station 178 Pressure Bulkhead Structure  
Figure 102 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



**Station 178 Pressure Bulkhead Structure  
Figure 102 (Sheet 2 of 2)**

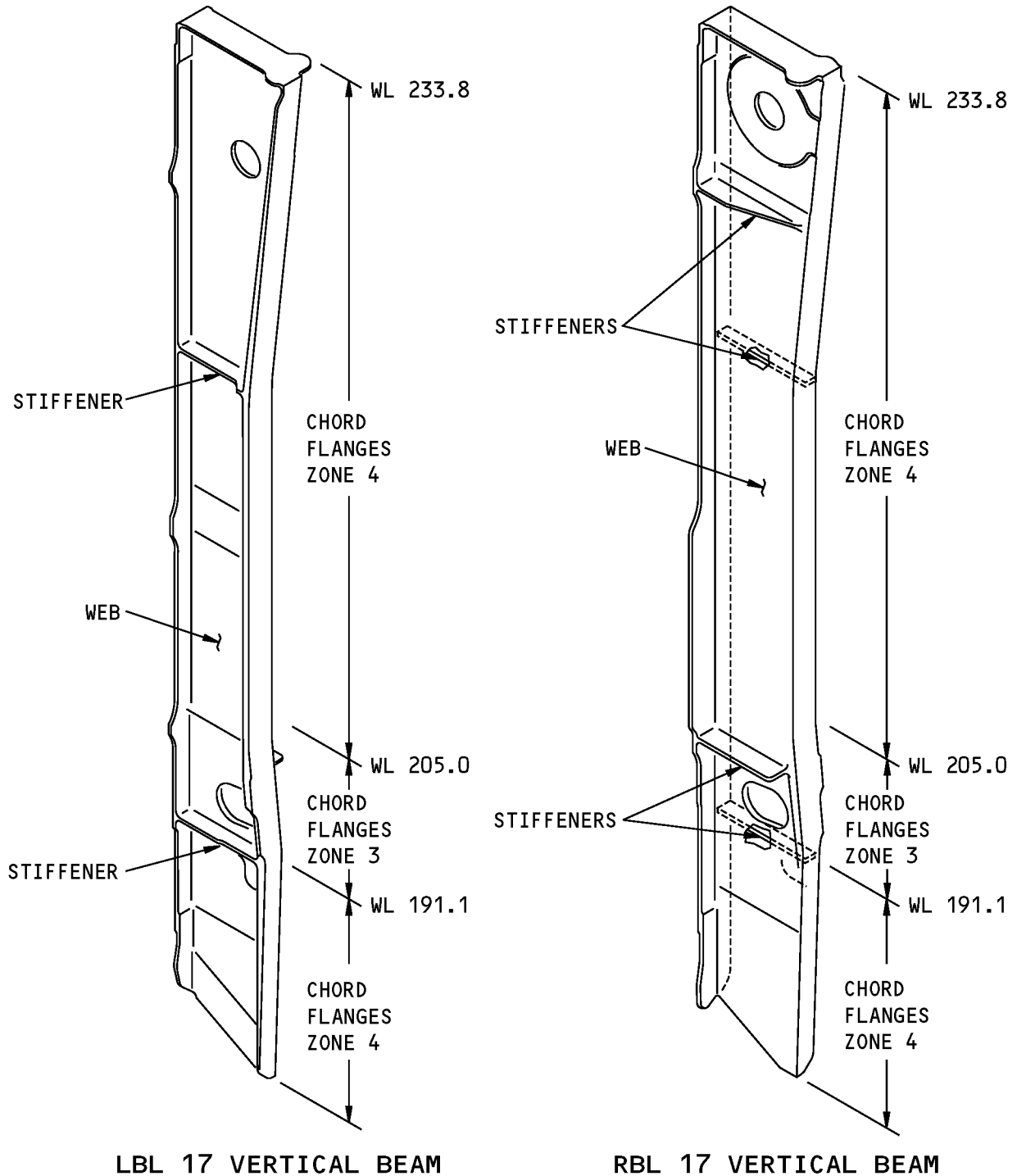
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL BEAMS ARE MADE OF MACHINED ALUMINUM. STIFFENERS, CHORD FLANGES AND WEBS ARE INTEGRAL TO THE BEAM.

**Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones  
Figure 103 (Sheet 1 of 3)**

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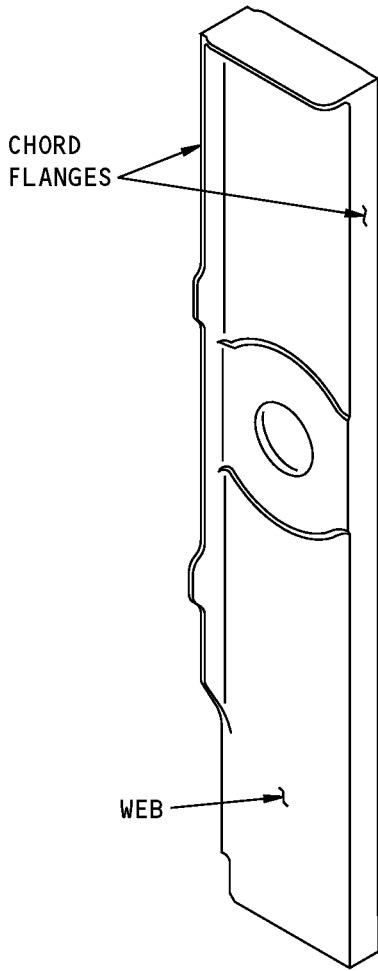
**LBL 17 VERTICAL BEAM**

**RBL 17 VERTICAL BEAM**

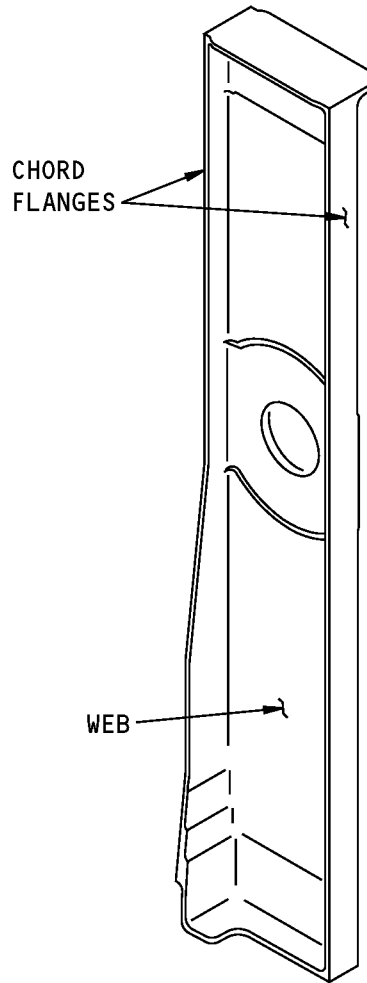
**NOTE:** ALL BEAMS ARE MADE OF MACHINED ALUMINUM. STIFFENERS, CHORD FLANGES AND WEBS ARE INTEGRAL TO THE BEAM.

**Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones  
Figure 103 (Sheet 2 of 3)**

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**LBL 24 VERTICAL BEAM**



**RBL 24 VERTICAL BEAM**

**Station 178 Pressure Bulkhead Vertical Beam Allowable Damage Zones  
Figure 103 (Sheet 3 of 3)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
53-10-90, ALLOWABLE DAMAGE 1	Nose Landing Gear Support Structure Fittings
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Chords (Forged), Intercostals, and Angles

##### (1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , E , and F .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

#### B. Stiffeners and Seal Retainers

##### (1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Figure 104, Detail G .

#### C. Channels, Brackets, Gussets, Supports, and Clips - Machined or Formed

##### (1) Cracks:

(a) Remove cracks as shown in Figure 104, Details A , B , and E .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

(3) Dents are not permitted

(4) Holes and Punctures are permitted if they are:

(a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(b) A maximum of 0.25 inch (6.4 mm) in diameter after the cleanup.

1) Fill the hole with 2117-T3 or 2117-T4 rivet.

2) Install the rivet without sealant.





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**STRUCTURAL REPAIR MANUAL**

D. Webs

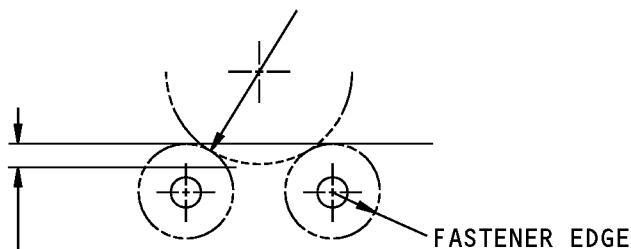
- (1) Cracks:
  - (a) Remove cracks as shown in Figure 104, Details A , B , and H .
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Figure 104, Details A , B , C , D , and H .
- (3) Dents are permitted as shown in Figure 104, Detail I .
- (4) Holes and Punctures are permitted if they are:
  - (a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge
  - (b) A maximum of 0.25 inch (6.4 mm) in diameter after the cleanup.
    - 1) Fill the hole with 2117-T3 or 2117-T4 rivet.
    - 2) Install the rivet without sealant.

E. Vertical Beam (Machined)

- (1) Integral Chord Flanges
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 104, Details A , B , and J .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 104, Details A , B , C , D , E , and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (2) Integral Webs
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 104, Details A , B , H , K , and L .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 104, Details A , B , C , D , H , K , and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm)

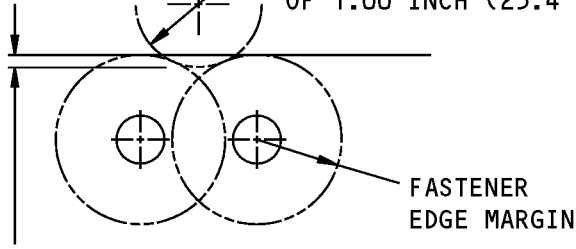


X = WIDTH OF THE MATERIAL MARGIN THAT IS REMOVED  
 = 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE, WHICHEVER IS MINIMUM **1**  
 = A MAXIMUM OF 0.10 INCH (2.5 mm) **2**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**A**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm)

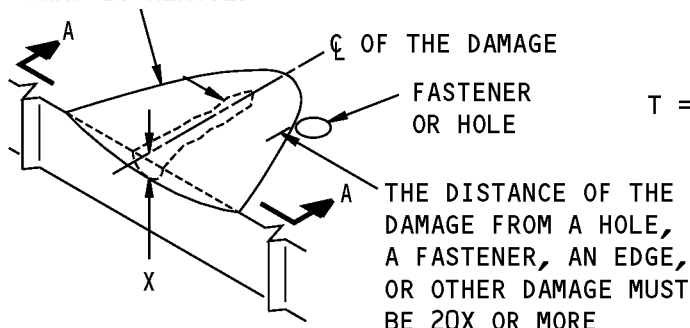


X = WIDTH OF THE MATERIAL MARGIN THAT IS REMOVED  
 = 0.05 INCH (1.25 mm) OR 5% OF WIDTH OF FLANGE, WHICHEVER IS MINIMUM **1**  
 = A MAXIMUM OF 0.10 INCH (2.5 mm) **2**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**B**

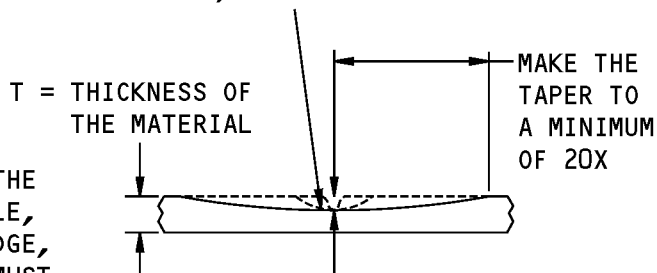
AREA OF THE MATERIAL THAT IS REMOVED



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**C**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



T = THICKNESS OF THE MATERIAL  
 X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T **1**  
 = A MAXIMUM OF 0.10T **2**

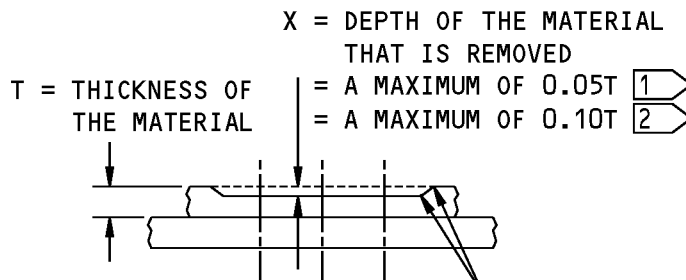
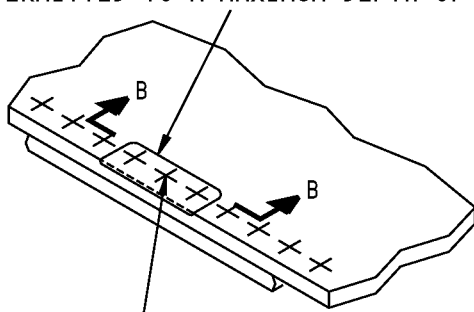
A-A

**1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.  
**2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
 Figure 104 (Sheet 1 of 10)**

STRUCTURAL REPAIR MANUAL

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X

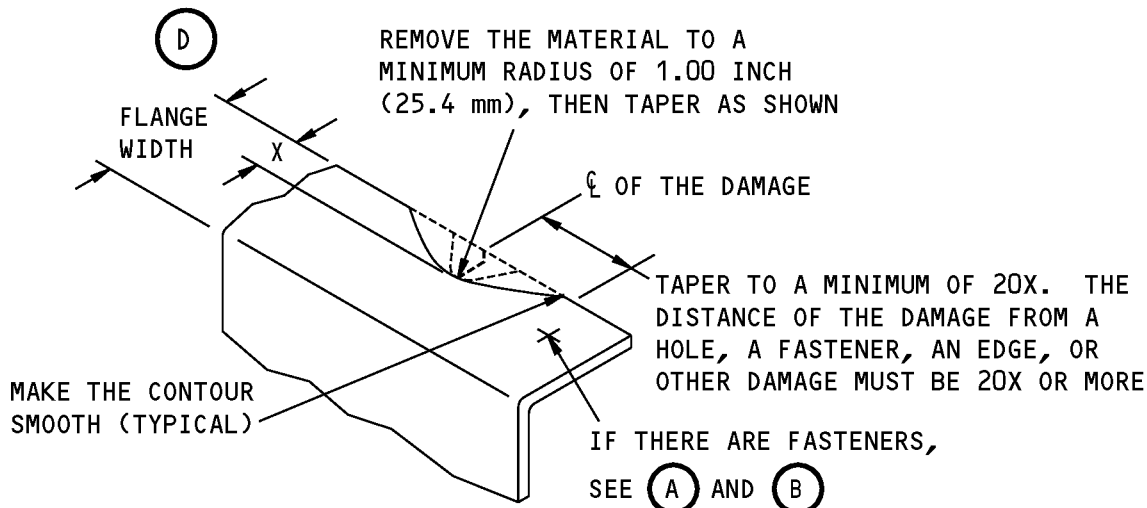


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

B-B

REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE



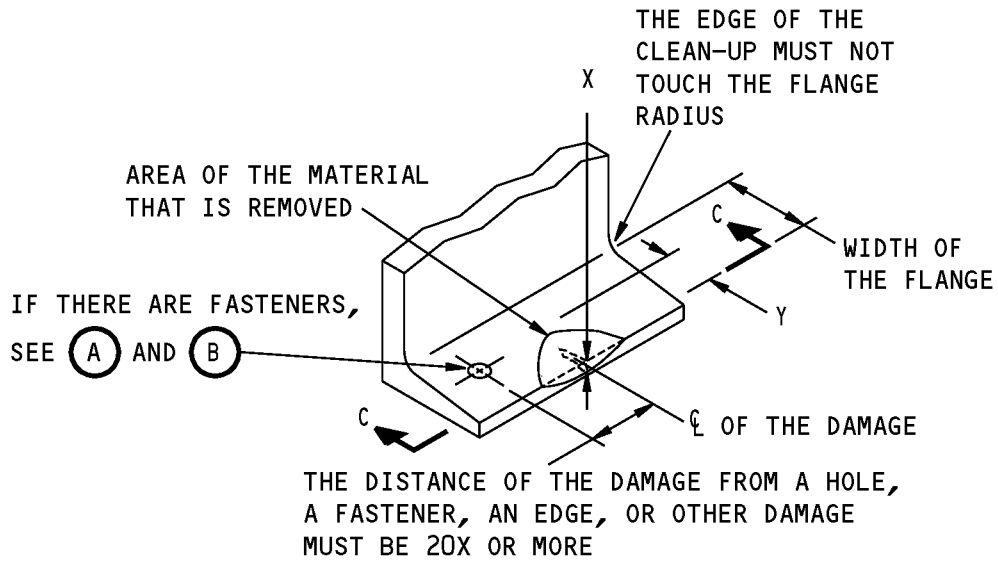
- X = WIDTH OF THE MATERIAL THAT IS REMOVED
- = 0.025 INCH (0.65 mm) OR 2.5% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR FLANGES OF THE MACHINED BEAM [1]
- = 0.05 INCH (1.25 mm) OR 5% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR FLANGES OF THE FORMED PART [1]
- = 0.10 INCH (2.55 mm) OR 10% OF FLANGE WIDTH, WHICHEVER IS SMALLER FOR ALL OTHER STRUCTURE [1]
- = A MAXIMUM OF 0.05 INCH (1.3 mm) FOR FLANGES OF THE MACHINED BEAM [2]
- = A MAXIMUM OF 0.10 INCH (2.5 mm) FOR FLANGES OF THE FORMED PART [2]
- = A MAXIMUM OF 0.20 INCH (5.1 mm) FOR ALL OTHER STRUCTURE [2]

REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FLANGE

E

Allowable Damage Limits  
Figure 104 (Sheet 2 of 10)

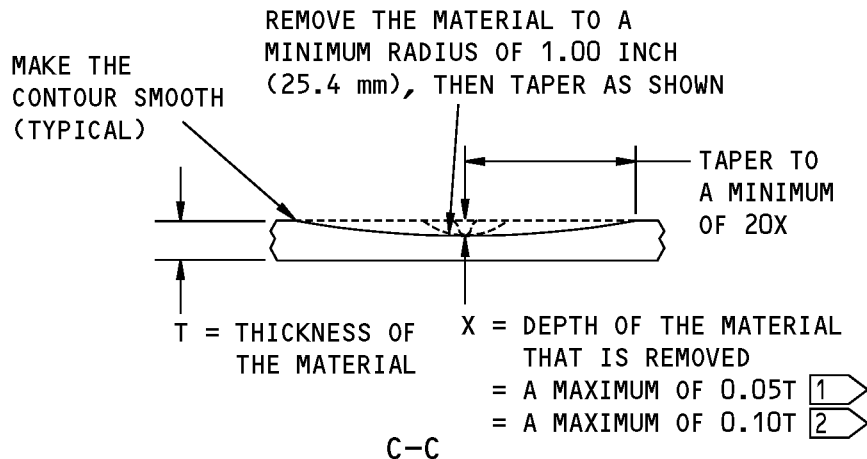
**STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF FLANGE WIDTH 1  
 ≤ 10 PERCENT OF FLANGE WIDTH 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
 AT AN EDGE OF A THICK FLANGE  
 (MORE THAN 0.10 INCH (2.5 mm) IN THICKNESS)**

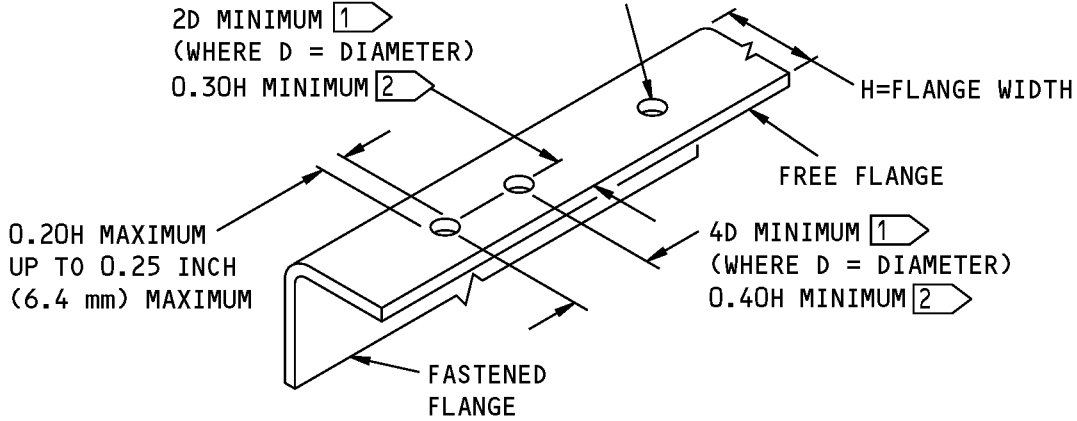
**(F)**



**Allowable Damage Limits  
 Figure 104 (Sheet 3 of 10)**

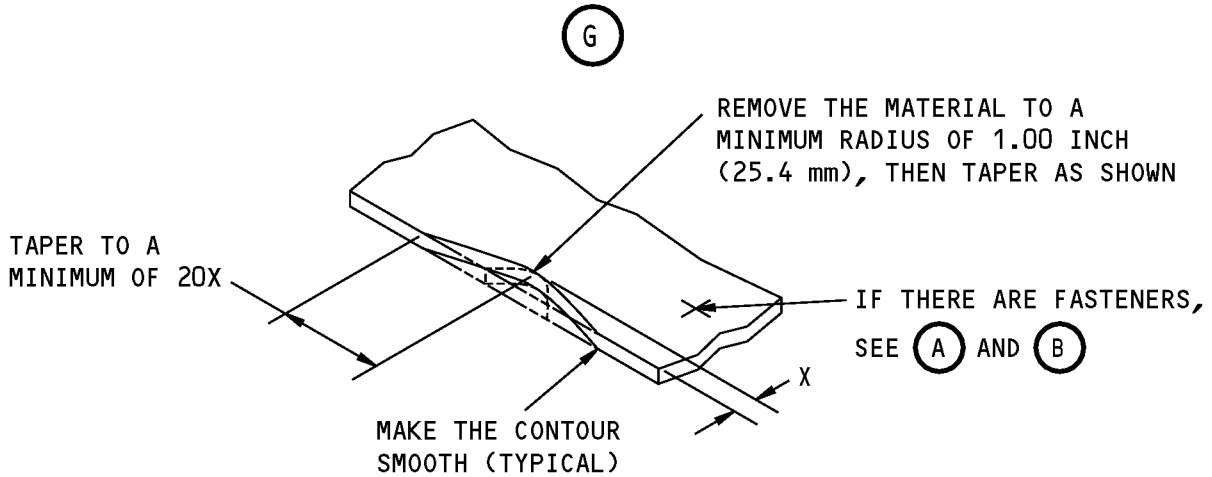
**STRUCTURAL REPAIR MANUAL**

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH (6.4 mm). FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT



**NOTE:** HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**



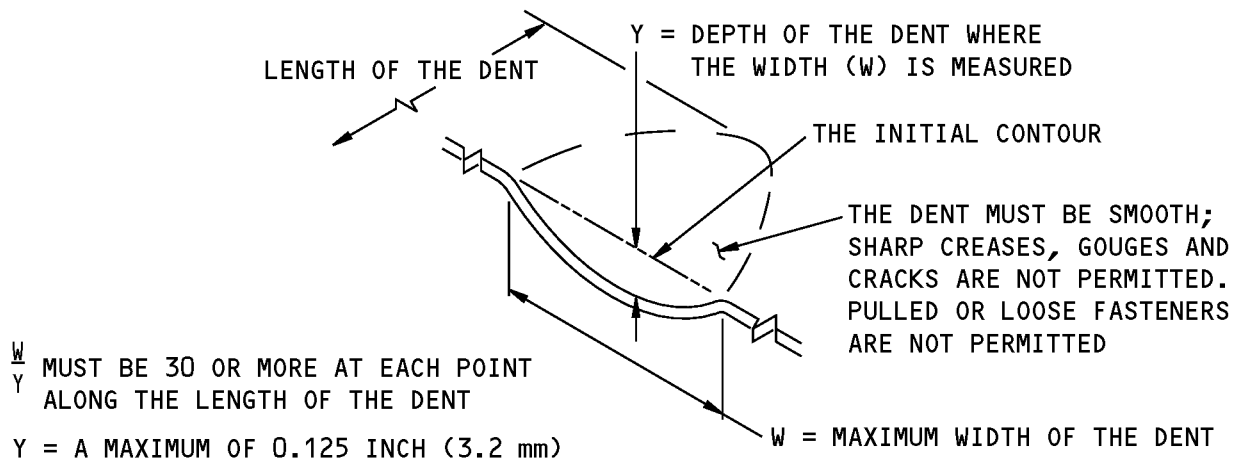
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH (1.27 mm) (1)  
 = A MAXIMUM OF 0.10 INCH (2.5 mm) (2)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(H)

**Allowable Damage Limits  
Figure 104 (Sheet 4 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**

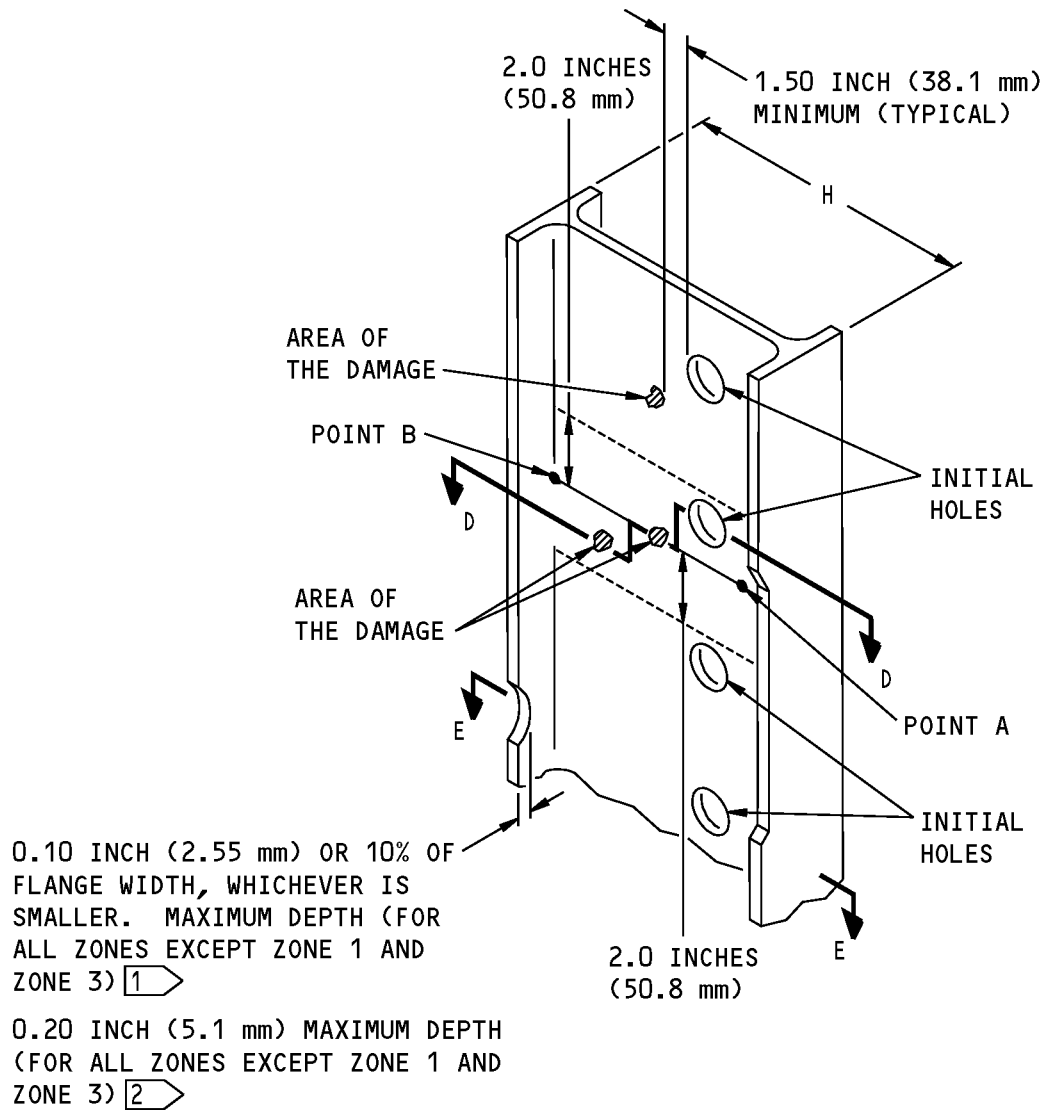


**DENT THAT IS PERMITTED**



**Allowable Damage Limits  
Figure 104 (Sheet 5 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



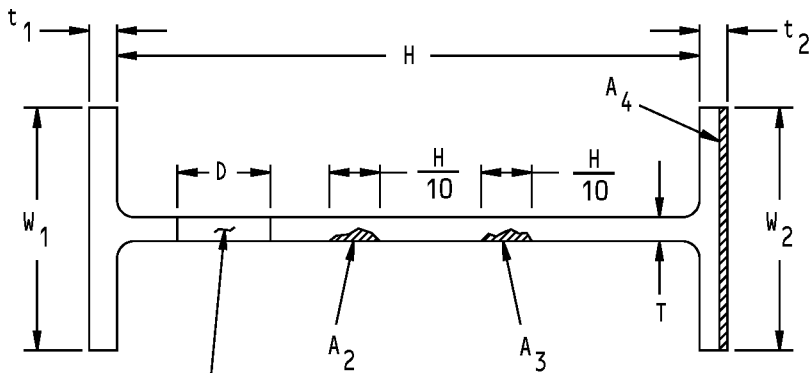
**NOTE:** REFER TO FIGURE 103 FOR ZONE IDENTIFICATION

**REMOVAL OF DAMAGED MATERIAL FROM VERTICAL BEAMS**



**Allowable Damage Limits  
Figure 104 (Sheet 6 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



CROSS-SECTIONAL  
AREA OF THE  
INITIAL HOLE

**NOTE:** REFER TO TABLE A FOR THE MAXIMUM LIMIT DIMENSIONS AND FOR THE MAXIMUM AREA THAT CAN BE REMOVED FROM THE FLANGE.

D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$  = MAXIMUM DIAMETER OF THE DAMAGE [THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH (19.1 mm)]

T = THICKNESS OF THE WEB

$A_1$  = INITIAL AREA OF THE WEB

= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)

$$= HT - DT + w_1 t_1 + w_2 t_2$$

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

$A_3$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$A_4$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left( \frac{A_2 + A_3 + A_4}{A_1} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

= 5 PERCENT MAXIMUM 1

= 10 PERCENT MAXIMUM 2

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 5 PERCENT OF THE INITIAL AREA OF THE WEB. 1

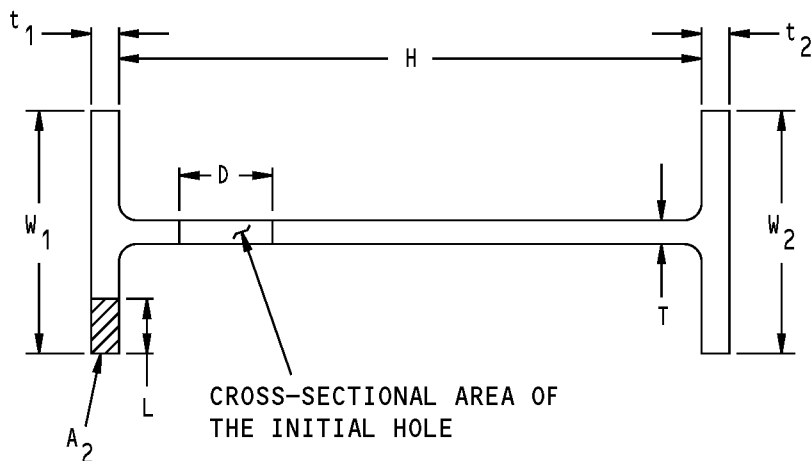
THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB. 2

D-D

**Allowable Damage Limits  
Figure 104 (Sheet 7 of 10)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE A FOR THE MAXIMUM LIMIT DIMENSIONS.

D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$  = MAXIMUM DIAMETER OF THE DAMAGE [THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH (19.1 mm)]

T = THICKNESS OF THE WEB

$A_1$  = INITIAL AREA OF THE WEB

= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 $= HT - DT + W_1t_1 + W_2t_2$

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2 ( $Lt_1$ )

L = 0.10 INCH (2.55 mm) OR XX% OF THE INITIAL FLANGE AREA ( $Lt_1$ ), THAT WHICH IS LESS. REFER TO TABLE A. **1**

L = 0.20 INCH (5.1 mm) OR XX% OF THE INITIAL FLANGE AREA ( $Lt_1$ ), THAT WHICH IS LESS. REFER TO TABLE A. **2**

$$\left(\frac{A_2}{A_1}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED} \\ = 5 \text{ PERCENT MAXIMUM } \mathbf{1}$$

$$\left(\frac{A_2}{A_1}\right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED} \\ = 10 \text{ PERCENT MAXIMUM } \mathbf{2}$$

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 5 PERCENT OF THE INITIAL AREA OF THE WEB. **1**

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB. **2**

E-E

**Allowable Damage Limits  
Figure 104 (Sheet 8 of 10)**



**737-800  
STRUCTURAL REPAIR MANUAL**











MAXIMUM LIMIT DIMENSIONS FOR VERTICAL BEAM FLANGES			
ZONE LOCATION	BL LOCATION	MAXIMUM DEPTH OF EDGE TRIM REMOVAL	MAXIMUM LOSS OF CROSS-SECTIONAL AREA
1	5.7	N/A	1 PERCENT OF THE INITIAL FLANGE AREA 
1	5.7	N/A	5 PERCENT OF THE INITIAL FLANGE AREA 
2	5.7	0.20 INCH	10 PERCENT OF THE INITIAL FLANGE AREA 
2	5.7	0.20 INCH	15 PERCENT OF THE INITIAL FLANGE AREA 
3	17.0	N/A	3 PERCENT OF THE INITIAL FLANGE AREA 
3	17.0	N/A	8 PERCENT OF THE INITIAL FLANGE AREA 
4	17.0	0.20 INCH	9 PERCENT OF THE INITIAL FLANGE AREA 
4	17.0	0.20 INCH	14 PERCENT OF THE INITIAL FLANGE AREA 
—	24.0	0.20 INCH	10 PERCENT OF THE INITIAL FLANGE AREA 
—	24.0	0.20 INCH	15 PERCENT OF THE INITIAL FLANGE AREA 

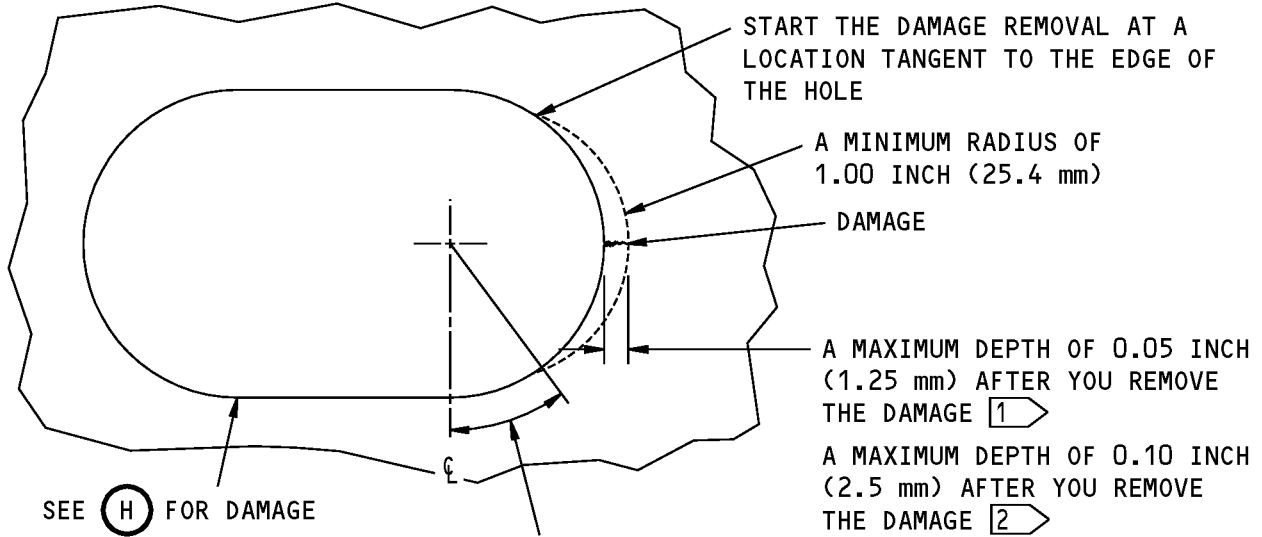
TABLE A

**Allowable Damage Limits  
Figure 104 (Sheet 9 of 10)**

D634A210

ALLOWABLE DAMAGE 1  
Page 118  
**53-10-08**  
Nov 10/2004

**STRUCTURAL REPAIR MANUAL**



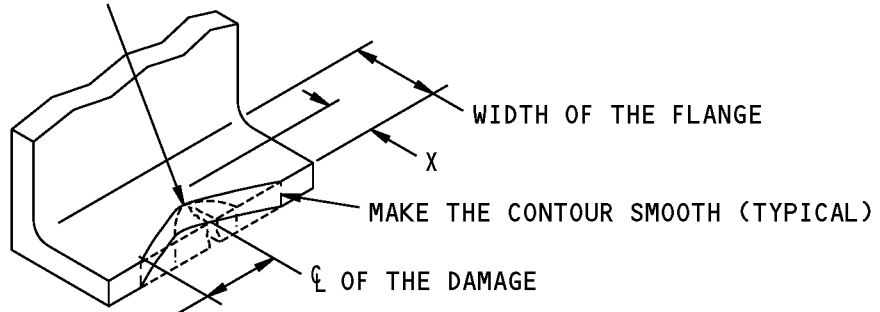
SEE (H) FOR DAMAGE

TO A STRAIGHT EDGE MAXIMUM LENGTH OF DAMAGE ON THE  
EDGE FOUND IN AN ARC OF 45 DEGREES

**REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE**

(K)

REMOVE THE MATERIAL TO A MINIMUM RADIUS  
OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM  
AN EDGE MUST BE 20X OR MORE

- X = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(L)

**Allowable Damage Limits  
Figure 104 (Sheet 10 of 10)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 2 - STATION 227.80 NOSE WHEEL WELL BULKHEAD**

**1. Applicability**

A. This subject gives the allowable damage limits for the Station 227.80 Nose Wheel Well Bulkhead shown in Section 41 Nose Wheel Well Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 2.

**2. General**

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.

(1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
Chords, Brackets, Angles, Seal Retainers, Extruded Intercostals, and Stiffeners	4.A
Formed Intercostals and Clips	4.B
Webs	4.C

C. Remove the damage as necessary.

(1) Refer to 51-10-02 for the inspection and removal of damage.

(2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.

(3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

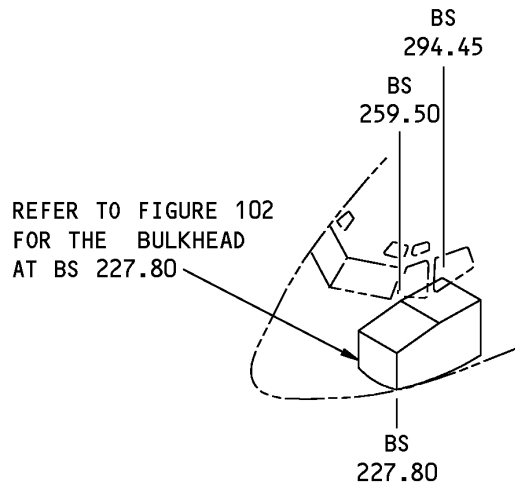
D. After you remove the damage, do the steps that follow:

(1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

(2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.

(3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

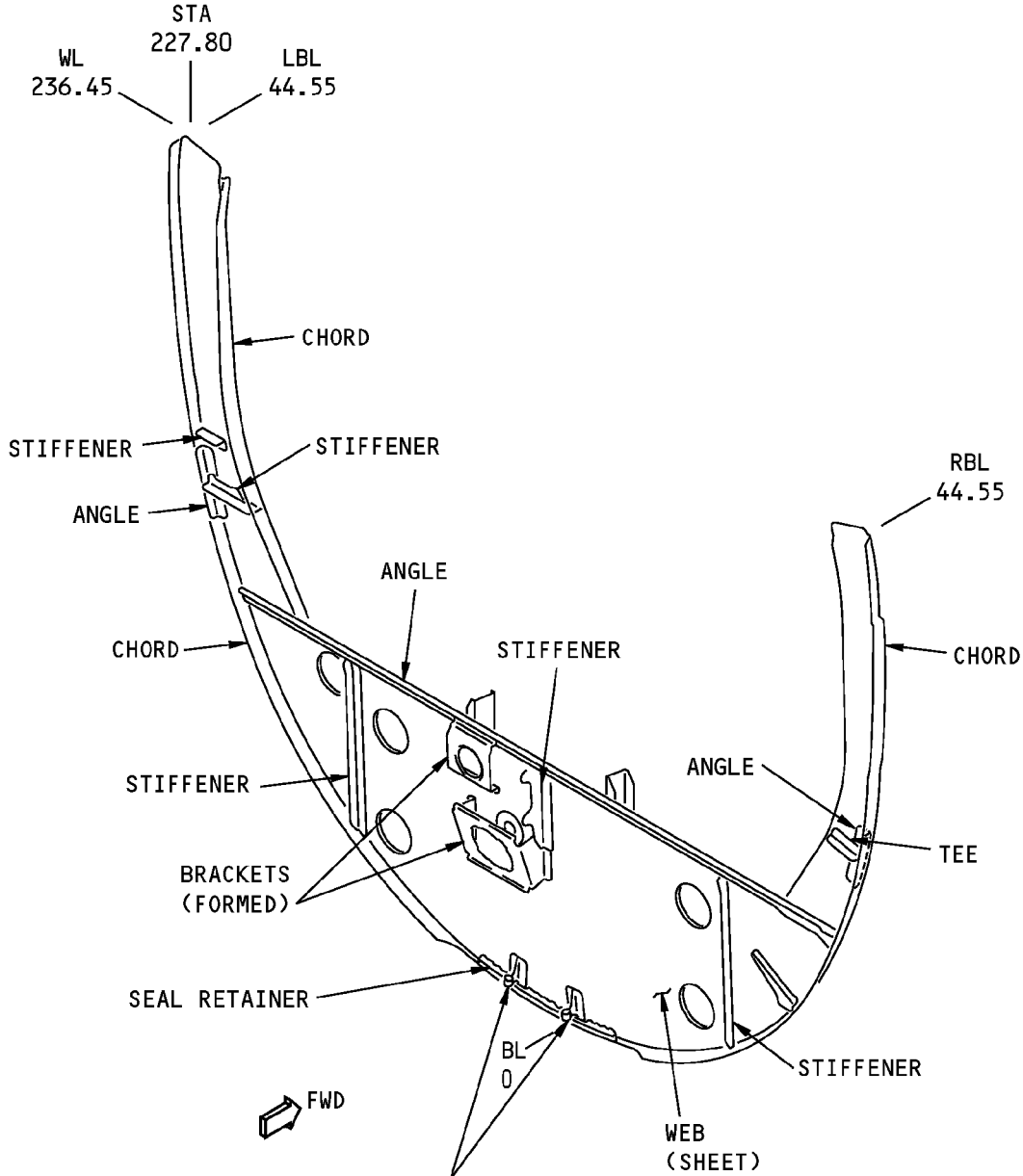
**737-800  
STRUCTURAL REPAIR MANUAL**



G88483 S0006588285\_V4

**Section 41 Nose Wheel Well Bulkhead Location  
Figure 101**

**737-800  
STRUCTURAL REPAIR MANUAL**



REFER TO SRM 52-80-90 FOR THE DOOR  
STOP FITTINGS (NOSE GEAR DOOR)

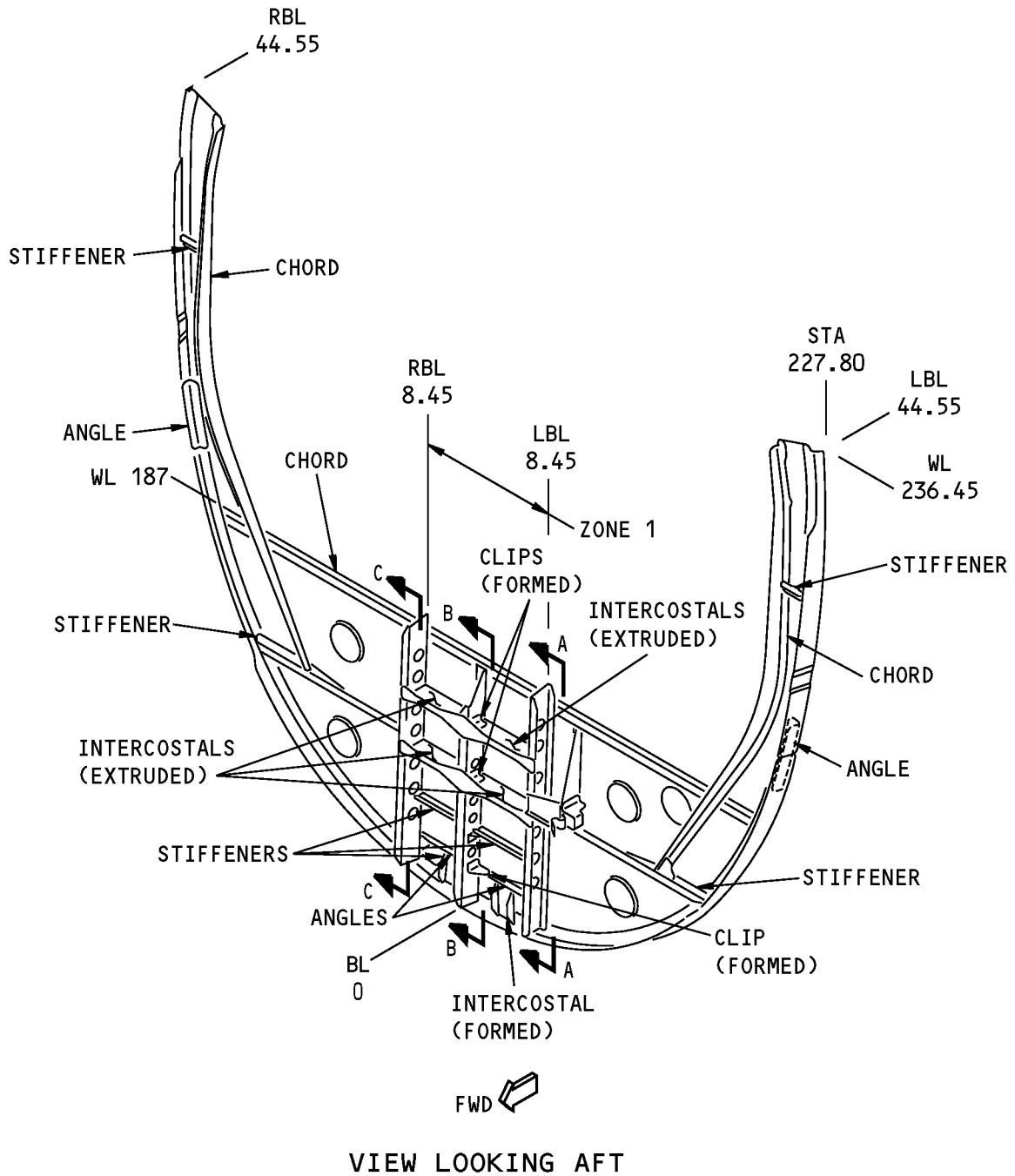
**VIEW LOOKING FORWARD**

**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- ALL PARTS ARE EXTRUDED UNLESS OTHERWISE SPECIFIED.

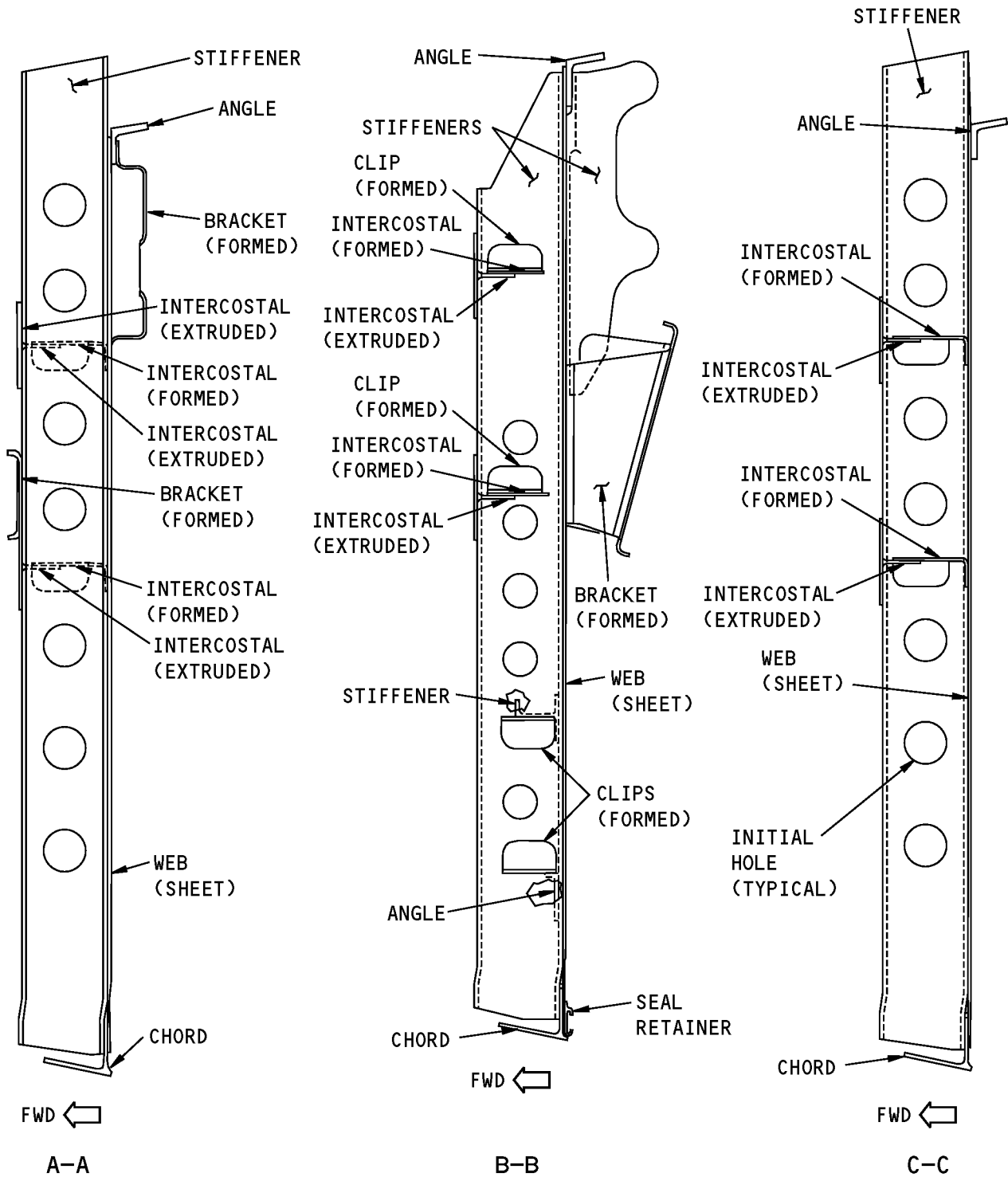
**Station 227.80 Bulkhead Structure  
Figure 102 (Sheet 1 of 3)**

**737-80  
STRUCTURAL REPAIR MANUAL**



**Station 227.80 Bulkhead Structure  
Figure 102 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



**Station 227.80 Bulkhead Structure  
Figure 102 (Sheet 3 of 3)**





## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Chords, Brackets, Angles, Seal Retainers, Extruded Intercostals, and Stiffeners

##### (1) Cracks:

- (a) Remove the damage as shown in Figure 103, Details A , B , E and J .
- (b) Only one damage area is permitted at a cross-section.

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Figure 103, Details A , B , C , D , E , F and J .
- (b) Only one damage area is permitted at a cross-section.

##### (3) Dents are not permitted

##### (4) Holes and Punctures are permitted if they are:

- (a) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.
- (b) A maximum of 0.25 inch (6.4 mm) in diameter after cleanup.
  - 1) Fill the hole with a 2117-T3 or 2117-T4 rivet.
  - 2) Install the rivet without sealant.

##### (5) No damage on the WL 187.0 horizontal chord is permitted in Zone 1, which is between the vertical stiffeners at LBL 8.45 and RBL 8.45.

#### B. Intercostals, Stiffeners and Clips

##### (1) Cracks:

- (a) Remove the damage as shown in Figure 103, Details A , B , and E .
- (b) Only one damage area is permitted at a cross-section which includes an initial hole.

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Figure 103, Details A , B , C , D , E and F .
- (b) Only one damage area is permitted at a cross-section which includes an initial hole.

##### (3) Dents are not permitted

##### (4) Holes and Punctures are permitted in the free flange as shown in Figure 103, Detail G .

#### C. Webs

##### (1) Cracks:

- (a) Remove the damage as shown in Figure 103, Details A , B , and H .

##### (2) Nicks, Gouges, Scratches, and Corrosion:



## 737-800

# STRUCTURAL REPAIR MANUAL

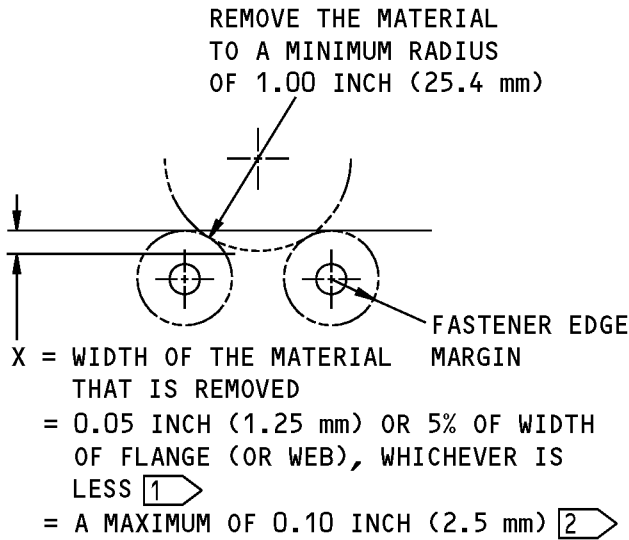
- (a) Remove the damage as shown in Figure 103, Details A , B , D , and H .
- (b) Remove the damage as shown in Figure 103, Detail C .

**NOTE:** For airplanes that have completed Service Bulletin 737-21-1149, the damage removed from several locations should not be more than 20 percent of the surface area of the web.

For airplanes that have not completed Service Bulletin 737-21-1149, the damage removed from several locations should not be more than 25 percent of the surface area of the web.

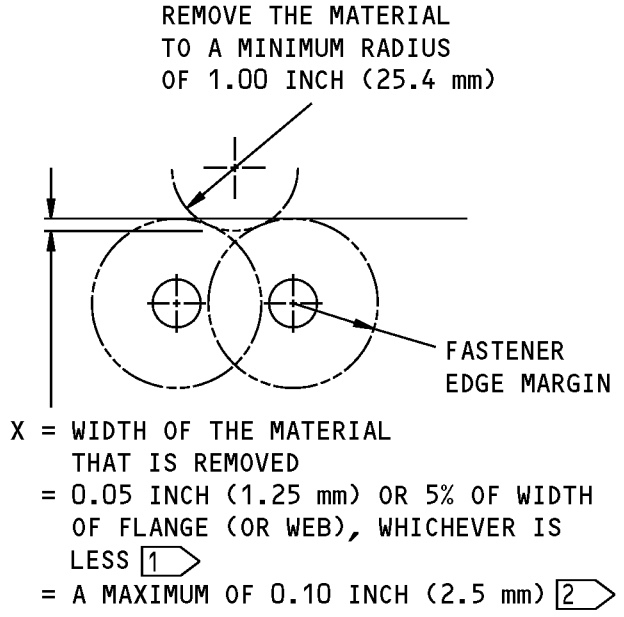
- (3) Dents are permitted as shown in Figure 103, Detail I if:
  - (a) They do not extend across attached structures
  - (b) They do not have an "oil-can" condition.
- (4) Holes and Punctures are permitted if they are:
  - (a) A maximum of 0.25 inch (6.4 mm) in diameter after cleanup
    - 1) Fill the hole with 2117-T3 or 2117-T4 rivet.
    - 2) Install the rivet without sealant.
  - (b) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge.

**STRUCTURAL REPAIR MANUAL**



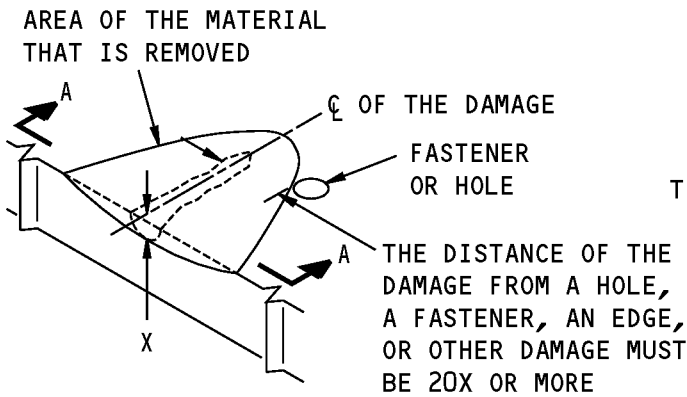
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**(A)**



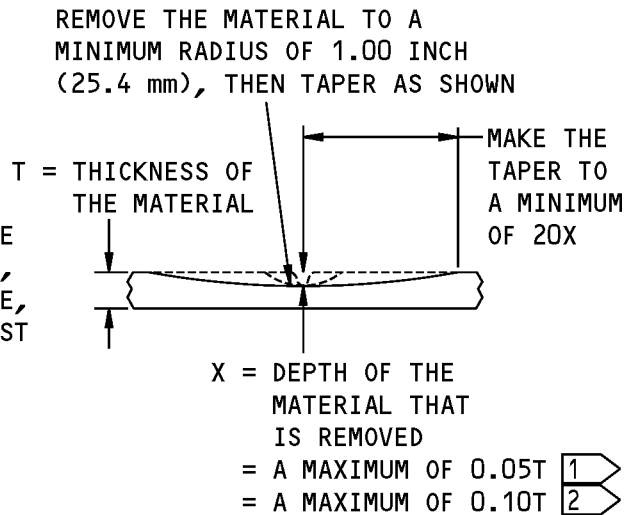
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**(B)**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**(C)**



A-A

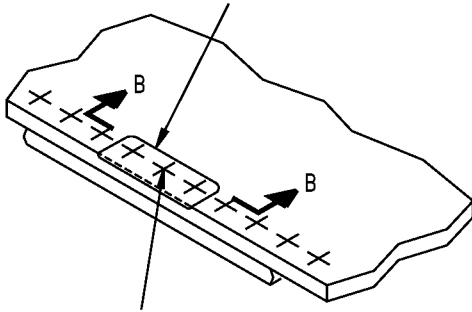
1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
 Figure 103 (Sheet 1 of 5)**

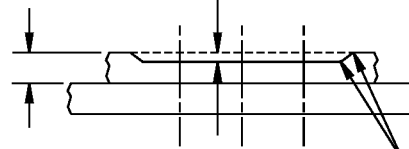
**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T 1  
 = A MAXIMUM OF 0.10T 2

T = THICKNESS OF THE MATERIAL



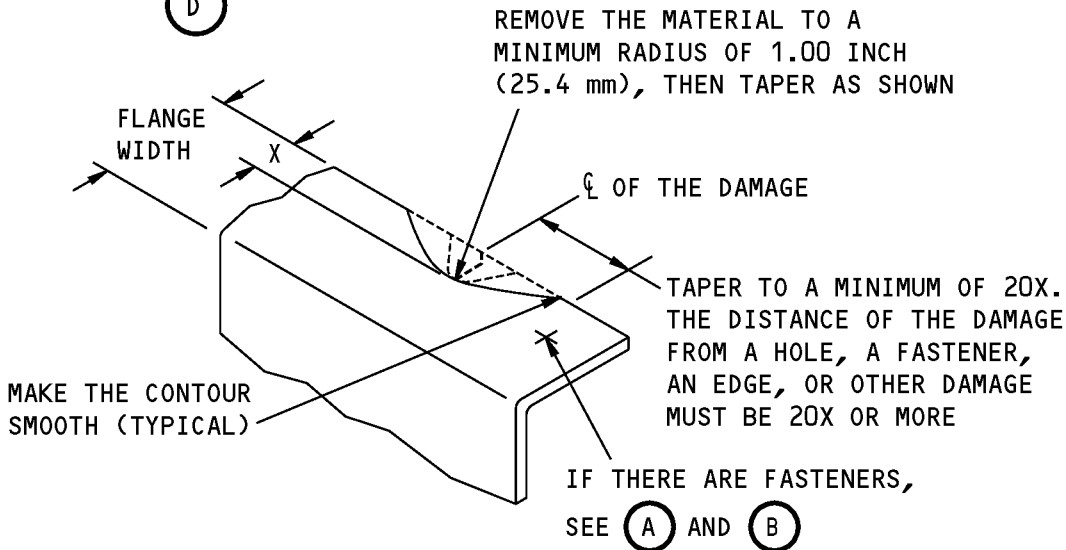
MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

B-B

REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE**

(D)



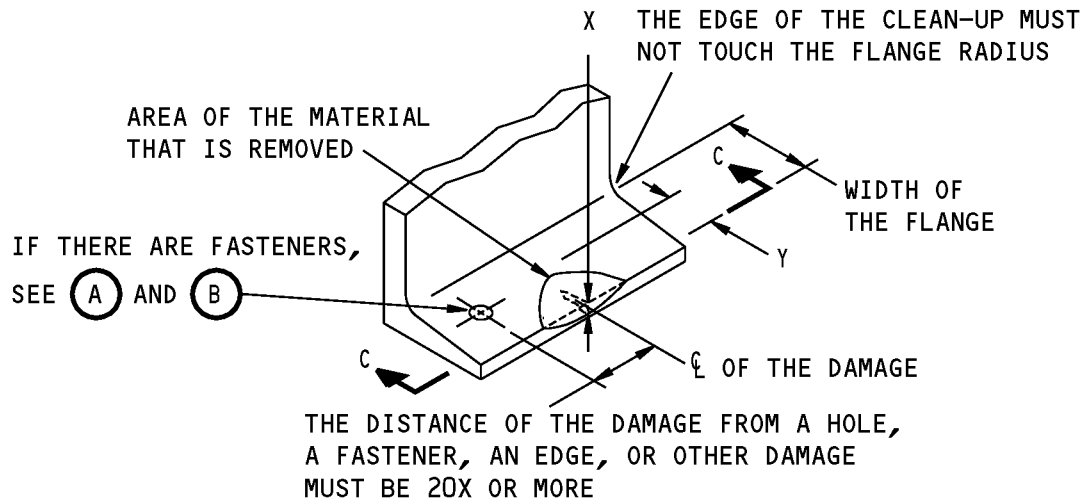
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = 0.05 INCH (1.25 mm) OR 5% OF FLANGE WIDTH, WHICHEVER IS SMALLER 1  
 = A MAXIMUM OF 0.10 INCH (2.5 mm) 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

(E)

**Allowable Damage Limits  
 Figure 103 (Sheet 2 of 5)**

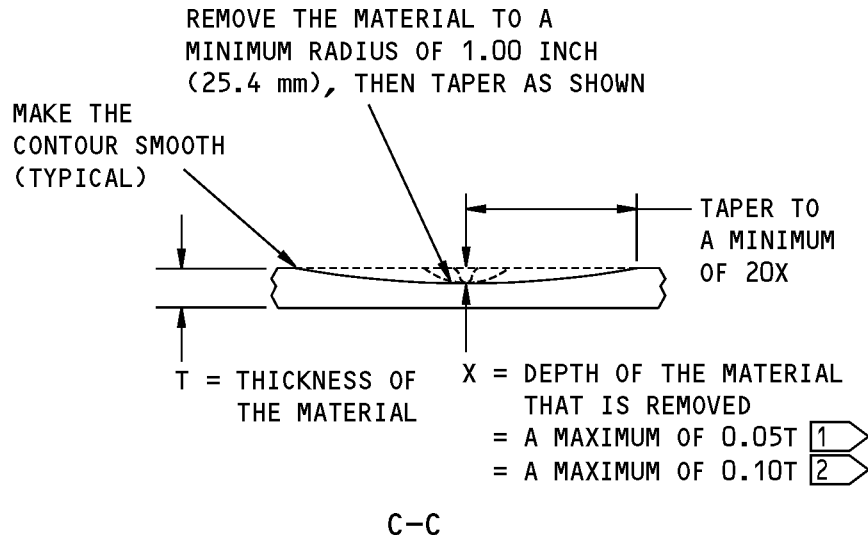
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE FLANGE 1  
 ≤ 10 PERCENT OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A MACHINED OR EXTRUDED PART**

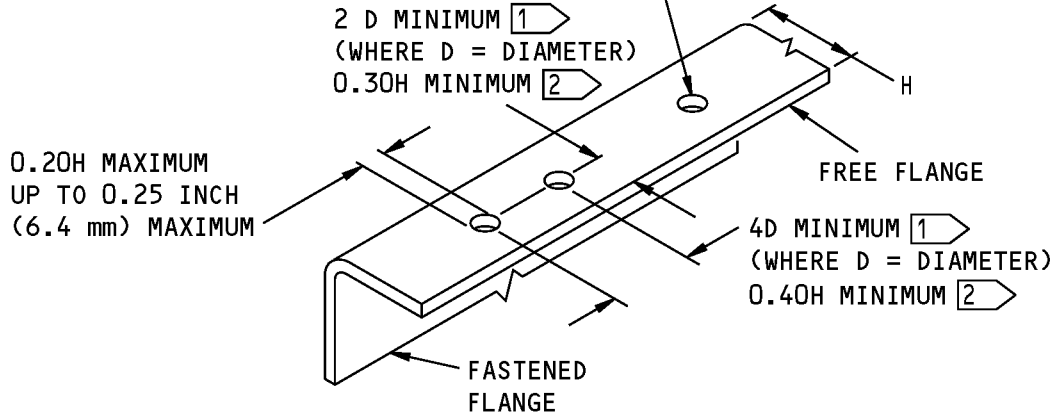
(F)



**Allowable Damage Limits  
Figure 103 (Sheet 3 of 5)**

**STRUCTURAL REPAIR MANUAL**

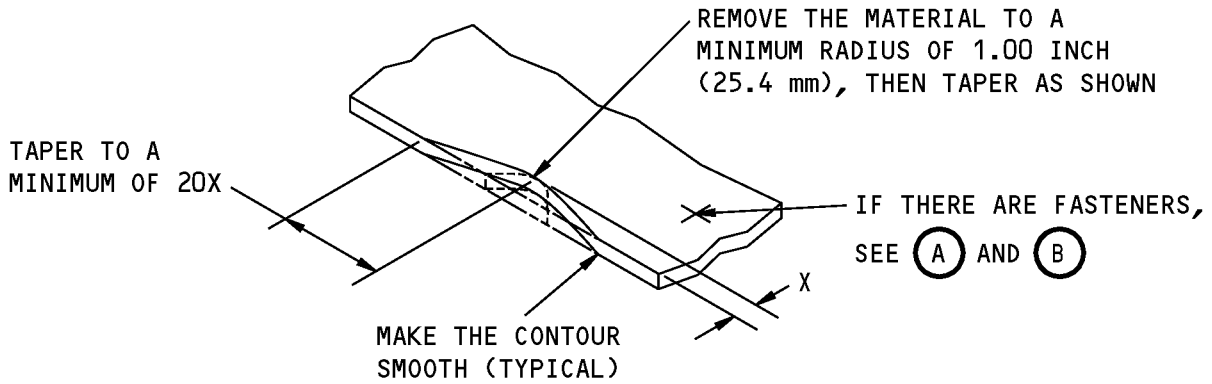
A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH (6.4 mm). FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT



**NOTE:** HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

(G)



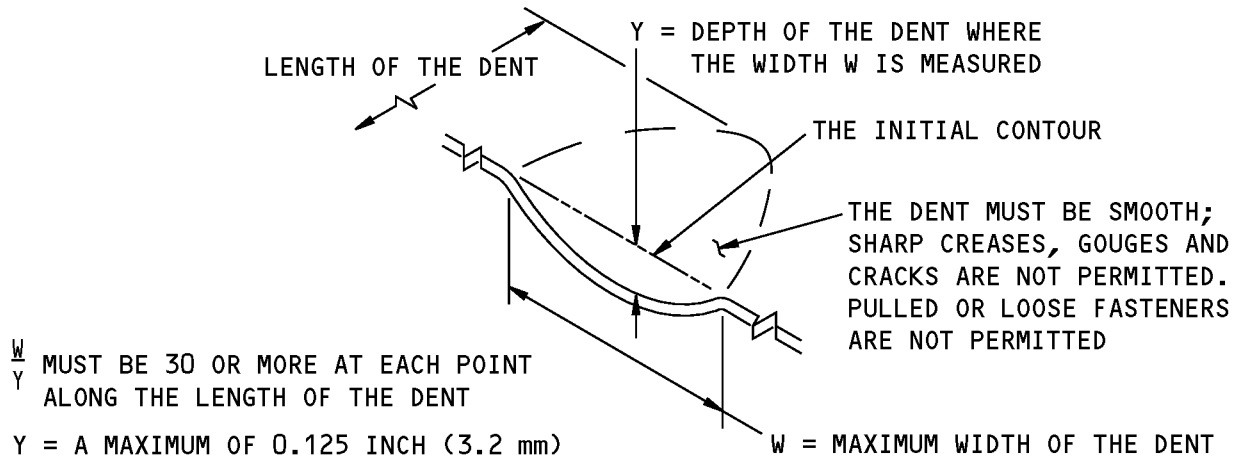
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.05 INCH (1.25 mm) (1)  
= A MAXIMUM OF 0.10 INCH (2.5 mm) (2)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(H)

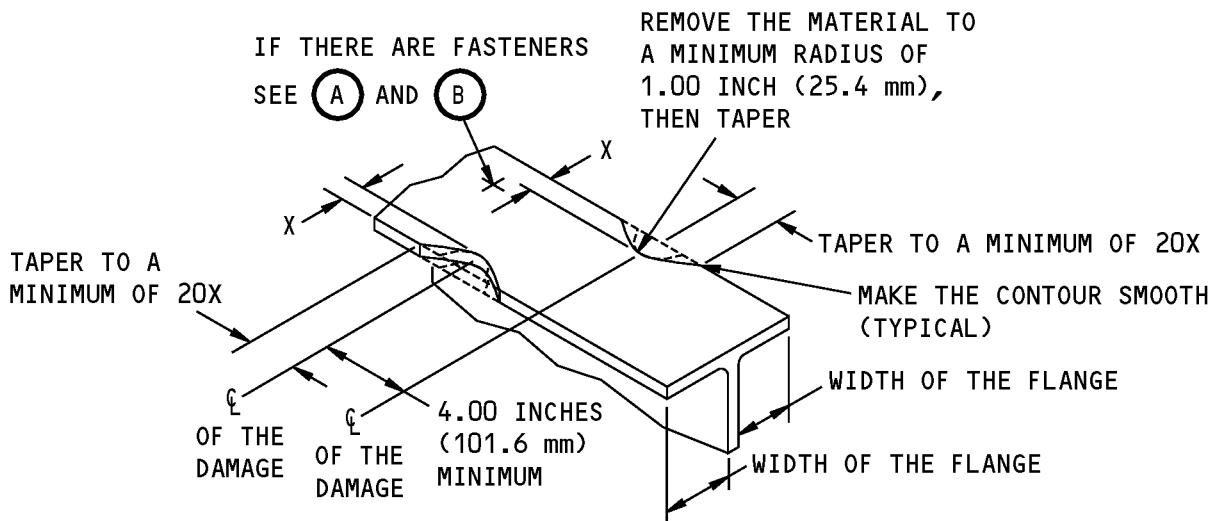
**Allowable Damage Limits  
Figure 103 (Sheet 4 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

I



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = 0.05 INCH (1.25 mm) OR 5% OF FLANGE WIDTH,  
 WHICHEVER IS SMALLER 1  
 = A MAXIMUM OF 0.10 INCH (2.5 mm) 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

J

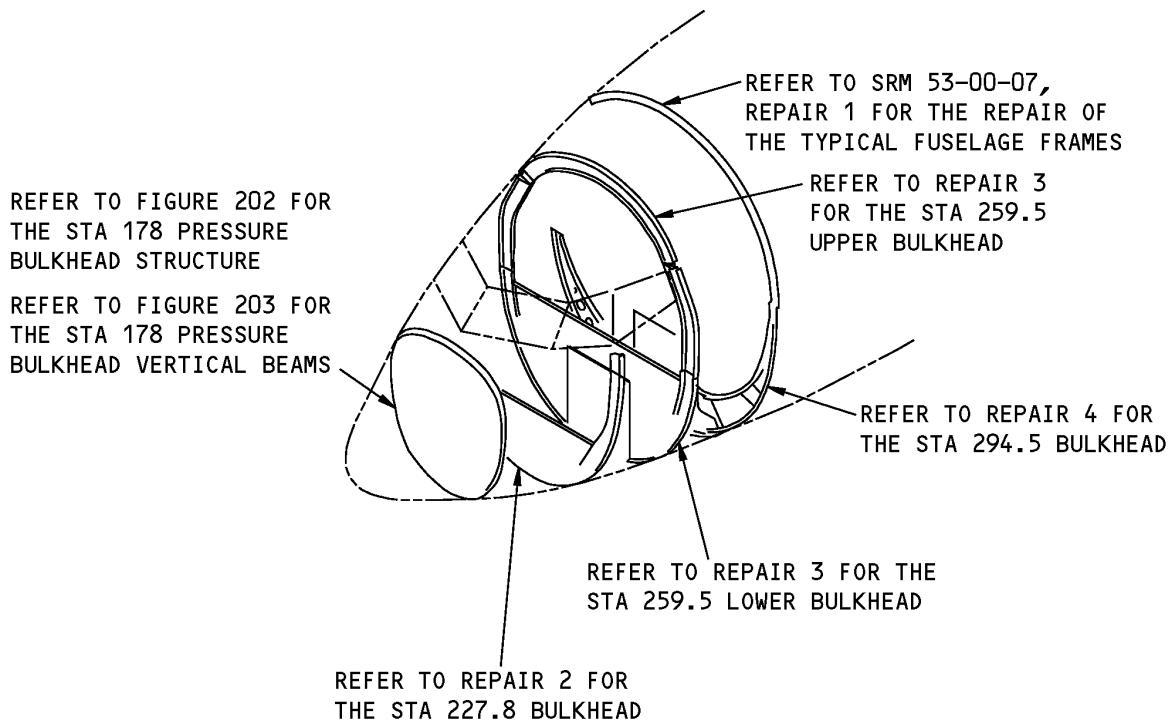
**Allowable Damage Limits  
Figure 103 (Sheet 5 of 5)**

**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - STATION 178 FORWARD PRESSURE BULKHEAD**

**1. Applicability**

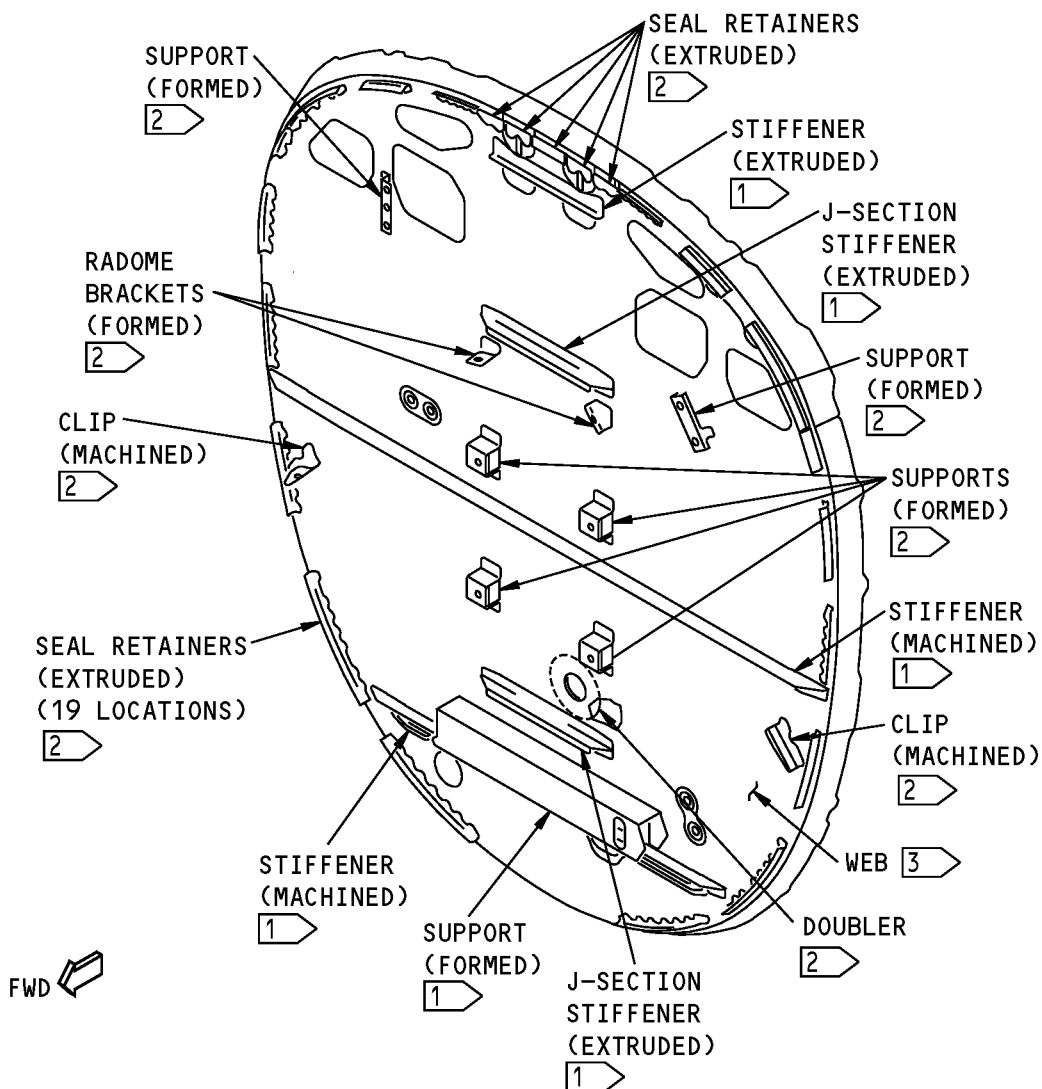
- A. Repair 1 is applicable to damage to the structure of the station 178 forward pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 201/REPAIR 1, Station 178 Pressure Bulkhead Structure, Figure 202/REPAIR 1, and Station 178 Pressure Bulkhead Vertical Beams, Figure 203/REPAIR 1.



**Station 178 Pressure Bulkhead Location  
Figure 201**



**737-800  
STRUCTURAL REPAIR MANUAL**



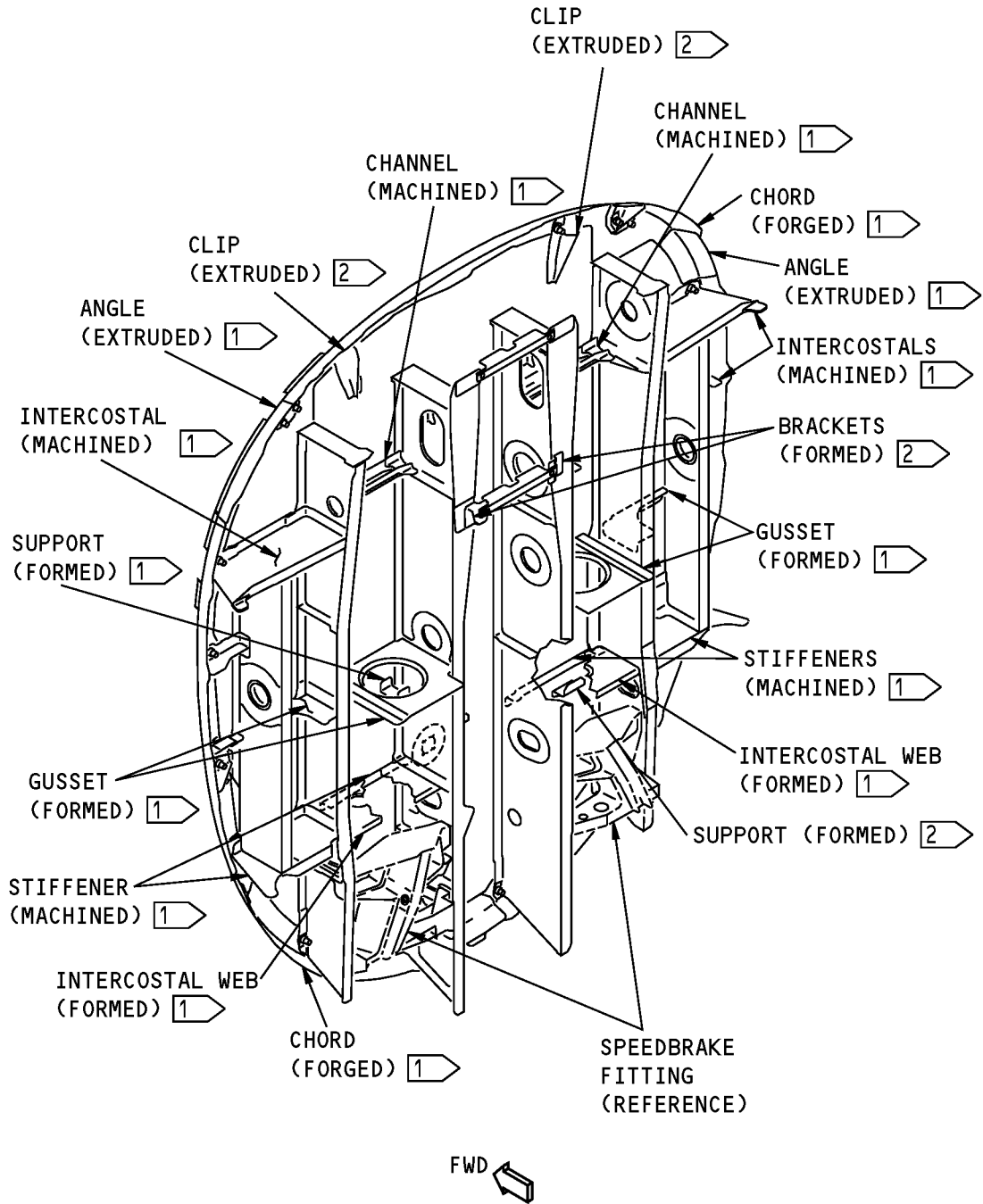
**NOTES**

- ALL PARTS ARE MADE OF ALUMINUM.

- [1] REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- [2] THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.
- [3] THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

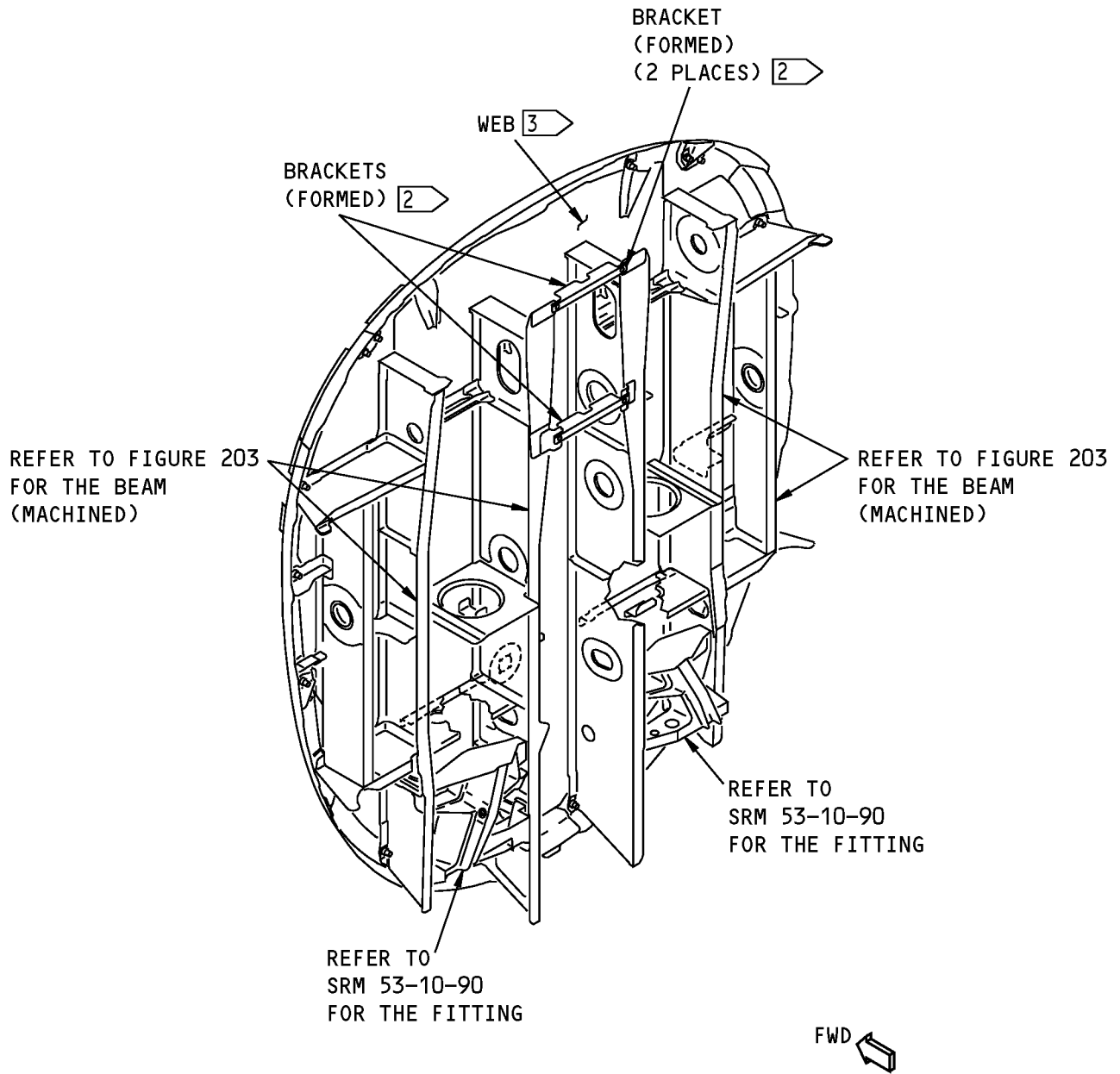
**Station 178 Pressure Bulkhead Structure  
Figure 202 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



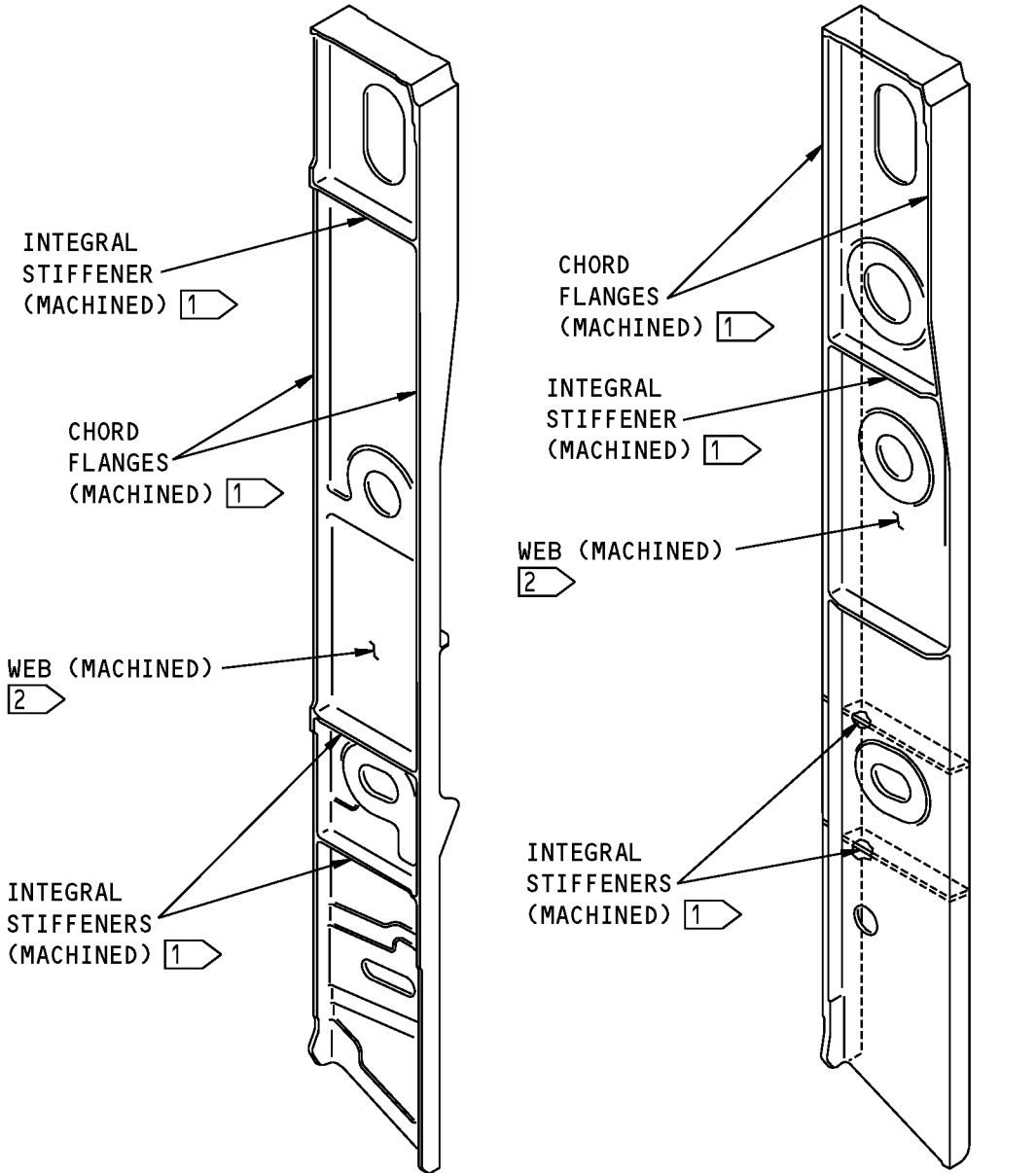
**Station 178 Pressure Bulkhead Structure  
Figure 202 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Station 178 Pressure Bulkhead Structure  
Figure 202 (Sheet 3 of 3)**

STRUCTURAL REPAIR MANUAL



LBL 5.7 VERTICAL BEAM

RBL 5.7 VERTICAL BEAM

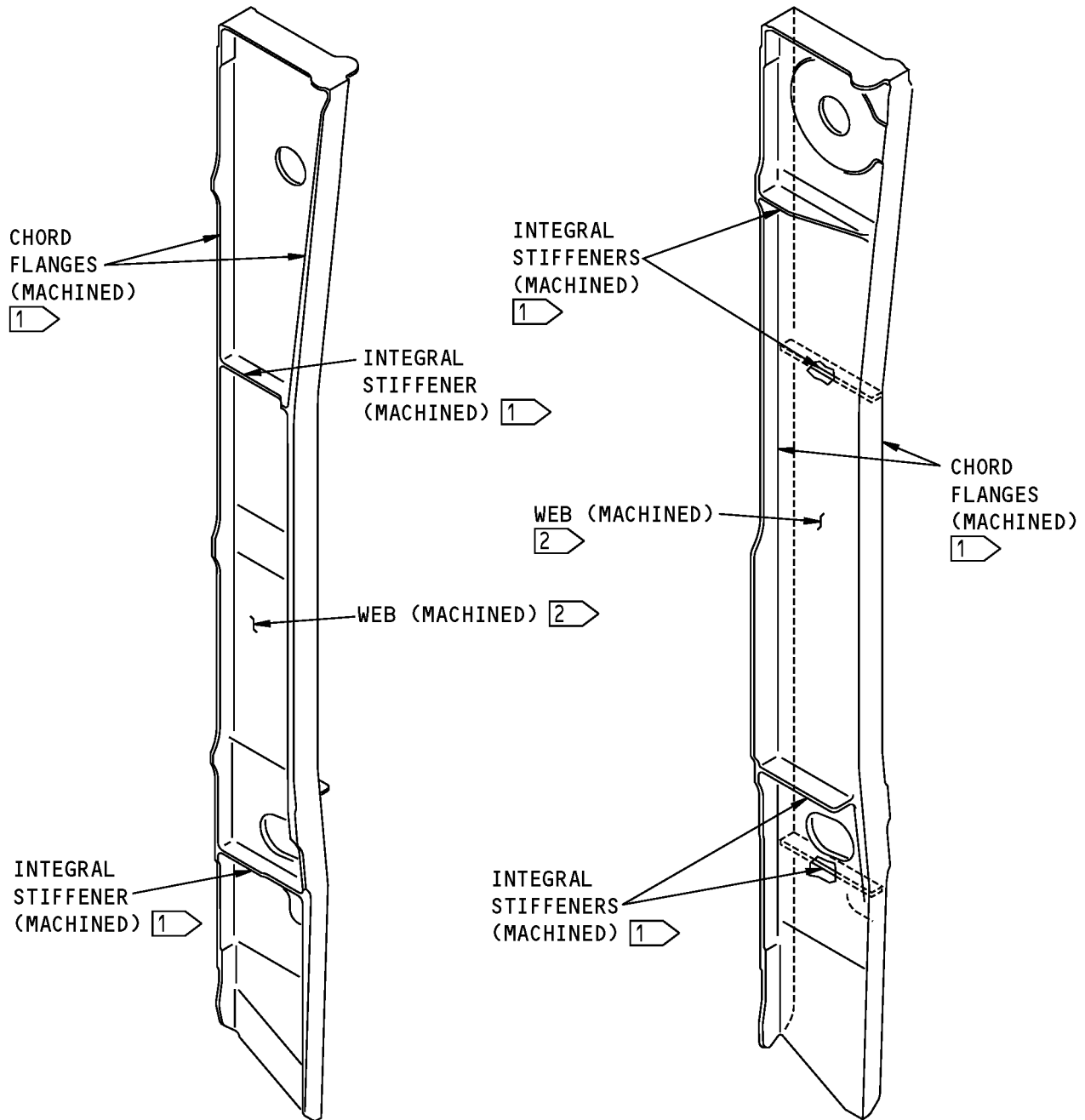
NOTES

- ALL PARTS ARE MADE OF ALUMINUM.

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

Station 178 Pressure Bulkhead Vertical Beams  
Figure 203 (Sheet 1 of 3)

**737-800  
STRUCTURAL REPAIR MANUAL**

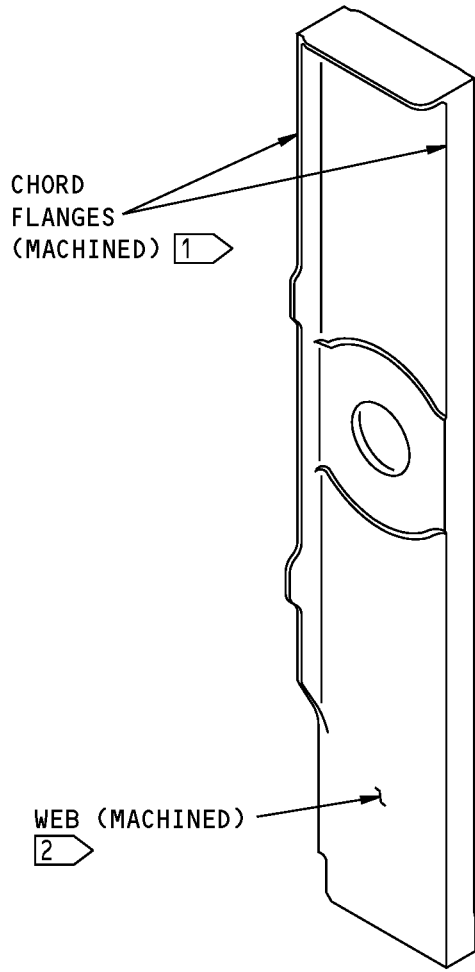


**LBL 17 VERTICAL BEAM**

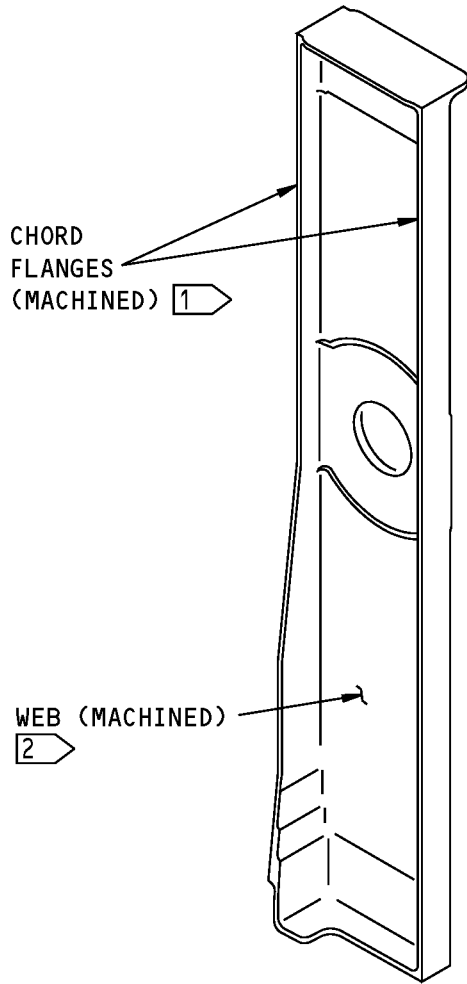
**RBL 17 VERTICAL BEAM**

**Station 178 Pressure Bulkhead Vertical Beams  
Figure 203 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**LBL 24 VERTICAL BEAM**



**RBL 24 VERTICAL BEAM**

**Station 178 Pressure Bulkhead Vertical Beams  
Figure 203 (Sheet 3 of 3)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

### 3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, ALLOWABLE DAMAGE 1	Station 178 Pressure Bulkhead
53-10-08, IDENTIFICATION 1	Station 178 Forward Pressure Bulkhead

### 4. Repair Instructions

- A. Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the station 178 forward pressure bulkhead shown in Station 178 Pressure Bulkhead Location, Figure 201/REPAIR 1, Station 178 Pressure Bulkhead Structure, Figure 202/REPAIR 1, and Station 178 Pressure Bulkhead Vertical Beams, Figure 203/REPAIR 1.

**NOTE:** If necessary, refer to 53-10-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

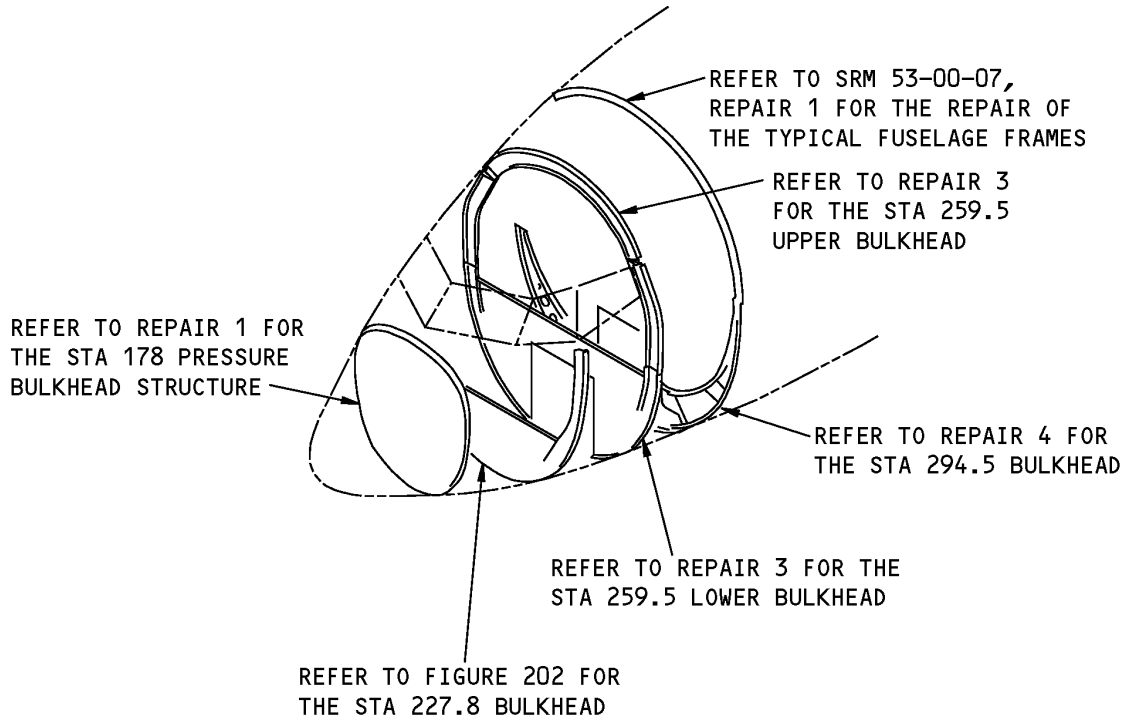
REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 178 FORWARD PRESSURE BULKHEAD	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Forged parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

**STRUCTURAL REPAIR MANUAL**

**REPAIR 2 - STATION 227.80 NOSE WHEEL WELL FORWARD BULKHEAD**

**1. Applicability**

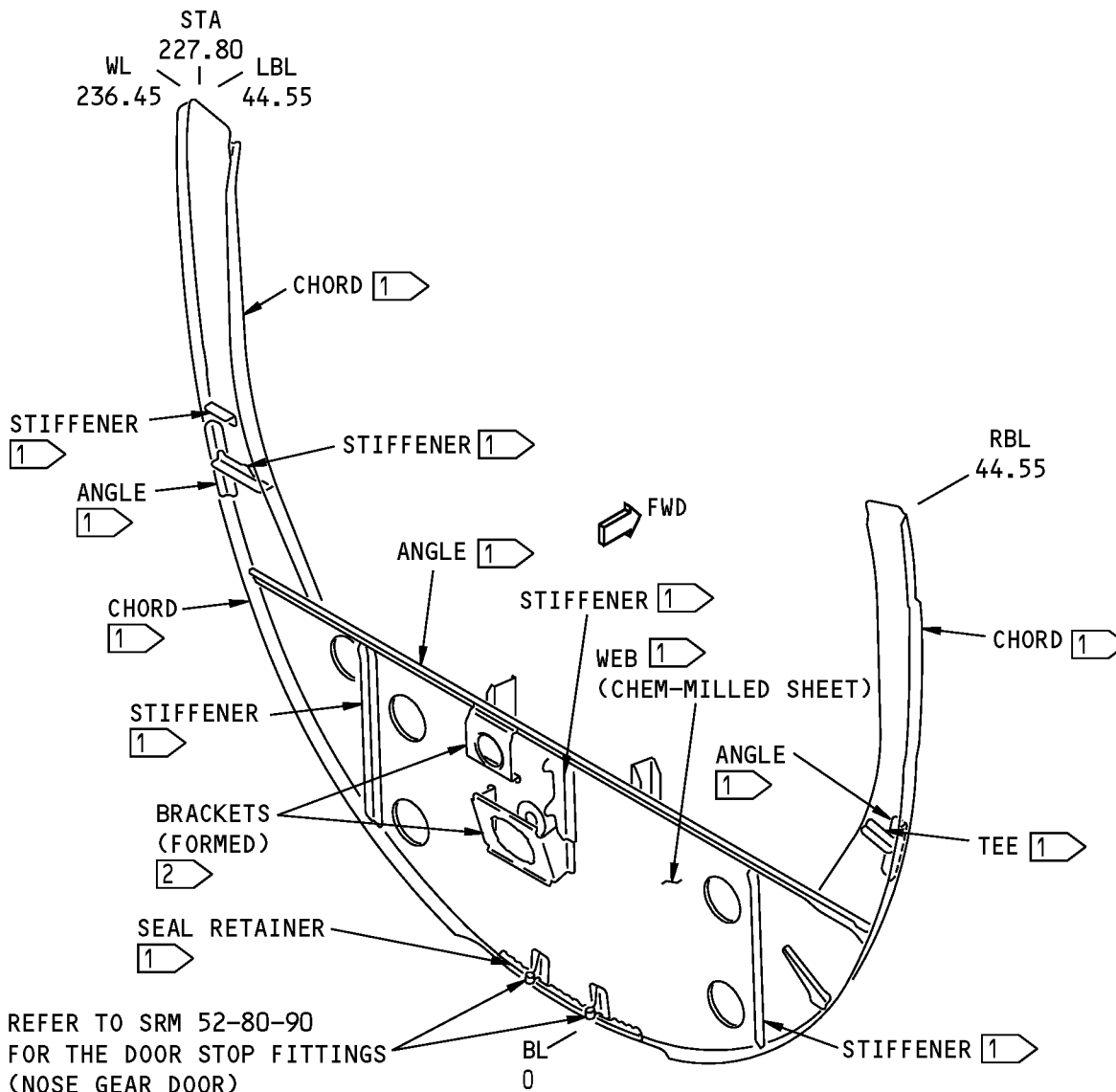
- A. Repair 2 is applicable to damage to the structure of the station 227.80 bulkhead shown in Station 227.80 Nose Wheel Well Forward Bulkhead Location, Figure 201/REPAIR 2 and Station 227.80 Bulkhead Structure, Figure 202/REPAIR 2.



**Station 227.80 Nose Wheel Well Forward Bulkhead Location  
Figure 201**



**737-800  
STRUCTURAL REPAIR MANUAL**



**VIEW LOOKING FORWARD**

**NOTES**

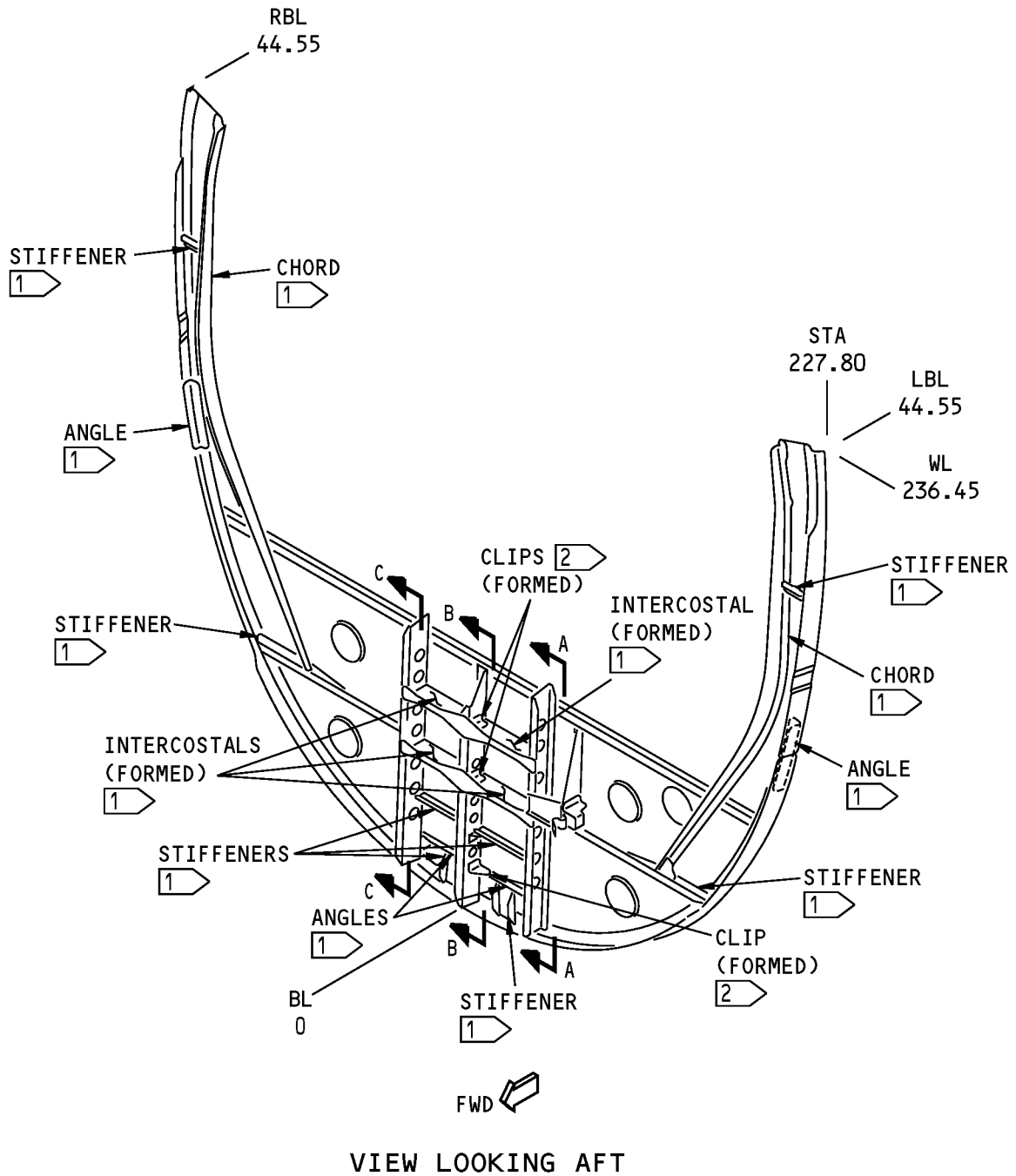
- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- ALL PARTS ARE EXTRUDED UNLESS OTHERWISE SPECIFIED.

1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.

2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. A REPAIR FOR THIS PART. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 2, REPLACE THE DAMAGED PART.

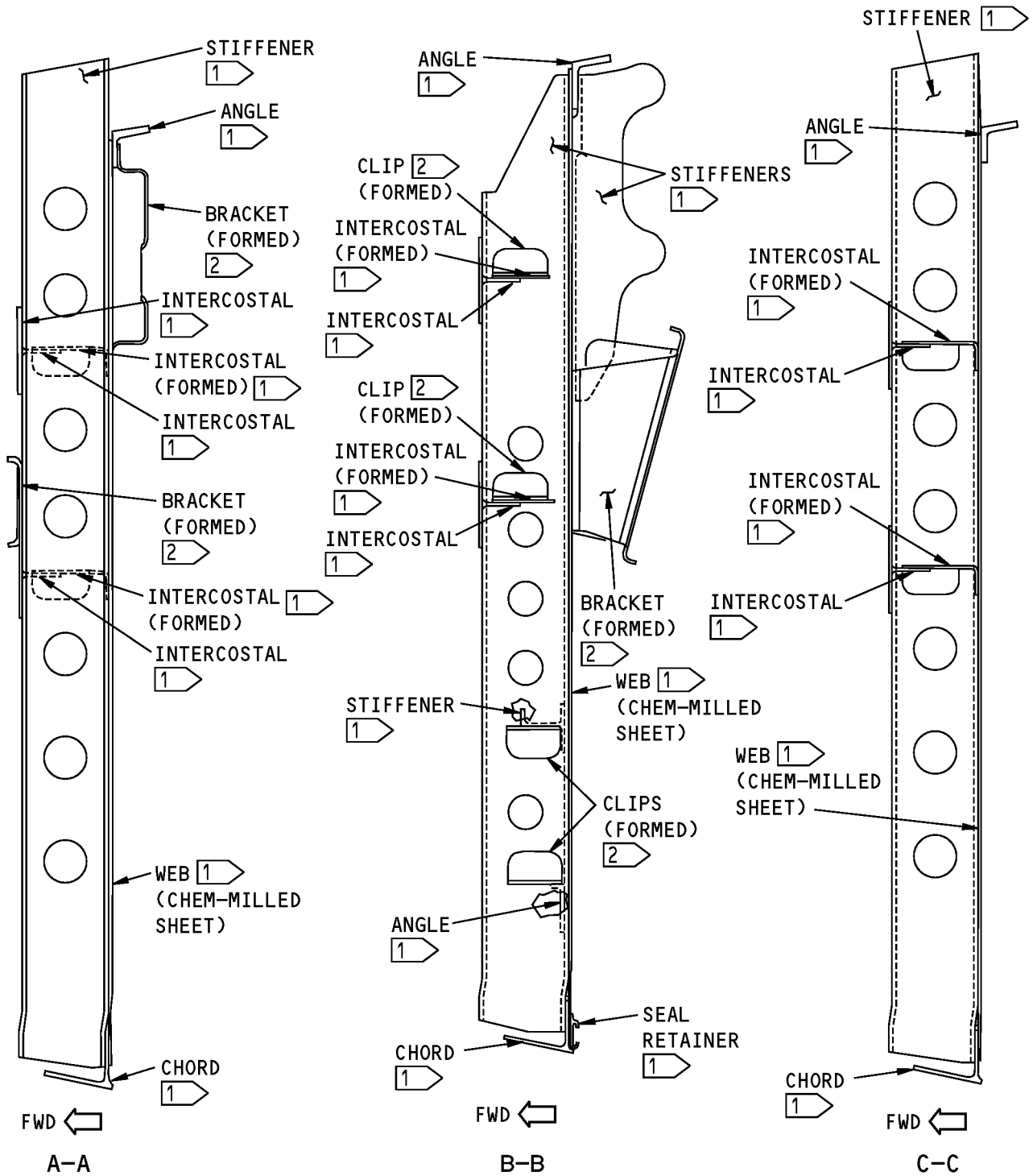
**Station 227.80 Bulkhead Structure  
Figure 202 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Station 227.80 Bulkhead Structure  
Figure 202 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



Station 227.80 Bulkhead Structure  
Figure 202 (Sheet 3 of 3)



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

### 3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, ALLOWABLE DAMAGE 2	Station 227.80 Nose Wheel Well Bulkhead
53-10-08, IDENTIFICATION 2	Station 227.8 Nose Wheel Well Forward Bulkhead

### 4. Repair Instructions

- A. Refer to Table 201/REPAIR 2 to find the applicable repair for a component of the station 227.80 bulkhead shown in Station 227.80 Nose Wheel Well Forward Bulkhead Location, Figure 201/REPAIR 2 and Station 227.80 Bulkhead Structure, Figure 202/REPAIR 2.

**NOTE:** If necessary, refer to 53-10-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

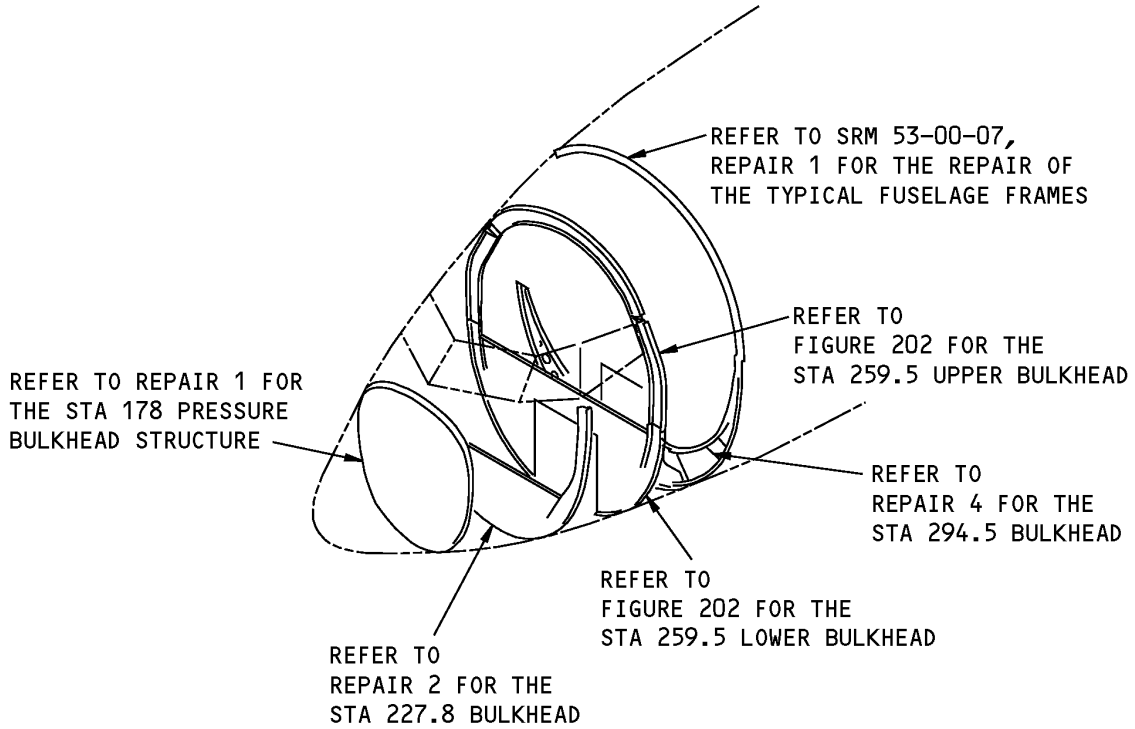
REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 227.80 BULKHEAD	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

**STRUCTURAL REPAIR MANUAL**

**REPAIR 3 - STATION 259.50 NOSE WHEEL WELL MIDDLE BULKHEAD**

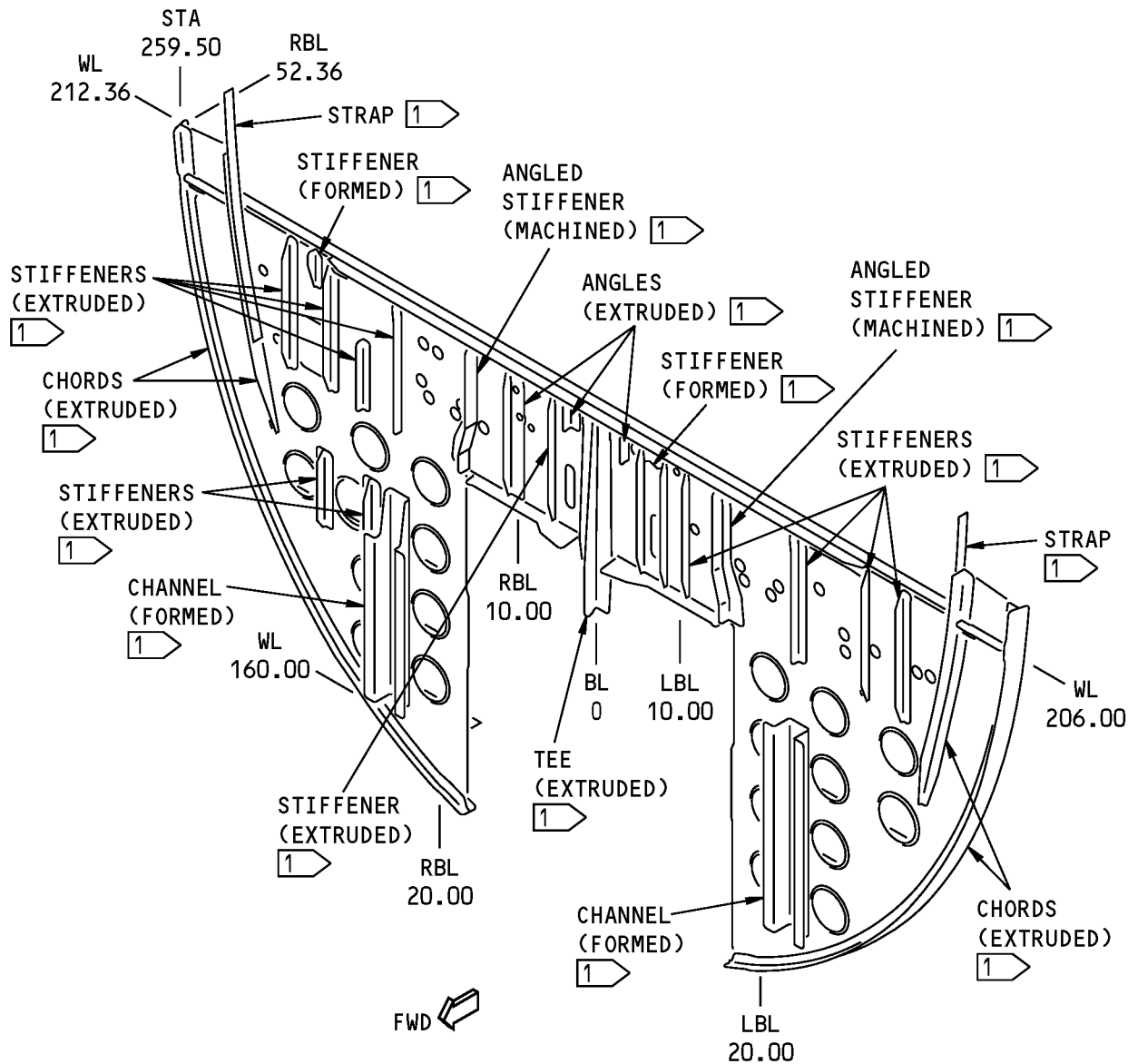
**1. Applicability**

- A. Repair 3 is applicable to damage to the structure of the station 259.50 bulkhead shown in Station 259.5 Nose Wheel Well Middle Bulkhead Location, Figure 201/REPAIR 3 and Station 259.50 Bulkhead Structure, Figure 202/REPAIR 3.



**Station 259.5 Nose Wheel Well Middle Bulkhead Location  
Figure 201**

STRUCTURAL REPAIR MANUAL



LOWER BULKHEAD

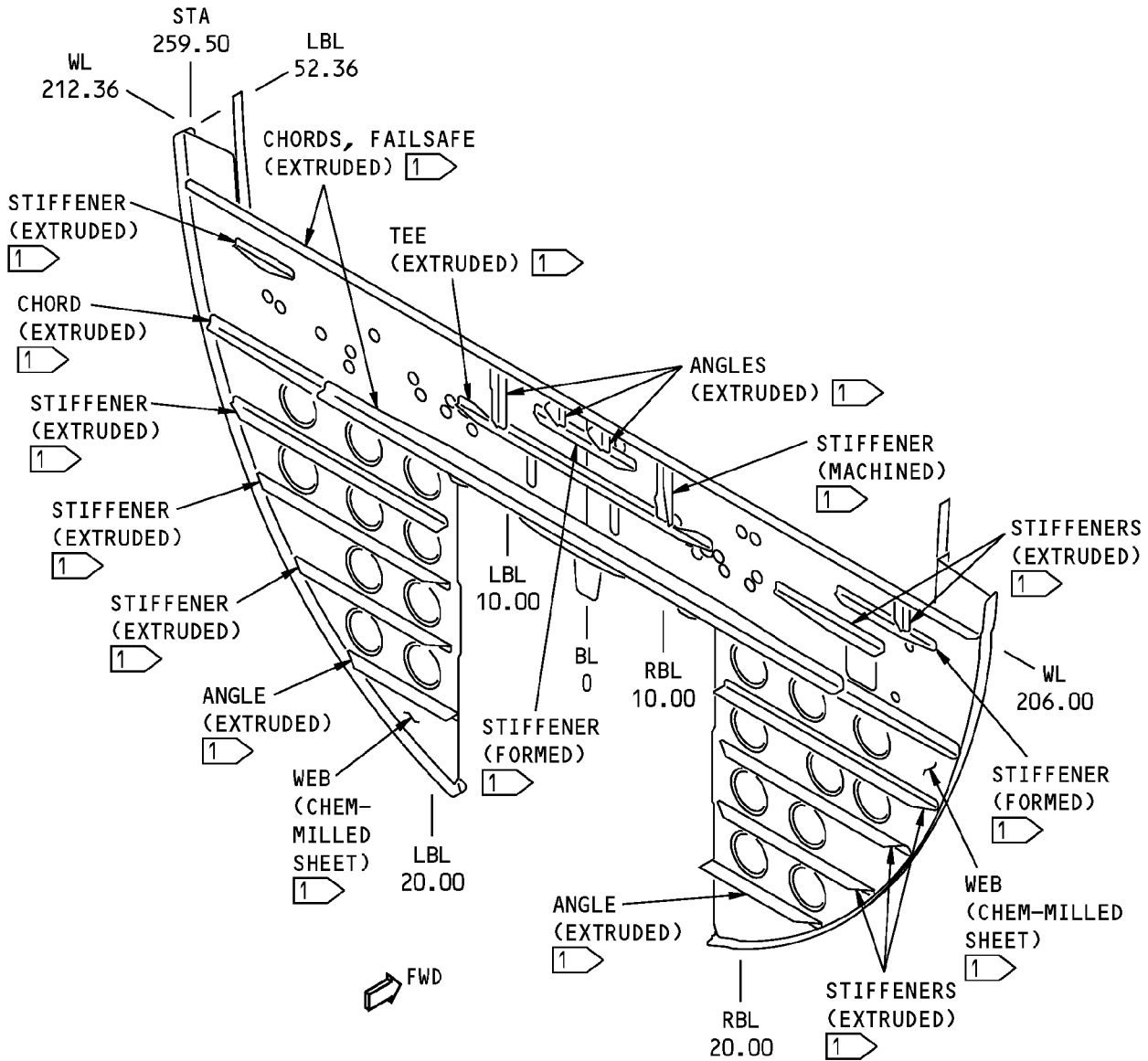
VIEW LOOKING AFT

NOTES

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.
- 3 REFER TO SRM 53-00-01 FOR THE REPAIR.

Station 259.50 Bulkhead Structure  
Figure 202 (Sheet 1 of 5)

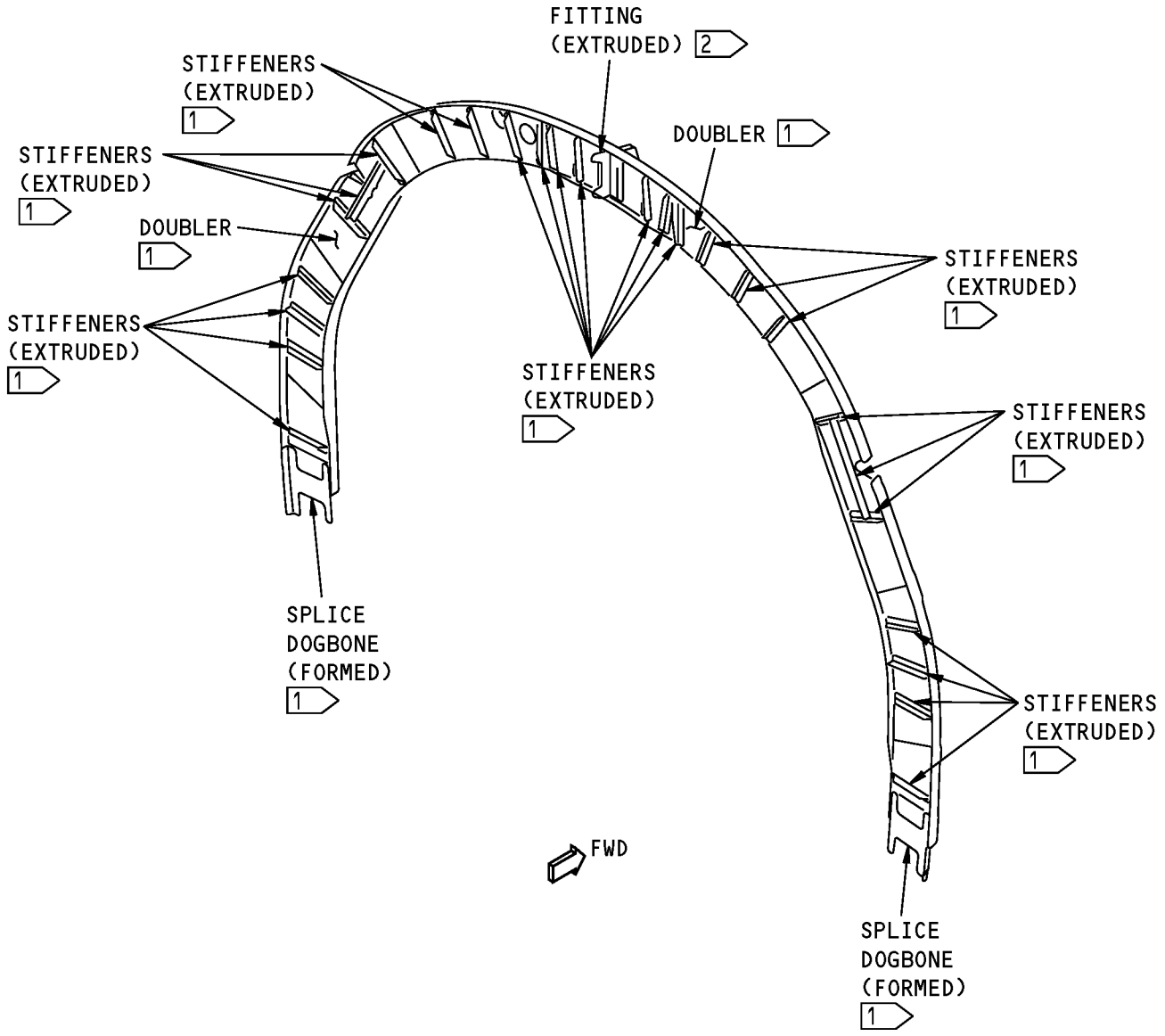
**737-800  
STRUCTURAL REPAIR MANUAL**



**LOWER BULKHEAD  
VIEW LOOKING FORWARD**

**Station 259.50 Bulkhead Structure  
Figure 202 (Sheet 2 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**

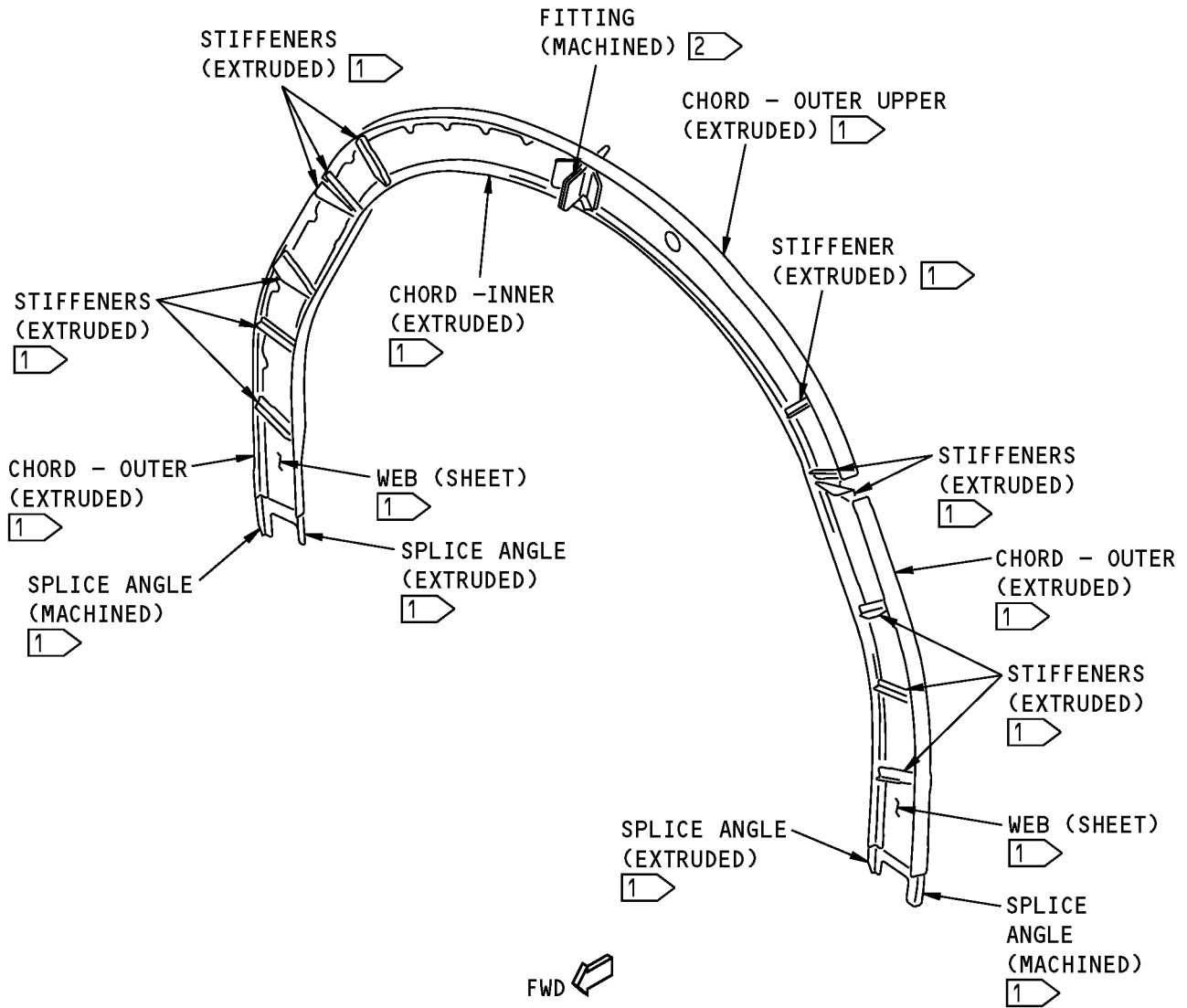


**UPPER BULKHEAD  
VIEW LOOKING FORWARD**

**Station 259.50 Bulkhead Structure  
Figure 202 (Sheet 3 of 5)**



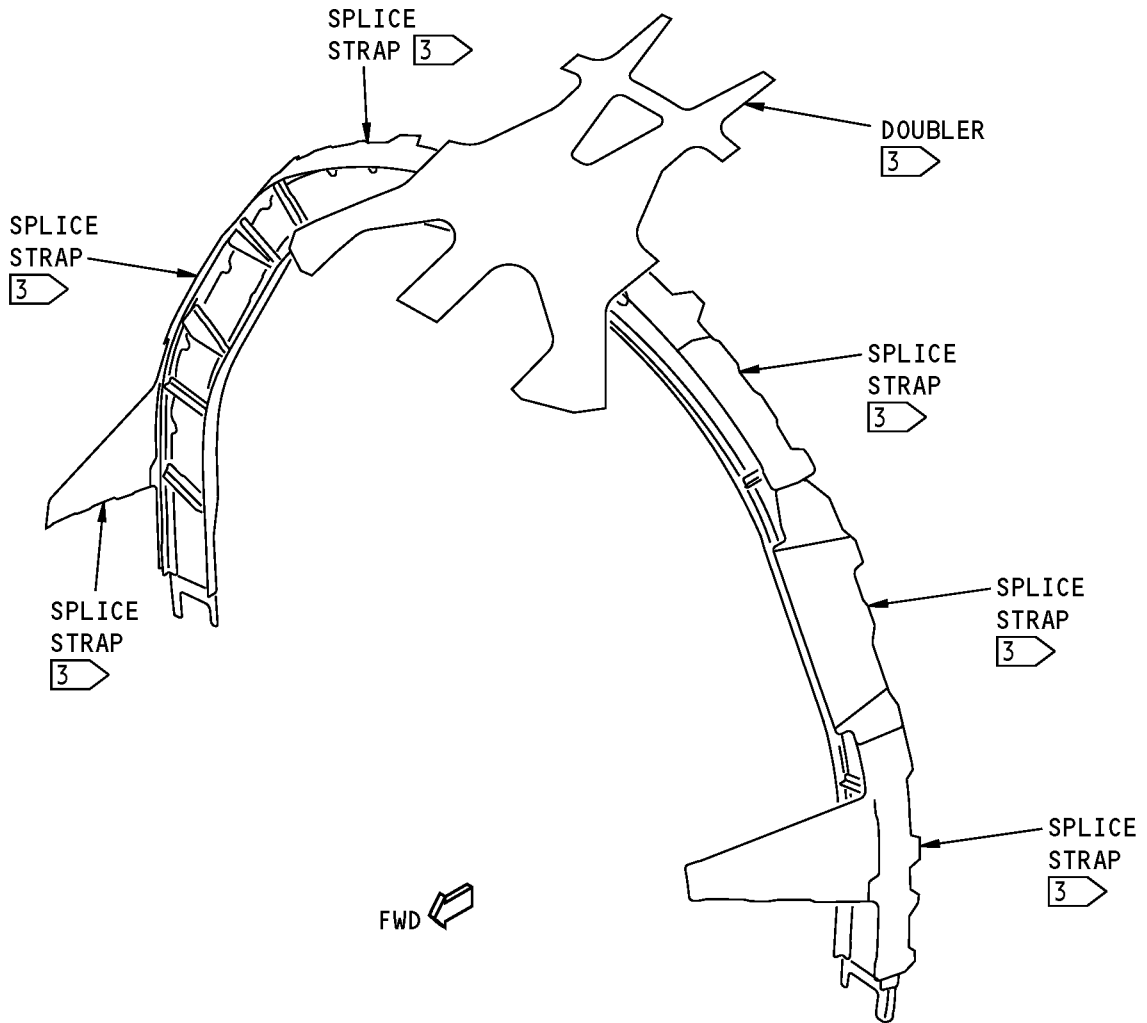
**737-800  
STRUCTURAL REPAIR MANUAL**



**UPPER BULKHEAD  
VIEW LOOKING AFT**

**Station 259.50 Bulkhead Structure  
Figure 202 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



**UPPER BULKHEAD – SPLICES  
VIEW LOOKING AFT**

**Station 259.50 Bulkhead Structure  
Figure 202 (Sheet 5 of 5)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-00-07, REPAIR 1	Fuselage Zee Frames
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, IDENTIFICATION 3	Station 259.50 Bulkhead Structure

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 3 to find the applicable repair for a component of the station 259.50 bulkhead shown in Station 259.5 Nose Wheel Well Middle Bulkhead Location, Figure 201/REPAIR 3 and Station 259.50 Bulkhead Structure, Figure 202/REPAIR 3.

**NOTE:** If necessary, refer to 53-10-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

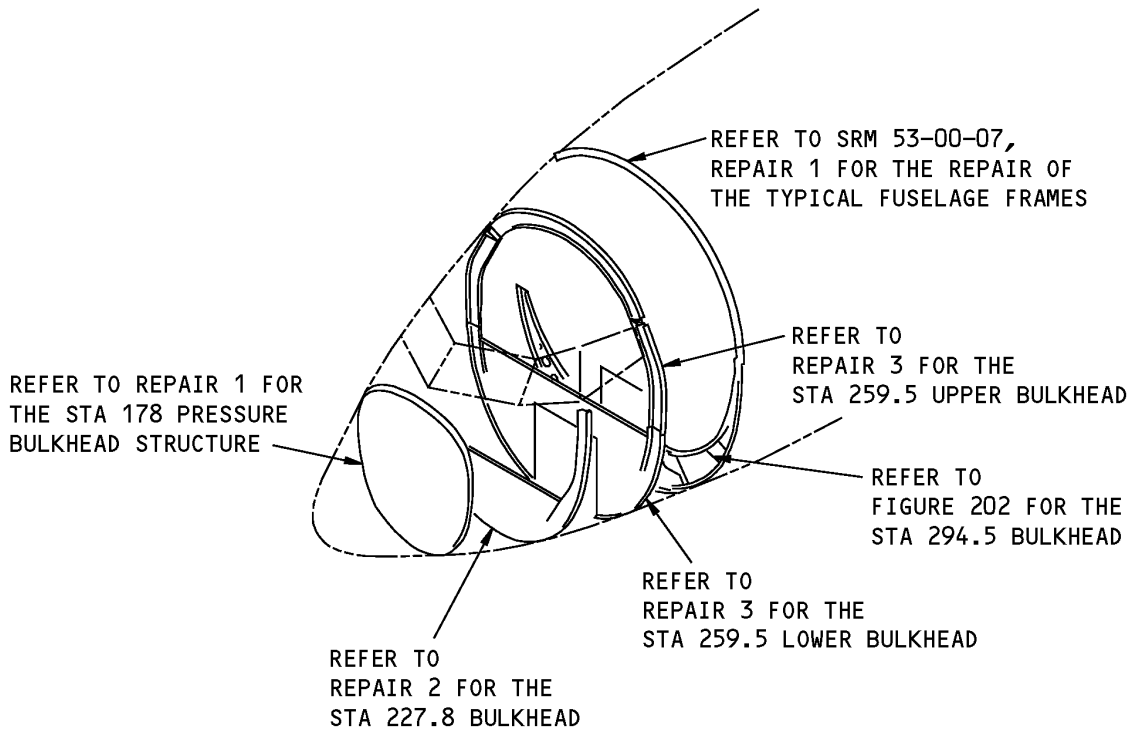
REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 259.50 BULKHEAD	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

**STRUCTURAL REPAIR MANUAL**

**REPAIR 4 - STATION 294.50 NOSE WHEEL WELL AFT BULKHEAD**

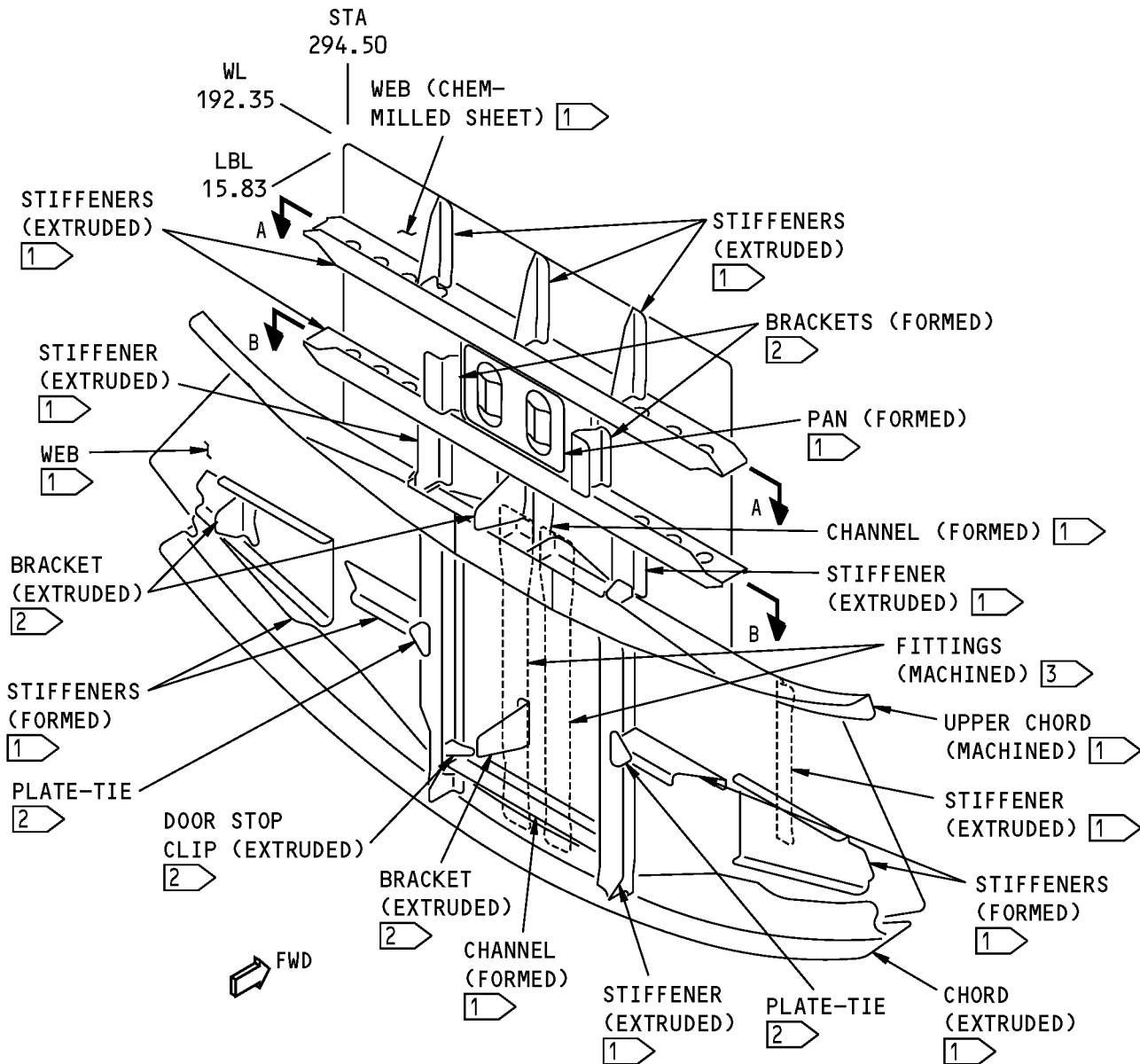
**1. Applicability**

- A. Repair 4 is applicable to damage to the structure of the station 294.50 bulkhead shown in Station 294.5 Nose Wheel Well aft Bulkhead Location, Figure 201/REPAIR 4 and Station 294.50 Bulkhead Structure, Figure 202/REPAIR 4.



**Station 294.5 Nose Wheel Well aft Bulkhead Location  
Figure 201**

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STRUCTURAL REPAIR MANUAL**



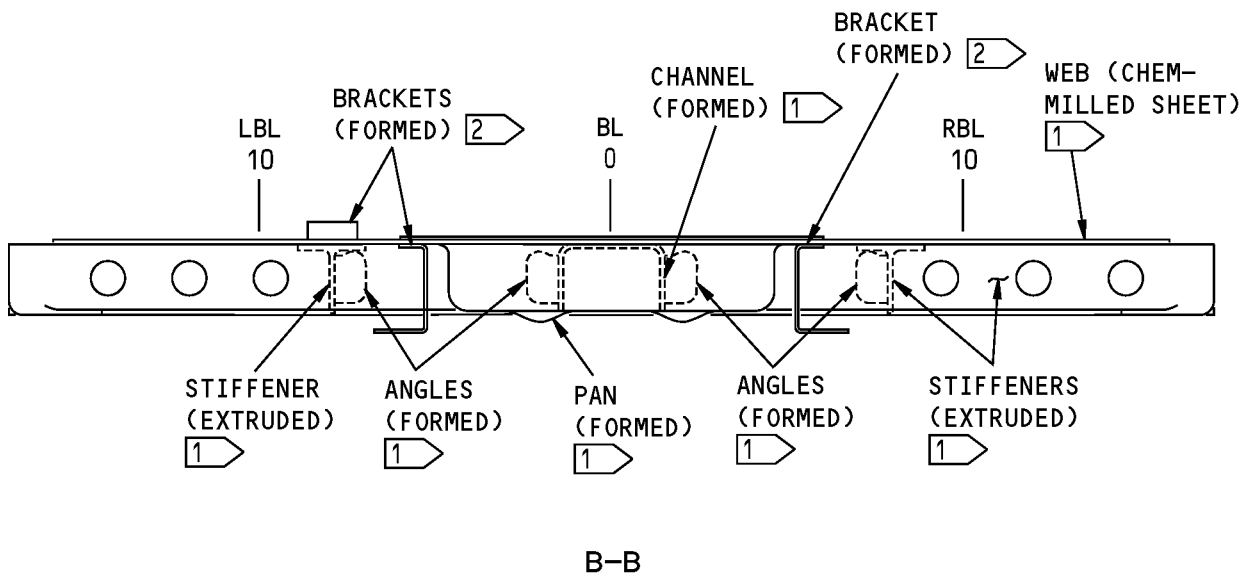
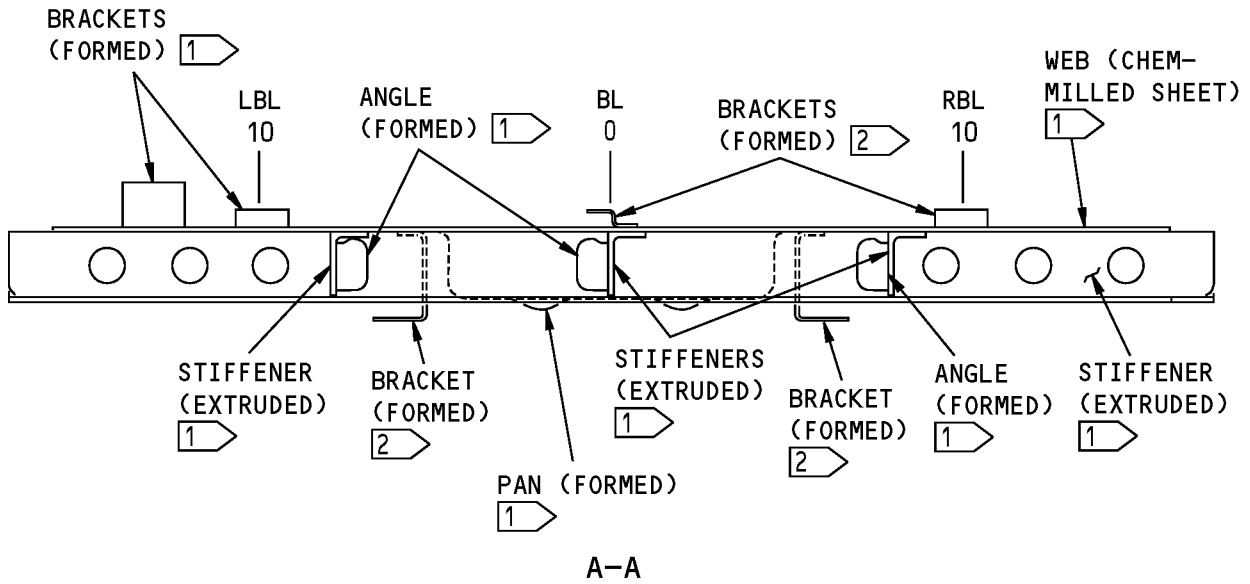
**NOTES**

- ALL PARTS ARE MADE OF ALUMINUM

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE ALLOWABLE DAMAGE LIMITS GIVEN IN SRM 53-10-08, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGED PART.
- 3 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

**Station 294.50 Bulkhead Structure  
Figure 202 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Station 294.50 Bulkhead Structure  
Figure 202 (Sheet 2 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-08	FUSELAGE BULKHEADS - SECTION 41
53-10-08, IDENTIFICATION 4	Station 294.5 Nose Wheel Well Aft Bulkhead

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 4 to find the applicable repair for a component of the station 294.50 bulkhead shown in Station 294.5 Nose Wheel Well aft Bulkhead Location, Figure 201/REPAIR 4 and Station 294.50 Bulkhead Structure, Figure 202/REPAIR 4.

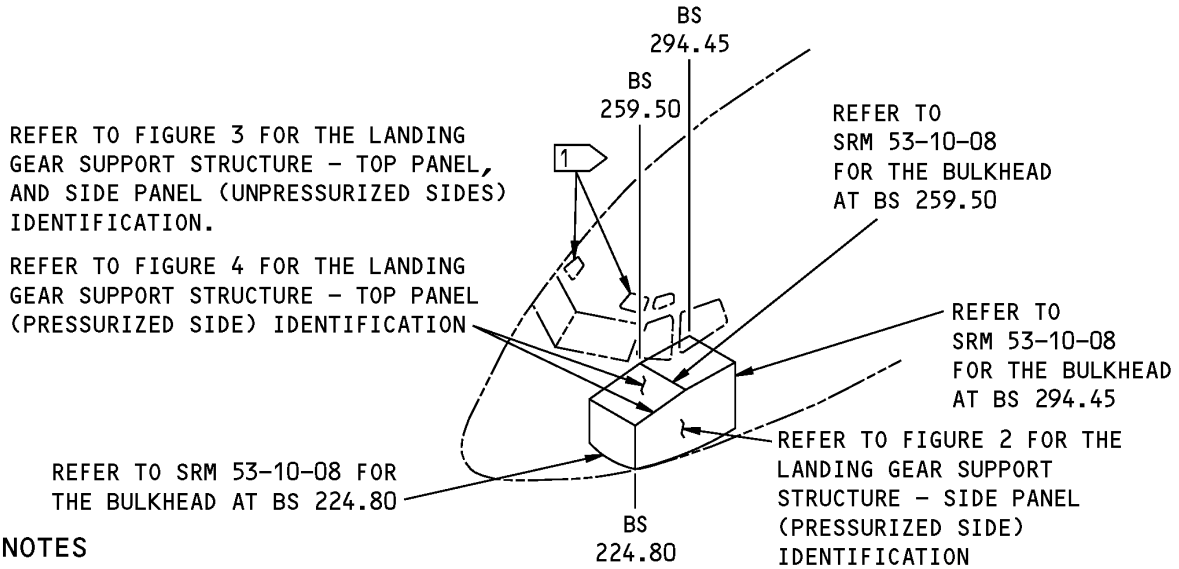
**NOTE:** If necessary, refer to 53-10-08, Identification 4 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE STRUCTURE OF THE STATION 294.50 BULKHEAD	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded and Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**1** NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

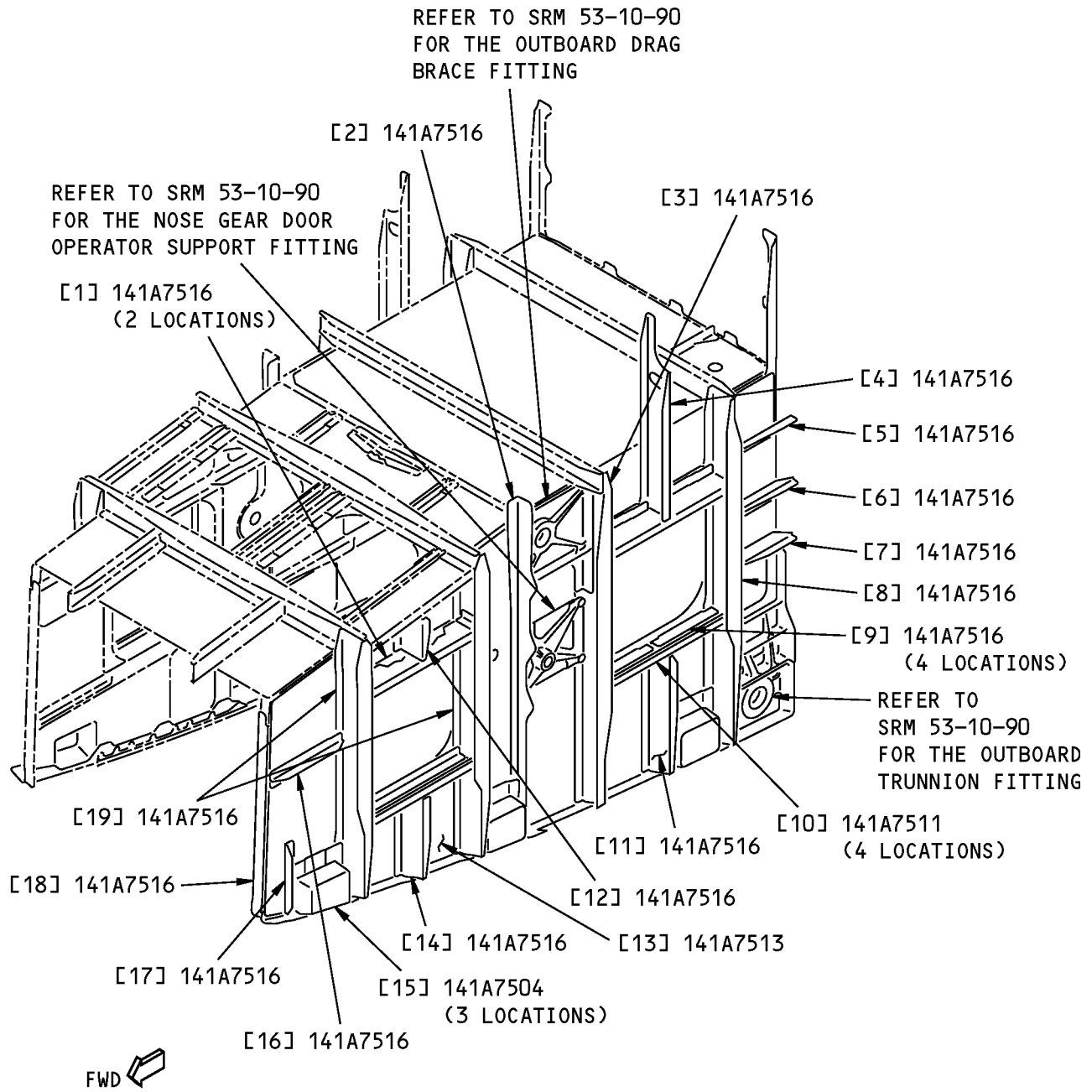
**Section 41 Landing Gear Support Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A7500	Side Panel Installation - Nose Wheel Well
141A7600	Top Panel Installation - Nose Wheel Well
141A7650	Nose Landing Gear Retract Actuator Support Installation



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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 41 Landing Gear Support Structure - Side Panel (Pressurized Side) Identification  
Figure 2**



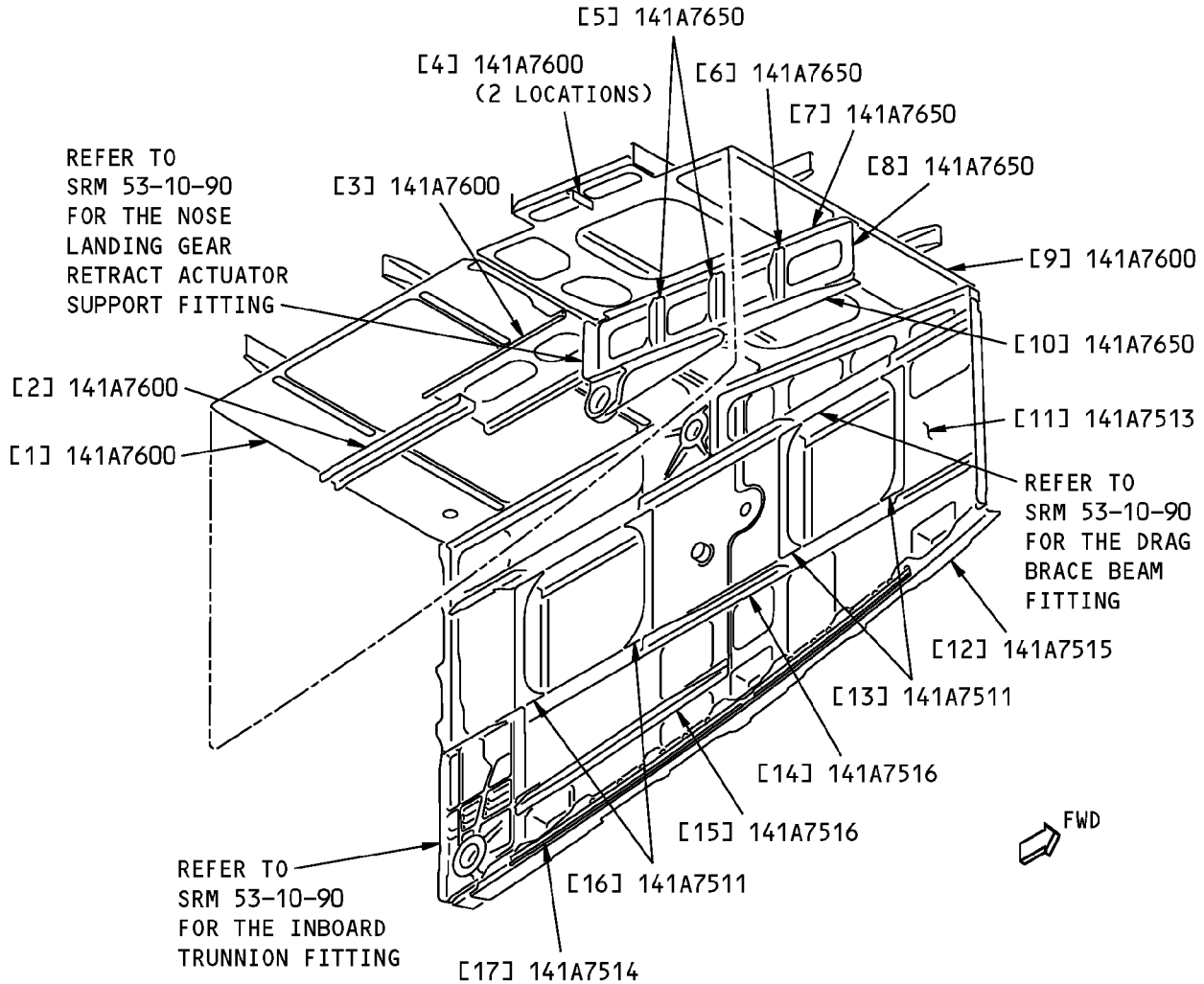
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Angle		BAC1503-100777 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Vertical Beam		BAC1506-4376 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Vertical Beam		BAC1518-1187 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Vertical Beam		BAC1506-4375 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Angle		BAC1503-100658 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Tee		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Tee		BAC1505-100690 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Vertical Beam		BAC1518-1187 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1503-100777 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Intercostal	0.050 (12.7)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Vertical Beam		BAC1506-4375 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Vertical Beam		BAC1517-486 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[14]	Vertical Beam		BAC1506-1779 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Hinge Bracket Support		7075-T73 die forging as given in BMS 7-186	
[16]	Tee		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		AND10133-1202 7075-T73511 extrusion as given in QQ-A-200/11	
[18]	Forward Chord		BAC1503-4162 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Vertical Beam		BAC1518-403 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 41 Landing Gear Support Structure - Top Panel, and Side Panel (Unpressurized Sides) Identification Figure 3**



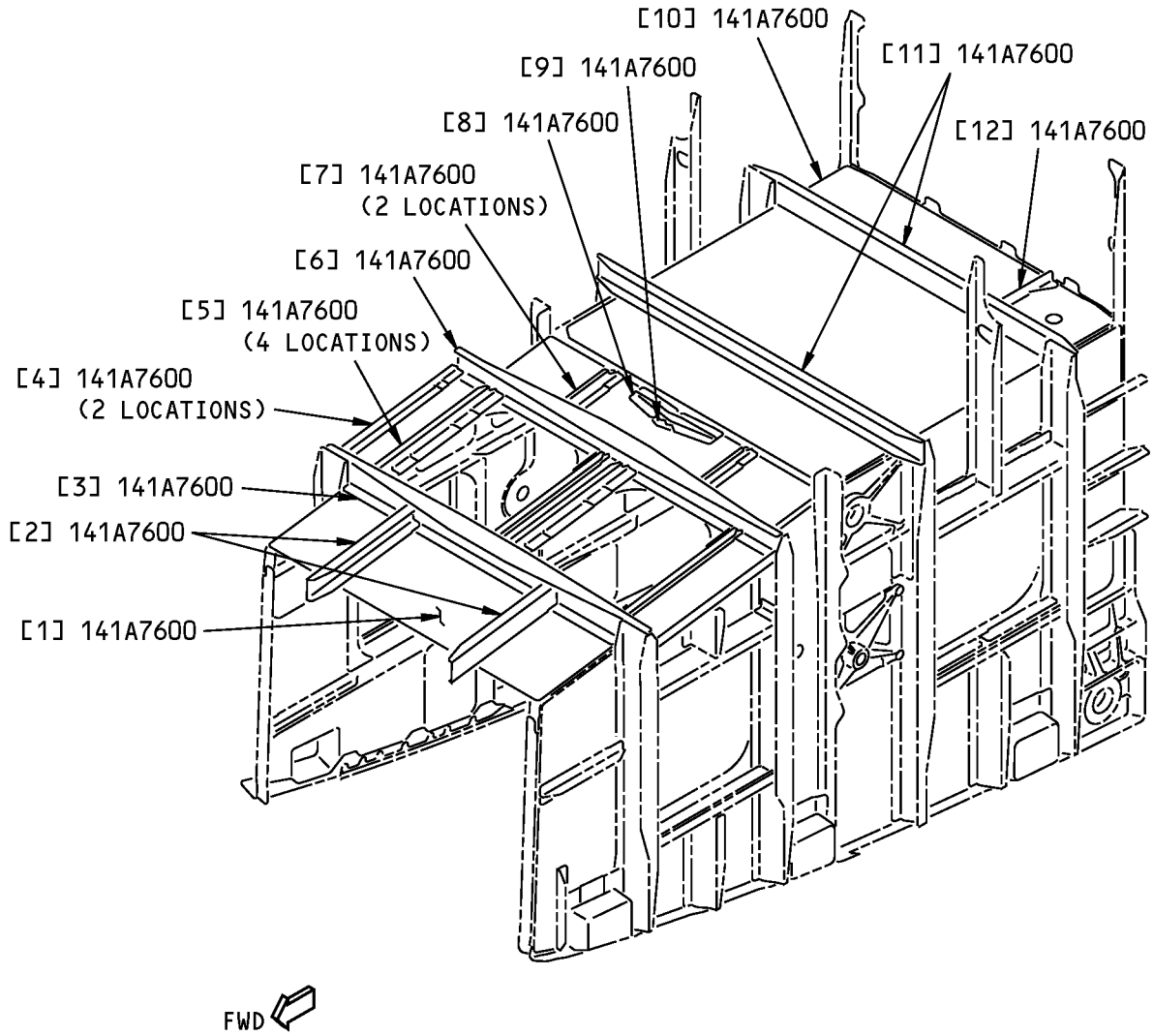
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[2]	Channel		AND10137-2004 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Doubler	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5.	
[4]	Clip		BAC1489-118 7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1506-4340 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		AND10134-1206 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Upper Chord		BAC1506-4310 2024-T3511 extrusion as given in QQ-A-200/3	
[8]	Web	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/5 that is machined or chem-milled as given in BAC 5772, Type II to (+ or -) 0.0100 inch in the pocket areas	
[9]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[10]	Lower Chord		BAC1506-4309 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[12]	Lower Chord	0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Strap	0.100 (2.54)	2024-T3 clad as given in QQ-A-250/5	
[14]	Tee		BAC1505-10124 2024-T3511 extrusion as given in QQ-A-200/3	
[15]	Canted Tee		BAC1505-101666 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Strap	0.125 (3.18)	2024-T3 clad as given in QQ-A-250/5	
[17]	Seal Retainer		BAC1520-1372 6061-T42 as given in QQ-A-200/8	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 41 Landing Gear Support Structure - Top Panel (Pressurized Side) Identification  
Figure 4**



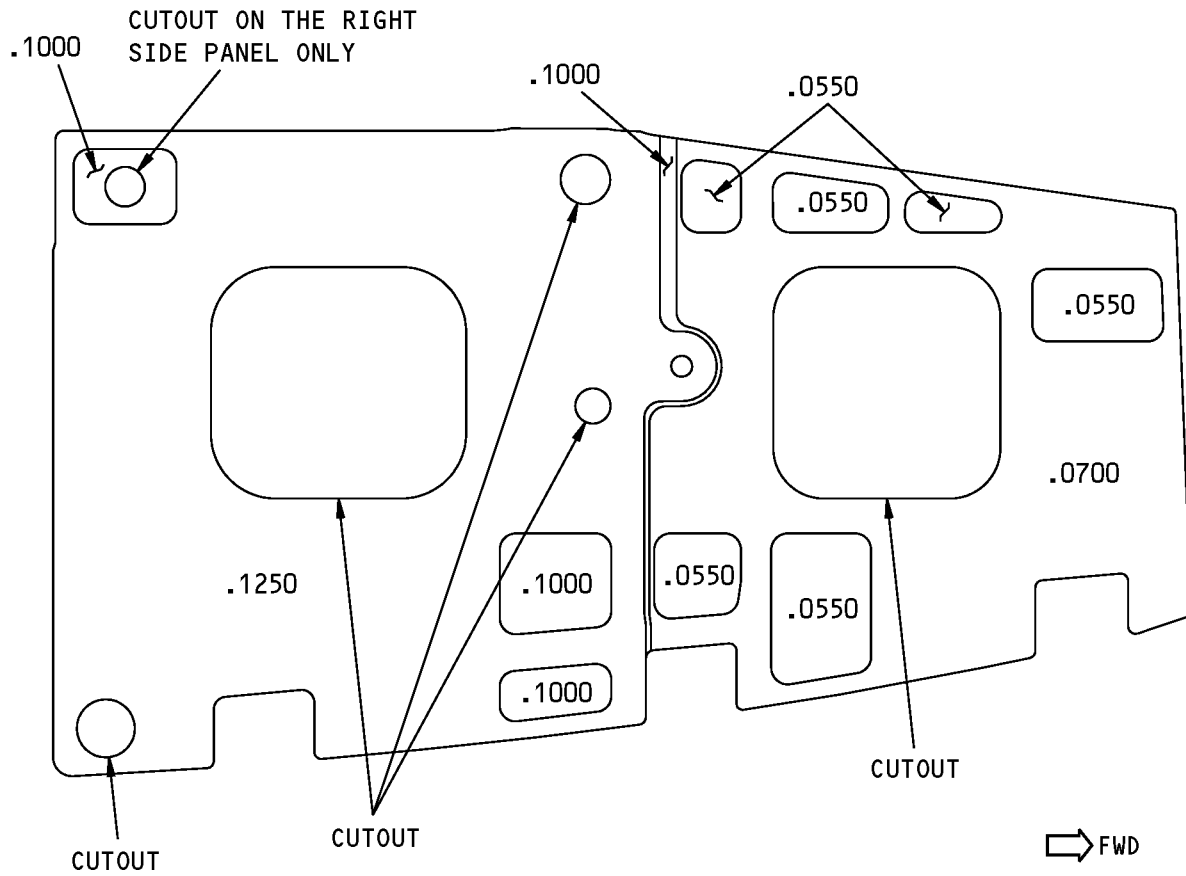
**737-800  
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[2]	Stiffener		BAC1509-100678 7075-T73511 extruded bar, ultrasonic inspected as given in BAC 5439, Class A. (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[3]	Horizontal Beam		BAC1518-1222 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Stiffener		BAC1503-101043 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1517-2792 7075-T73511 extruded bar, ultrasonic inspected as given in BAC 5439, Class A. (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[6]	Horizontal Beam		BAC1518-1221 2024-T3511 extrusion as given in QQ-A-200/3	
[7]	Stiffener		BAC1506-4447 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		AND10136-3001 7075-T73 extrusion as given in QQ-A-200/11	
[9]	Filler	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Web	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[11]	Horizontal Beam		AND10137-2202 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1505-100037 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

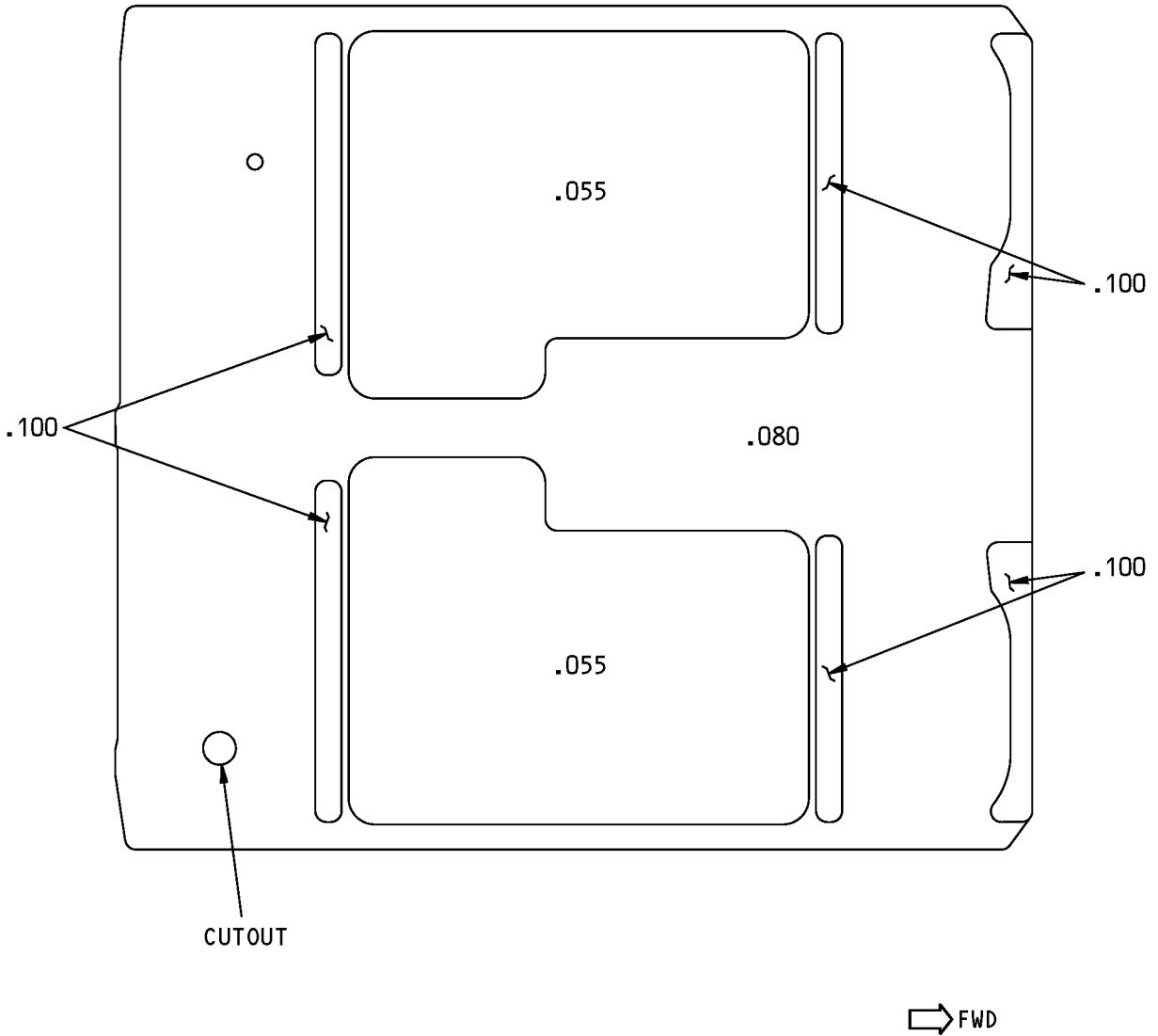
**737-800  
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LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE (EXCEPT AS SHOWN)

**Chem-Milled Areas of Figure 2, Item [13] and Figure 3, Item [11]  
Figure 5**

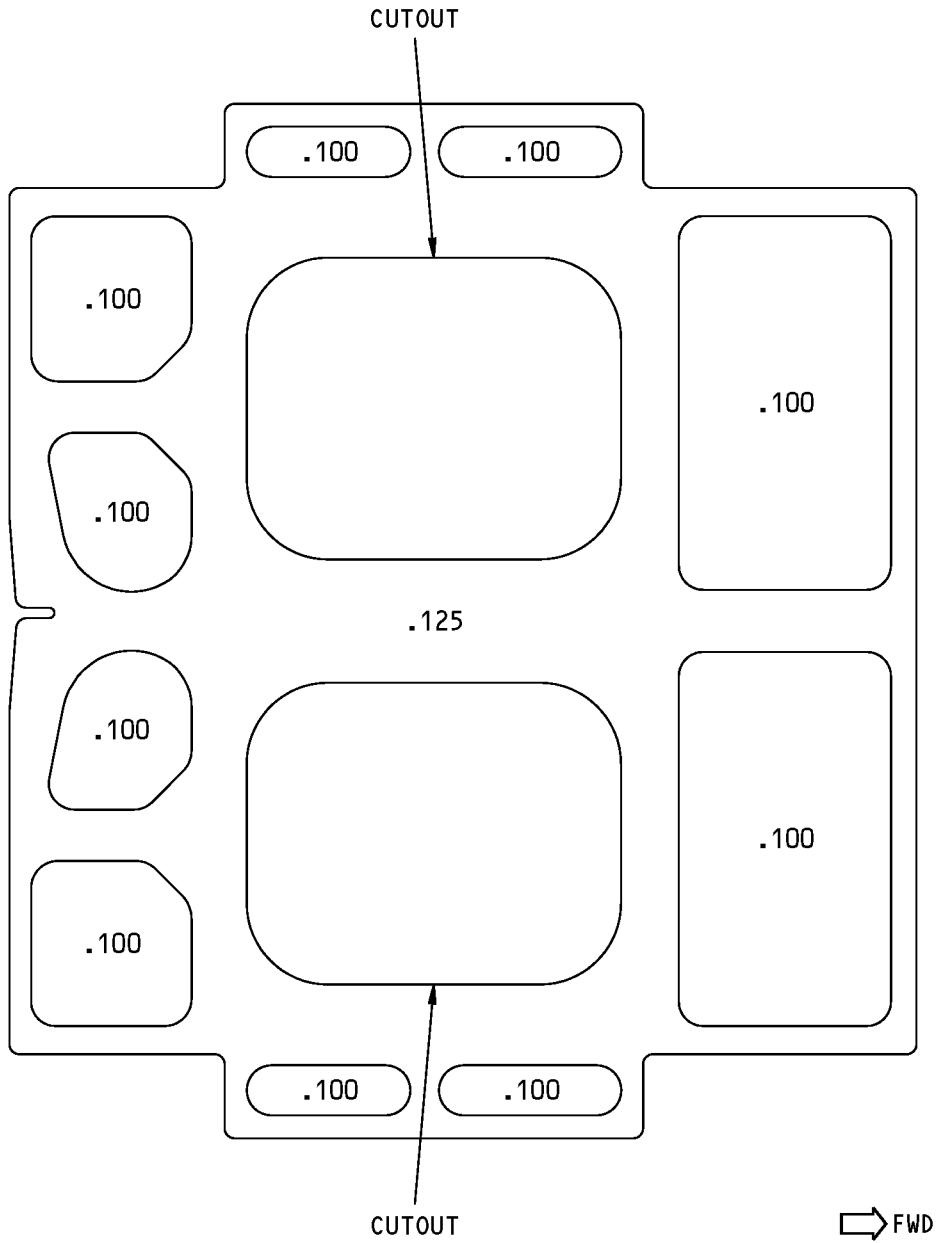
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**Chem-Milled Areas of Figure 3, Item [1] and Figure 4, Item [10]  
Figure 6**



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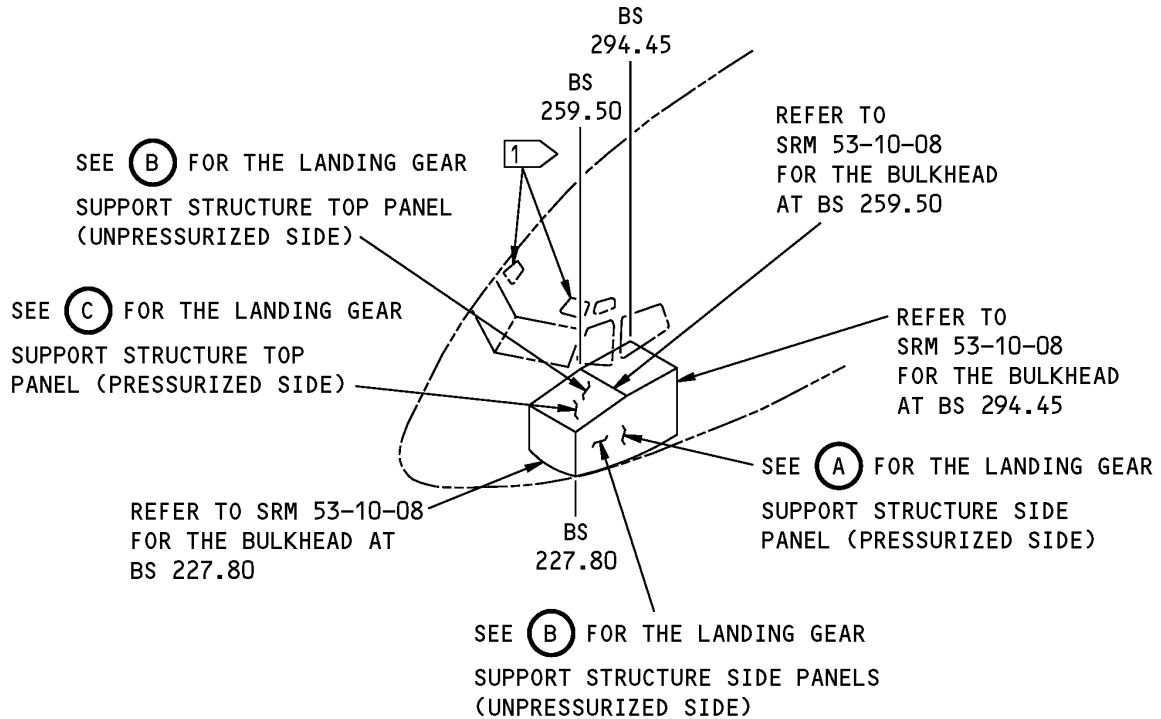
**Chem-Milled Areas of Figure 3, Item [9] and Figure 4, Item [1]  
Figure 7**

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**ALLOWABLE DAMAGE 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION**

**1. Applicability**

- A. This subject gives the allowable damage limits for the landing gear support structure shown in Section 41 Landing Gear Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1.

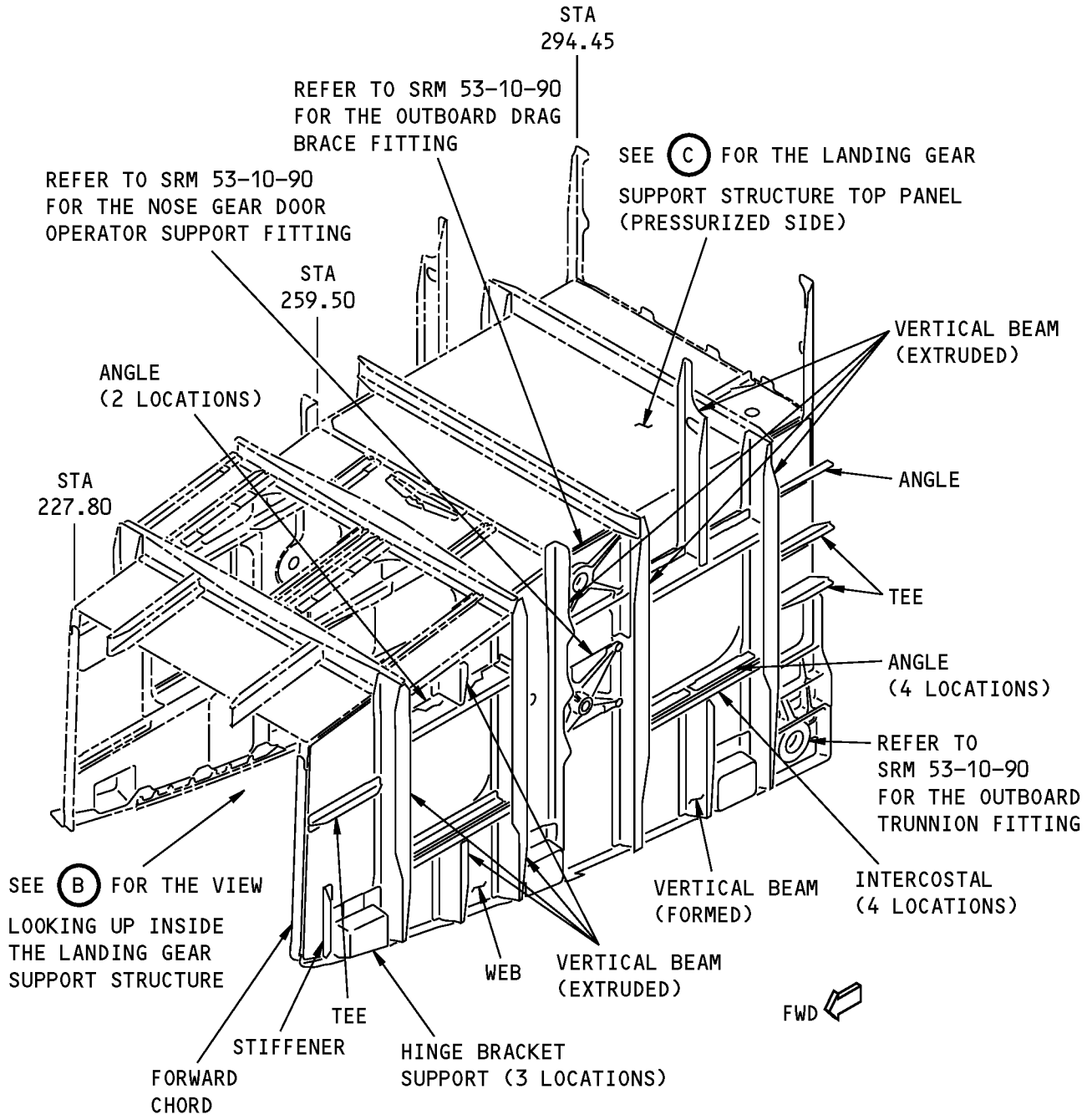


**NOTES**

- 1) NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Landing Gear Support Structure Location  
Figure 101 (Sheet 1 of 4)**

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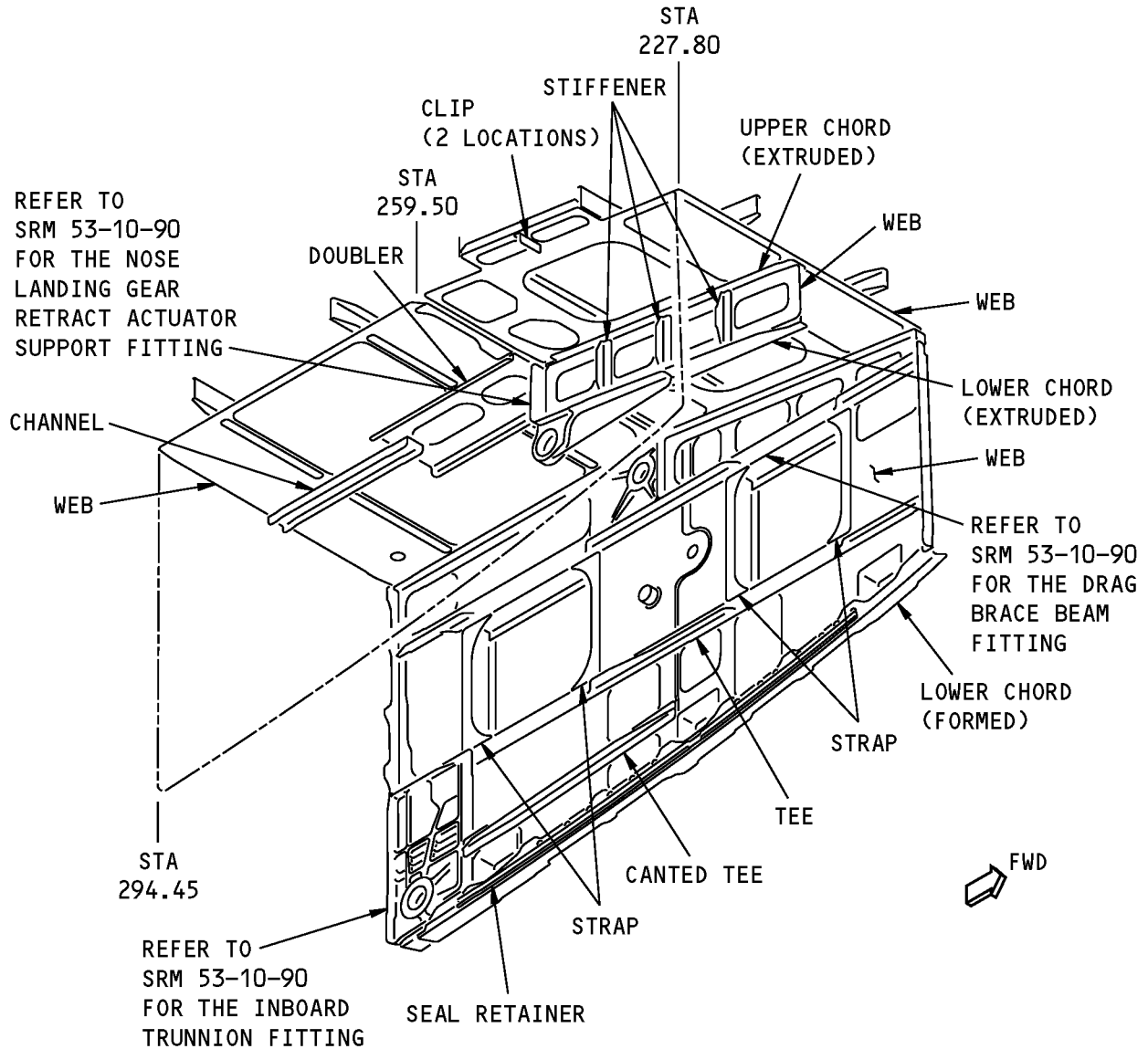


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
SIDE PANEL (PRESSURIZED SIDE)

(A)

Section 41 Landing Gear Support Structure Location  
Figure 101 (Sheet 2 of 4)

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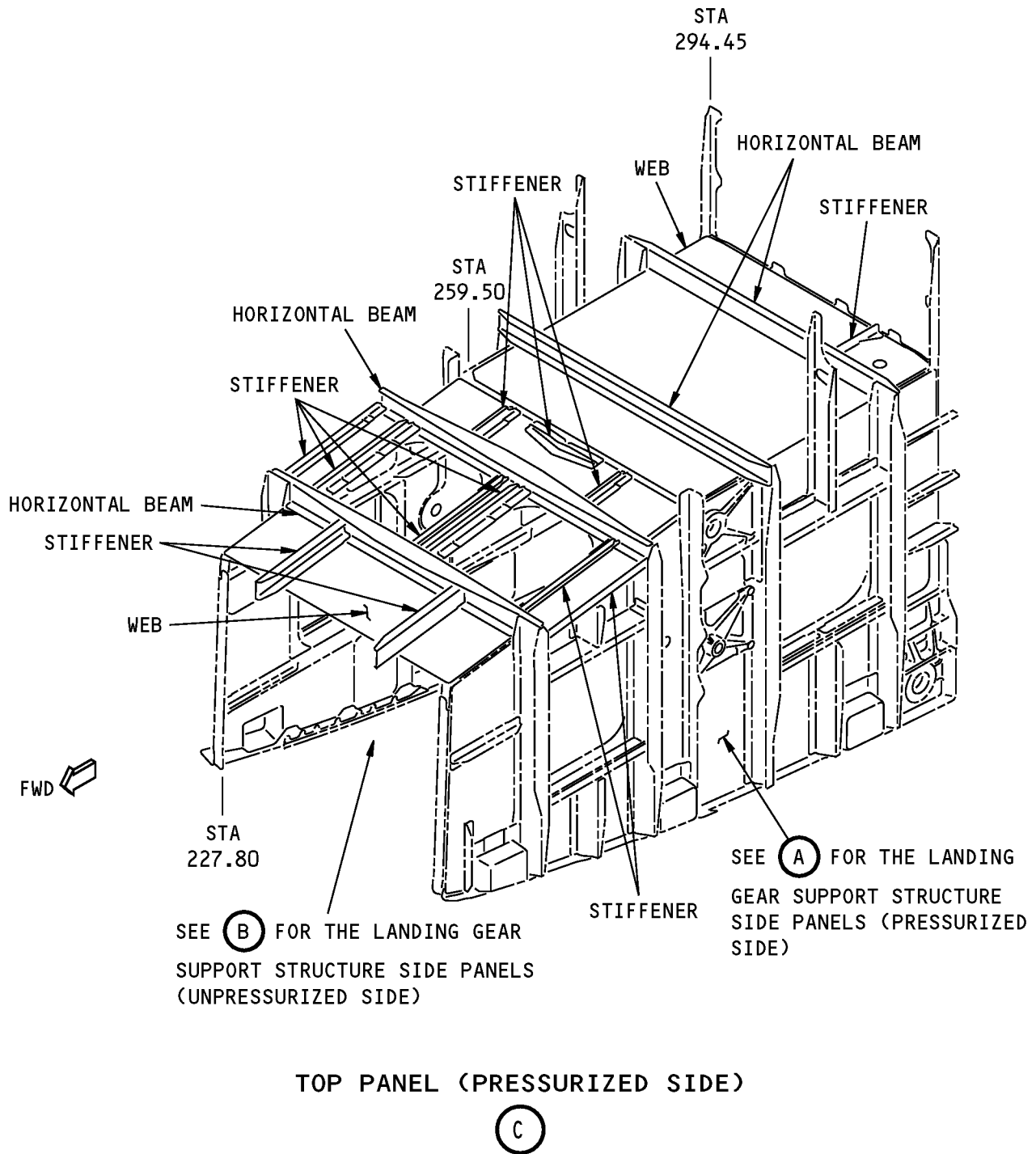


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE  
TOP AND SIDE PANELS (UNPRESSURIZED SIDE)

(B)

**Section 41 Landing Gear Support Structure Location  
Figure 101 (Sheet 3 of 4)**

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**Section 41 Landing Gear Support Structure Location  
Figure 101 (Sheet 4 of 4)**



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### 2. General

- A. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
- C. Apply one layer of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.
- D. The above procedures do not apply to dent damage.
  - (1) Dents can have an "oil can condition". An "oil can condition" is a deflection that occurs in the webs of the side and top panels of the landing gear support structure when the cabin goes through the pressurization/depressurization cycle.
  - (2) An "oil can condition" at a dent is not permitted.

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-10-90, ALLOWABLE DAMAGE 1	Nose Landing Gear Support Structure Fittings
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-10-03	General - Shot Peening Procedures
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

- A. Side Panels (Pressurized Side)
    - (1) Hinge Bracket Supports
      - (a) Cracks are not permitted.
      - (b) Nicks, Gouges, Scratches, and Corrosion:
        - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
- WARNING: MAKE SURE THAT YOU WEAR EYE PROTECTION WHEN YOU USE THE FLAP PEEN WHEEL. IF YOU DO NOT OBEY, AN INJURY CAN OCCUR.**
- 2) Flap peen or shot peen the surfaces if you remove the damage from the hinge bracket supports.
    - a) Refer to 51-20-06 for shot peen intensity and shot number.
    - b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.
  - (c) Dents are not permitted.

**STRUCTURAL REPAIR MANUAL**

- (d) Holes and Punctures are not permitted.
- (2) Angles, Stiffeners, and Forward Chords
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) Tees
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and I .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (4) Webs
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .
    - 2) Damage that does not go through the clad surface is permitted.
  - (c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:
    - 1) They do not extend across an attached structure
    - 2) There is not an "oil can condition".
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum diameter of 0.25 inch
    - 2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.
- (5) Extruded Vertical Beams
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (6) Formed Vertical Beams
  - (a) Cracks are not permitted.



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## STRUCTURAL REPAIR MANUAL

- (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and G .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (7) Intercostals
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are permitted in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .
  - (e) In web areas, Holes and Punctures are permitted if they are:
    - 1) A maximum diameter of 0.25 inch
    - 2) A minimum of 1.00 inch away from the edge of a hole, other damage, or part edge
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.
- B. Top and Side Panels (Unpressurized Sides)
- (1) Channels and Extruded Chords
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (2) Tees
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and I .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) Stiffeners
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
  - (c) Dents are not permitted.

ALLOWABLE DAMAGE 1

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## STRUCTURAL REPAIR MANUAL

- (d) Holes and Punctures are permitted only in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .
  - (4) Formed Chords, Seal Retainers, and Clips
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and G .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are permitted only in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .
  - (5) Doublers, Webs, and Straps
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .
      - 2) Damage that does not go through the clad surface is permitted.
    - (c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:
      - 1) They do not extend across an attached structure
      - 2) There is not an "oil can condition".
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum diameter of 0.25 inch
      - 2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius of a web
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.
- C. Top Panel (Pressurized Side)
- (1) Horizontal Beams
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Stiffeners
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and K .
    - (c) Dents are not permitted.

ALLOWABLE DAMAGE 1

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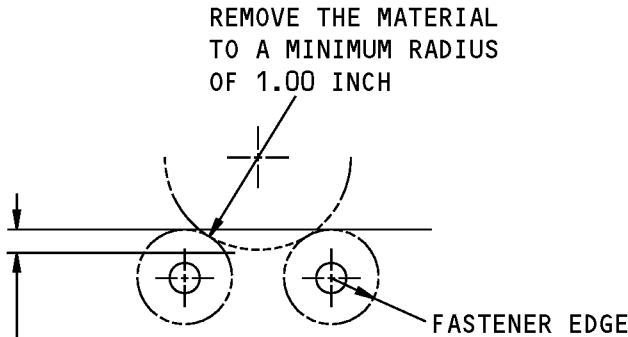


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## STRUCTURAL REPAIR MANUAL

- (d) Holes and Punctures are permitted in the free flange as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail J .
- (3) Webs
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , E , and H .
    - 2) Damage that does not go through the clad surface is permitted.
  - (c) Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail D if:
    - 1) They do not extend across an attached structure
    - 2) There is not an "oil can condition".
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum diameter of 0.25 inch
    - 2) A minimum of 1.00 inch away from the edge of a hole, other damage, part edge, or chem-milled radius
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum protruding head rivet. Install the rivet without sealant.

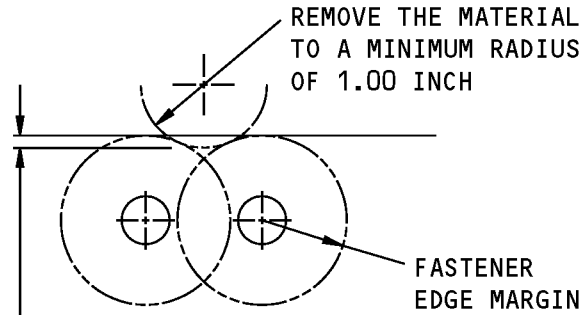
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL MARGIN THAT IS REMOVED  
 = 0.10 INCH OR 5% OF FLANGE WIDTH, WHICHEVER IS LESS **1**  
 = A MAXIMUM OF 0.15 INCH **2**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

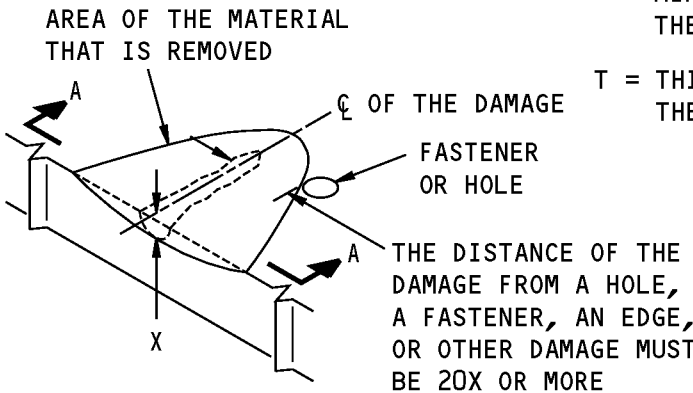
**(A)**



X = WIDTH OF THE MATERIAL MARGIN THAT IS REMOVED  
 = 0.10 INCH OR 5% OF FLANGE WIDTH, WHICHEVER IS LESS **1**  
 = A MAXIMUM OF 0.15 INCH **2**

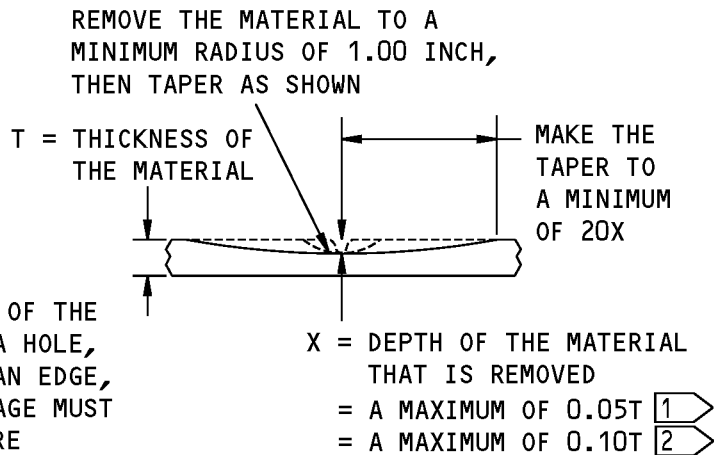
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**(B)**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**(C)**



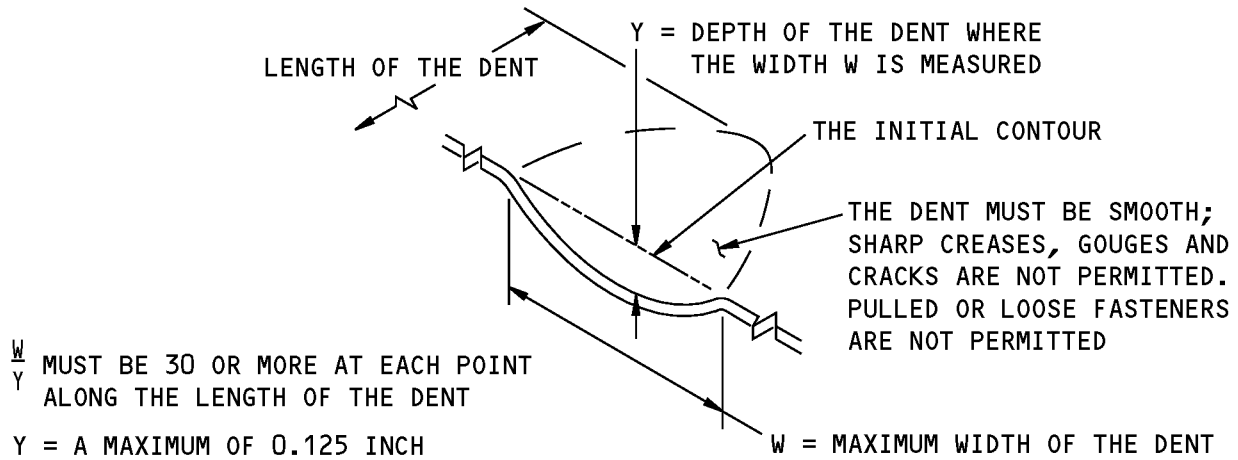
X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T **1**  
 = A MAXIMUM OF 0.10T **2**

A-A

- 1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
 Figure 102 (Sheet 1 of 6)**

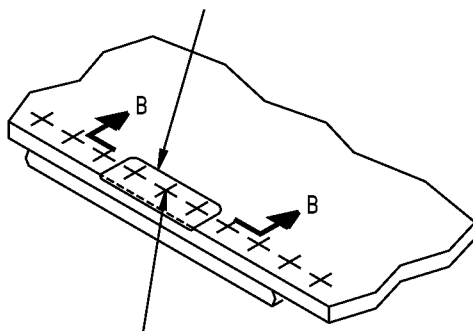
**737-800  
STRUCTURAL REPAIR MANUAL**



DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR DENT THAT IS PERMITTED

(D)

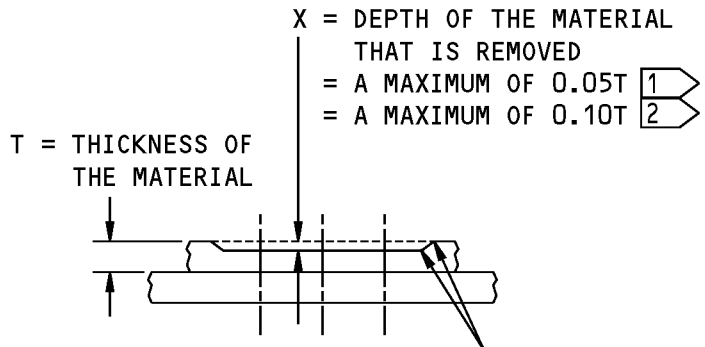
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

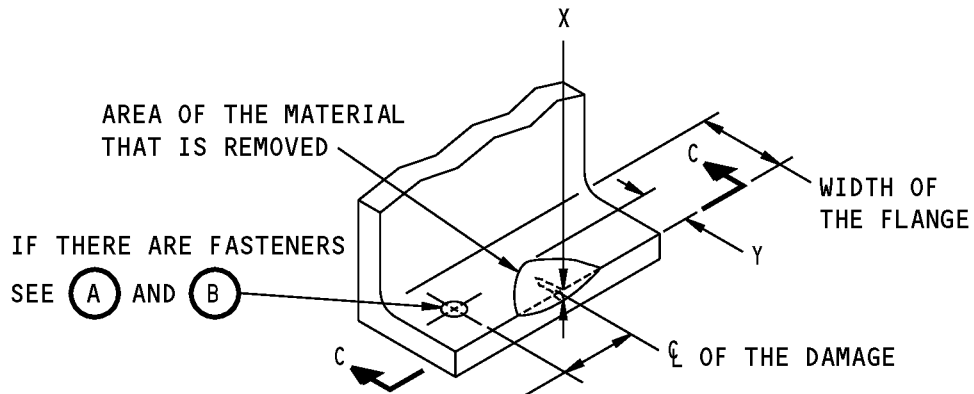
(E)



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

Allowable Damage Limits  
Figure 102 (Sheet 2 of 6)

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STRUCTURAL REPAIR MANUAL**

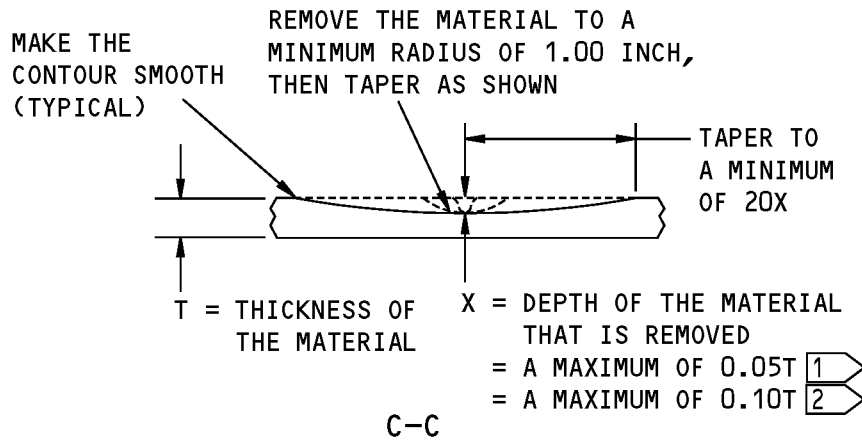


THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

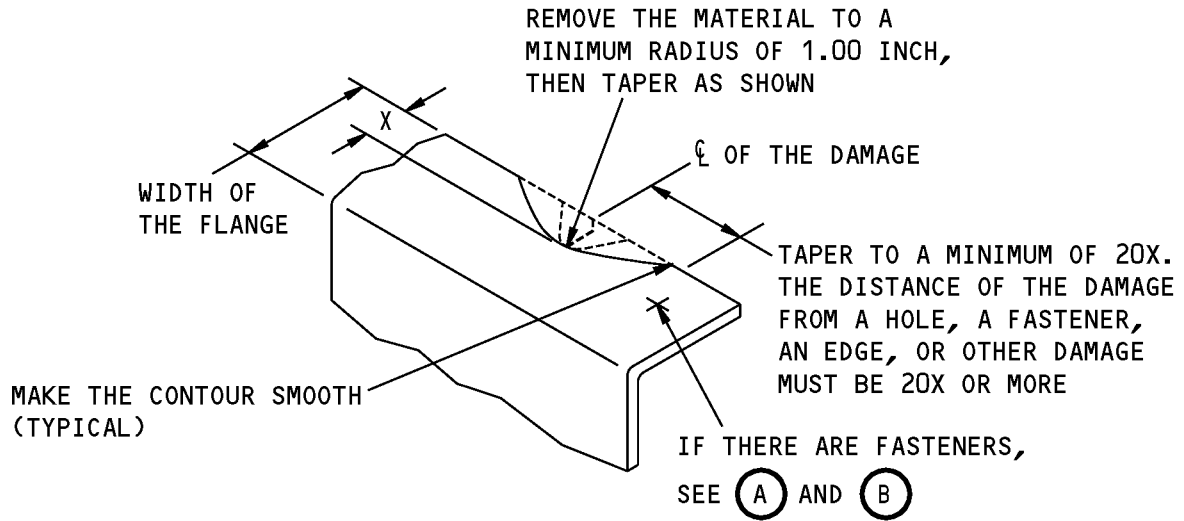
**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

**(F)**



**Allowable Damage Limits  
Figure 102 (Sheet 3 of 6)**

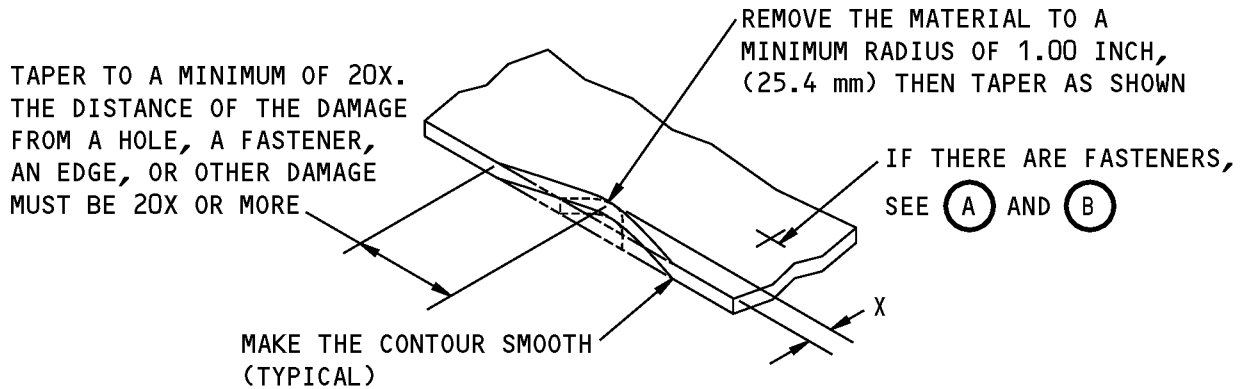
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(G)**



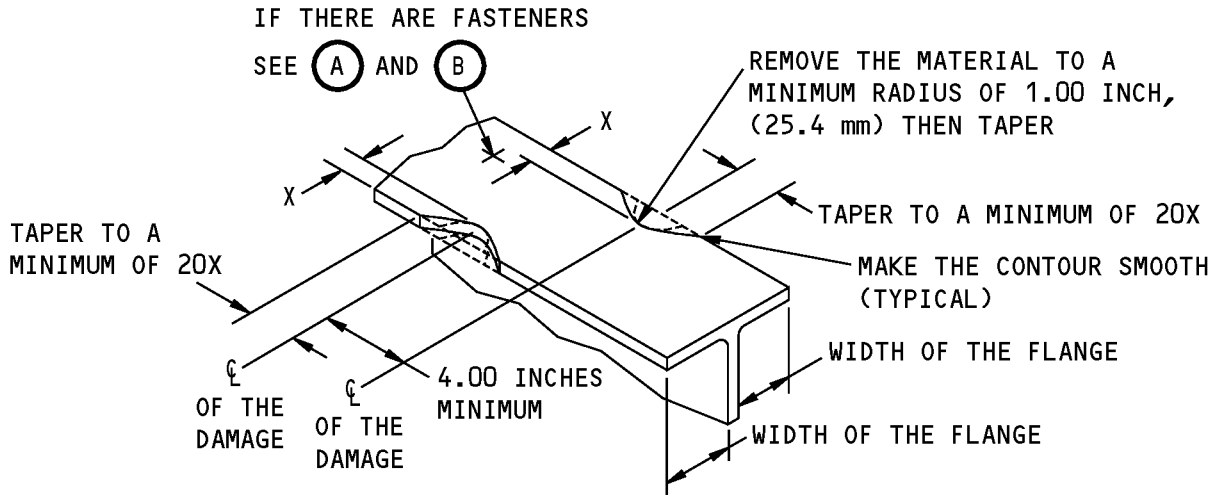
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10 INCH 1  
 = A MAXIMUM OF 0.15 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

**(H)**

**Allowable Damage Limits  
 Figure 102 (Sheet 4 of 6)**

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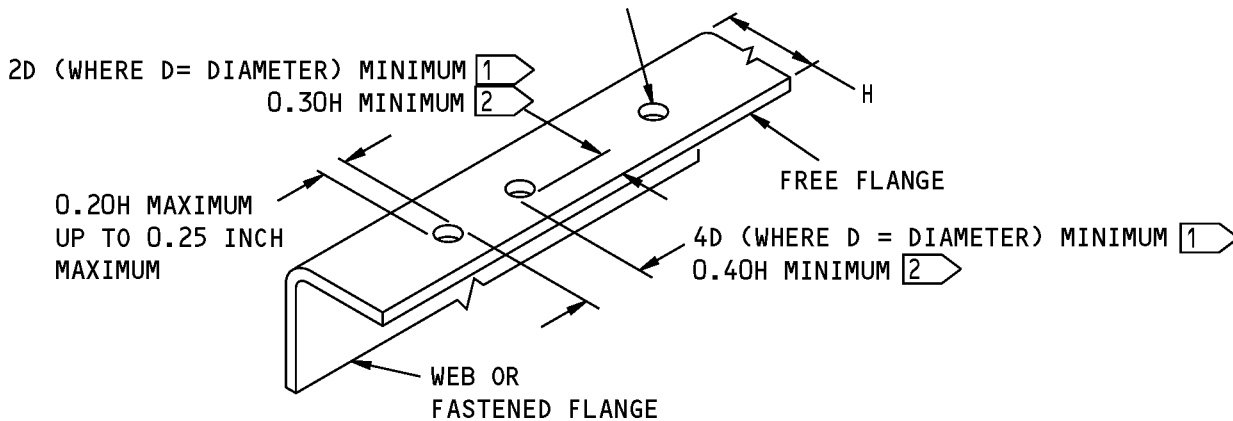


X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(I)

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD RIVETS



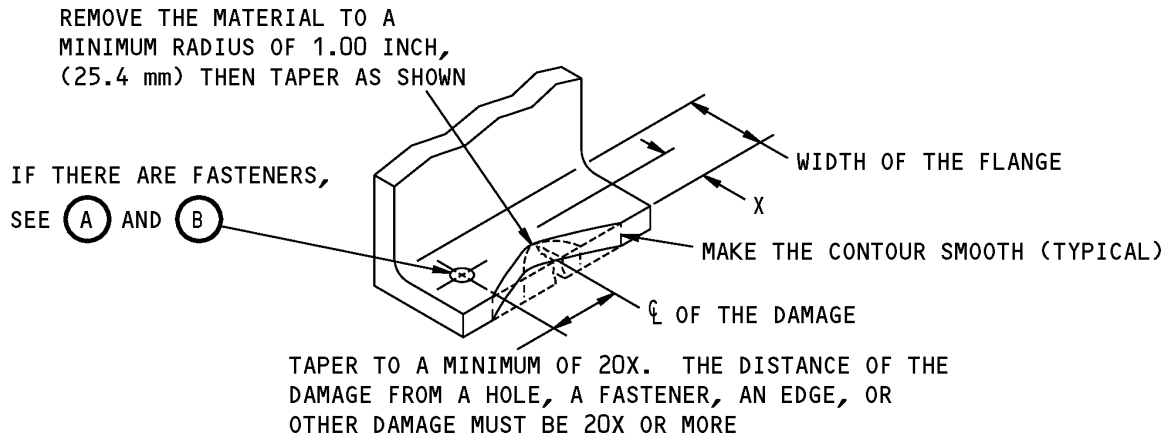
NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.



**HOLES AND PUNCTURES IN A FREE FLANGE**

(J)

**Allowable Damage Limits  
 Figure 102 (Sheet 5 of 6)**

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- X = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(K)

**Allowable Damage Limits  
Figure 102 (Sheet 6 of 6)**

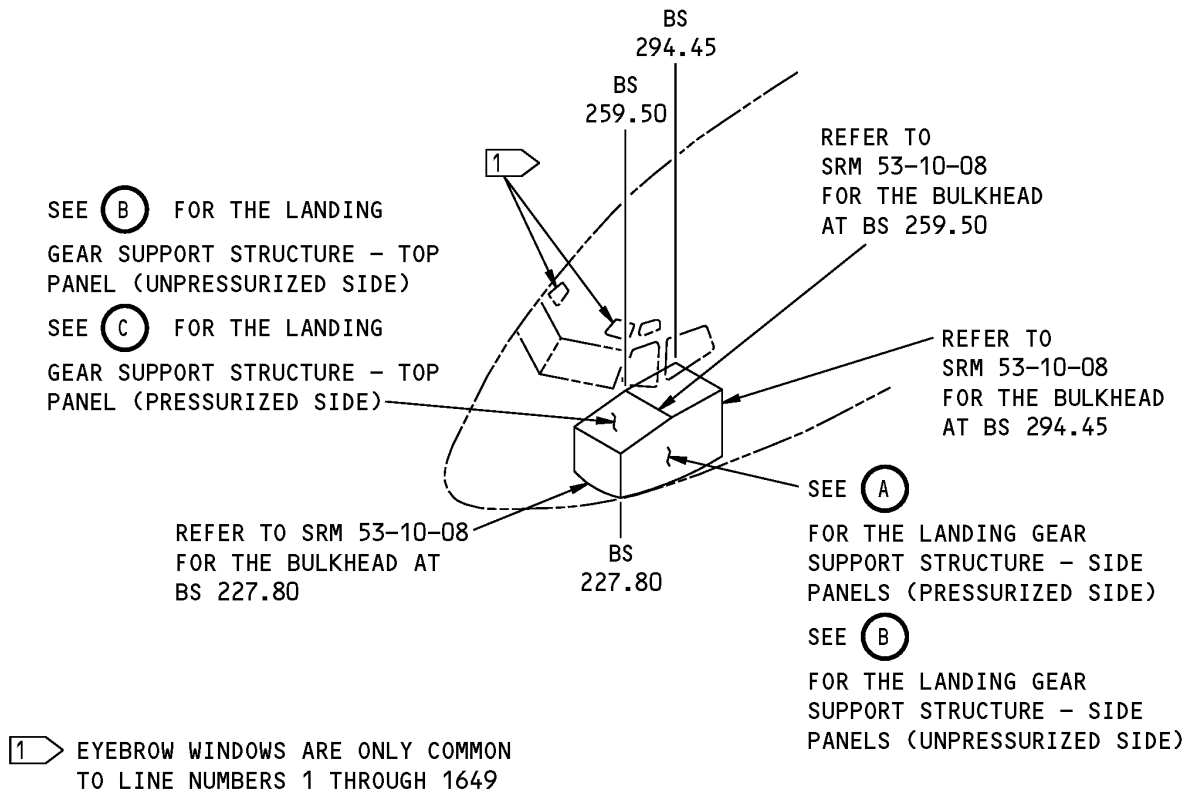


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**REPAIR 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE LOCATION**

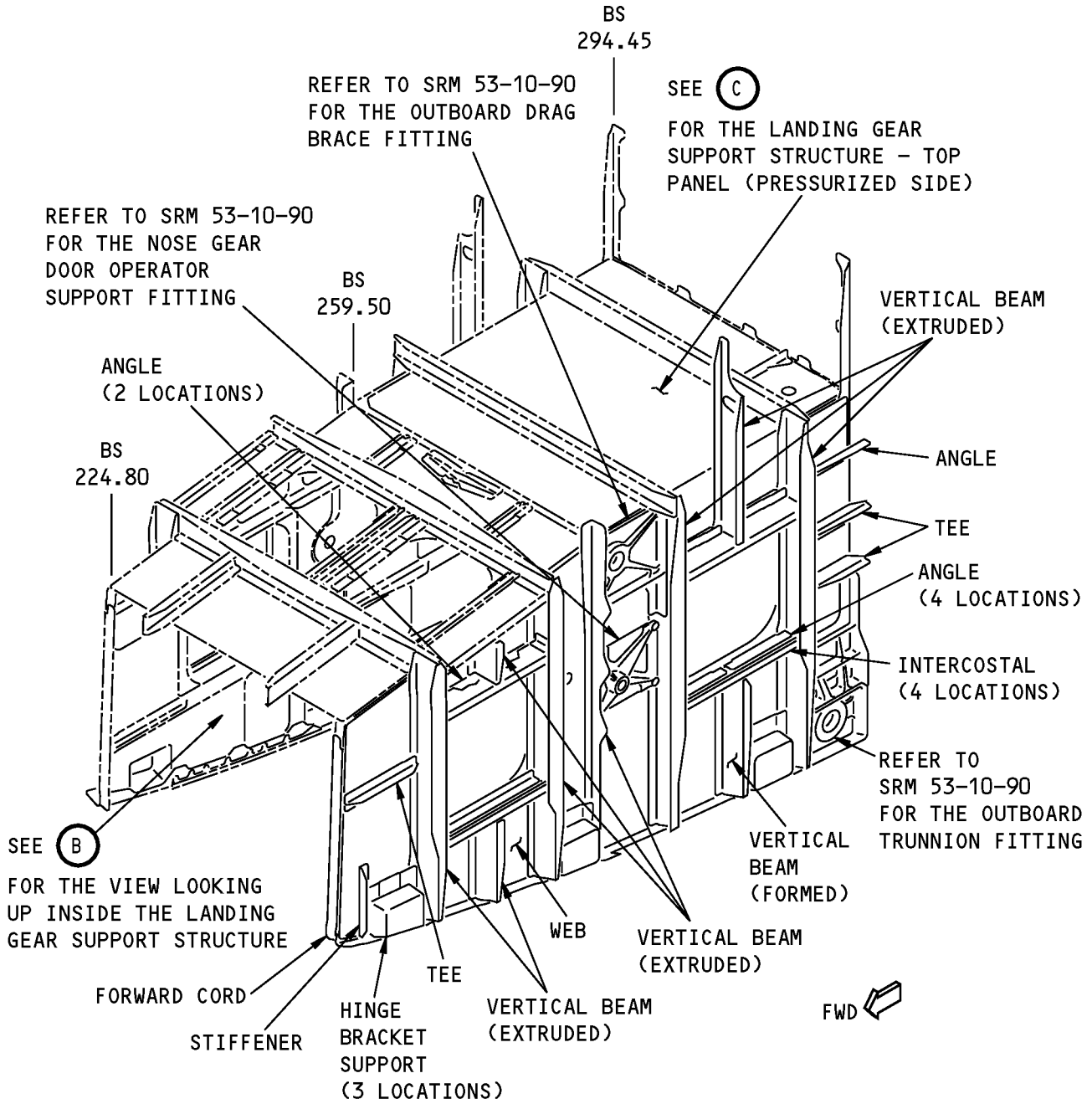
**1. Applicability**

- A. Repair 1 is applicable to damage to the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side) , Figure 201/REPAIR 1.



**Section 41 Landing Gear Support Structure Location (Pressurized Side)  
Figure 201 (Sheet 1 of 4)**

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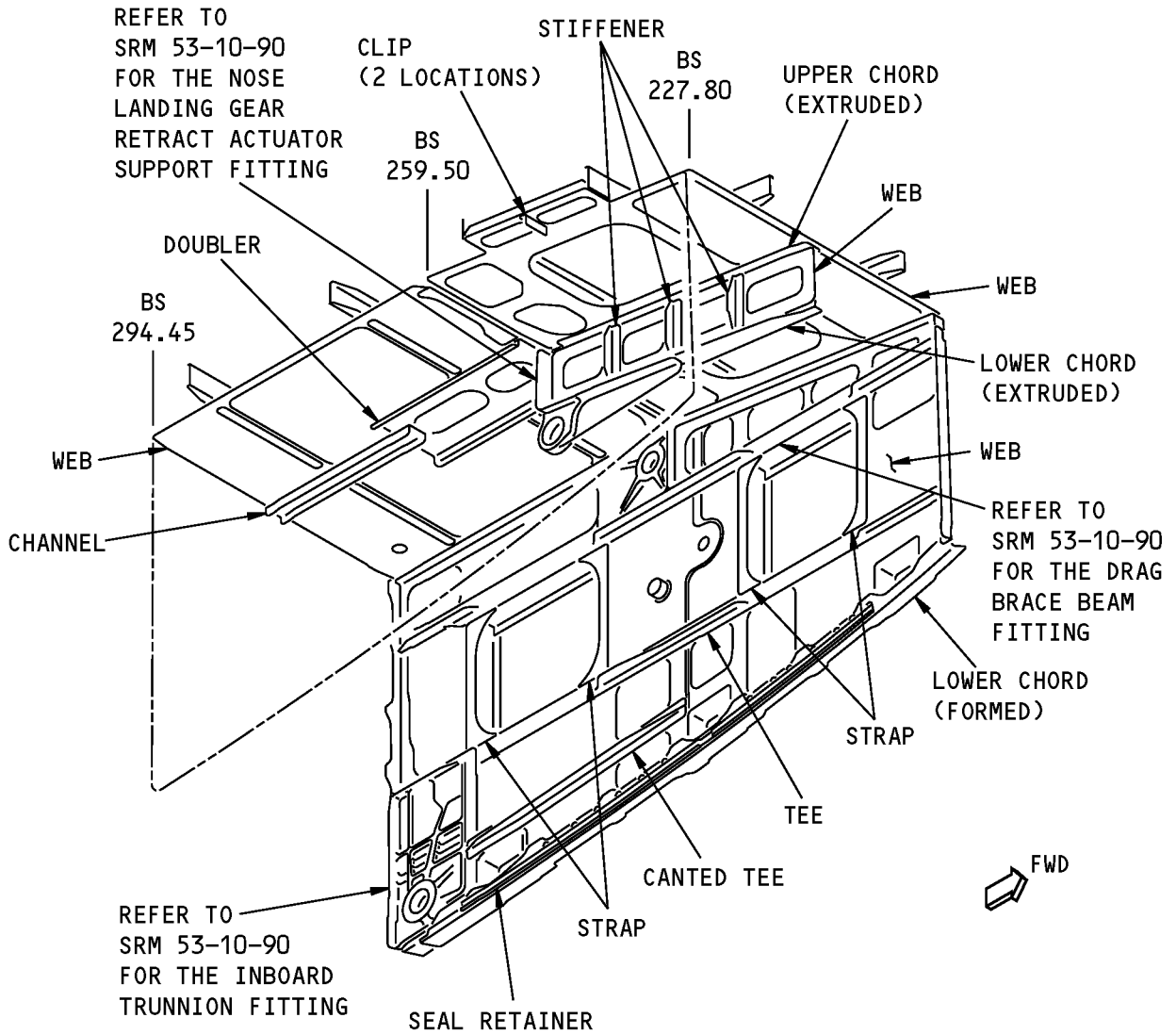


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
SIDE PANEL (PRESSURIZED SIDE)

(A)

Section 41 Landing Gear Support Structure Location (Pressurized Side)  
Figure 201 (Sheet 2 of 4)

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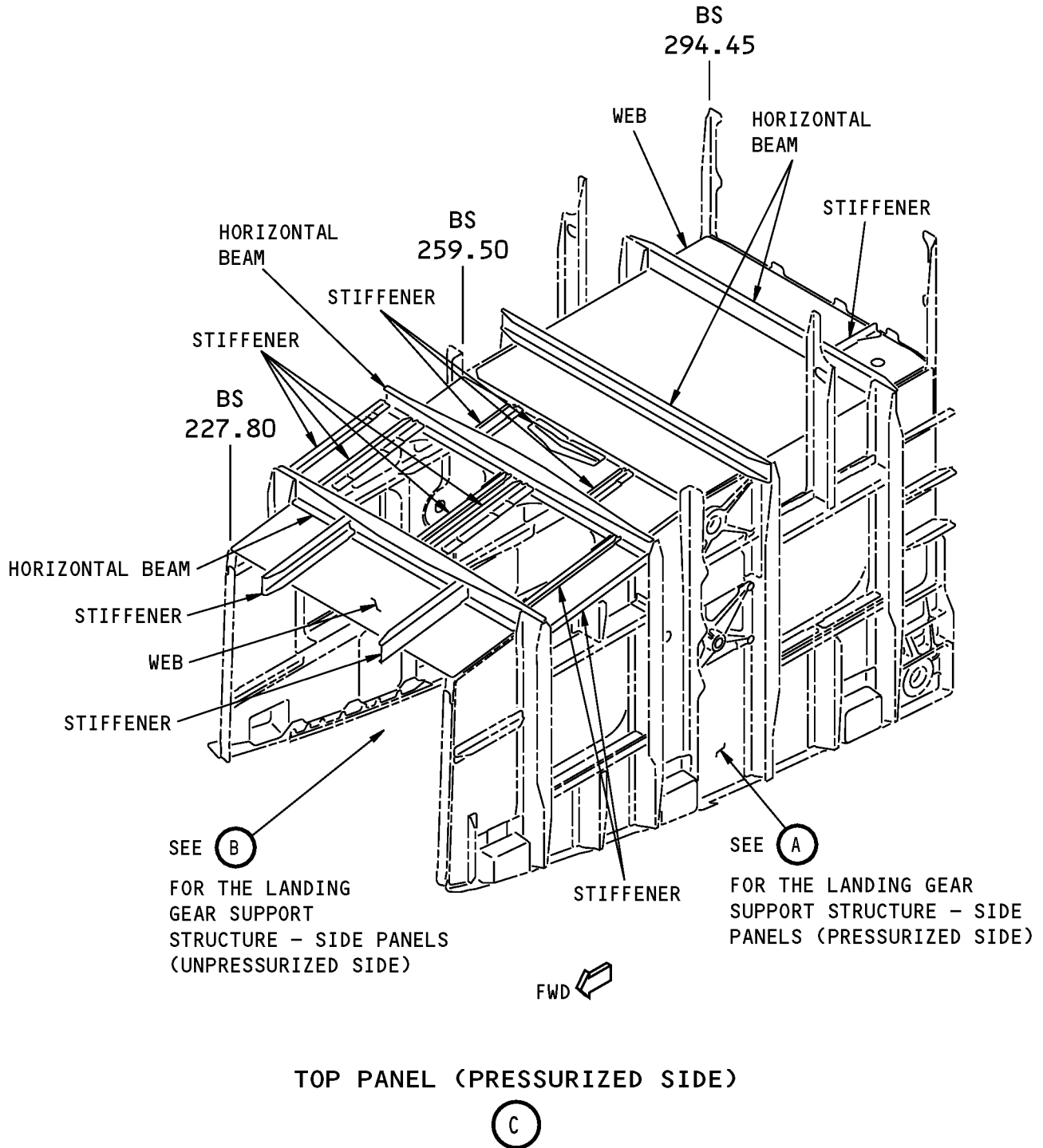


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE  
TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

**B**

**Section 41 Landing Gear Support Structure Location (Pressurized Side)  
Figure 201 (Sheet 3 of 4)**

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**Section 41 Landing Gear Support Structure Location (Pressurized Side)  
Figure 201 (Sheet 4 of 4)**



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**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.

**NOTE:** The typical repairs are not applicable if there are nutplates in the repair area.

- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-90, REPAIR 1	Nose Landing Gear Support Fitting Structure

**4. Repair Instructions**

- A. Side Panels (Pressurized Side)
  - (1) Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the side panels (pressurized side) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side) , Figure 201/REPAIR 1.
- B. Top and Side Panels (Unpressurized Sides)
  - (1) Refer to Table 202/REPAIR 1 to find the applicable repair for a component of the top and side panels (unpressurized sides) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side) , Figure 201/REPAIR 1.
- C. Top Panel (Pressurized Side)
  - (1) Refer to Table 203/REPAIR 1 to find the applicable repair for a component of the top panel (pressurized side) of the Section 41 landing gear support structure shown in Section 41 Landing Gear Support Structure Location (Pressurized Side) , Figure 201/REPAIR 1.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - SIDE PANELS (PRESSURIZED SIDE)	
COMPONENT	REPAIR
Angles	Refer to SRM 51-70-12
Forward Chords	Refer to SRM 51-70-12
Hinge Bracket Supports	There are no repairs for these parts in the Structural Repair Manual at this time.
Intercostals	Refer to SRM 51-70-11
Stiffeners	Refer to SRM 51-70-12
Tees	Refer to SRM 51-70-12
Vertical Beams	Refer to SRM 51-70-12



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<b>REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - SIDE PANELS (PRESSURIZED SIDE)</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Webs	Refer to SRM 51-70-13

**Table 202:**

<b>REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - TOP AND SIDE PANELS (UNPRESSURIZED SIDES)</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Channels	Refer to SRM 51-70-12
Clips	Refer to SRM 51-70-11
Doublers	Refer to SRM 51-70-11
Extruded Chords	Refer to SRM 51-70-12
Formed Chords	Refer to SRM 51-70-11
Seal Retainers	Refer to SRM 51-70-12
Stiffeners	Refer to SRM 51-70-12
Straps	Refer to SRM 51-70-11
Tees	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

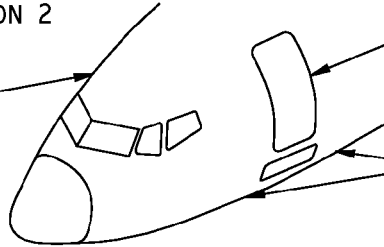
**Table 203:**

<b>REPAIR REFERENCES FOR THE SECTION 41 LANDING GEAR SUPPORT STRUCTURE - TOP PANEL (PRESSURIZED SIDE)</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Horizontal Beams	Refer to SRM 51-70-12
Stiffeners	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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**IDENTIFICATION 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE**

REFER TO IDENTIFICATION 2  
FOR GALLEY DOOR  
SURROUND STRUCTURE  
IDENTIFICATION



REFER TO FIGURE 2 FOR THE  
THE ENTRY AND AIRSTAIR DOOR  
SURROUND STRUCTURE IDENTIFICATION

REFER TO IDENTIFICATION 3  
FOR ELECTRONICS ACCESS DOOR  
SURROUND STRUCTURE IDENTIFICATION

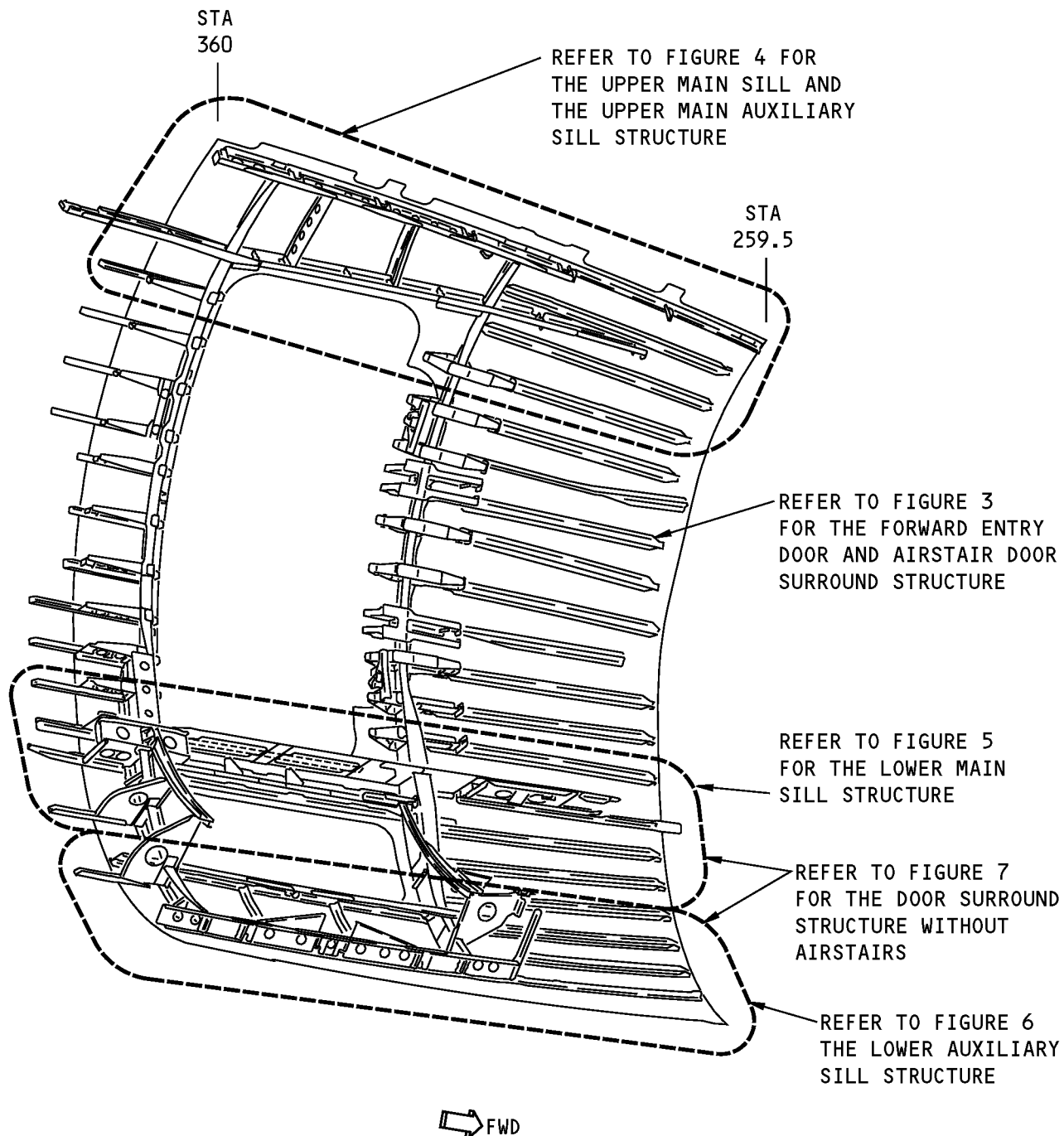
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Forward Entry and Airstair Door Surround Structure  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4108	Miscellaneous Functional Collector - Section 41
140A4112	Entry Door Panel, Section 41, Functional Collector
141A0742	Integration Installation -Integration Functional Collector
141A8110	Sill Installation - Lower Main, Forward Entry Door
141A8120	Sill Installation - Upper Main, Entry Door Panel
141A8130	Sill Assembly - Upper Auxiliary, Entry Door Panel
141A8140	Sill Installation - Lower Airstair
141A8141	Sill Installation - Upper Airstair
141A8150	Frame Installation - Station 303.9, Entry Door Panel
141A8160	Frame Installation - Station 348.2, Entry Door Panel

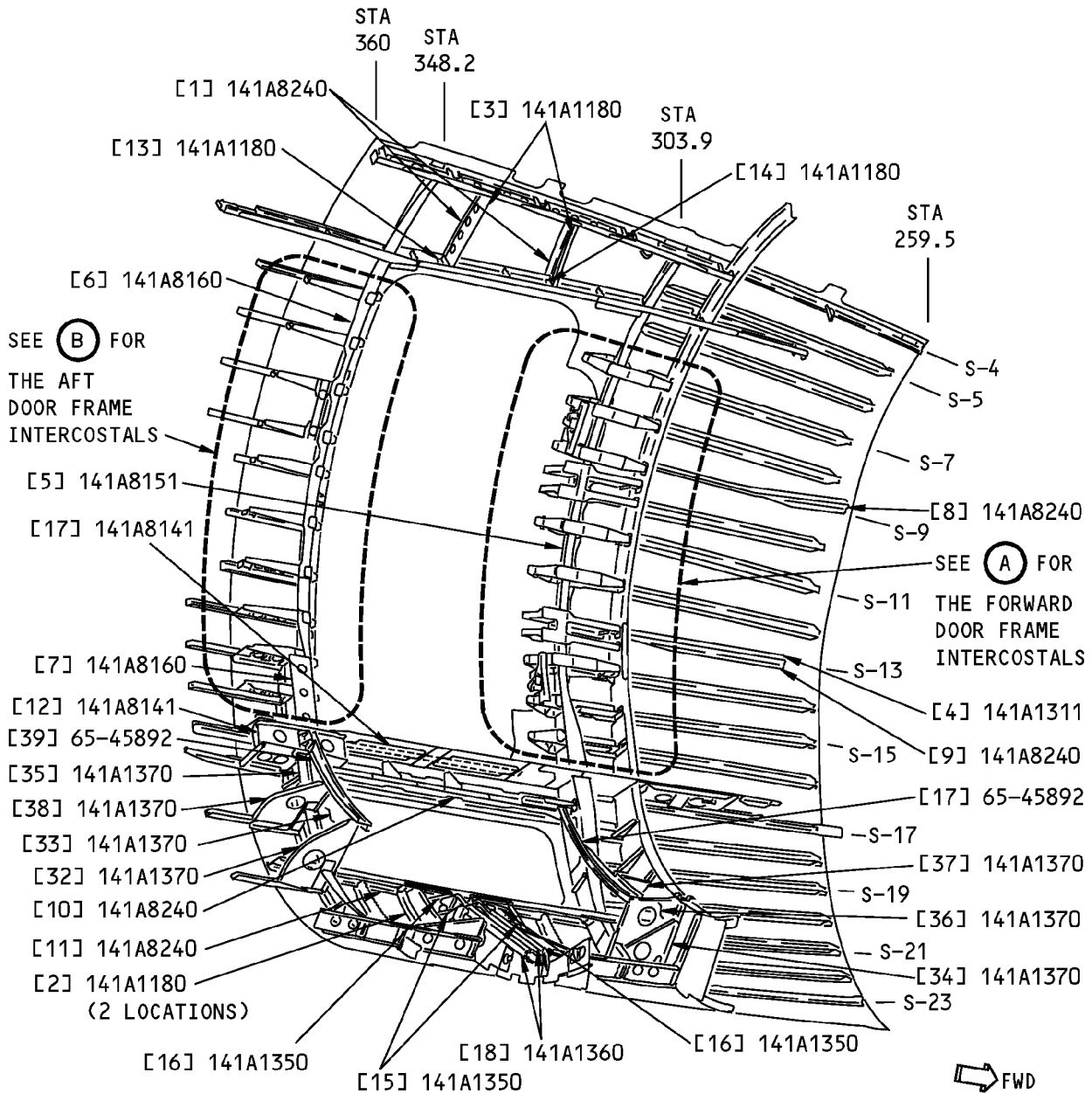
**STRUCTURAL REPAIR MANUAL**



**Forward Entry and Airstair Door Surround Structure Locations**  
**Figure 2**



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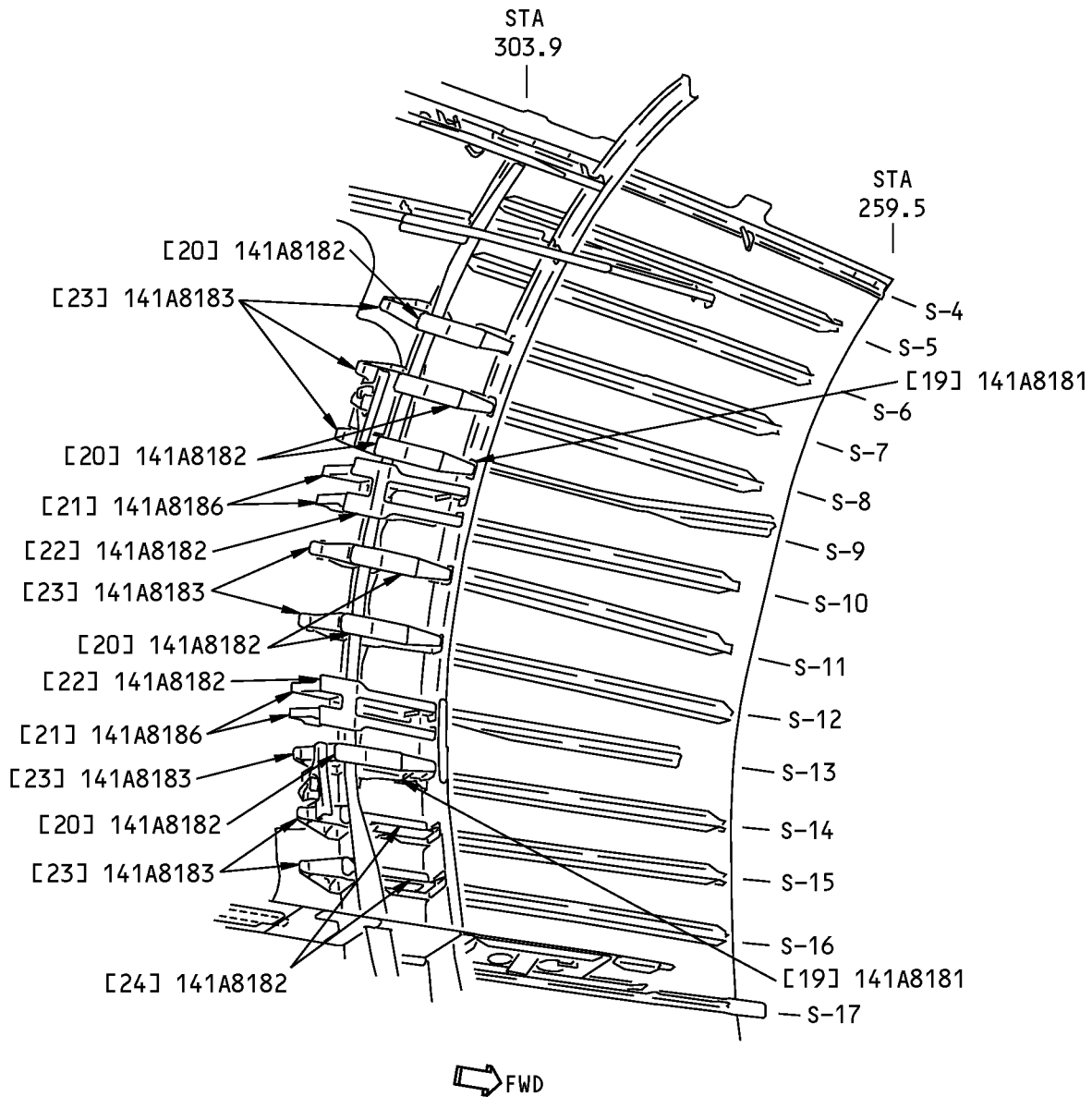
**FORWARD ENTRY DOOR SURROUND STRUCTURE**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 41 Entry Door and Airstair Door Surround Structure Identification  
Figure 3 (Sheet 1 of 3)**

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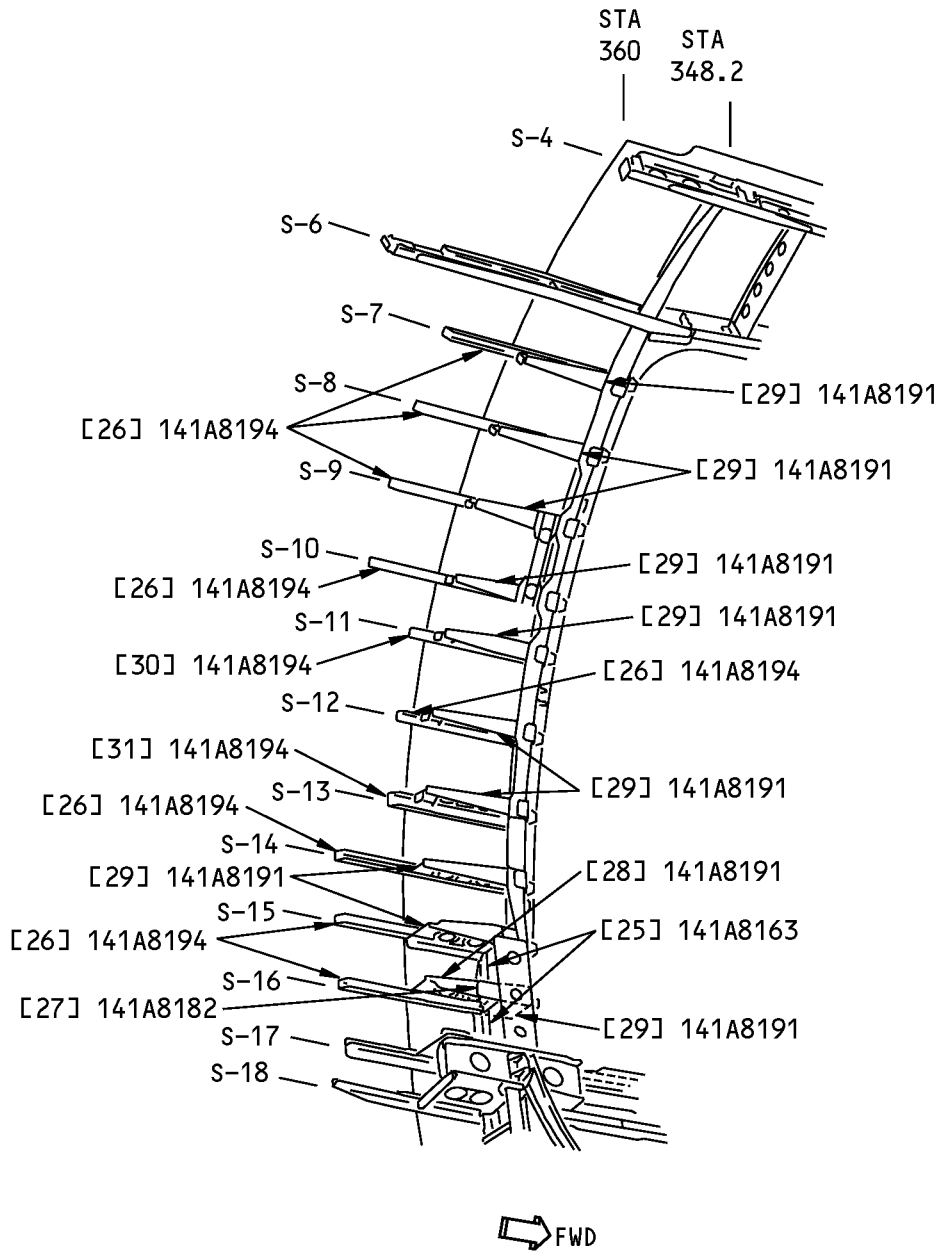


**SECTION 41 ENTRY DOOR FRAME INTERCOSTALS  
(FORWARD DOOR FRAME)**

**A**

**Section 41 Entry Door and Airstair Door Surround Structure Identification  
Figure 3 (Sheet 2 of 3)**

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**SECTION 41 ENTRY DOOR FRAME INTERCOSTALS  
(AFT DOOR FRAME)**

**(B)**

**Section 41 Entry Door and Airstair Door Surround Structure Identification  
Figure 3 (Sheet 3 of 3)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Outer Chord (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web (2)	0.025 (0.64)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Installation Web Web Angle Angle (2)	0.063 (1.6) 0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11 BAC1489-360 7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Forward Door Frame Outer Chord Inner Chord		BAC1514-3228 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses BAC1506-4331 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[6]	Aft Upper Door Frame Outer Chord		BAC1517-2767 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[7]	Aft Lower Door Frame Inner Chord Doubler Angle, Splice	0.050 (1.27) 0.080 (2.03)	BAC1514-3227 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses 7075-T62 clad sheet as given in QQ-A-250/13 2024-T42 clad sheet as given in QQ-A-250/5	
[8]	Outer Chord		7050-T7451 plate as given in BMS 7-323, Type I	
[9]	Outer Chord		BAC1506-4292 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Outer Chord, Upper Airstair		BAC1505-100881 2024-T42 extrusion as given in QQ-A-200/3 (Optional: AND10136-3006)	
[11]	Outer Chord, Lower Airstair		BAC1506-4448 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Upper Airstair Sill Angle Web Web	0.125 (3.18) 0.080 (2.03) 0.160 (4.06)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[13]	Tee		BAC1506-994 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Tee		BAC1506-525 7075-T6511 as given in QQ-A-200/11 (Optional: BAC1505-101212 7075-T73511)	



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LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[15]	Intercostal (2)		BAC1514-1291 7050-T7451 plate as given in AMS 4050 (Optional: 7075-T73511 extrusion as given in QQ-A-200/11)	
[16]	Intercostal (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[17]	Upper Airstair Sill Angle Web Web	0.090 (2.29) 0.050 (1.27) 0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	YC001-YC099, YC101-YC299, YC301-YC395, YC401-YC499, YC501-YC699, YC701-YC899, YC901-YC930 ONLY
	Bracket (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[18]	Frame Assembly Web (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899 ONLY
	Chord, Lower Inner (2)		BAC1490-2712 2024-T42 clad sheet as given in QQ-A-250/5	
	Chord, Upper Inner (2)		BAC1490-2530 2024-T42 clad sheet as given in QQ-A-250/5	
	Failsafe Chord - Aft and Forward		BAC1490-2759 7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Intercostal (2)		7050-T7451 plate as given in BMS 7-323. (Grain direction controlled part) Refer to the production drawings for the machined thicknesses. (Optional: 7075-T73 forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
[20]	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[21]	Hinge Box, Upper and Lower		7050-T7451 plate as given in BMS 7-186. (Grain direction controlled part) Refer to the production drawings for the machined thicknesses	
[22]	Strap	0.125 (3.18)	7075-T6 sheet as given in QQ-A-250/12	
[23]	Doorstop (8)		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) Refer to the production drawings for the machined thicknesses. (Optional: 7075-T73 forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
[24]	Strap (2)	0.220 (5.59)	2024-T3 sheet as given in QQ-A-250/4	
[25]	Web (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Channel		BAC1498-162 7075-T62 clad sheet as given in QQ-A-250/13	
[27]	Strap	0.090 (2.29)	2024-T3 sheet as given in QQ-A-250/4	
[28]	Intercostal		7050-T7451 machined plate as given in BMS 7-323. (Grain direction controlled part) (Optional: 7075-T73 precision forging as given in BMS 7-186)	
[29]	Intercostal		7050-T7451 machined plate as given in BMS 7-323. (Grain direction controlled part)	
[30]	Channel		BAC1493-439 7075-T62 clad sheet as given in QQ-A-250/13	
[31]	Channel		BAC1493-904 7075-T62 clad sheet as given in QQ-A-250/13	

IDENTIFICATION 1

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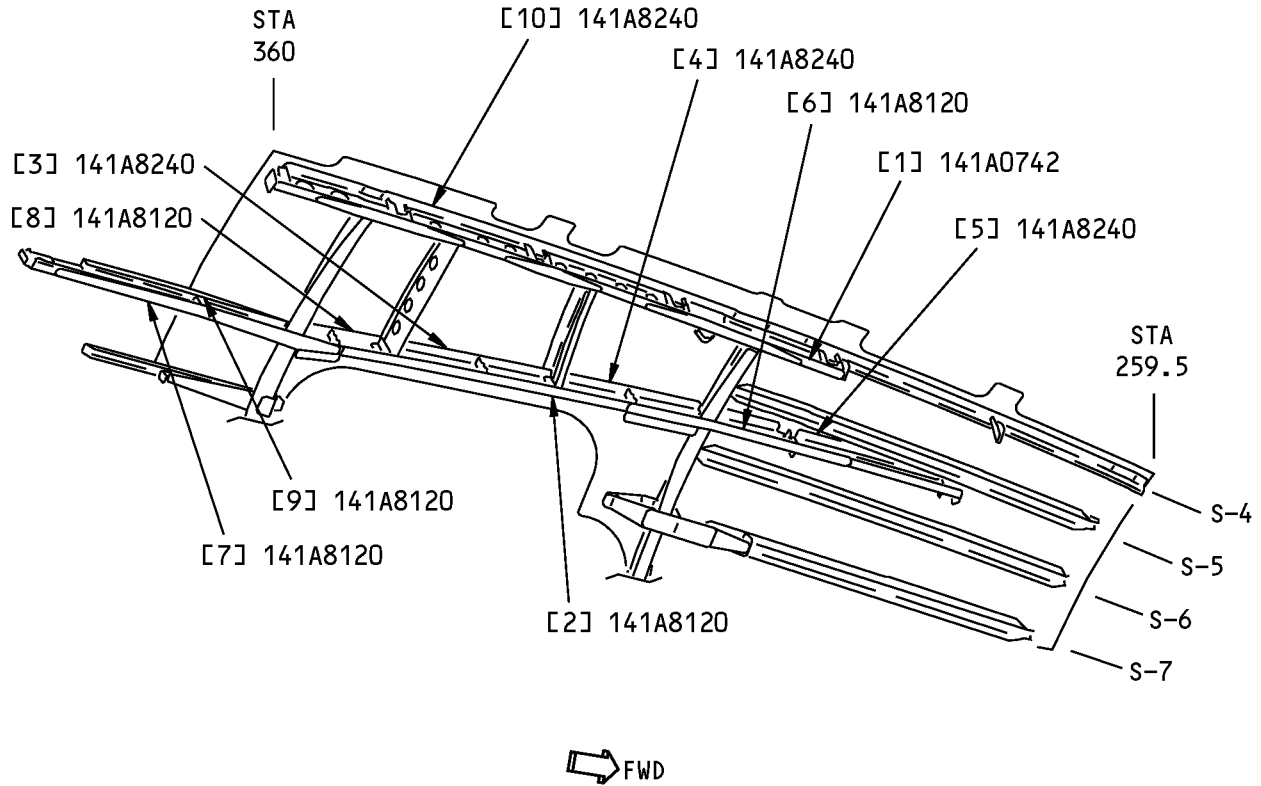


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LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[32]	Intercostal Assembly Angle		AND10133-1401 7075-T62 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[33]	Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[34]	Angle		BAC1490-2642 7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[35]	Tee		BAC1505-100415 7075-T6511 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[36]	Intercostal	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[37]	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
[38]	Intercostal Assembly Angle		AND10133-1401 7075-T62 extrusion as given in QQ-A-200/11	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY
	Intercostal	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[39]	Tracks, Forward and Aft		BAC1520-1410 7075-T6 sheet as given in QQ-A-277	YC101-YC299, YC381-YC395, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Upper Main and Upper Main Auxiliary Sill Identification  
Figure 4**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Upper Main Auxiliary Sill			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web (2)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap (2)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
	Tee		BAC1505-26400 7075-T6511 extrusion as given in QQ-A-200/11	
	Tee		BAC1505-100813 7075-T73511 extrusion as given in QQ-A-200/11	
	Angle (2)		BAC1490-62 7075-T62 clad sheet as given in QQ-A-250/13	
	Angle		BAC1490-2529 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Upper Main Sill (STA 277 to STA 348.20)			
	Angle	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.125 (3.18)	Ti-6Al-4V sheet annealed as given in MIL-T-9046, Code AB-1 annealed	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Angle, Inner Chord		AND10133-0701 7075-T6511 extrusion as given in QQ-A-200/11	
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Angle, Inner Chord		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
	Web	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
	Angle, Inner Chord		BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Outer Chord		BAC1503-100028 2024-T42 extrusion as given in QQ-A-200/3	
[4]	Outer Chord		BAC1503-100096 2024-T3511 extrusion as given in QQ-A-200/3	
[5]	Outer Chord		AND10133-0701 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Web Assembly (STA 277 to STA 294.5)			
	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	



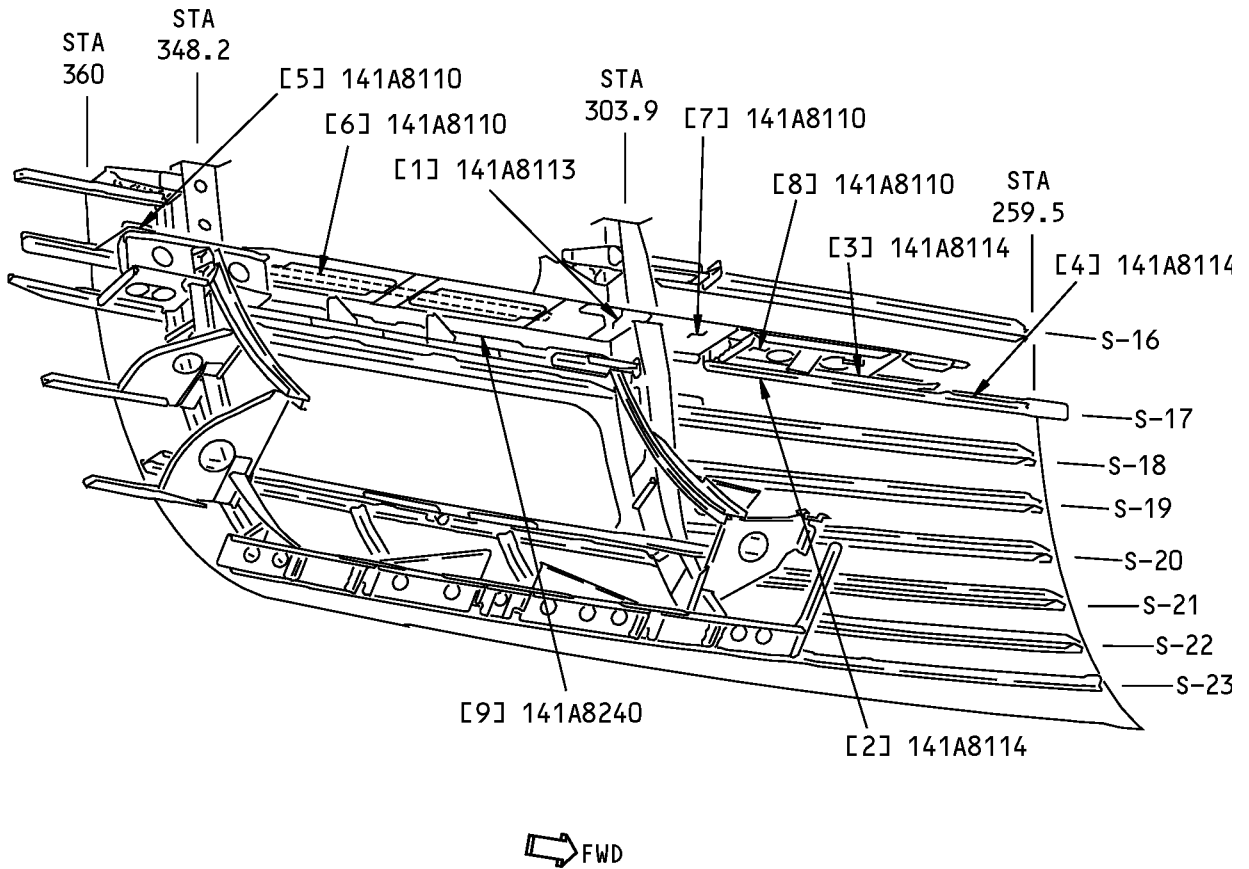


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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[7]	Sill (STA 348.2 to STA 380) Channel Strap	0.071 (1.8)  0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13  Ti-6Al-4V sheet as given in MIL-T-9046, Code AB-1, annealed	
[8]	Web Assembly (STA 348.20 to STA 360) Web	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Web Assembly (STA 360 to STA 380) Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Chord (STA 259.5 to (STA 360)		BAC1517-2786 7075-T62 extrusion as given in QQ- A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Lower Main Sill Identification  
Figure 5**



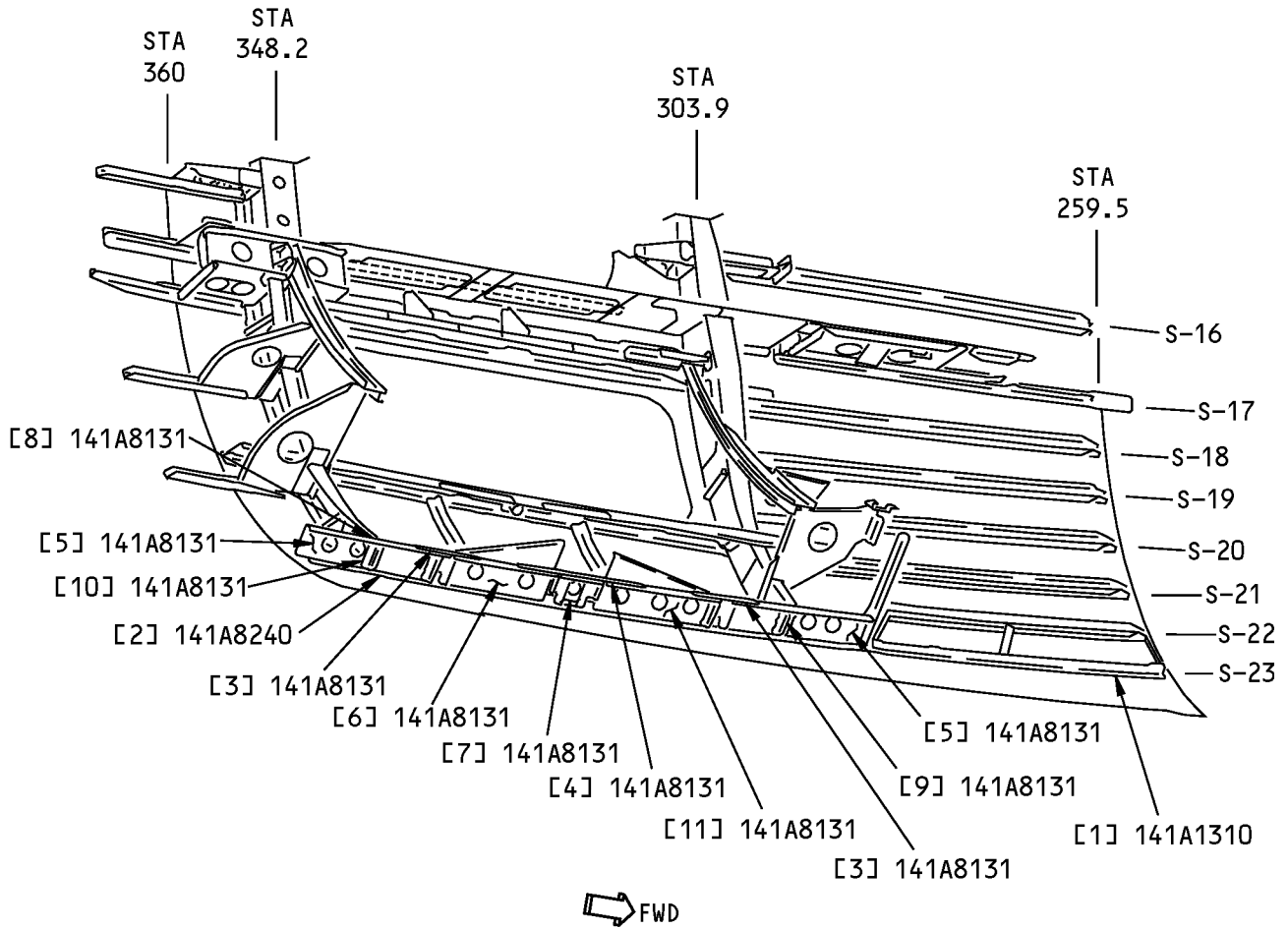
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Angle	0.100 (2.54)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Angle (2)		BAC1504-2583 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle		BAC1514-1530 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Chord		BAC1506-4521 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Sill (STA 351.2 to STA 360) Web	0.250 (6.35)	7075-T651 plate as given in QQ-A-250/12	
[6]	Sill (STA 303.9 to STA 351.2) Web Inner Chord Chord Angle	0.090 (2.29) 0.090 (2.29) 0.050 (1.27) 0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Sill (STA 294.5 to STA 303.9) Web Angle	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1514-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Sill (STA 377 to STA 294.5) Web Angle Angle	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11 BAC1514-3130 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Outer Chord		BAC1506-588 2024-T42 extrusion as given in QQ-A-200/3	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**Lower Auxiliary Sill Identification  
Figure 6**



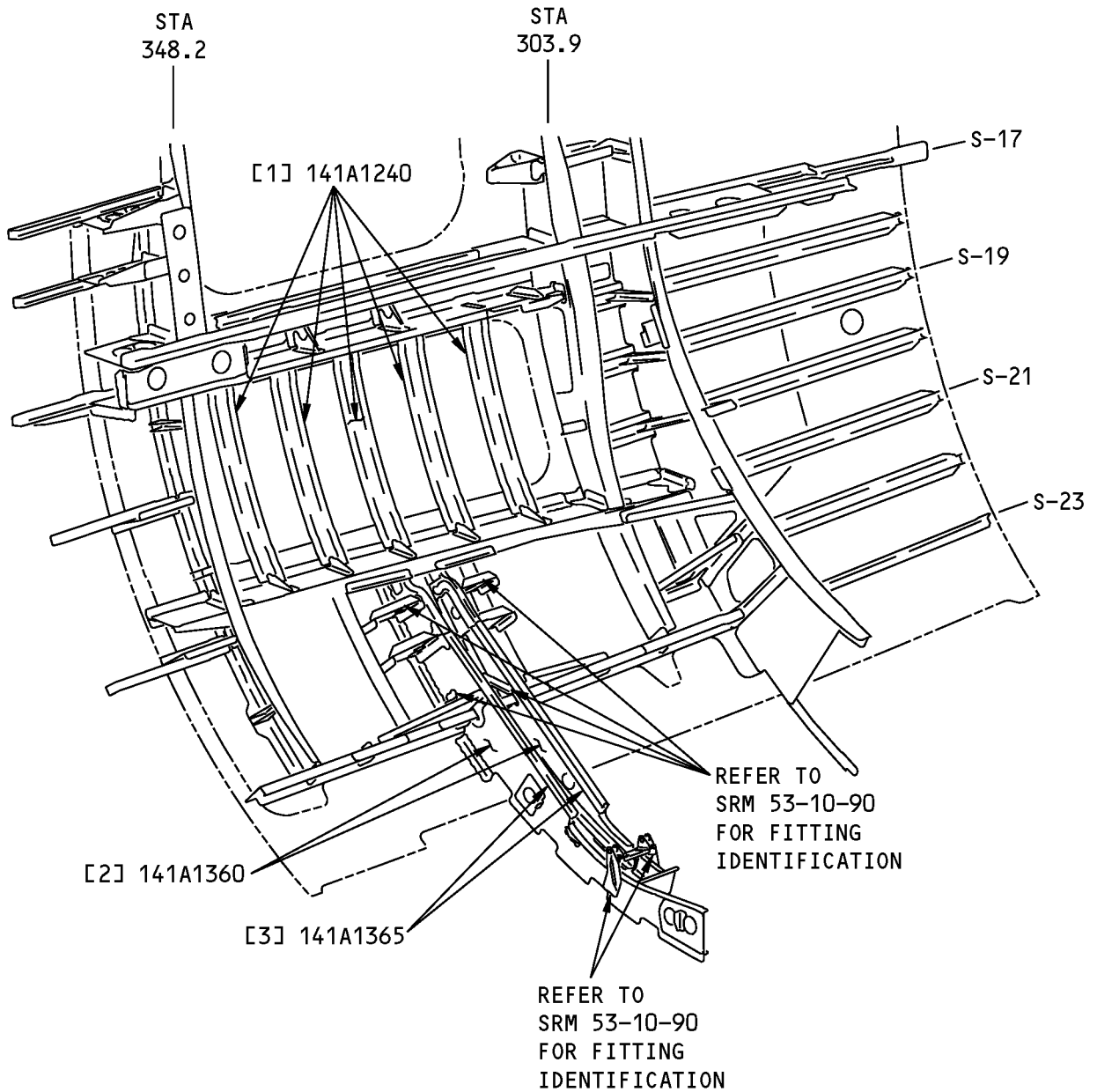
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal Assembly Intercostal Intercostal Angle	0.063 (1.6) 0.050 (1.27) 0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Outer Chord		BAC1514-1732 7075-T73 extrusion as given in QQ-A-200/11	
[3]	Strap (2)	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Strap	0.112 (2.84)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Sill (STA 344 to STA 360 and STA 294.5 to STA 312) Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Sill (STA 330.2 to STA 344) Web Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2788 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Sill (STA 325.28 to STA 330.62) Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Tee		BAC1506-4035 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Tee		BAC1505-100164 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Tee		BAC1505-101184 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Sill (STA 312 to STA 325.38) Web Web Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2788 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2549 7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Section 41 Entry Door Without Airstairs  
Figure 7**



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**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stub Frame (5)		BAC1517-2796 7075-T62 clad sheet as given in QQ-A-250/13	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899, YC931-YC940 ONLY
[2]	Frame Assembly Web Chord, Lower Inner  Chord, Upper Inner  Failsafe Chord - Aft	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1490-2712 2024-T42 clad sheet as given in QQ-A-250/5  BAC1490-2530 2024-T42 clad sheet as given in QQ-A-250/5  BAC1490-2759 7075-T62 clad sheet as given in QQ-A-250/13	YC001-YC099, YC301-YC380, YC501-YC699, YC731-YC750, YC781-YC899, YC931-YC940 ONLY
[3]	Track		BAC1520-1377 7075-T6511 extrusion as given in QQ-A-200/11. (Optional: 7050-T7451 plate as given in AMS 4050)	YC101-YC299, YC401-YC499, YC701-YC730, YC751-YC780, YC901-YC930 ONLY

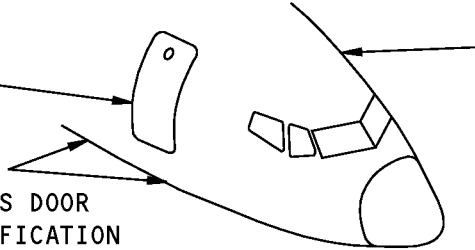
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 2 - FORWARD GALLEY DOOR SURROUND STRUCTURE**

REFER TO FIGURE 2 FOR THE  
THE GALLEY DOOR SURROUND  
STRUCTURE IDENTIFICATION

REFER TO IDENTIFICATION 3  
FOR THE ELECTRONICS ACCESS DOOR  
SURROUND STRUCTURE IDENTIFICATION



REFER TO IDENTIFICATION 1  
FOR THE ENTRY DOOR SURROUND  
STRUCTURE IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

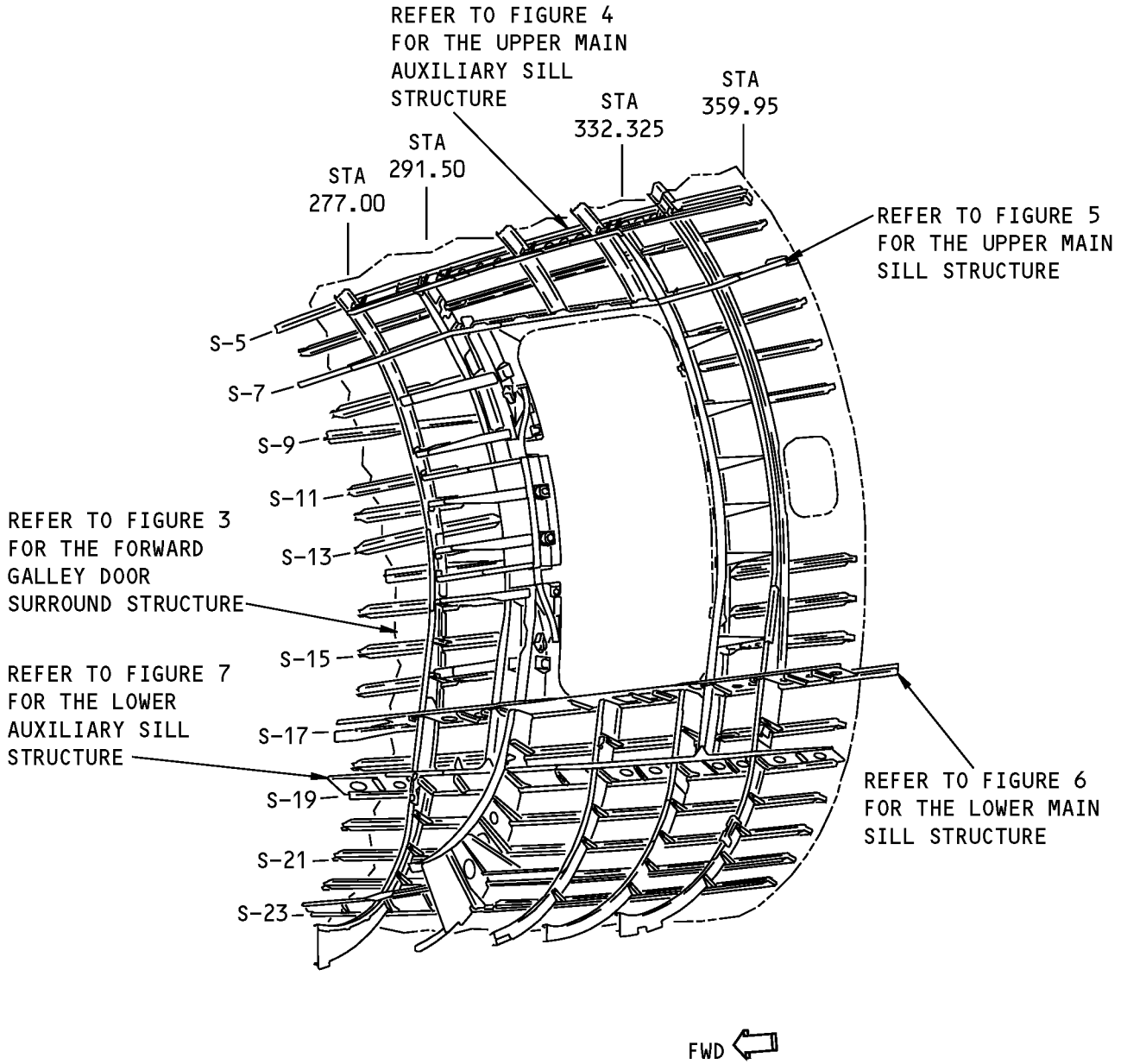
**Forward Galley Door Surround Structure  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4100	Section 41 - Integration Functional Collector
140A4113	Section 41 Galley Door Panel
141A1310	Intercostal DA&I - Stringer 23, Door Panels
141A8310	Sill Assembly & Installation - Lower Main, Galley Door Panel
141A8320	Sill Installation - Upper Main, Galley Door Panel
141A8350	Forward Edge Frame A&I - Galley Door Panel
141A8370	Stub Frame A&I - Galley Door Panel
141A8380	Installation - Forward Door Intercostals, Galley Door Panel
141A8390	Installation - Aft Door Intercostals, Galley Door Panel

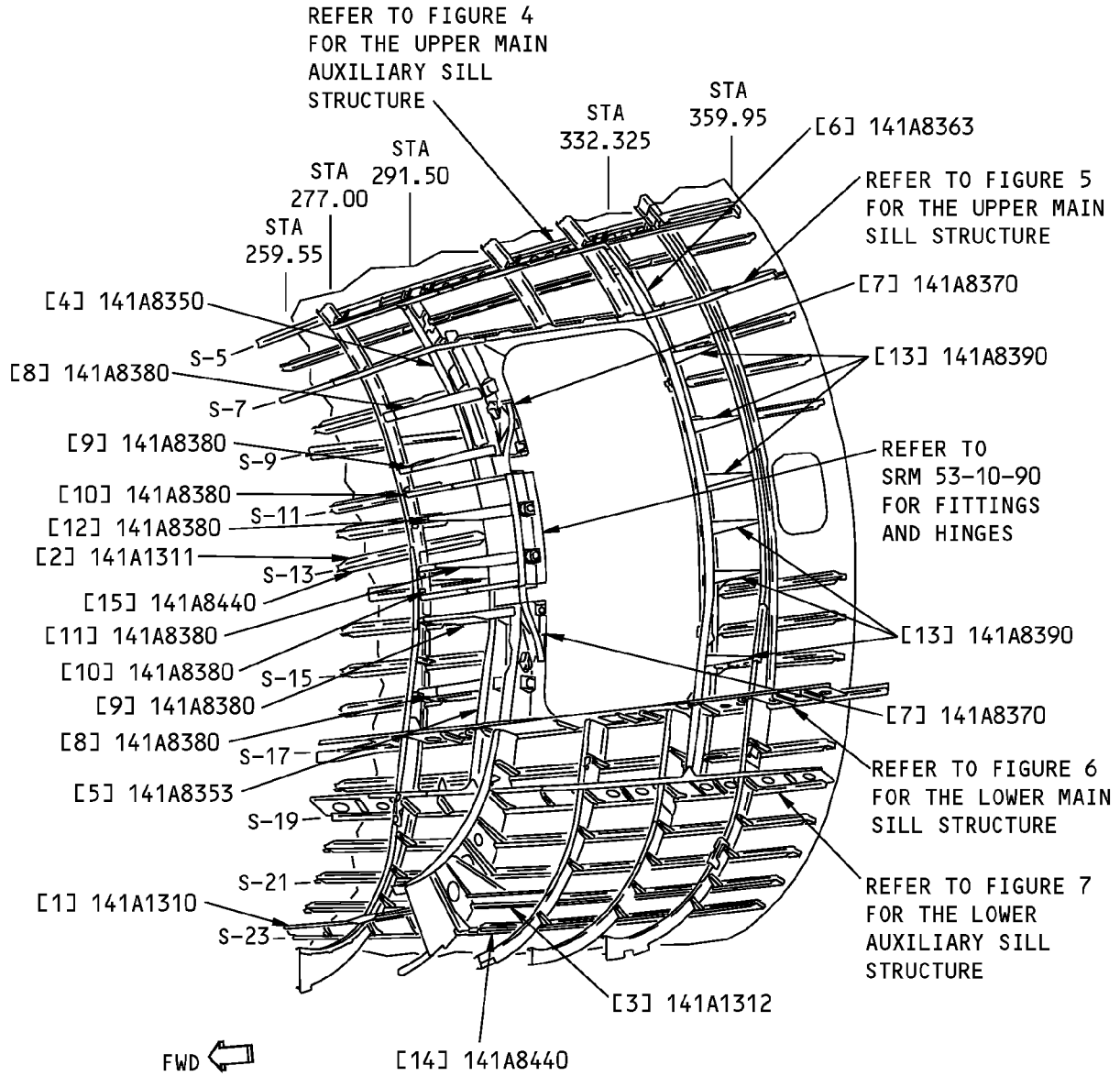


**STRUCTURAL REPAIR MANUAL**



**Forward Galley Door Surround Structure Location  
Figure 2**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Forward Galley Door Surround Structure Identification  
Figure 3**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal Assembly Intercostal Intercostal Angle	0.063 (1.6) 0.050 (1.27) 0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Stiffener Installation Angle Angle Web	0.063 (1.6)	BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11 BAC1489-360 7075-T62 Clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Intercostal Assembly Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Forward Edge Frame Assembly Inner Chord Stiffener Angle	0.450 (11.43)	BAC1514-3194 7075-T62 extrusion as given in QQ-A-200/11 7075-T651 plate as given in QQ-A-250/12. Refer to the production drawings for the machined thicknesses BAC1514-3208 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Forward Edge Frame Outer Chord		BAC1514-3193 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses	
[6]	Aft Edge Frame Outer Chord Strap J-web	0.350 (8.89)	BAC1514-3193 2024-T42 extrusion as given in QQ-A-200/3. Refer to the production drawings for the machined thicknesses (Optional: BAC1510-1258) 7075-T651 plate as given in QQ-A-250/12. Refer to the production drawings for the machined thicknesses BAC1503-100244 7075-T62 extrusion as given in QQ-A-200/11. Refer to the production drawings for the machined thicknesses	
[7]	Stub Frame (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Intercostal Assembly Intercostal Strap	0.190 (4.83)	7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses) 2024-T3 sheet as given in QQ-A-250/4	
[9]	Intercostal Assembly			

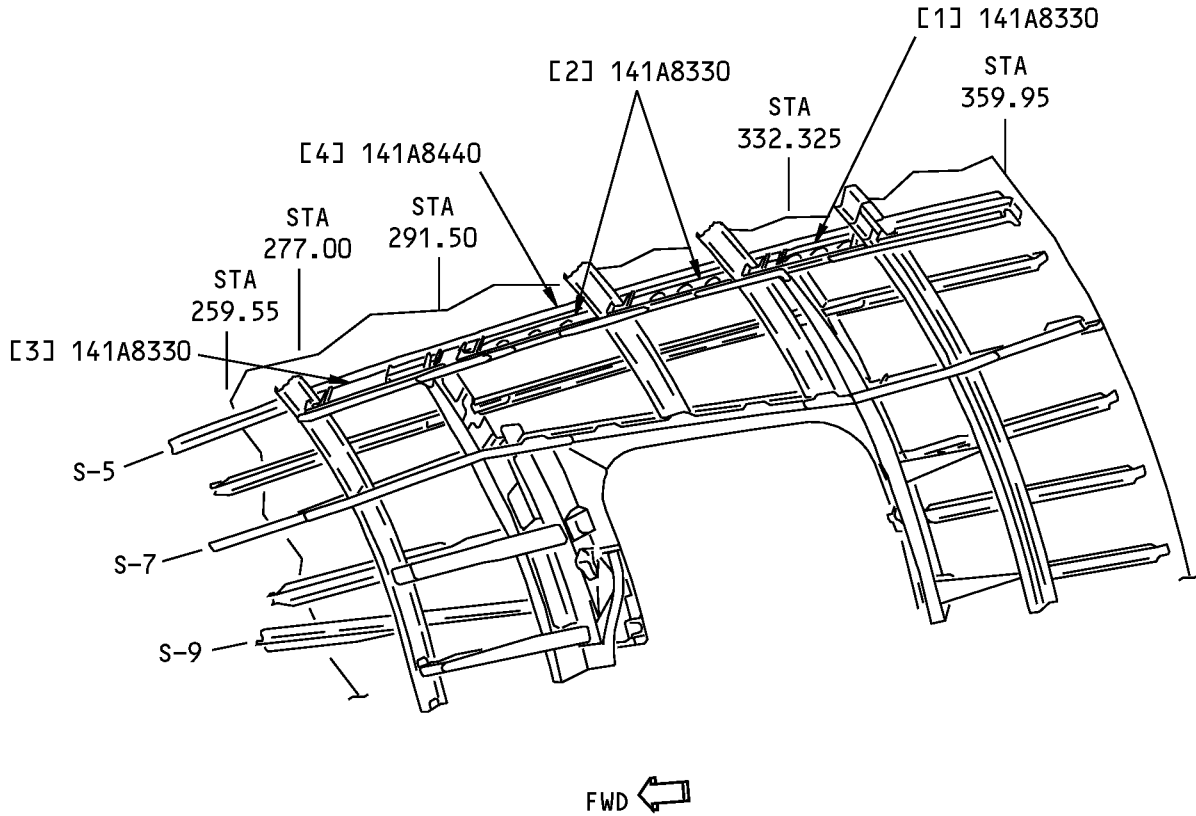


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STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.310 (7.87)	2024-T3 plate as given in QQ-A-250/4	
[10]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.140 (3.56)	2024-T3 sheet as given in QQ-A-250/4	
[11]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[12]	Intercostal Assembly			
	Intercostal		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part) (Optional: 7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses)	
	Strap	0.250 (6.35)	2024-T3 plate as given in QQ-A-250/4	
[13]	Intercostal		7075-T73 die forging as given in BMS 7-186. Refer to the production drawings for the chem-mill thicknesses	
[14]	Chord		AND10134-1205 7075-T62 extrusion as given in QQ-A-200/11	
[15]	Chord		BAC1506-4292 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Upper Main Auxiliary Sill Structure Identification  
Figure 4**



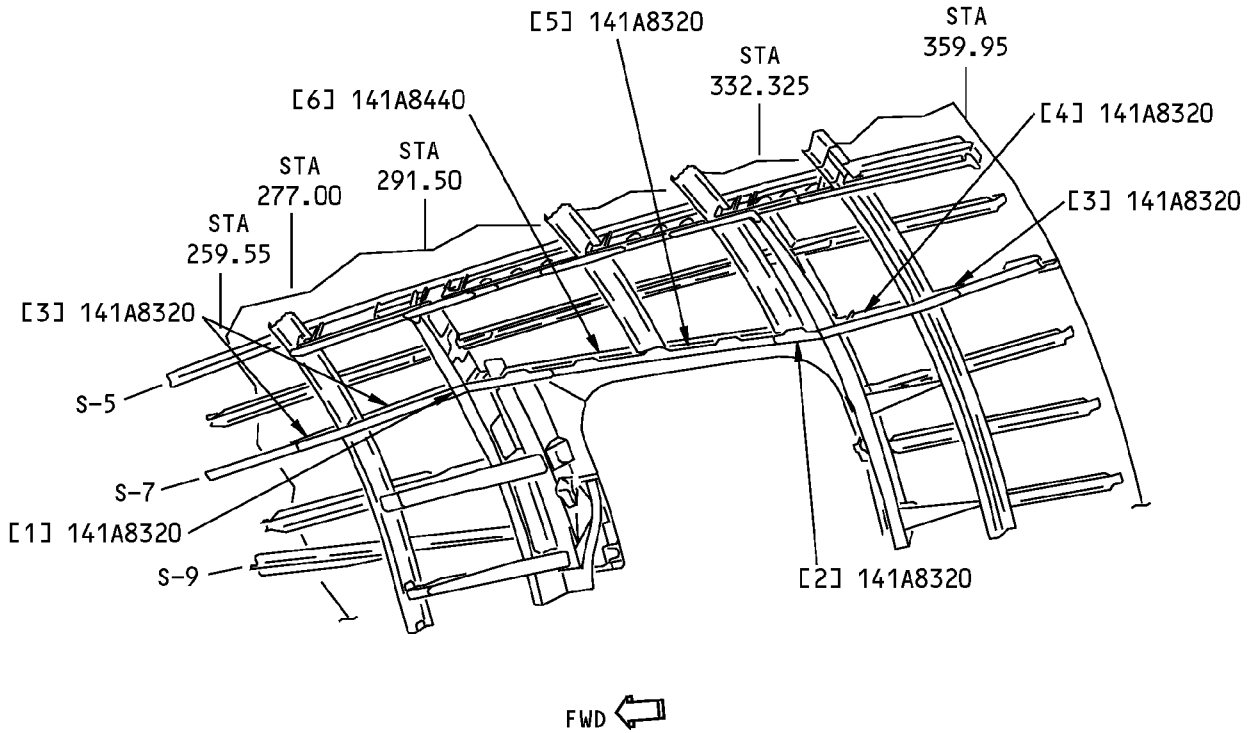
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Sill (STA 344 to STA 328) Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Sill (STA 312 to STA 328 and STA 294.5 to STA 312) Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Sill (STA 277 to STA 294.5) Web Strap	0.063 (1.6) 0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Chord		BAC1503-100613 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Upper Main Sill Structure Identification  
Figure 5**



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**STRUCTURAL REPAIR MANUAL**

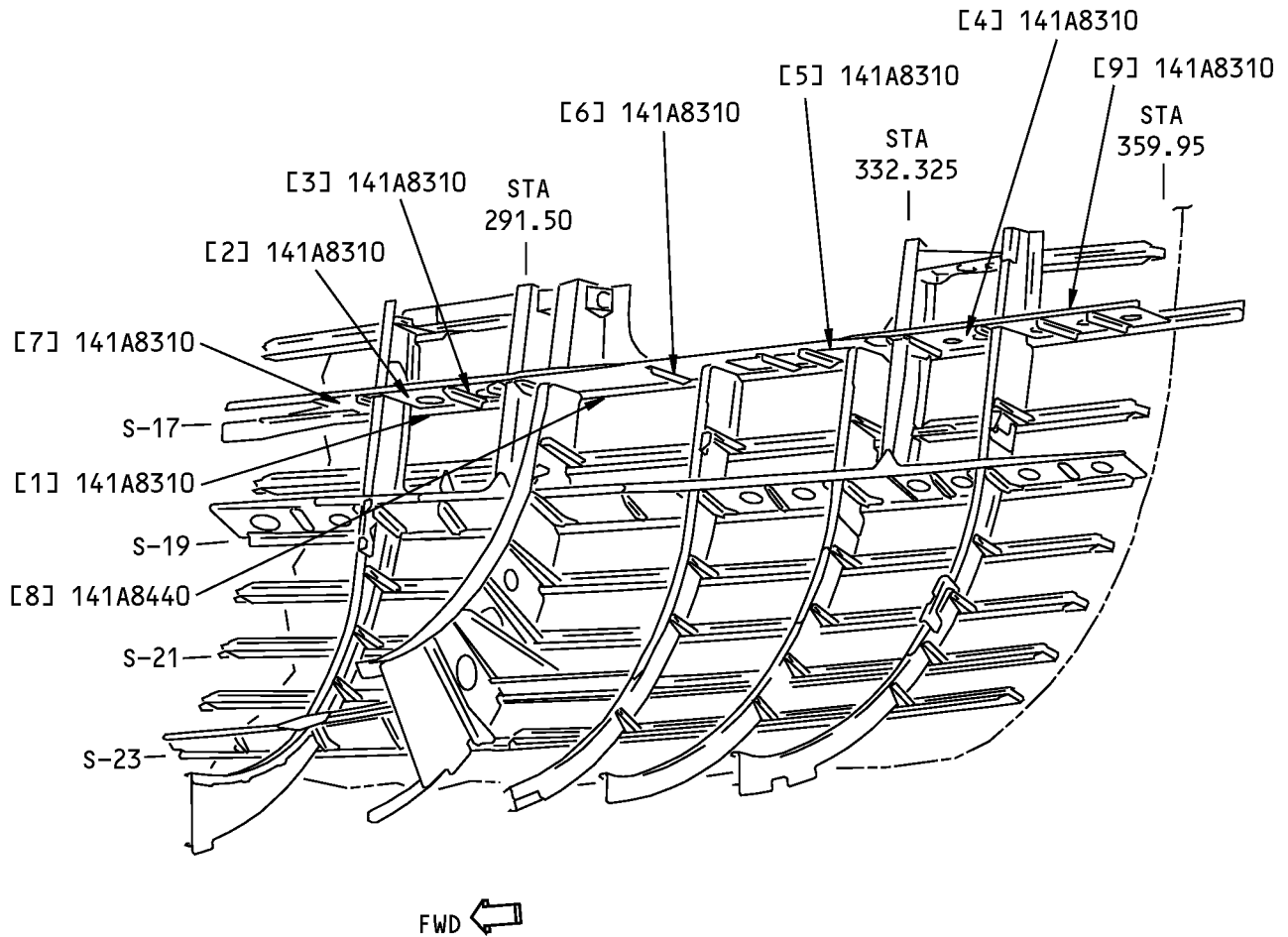
**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap	0.160 (4.6)	2024-T3 sheet as given in QQ-A-250/4	
[2]	Strap	0.100 (2.54)	2024-T3 sheet as given in QQ-A-250/4	
[3]	Web (STA 344 to STA 360, STA 277 to STA 291.5, and STA 259.5 to 277) STA 277)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Web (STA 332.1 to STA 344)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web (STA 291.5 to STA 332.1)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Chord		BAC1503-100195 2024-T62 extrusion as given in QQ-A-200/3	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**Lower Main Sill Structure Identification  
Figure 6**



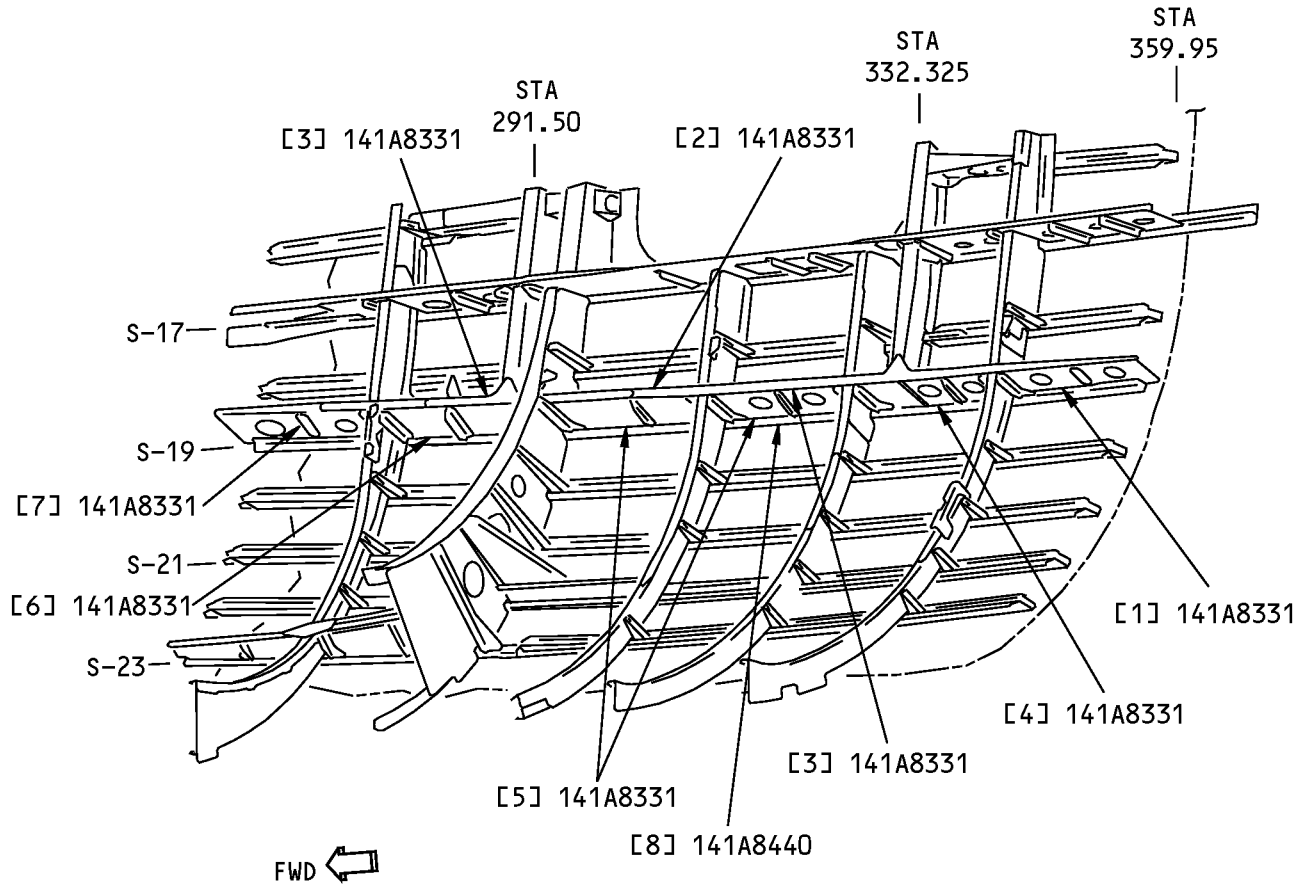
**737-800  
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**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap, Outer Chord	0.400 (10.16)	2024-T351 plate as given in QQ-A-250/4. This is a grain direction controlled part	
[2]	Strap, Inner Chord	0.200 (5.08)	7075-T6 sheet as given in QQ-A-250/12	
[3]	Web Assembly (STA 277 to STA 291.5) Web  Angle  Channel	0.090 (2.29)    0.045 (1.14)	7075-T6 Clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses  BAC1490-2630 7075-T62 clad sheet as given in QQ-A-250/13  7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Web (STA 332.1 to STA 344)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web Assembly (STA 2921.5 to STA 332.1) Web (2)  Web  Angle  Angle	0.063 (1.6)  0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses  7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses  BAC1490-2735 7075-T62 clad sheet as given in QQ-A-250/13  BAC1490-2630 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Chord Assembly (STA 259.5 to STA 360) Inner Chord Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3290 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Web (STA 259.5 to STA 277)	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[8]	Chord (STA 259.5 to STA 360)		BAC1506-2633 2024-T42 extrusion as given in QQ-A-200/3	
[9]	Web (STA 344 to STA 360)	0.090 (2.29)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Lower Auxiliary Sill Structure Identification  
Figure 7**



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**Table 6:**

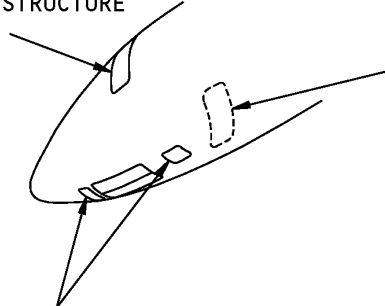
<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web (STA 344 to STA 360)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Strap	0.125 (3.18)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Strap (2)	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Web Assembly (STA 328 to STA 344) Web Angle	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 AND10134-0501 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Web Assembly (STA 312 to STA 328 and STA 294.5 to STA 312) Web Angle	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 AND10134-0501 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Web Assembly (STA 277 to STA 294.5) Web Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 AND10134-1201 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Web (STA 259.5 to STA 277)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (STA 259.5 to STA 360)		BAC1503-100144 7075-T73 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 3 - FORWARD BAY AND ELECTRONIC BAY ACCESS DOORS SURROUND STRUCTURE**

REFER TO IDENTIFICATION 1  
FOR THE FORWARD ENTRY  
DOOR SURROUND STRUCTURE  
IDENTIFICATION



REFER TO IDENTIFICATION 2 FOR  
THE FORWARD GALLEY DOOR SURROUND  
STRUCTURE IDENTIFICATION

REFER TO FIGURES 2 AND 3 FOR  
THE FORWARD BAY AND ELECTRONIC  
BAY ACCESS DOOR SURROUND  
STRUCTURES IDENTIFICATION

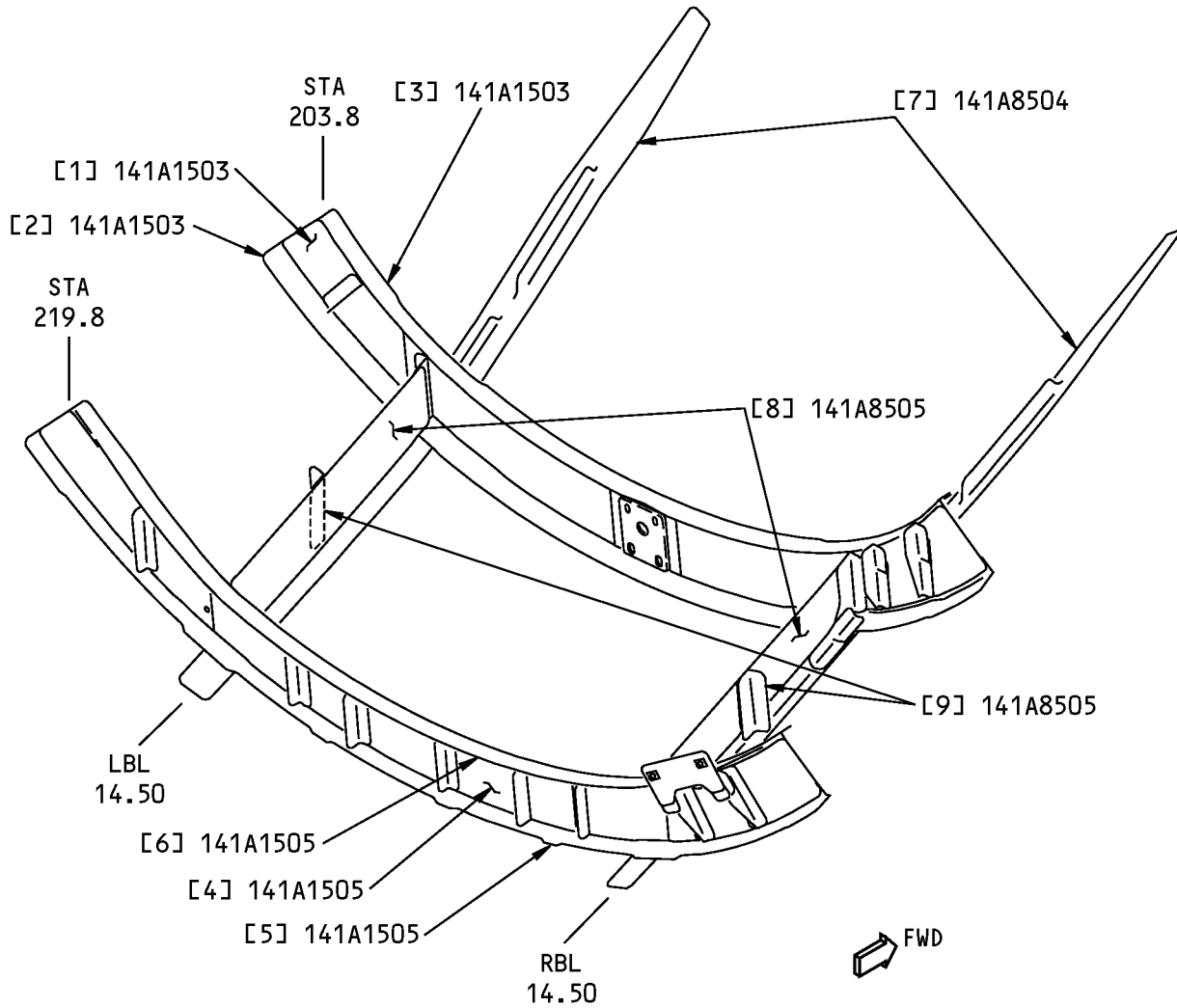
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Forward Bay and Electronic Bay Access Door Surround Structures Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4105	Functional Collector - Lower Lobe, Section 41
141A8501	Intercostal Installation-Forward Access Section 41
141A8505	Surround Assemblies - Lower Lobe Access, Section 41
141A8511	Surround Installation - Electronic Bay Access, Section 41

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**FORWARD BAY ACCESS DOOR SURROUND STRUCTURE**

**Forward Bay Access Door Surround Structure Identification  
Figure 2**



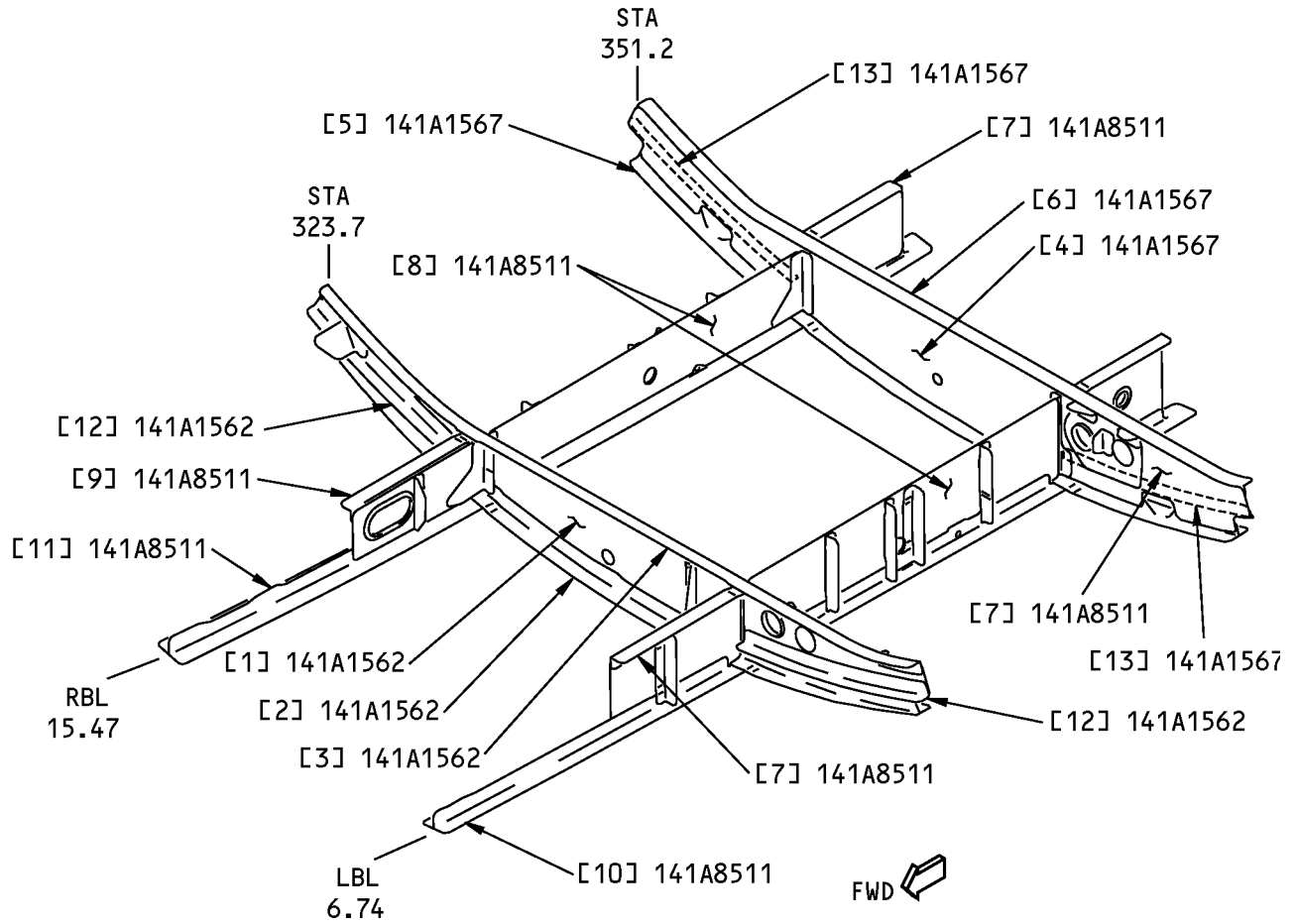
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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[2]	Outer Chord		BAC1506-1744 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Inner Chord		BAC1503-100055 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to the production drawings for the chem-mill thicknesses	
[5]	Outer Chord		BAC1506-1989 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Inner Chord		BAC1505-100274 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Outer Chord (2)		BAC1505-100482 2024-T42 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323)	
[8]	Web (2)	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Stiffener (2)		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**ELECTRONIC BAY ACCESS DOOR SURROUND STRUCTURE**

**Electronic Bay Access Door Surround Structure Identification  
Figure 3**





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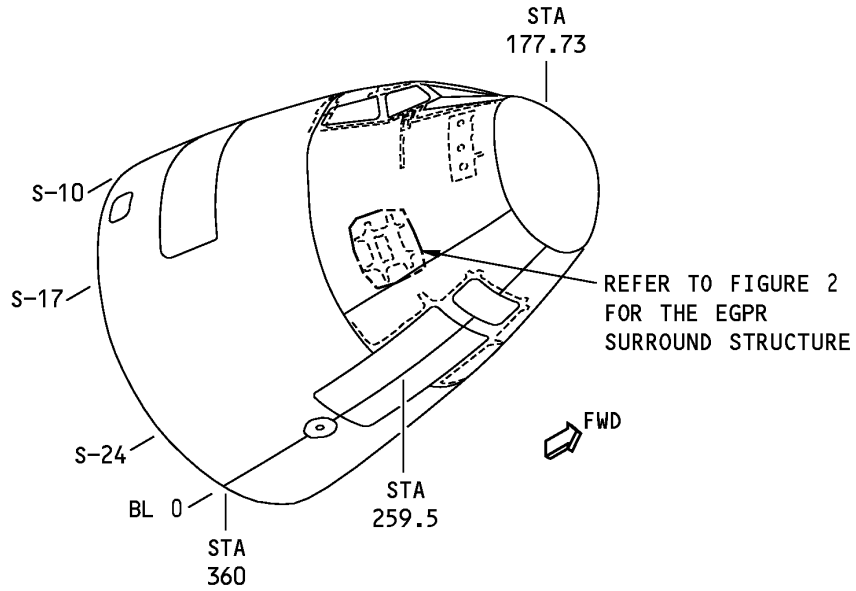
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Outer Chord		BAC1506-921 2024-T42 extrusion as given in QQ-A-200/3	
[3]	Inner Chord		BAC1503-100913 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Outer Chord		BAC1505-101176 2024-T42 extrusion as given in QQ-A-200/3	
[6]	Inner Chord		AND10133-1201 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Intercostal (3) Assembly Web Chord	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Intercostal Web (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Intercostal Assembly Web Chord	0.071 (1.8)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Lower Chord		BAC1506-4301 7075-T62 extrusion as given in QQ-A-200/11	
[11]	Lower Chord		BAC1506-1743 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Failsafe Chord (2)		BAC1490-2569 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Failsafe Chord (2)		BAC1490-2807 7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND STRUCTURE**

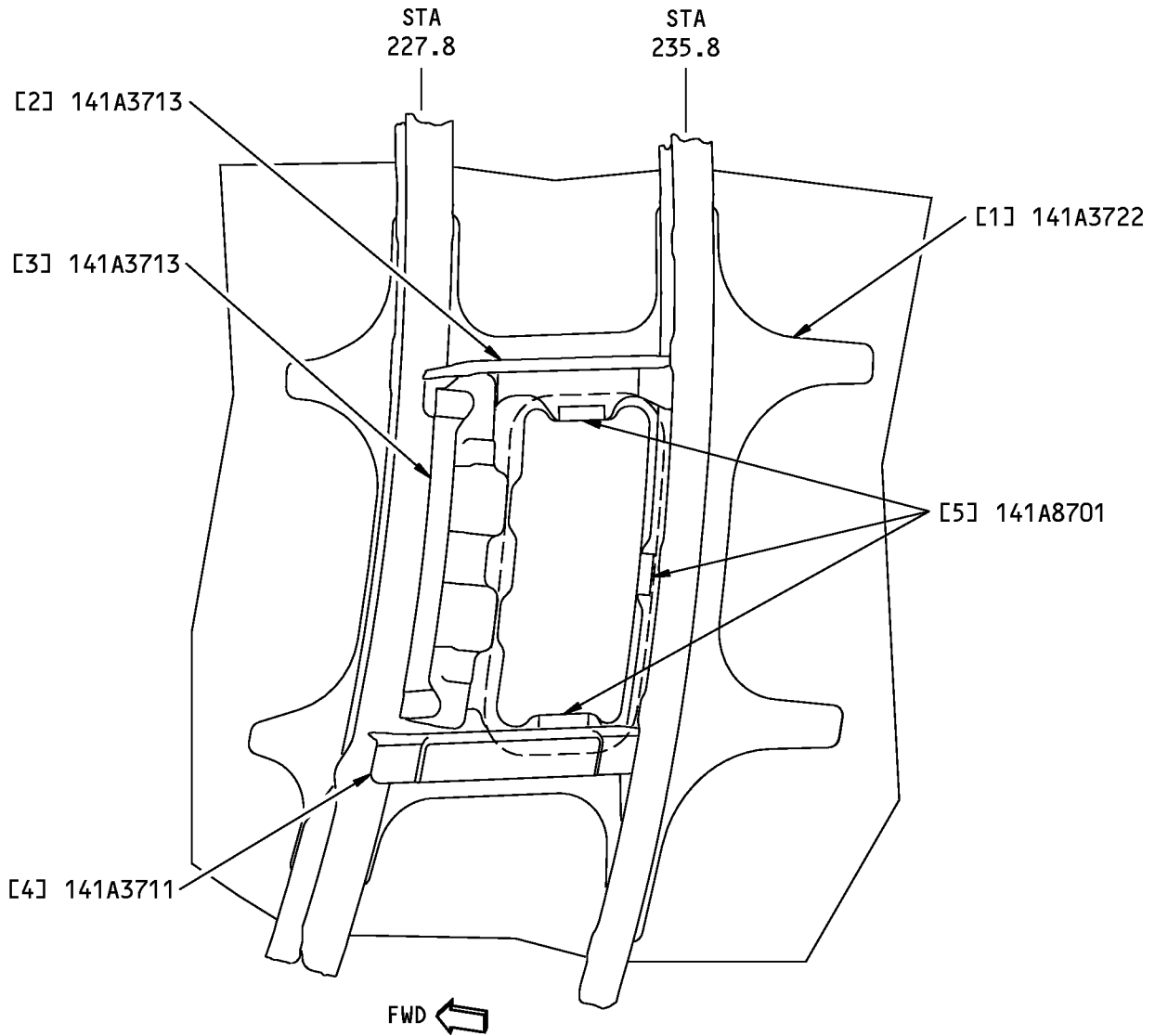


1665037 S0000298275\_V1

**Electrical Ground Power Receptacle Surround Structure Location  
Figure 1**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A3702	Skin Installation -Side Panel, Section 41
141A0640	Intergration Installation -Side Panel, Section 41

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

1664999 S0000298281\_V1

**Electrical Ground Power Receptacle Surround Structure Identification  
Figure 2**



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>*[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5.	
[2]	Stiffener	2.00 (50.8)	7050-T7451 Plate. Ultrasonic Inspect as given in BAC5439 Class A.	
[3]	Intercostal	1.75 (44.45)	7075-T7351 Plate as given in QQ-A-250/1, ultrasonic inspect as given in BAC5439 Class A.	
[4]	Stiffener		BAC1508-311 7075-T73511 Extrusion as given in QQ-A-200/11, ultrasonic inspect as given in BAC5439 Class A. (Optional: 7075-T73511 Extruded Bar)	
[5]	Rubbing Block	0.031 (0.79)	Phenolic Resin, Laminated Thermosetting Sheet as given in ASTM D709, Type V, Grade N-1.	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**ALLOWABLE DAMAGE 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE**

**1. Applicability**

A. This subject gives the allowable damage limits for the door surround structure as shown in Figure 101/ALLOWABLE DAMAGE 1.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
UPPER MAIN AUXILIARY SILL	OUTER CHORDS	4.A
	TEE CLIPS	4.B
	ANGLES	4.C
	WEBS	4.D
	DOUBLER	4.D
	STRAPS	4.E
	CHANNELS	4.H
UPPER MAIN SILL	OUTER CHORD	4.A
	INNER CHORD ANGLES	4.B
	ANGLES	4.C
	WEBS	4.D
	DOUBLER	4.D
	STRAPS	4.E
AFT LOWER FRAME CHORD	FRAME CHORD	4.A
	SPLICE ANGLE	4.C
	FRAME DOUBLER	4.D
	SPLICE STRAP	4.E
AFT DOOR FRAME INTERCOSTAL	INTERCOSTAL	4.G
	CHANNEL	4.H
FORWARD DOOR FRAME INTERCOSTAL	STRAP	4.E
	INTERCOSTAL	4.G
STIFFENER INSTALLATION AT S-13	OUTER CHORD	4.A
	ANGLE	4.B
	ANGLES	4.C
	WEBS	4.D
LOWER AUXILIARY SILL	OUTER CHORD	4.A
	TEES	4.B
	WEBS	4.D
	STRAPS	4.E
	INTERCOSTAL	4.F



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PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
LOWER MAIN SILL	OUTER CHORD	4.A
	ANGLES CLIP	4.B
	ANGLE	4.B
	INNER CHORD	4.C
	CHORD	4.C
	ANGLE	4.C
	SHEAR CLIP	4.C
	WEB	4.D
	CHANNEL	4.H
	BULB ANGLE	4.J
INTERCOSTAL ASSEMBLY	ANGLE	4.B
	DOUBLER	4.D
	INTERCOSTAL	4.F
CARRIAGE TRACK SUPPORT	CHORDS	4.C
	FAIL SAFE CHORDS	4.C
	WEBS	4.D
	DOUBLERS	4.D
UPPER AIRSTAIR SILL	TEE CLIPS	4.B
	CHANNEL CLIP	4.B
	ANGLE	4.C
	WEB	4.D
	J-WEB	4.D
LOWER AIRSTAIR SILL	INNER CHORD	4.B
	TEE CLIPS	4.B
	CLIP	4.B
	ANGLES	4.C
	WEBS	4.D
LOWER AUXILIARY AIRSTAIR SILL	TEE CLIPS	4.B
	CHANNEL CLIP	4.B
	CLIPS	4.B
	ANGLES	4.C
	WEBS	4.D
	STRAPS	4.E



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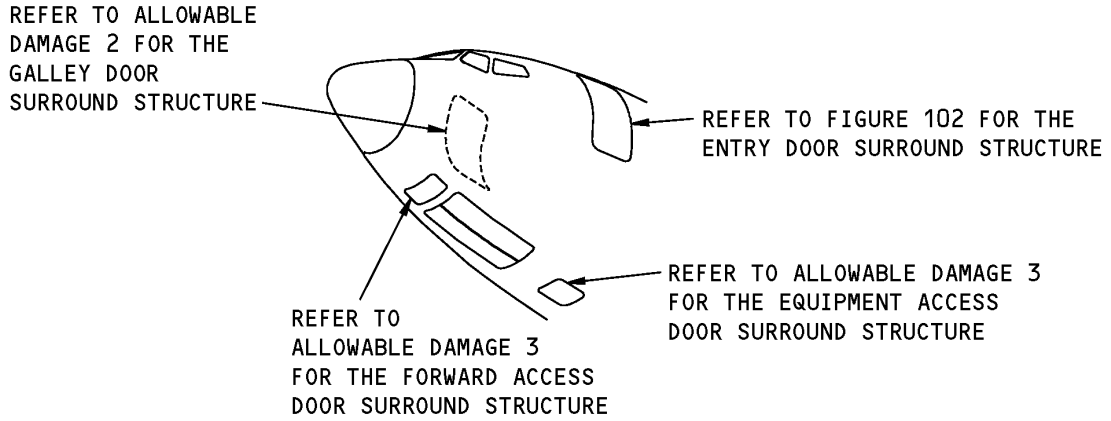
PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
OTHER STRUCTURES	TRACKS	4.A
	TEES	4.B
	OUTER CHORDS	4.C
	INTERCOSTAL	4.F
	STUB FRAMES	4.I

2. General

**WARNING:** SMALL PARTICLES OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH OR MORE ON TOP OF THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, HALON, CARBON TETRACHLORIDE, OR CARBON DIOXIDE. WATER THAT TOUCHES MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

- A. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.
  - (4) Refer to SOPM 20-10-07 when you machine titanium straps.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01
- C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.
- D. After you have removed the damage from the titanium strap, do the step that follows:
  - (1) Apply one layer of BMS 10-11, Type I primer to the reworked area. Refer to SOPM 20-40-02.

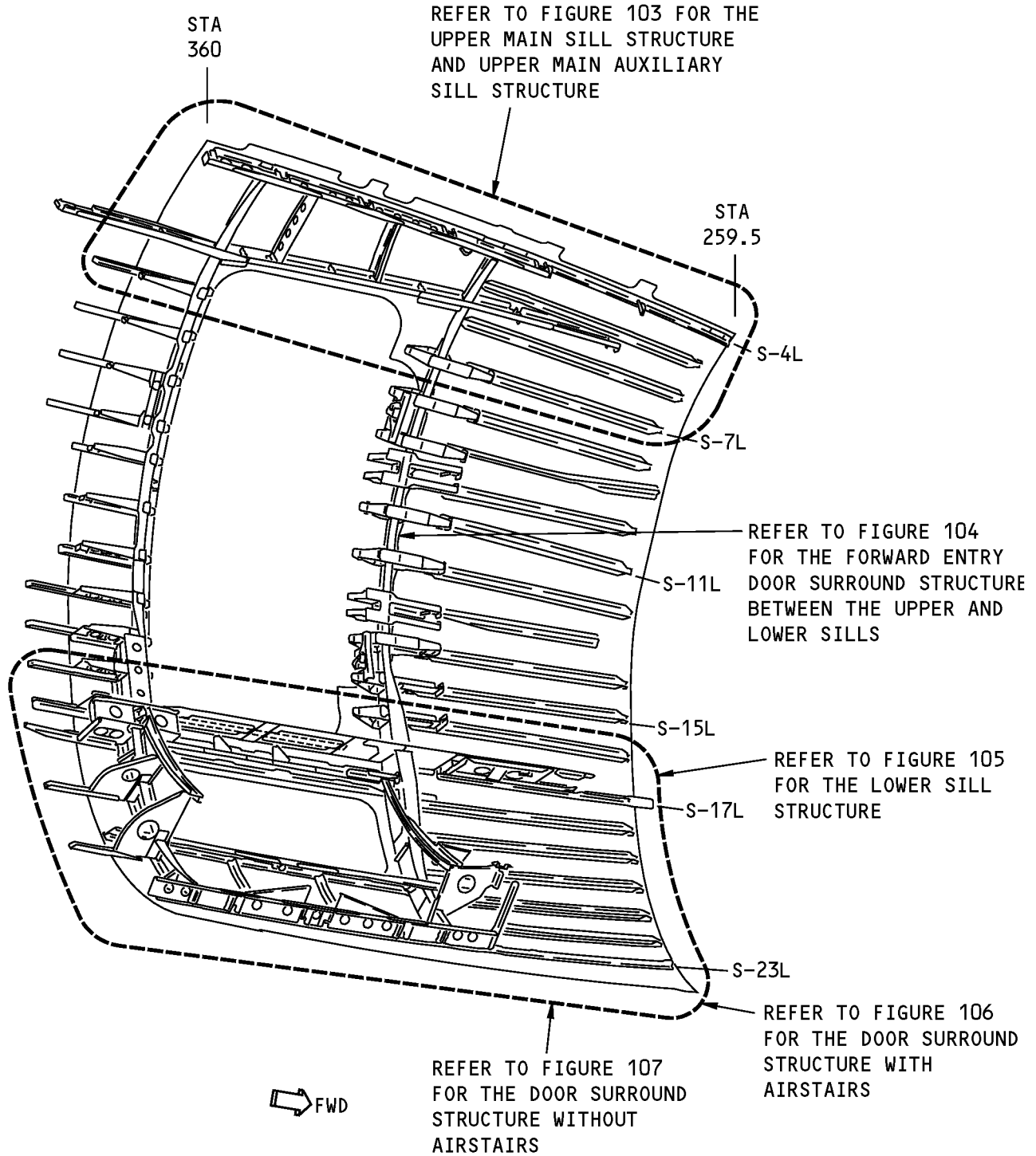
**737-800  
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**Forward Entry and Airstair Door Surround Structure  
Figure 101**

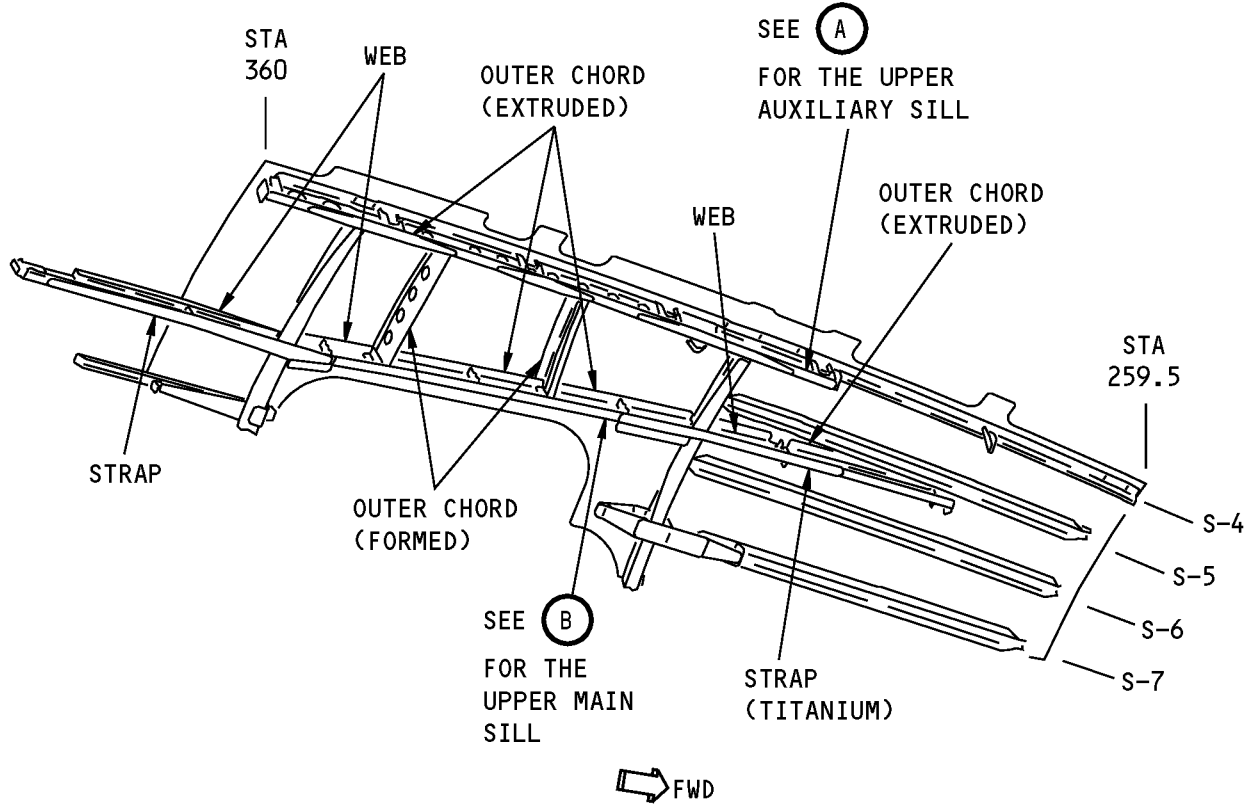


**STRUCTURAL REPAIR MANUAL**



**Forward Entry and Airstair Door Surround Structure Locations**  
**Figure 102**

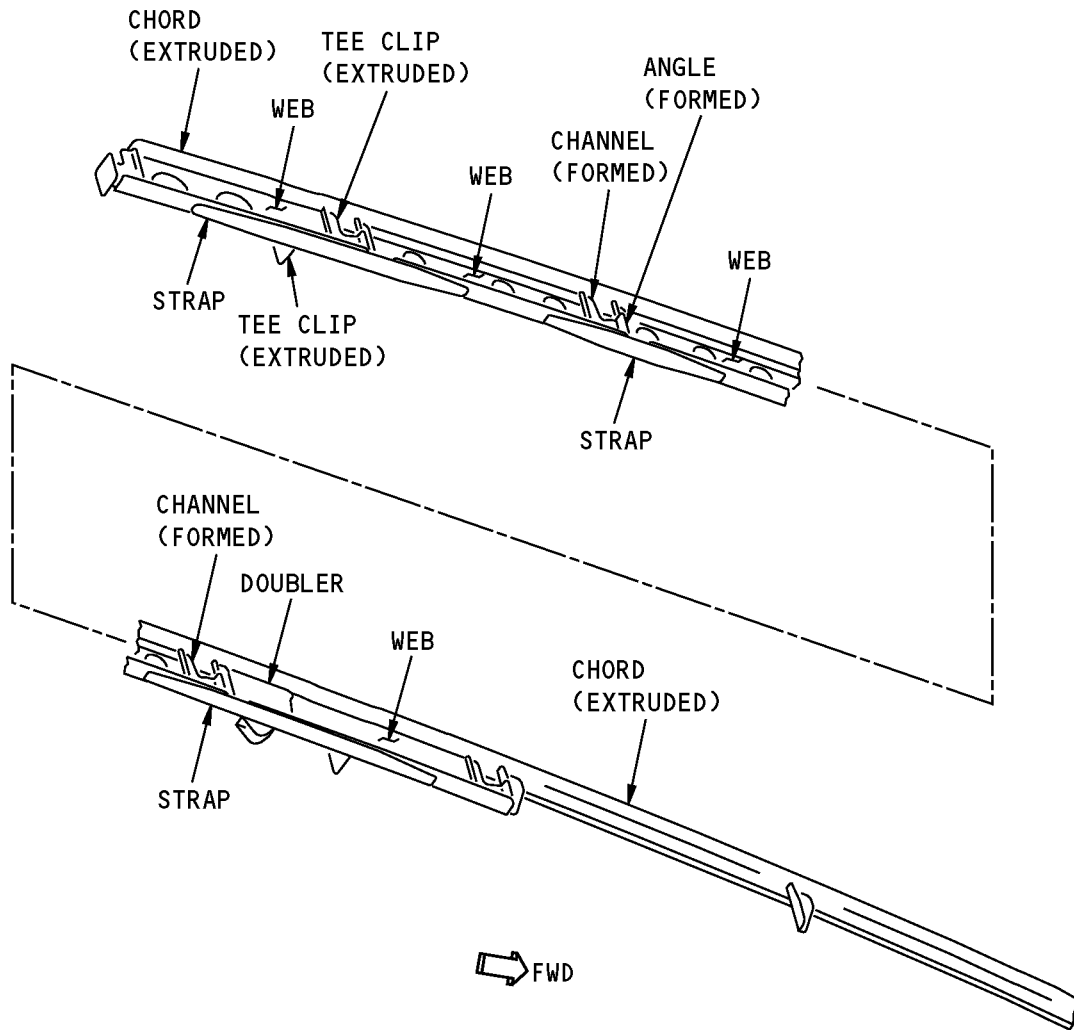
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**Upper Main Sill and Upper Auxiliary Sill Structure  
Figure 103 (Sheet 1 of 3)**

**STRUCTURAL REPAIR MANUAL**

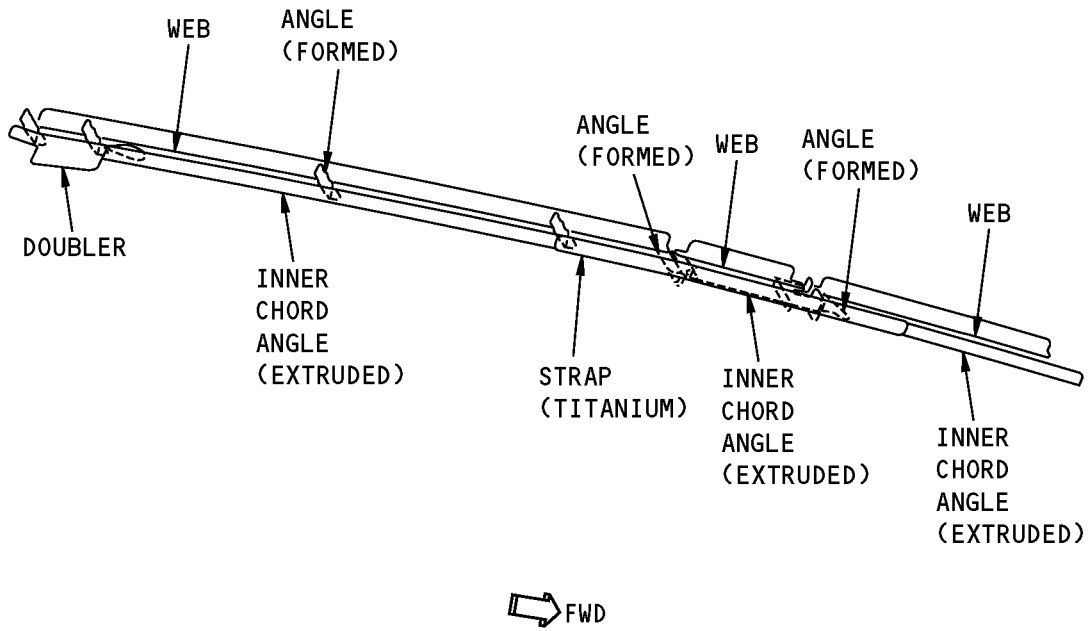


NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER AUXILIARY SILL**



**Upper Main Sill and Upper Auxiliary Sill Structure  
Figure 103 (Sheet 2 of 3)**



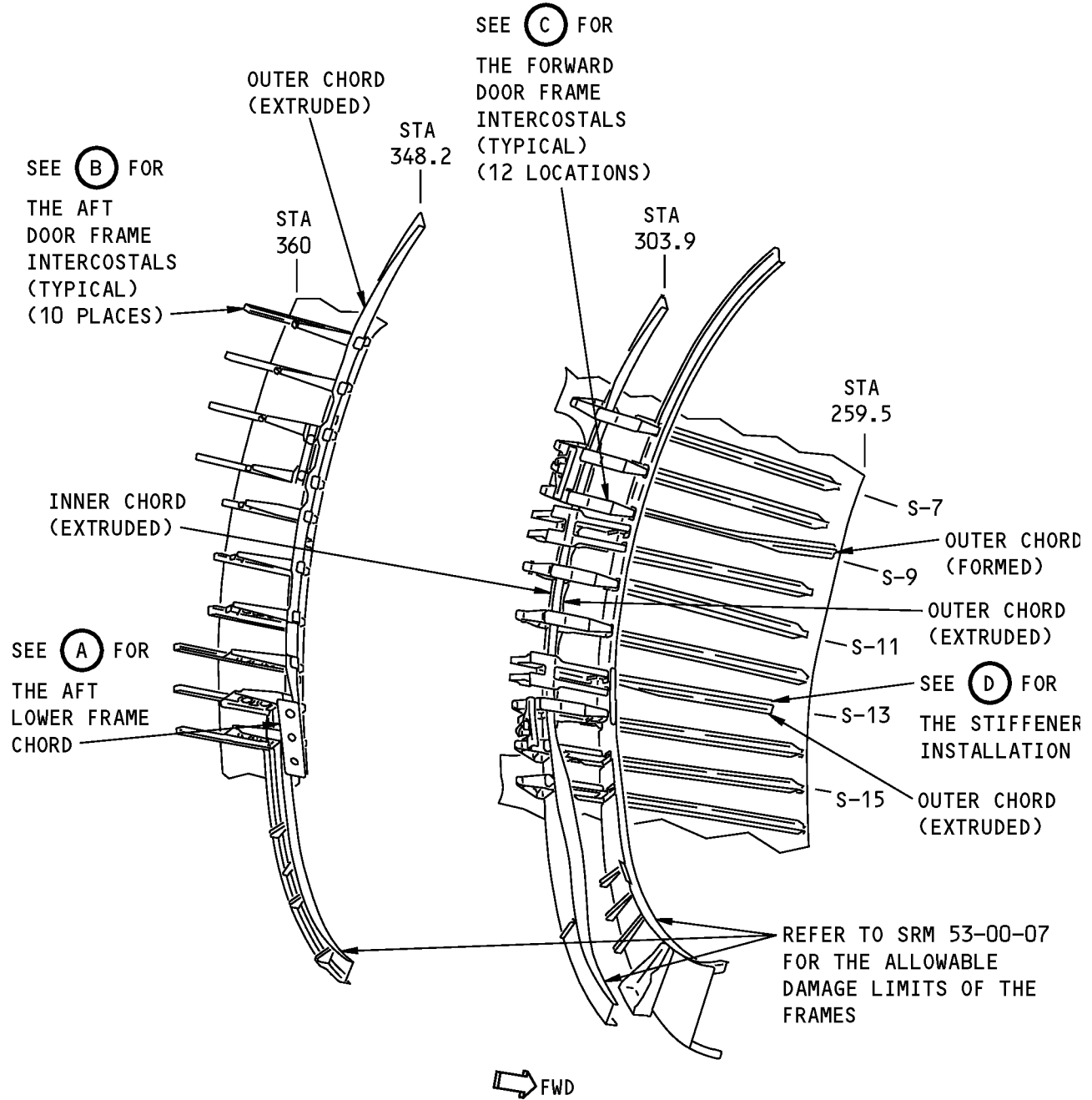
NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**UPPER MAIN SILL**

(B)

**Upper Main Sill and Upper Auxiliary Sill Structure  
Figure 103 (Sheet 3 of 3)**

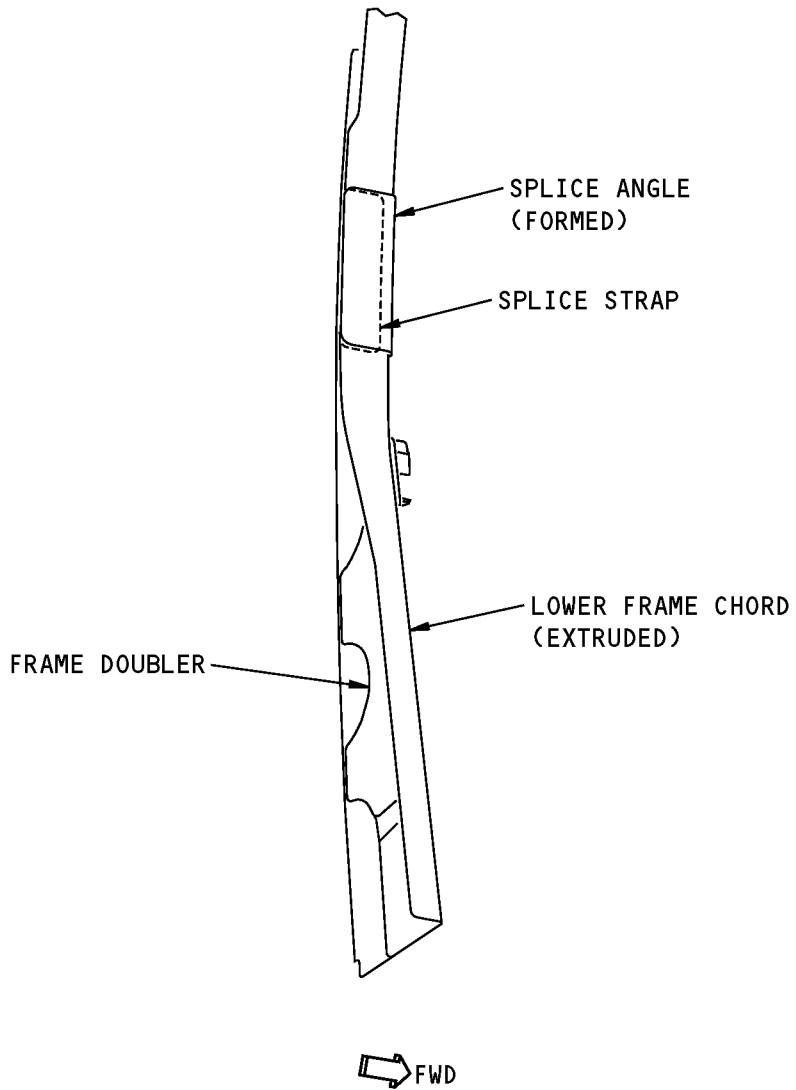
**STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 104 (Sheet 1 of 4)**

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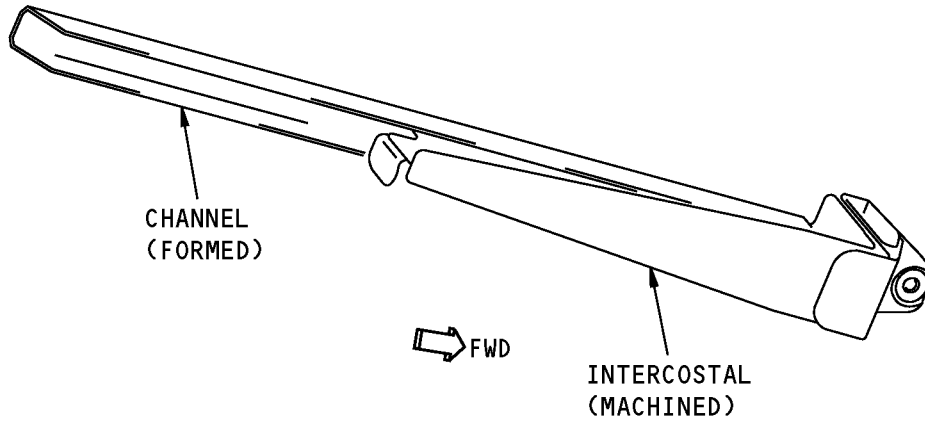
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**AFT LOWER FRAME CHORD**



**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 104 (Sheet 2 of 4)**

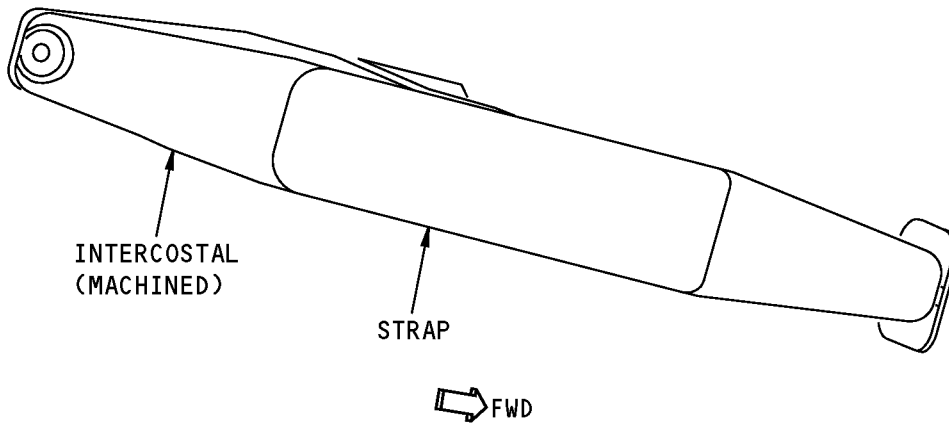
**737-800  
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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**AFT DOOR FRAME INTERCOSTAL (TYPICAL)**

**B**



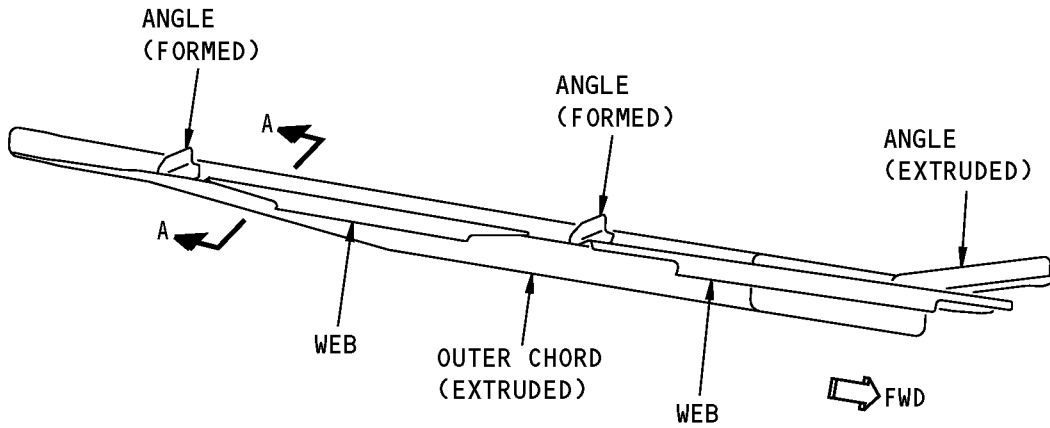
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**FORWARD DOOR FRAME INTERCOSTALS (TYPICAL)**

**C**

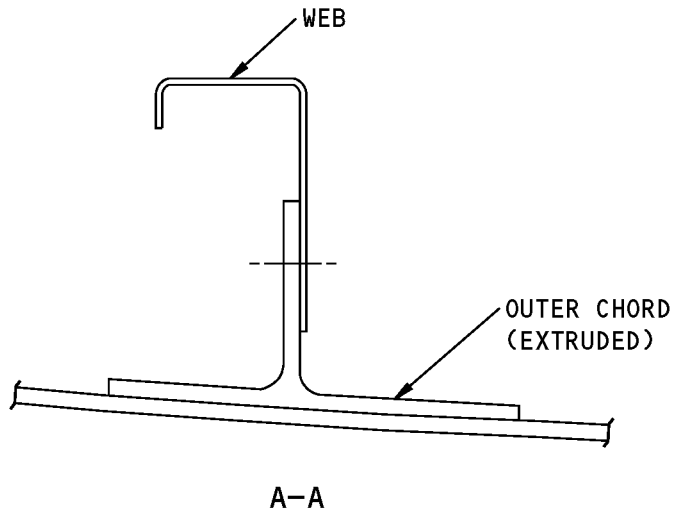
**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 104 (Sheet 3 of 4)**

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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

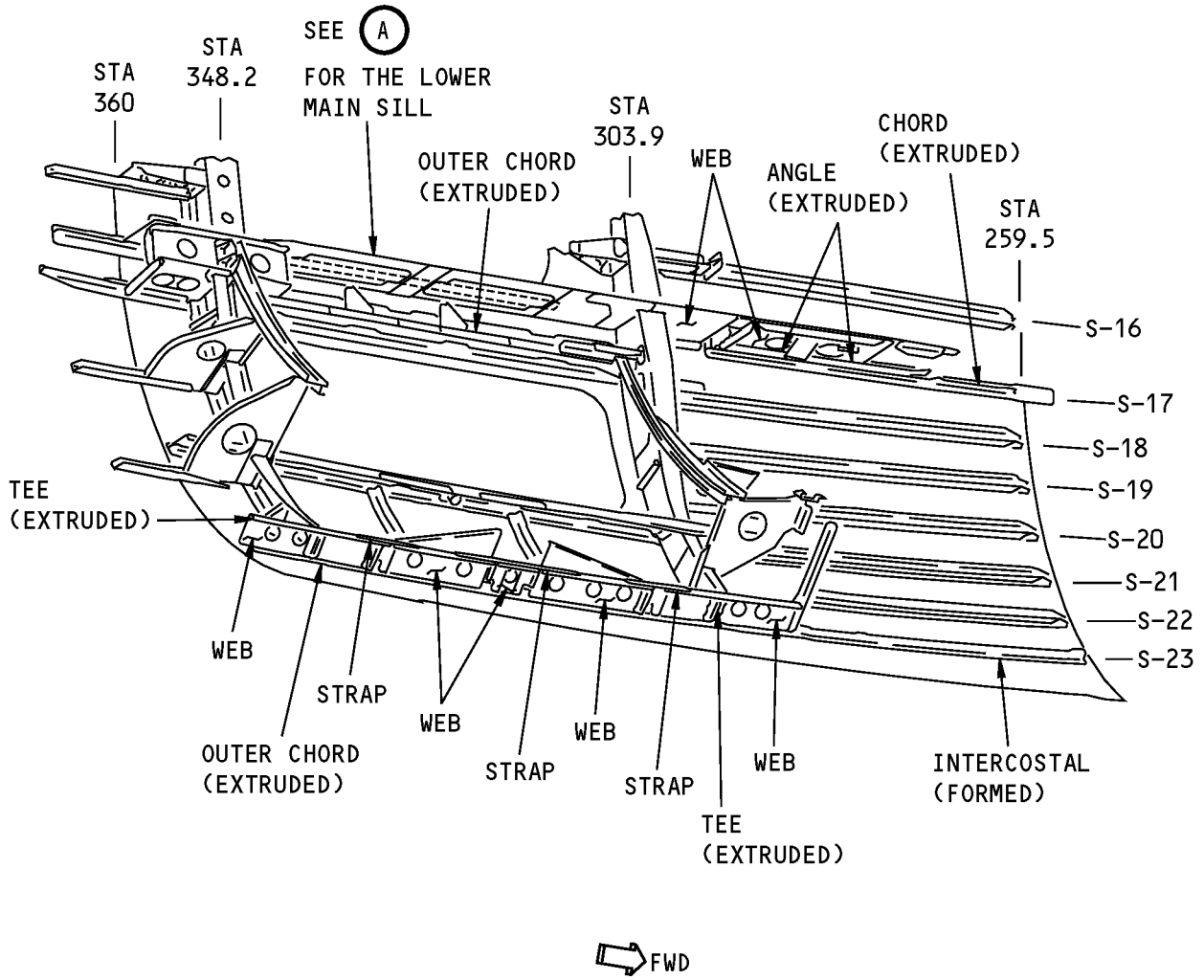
**STIFFENER INSTALLATION AT STRINGER 13**



**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 104 (Sheet 4 of 4)**



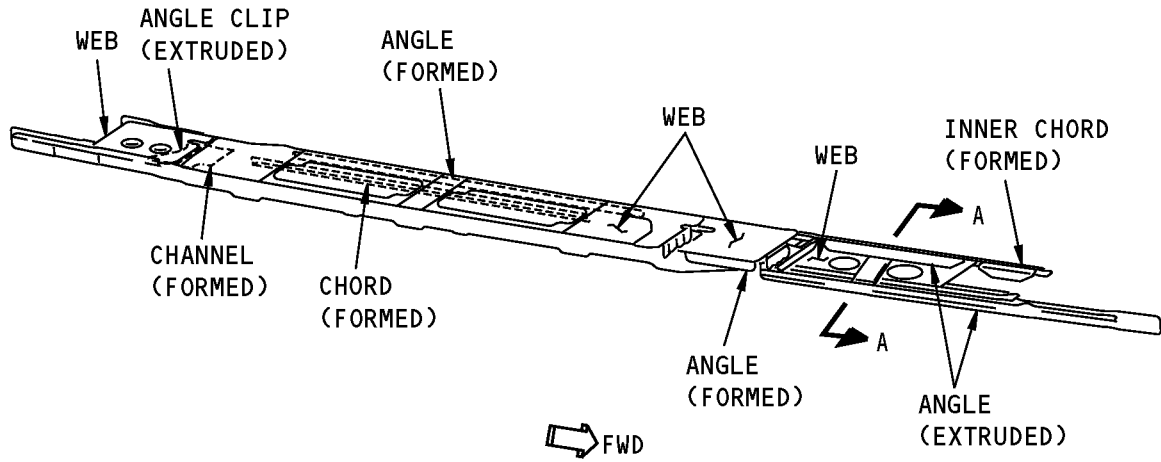
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

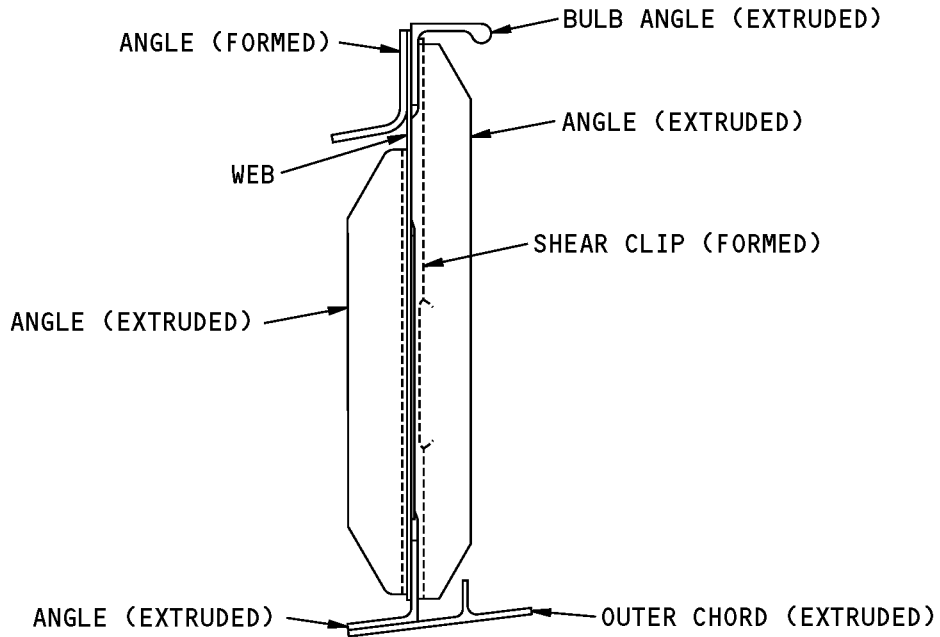
**Lower Sill Structure  
Figure 105 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

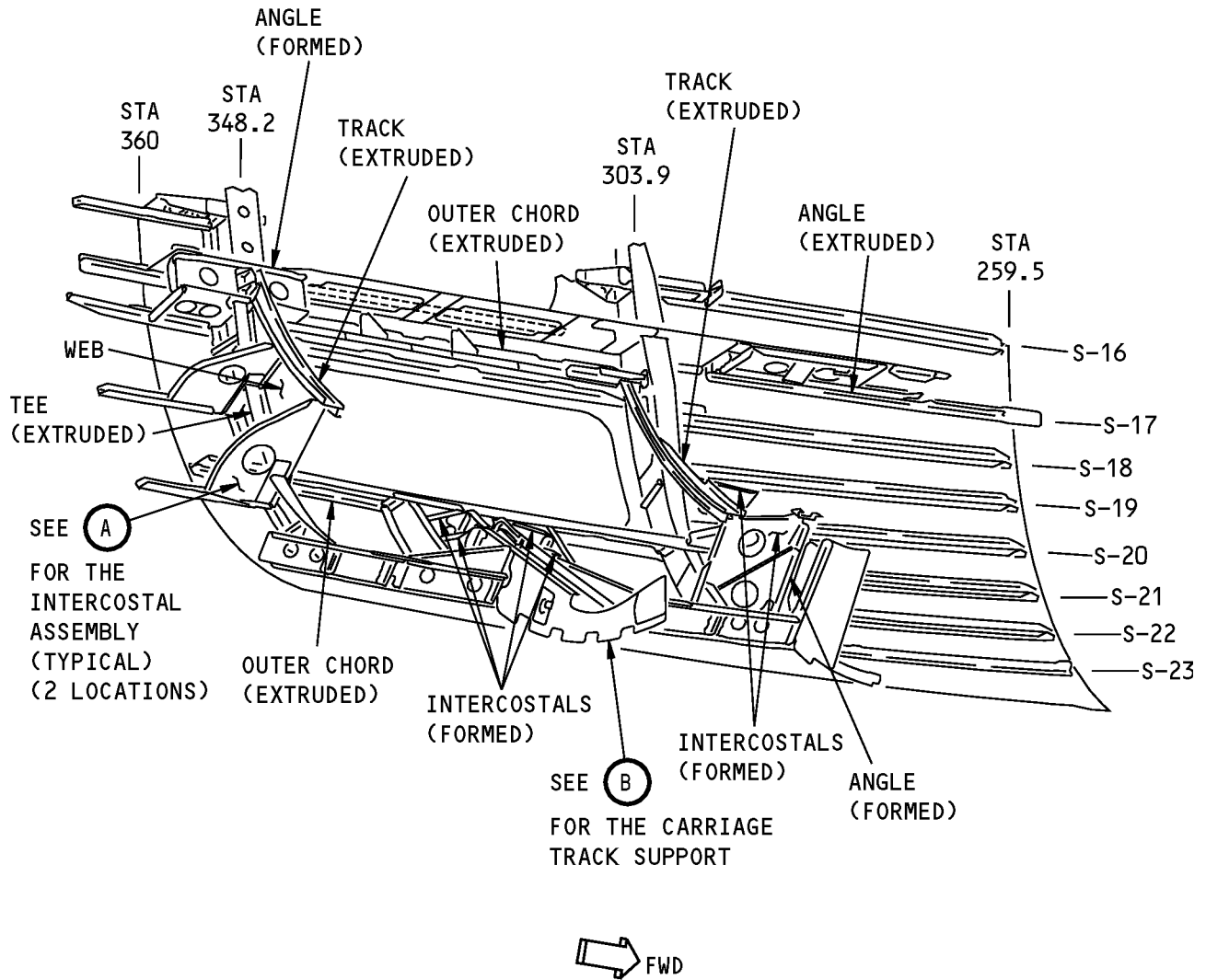
**LOWER MAIN SILL**



A-A

**Lower Sill Structure  
Figure 105 (Sheet 2 of 2)**

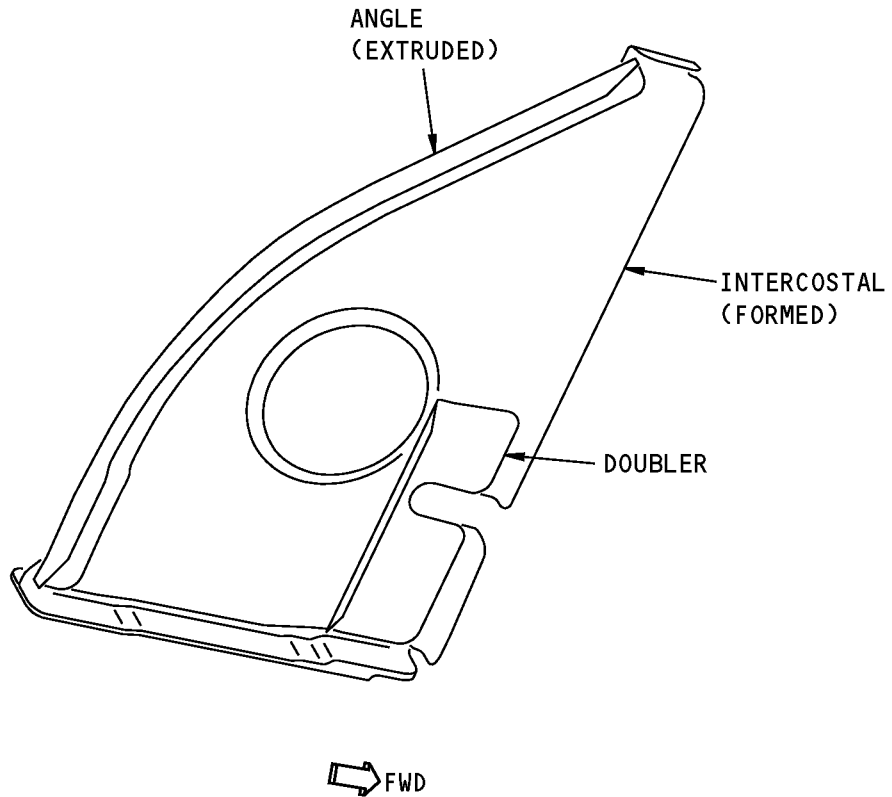
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Door Surround Structure With Airstairs  
Figure 106 (Sheet 1 of 3)**

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NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY (TYPICAL)**

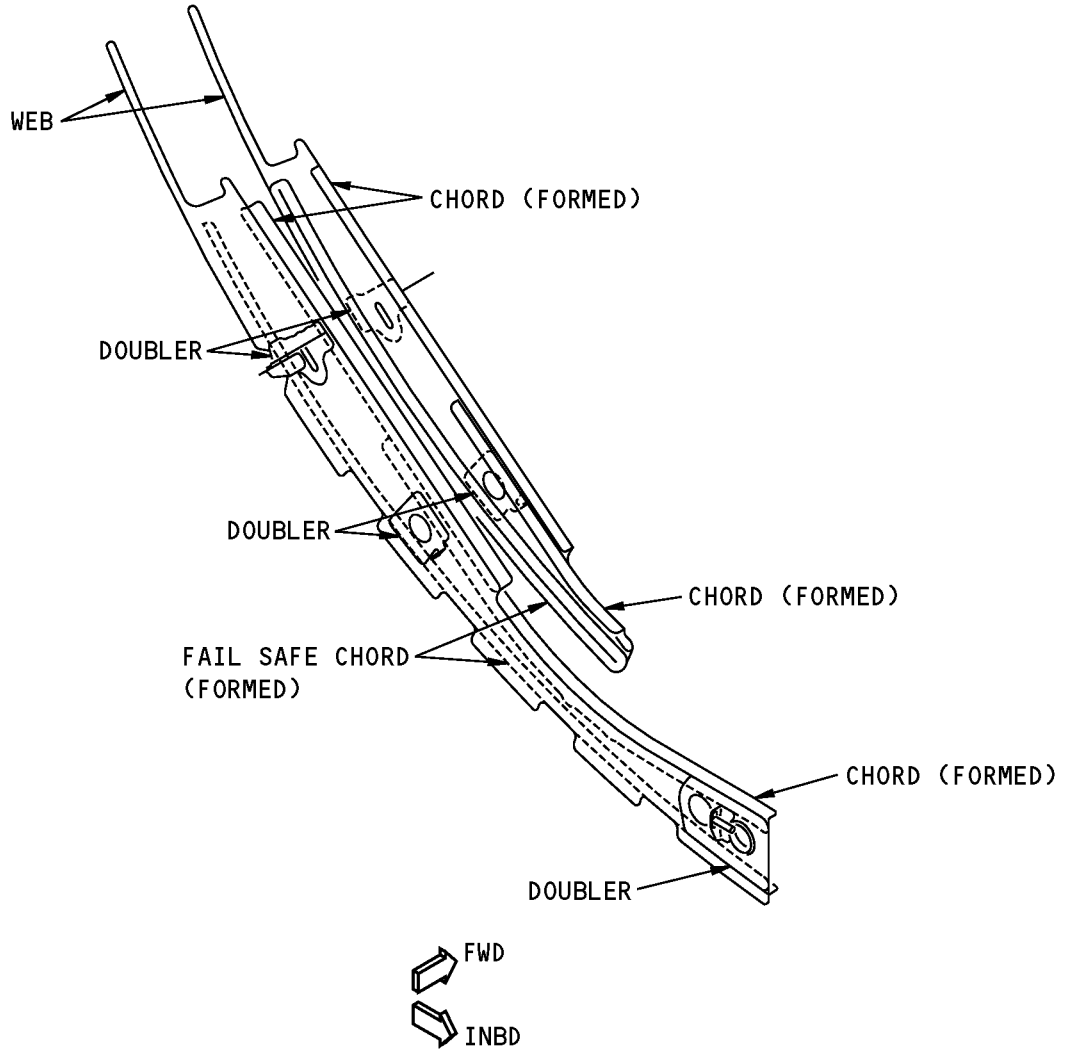
(A)

**Door Surround Structure With Airstairs  
Figure 106 (Sheet 2 of 3)**

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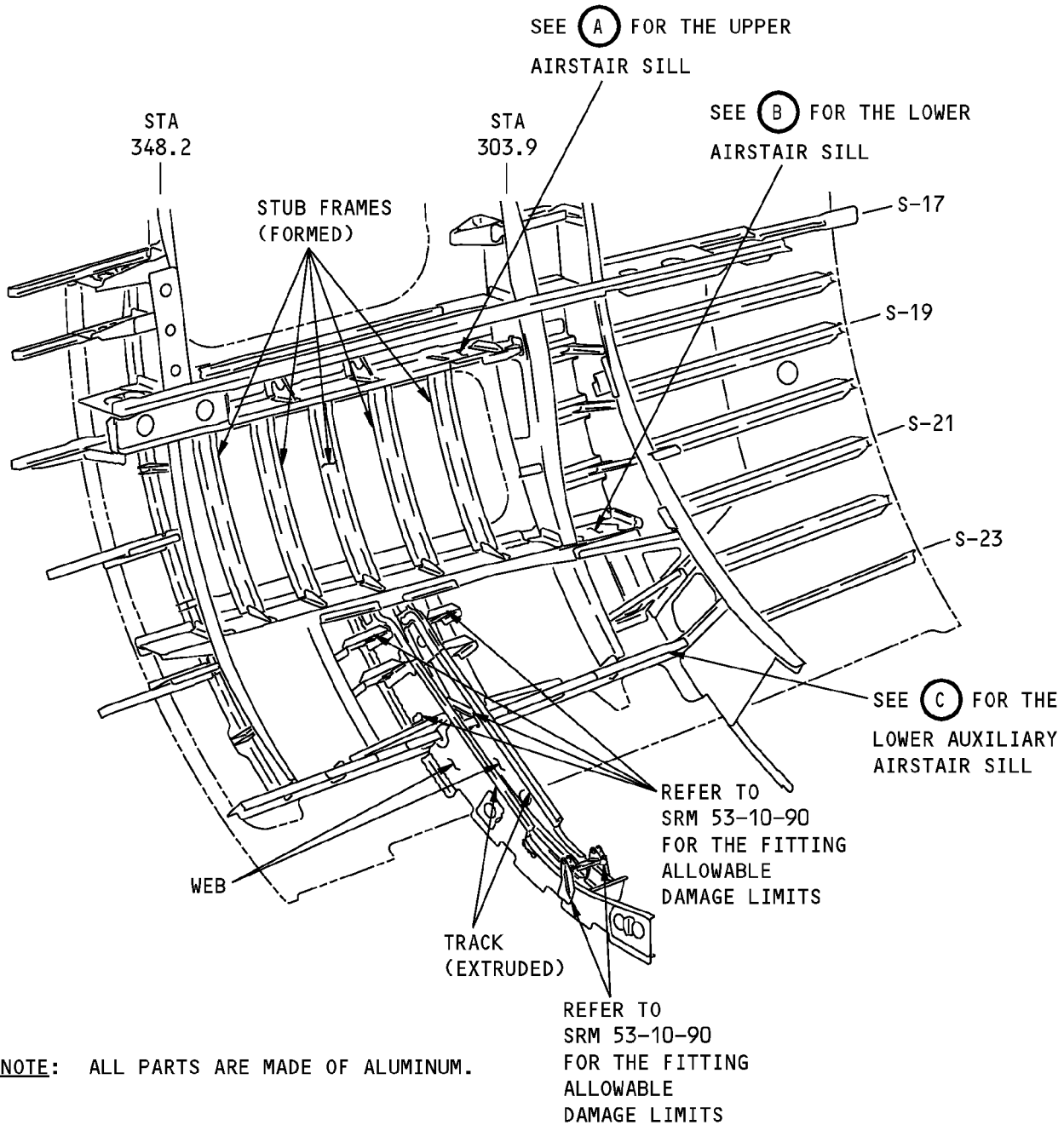
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**CARRIAGE TRACK SUPPORT**

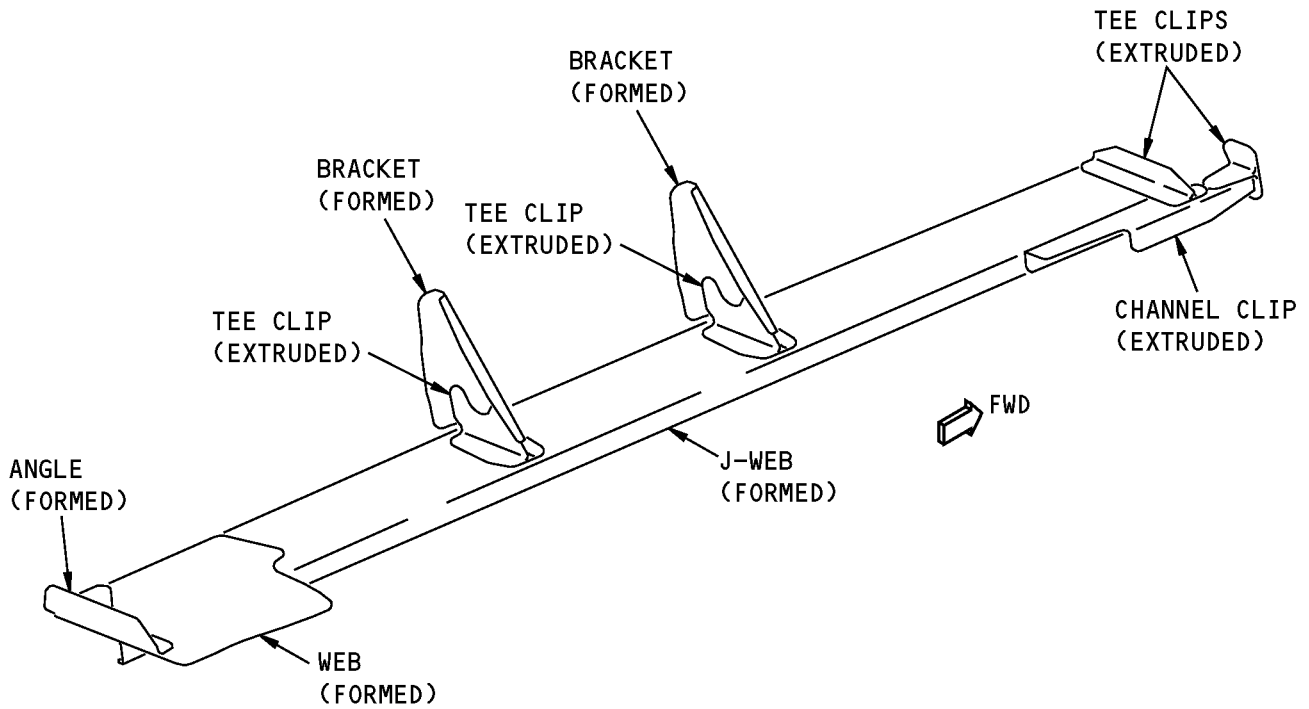
**B**

**Door Surround Structure With Airstairs  
Figure 106 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**



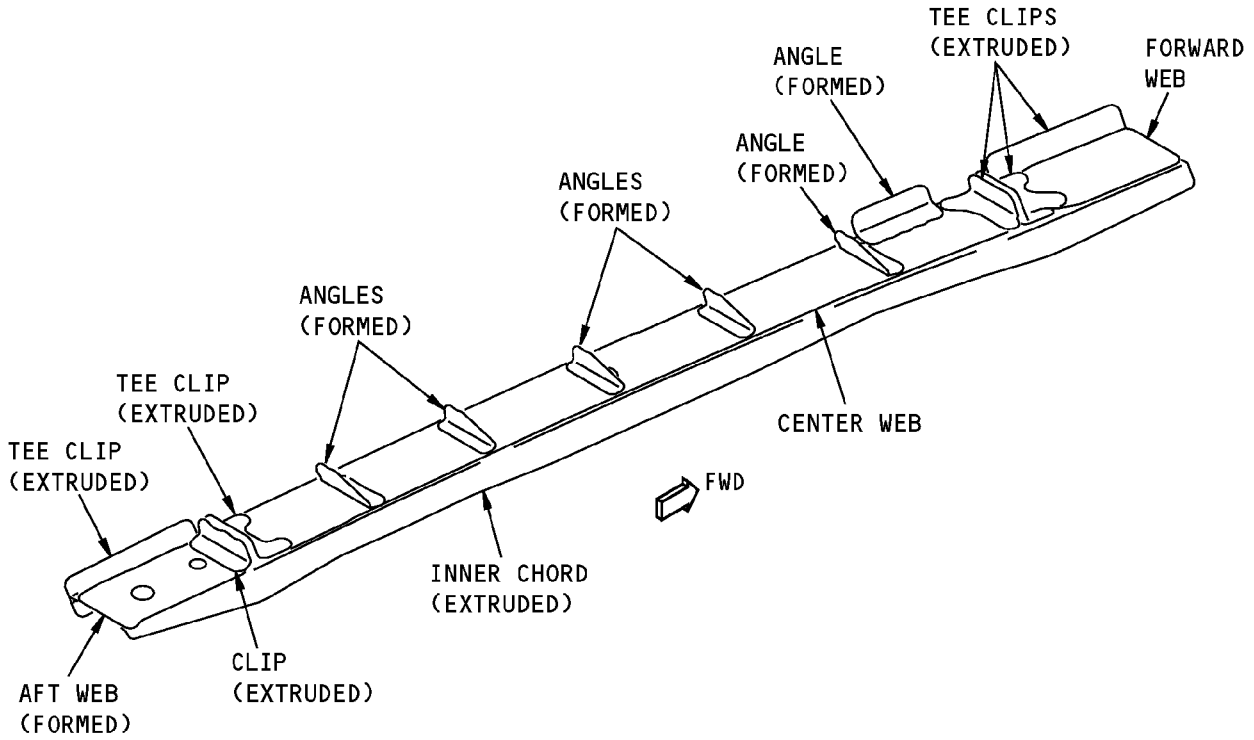
**Door Surround Structure Without Airstairs  
Figure 107 (Sheet 1 of 4)**



**UPPER AIRSTAIR SILL**

(A)

**Door Surround Structure Without Airstairs  
Figure 107 (Sheet 2 of 4)**



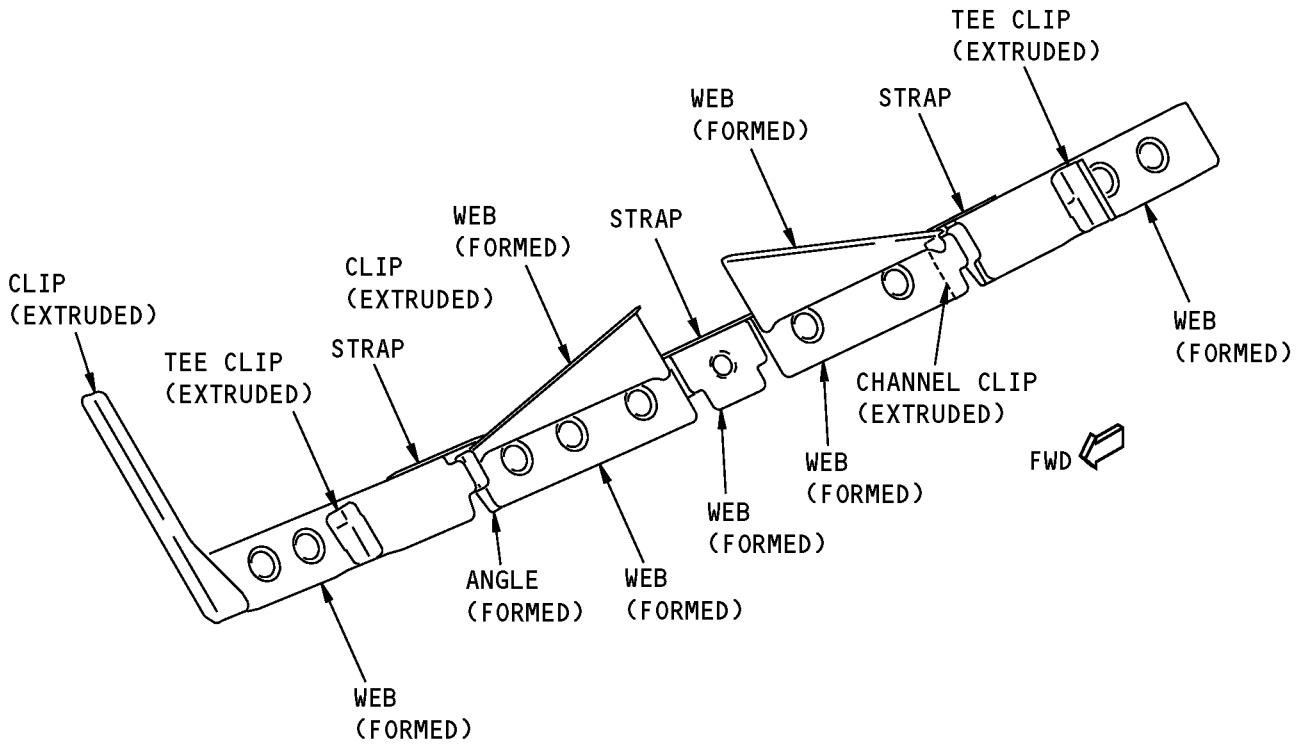
**LOWER AIRSTAIR SILL**

**(B)**

**Door Surround Structure Without Airstairs  
Figure 107 (Sheet 3 of 4)**



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**LOWER AUXILIARY AIRSTAIR SILL**

(C)

**Door Surround Structure Without Airstairs  
Figure 107 (Sheet 4 of 4)**



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## STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-10-07	Machining of Titanium
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

- A. Chords and Tracks - Extruded
  - (1) Cracks:
    - (a) Remove damage as shown in Figure 108, Details A , B , and C .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove damage as shown in Figure 108, Details A , B , C , D , E and H .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- B. Inner Chord Angles, Angles, Angle Clip, Stiffener, Tee Clips, Tees, Channel Clip - Extruded
  - (1) Cracks:
    - (a) Remove damage as shown in Figure 108, Details A , B , C , and F .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove damage as shown in Figure 108, Details A, B, C, D, E, and F.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- C. Fail Safe Chords, Chords, Inner Chord, Angles, Splice Angle, Shear Clip - Formed
  - (1) Cracks:
    - (a) Remove the damage as shown in Figure 108, Details A , B , and G .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 108, Details A , B , D , G , and H .
  - (3) Dents are permitted as shown in Figure 108, Detail I .
  - (4) Holes and Punctures are not permitted.
- D. Webs and Doublers
  - (1) Cracks:
    - (a) Remove the damage as shown in Figure 108, Details A , B , and K .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 108, Details A , B , D , H and K .
  - (3) Dents are permitted as shown in Figure 108, Detail I .

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(4) Holes and Punctures:

(a) The damage is permitted as shown in Figure 108, Detail J if it is:

- 1) A maximum of 0.25 inch in diameter
- 2) A minimum of 4D (D = the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part
- 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

E. Straps

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , L , and M .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , H , L , and M .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

F. Intercostals - Formed

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G , and H .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

(a) The damage is permitted as shown in Figure 108, Detail J if it is:

- 1) A maximum of 0.25 inch in diameter
- 2) A minimum of 4D (D = the diameter of the damage) away from a hole, or other damage and a 2D minimum from the edge part
- 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

G. Intercostals - Machined

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , C , D , E , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

H. Channels - Formed

(1) Cracks:

(a) Remove the damage as shown in Figure 108, Details A , B , and G .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 108, Details A , B , D , G and H .

(3) Dents are permitted as shown in Figure 108, Detail I .

(4) Holes and Punctures:

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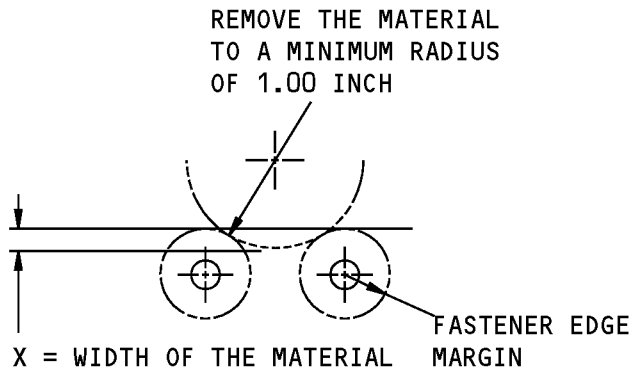


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- (a) The damage is permitted as shown in Figure 108, Detail J if it is:
  - 1) A maximum of 0.25 inch in diameter
  - 2) A minimum of 4D (D = the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part
  - 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- I. Stub Frames - Formed
  - (1) Cracks:
    - (a) Remove the damage as permitted in Figure 108, Details A , B , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 108, Details A , B , D , G , H , and K .
  - (3) Dents are permitted as shown in Figure 108, Detail I .
  - (4) Holes and Punctures:
    - (a) The damage is permitted as shown in Figure 108, Detail J if it is:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a hole, or other damage and 2D minimum from the edge part
      - 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- J. Bulb Angle - Extruded
  - (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 108, Details A , B , C , D , E , and N .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH

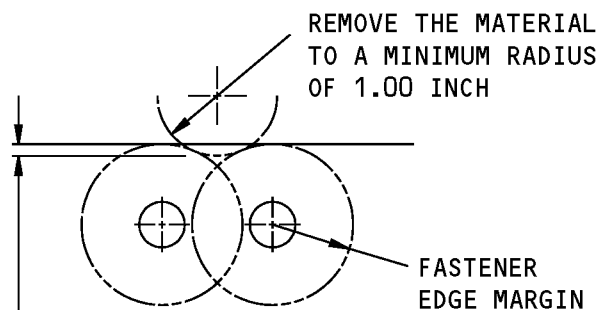
X = WIDTH OF THE MATERIAL THAT IS REMOVED

= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1

= A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH

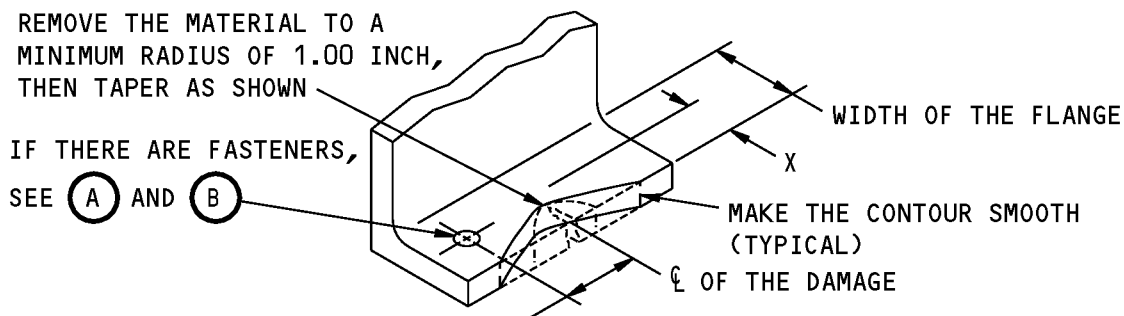
X = WIDTH OF THE MATERIAL THAT IS REMOVED

= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1

= A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

IF THERE ARE FASTENERS, SEE (A) AND (B)

TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED

= A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1

= A MAXIMUM OF 0.10 INCH 2

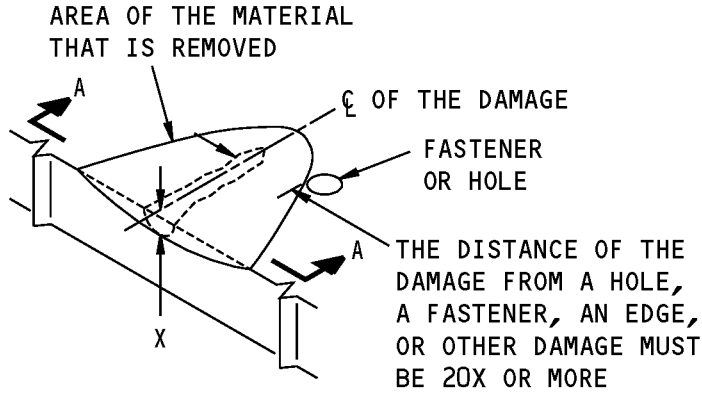
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED OR EXTRUDED PART**

(C)

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
Figure 108 (Sheet 1 of 9)**

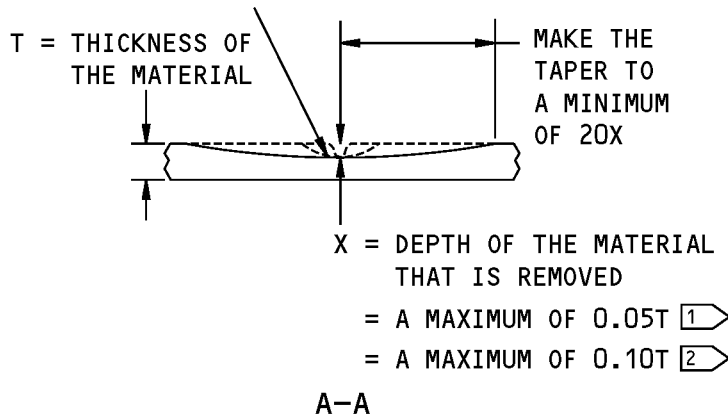
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE**

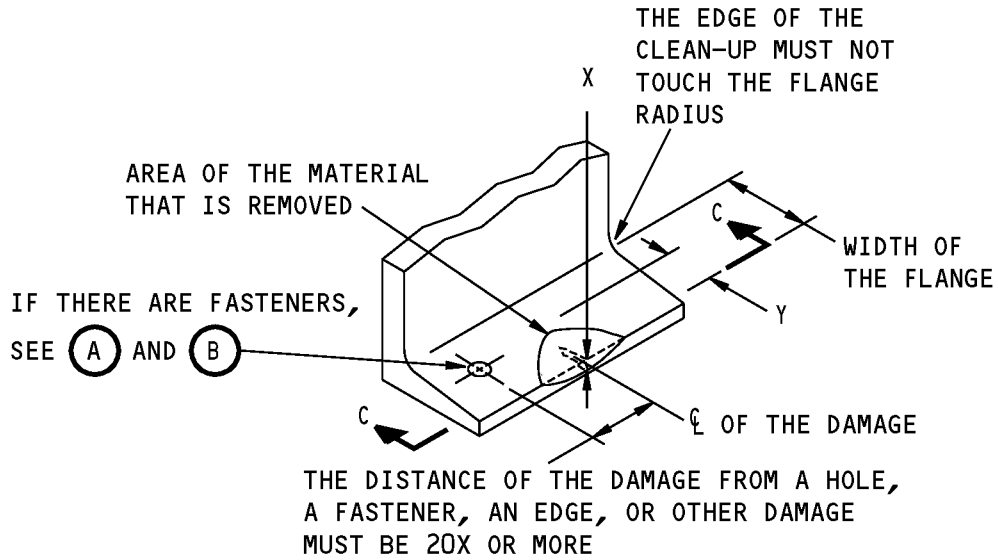
D

REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH,  
THEN TAPER AS SHOWN



**Allowable Damage Limits  
Figure 108 (Sheet 2 of 9)**

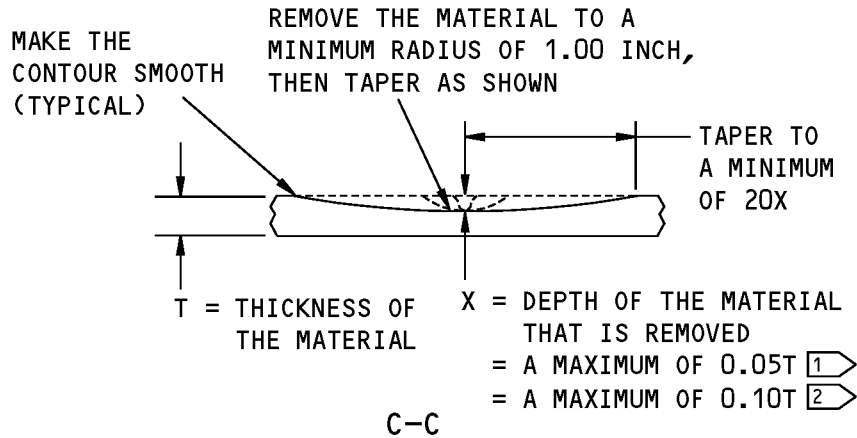
**STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED

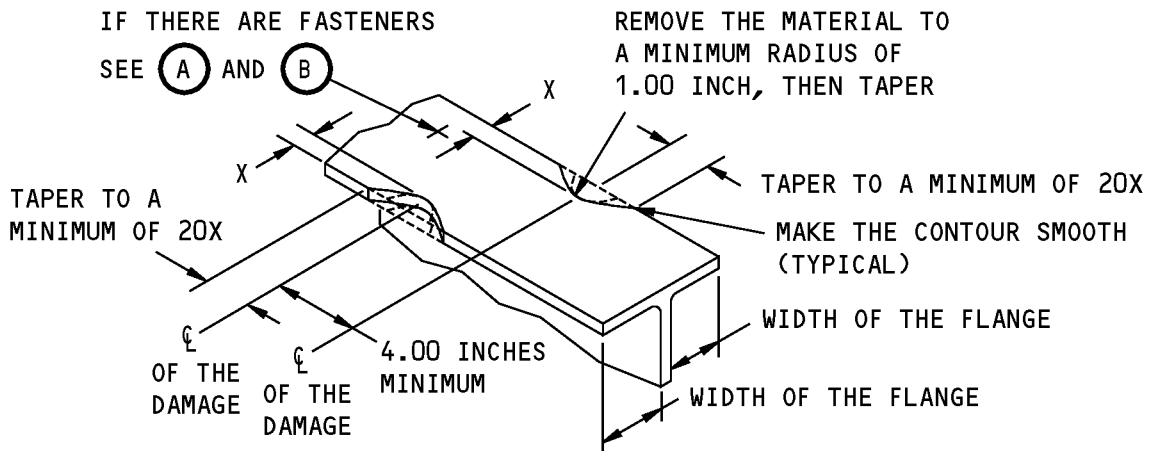
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART**

(E)



**Allowable Damage Limits  
Figure 108 (Sheet 3 of 9)**

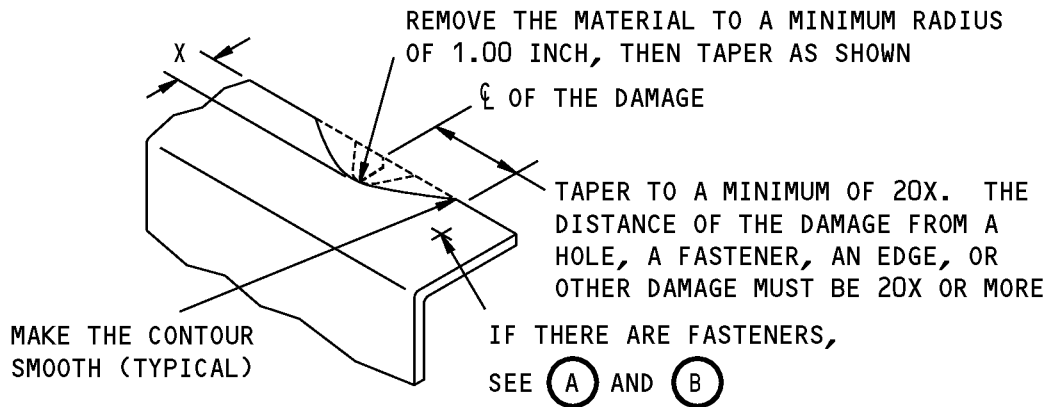
**737-800  
STRUCTURAL REPAIR MANUAL**



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS **1**  
 = A MAXIMUM OF 0.10 INCH **2**

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(F)**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS **1**  
 = A MAXIMUM OF 0.10 INCH **2**

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

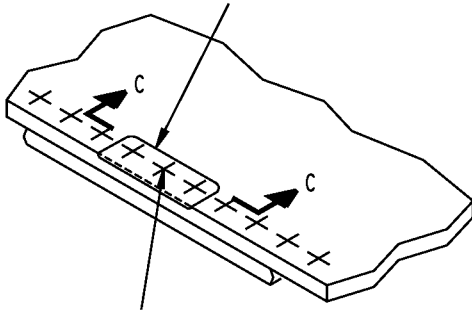
**(G)**

**Allowable Damage Limits  
Figure 108 (Sheet 4 of 9)**



**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X

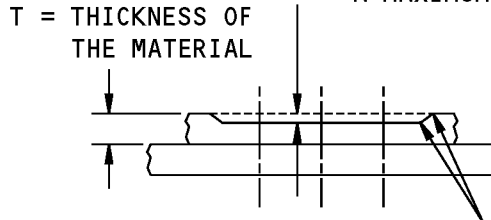


REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE**

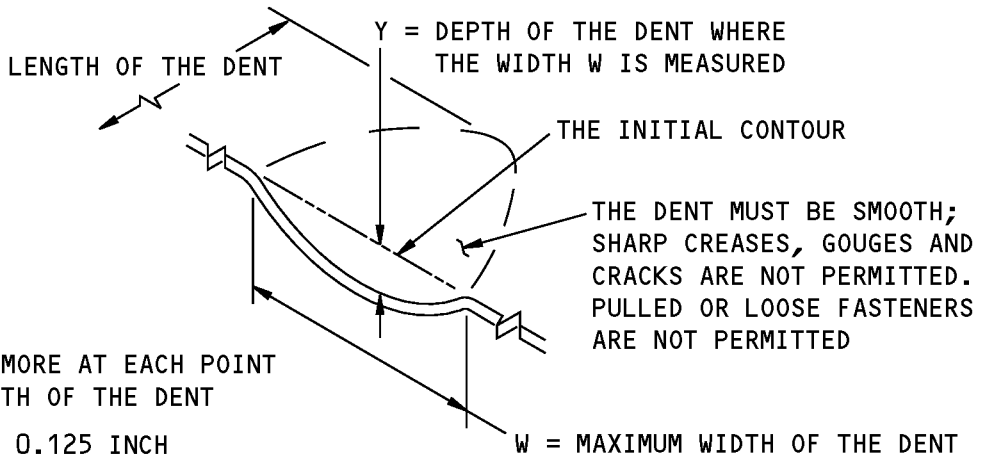
**H**

X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T 1  
 = A MAXIMUM OF 0.10T 2



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

C-C



$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE DENT

Y = A MAXIMUM OF 0.125 INCH

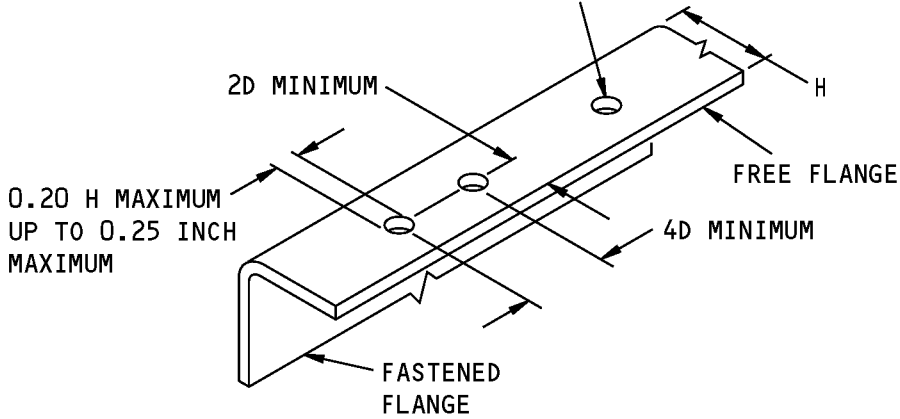
**DENT THAT IS PERMITTED**

**I**

**Allowable Damage Limits  
 Figure 108 (Sheet 5 of 9)**

**STRUCTURAL REPAIR MANUAL**

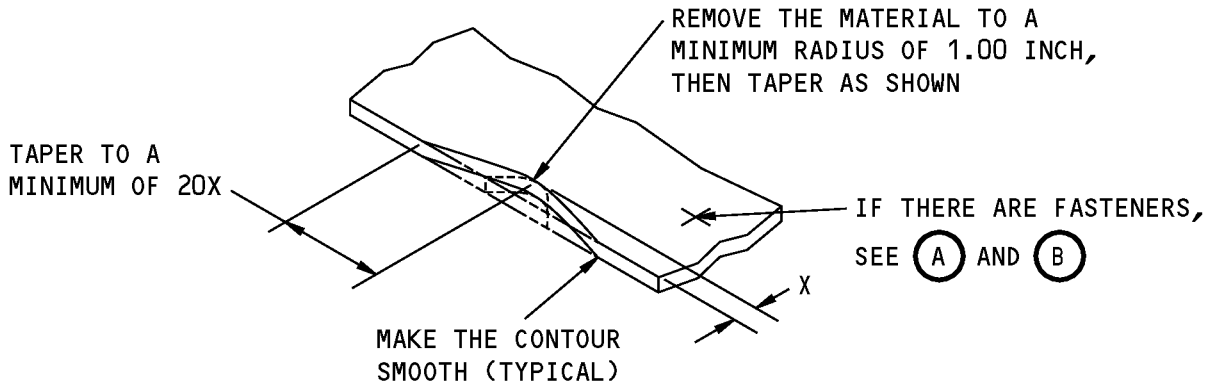
A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT



**NOTE:** HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

**J**



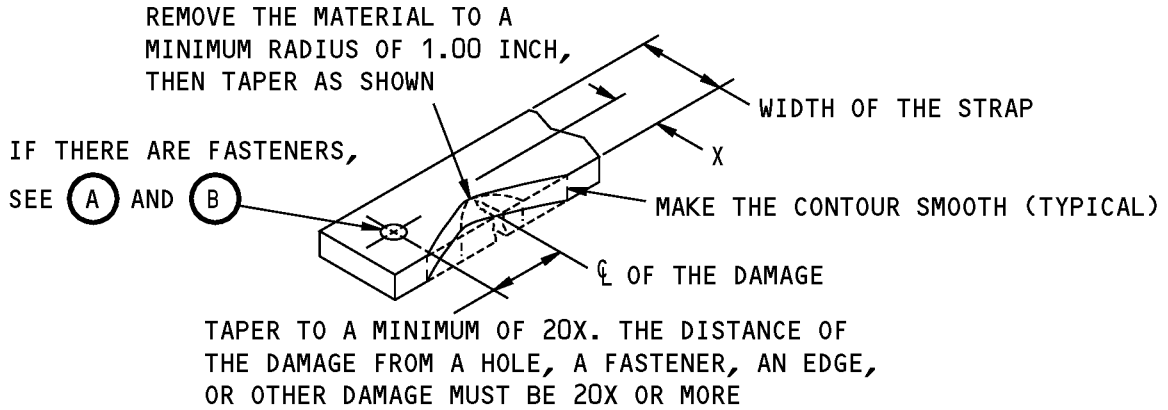
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH **1**  
 = A MAXIMUM OF 0.10 INCH **2**

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

**K**

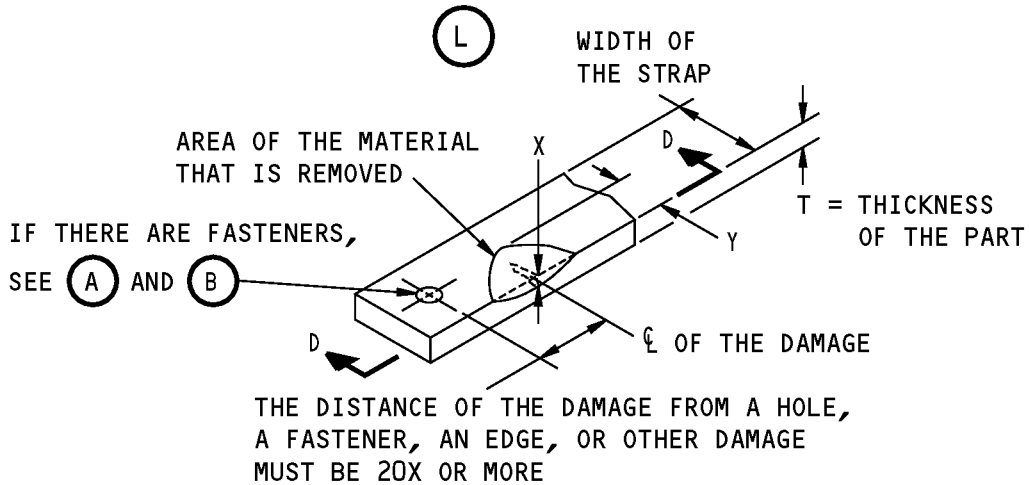
**Allowable Damage Limits  
 Figure 108 (Sheet 6 of 9)**

**STRUCTURAL REPAIR MANUAL**



- X = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
- = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP**



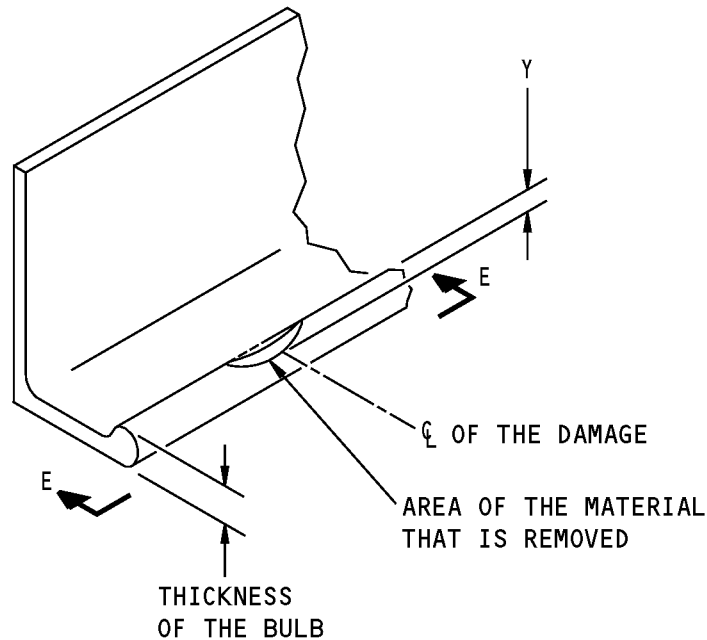
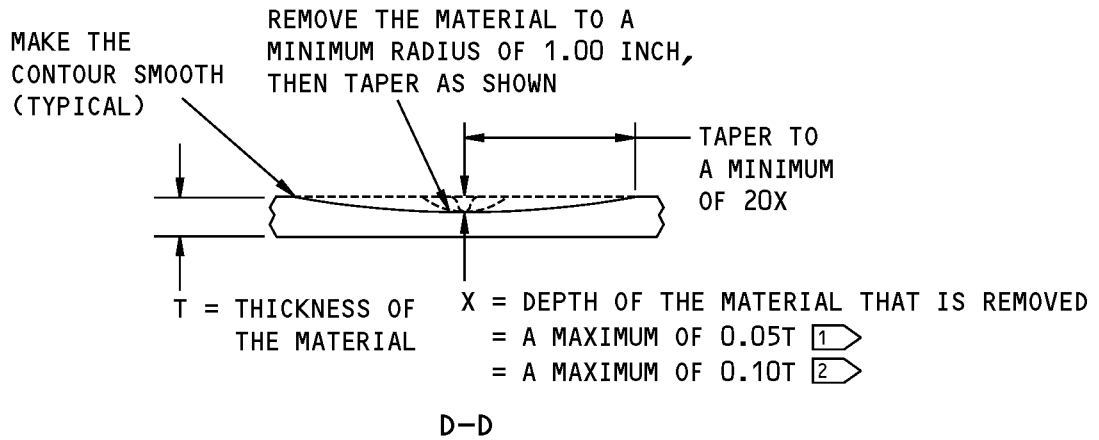
- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
- = A MAXIMUM OF 0.10 INCH 2
- X = A MAXIMUM OF 0.05T 1
- = A MAXIMUM OF 0.10T 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP**

(M)

**Allowable Damage Limits  
Figure 108 (Sheet 7 of 9)**

**737-800  
STRUCTURAL REPAIR MANUAL**



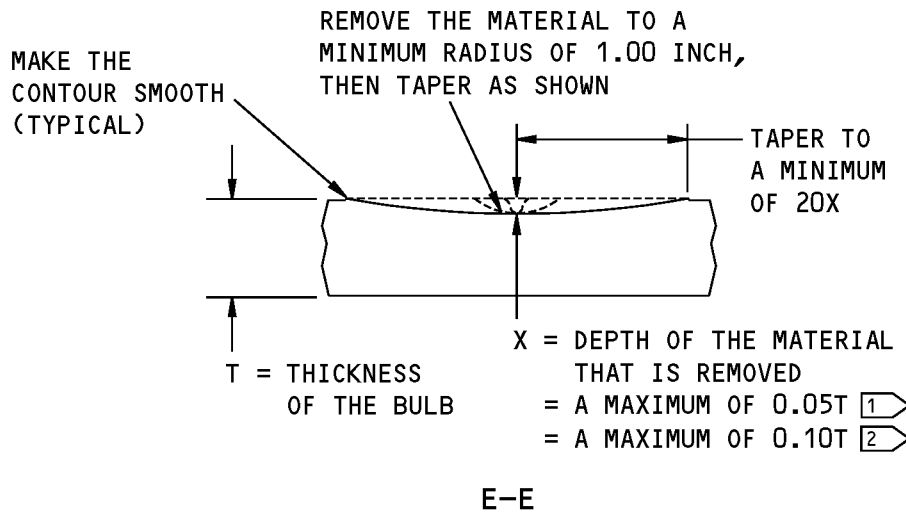
Y = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 5 PERCENT OF THE THICKNESS OF THE BULB 1  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED EXTRUSION**

(N)

**Allowable Damage Limits  
Figure 108 (Sheet 8 of 9)**

**737-800  
STRUCTURAL REPAIR MANUAL**



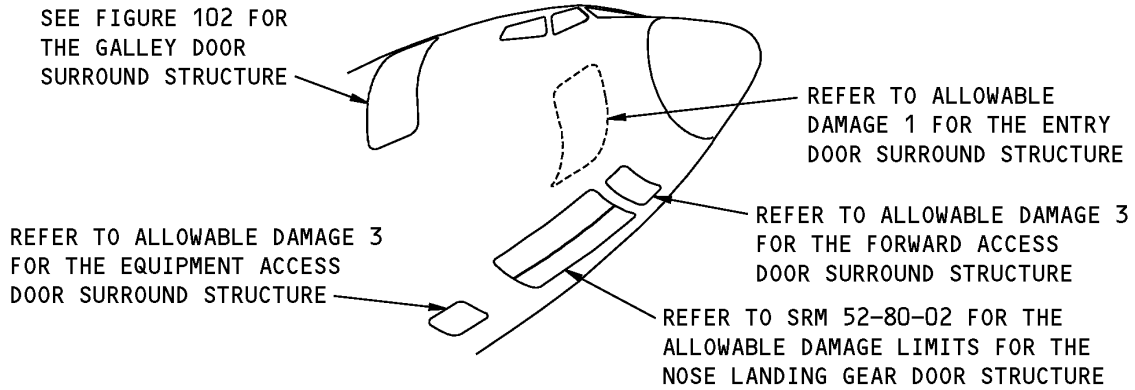
**Allowable Damage Limits  
Figure 108 (Sheet 9 of 9)**

**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 2 - FORWARD GALLEY DOOR SURROUND STRUCTURE**

**1. Applicability**

- A. This subject gives the allowable damage limits for the forward galley door surround structure shown in Forward Galley Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 2.



**Forward Galley Door Surround Structure  
Figure 101**

**2. General**

- A. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01
- C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.
  - (1) Apply one layer of BMS 10-11, Type I primer to the reworked area. Refer to SOPM 20-40-02.



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STRUCTURAL REPAIR MANUAL**

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>		
<b>TYPE OF STRUCTURE</b>	<b>PART NAME</b>	<b>PARAGRAPH</b>
UPPER MAIN AUXILIARY SILL	CHORD	4.A
	WEBS	4.B
	STRAPS	4.D
	CLIPS	4.E
UPPER MAIN SILL	CHORD	4.A
	WEBS	4.B
	CLIPS	4.C
	STRAPS	4.D
	CLIPS	4.E
LOWER MAIN SILL	CHORD	4.A
	WEBS	4.B
	TEE CLIPS	4.C
	ZEE STIFFENERS	4.C
	STIFFENERS	4.C
	ANGLE	4.C
	CHANNEL	4.C
	INNER CHORD STRAP	4.D
	OUTER CHORD STRAP	4.D
	CHANNELS	4.E
	ANGLES	4.E
	INNER CHORD	4.E
LOWER AUXILIARY SILL	CHORD	4.A
	WEBS	4.B
	CLIPS	4.C
	ANGLES	4.C
	STRAPS	4.D
INTERCOSTAL ASSEMBLY AT STRINGER S-23	STRAP	4.D
	ANGLE	4.E
	INTERCOSTALS	4.E
INTERCOSTAL ASSEMBLY S-22	INTERCOSTALS	4.E
BUILT-UP INTERCOSTAL ASSEMBLY	STRAP	4.D
	INTERCOSTAL	4.F
STIFFENER INSTALLATION AT STRINGER S-13	CHORD	4.A
	WEB	4.B
	ANGLE	4.C
	ANGLES	4.E

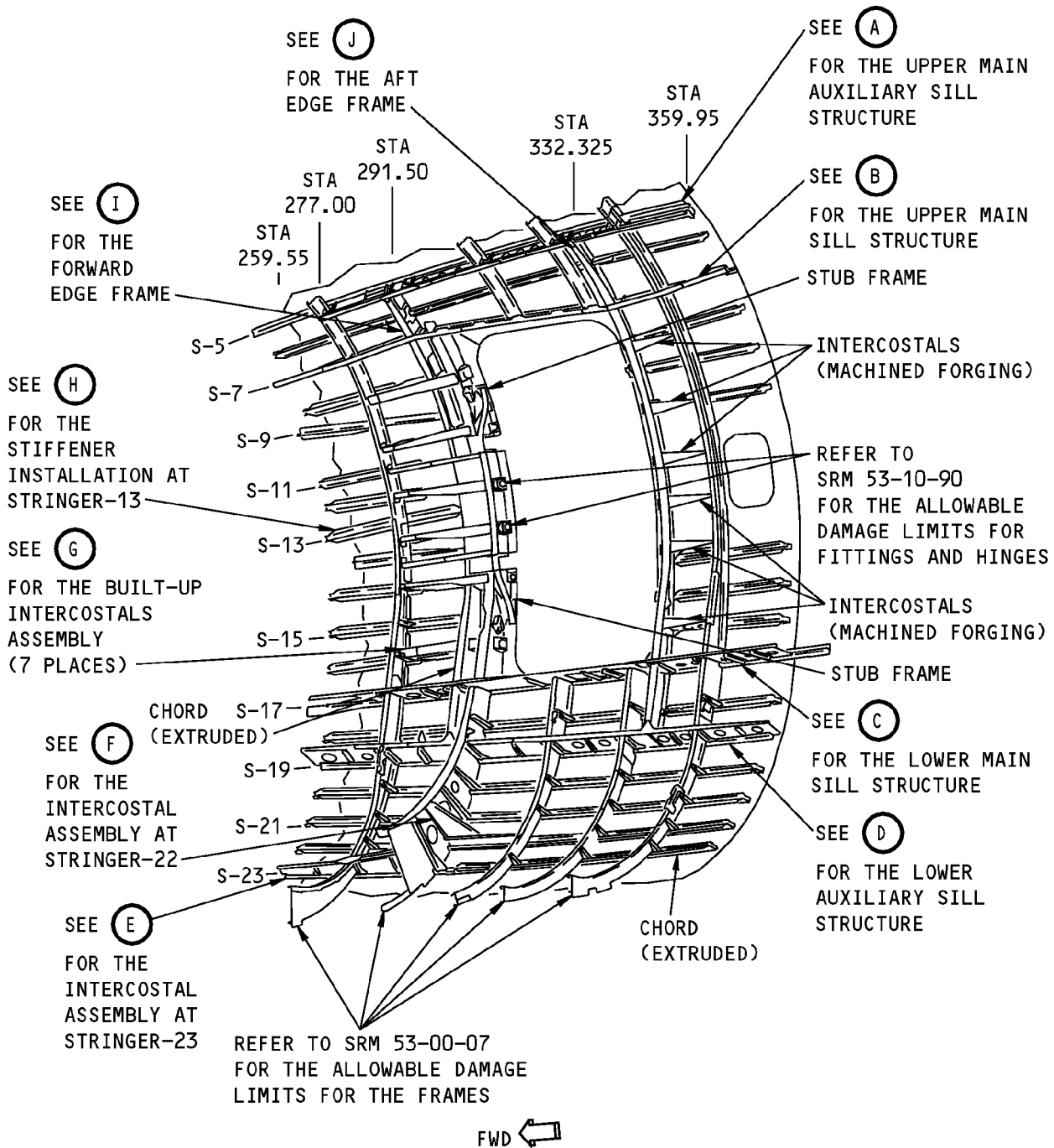


**737-800**  
**STRUCTURAL REPAIR MANUAL**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
FORWARD EDGE FRAME	INNER CHORD	4.A
	ANGLE	4.C
	STIFFENER	4.E
AFT EDGE FRAME	OUTER CHORD	4.A
	INNER CHORD	4.A
	J-WEB	4.B
	STRAP FILLER	4.D
OTHER STRUCTURES	CHORDS	4.A
	INTERCOSTALS	4.F
	STUB FRAMES	4.G



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STRUCTURAL REPAIR MANUAL**

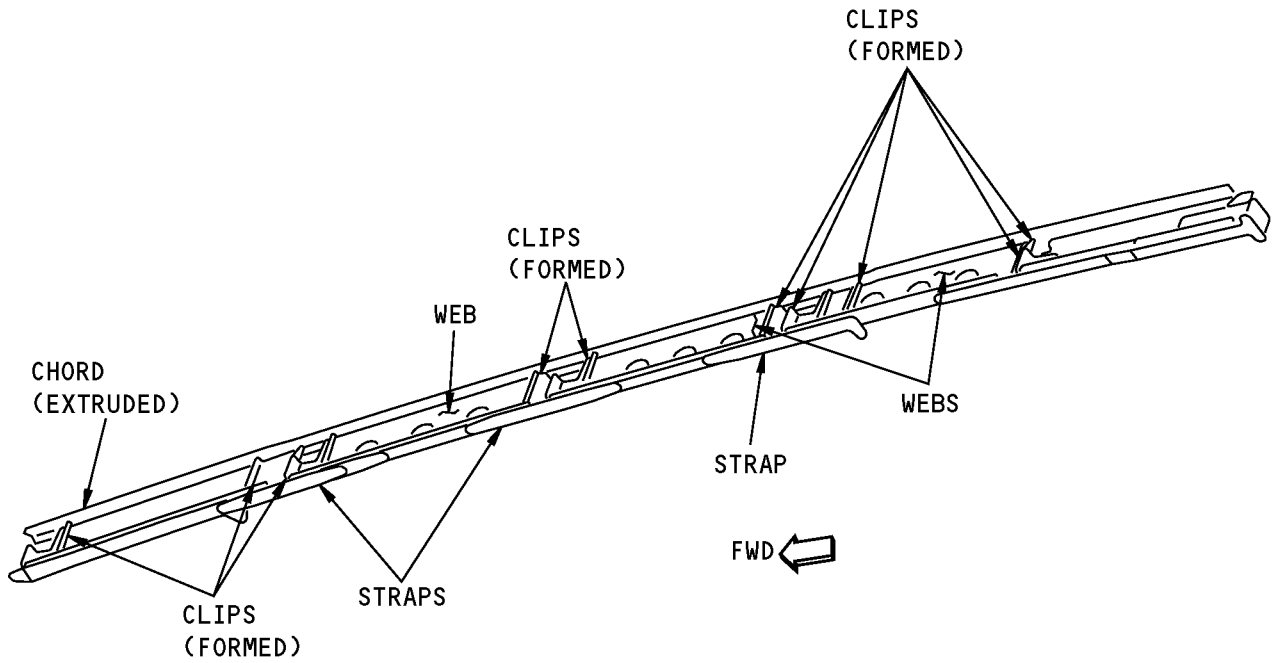


**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**FORWARD GALLEY DOOR SURROUND STRUCTURE**

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



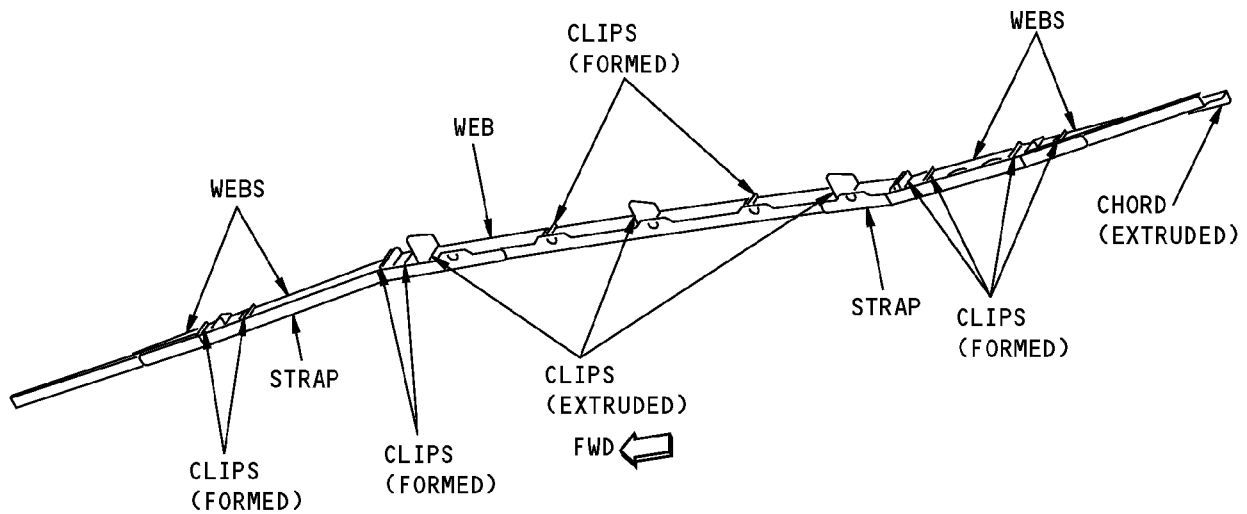
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER MAIN AUXILIARY SILL STRUCTURE**

(A)

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 2 of 11)**

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STRUCTURAL REPAIR MANUAL**



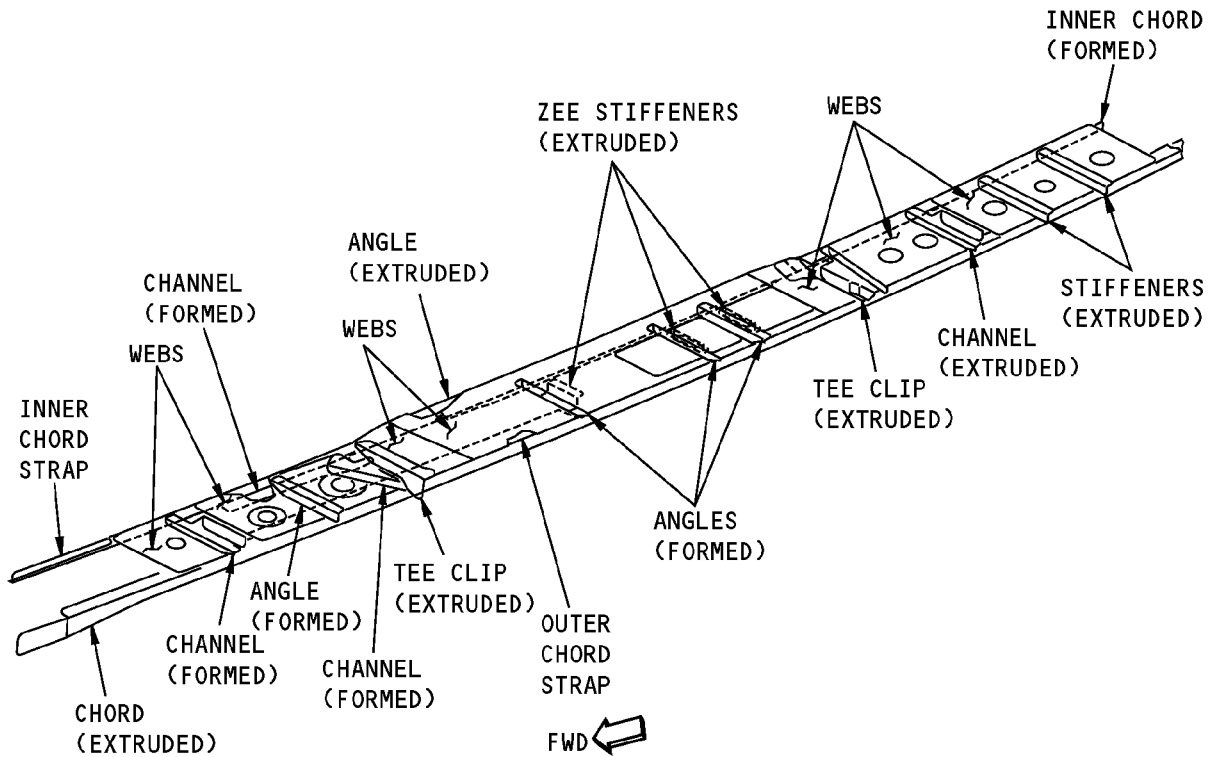
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER MAIN SILL STRUCTURE**

(B)

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 3 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



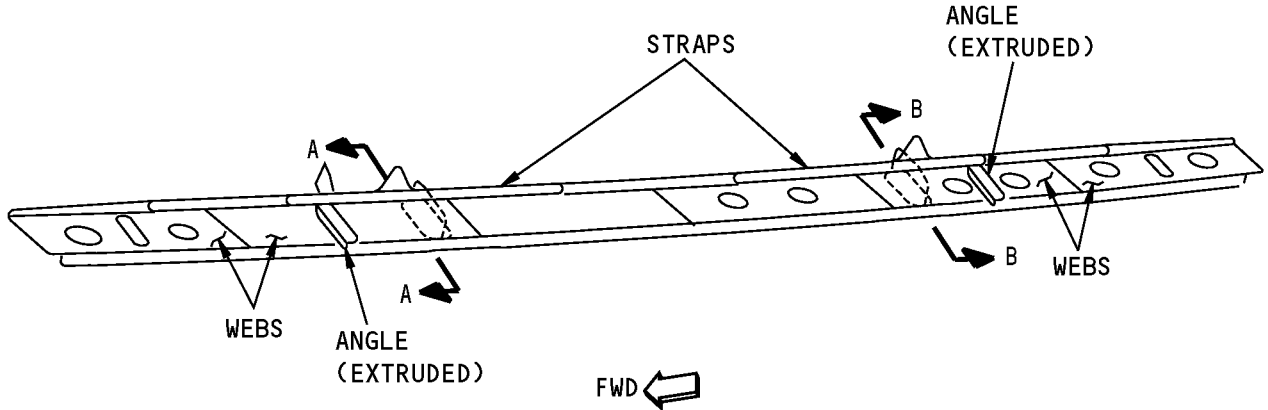
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**LOWER MAIN SILL STRUCTURE**



**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 4 of 11)**

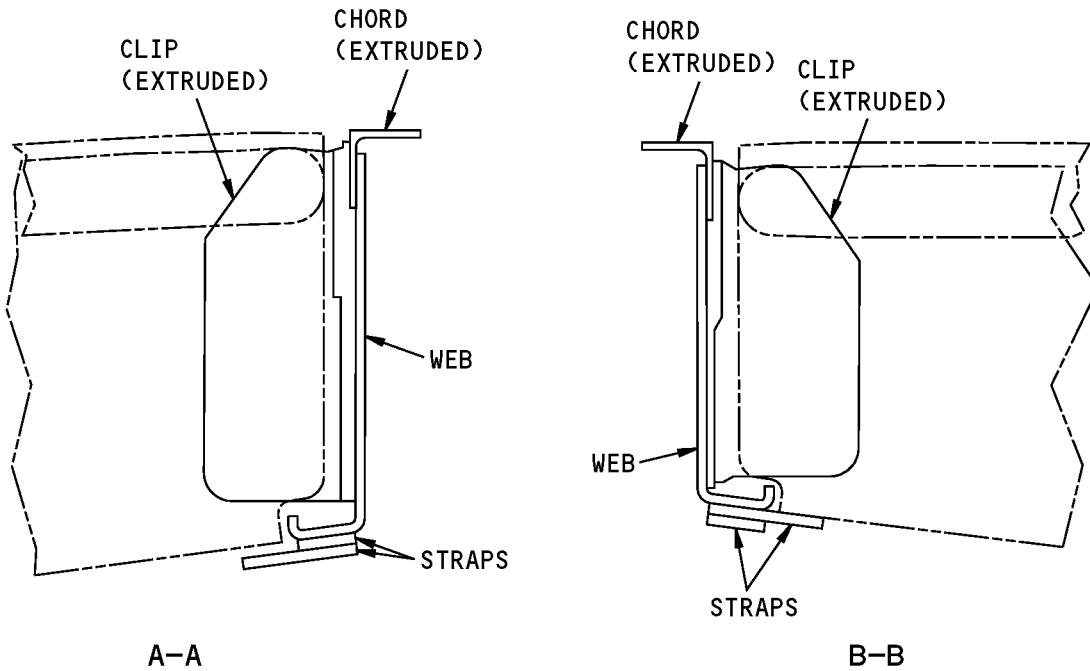
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

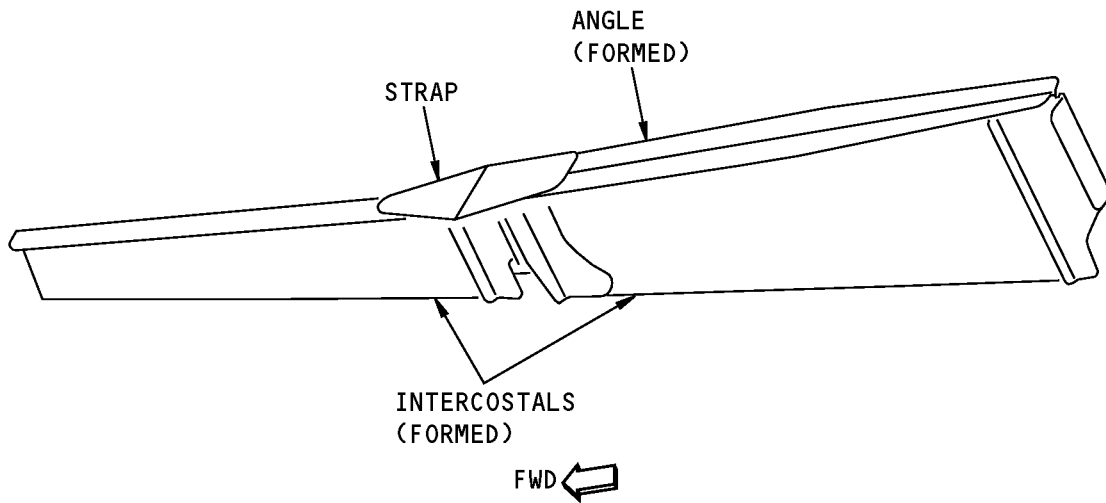
**LOWER AUXILIARY SILL STRUCTURE**

(D)



**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 5 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



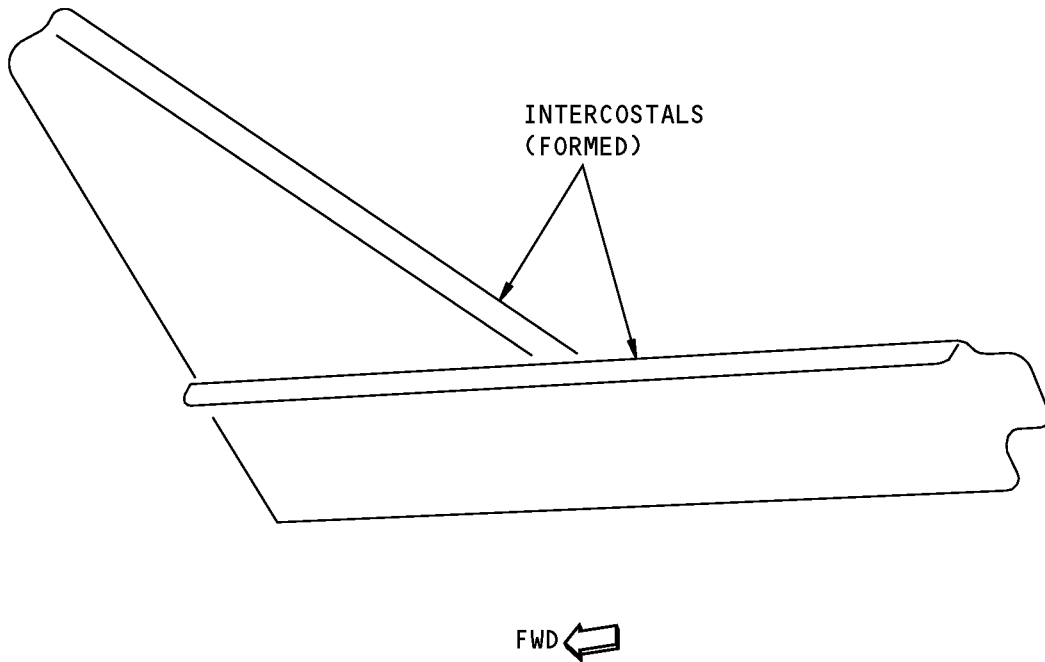
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY AT STRINGER 23**

**E**

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 6 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



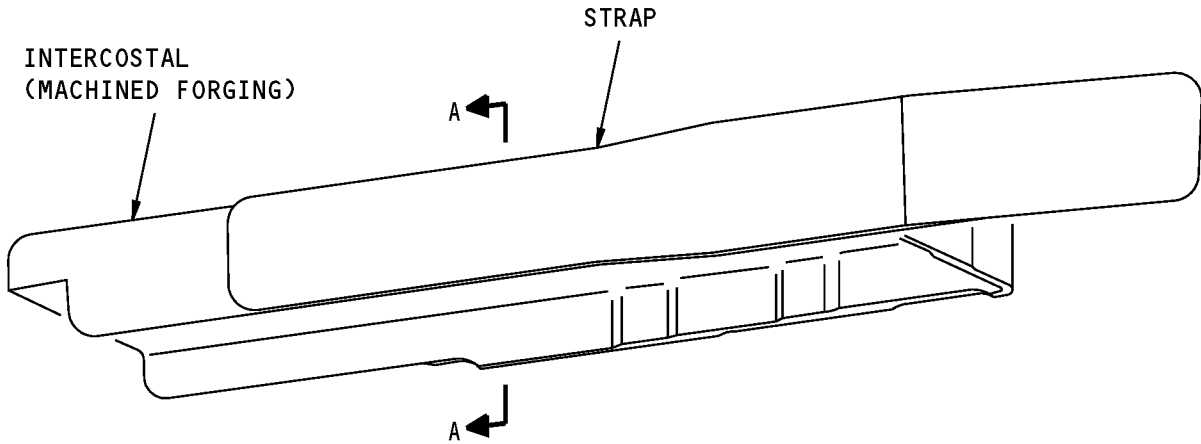
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY AT STRINGER 22**

**F**

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 7 of 11)**

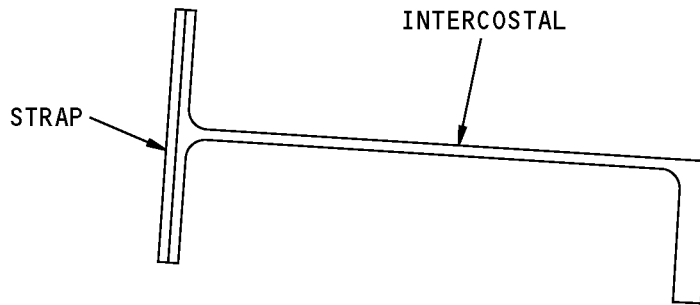
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY**

**G**

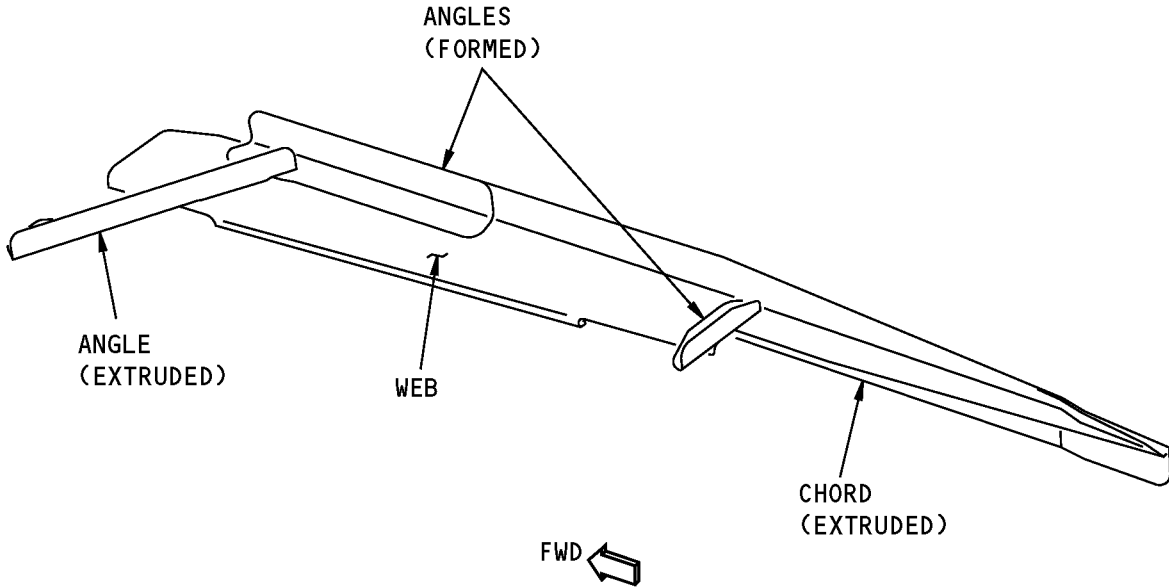


**A-A**

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 8 of 11)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**STIFFENER INSTALLATION AT STRINGER 13**



**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 9 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

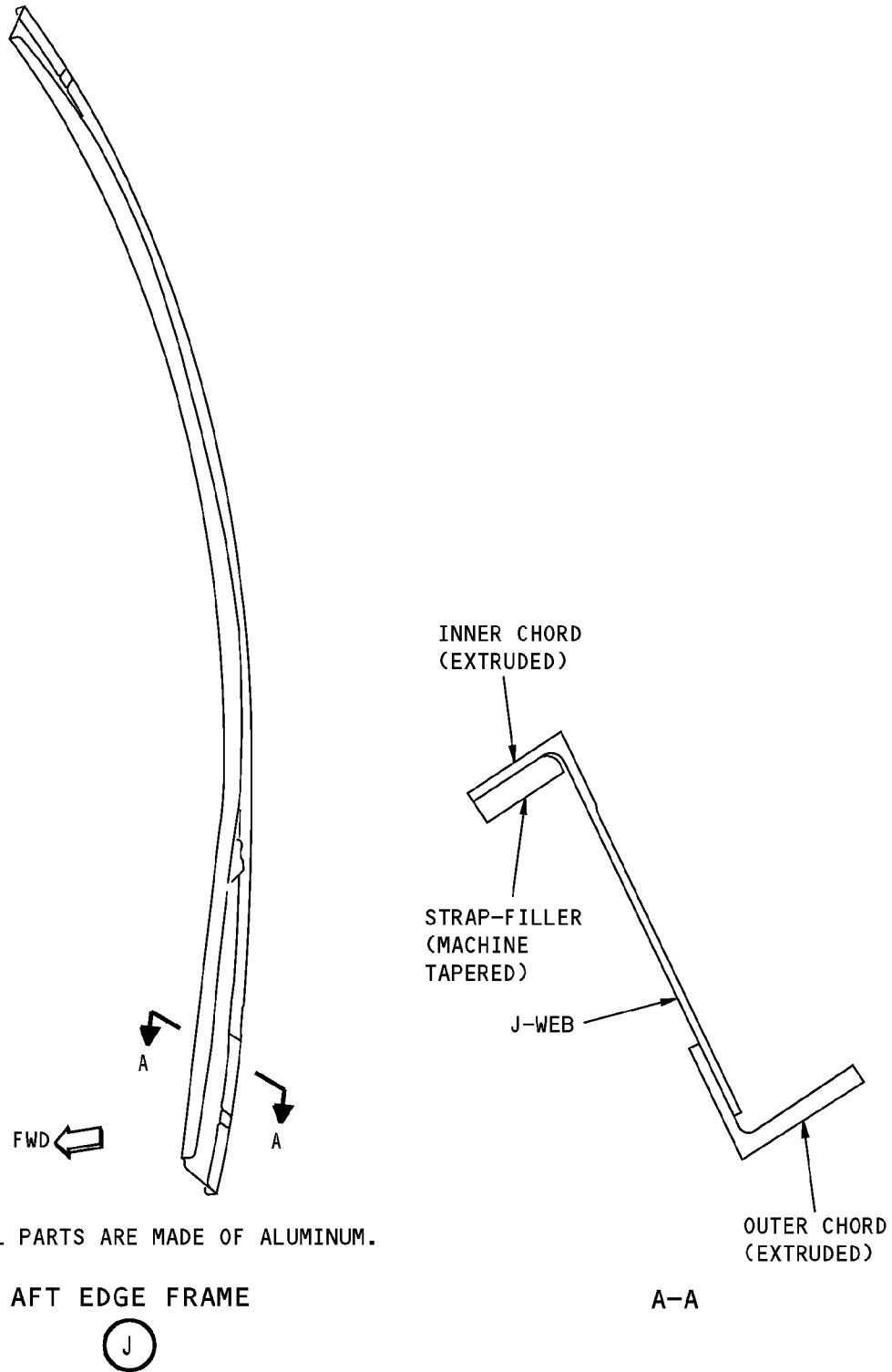


NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**FORWARD EDGE FRAME**



**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 10 of 11)**



NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**Forward Galley Door Surround Structure Locations  
Figure 102 (Sheet 11 of 11)**



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### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-40-02	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Outer Chords, Inner Chords, and Chords - Extruded

##### (1) Cracks:

(a) Remove damage as shown in Figure 103, Details A , B , and C .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove damage as shown in Figure 103, Details A , B , C , D and E .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

#### B. Webs

##### (1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A , B , and F .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .

(3) Dents are permitted as shown in Figure 103, Detail H .

(4) Holes and punctures are permitted if they are:

(a) A maximum of 0.25 inch in diameter

(b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage

(c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

#### C. Stiffeners, Angles, Clips, Zee Stiffeners, Tee Clips, and Channels - Extruded

##### (1) Cracks:

(a) Remove edge crack and surface cracks as shown in Figure 103, Details A , B , C , and I .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and I .

(3) Dents are not permitted.

(4) Holes and punctures are not permitted.

#### D. Straps and Strap-Filler



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## STRUCTURAL REPAIR MANUAL

- (1) Cracks:
    - (a) Remove damage as shown in Figure 103, Details A , B , J , and K .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove damage as shown in Figure 103, Details A , B , D , J , and K .
  - (3) Dents are not permitted.
  - (4) Holes and punctures are not permitted.
- E. Intercostals, Inner Chords, Stiffener, Angles, Clips, and Channels - Formed
- (1) Cracks:
    - (a) Remove damage as shown in Figure 103, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove damage as shown in Figure 103, Details A , B , D , G , and L .
  - (3) Dents are permitted as shown in Figure 103, Detail H .
  - (4) Holes and punctures are permitted if they are:
    - (a) A maximum of 0.25 inch in diameter
    - (b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage
    - (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- F. Intercostals - Machined Forging
- (1) Cracks:
    - (a) Remove damage as shown in Figure 103, Details A , B , and C .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove damage as shown in Figure 103, Details A , B , C , D , and E .
  - (3) Dents are not permitted.
  - (4) Holes and punctures are not permitted.
- G. Stub Frames
- (1) Cracks:
    - (a) Remove the damage as shown in Figure 103, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A , B , D , G , and L .
  - (3) Dents are permitted as shown in Figure 103, Detail H .
  - (4) Holes and punctures are permitted in:
    - (a) The free flange as shown in Figure 103, Detail M .
      - 1) The webs if they are:
        - a) A maximum of 0.25 inch in diameter
        - b) A minimum of 4D (D= the diameter of the damage) away from a hole, the edge part, or other damage
        - c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

ALLOWABLE DAMAGE 2

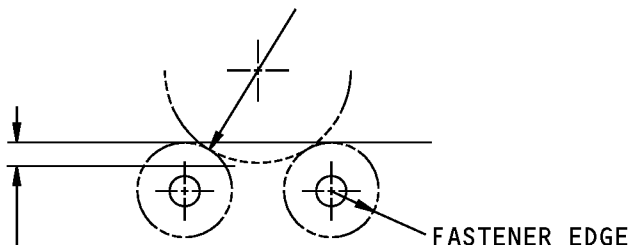
**53-10-15**

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Nov 10/2004

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STRUCTURAL REPAIR MANUAL

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH

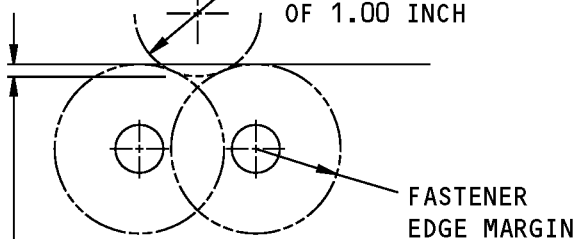


X = WIDTH OF THE MATERIAL MARGIN THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH



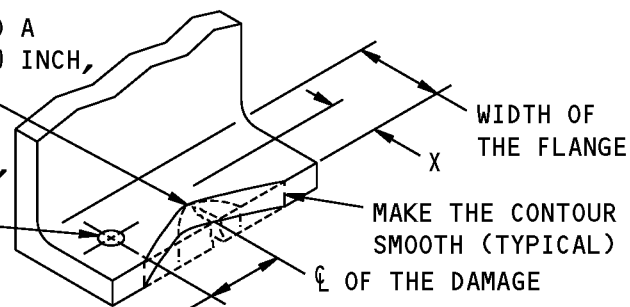
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE (OR WEB) WIDTH, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.10 INCH 2

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

IF THERE ARE FASTENERS, SEE (A) AND (B)



TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.10 INCH 2

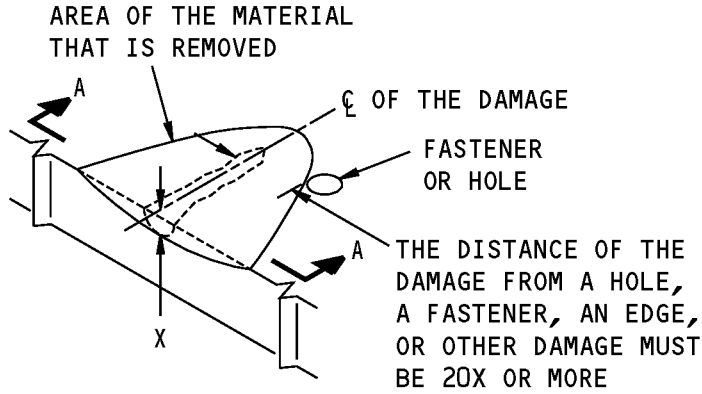
REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A MACHINED PART OR AN EXTRUDED PART

(C)

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

Allowable Damage Limits  
 Figure 103 (Sheet 1 of 8)

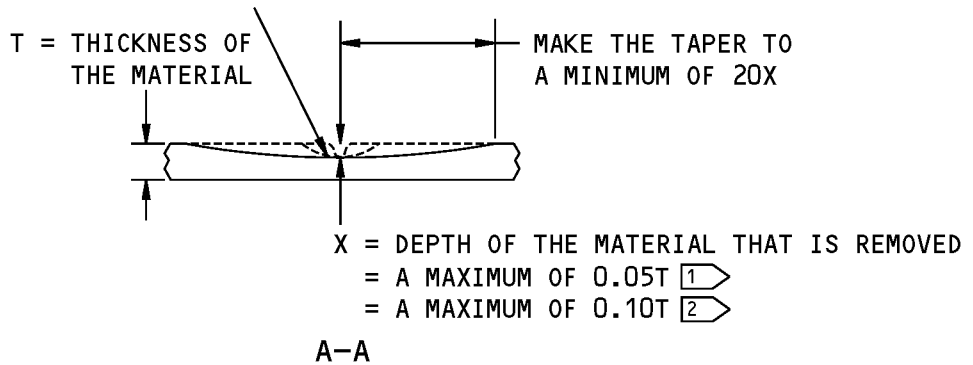
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE**

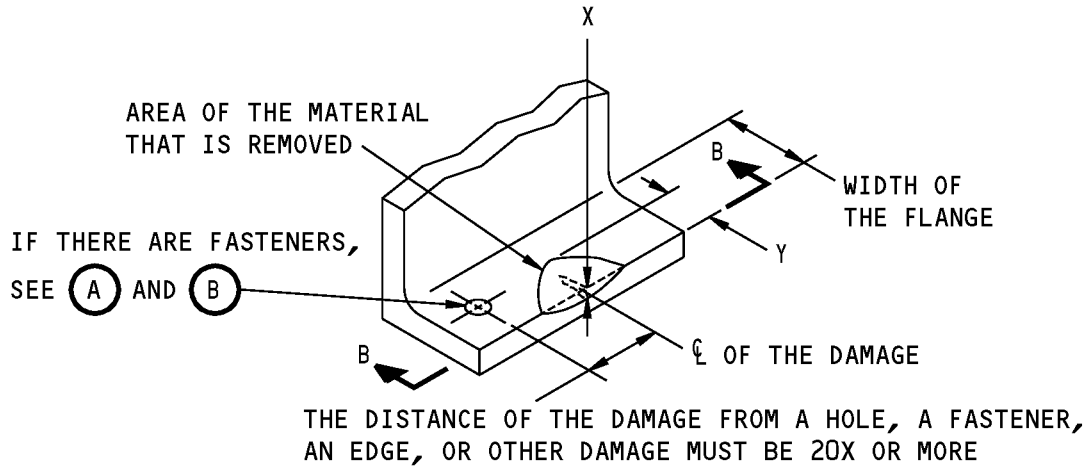
(D)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



**Allowable Damage Limits  
Figure 103 (Sheet 2 of 8)**

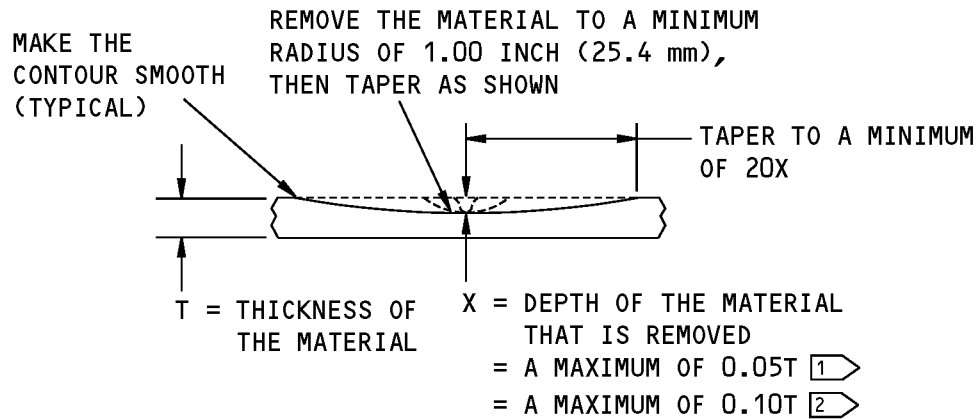
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE OR 0.05 INCH, THAT WHICH IS LESS 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART**

**(E)**

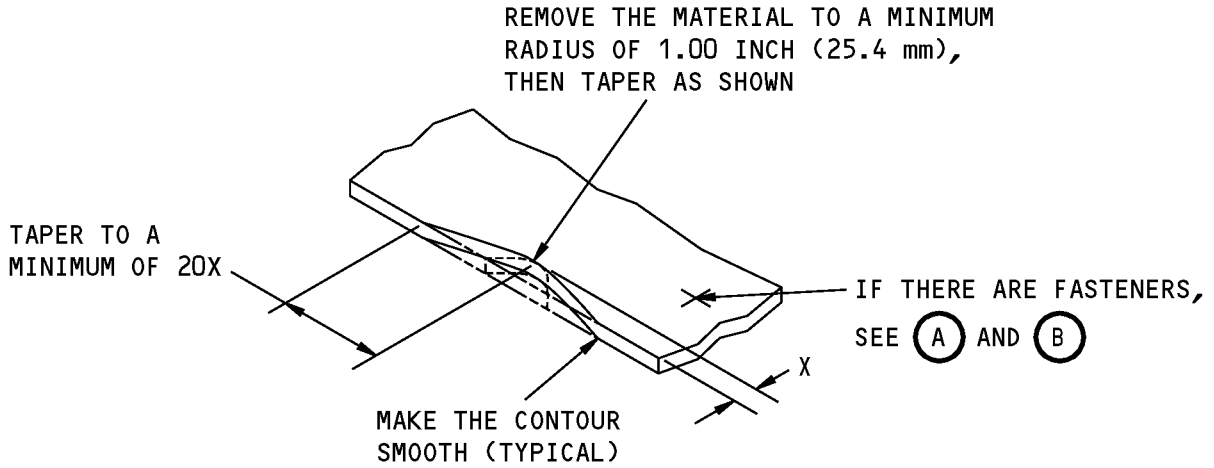


B-B

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 8)**



**STRUCTURAL REPAIR MANUAL**

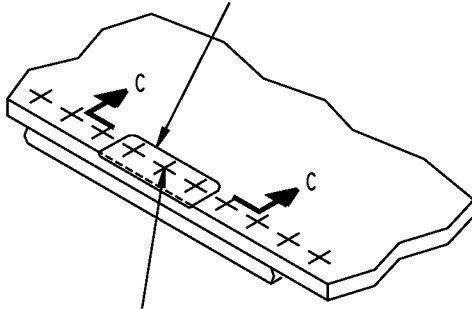


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH 1  
 = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(F)

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



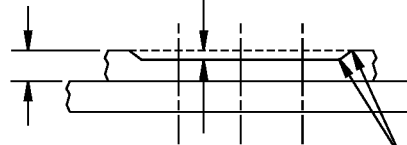
REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(G)

X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T 1  
 = A MAXIMUM OF 0.10T 2

T = THICKNESS OF THE MATERIAL

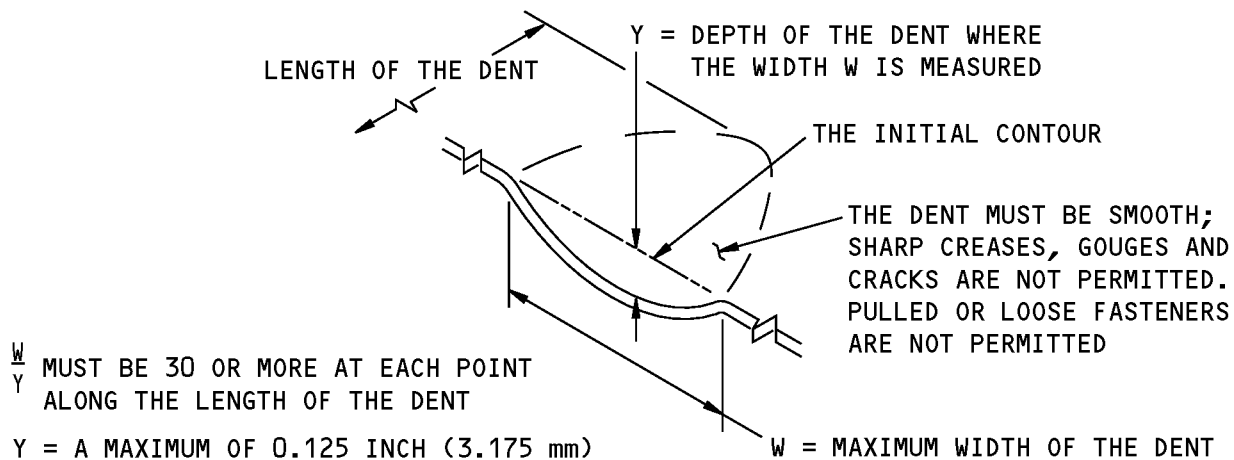


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

C-C

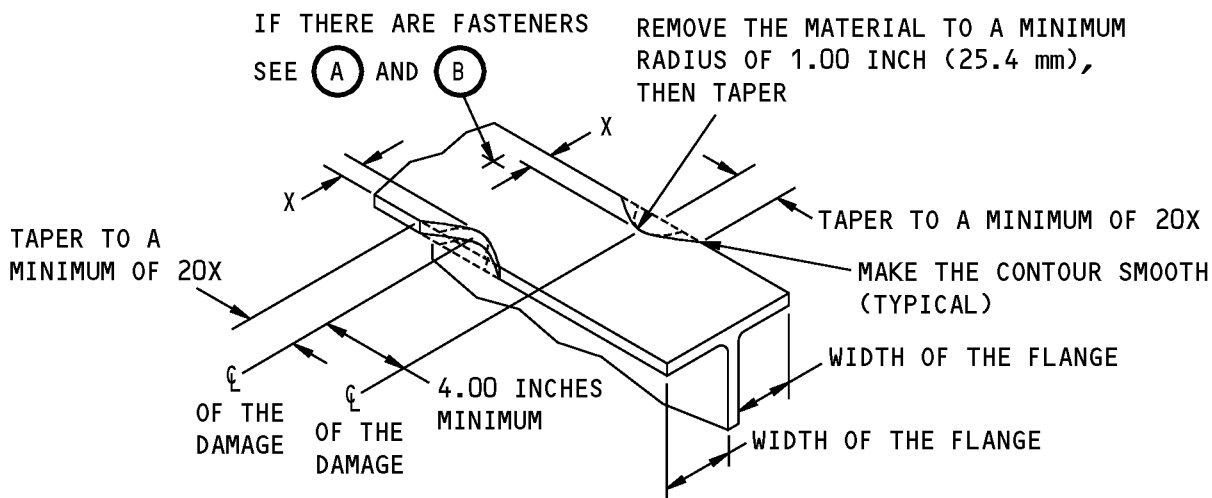
**Allowable Damage Limits  
 Figure 103 (Sheet 4 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(H)



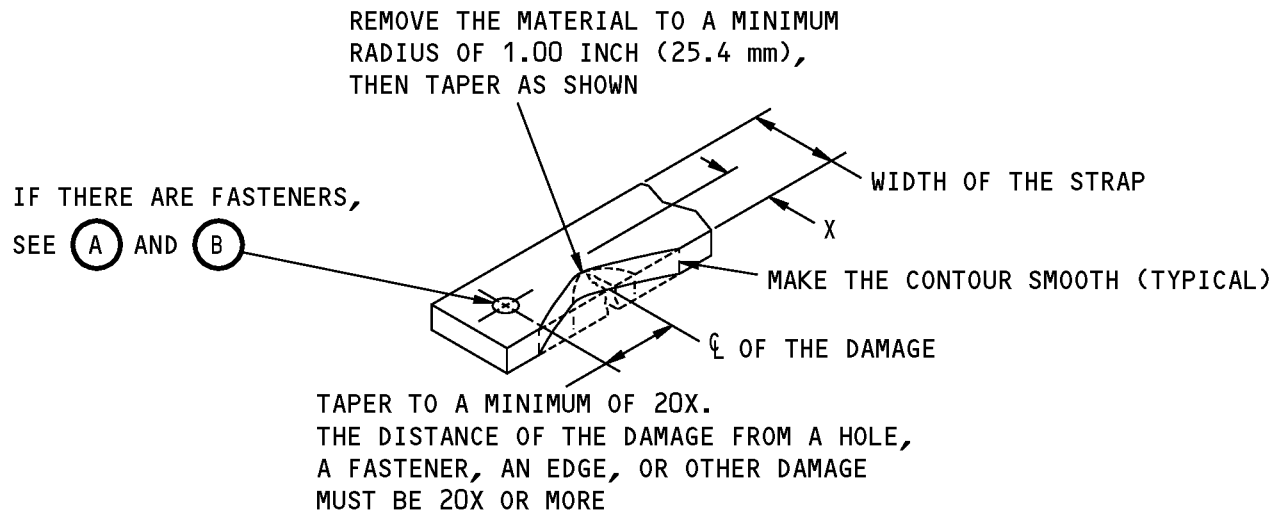
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE WIDTH OF THE FLANGE, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(I)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**



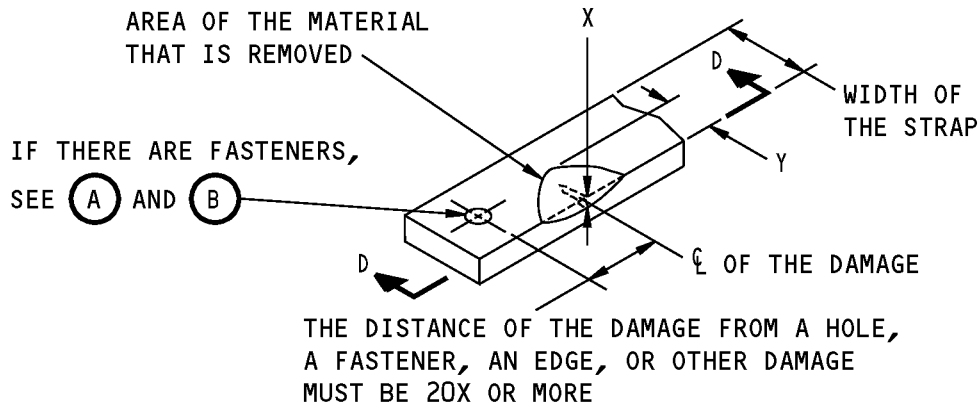
X = WIDTH OF THE MATERIAL REMOVED  
 = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP**



**Allowable Damage Limits  
Figure 103 (Sheet 6 of 8)**

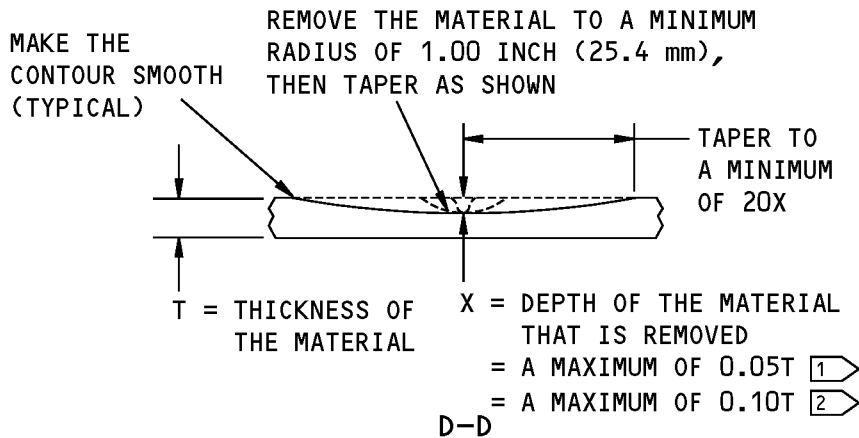
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE STRAP WIDTH, THAT WHICH IS LESS 1
- = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP**

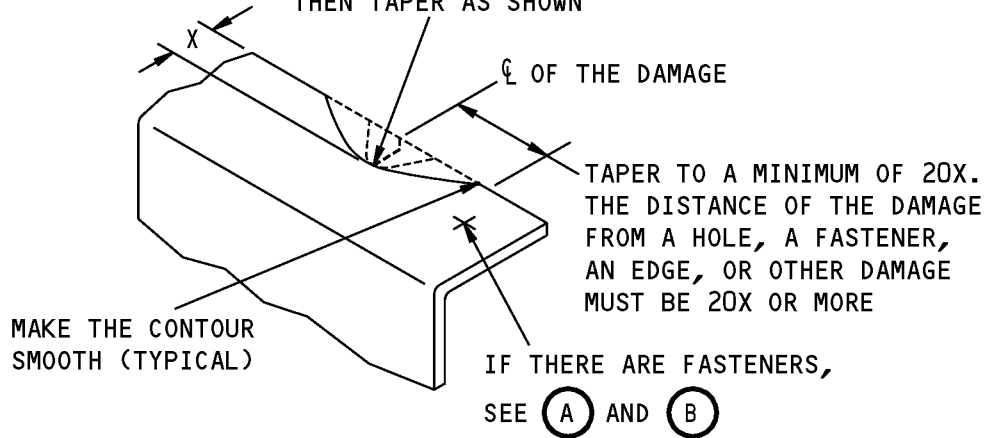
(K)



**Allowable Damage Limits  
Figure 103 (Sheet 7 of 8)**

**STRUCTURAL REPAIR MANUAL**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN

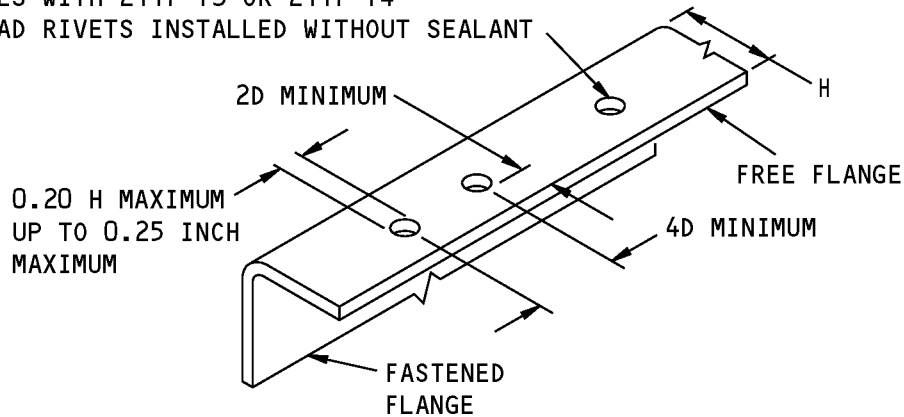


- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 0.05 INCH OR 5 PERCENT OF THE FLANGE WIDTH, THAT WHICH IS LESS 1
- = A MAXIMUM OF 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

**(L)**

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT



**NOTE:** HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

**(M)**

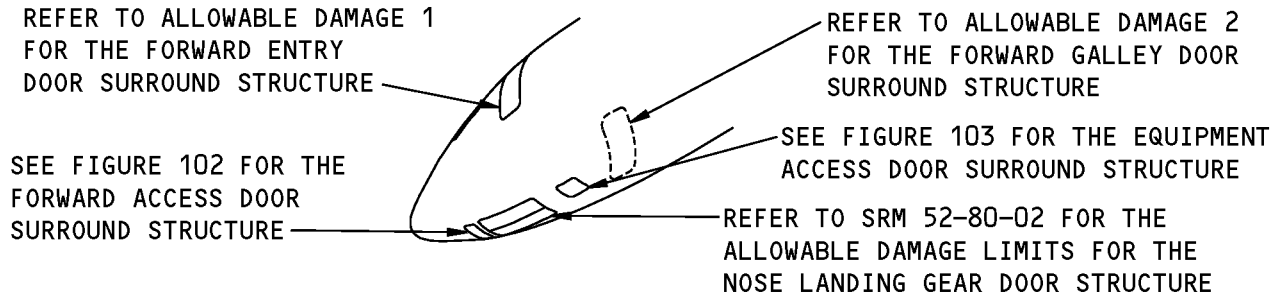
**Allowable Damage Limits  
Figure 103 (Sheet 8 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 3 - ACCESS DOORS SURROUND STRUCTURE**

**1. Applicability**

- A. This subject gives the allowable damage limits for the doors surround structure as shown in Access Door Surround Structure Locations, Figure 101/ALLOWABLE DAMAGE 3.



**Access Door Surround Structure Locations  
Figure 101**

**2. General**

- A. Remove the damaged material as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (4) Make the edges of the blendouts and holes smooth to a finish of 125 microinches Ra or smoother.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01
- C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

**Table 101:**

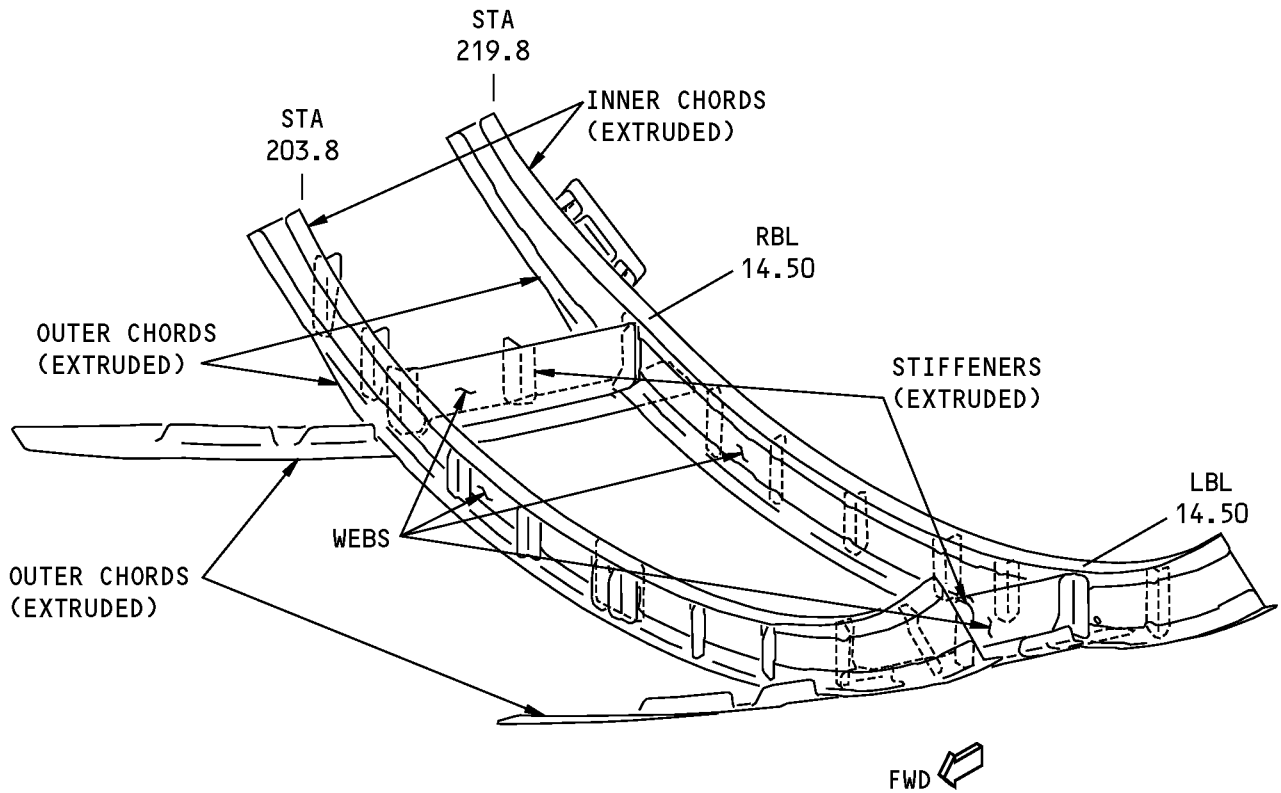
PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
FORWARD ACCESS DOOR SURROUND STRUCTURE	OUTER CHORDS	4.A.(1)
	INNER CHORDS	4.A.(1)
	STIFFENERS	4.A.(1)
	WEBS	4.A.(2)



**737-800**  
**STRUCTURAL REPAIR MANUAL**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>		
<b>TYPE OF STRUCTURE</b>	<b>PART NAME</b>	<b>PARAGRAPH</b>
EQUIPMENT ACCESS DOOR SURROUND STRUCTURE	OUTER CHORDS	4.B.(1)
	INNER CHORDS	4.B.(1)
	CHORDS	4.B.(1)
	LOWER CHORDS	4.B.(2)
	FAIL SAFE CHORDS	4.B.(3)
	WEBS	4.B.(4)
	INTERCOSTAL WEBS	4.B.(4)

**737-800  
STRUCTURAL REPAIR MANUAL**



NOTE: ALL PARTS ARE MADE OF ALUMINUM.

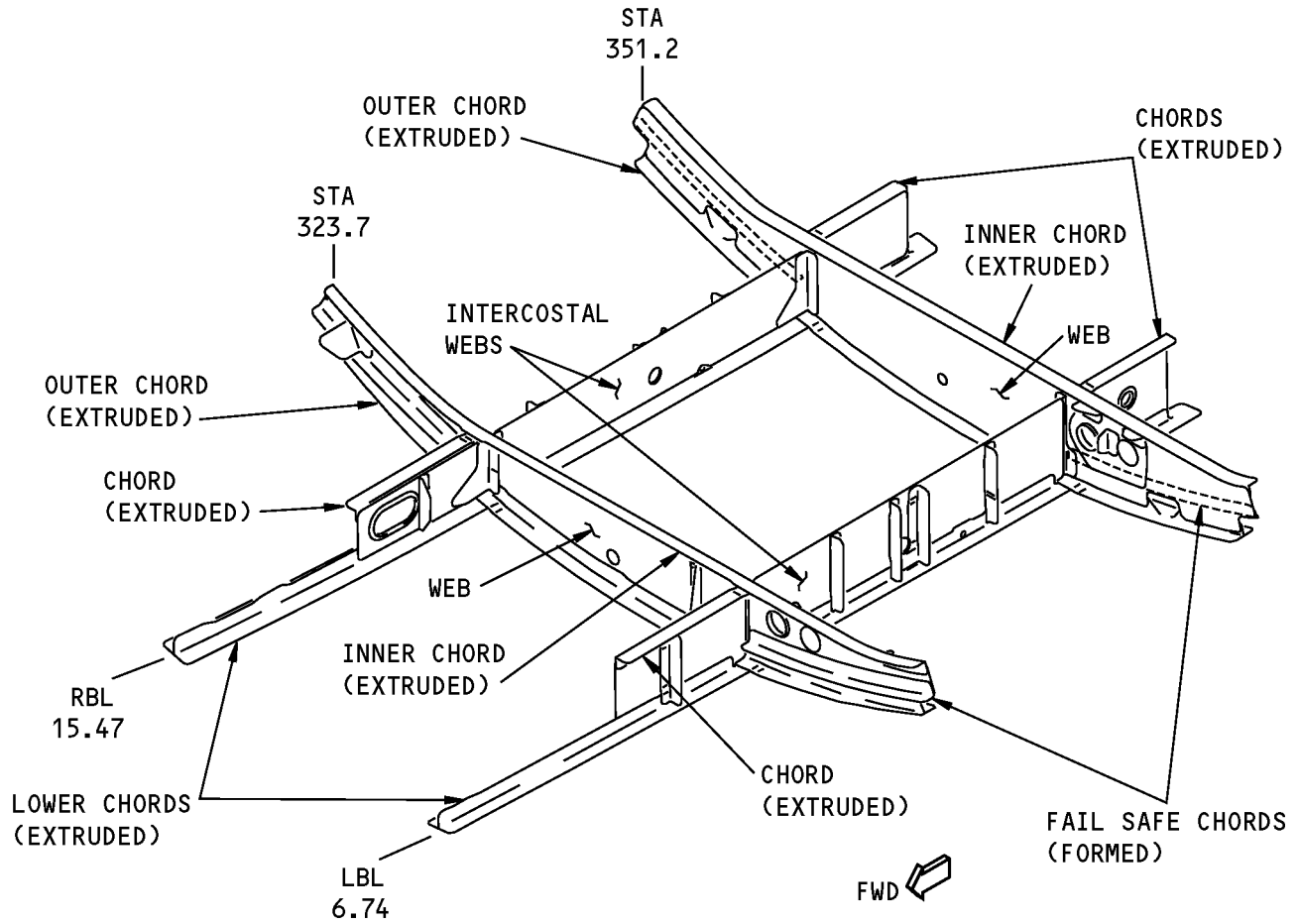
**Forward Access Door Surround Structure  
Figure 102**

D634A210

ALLOWABLE DAMAGE 3  
**53-10-15**  
Page 103  
Nov 01/2003



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Equipment Access Door Surround Structure  
Figure 103**

D634A210

ALLOWABLE DAMAGE 3  
**53-10-15**  
Page 104  
Nov 01/2003



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Forward Access Door Surround Structure

##### (1) Chords and Stiffeners

###### (a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and C .

###### (b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D , and E .

###### (c) Dents are not permitted.

###### (d) Holes and Punctures are not permitted.

##### (2) Webs

###### (a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and F .

###### (b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , D , F , and G .

###### (c) Dents are permitted as shown in Figure 104, Detail H .

###### (d) Holes and Punctures are permitted if they are:

1) A maximum of 0.25 inch in diameter

2) A minimum of 4D (D = the diameter of the damage) away from a hole, the edge part, or other damage

3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

#### B. Equipment Access Door Surround Structure

##### (1) Outer Chords, Inner Chords, and Chords

###### (a) Cracks:

1) Remove the damage as shown in Figure 104, Details A , B , and C .

###### (b) Nicks, Gouges, Scratches, and Corrosion:

1) Remove the damage as shown in Figure 104, Details A , B , C , D and E .

###### (c) Dents are not permitted.

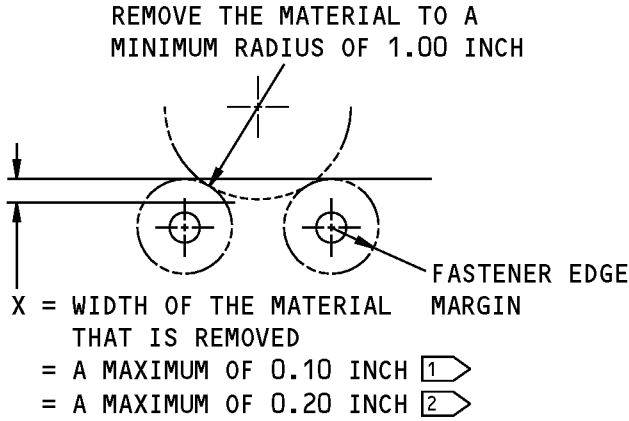


737-800

## STRUCTURAL REPAIR MANUAL

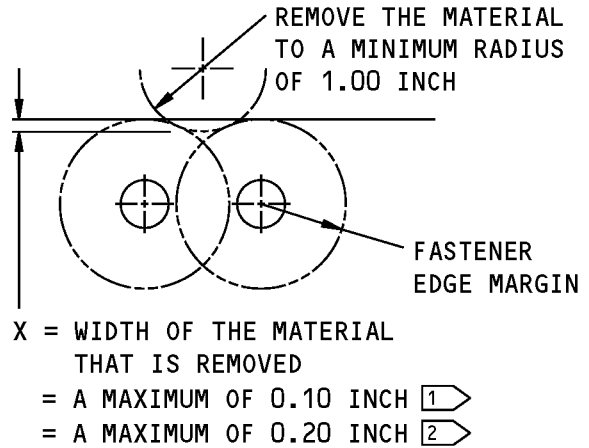
- (d) Holes and Punctures are not permitted.
- (2) Lower Chords
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 104, Details A , B , and I .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 104, Details A , B , D , E , and I .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) Fail Safe Chords
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 104, Details A , B , and J .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 104, Details A , B , D and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (4) Webs, Intercostal Webs
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 104, Details A , B , and F .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 104, Details A , B , D , F and G .
  - (c) Dents are permitted as shown in Figure 104, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from the hole, the edge part, or other damage
    - 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

**STRUCTURAL REPAIR MANUAL**



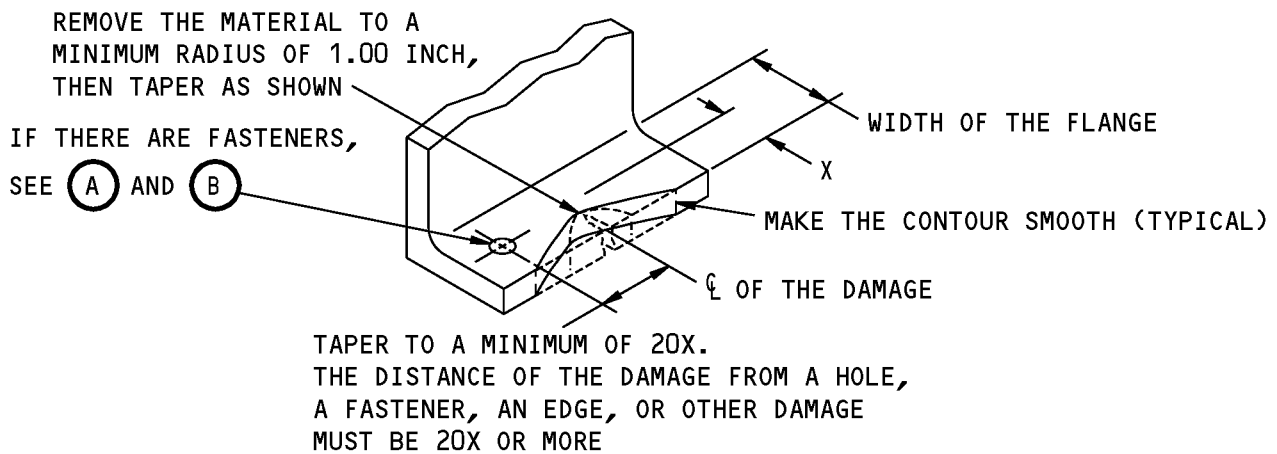
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



X = WIDTH OF THE MATERIAL REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF AN EXTRUDED PART

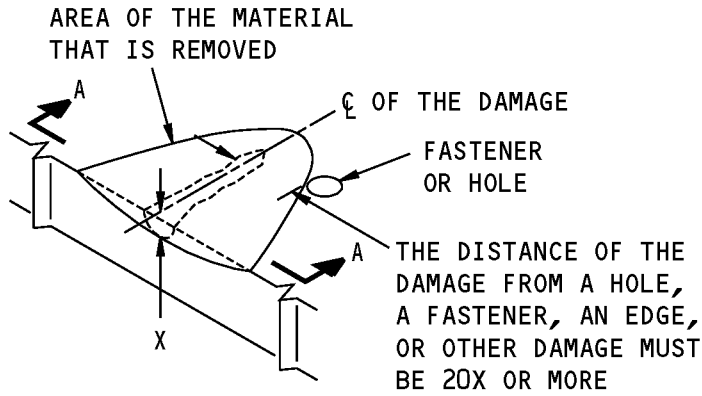
(C)

**NOTES**

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
 Figure 104 (Sheet 1 of 6)**

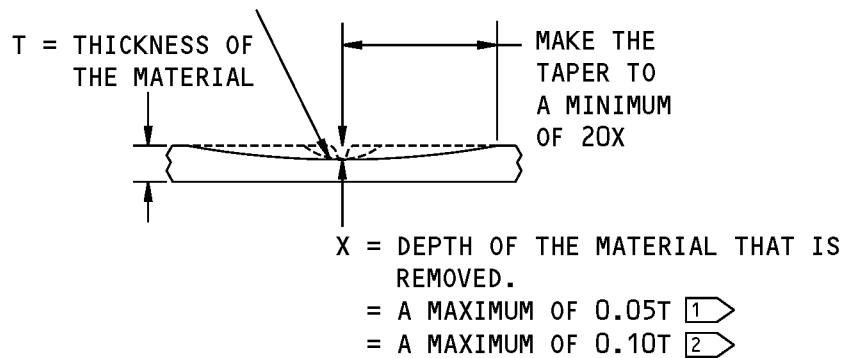
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE**

D

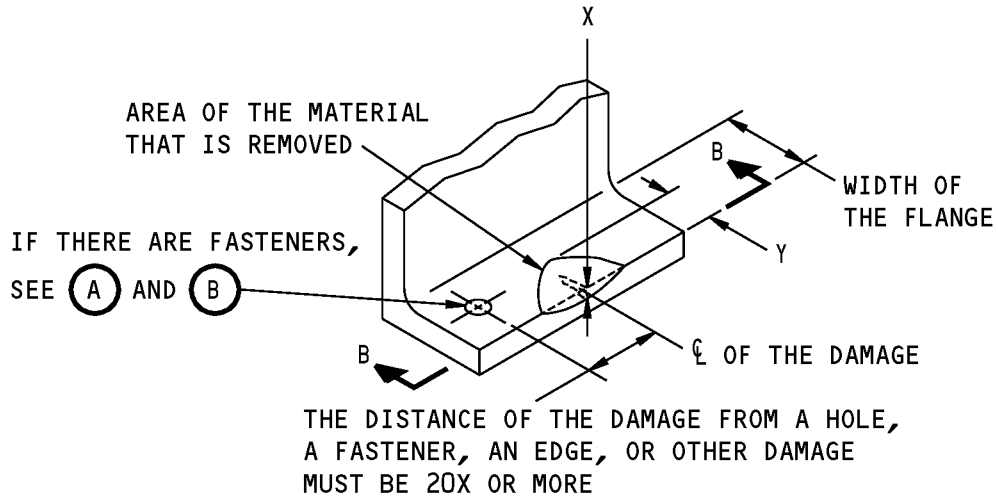
REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN



A-A

**Allowable Damage Limits  
Figure 104 (Sheet 2 of 6)**

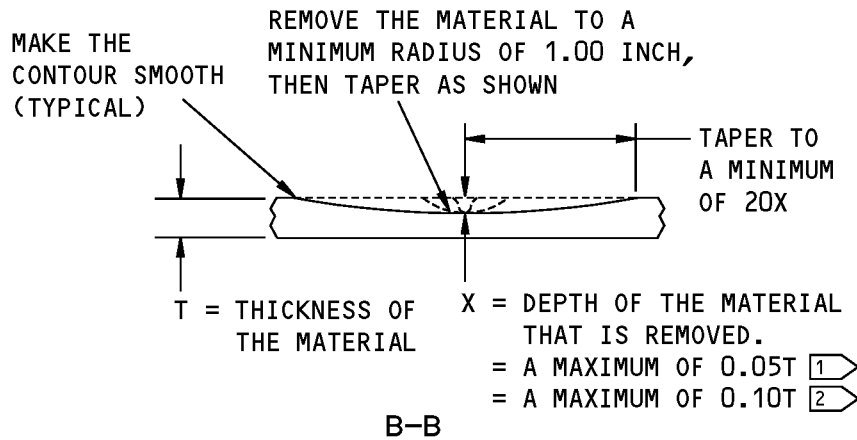
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

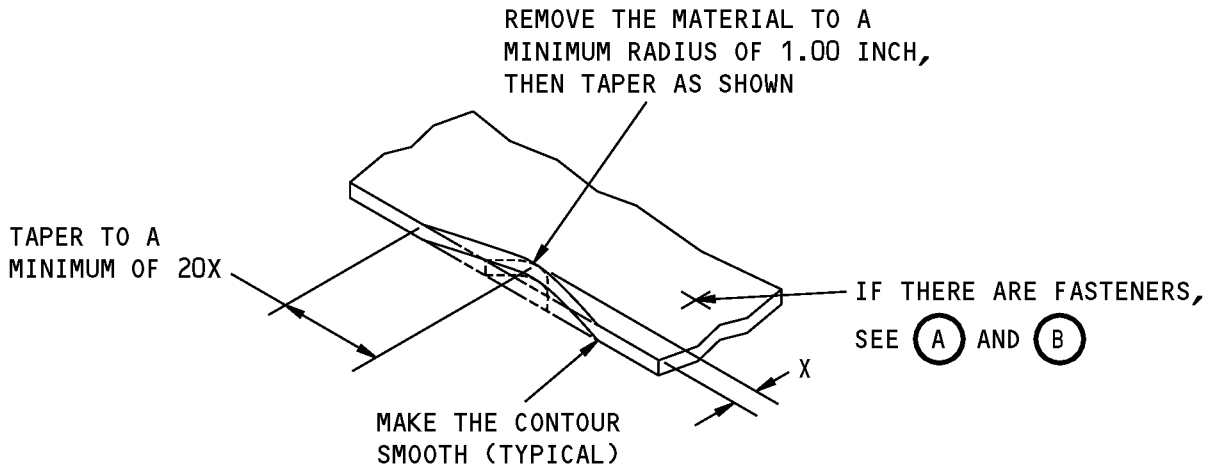
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF AN EXTRUDED PART**

(E)



**Allowable Damage Limits  
Figure 104 (Sheet 3 of 6)**

**737-800  
STRUCTURAL REPAIR MANUAL**

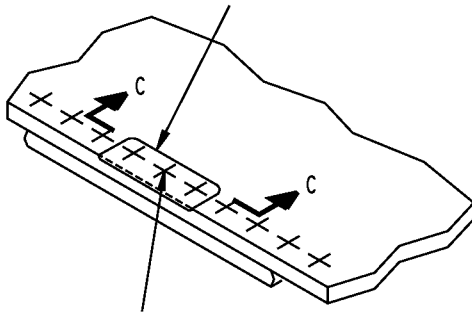


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH (1)  
 = A MAXIMUM OF 0.10 INCH (2)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(F)

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



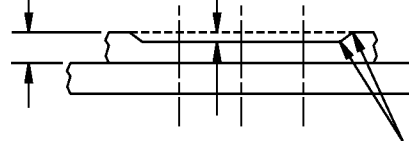
REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(G)

X = DEPTH OF THE MATERIAL THAT IS REMOVED.  
 = A MAXIMUM OF 0.05T (1)  
 = A MAXIMUM OF 0.10T (2)

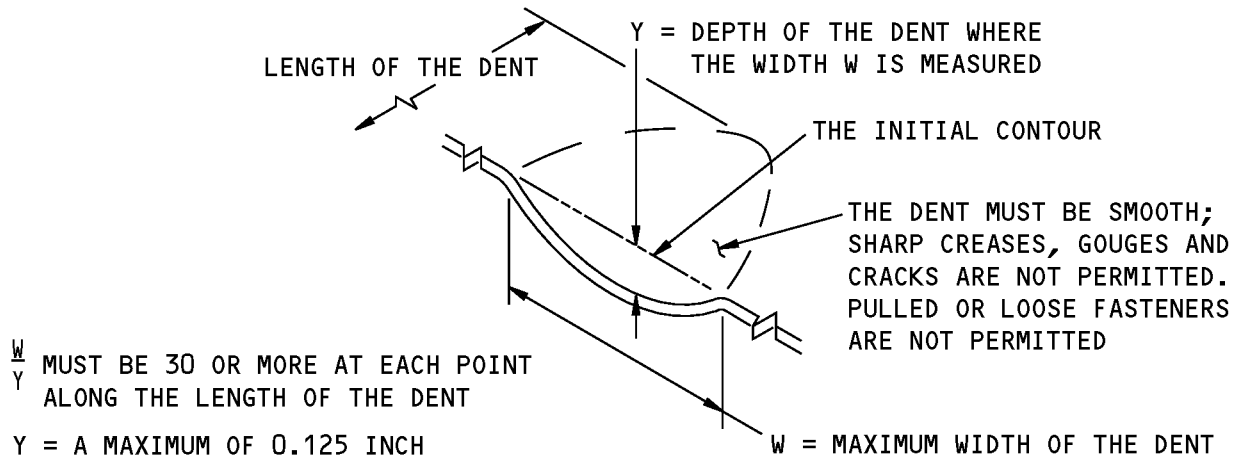
T = THICKNESS OF THE MATERIAL



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

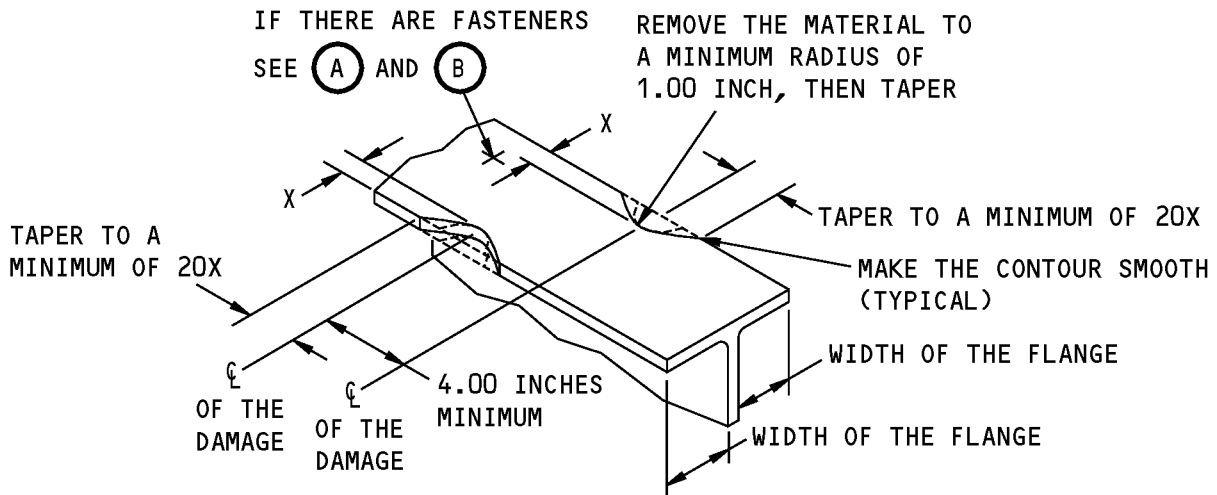
**Allowable Damage Limits  
Figure 104 (Sheet 4 of 6)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(H)



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED.  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

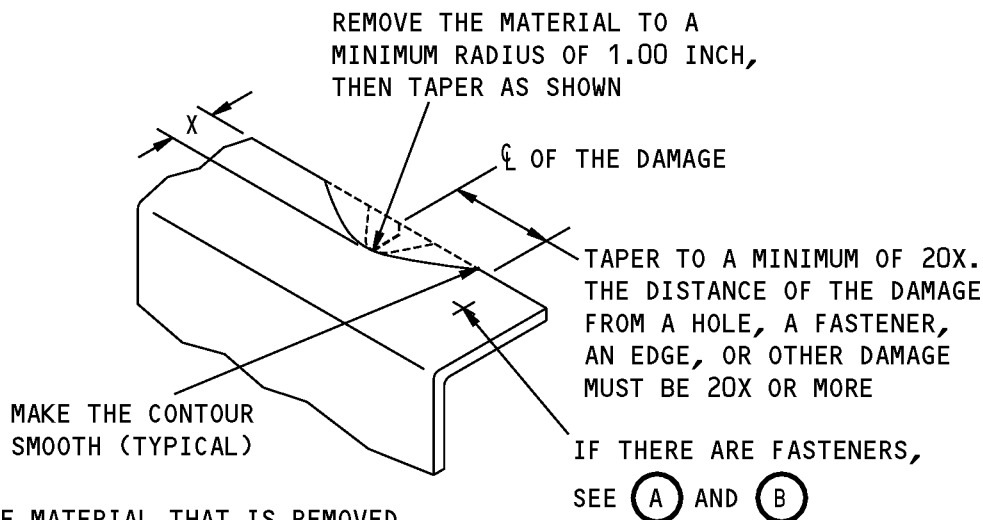
**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(I)

**Allowable Damage Limits  
Figure 104 (Sheet 5 of 6)**



**737-800  
STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED.  
 = A MAXIMUM OF 0.10 INCH OR 10 PERCENT OF THE  
 FLANGE WIDTH, THAT WHICH IS LESS 1  
 = A MAXIMUM OF 0.20 INCH 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

J

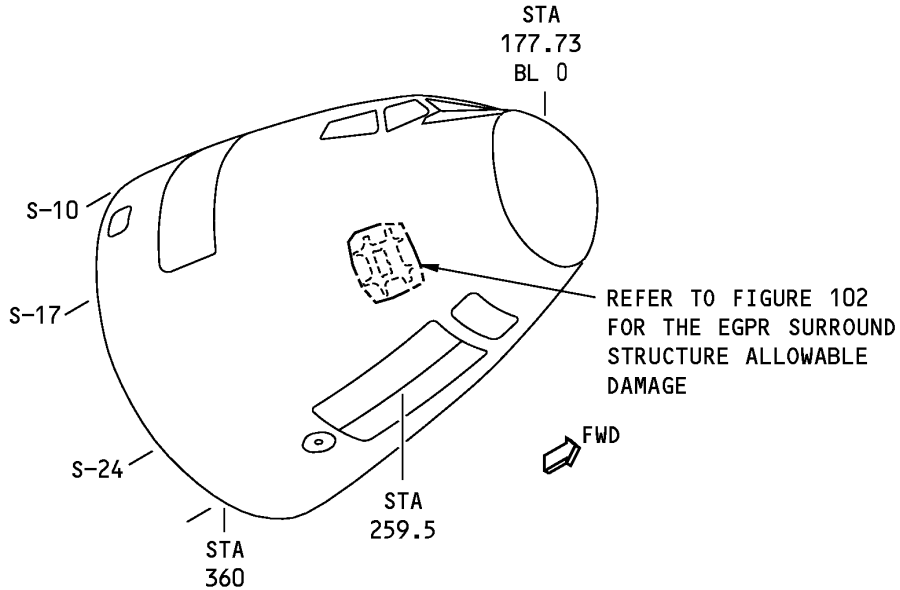
**Allowable Damage Limits  
Figure 104 (Sheet 6 of 6)**

**737-800  
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND DOUBLER**

**1. Applicability**

- A. This subject gives the allowable damage limits for the Electrical Ground Power Receptacle (EGPR) surround doubler only as shown in Figure 101/ALLOWABLE DAMAGE 4.



1665247 S0000303734\_V1

**Electrical Ground Power Receptacle Surround Doubler Location  
Figure 101**

**2. General**

- A. Trim out the damaged area of the EGPR doubler as shown in Figure 102/ALLOWABLE DAMAGE 4. Make sure that you do not damage the EGPR stiffener or the intercostal while you trim the damage.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (4) Make the inner corner radius of the trim out a minimum of 1.00 in. (25.40 mm).
  - (5) Make the outer radius of the trim out a minimum of 0.50 in. (12.70 mm).
  - (6) Make sure the cut edges of the trim out have a surface smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.
  - (7) Keep a 2D minimum edge margin from initial fastener locations.
  - (8) Do a 10x visual inspection of the trim out area. Make sure that the damage does not extend under the skin. Make sure that there is no disbond between the EGPR doubler and the skin.



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## STRUCTURAL REPAIR MANUAL

- (9) Do a High Frequency Eddy Current (HFEC) inspection of the trim out edge to make sure that there are no cracks. If you find no cracks, make a 0.040 in. (1.02 mm) insurance cut of the trim out area. Do not make the insurance cut along the initial edge of the skin..
- B. Do a Non-Destructive Test (NDT) inspection of the interior structure to make sure that there is no damage.
- C. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01
- D. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

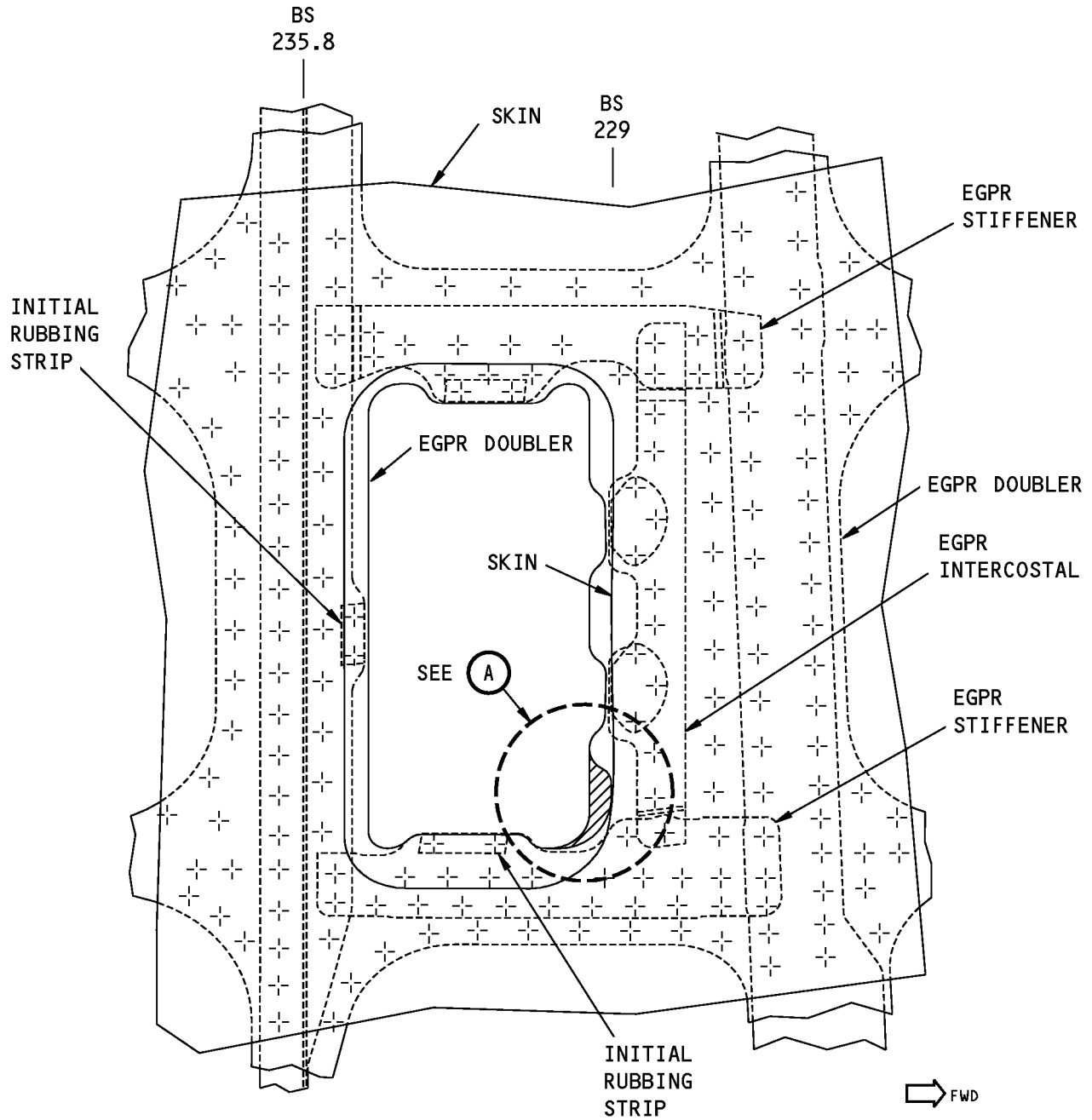
### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

- A. EGPR Surround Structure:
  - (1) Doubler
    - (a) Remove the damage as shown in Paragraph 2.A./ALLOWABLE DAMAGE 4 and Figure 102/ALLOWABLE DAMAGE 4.

**737-800  
STRUCTURAL REPAIR MANUAL**

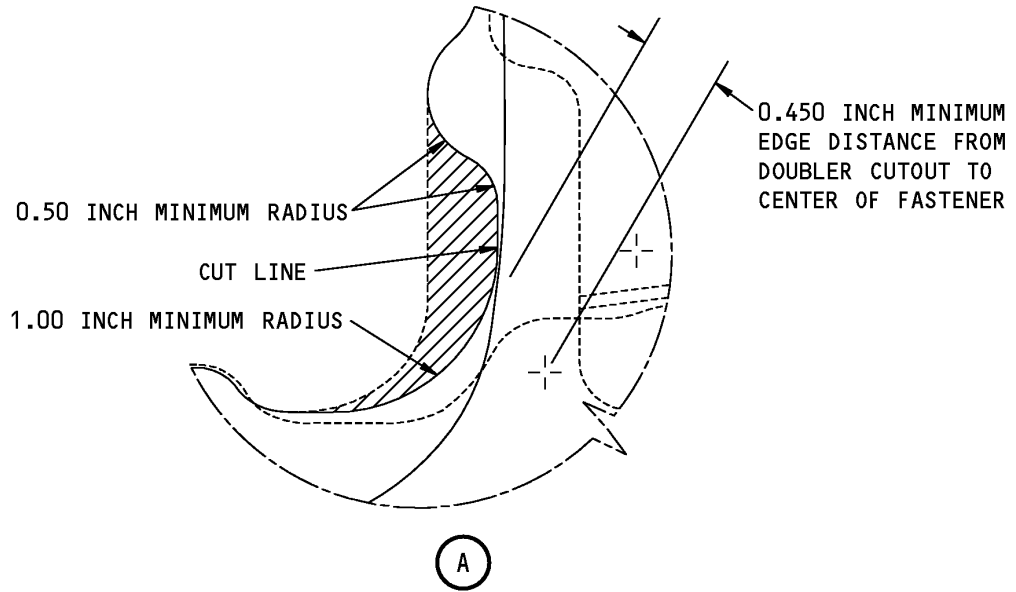


**VIEW LOOKING INBOARD  
RIGHT SIDE IS SHOWN**

1665251 S0000304429\_V1

**Allowable Damage Limits  
Figure 102 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



1665255 S0000304430\_V1

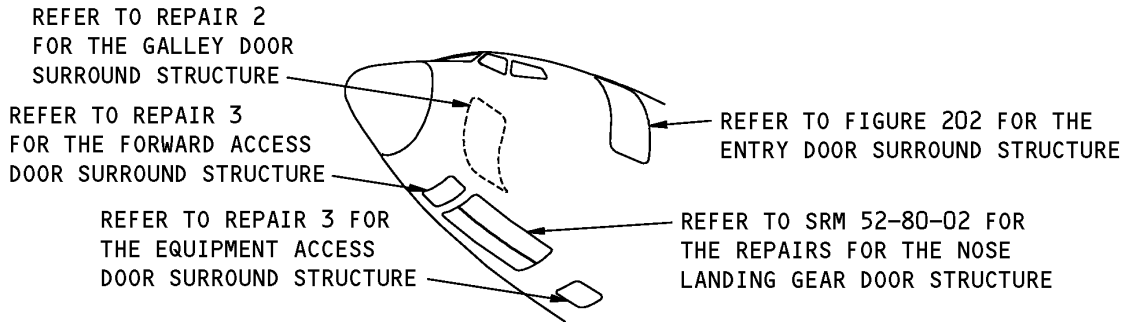
**Allowable Damage Limits  
Figure 102 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - FORWARD ENTRY AND AIRSTAIR DOOR SURROUND STRUCTURE**

**1. Applicability**

- A. Repair 1 is applicable to damage to the Forward Entry and Airstair Doors Surround Structures as shown in Forward Entry and Airstair Door Surround Structure, Figure 201/REPAIR 1.



**Forward Entry and Airstair Door Surround Structure  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41
53-10-15, ALLOWABLE DAMAGE 1	Forward Entry and Airstair Door Surround Structure



**737-800**  
**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
53-10-15, IDENTIFICATION 1	Forward Entry and Airstair Door Surround Structure

**4. Repair Instructions**

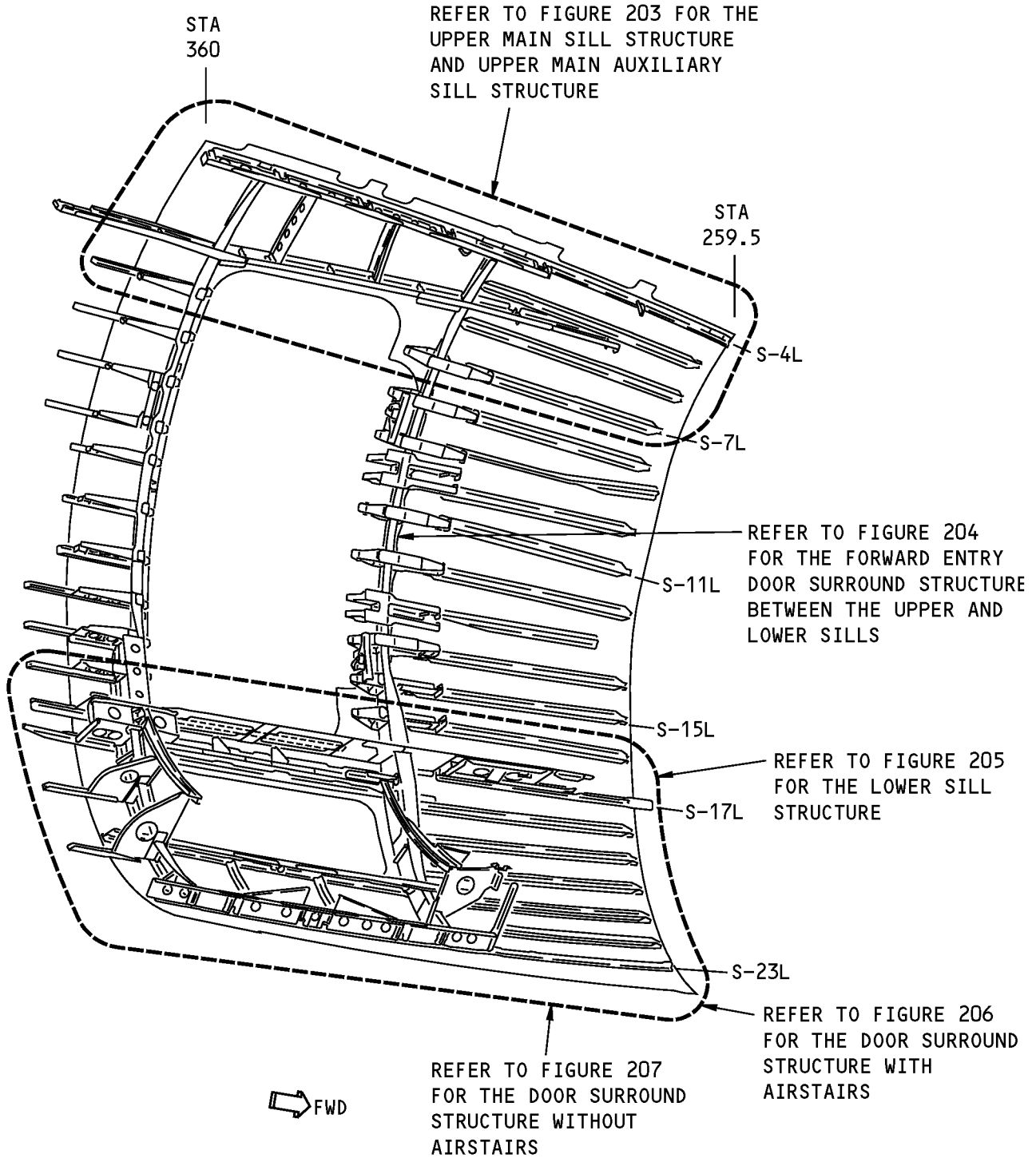
- A. Refer to Forward Entry and Airstair Door Surround Structure, Figure 201/REPAIR 1 through Door Surround Structure Without Airstairs, Figure 207/REPAIR 1, and Table 201 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-10-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

<b>REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES</b>	
<b>TYPE OF COMPONENT</b>	<b>REPAIR</b>
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps, Doublers, Lower Frame Chord, Splice Angle	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-15, Allowable Damage 1, replace the damaged part.
Machined Intercostals	There are no repairs for these parts in the Structural Repair Manual at this time.

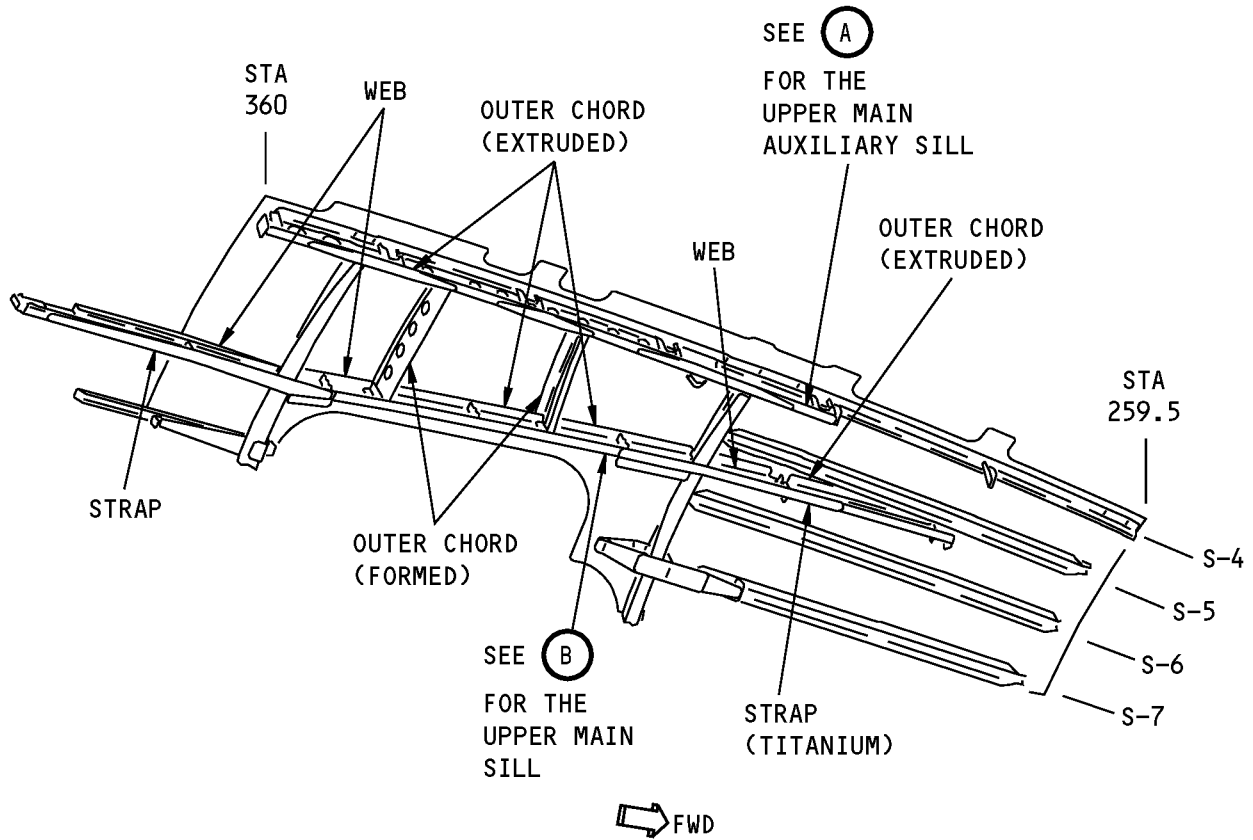
**STRUCTURAL REPAIR MANUAL**



**Forward Entry and Airstair Door Surround Structure Locations**  
**Figure 202**



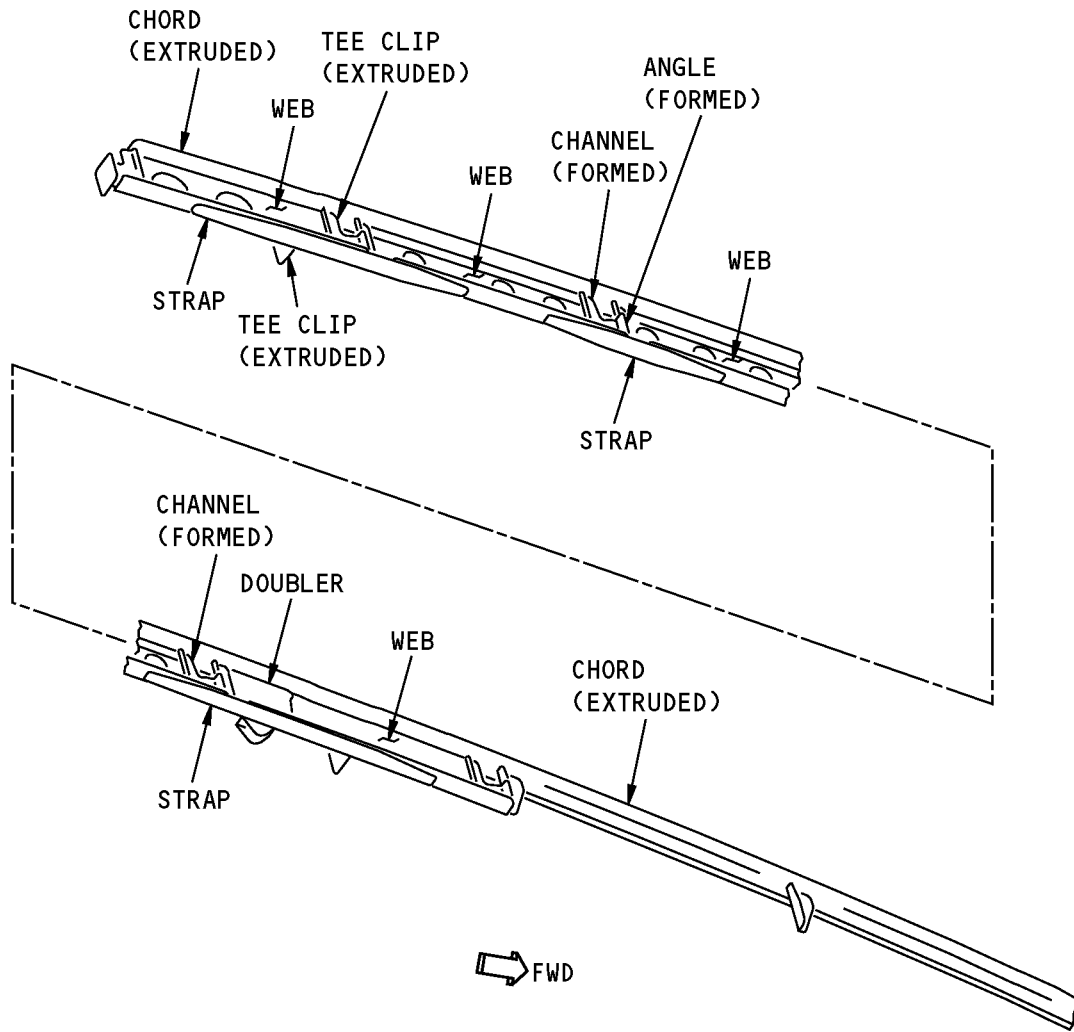
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**Upper Main Sill and Upper Main Auxiliary Sill Structure  
Figure 203 (Sheet 1 of 3)**

**STRUCTURAL REPAIR MANUAL**



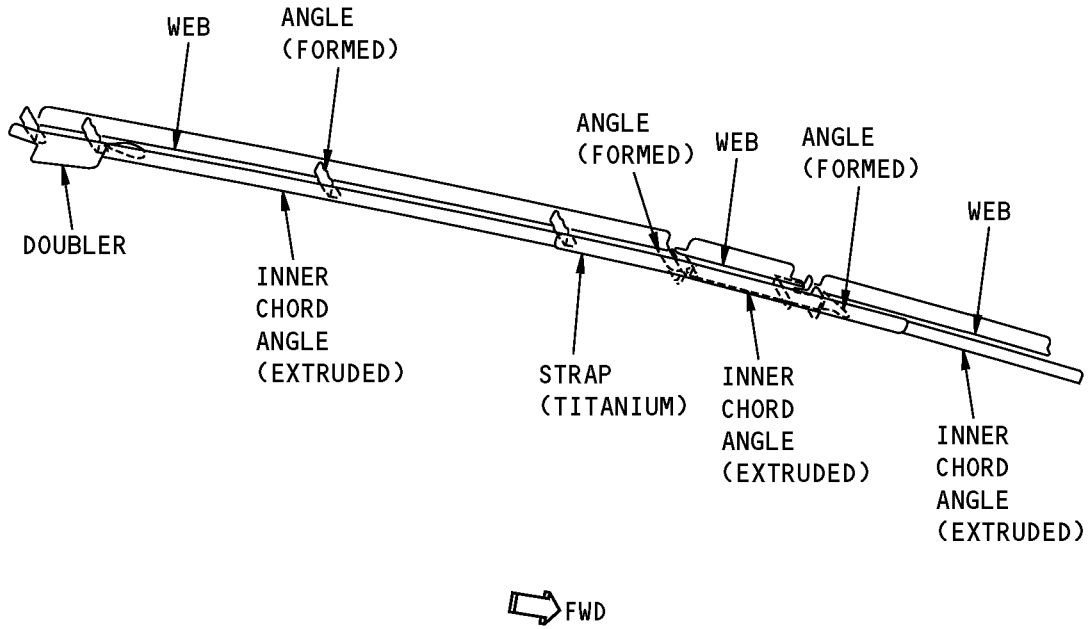
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER MAIN AUXILIARY SILL**

(A)

**Upper Main Sill and Upper Main Auxiliary Sill Structure  
Figure 203 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



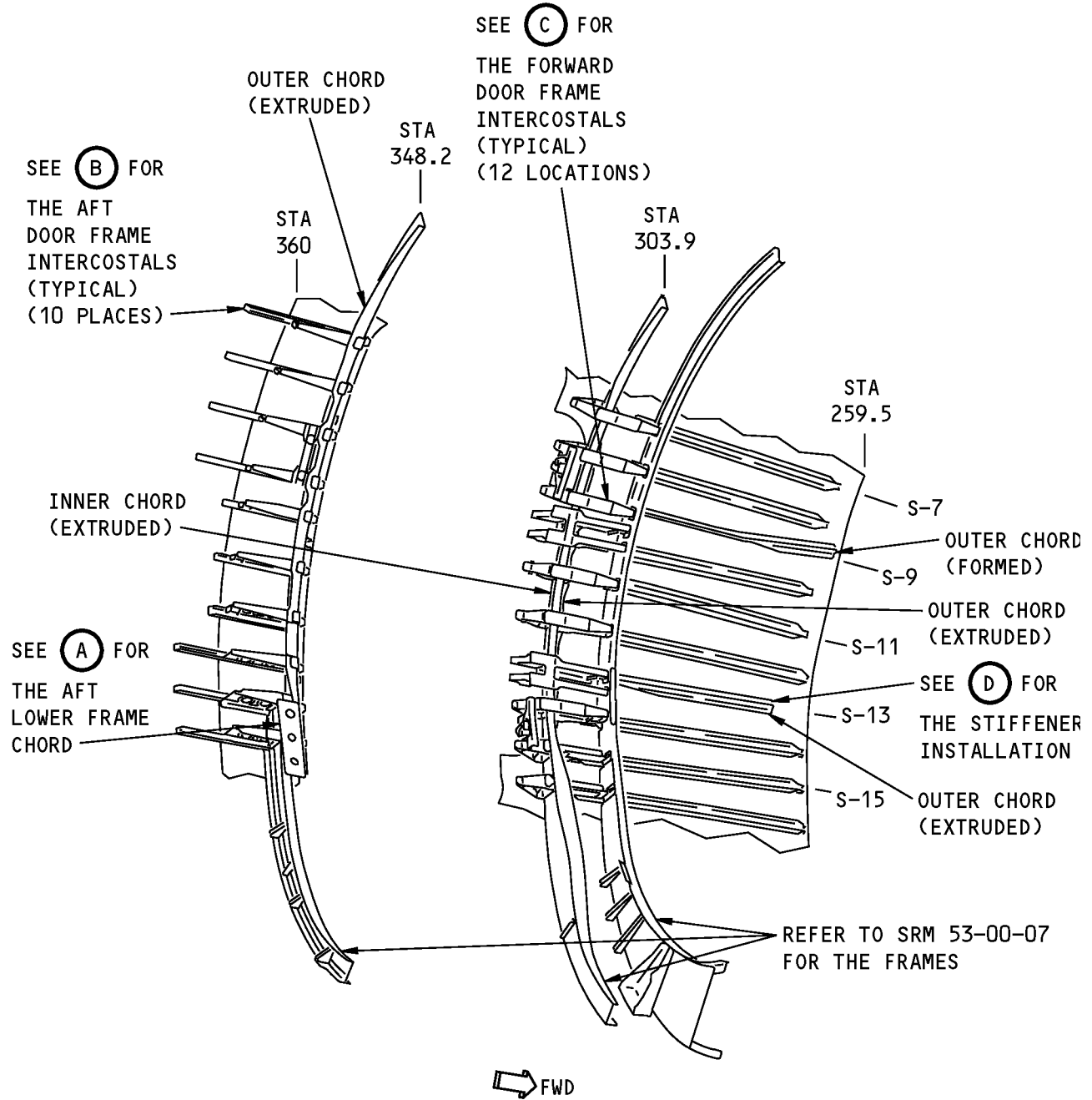
NOTE: ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**UPPER MAIN SILL**

(B)

**Upper Main Sill and Upper Main Auxiliary Sill Structure  
Figure 203 (Sheet 3 of 3)**

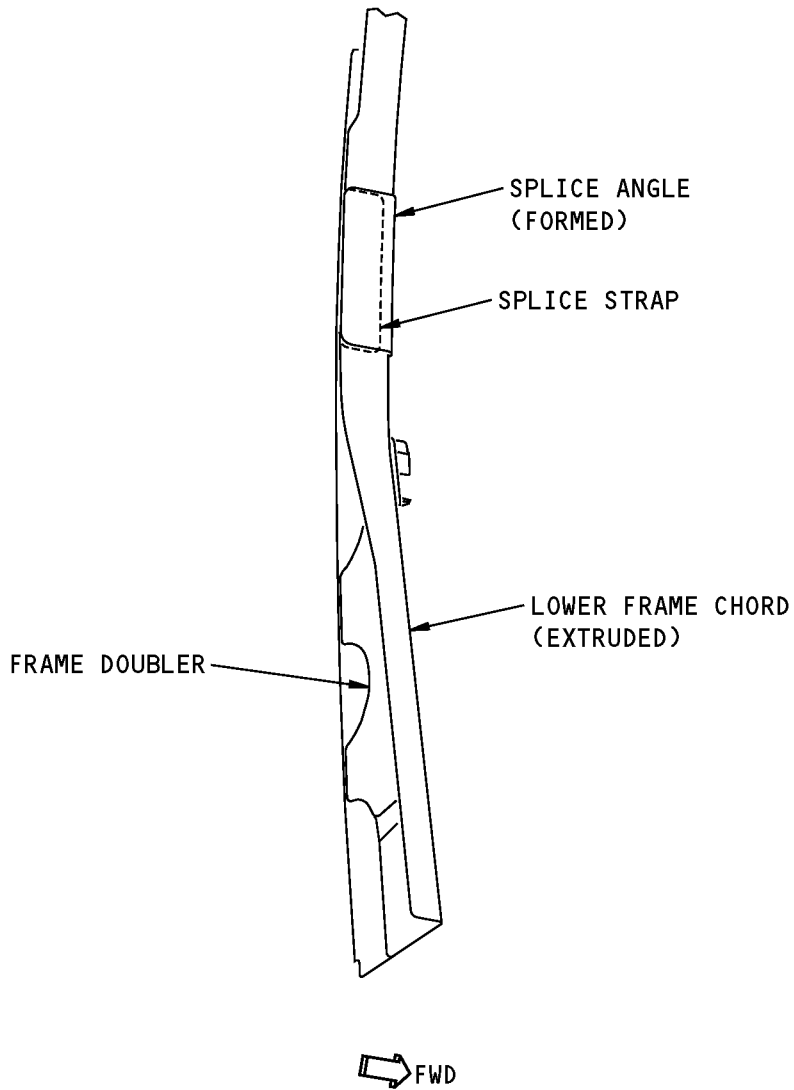
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 204 (Sheet 1 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



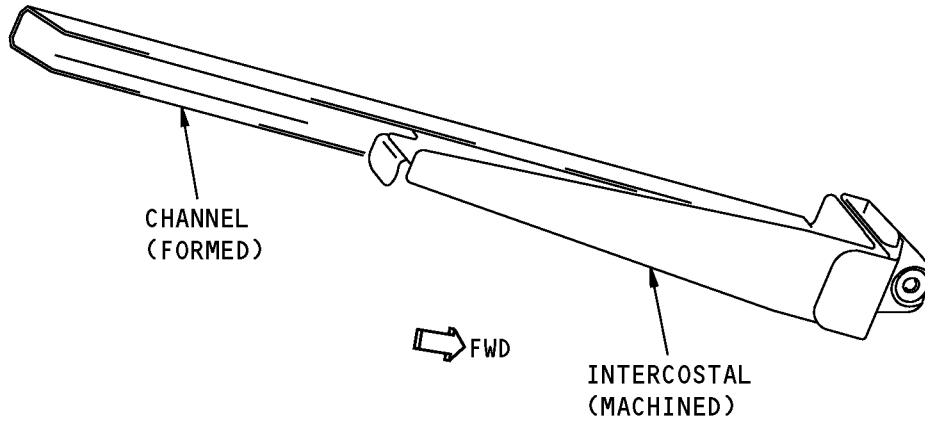
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**AFT LOWER FRAME CHORD**



**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 204 (Sheet 2 of 4)**

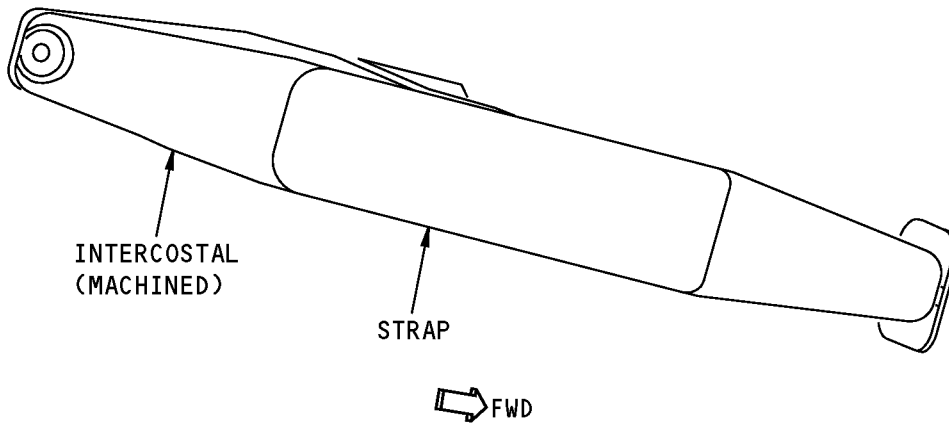
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**AFT DOOR FRAME INTERCOSTAL (TYPICAL)**

**B**



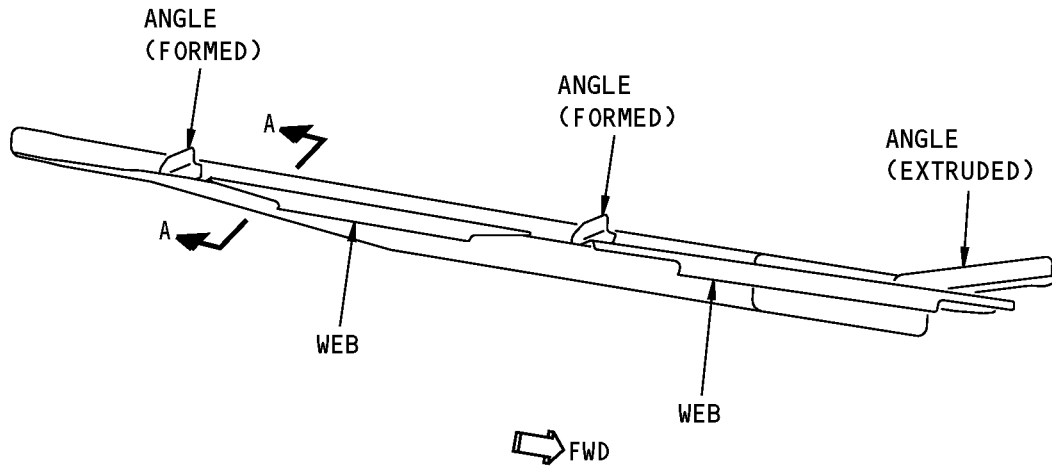
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**FORWARD DOOR FRAME INTERCOSTALS (TYPICAL)**

**C**

**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 204 (Sheet 3 of 4)**

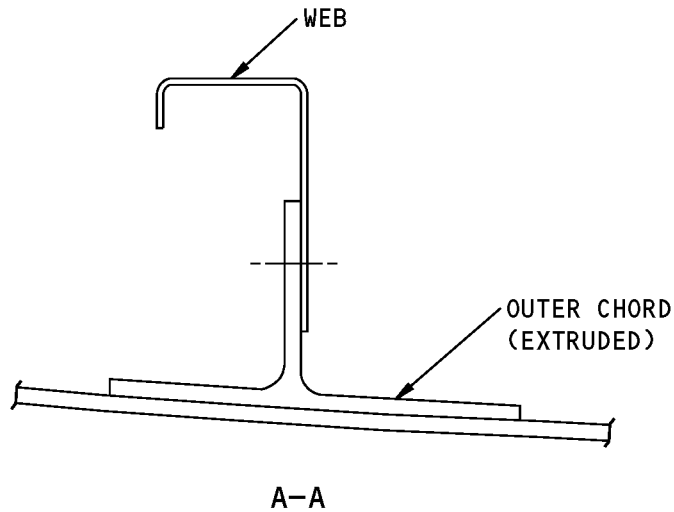
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

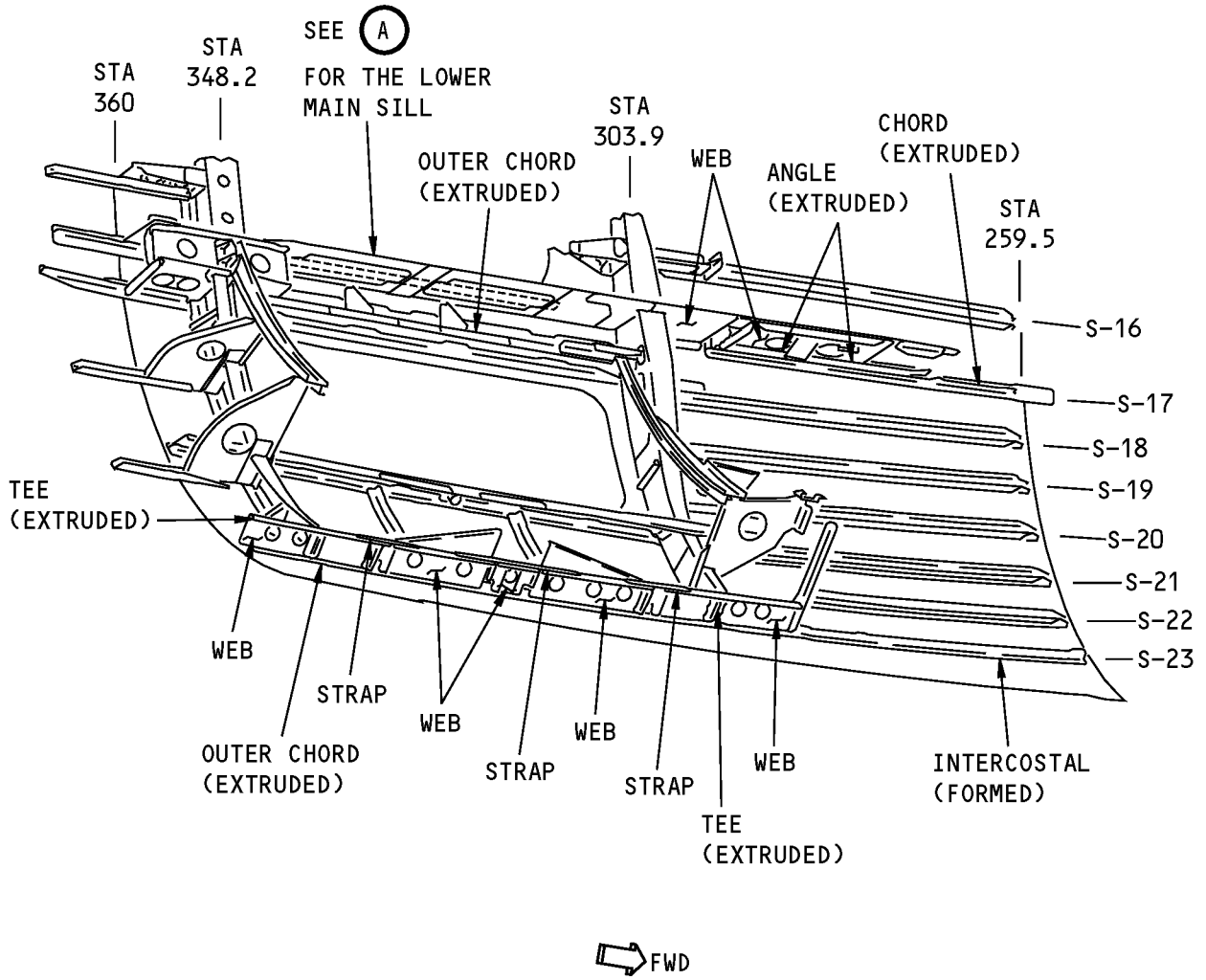
**STIFFENER INSTALLATION AT STRINGER 13**

(D)



**Forward Entry Door Surround Structure Between the Upper and Lower Sills  
Figure 204 (Sheet 4 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**

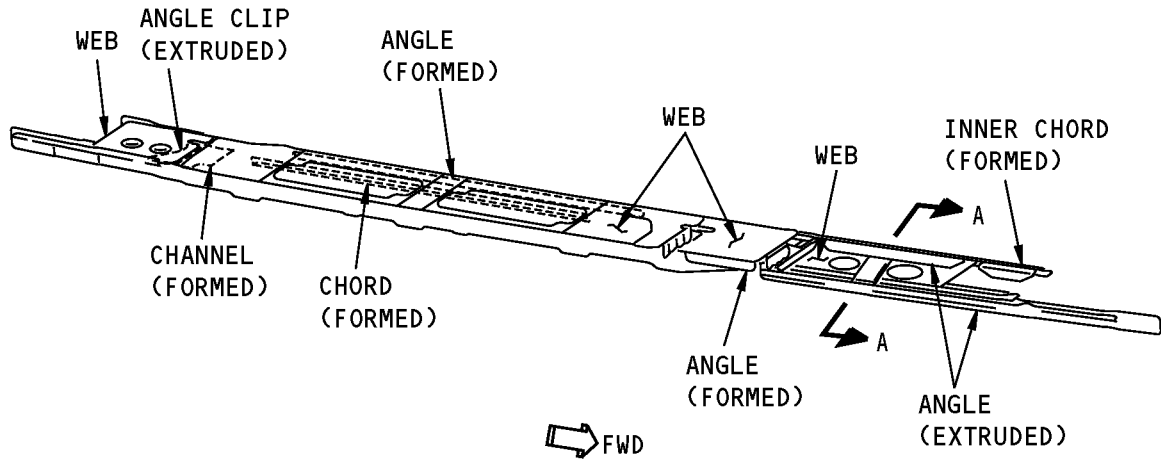


**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Lower Sill Structure  
Figure 205 (Sheet 1 of 2)**

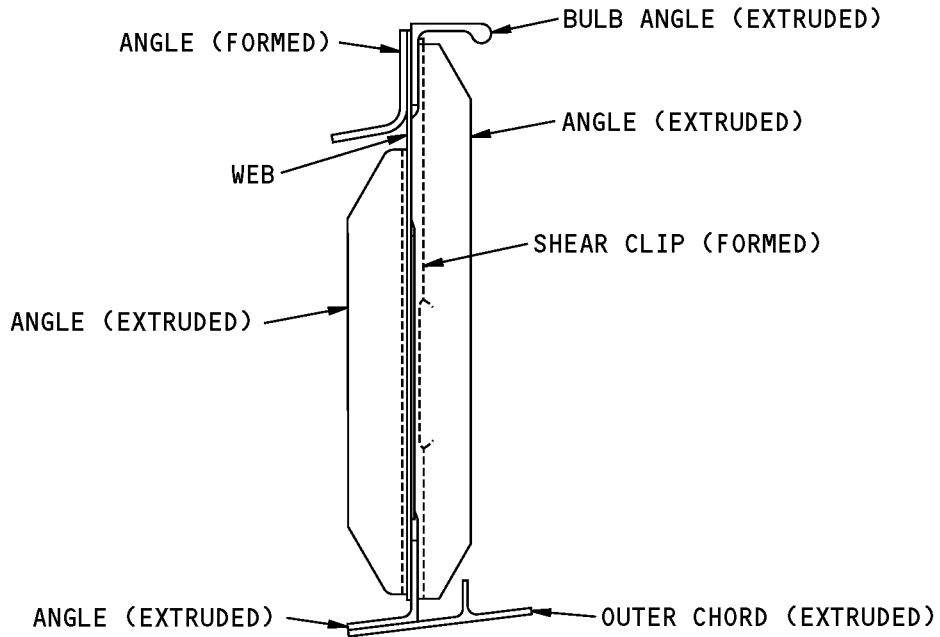


**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

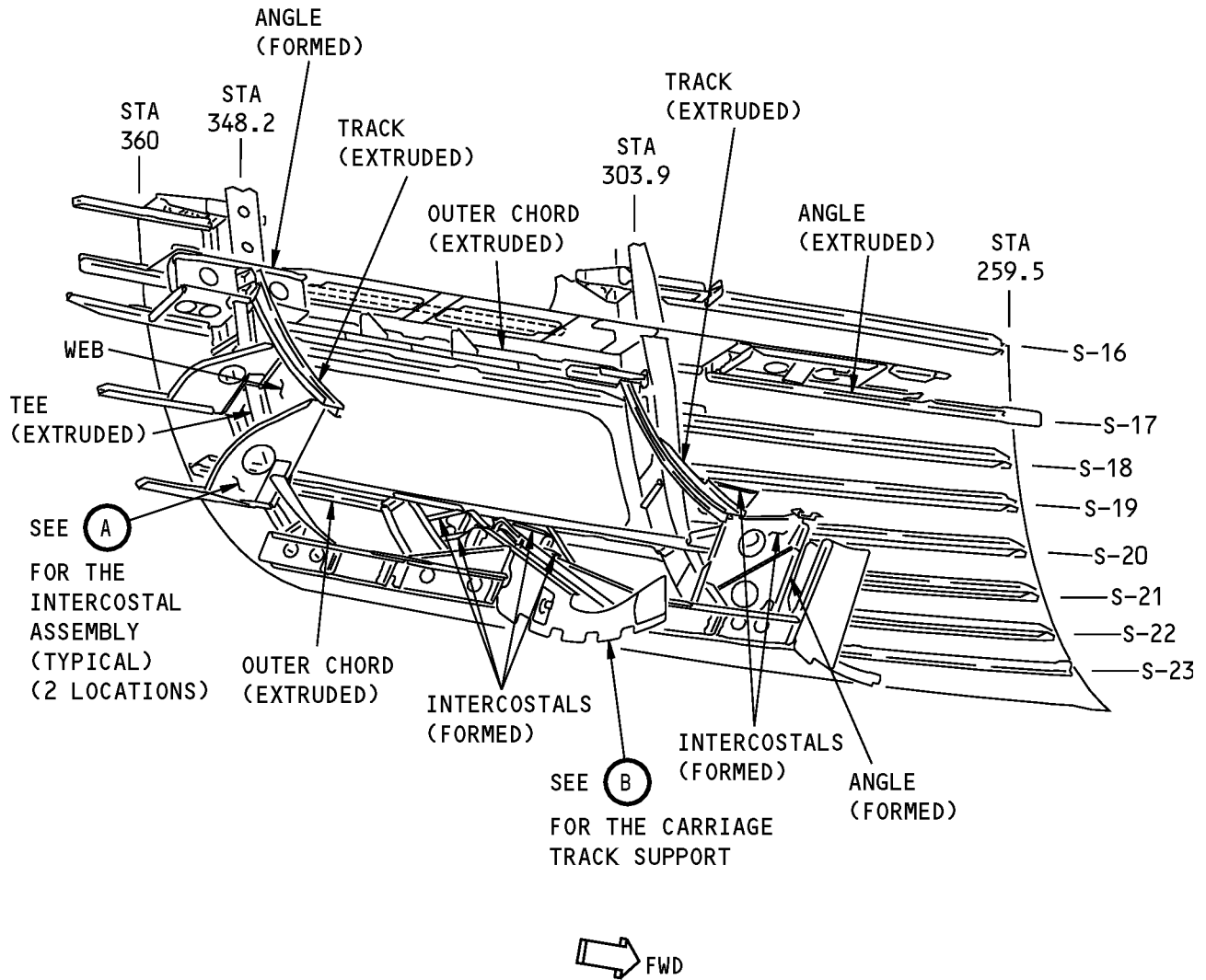
**LOWER MAIN SILL**



A-A

**Lower Sill Structure  
Figure 205 (Sheet 2 of 2)**

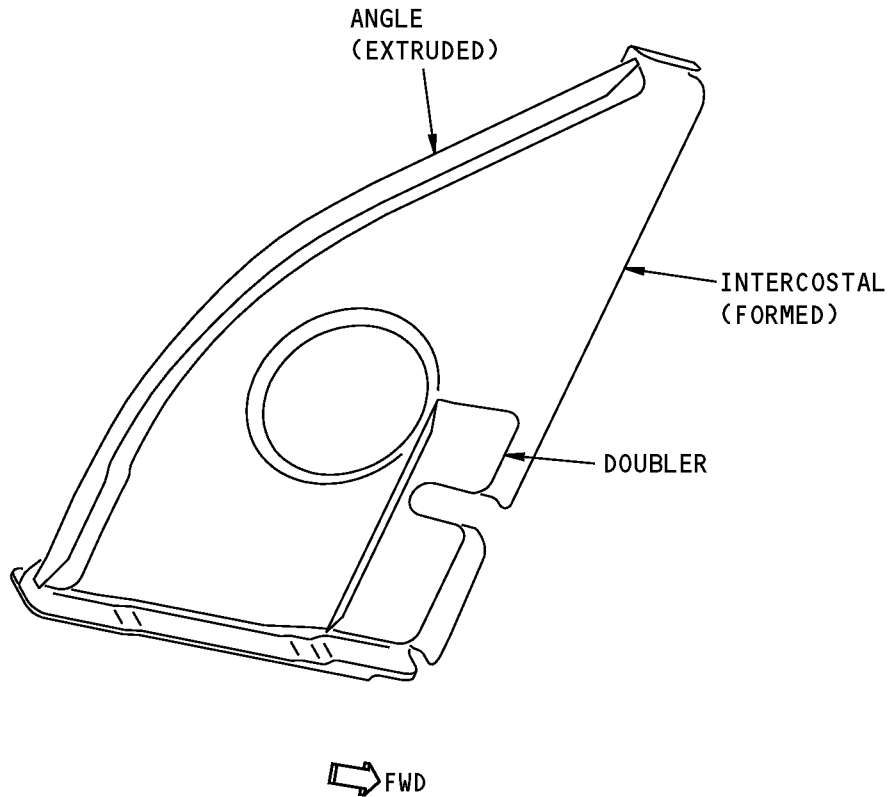
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Door Surround Structure With Airstairs  
Figure 206 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



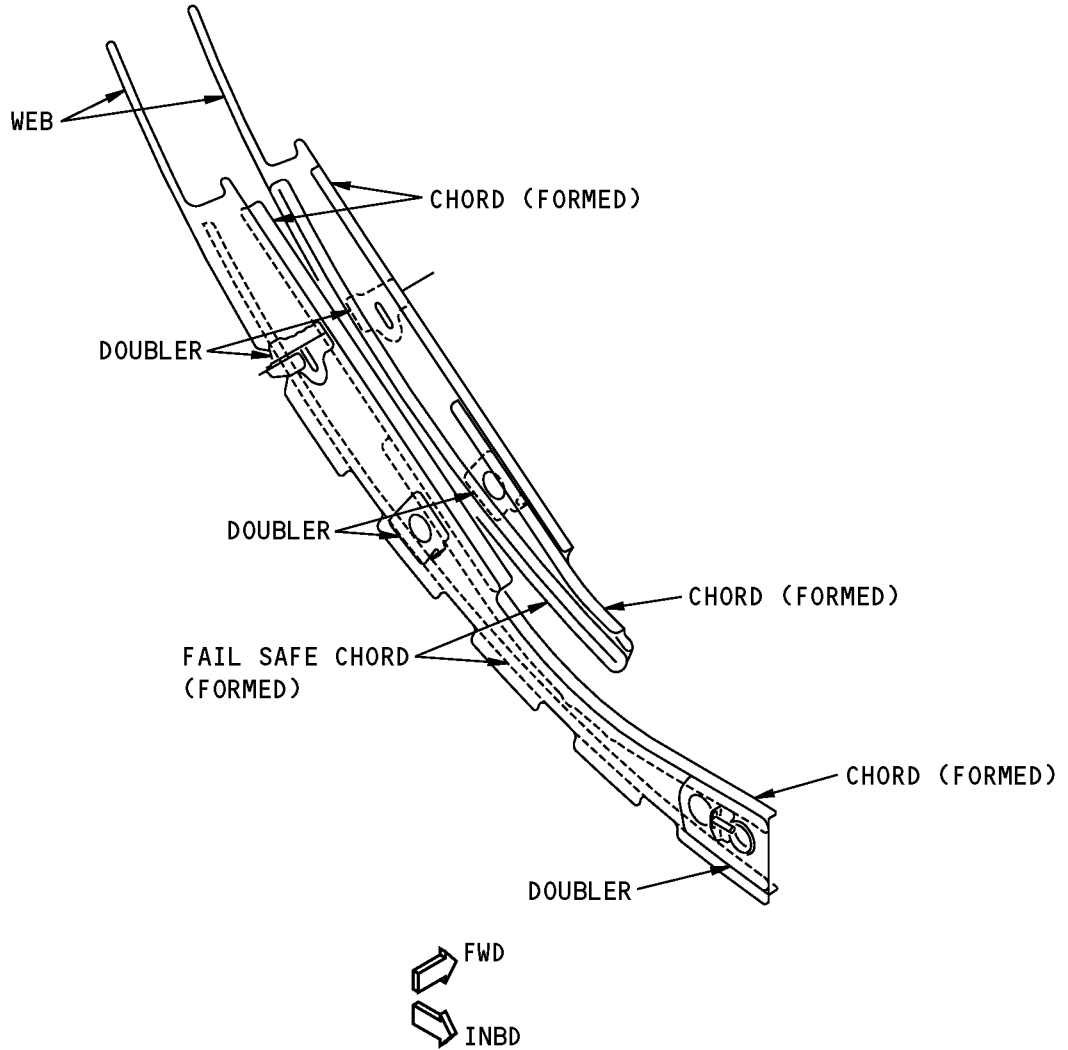
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY (TYPICAL)**

(A)

**Door Surround Structure With Airstairs  
Figure 206 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



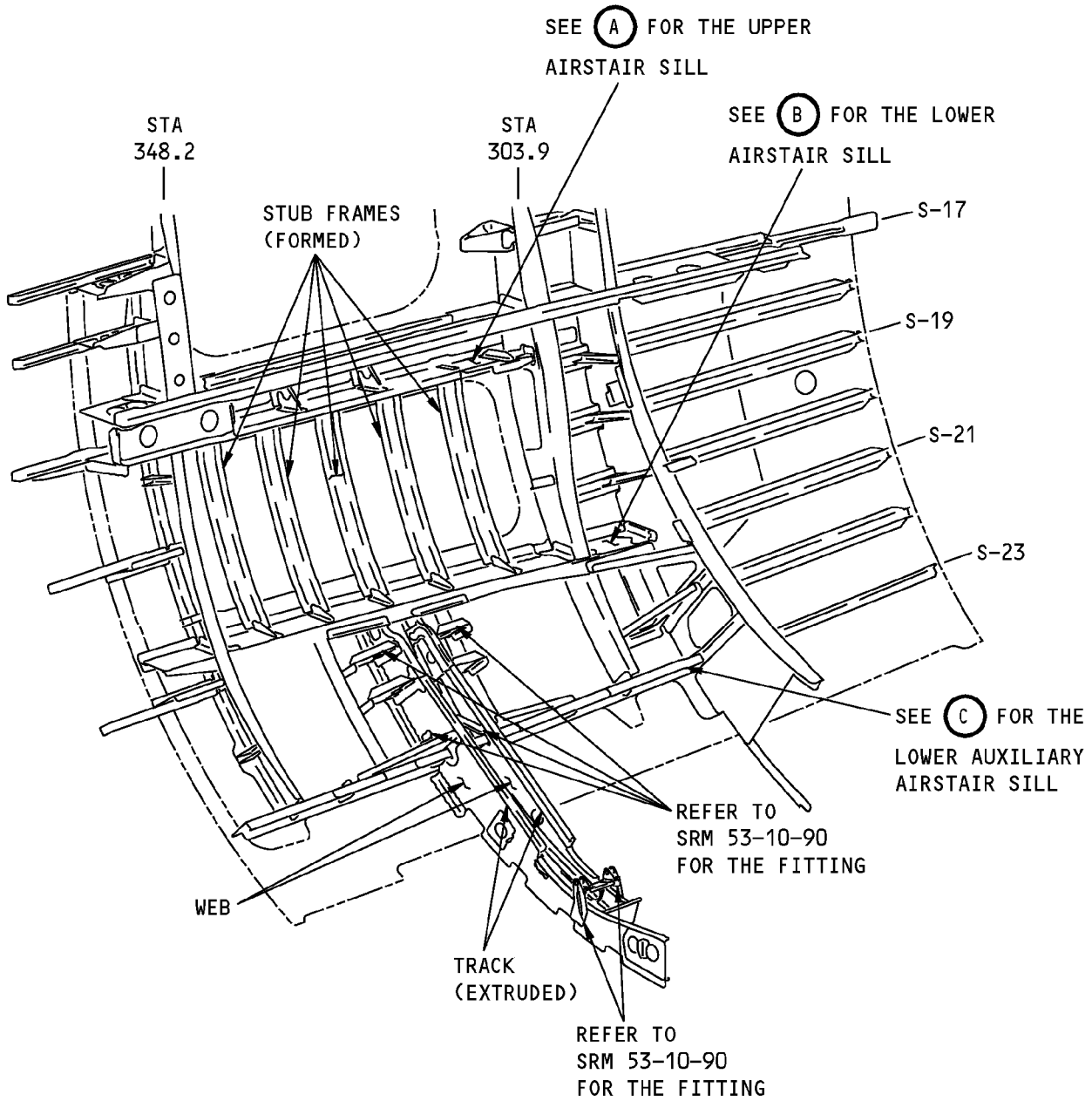
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**CARRIAGE TRACK SUPPORT**

**B**

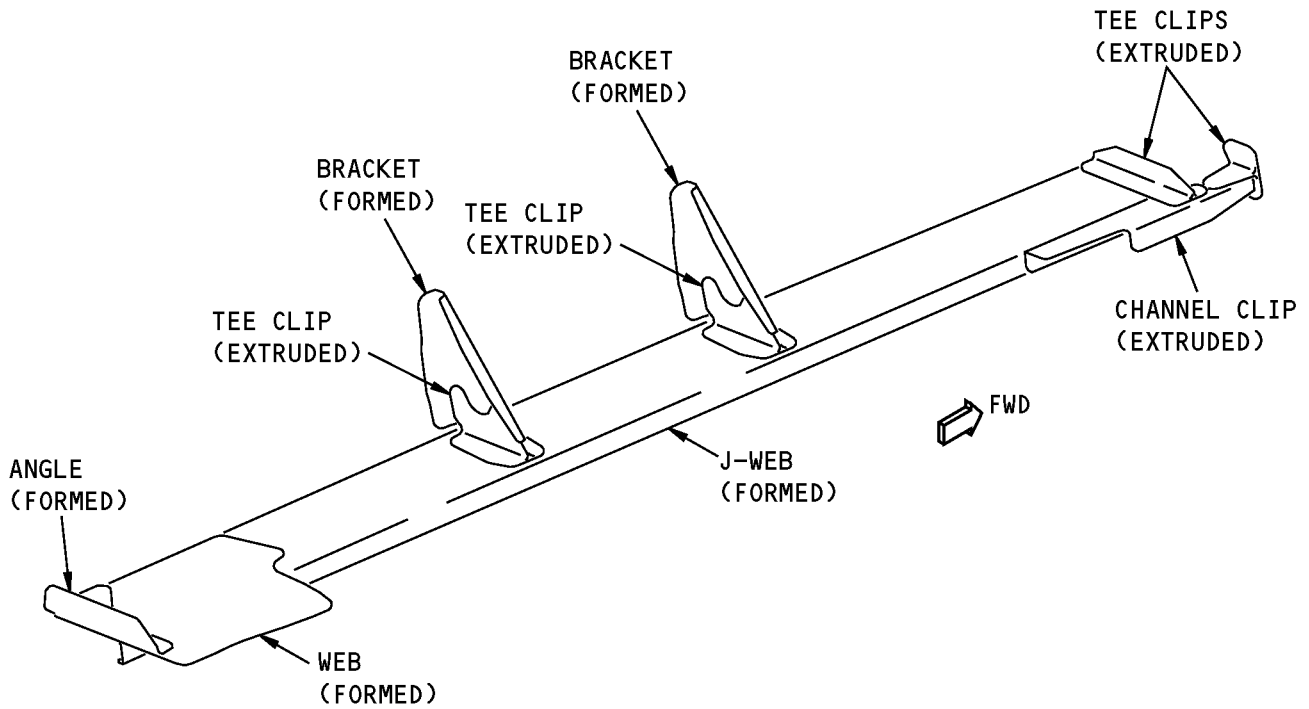
**Door Surround Structure With Airstairs  
Figure 206 (Sheet 3 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

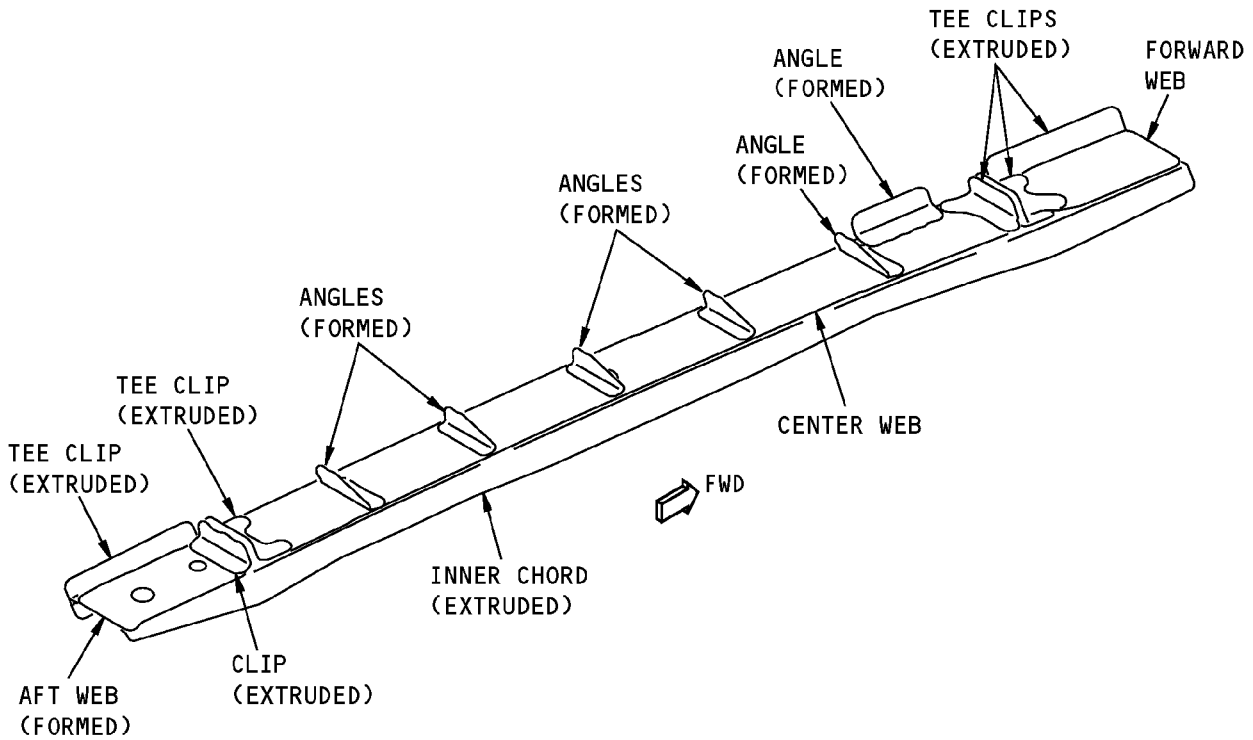
**Door Surround Structure Without Airstairs  
Figure 207 (Sheet 1 of 4)**



**UPPER AIRSTAIR SILL**

(A)

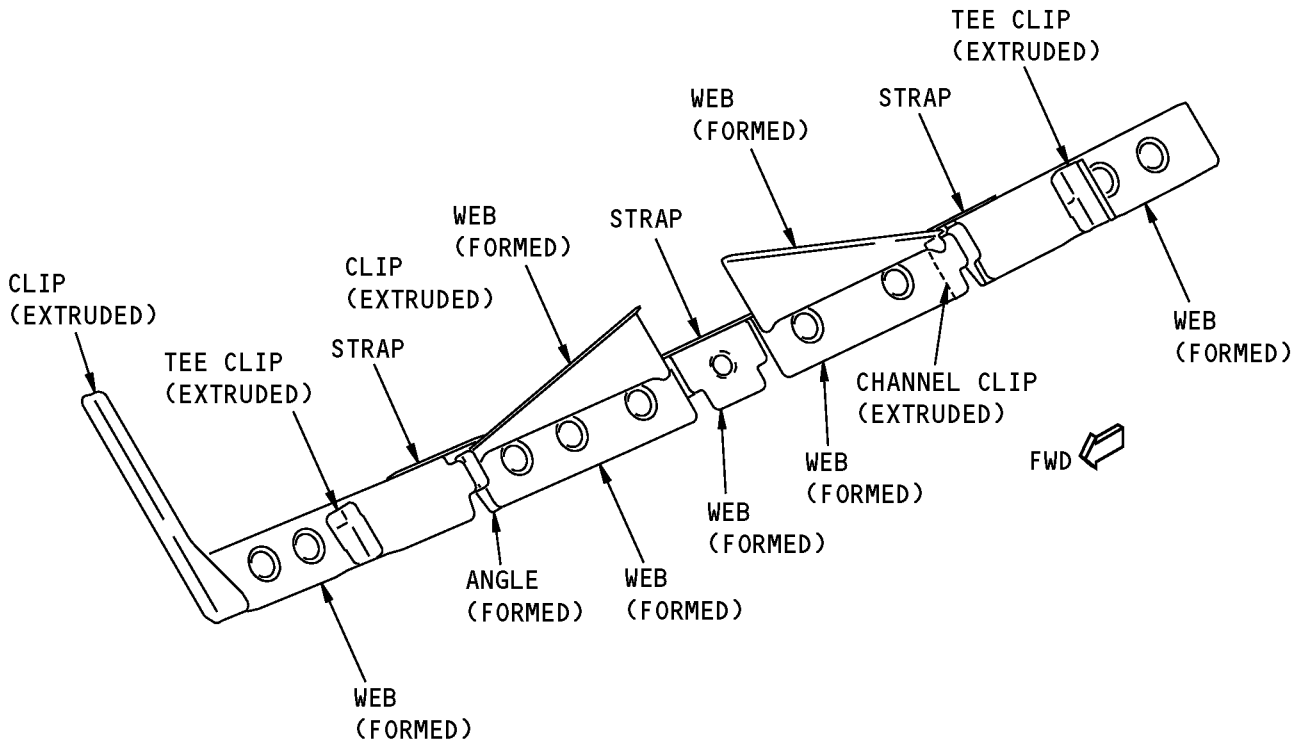
**Door Surround Structure Without Airstairs  
Figure 207 (Sheet 2 of 4)**



LOWER AIRSTAIR SILL

(B)

Door Surround Structure Without Airstairs  
Figure 207 (Sheet 3 of 4)



LOWER AUXILIARY AIRSTAIR SILL

(C)

Door Surround Structure Without Airstairs  
Figure 207 (Sheet 4 of 4)



**STRUCTURAL REPAIR MANUAL**

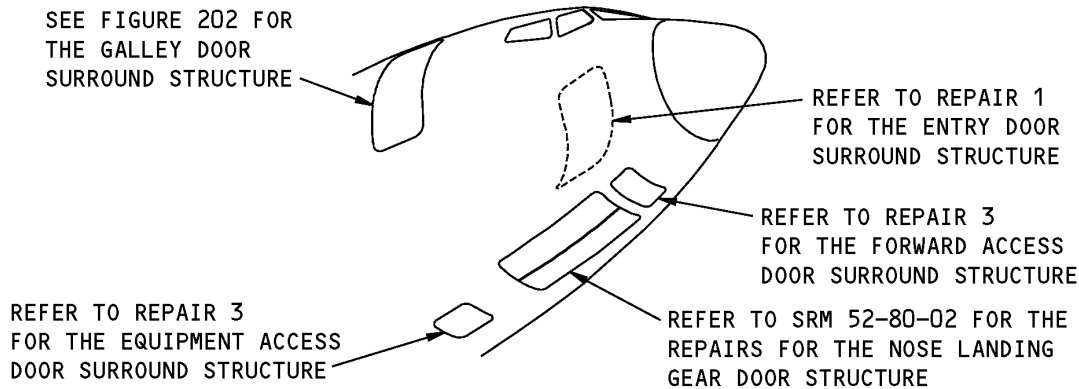
**REPAIR 2 - SECTION 41 FORWARD GALLEY DOOR SURROUND STRUCTURE**

**1. Applicability**

- A. Repair 2 is applicable to damage to the forward galley door surround structure shown in Forward Galley Door Surround Structure Locations, Figure 201/REPAIR 2.

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.



**Forward Galley Door Surround Structure Locations  
Figure 201**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41
53-10-15, ALLOWABLE DAMAGE 2	Forward Galley Door Surround Structure



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

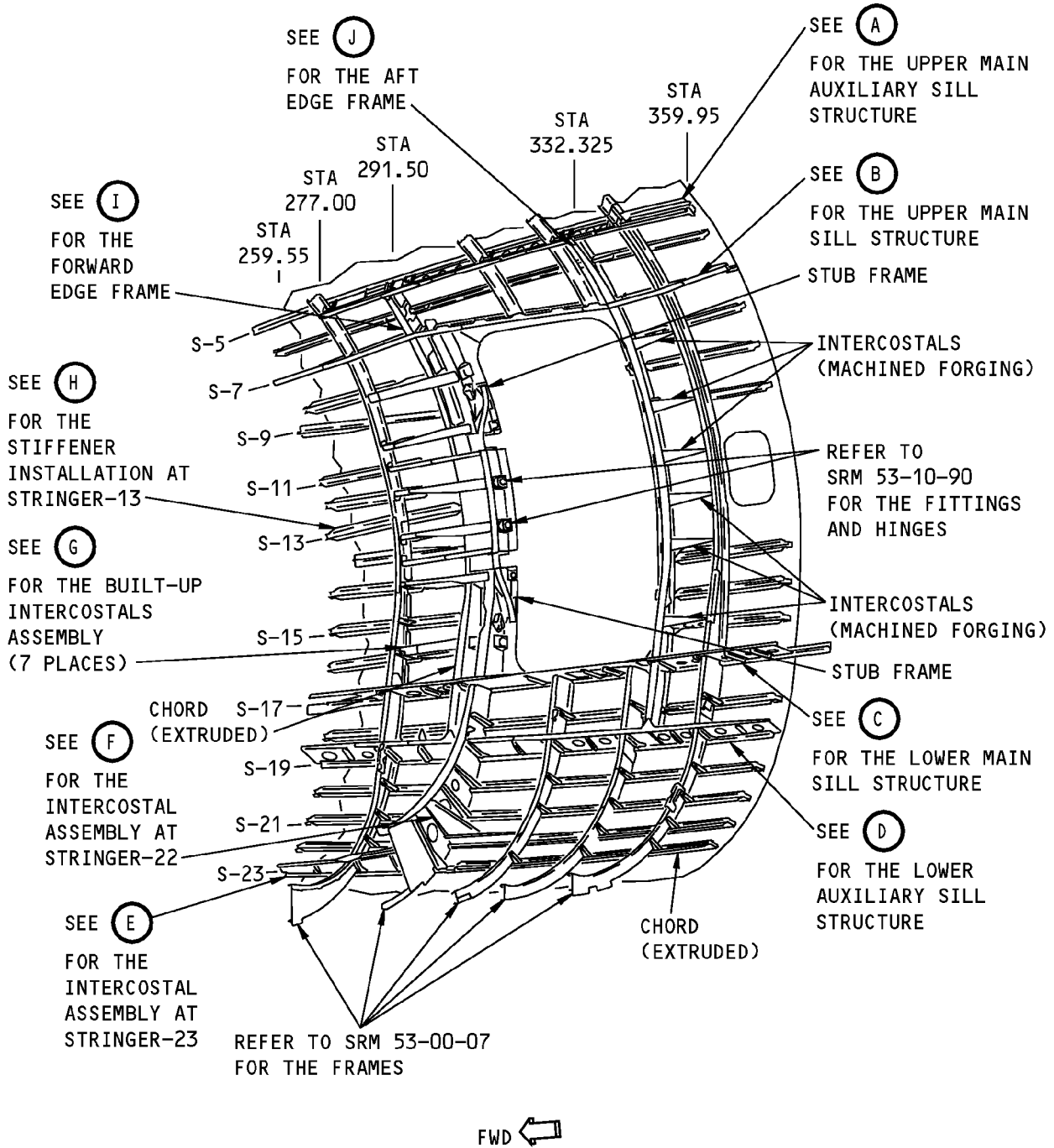
A. Refer to Forward Galley Door Surround Structure Locations, Figure 201/REPAIR 2 and Forward Galley Door Surround Structure, Figure 202/REPAIR 2, and Table 201 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-10-15, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

<b>REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES</b>	
<b>TYPE OF COMPONENT</b>	<b>REPAIR</b>
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-15, Allowable Damage 2, replace the damaged part
Machined Tapered Strap Filler Machined Tapered Stiffener	There are no repairs for these parts in the Structural Repair Manual at this time

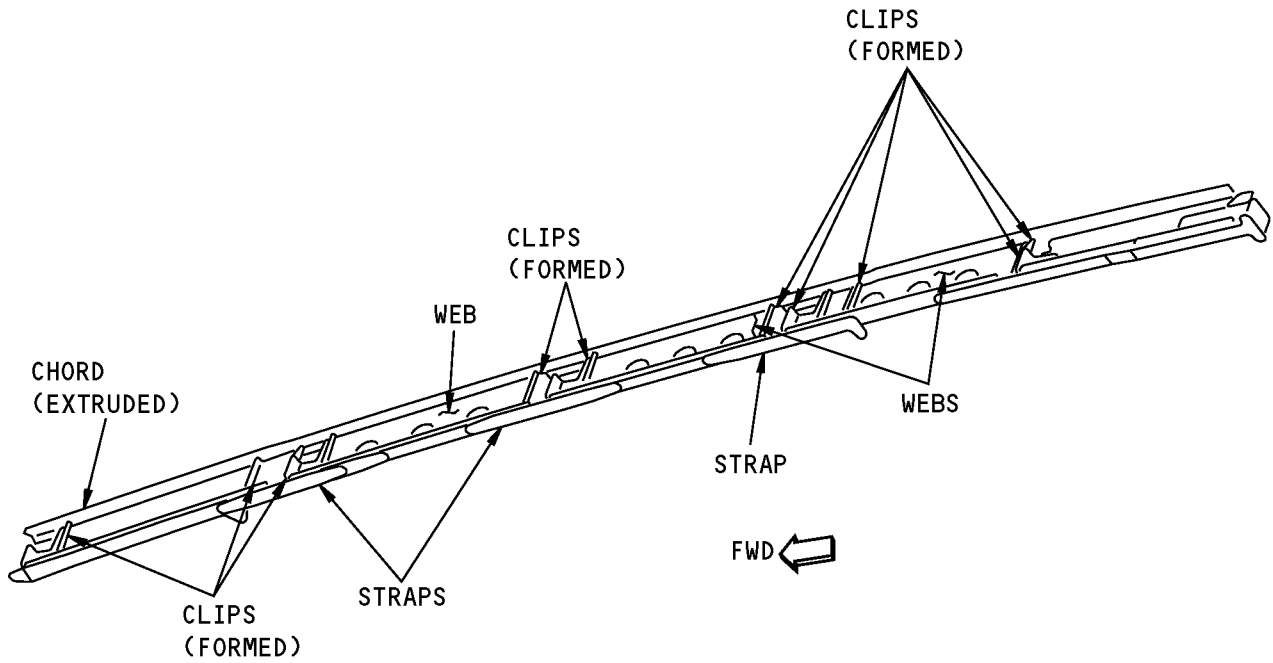
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



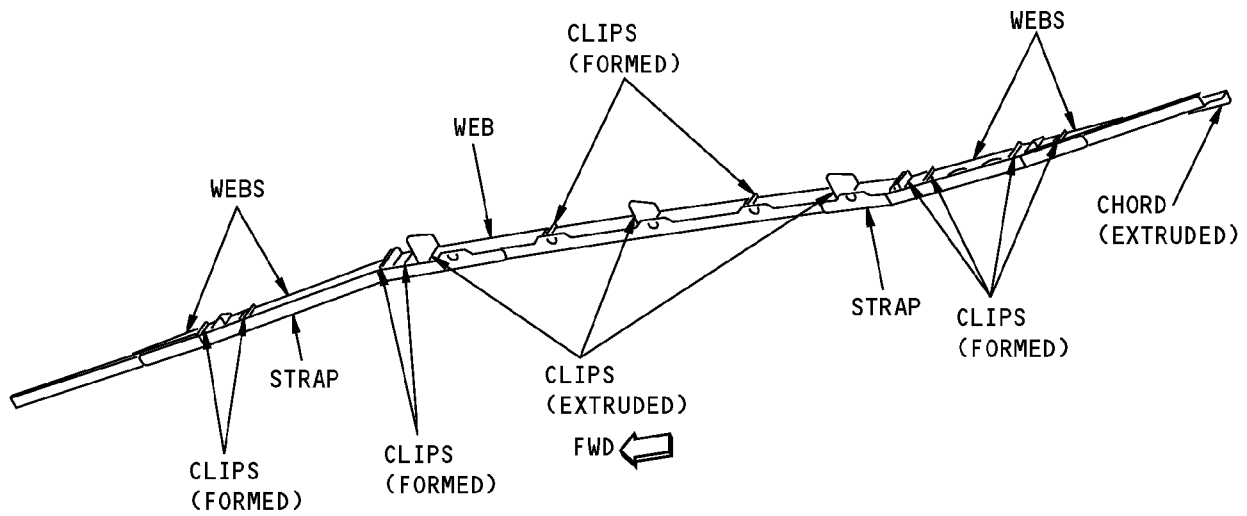
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER MAIN AUXILIARY SILL STRUCTURE**

(A)

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 2 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



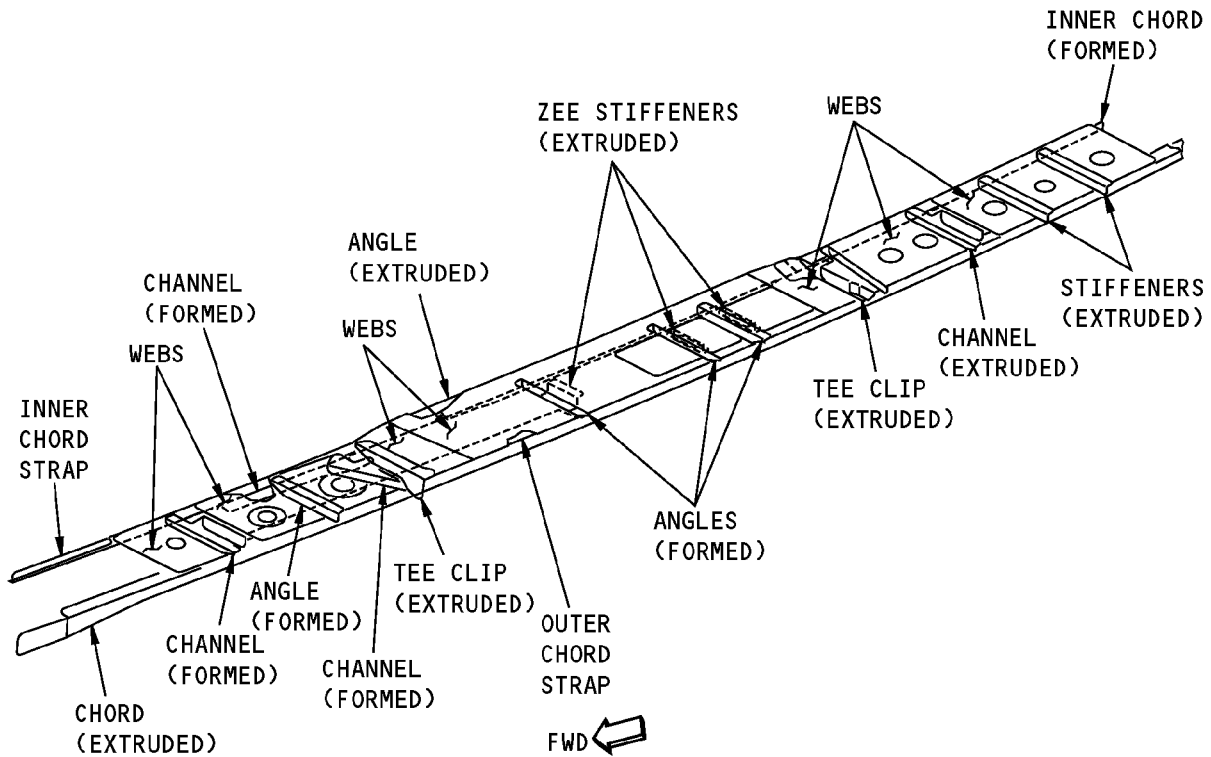
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**UPPER MAIN SILL STRUCTURE**

(B)

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 3 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



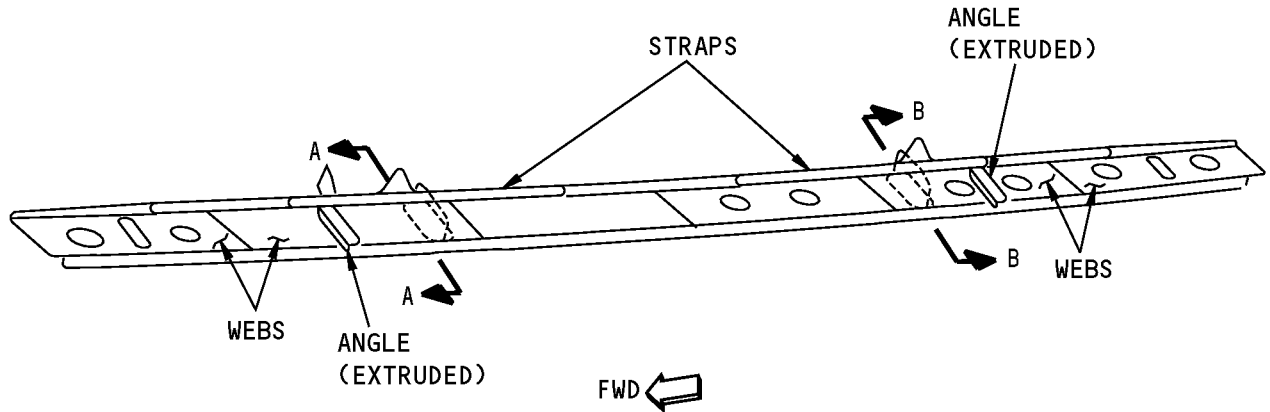
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**LOWER MAIN SILL STRUCTURE**



**Forward Galley Door Surround Structure  
Figure 202 (Sheet 4 of 11)**

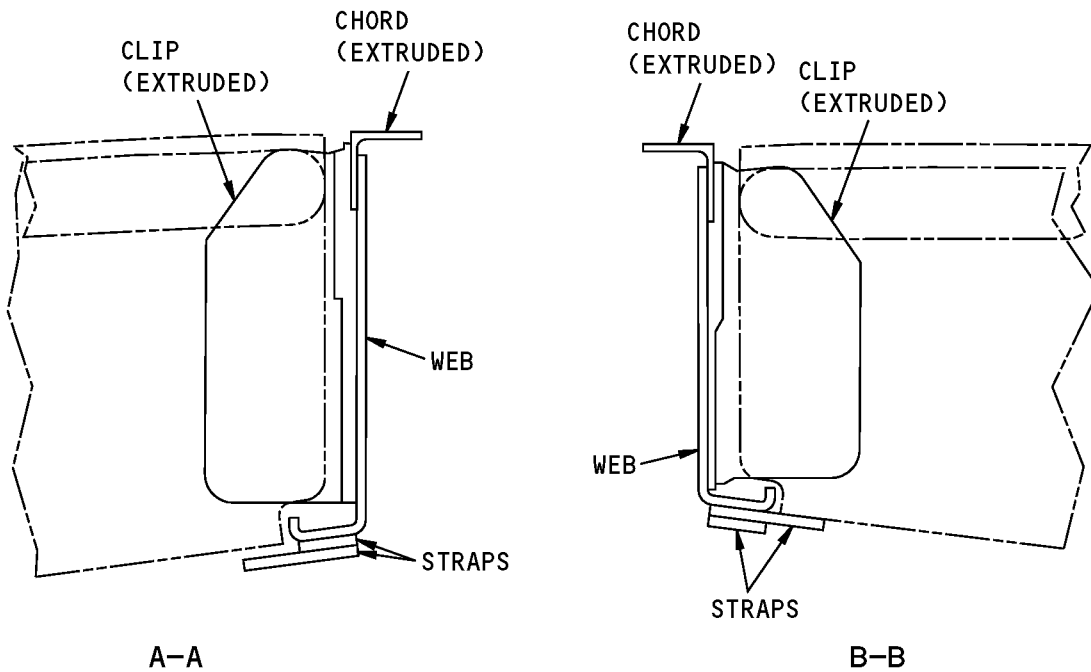
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

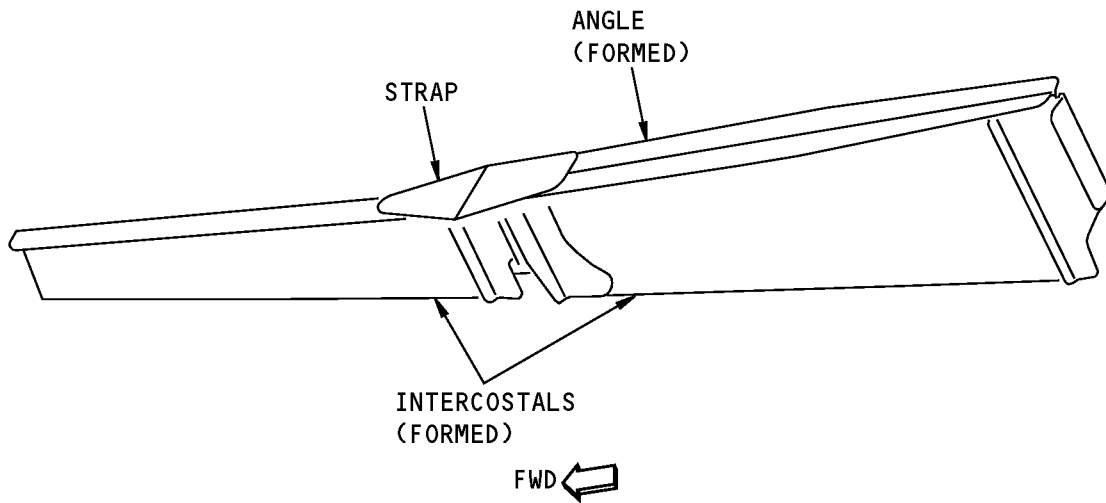
**LOWER AUXILIARY SILL STRUCTURE**

(D)



**Forward Galley Door Surround Structure  
Figure 202 (Sheet 5 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

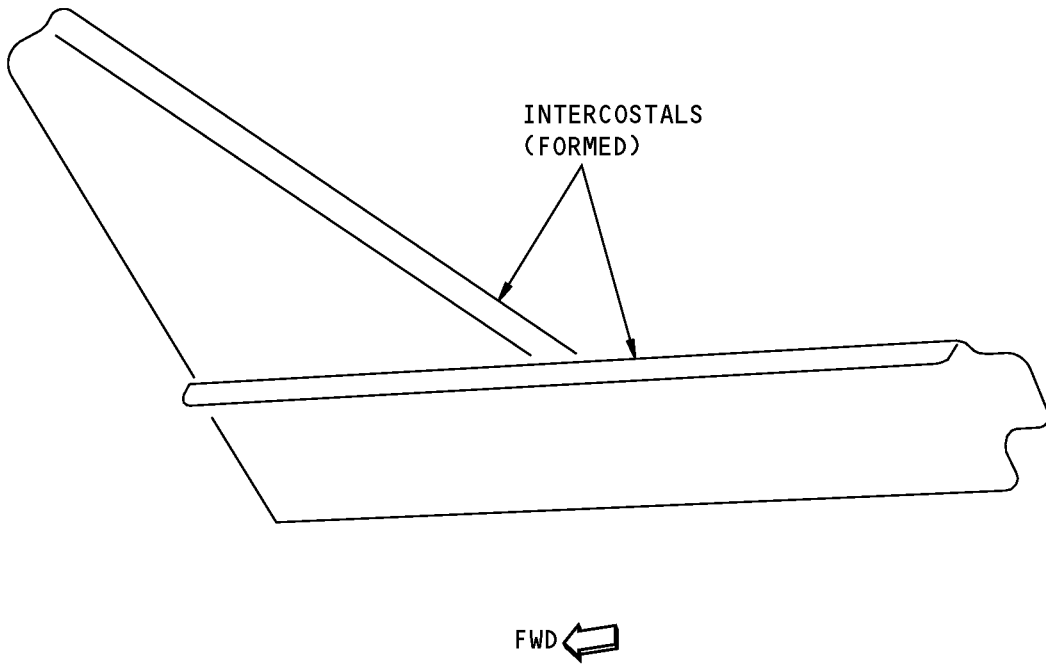
**INTERCOSTAL ASSEMBLY AT STRINGER 23**

**E**

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 6 of 11)**



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STRUCTURAL REPAIR MANUAL**



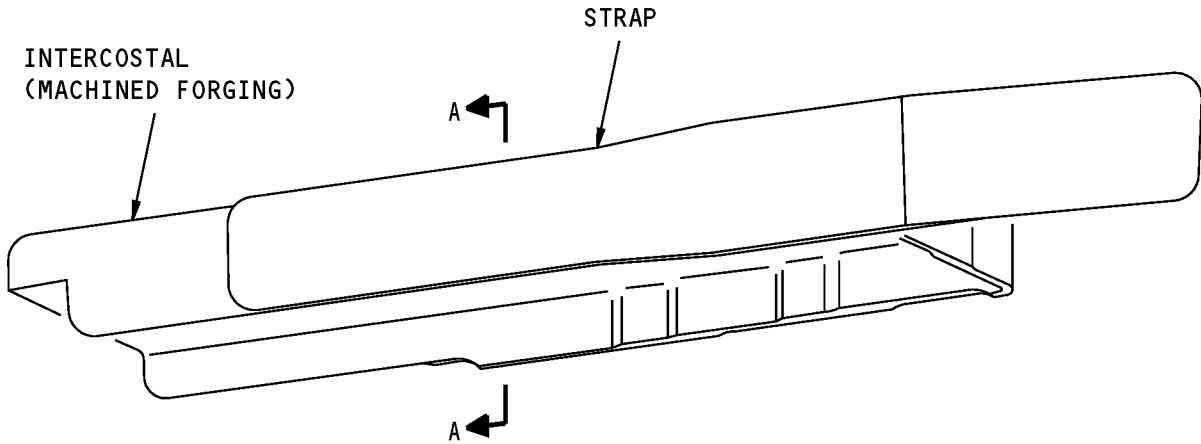
NOTE: ALL PARTS ARE MADE OF ALUMINUM.

**INTERCOSTAL ASSEMBLY AT STRINGER 22**

**F**

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 7 of 11)**

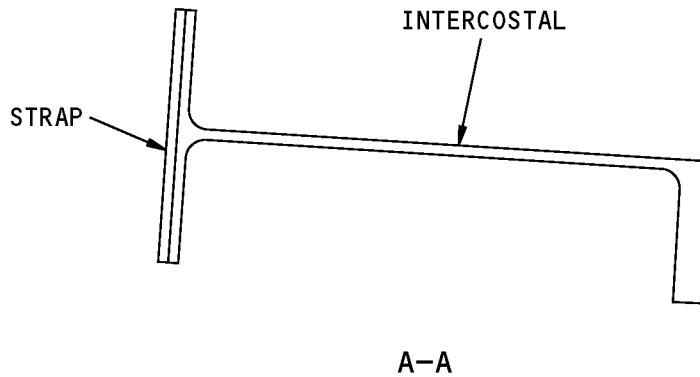
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

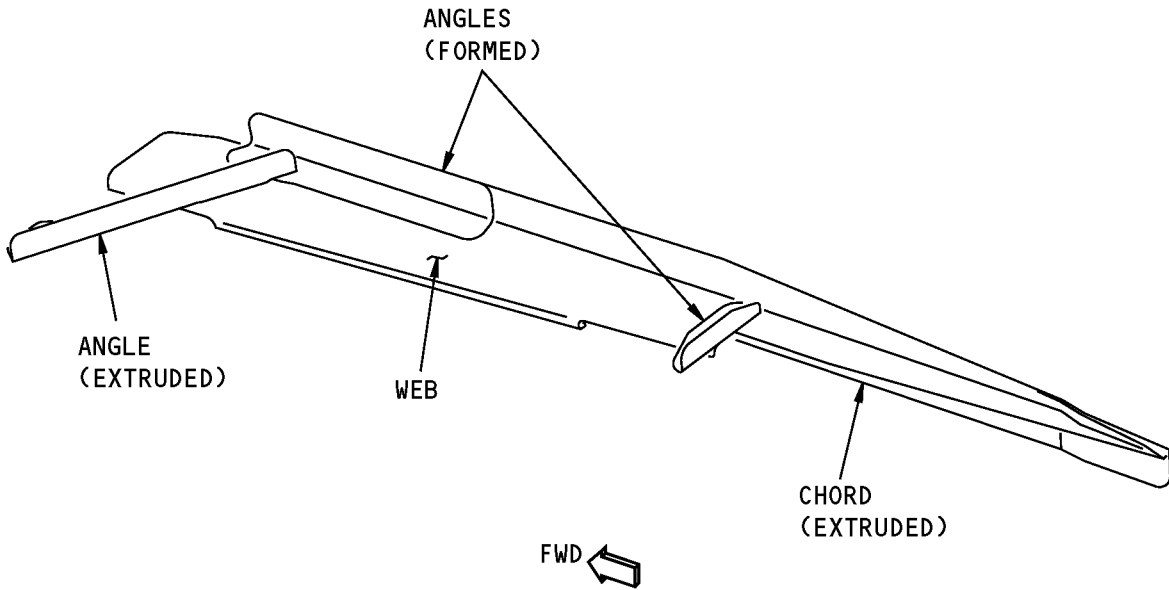
**INTERCOSTAL ASSEMBLY**

**G**



**Forward Galley Door Surround Structure  
Figure 202 (Sheet 8 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**STIFFENER INSTALLATION AT STRINGER 13**

(H)

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 9 of 11)**

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STRUCTURAL REPAIR MANUAL**



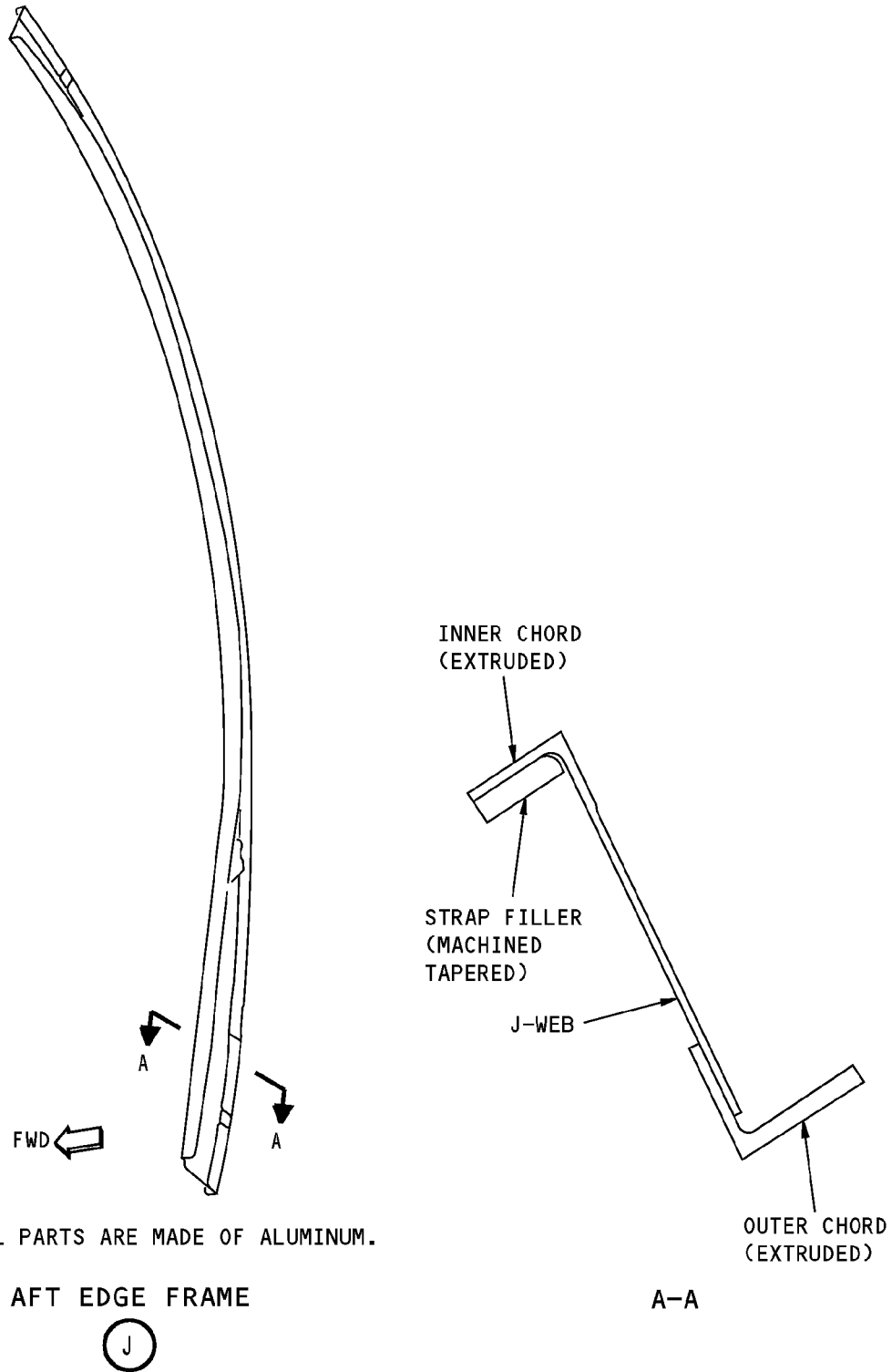
**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**FORWARD EDGE FRAME**



**Forward Galley Door Surround Structure  
Figure 202 (Sheet 10 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Forward Galley Door Surround Structure  
Figure 202 (Sheet 11 of 11)**

**STRUCTURAL REPAIR MANUAL**

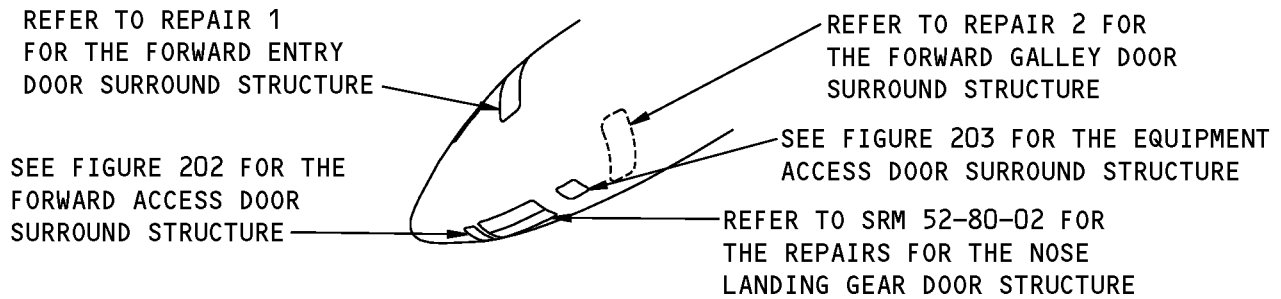
**REPAIR 3 - SECTION 41 ACCESS DOORS SURROUND STRUCTURE**

**1. Applicability**

- A. Repair 3 is applicable to damage to the Access Doors Surround Structures as shown in Access Door Surround Structure Locations, Figure 201/REPAIR 3.

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.



**Access Door Surround Structure Locations  
Figure 201**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-10-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 41

**4. Repair Instructions**

- A. Refer to Access Door Surround Structure Locations, Figure 201/REPAIR 3 through Equipment Access Door Surround Structure Repairs, Figure 203/REPAIR 3, and Table 201 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-10-15, Identification 3 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

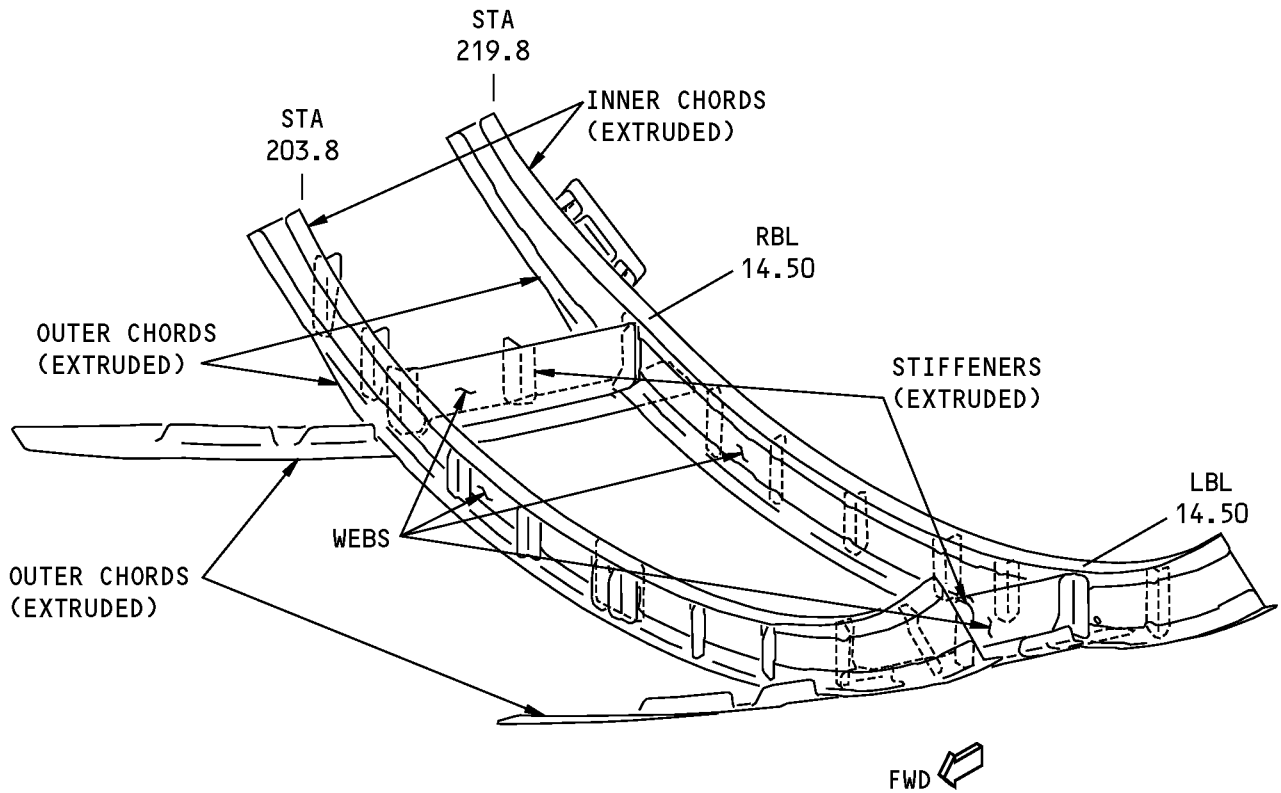
REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12



**737-800**  
**STRUCTURAL REPAIR MANUAL**

<b>REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES</b>	
<b>TYPE OF COMPONENT</b>	<b>REPAIR</b>
Webs	Refer to SRM 51-70-13

**737-800  
STRUCTURAL REPAIR MANUAL**

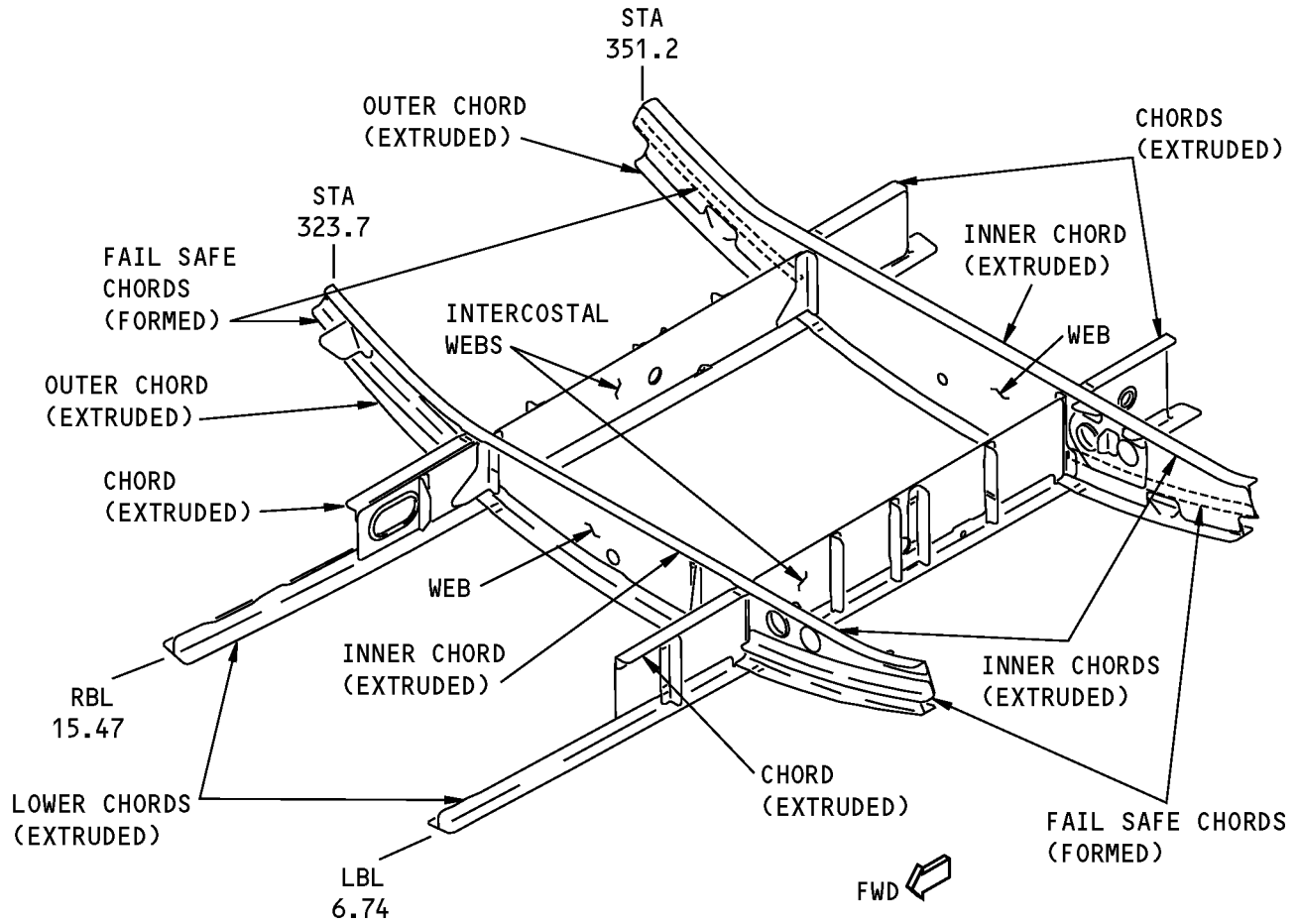


**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Forward Access Door Surround Structure Repairs  
Figure 202**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM.

**Equipment Access Door Surround Structure Repairs  
Figure 203**



737-800

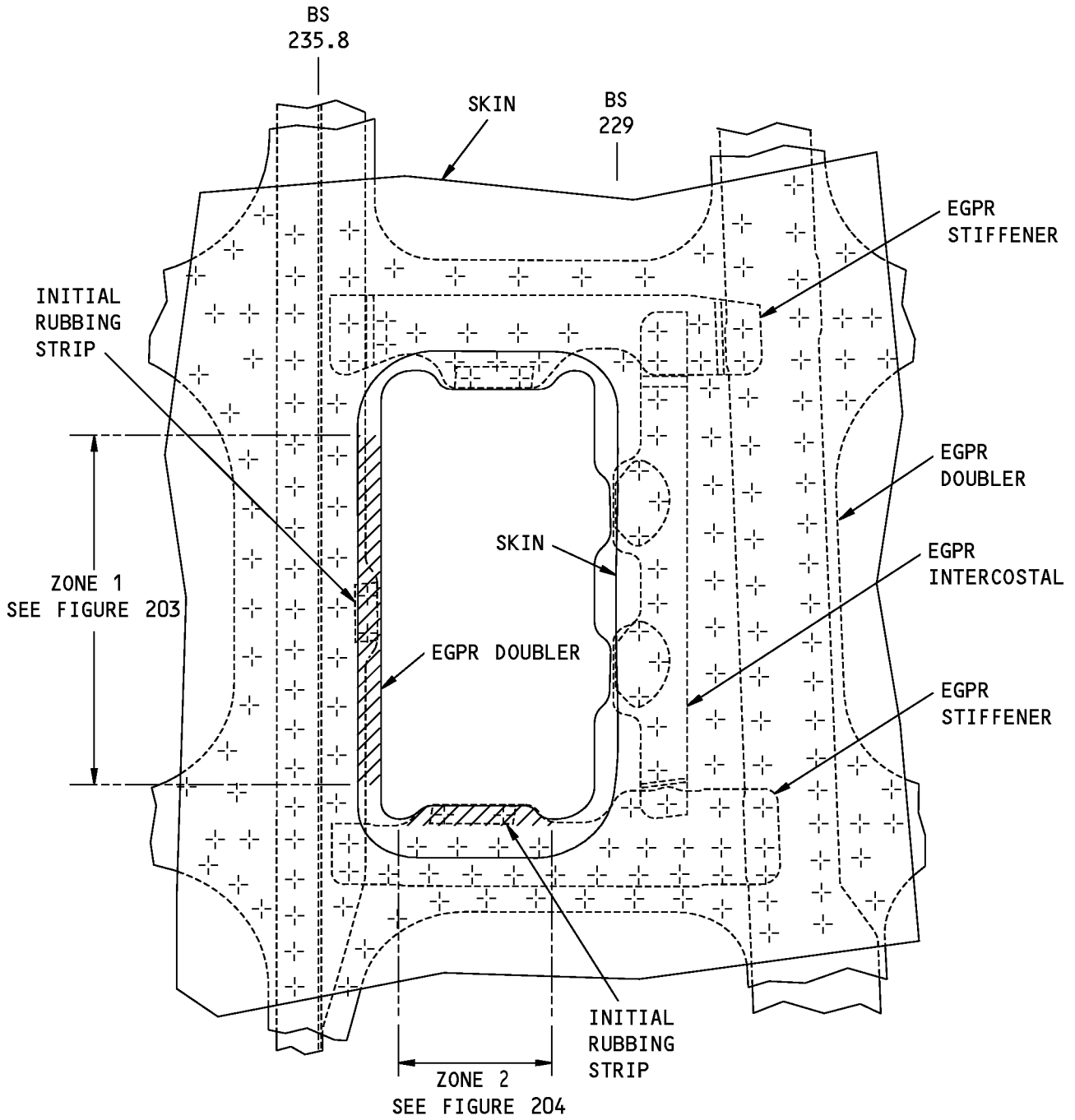
## STRUCTURAL REPAIR MANUAL

### REPAIR 4 - ELECTRICAL GROUND POWER RECEPTACLE SURROUND DOUBLER

#### 1. Applicability

- A. Repair 4 is applicable to crack damage of the Electrical Ground Power Receptacle (EGPR) surround doubler only. Refer to Figure 201/REPAIR 4 for damage locations. Contact The Boeing Company if you find damage to the skin, frame or stiffener in the location of the EGPR.
- B. Repair 4 is only applicable to airplanes that have the BS 235.8 frame outer chord configuration as shown in Figure 201/REPAIR 4.
- C. Repair 4 is applicable to two zones of damage on the doubler only as shown in Figure 201/REPAIR 4. Each zone of damage is one repair.
  - (1) Refer to Figure 203/REPAIR 4 for repair in Zone 1.
  - (2) Refer to Figure 204/REPAIR 4 for repair in Zone 2.

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STRUCTURAL REPAIR MANUAL**



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**Electrical Ground Power Receptacle Surround Doubler Damage Zones  
Figure 201**



737-800

## STRUCTURAL REPAIR MANUAL

### 2. General

- A. This 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 51-00-06, GENERAL for repair categories and definitions.

### 3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05	REPAIR SEALING
51-20-13, GENERAL	Surface Roughness Finish Requirements
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Get access to the damaged area:
- (1) Remove the EGPR access door.
- B. Remove the initial rubbing block and the laminated shim. Keep the rubbing block. Discard the laminated shim.
- C. Trim out the damaged area of the EGPR doubler. Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair. Refer to 51-10-02, GENERAL.
- (1) Make sure that you do not damage the frame chord in Zone 1 or the EGPR stiffener in Zone 2 when you do the trim out.
  - (2) Make the inner corner a 1.00 in. (25.40 mm) minimum radius on the trim out.
  - (3) Make the outer corner a 0.50 in. (12.70 mm) minimum radius on the trim out.
  - (4) Make sure that the cut edges of the trim out have a surface smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.
  - (5) Keep a 2D minimum edge margin from initial fastener locations.
  - (6) Do a 10x visual inspection of the trim out area. Make sure that the damage does not extend under the Skin. Make sure that there is no disbond between the EGPR doubler and the skin.
  - (7) Do a High Frequency Eddy Current (HFEC) inspection of the trim out edge to make sure that there are no cracks. If you find no cracks, make a 0.040 in. (1.02 mm) insurance cut of the trim out area. Do not make the insurance cut along the initial edge of the skin.
- D. Do a Non-Destructive Test (NDT) inspection of the interior structure to make sure that there is no damage.
- E. Make the repair parts. Refer to Table 201/REPAIR 4 and Figure 203/REPAIR 4 for a Zone 1 repair or Figure 204/REPAIR 4 for a Zone 2 repair, as applicable.
- (1) Make sure that all the fasteners in the repair parts will have a 2D minimum fastener edge margin.



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**Table 201:** Repair Materials

ITEM	PART	Quantity	Material
[1]	Doubler	1	Use 0.050 in. (1.27 mm) thick 7075-T6 Clad sheet (optional: 2024-T3 Clad sheet).
[2]	Doubler	1	Use 0.050 in. (1.27 mm) thick 7075-T6 Clad sheet (optional: 2024-T3 Clad sheet).
[3]	Filler	1	Use 0.040 in. (1.02 mm) thick 2024-T3 Clad sheet.

- F. Make sure that the cut edges of the repair parts have a smoothness of 63 microinches (1.6 micrometers) Ra or smoother. Refer to 51-20-13, GENERAL.
- G. Assemble the repair parts.
- (1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable.
- H. Drill the necessary fastener holes.
- (1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable, for the type and size of fastener.
- I. Disassemble the repair parts.
- J. Remove all nicks, scratches, gouges, burrs, sharp edges from the repair parts and the repaired surfaces of the initial structure.
- K. Apply a chemical conversion coating to the repair parts and the bare surfaces of the initial structure. Refer to 51-20-01, GENERAL.
- L. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the repair parts and the trim out in the initial structure, as applicable. Refer to SOPM 20-41-02.
- M. Install the repair parts.
- (1) Refer to Figure 203/REPAIR 4 for the Zone 1 repair or Figure 204/REPAIR 4 for the Zone 2 repair, as applicable.
  - (2) When you install the repair parts, a maximum 0.010 in. (0.25 mm) pull down is acceptable.
  - (3) Re-install the initial rubbing block at the initial fastener locations. Use the same type and size fasteners as the initial fasteners. You can over size the fastener a maximum of 1/32 inch as required.
  - (4) Install the repair parts wet with BMS 5-95 sealant. Refer to 51-20-05.
  - (5) Fill any gaps between the new parts and initial structure with BMS 5-95 sealant. Refer to 51-20-05.
- N. Apply a finish to the external surface of the repair. Refer to AMM SUBJECT 51-21-00.



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## STRUCTURAL REPAIR MANUAL

### NOTES

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

### FASTENER SYMBOLS

- ⊕ REFERENCE FASTENER LOCATION.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D RIVET OR BACR15GF5D RIVET.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER.

1665291 S0000304193\_V2

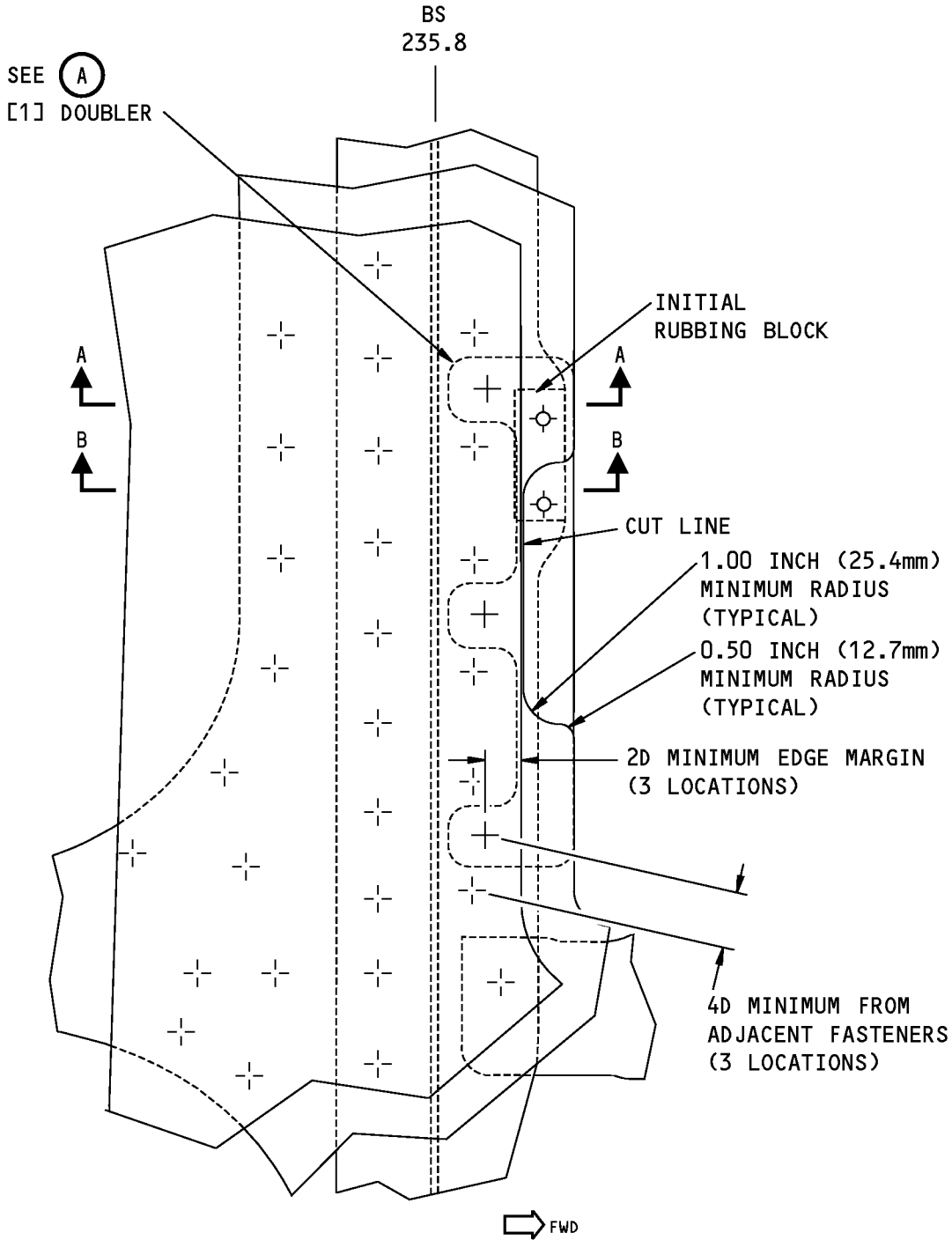
### Electrical Ground Power Receptacle Surround Doubler Repair Notes and Fastener Symbols Figure 202

D634A210

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REPAIR 4  
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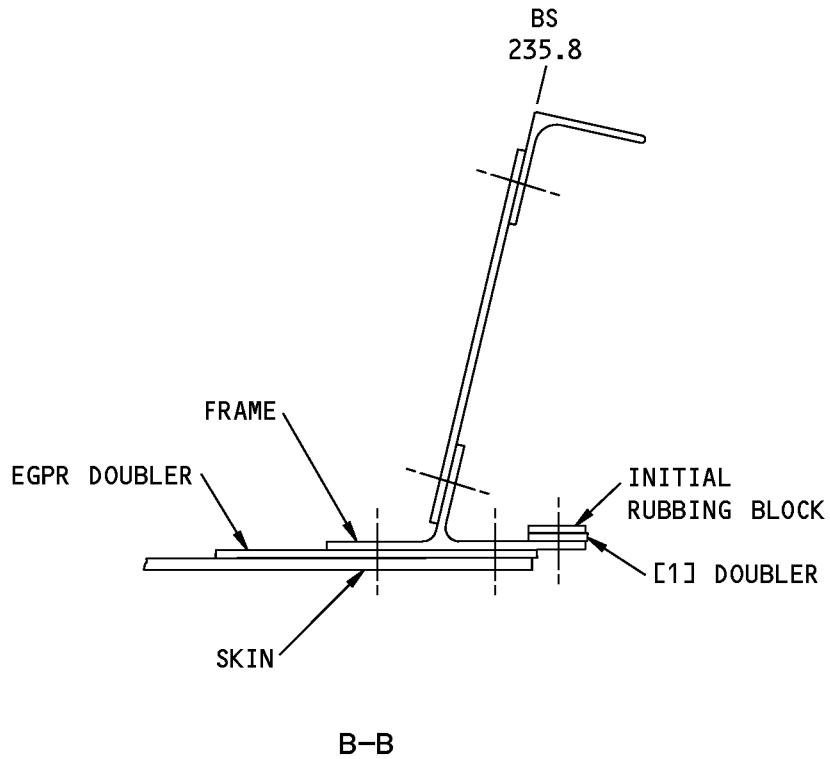
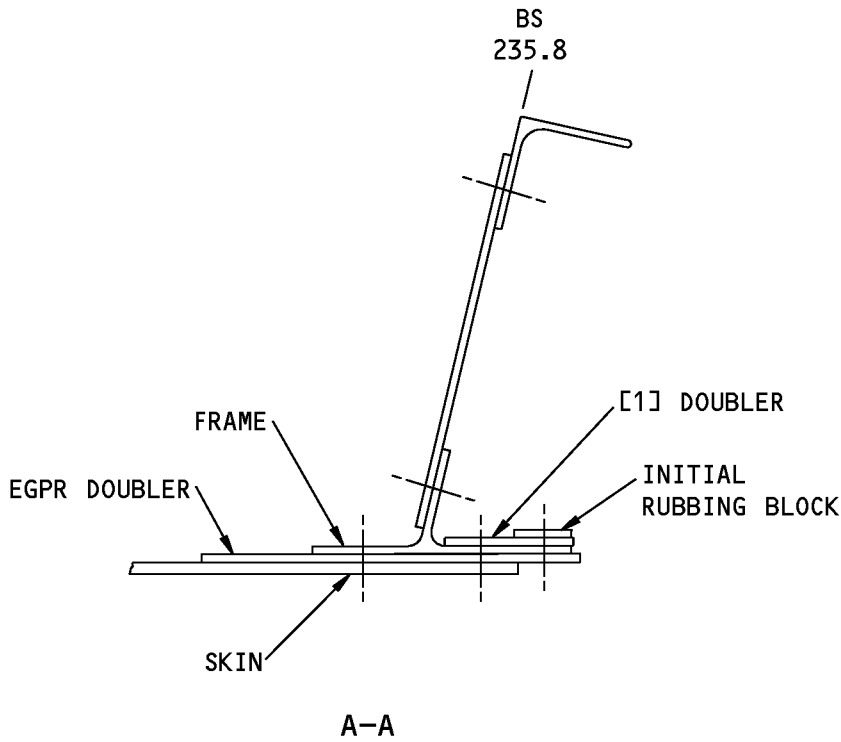


**VIEW LOOKING INBOARD  
RIGHT SIDE IS SHOWN**

1665295 S0000301479\_V1

**Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair  
Figure 203 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**

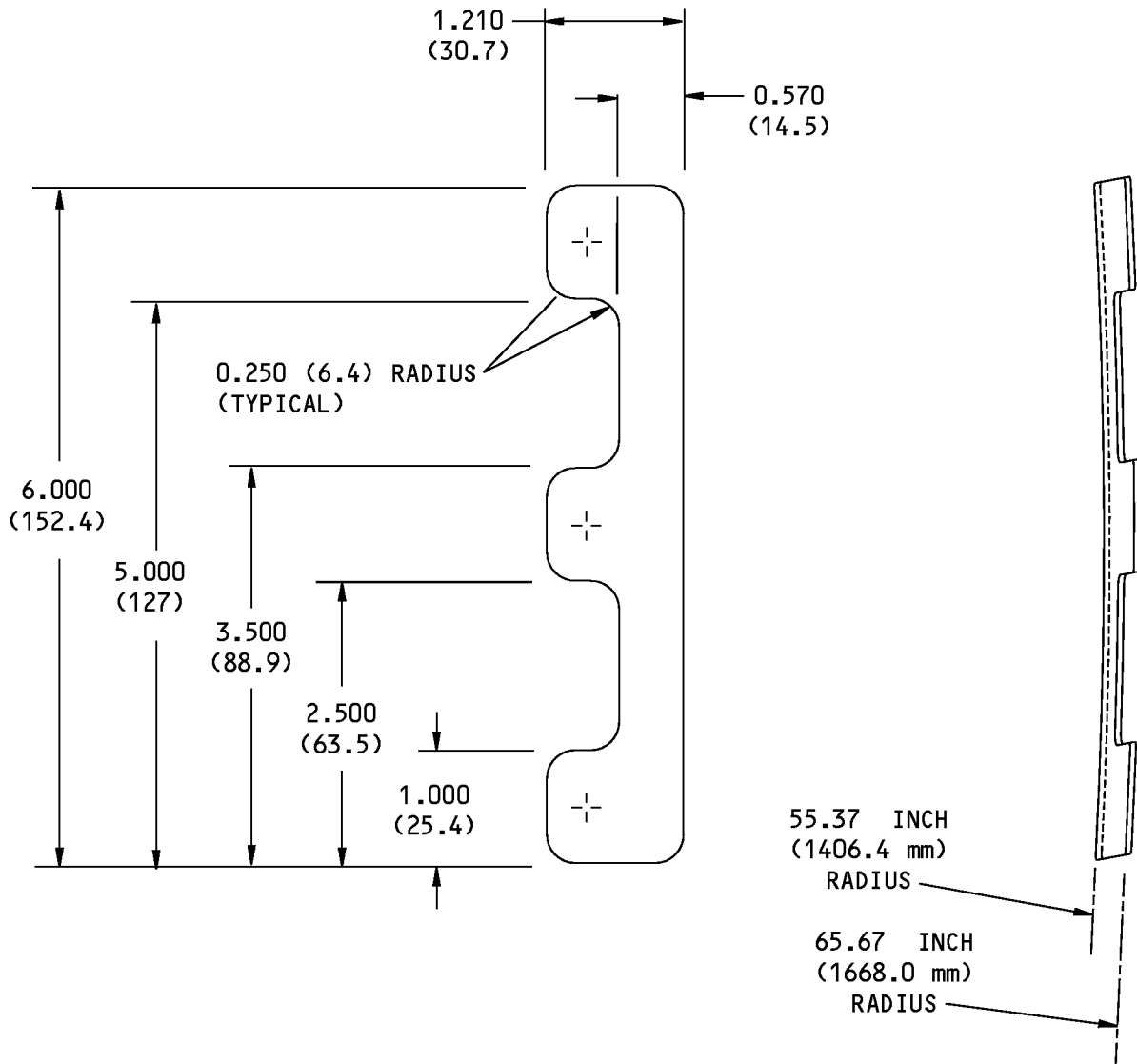


1665305 S0000301496\_V1

**Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair  
Figure 203 (Sheet 2 of 3)**



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STRUCTURAL REPAIR MANUAL**



VIEW LOOKING FORWARD  
RIGHT SIDE IS SHOWN  
REPAIR PART [1] DOUBLER

(A)

1665316 S0000304196\_V1

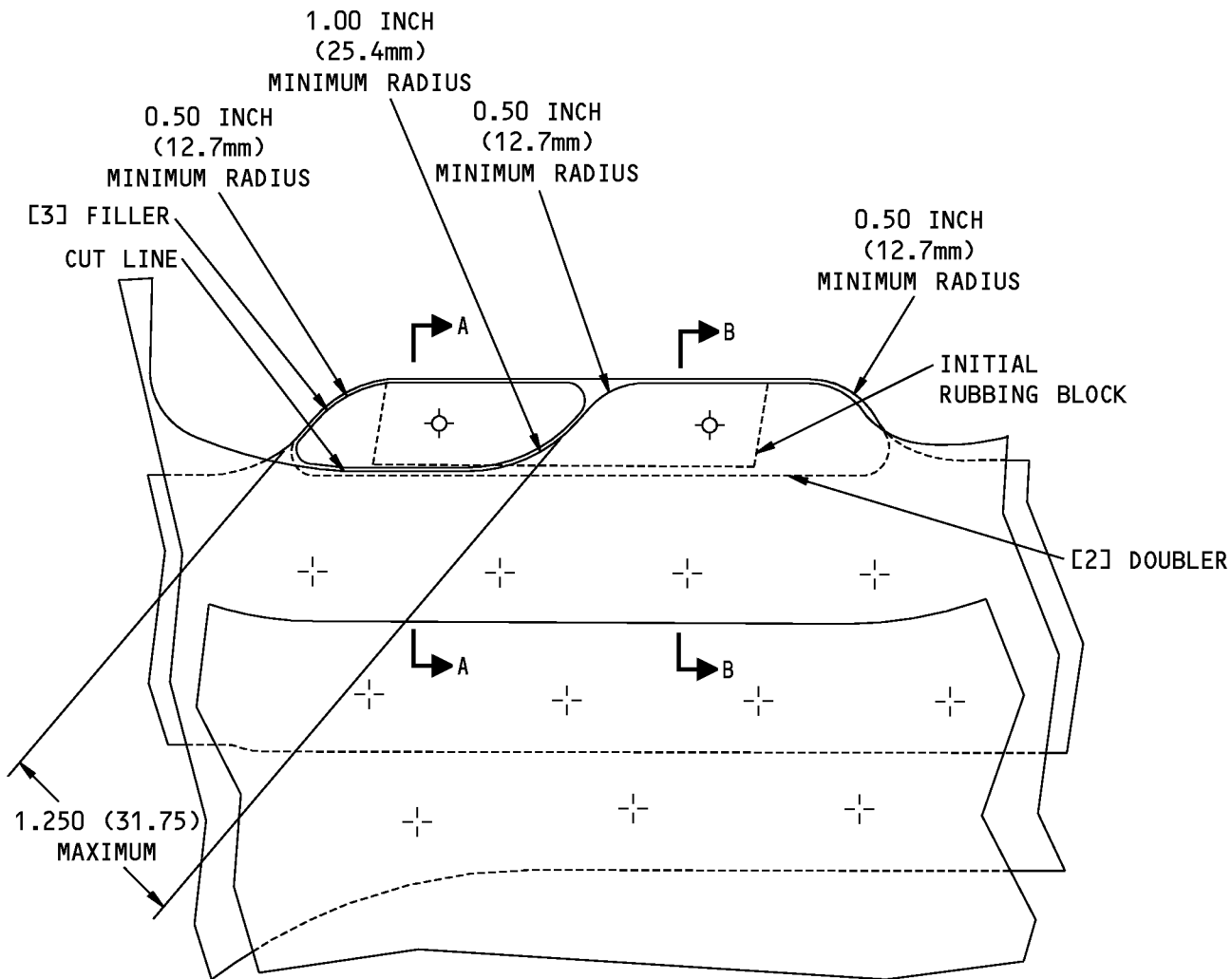
**Electrical Ground Power Receptacle Surround Doubler Zone 1 Repair  
Figure 203 (Sheet 3 of 3)**

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REPAIR 4  
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**STRUCTURAL REPAIR MANUAL**



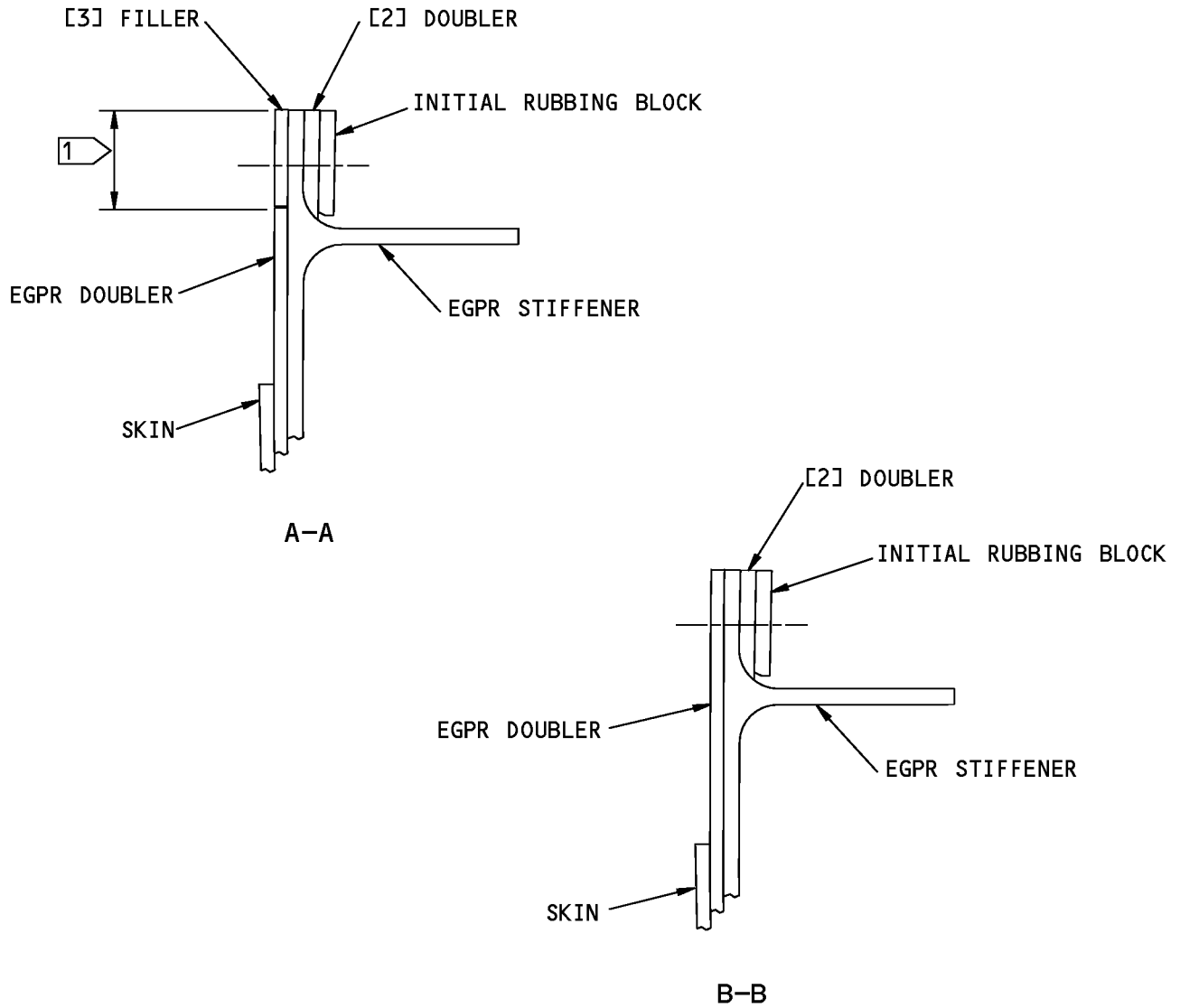
**NOTE:** ALL CORNER RADIUS 0.100 INCH (2.54 mm) EXCEPT WHERE GIVEN.

VIEW LOOKING INBOARD  
RIGHT SIDE IS SHOWN

1665323 S0000301480\_V1

**Electrical Ground Power Receptacle Surround Doubler Zone 2 Repair  
Figure 204 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

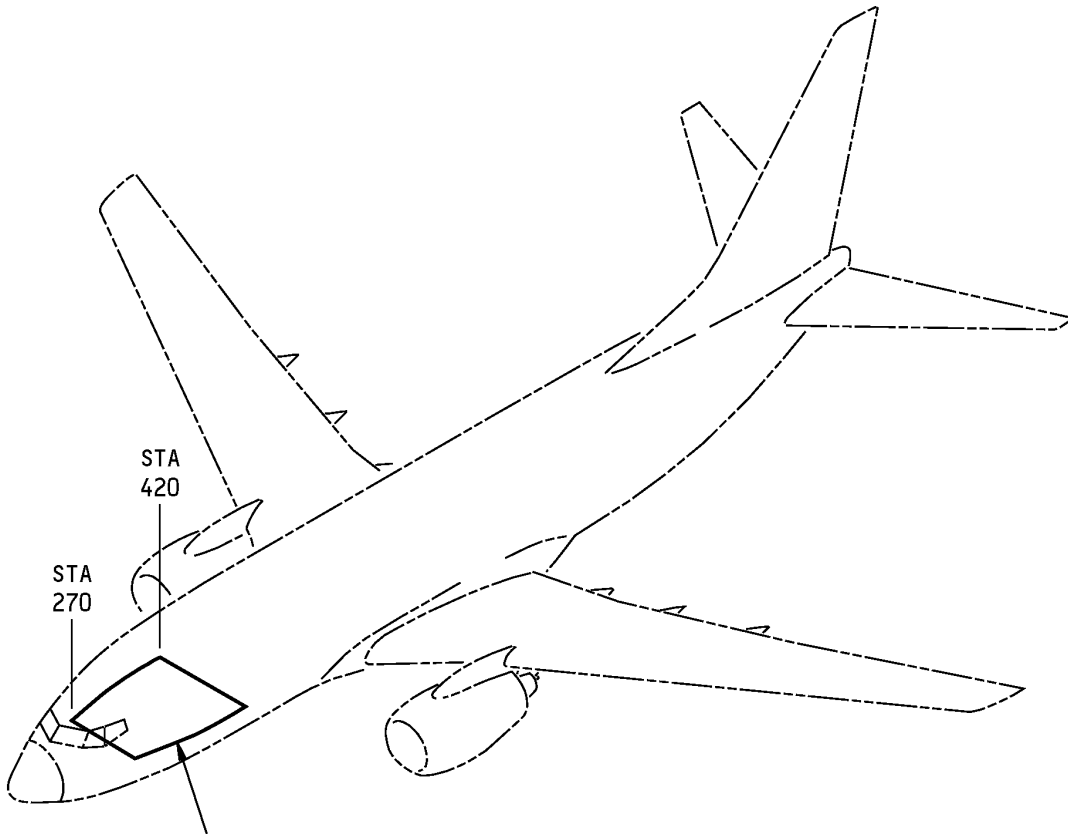
1 MAXIMUM CUT DEPTH 0.500 INCH (12.7mm)

1665325 S0000301497\_V1

**Electrical Ground Power Receptacle Surround Doubler Zone 2 Repair  
Figure 204 (Sheet 2 of 2)**

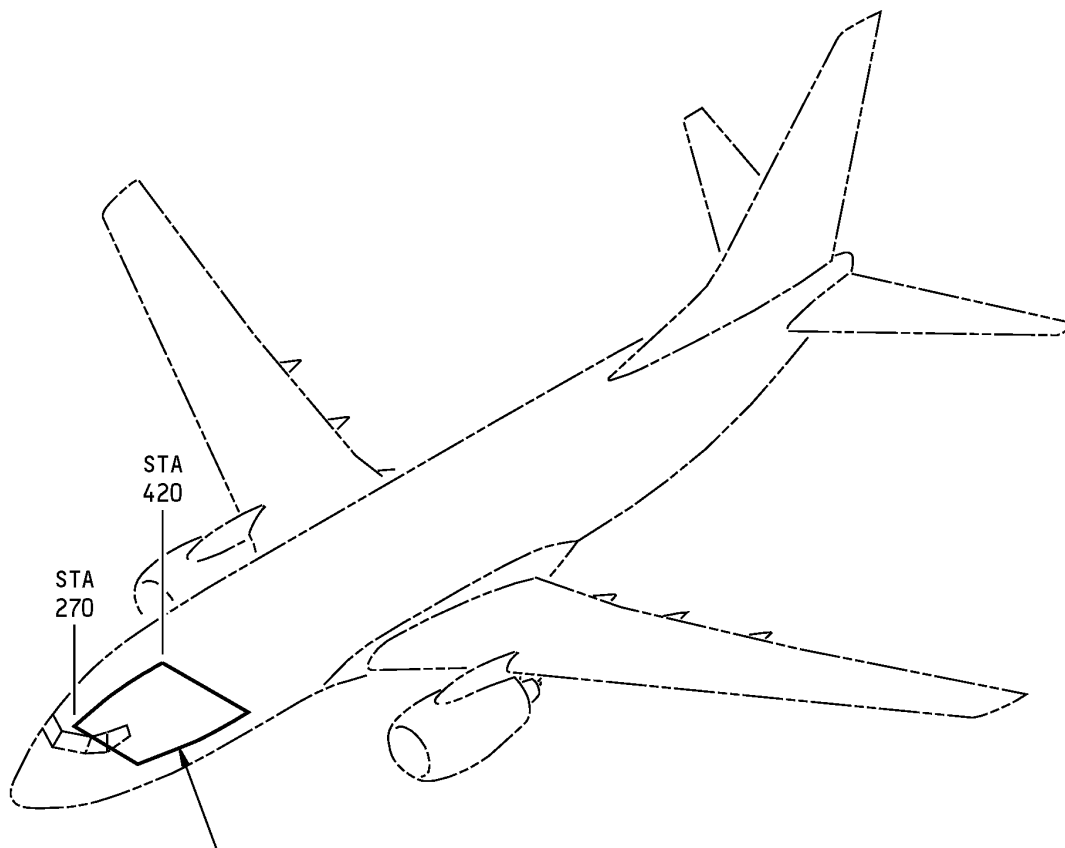
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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION GENERAL - SECTION 41 PASSENGER COMPARTMENT FLOOR PANELS**



REFER TO SRM 53-00-50 FOR THE  
GENERAL IDENTIFICATION DATA THAT  
IS APPLICABLE TO THE PASSENGER  
COMPARTMENT FLOOR PANELS IN SECTION 41

**Section 41 Passenger Compartment Floor Panel Location  
Figure 1**

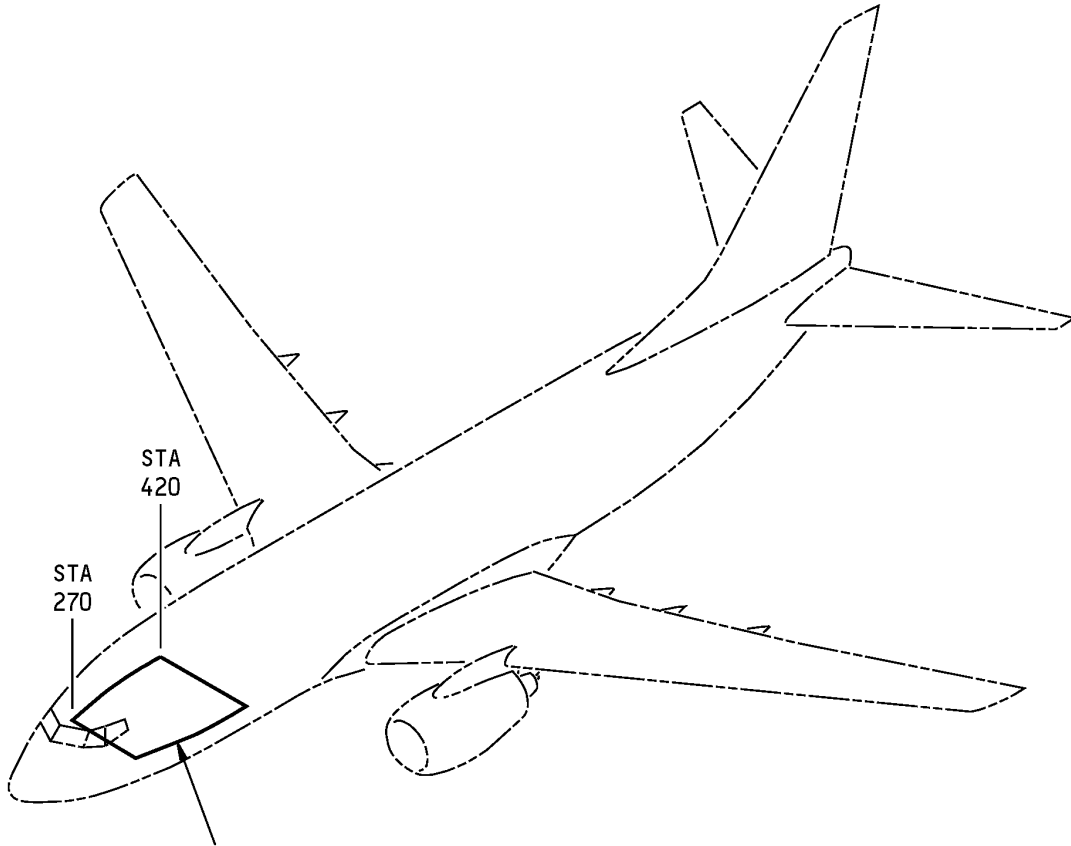
ALLOWABLE DAMAGE GENERAL - SECTION 41 PASSENGER COMPARTMENT FLOOR PANELS

REFER TO SRM 53-00-50 FOR THE  
GENERAL ALLOWABLE DAMAGE DATA  
THAT IS APPLICABLE TO THE  
PASSENGER COMPARTMENT FLOOR  
PANELS IN SECTION 41

**Section 41 Passenger Compartment Floor Panel Location  
Figure 101**

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REPAIR GENERAL - SECTION 41 PASSENGER COMPARTMENT FLOOR PANELS

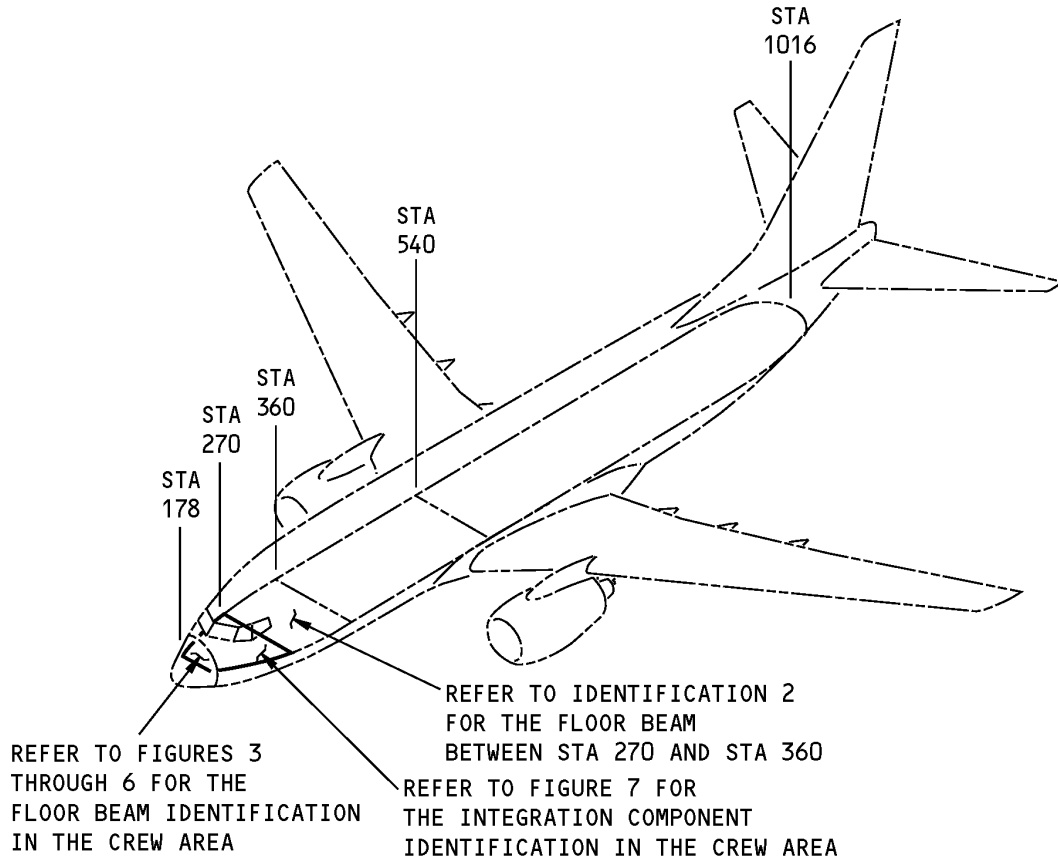


REFER TO SRM 53-00-50 FOR THE  
GENERAL REPAIR DATA THAT IS  
APPLICABLE TO THE PASSENGER  
COMPARTMENT FLOOR PANELS IN  
SECTION 41

**Section 41 Passenger Compartment Floor Panel Location  
Figure 201**

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**IDENTIFICATION 1 - SECTION 41 FLOOR STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 41 Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4103	Crew Floor Functional Collector
141A0640	Integration Installation-Side Panel, Section 41
141A5100	Integration Installation - Crew Floor, Section 41
141A5110	Integration Installation - Crew Floor
141A5120	Floor Web Installation - Crew Floor

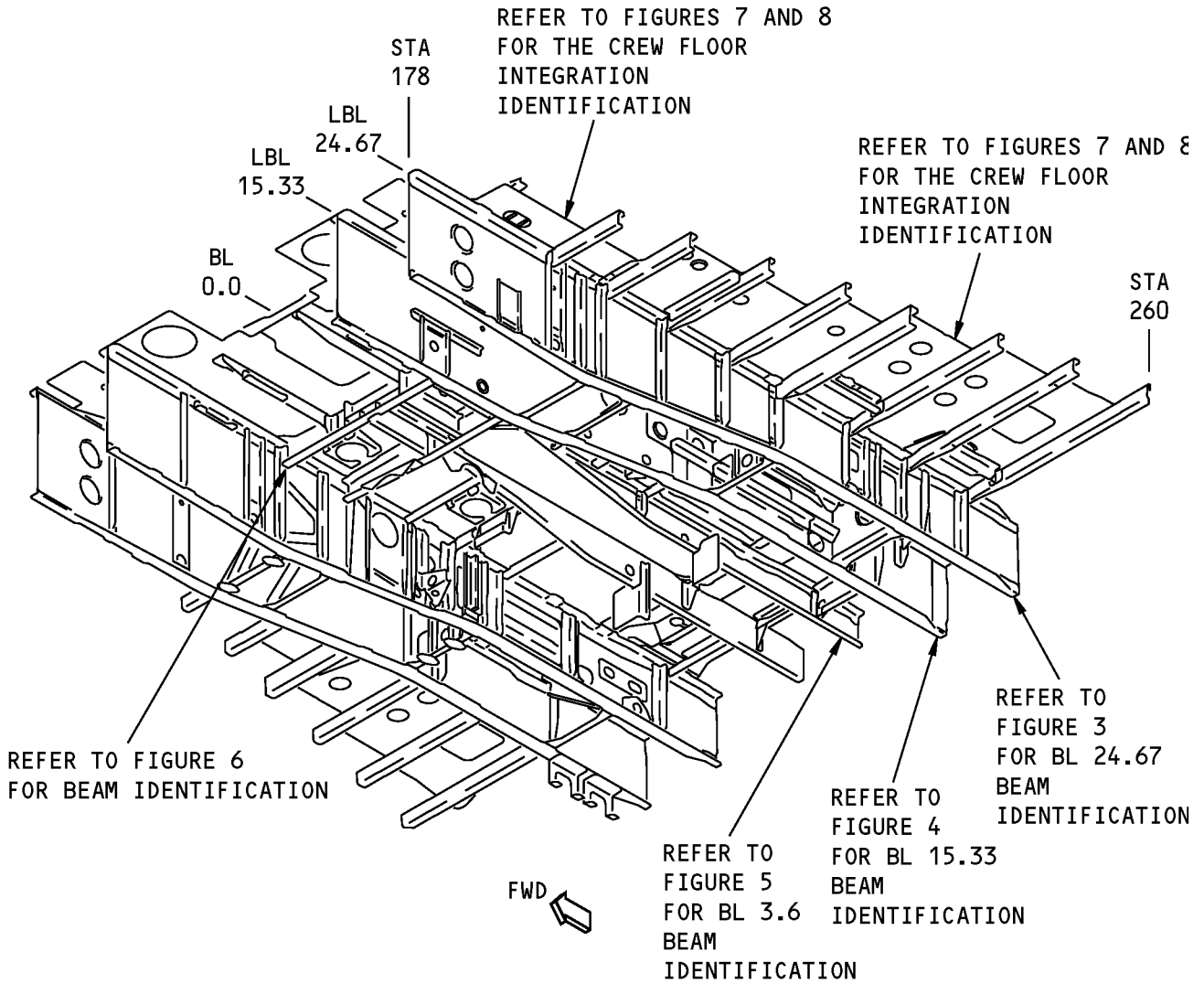


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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
141A5130	Door Installation - Crew Floor
141A5140	Small Assembly - Crew Floor, Section 41
141A5160	Beam Installation - Crew Floor, BL 3.6
141A5170	Beam Installation - Crew Floor, BL 15.33
141A5180	Beam Installation - Crew Floor, BL 24.67

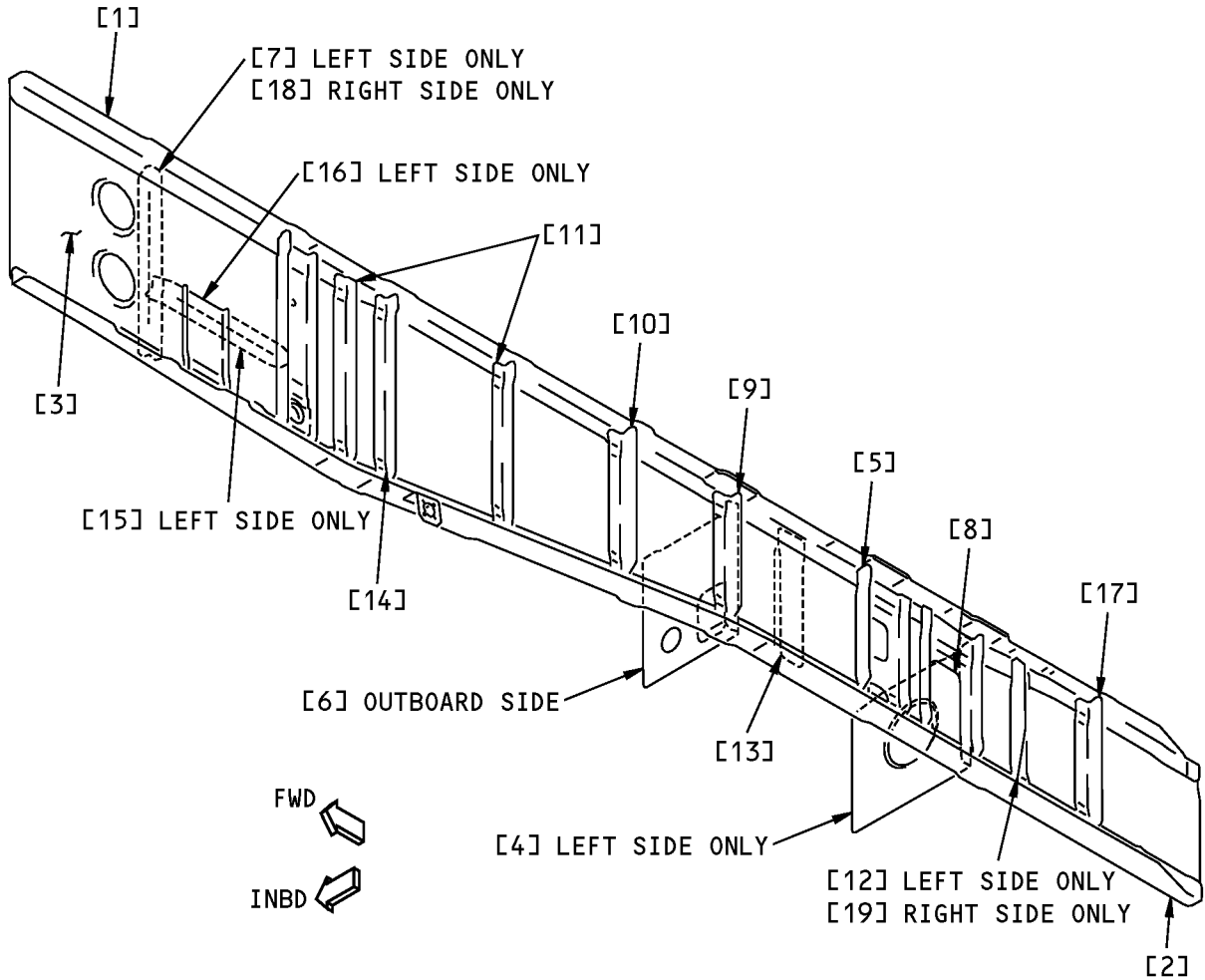


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**Section 41 Floor Structure Crew Area Floor Beam Locations  
Figure 2**

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**LEFT SIDE IS SHOWN,  
RIGHT SIDE IS OPPOSITE  
EXCEPT AS NOTED**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5180

**Section 41 Floor Structure BL 24.67 Crew Area Floor Beam Identification  
Figure 3**



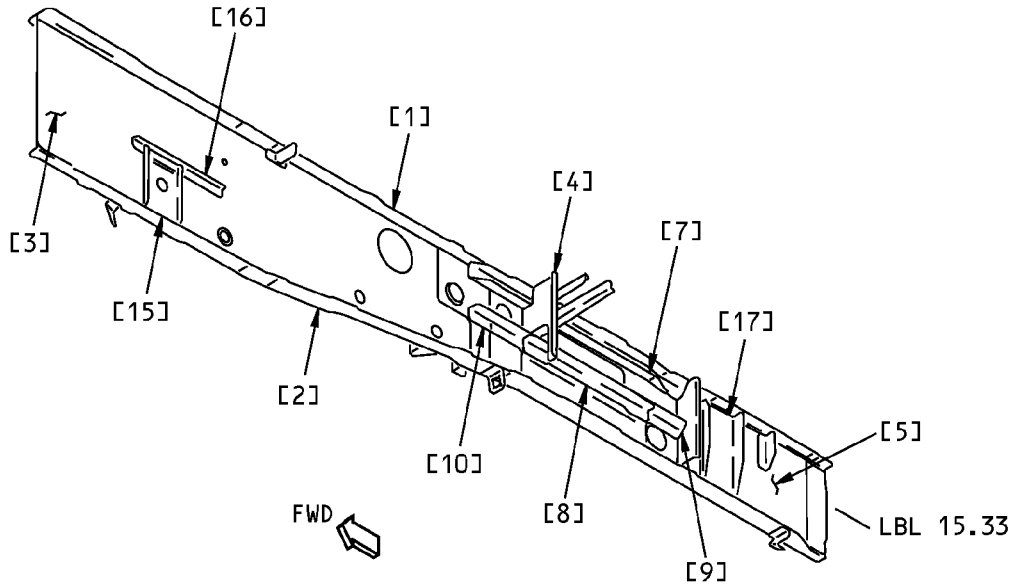
**737-800  
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**Table 2:**

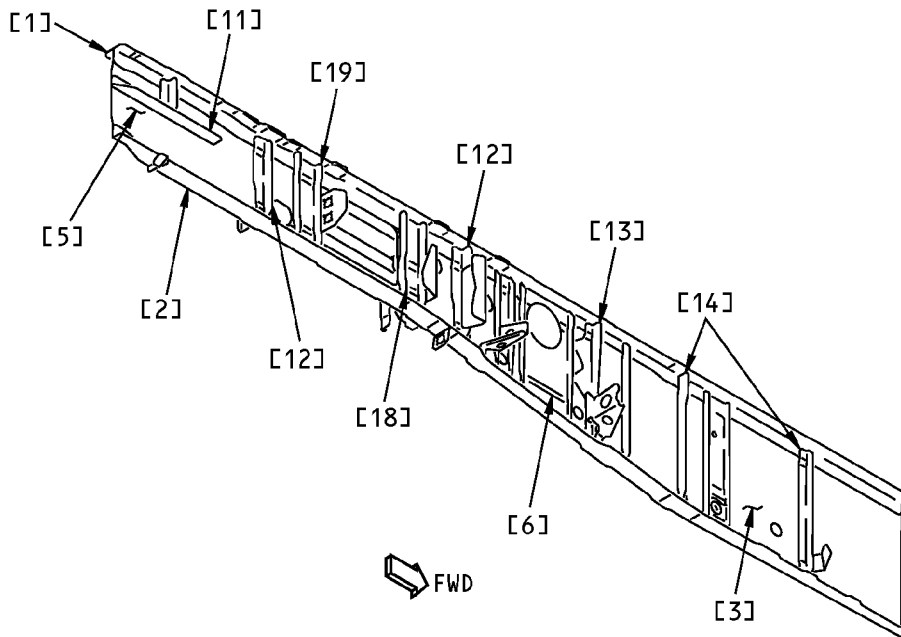
<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Chord, Upper		7050-T7451 plate as given in AMS 4050	
[2]	Chord, Lower		AND10136-2005 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Web	0.050 (1.27)	7075-T6 sheet as given in QQ-A-250/12	
[4]	Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[5]	Stiffener		BAC1493-137 clad sheet as given in QQ-A-250/13	
[6]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Stiffener		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	Left side only
[8]	Stiffener		BAC1493-476 7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Stiffener		BAC1506-4257 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/15) Refer to the Boeing production drawing for the chem-milled or machined thicknesses	
[10]	Stiffener		BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/11	
[11]	Stiffener (2)		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar as given in QQ-A-200/11) Refer to the Boeing production drawing for the machined thicknesses	
[12]	Stiffener		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1514-3134)	Left side only
[13]	Stiffener		BAC1505-100052 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1490-40 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[16]	Channel		BAC1493-361 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[17]	Angle, Clip		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar as given in QQ-A-200/11) Refer to the Boeing production drawing for the machined thicknesses	
[18]	Stiffener		AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11	Right side only
[19]	Stiffener		AND10134-1406 7075-T62 extrusion as given in QQ-A-200/11	Right side only

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**LEFT SIDE IS SHOWN  
OUTBOARD SIDE**



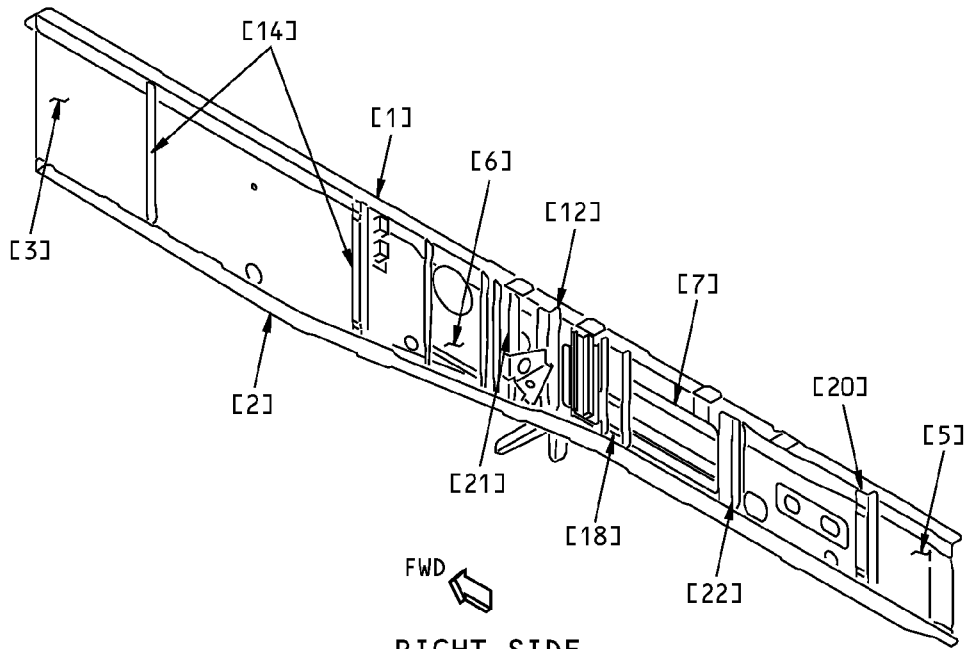
**LEFT SIDE IS SHOWN  
INBOARD SIDE**

**NOTES**

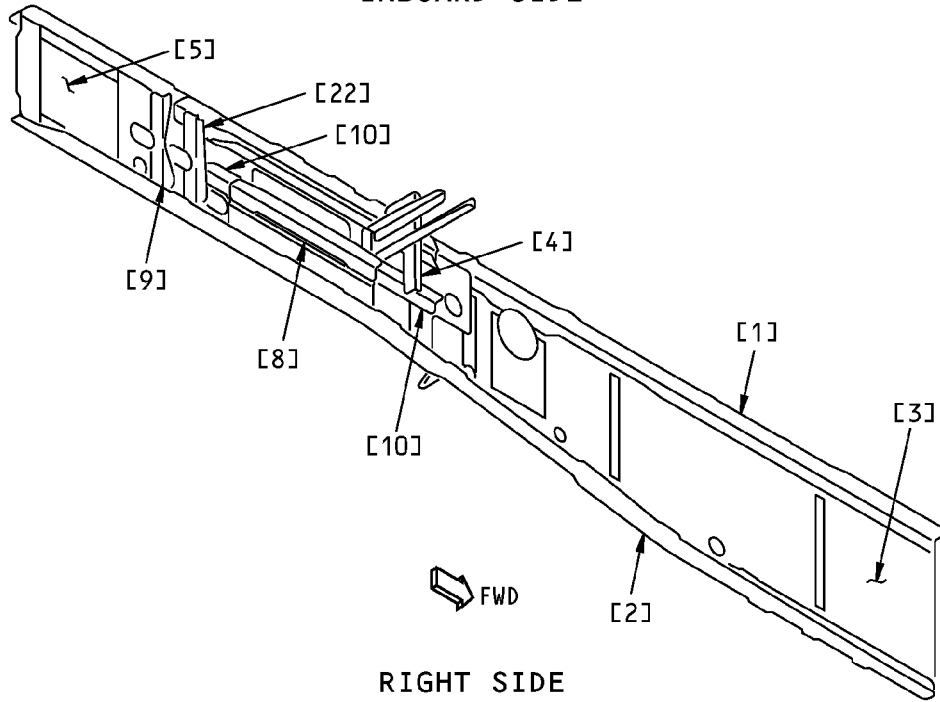
- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5170

**Section 41 Floor Structure BL 15.33 Crew Area Floor Beam Identification  
Figure 4 (Sheet 1 of 2)**

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**RIGHT SIDE  
INBOARD SIDE**



**RIGHT SIDE  
OUTBOARD SIDE**

**NOTE:** REFER TO DRAWING NUMBER 141A5170

**Section 41 Floor Structure BL 15.33 Crew Area Floor Beam Identification  
Figure 4 (Sheet 2 of 2)**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Upper Chord		7075-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Lower Chord		AND10136-2005 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Web	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Web	0.063 (1.6)	7075-T6 sheet as given in QQ-A-250/12. Refer to the Boeing production drawing for the chem-milled thicknesses	
[6]	Channel	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Channel	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Web Assembly Web Angle, Panel	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13 AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Angle, Panel		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Angle, Panel		BAC1514-3136 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle, Support		AND10133-1001 7075-T6511 extrusion as given in QQ-A-200/11	Left side only
[12]	Stiffener-Tee (2)		BAC1506-4260 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100269 7075-T76511 extrusion as given in QQ-A-200/15)	Right side has 1 each
[13]	Stiffener, Channel		BAC1493-466 7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[14]	Stiffener, Angle (2)		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1514-3249)	
[15]	Channel Doubler		BAC1493-114 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[16]	Stiffener, Angle		BAC1490-2776 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[17]	Stiffener, Channel		BAC1493-604 7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[18]	Stiffener, Channel	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Stiffener, Channel	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	Left side only
[20]	Stiffener, Tee		BAC1506-4258 7075-T73511 extrusion as given in QQ-A-200/11	Right side only

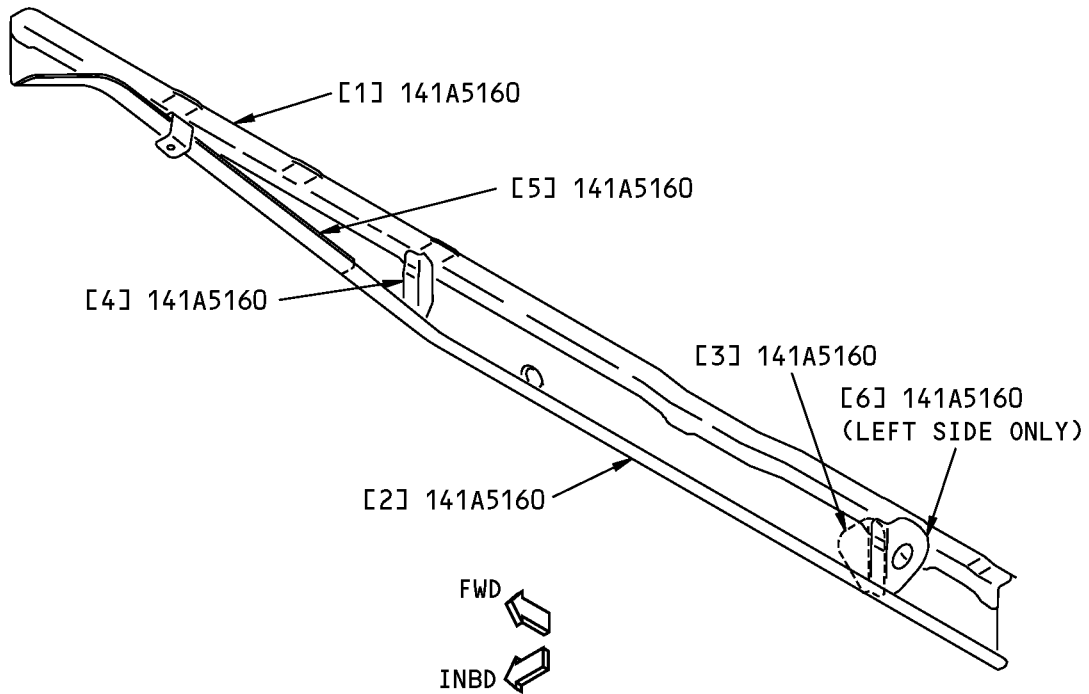


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LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[21]	Stiffener, Channel		BAC1493-308 7075-T62 clad sheet as given in QQ-A-250/13	Right side only YC008-YC050, YC054-YC070, YC074-YC099, YC103-YC110, YC112-YC120, YC122-YC199, YC201-YC299, YC303-YC320, YC331-YC380, YC382-YC399, YC405-YC499, YC507-YC570, YC573-YC599, YC603-YC699, YC701-YC799, YC801-YC899, YC901-YC999, YD001-YD999 ONLY
[22]	Stiffener, Tee		BAC1506-4258 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100470 7075-T76511 extrusion as given in QQ-A-200/15)	Right side only YC008-YC050, YC054-YC070, YC074-YC099, YC103-YC110, YC112-YC120, YC122-YC199, YC201-YC299, YC303-YC320, YC331-YC380, YC382-YC399, YC405-YC499, YC507-YC570, YC573-YC599, YC603-YC699, YC701-YC799, YC801-YC899, YC901-YC999, YD001-YD999 ONLY

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**LEFT SIDE IS SHOWN,  
RIGHT SIDE IS OPPOSITE  
EXCEPT AS NOTED**

**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 41 Floor Structure BL 3.6 Beam Identification  
Figure 5**

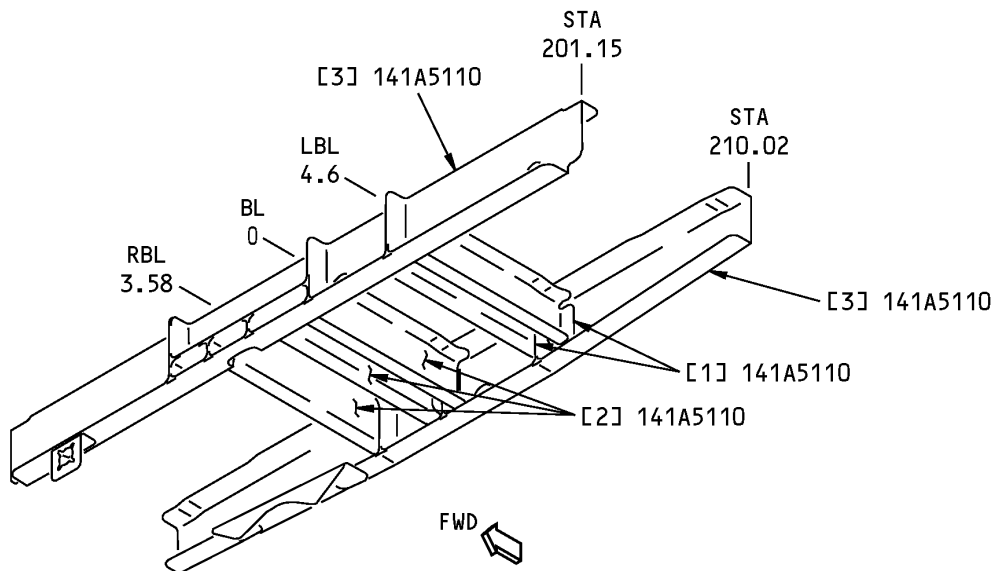


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**Table 4:**

LIST OF MATERIALS FOR FIGURE 5				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Chord, Upper		BAC1514-3137 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Support, Angle		BAC1490-2867 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1514-3132 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Strap		BAC1512-3337 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Support, Angle		BAC1514-3133 7075-T73511 extrusion as given in QQ-A-200/11	Left side only

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

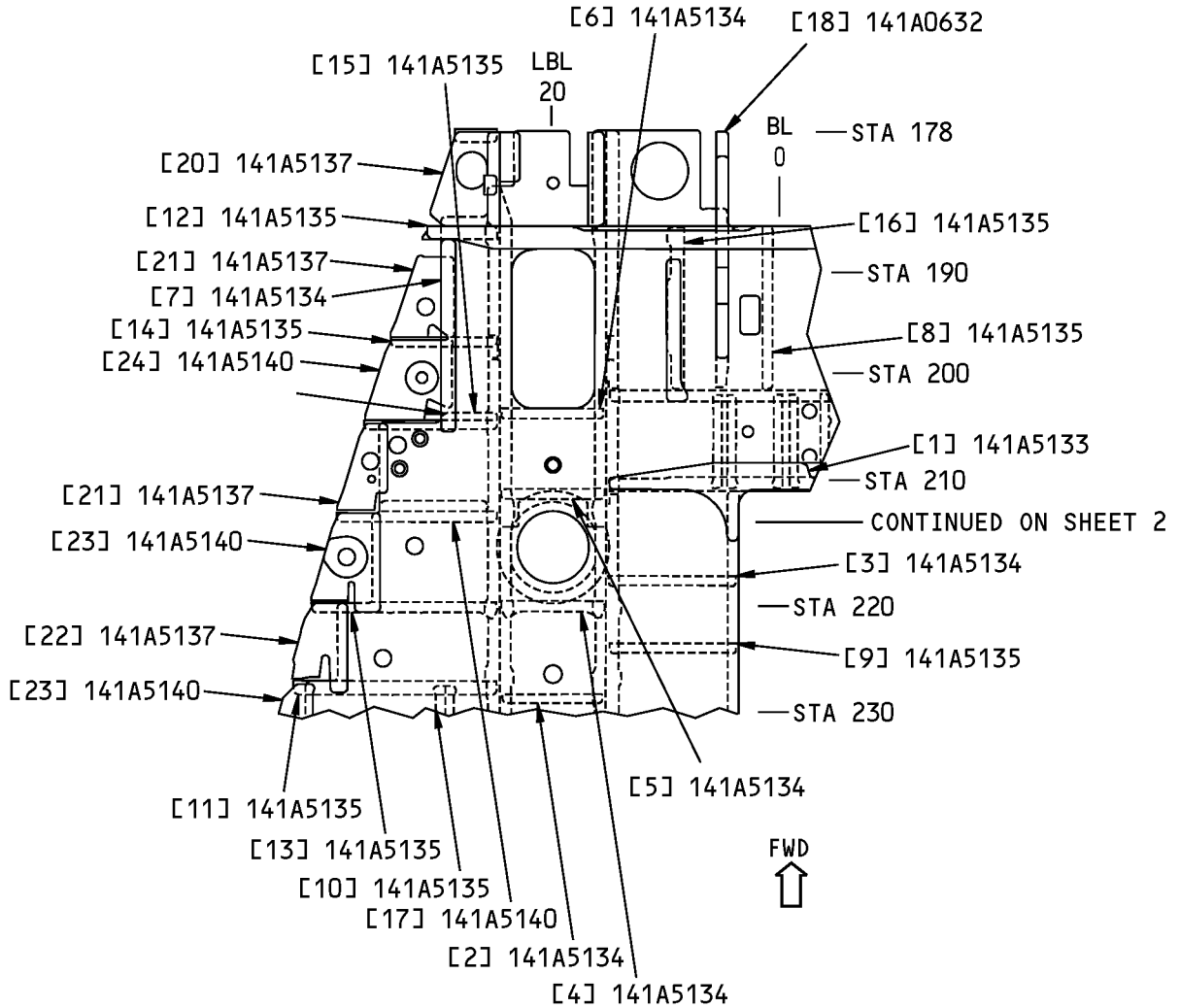
### Section 41 Floor Structure Crew Area Floor Beam Identification Figure 6

**Table 5:**

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam, Channel (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Beam, Channel (3)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Beam (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

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\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

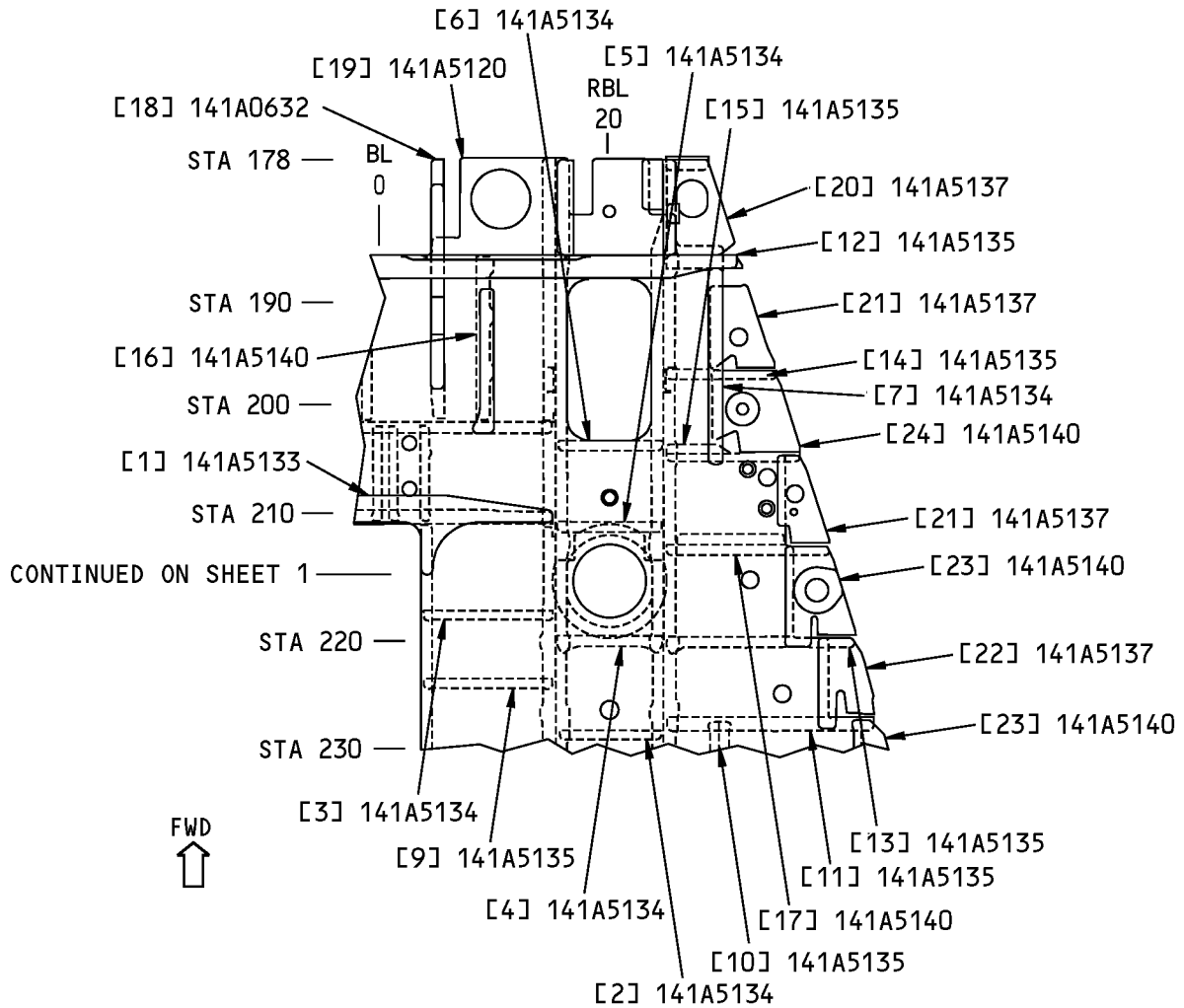


**NOTES**

- REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Section 41 Floor Structure Forward Crew Area Integration Identification  
Figure 7 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure Forward Crew Area Integration Identification  
Figure 7 (Sheet 2 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Angle (2)		BAC1514-3204 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (2)		BAC1514-3196 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Angle (2)		BAC1514-3201 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Angle (2)		BAC1514-3200 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Angle (2)		BAC1514-3206 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener-Channel (2)		7050-T7451 plate as given in AMS 4050	
[8]	Angle-Support		AND10134-1403 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener (2)		BAC1503-100748 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Beam (2)		BAC1506-4393 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate)	
[11]	Channel (2)		BAC1509-100112 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Angle		BAC1504-8256 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Channel (2)		BAC1493-875 2024-T42 clad sheet as given in QQ-A-250/5	
[14]	Channel (2)		BAC1510-1347 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	J-Beam (2)		BAC1506-4326 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Angle-Support (2)		AND10134-2006 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Channel (2)		BAC1493-460 2024-T42 clad sheet as given in QQ-A-250/5	
[18]	Integration Assembly Channel, Floor (2)		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part)	
	Strap (2)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[19]	Web-Floor	0.071 (1.8)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 9 for chem-milled thicknesses	
[20]	Shear Tie (2)	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	
[21]	Shear Tie (8)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[22]	Shear Tie (2)	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[23]	Shear Tie Assembly (4) Shear Tie	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	

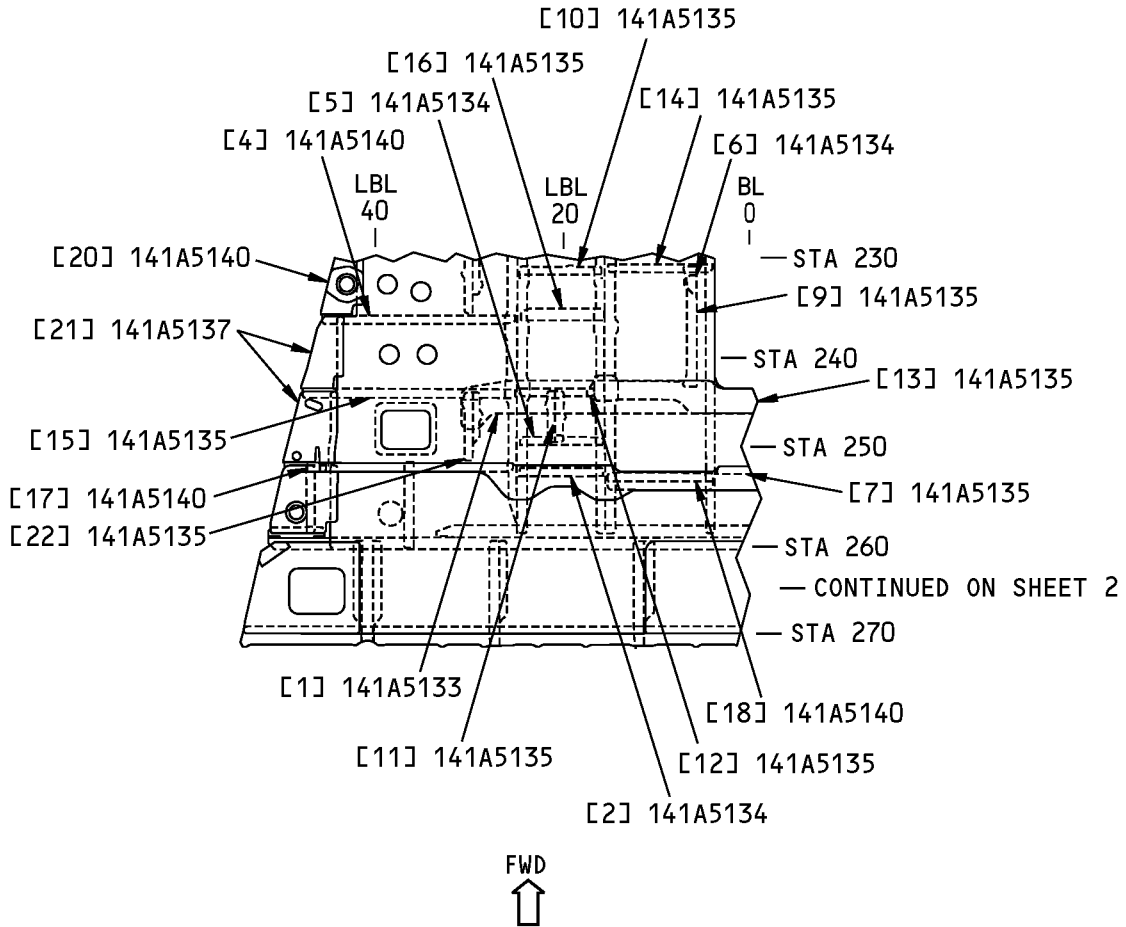


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LIST OF MATERIALS FOR FIGURE 7				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Ring Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[24]	Shear Tie Assembly (2)			
	Shear Tie	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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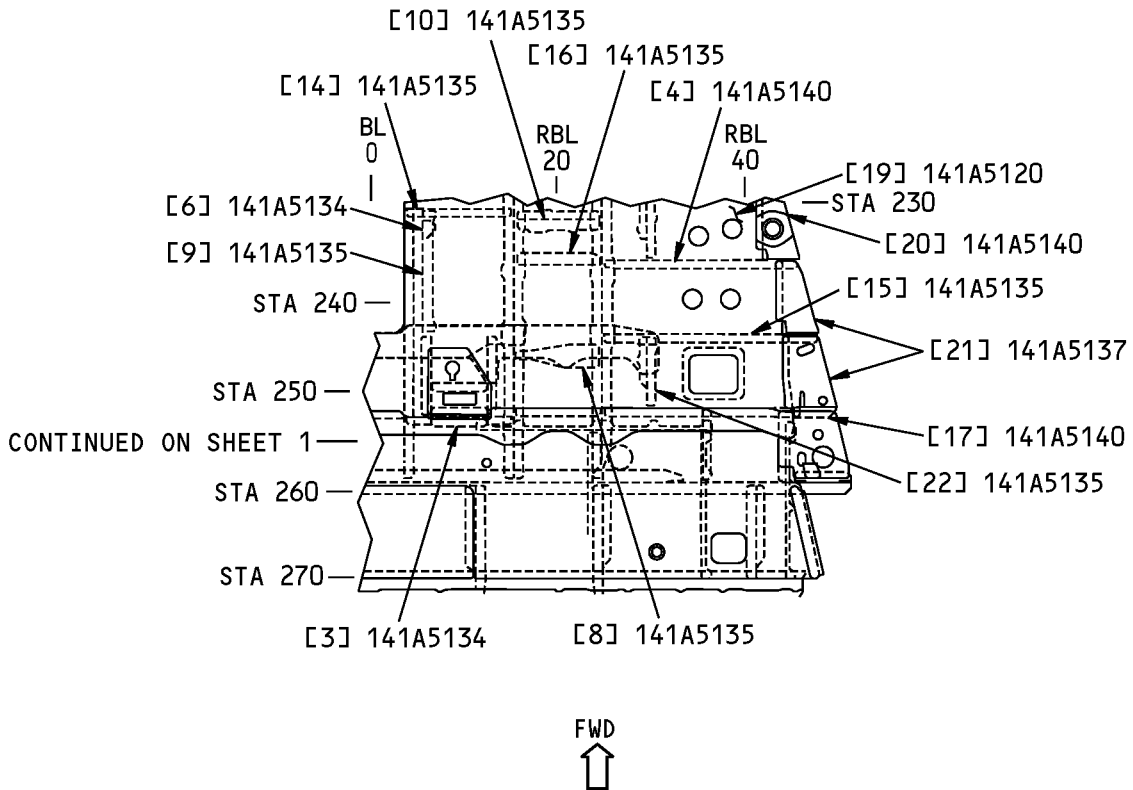


**NOTES**

- REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

**Section 41 Floor Structure Aft Crew Area Integration Identification  
Figure 8 (Sheet 1 of 2)**

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**Section 41 Floor Structure Aft Crew Area Integration Identification  
Figure 8 (Sheet 2 of 2)**



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**Table 7:**

<b>LIST OF MATERIALS FOR FIGURE 8</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Angle		BAC1514-3249 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Angle-Support		BAC1514-3205 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Channel (2)		BAC1493-875 2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Channel		BAC1509-100669 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Channel (2)		AND10137-1011 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Channel		AND10137-1107 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Beam		BAC1506-4495 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[9]	Angle (2)		AND10133-1401 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	J-Beam (2)		BAC1506-4494 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[11]	Beam		BAC1506-4392 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[12]	Z-Beam		BAC1517-2785 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1506-4389 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[14]	Stiffener (2)		BAC1514-3201 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Channel (2)		BAC1493-876 2024-T42 clad sheet as given in QQ-A-250/5	
[16]	Angle		BAC1514-3248 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[17]	Channel (2)		BAC1493-494 2024-T42 clad sheet as given in QQ-A-250/5	
[18]	J-Beam Assembly Stiffener  J-Beam		BAC1490-2715 7075-T62 clad sheet as given in QQ-A-250/13  BAC1506-4323 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[19]	Web-Floor	0.071 (1.8)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figure 9 for chem-milled thicknesses	



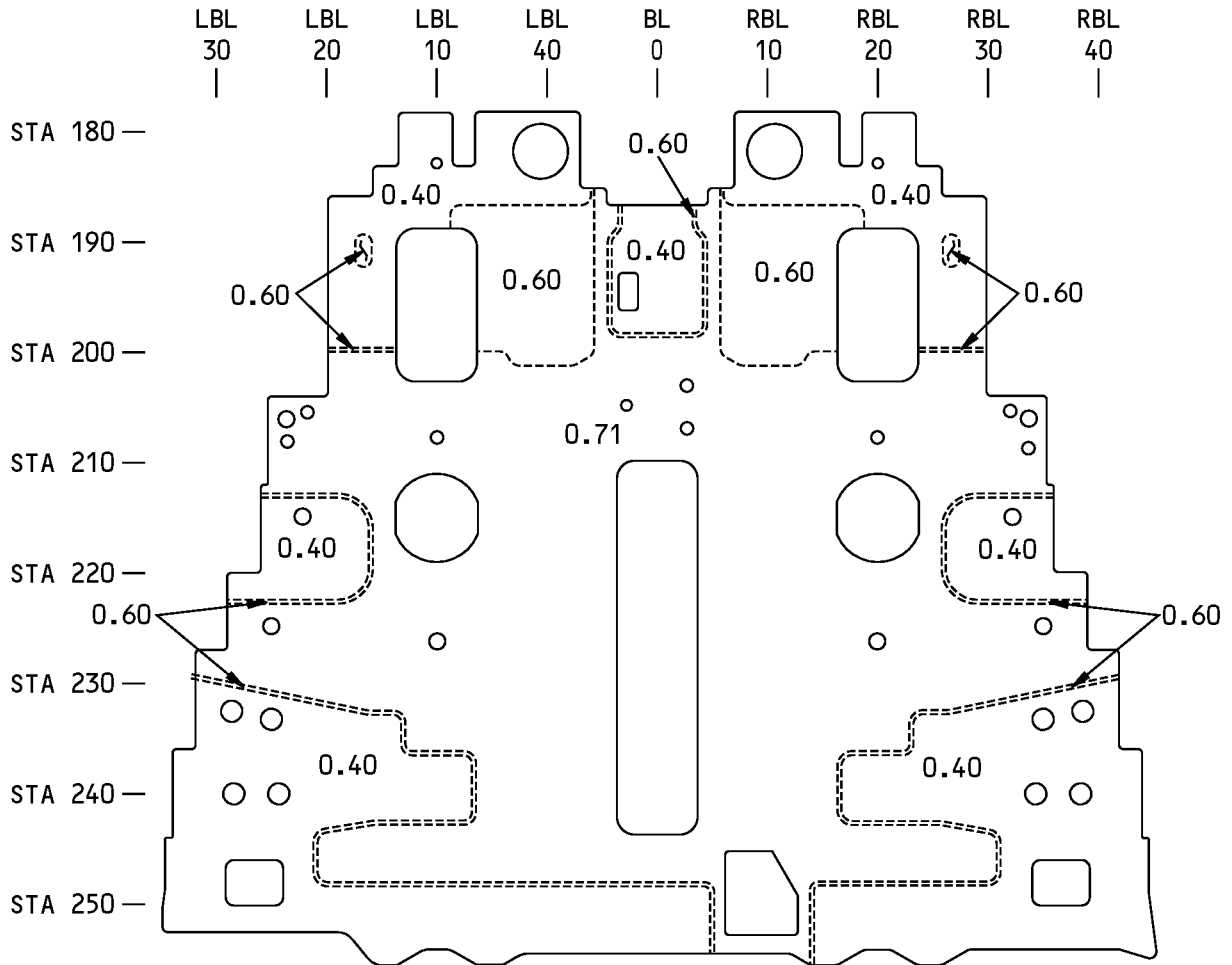


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LIST OF MATERIALS FOR FIGURE 8				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[20]	Shear Tie Assembly (2)			
	Shear Tie	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Doubler	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[21]	Shear Tie (4)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[22]	J-Beam (2)		BAC1506-4394 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

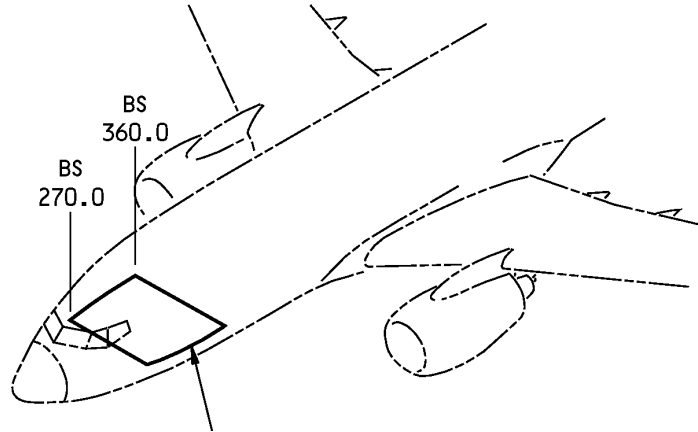
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**Chem-milled Thicknesses for Item [19]  
Figure 9**

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**IDENTIFICATION 2 - SECTION 41 PASSENGER COMPARTMENT FLOOR STRUCTURE**



REFER TO FIGURE 2 FOR THE  
SECTION 41 FLOOR STRUCTURE LOCATIONS

**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.
- THE FLOOR STRUCTURE SHOWN IN THIS FIGURE IS THE BASIC CONFIGURATION. REFER TO BOEING DRAWINGS FOR OPTIONAL FLOOR STRUCTURE.

**Section 41 Floor Structure  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
141A5210	Floor Step Assembly and Installation, Station 259-277
141A5400	Stabilization Installation Section 41

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REFER TO FIGURE 6 FOR THE SECTION 41 FLOOR BEAM AT STATION 294.5 IDENTIFICATION

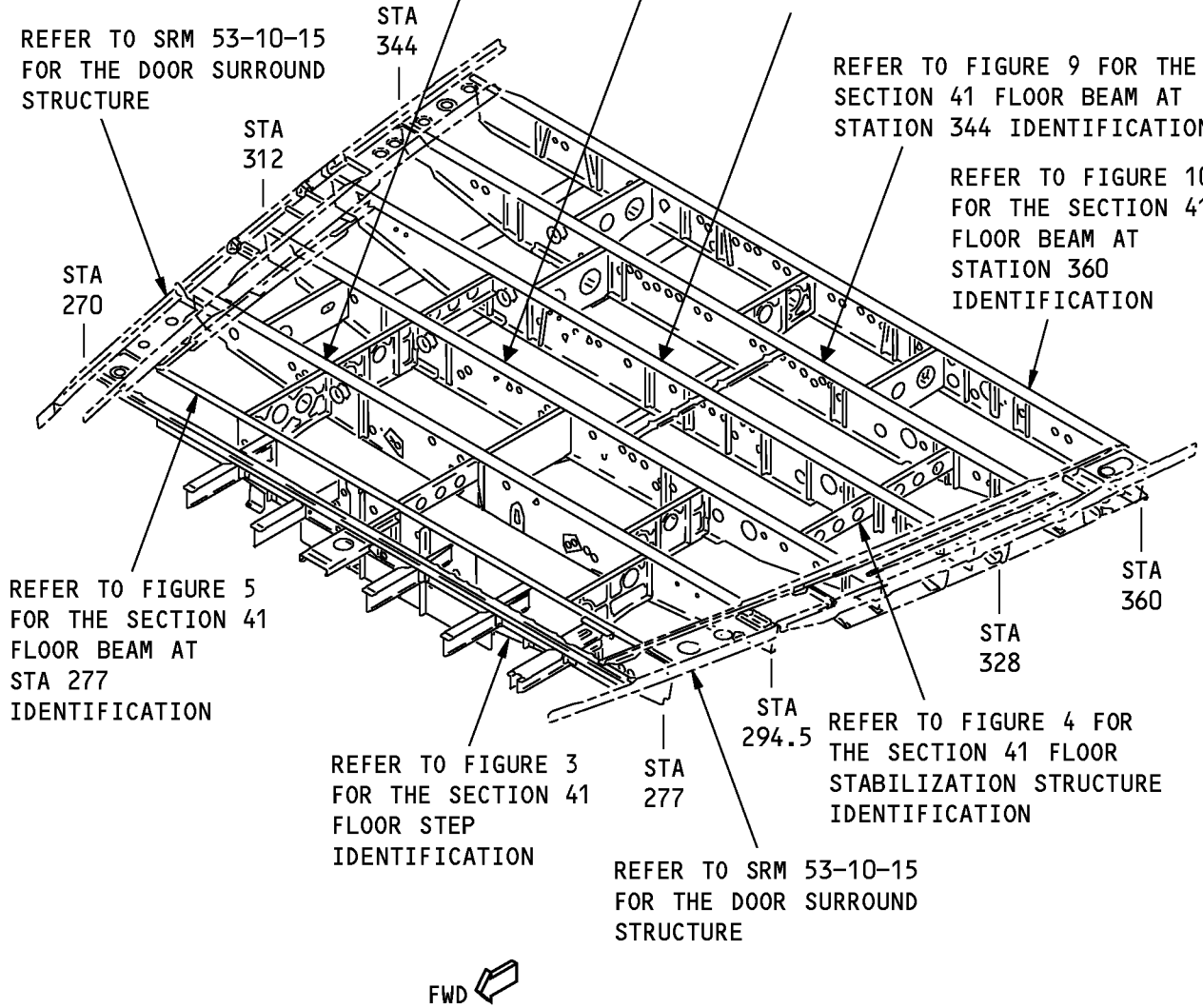
REFER TO FIGURE 7 FOR THE SECTION 41 FLOOR BEAM AT STATION 312 IDENTIFICATION

REFER TO FIGURE 8 FOR THE SECTION 41 FLOOR BEAM AT STATION 328 IDENTIFICATION

REFER TO FIGURE 9 FOR THE SECTION 41 FLOOR BEAM AT STATION 344 IDENTIFICATION

REFER TO FIGURE 10 FOR THE SECTION 41 FLOOR BEAM AT STATION 360 IDENTIFICATION

REFER TO SRM 53-10-15 FOR THE DOOR SURROUND STRUCTURE



REFER TO FIGURE 5 FOR THE SECTION 41 FLOOR BEAM AT STA 277 IDENTIFICATION

REFER TO FIGURE 3 FOR THE SECTION 41 FLOOR STEP IDENTIFICATION

REFER TO SRM 53-10-15 FOR THE DOOR SURROUND STRUCTURE

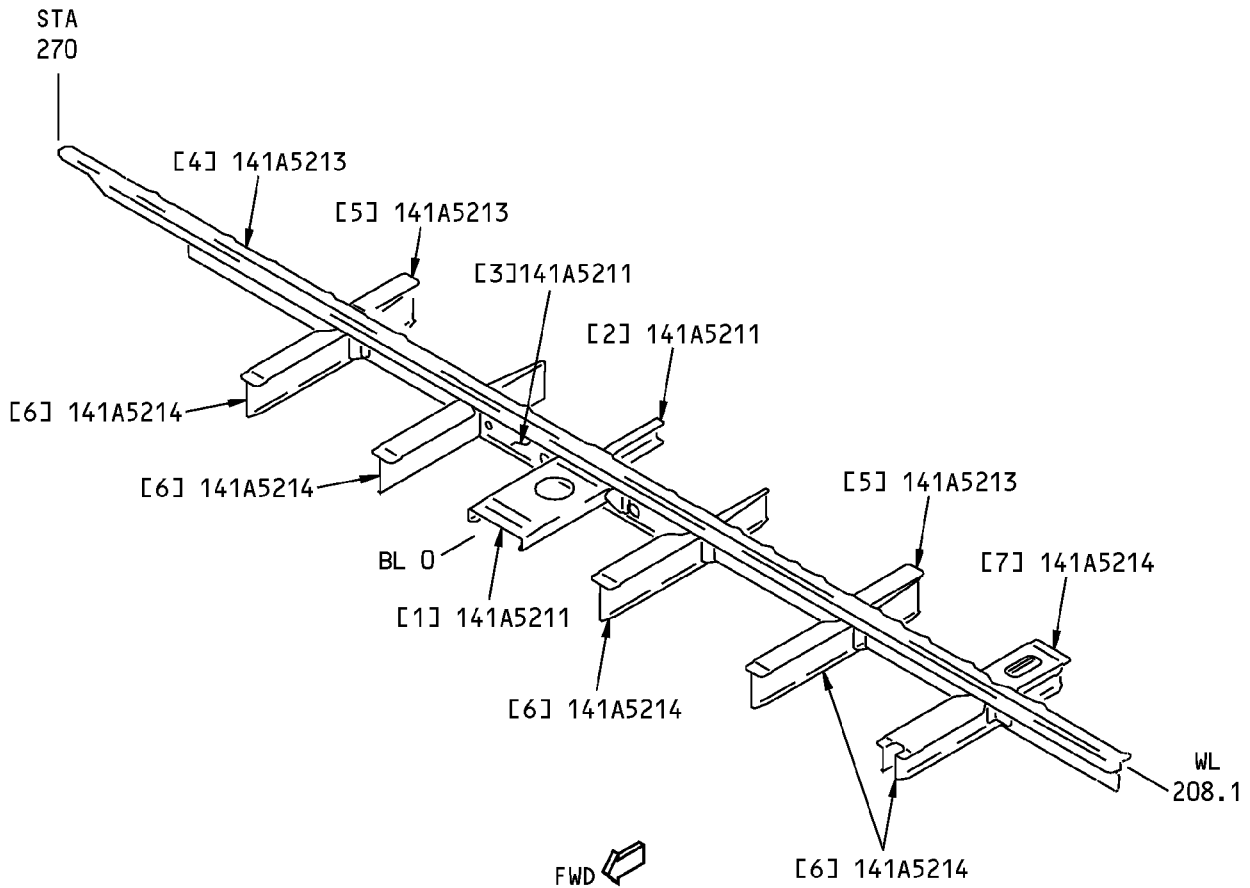
REFER TO FIGURE 4 FOR THE SECTION 41 FLOOR STABILIZATION STRUCTURE IDENTIFICATION



**NOTE:** REFER TO FIGURE 4 FOR THE STABILIZATION STRUCTURE.

**Section 41 Floor Structure Locations  
Figure 2**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 41 Floor Step Identification  
Figure 3**



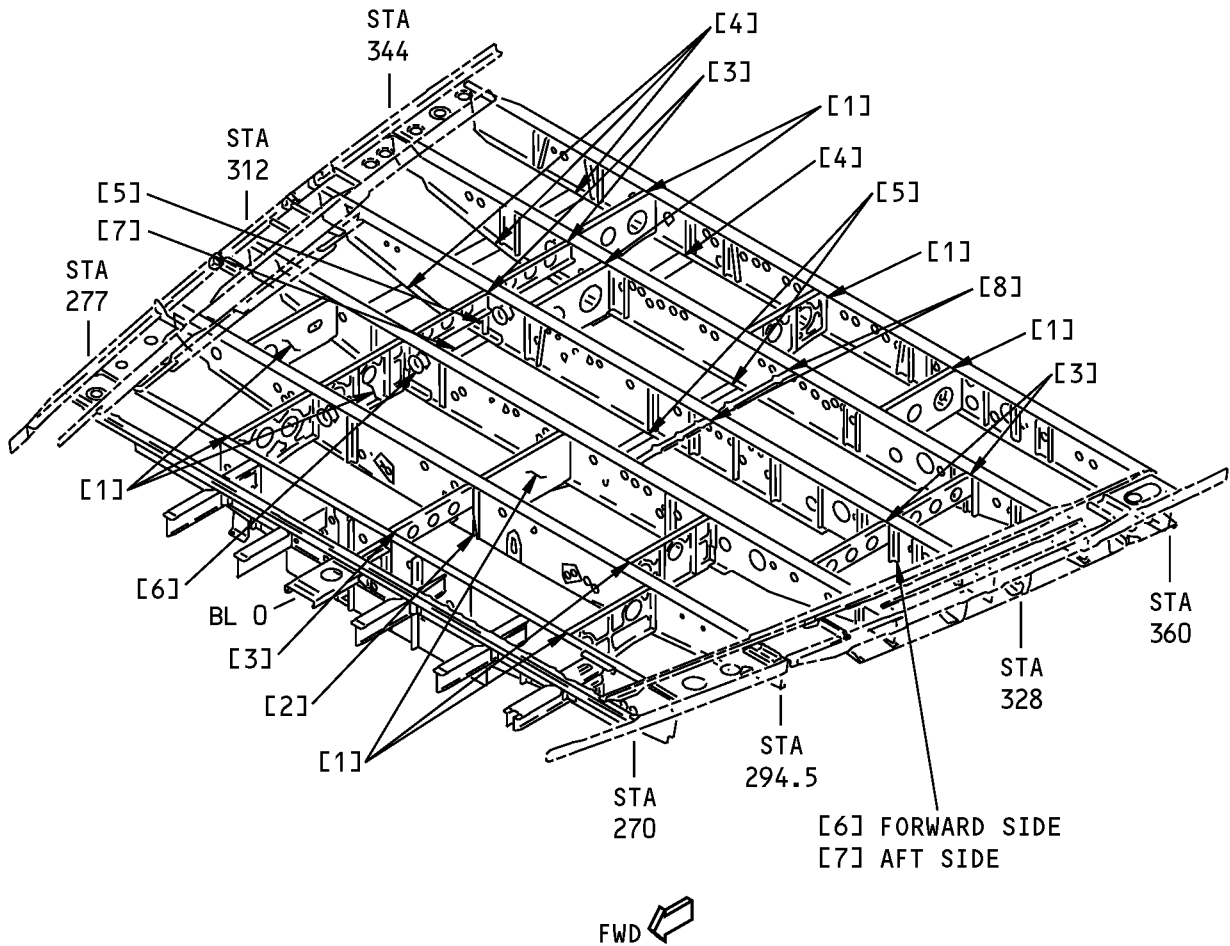
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Support Channel	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Support Channel		BAC1493-581 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.050 (12.7)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Lateral Intercostal		BAC1520-2760 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Tee Chord (2)		BAC1505-101183 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Intercostal (5)		7050-T7451 plate as given in AMS 4050	
[7]	Hardpoint Chord		7050-T7451 plate as given in AMS 4050	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DRAWING NUMBER 141A5410

**Section 41 Floor Stabilization Structure Identification  
Figure 4**



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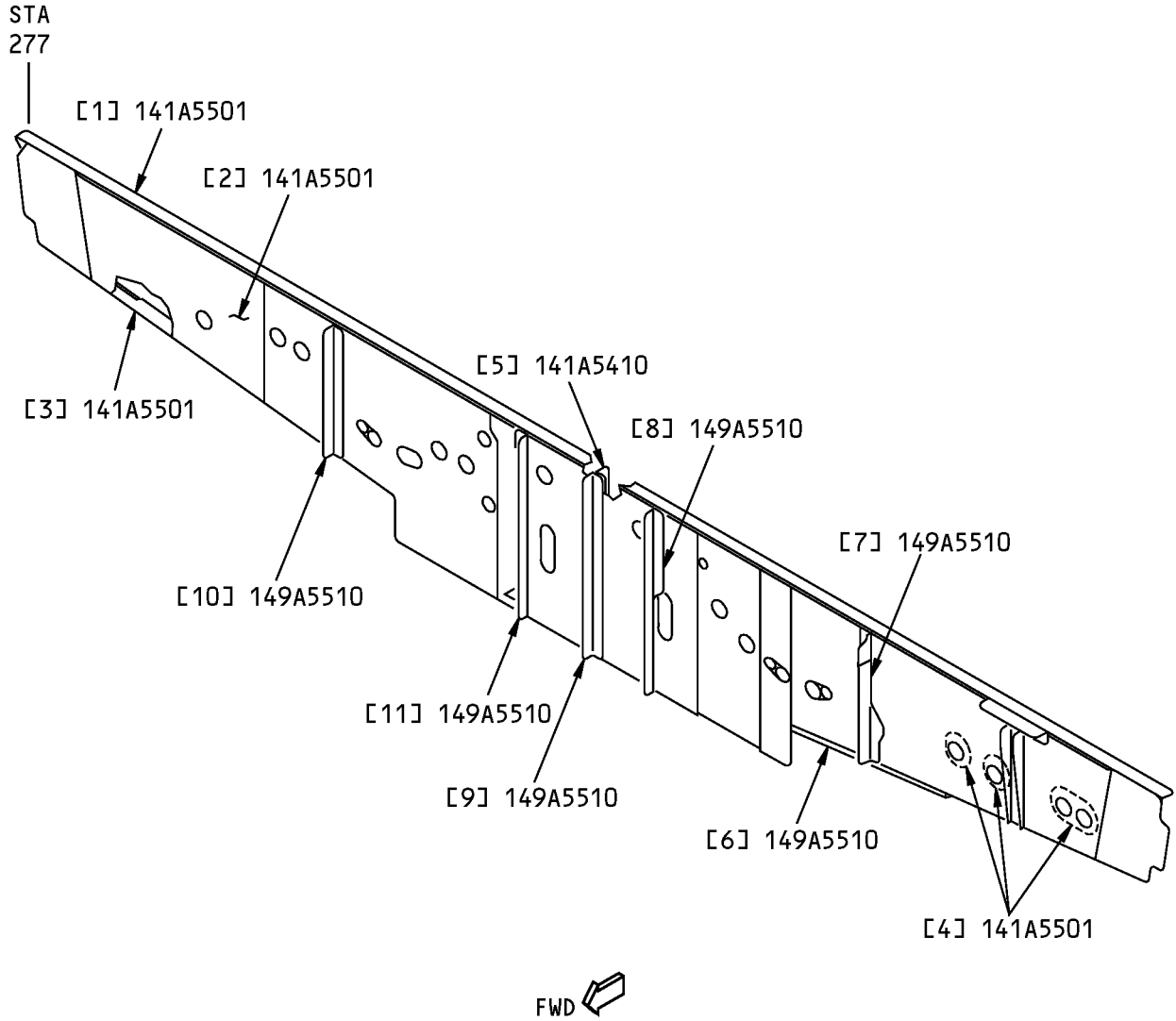
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Stiffener		BAC1503-100046 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Intercostal	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stabilizer Strap		BAC1513-433 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stabilizer Strap		BAC1513-295 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1514-3195 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Panel Break		BAC1505-100403 7050-T6511 extrusion as given in AMS 4340	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 41 Floor Beam Identification at Station 277  
Figure 5**



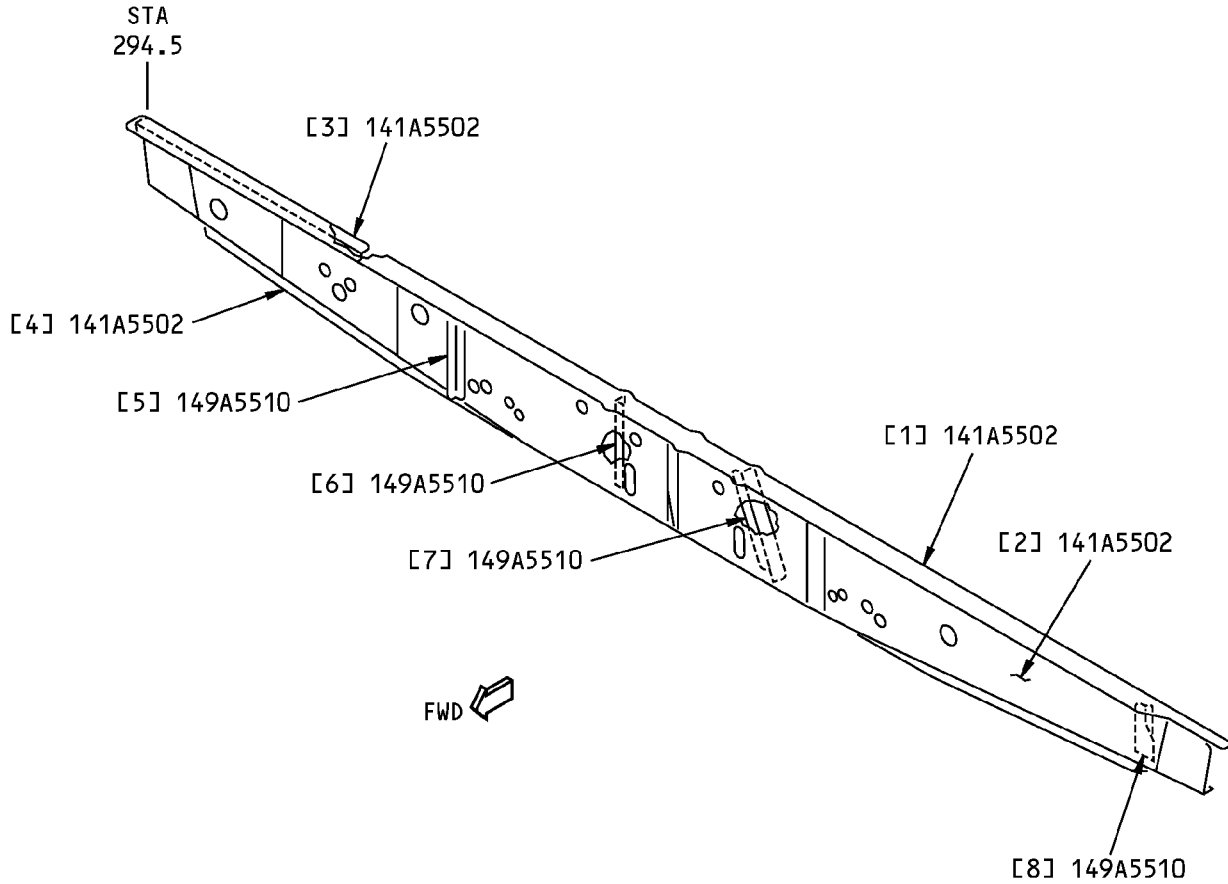
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Chord, Angle		BAC1503-101054 7050-T76511 extrusion as given in AMS 4340	
[2]	Web	0.120 (3.05)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to Figure 11 for the chem-milled thicknesses	
[3]	Chord, Angle		BAC1503-101053 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Doubler (3)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1514-3206 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		AND10134-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1505-101640 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100592 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1503-100259 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T6511)	
[10]	Stiffener		BAC1514-867 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100238 7075-T6511 extrusion as given in QQ-A-200/11)	
[11]	Stiffener		BAC1503-100413 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**Station 294.5 Floor Beam Identification  
Figure 6**



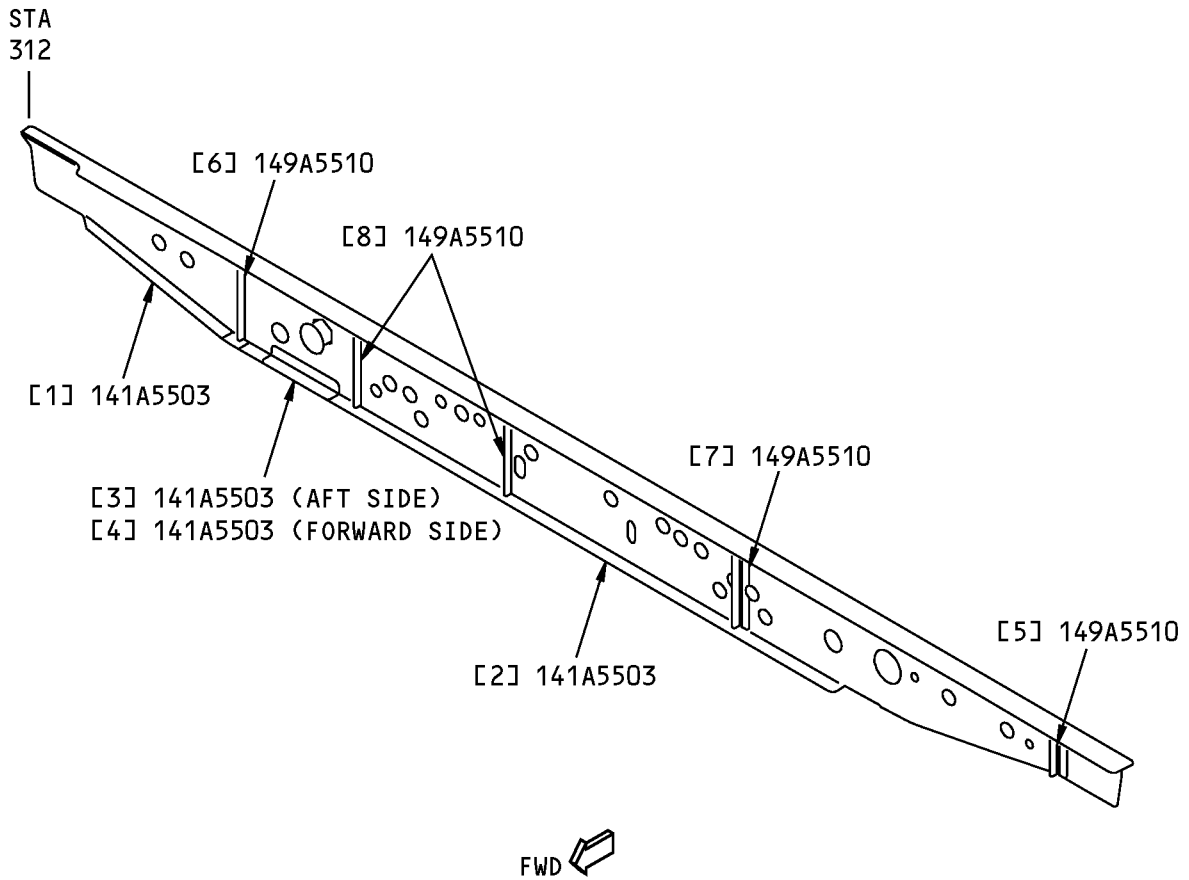
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Chord, Upper		BAC1503-101052 7050-T76511 extrusion as given in AMS 4340	
[2]	Web	0.110 (2.8)	7075-T6 clad sheet as given in QQ-A-250/13. Refer to Figure 12 for the chem-milled thicknesses	
[3]	Angle		BAC1490-2816 7075-T6 formed angle as given in QQ-A-200/11	
[4]	Chord, Lower		BAC1503-101051 7075-T62 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[5]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1514-1081 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[7]	Stiffener		BAC1503-100380 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100323 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Section 41 Floor Beam Identification AT Station 312  
Figure 7**



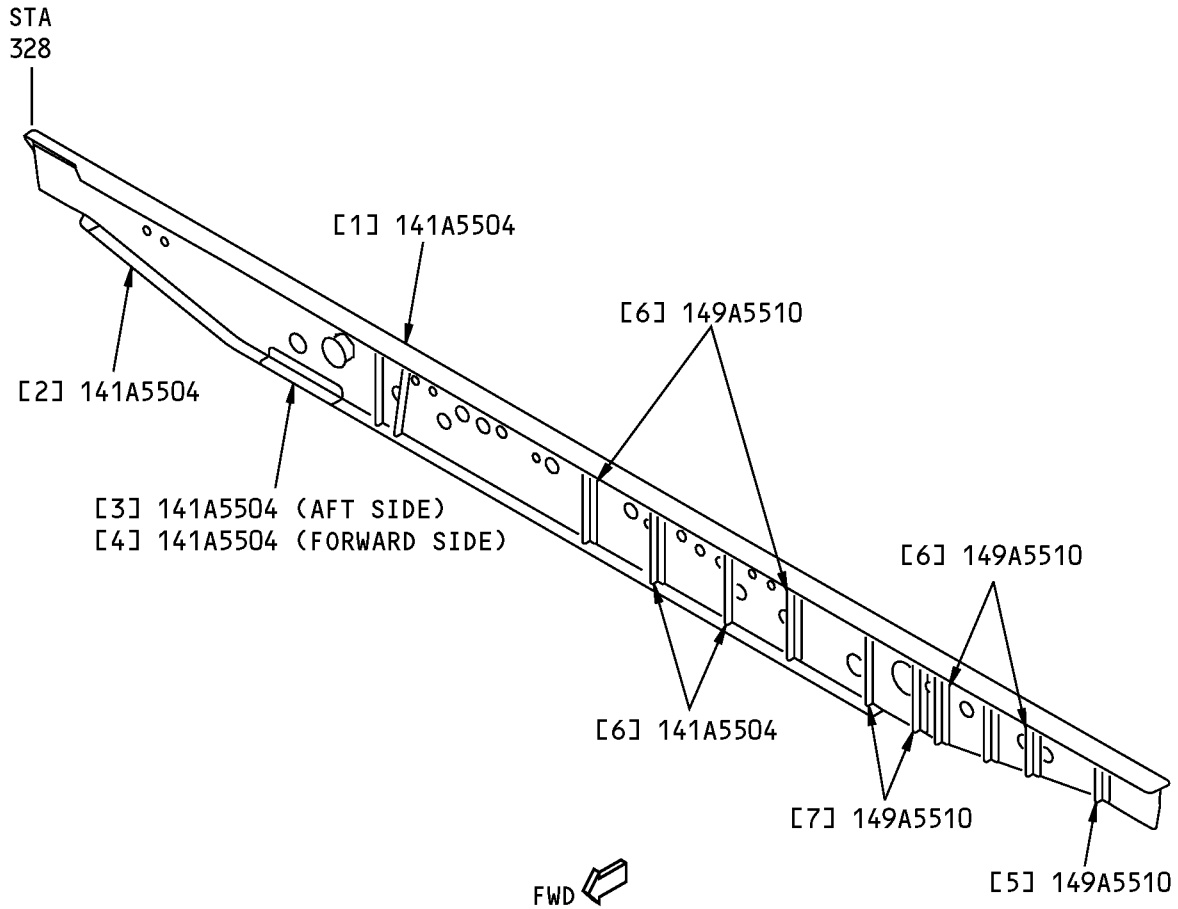
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**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Lower Chord		BAC1505-100952 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Beam, Transverse		BAC1518-1210 7050-T76511 extrusion as given in AMS 4340	
[3]	Splice Angle		BAC1503-3373 7075-T62 extrusion as given in QQ-A-200/11	
[4}	Splice Angle		BAC1503-100310 7075-T62 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100691 7075-T6511 extrusion as given in QQ-A-200/11)	
[5]	Stiffener		AND10136-1503 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1503-100917 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

**Section 41 Floor Beam Identification at Station 328  
Figure 8**



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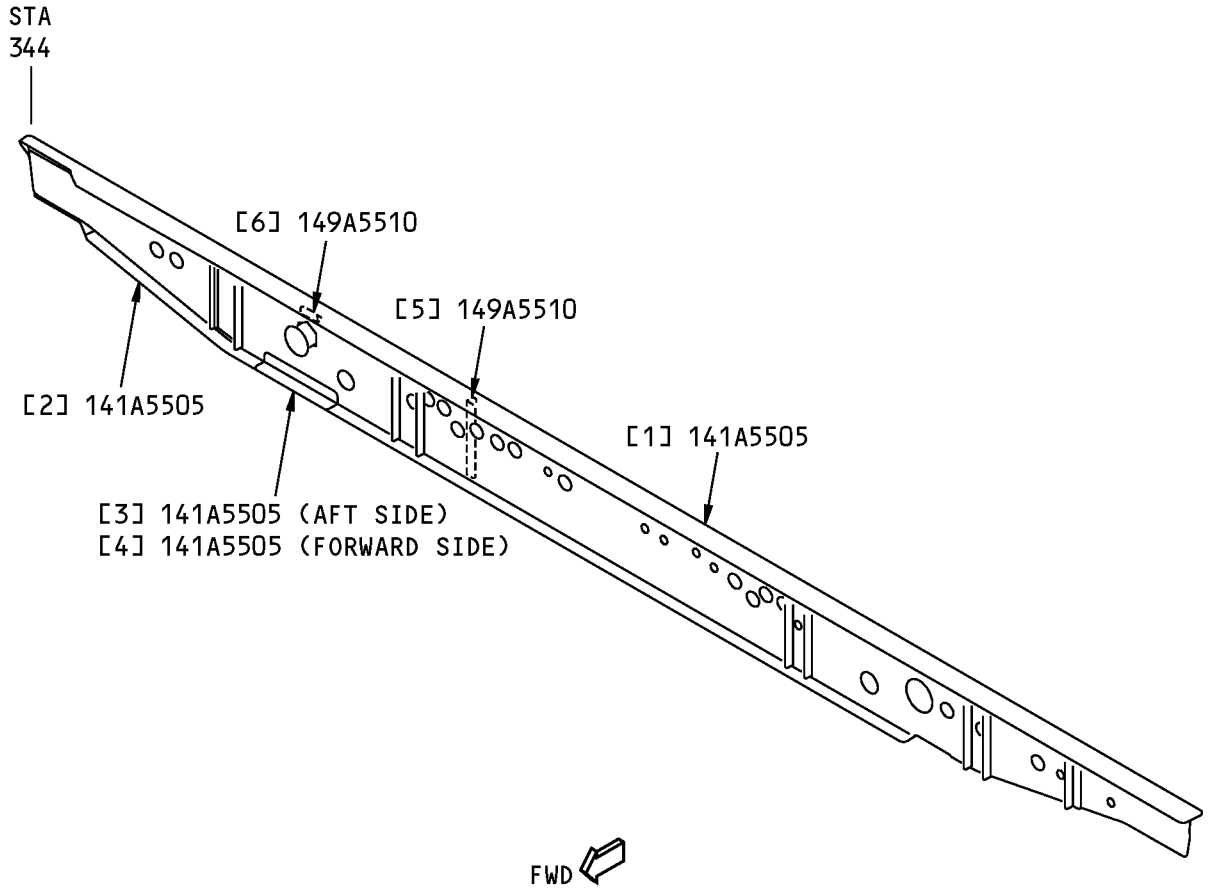
**Table 7:**

<b>LIST OF MATERIALS FOR FIGURE 8</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Beam, Transverse		BAC1518-1210 7050-T76511 extrusion as given in AMS 4340	
[2]	Lower Chord		BAC1505-100445 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Splice Angle		BAC1503-100691 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[4]	Splice Angle		BAC1503-3373 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[5]	Stiffener		BAC1505-101579 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (5)		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (2)		BAC1503-100305 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

**Section 41 Floor Beam Identification at Station 344  
Figure 9**



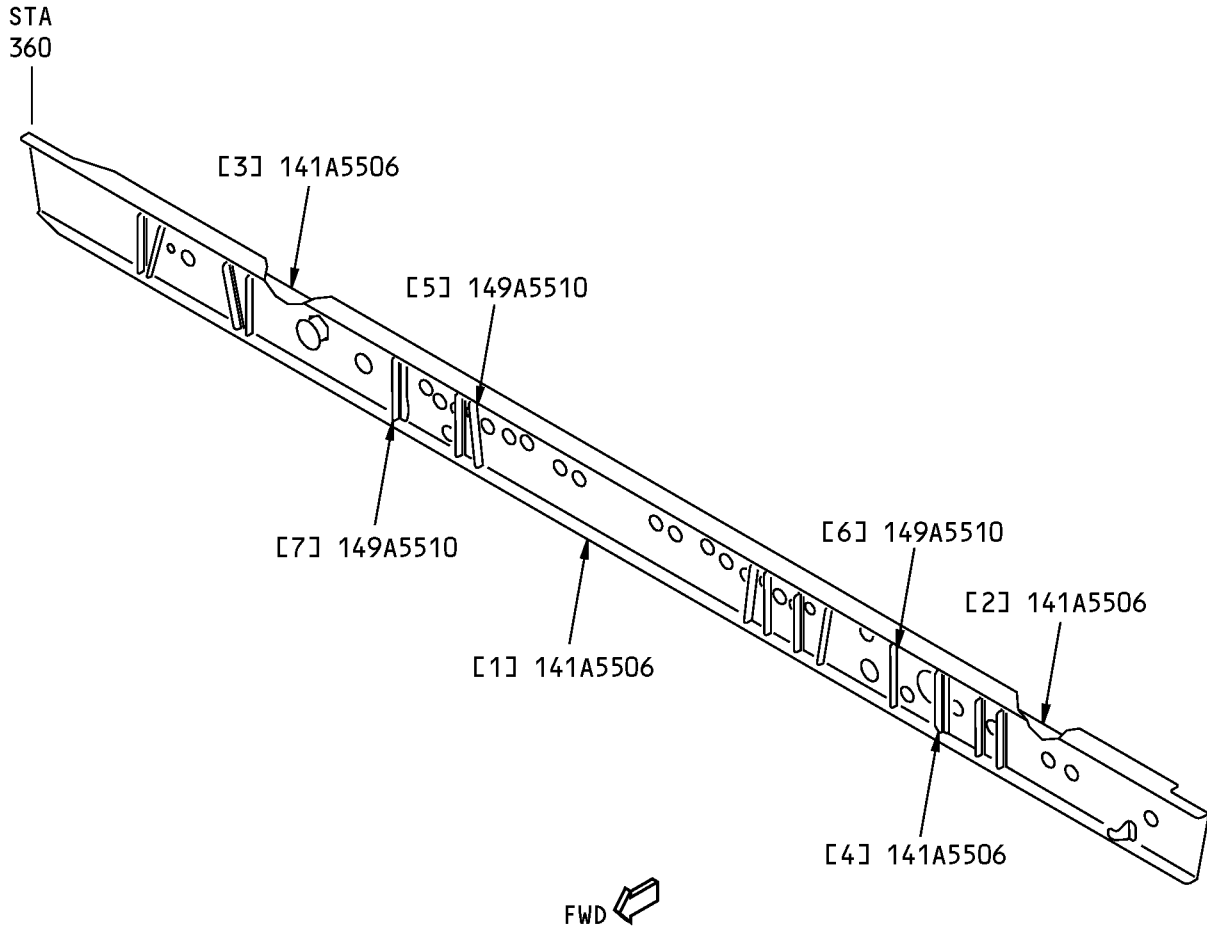
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**Table 8:**

<b>LIST OF MATERIALS FOR FIGURE 9</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1218 7050-T76511 extrusion as given in AMS 4240. Refer to Figure 13 for the chem-milled thicknesses	
[2]	Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[3]	Splice		BAC1514-90 7050-T76511 extrusion as given in AMS 4340	
[4]	Splice		BAC1503-100369 7050-T76511 extrusion as given in AMS 4340 (Optional: BAC1503-100370 7075-T6511 extrusion as given in QQ-A-200/11)	
[5]	Stiffener		BAC1503-100096 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100031 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

**Section 41 Floor Beam Identification at Station 360  
Figure 10**



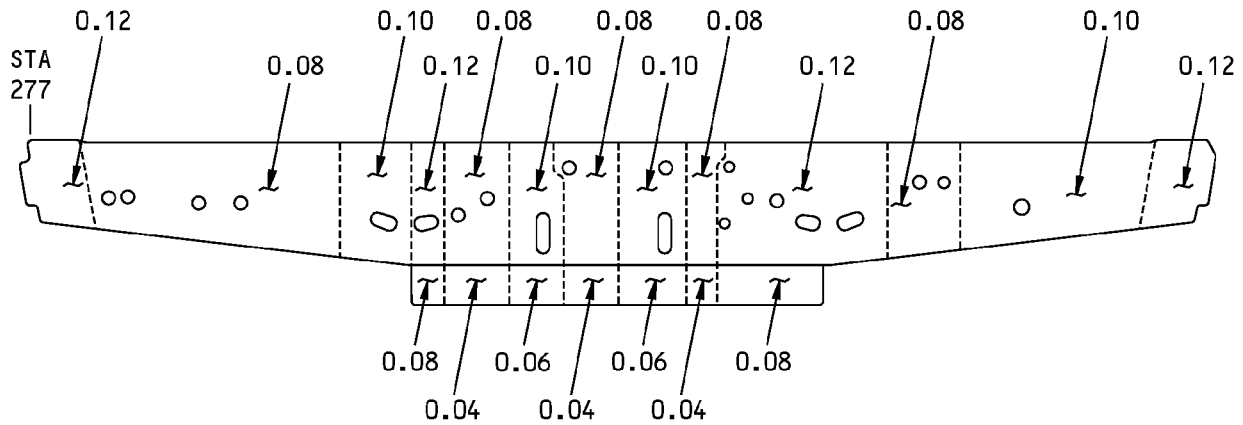
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**Table 9:**

<b>LIST OF MATERIALS FOR FIGURE 10</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Beam, Transverse		BAC1518-1208 7050-T76511 extrusion as given in AMS 4340	
[2]	Doubler	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Doubler	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Stiffener		AND10133-0702 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		AND10136-2002 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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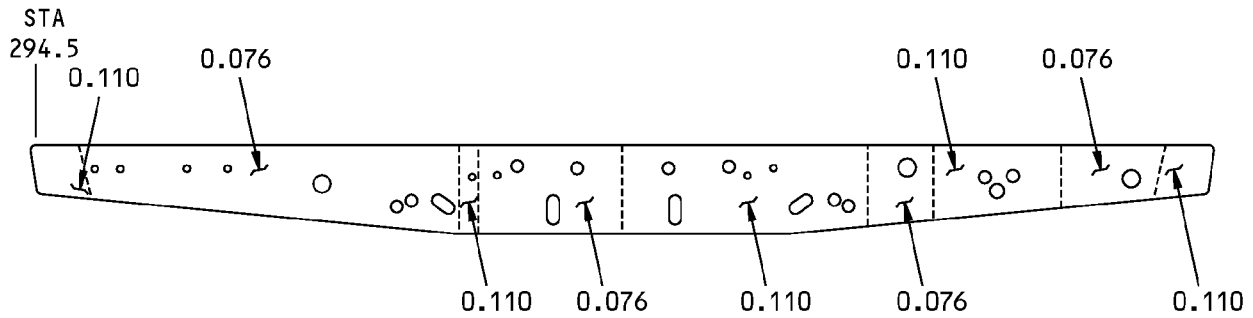


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**VIEW LOOKING FORWARD**

**Chem-milled Thicknesses for Figure 5, Item [2]  
Figure 11**

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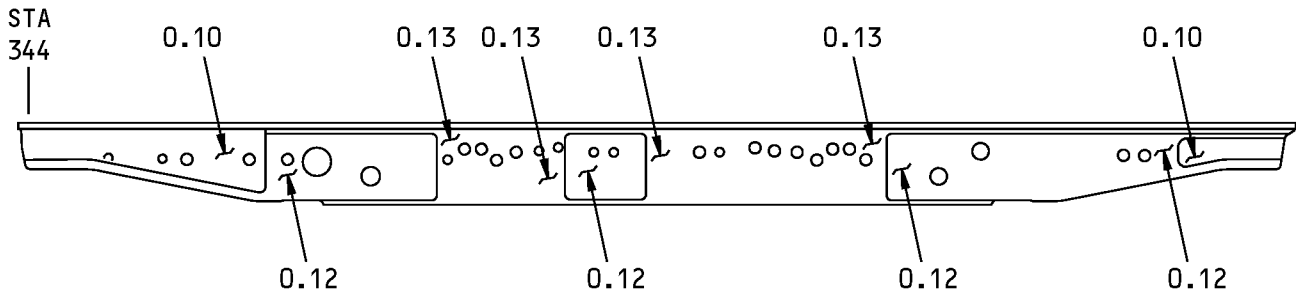


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**VIEW LOOKING FORWARD**

**Chem-milled Thicknesses for Figure 6, Item [2]  
Figure 12**

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**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**VIEW LOOKING FORWARD**

**Chem-milled Thicknesses for Figure 9, Item [1]  
Figure 13**



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# STRUCTURAL REPAIR MANUAL

## ALLOWABLE DAMAGE 1 - SECTION 41 FLOOR STRUCTURE

### 1. Applicability

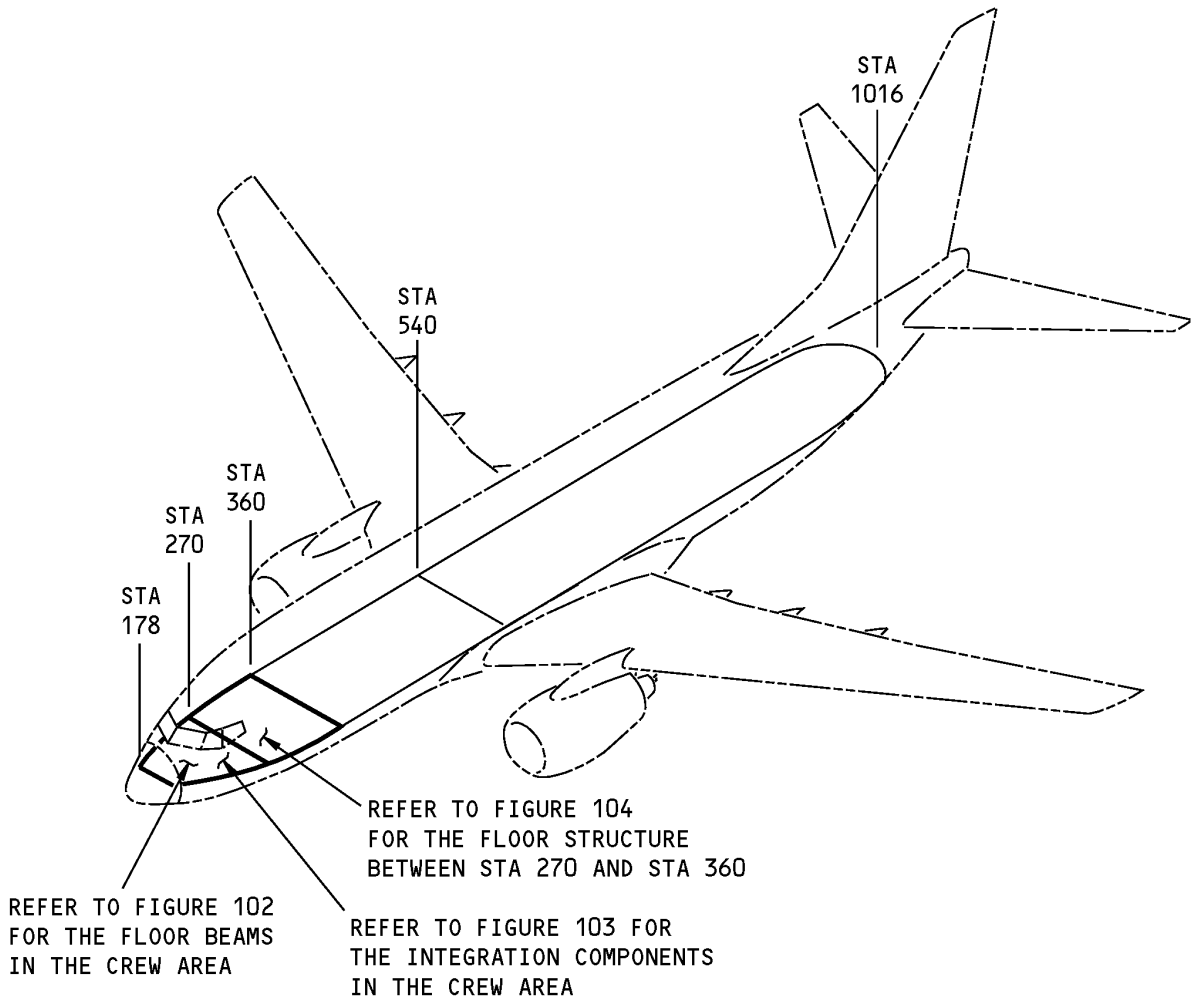
- A. This subject gives the allowable damage limits for the Section 41 floor structure shown in Section 41 Floor Structure Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. Only the basic configuration of the floor structure is shown. Refer to Boeing drawings for optional structure.

Table 101:

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS			
TYPE OF STRUCTURE	FIGURE	GROUP	PARAGRAPH
ANGLE ASSEMBLIES, ANGLES, SUPPORT ANGLES, CHANNELS, ANGLE SUPPORTS, J-BEAMS, CHANNEL ASSEMBLIES, CLIP ANGLES, STIFFENERS, TEE STIFFENERS, STIFFENER ASSEMBLIES, BULKHEAD ANGLES, PANEL ANGLES, TEE CLIPS, AND ANGLE STIFFENERS (EXTRUDED)	102, 103, 104	1	4.A
ANGLES, ANGLE SUPPORTS, CHANNELS, STIFFENERS, CHANNEL ASSEMBLIES, ANGLE STIFFENERS, INTERCOSTALS, CHANNEL STIFFENERS, CHANNEL BEAMS, BRACKETS, SUPPORT CHANNELS, CHANNEL DOUBLERS, AND INTERCOSTAL ASSEMBLIES (FORMED)	102, 103, 104	2	4.B
UPPER CHORDS, TEE CHORDS, LATERAL INTERCOSTALS, AND LOWER CHORDS (EXTRUDED)	102, 104	3	4.C
UPPER CHORDS, HARDPOINT CHORD, AND ANCHOR BEAMS (MACHINED)	102, 104	4	4.D
BEAM, J-BEAM, CHANNEL ASSEMBLIES, INTERCOSTALS, CHANNEL STIFFENERS, ANGLE STIFFENERS, STIFFENERS, ANGLES, SPLICE ANGLES, AND INTERCOSTAL ASSEMBLIES (MACHINED)	102, 103, 104	5	4.E
PANEL BREAKS AND FLAT FILLERS (EXTRUDED)	102, 104	6	4.F
STRAPS AND STABILIZER STRAPS (EXTRUDED)	102, 103, 104	7	4.G
TRANSVERSE BEAMS AT STA 312 THRU STA 360 (EXTRUDED)	104	8	4.H
UPPER CHORDS AND LOWER CHORDS - STA 277 THRU STA 360 (EXTRUDED AND MACHINED)	104	9	4.I
FLOOR WEB IN THE CREW AREA, AFT FLOOR WEB, AND REMOVABLE PANELS (BARE SHEET, CLAD SHEET)	102, 103	10	4.J
WEBS, BULKHEAD WEBS, WEB ASSEMBLIES, SHEAR TIES, SHEAR ASSEMBLIES, AND CHANNEL DOUBLERS (FORMED, BARE SHEET, CLAD SHEET)	102, 103, 104	11	4.K

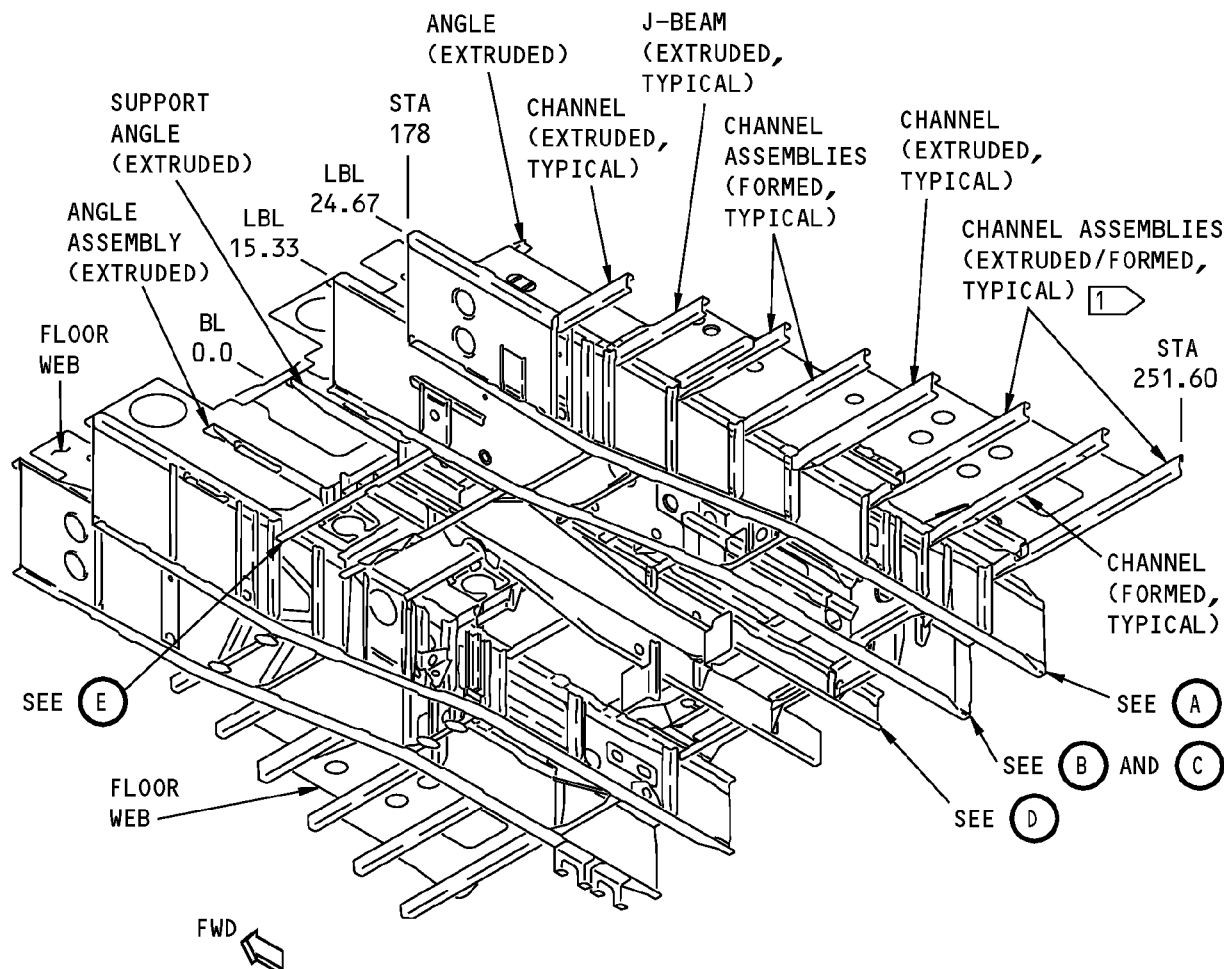


**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure Location  
Figure 101**

**737-800  
STRUCTURAL REPAIR MANUAL**



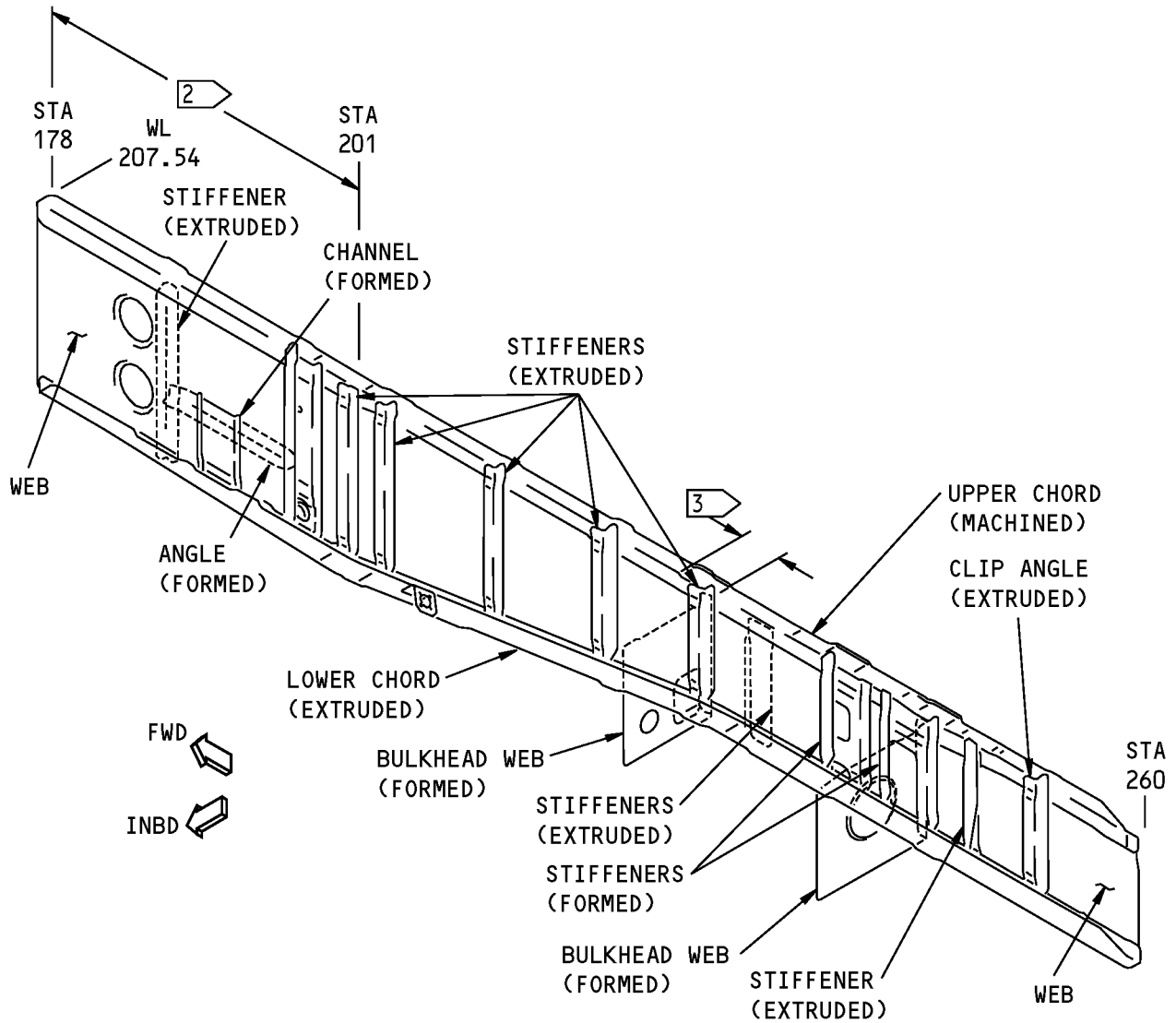
**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.

- 1 THE CHANNEL ASSEMBLY IS MADE FROM A FORMED CHANNEL AND AN EXTRUDED CLIP.
- 2 NO DAMAGE IS PERMITTED TO THE UPPER CHORD BETWEEN STA 178 AND STA 201.
- 3 NO DAMAGE IS PERMITTED TO THE UPPER CHORD AT THE SEAT RAIL ATTACH POINT, STA 226.5.

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 102 (Sheet 1 of 5)**

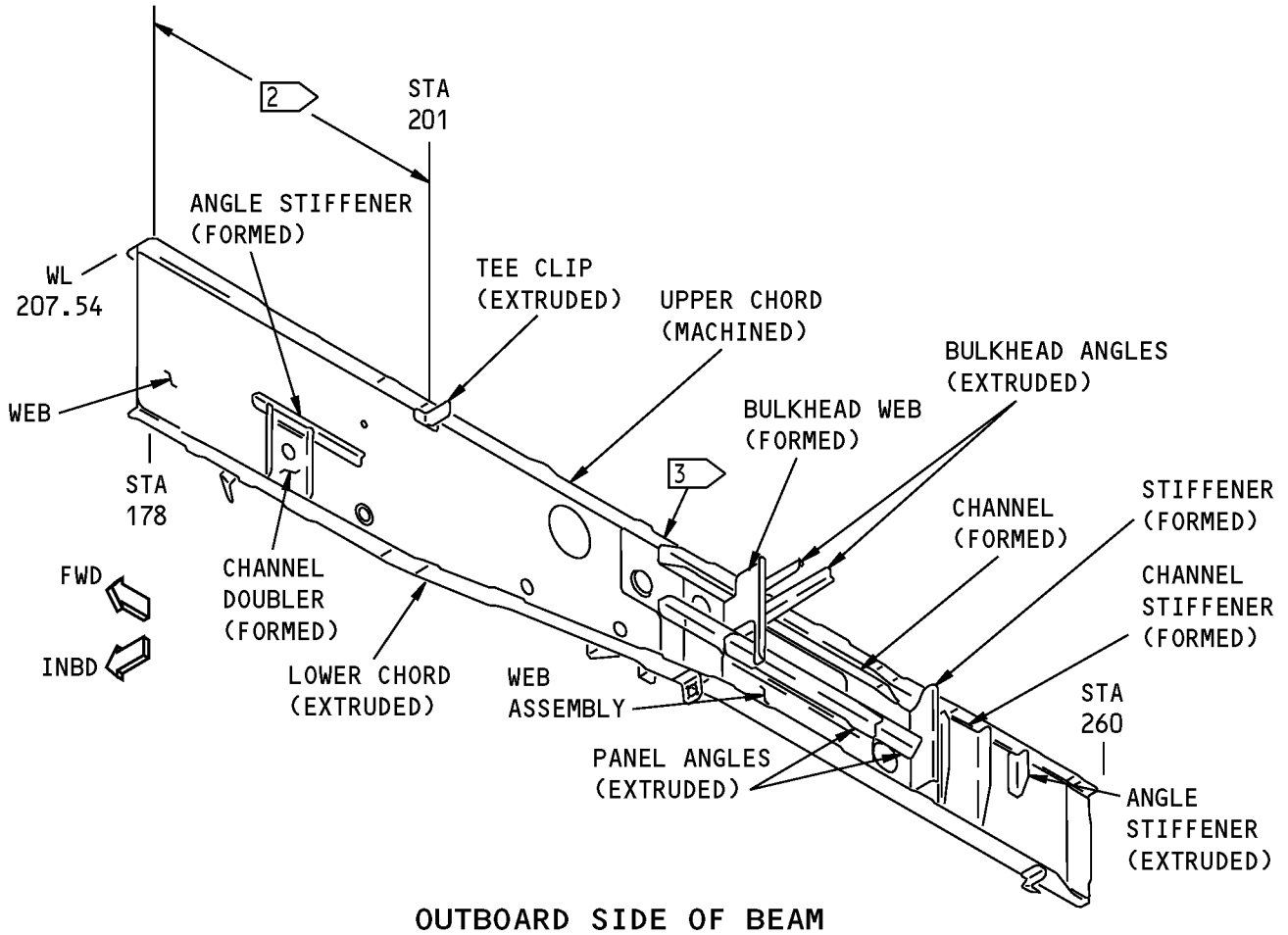
**737-800  
STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN,  
RIGHT SIDE IS ALMOST THE SAME  
BEAM INSTALLATION AT BL 24.67

**A**

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 102 (Sheet 2 of 5)**



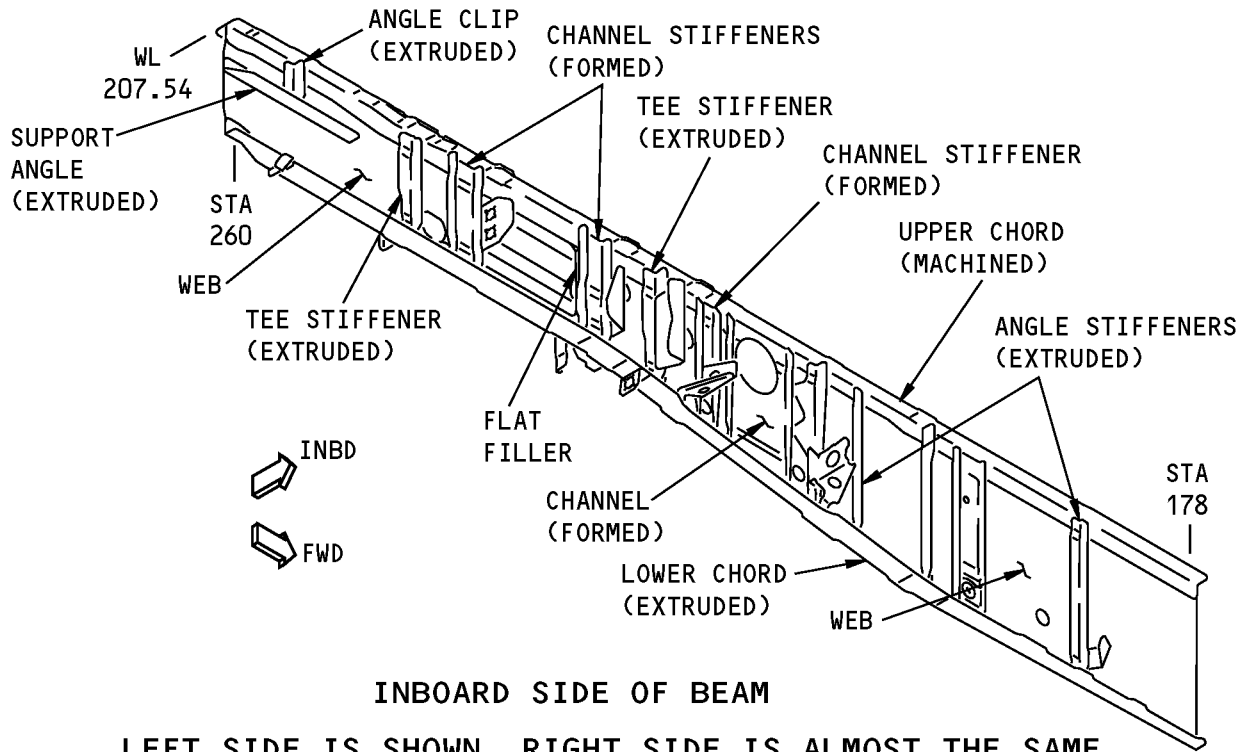
OUTBOARD SIDE OF BEAM

LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME  
BEAM INSTALLATION AT BL 15.33

(B)

Section 41 Floor Structure - Crew Area Floor Beams  
Figure 102 (Sheet 3 of 5)

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STRUCTURAL REPAIR MANUAL**



**INBOARD SIDE OF BEAM**

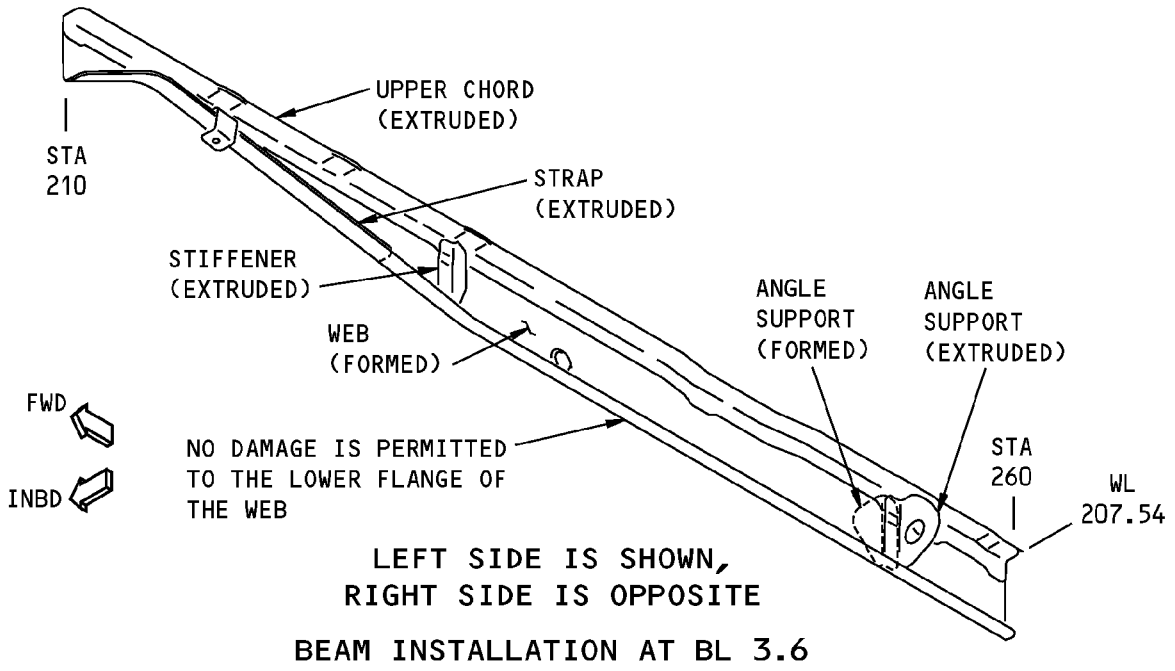
**LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME**

**BEAM INSTALLATION AT BL 15.33**

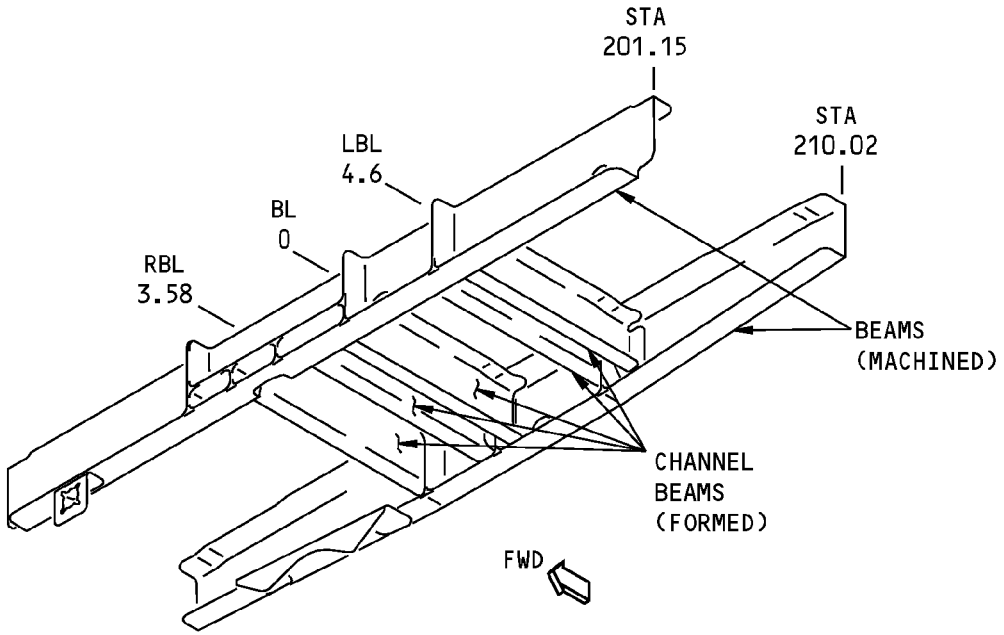
**(C)**

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 102 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



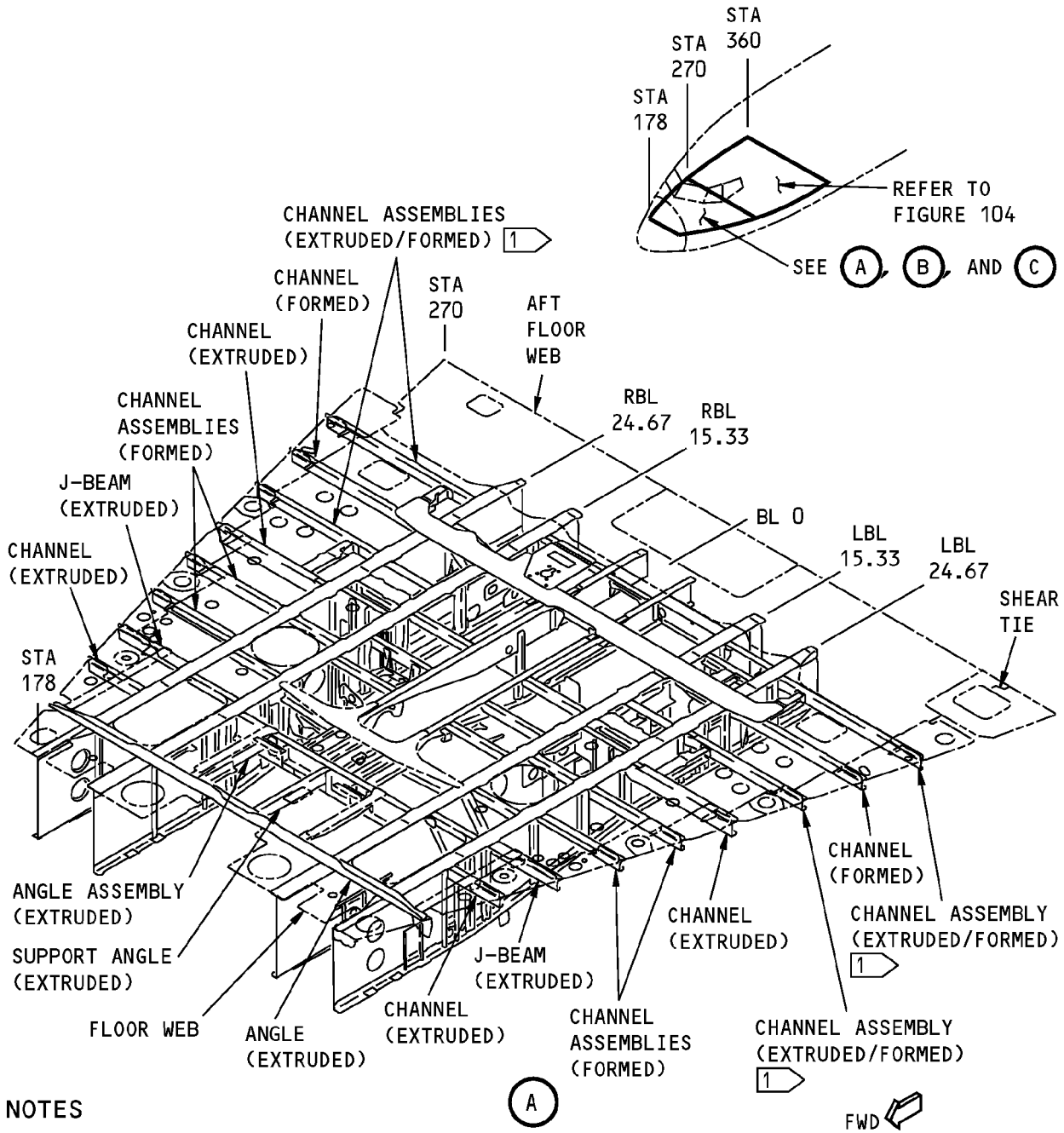
(D)



(E)

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 102 (Sheet 5 of 5)**

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STRUCTURAL REPAIR MANUAL**



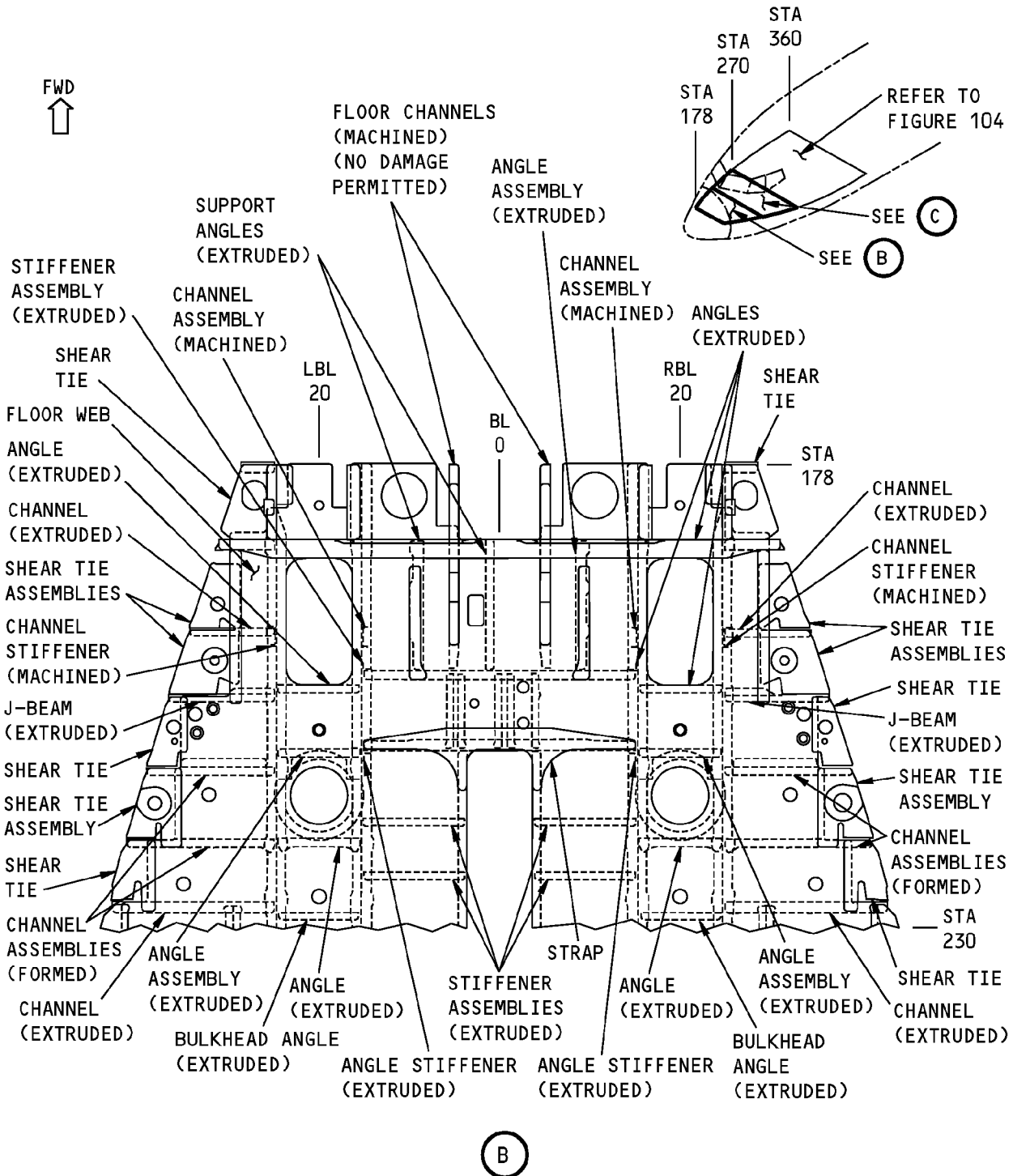
**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.

**1** THE CHANNEL ASSEMBLY IS MADE FROM A FORMED CHANNEL AND AN EXTRUDED CLIP.

**Section 41 Floor Structure - Integration Components in the Crew Area  
Figure 103 (Sheet 1 of 3)**

**STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Integration Components in the Crew Area  
Figure 103 (Sheet 2 of 3)**

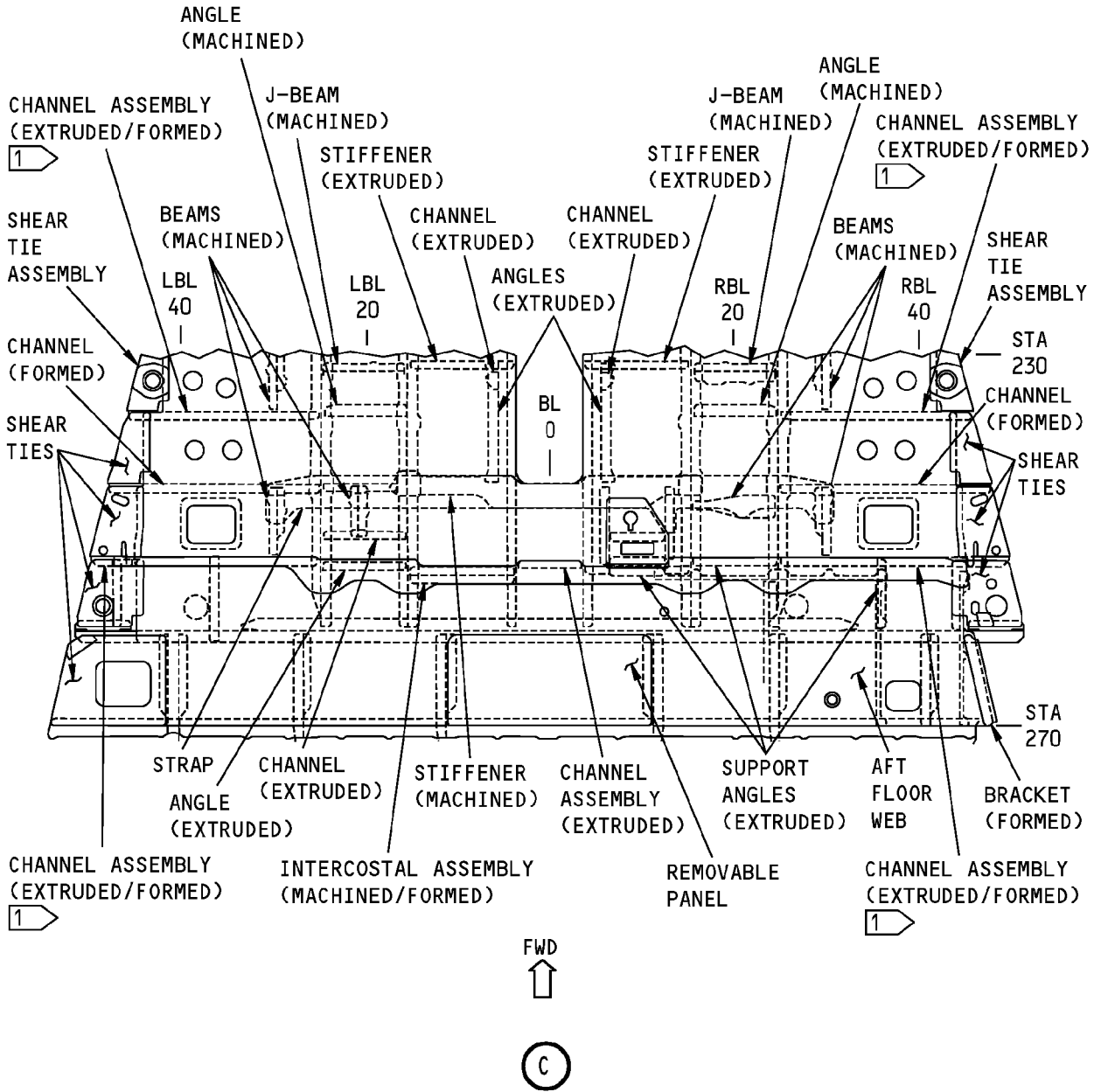
ALLOWABLE DAMAGE 1

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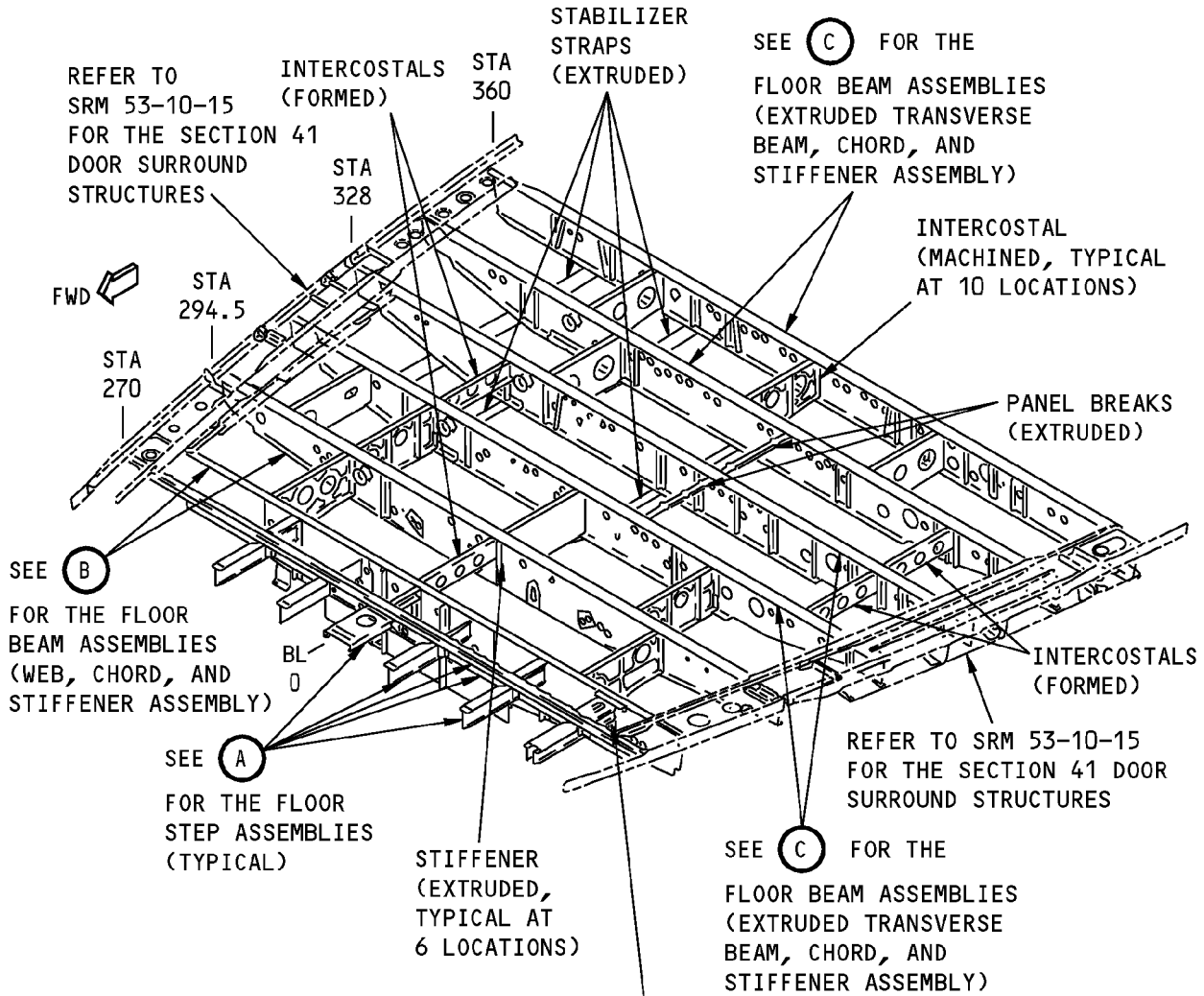
D634A210





**Section 41 Floor Structure - Integration Components in the Crew Area**  
**Figure 103 (Sheet 3 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



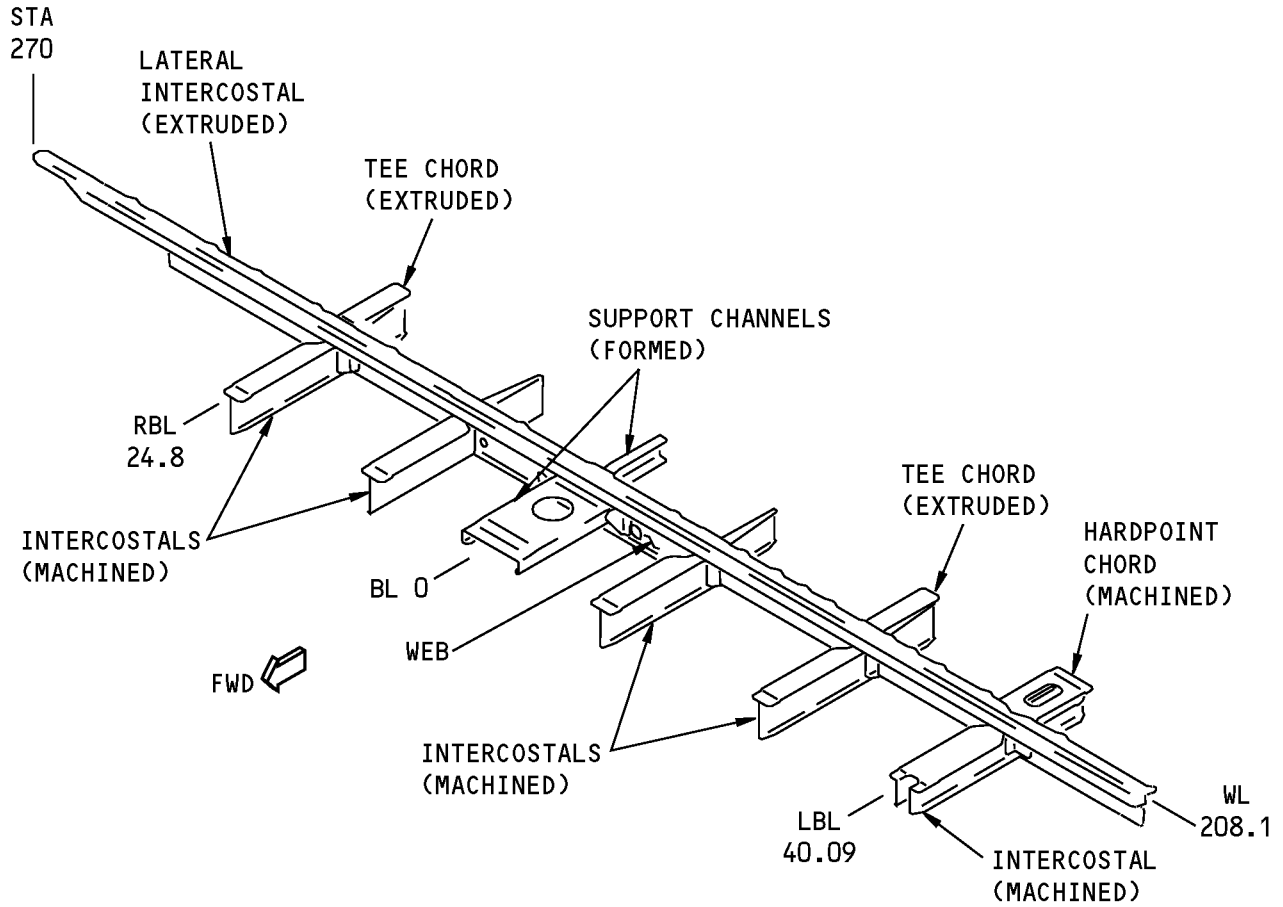
NO DAMAGE IS PERMITTED  
TO THE CLIP AT STA 277  
AND LBL 40

**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.
- REFER TO TABLE 101 FOR THE ALLOWABLE DAMAGE LIMITS.

**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 104 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



**FLOOR STEP ASSEMBLY**

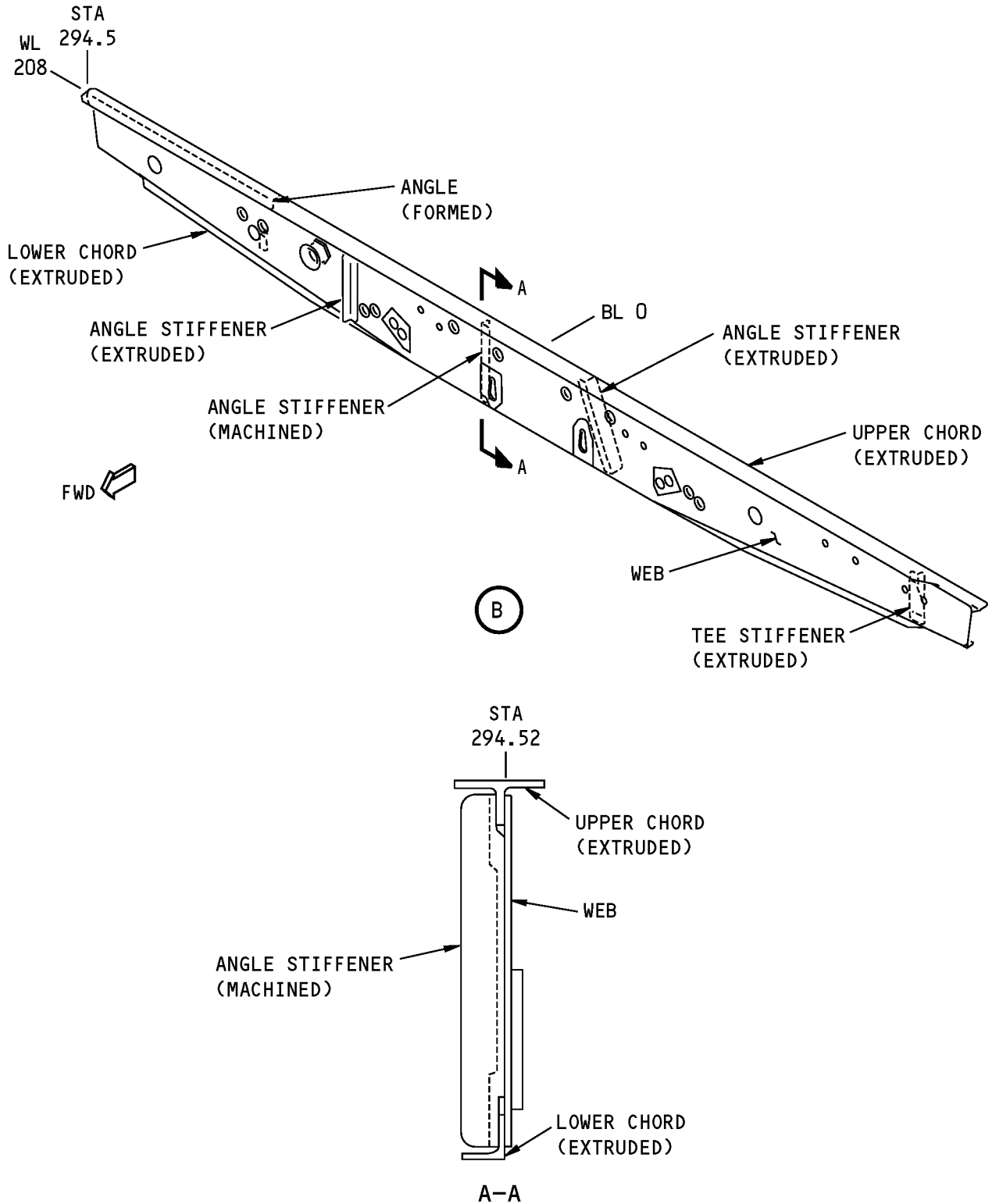
**A**

**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 104 (Sheet 2 of 4)**

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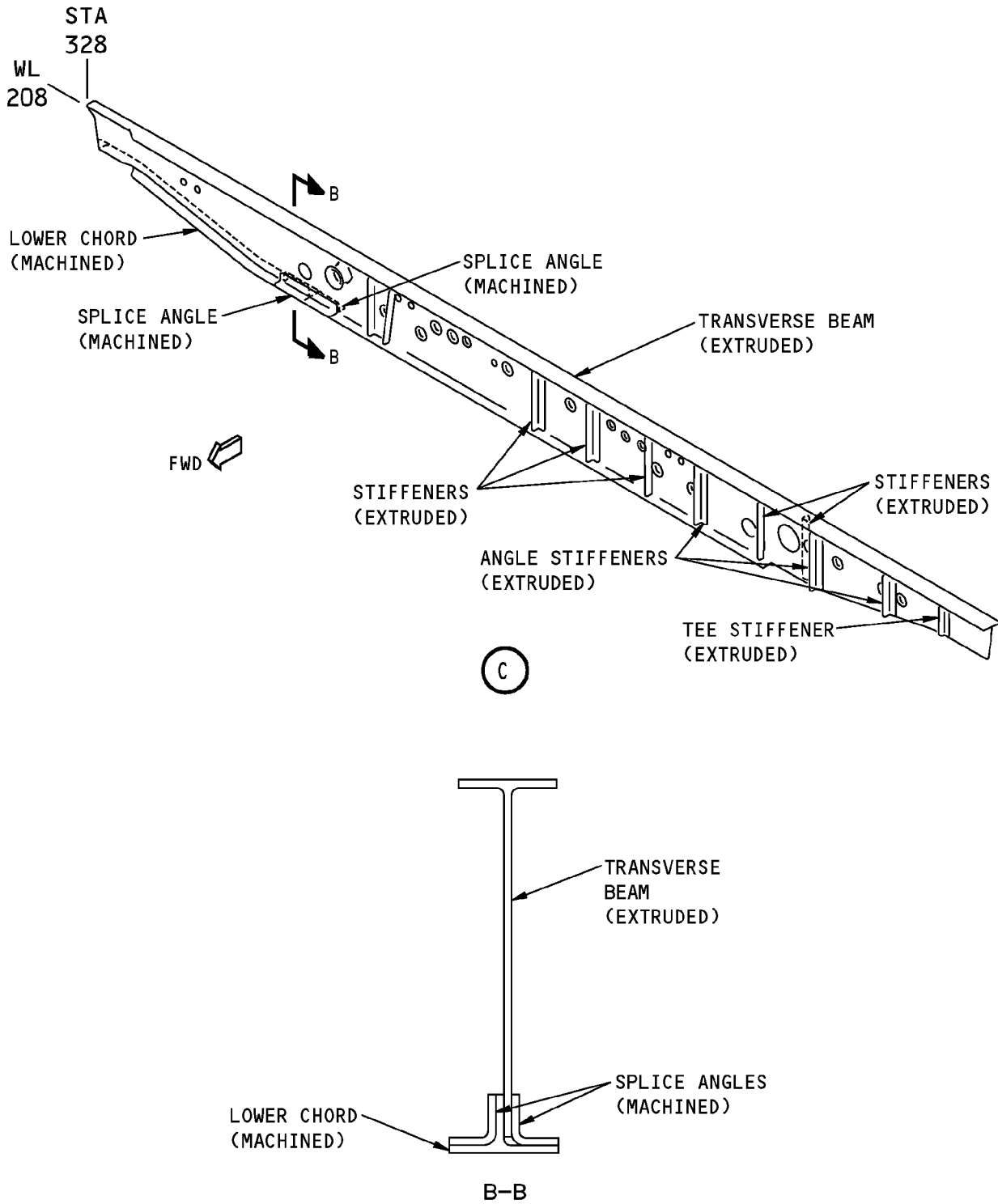
**53-10-51**  
ALLOWABLE DAMAGE 1  
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**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 104 (Sheet 3 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 104 (Sheet 4 of 4)**



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### 2. General

- A. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
- C. Apply one of the two finishes to the reworked areas:
  - (1) Apply two layers of BMS 10-11, Type I, primer. Refer to SOPM 20-41-02 and AMM 51-21-00/701.
  - (2) Apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II, enamel. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

- A. Group 1 Parts: Angle Assemblies, Angles, Support Angles, Channels, Angle Supports, J-Beams, Channel Assemblies, Clip Angles, Stiffeners, Tee Stiffeners, Stiffener Assemblies, Bulkhead Angles, Panel Angles, Tee Clips, and Angle Stiffeners - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
  - (4) Holes and Punctures:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .
      - 1) Detail J is permitted only for beam stiffeners.
- B. Group 2 Parts: Angles, Angle Supports, Channels, Stiffeners, Channel Assemblies, Angle Stiffeners, Intercostals, Channel Stiffeners, Channel Beams, Brackets, Support Channels, Channel Doublers, and Intercostal Assemblies - Formed
  - (1) Cracks:



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## STRUCTURAL REPAIR MANUAL

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , K and N .
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , K , and N .
- (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
- (4) Holes and Punctures:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .
    - 1) Detail J is permitted only for beam stiffeners.
- C. Group 3 Parts: Upper Chords, Tee Chords, Lateral Intercostals, and Lower Chords - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- D. Group 4 Parts: Upper Chords, Hardpoint Chord, and Anchor Beams - Machined
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- E. Group 5 Parts: Beam, J-Beam, Channel Assemblies, Intercostals, Channel Stiffeners, Angle Stiffeners, Stiffeners, Angles, Splice Angles, and Intercostal Assemblies - Machined
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , and H .
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
  - (4) Holes and Punctures:

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## STRUCTURAL REPAIR MANUAL

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details I and J .
  - 1) Detail J is permitted only for beam stiffeners.
- F. Group 6 Parts: Panel Breaks and Flat Fillers - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
  - (4) Holes and Punctures are permitted if they are:
    - (a) A maximum of 0.25 inch in diameter
    - (b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge
    - (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- G. Group 7 Parts: Straps and Extruded Stabilizer Straps - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- H. Group 8 Parts: Transverse Beams between STA 312 and STA 360 - Extruded
  - (1) Web area:
    - (a) Cracks:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , L , and O .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail O .
  - (2) Flange areas:
    - (a) Cracks:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .

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## STRUCTURAL REPAIR MANUAL

- (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , and O .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- I. Group 9 Parts: Upper Chords and Lower Chords between STA 277 and STA 360 - Extruded and Machined
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , and P .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- J. Group 10 Parts: Floor Web in the Crew Area, Aft Floor Web, and the Removable Panels - Formed Bare and Clad Sheet
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
  - (4) Holes and Punctures are permitted if they are:
    - (a) A maximum of 0.25 inch in diameter
    - (b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge
    - (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- K. Group 11 Parts: Webs, Bulkhead Webs, Web Assemblies, Shear Ties, Shear Assemblies and Channel Doublers - Formed Bare and Clad Sheet
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Details A , B , C , E , L , M , and N .
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail D .
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 105/ALLOWABLE DAMAGE 1, Detail M , i f they are:

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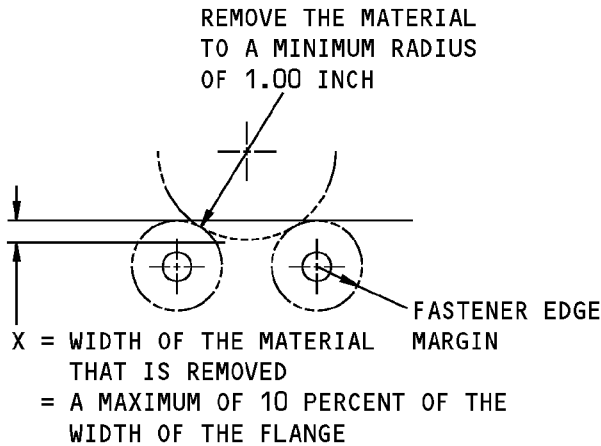


**737-800**

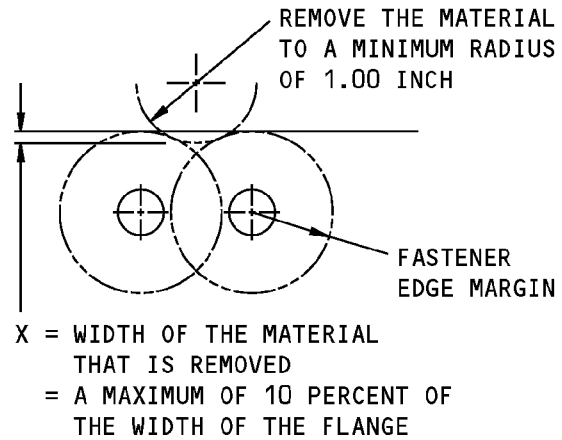
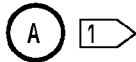
**STRUCTURAL REPAIR MANUAL**

- (a) A maximum of 0.25 inch in diameter
- (b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge
- (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

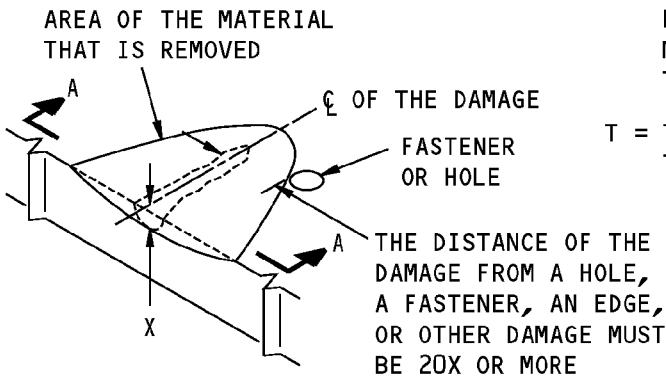
**STRUCTURAL REPAIR MANUAL**



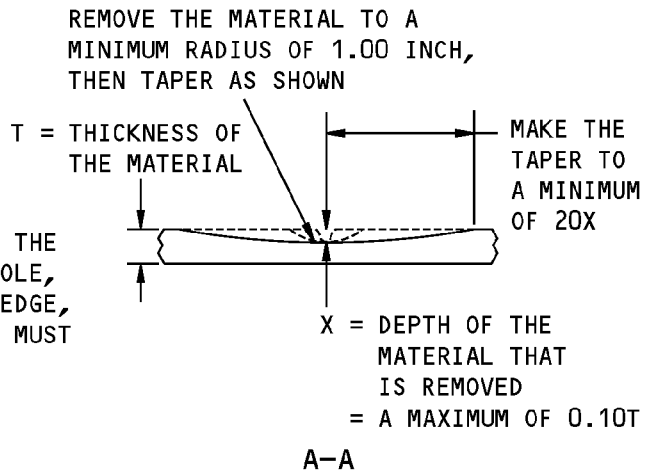
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**



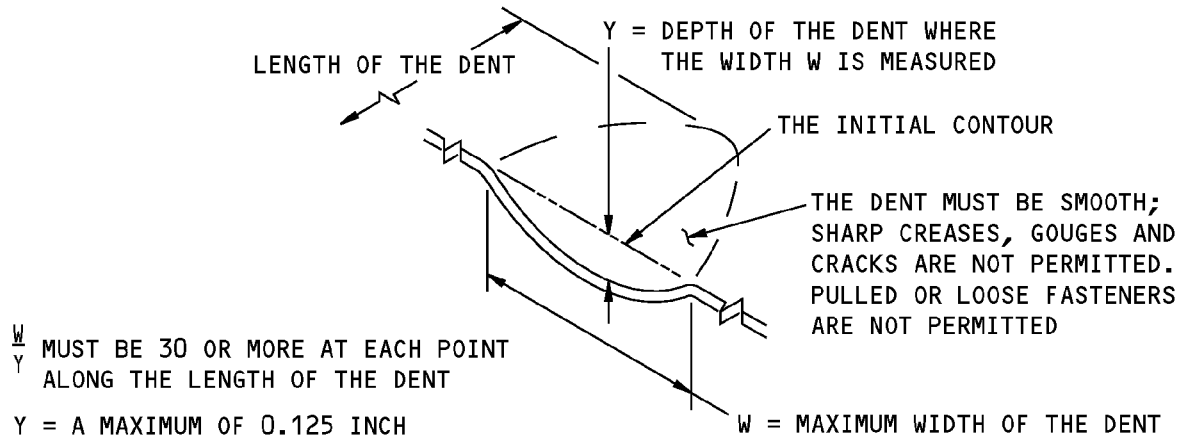
**NOTES**

1 THIS DETAIL IS NOT PERMITTED FOR THE LOWER CHORDS ON FLOOR BEAMS AT THE FOLLOWING LOCATIONS:

- STA 277.0, FROM BL 0.0 THRU RBL 51.0
- STA 294.5, FROM BL 0.0 THRU RBL 31.6
- STA 328.0, FROM LBL 45.5 THRU BL 0.0

**Allowable Damage Limits  
Figure 105 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

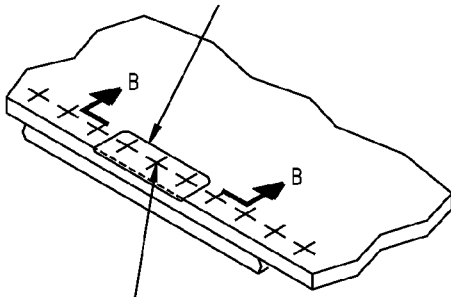


**NOTE:** DENTS CAN NOT EXTEND ACROSS ATTACHED STRUCTURE. DENTS ARE PERMITTED IN FREE FLANGES ONLY FOR PARTS OTHER THAN WEBS AND SHEAR TIES.

**DENT THAT IS PERMITTED**

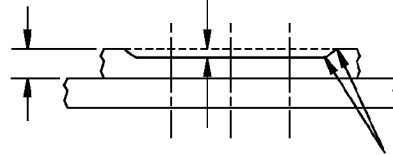
**D**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

T = THICKNESS OF THE MATERIAL  
X = DEPTH OF THE MATERIAL THAT IS REMOVED = A MAXIMUM OF 0.10T



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

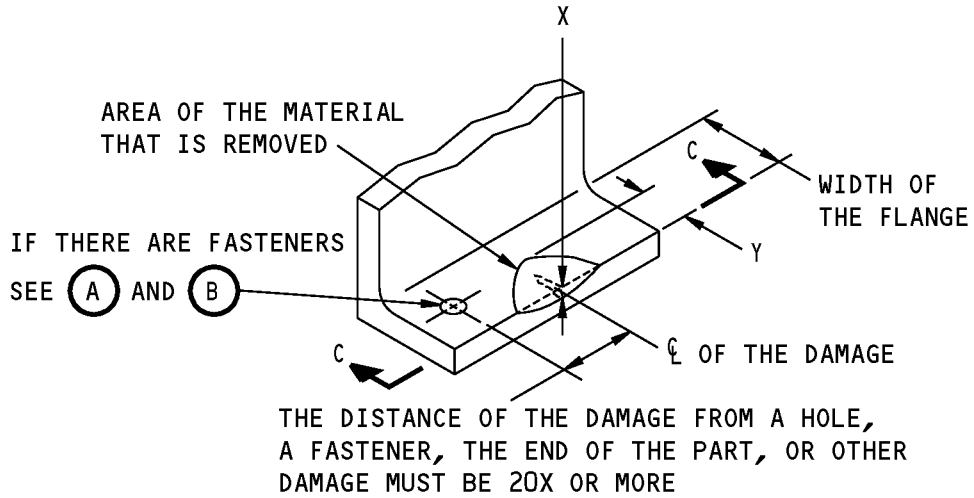
B-B

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

**E**

**Allowable Damage Limits  
Figure 105 (Sheet 2 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

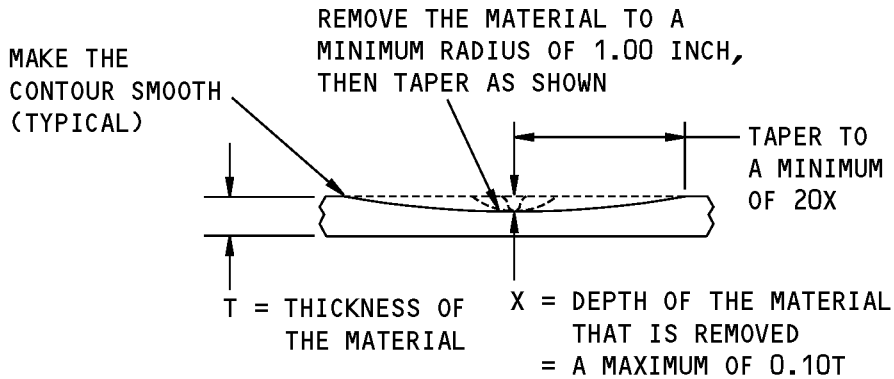


Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

NOTE: AN ANGLE IS SHOWN, BUT THE DETAIL CAN ALSO BE APPLICABLE TO A TEE SECTION.

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

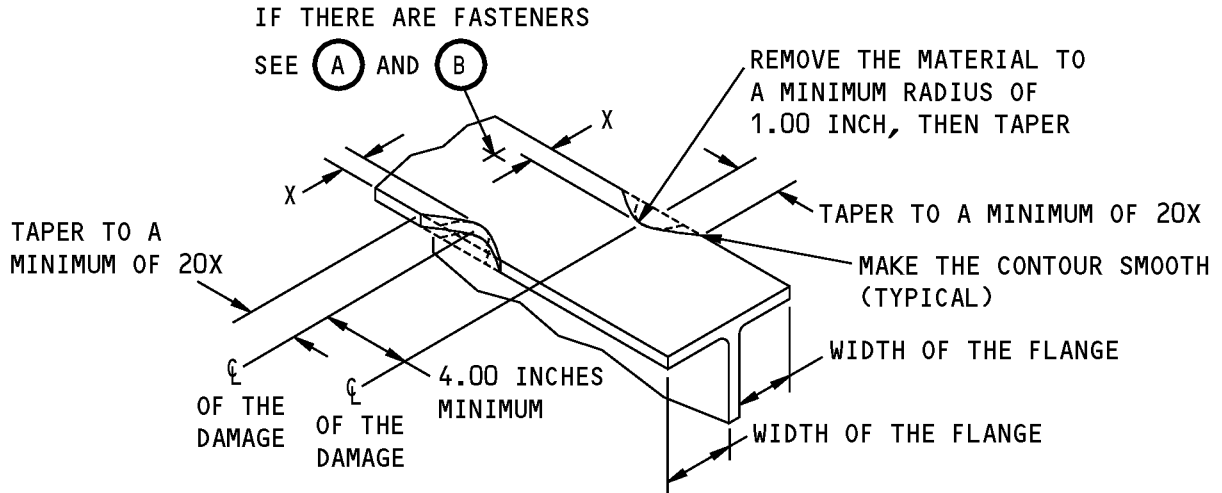
(F)



C-C

**Allowable Damage Limits  
Figure 105 (Sheet 3 of 11)**

**STRUCTURAL REPAIR MANUAL**

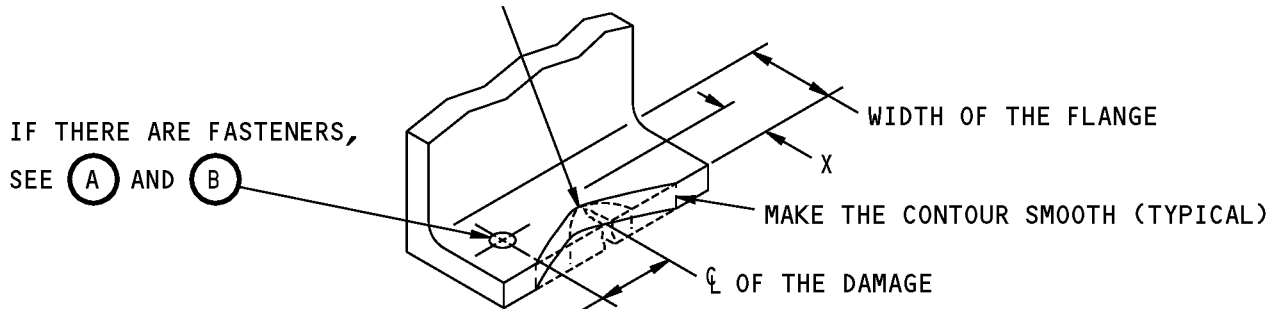


X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**



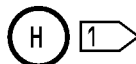
REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN



TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE,  
A FASTENER, AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE

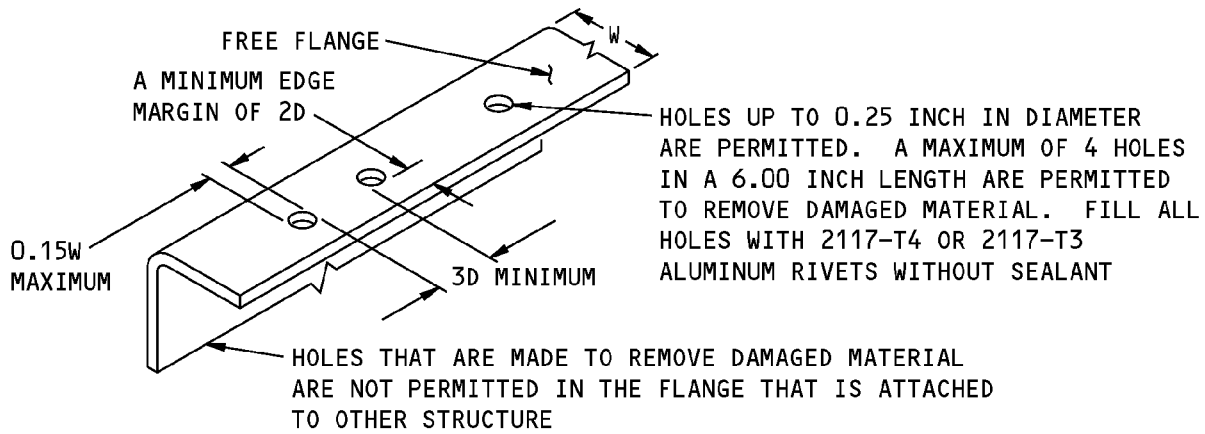
X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**



**Allowable Damage Limits  
Figure 105 (Sheet 4 of 11)**

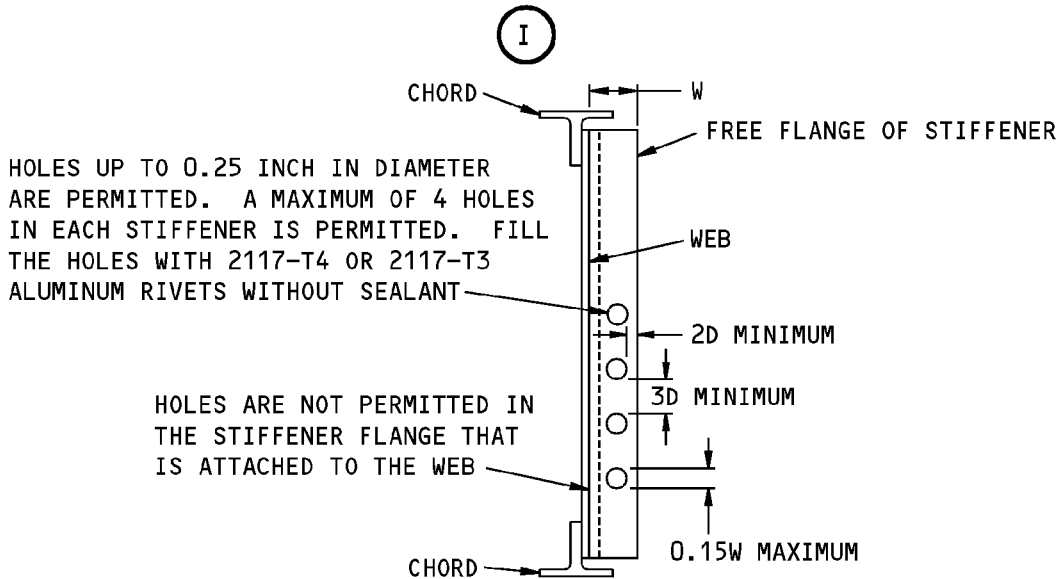
**STRUCTURAL REPAIR MANUAL**



D = THE DIAMETER OF THE HOLE  
W = THE WIDTH OF THE FLANGE

**NOTE:** HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN A FLANGE**



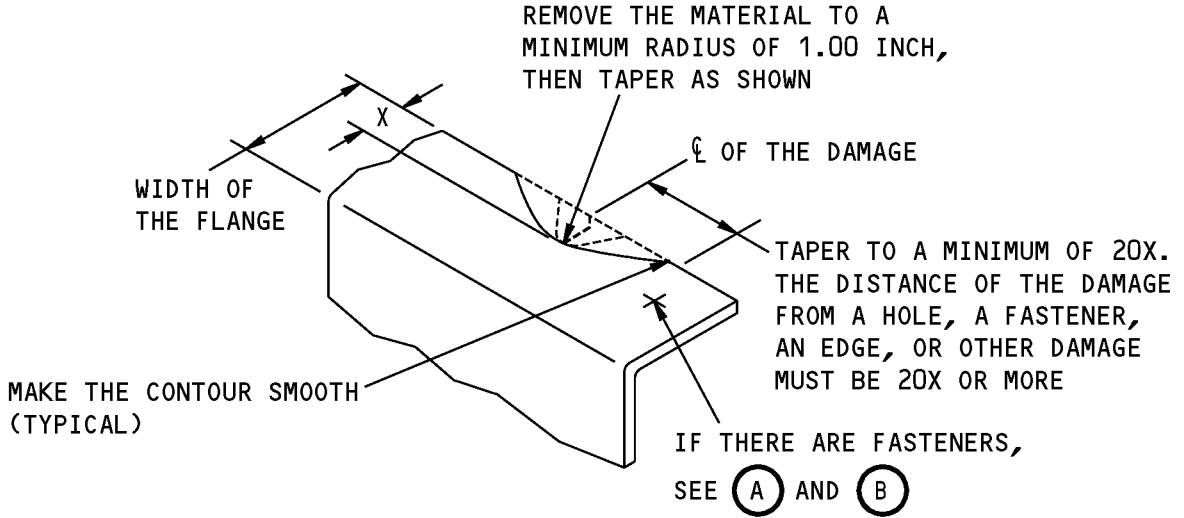
D = THE DIAMETER OF THE HOLE  
W = THE WIDTH OF THE STIFFENER FLANGE

**HOLES THAT ARE PERMITTED TO REMOVE DAMAGED MATERIAL FROM THE FREE FLANGES OF THE WEB STIFFENERS**

**J**

**Allowable Damage Limits  
Figure 105 (Sheet 5 of 11)**

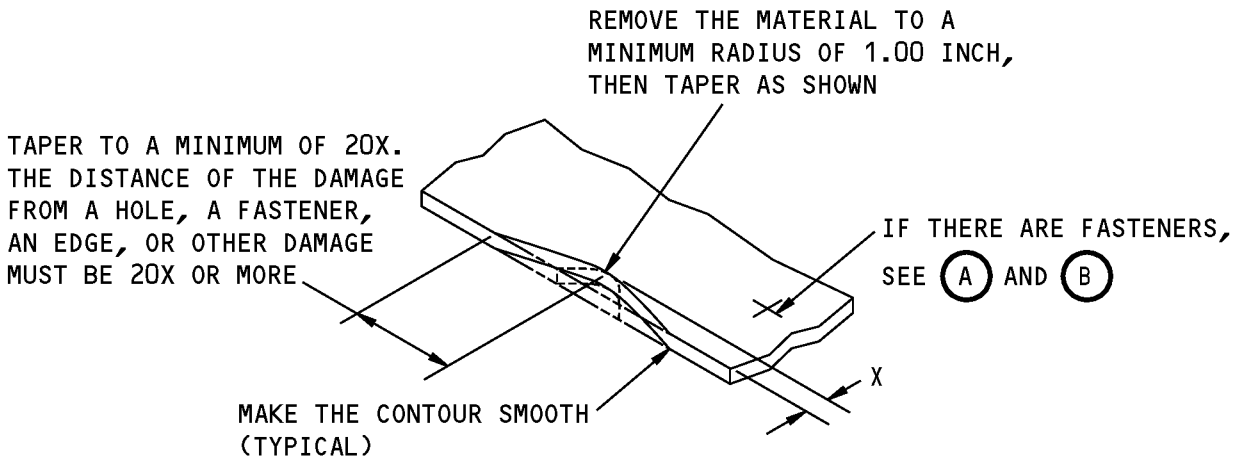
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(K)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.20 INCH

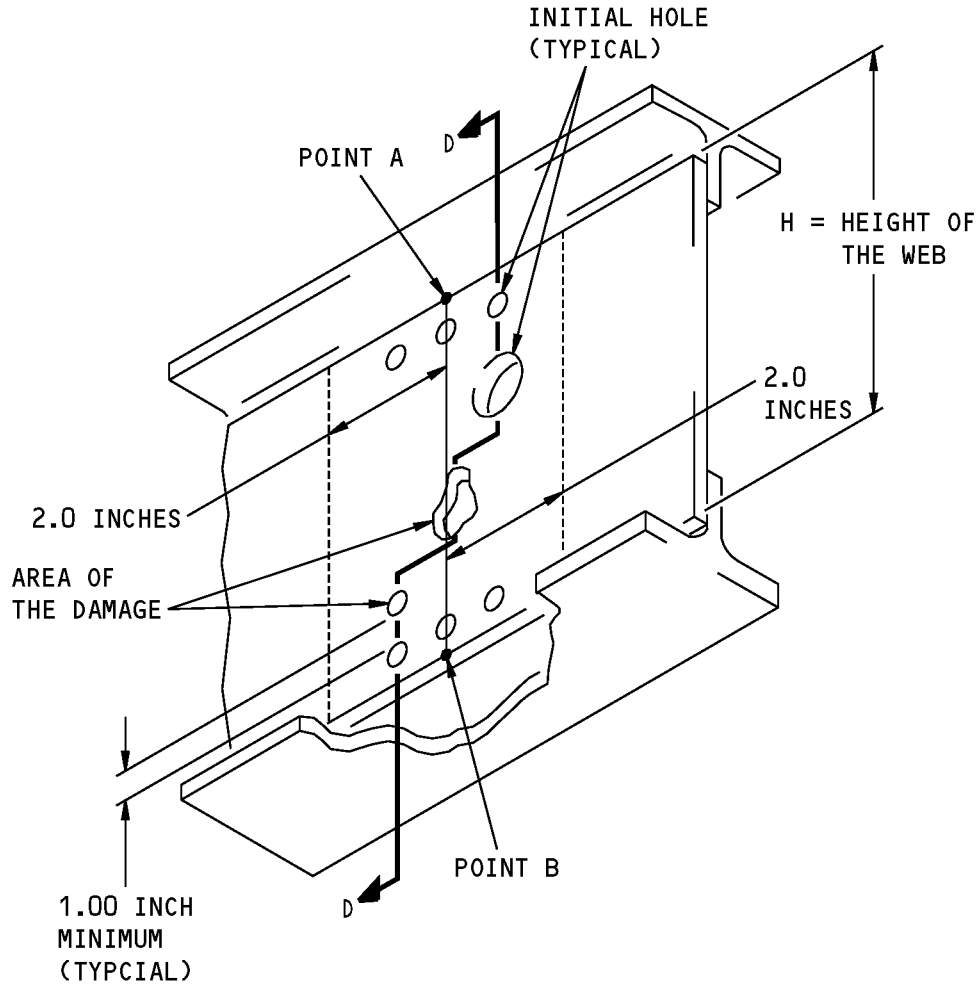
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(L)

**Allowable Damage Limits  
 Figure 105 (Sheet 6 of 11)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER**

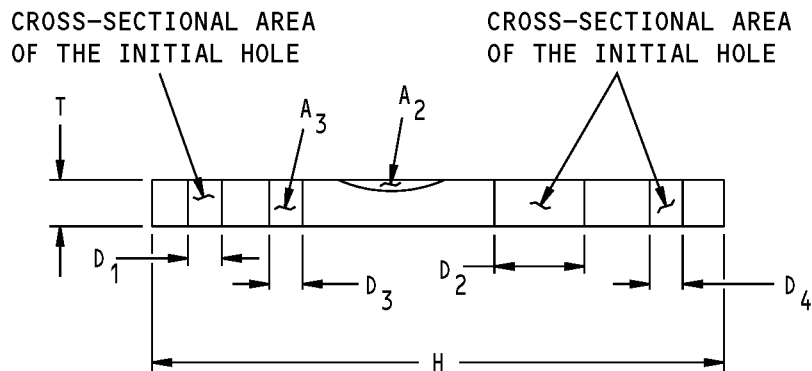
(M)

**Allowable Damage Limits  
Figure 105 (Sheet 7 of 11)**

D634A210

**53-10-51**  
ALLOWABLE DAMAGE 1  
Page 126  
Nov 01/2003

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STRUCTURAL REPAIR MANUAL**



D = DIAMETER OF THE HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB AS GIVEN BY THE NOMINAL THICKNESS ON THE PRODUCTION DRAWING

A<sub>1</sub> = INITIAL AREA OF THE WEB

= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)

$$= HT - D_1T - D_2T - D_4T$$

A<sub>2</sub> = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

A<sub>3</sub> = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_2 + A_3}{A_1} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

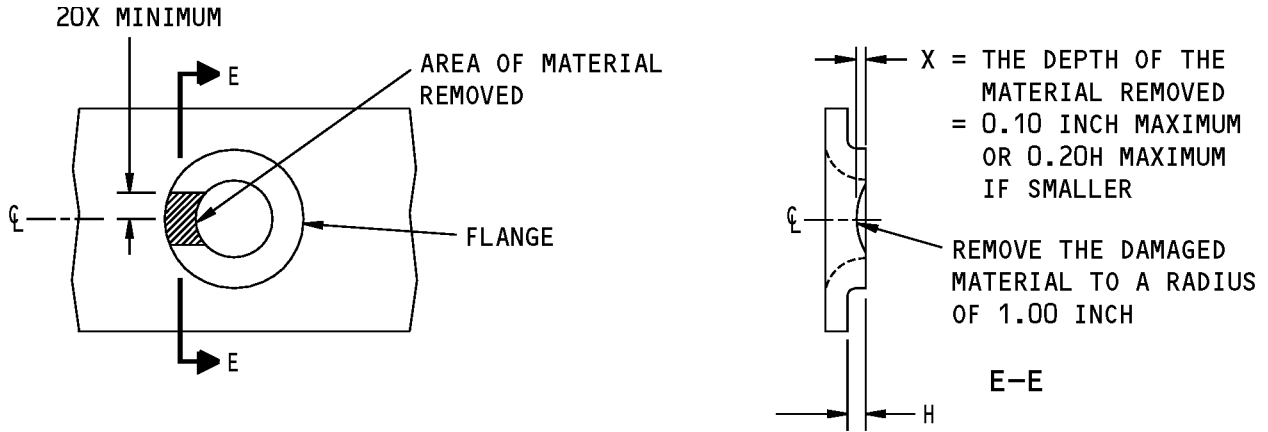
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

**(ROTATED 90° CLOCKWISE)  
D-D**

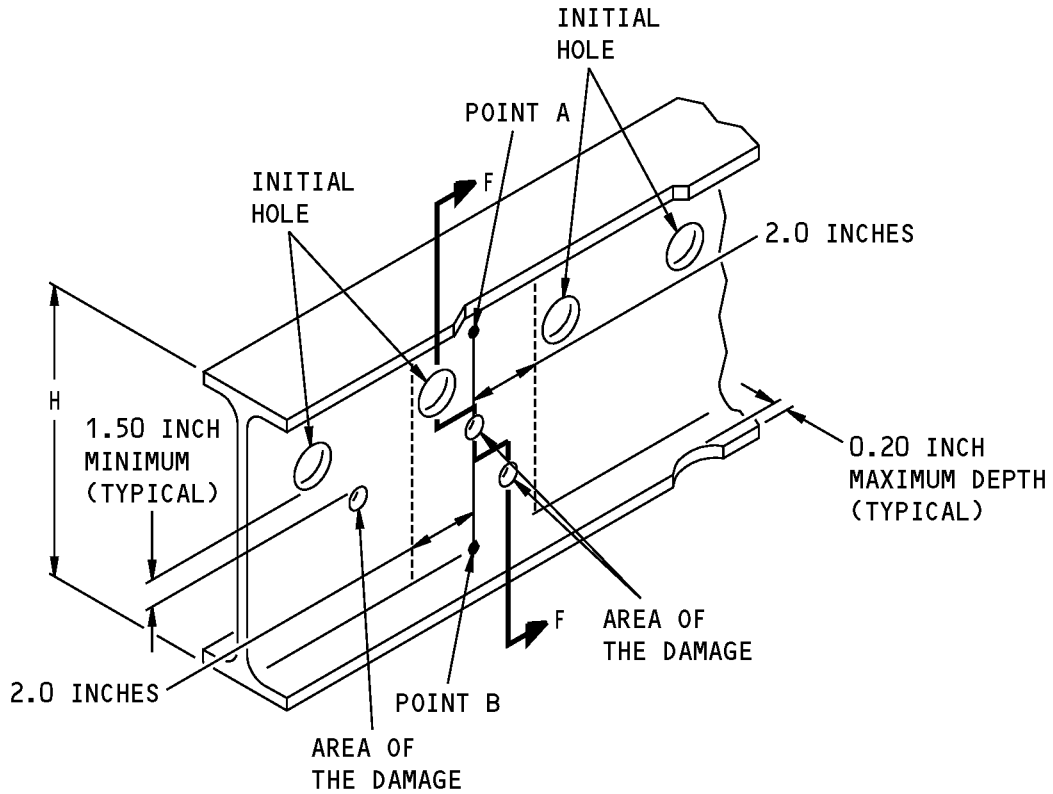
**Allowable Damage Limits  
Figure 105 (Sheet 8 of 11)**

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE**

(N)

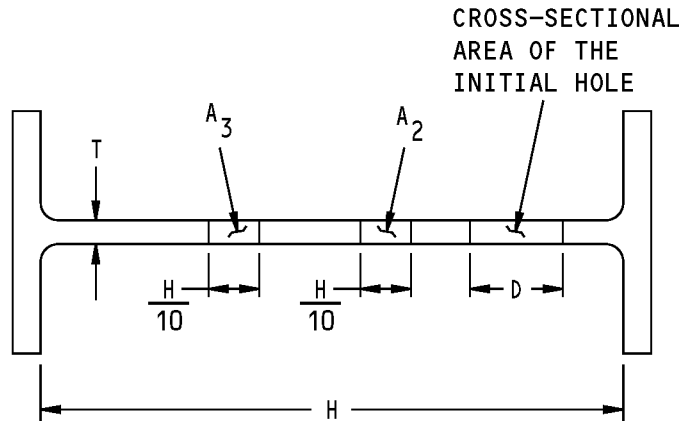


**REMOVAL OF DAMAGED MATERIAL FROM EXTRUDED FLOOR BEAMS**

(O)

**Allowable Damage Limits  
Figure 105 (Sheet 9 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

$\frac{H}{10}$  = MAXIMUM DIAMETER OF THE DAMAGE (THE MAXIMUM DIAMETER MUST NOT BE MORE THAN 0.75 INCH)

T = THICKNESS OF THE WEB AS GIVEN BY THE NOMINAL THICKNESS ON THE PRODUCTION DRAWING

$A_1$  = INITIAL AREA OF THE WEB  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 = HT - DT

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

$A_3$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_2 + A_3}{A_1} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

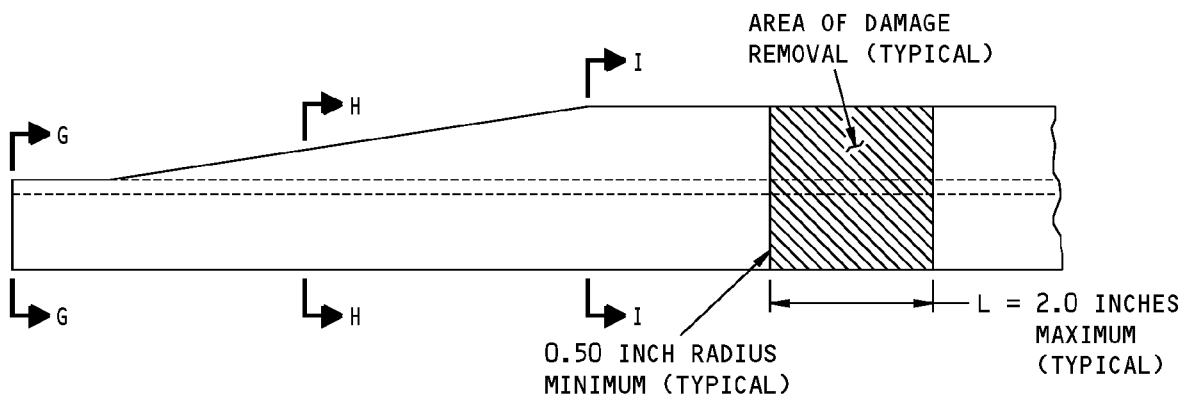
= 10 PERCENT MAXIMUM

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

**(ROTATED 90° CLOCKWISE)  
F-F**

**Allowable Damage Limits  
Figure 105 (Sheet 10 of 11)**

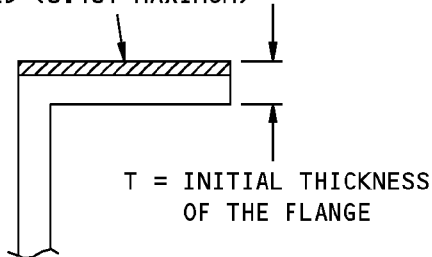
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE FROM A FLOOR BEAM  
STATION 277 THRU STATION 360**

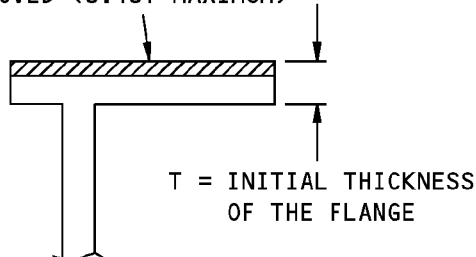
(P)

MATERIAL THAT IS  
REMOVED (0.10T MAXIMUM)



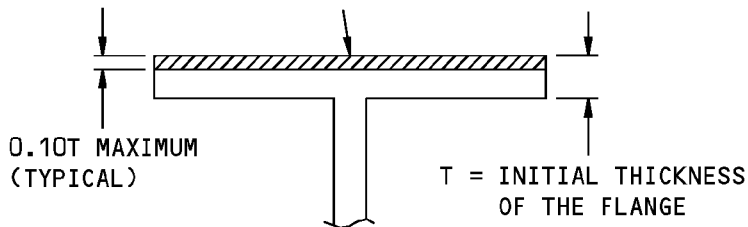
G-G

MATERIAL THAT IS  
REMOVED (0.10T MAXIMUM)



H-H

MATERIAL THAT IS  
REMOVED (0.10T MAXIMUM)



I-I

**NOTES**

- UPPER FLANGE IS SHOWN. THE DAMAGE LIMITS ARE THE SAME FOR THE LOWER FLANGE.
- ONLY ONE DAMAGE LOCATION IS PERMITTED BETWEEN TWO LOWER STABILIZER STRAPS.
- USE FILLERS AS NECESSARY WHERE THE FLOOR BEAM IS ATTACHED TO ADJACENT STRUCTURE. THE MAXIMUM GAP BEFORE FASTENERS ARE INSTALLED IS 0.01 INCH.

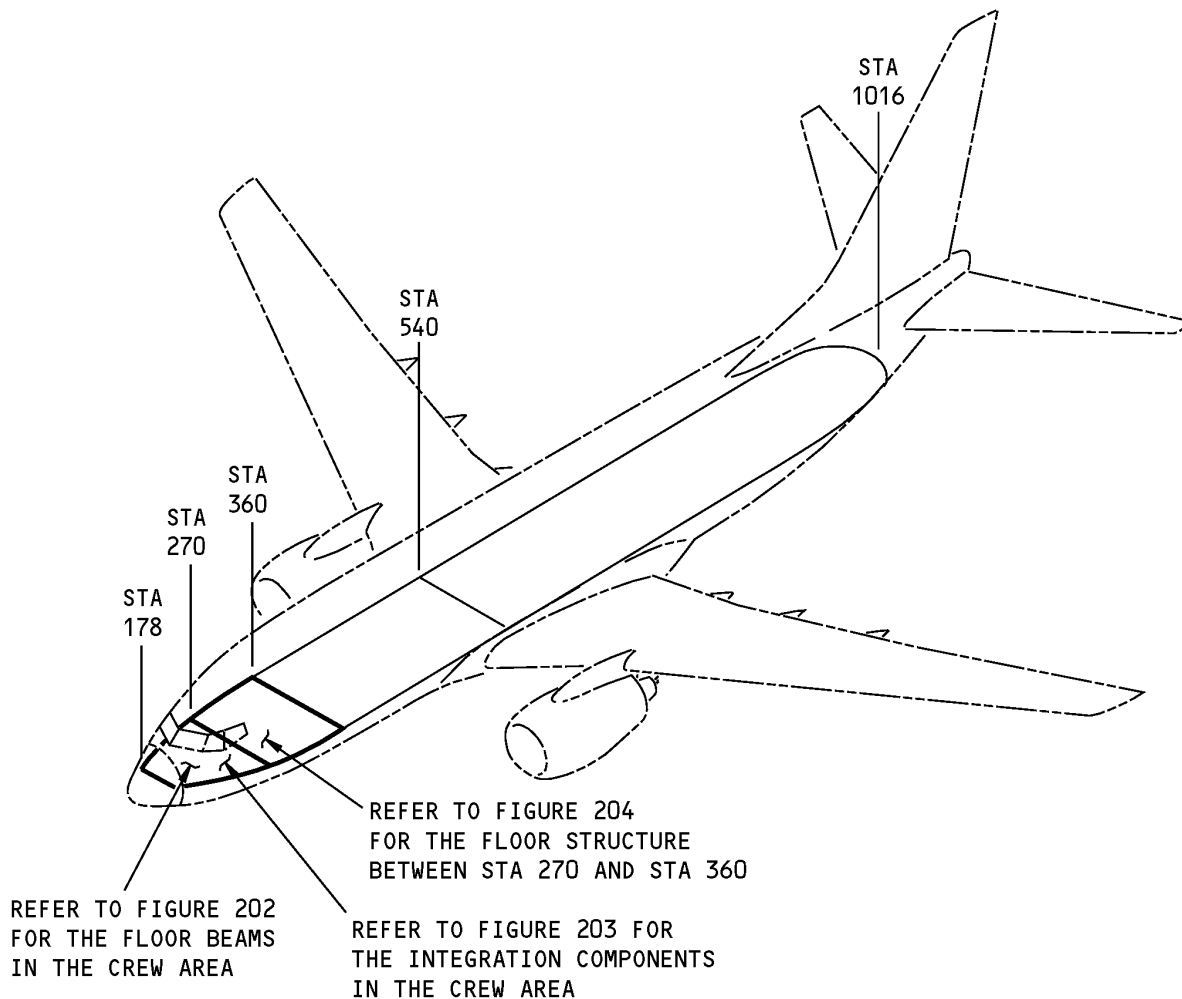
**Allowable Damage Limits  
Figure 105 (Sheet 11 of 11)**

**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 41 FLOOR STRUCTURE**

**1. Applicability**

- A. Repair 1 is applicable to damage to all the parts of the section 41 floor structure identified in Section 41 Floor Structure Location, Figure 201/REPAIR 1 thru Section 41 Floor Structure - Station 270 thru Station 360, Figure 204/REPAIR 1.
- B. Repair 1 is not applicable to damage to the floor webs, shear ties, and removable panel. Refer to 53-10-51, Repair 2 for the repair of the floor webs, shear ties, and removable panel.



**Section 41 Floor Structure Location  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.



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## STRUCTURAL REPAIR MANUAL

- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

### 3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-10-51	FUSELAGE FLOOR STRUCTURE - SECTION 41

### 4. Repair Instructions

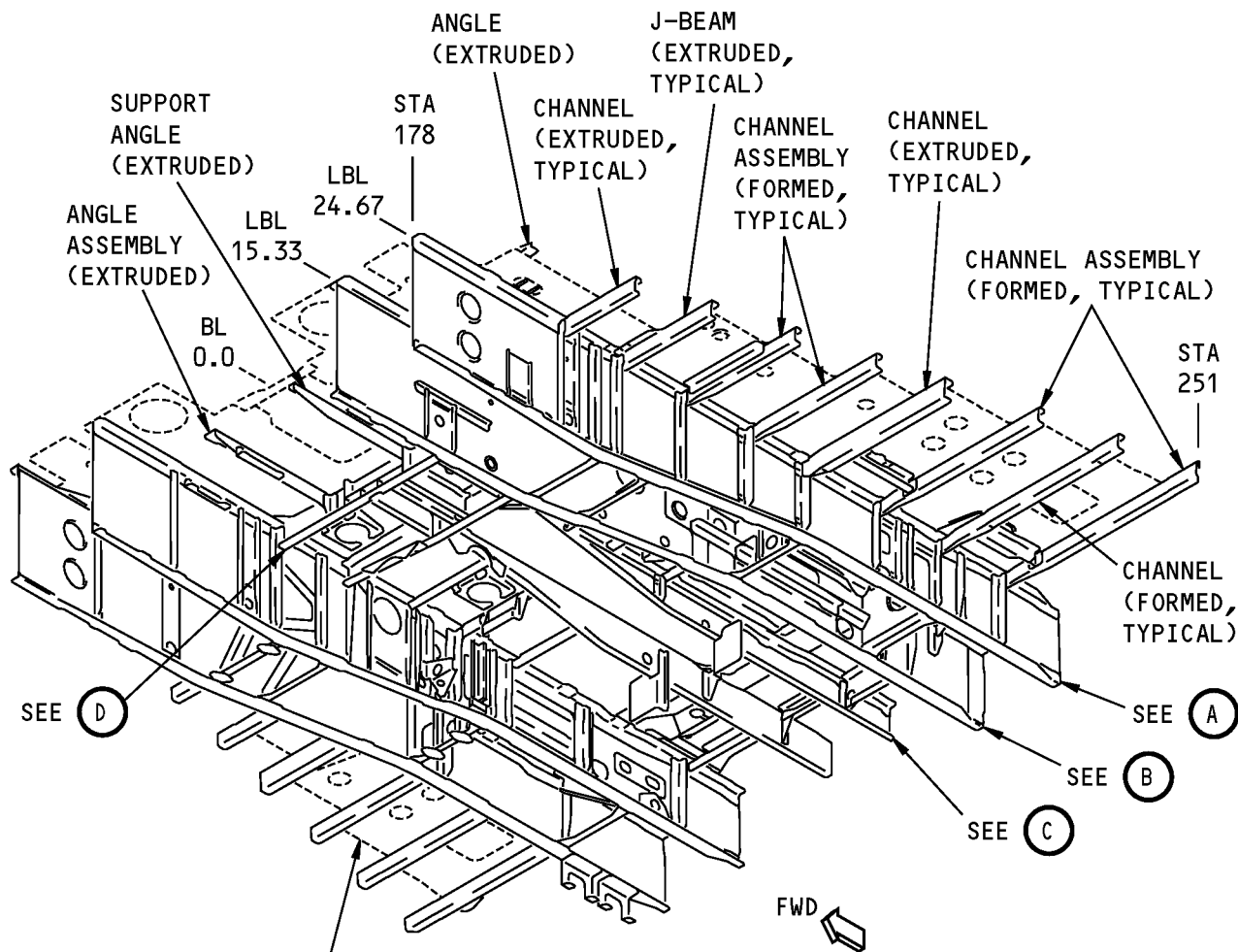
- A. Refer to Section 41 Floor Structure Location, Figure 201/REPAIR 1 thru Section 41 Floor Structure - Station 270 thru Station 360, Figure 204/REPAIR 1 and Table 201 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-10-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 41 FLOOR STRUCTURE	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

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STRUCTURAL REPAIR MANUAL**



REFER TO SRM 53-10-51,  
REPAIR 2 FOR THE REPAIR  
OF THE FLOOR WEB

**NOTES**

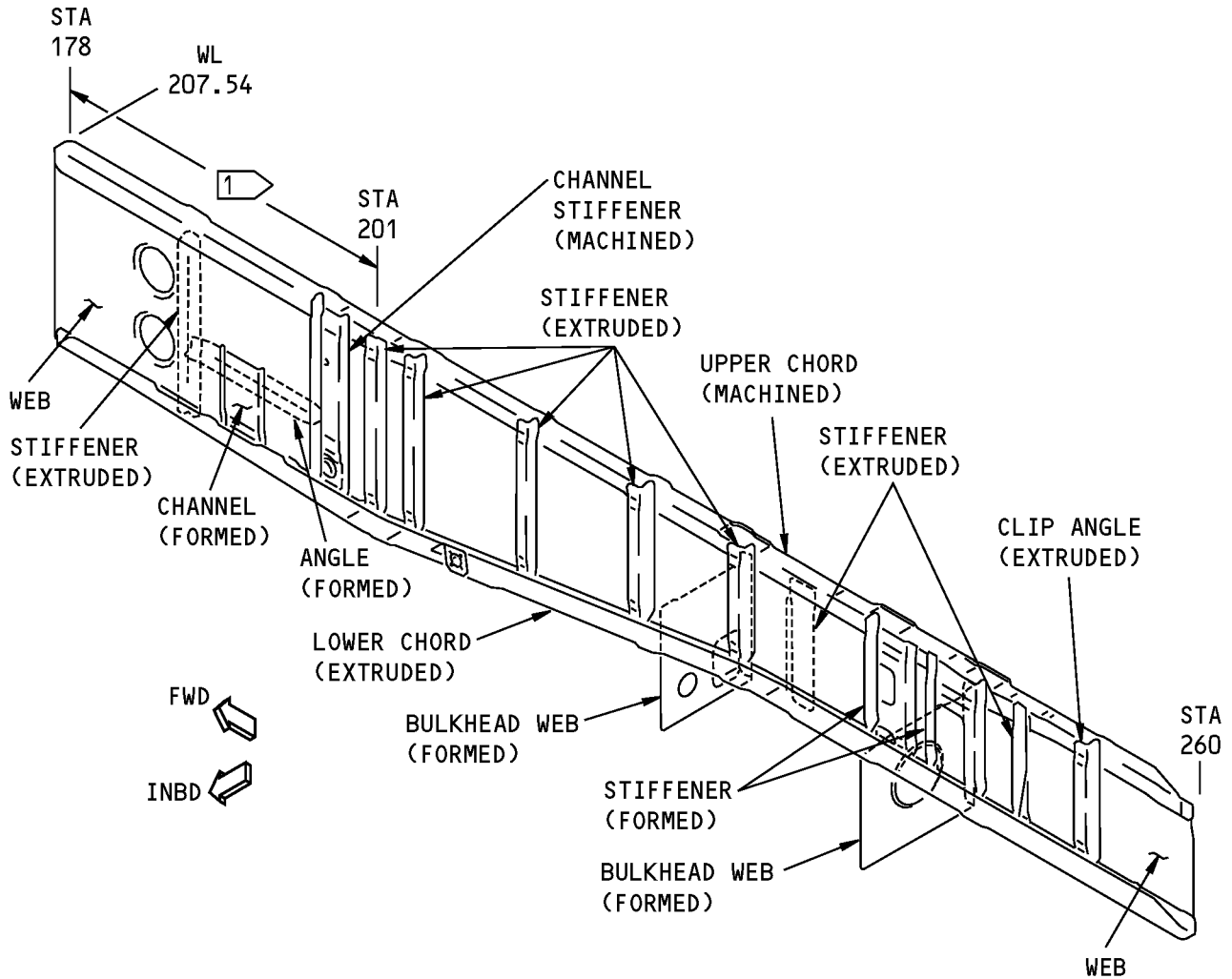
- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

- 1 THERE ARE NO REPAIRS OF THE UPPER CHORD BETWEEN STA 178 AND STA 201 IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.
- 2 ONLY THE FLANGES OF THE BEAM CAN BE REPAIRED AS GIVEN IN SRM 51-70-12. FOR THE REPAIR OF THE WEB OF THE BEAM YOU MUST CONTACT THE BOEING COMPANY.

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 202 (Sheet 1 of 4)**



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STRUCTURAL REPAIR MANUAL**

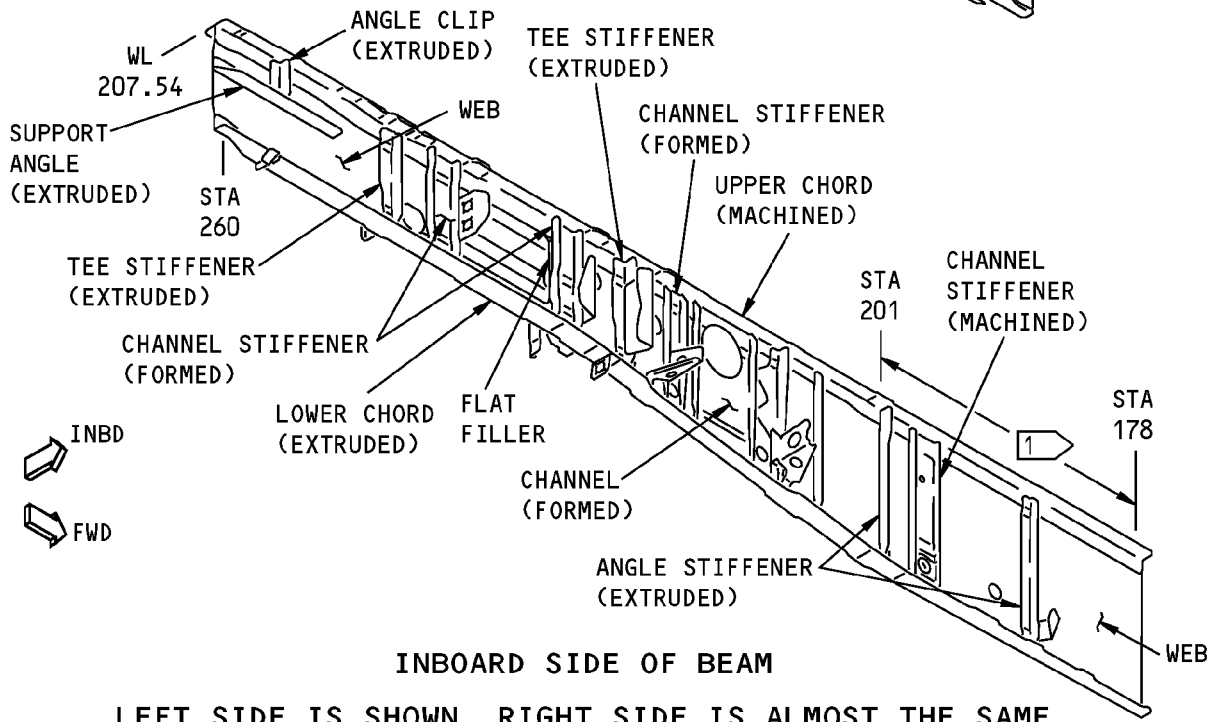
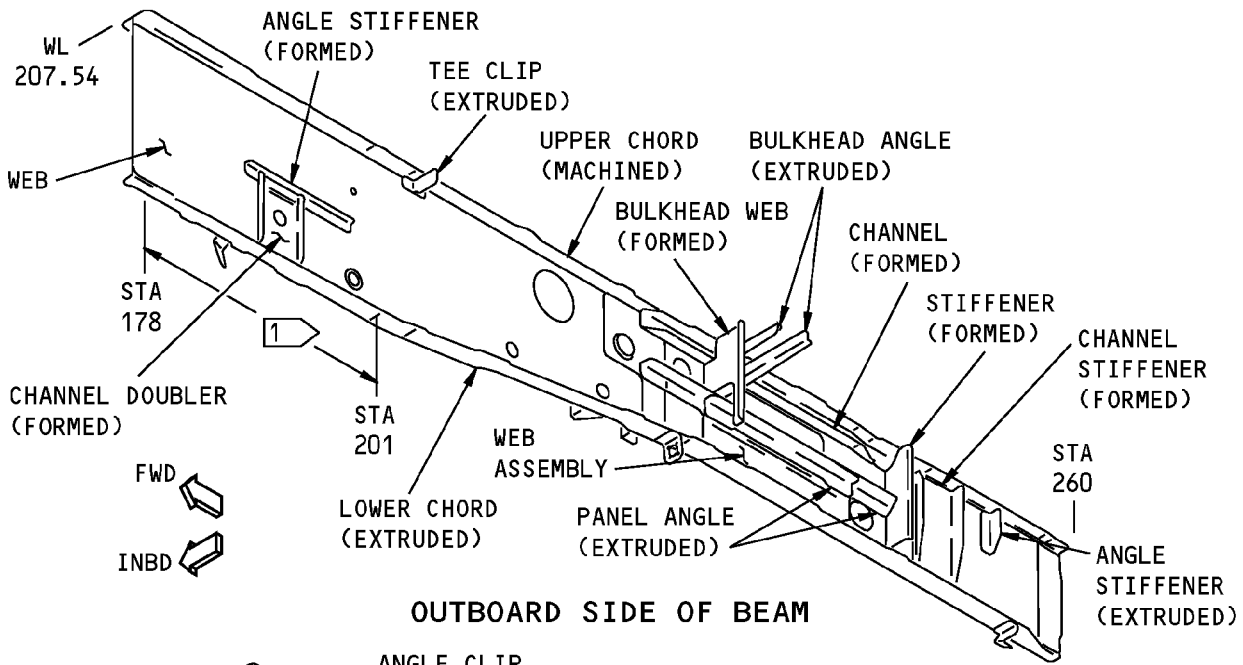


LEFT SIDE IS SHOWN,  
RIGHT SIDE IS ALMOST THE SAME  
BEAM INSTALLATION AT BL 24.67

A

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 202 (Sheet 2 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**

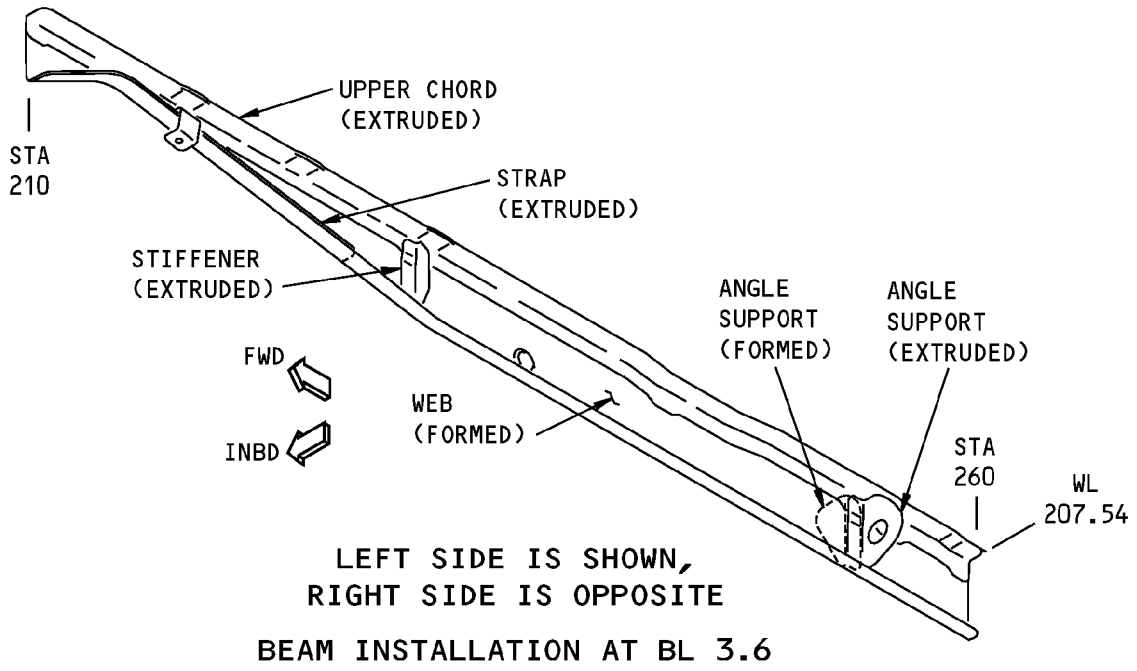


LEFT SIDE IS SHOWN, RIGHT SIDE IS ALMOST THE SAME  
BEAM INSTALLATION AT BL 15.33

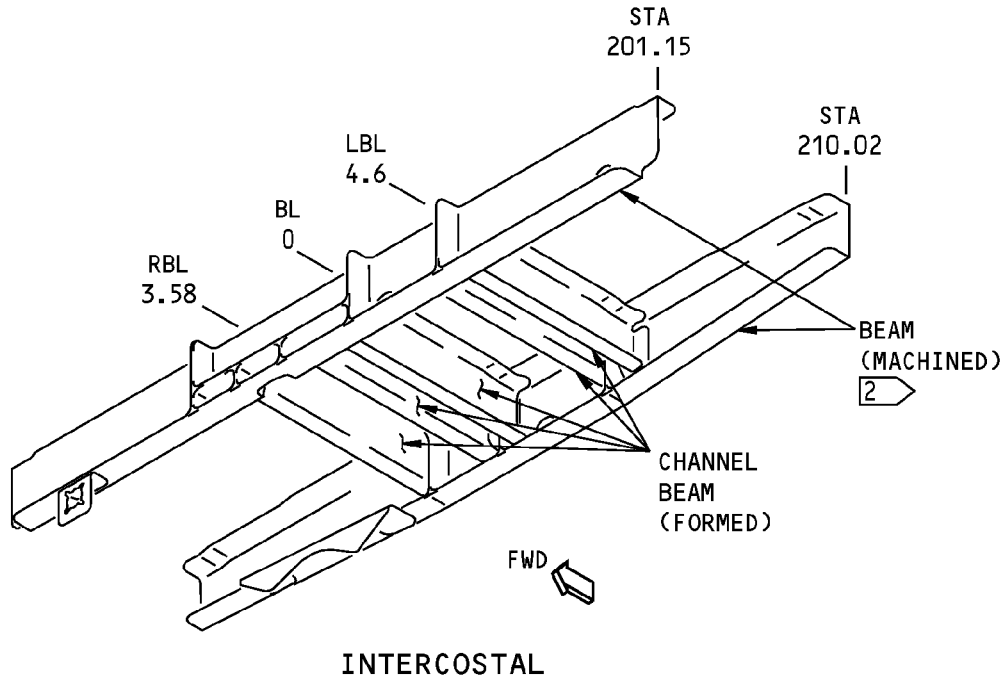
**B**

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 202 (Sheet 3 of 4)**

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STRUCTURAL REPAIR MANUAL**



(C)

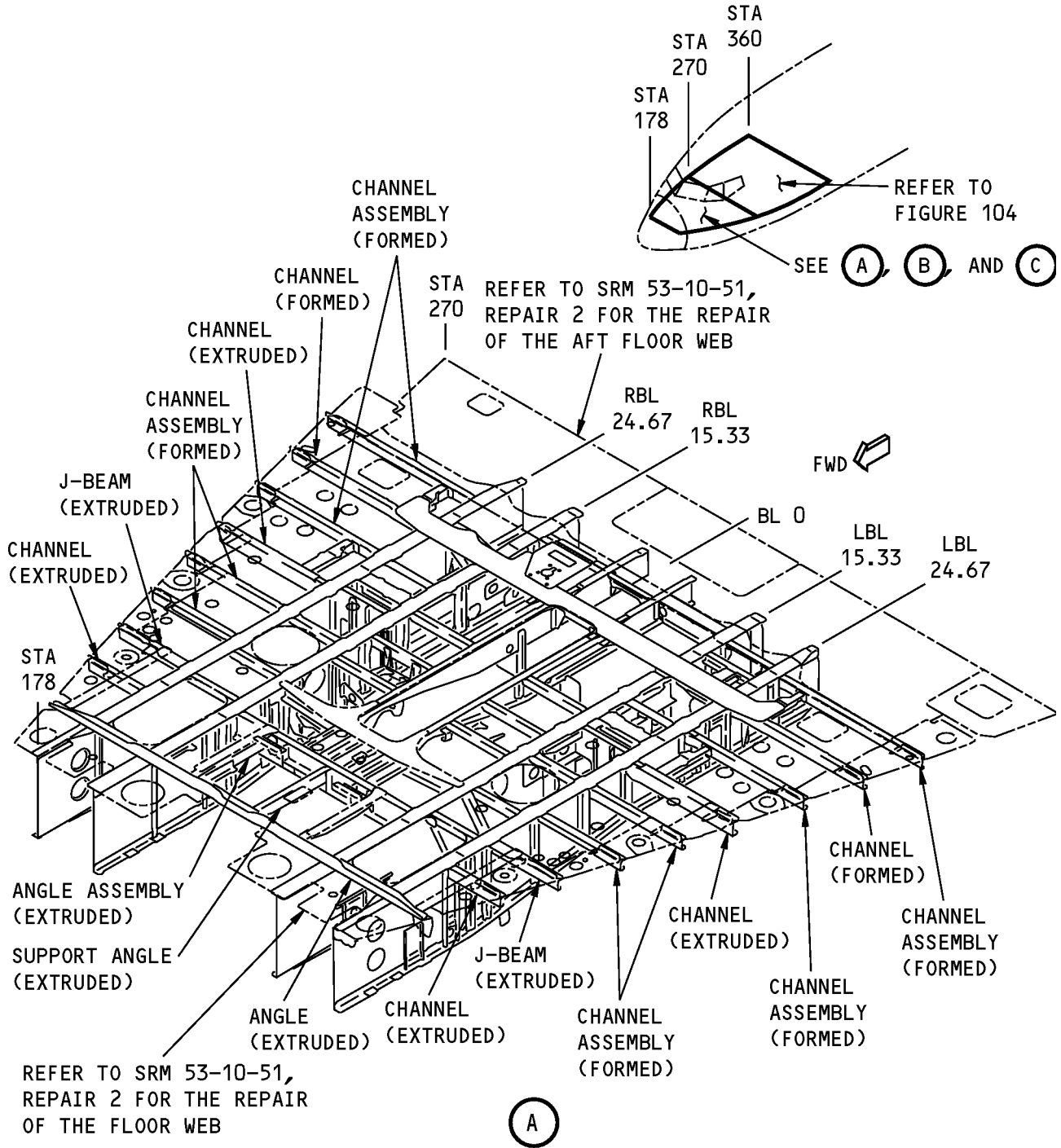


INTERCOSTAL

(D)

**Section 41 Floor Structure - Crew Area Floor Beams  
Figure 202 (Sheet 4 of 4)**

**STRUCTURAL REPAIR MANUAL**

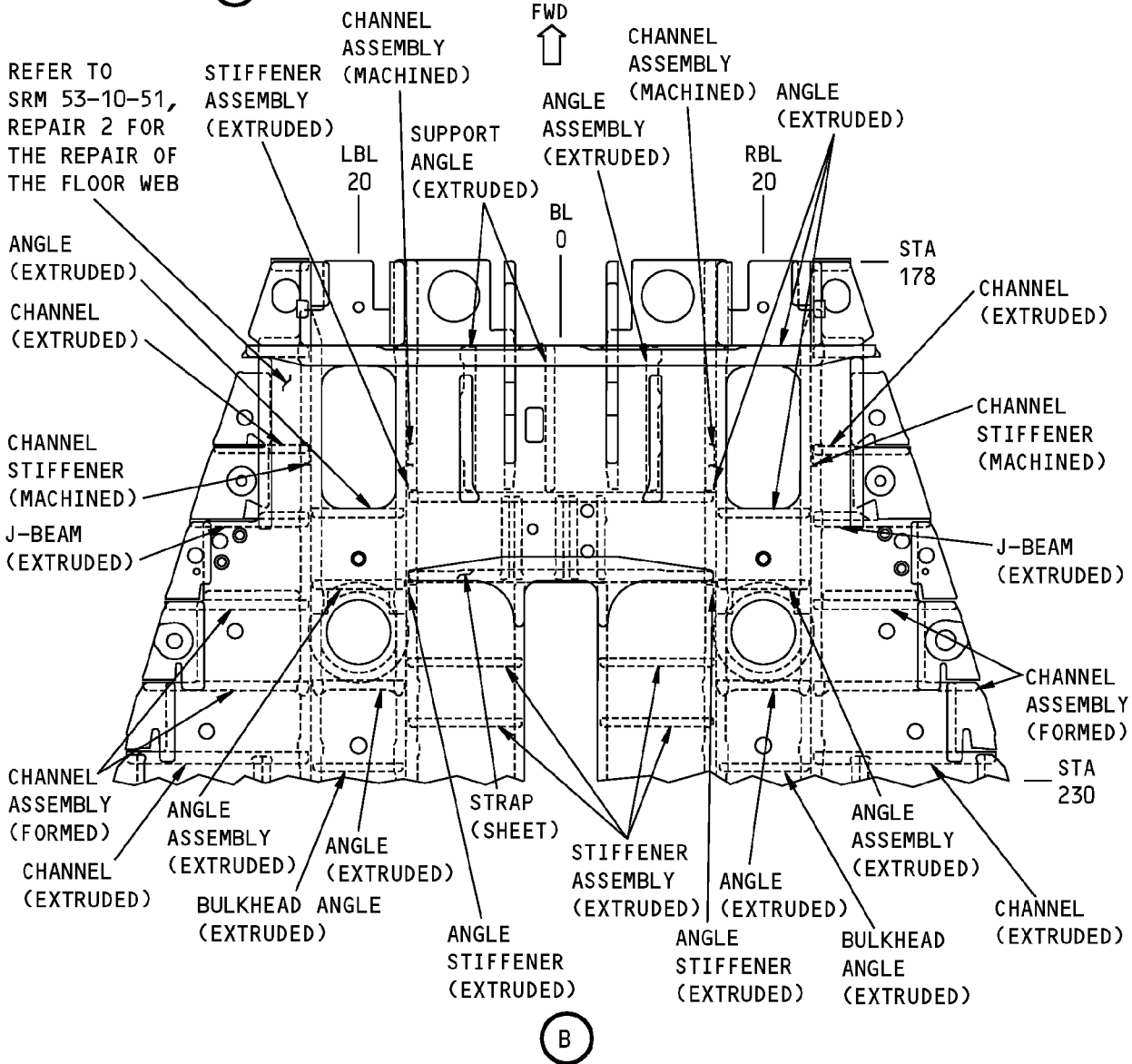
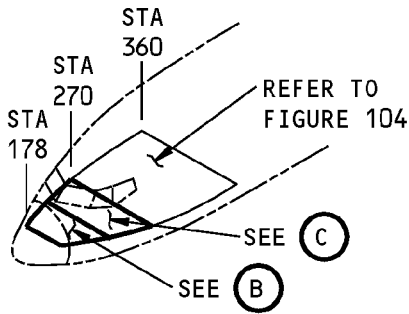


**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

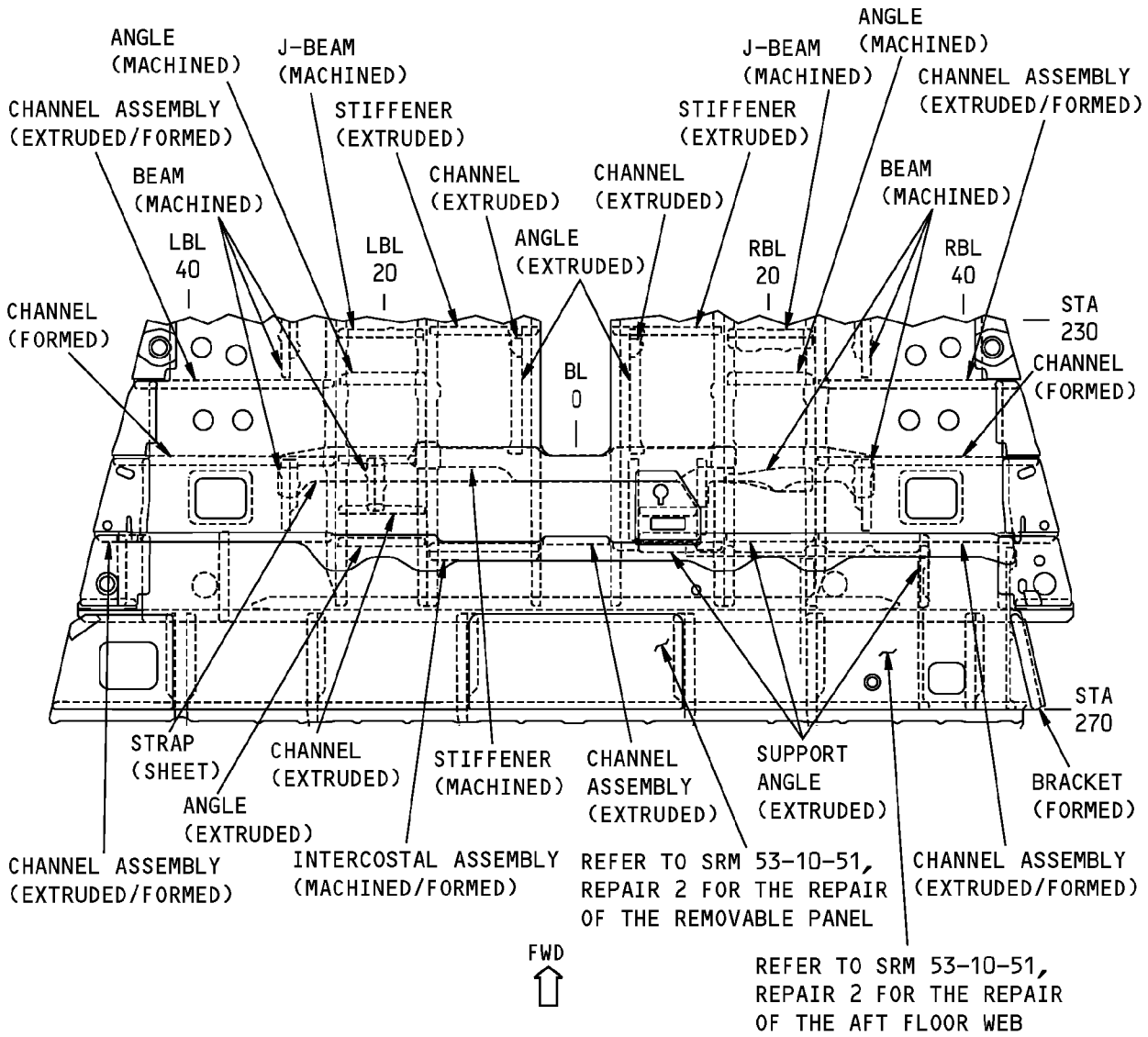
**Section 41 Floor Structure - Integration Components in the Crew Area  
Figure 203 (Sheet 1 of 3)**

**STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Integration Components in the Crew Area  
Figure 203 (Sheet 2 of 3)**

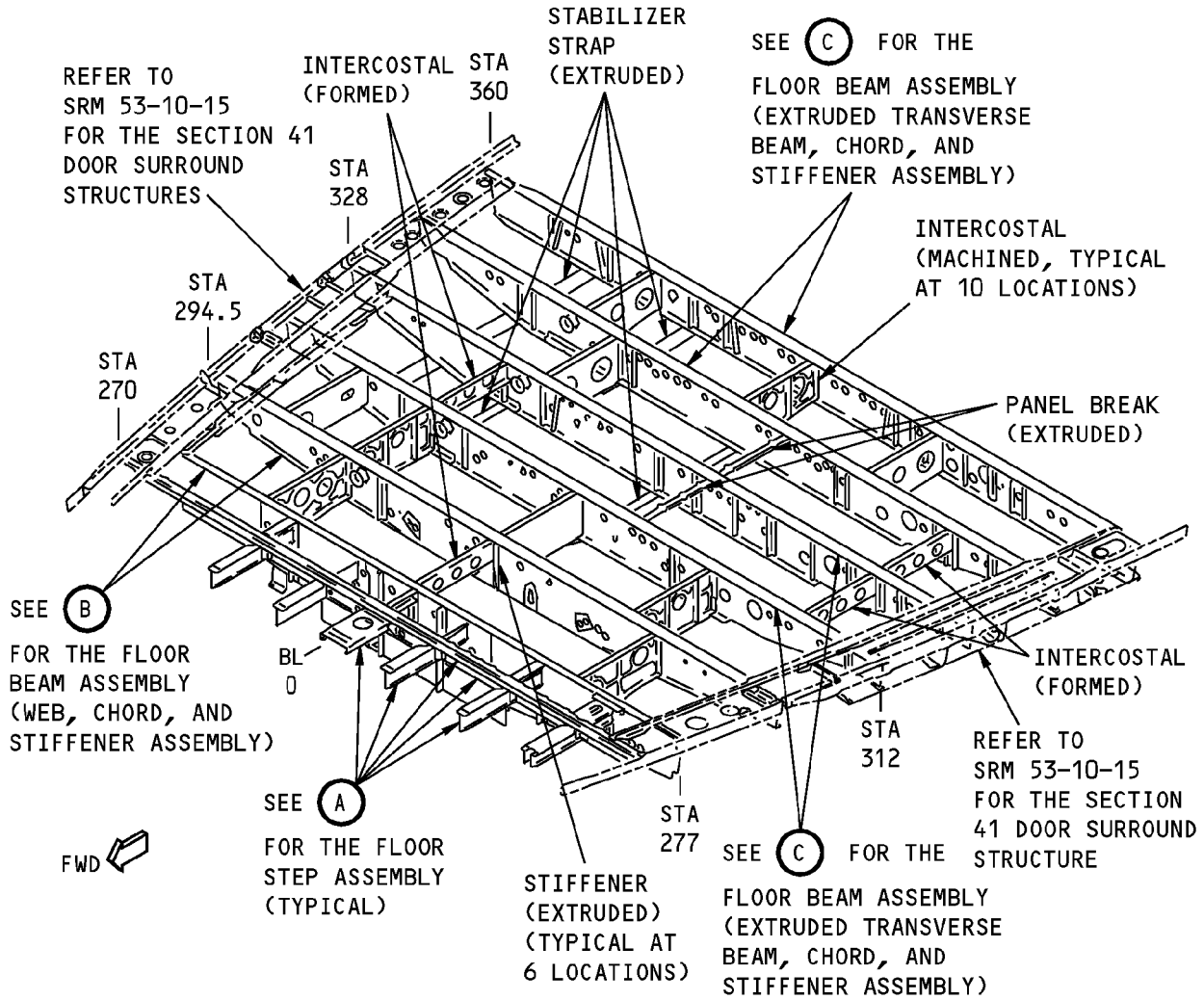
**STRUCTURAL REPAIR MANUAL**



(C)

**Section 41 Floor Structure - Integration Components in the Crew Area  
Figure 203 (Sheet 3 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**

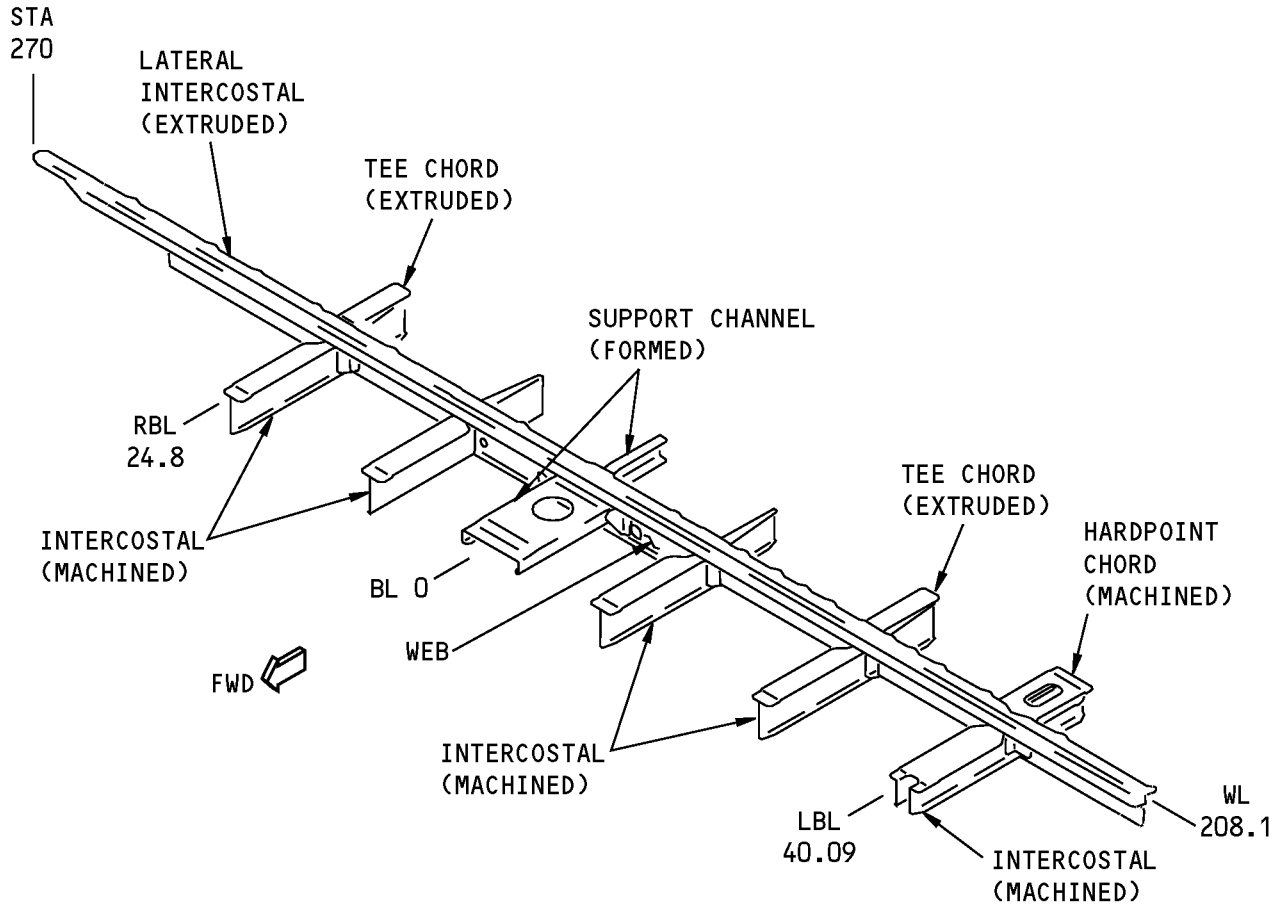


**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM.

**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 204 (Sheet 1 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



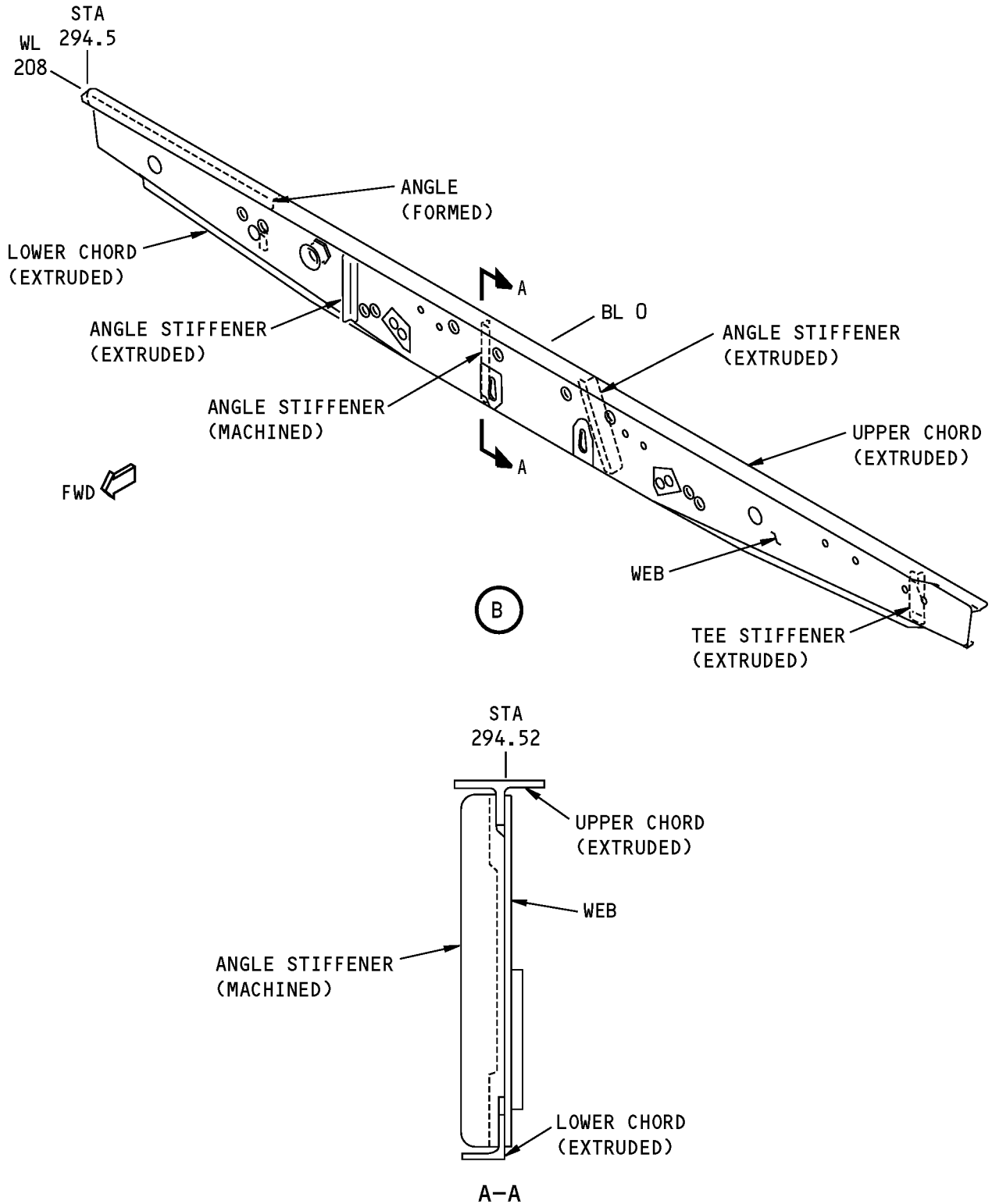
**FLOOR STEP ASSEMBLY**

**A**

**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 204 (Sheet 2 of 4)**

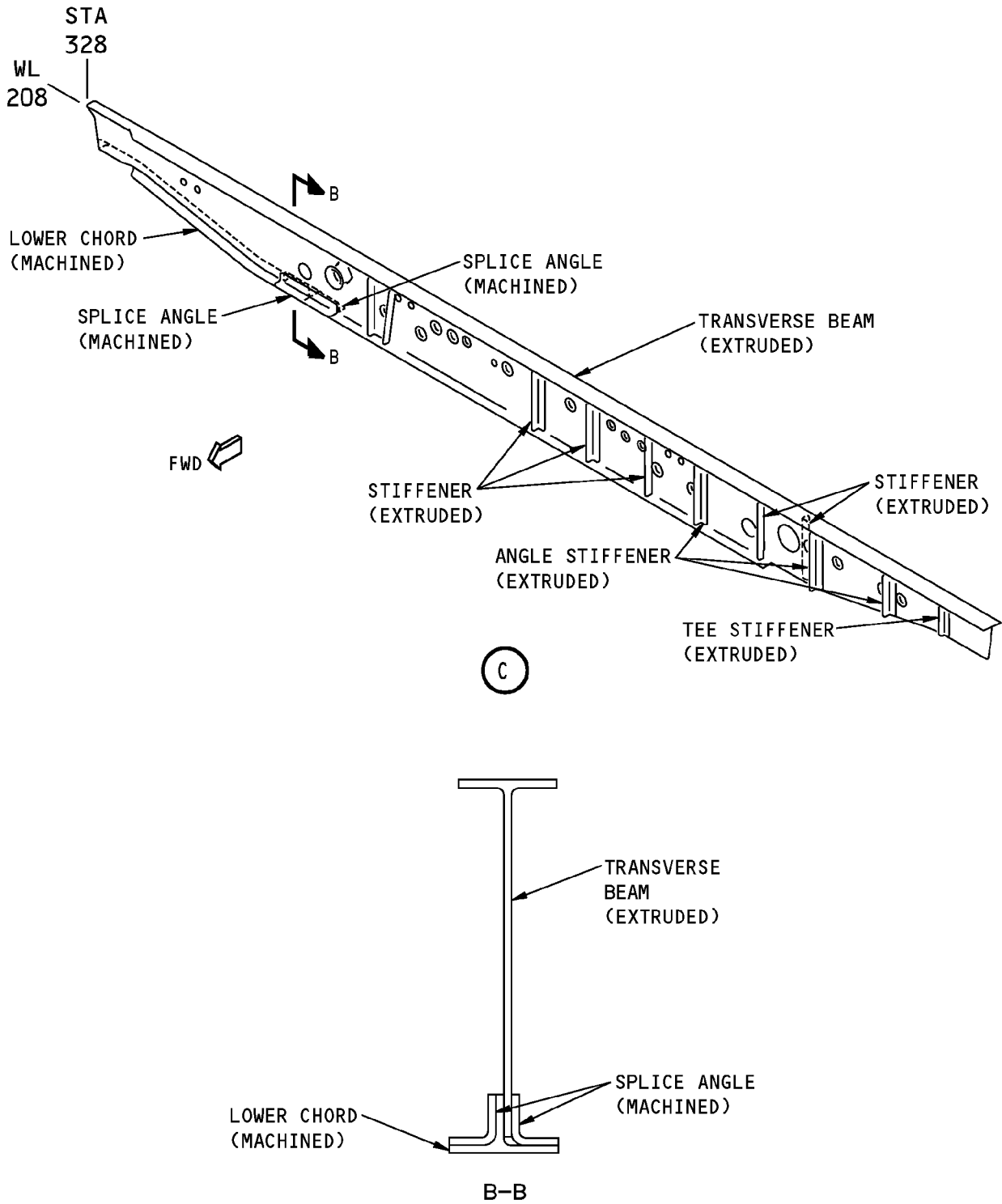


**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 204 (Sheet 3 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Station 270 thru Station 360  
Figure 204 (Sheet 4 of 4)**

**STRUCTURAL REPAIR MANUAL**

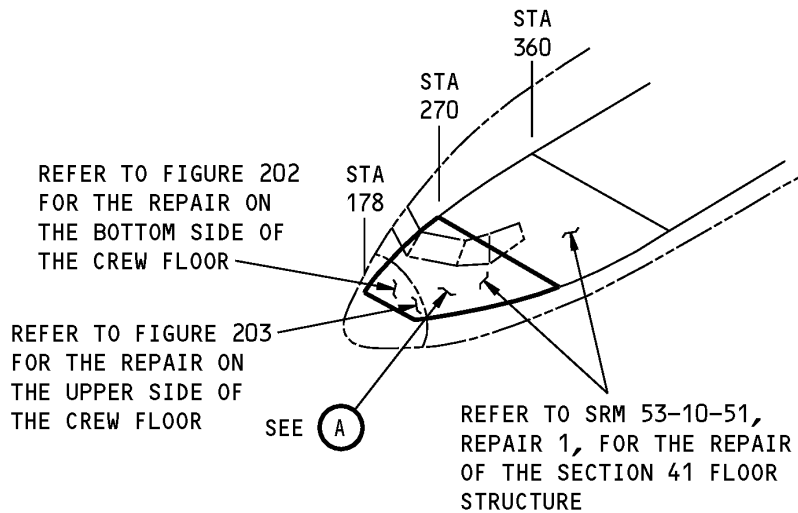
**REPAIR 2 - SECTION 41 FLOOR WEBS**

**1. Applicability**

- A. Repair 2 is applicable to damage to the structures that follow, from Sta 178 to Sta 270 (Refer to Section 41 Floor Web - Location, Figure 201/REPAIR 2):
  - (1) The forward floor web
  - (2) The aft floor web
  - (3) The removable panel.

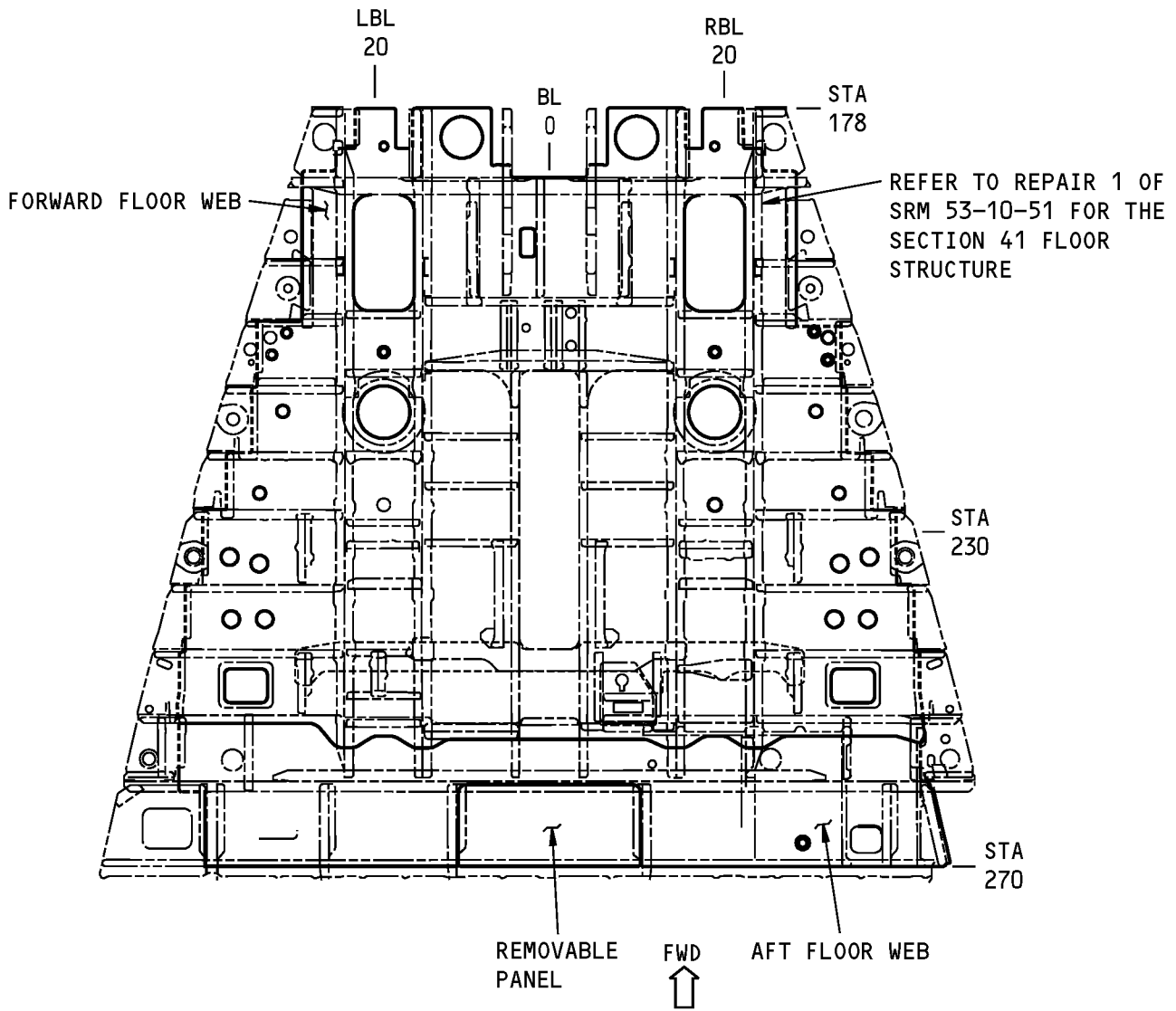
**2. General**

- A. Repair 2 is a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Make sure that you do not cause damage to the adjacent structure or components in the repair area when you install a repair.



**Section 41 Floor Web - Location  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



PLAN VIEW  
VIEW LOOKING DOWN  
FLOOR WEB



Section 41 Floor Web - Location  
Figure 201 (Sheet 2 of 2)



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

A. For crack damage, do one of the steps that follow:

- (1) Drill a stop hole at the ends of all cracks that do not end at fastener holes and continue with step 4.C. Refer to 51-10-02 for the procedures to drill a stop hole.
- (2) Cut and remove the crack as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2. Refer to 51-10-02 for the procedures to remove the damage.
  - (a) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.
  - (b) Make the cut in the shape of a rectangle.
  - (c) Put the web that is around the damage cutout back to the initial contour.
  - (d) Continue with step 4.C.

B. For areas of damage other than cracks, do as follows:

- (1) Cut and remove the damaged part of the floor web as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2. Refer to 51-10-02 for the procedures to remove the damage.
  - (a) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.
  - (b) Make the cut in the shape of a rectangle.
  - (c) Put the web that is around the damage cutout back to the initial contour.
  - (d) Continue with step 4.C.

C. Make the repair parts as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2 and given in Table 201/REPAIR 2.

**NOTE:** Make the repair part [2] Filler to fit the web cutout and keep a gap of 0.000 to 0.100 inch (0.0 mm to 2.54 mm) all around.

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STRUCTURAL REPAIR MANUAL**

**Table 201:**

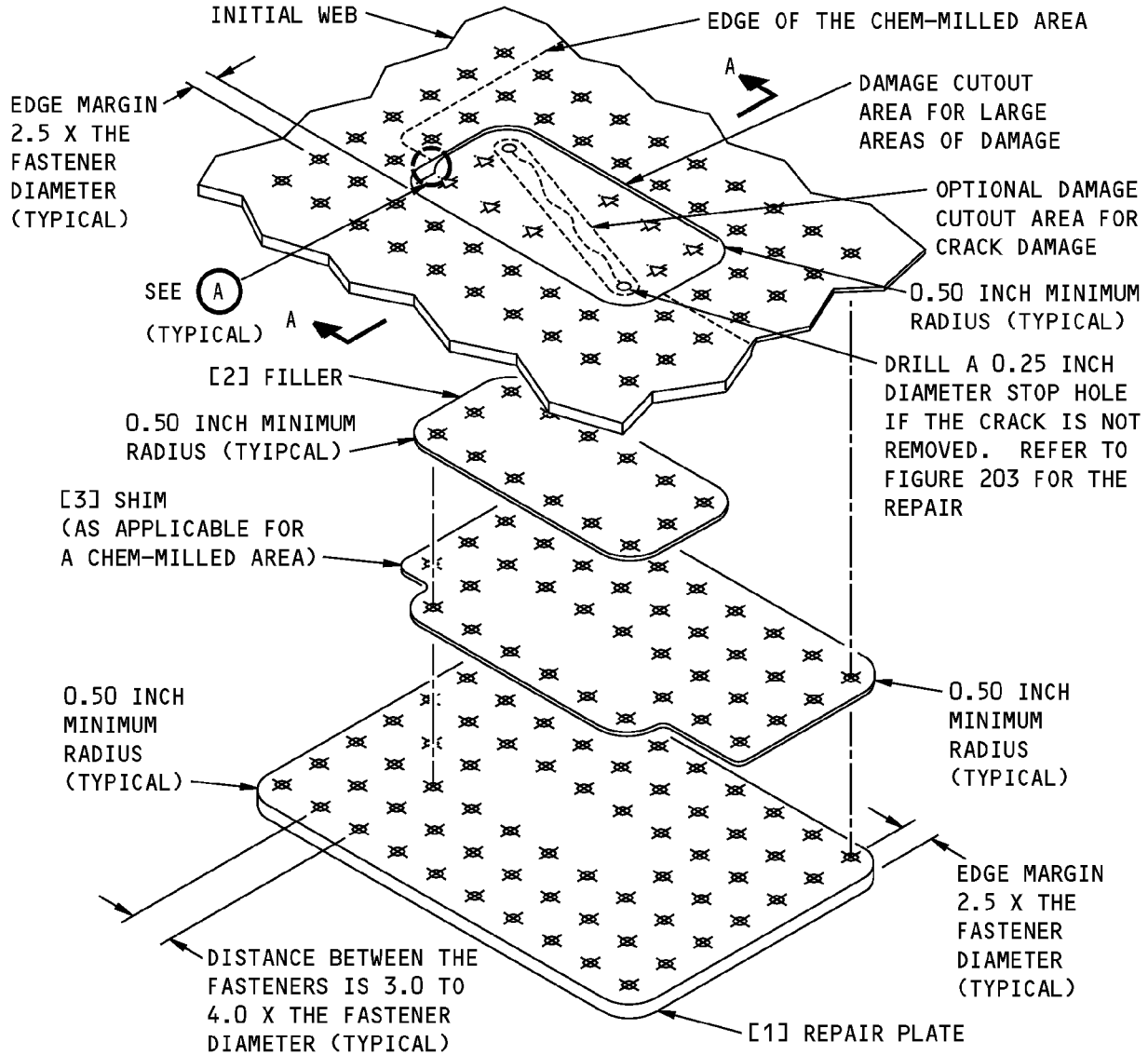
<b>REPAIR MATERIAL</b>			
<b>ITEM</b>	<b>PART</b>	<b>QUANTITY</b>	<b>MATERIAL</b>
[1]	Repair Plate	1	Use 2024-T3 clad sheet. Refer to Table 202 for the necessary thicknesses of the material
[2]	Filler (for damage that is cut out)	1	Use 2024-T3 clad sheet that is the same thickness as the initial web (minus the depth of the chem-milled pocket, if applicable)
[3]	Shim (as applicable for chem- milled area)	As necessary	Use 2024-T3 clad sheet that is the same thickness as the depth of the applicable chem-milled pocket
[4]	Repair Plate	1	Use 2024-T3 clad sheet. Refer to Table 202 for the necessary thicknesses of the material

**Table 202:**

<b>REPAIR PART THICKNESSES AND REPAIR FASTENER DIAMETERS FOR INITIAL WEB OR PANEL THICKNESSES</b>		
<b>INITIAL WEB OR PANEL THICKNESSES [MEASURED AT THE THICKEST PART OF THE WEB OR PANEL IN THE REPAIR AREA IN INCHES (mm)]</b>	<b>ITEM [1] and [4] REPAIR PLATE THICKNESS IN INCHES (mm)</b>	<b>REPAIR FASTENER DIAMETER IN INCHES</b>
0.040 (1.02)	0.050 (1.27)	5/32
0.060 (1.52)	0.071 (1.80)	5/32
0.071 (1.80)	0.080 (2.03)	5/32

- D. Assemble the repair parts as shown in Section 41 Floor Web - Repair for Damage That is Cut Out, Figure 202/REPAIR 2 or Section 41 Floor Web - Crack Damage That is Stop Drilled, Figure 203/REPAIR 2.
- E. Drill the fastener holes. Refer to 51-40-05 for the fastener hole sizes.
- F. Disassemble the repair parts.
- G. Remove the nicks, scratches, gouges, and sharp edges from the repair parts and the initial web.
- H. Apply a chemical conversion coating to the repair parts and bare surfaces of the initial web. Refer to 51-20-01.
- I. Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial web. Refer to SOPM 20-41-02.
- J. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05.
- K. Install the fasteners without sealant.
- L. Fill the space between the part [2] Filler and the initial web with BMS 5-95 sealant, if applicable. Refer to 51-20-05.
- M. Apply a layer of BMS 3-23 Corrosion Inhibiting Compound (CIC) to the area as necessary. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**



**REPAIR ON THE BOTTOM SIDE OF THE CREW FLOOR IN A CHEM-MILLED AREA IS SHOWN**

**NOTES**

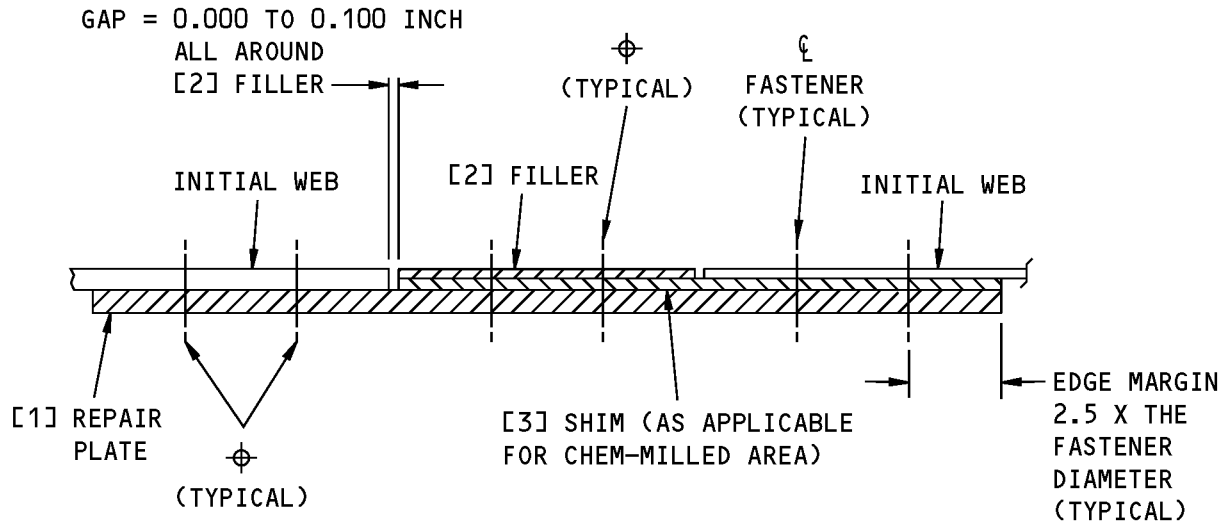
- THE EDGE OF THE [3] SHIM MUST NOT TOUCH THE CHEM-MILLED RADIUS.

**FASTENER SYMBOLS**

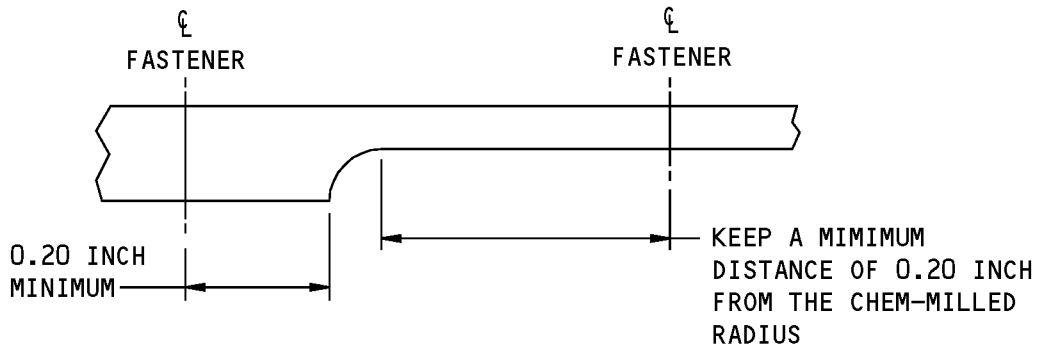
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D( ) RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D( ) RIVET WHEN THE CRACK DAMAGE IS STOP-DRILLED OR CUT OUT.

**Section 41 Floor Web - Repair for Damage That is Cut Out  
Figure 202 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



A-A

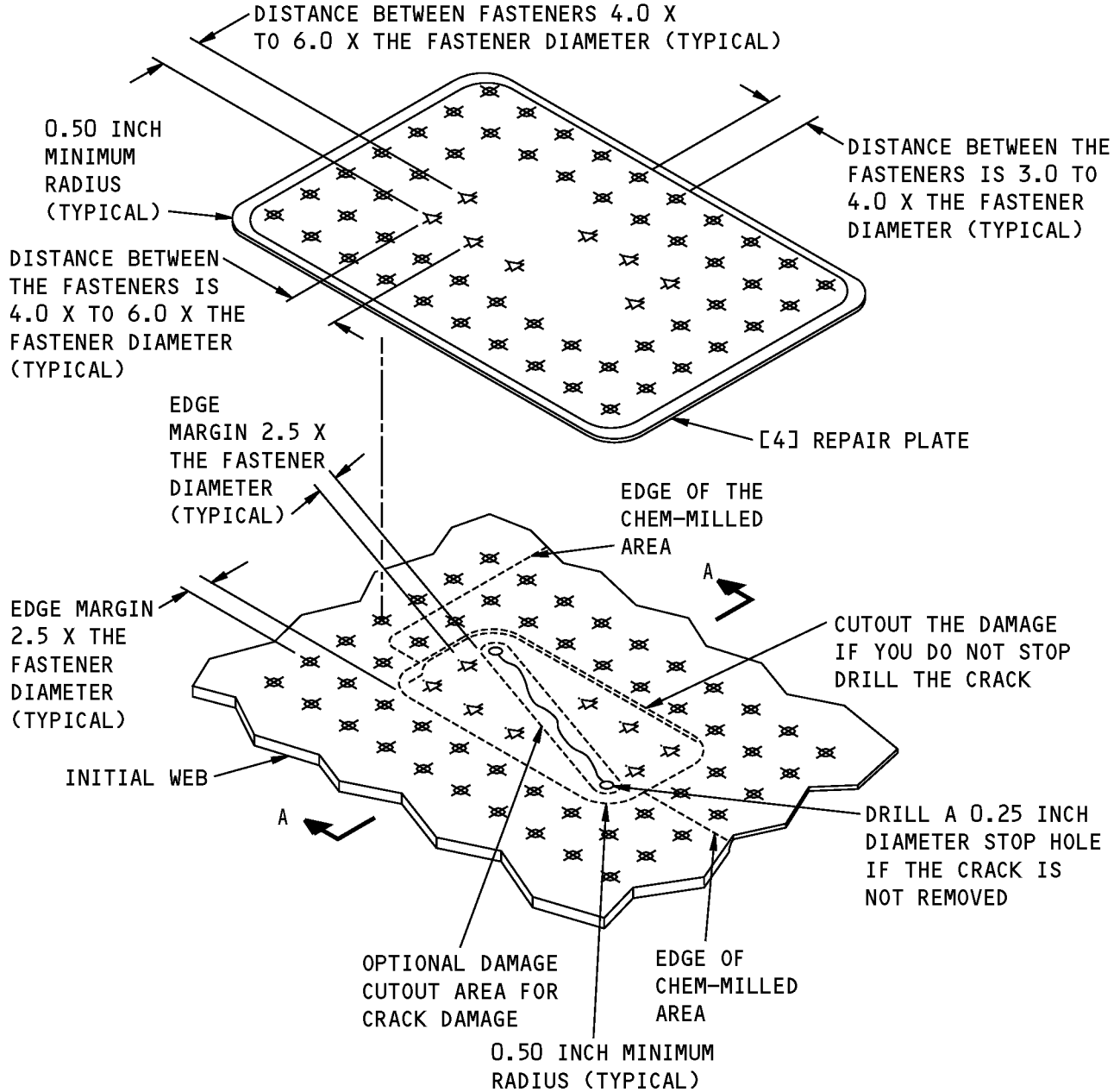


A

**Section 41 Floor Web - Repair for Damage That is Cut Out  
Figure 202 (Sheet 2 of 2)**



**STRUCTURAL REPAIR MANUAL**



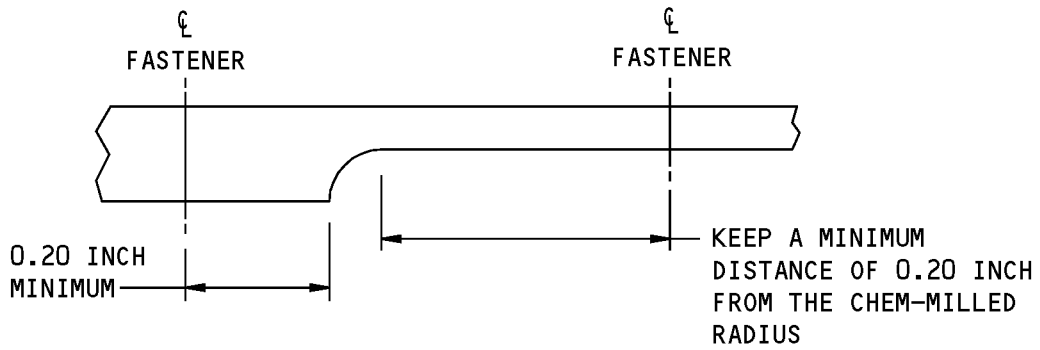
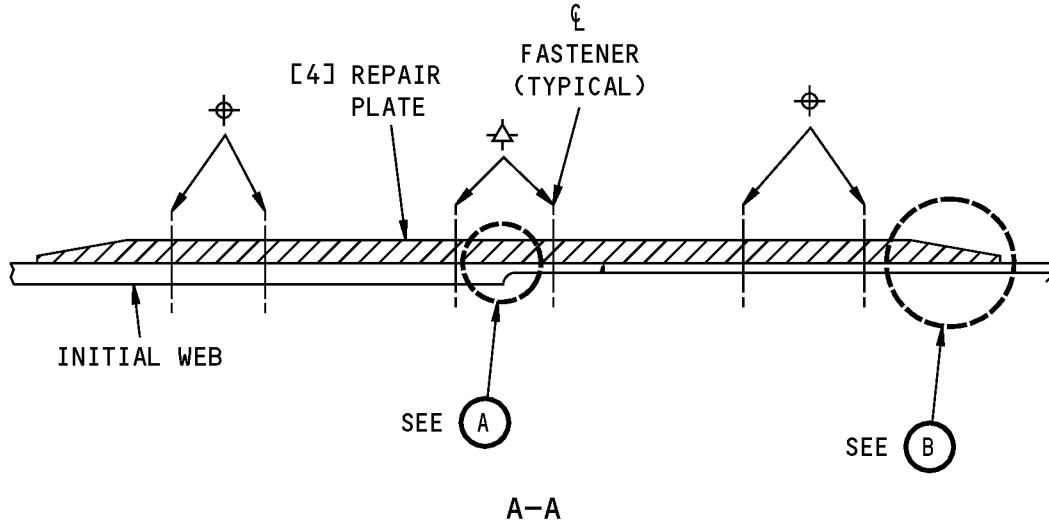
**REPAIR ON THE UPPER SIDE OF THE CREW FLOOR IN CHEM-MILLED AREA SHOWN**

**FASTENER SYMBOLS**

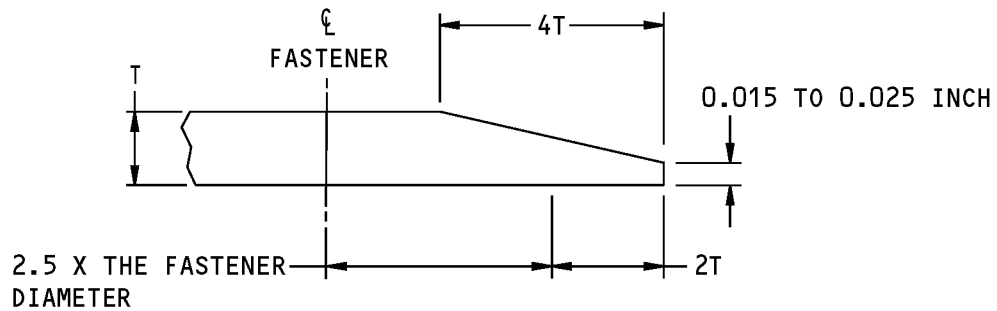
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D( ) RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D( ) RIVET WHEN THE CRACK DAMAGE IS STOP-DRILLED OR CUT OUT.

**Section 41 Floor Web - Crack Damage That is Stop Drilled  
Figure 203 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



A



T = THICKNESS OF THE REPAIR PLATE

B

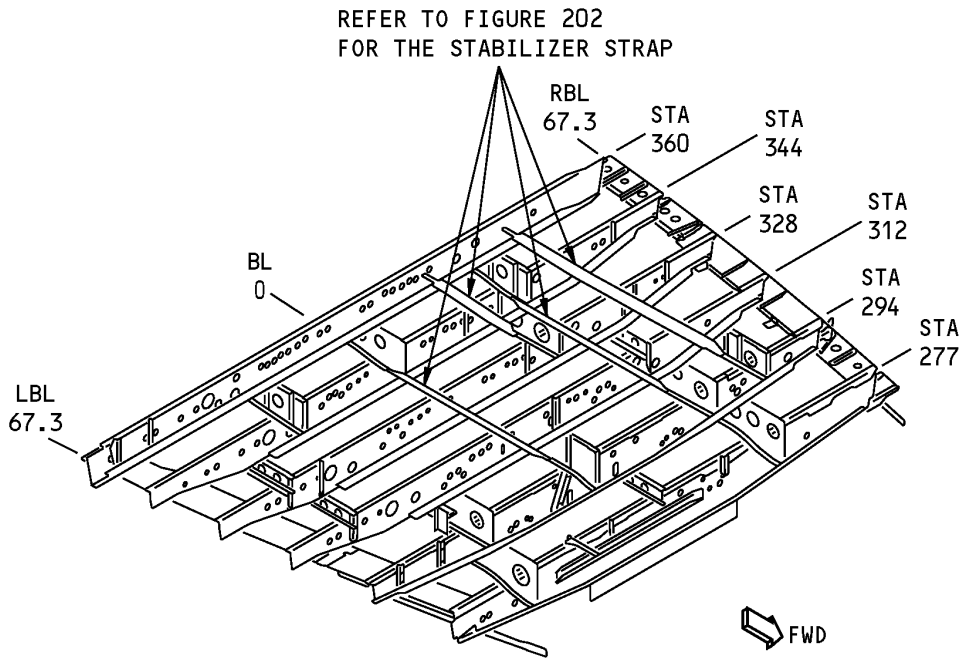
**Section 41 Floor Web - Crack Damage That is Stop Drilled  
Figure 203 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

**REPAIR 3 - SECTION 41 FLOOR STRUCTURE STABILIZER STRAP**

**1. Applicability**

- A. Repair 3 is applicable to crack damage in the stabilizer straps shown in Section 41 Floor Structure - Stabilizer Strap Locations, Figure 201/REPAIR 3.



**Section 41 Floor Structure - Stabilizer Strap Locations  
Figure 201**

**2. General**

- A. Repair 3 gives instructions for a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.



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# STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-00, GENERAL P/B GENERAL	FASTENERS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Find the applicable repair as shown in Section 41 Floor Structure - Stabilizer Strap Repairs, Figure 202/REPAIR 3. Typical repair locations are shown for a given extrusion of a strap.
- B. Drill a stop hole at the ends of all cracks in straps that do not end at fastener holes. Refer to Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3 and SRM 51-10-02 for the procedures to drill a stop hole.
- C. Remove the initial fasteners as necessary for the repair. Refer to 51-40-02.
- D. Make the repair parts as shown in Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3. Refer to Table 201/REPAIR 3 for the repair material.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use clad or bare 7075-T6 that is 0.063 inch (1.600 mm) thick. The use of clad material is recommended. Width: 2.0 inches (50.8 mm) for BAC1513-295 extrusions and 3.0 inches (76.2 mm) for BAC1513-433 extrusions. Length: As necessary
[2]	Filler	1	Use clad or bare 7075-T6 that is 0.075 inch (1.905 mm) thick. The use of clad material is recommended. This filler can be made of one 0.025 inch (0.635 mm) thick filler and one 0.050 inch (1.270 mm) thick filler for a total thickness of 0.075 inch (1.905 mm). Length: As necessary
[3]	Filler	1	Use clad or bare 7075-T6 that is 0.025 inch (0.635 mm) thick. The use of clad material is recommended. Length: As necessary. Note: This filler is only necessary for the repair shown in Figure 207

- E. Assemble the repair parts as shown in Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6, Figure 203/REPAIR 3 thru Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5, Figure 207/REPAIR 3.
- F. Drill the fastener holes. Refer to 51-40-05 for the fastener hole dimensions.

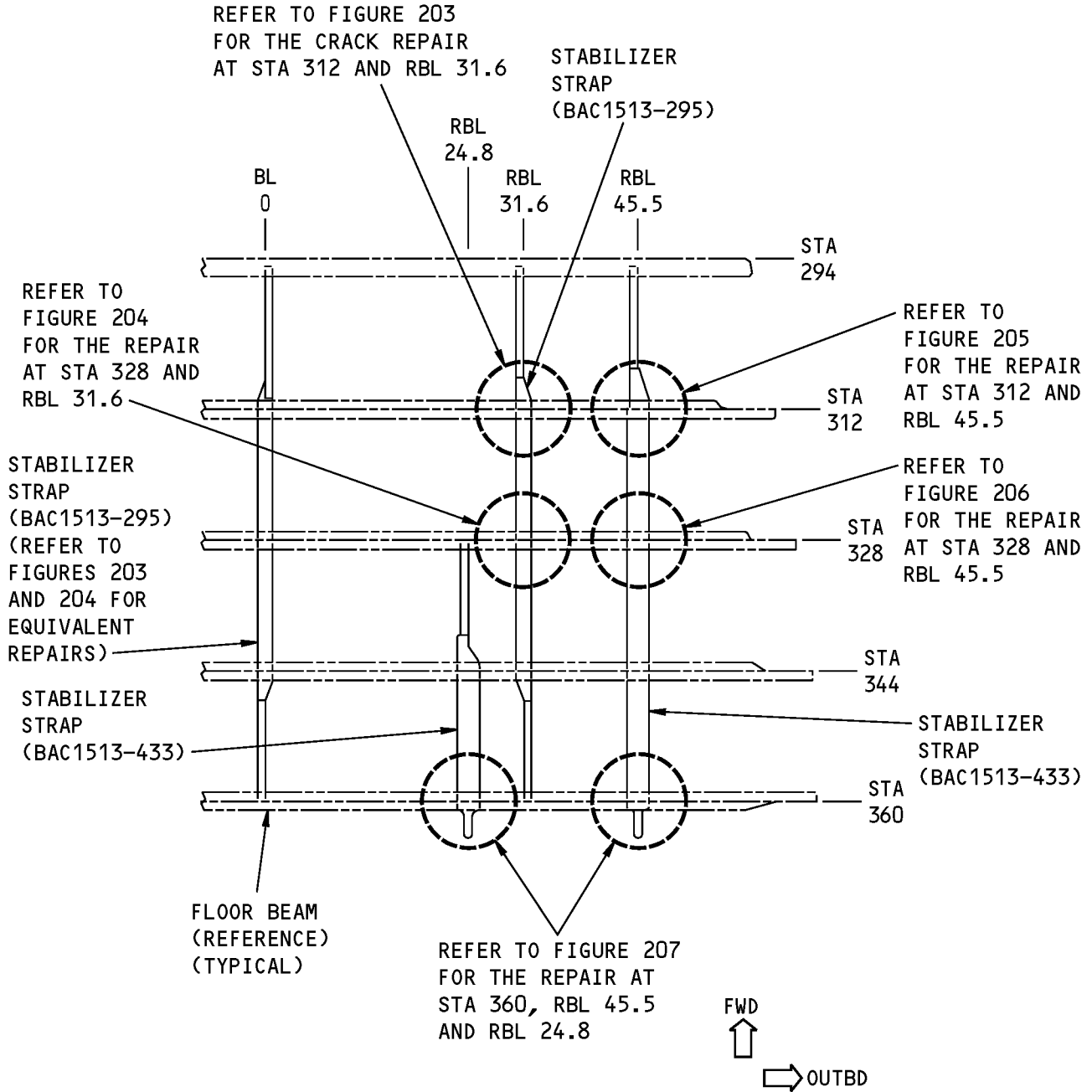


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## STRUCTURAL REPAIR MANUAL

- G. Remove the repair parts.
- H. Remove the nicks, scratches, gouges, burrs, and sharp edges from the repair parts and the bare surfaces of the strap.
- I. Apply a chemical conversion coating to the repair parts and bare surfaces of the strap. Refer to 51-20-01 for the chemical conversion coating procedures.
- J. Apply two layers of BMS 10-11, Type I, primer to the area of the repair. Refer to SOPM 20-41-02 for the procedures to apply the primer.
  - (1) Apply the primer to the repair parts.
  - (2) Apply the primer to the bare surfaces of the strap.
- K. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05 for the procedures to apply the sealant.
- L. Install the fasteners.
  - (1) Install the hex drive fasteners at the repair and initial locations wet with BMS 5-95 sealant in transition fit holes.
  - (2) Install the rivets at the initial locations, as necessary, without sealant.
- M. Apply the decorative finish to the repair area as given in AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**

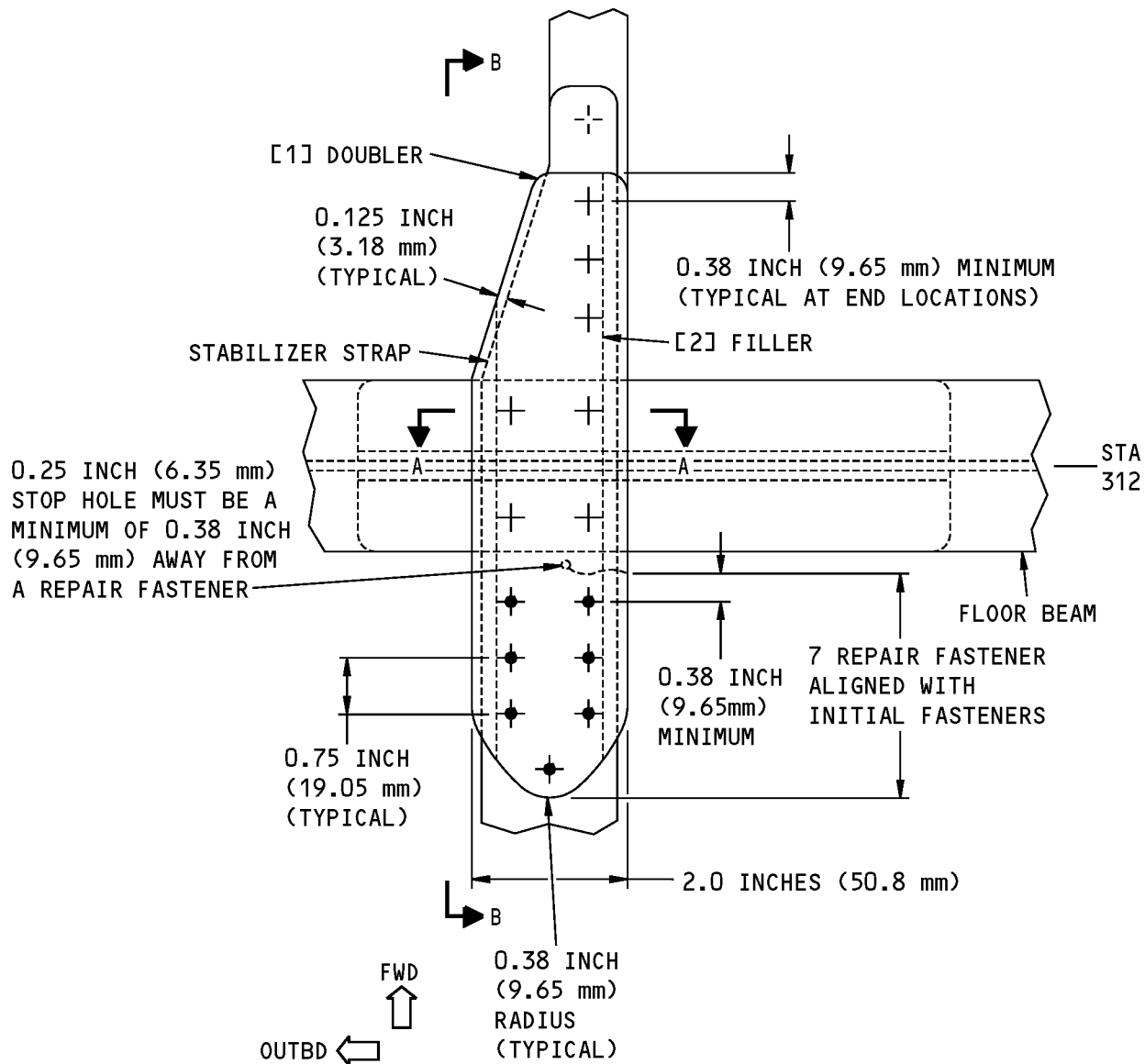


TOP VIEW

BASELINE FLOOR STRUCTURE

**Section 41 Floor Structure - Stabilizer Strap Repairs  
Figure 202**

STRUCTURAL REPAIR MANUAL

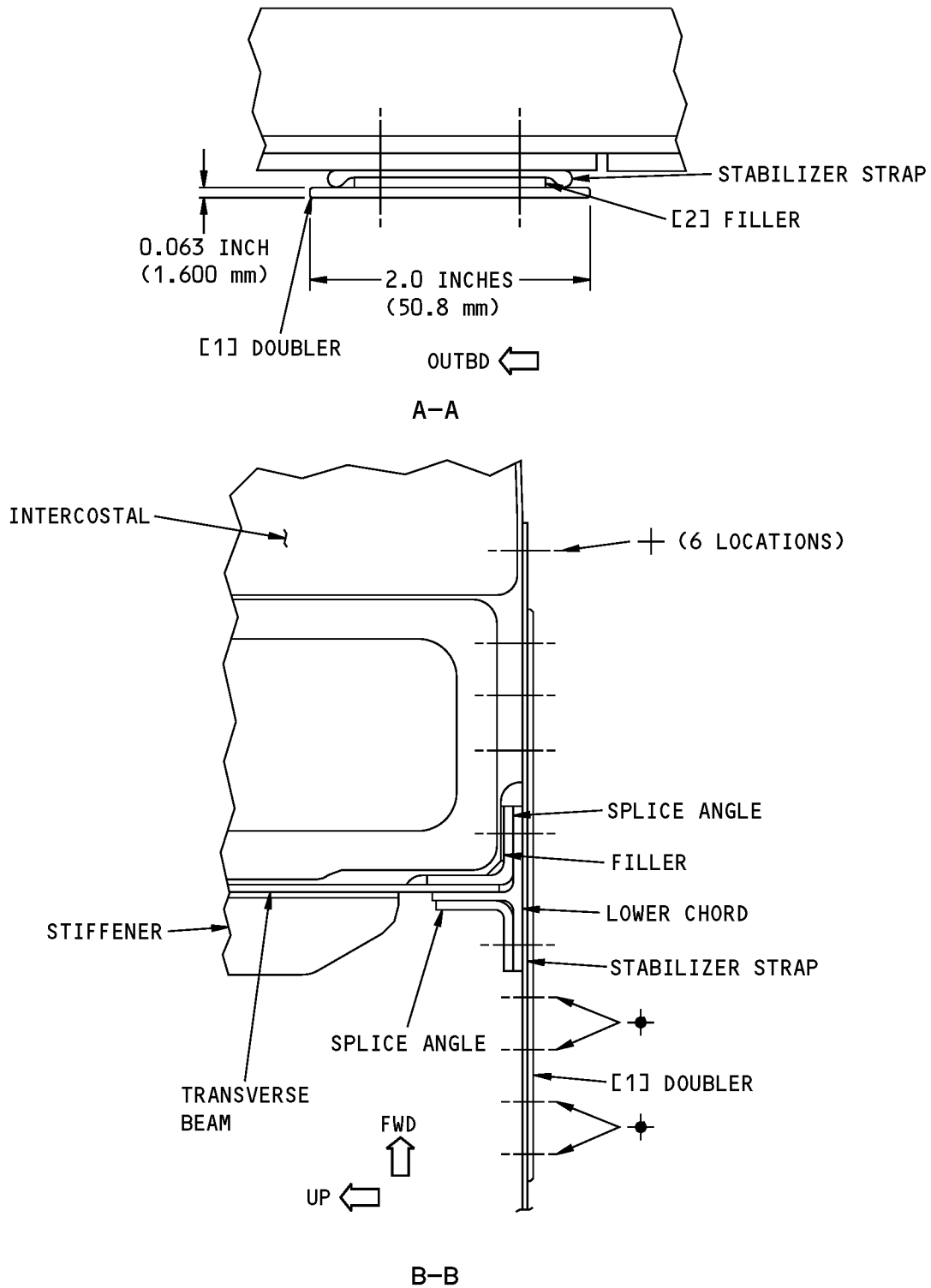


FASTENER SYMBOLS

- ⊕ REFERENCE FASTENER LOCATION
- ⊕ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K( ) HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6  
Figure 203 (Sheet 1 of 2)

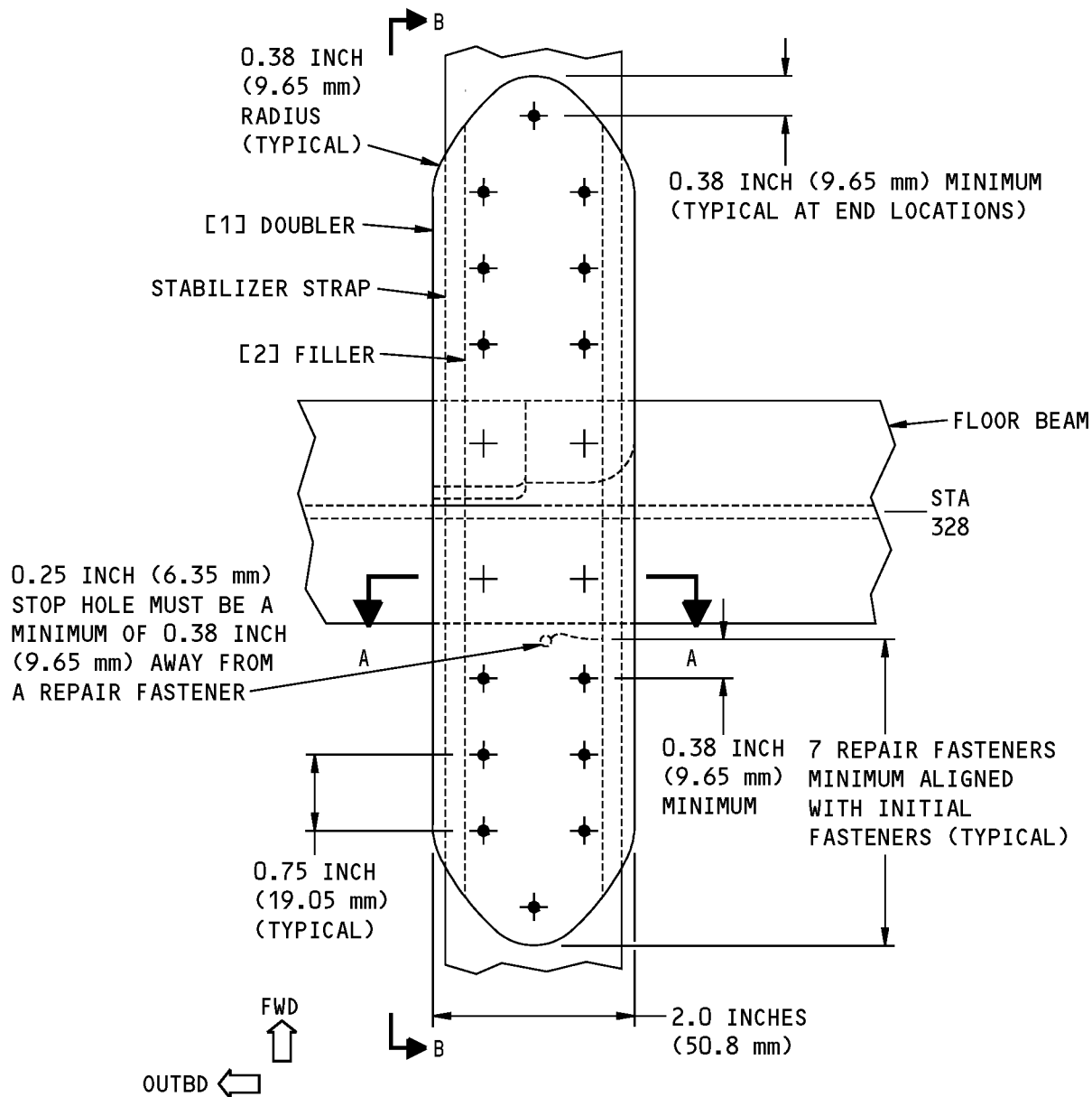
**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 31.6  
Figure 203 (Sheet 2 of 2)**



STRUCTURAL REPAIR MANUAL

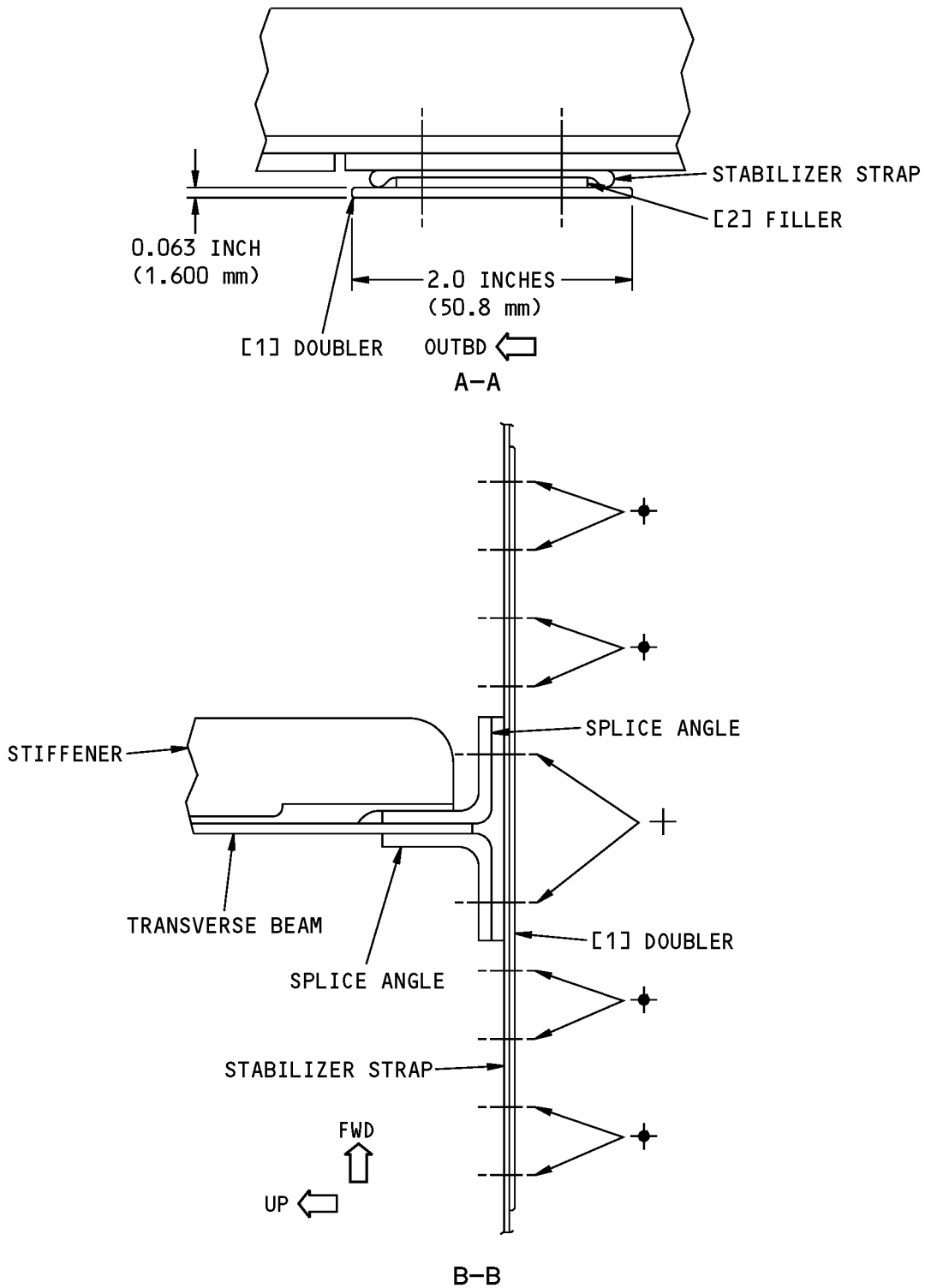


FASTENER SYMBOLS

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.
- REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

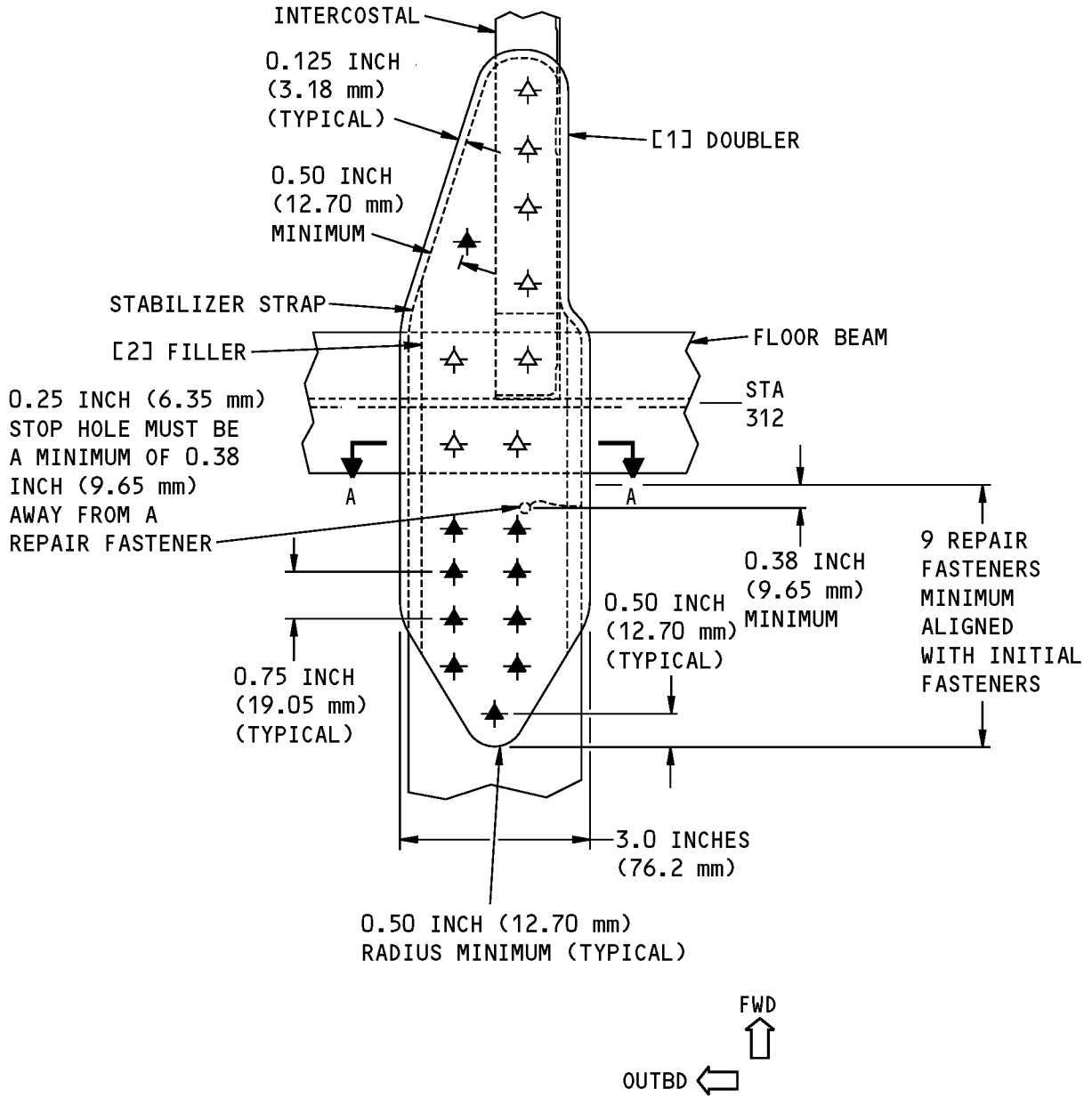
Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 31.6  
Figure 204 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 31.6  
Figure 204 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

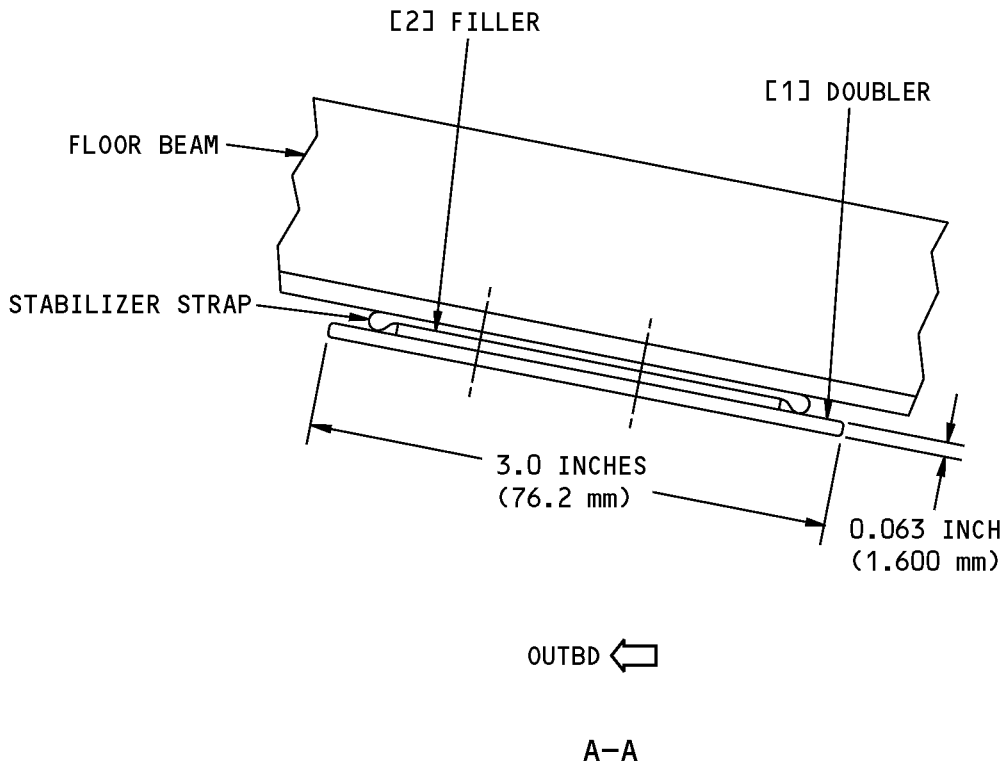


**FASTENER SYMBOLS**

- ✈ INITIAL FASTENER LOCATION. INSTALL A BACB30VT6K( ) HEX DRIVE BOLT UP TO 1/64 INCH DIAMETER OVERSIZE.
- ▲ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K( ) HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

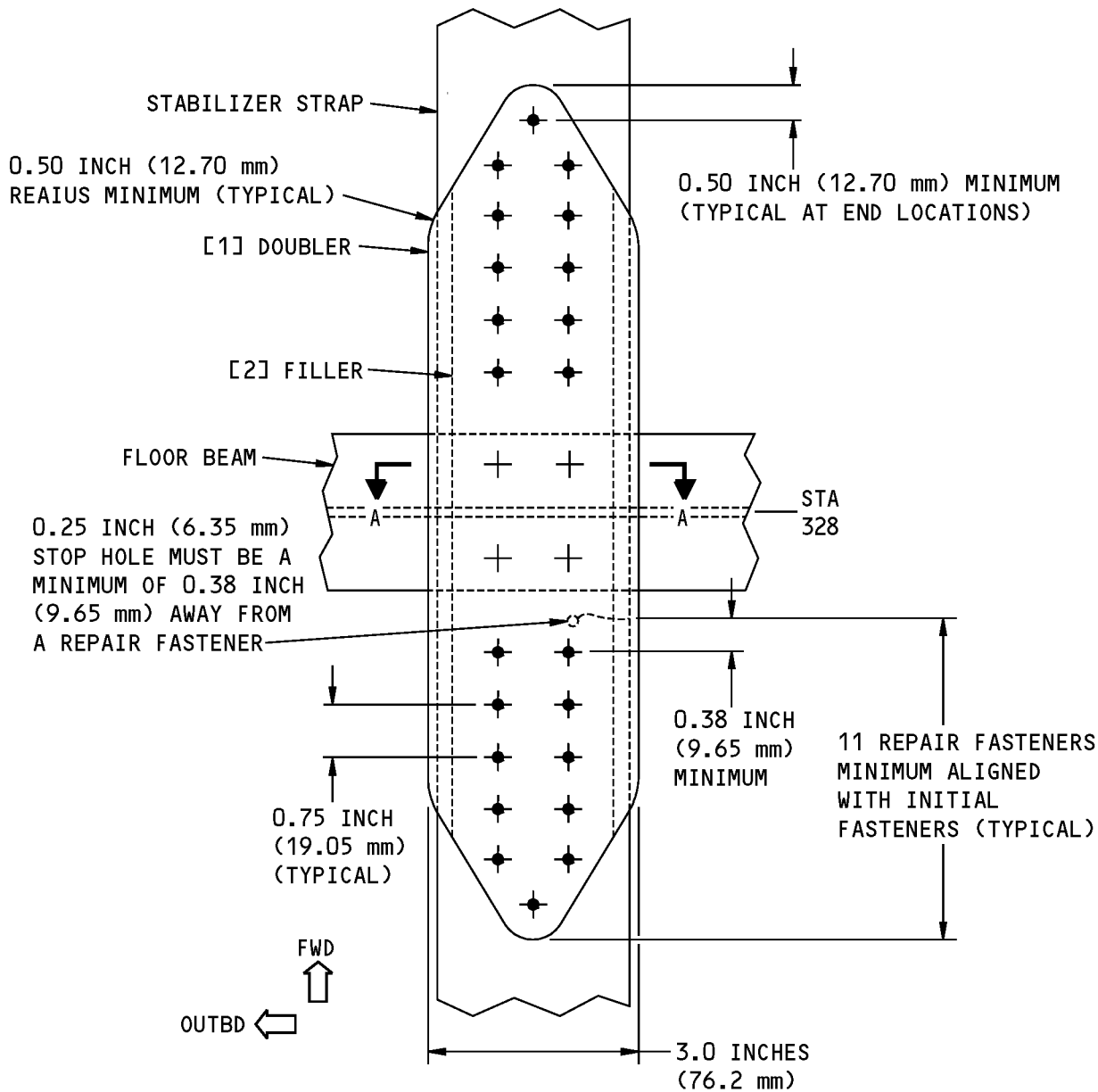
**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 45.5  
Figure 205 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 312 and RBL 45.5  
Figure 205 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL

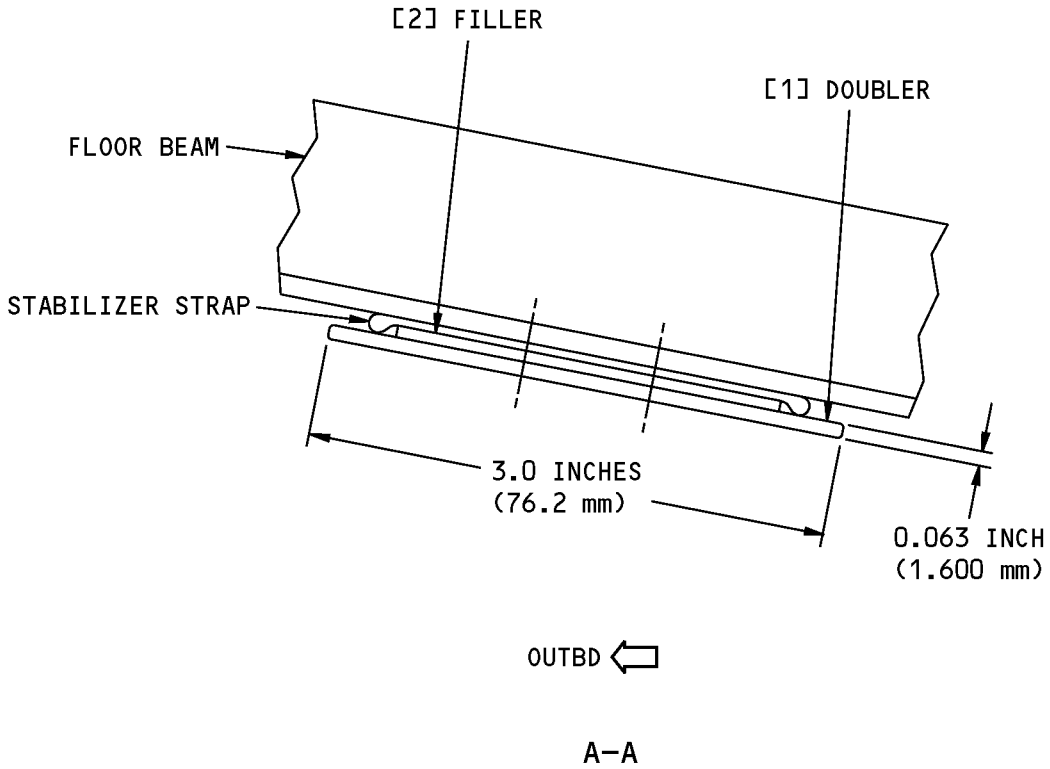


FASTENER SYMBOLS

- + INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K() HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

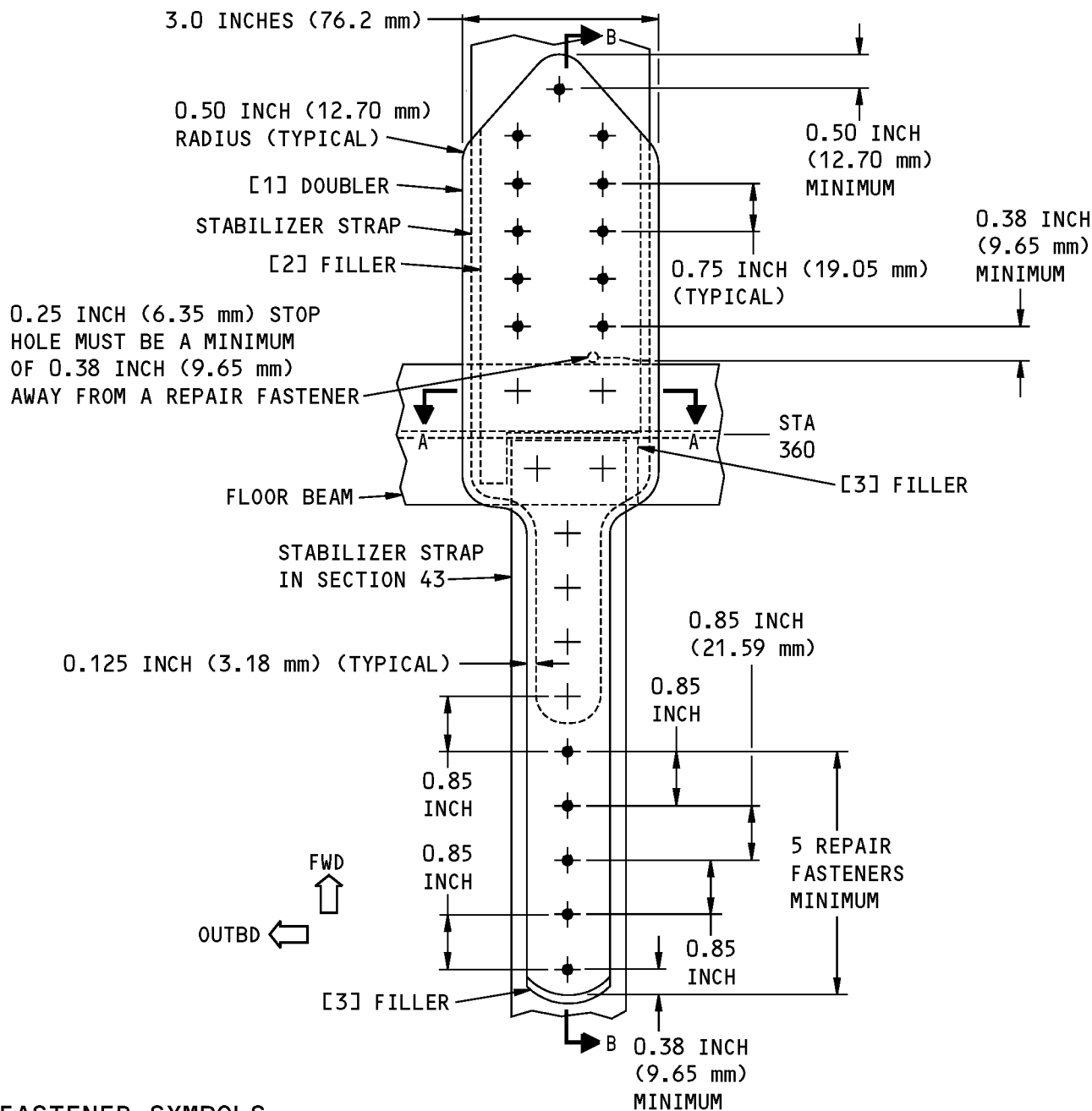
Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 45.5  
Figure 206 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 328 and RBL 45.5  
Figure 206 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

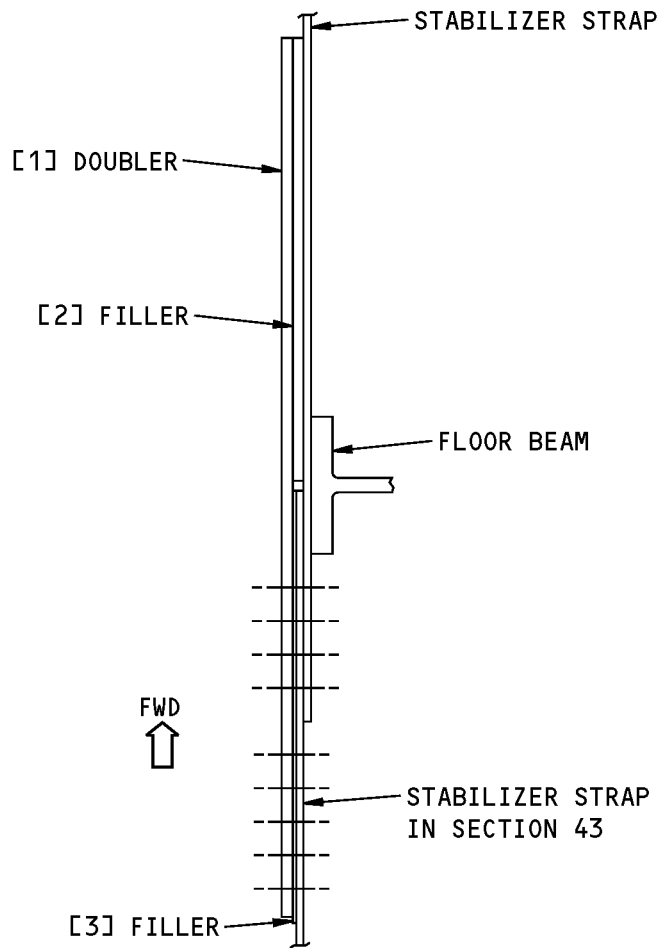
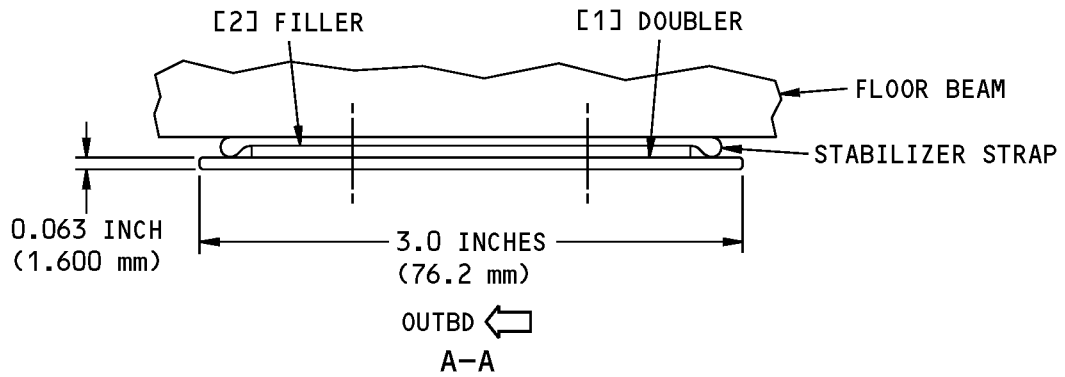


**FASTENER SYMBOLS**

- ✚ INITIAL FASTENER LOCATION. INSTALL A FASTENER THAT IS THE SAME TYPE AND DIAMETER (UP TO 1/32 INCH DIAMETER OVERSIZE FOR RIVETS AND 1/64 INCH DIAMETER OVERSIZE FOR HEX DRIVE BOLTS) AS THE INITIAL FASTENER.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACB30VT6K( ) HEX DRIVE BOLT. REFER TO SRM 51-40-00 THROUGH 51-40-06 FOR THE FASTENER DATA.

**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5  
Figure 207 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** SECTION B-B IS NOT TO SCALE.

B-B

**Section 41 Floor Structure - Stabilizer Strap Crack Repair at Station 360 and RBL 45.5  
Figure 207 (Sheet 2 of 2)**





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## STRUCTURAL REPAIR MANUAL

### REPAIR 6 - SECTION 41 - DAMAGE ON THE UPPER FLANGE OF A FLOOR INTERCOSTAL (MACHINED)

#### 1. Applicability

- A. This repair is applicable to damage on the upper flange of:
- (1) The floor intercostals in Fuselage Section 41. Refer to Figure 201/REPAIR 6 for the floor intercostal locations.
  - (2) The floor intercostals that are machined parts.
  - (3) The floor intercostals that have the same cross-section shown in Figure 202/REPAIR 6, Detail A, Section A-A.
- B. This repair is not applicable if the cracks go into the flange radius, web or stiffener of the floor intercostal. Contact the Boeing Company for an alternative repair.

#### 2. General

- A. This repair gives instructions for a permanent repair. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 to find the definitions of the different categories of repairs.

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
AMM 51-21-00	INTERIOR AND EXTERIOR FINISHES
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

#### 4. Repair Instructions

- A. Get access to the damaged area, as necessary.
- (1) Remove the floor panels and necessary adjacent structure to get access to the damaged floor intercostal.
  - (2) Remove the necessary fasteners in the damaged area. Keep a record of the floor panel fastener location.
- B. Do a visual inspection of the damaged area. Refer to INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the inspection procedure.
- C. Cut and remove the damage. Refer to Figure 202/REPAIR 6, Detail B and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02 for the removal of the damage procedure.

**STRUCTURAL REPAIR MANUAL**

D. Do a High Frequency Eddy Current (HFEC) Inspection of the repair area to make sure that there is no more damage. Refer to 737 NDT Part 6, 51-00-00, Figure 4. If you find more damage, do steps E thru F, Paragraph 4./REPAIR 6 again.

**NOTE:** As an alternative, you can do a penetrant inspection of the repair area. Refer to SOPM 20-20-02.

E. Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

F. Apply a chemical conversion coating to the bare surfaces of the floor intercostal. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.

G. Make the repair parts. Refer to Table 201/REPAIR 6 and SHEET METAL MATERIALS, 51-30-01.

(1) Make the part [1] filler to replace the removed material of the floor intercostal. Refer to Figure 203/REPAIR 6, Details A, B, C, D or E, as applicable.

(2) Make the part [2] filler to fill the space between the upper flange of the floor intercostal and the part [4] angle, if necessary. Refer to Figure 204/REPAIR 6, Detail A.

(3) Make the part [3] angle:

(a) If there is one repair area on the upper flange, as shown in Figure 203/REPAIR 6, Details A, B or D and Figure 204/REPAIR 6, Detail B, as applicable

(b) If there are two repair areas on the upper flange, as shown in Figure 203/REPAIR 6, Details C or E and Figure 204/REPAIR 6, Detail B, as applicable.

(4) Make the part [4] angle, if the removed area is in a position far from a vertical stiffener of the floor intercostal. Refer to Figure 203/REPAIR 6, Detail B or C, as applicable.

(5) Make the part [5] filler to fill a chem-milled area, if necessary. Refer to Figure 204/REPAIR 6, Detail D.

(6) Make the part [6] fitting or the part [7] fitting, as applicable if the removed area is in a position near a vertical stiffener of the floor intercostal. Refer to Figure 204/REPAIR 6, Detail E or Detail F, as applicable.

**Table 201:** Repair Material

ITEM	PART	QUANTITY	MATERIAL
[1]	Filler	As necessary	Use clad 7075-T6 sheet. Thickness is the same as the thickness of the removed material.
[2]	Filler	1	Use clad 7075-T6 sheet, thickness as necessary. Refer to Figure 204/REPAIR 6, Detail A for dimensions.
[3]	Angle	1	Use 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail B for dimensions.
[4]	Angle	1	Use 7075-T7351 extrusion. Refer to Figure Figure 204/REPAIR 6, Detail C for dimensions.
[5]	Filler	As necessary	Use clad 7075-T6 sheet, thickness as necessary. Refer to Figure 204/REPAIR 6, Detail D for dimensions.
[6]	Fitting	1	Use 7075-T7351 plate, or 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail E for dimensions.
[7]	Fitting	1	Use 7075-T7351 plate, or 7075-T6511 extrusion. Refer to Figure 204/REPAIR 6, Detail F for dimensions.

H. Assemble the repair parts as shown in Figure 203/REPAIR 6, Details A, B, C, D, E, and F as applicable. A maximum of 0.010 in. (0.25 mm) pull gap is left before the repair parts installation.

I. Drill necessary fastener holes.

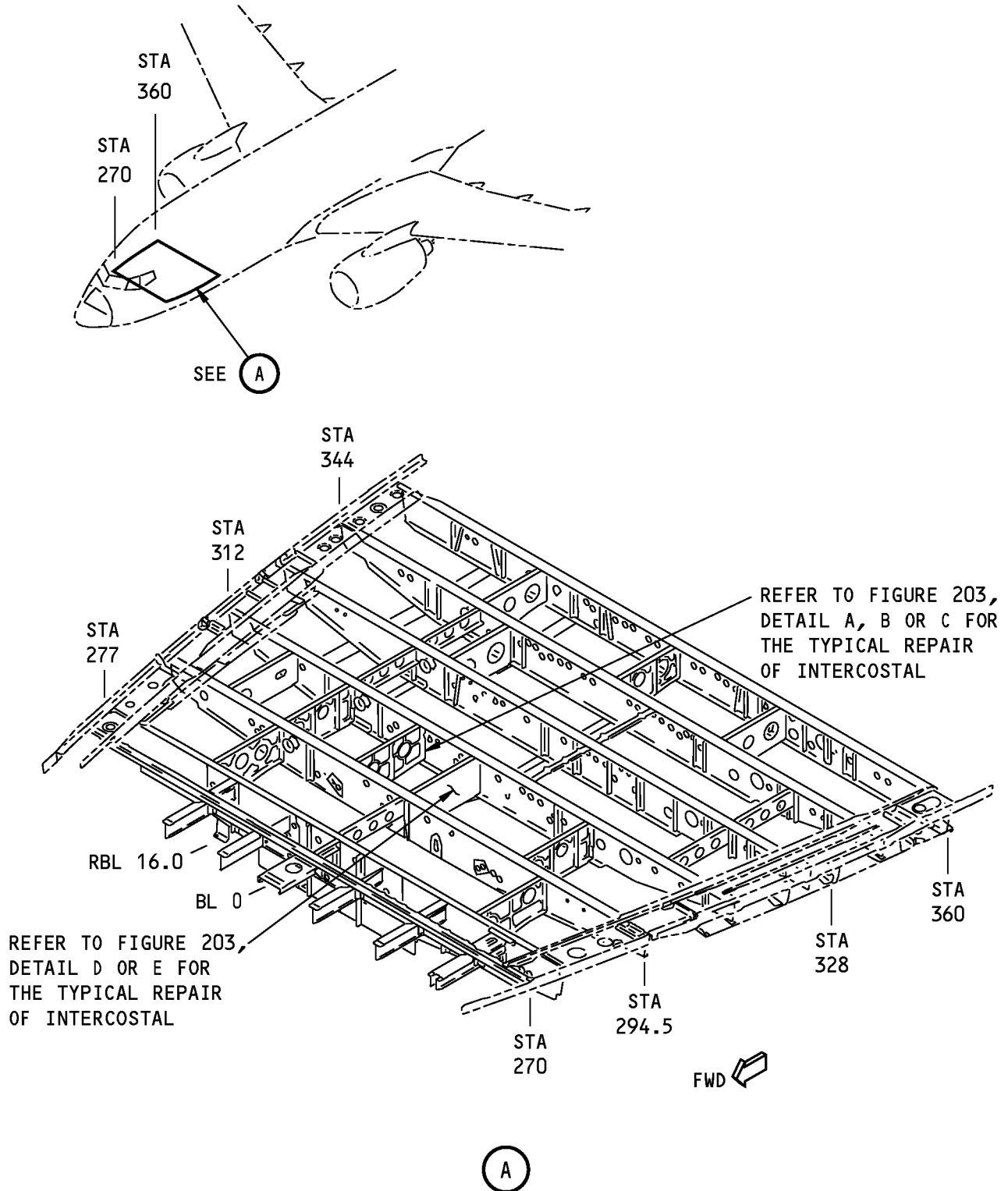


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## STRUCTURAL REPAIR MANUAL

- (1) Do not drill fastener holes through the chem-milled or fillet radius.
  - (2) Refer to Figure 203/REPAIR 6 Details A, B, C, D, or E, as applicable, for the type and size of fasteners.
  - (3) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.
  - (4) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.
- J. Disassemble the repair parts.
- K. Remove all nicks, scratches, gouges, burrs, sharp edges from the repair parts and repaired surfaces of the initial parts.
- L. Apply a chemical conversion coating to the repair parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- M. Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the repair parts and the floor intercostals. Refer to SOPM 20-41-02.
- N. Install the repair part(s) as shown in Figure 203/REPAIR 6 Details A, B, C, D, E, and F as applicable.
- (1) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.
  - (2) Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation.
  - (3) Install hex drive bolts wet with BMS 5-95 sealant. Install the rivets without sealant. Refer to FASTENER HOLE SIZES, 51-40-05.
- O. Apply a fillet seal and fill all gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.
- P. Apply one layer of BMS 10-11, Type I primer to the fastener head in the repair area. Refer to SOPM 20-41-02.
- Q. Apply one layer of BMS 3-23, Type II corrosion inhibiting compound followed by one layer of BMS 3-26 corrosion inhibiting compound to the repair area. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- (1) As an alternative, apply one layer of BMS 3-29 corrosion inhibiting compound. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- R. Install the adjacent structure that you removed.
- S. Install the floor panels.
- (1) Clean the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
  - (2) Apply a chemical conversion coating to the fastener holes as given in PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
  - (3) Apply one layer of BMS 10-11, Type I primer to the fastener holes. Refer to AMM SUBJECT 51-21-00.
  - (4) Apply BMS 3-24 grease to the fastener holes.
  - (5) Install the clip-on nuts or nutplates at each fastener hole, as applicable.
  - (6) Align the clip-on nuts or nutplates and the floor panel fastener holes, as applicable.
- T. Put the floor panels in position and install the fasteners wet with BMS 3-24 grease. Torque the fasteners from 20 in-lb (2.3 N·m) to 25 in-lb (2.8 N·m).

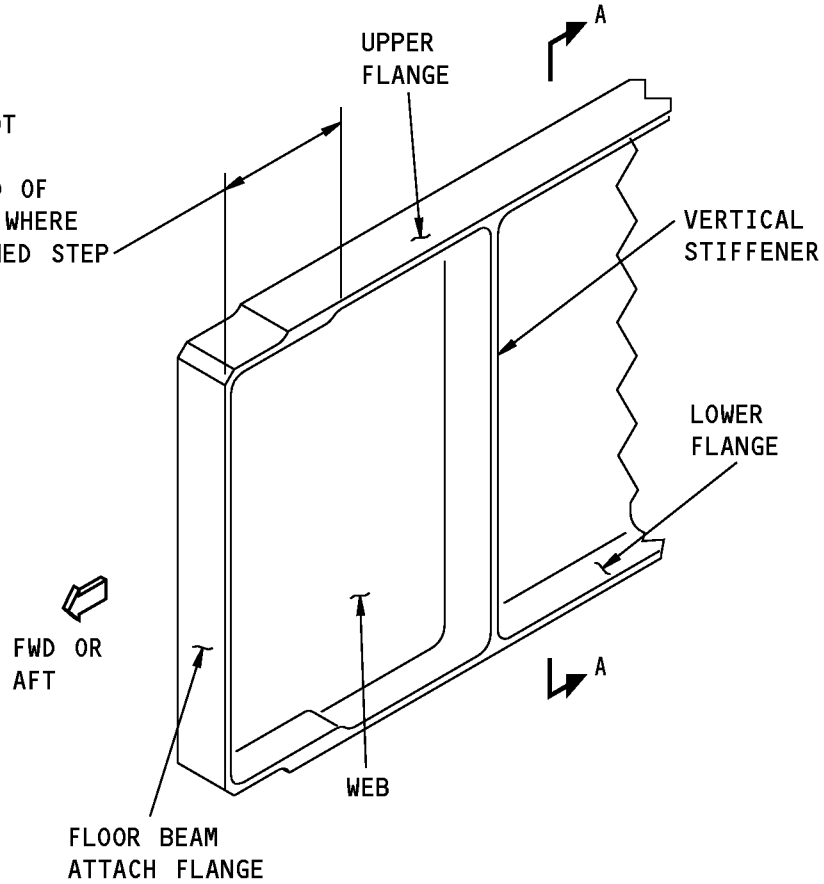
**737-800  
STRUCTURAL REPAIR MANUAL**



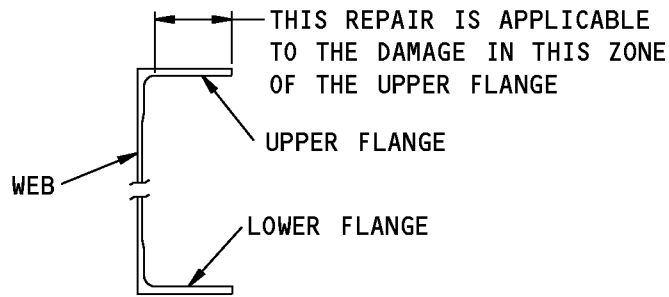
**Floor Intercostal Location  
Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

THIS REPAIR IS NOT APPLICABLE TO THE DAMAGE AT THE END OF THE UPPER FLANGE WHERE THERE IS A MACHINED STEP



**TYPICAL INTERCOSTAL**

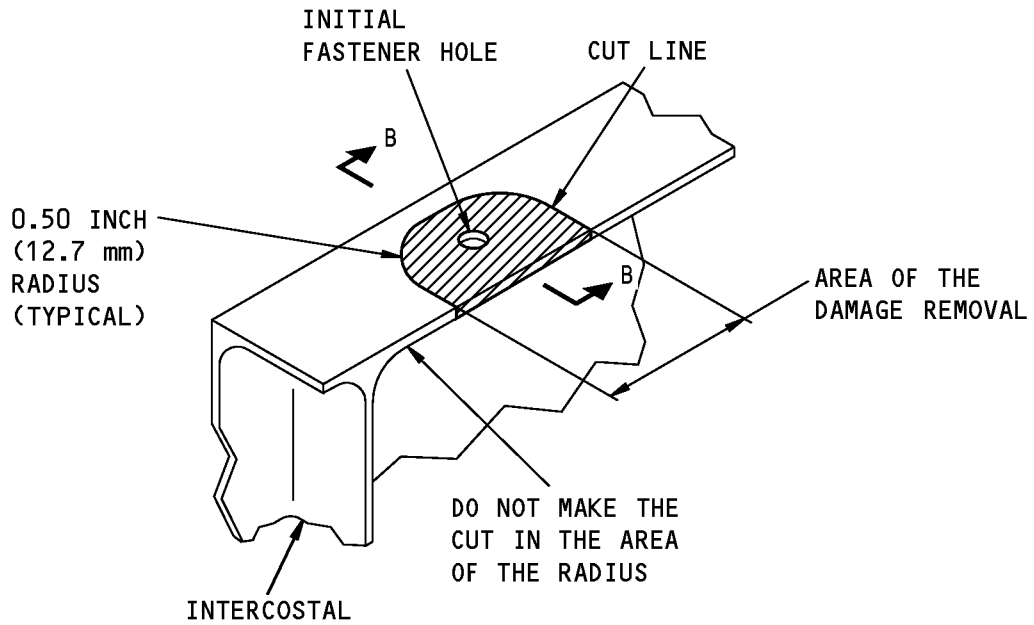



A-A

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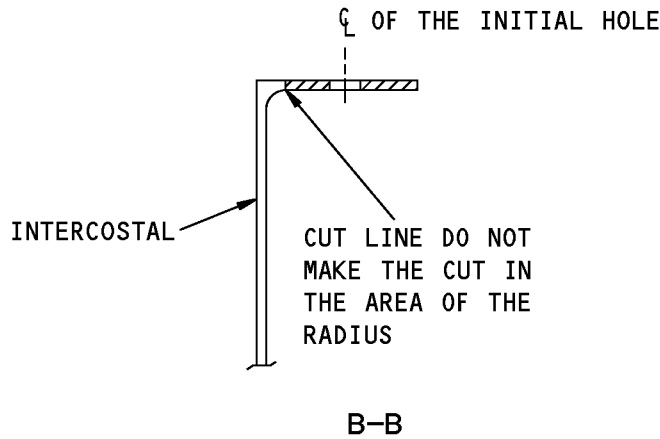
**Removal of the Damage  
Figure 202 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



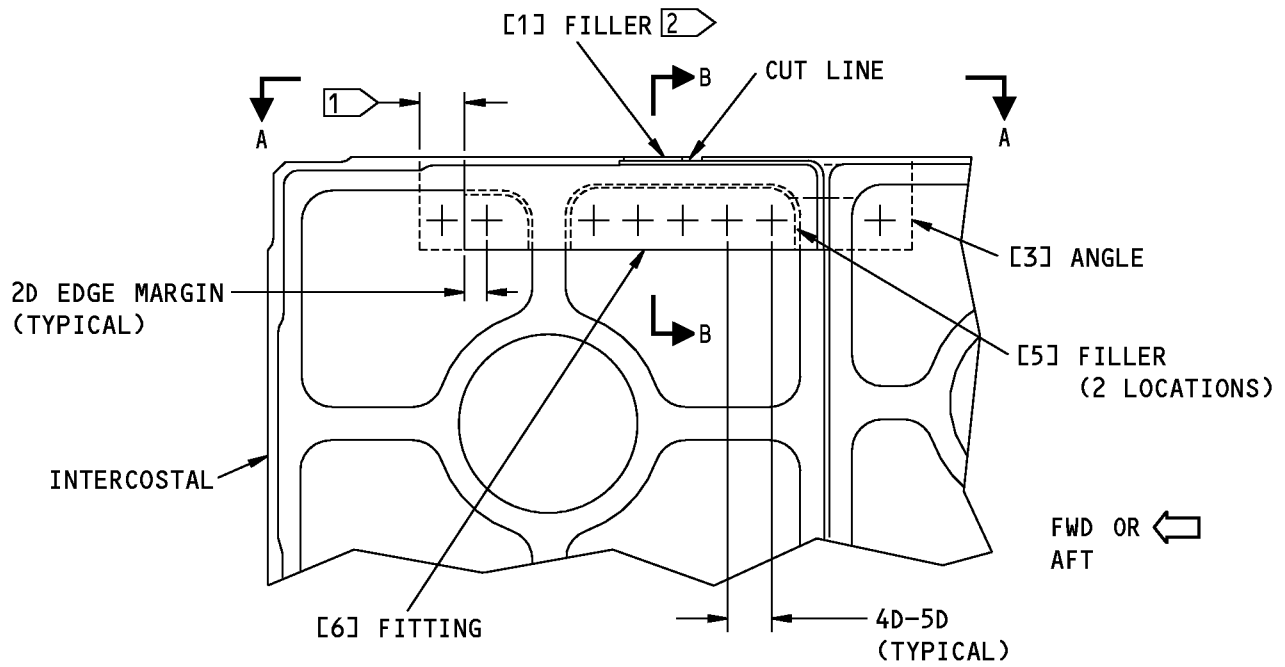
 THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE

**TYPICAL REMOVAL OF THE DAMAGE**



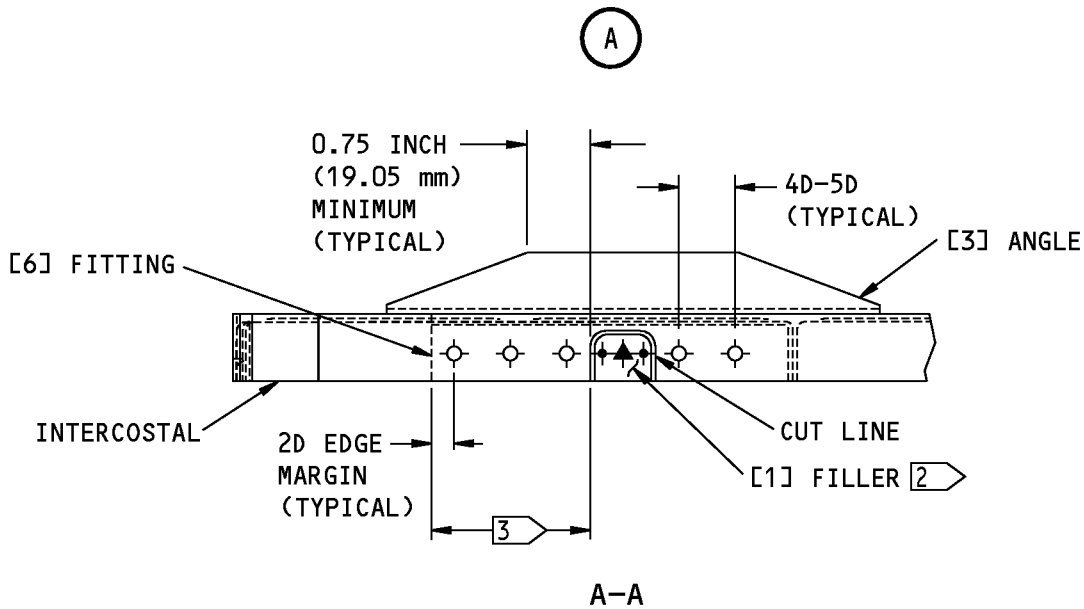
**Removal of the Damage  
Figure 202 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



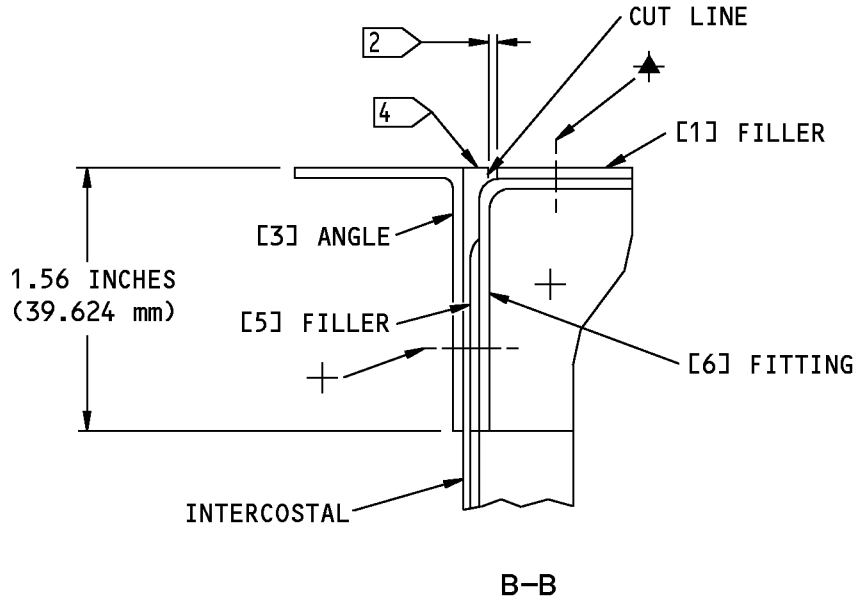
**NOTE:** THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

**TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE  
WITH REPAIR FITTING**



**Floor Intercostal Repair  
Figure 203 (Sheet 1 of 11)**

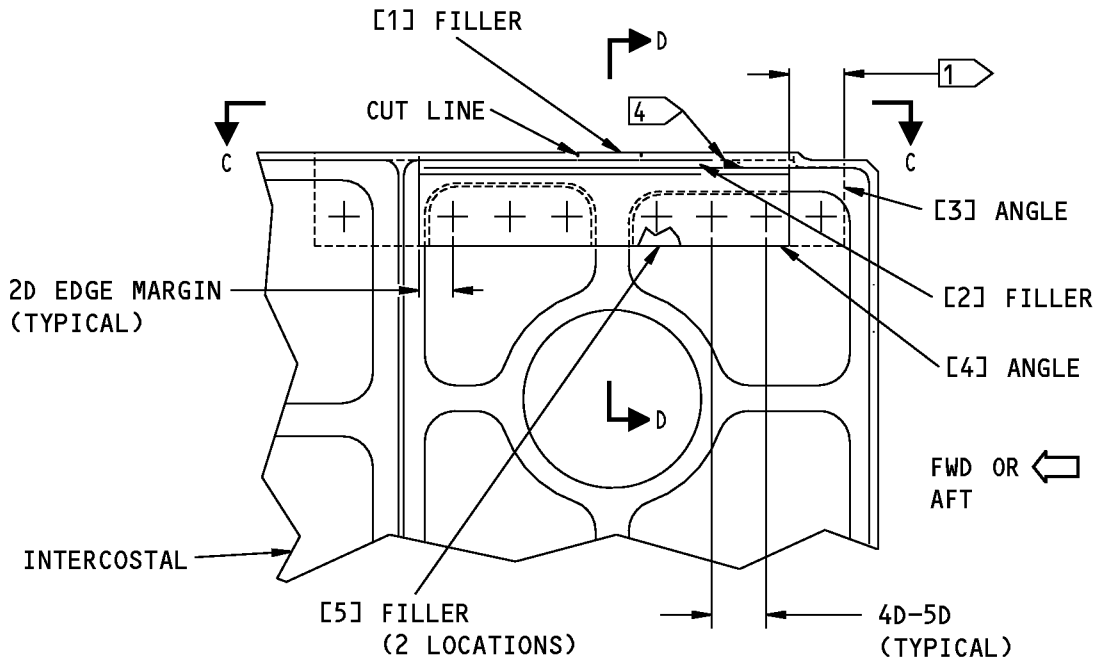
**737-800  
STRUCTURAL REPAIR MANUAL**



**Floor Intercostal Repair  
Figure 203 (Sheet 2 of 11)**

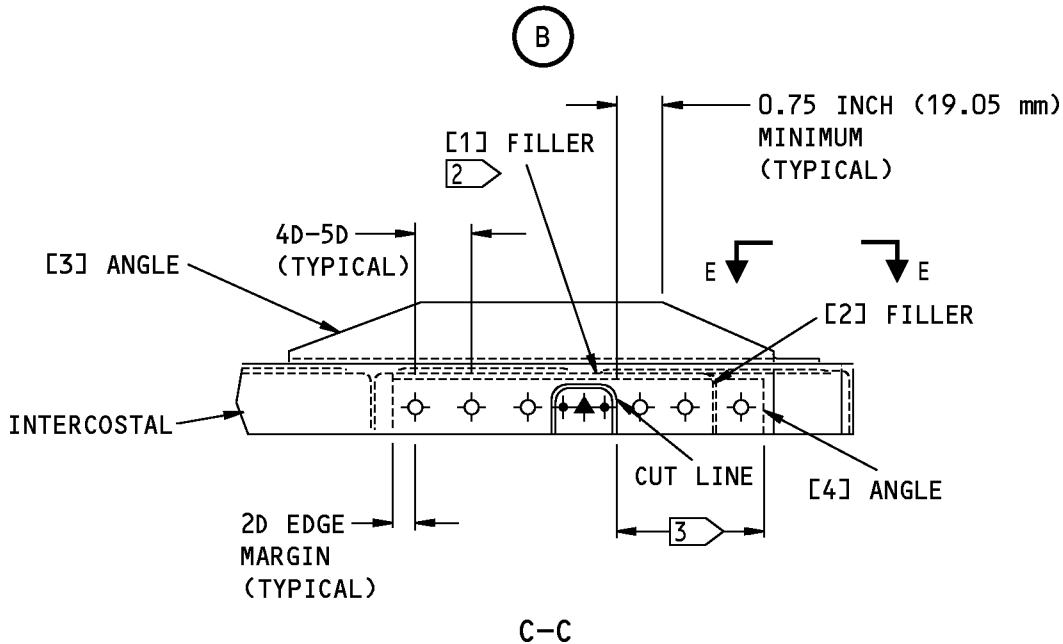


**737-800  
STRUCTURAL REPAIR MANUAL**



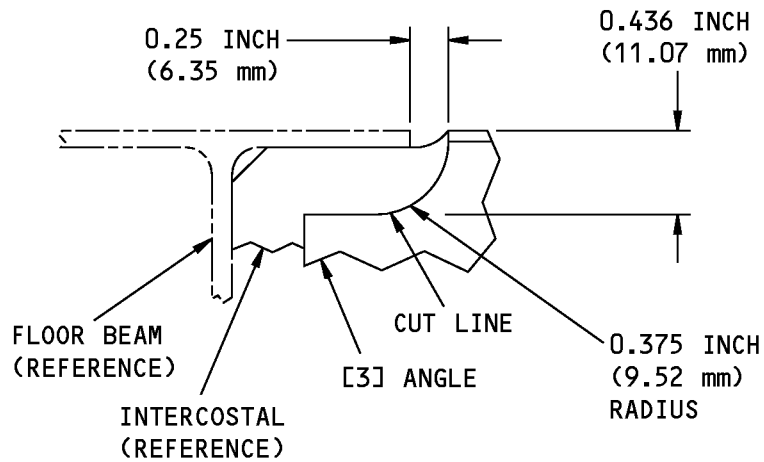
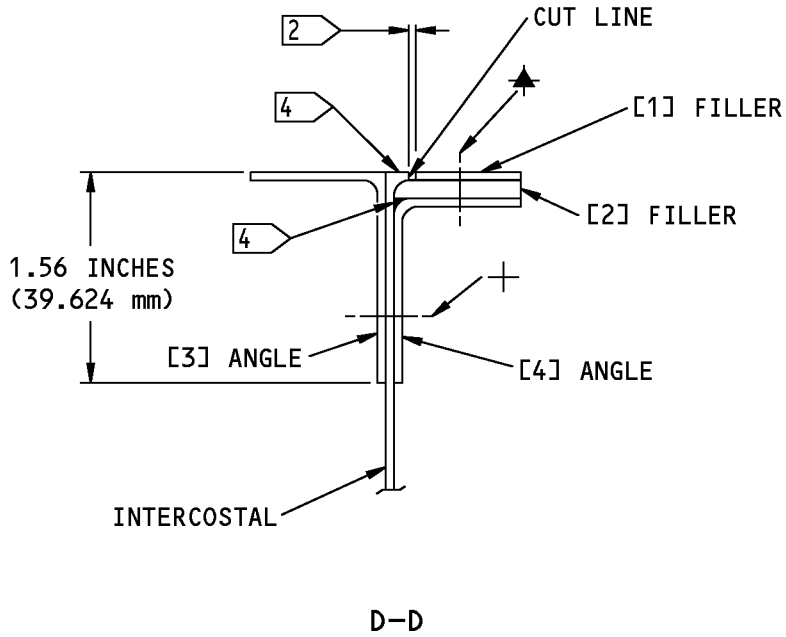
**NOTE:** THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

**TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE WITH REPAIR ANGLE**



**Floor Intercostal Repair  
Figure 203 (Sheet 3 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

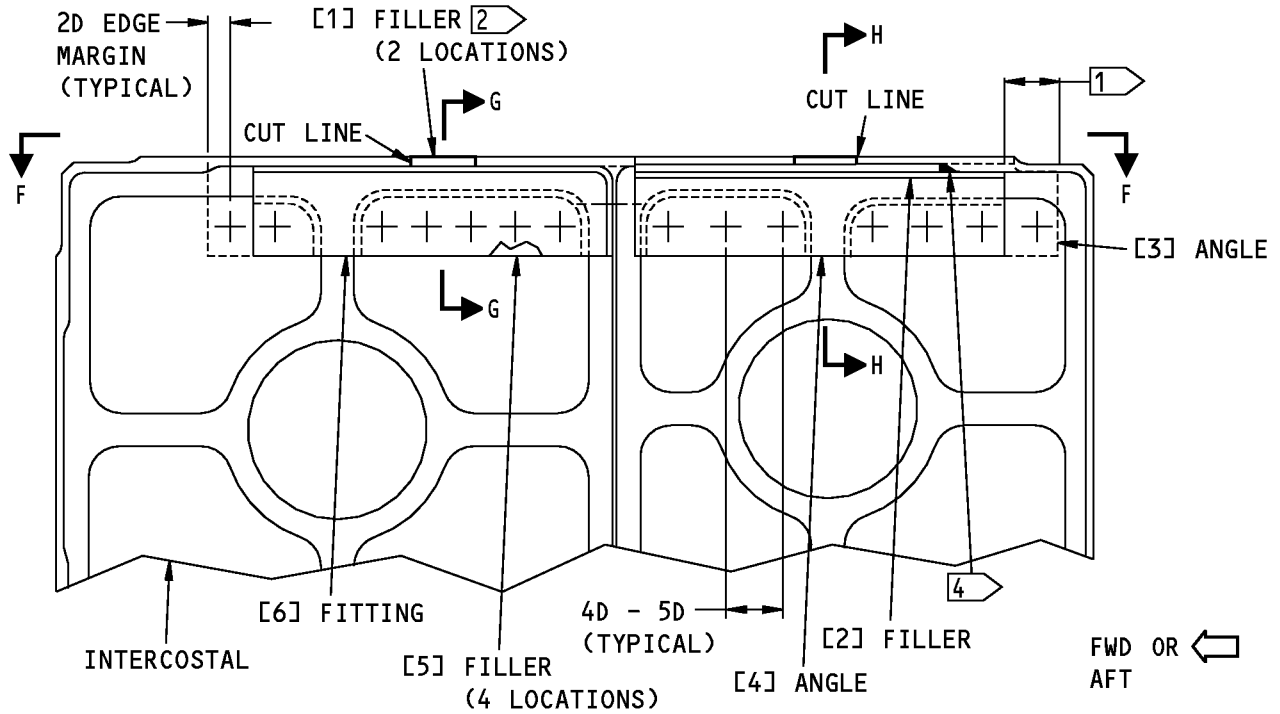


**NOTE:** MAKE CUT IN THE PART [3] ANGLE IF NECESSARY

**E-E  
(VIEW IS ROTATED 180°)**

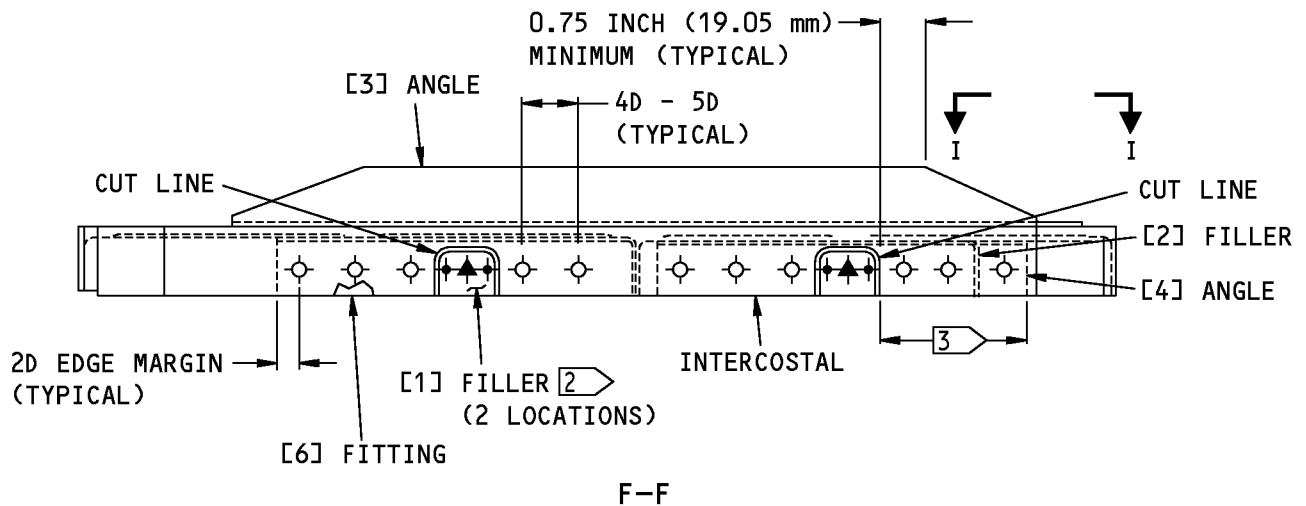
**Floor Intercostal Repair  
Figure 203 (Sheet 4 of 11)**

**STRUCTURAL REPAIR MANUAL**



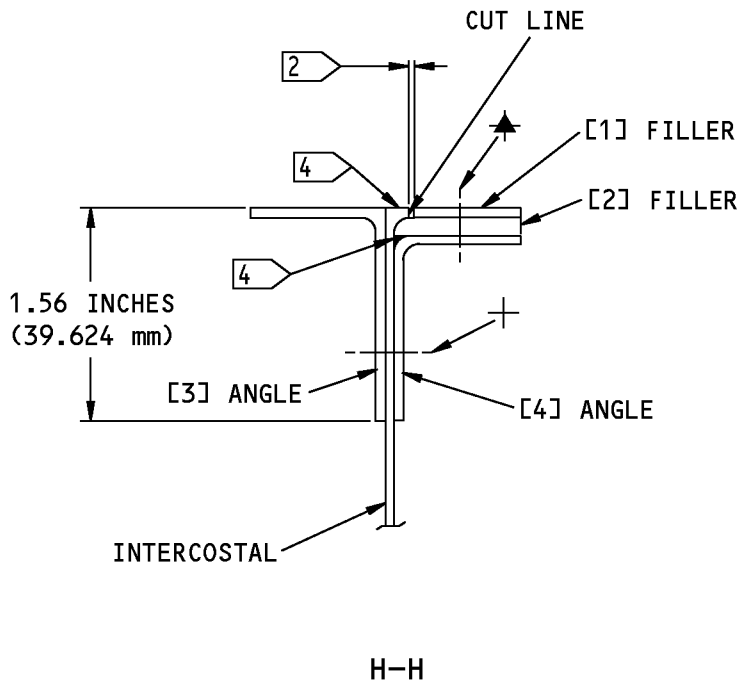
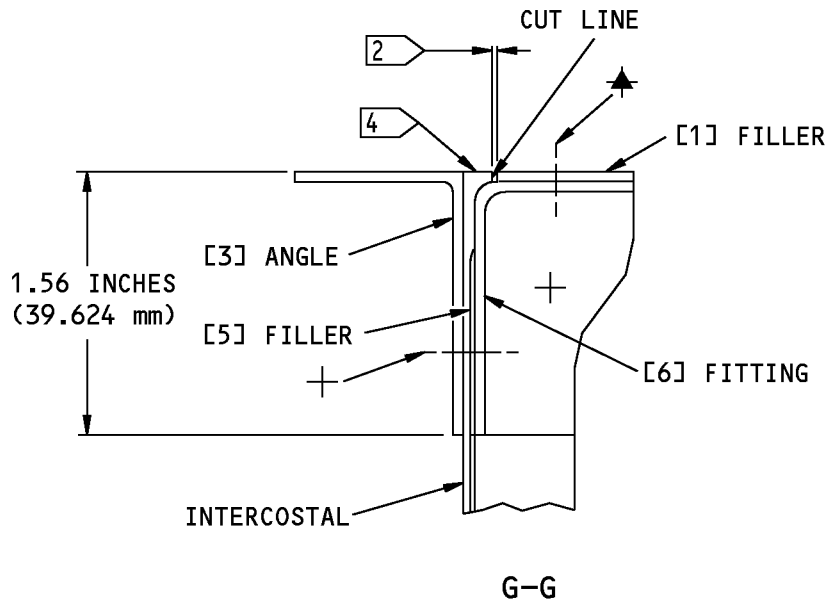
**NOTE:** THE REPAIR OF 0.060 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN  
 TYPICAL REPAIR TO BOTH SIDE OF THE INTERCOSTAL UPPER FLANGE

(C)



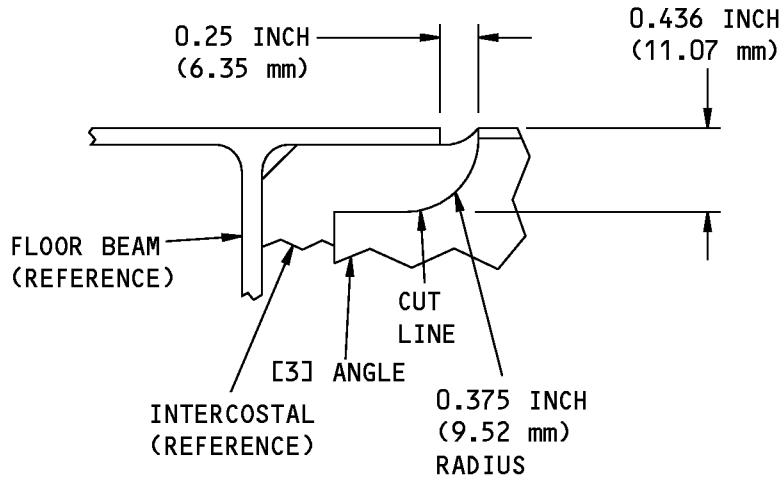
**Floor Intercostal Repair  
 Figure 203 (Sheet 5 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Floor Intercostal Repair  
Figure 203 (Sheet 6 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

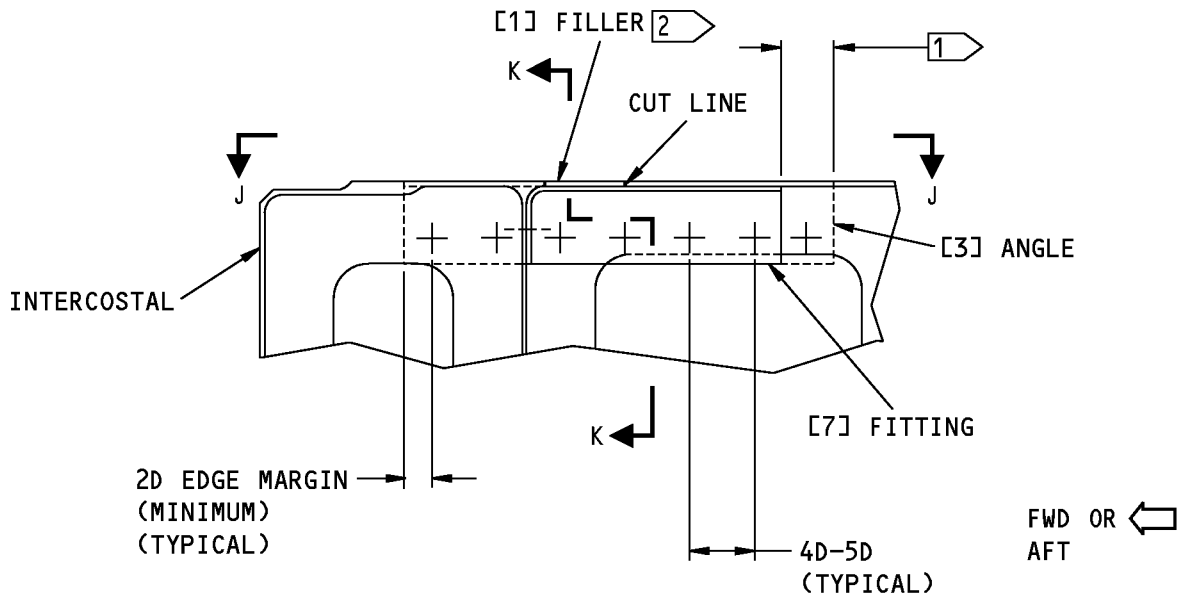


**NOTE:** MAKE CUT IN THE PART [3] IF NECESSARY

**I-I  
(VIEW IS ROTATED 180°)**

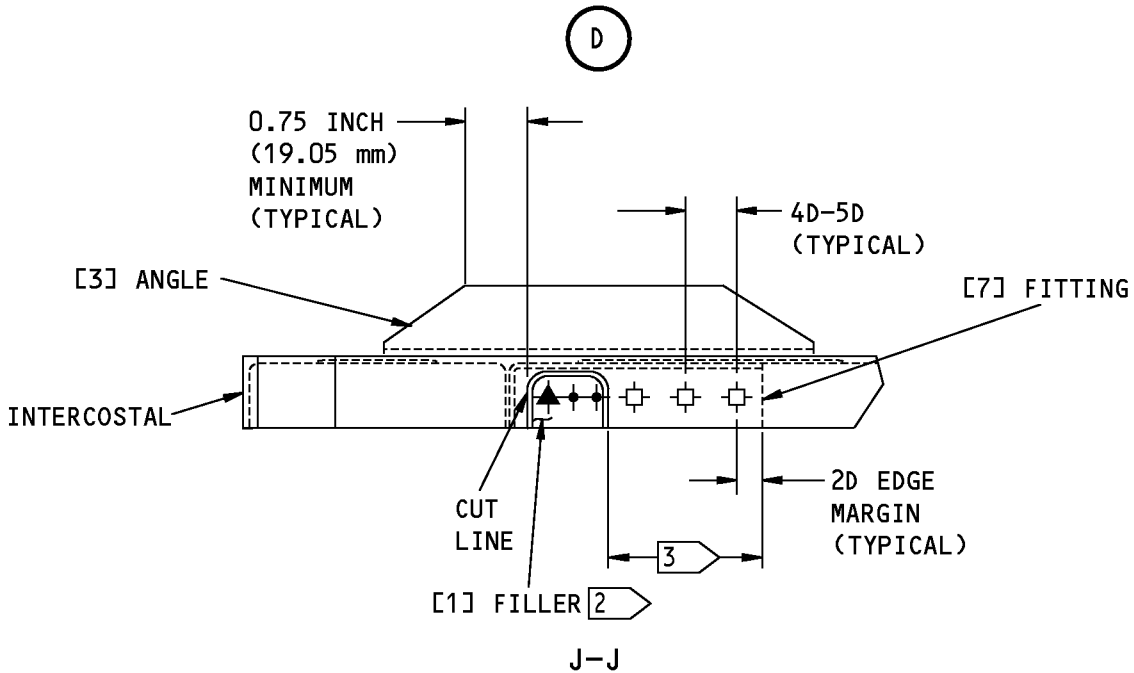
**Floor Intercostal Repair  
Figure 203 (Sheet 7 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



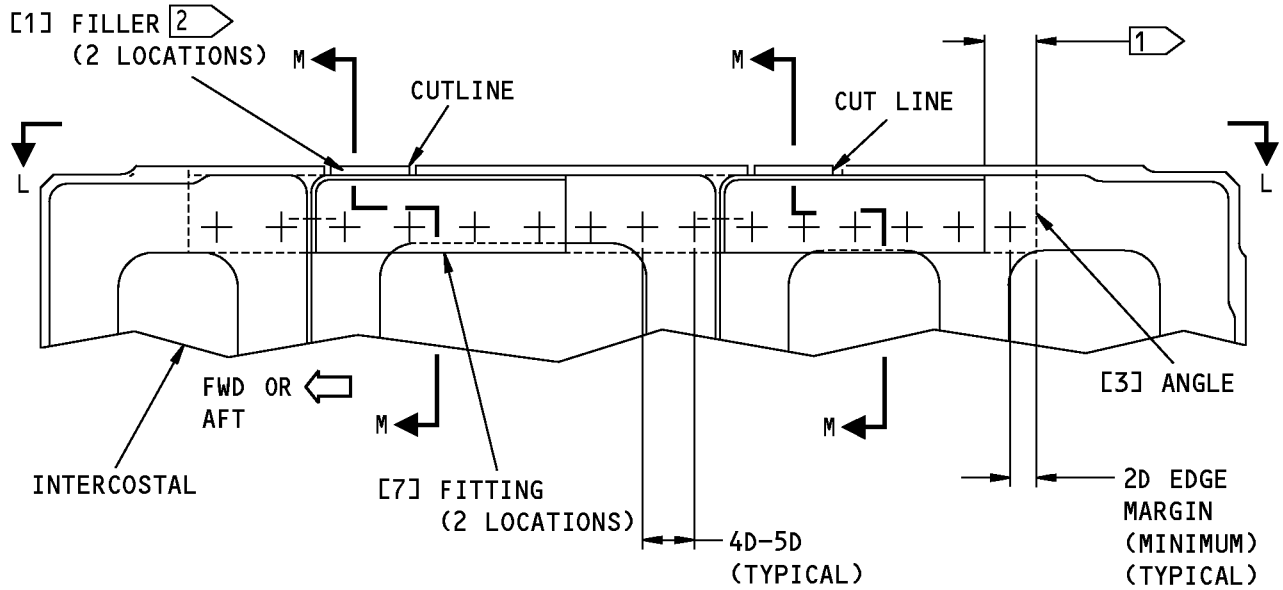
**NOTE:** THE REPAIR OF 0.070 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN.

**TYPICAL REPAIR TO ONE SIDE OF THE INTERCOSTAL UPPER FLANGE  
WITH FITTING**



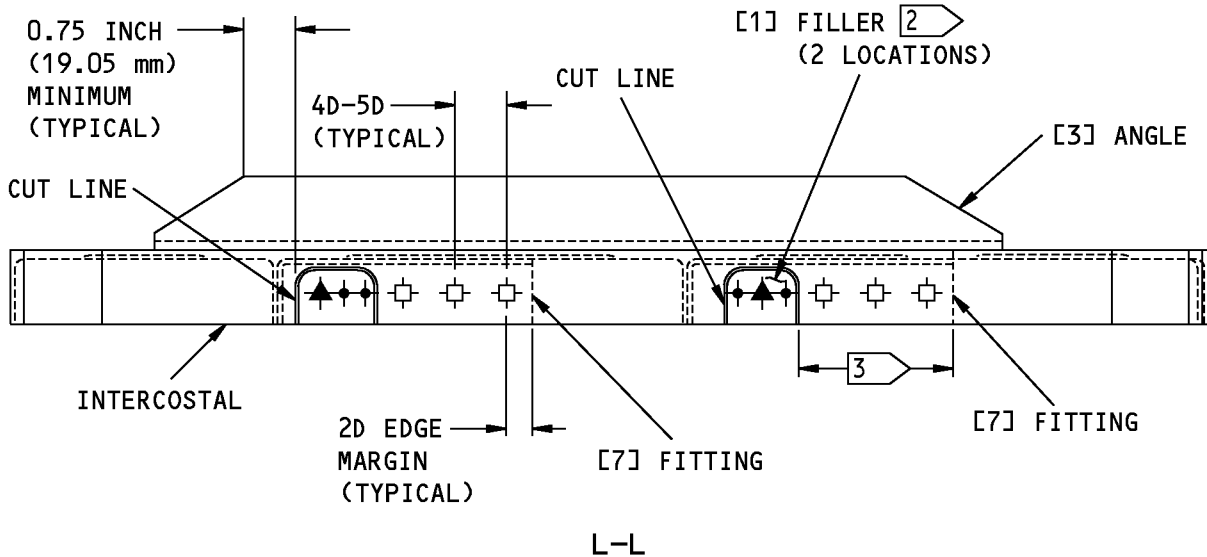
**Floor Intercostal Repair  
Figure 203 (Sheet 8 of 11)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** THE REPAIR OF 0.070 INCH THICK UPPER FLANGE INTERCOSTAL IS SHOWN  
TYPICAL REPAIR TO BOTH SIDE OF THE INTERCOSTAL UPPER FLANGE

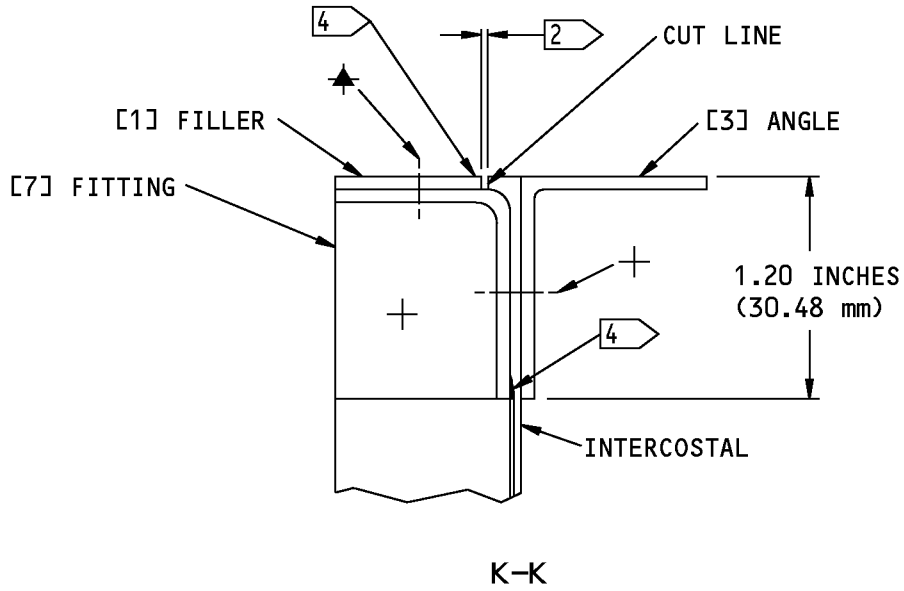
**(E)**



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**Floor Intercostal Repair  
Figure 203 (Sheet 9 of 11)**

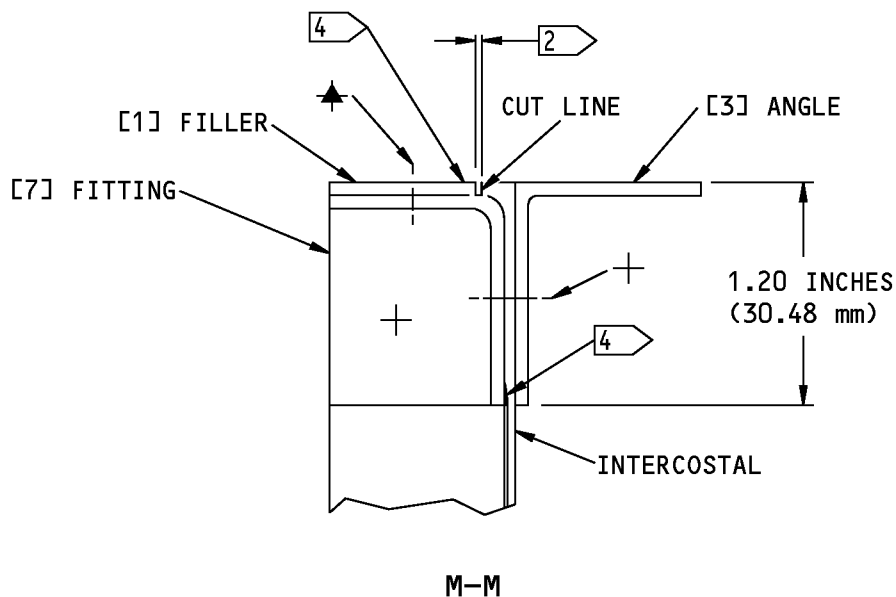
**737-800  
STRUCTURAL REPAIR MANUAL**



**Floor Intercostal Repair  
Figure 203 (Sheet 10 of 11)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTES**

- ALL DIMENSIONS ARE IN INCHES (mm).

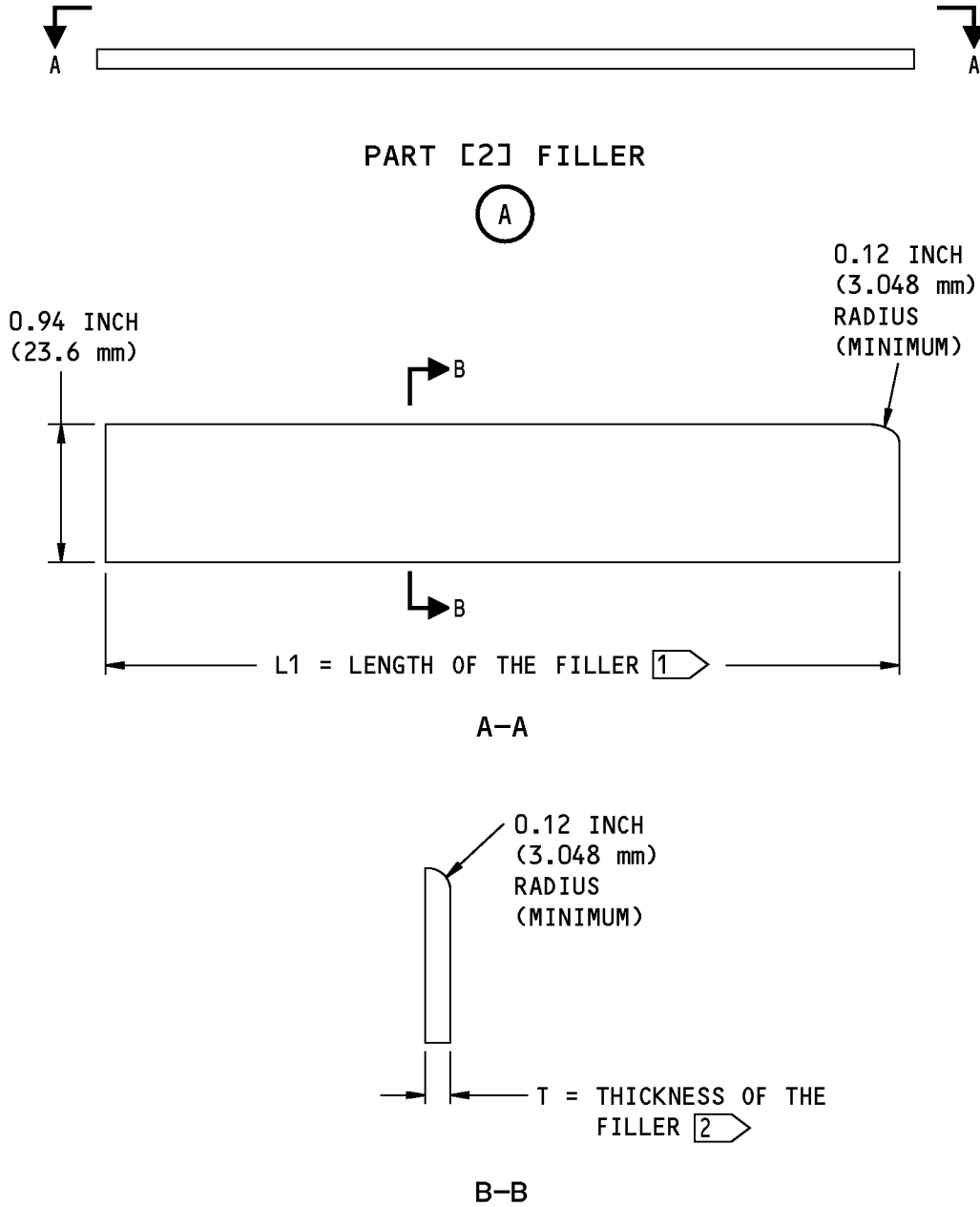
- [1] USE A MINIMUM ONE REPAIR FASTENER THROUGH THE ENDS OF EACH FLANGE OF THE PART [3] ANGLE.
- [2] MAKE SURE THAT THE GAP BETWEEN THE PART [1] FILLER AND THE INITIAL CHORD IS NOT MORE THAN 0.010 INCH (0.12 mm) BEFORE FASTENER INSTALLATION.
- [3] USE A MINIMUM OF 3 REPAIR FASTENERS FROM THE CUT LINE.
- [4] FILL ALL GAPS WITH BMS 5-95 SEALANT.

**FASTENER SYMBOLS**

- ▲ FLOOR PANEL FASTENER LOCATION. INSTALL A BACN10JR3CFD NUTPLATE WITH A BACR15BA3AD()C RIVETS WHERE BACN10VR()CG CLIP-ON NUT CAN NOT BE INSTALLED.
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15BA3AD()C RIVETS.
- ⊙ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K()X HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊠ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K() HEX DRIVE BOLT WITH A BACC30M COLLAR.

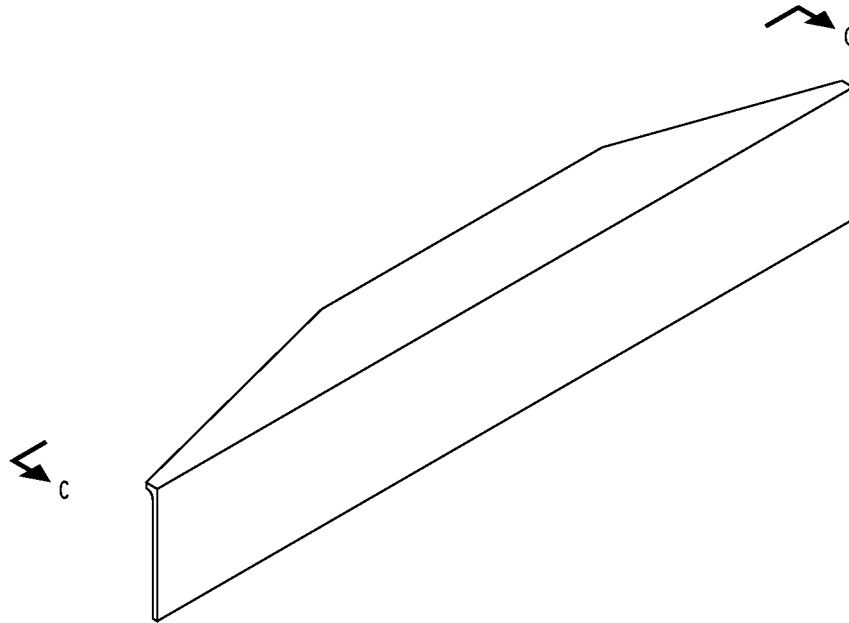
**Floor Intercostal Repair  
Figure 203 (Sheet 11 of 11)**

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STRUCTURAL REPAIR MANUAL**



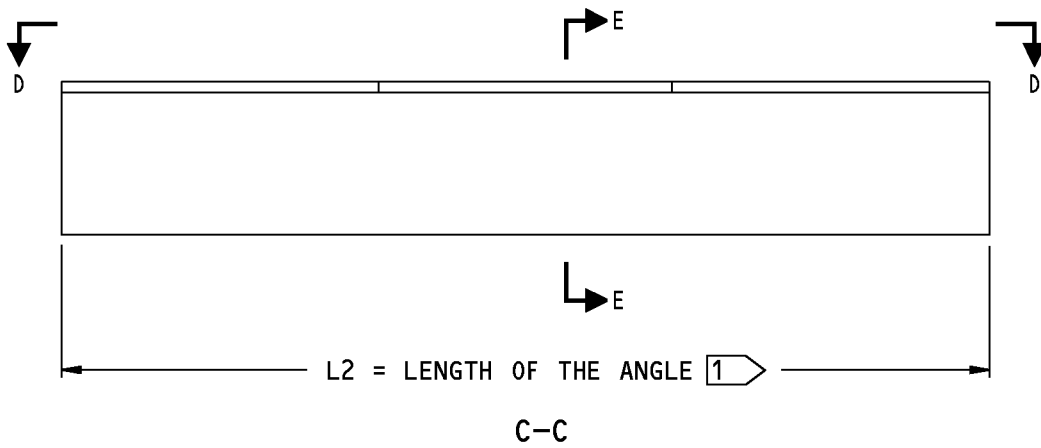
**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 1 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



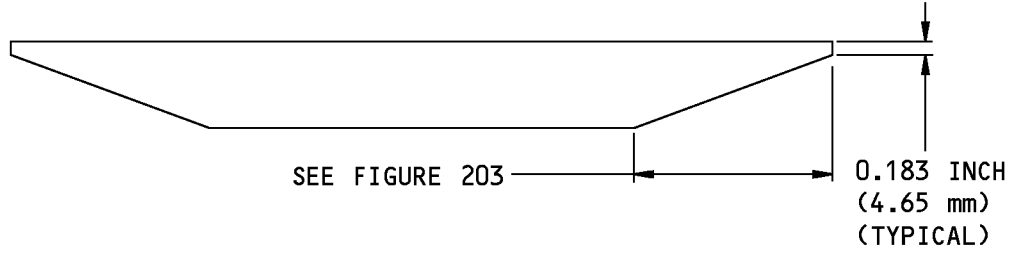
**PART [3] ANGLE**

**(B)**

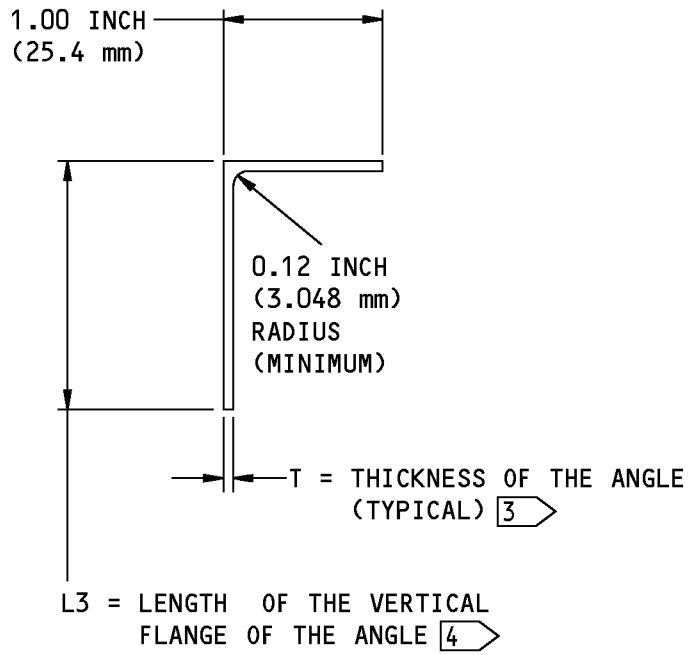


**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 2 of 10)**

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STRUCTURAL REPAIR MANUAL**



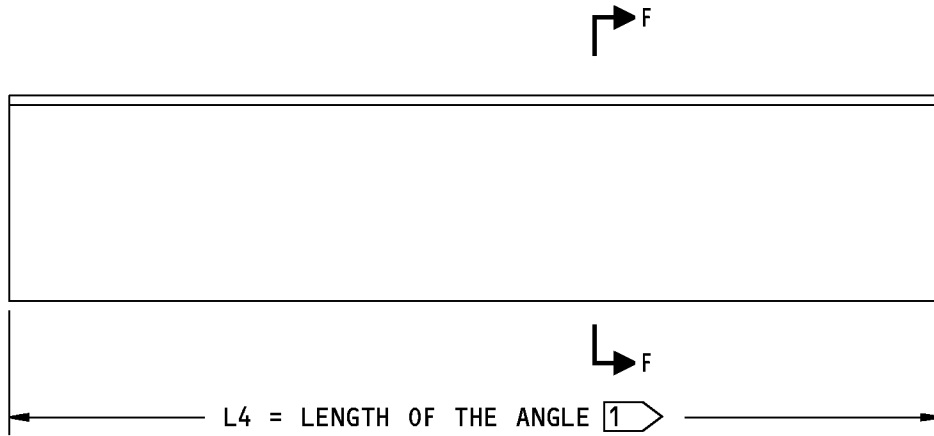
D-D



E-E

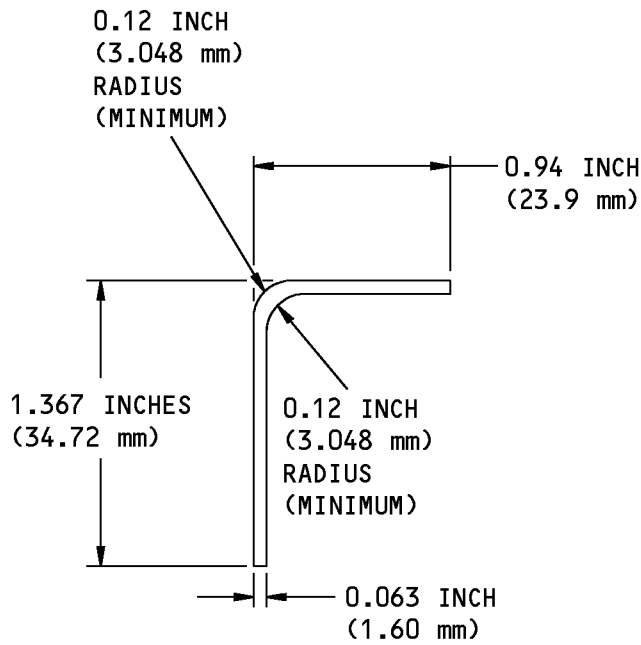
**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 3 of 10)**

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STRUCTURAL REPAIR MANUAL



REPAIR PART [4] ANGLE

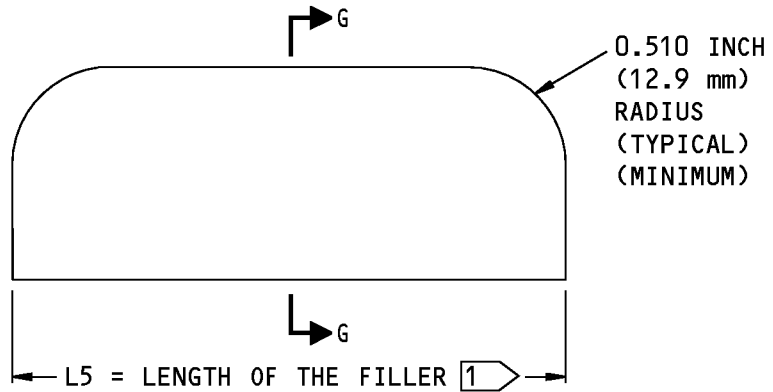
(C)



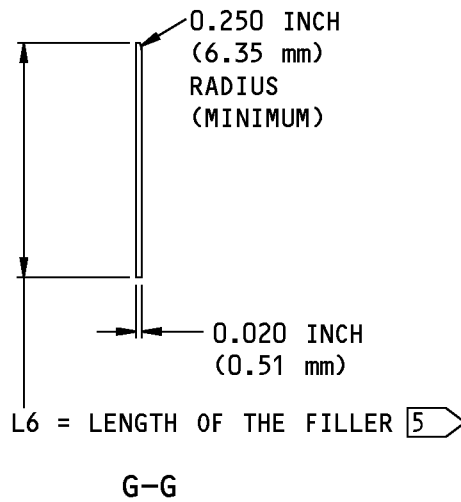
F-F

Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 4 of 10)

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STRUCTURAL REPAIR MANUAL**

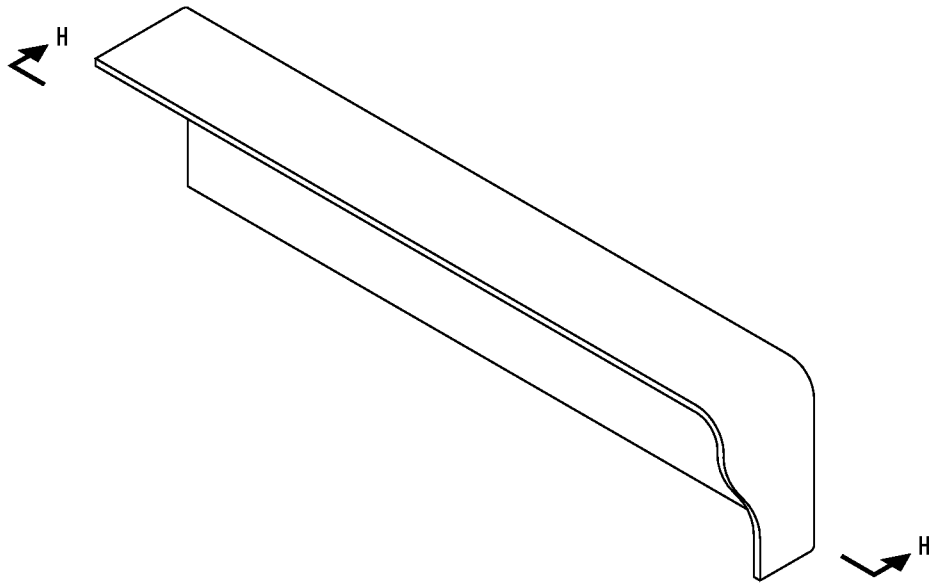


REPAIR PART [5] FILLER



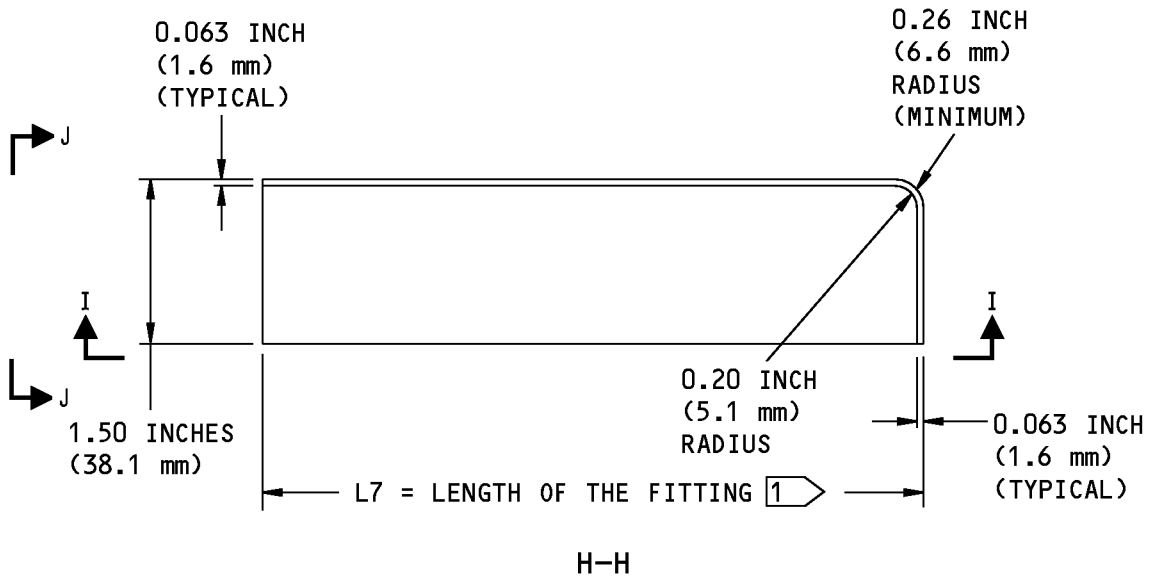
**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 5 of 10)**

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STRUCTURAL REPAIR MANUAL**



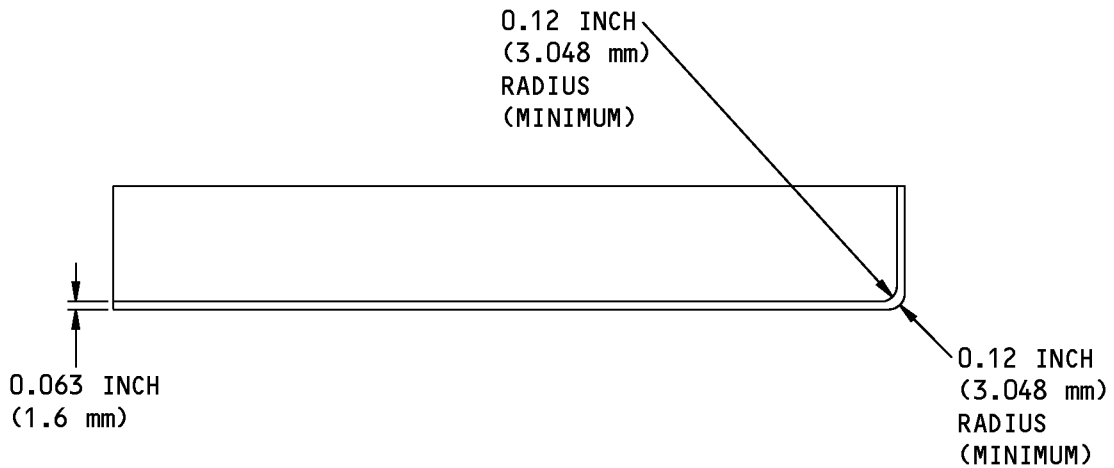
**REPAIR PART [6] FITTING**

**E**

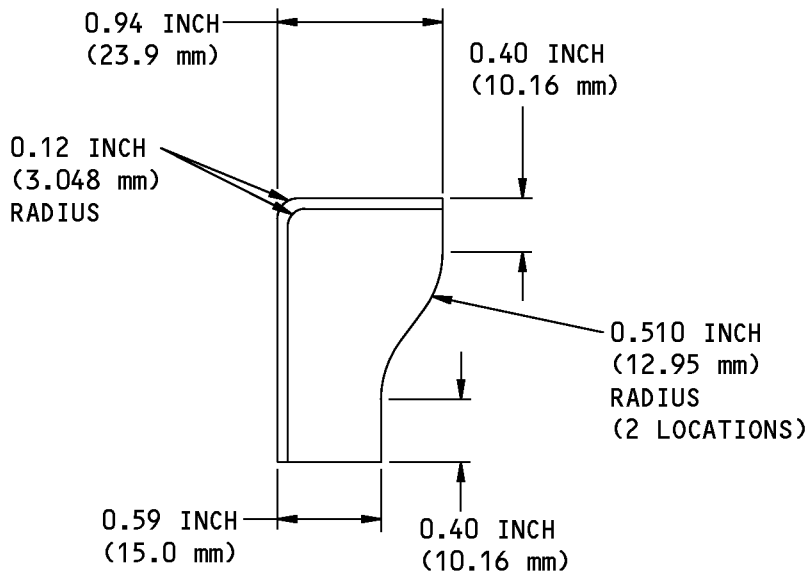


**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 6 of 10)**

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STRUCTURAL REPAIR MANUAL**



I-I

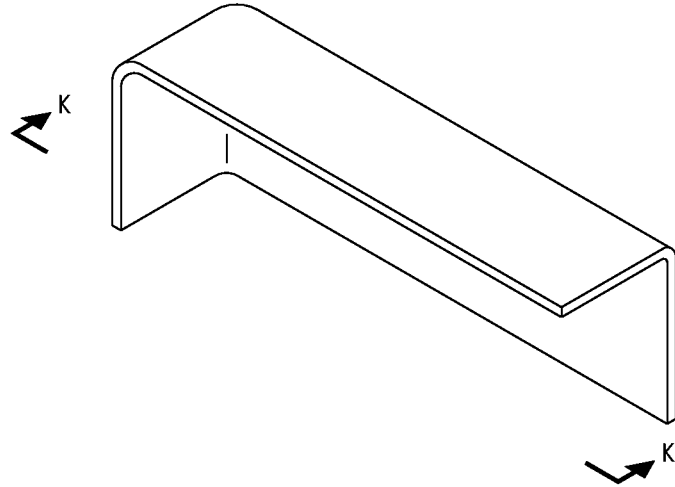


J-J

**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 7 of 10)**

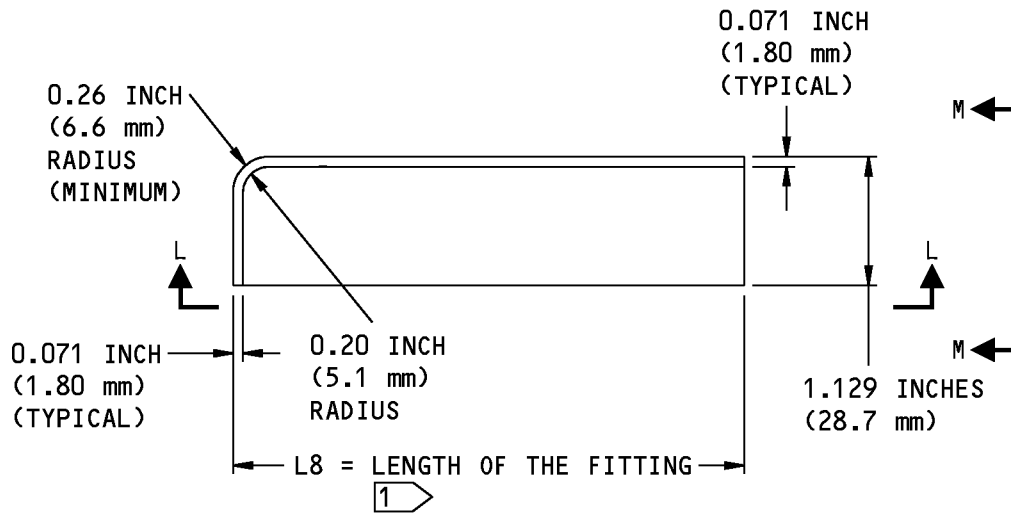


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STRUCTURAL REPAIR MANUAL**



**REPAIR PART [7] FITTING**

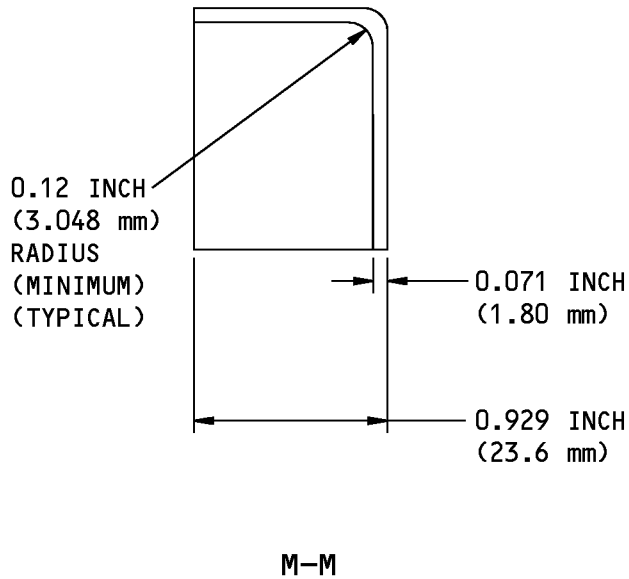
**F**



**K-K**

**Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 8 of 10)**

**737-800**  
**STRUCTURAL REPAIR MANUAL**



**Repair Parts for Floor Intercostal Repair**  
**Figure 204 (Sheet 9 of 10)**



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## STRUCTURAL REPAIR MANUAL

### NOTES

- D = DIAMETER OF THE FASTENER.

- 1 MAKE SURE THAT LENGTH OF THE REPAIR PARTS, AS NECESSARY, KEEPS  $4D-5D$  DISTANCE BETWEEN FASTENERS AND  $2D$  EDGE MARGIN.
- 2 MAKE THE THICKNESS OF THE PART [2] FILLER AS NECESSARY TO FILL THE SPACE BETWEEN THE UPPER FLANGE OF THE FLOOR INTERCOSTAL AND PART [4] ANGLE.
- 3 USE THE THICKNESS OF THE PART [3] ANGLE EQUAL TO THE THICKNESS OF THE UPPER FLANGE OF THE INITIAL INTERCOSTAL.
- 4 SEE FIGURE 203 FOR LENGTH OF THE VERTICAL FLANGE OF THE PART [3] ANGLE.
- 5 MAKE THE LENGTH OF THE PART [5] FILLER AS NECESSARY TO FILL THE SPACE BETWEEN THE FLOOR INTERCOSTAL AND PART [4] ANGLE OR PART [6] FITTING.

Repair Parts for Floor Intercostal Repair  
Figure 204 (Sheet 10 of 10)

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**53-10-51**

REPAIR 6  
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Mar 10/2009



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## STRUCTURAL REPAIR MANUAL

### REPAIR 7 - SECTION 41 - DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 328

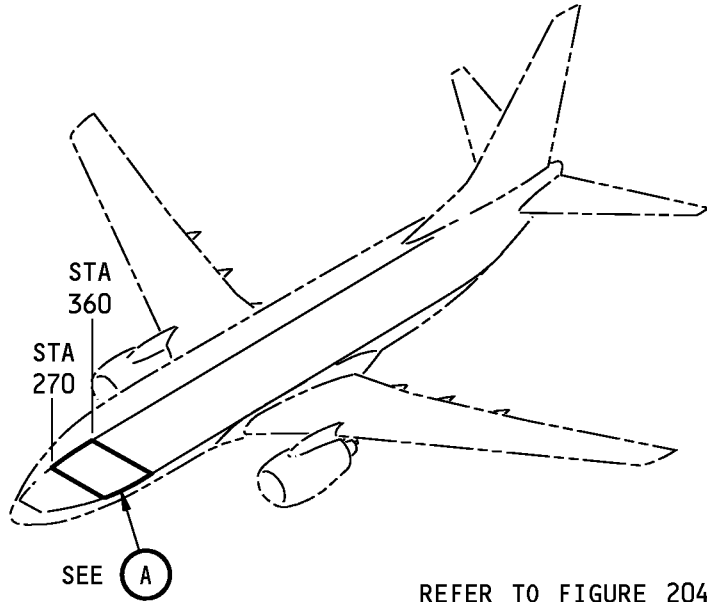
#### 1. Applicability

- A. This repair is applicable to damage on the two flanges of the upper chord of the floor beam at STA 328.
- B. This repair is applicable to both the Right Hand (RH) and Left Hand (LH) side of the floor beam. Repairs to the RH side are shown. Repairs to the LH side are opposite except where shown.

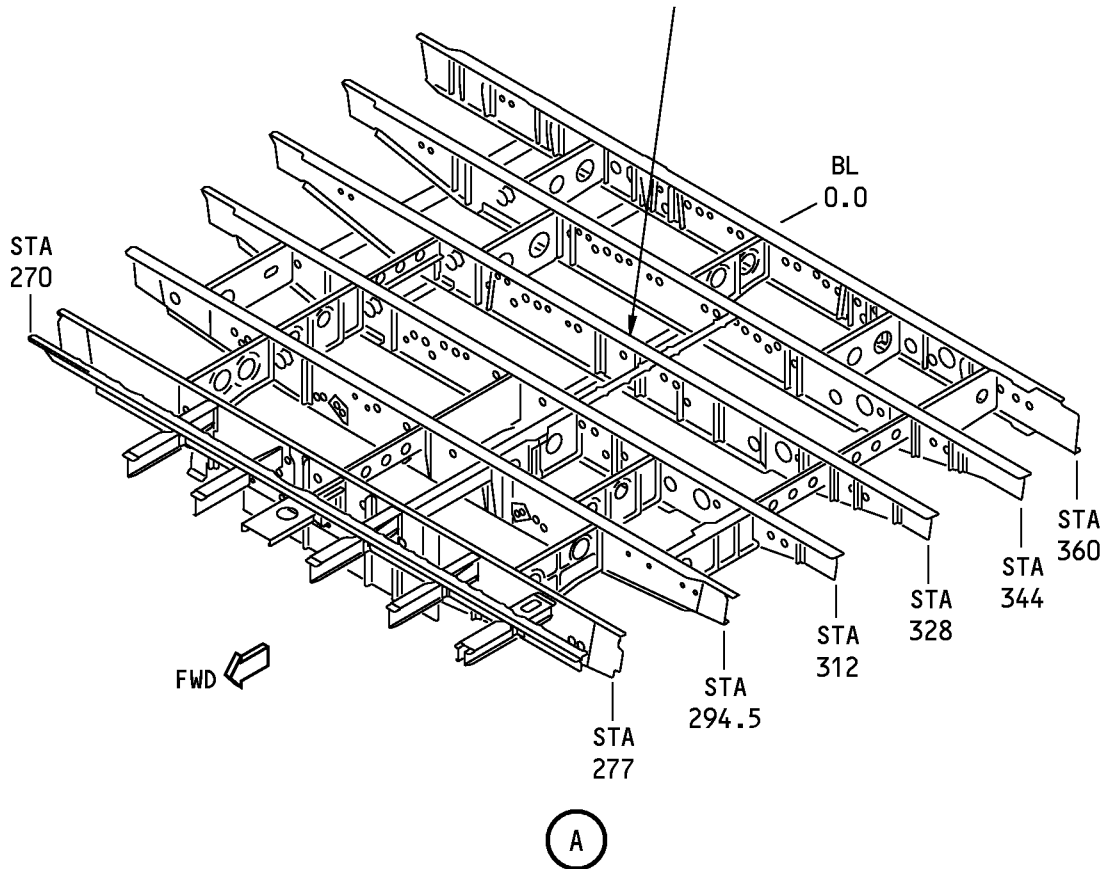
#### 2. General

- A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.
- B. This repair has three alternatives:
  - Alternative 1 : Use this typical repair if you find damage on the upper chord along the full length of the Floor Beam. Refer to Figure 204/REPAIR 7
  - Alternative 2 : Use this typical repair if you find damage on the upper chord along half the length of the Floor Beam. Refer to Figure 205/REPAIR 7
  - Alternative 3 : Use this typical repair if you find damage on the upper chord at the end of the Floor Beam. Refer to Figure 206/REPAIR 7.
- C. Do not install splice parts in locations directly adjacent to the galley or lavatory fittings.
- D. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact the Boeing Company for further instructions.

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STRUCTURAL REPAIR MANUAL**



REFER TO FIGURE 204, FIGURE 205 AND  
FIGURE 206 FOR THE TYPICAL FLOOR BEAM REPAIR



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**Section 41 - Location of the Floor Beam at STA 328  
Figure 201**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-10-03	General - Shot Peening Procedures
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Get access to the repair area, as necessary.
- (1) Remove the adjacent structure to get access to the damaged floor beam.
  - (2) Remove the necessary fasteners in the repair area.
- B. Find the limits of the damage.
- (1) Refer to Figure 204/REPAIR 7 if you find damage along more than half the length of the floor beam, or on both sides of BL 0.
  - (2) Refer to Figure 205/REPAIR 7 if you find damage along less than half the length of the floor beam only.
  - (3) Refer to Figure 206/REPAIR 7 if you find damage at one or both of the ends of the floor beam only.
- C. Cut and remove the damaged flanges of the upper chord of the floor beam. Refer to Figure 203/REPAIR 7 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.
- (1) At the initial fastener locations keep a minimum 2.0 D edge margin.
  - (2) Do a detailed visual inspection of the cut edge to make sure that there is no damage caused by corrosion.
  - (3) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03
- D. Remove the initial rivet that plugs the tooling hole in the web of the initial floor beam.
- (1) Countersink the tooling hole to a depth of 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).
  - (2) Double flush plug the initial tooling hole with a BACR15CE()AD rivet.
  - (3) Microshave the rivet flush.
- E. Trim the top edge of any initial stiffeners that are in-line with the repair splice angles. Refer to Figure 204 (Sheet 6) or Figure 205 (Sheet 4) or Figure 206 (Sheet 5) and Figure 206 (Sheet 6) as applicable.
- (1) Keep a minimum of 1.75D edge margin from fastener holes.

**STRUCTURAL REPAIR MANUAL**

- (2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.
- (3) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03.
- F. For alternatives 1 and 2, trim out the flange from the top two fasteners of the machined intercostal attached to the floor beam at BL 24.82. Refer to Figure 204 (Sheet 9), and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.
  - (1) Keep a minimum 0.250 radius on the intercostal web.
  - (2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.
  - (3) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03.
- G. Apply a chemical conversion coating to the bare surfaces of the floor beam, stiffeners and intercostals. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- H. Make the repair parts. Refer to Table 201/REPAIR 7 and Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable, and SHEET METAL MATERIALS, 51-30-01.
  - (1) When you make the Part (1) T-Chord, you are permitted to use an optional "T" shaped extrusion as long as:
    - (a) The material for the extrusion is 7050-T76511 or 7075-T6511.
    - (b) The horizontal flange is 0.125 in. (3.18 mm) thick, the vertical flange is 0.100 in. (2.54 mm) thick, and the corner radius is 0.125 in. (3.18 mm).
    - (c) The horizontal flange is a minimum of 2.30 in. (58.42 mm) wide to provide the necessary edge margin to the floor panel attach fasteners.
    - (d) You make sure that the vertical flange has 2D minimum edge margin and 4D to 6D fastener distance at all new fastener locations.
    - (e) You make sure that there are no cracks in the new upper chord. Use the dye penetrant inspection as given in SOPM 20-20-02.
    - (f) Shot peen or flap peen the cut edge with 200% coverage as given in SOPM 20-10-03.
  - (2) If it is necessary to machine the new T-chord then use the dye penetrant inspection as given in SOPM 20-20-02. Shot peen or flap peen the machined areas with 200% coverage as given in SOPM 20-10-03.
  - (3) Make structural shims as necessary at the floor beam and pulley brackets. Refer to 51-30-01, GENERAL.

**Table 201: REPAIR MATERIAL**

ITEM	PART	QUANTITY	MATERIAL
[1]	T-Chord	As necessary	Use BAC1505-100224 7050-T76511 (optional: 7075-T6511) extrusion.
[2]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.071 in. (1.80 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2811 7075-T6 clad formed angle or an equivalent 0.071 in. (1.80 mm) 7075-T6 clad formed angle).
[3]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.080 in. (2.03 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2900 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[4]	Shim	As necessary	2024-T3 Bare sheet as given in AMS-QQ-A-250/4 (Optional: 7075-T6 clad sheet)

**STRUCTURAL REPAIR MANUAL**

**Table 201: REPAIR MATERIAL (Continued)**

ITEM	PART	QUANTITY	MATERIAL
[5]	Angle	1	Use 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm). Maintain the minimum bend radius. (Optional: BAC 1490-2651 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[6]	Filler	4	Use 7075-T6 clad sheet. Thickness is 0.020 in. (0.51 mm)/0.032 in. (0.81 mm).

- I. Assemble the repair parts. Install the Part [1] T-chord on the aft side of the floor beam. Make sure that the distance between mating surfaces of the repair parts is not larger than 0.010 in. (0.25 mm).
  - (1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable.
- J. Drill the necessary fastener holes.
  - (1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable, for the type and size of fasteners.
  - (2) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.
  - (3) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.
- K. Disassemble the repair parts.
- L. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and repaired surfaces of the initial parts.
- M. Apply a chemical conversion coating to the repair parts and the machined surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- N. Apply two layers of BMS 10-11, Type I primer to the repair parts and the machined surfaces of the initial parts. Refer to SOPM 20-41-02.
- O. Install the repair parts.
  - (1) Refer to Figure 204/REPAIR 7 or Figure 205/REPAIR 7 or Figure 206/REPAIR 7 as applicable.
  - (2) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.
  - (3) Install hex drive bolts wet with BMS 5-95 sealant into transition fit holes. Install the rivets without sealant. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation. Refer to REPAIR SEALING, 51-20-05.
  - (4) When you install the repair parts, use fillers if the space between parts is 0.010 in. (0.25 mm) or more before fastener pull-up.
- P. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.
- Q. Apply one layer of BMS 10-11, Type I primer to the fastener heads in the repair area. Refer to SOPM 20-41-02.
- R. Apply a corrosion inhibiting compound in accordance with PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01 or an operator approved procedure.
- S. Install the adjacent structure that you removed.



**STRUCTURAL REPAIR MANUAL**

**NOTES**

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

- 1 THERE MUST BE A MINIMUM OF FOUR REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [3] ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER.
- 2 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [2] ANGLE EXTENDED BEYOND THE PART (3) ANGLE.
- 3 IF YOU MUST MAKE THE FASTENER HOLE LARGER, INSTALL A MAXIMUM 1/32ND INCH LARGER FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER. THE HOLE MUST BE A TRANSITION FIT HOLE. INSTALL THE FASTENER WET WITH BMS 5-95.

**FASTENER SYMBOLS**

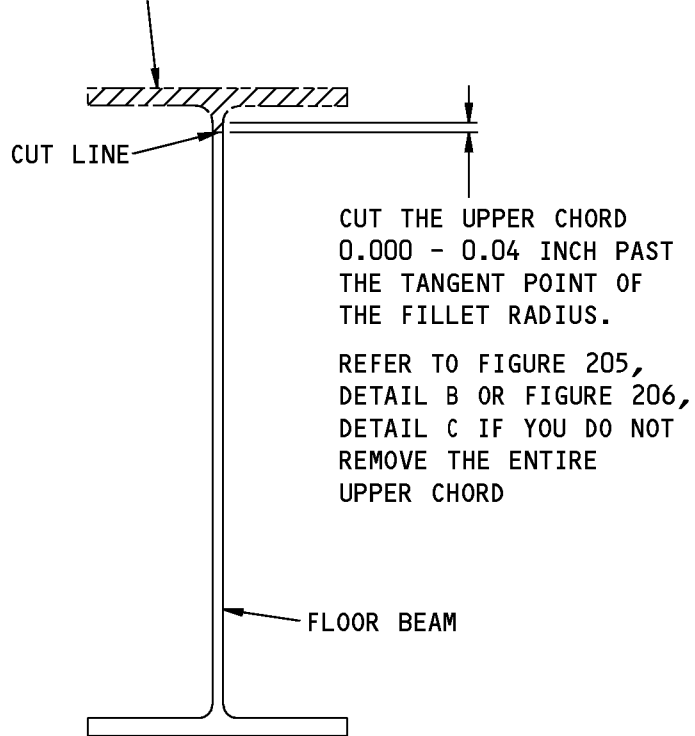
- ⊕ REFERENCE FASTENER LOCATION.
- + FLOOR PANEL FASTENER LOCATION.
- ⊙ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K( )X OR BACB30FP8A( ) HEX DRIVE BOLT WITH A BACC30M COLLAR. 3
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K( ) OR BACB30FN6A( ) HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K( ) OR BACB30FM6A( ) HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K( )Y HEX DRIVE BOLT WITH A BACC30M COLLAR. 3
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY6K( )X HEX DRIVE BOLT WITH A BACC30M COLLAR. 3
- ⊕ PULLEY BRACKET FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER. 3

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**Notes and Fastener Symbols  
Figure 202**

**737-800  
STRUCTURAL REPAIR MANUAL**

CUT THE UPPER CHORD  
OF THE FLOOR BEAM

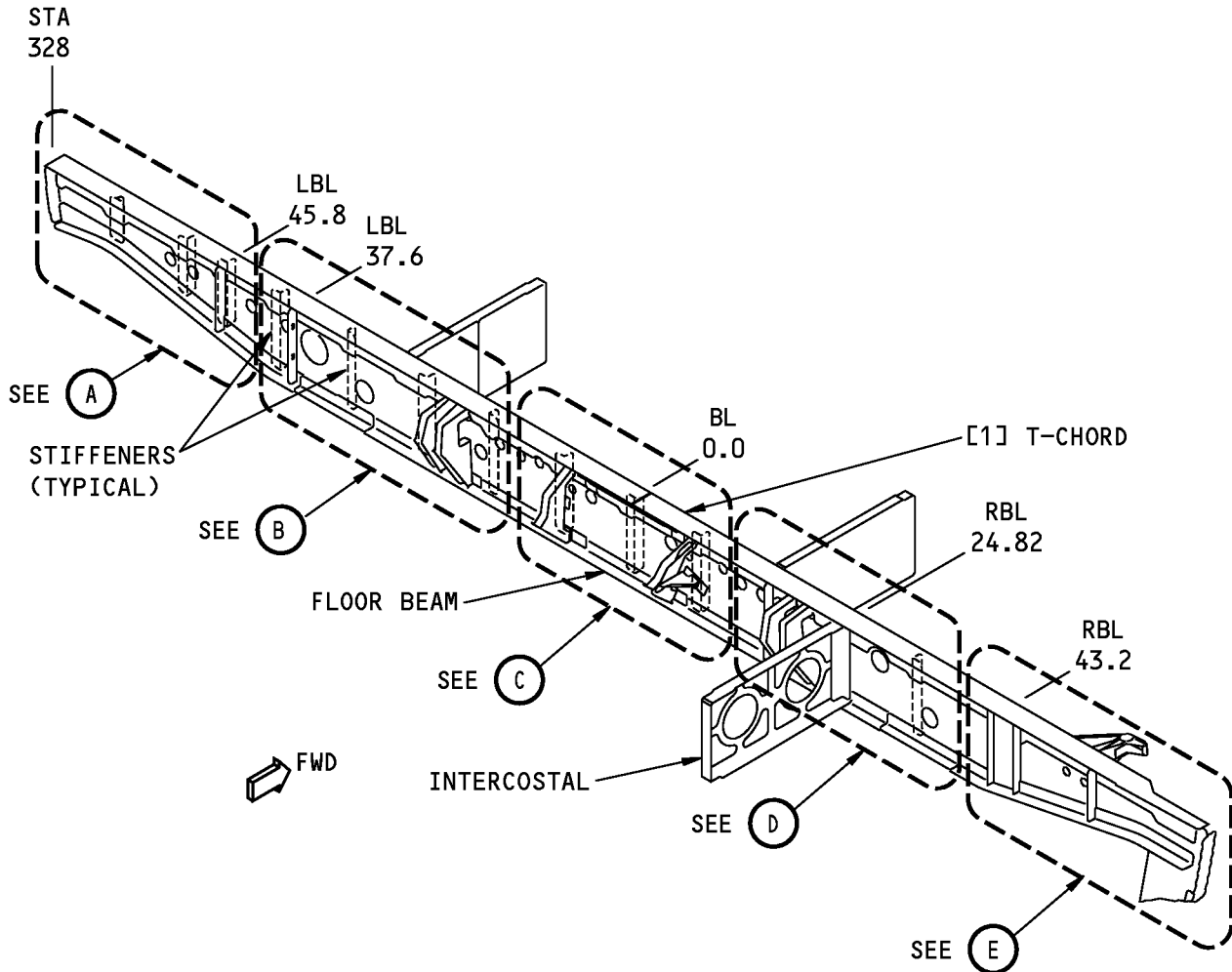


 THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE.

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**Removal of the Damage  
Figure 203**

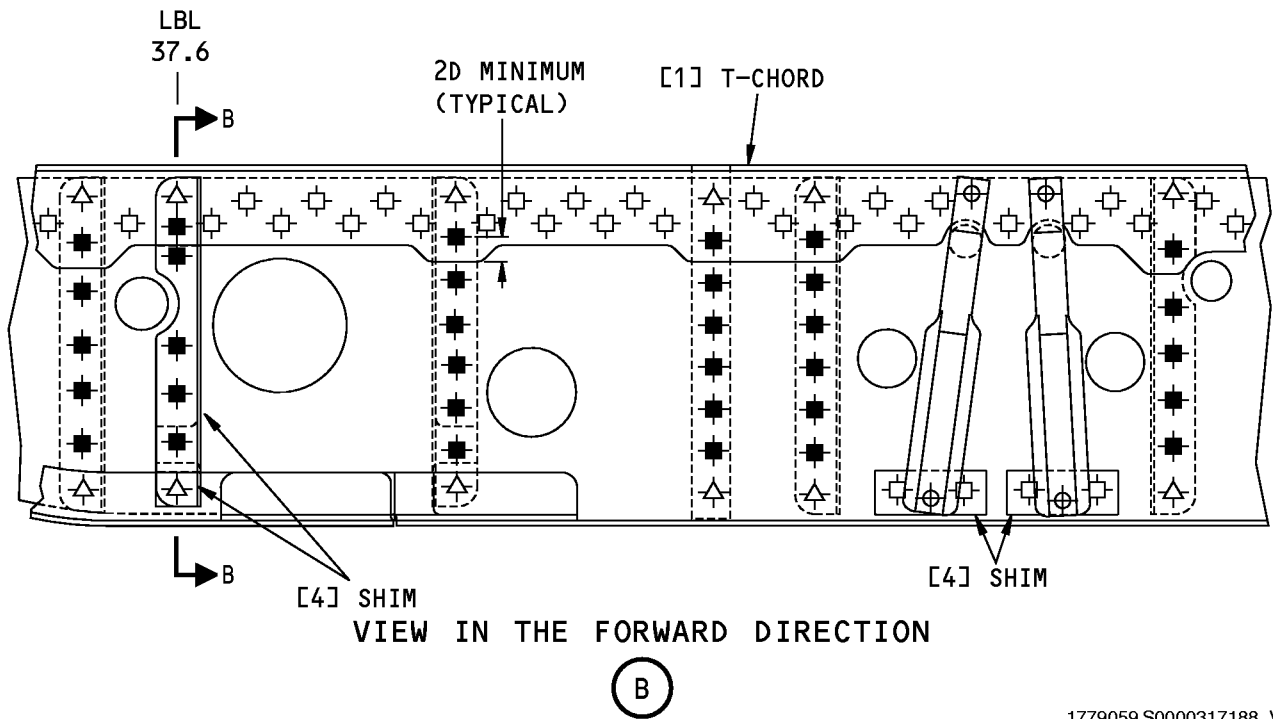
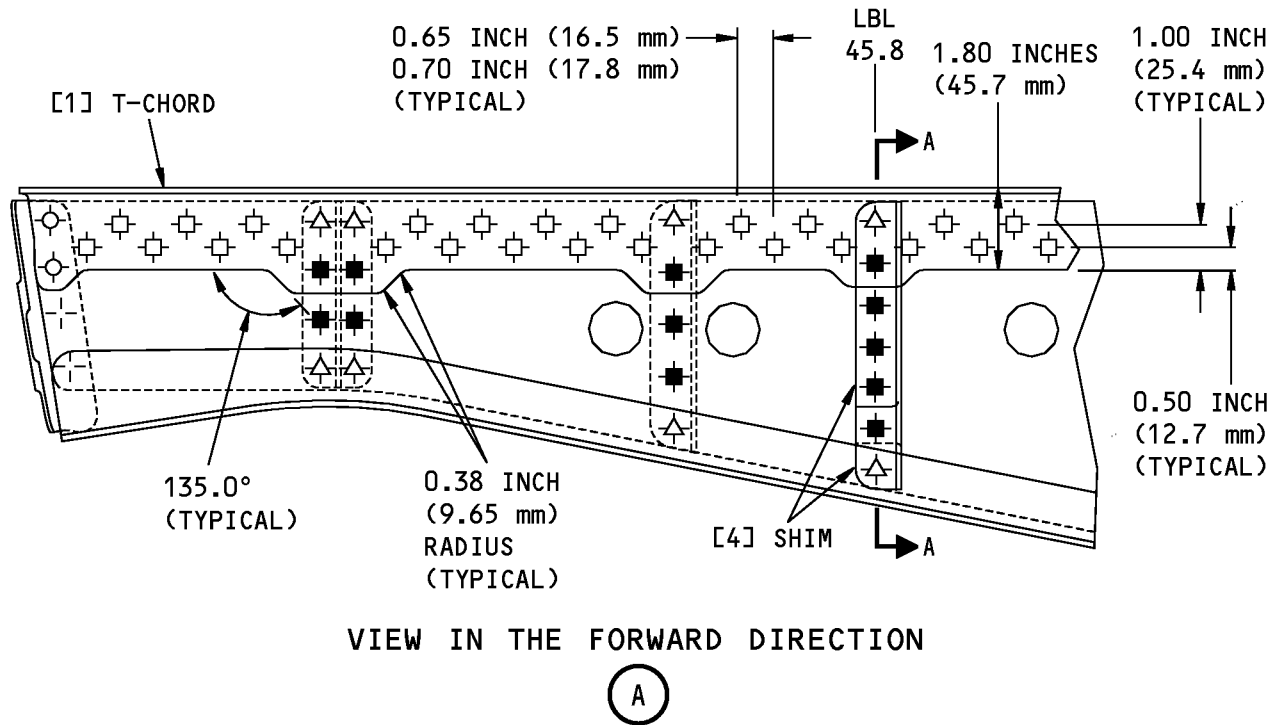
**737-800  
STRUCTURAL REPAIR MANUAL**



1779054 S0000317184\_V1

**Repair Alternative 1  
Figure 204 (Sheet 1 of 10)**

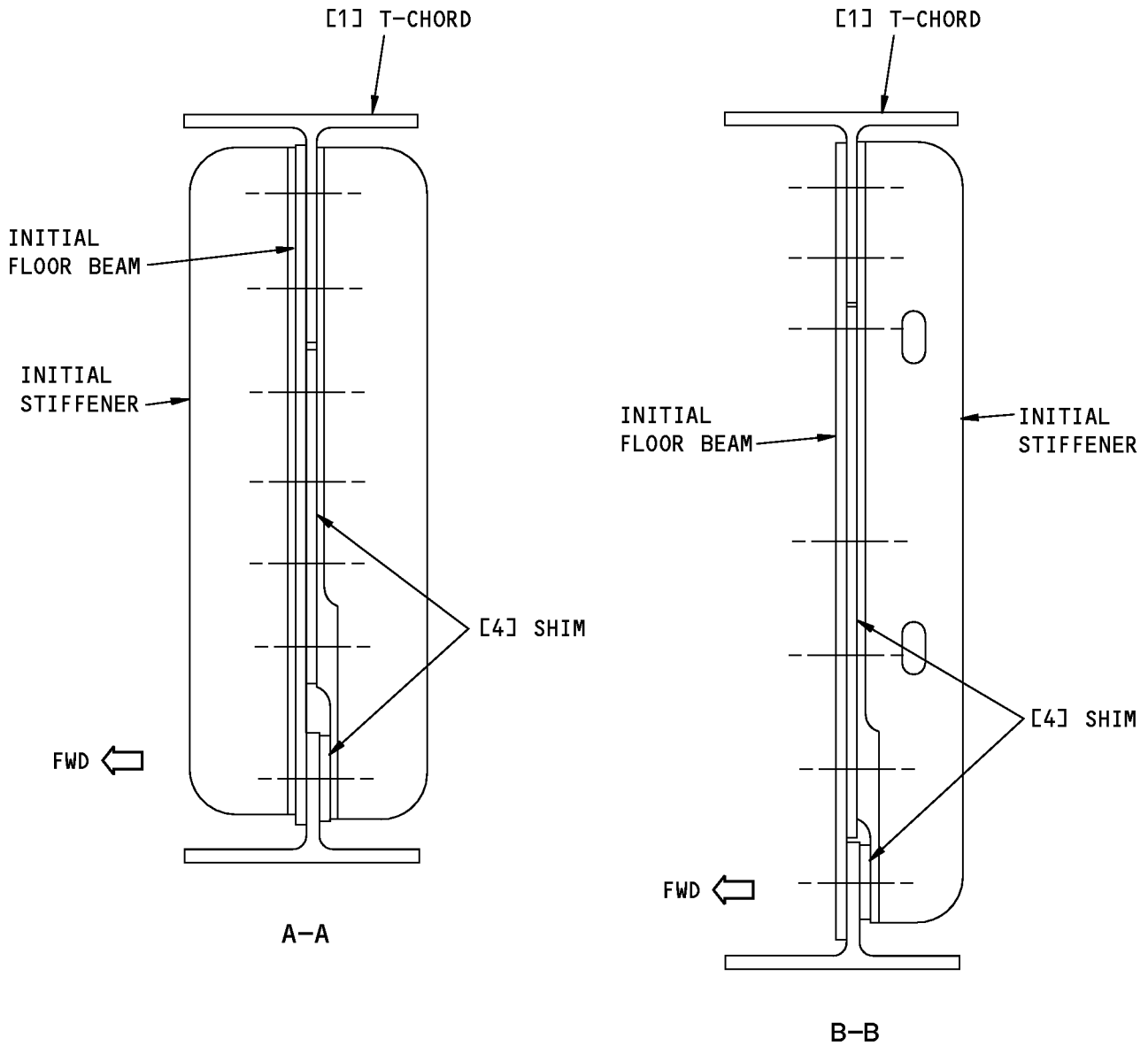
**STRUCTURAL REPAIR MANUAL**



1779059 S0000317188\_V1

**Repair Alternative 1**  
**Figure 204 (Sheet 2 of 10)**

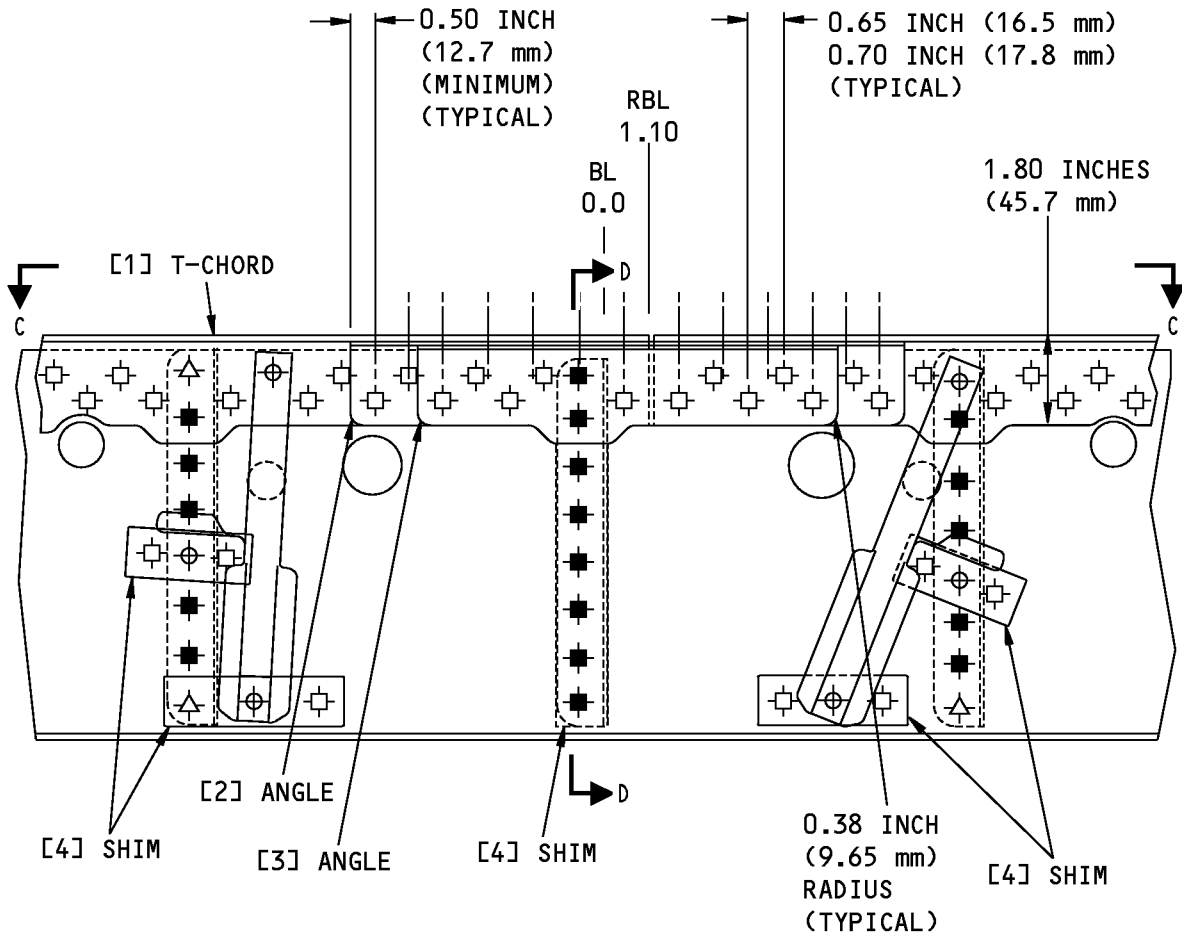
**737-800  
STRUCTURAL REPAIR MANUAL**



1779060 S0000317189\_V1

**Repair Alternative 1  
Figure 204 (Sheet 3 of 10)**

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VIEW IN THE FORWARD DIRECTION  
SPLICE OF THE PART [1] T-CHORD



1779064 S0000317190\_V1

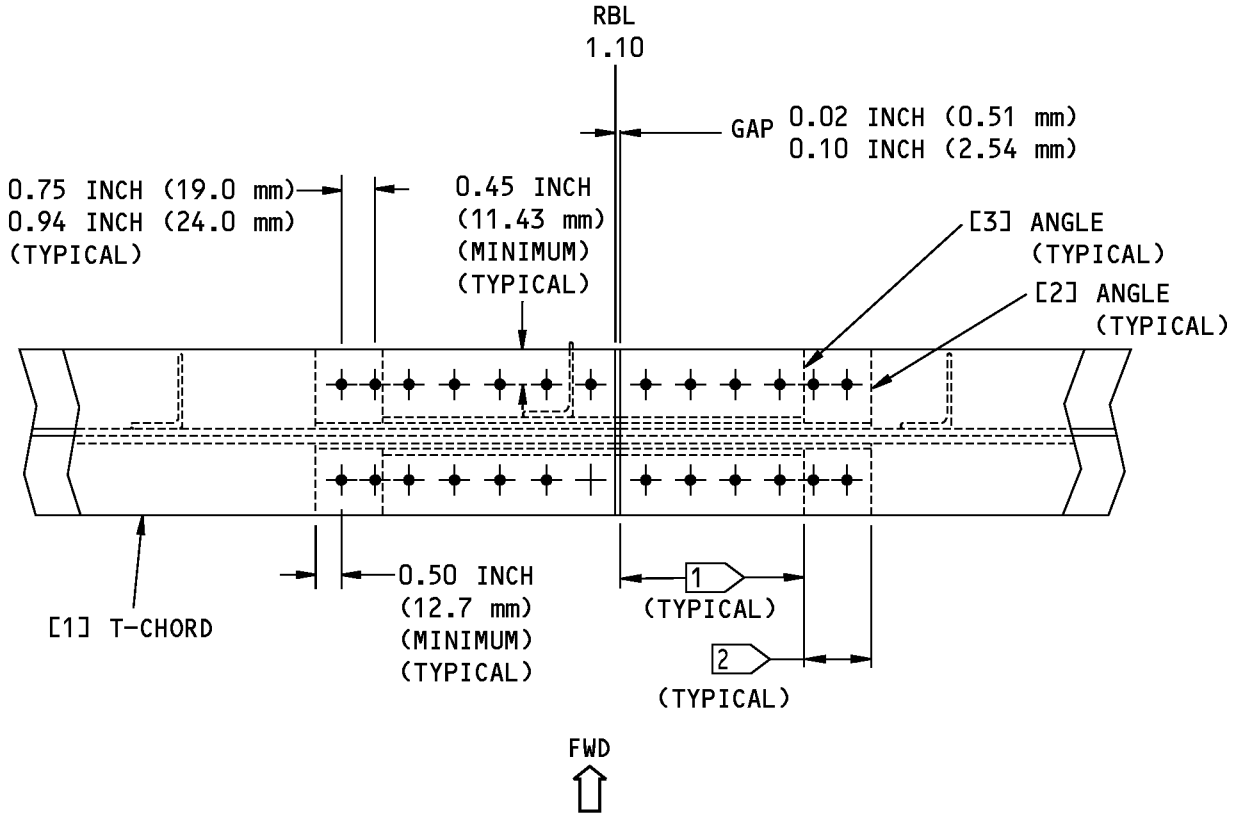
**Repair Alternative 1  
Figure 204 (Sheet 4 of 10)**

D634A210

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**PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY  
C-C**

1779065 S0000317193\_V1

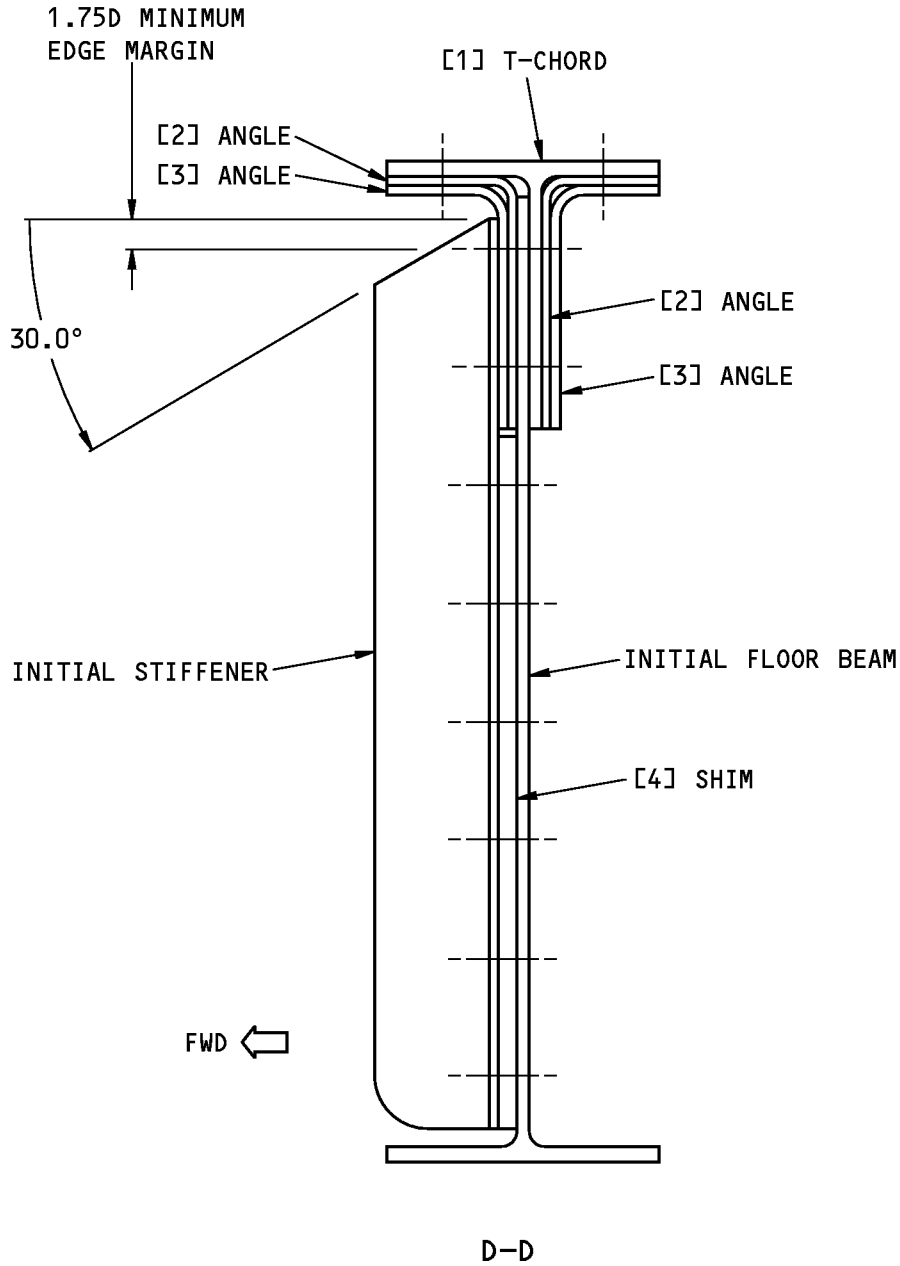
**Repair Alternative 1  
Figure 204 (Sheet 5 of 10)**

D634A210

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1779066 S0000317196\_V1

**Repair Alternative 1  
Figure 204 (Sheet 6 of 10)**

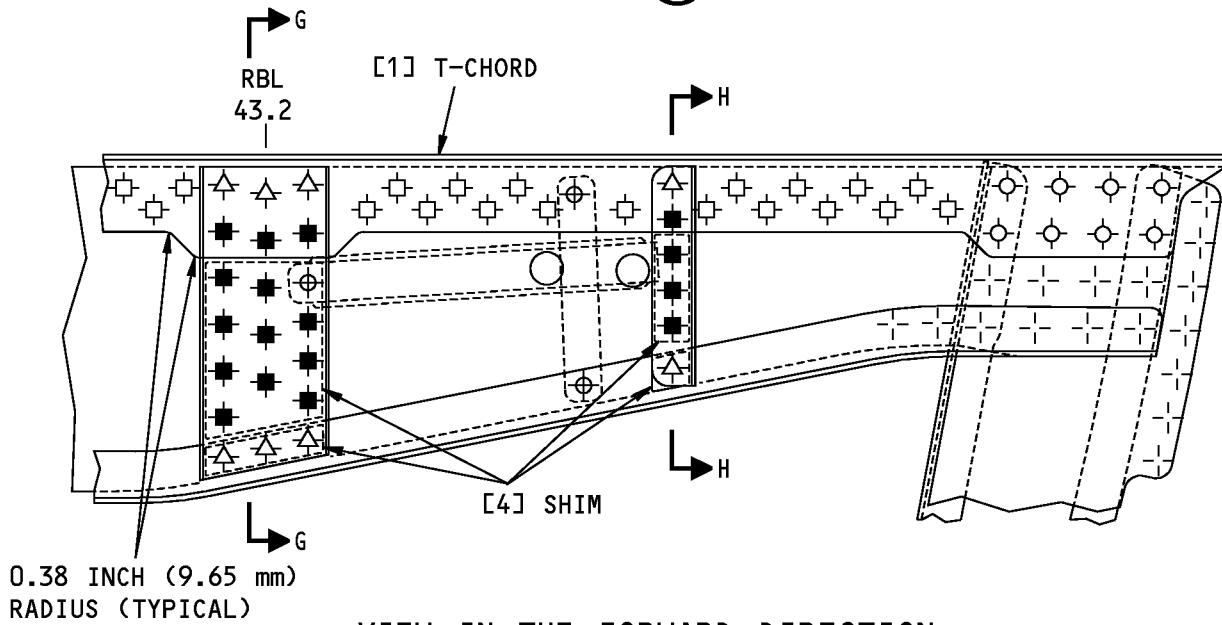
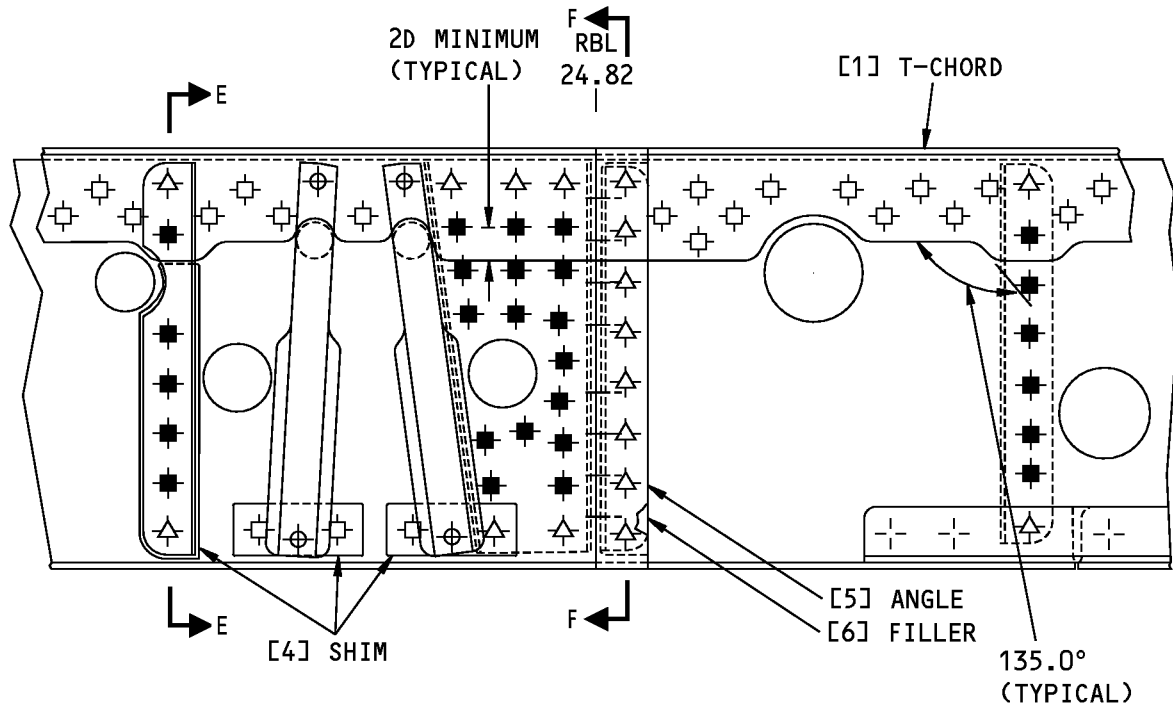
D634A210

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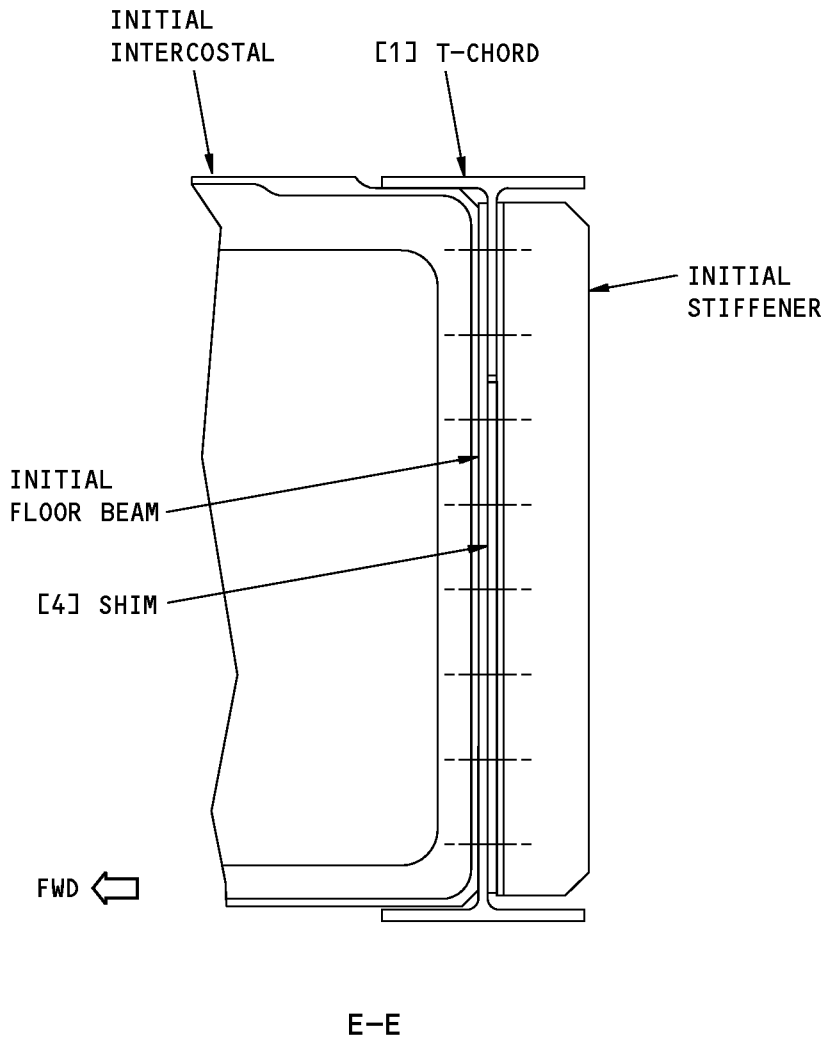
**737-800  
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1703914 S0000309867\_V1

**Repair Alternative 1  
Figure 204 (Sheet 7 of 10)**

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1779067 S0000317202\_V1

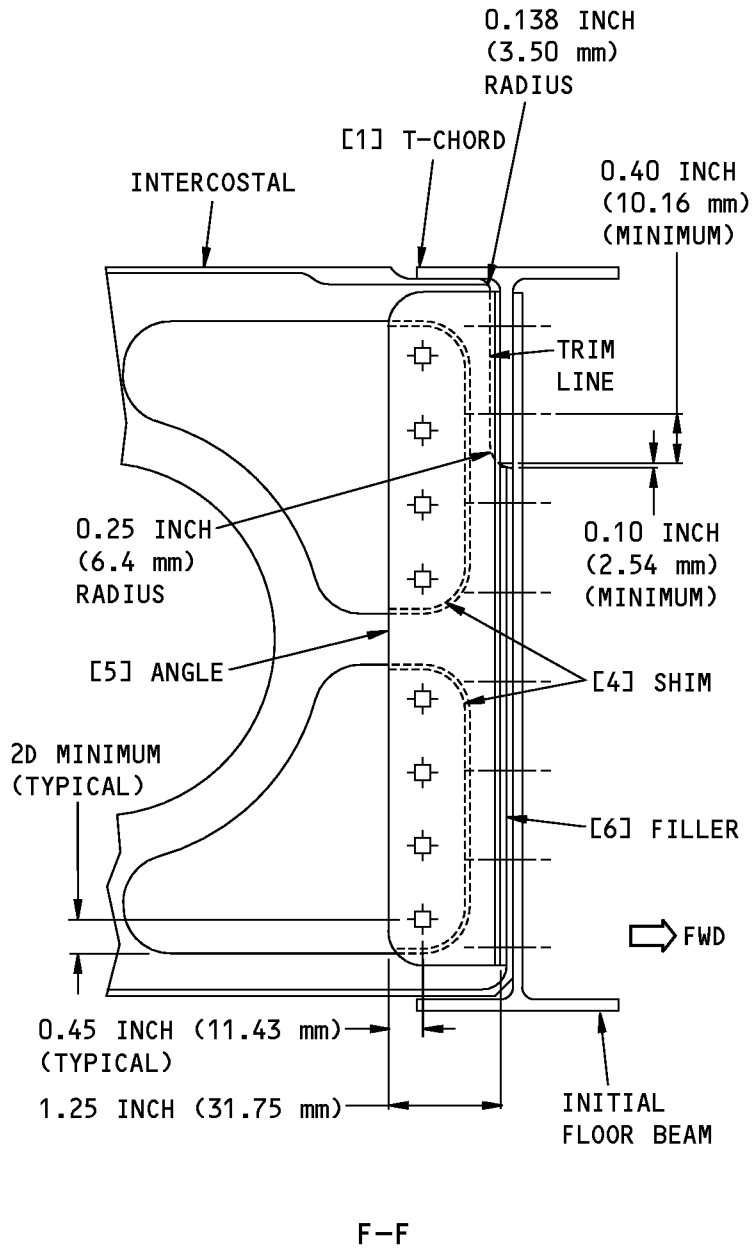
**Repair Alternative 1  
Figure 204 (Sheet 8 of 10)**

D634A210

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1703919 S0000309868\_V1

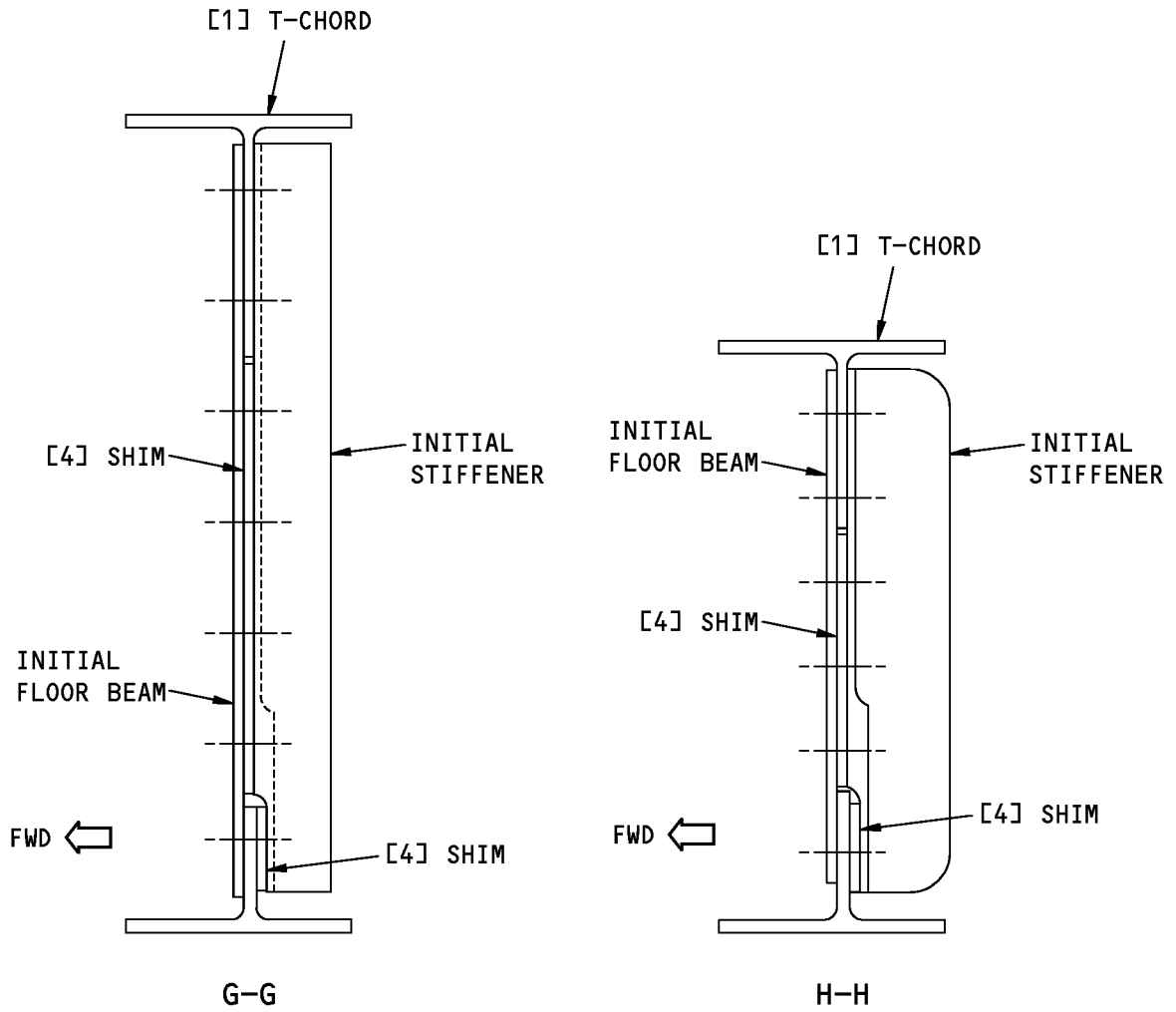
**Repair Alternative 1  
Figure 204 (Sheet 9 of 10)**

D634A210

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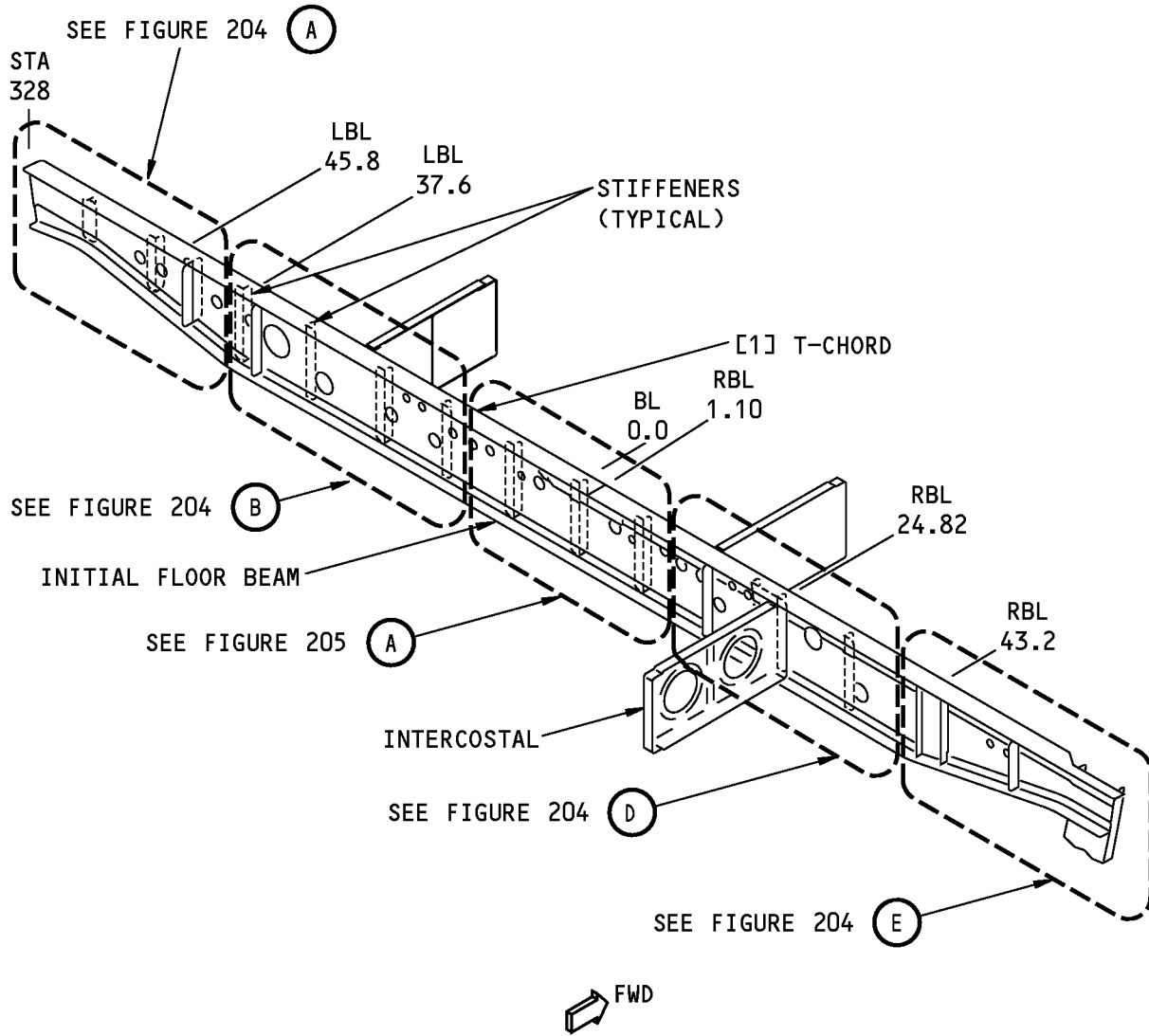
**737-800  
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1703920 S0000309869\_V1

**Repair Alternative 1  
Figure 204 (Sheet 10 of 10)**

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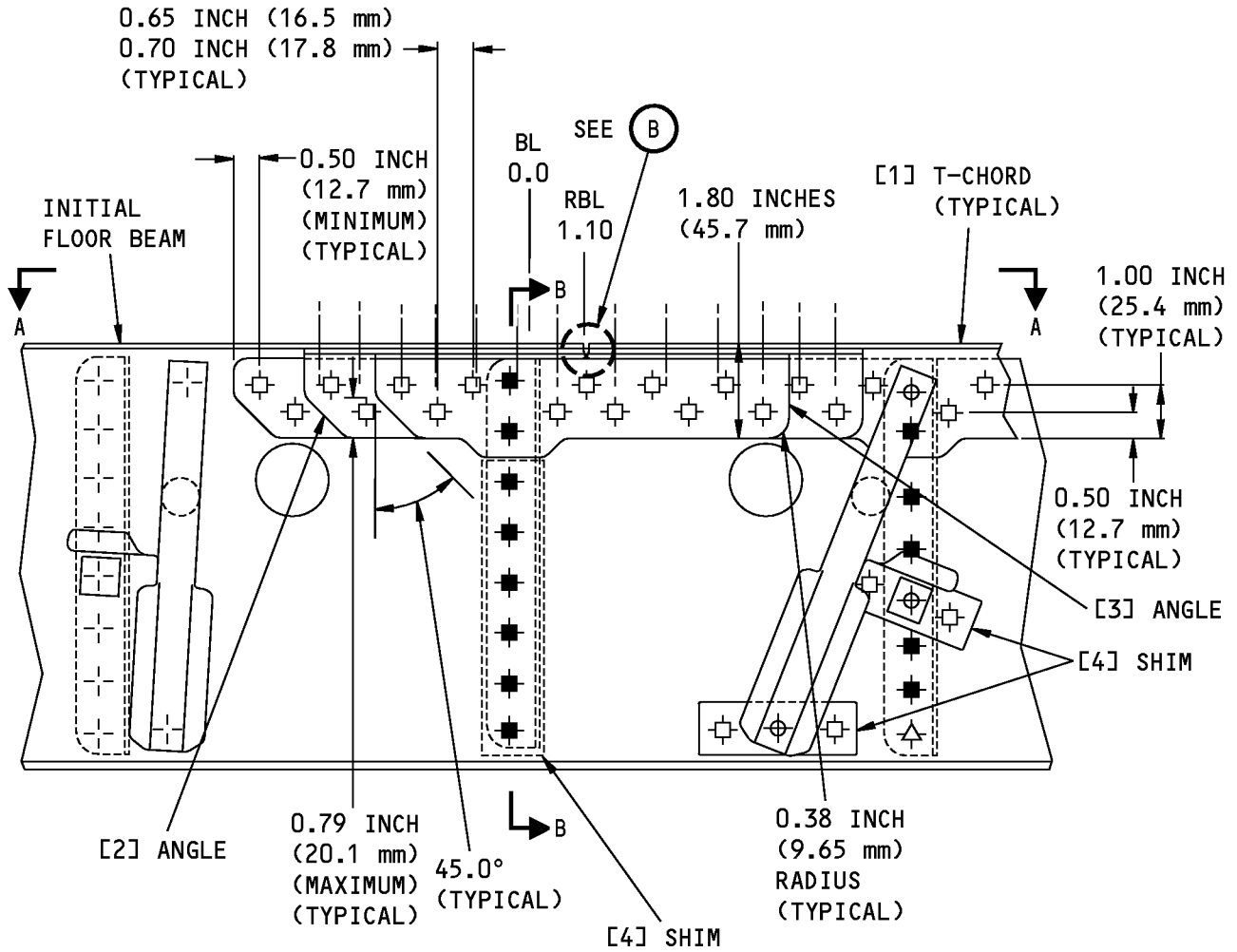
1703907 S0000295289\_V1

**Repair Alternative 2  
Figure 205 (Sheet 1 of 5)**

D634A210

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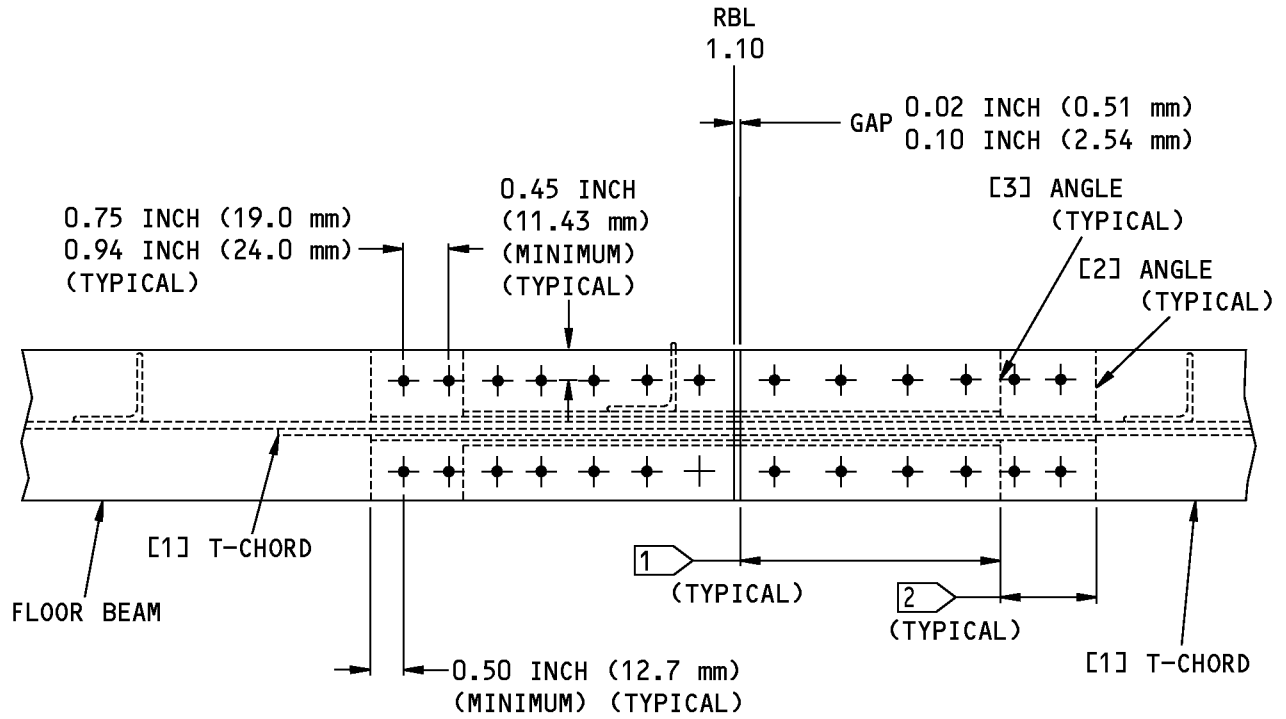
SPLICE OF THE PART [1] T-CHORD AND THE FLOOR BEAM AT RBL 1.60

(A)

1703909 S0000304891\_V1

Repair Alternative 2  
Figure 205 (Sheet 2 of 5)

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(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)  
A-A

1703910 S0000309864\_V1

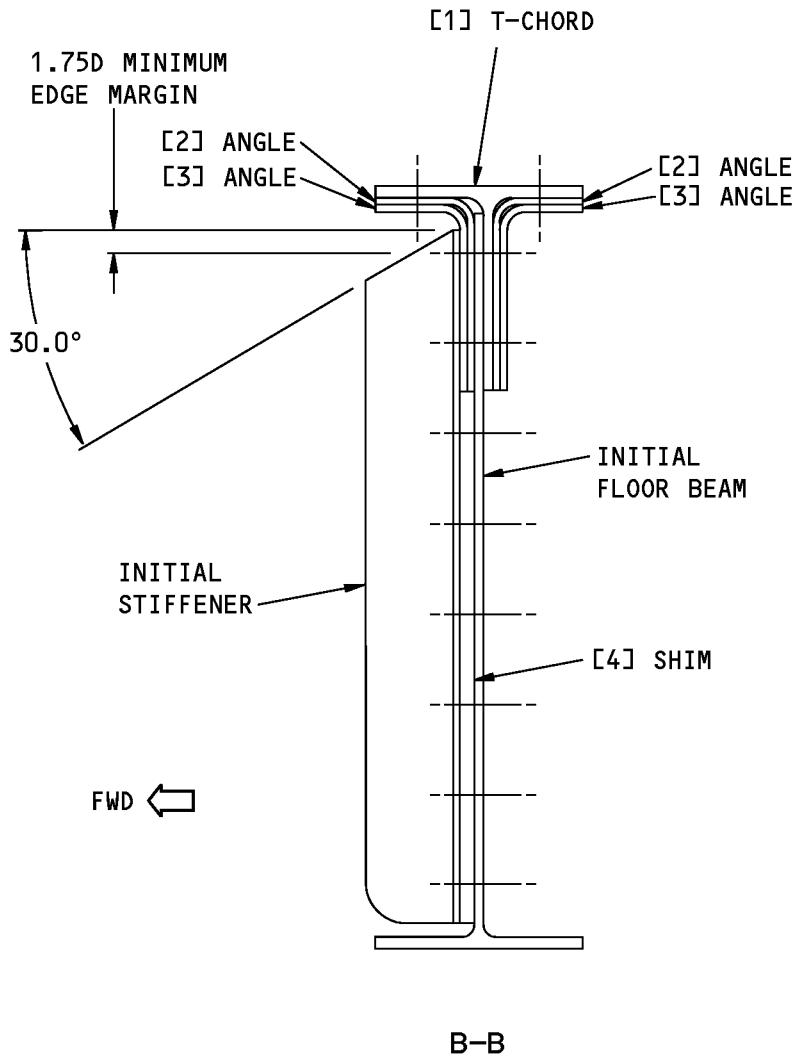
**Repair Alternative 2  
Figure 205 (Sheet 3 of 5)**

D634A210

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1703912 S0000309865\_V1

**Repair Alternative 2  
Figure 205 (Sheet 4 of 5)**

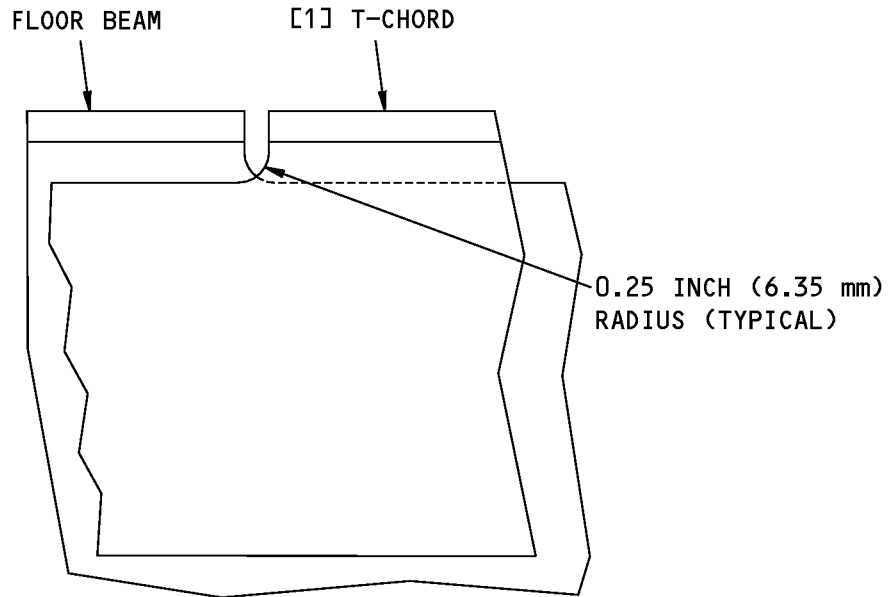
D634A210

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ANGLES PART [2] AND PART [3] NOT SHOWN FOR CLARITY

(B)

1703922 S0000309870\_V1

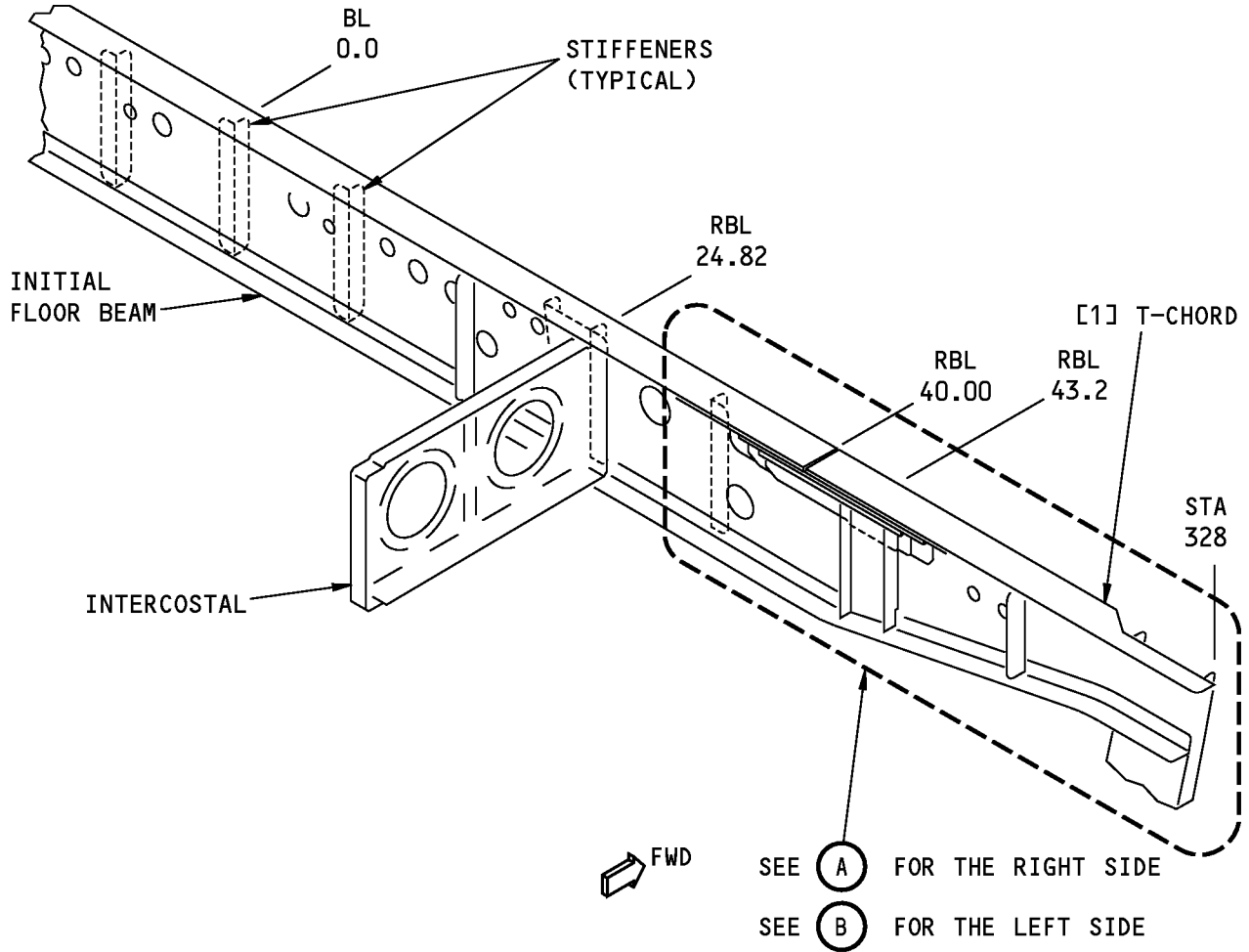
**Repair Alternative 2  
Figure 205 (Sheet 5 of 5)**

D634A210

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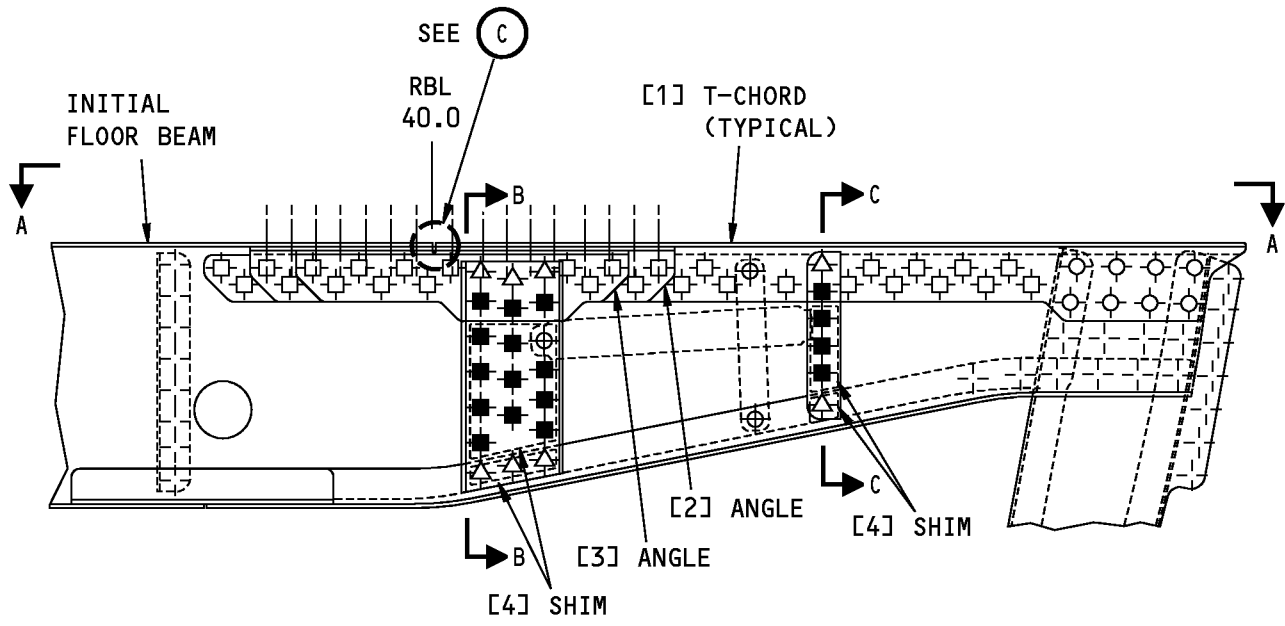
**737-800  
STRUCTURAL REPAIR MANUAL**



1703923 S0000304890\_V1

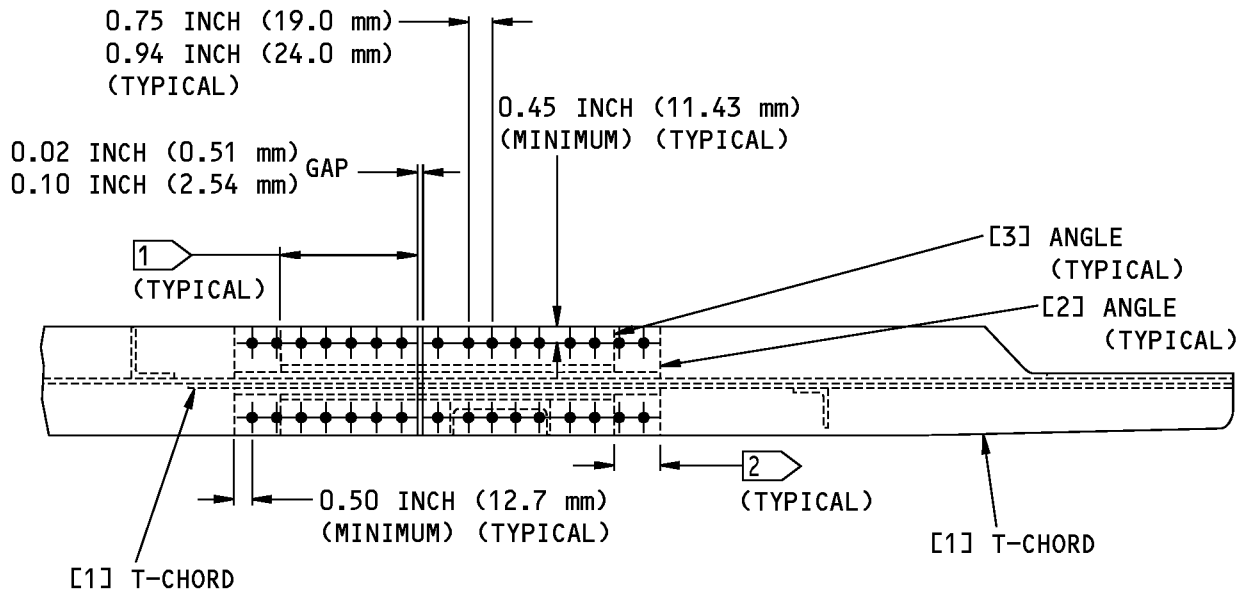
**Repair Alternative 3  
Figure 206 (Sheet 1 of 7)**

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**SPLICE OF THE PART [1] T-CHORD AND THE FLOOR BEAM AT RBL 40.00**

**(A)**



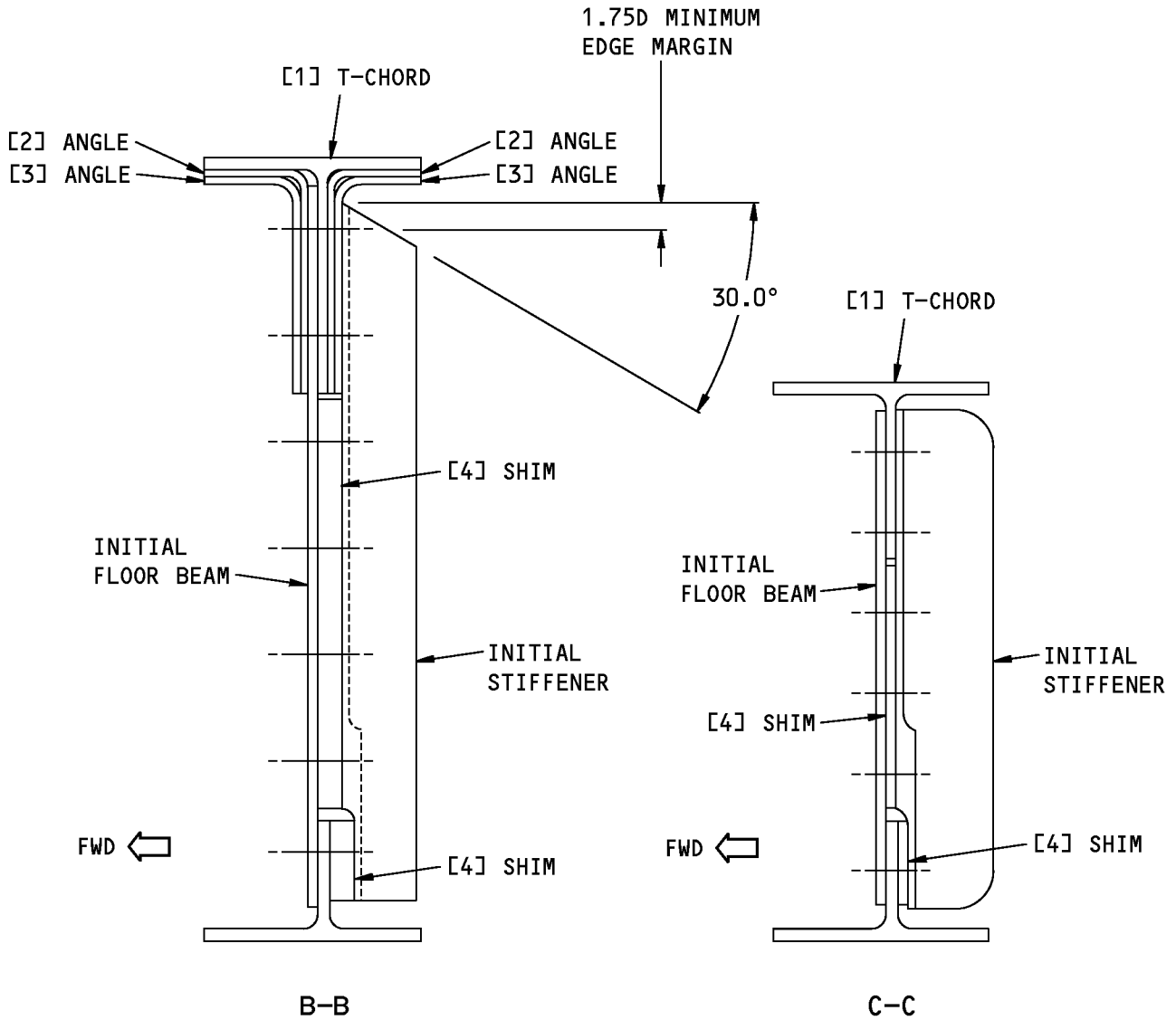
(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)

A-A

1703924 S0000309871\_V1

**Repair Alternative 3  
Figure 206 (Sheet 2 of 7)**

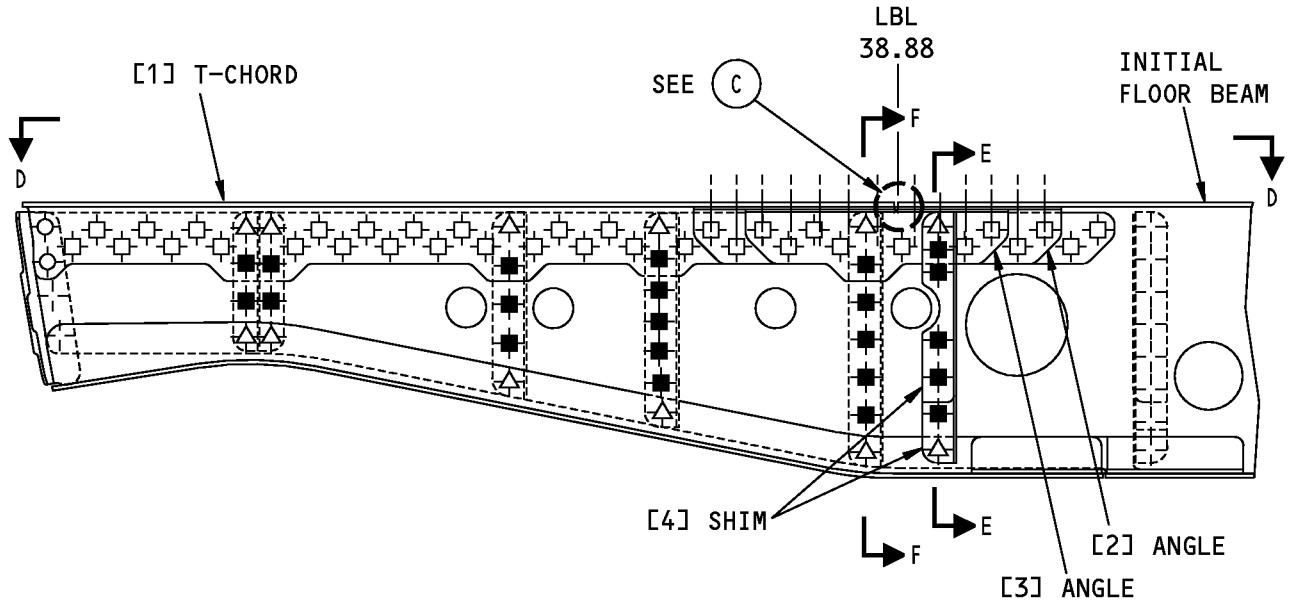
**737-800  
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1703926 S0000309873\_V1

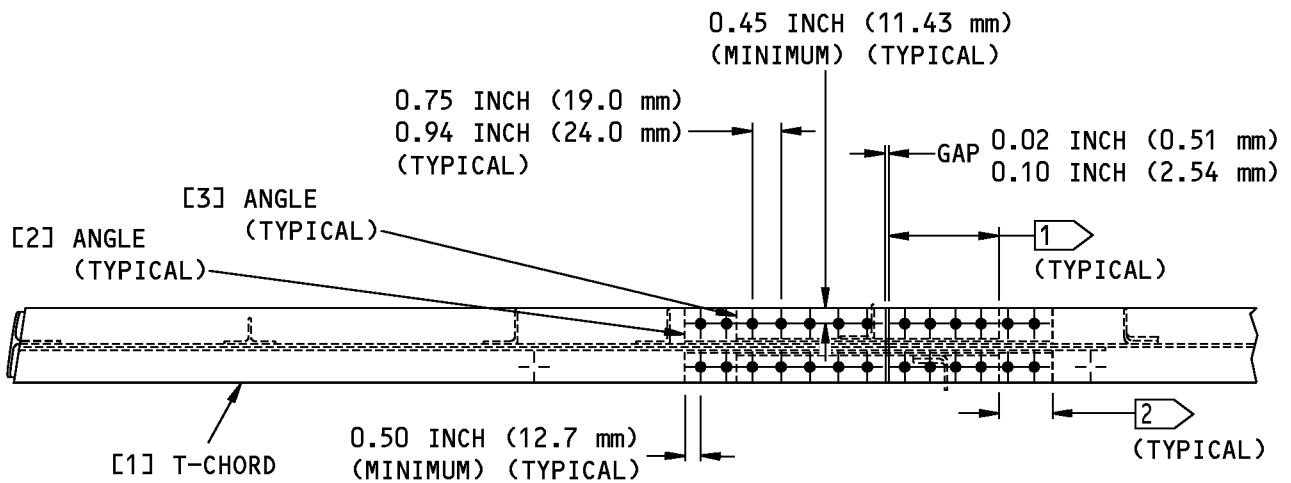
**Repair Alternative 3  
Figure 206 (Sheet 3 of 7)**

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**SPLICE OF THE PART [1] T-CHORD AND  
THE FLOOR BEAM AT LBL 38.88**

(B)



(PULLEY BRACKETS ARE NOT SHOWN FOR CLARITY)

D-D

1779717 S0000318009\_V1

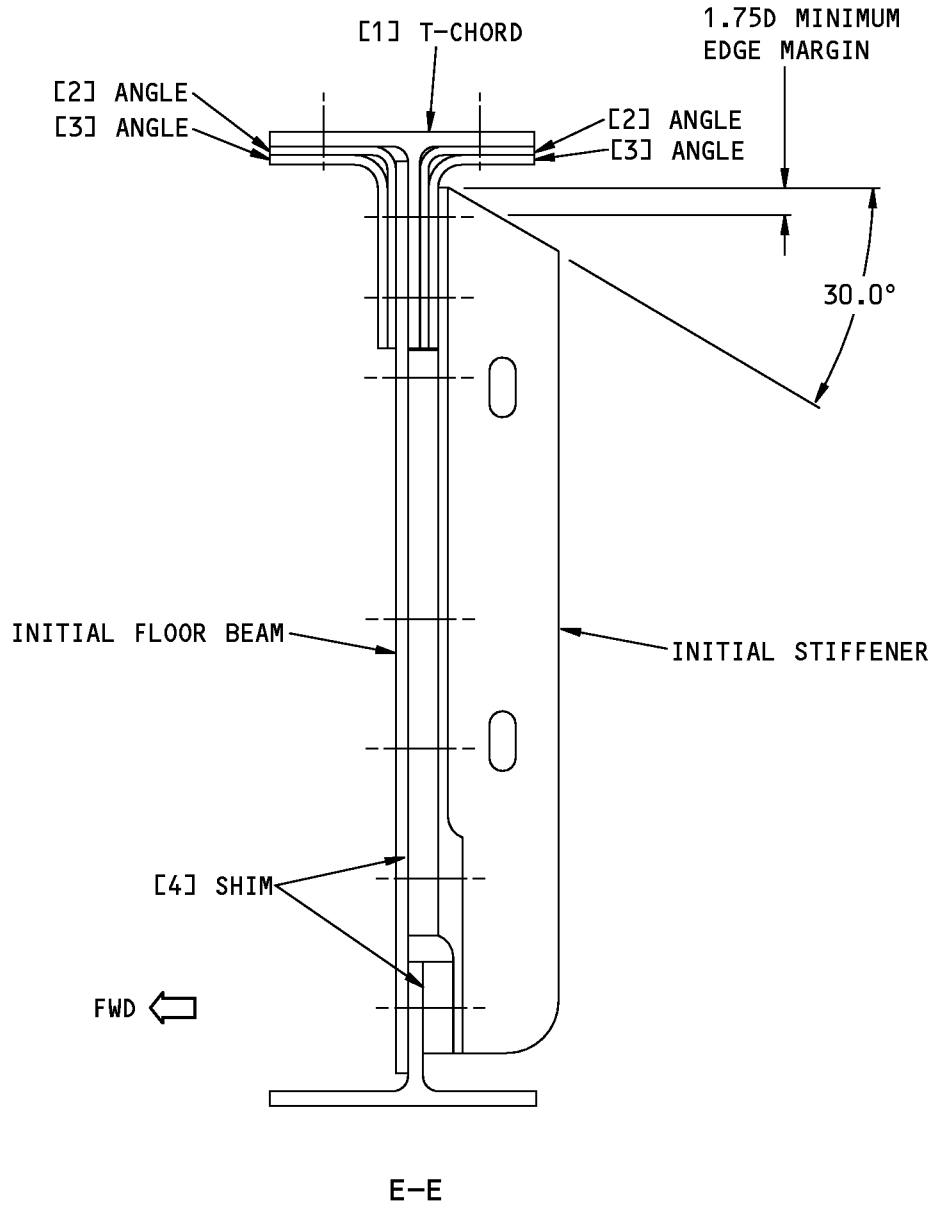
**Repair Alternative 3  
Figure 206 (Sheet 4 of 7)**

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STRUCTURAL REPAIR MANUAL**



1779719 S0000318010\_V1

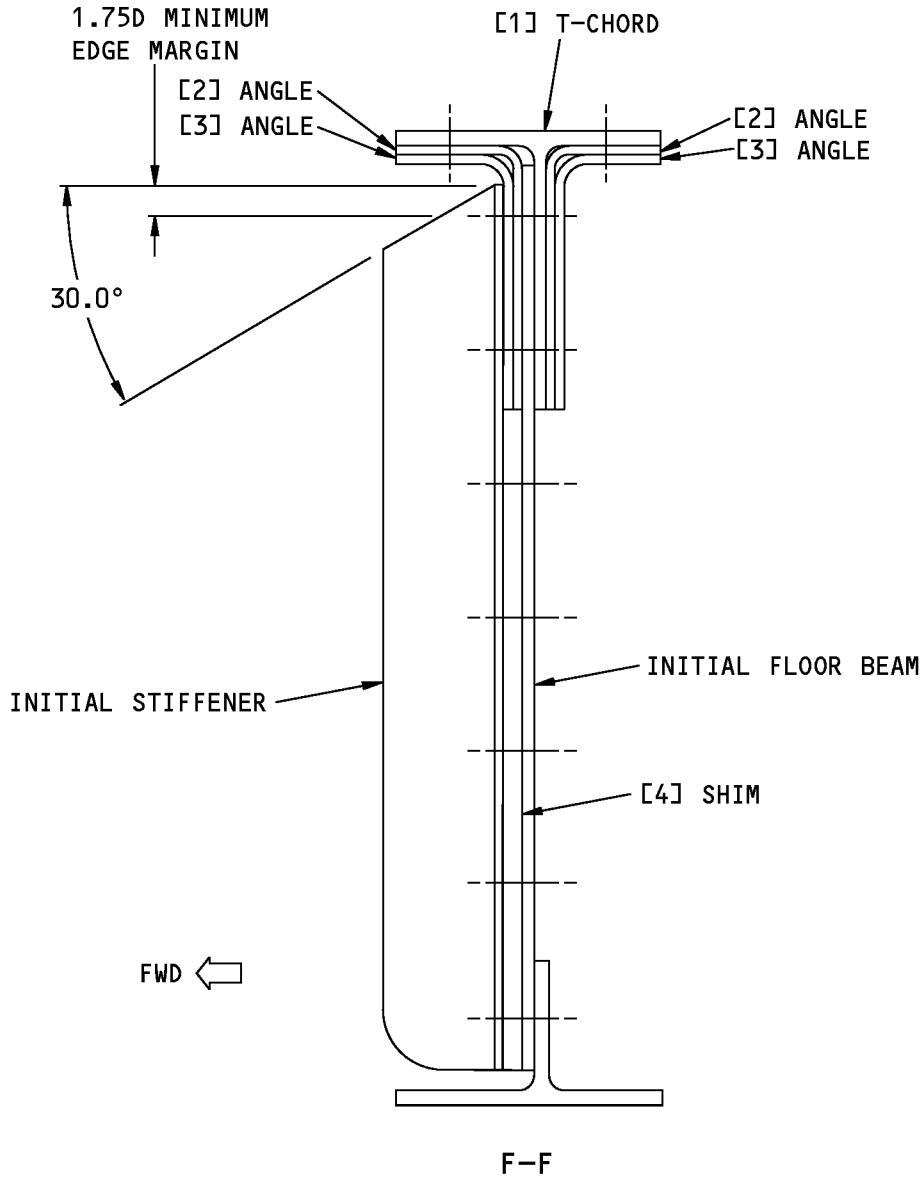
**Repair Alternative 3  
Figure 206 (Sheet 5 of 7)**

D634A210

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1779731 S0000318011\_V1

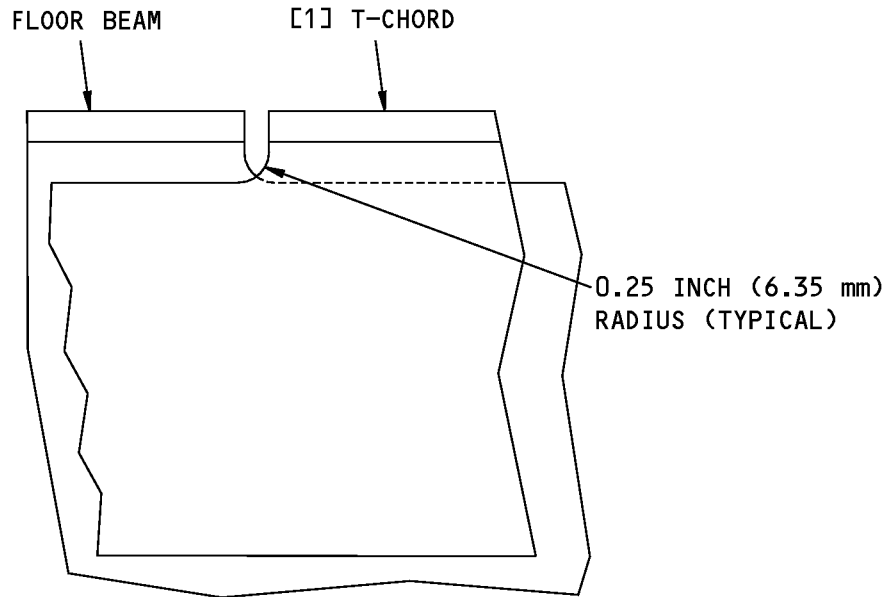
**Repair Alternative 3  
Figure 206 (Sheet 6 of 7)**

D634A210

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ANGLES PART [2] AND PART [3] NOT SHOWN FOR CLARITY

(C)

1703927 S0000309875\_V1

**Repair Alternative 3  
Figure 206 (Sheet 7 of 7)**

D634A210

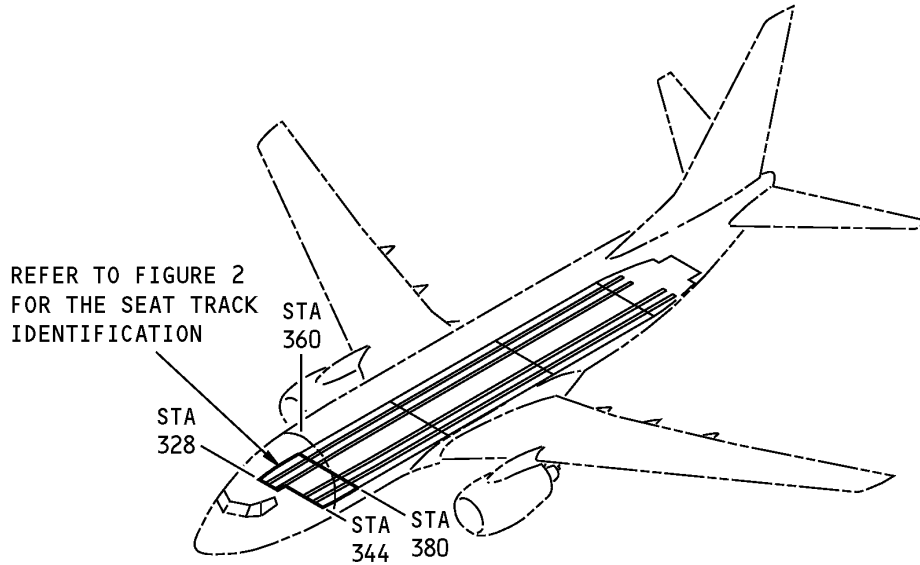
**53-10-51**

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**IDENTIFICATION 1 - SECTION 41 SEAT TRACKS**



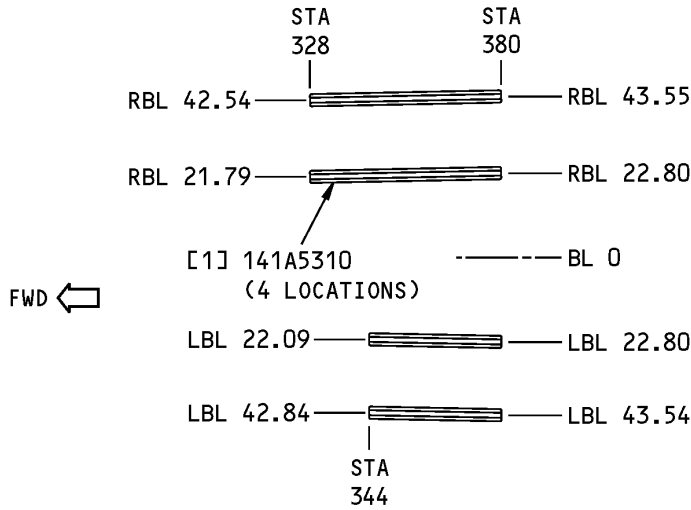
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 41 Seat Track Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0345	Section 41 to Section 43 Floor Integration Functional Collector
141A5300	Seat Track Installation - Section 41

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0345 TO SEE THE DIFFERENT CONFIGURATIONS.

**Section 41 Seat Track Identification  
Figure 2**

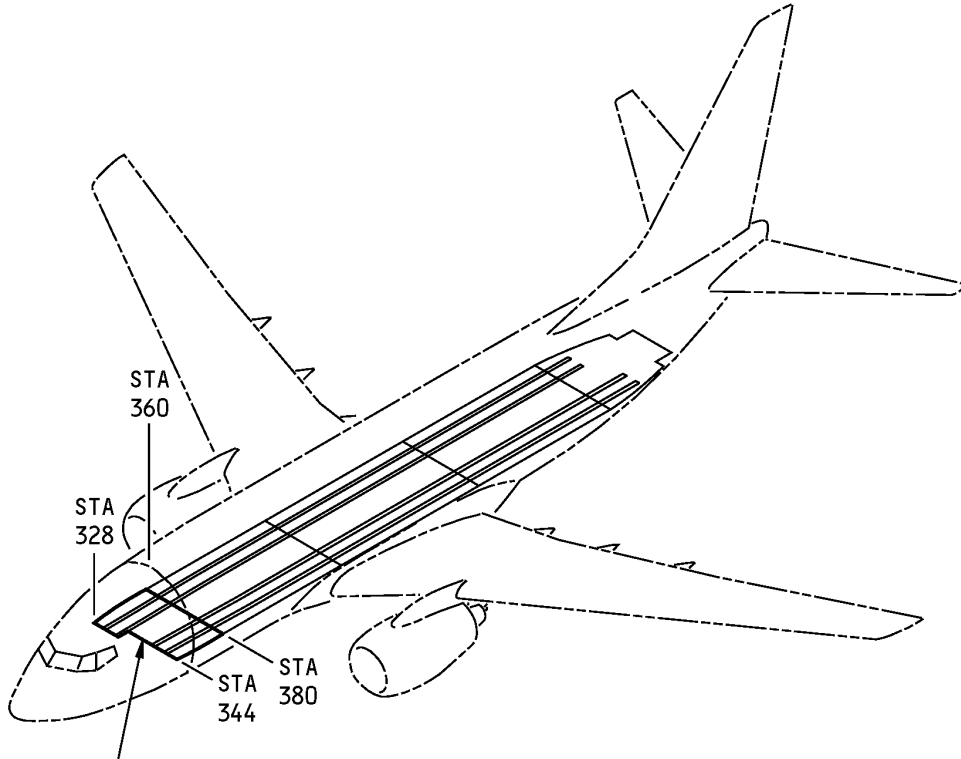
**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Seat Track (4)		BAC1674-9 Ti-6Al-4V extruded bar as given in AMS 4935 (Optional: Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, condition A)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE GENERAL - SECTION 41 SEAT TRACKS**

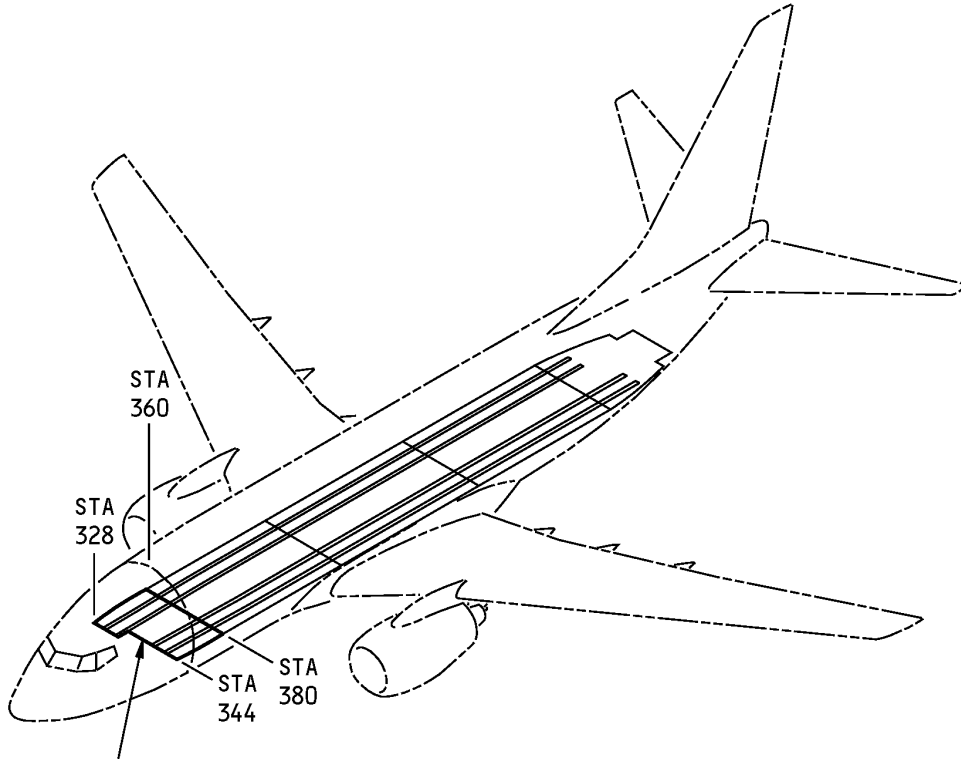


REFER TO SRM 53-00-52  
FOR THE ALLOWABLE DAMAGE  
DATA THAT IS APPLICABLE TO  
THE SEAT TRACKS IN SECTION 41

**Section 41 Seat Track Allowable Damage  
Figure 101**

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**REPAIR GENERAL - SECTION 41 SEAT TRACKS**

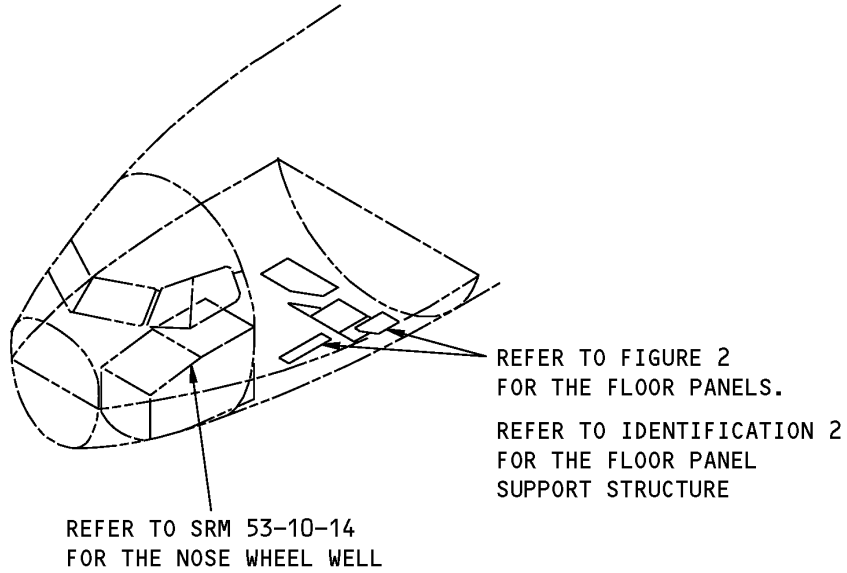


REFER TO SRM 53-00-52  
FOR THE REPAIRS THAT  
ARE APPLICABLE TO THE  
SEAT TRACKS IN SECTION 41

**Section 41 Seat Track Repairs  
Figure 201**

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**IDENTIFICATION 1 - FORWARD EQUIPMENT BAY FLOOR PANELS**

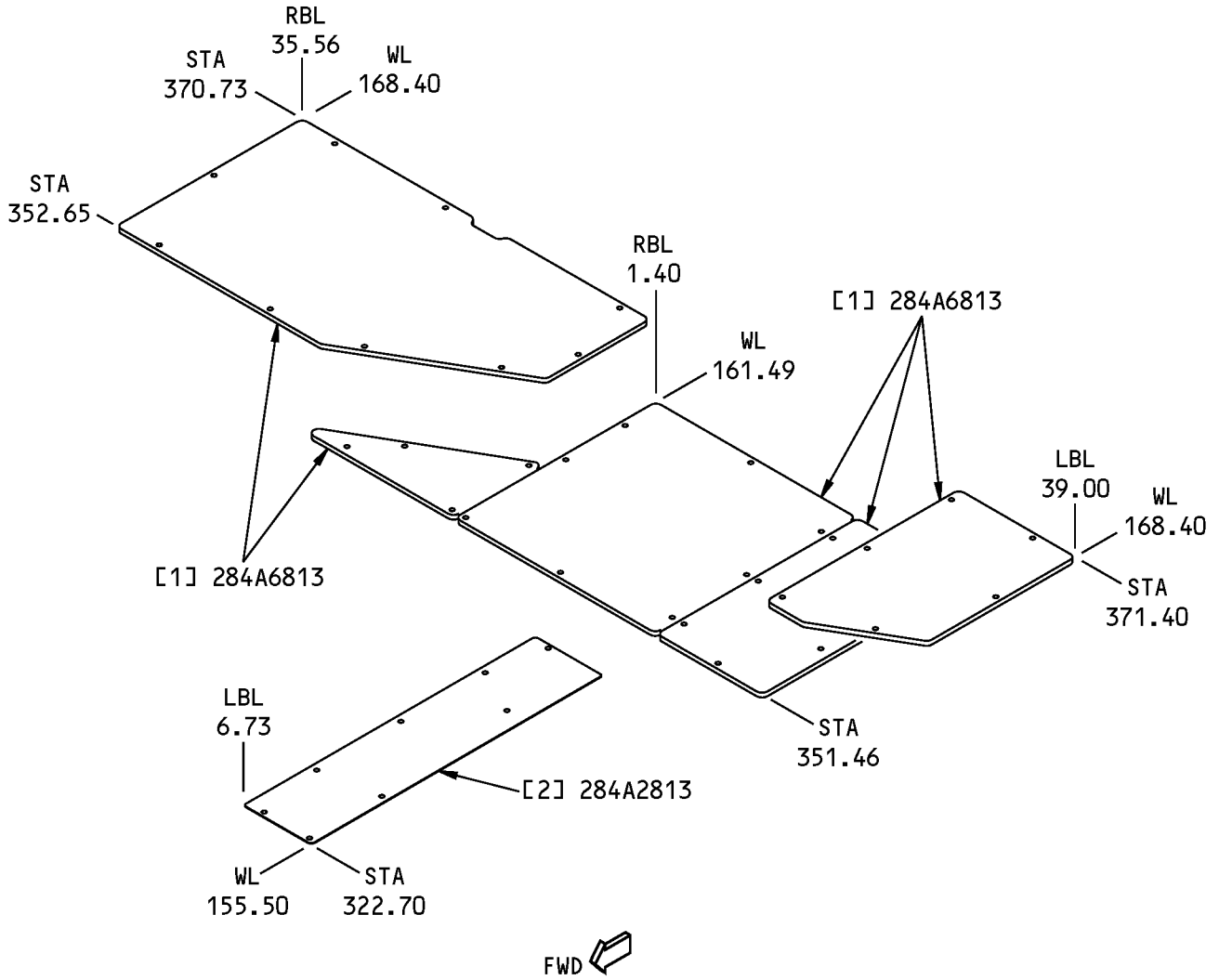


**Forward Equipment Bay Floor Panel Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
284A0012	Electrical/Electronics Equipment Installation Collector - Final Assembly, Functional Product Collector
284A0813	Panel Installation - Floor, E/E Compartment

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**Forward Equipment Bay Floor Panel Identification  
Figure 2**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

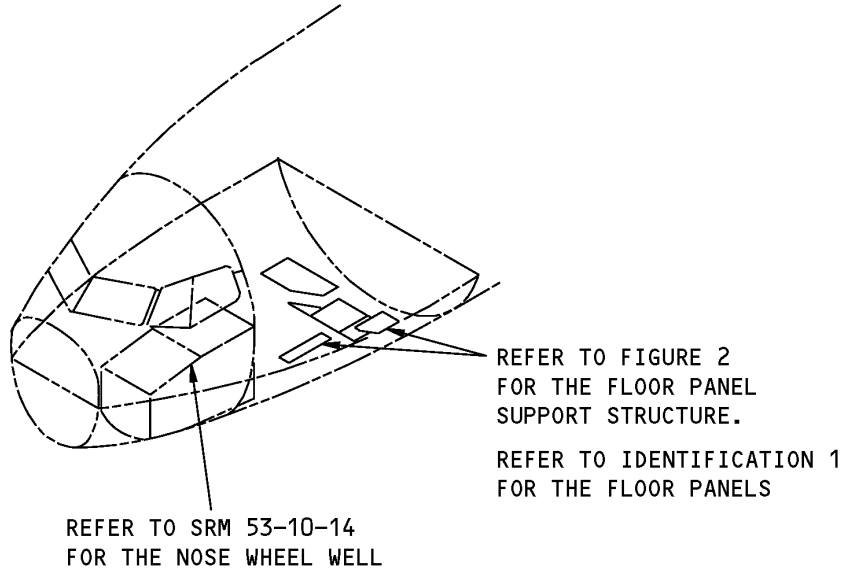
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Panel Assembly		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Panel	0.400 (10.16)	Fiberglass-faced non-metallic core as given in BMS 4-17, Type III, Grade A or B	
	Roll Tape	0.062 (1.57)	Flexible Foam Tape as given in BMS 8-283, Type I	
[2]	Panel Assembly	0.063 (1.6)	2024-T3 sheet as given in QQ-A-250/4	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE**



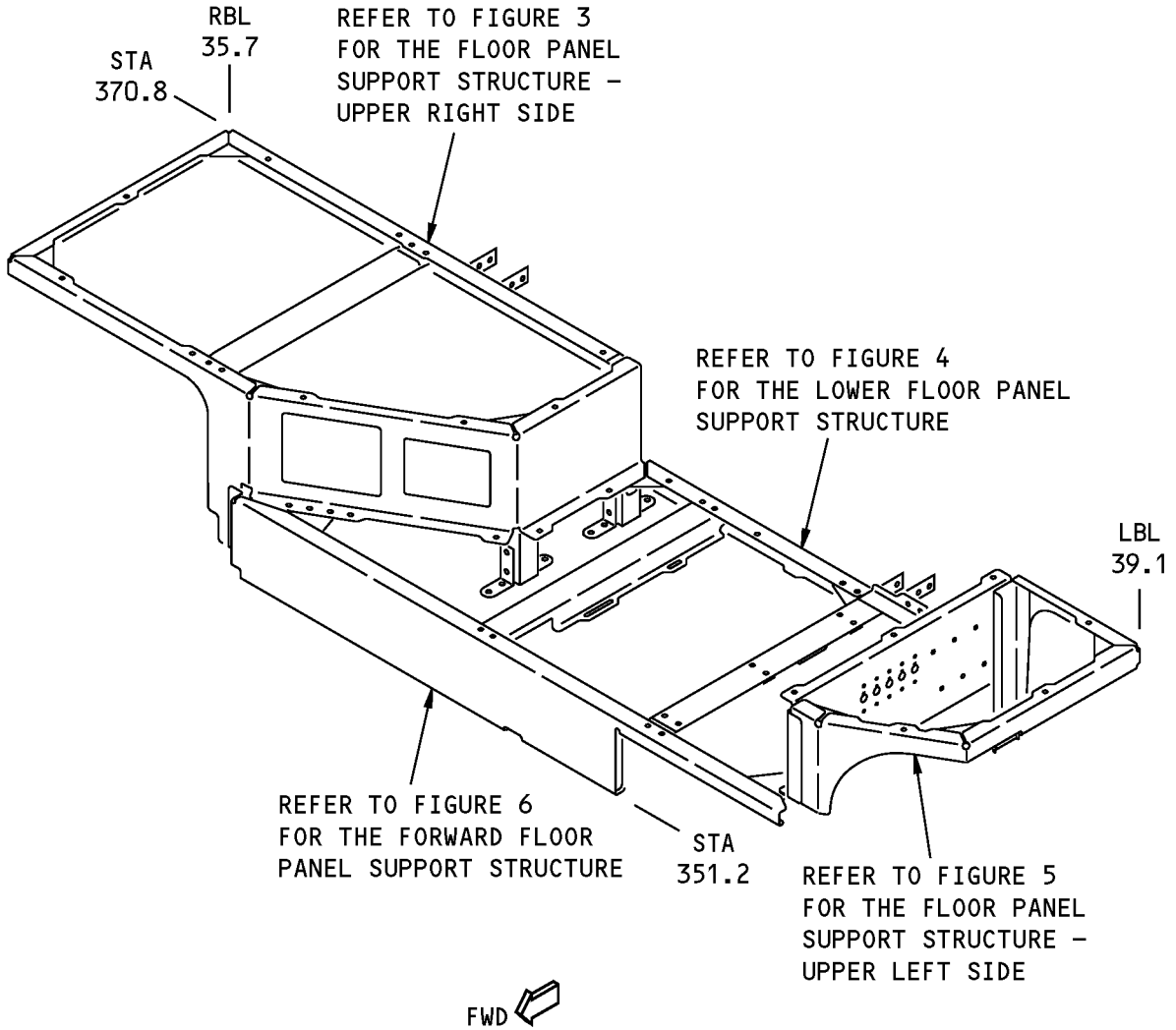
**Forward Equipment Bay Floor Panel Support Structure Location  
Figure 1**

**Table 1:**

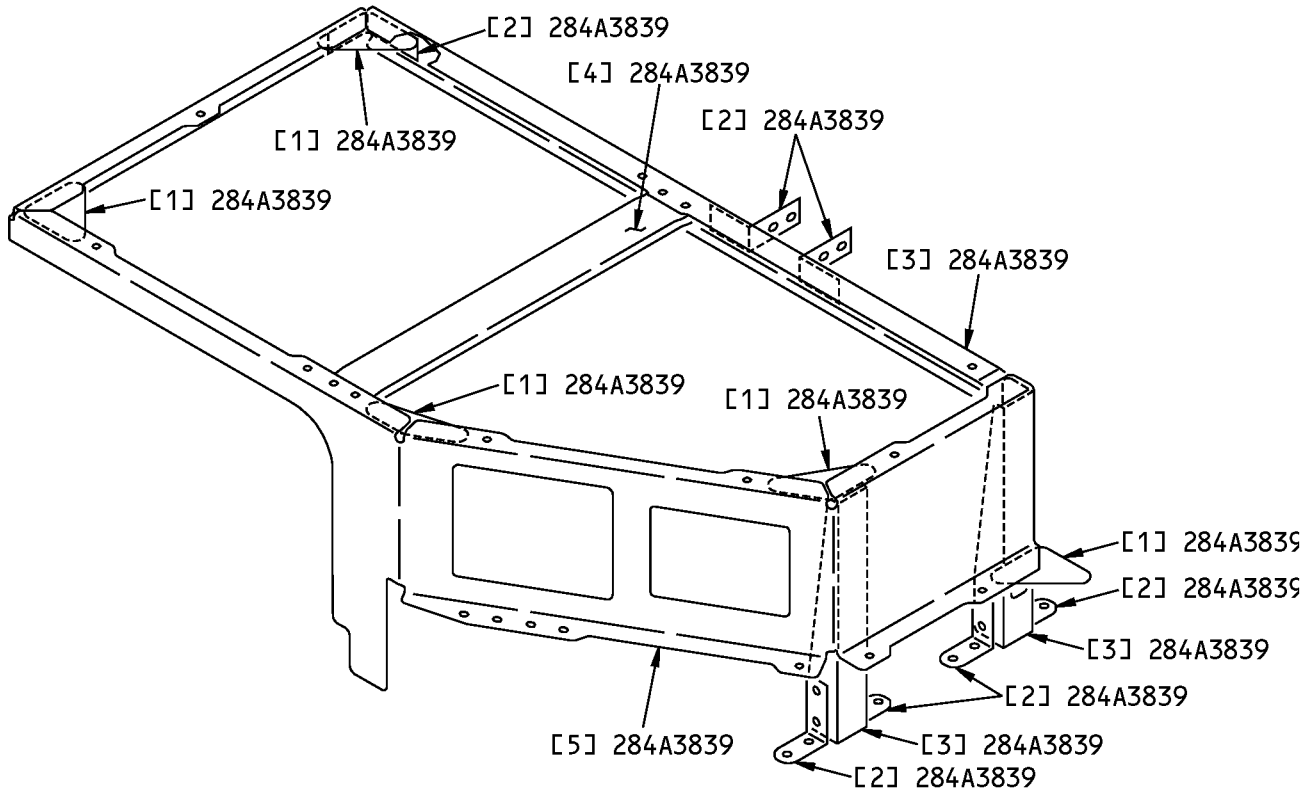
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
284A0001	Electrical/Electronics Equipment Installation Collector - Body, Functional Product Collector
284A0839	Support Installation - Floor, E/E Compartment
284A2839	Support Assembly - Floor, E/E Compartment



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**Forward Equipment Bay Floor Panel Support Structure Identification  
Figure 2**



FWD

**FLOOR PANEL SUPPORT STRUCTURE—  
UPPER RIGHT SIDE**

**Forward Equipment Bay Floor Panel Support Structure - Upper Right Side Identification  
Figure 3**



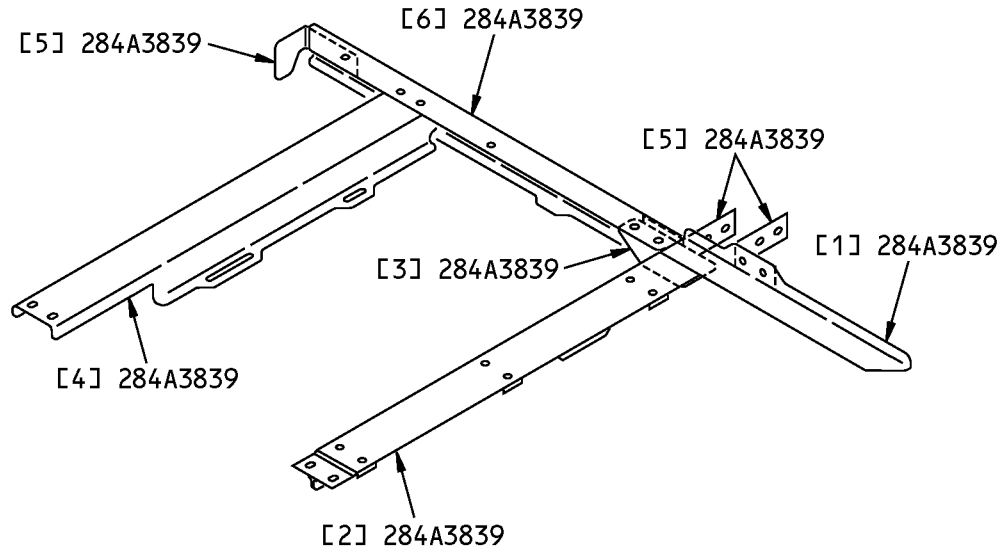
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stiffener	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Angle (7)		BAC1503-100918 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Channel (3)		BAC1509-100689 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel		BAC1493-625 7075-T6 formed channel as given in QQ-A-250/12	
[5]	Panel	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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FWD 

**LOWER FLOOR PANEL SUPPORT STRUCTURE**

**Forward Equipment Bay Lower Floor Panel Support Structure Identification  
Figure 4**



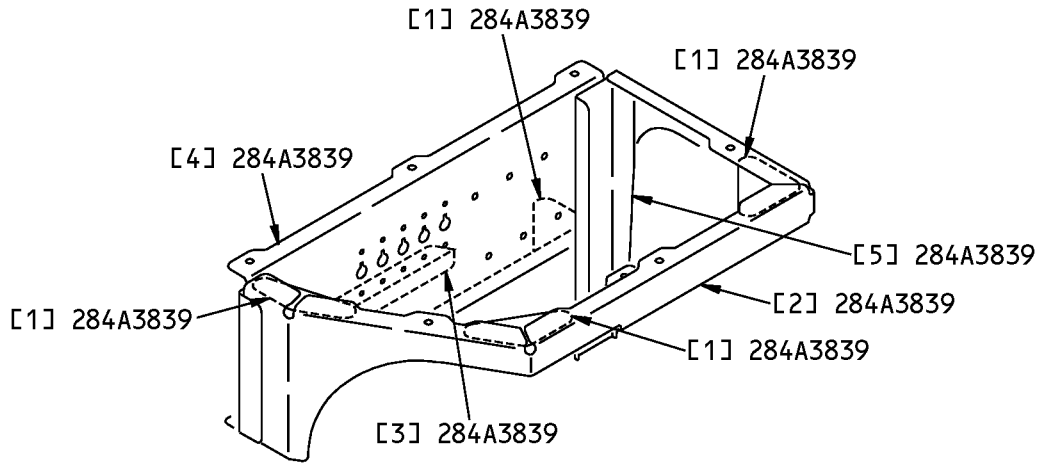
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Angle		AND10134-1204 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Tee		AND10136-2006 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[4]	Bracket	0.063 (1.60)	7075-T6 formed sheet as given in QQ-A-250/12	
[5]	Angle (3)		BAC1503-100918 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Channel		BAC1509-100689 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



FWD 

**FLOOR PANEL SUPPORT STRUCTURE –  
UPPER LEFT SIDE**

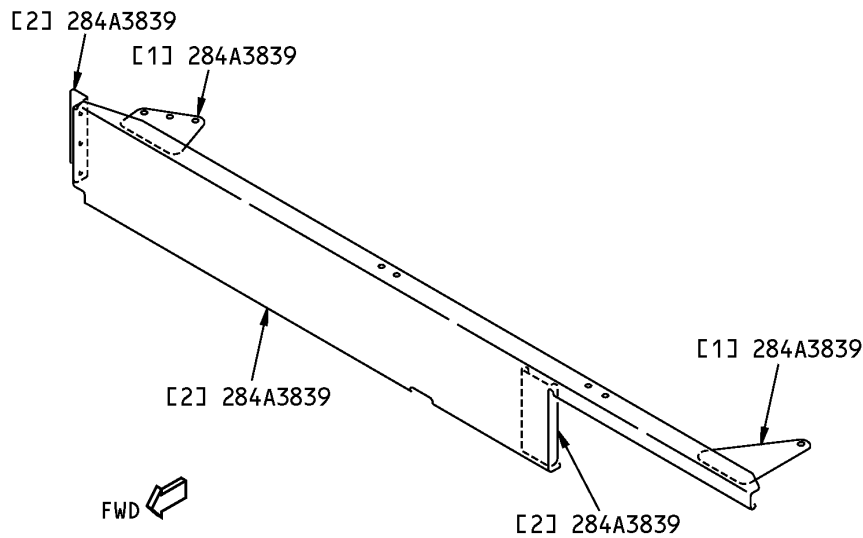
**Forward Equipment Bay Floor Panel Support Structure - Upper Left Side Identification  
Figure 5**

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**Table 4:**

LIST OF MATERIALS FOR FIGURE 5				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Stiffener (4)	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Bracket	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	
[3]	Angle		BAC1514-725 7075-T6511 extrusion as given in QQ-A-250/11	
[4]	Panel	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	
[5]	Channel		BAC1493-533 7075-T6 formed channel as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**FORWARD FLOOR PANEL SUPPORT STRUCTURE**

**Forward Equipment Bay Forward Floor Panel Support Structure Identification  
Figure 6**

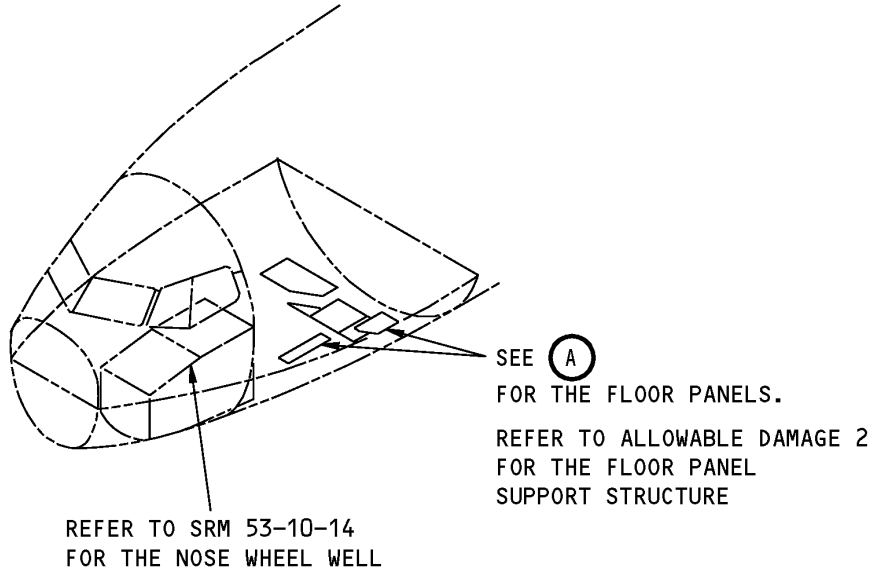
**Table 5:**

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Stiffener (3)	0.063 (1.60)	6013-T6 sheet as given in AMS 4347	
[2]	Bracket (2)	0.063 (1.60)	6013-T6 formed sheet as given in AMS 4347	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL****ALLOWABLE DAMAGE 1 - FORWARD EQUIPMENT BAY FLOOR PANELS****1. Applicability**

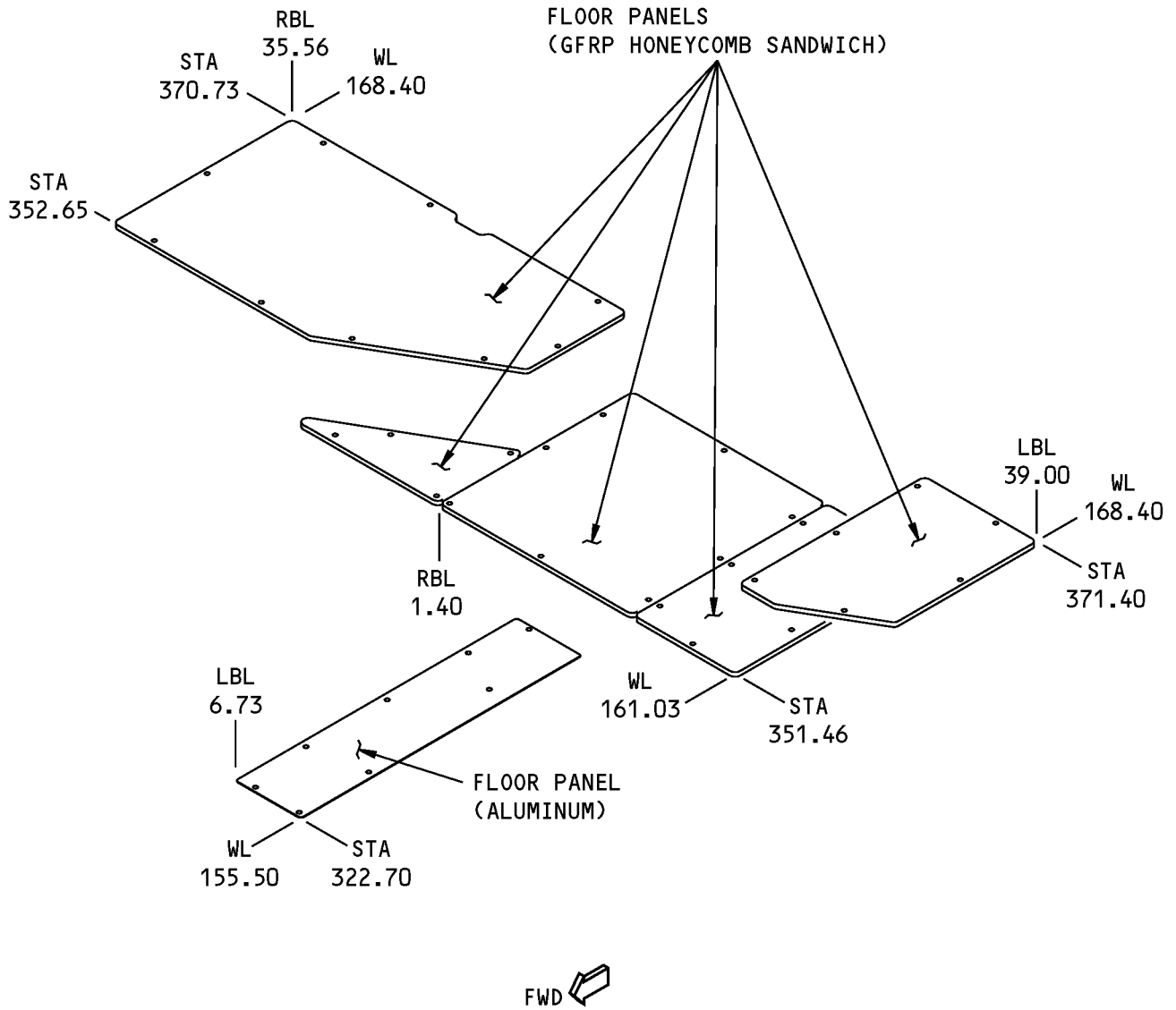
- A. This subject gives the allowable damage limits for the forward equipment bay floor panels shown in Forward Equipment Bay Floor Panel Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits given are only applicable to the functional properties of the forward equipment bay floor panels. If the panel does not function satisfactorily, you can repair it to put it back to a serviceable condition.



**Forward Equipment Bay Floor Panel Location  
Figure 101 (Sheet 1 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**TYPICAL FLOOR PANEL CONFIGURATION**

**A**

**Forward Equipment Bay Floor Panel Location  
Figure 101 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. Seal cracks and holes that go through the floor panel with BMS 5-146, Type I, Class 1, Grade A cargo liner joint sealing tape. As an alternative, you can make the seal with aluminum foil tape (speed tape).

### 3. Inspection Requirements

- A. Do a visual inspection at 400 flight cycles maximum to make sure the sealing tape is in a satisfactory condition. Replace the tape if there are signs of deterioration.
- B. Do a permanent repair at 4,000 flight cycles maximum from the time the tape was applied.

### 4. References

Reference	Title
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 5. Allowable Damage Limits

#### A. Composite (GFRP Honeycomb Sandwich) Floor Panels

- (1) The total damage must not be more than 30 percent of the panel area for airplanes that have not completed Service Bulletin 737-21-1149.
- (2) The total damage must not be more than 25 percent of the panel area for airplanes that have completed Service Bulletin 737-21-1149.
- (a) Cracks:
- Cracks are permitted if they are:
    - A maximum of 3.0 inches (76.2 mm) in length
    - Sealed as given in Paragraph 2.
  - Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.
- (b) Nicks, Gouges, or Scratches are permitted if they are:
- A maximum of 3.0 inches (76.2 mm) in length.
- (c) Dents are permitted if they are:
- A maximum of 3.0 inches (76.2 mm) in diameter.
- (d) Holes and Punctures are permitted if they are:
- A maximum of 2.0 inches (50.8 mm) in diameter
  - Sealed as given in Paragraph 2.
- (e) Delaminations are permitted if they are:
- A maximum of 3.0 inches (76.2 mm) in diameter.

#### B. Aluminum

- (1) The total damage must not be more than 30 percent of the panel area for airplanes that have not completed Service Bulletin 737-21-1149.



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## STRUCTURAL REPAIR MANUAL

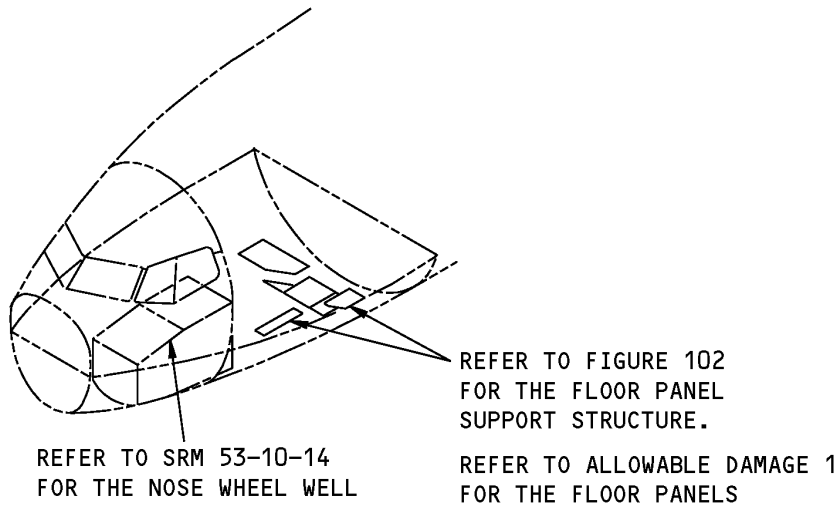
- (2) The total damage must not be more than 25 percent of the panel area for airplanes that have completed Service Bulletin 737-21-1149.
  - (a) Cracks:
    - 1) Cracks are permitted if they are:
      - a) A maximum of 3.0 inches (76.2 mm) in length
      - b) Sealed as given in Paragraph 2.
    - 2) Stop drill a 0.25 inch (6.35 mm) hole at the ends of a crack. The stop hole must be a minimum of 1.0 inch (25.4 mm) from a fastener hole.
      - a) Install a 2117-T3 or 2117-T4 rivet. Install the rivet without sealant.
    - 3) Cracks that are between three adjacent fastener holes are permitted at the end of the panel that is attached.
  - (b) Nicks, Gouges, Scratches, and Corrosion are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in length.
  - (c) Dents are permitted if they are:
    - 1) A maximum of 3.0 inches (76.2 mm) in diameter.
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 2.0 inches (50.8 mm) in diameter
    - 2) Sealed as given in Paragraph 2.

**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE**

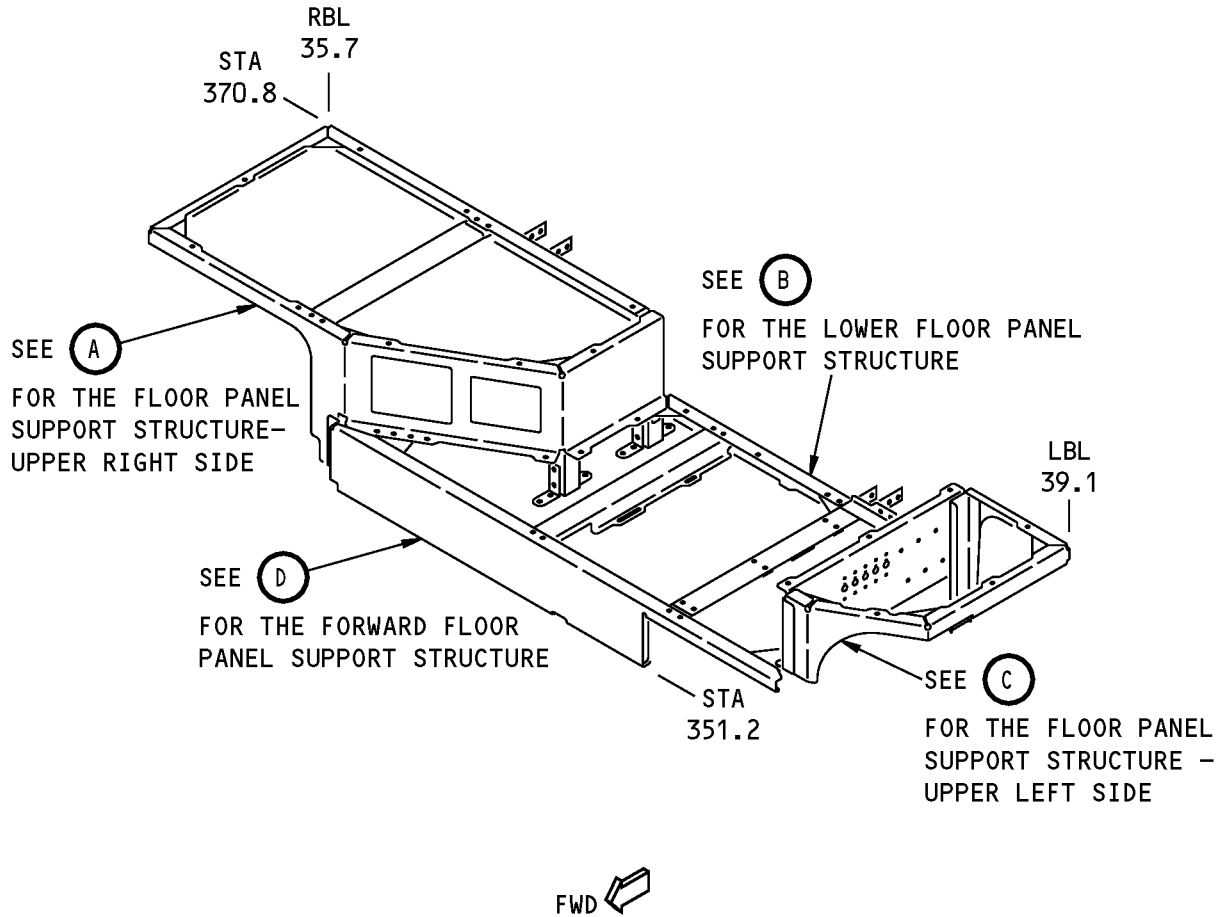
**1. Applicability**

- A. This subject gives the allowable damage limits for the forward equipment bay floor panel support structure shown in Forward Equipment Bay Floor Panel Support Structure Location, Figure 101/ALLOWABLE DAMAGE 2.



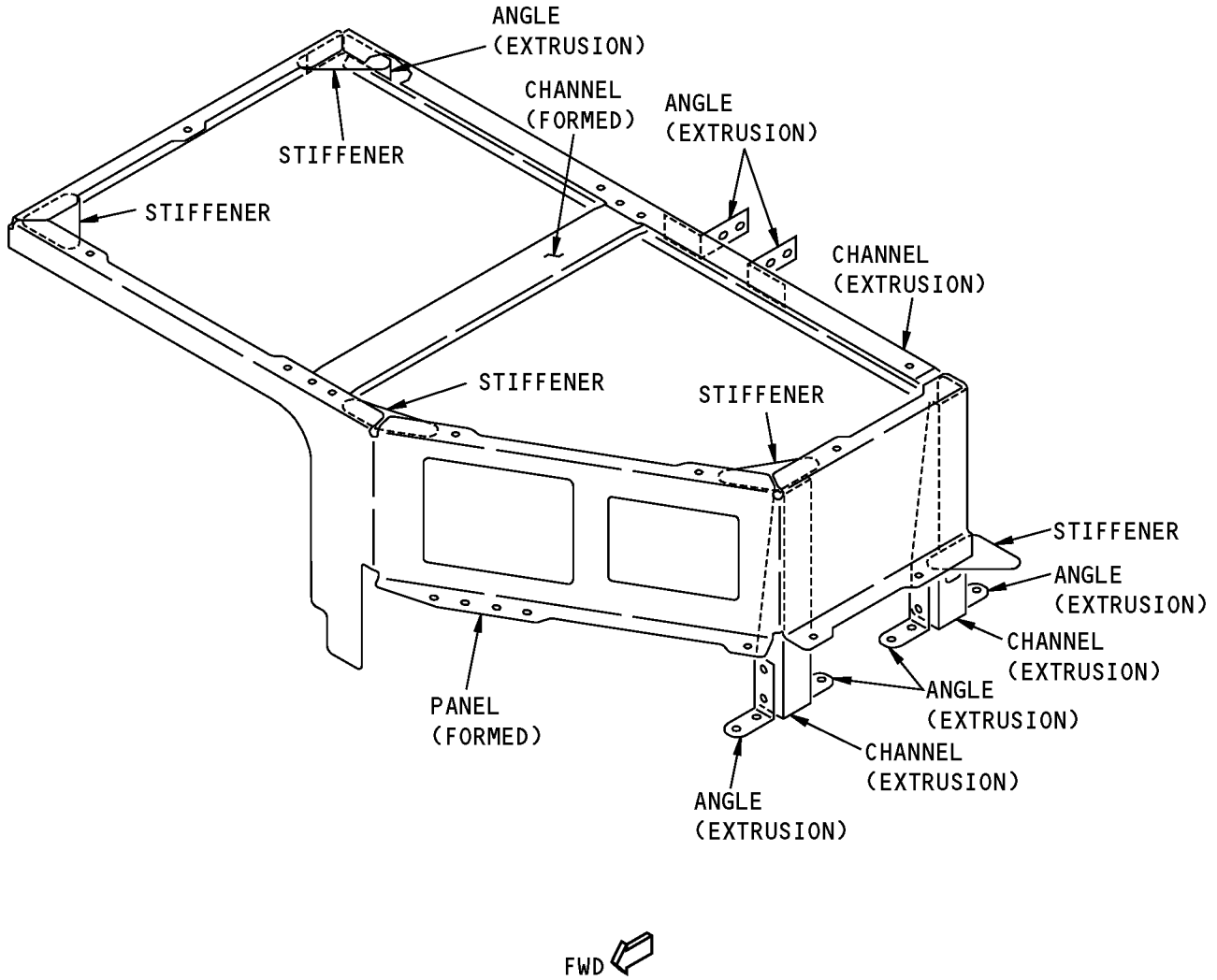
**Forward Equipment Bay Floor Panel Support Structure Location  
Figure 101**

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**Forward Equipment Bay Floor Panel Support Structure  
Figure 102 (Sheet 1 of 5)**

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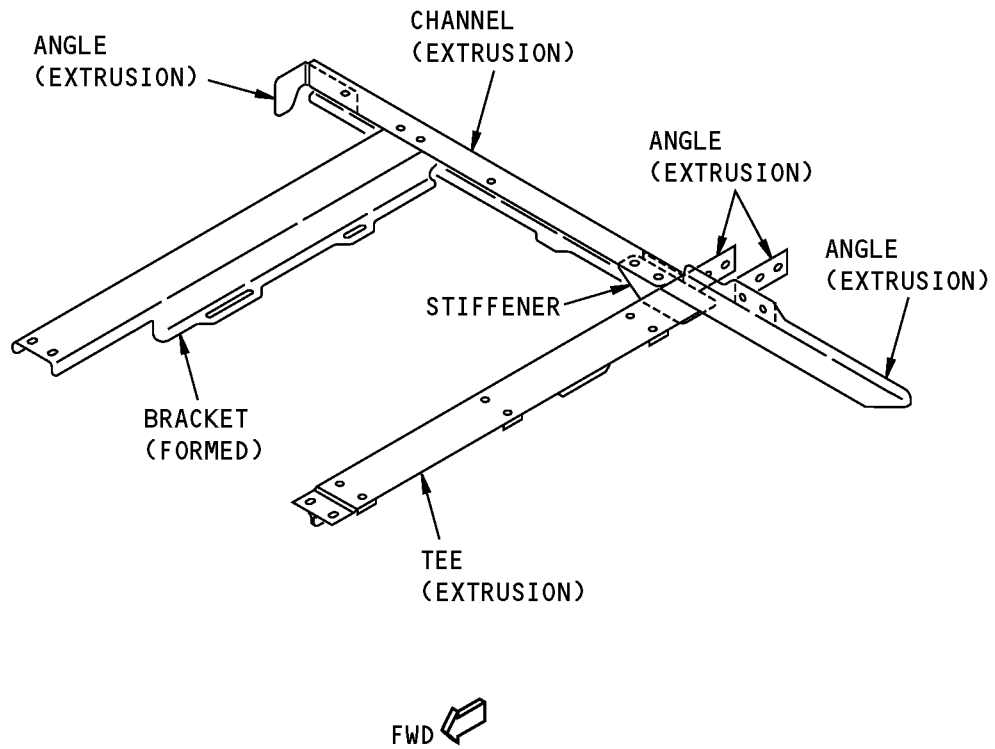


**FLOOR PANEL SUPPORT STRUCTURE -  
UPPER RIGHT SIDE**

**A**

**Forward Equipment Bay Floor Panel Support Structure  
Figure 102 (Sheet 2 of 5)**

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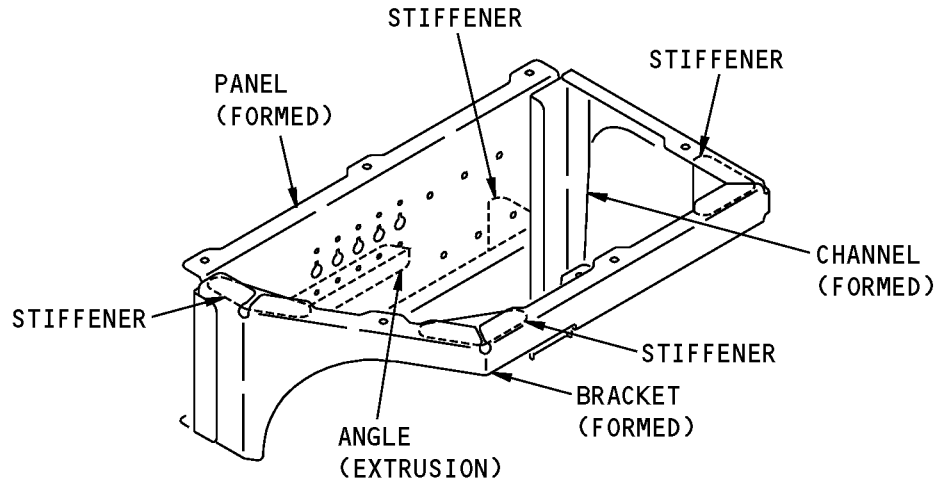


**LOWER FLOOR PANEL SUPPORT STRUCTURE**

**B**

**Forward Equipment Bay Floor Panel Support Structure  
Figure 102 (Sheet 3 of 5)**

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FWD 

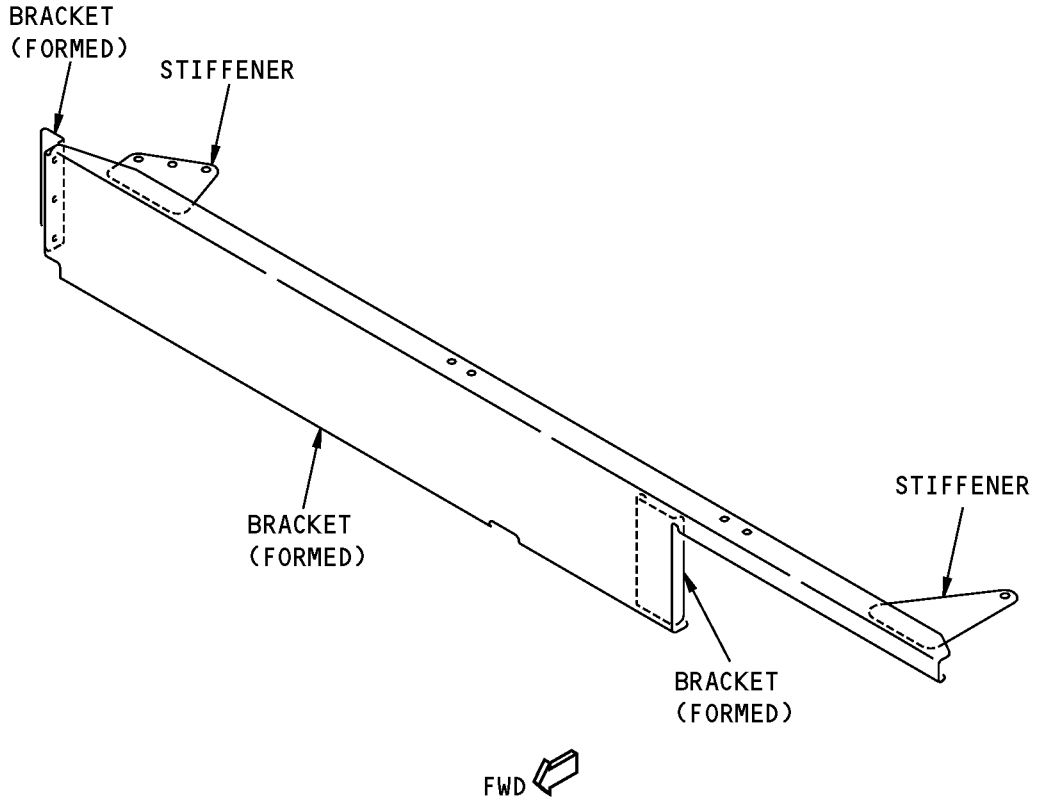
**FLOOR PANEL SUPPORT STRUCTURE –  
UPPER LEFT SIDE**

(C)

**Forward Equipment Bay Floor Panel Support Structure  
Figure 102 (Sheet 4 of 5)**



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**FORWARD FLOOR PANEL SUPPORT STRUCTURE**

(D)

**Forward Equipment Bay Floor Panel Support Structure  
Figure 102 (Sheet 5 of 5)**

D634A210

**53-10-54**

ALLOWABLE DAMAGE 2  
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**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Stiffener (sheet)	4.A
Channel (extrusion)	4.B
Channel (formed)	4.C
Angle (extrusion)	4.B
Panel (formed)	4.C
Bracket (formed)	4.C
Tee (extrusion)	4.B

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply two layers of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

- A. Stiffeners
  - (1) Cracks:



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- (a) Remove the damage as shown in Figure 103, Details A , B , and D .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A , B , C , and D .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures:
    - (a) The damage is permitted if it is:
      - 1) A maximum of 0.25 inch (5.35 mm) in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage
      - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
        - a) Install the rivet without sealant.
- B. Channels, Angles, and Tees (Extrusions)
- (1) Cracks:
    - (a) Remove the damage as shown in Figure 103, Details A , B , G , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A , B , C , E , F , G , and H .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures:
    - (a) The damage is permitted if it is:
      - 1) A maximum of 0.25 inch (6.35 mm) in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage
      - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
        - a) Install the rivet without sealant.
- C. Channels, Panels, and Brackets (Formed)
- (1) Cracks:
    - (a) Remove the damage as shown in Figure 103, Details A , B , and D .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (3) Dents:
    - (a) Refer to Figure 103, Detail I for the damage that is permitted.
  - (4) Holes and Punctures:
    - (a) The damage is permitted if it is:
      - 1) A maximum of 0.25 inch (6.35 mm) in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the edge of the part, or other damage
      - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
        - a) Install the rivet without sealant.

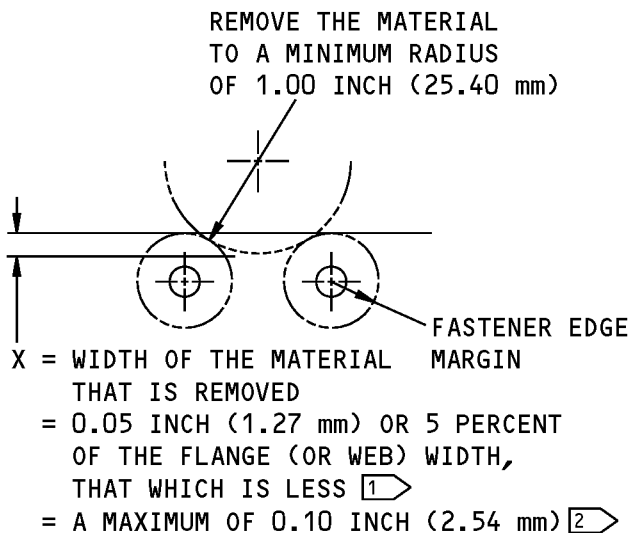
ALLOWABLE DAMAGE 2

**53-10-54**

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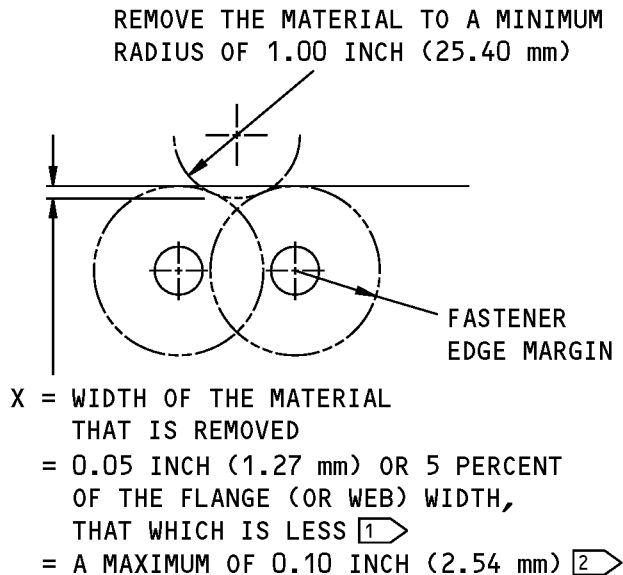
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**STRUCTURAL REPAIR MANUAL**



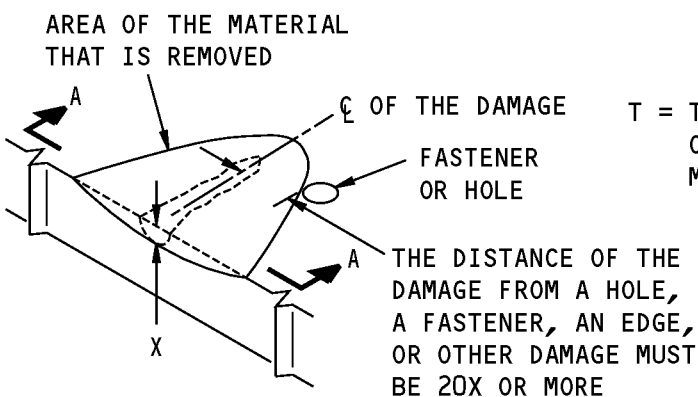
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**A**



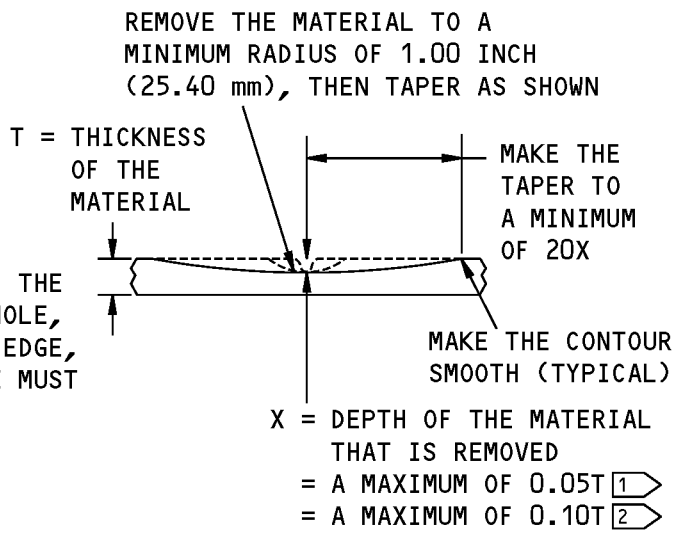
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**B**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**C**



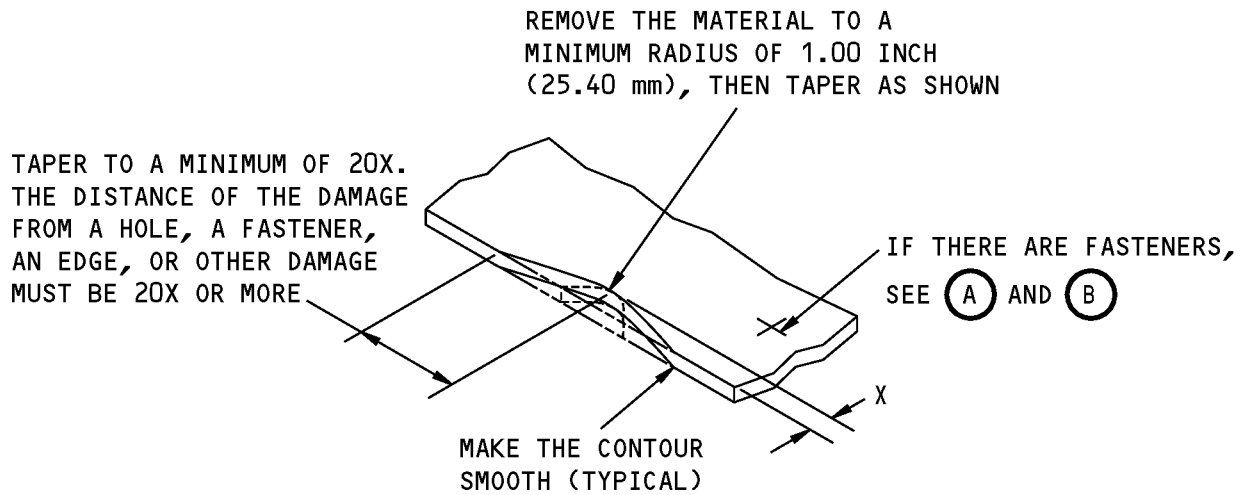
A-A



**1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

**2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149

**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
 Figure 103 (Sheet 1 of 6)**

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STRUCTURAL REPAIR MANUAL**



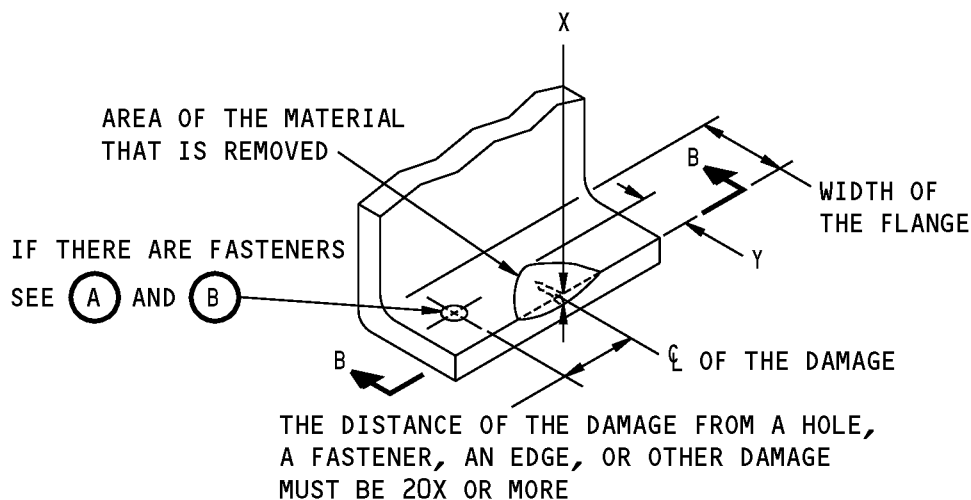
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= 0.05 INCH (1.27 mm) OR 5% OF THE WIDTH OF  
FLANGE, THAT WHICH IS LESS   
= A MAXIMUM OF 0.10 INCH (2.54 mm) 

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(D)

**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
Figure 103 (Sheet 2 of 6)**

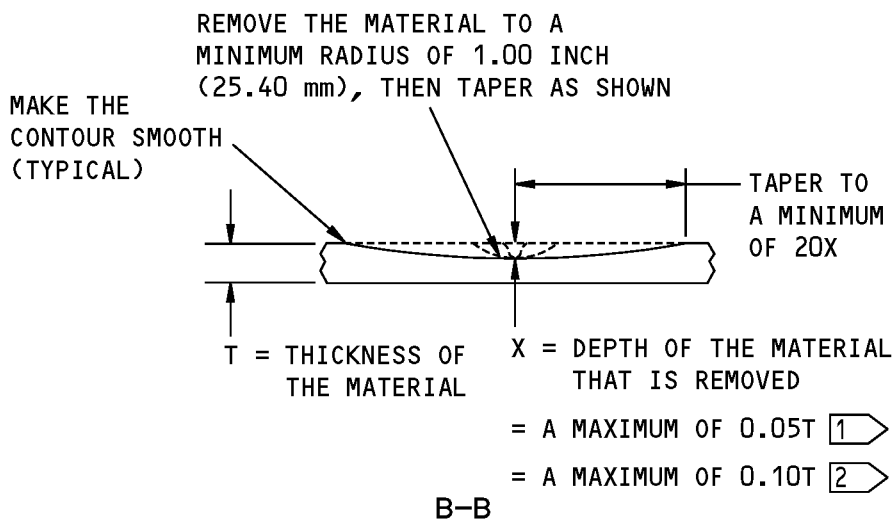
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

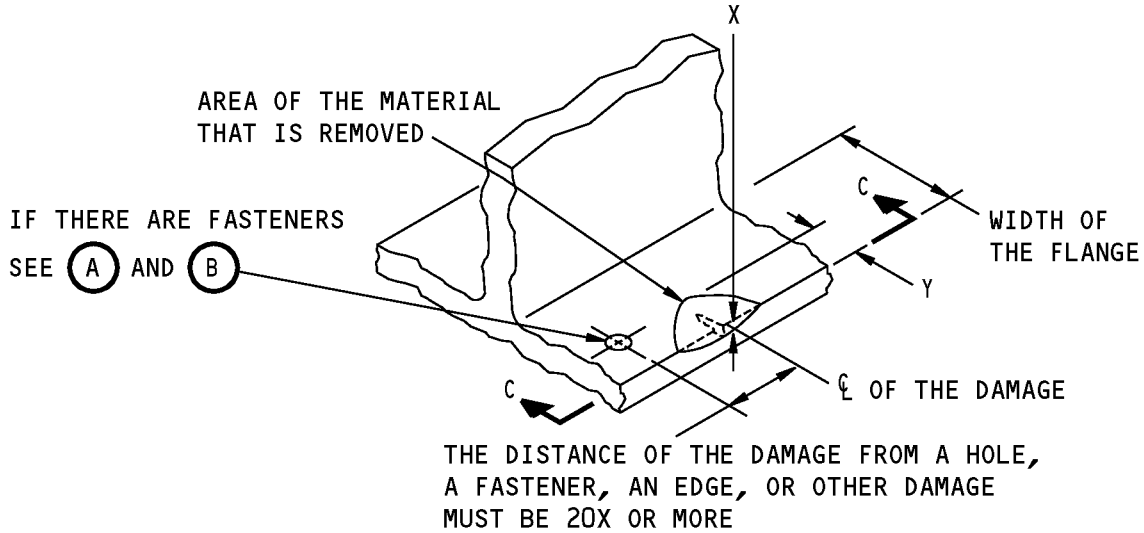
**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(E)



**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
Figure 103 (Sheet 3 of 6)**

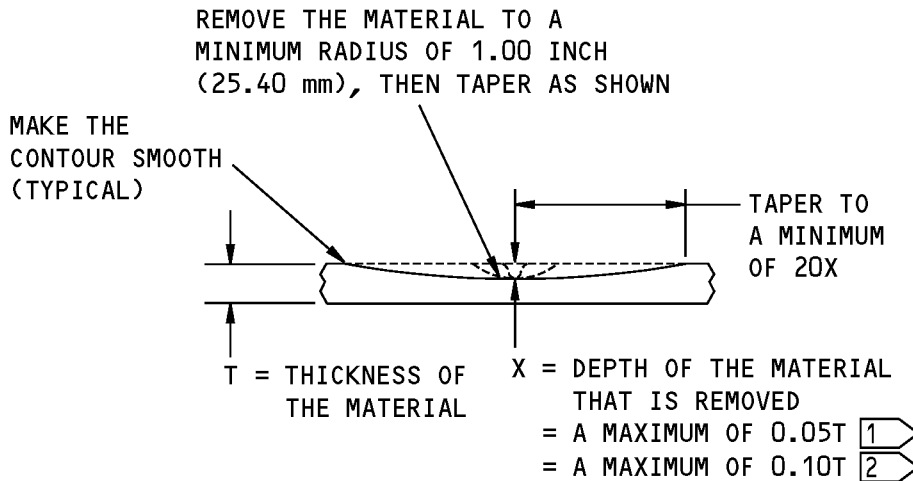
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(F)

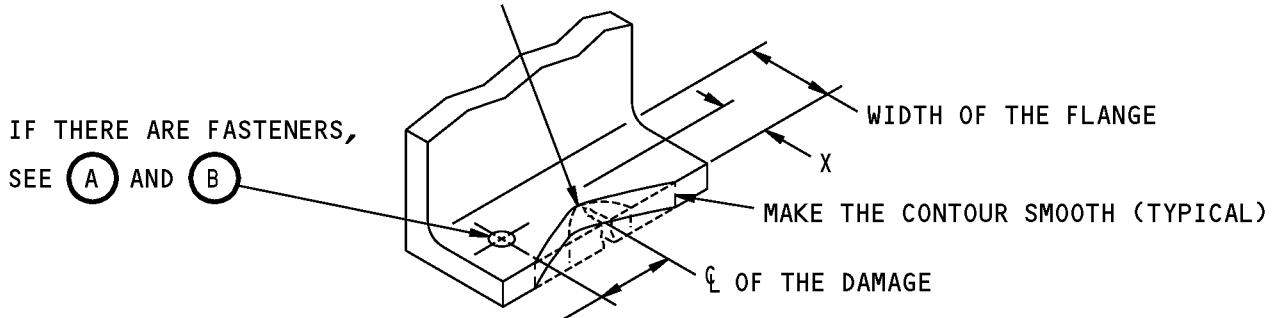


C-C

**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
Figure 103 (Sheet 4 of 6)**

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REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.40 mm), THEN TAPER AS SHOWN

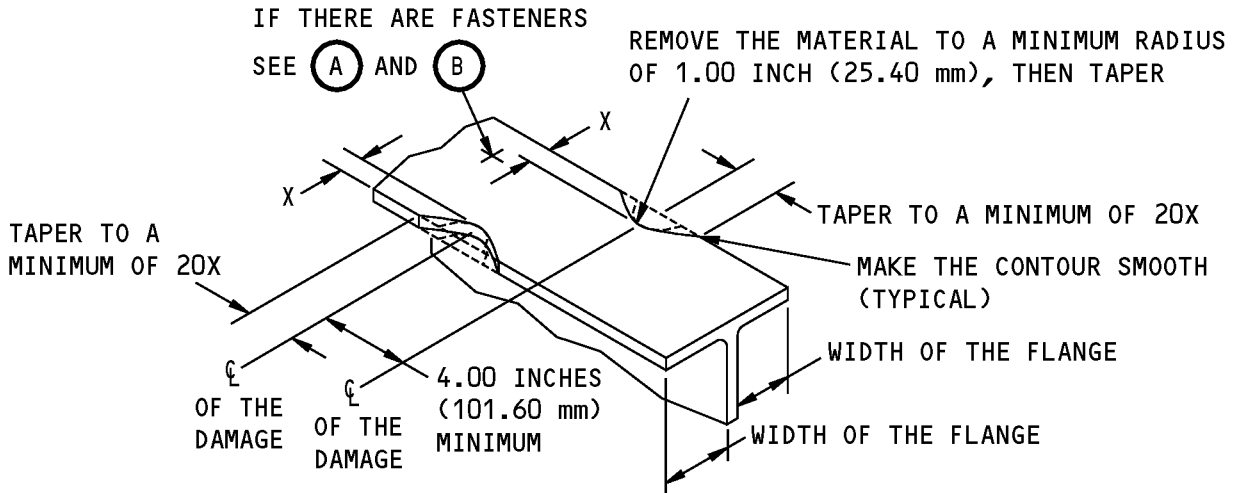


TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE,  
A FASTENER, AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE

- Y = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

**(G)**



- X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

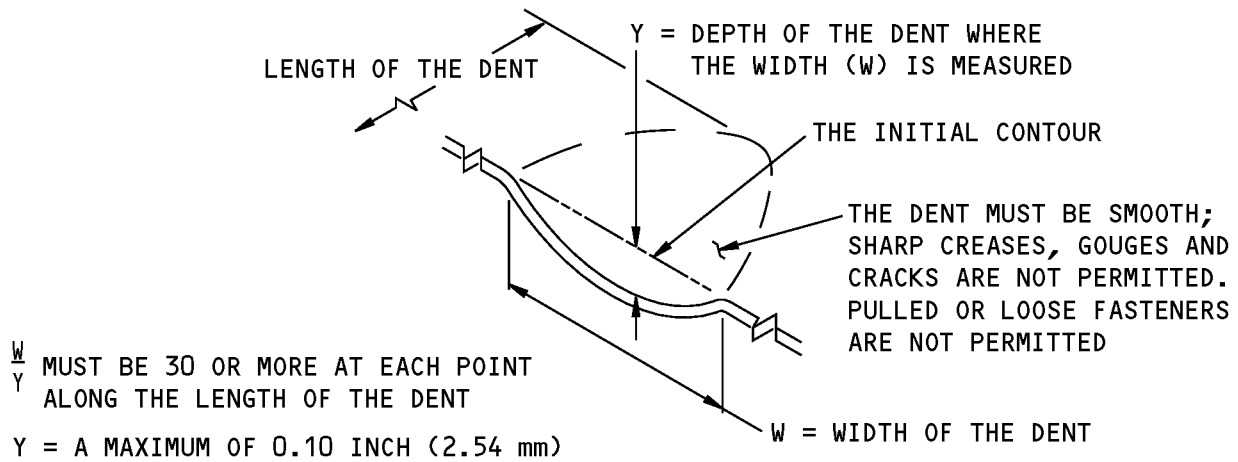
**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(H)**

**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
Figure 103 (Sheet 5 of 6)**



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STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**



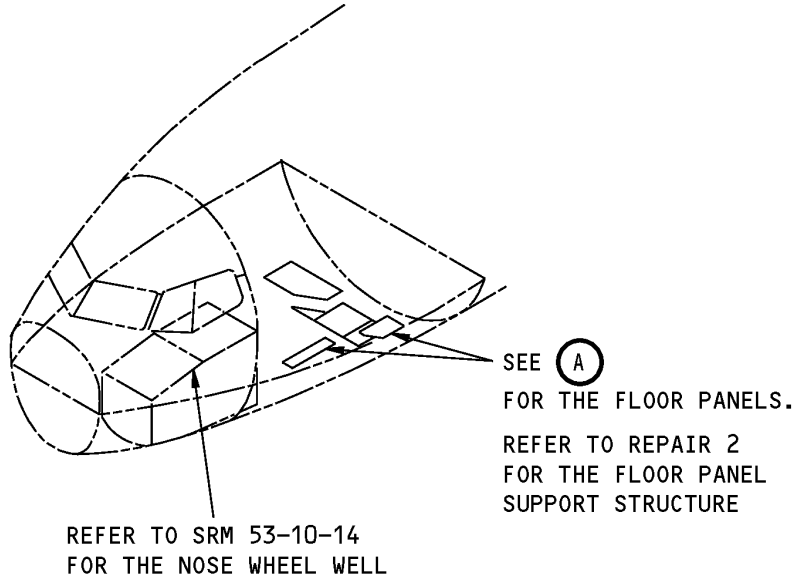
**FWD Equip Bay Floor Panel Support Structure Allowable Damage Details  
Figure 103 (Sheet 6 of 6)**

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REPAIR 1 - FORWARD EQUIPMENT BAY FLOOR PANELS

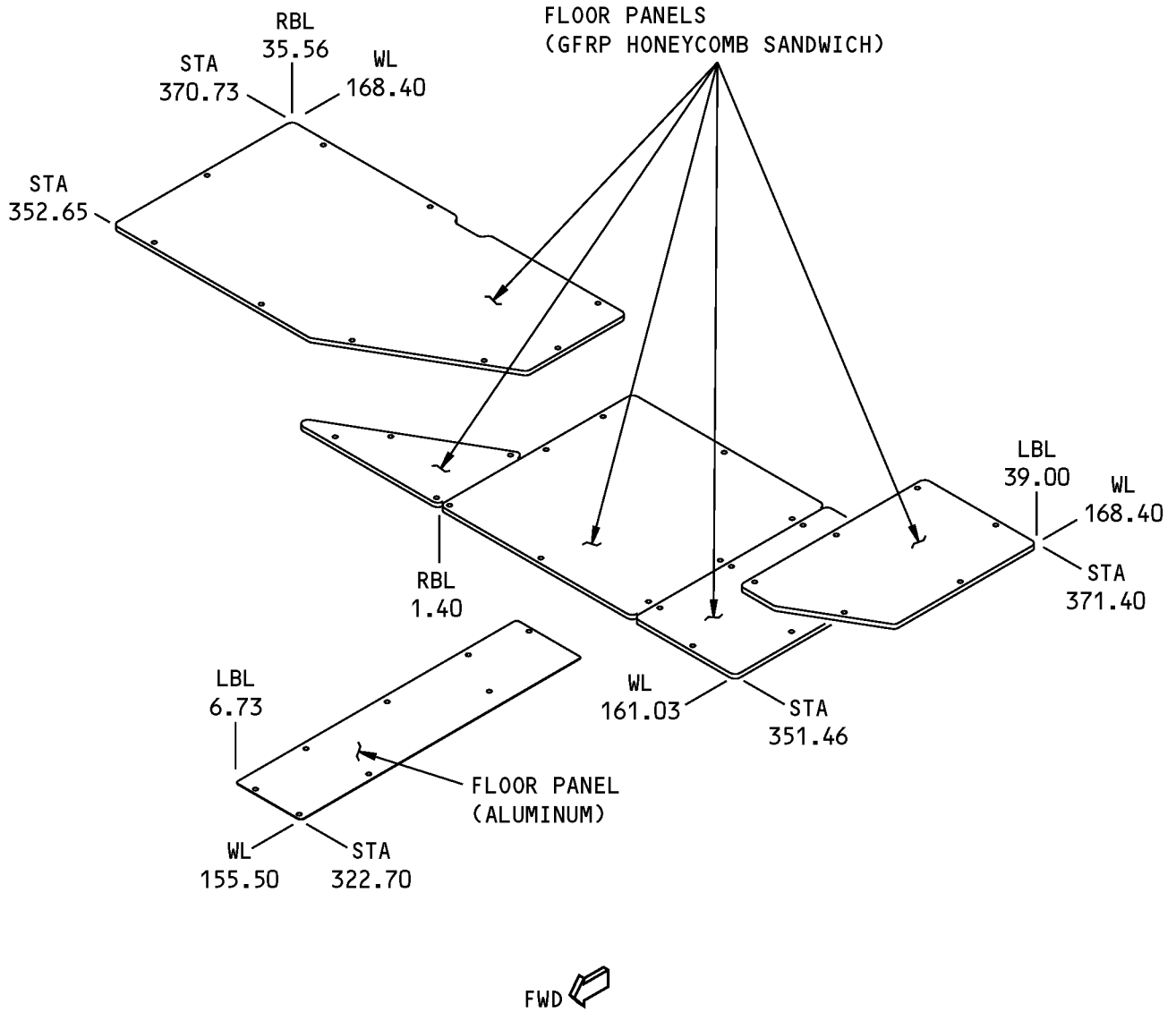
1. Applicability

- A. Repair 1 is applicable to damage to the forward equipment bay floor panels shown in Forward Equipment Bay Floor Panel Location, Figure 201/REPAIR 1.



Forward Equipment Bay Floor Panel Location  
Figure 201 (Sheet 1 of 2)

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STRUCTURAL REPAIR MANUAL**



**TYPICAL FLOOR PANEL CONFIGURATION**

(A)

**Forward Equipment Bay Floor Panel Location  
Figure 201 (Sheet 2 of 2)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**2. References**

Reference	Title
53-00-50, REPAIR GENERAL	Composite Floor Panels
53-10-54, ALLOWABLE DAMAGE 1	Forward Equipment Bay Floor Panels

**3. Repair Instructions**

A. Refer to Table 201/REPAIR 1 to find the applicable repair for the part you want to repair.

**Table 201:**

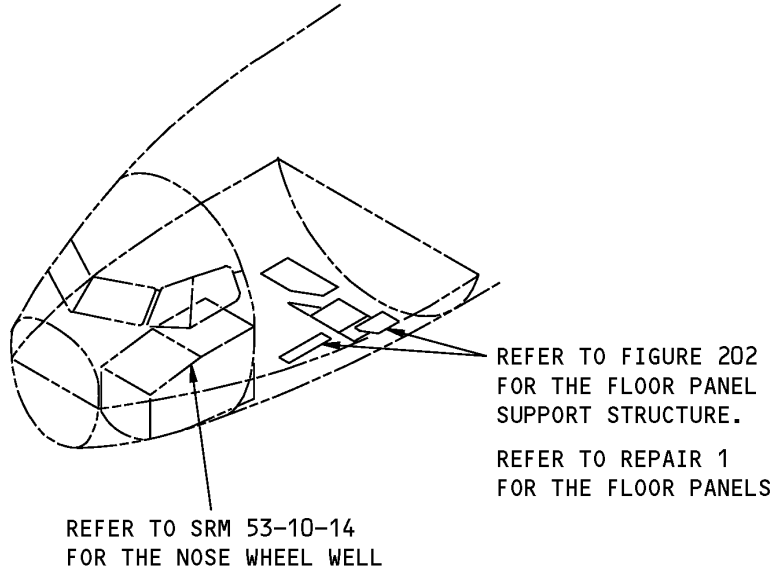
<b>REPAIR REFERENCES FOR THE FORWARD EQUIPMENT BAY FLOOR PANELS</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Panel (Composite)	Refer to SRM 53-00-50
Panel (Aluminum)	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-54, Allowable Damage 1, replace the damaged part.

**STRUCTURAL REPAIR MANUAL**

**REPAIR 2 - FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE**

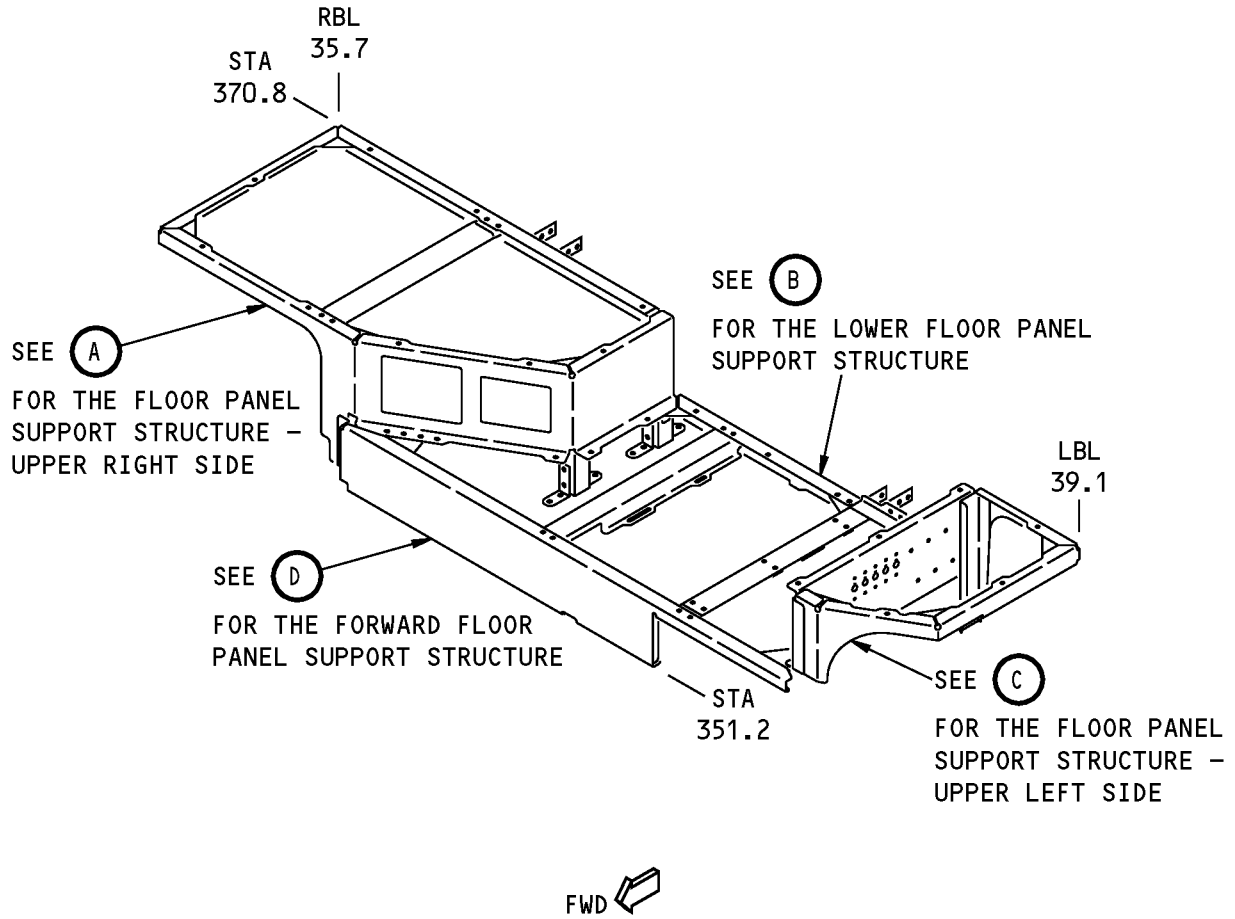
**1. Applicability**

- A. Repair 2 is applicable to damage to the forward equipment bay floor panel support structure shown in Forward Equipment Bay Floor Panel Support Structure Location, Figure 201/REPAIR 2.

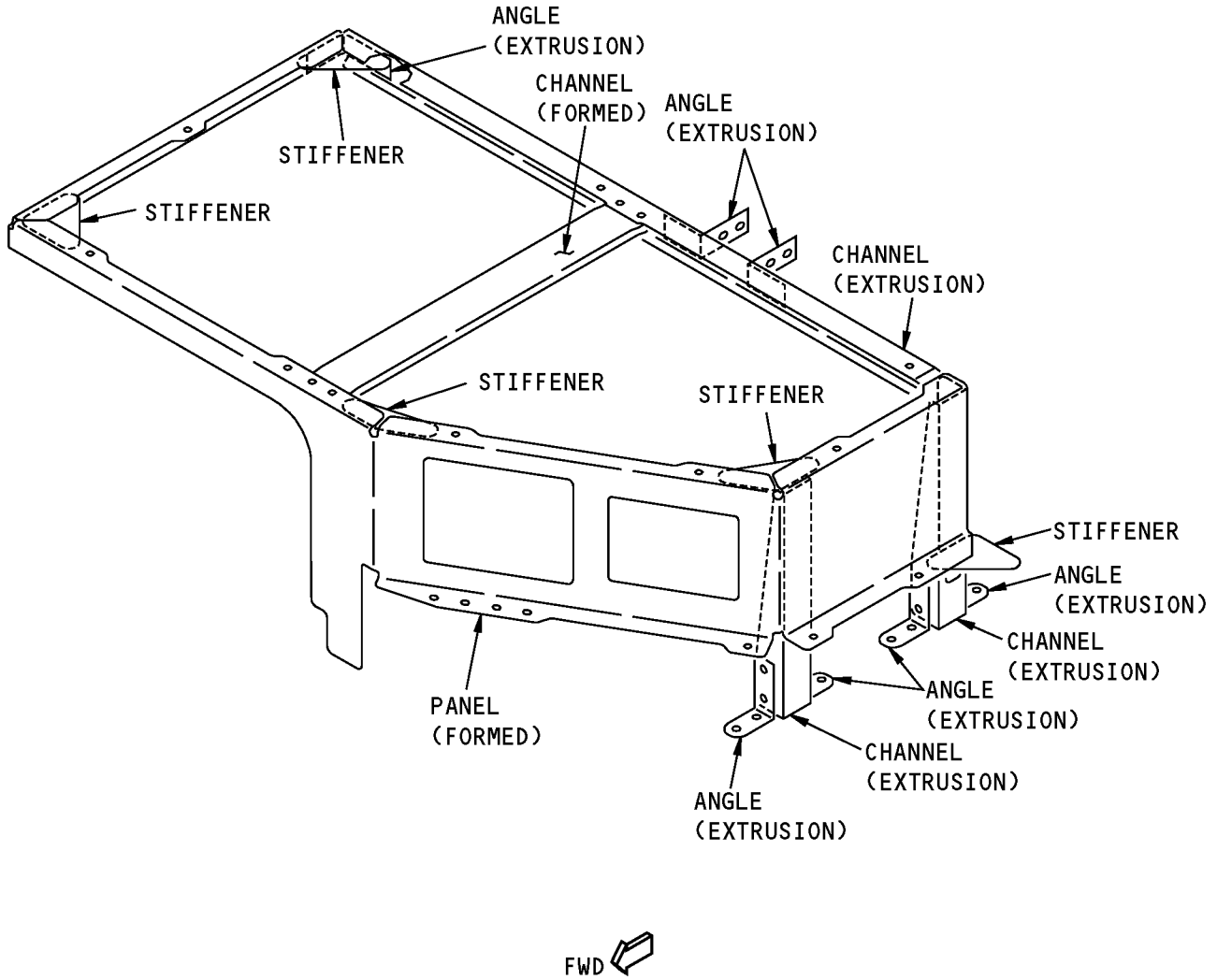


**Forward Equipment Bay Floor Panel Support Structure Location  
Figure 201**

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**Forward Equipment Bay Floor Panel Support Structure  
Figure 202 (Sheet 1 of 5)**

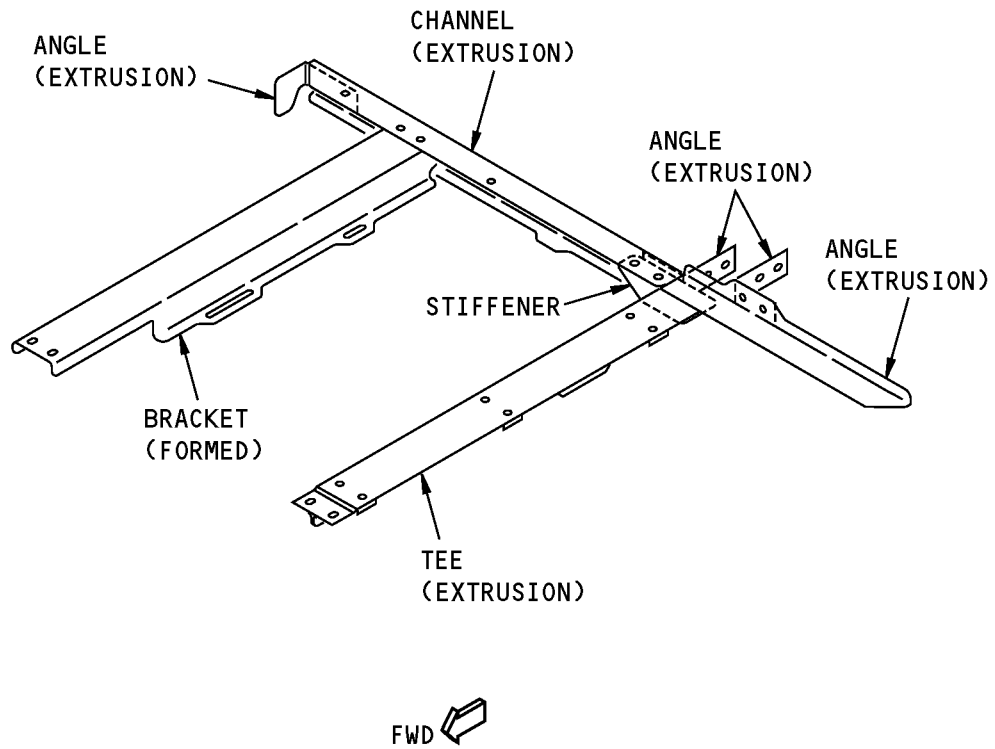


FLOOR PANEL SUPPORT STRUCTURE -  
UPPER RIGHT SIDE

A

Forward Equipment Bay Floor Panel Support Structure  
Figure 202 (Sheet 2 of 5)

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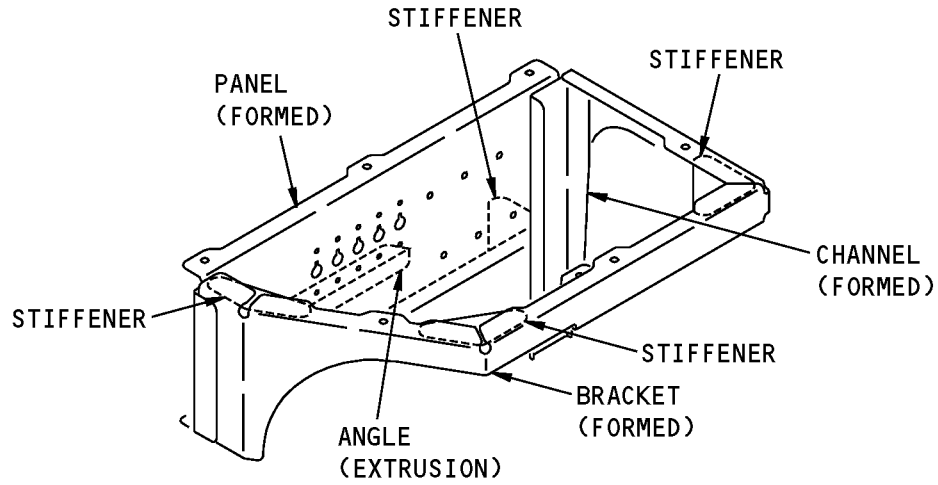
**LOWER FLOOR PANEL SUPPORT STRUCTURE**

**B**

**Forward Equipment Bay Floor Panel Support Structure  
Figure 202 (Sheet 3 of 5)**



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**STRUCTURAL REPAIR MANUAL**



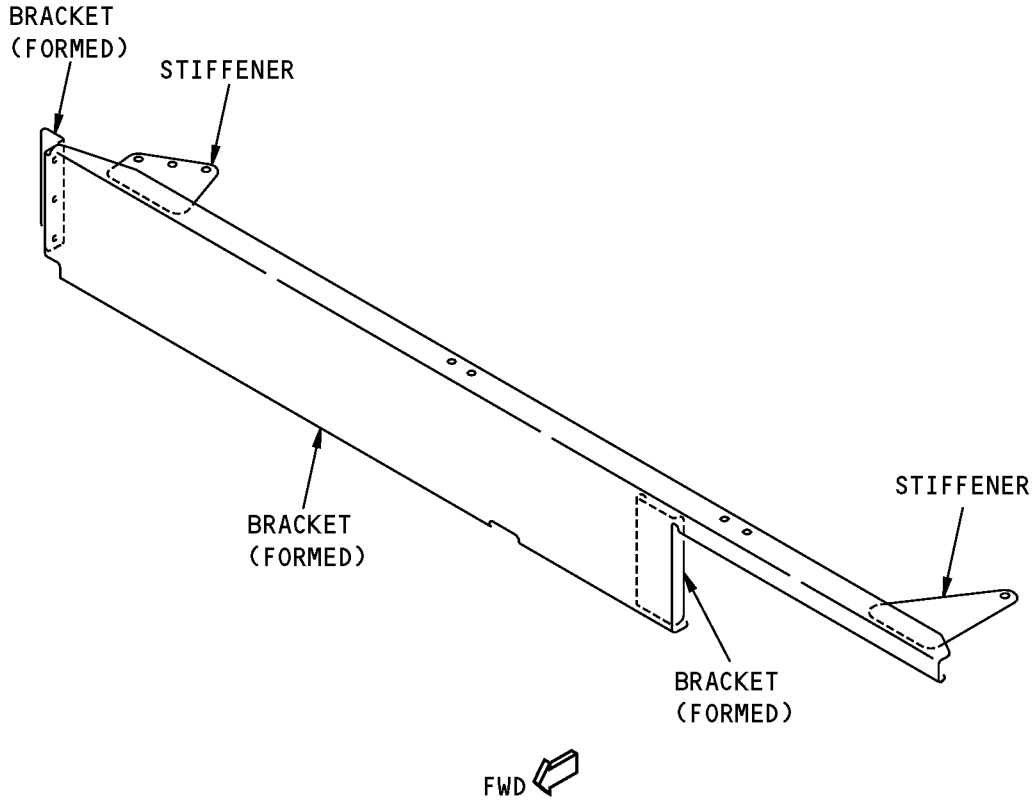
FWD 

**FLOOR PANEL SUPPORT STRUCTURE –  
UPPER LEFT SIDE**

(C)

**Forward Equipment Bay Floor Panel Support Structure  
Figure 202 (Sheet 4 of 5)**

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**FORWARD FLOOR PANEL SUPPORT STRUCTURE**



**Forward Equipment Bay Floor Panel Support Structure  
Figure 202 (Sheet 5 of 5)**



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**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. The typical repairs given in 51-70-11 and 51-70-12 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11 and 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-10-54	FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 2 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-10-54, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

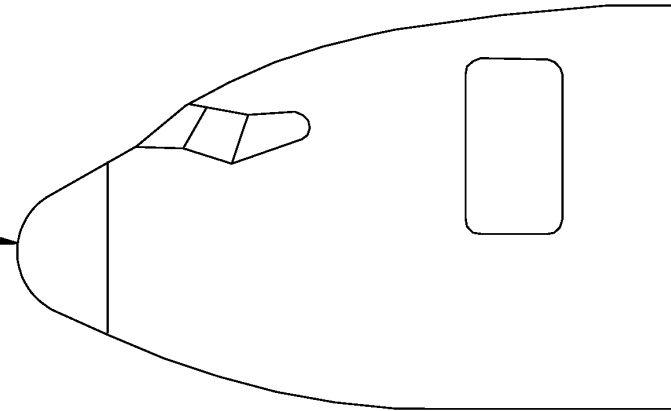
REPAIR REFERENCES FOR THE FORWARD EQUIPMENT BAY FLOOR PANEL SUPPORT STRUCTURE	
TYPE OF COMPONENT	REPAIR
Stiffeners (sheet)	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-10-54, Allowable Damage 2, replace the damaged part
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12

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**IDENTIFICATION 1 - NOSE RADOME**

REFER TO FIGURE 2  
FOR THE NOSE RADOME  
MADE OF HONEYCOMB  
STRUCTURE

REFER TO FIGURE 3  
FOR THE NOSE RADOME  
MADE OF FOAM  
CORE STRUCTURE



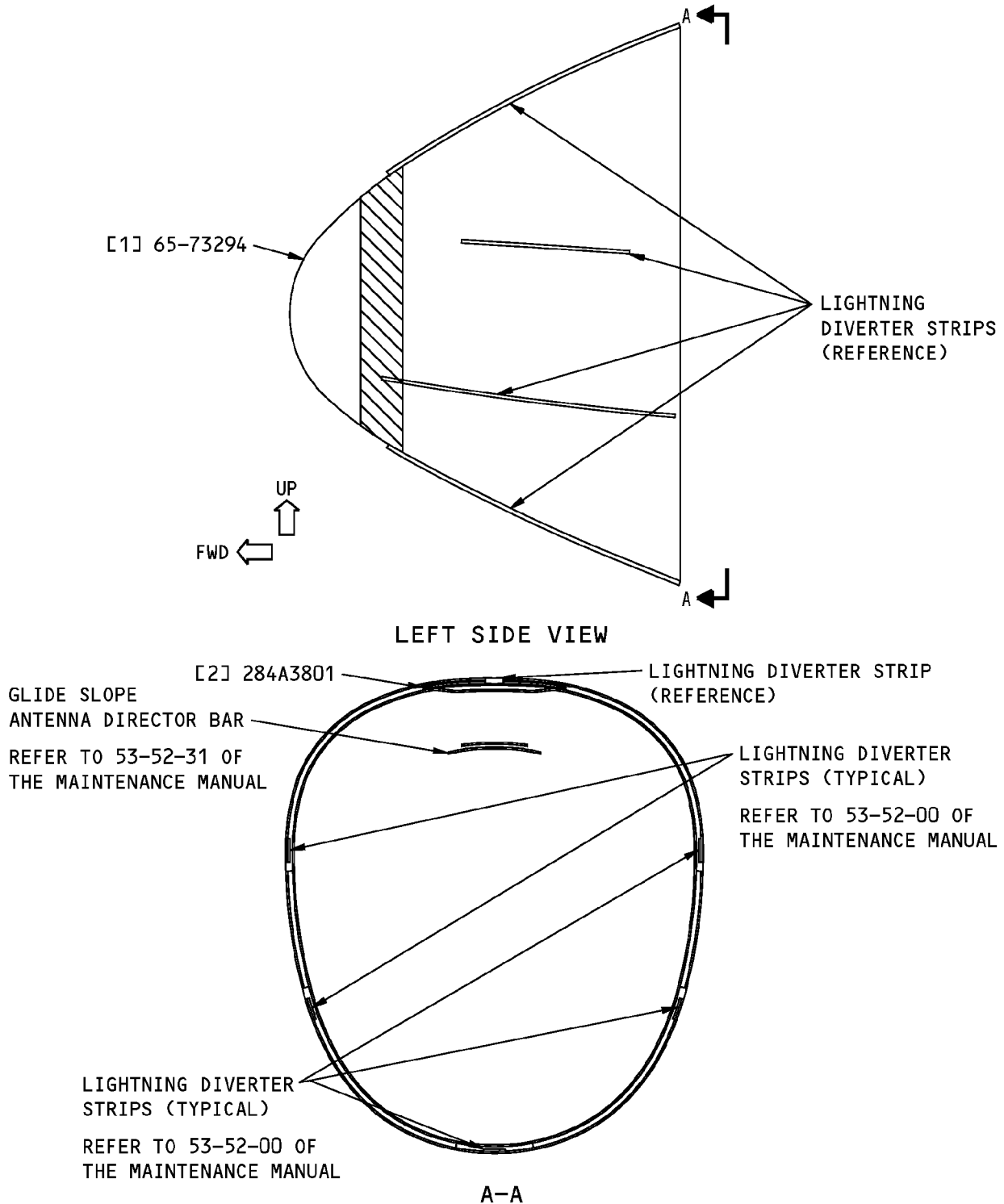
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Nose Radome location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
284A0801	Radome Installation - X-Band, Weather Radar
284A0802	Rod Installation - Radome Support
284A1801	Radome Assembly - X-Band, Weather Radar
284A3801	Details/CFA - Nose Radome
1001002	Nordam Nose Radome Installation (Vendor drawing)
1001737	Nordam Nose Radome Assembly (Vendor drawing)

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**Nose Radome Identification  
Figure 2**



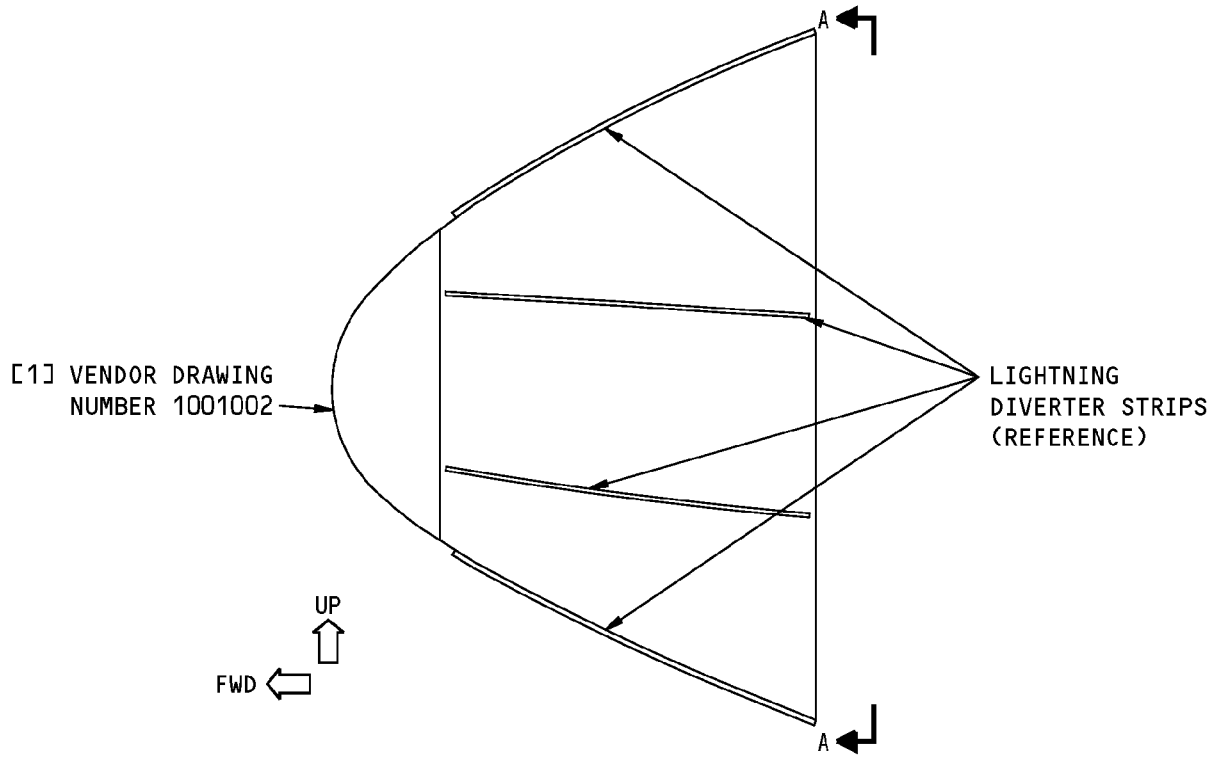
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**Table 2:**

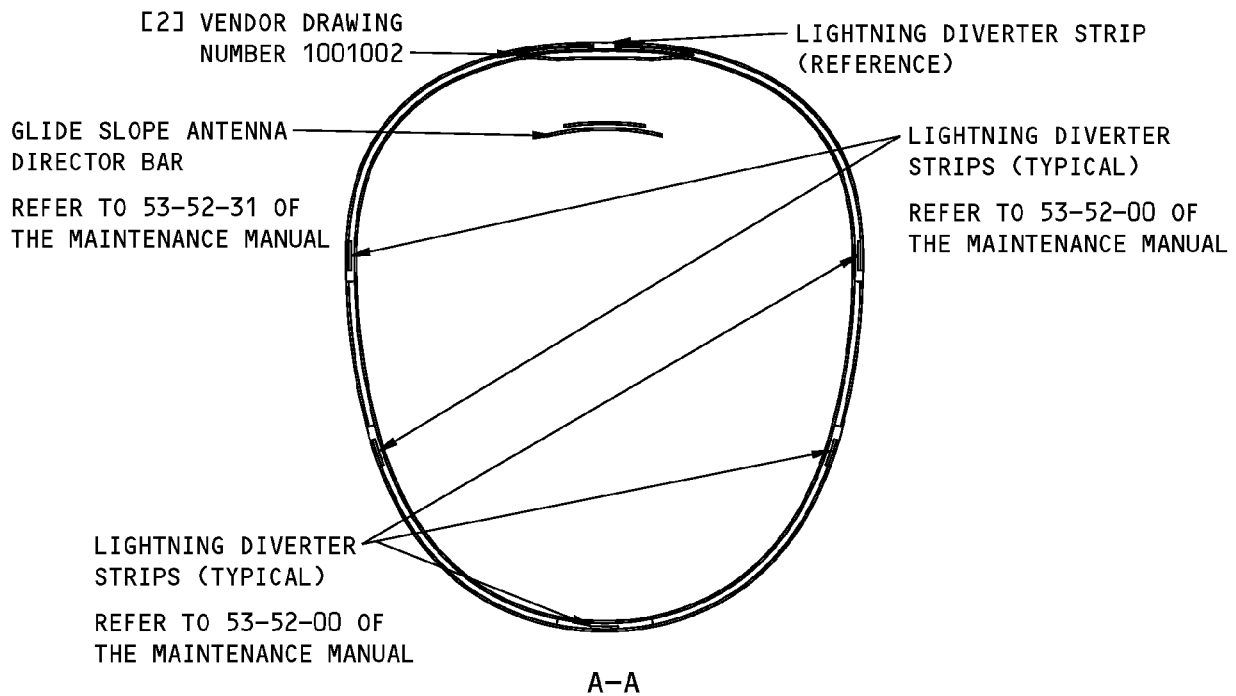
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Nose Radome Assembly		Supplied by: Heath Techna Precision Structures, Inc. 19819 84th Ave. Kent, Washington 98064-9704	
[2]	Reinforcing Angle		BAC1503-100097 7075-0 Extrusion as given in QQ-A-227 Heat treat to T6 condition.	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL**



LEFT SIDE VIEW



**Nose Radome Identification  
Figure 3**



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STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Nose Radome Assembly		Supplied by: The Nordam Group 5101 Blue Mound Road Fort Worth, Texas 76106	
[2]	Reinforcing Angle			

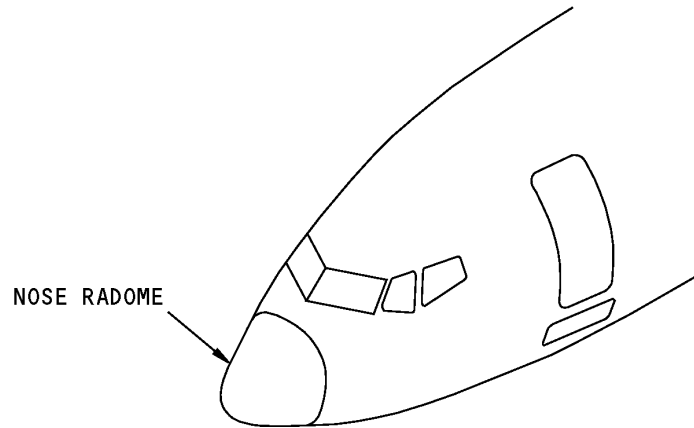
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



## STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - NOSE RADOME**1. Applicability**

- A. Allowable Damage 1 gives the allowable damage limits for the nose radome shown in Nose Radome Location, Figure 101/ALLOWABLE DAMAGE 1.



**Nose Radome Location  
Figure 101**

**2. General**

- A. Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other inspection methods that have been approved and found to be satisfactory by the operator, can be used.

- (1) Refer to Definitions of the Damage Dimensions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of the damage.
  - (2) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets.
- B. Refer to AMM 53-52-03/201, for the inspection, check, removal, and installation of the lightning diverter strips.
- C. Refer to AMM 53-52-31/401 for the removal and installation of the Glide Slope Director Bar.
- D. Remove all contamination and water from the structure. Refer to 51-30-05 and 51-70-04 for the tools and the cleanup procedures.
- E. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits that are applicable to the radome.

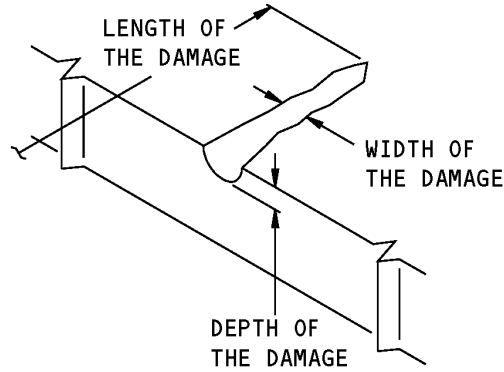


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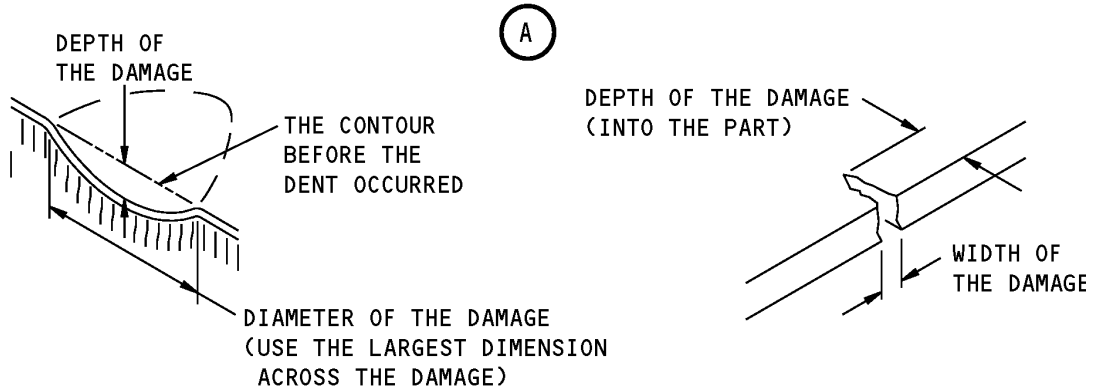
## STRUCTURAL REPAIR MANUAL

- F. Seal all damaged areas that are not more than one ply deep (and that meet the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1) with one of the two methods that follow:
- (1) Make a temporary seal.
    - (a) Apply Scotchbrand 853, Permacel P280 or the equivalent tape.
    - (b) Keep a record of the location.
    - (c) Make sure that the tape is in satisfactory condition after each interval of 400 flight hours, or more frequently.
    - (d) Seal the damage permanently at or before 5000 flight hours from the time the seal was made.
  - (2) Make a permanent seal.
    - (a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
    - (b) Apply the finish as given is AMM 53-52-00/701
- G. Seal all damaged areas that are more than one ply deep (and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1) as follows:
- (1) Use a vacuum and heat to remove moisture from the solid laminate, honeycomb cells, or foam core. Refer to 51-70-04.
  - (2) Make a temporary seal with Scotchbrand 853, Permacel P280 or the equivalent tape.
  - (3) Keep a record of the location.
  - (4) Repair the damage at or before 400 flight hours from the time the seal was made.
- H. Make sure the aerodynamic smoothness is satisfactory. Refer to 51-10-01.
- I. The definition of the words "other damage" as used in the allowable damage limits, does not include nicks, gouges, and scratches that do not cause fiber damage and are sealed.

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**SIZE DEFINITIONS FOR NICK, GOUGE, OR SCRATCH DAMAGE**



**SIZE DEFINITIONS FOR  
DENT DAMAGE**

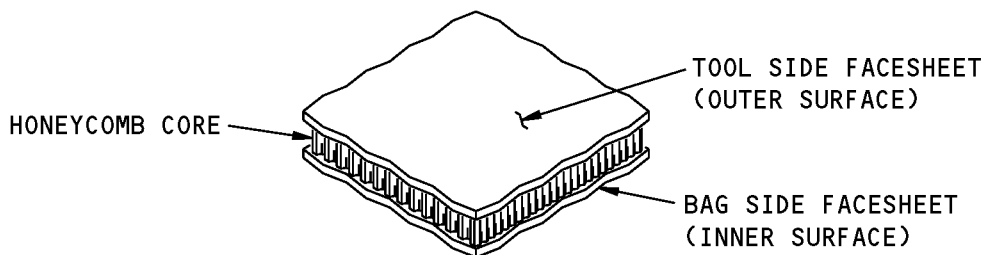
**(B)**

**SIZE DEFINITIONS FOR  
EDGE DAMAGE**

**(C)**

**NOTE:** A HONEYCOMB STRUCTURE IS SHOWN. THE DEFINITIONS ALSO APPLY TO FOAM CORE STRUCTURE.

**Definitions of the Damage Dimensions  
Figure 102**



**NOTE:** A HONEYCOMB CORE IS SHOWN. THE DEFINITIONS ALSO APPLY TO FOAM CORE STRUCTURE.

**Definitions of the Facesheets  
Figure 103**



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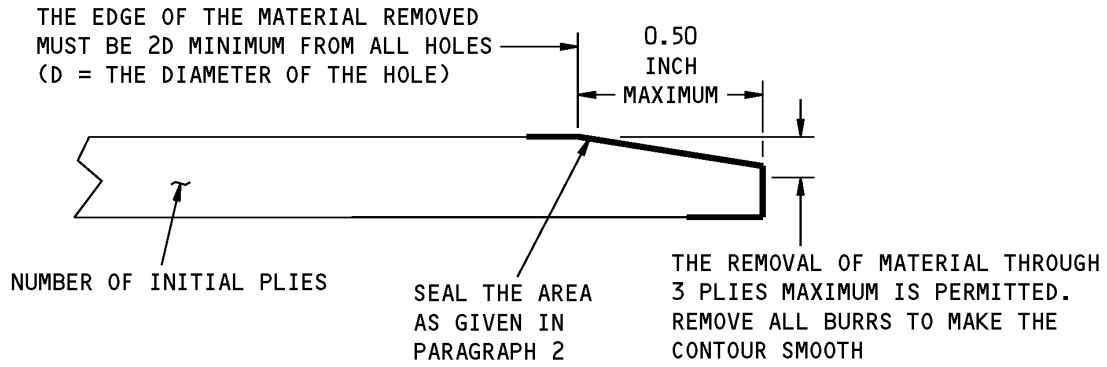
### 3. References

Reference	Title
51-10-01	AERODYNAMIC SMOOTHNESS
51-10-02, GENERAL	Inspection and Removal of Damage
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
AMM 53-52-00 P/B 601	NOSE RADOME - INSPECTION/CHECK
AMM 53-52-00 P/B 701	NOSE RADOME - CLEANING/PAINTING
AMM 53-52-00/701	Nose Radome - Cleaning and Painting
AMM 53-52-03/201	Lightning Diverter Strips - Maintenance Practices
AMM 53-52-31/401	Director Bar - Glide Slope Antenna - Removal/Installation
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

### 4. Allowable Damage Limits for the Nose Radome

- A. Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
- B. Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:
  - (1) A maximum of 1.0 square inch in area
  - (2) A minimum of 10.0 inches away from the edge of other damage
  - (3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.
- C. Dents that do not cause damage to the glass fibers are permitted if they are:
  - (1) A maximum of 1.0 square inch in area
  - (2) A minimum of 10.0 inches away from the edge of other damage
  - (3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.
- D. Delaminations are permitted if they are:
  - (1) A maximum of 1.0 square inch in area
  - (2) A minimum of 10.0 inches away from the edge of other damage
  - (3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.
- E. Holes and Punctures are permitted if they are:
  - (1) A maximum of 1.0 square inch in area
  - (2) A minimum of 10.0 inches away from the edge of other damage
  - (3) A minimum of 2.0 inches away from the edge of the radome or an edge fastener.
- F. Edge damage is permitted if it is:
  - (1) A maximum of 1.00 inch in width
  - (2) A maximum of 0.25 inch in depth.
- G. Edge Erosion is permitted as shown in Cleanup and Sealing of Edge Erosion, Figure 104/ALLOWABLE DAMAGE 1.

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**Cleanup and Sealing of Edge Erosion  
Figure 104**



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## STRUCTURAL REPAIR MANUAL

### REPAIR GENERAL - NOSE RADOME

#### 1. Applicability

- A. This repair section is applicable and approved for the repair of radomes as delivered or approved by Boeing for use on this model airplane. Repairs that are made from this repair section are not approved for radomes that have been modified, rebuilt or re-ringed using processes and materials that have not been approved by Boeing for use on this model airplane.
- B. This subject gives the general repair data for damage:
  - (1) To the nose radome that is made of honeycomb core structure or foam core structure.
  - (2) That is more than the allowable damage limits given by Allowable Damage 1. Refer to Allowable Damage 1 for the type and dimension of damage that is permitted.

#### 2. General

- A. When you do a radome repair, do the general steps that follow:
  - (1) Do an inspection to find the limits of the damage.
  - (2) Make a decision on a repair option for:
    - (a) The maximum length and depth of the damage that is removed
    - (b) The number of damage locations or other repairs on the radome
    - (c) The type of layup materials you use.
  - (3) Repair the damage with one of the applicable repair options.
  - (4) On the inside of the radome, keep a record of damage and the extent of the repairs that are made.
- B. For 3-ply honeycomb core radomes, a test for the electrical transmission efficiency is not necessary for most of the repairs given in this subject.

**NOTE:** Predictive wind shear requires a Class C radome as given in Document No. RTCA/DO-213 (Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes). If you do not test the radome for electrical transmission efficiency, the radome will not meet the requirements for predictive wind shear.

- (1) If predictive wind shear is a requirement, an electrical transmission efficiency test is necessary after you complete Repair 1.
  - (a) If predictive wind shear is not a requirement then a test is not necessary, the radome is a Class D radome.
- (2) A test is not necessary when you do Repairs 2 thru 13.
  - (a) After this repair is complete, the nose radome is classified as a Class D radome.
- C. For 4-ply honeycomb core radomes and foam core radomes, a test for the electrical transmission efficiency is not necessary for all of the repairs given in this subject.

**NOTE:** After you do a repair, these radomes are classified as Class C radomes. You can do a test to find if the radome has better electrical transmission efficiency.



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### STRUCTURAL REPAIR MANUAL

D. The radome that is repaired and has primer, decorative paint, rain erosion protection applied and the lightning diverter strips installed must have the transmission efficiency requirements that follow:

**NOTE:** Thicknesses of paint which are more than 0.010 inch can decrease the necessary radome electrical transmission efficiency. A radome wall that has been repaired should be put back to its initial thickness. If this is not done, radome transmission efficiency will be decreased. For repaired radomes on airplanes that have Predictive Wind Shear (PWS), and that are finished with CAAPCO erosion and p-static protection (Caapcoat B-274 as specified in BAC5880 and Caapcoat AS-P108), do a transmission efficiency test. The efficiency test must show the radome to be Class C or better.

(1) The average transmission efficiency for a continuous scan of the antenna in the radome window area must not be less than:

- (a) 84 percent for Class C radomes
- (b) 80 percent for Class D radomes.

**NOTE:** The radome window area is between ± 80 degrees azimuth and ± 20 degrees elevation.

(2) The minimum transmission efficiency at a point in the radome window must not be less than:

- (a) 78 percent for Class C radomes
- (b) 75 percent for Class D radomes.

E. If you need to know the class of a repaired radome, measure the electrical transmission efficiency as given in Paragraph 2.4.7.1. of Document No. RTCA/DO-213 (Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes). You can get a copy of this document from: RTCA, Incorporated 1140 Connecticut Avenue, Northwest, Suite 1020 Washington, D.C. 20036-4001 U.S.A. Telephone: 202-833-9339 Facsimile (FAX): 202-833-9434

F. Refer to AMM 53-52-03/201 to replace the lightning diverter strip.

G. Refer to AMM 53-52-31/401 to replace the glide slope director element.

H. Make sure that you do the repairs in a clean location. Make sure that the air in the area has no oil, mist, exhaust fumes, gases, soot, rain, dust, or other unwanted materials.

I. Prevent repair surface contamination. Do not touch the cleaned parts, the repair fabric, or the adhesives with your bare hands. Wear clean lint-free gloves when you work with these parts.

J. When you repair a large area, make sure you use the applicable tool fixtures to prevent distortion of the radome.

K. Refer to Table 201/REPAIR GENERAL for the materials used in these repairs.

L. Refer to Table 202/REPAIR GENERAL for the resin, adhesive, and potting compound data.

**Table 201:**

NOSE RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric for repairs with wet layup materials	BMS 9-3, Type H-2 or H-3,
Laminating resin for the BMS 9-3 repair fabric	BMS 8-301, Class 1 or Class 2
Repair fabric for repairs with preimpregnated layup materials	BMS 8-79, Style 1581 or Style 7781
Film adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129 Type 4, Grade 5



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NOSE RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000 Class 3 or 4 foam core material

**Table 202:**

RESIN, ADHESIVE, AND POTTING COMPOUND DATA				
RESIN TYPE	COMPONENTS	PARTS BY WEIGHT	POT LIFE	CURE TIME AND TEMPERATURE
BMS 5-28, Type 15 (Potting compound)	Epocast 1615 Part A Epocast 1615 Part B	Refer to the manufacturer's data	10 to 30 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 16 (Potting compound)	Epocast 1616 Part A Epocast 1616 Part B	Refer to the manufacturer's data	20 to 40 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 17 (Potting compound)	Epocast 1617 Part A Epocast 1617 Part B or Magnobond 91 Part A Magnobond 91 Part B	Refer to the manufacturer's data	60 to 90 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 18, Class 1 (Potting compound)	FR 7176 Part A FR 7176 Part B or Magnobond 92-1 Part Magnobond 92-1 Part or Epocast 1618 Part A Epocast 1618 Part B	Refer to the manufacturer's data	12 to 25 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 19 (Potting compound)	Epocast 1619 Part A Epocast 1619 Part B	Refer to the manufacturer's data	20 to 40 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 5-28, Type 20 (Potting compound)	Epocast 1620 Part A Epocast 1620 Part B or FR 7174 Part A FR 7174 Part B	Refer to the manufacturer's data	20 to 70 minutes	7 days at 77°F (25°C) ±5°F or 5 hours at 125°F (52°C) ±5°F
BMS 8-301, Class 1 (Laminating resin)	EA 9390 Part A - Resin Part B - Hardener	Refer to the manufacturer's data	120 minutes	Refer to Figure 213
BMS 8-301, Class 2 (Laminating resin)	EY 3804 Part A - Resin Part B - Hardener	Refer to the manufacturer's data	45 minutes	Refer to Figure 212
Resin Mix 1	BMS 8-301, Class 1 Mixed with milled glass fibers	Refer to the manufacturer's data for the BMS 8-301	120 minutes	Refer to Figure 213
Resin Mix 2	BMS 8-301, Class 2 Mixed with milled glass fibers	Refer to the manufacturer's data for the BMS 8-301	45 minutes	Refer to Figure 212

M. Keep the resin systems and potting compounds between 40°F (4°C) and 80°F (27°C) in sealed containers.

- (1) Identify the material container with a label that contains the data that follows:
  - (a) Boeing Material Specification (BMS)
  - (b) Type
  - (c) Class
  - (d) Supplier name



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- (e) Batch number
  - (f) Date of preparation.
- N. The definitions of terms related to these repairs are as follows:
- (1) Bond Line: The adhesive that is between two parts after the cure.
  - (2) Core: Honeycomb or foam structure that is bonded between two facesheets in a sandwich construction.
  - (3) Cure Cycle: The temperature, pressure, temperature increase rate and temperature decrease rate that is applied over a length of time to cure the resin, potting compound, or adhesive.
  - (4) Cure Temperature: The temperature that is applied to the bond assembly during the cure cycle.
  - (5) Cure Time: The length of time that a part is at the cure temperature and under vacuum.
  - (6) Damage: A change to a surface that comes from corrosion, erosion, dents, gouges, scratches, punctures and holes.
  - (7) Delamination: A separation of a facesheet from the core in a sandwich construction.
  - (8) Edge Delamination: A separation of the parts along an edge.
  - (9) Facesheet: The outer skin that is bonded to the core in a sandwich construction.
  - (10) Instrumented NDI: An inspection that uses approved instrumentation to find the type and size of internal defects or flaws in a material.
  - (11) Nondestructive Inspection (NDI): An inspection procedure that does not cause damage to the part or the structure.
  - (12) Part Temperature: The actual temperature of the repair part that is measured by a pyrometer (thermocouples or other probe devices) during the cure cycle.
  - (13) Porosity: A cluster of small voids in the adhesive.
  - (14) Pot Life: The time that a resin system, potting compound, or adhesive can be applied.
  - (15) Room Temperature: Ambient temperature conditions. For Engineering functions, this temperature is 68°F (18°C) to 90°F (32°C).
  - (16) Void: An empty space in a laminate. This is normally associated with resin starved areas.

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-30-03	NON-METALLIC MATERIALS
51-30-05, GENERAL	Equipment and Tools For Repairs
51-70-04, REPAIR GENERAL	Repair Procedures for Wet Layup Materials
51-70-05, REPAIR GENERAL	Repair Procedures for Preimpregnated Materials
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-10-72, ALLOWABLE DAMAGE 1	Nose Radome
AMM 51-21-71 P/B 701	CONDUCTIVE COATING FOR EXTERNAL SURFACES - CLEANING/PAINTING
AMM 53-12-01/701	Aircraft Maintenance Manual
AMM 53-52-00/401	Nose Radome - Removal/Installation
AMM 53-52-00/601	Nose Radome
AMM 53-52-00/701	Nose Radome - Cleaning and Painting

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(Continued)

Reference	Title
AMM 53-52-03/201	Lightning Diverter Strips - Maintenance Practices
AMM 53-52-31/401	Director Bar - Glide Slope Antenna - Removal/Installation
RTCA /DO-213	Minimum Operational Performance Standards (MOPS) for Nose-Mounted Radomes
SOPM 20-30-03	Standard Overhaul Practices Manual
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure
737 NDT Part 2, 51-00-01	Water Detection in Honeycomb Structure
737 NDT Part 4, 51-00-05	Bondline Delamination Inspection in Honeycomb Structure
737 NDT Part 6, 53-50-00 Figure 1	Measurement of the Radome Thickness

#### 4. Make a Decision on the Applicable Repair Option

A. Find the limits of the damage.

- (1) Remove the radome from the airplane as given in AMM 53-52-00/401, if necessary.
- (2) Remove the lightning diverter strips as given in AMM 53-52-03/201, if necessary.
- (3) Remove the glide slope director element as given in AMM 53-52-31/401, if necessary.

**WARNING:** DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, INJURY TO PERSONS CAN OCCUR. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

**CAUTION:** DO NOT USE CHEMICAL PAINT STRIPPERS TO REMOVE THE PAINT IN THE DAMAGED AREAS. THESE CHEMICALS CAN CAUSE DAMAGE TO THE RESIN SYSTEMS. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

- (4) Clean the damaged area with a soft cloth moist with methyl isobutyl ketone (MIBK) or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for possible sources of the solvents. Remove all the contamination.
- (5) Do a visual inspection of the radome for:
  - (a) The length, width, and depth of the external damage
  - (b) The entry of oil, fuel, dirt or other unwanted materials
  - (c) Damage to the lightning diverter strips and the glide slope director element.
- (6) Do an inspection for water as given in 737 NDT Part 2, 51-00-01 or with the use of a moisture meter such as Moisture Meter A8-AF (or the equivalent) as given in AMM 53-52-00/601. You can order the Moisture Meter A8-AF from: Aqua Measure Instrument Company 1712 Earhart Court P.O. Box 369 La Verne, California, USA 91750 (909)-392-5833
- (7) Do an inspection for ply-to-ply delaminations and ply-to-core disbond with instrumented NDI equipment as given in 737 NDT Part 4, 51-00-05.

**NOTE:** If NDI equipment is not available, do a tap test as given in 737 NDT Part 1, 51-05-01.



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B. Make a decision on which repair option to use with the flow chart shown in Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL and with the data that follows:

**NOTE:** When you do a time-limited repair, you must inspect the repair at specified intervals and replace the repair with a permanent repair by a specified time. Refer to the numbered repair option for the inspection intervals, inspection procedures, and time limits. Refer to 51-00-06 for the different types of repairs.

(1) Do the repair given in Repair 1 if there is only water contamination in the radome and the three conditions that follow are true:

**NOTE:** We recommend that you use Repair 2 or 3 to remove the water contamination. These repairs use repair plies that are the same total thickness as the initial facesheet. Repair 1 is not recommended because it adds thickness to the initial facesheet.

- (a) The water contamination is in an area that has a maximum diameter of 20.0 inches (508 mm).
- (b) The water contamination is in an area that is 4 inches (101.6 mm) away from other repairs.
- (c) There is no visible damage or delamination that is more than what is permitted in Allowable Damage 1.

(2) If there is water contamination that is more than the limits given in Paragraph 4.B.(1)/REPAIR GENERAL, do the steps that follow:

- (a) Refer to Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet.

(3) If there is damage that is more than the limits given in Allowable Damage 1, do the steps that follow:

- (a) Refer to Table 203/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet.
- (b) Refer to Table 204/REPAIR GENERAL for the repair options that are applicable to damage that is a maximum depth of one facesheet and the core.
- (c) Refer to Table 205/REPAIR GENERAL for the repair options that are applicable to damage that is to the two facesheets and the core.

**Table 203:**

REPAIR OPTIONS FOR DAMAGE TO A MAXIMUM DEPTH OF ONE FACESHEET				
TYPE OF LAYUP MATERIALS	CURE TEMPERATURE OF THE REPAIR MATERIALS	REPAIR OPTION	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)	REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS
Preimpregnated	250°F (121°C)	REPAIR 2	No limit	Permanent repair. There is no limit on the number of repairs of this type

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REPAIR OPTIONS FOR DAMAGE TO A MAXIMUM DEPTH OF ONE FACESHEET				
TYPE OF LAYUP MATERIALS	CURE TEMPERATURE OF THE REPAIR MATERIALS	REPAIR OPTION	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)	REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS
Wet	Room temperature	REPAIR 3	0 to 15	Time-limited repair. Only one repair of this type is permitted
	150°F (66°C)	REPAIR 4	0 to 4	Permanent repair. There is no limit on the number of repairs of this type
			4 to 30	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			30 to 50	Time-limited repair. Only one repair of this type is permitted
	200°F (93°C)	REPAIR 5	No limit	Permanent repair. There is no limit on the number of repairs of this type

**NOTE:** Note: The dimensions given in the table are measured along the contour of the radome. All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.

**Table 204:**

REPAIR OPTIONS FOR DAMAGE TO A MAXIMUM DEPTH OF ONE FACESHEET AND THE CORE				
TYPE OF LAYUP MATERIALS	CURE TEMPERATURE OF THE REPAIR MATERIALS	REPAIR OPTION	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)	REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS
Preimpregnated	250°F (121°C)	REPAIR 6	No limit	Permanent repair. There is no limit on the number of repairs of this type
Wet	Room temperature	REPAIR 7	0 to 15	Time-limited repair. Only one repair of this type is permitted
	150°F (66°C)	REPAIR 8	0 to 4	Permanent repair. There is no limit on the number of repairs of this type
			4 to 25	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			25 TO 40	Time-limited repair. Only one repair of this type is permitted
200°F (93°C)	REPAIR 9	No limit	Permanent repair. There is no limit on the number of repairs of this type	

**NOTE:** The dimensions given in the table are measured along the contour of the radome. All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.



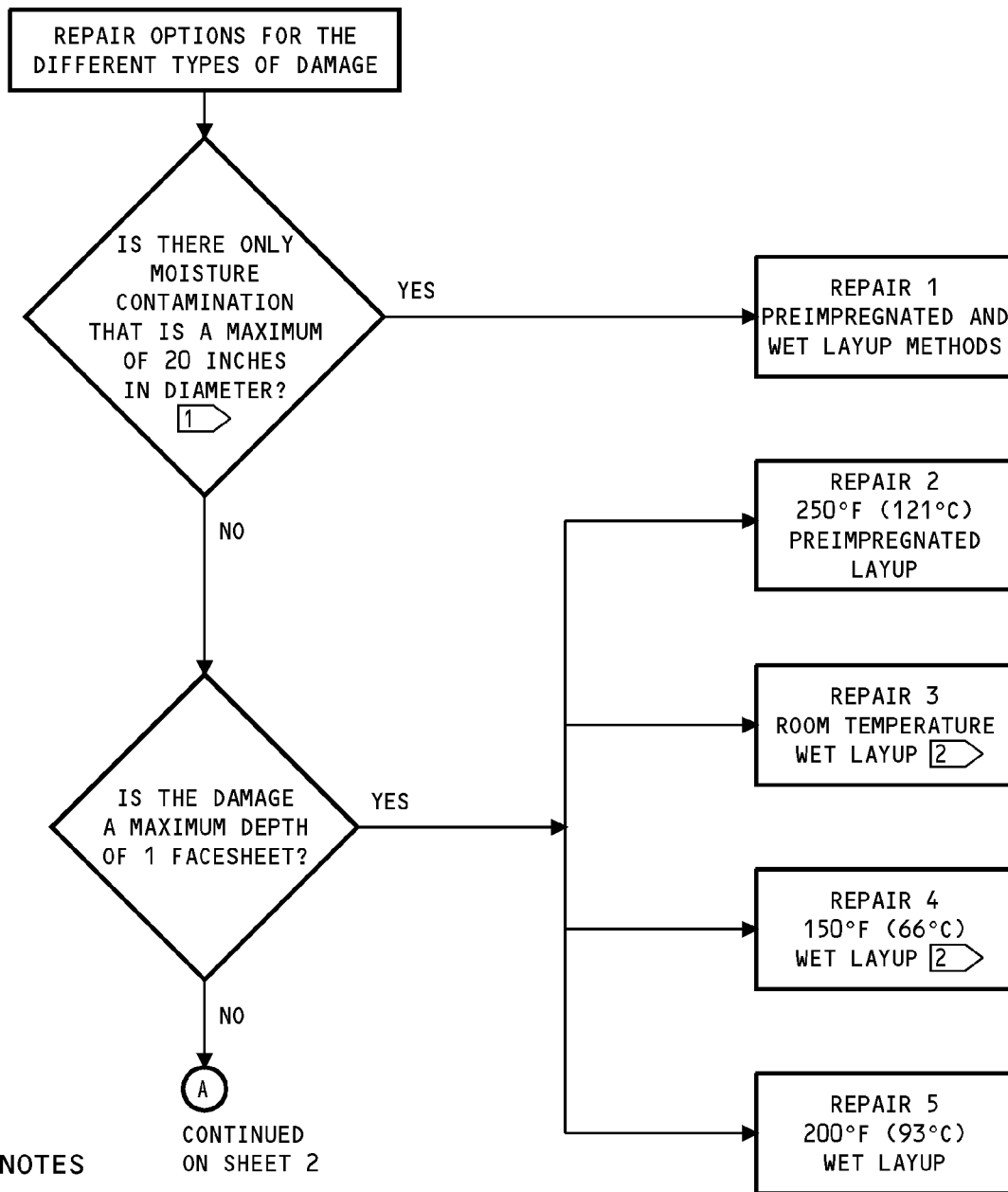
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**Table 205:**

<b>REPAIR OPTIONS FOR DAMAGE TO THE TWO FACESHEETS AND THE CORE</b>				
<b>TYPE OF LAYUP MATERIALS</b>	<b>CURE TEMPERATURE OF THE REPAIR MATERIALS</b>	<b>REPAIR OPTION</b>	<b>MAXIMUM DIAMETER OF THE DAMAGE CLEANUP (INCHES)</b>	<b>REPAIR TYPES AND LIMITS ON THE NUMBER OF REPAIRS</b>
Preimpreg-nated	250°F (121°C)	REPAIR 10	No limit	Permanent repair. There is no limit on the number of repairs of this type
Wet	Room temperature	REPAIR 11	0 to 15	Time-limited repair. Three repairs of this type are permitted
	150°F (66°C)	REPAIR 12	0 to 10	Permanent repair if only one repair of this type is made. All repairs of this type are time-limited if two or more repairs of this type are made
			10 to 20	Time-limited repair. Two repairs of this type are permitted
	200°F (93°C)	REPAIR 13	No limit	Permanent repair. There is no limit on the number of repairs of this type

**NOTE:** The dimensions given in the table are measured along the contour of the radome. All repairs must be a minimum of 3.0 inches (76.2 mm) away from other repairs. Refer to SRM 51-00-06 for the definitions of the different types of repairs.

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NOTES

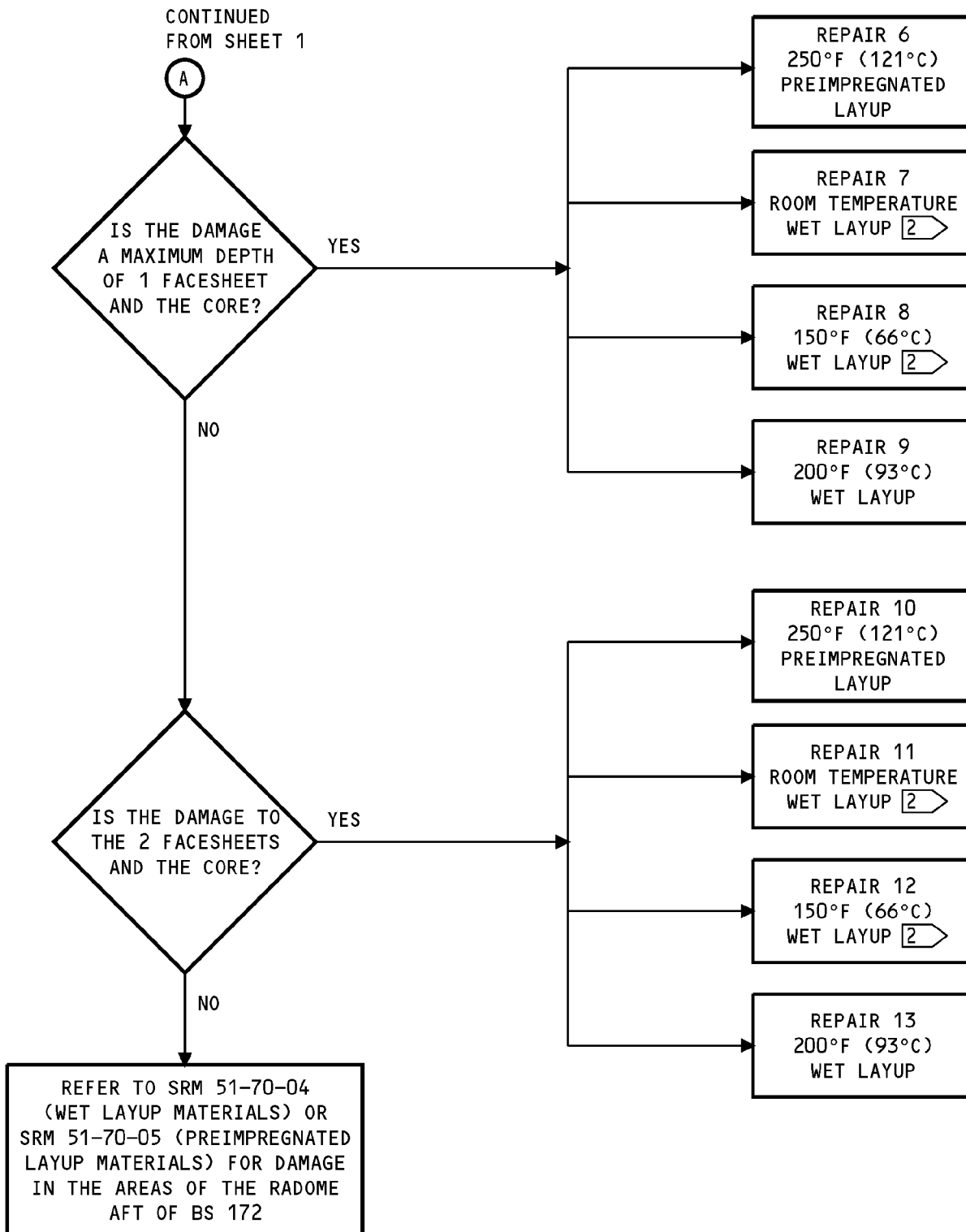
1 OTHER CONDITIONS:

- THE DAMAGE MUST NOT BE MORE THAN THE LIMITS GIVEN IN ALLOWABLE DAMAGE 1.
- THE EDGE OF THE DAMAGE AREA MUST BE A MINIMUM OF 4.0 INCHES (101.6 mm) FROM OTHER REPAIRS.

2 THIS REPAIR HAS LIMITS ON THE DIMENSION OF THE DAMAGE AND THE NUMBER OF DAMAGE AREAS. REFER TO THE APPLICABLE TABLE AS GIVEN IN PARAGRAPH 4 OR THE NUMBERED REPAIR FOR THE LIMITS.

Flow Chart of the Available Repair Options  
Figure 201 (Sheet 1 of 2)

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**Flow Chart of the Available Repair Options  
Figure 201 (Sheet 2 of 2)**



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### 5. Repair Procedures That Are the Same For the Different Repairs

A. Remove the damaged area of the facesheets.

**WARNING:** DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE VAPOR IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURY. USE A VACUUM TABLE OR A PORTABLE VACUUM WHEN YOU REMOVE THE DAMAGED MATERIAL. DO NOT BREATHE THE DUST. WHEN YOU SAND THE PLY LAYERS, A FINE DUST IS MADE THAT CAN BE HAZARDOUS. THE DUST CAN CAUSE SKIN AND EYE IRRITATION OR RESPIRATORY PROBLEMS.

- (1) Tape off the area that is 1.0 inch from the edge of where the largest repair ply will be applied. Refer to the applicable repair figure.
- (2) Remove the damaged area of the facesheets in a smooth circular or oval shape with 180-grit or smaller abrasive paper. Be careful not to cause damage to the facesheet and core which are not damaged.
- (3) Remove the finish inside the taped off area and make the surfaces rough with 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.
- (4) If the initial core in the damaged area will not be removed, then sand the adhesive:
  - (a) That is over the honeycomb core cells to open the core cells.
  - (b) That is on the foam core to open the surface of the core to the air.
  - (c) Use 240-grit or smaller abrasive paper. It is not necessary to remove the adhesive fillets from the core.
- (5) Remove the tape.

B. Remove the damaged area of the core.

- (1) You can remove the core with a router. Refer to 51-10-02 for the instructions to use the router and template.
- (2) Remove the core to the same dimensions as the hole in the facesheet.
- (3) Remove the full depth of the core.
- (4) Do not damage the opposite side initial facesheet if it is not damaged.
- (5) Do not remove the initial adhesive from the opposite side initial facesheet if the facesheet is not damaged.

C. Make the necessary taper.

- (1) Tape off the area that is 1.0 inch (25.4 mm) from the edge of where the largest repair ply will be applied. Refer to the applicable repair figure.
- (2) Remove the finish inside the taped off area and make the surfaces rough with 240-grit or smaller abrasive paper. Be careful not to cause damage to the plies that are not damaged.
- (3) Make an even taper from the edge of the facesheet where the damage was removed as shown in Taper Sand that is Necessary for the Repair, Figure 202/REPAIR GENERAL.
  - (a) Use 180-grit sandpaper.
  - (b) Make the taper as given in the applicable repair option.
- (4) Remove the tape.

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**CAUTION:** YOU MUST REMOVE THE WATER THAT HAS BEEN ABSORBED INTO THE PART BEFORE A REPAIR IS MADE. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

D. Remove all of the water and other unwanted material. The area of the damage cleanup must be fully dry.

- (1) Remove all the water and other unwanted material that you can with a vacuum or with compressed air that is free from oil.
- (2) An option to remove the water more quickly is to use a vacuum bag as shown in Water Removal Procedure, Figure 203/REPAIR GENERAL and as follows:
  - (a) Put a layer of glass fabric or the equivalent (breather cloth) or a metal mesh screen over the area of the water contamination.
    - 1) Use masking tape to hold the fabric or the screen in position.
    - 2) Make sure the cloth or the screen is large enough to go below the vacuum line and gage. The vacuum line and gage must be located outside of the area of the water contamination.
  - (b) Put a thermocouple at the center of the area that has the water contamination as shown in Water Removal Procedure, Figure 203/REPAIR GENERAL.
    - 1) If the glass fabric breather cloth is used, put the thermocouple below the cloth.
    - 2) If you use the metal mesh screen, put the thermocouple above the screen.
  - (c) Put a heat blanket on the surface of the facesheet that is not damaged or at the alternative location shown in Water Removal Procedure, Figure 203/REPAIR GENERAL.
  - (d) Put a thermocouple adjacent to the heat blanket (on the facesheet side), at the center of the area that has the water contamination.
  - (e) Put the bases for the vacuum line and the vacuum gage into position. Make sure they touch the breather cloth (or metal screen) but do not go over the area that has the water contamination.
  - (f) Apply the vacuum sealing compound to the damaged facesheet around the layout.
  - (g) Seal the location with the vacuum bag material.
  - (h) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

**NOTE:** Use a desiccant indicator in the vacuum line to verify that the water removal is complete.

- (i) Apply a minimum vacuum of 22 inches mercury.
- (3) Increase the temperature at a rate between 1°F and 5°F (0.5°C and 3°C) for each minute until the temperature is between 150°F (65°C) and 170°F (76°C).
- (4) Hold the temperature between 150°F (65°C) and 170°F (76°C) for a minimum of 1 hour.
- (5) Decrease the temperature at a maximum rate of 5°F (3°C) for each minute.
- (6) Do Step (3) again if there still is water in the damage area.

**NOTE:** If the water cannot be removed, the material that has the contamination must be removed.

E. Clean the repair area or repair core.



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## STRUCTURAL REPAIR MANUAL

**WARNING:** DO NOT BREATHE THE FUMES OR ALLOW THE SOLVENTS TO TOUCH YOUR SKIN, EYES, OR CLOTHING. MAKE SURE THAT THE AIR SUPPLY TO THE AREA IS NOT BLOCKED. IF YOU DO NOT OBEY, YOU CAN CAUSE SKIN IRRITATION OR INJURY. DO NOT USE SOLVENTS IN AREAS WITH EQUIPMENT THAT CAN PRODUCE HEAT OR SPARKS. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR.

**CAUTION:** DO NOT SOAK THE PARTS IN TRICHLOROETHANE SOLVENT. DO NOT LET THE SOLVENT STAY ON THE PARTS FOR MORE THAN 60 SECONDS. IF YOU DO NOT OBEY, YOU CAN CAUSE DAMAGE TO THE PARTS.

- (1) Clean the repair area of the honeycomb structure with a soft cloth moist with MIBK or acetone. Refer to SOPM 20-30-03 for the general cleaning procedures and 51-30-03 for possible sources of the solvents.
  - (a) Clean the repair area of the honeycomb core only as follows:
    - 1) Clean the surface again until a new moist cloth is clean after it is used.
    - 2) Remove the solvent from the surface before it can dry.
    - 3) Remove the remaining solvent film before you continue the repair.
  - (b) Clean the repair area of the foam core as follows:
    - 1) Lightly sand the foam core and remove the unwanted material with clean compressed air.

### F. Make the repair parts.

- (1) Find which repair option from Flow Chart of the Available Repair Options, Figure 201/REPAIR GENERAL is necessary for the type and size of damage that was found. Refer to the specified repair option for the type of repair parts that are necessary.

**WARNING:** DO NOT USE EQUIPMENT THAT CAUSES AN ARC OR A SPARK IN AN AREA WHERE THE IGNITION OF THE FUMES IS POSSIBLE. IF YOU DO NOT OBEY, AN EXPLOSION CAN OCCUR AND CAUSE INJURIES.

**CAUTION:** DO NOT TOUCH THE ADHESIVE FILM, FOAMING ADHESIVE, OR PREIMPREGNATED MATERIALS WITH YOUR BARE HANDS OR OTHER PARTS OF YOUR BODY. USE CLEAN LINT-FREE GLOVES WHEN YOU TOUCH THESE MATERIALS. THESE MATERIALS MUST HAVE NO CONTAMINATION. DO NOT FOLD, PULL, OR MAKE THE ADHESIVE FILM THIN. MAKE SURE THAT YOU REMOVE THE SEPARATOR SHEET FROM THE ADHESIVES AND PREIMPREGNATED MATERIALS BEFORE INSTALLATION. KEEP ALL THE SEPARATOR SHEETS UNTIL THE LAYUP IS COMPLETE. COUNT THE SHEETS TO MAKE SURE THAT ONE WAS NOT INCLUDED IN THE LAYUP. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- (2) If wet layup repair plies are necessary, do as follows:
  - (a) Make the repair plies from BMS 9-3, Type H-2 or H-3 glass fiber fabric. Refer to Table 201/REPAIR GENERAL.
  - (b) Impregnate the BMS 9-3 repair plies with BMS 8-301 resin as given in Paragraph 5.1./REPAIR GENERAL
- (3) If preimpregnated repair plies are necessary, do as follows:

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- (a) Make the repair plies from BMS 8-79, Style 1581 or Style 7781 glass fiber fabric. Refer to Table 201/REPAIR GENERAL.
- (4) If a repair core is necessary, do as follows:
  - (a) Make the repair core from the same material as the initial core.
    - 1) Refer to the radome identification section or the engineering drawings to find the initial core material.
  - (b) Cut the repair core to have the same perimeter dimension as the core you removed. Refer to 51-10-02 for the instructions to use the router and template.

**NOTE:** A maximum clearance of 0.125 inch (3.18 mm) is permitted between the repair core and the core hole for honeycomb structure.

- (c) Cut the repair core to the thickness necessary to be a small distance higher than the outer surface of the initial facesheet.
  - 1) If the repair is in a highly contoured area of a radome made of foam core, you must do one of the two steps that follows:
    - a) Order preformed core from: The Nordam Group 5101 Blue Mound Road Fort Worth, TX 76106
    - b) Make the contour of the foam core the same as the contour of the repair area on the nose radome.
      - Vacuum bag the core to an area on the radome or use another radome for the correct contour.
      - Apply heat with a heat gun or heat lamp at a temperature of 225°F ± 5°F for 20 ± 5 minutes.
      - After you apply the heat, keep the vacuum in place until the temperature is below 140°F.
      - Remove the vacuum.
- (d) Clean the repair core.
  - 1) Soak a honeycomb repair core in isopropyl alcohol (IPA), MIBK, or acetone for a maximum of 60 seconds.

**NOTE:** If the core still is not clean, you can soak it again up to three more times for a maximum of 60 seconds each.
  - 2) Wipe foam repair core with isopropyl alcohol (IPA) or MIBK.

### G. Make a plaster support.

- (1) The plaster support gives the repair the same contour as the initial contour of the radome.
- (2) Use a plaster support if you:
  - (a) Make a large repair
  - (b) Make a repair to the two facesheets.
- (3) Make the plaster support have the same contour as side of the radome you repair first. We recommend that you repair the internal side of the radome first.
- (4) Make the plaster support with the steps that follow:
  - (a) Fill the hole made by the damage removal with a wooden block.

**NOTE:** You can also make the plaster support from the same area of an undamaged radome.

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- (b) Apply parting film over the repair area on the facesheet that you use to make the plaster support.
- (c) Build a barrier around the repair area to give the plaster a minimum thickness of 1.0 inch (25.4 mm).
- (d) Pour a mixture of plaster and water into the barrier.
- (e) When the plaster becomes hard:
  - 1) Remove the radome from the plaster support
  - 2) Let the plaster dry in a circulating air oven at 120°F (49°C) for approximately 24 hours.
- (5) Apply a mold release coating to the plaster support before you apply the repair materials.
- (6) When you do a repair, you can hold the plaster support in position with the vacuum bag, clamps, or tape.

**CAUTION:** DO NOT TOUCH THE RESIN MATERIALS WITH YOUR BARE HANDS. USE CLEAN RUBBER GLOVES WHEN YOU USE THESE MATERIALS. KEEP THE MATERIALS FREE FROM CONTAMINATION. IF YOU DO NOT OBEY, YOU CAN CAUSE THE REPAIR TO BE UNSATISFACTORY.

H. Install the repair core.

**NOTE:** Make sure that the core repair plug has a tight interference fit in the core hole after you apply the adhesive or potting compound.

- (1) Install the repair core with the steps that follow if you use preimpregnated layup materials:
    - (a) Cut pieces of BMS 5-129 film adhesive as necessary to make one layer around the repair core.
      - 1) As an alternative, you can use BMS 5-28, Type 15, 16, 17, 18, 19, or 20 potting compound. Apply it to the sides of the initial core edges that will touch when the repair core is installed. Refer to Table 202/REPAIR GENERAL.
    - (b) Remove the separator sheet from one side of the adhesive.
    - (c) Wind the adhesive around the repair core.
    - (d) Remove the separator sheet from the second side of the adhesive.
    - (e) If the repair core is a honeycomb structure, align the core ribbon direction with that of the initial core.
    - (f) Carefully put the repair core into the core hole.
  - (2) Install the repair core with the steps that follow if you use wet layup materials:
    - (a) Apply a layer of BMS 5-28, Type 15, 16, 17, 18, 19, or 20 potting compound on the sides of the initial core edges that will touch when the repair core is installed. Refer to Table 202/REPAIR GENERAL.
      - 1) As an alternative, you can use a layer of BMS 8-301 resin.
    - (b) If the repair core is a honeycomb structure, align the ribbon direction with that of the initial core.
    - (c) Carefully compress the repair core and put it into the core hole.
- I. Do the vacuum bag procedure or the alternate procedure to impregnate the BMS 9-3 repair plies with BMS 8-301, Class 1 or 2 laminating resin.

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- (1) To impregnate the BMS 9-3 repair plies with the vacuum bag procedure, refer to Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin, Figure 204/REPAIR GENERAL and do the steps that follow.
  - (a) Cut two pieces of vacuum bag material. Make the bag material a minimum of 6 inches (152.4 mm) larger than the fabric that will be impregnated.
  - (b) Cut one piece of breather cloth that is two inches (50.8 mm) smaller than the vacuum bag material.
  - (c) Cut two pieces of solid parting film. Make them a minimum of 3 inches (76.2 mm) larger than the fabric.
    - 1) Put one piece of vacuum bag material on a smooth surface. Hold the vacuum bag material in position with tape.
    - 2) Apply vacuum sealing compound to the edge of the vacuum bag material.
    - 3) Place the second piece of vacuum bag material over the first and seal one edge.
    - 4) Install a vacuum probe and gage.
  - (d) Put one piece of the solid parting film on the first piece of vacuum bag material.
  - (e) Weigh the fabric to be impregnated. Multiply the weight by 1.3. The result gives you the laminating resin necessary to impregnate the fabric.
  - (f) Mix the BMS 8-301 laminating resin as given in Table 202/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.

**NOTE:** The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.
  - (g) Put the fabric over the parting film. Make sure the fabric is smooth.
  - (h) Put the resin in the center of the fabric.
  - (i) Put the second piece of solid parting film above the fabric. Make sure the parting film is smooth.
  - (j) Put the breather cloth over the parting film.
  - (k) Seal the vacuum bag.
  - (l) Apply full vacuum to the vacuum bag.
  - (m) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.
  - (n) Release the vacuum from the vacuum bag.
  - (o) Remove the vacuum bag.
  - (p) Cut the repair plies. Do not remove the solid parting film.
- (2) To impregnate the BMS 9-3 repair plies with the alternate procedure, refer to Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin, Figure 205/REPAIR GENERAL and do the steps that follow.
  - (a) Cut two pieces of solid parting film. Make them 3 inches (76.2 mm) larger than the fabric.
  - (b) Put one piece of solid parting film on a smooth surface. Hold it in position with tape.
  - (c) Weigh the fabric to be impregnated. Multiply the weight by 1.3. The result gives you the laminating resin necessary to impregnate the fabric.

**NOTE:** The resin-to-fiber content will be approximately 1 to 1 by weight after the parting film is separated.

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- (d) Mix the BMS 8-301 laminating resin as given in Table 202/REPAIR GENERAL. Weigh the laminating resin to find the correct amount necessary to impregnate the fabric.
  - (e) Put half of the resin in the center of the solid parting film.
  - (f) Put the fabric above the solid parting film and the laminating resin.
  - (g) Put the laminating resin that remains over the fabric in the center.
  - (h) Put the second piece of solid parting film above the fabric. Make sure that the parting film is smooth.
  - (i) Sweep the resin from the center to the edge of the fabric. Make the resin and the fabric smooth. Keep all of the resin in the fabric.
  - (j) Cut the repair plies. Do not remove the solid parting film at this time.
- J. Apply the repair plies or film adhesive.

**CAUTION:** MAKE SURE THAT YOU DO THIS PROCEDURE IN A CLEAN AREA. DO NOT PERMIT THE CONTAMINATION OF THE REPAIR PARTS. IF YOU DO NOT OBEY, YOU CAN CAUSE AN UNSATISFACTORY REPAIR. REMOVE THE PARTING FILM FROM THE IMPREGNATED MATERIALS OR ADHESIVE BEFORE YOU LAY UP AND CURE THE REPAIR. IF YOU DO NOT OBEY, THE REPAIR WILL BE UNSATISFACTORY.

- (1) Remove the first piece of parting film.
  - (2) Put the ply on the repair. Make the ply smooth and free from wrinkles.
  - (3) Remove the second piece of parting film.
  - (4) Do steps (1) through (3) for each repair ply or layer of adhesive.
- K. Assemble the vacuum bag system that will be used to cure the repair.
- (1) Do steps (a) through (g) that follow if you will cure the repair at room temperature or at a temperature that is higher than room temperature with an oven, heat lamps or autoclave.
    - (a) Refer to Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave, Figure 206/REPAIR GENERAL for the vacuum bag system to use when you cure the repair core separately. Refer to Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave, Figure 207/REPAIR GENERAL for the vacuum bag system to use when you cure the repair plies.
    - (b) Put a layer of perforated parting film above the repair area that is a minimum of 1.0 inch (25.4 mm) larger all around than the repair area.
    - (c) If you cure the repair at a temperature that is higher than room temperature, put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave, Figure 206/REPAIR GENERAL and Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave, Figure 207/REPAIR GENERAL. Connect the thermocouples to the applicable recorders.
    - (d) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder.
    - (e) Put a layer of solid parting film over the surface bleeder that is 0.5 inch (12.7 mm) less all around than the surface bleeder.

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- (f) Put one layer of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3, Classes 8, 9, 10, 11, 12, or 13 or the equivalent) that is the same size as the surface bleeder above the repair area. This will be the breather cloth.

**NOTE:** Make sure the breather cloth touches the surface bleeder when you put the layup together.

- (g) Seal the repair with the vacuum bag material.
- 1) Put the bases for the vacuum line and the vacuum gage into position.
  - 2) If necessary, apply the vacuum sealing compound around the layup.
  - 3) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.
  - 4) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.
- (2) Do steps (a) through (i) that follow if you will cure the repair at a temperature that is higher than room temperature with a heat blanket.
- (a) Refer to Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket, Figure 208/REPAIR GENERAL for the vacuum bag system to use when you cure the repair core separately. Refer to Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 209/REPAIR GENERAL for the vacuum bag system to use when you cure the repair plies.
  - (b) Put a layer of perforated parting film above the repair area that is a minimum of 1.0 inch (25.4 mm) larger all around than the repair area.
  - (c) Put the thermocouples at the locations shown in Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket, Figure 208/REPAIR GENERAL and Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket, Figure 209/REPAIR GENERAL. Connect the thermocouples to the applicable recorders
  - (d) Put a layer of dry peel ply or glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) above the perforated parting film. This will be the surface bleeder. The surface bleeder should be a minimum of 2.0 inches larger all around than the heat blanket.
  - (e) Put a layer of solid parting film over the surface bleeder that is 0.5 inch (12.7 mm) less all around than the surface bleeder.
  - (f) Put a heat blanket above the solid parting film that is a minimum of 2.0 inches (50.8 mm) larger all around than the largest repair ply.

**CAUTION:** IT IS RECOMMENDED THAT YOU USE A MINIMUM OF ONE THERMOCOUPLE ON THE SIDE OF THE HEAT BLANKET THAT IS NEAREST TO THE REPAIR AREA. HEAT BLANKETS SOMETIMES BECOME DEFECTIVE AND CAN HEAT UP TOO QUICKLY OR GET TOO HOT. THE RESULT CAN BE AN UNSATISFACTORY REPAIR.

- (g) Put one to four thermocouples on the side of the heat blanket that is nearest to the repair area.
- (h) Put four to six layers of glass fabric cloth (BMS 9-3, Types D, H-2, or H-3 or the equivalent) that are the same size as the surface bleeder above the repair area. These will be the breather cloths.
- (i) Seal the repair with the vacuum bag material.
  - 1) Put the bases for the vacuum line and the vacuum gage into position.

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- 2) If necessary, apply the vacuum sealing compound around the layup.
- 3) Cut slits in the vacuum bag at the locations where the vacuum line and vacuum gage will be attached to the bases.
- 4) Install the vacuum line and the vacuum gage through the vacuum bag material and into the bases.

L. Do a check of the vacuum bag for leaks.

**NOTE:** A vacuum bag which has a leak can cause porosity in the repair and bond failure.

- (1) Apply a minimum vacuum of 22 inches of mercury.
- (2) Remove the vacuum source.
- (3) Monitor the vacuum gage. After 5 minutes, the total difference in vacuum must be less than 5 inches of mercury.

M. Apply the vacuum pressure for the cure.

- (1) Apply and keep a vacuum to a minimum of 22 inches of mercury in the vacuum bag during the cure of the repair.

N. Cure the potting compound.

- (1) Cure the potting compound for 5 hours at 120° to 130°F (49° to 54°C) as shown in Cure Cycle for the BMS 5-28, Type 15,16,17,18,19, and 20 Potting Compound , Figure 210/REPAIR GENERAL.
  - (a) The potting compound must remain at room temperature for a minimum of 1 hour before you apply the temperature.

**NOTE:** Room temperature is between 68° to 90°F (20° to 32°C).

- (2) As an alternative, you can cure the potting compound 7 days (168 hours) at 72° to 82°F (22° to 28°C).

O. Cure the repair fabric.

**CAUTION:** CURE THE REPAIR AT THE TEMPERATURE GIVEN BY THE REPAIR OPTIONS. IF YOU DO NOT OBEY, THE REPAIR CAN BE UNSATISFACTORY.

- (1) Cure the repair at room temperature.

**NOTE:** Room temperature is between 68° to 90°F (20° to 32°C).

- (a) If there is no potting compound in the repair that is not cured, cure the repair fabric at room temperature for 5 days (120 hours).
  - (b) If there is potting compound in the repair that is not cured, then cure the repair at 72° to 82°F (22° to 28°C) for 7 days (168 hours).
- (2) If you cure the repair fabric at a temperature that is higher than room temperature, do the steps that follow:

**NOTE:** Room temperature is between 68° to 90°F (20° to 32°C).

- (a) Apply the temperature with a heat lamp, oven, heat blanket or autoclave.
  - 1) Refer to Distance and Temperature Data for the Cure of the Repair with a Heat Lamp, Figure 211/REPAIR GENERAL for distance to put a 250 watt heat lamp from the surface of the repair.
  - 2) Monitor the temperature with the thermocouples. Make sure that the temperature does not increase at a rate more than 8°F (4.4°C) for each minute.



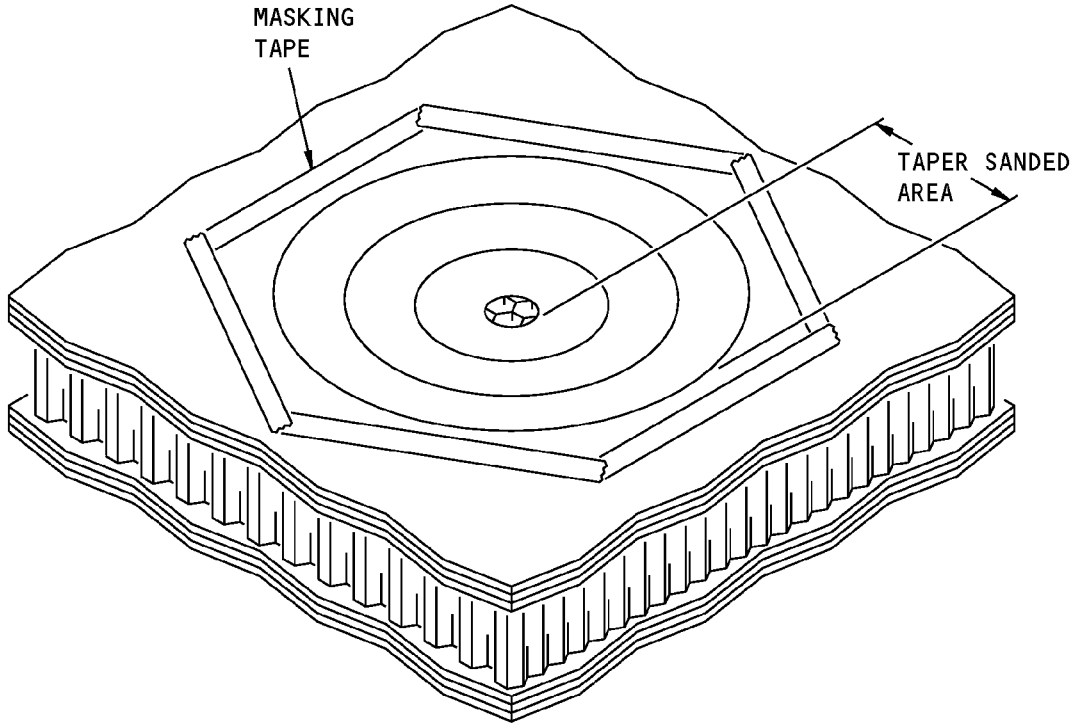


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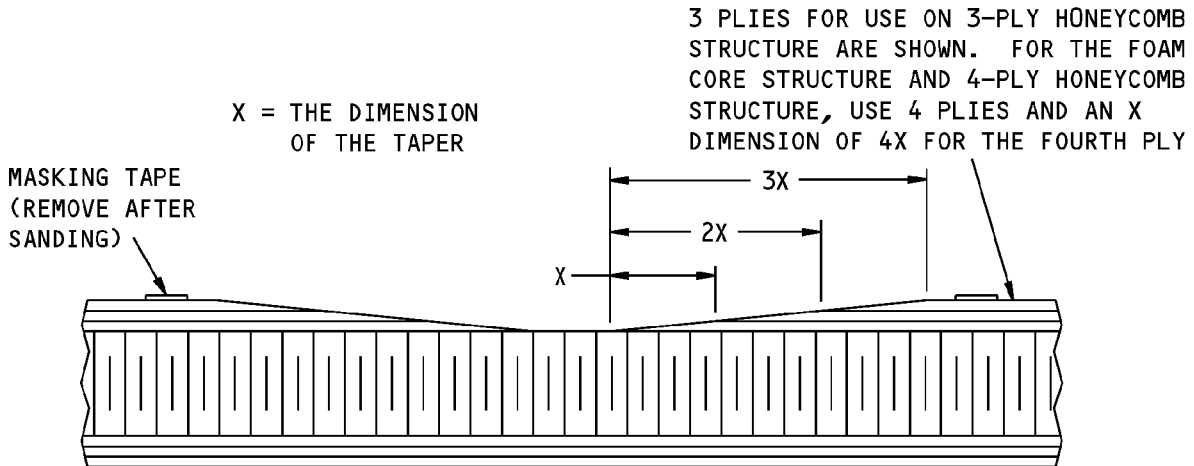
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- (b) For wet layup materials cured 150°F (66°C), refer to Cure Cycles for BMS 8-301, Class 2 Laminating Resin, Figure 212/REPAIR GENERAL for the cure time and temperature.
  - (c) For wet layup materials cured at 200°F (93°C), refer to Cure Cycles for BMS 8-301, Class 1 Laminating Resin, Figure 213/REPAIR GENERAL for the cure time and temperature.
  - (d) For preimpregnated layup materials cured at 250°F (121°C), refer to Cure Cycles for BMS 8-79 Preimpregnated Layup Materials, Figure 214/REPAIR GENERAL for the cure time and temperature.
- P. Put the radome back to the initial condition.
- (1) Seal the fibers that may be open to the air as given in 51-70-08. This includes the areas on the inner facesheet if the Tedlar moisture barrier was removed.
  - (2) Measure the thickness of the radome before the finish is applied, as given in 737 NDT Part 6, 53-50-00 Figure 1, Figure 1 .
  - (3) Apply the finish to the exterior surface. Refer to AMM 53-52-00/701.
  - (4) Measure the thickness of the radome again after the finish has been applied as given in 737 NDT Part 6, 53-50-00 Figure 1, Figure 1 .
  - (5) Make sure the thickness of the finish that was applied is not more than what is given in AMM 53-52-00/701.
    - (a) Subtract the thickness that was measured before the finish was applied from the thickness that was measured after the finish was applied.
  - (6) If the thickness of the finish is more than what is given in AMM 53-12-01/701, do one of the steps that follow:
    - (a) Remove the finish and do the Steps 5.P.(2) through 5.P.(5) again.
    - (b) Do a test for electrical transmission efficiency to see if it is satisfactory. If it is not satisfactory, remove the finish and do the Steps 5.P.(2) through 5.P.(5) again.
  - (7) Install the glide slope director element as given in AMM 53-52-31/401, if it was removed.
  - (8) Install the lightning diverter strips as given in AMM 53-52-03/201, if they were removed.
  - (9) Make a record of the type and location of the damage that occurred and the repair that was made.
  - (10) Install the radome as given in AMM 53-52-00/401, if it was removed.

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED



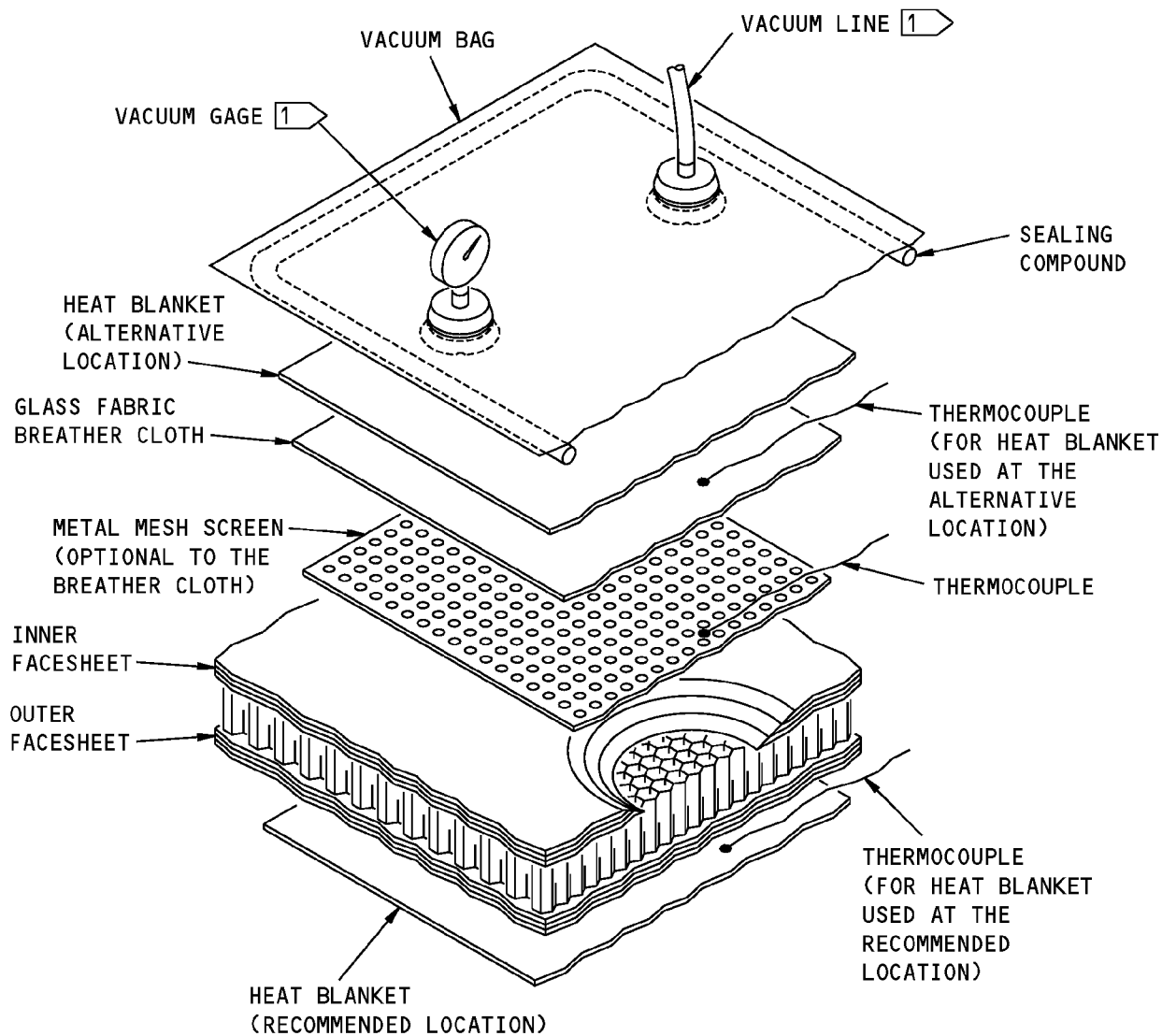
SECTION THROUGH THE CENTER OF THE REPAIR

**NOTES**

- REFER TO THE APPLICABLE REPAIR OPTION FOR THE NECESSARY TAPER.
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 202**

**737-800  
STRUCTURAL REPAIR MANUAL**



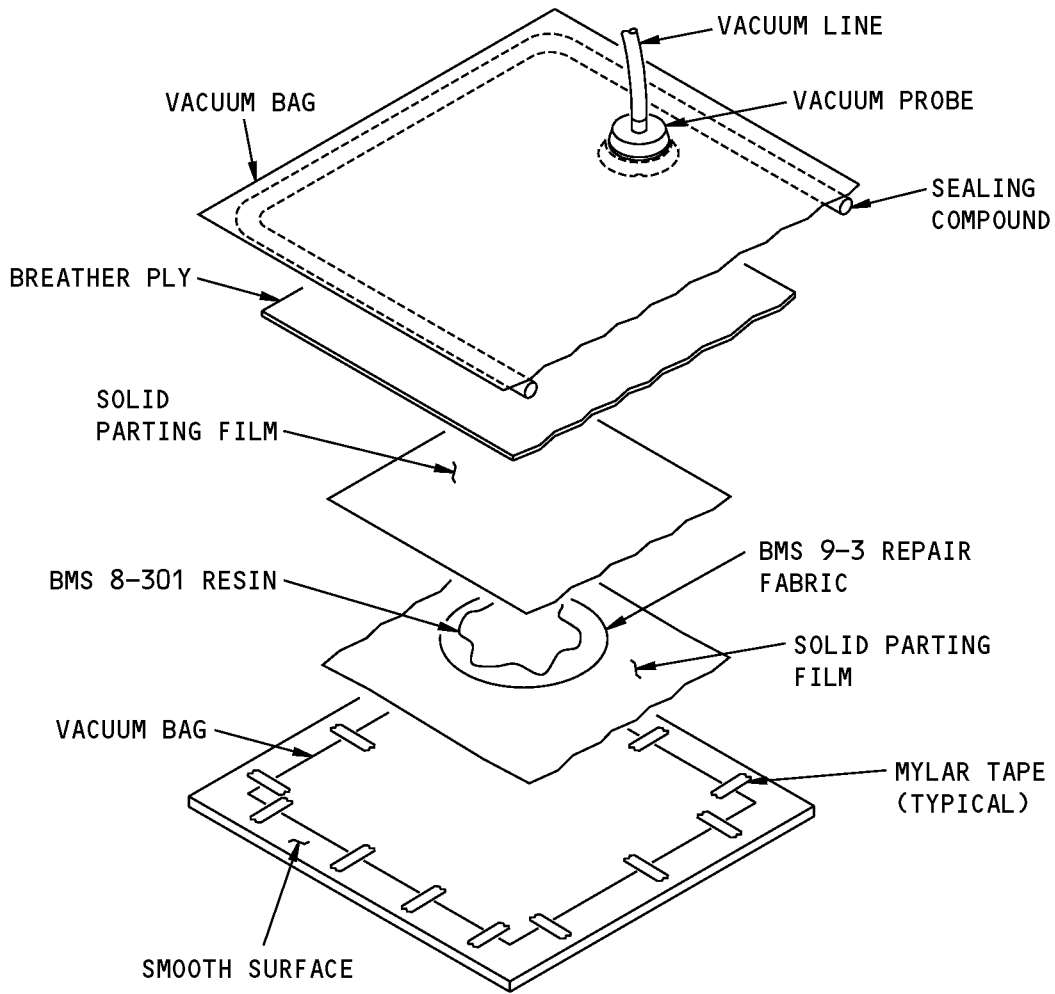
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**1** THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY OR METAL MESH SCREEN.

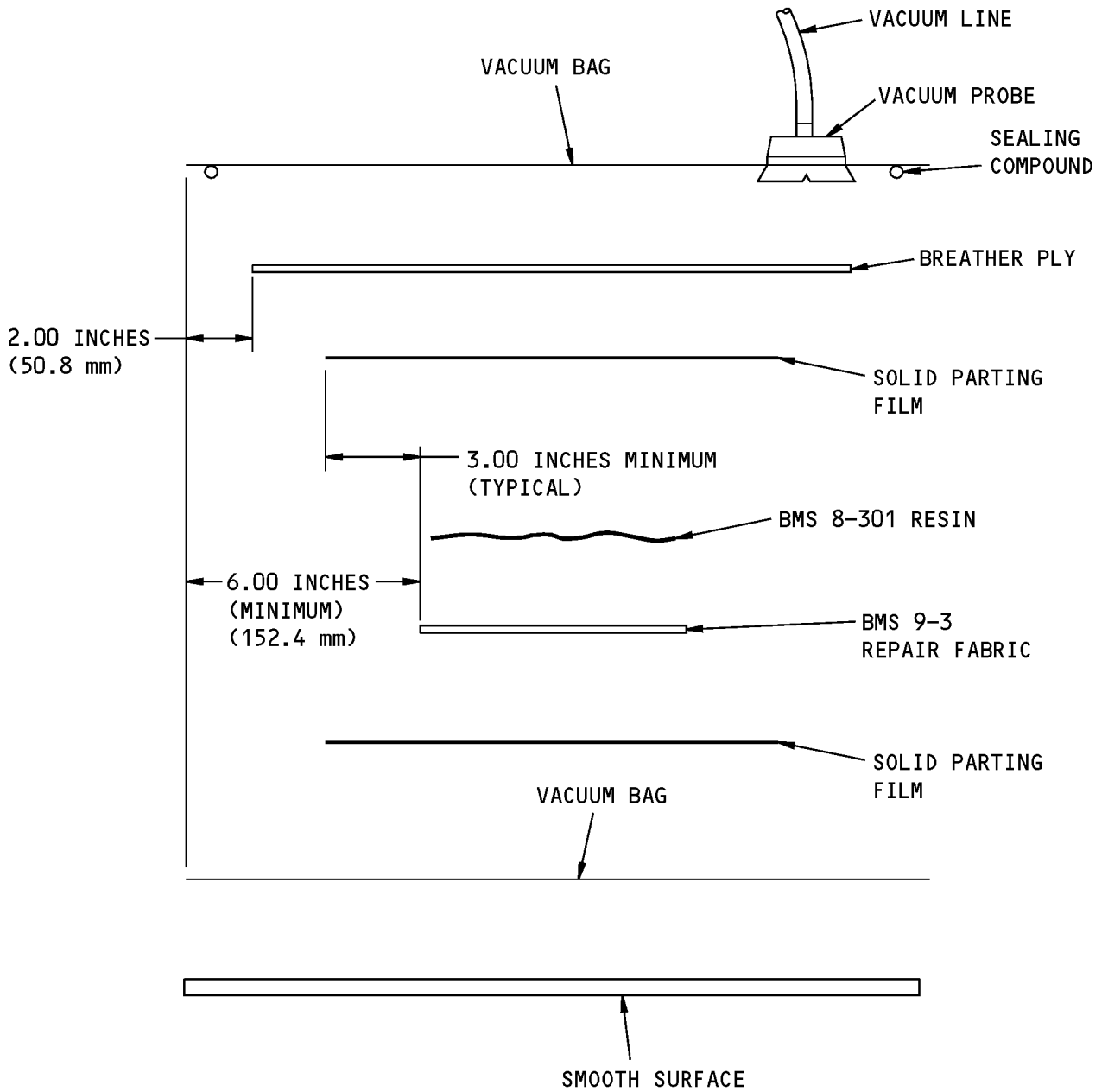
**Water Removal Procedure  
Figure 203**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin  
Figure 204 (Sheet 1 of 2)**

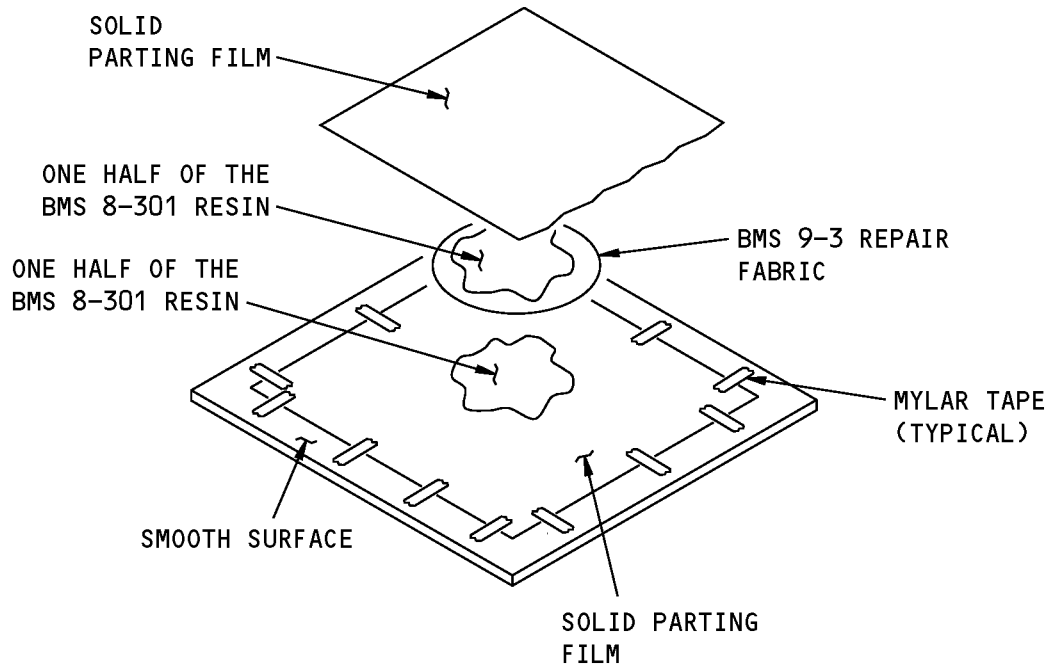
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE LAYUP**

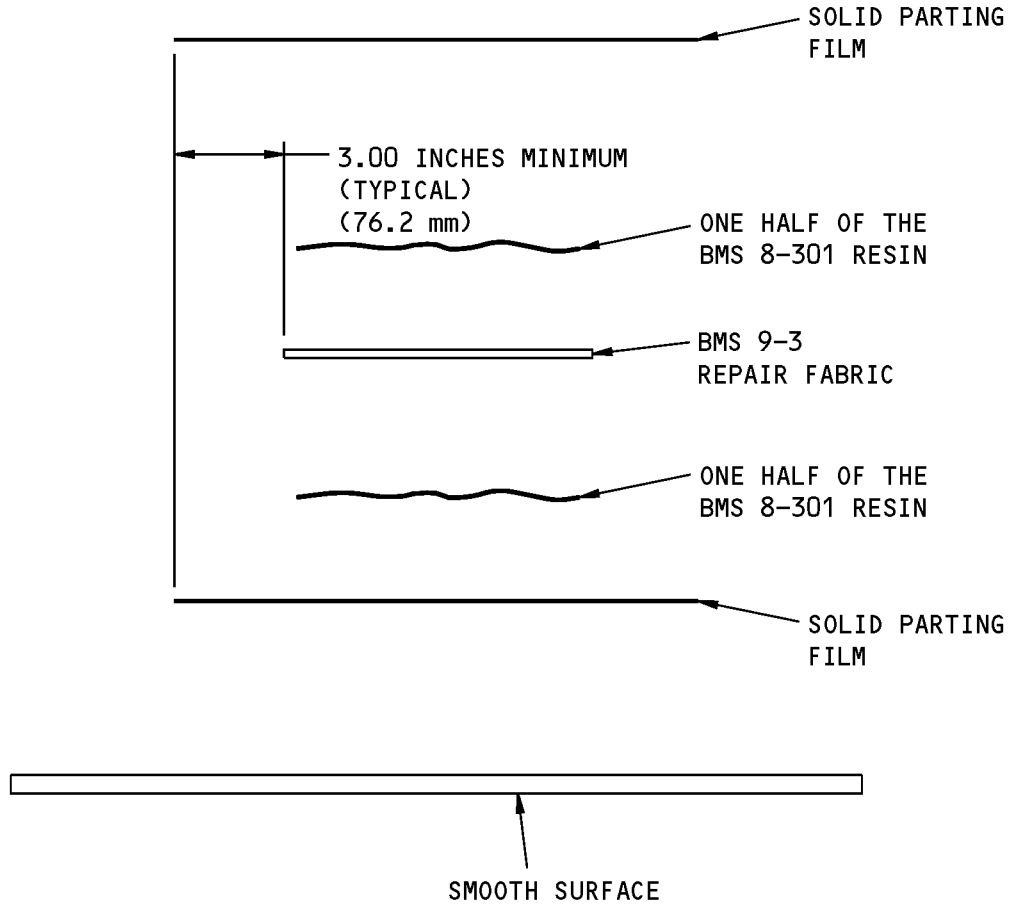
**Vacuum Bag Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin  
Figure 204 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin  
Figure 205 (Sheet 1 of 2)**

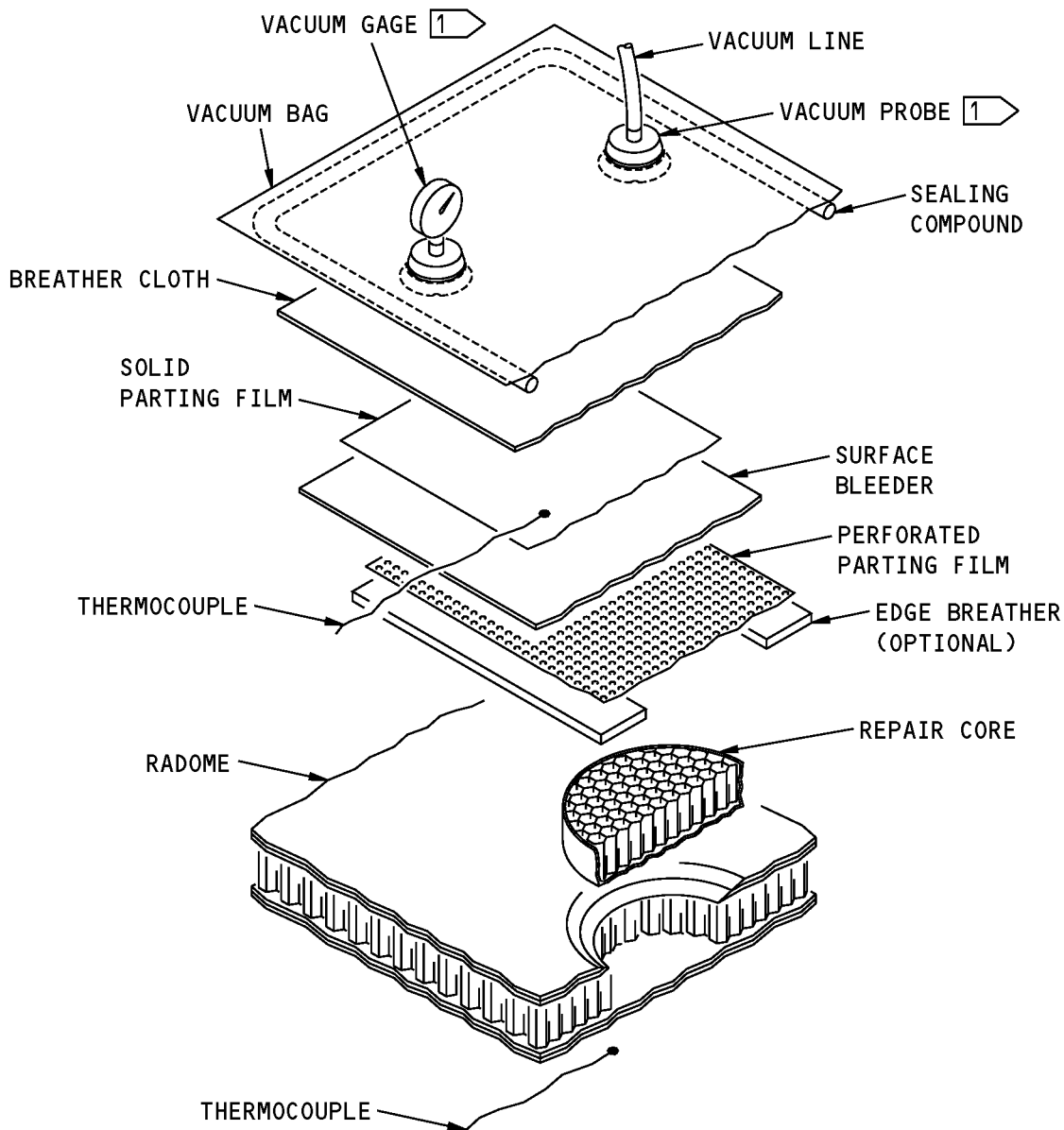
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE LAYUP FOR CORE REPLACEMENT**

**Alternate Procedure to Impregnate the BMS 9-3 Repair Plies with BMS 8-301 Resin  
Figure 205 (Sheet 2 of 2)**

STRUCTURAL REPAIR MANUAL



NOTES

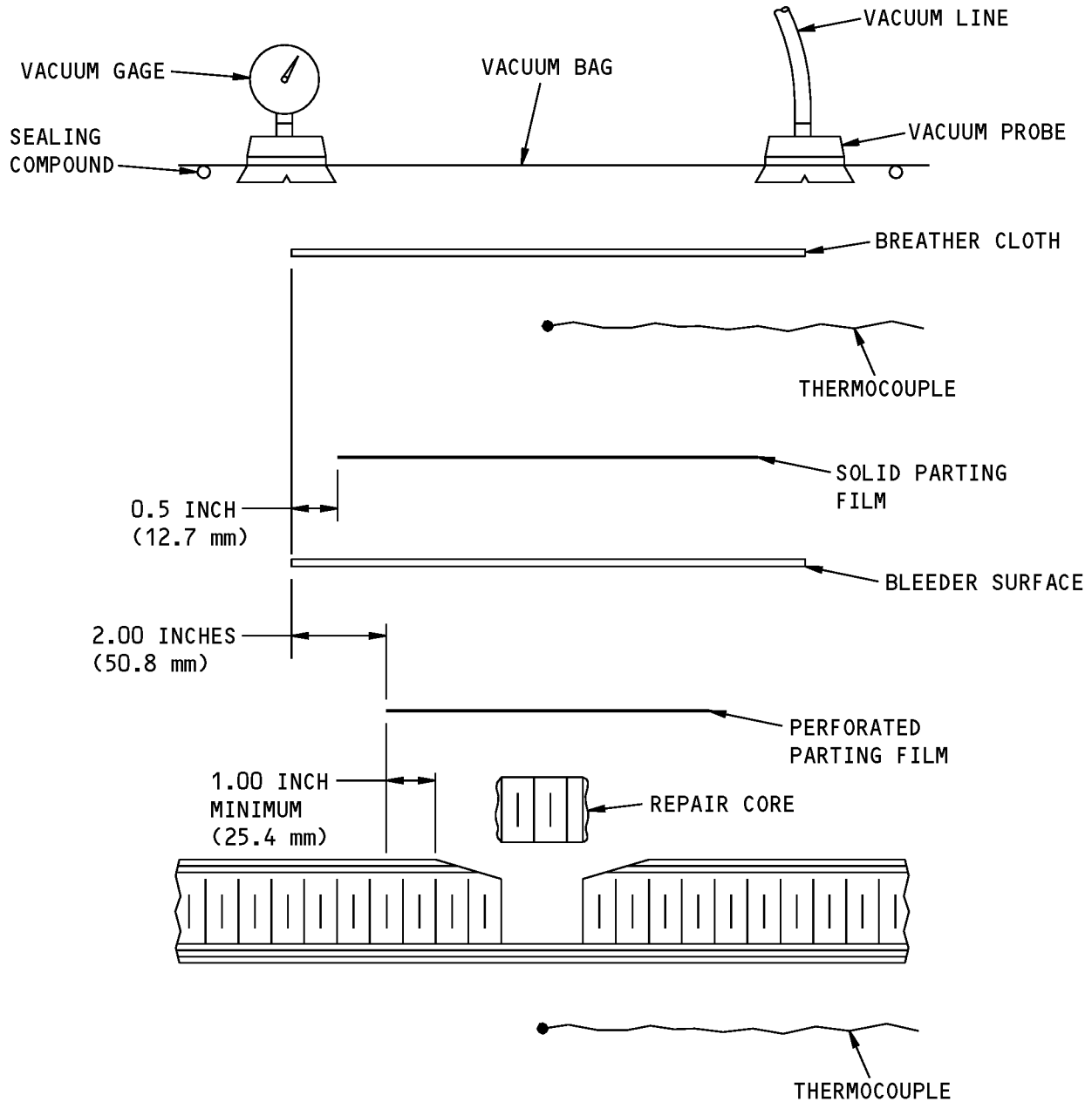
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**1** THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave  
Figure 206 (Sheet 1 of 2)**



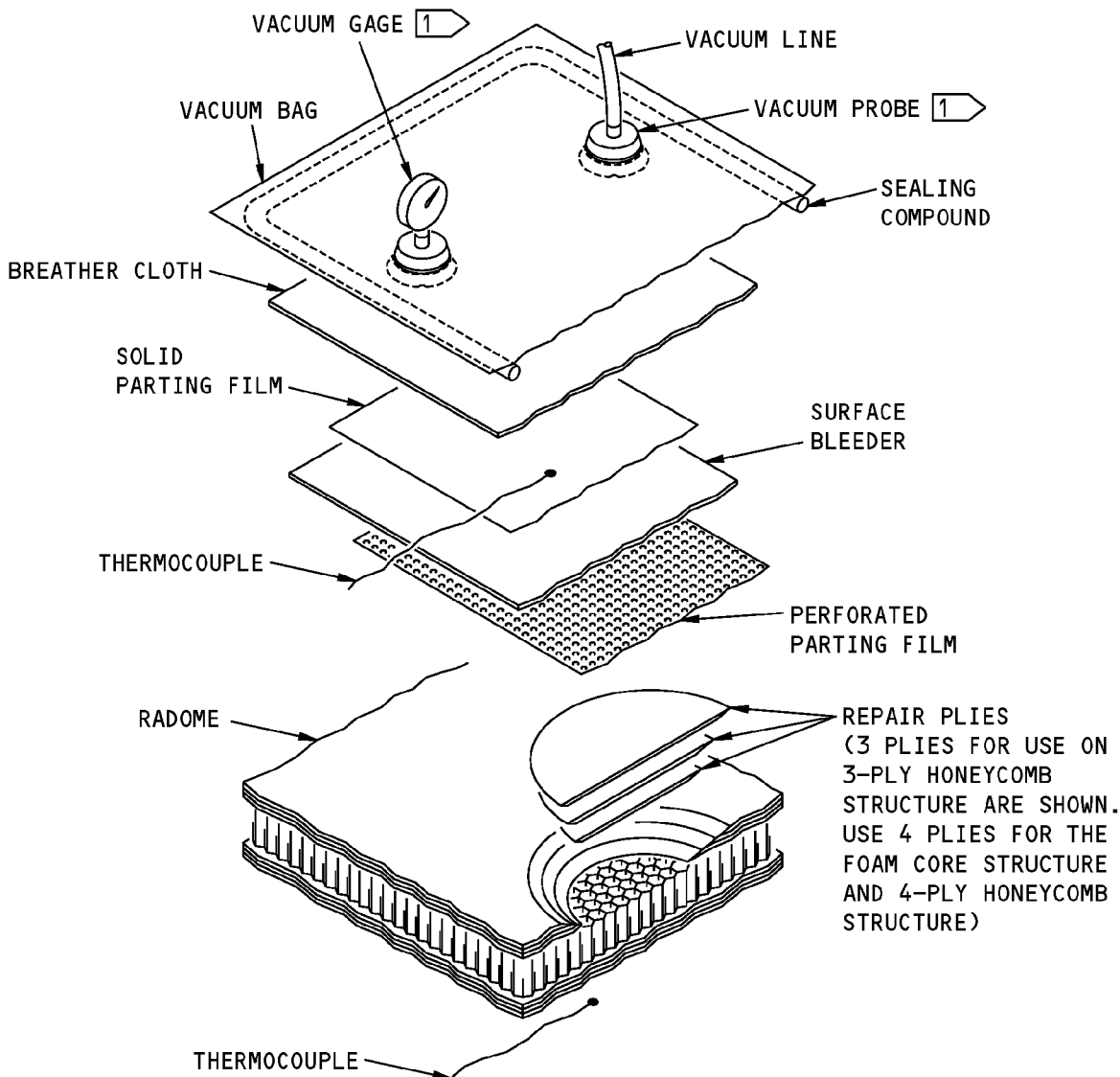
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with an Oven Heat Lamp, or Autoclave  
Figure 206 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



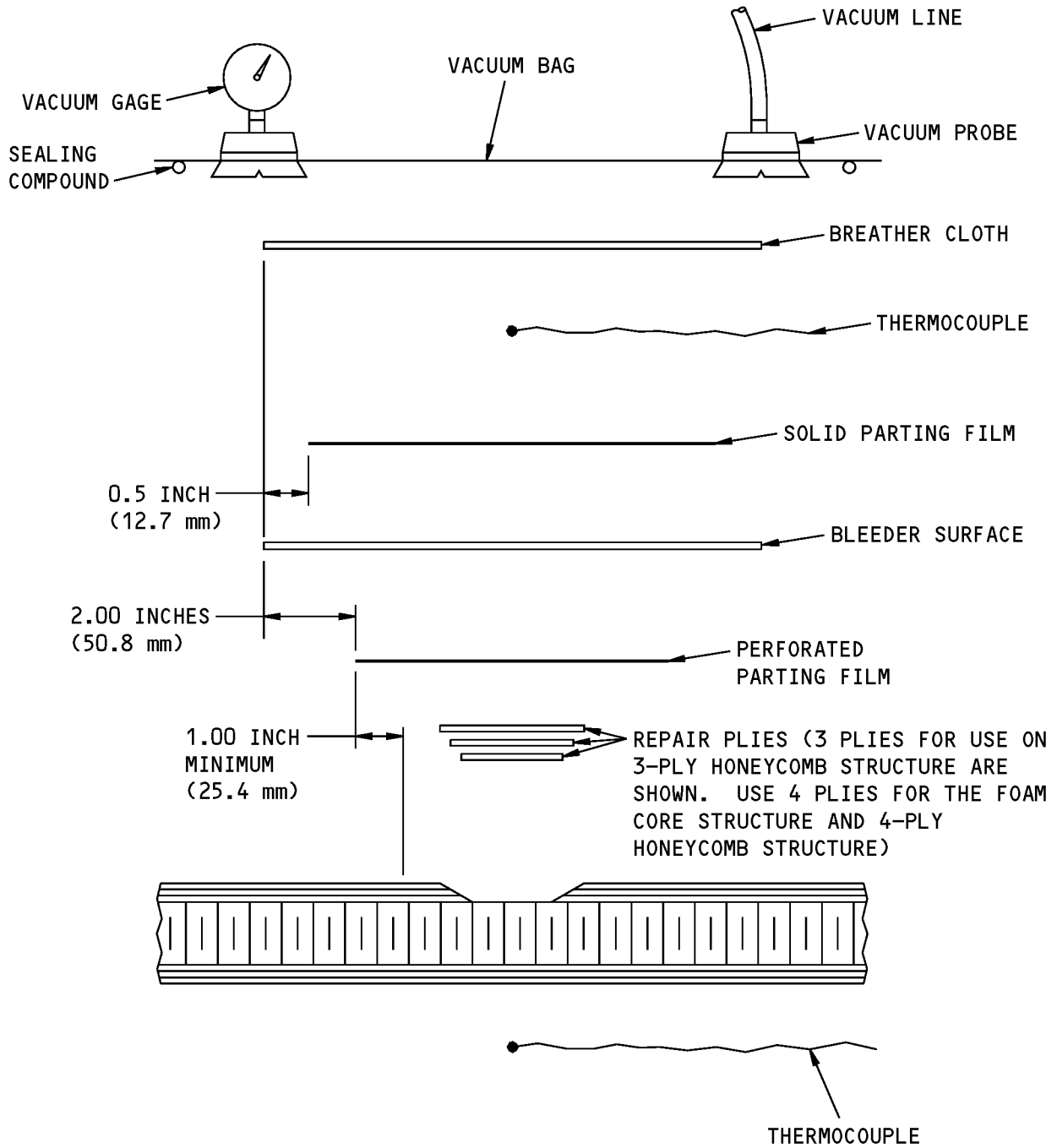
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

(1) THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave  
Figure 207 (Sheet 1 of 2)**

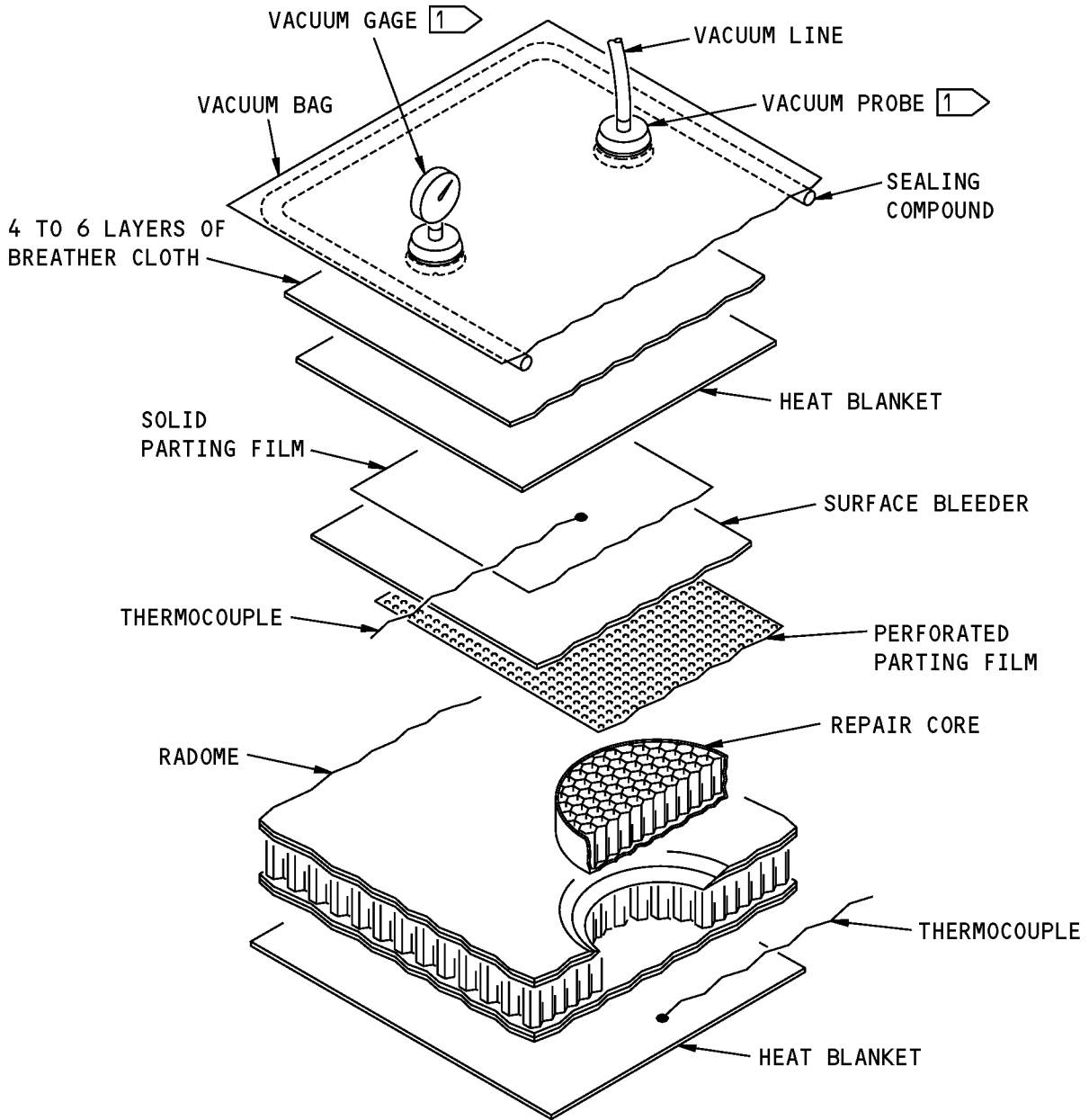
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Repair Plies with an Oven, Heat Lamp, or Autoclave  
Figure 207 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



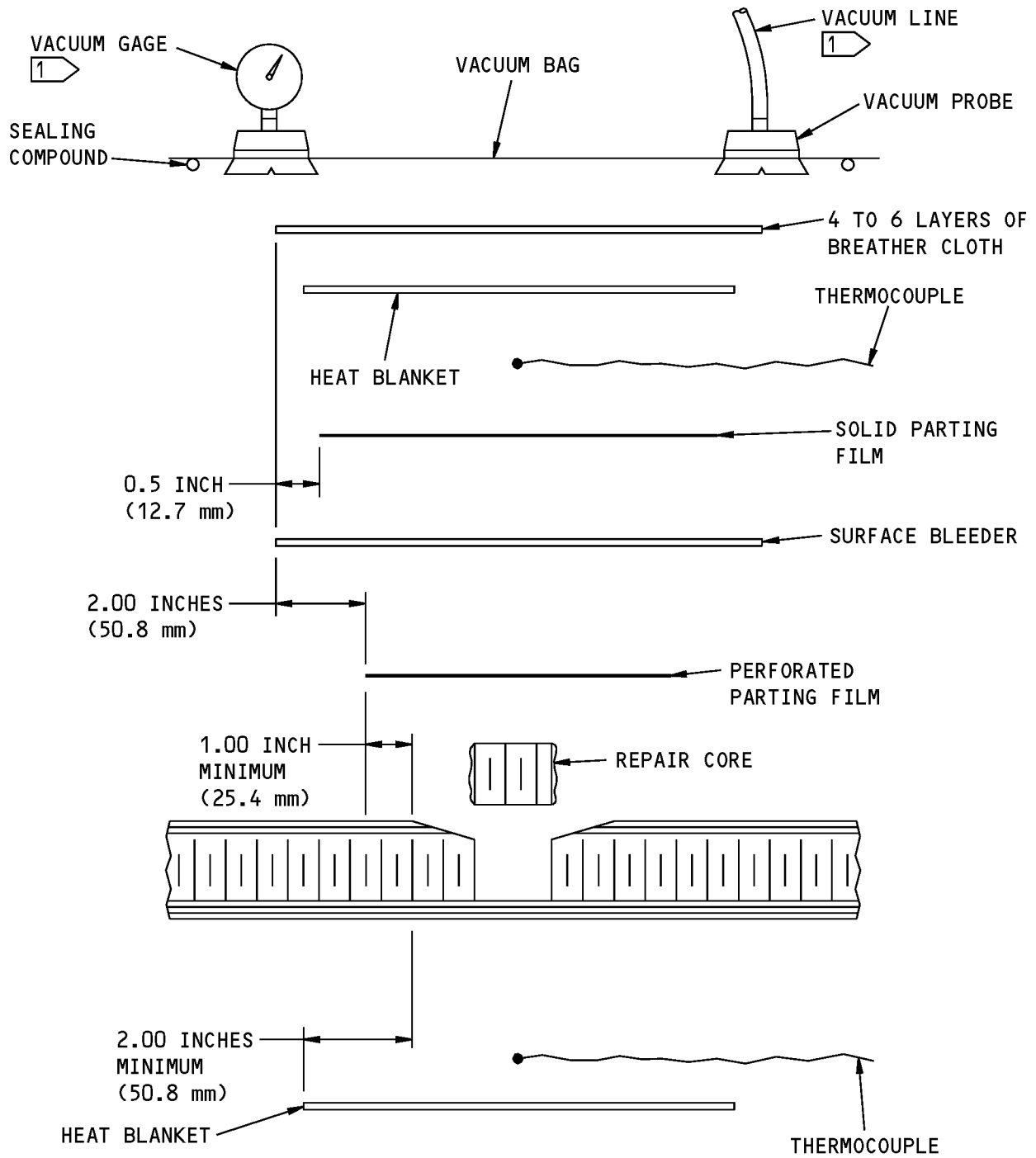
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**1** THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket  
Figure 208 (Sheet 1 of 2)**

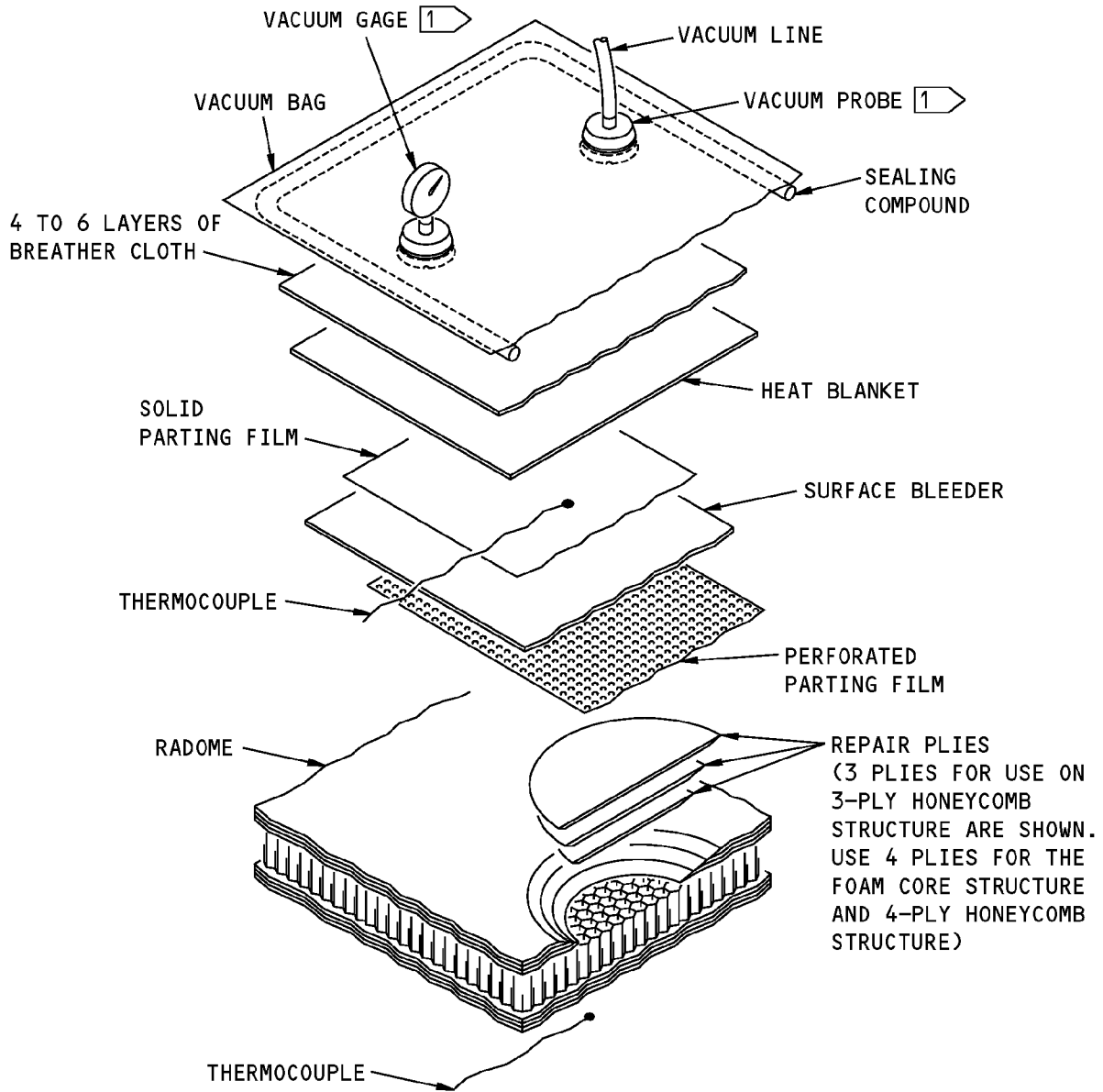
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Honeycomb Repair Core with a Heat Blanket  
Figure 208 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



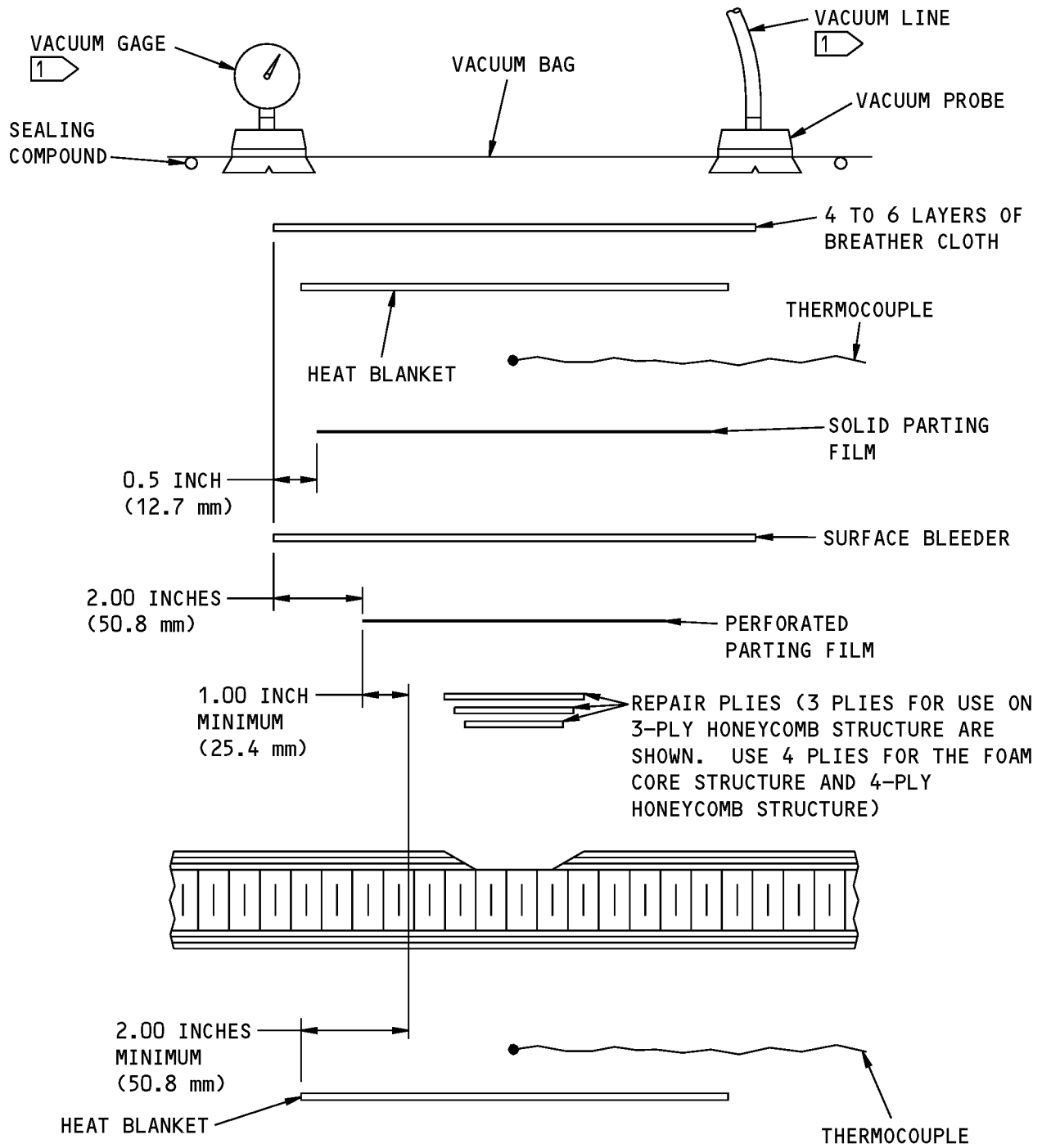
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 THE VACUUM PROBE AND GAGE MUST TOUCH THE SURFACE OF THE BREATHER PLY.

**Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket  
Figure 209 (Sheet 1 of 2)**

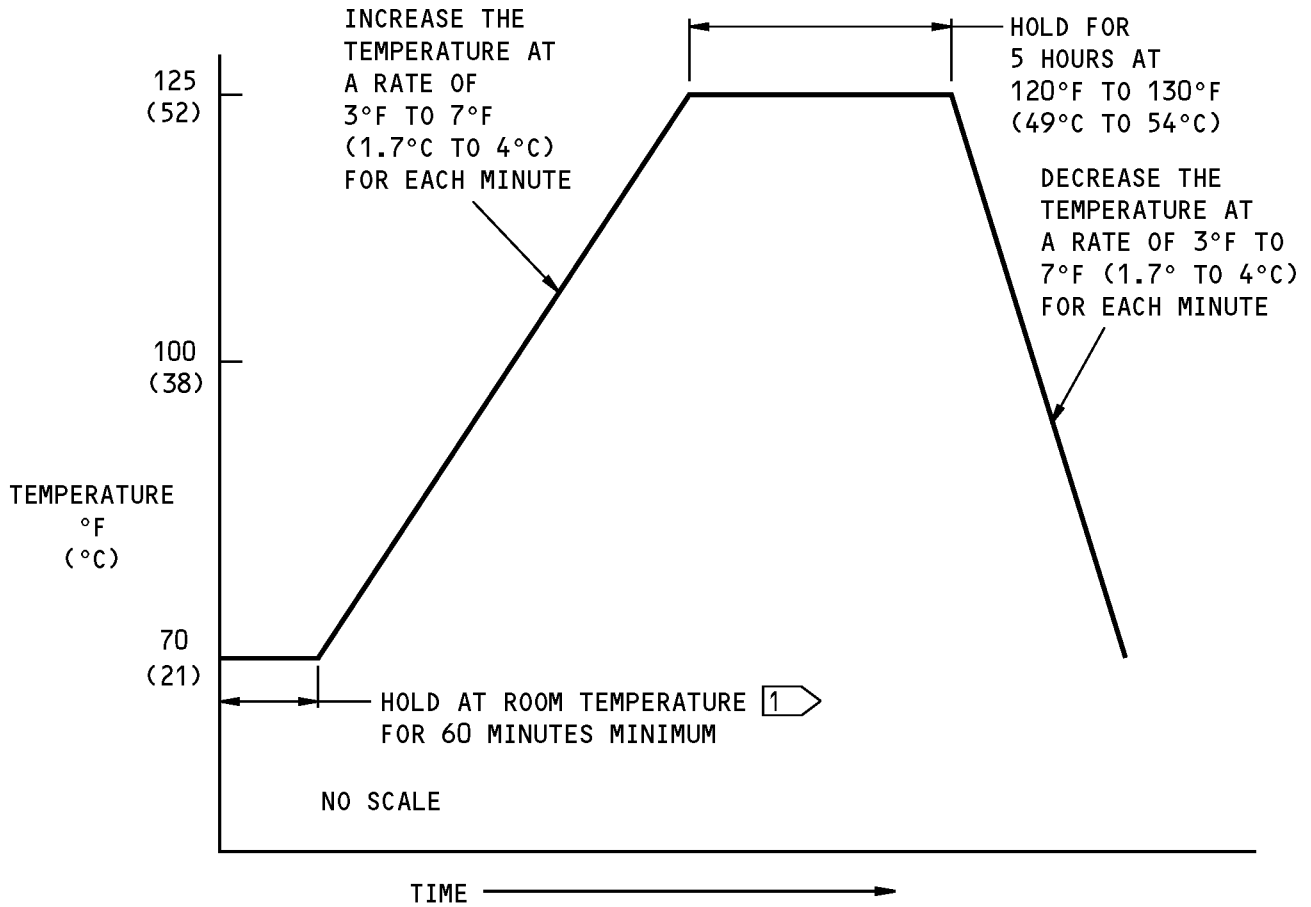
**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THRU THE VACUUM BAG SYSTEM**

**Vacuum Bag Instructions for the Cure of the Repair Plies with a Heat Blanket  
Figure 209 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



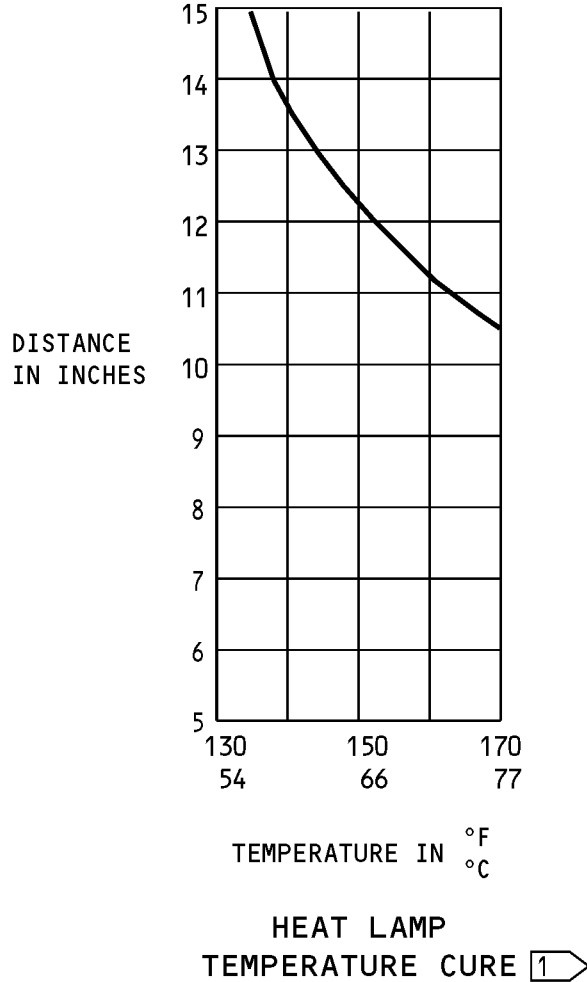
**NOTES**

**1** ROOM TEMPERATURE IS BETWEEN 68<sup>0</sup> TO 90<sup>0</sup> F (20<sup>0</sup> TO 32<sup>0</sup> C)

**Cure Cycle for the BMS 5-28, Type 15,16,17,18,19, and 20 Potting Compound  
Figure 210**



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STRUCTURAL REPAIR MANUAL**



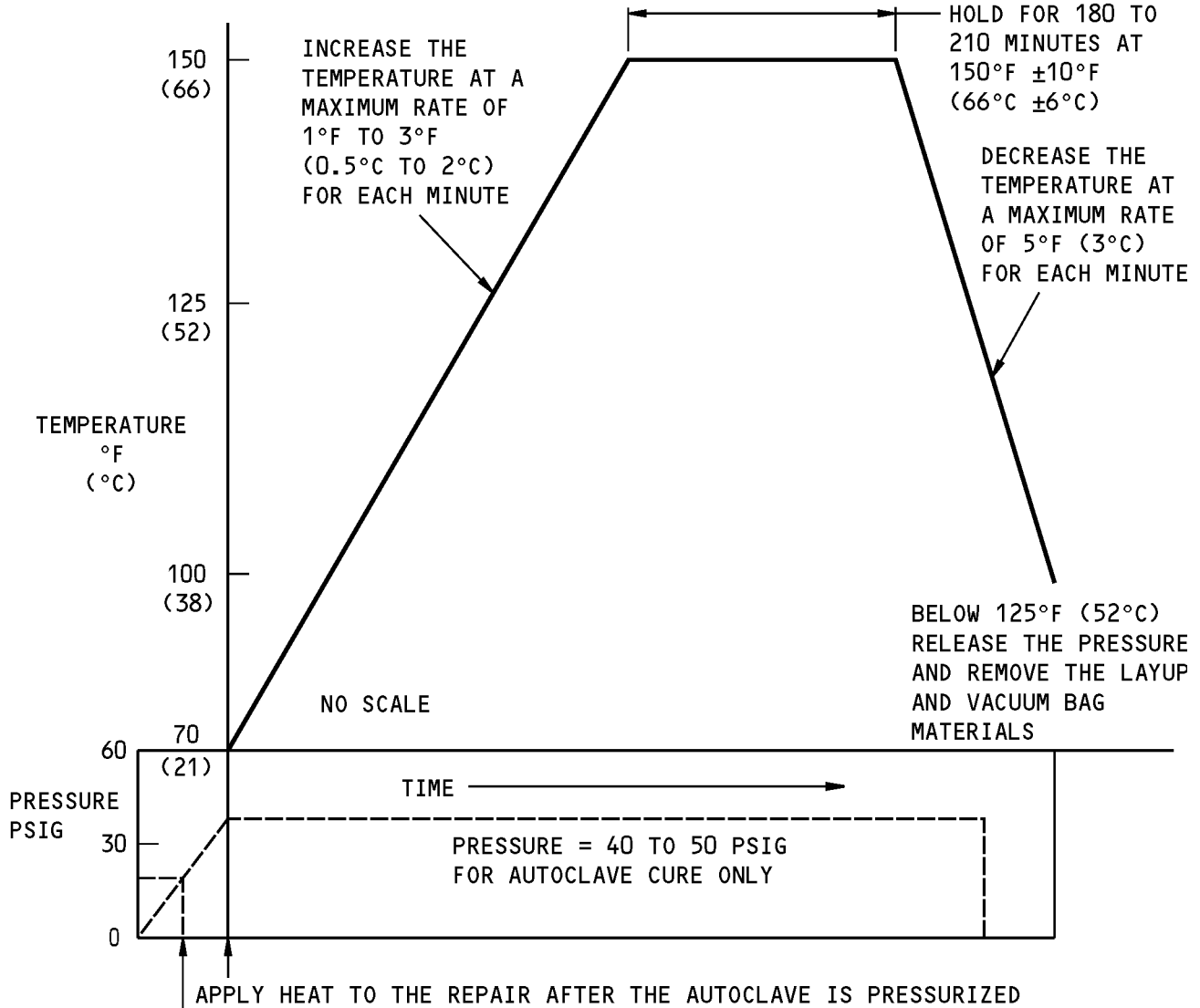
**NOTES**

- USE THERMOCOUPLES TO MONITOR THE TEMPERATURE.

① THE DISTANCE IN INCHES OF A 250 WATT HEAT LAMP FROM THE SURFACE OF THE REPAIR VS THE TEMPERATURE AT THE SURFACE OF THE REPAIR.

**Distance and Temperature Data for the Cure of the Repair with a Heat Lamp  
Figure 211**

**STRUCTURAL REPAIR MANUAL**



OPEN THE VACUUM BAG TO THE ATMOSPHERE AFTER THE PRESSURE IN THE AUTOCLAVE IS 20 PSIG

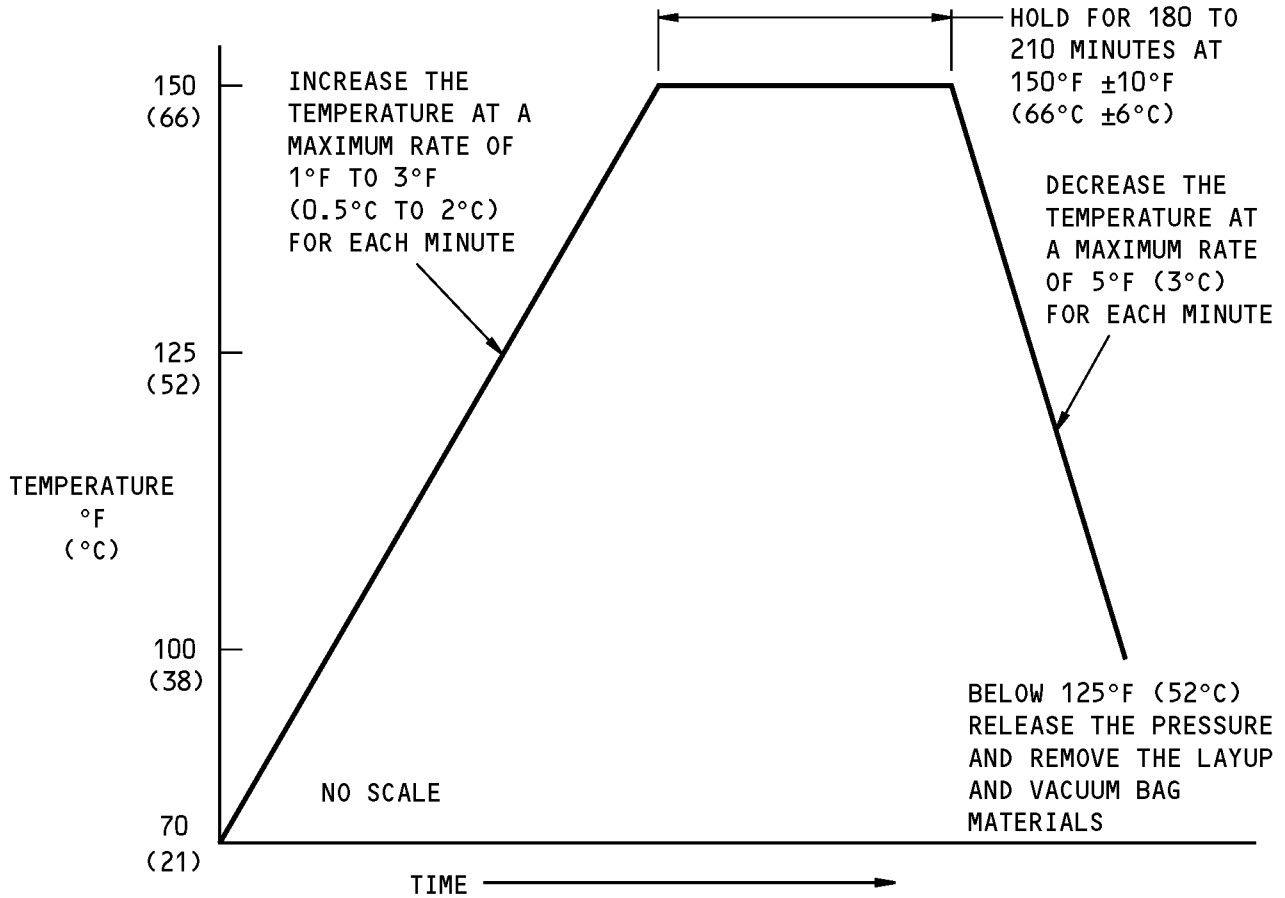
**150°F (66°C) AUTOCLAVE OR OVEN CURE CYCLE**

**NOTES**

- FOR THE OVEN, HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM VACUUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

**Cure Cycles for BMS 8-301, Class 2 Laminating Resin  
Figure 212 (Sheet 1 of 2)**

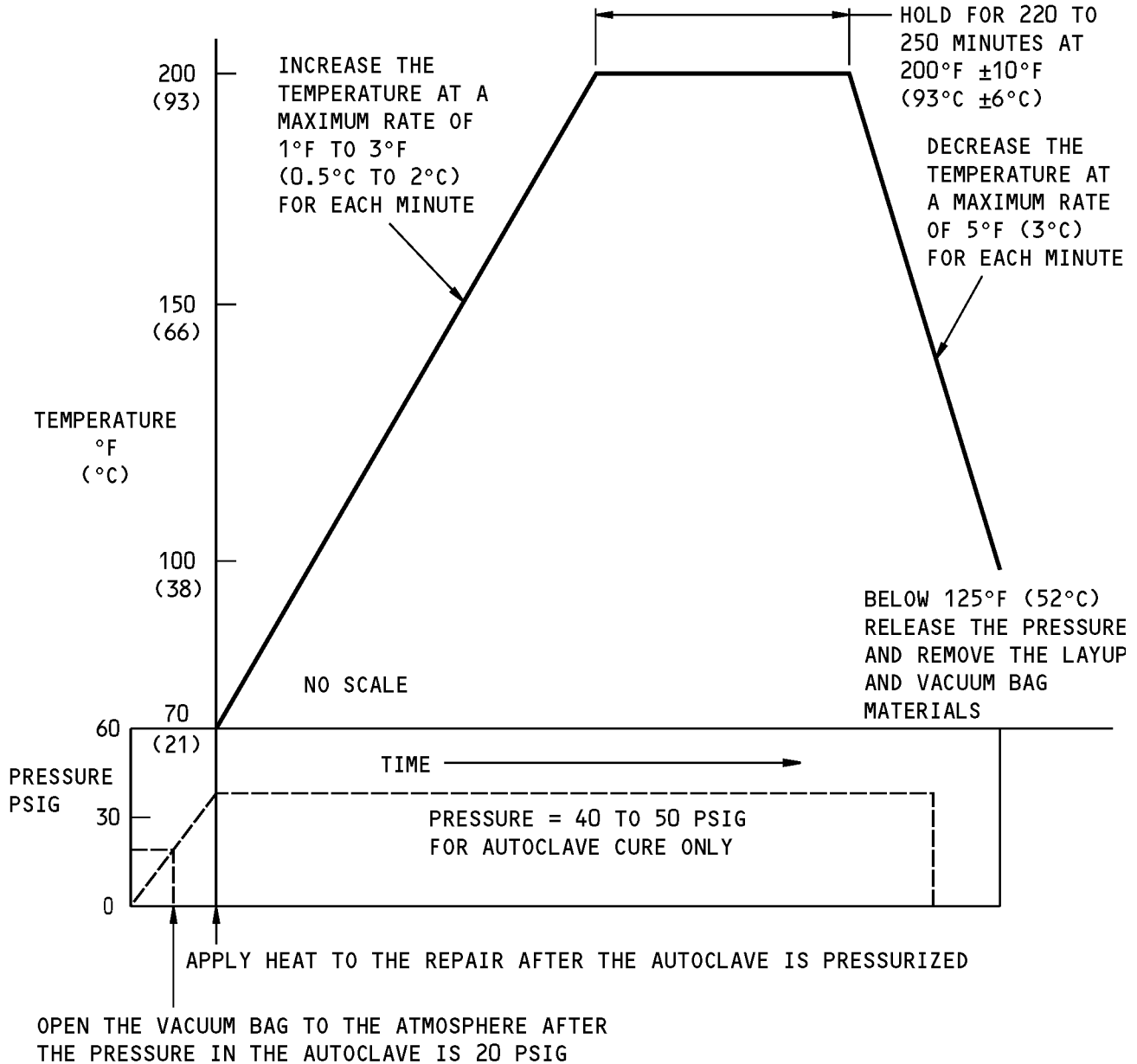
**737-800  
STRUCTURAL REPAIR MANUAL**



**150°F (66°C) HEAT LAMP OR HEAT BLANKET CURE CYCLE**

**Cure Cycles for BMS 8-301, Class 2 Laminating Resin  
Figure 212 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**



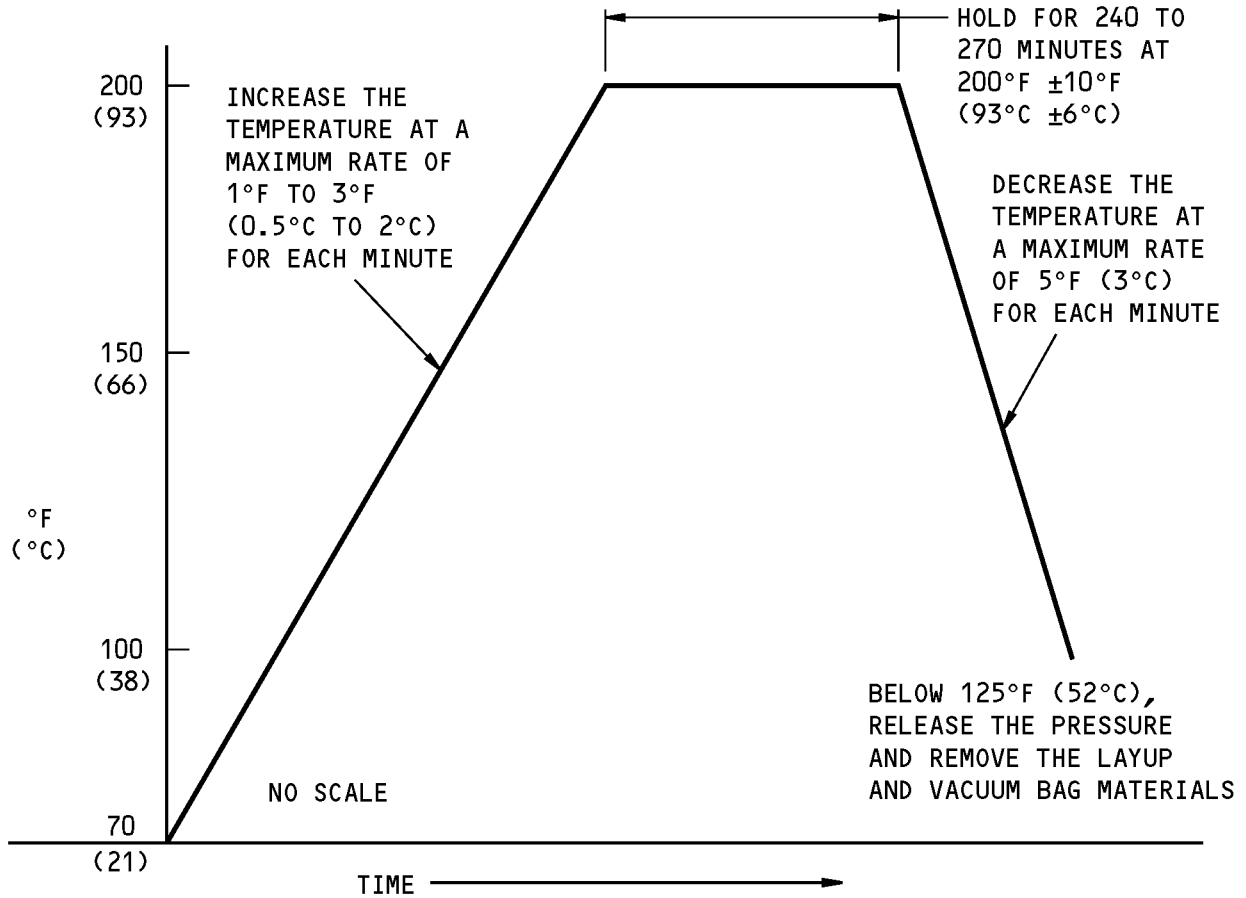
**200°F (93°C) AUTOCLAVE OR OVEN CURE CYCLE**

**NOTES**

- FOR THE OVEN, HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

**Cure Cycles for BMS 8-301, Class 1 Laminating Resin  
Figure 213 (Sheet 1 of 2)**

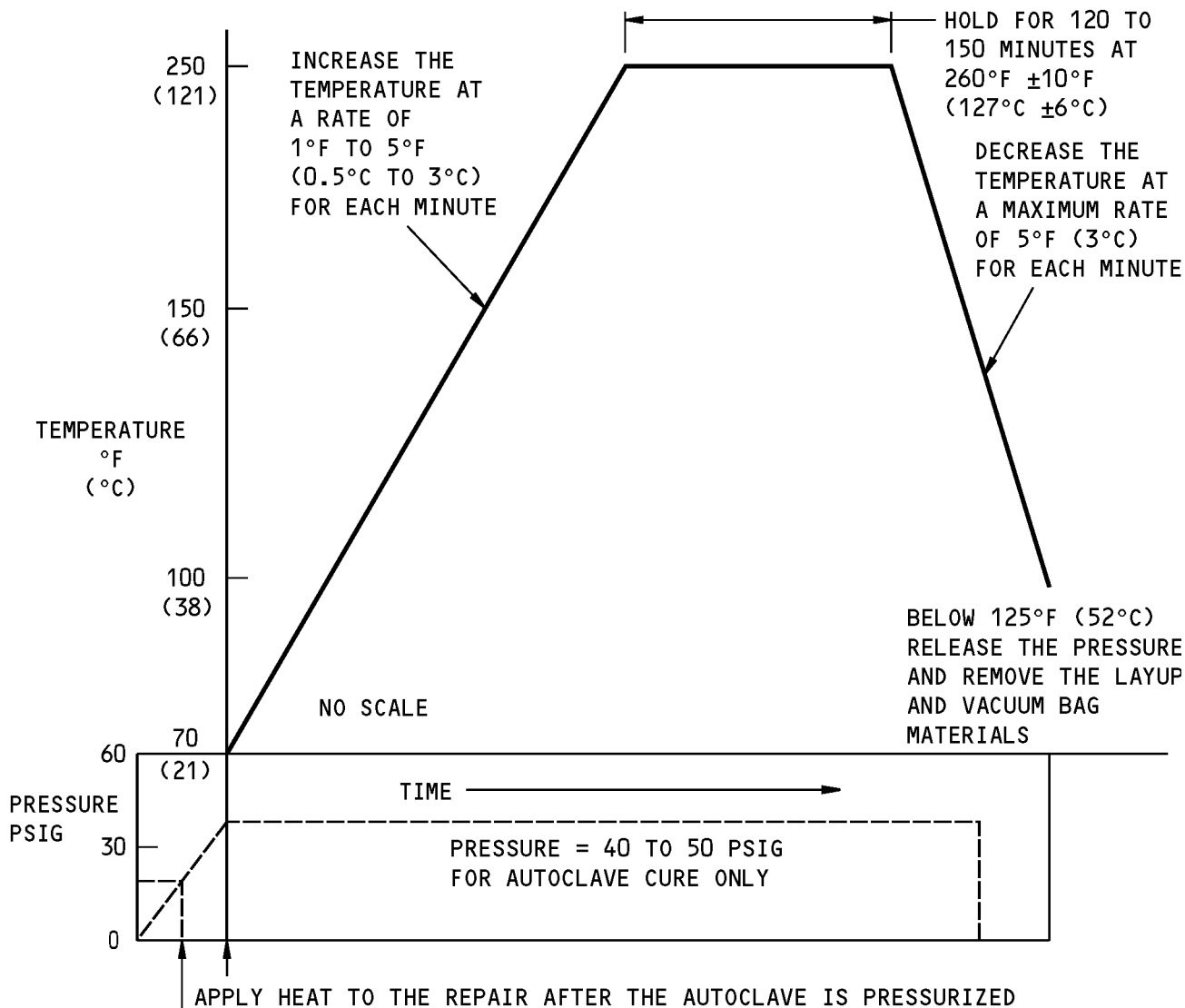
**737-800  
STRUCTURAL REPAIR MANUAL**



**200°F (93°C) HEAT LAMP OR HEAT BLANKET CURE CYCLE**

**Cure Cycles for BMS 8-301, Class 1 Laminating Resin  
Figure 213 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



OPEN THE VACUUM BAG TO THE ATMOSPHERE AFTER THE PRESSURE IN THE AUTOCLAVE IS 20 PSIG

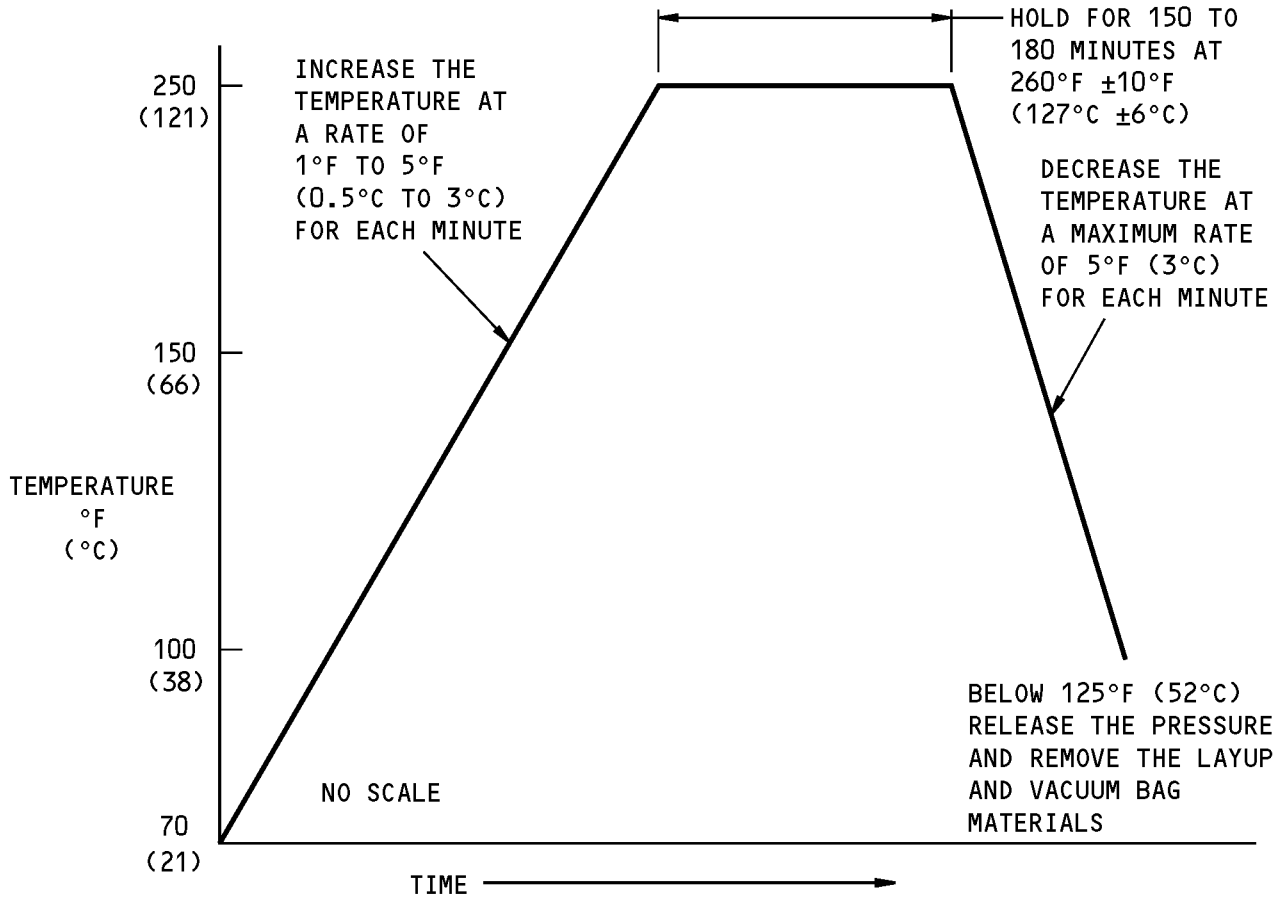
**250°F (121°C) AUTOCLAVE OR OVEN CURE CYCLE**

**NOTES**

- FOR THE OVEN HEAT LAMP, OR HEAT BLANKET CURE, KEEP A MINIMUM VACUUM OF 22 INCHES OF MERCURY DURING THE FULL CURE CYCLE.

**Cure Cycles for BMS 8-79 Preimpregnated Layup Materials  
Figure 214 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**250°F (121°C) HEAT LAMP OR HEAT BLANKET CURE CYCLE**

**Cure Cycles for BMS 8-79 Preimpregnated Layup Materials  
Figure 214 (Sheet 2 of 2)**



737-800

## STRUCTURAL REPAIR MANUAL

### REPAIR 1 - REPAIR FOR WATER CONTAMINATION - WET AND PREIMPREGNATED LAYUP MATERIALS

#### 1. Applicability

- A. Repair 1 is applicable to water contamination in nose radomes made of honeycomb core structure or foam core structure that is:
  - (1) In an area that has no visible damage or delaminations that are more than the allowable damage limits
  - (2) In an area that is a maximum diameter of 20.0 inches (508.0 mm)
  - (3) In an area that is 4 inches (101.6 mm) or more away from other repairs
  - (4) In the core areas of the radome. Refer to 51-70-04 and 51-70-05 for the repairs that are applicable to the edgeband of the radome.
- B. Repair 1 gives the instructions to drill holes into the inner facesheet of the radome to remove water contamination from an area.
  - (1) After the water is removed, a repair ply that is 1 inch (25.4 mm) larger all around than the contamination area is added.
  - (2) This repair ply makes the facesheet in the repair area thicker than the initial facesheet. The added thickness causes a decrease in the electrical transmission efficiency of the radome.
- C. Repairs 2, 3, 4, and 5 are recommended alternatives to Repair 1.
  - (1) Repairs 2, 3, 4, and 5 permit you to remove a facesheet in the area that has water contamination. After you remove the water, the facesheet is repaired without the added thickness necessary in Repair 1.
- D. The total maximum area of the added repair ply or plies that is permitted on the radome is 380 inches<sup>2</sup> (2451.6 cm<sup>2</sup>)
  - (1) A test for electrical transmission efficiency is necessary if the total area of the repair ply is more than 21.2 inches<sup>2</sup> (136.7 cm<sup>2</sup>). Refer to Repair General, Paragraph 2
  - (2) A test for electrical transmission efficiency is not necessary if the total area of the repair ply is less than or equal to 21.2 inches<sup>2</sup> (136.7 cm<sup>2</sup>).
  - (3) The area of the repair ply that is under a lightning diverter strip can be removed from the total area calculation.

#### 2. General

- A. Before you do Repair 1, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. The repair materials that are necessary for this repair are given in Table 201/REPAIR 1.
  - (1) You can use wet layup materials or preimpregnated layup materials to repair the nose radome. The two types of repair materials are equally satisfactory.



## 737-800 STRUCTURAL REPAIR MANUAL

**Table 201:**

NOSE RADOME REPAIR MATERIALS		
MATERIAL DESCRIPTION	BOEING SPECIFICATION	USE IN THE REPAIR
REPAIR FABRIC	BMS 9-3, Type H-2 or H-3,	Repair with wet layup materials
LAMINATING RESIN	BMS 8-301, Class 1 or Class 2	
REPAIR FABRIC	BMS 8-79, Style 1581 or Style 7781	Repair with preimpregnated layup materials
ADHESIVE FILM	BMS 5-129, Type 2, Grade 5 (As an alternative, you can use BMS 5-129, Type 4 Grade 5)	
POTTING COMPOUND	BMS 5-28, Type 18, 19, or 20	Repair at a location where the lightning diverter is attached. These materials are used with the wet layup or preimpregnated layup repair materials
NUT	BACN10YR3CD	
WASHER	NAS1149DD363P	
SCREW	NAS514P-8P	

### 3. References

Reference	Title
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS

### 4. Repair Instructions

- A. Put masking tape on the inner facesheet. Put the tape a minimum of 2 inches (50.8 mm) larger all around than the edges of the area that has water contamination.
- B. Remove the Tedlar moisture barrier from the inner facesheet in the area that has water contamination plus 1 inch (25.4 mm) more all around.
  - (1) Use 240-grit or smaller Scotch-Brite abrasive.
  - (2) Do not damage to the fibers of the inner facesheet.
- C. Drill a 1/16 inch diameter hole approximately in the center of each core cell that contains water contamination.

**NOTE:** Use care when you drill the hole. Do not cause damage to the outer facesheet or the core.

- (1) Refer to Removal of the Water Contamination, Figure 201/REPAIR 1, Detail A for an example of water contamination that is not at a lightning diverter strip attach location.
- (2) Refer to Removal of the Water Contamination, Figure 201/REPAIR 1, Detail B for an example of water contamination that is at a lightning diverter strip attach location.
- D. Remove all the water or other unwanted materials as given in Paragraph 5.D./REPAIR GENERAL
- E. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- F. If the repair is at a location where the lightning diverter is attached, fill the insert hole with BMS 5-28, Type 18, 19, or 20 potting compound.
  - (1) Prepare the potting compound as given in Repair General, Table 202 .

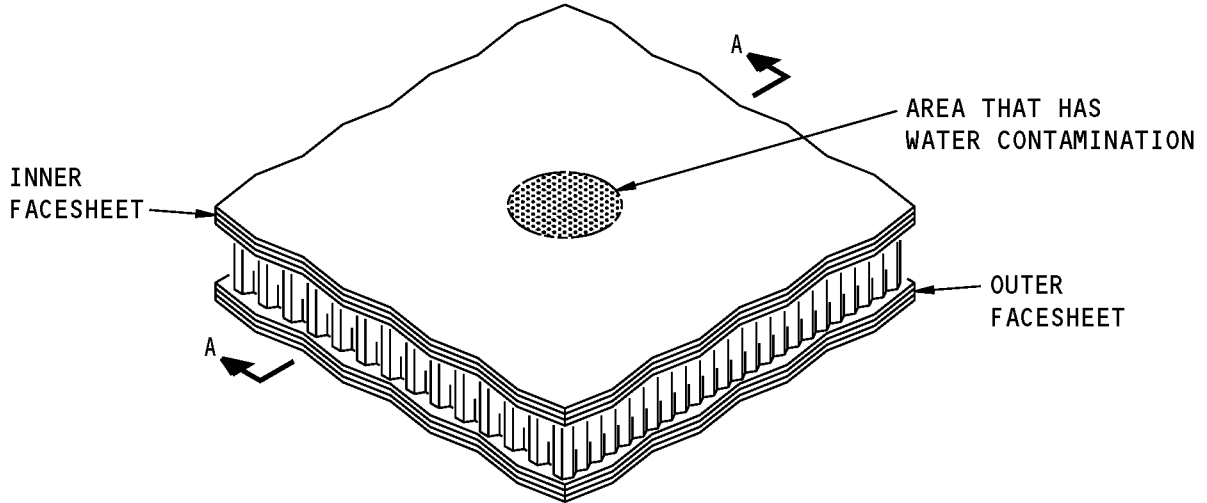


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## STRUCTURAL REPAIR MANUAL

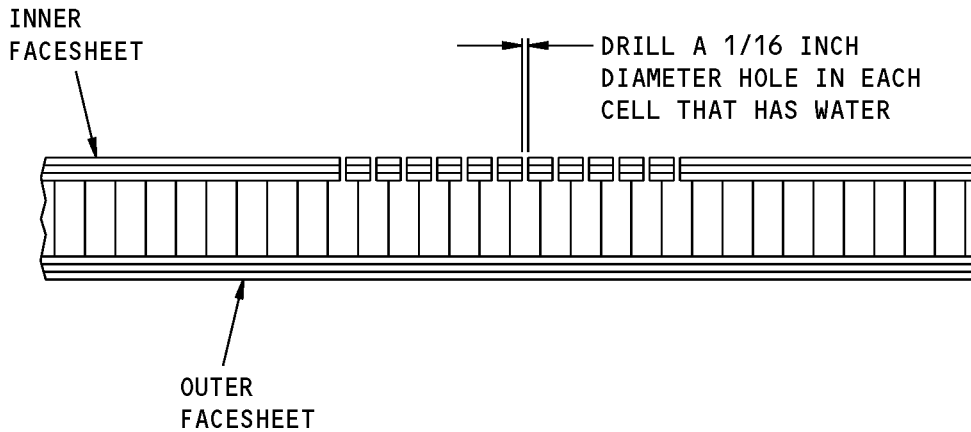
- (2) Fill the hole until the level of the potting compound is higher than the outer surface of the facesheet.
  - (3) Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL
  - (4) Sand the surface of the potting compound until it is smooth with the outer surface of the facesheet.
  - (5) Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- G. Prepare and apply the repair ply.
- (1) If you use preimpregnated layup materials, do the steps that follow:
    - (a) Refer to Table 201/REPAIR 1 for the repair materials.
    - (b) Refer to Layout of the Repair - Wet Layup Materials, Figure 202/REPAIR 1 for the layout of the repair parts.
    - (c) Cut one ply of repair fabric and film adhesive to the necessary shape and size.
    - (d) Apply the film adhesive and repair plies as given in Paragraph 5.J./REPAIR GENERAL
  - (2) If you use wet layup materials, do the steps that follow:
    - (a) Refer to Table 201/REPAIR 1 for the repair materials.
    - (b) Refer to Layout of the Repair - Preimpregnated Layup Materials, Figure 203/REPAIR 1 for the layout of the repair parts.
    - (c) Cut one ply of repair fabric to the necessary shape and size. Refer to Table 201/REPAIR 1 for the repair materials.
    - (d) Impregnate the repair ply with BMS 8-301 resin as given in Paragraph 5.I./REPAIR GENERAL
      - 1) Use BMS 8-301, Class 2 laminating resin if you cure the repair fabric at room temperature or at 150°F (66°C).
      - 2) Use BMS 8-301, Class 1 laminating resin if you cure the repair fabric at 200°F (93°C).
    - (e) Apply the repair plies as given in Paragraph 5.J./REPAIR GENERAL
- H. Assemble the vacuum bag system as Paragraph 5.K./REPAIR GENERAL
- I. Do a check of the vacuum bag for leaks as Paragraph 5.L./REPAIR GENERAL
- J. Apply the pressure to the layup as given in Paragraph 5.M./REPAIR GENERAL
- K. Cure the repair as given in Paragraph 5./REPAIR GENERAL0.
- L. If necessary, install the lightning diverter strip as shown in Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip, Figure 204/REPAIR 1.
- M. Apply the finish to the repair area and put the radome back to the initial condition as given in Paragraph 5.P./REPAIR GENERAL

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STRUCTURAL REPAIR MANUAL**



**WATER CONTAMINATION THAT IS NOT AT A  
LIGHTNING DIVERTER STRIP ATTACH LOCATION**

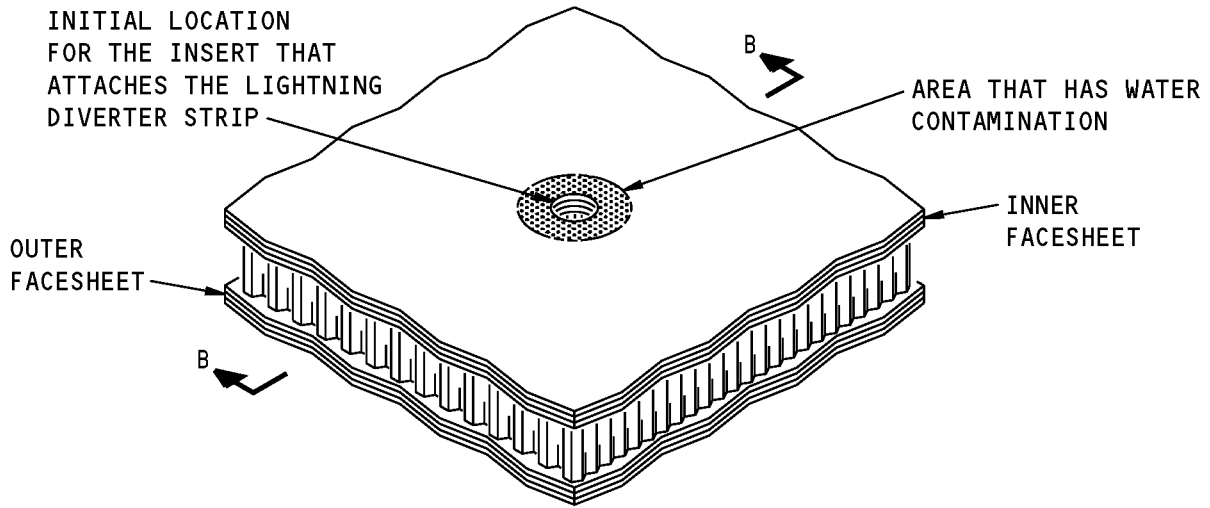
**A**



**A-A**

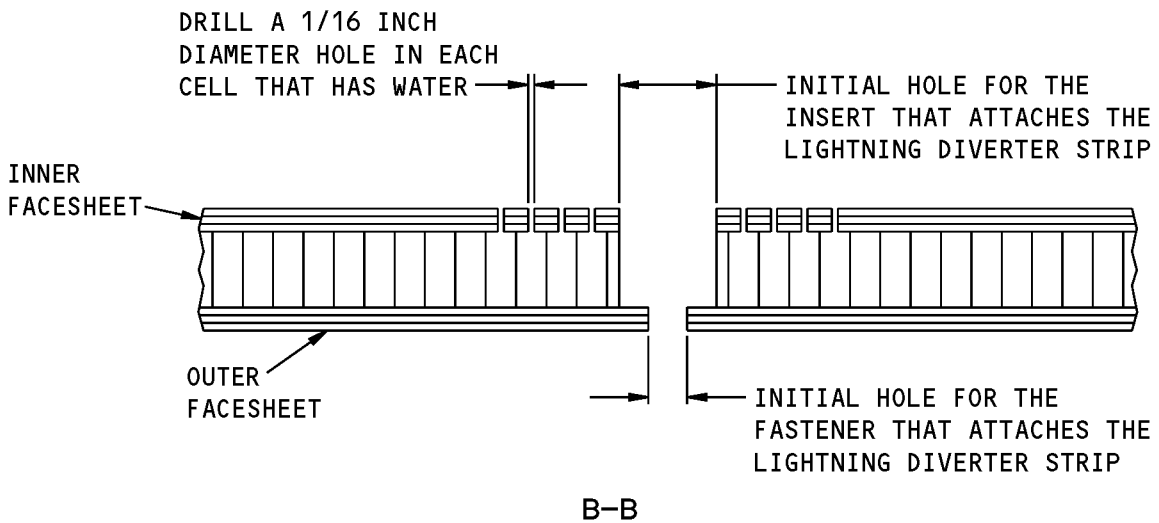
**Removal of the Water Contamination  
Figure 201 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



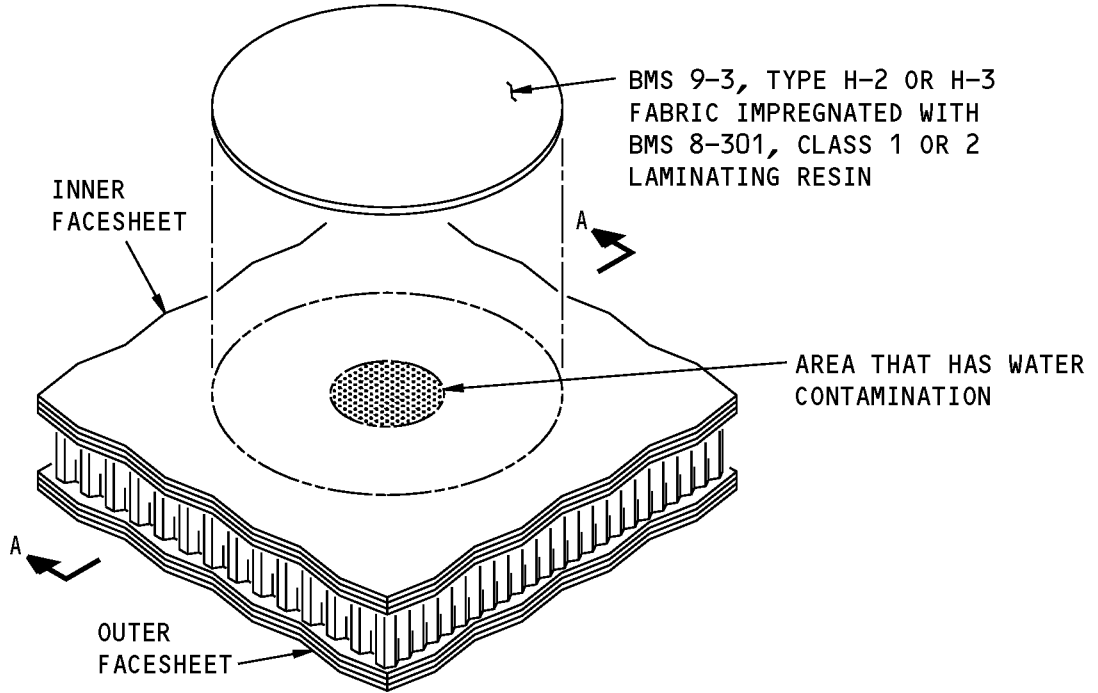
**WATER CONTAMINATION THAT IS AT A LIGHTNING DIVERTER STRIP INSERT LOCATION**

(B)



**Removal of the Water Contamination  
Figure 201 (Sheet 2 of 2)**

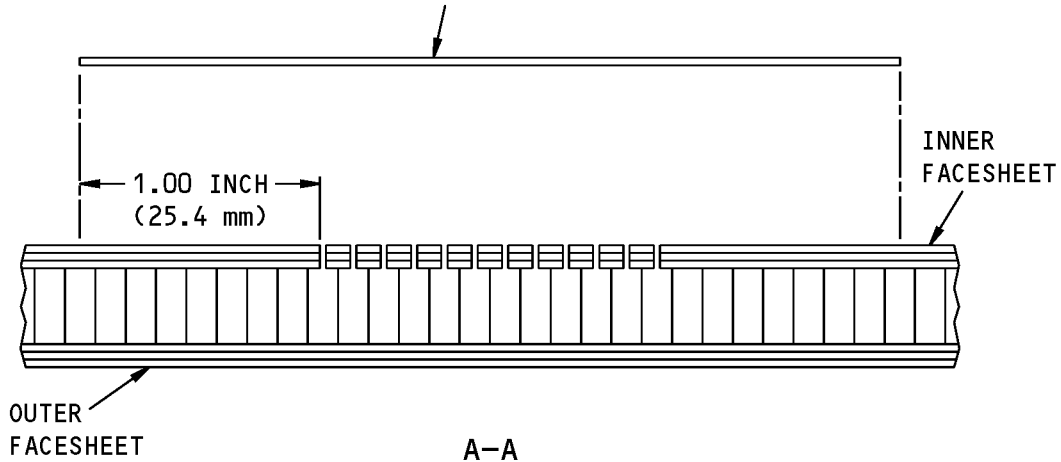
**STRUCTURAL REPAIR MANUAL**



WATER CONTAMINATION THAT IS NOT AT A LIGHTNING DIVERTER STRIP INSERT LOCATION

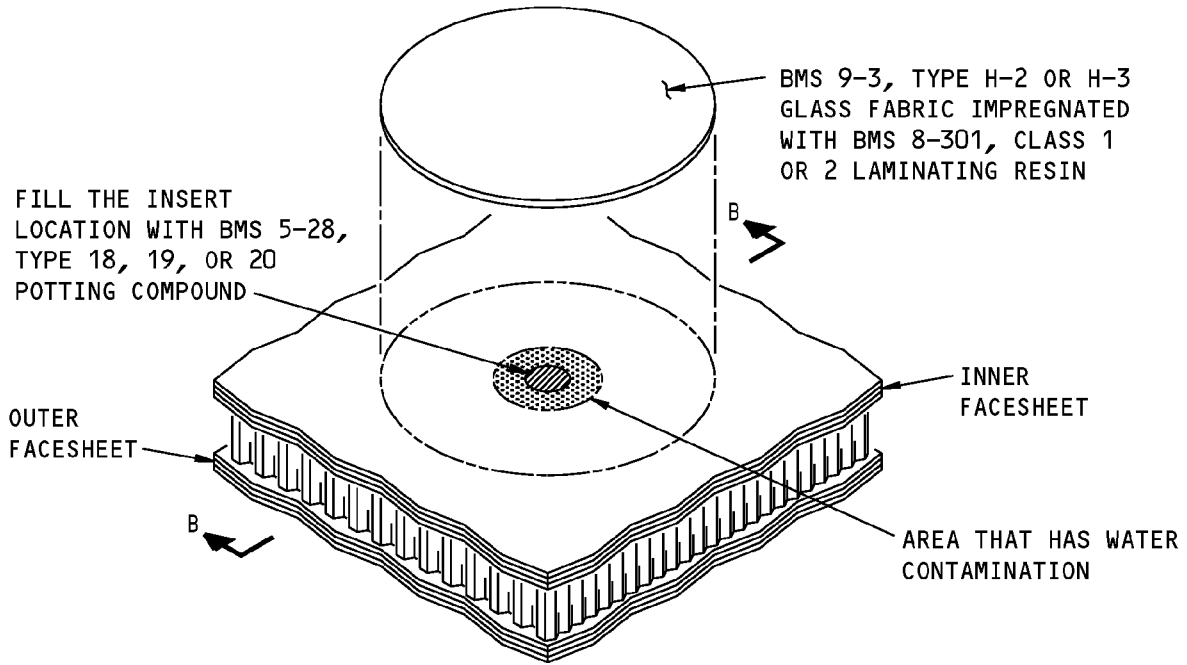
A

BMS 9-3, TYPE H-2 OR H-3 FABRIC IMPREGNATED WITH BMS 8-301, CLASS 1 OR 2 LAMINATING RESIN



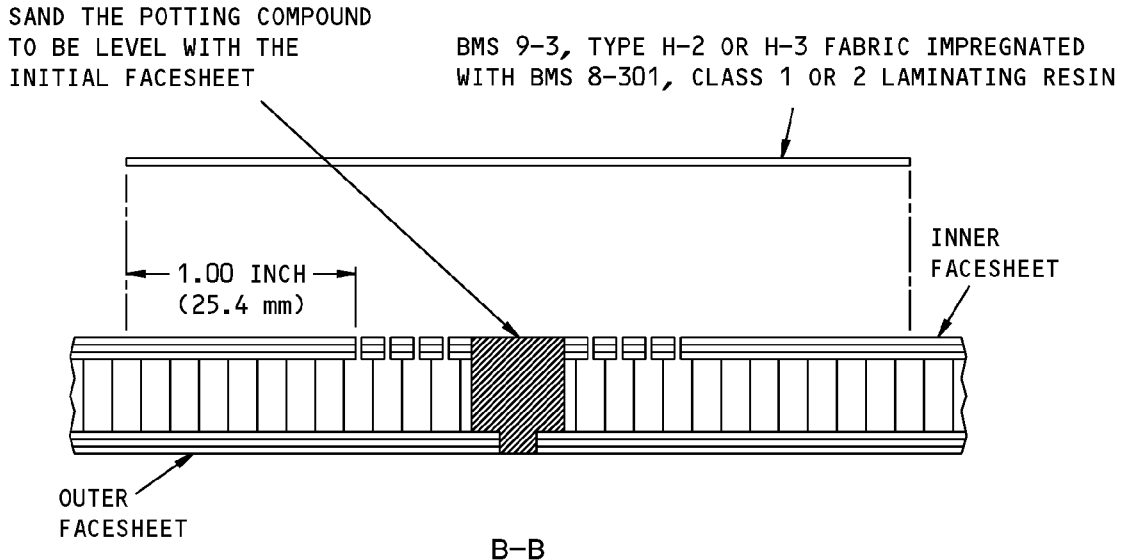
**Layout of the Repair - Wet Layup Materials**  
**Figure 202 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



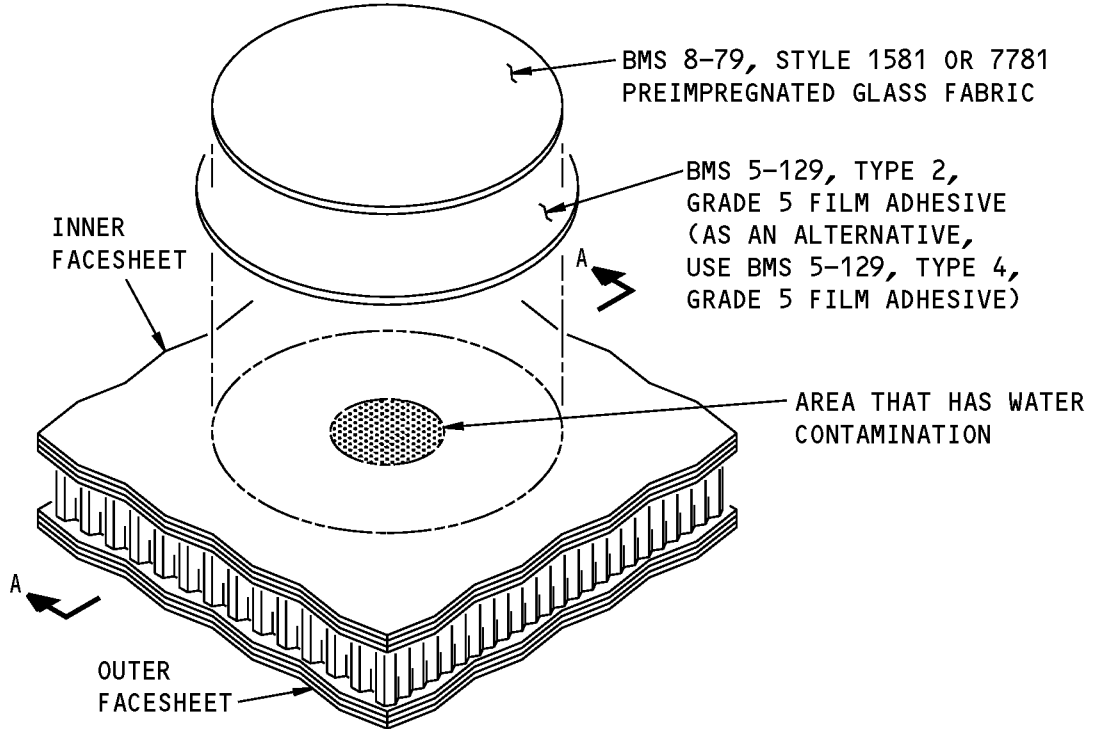
**WATER CONTAMINATION THAT IS AT A LIGHTNING DIVERTER STRIP INSERT LOCATION**

(B)



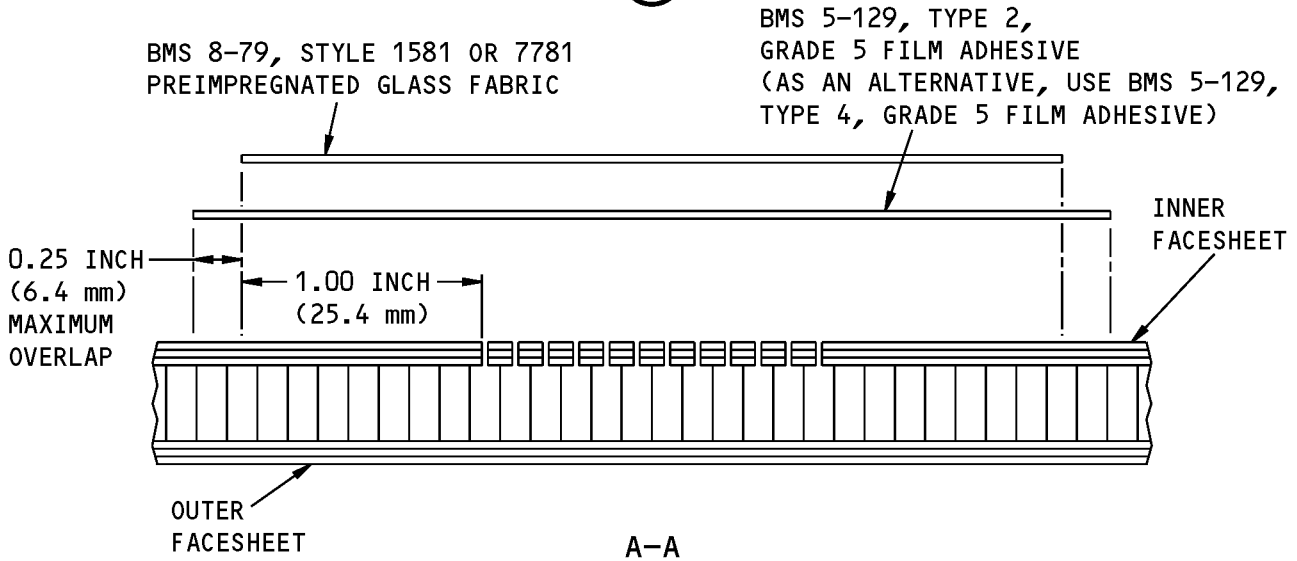
**Layout of the Repair - Wet Layup Materials  
Figure 202 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**



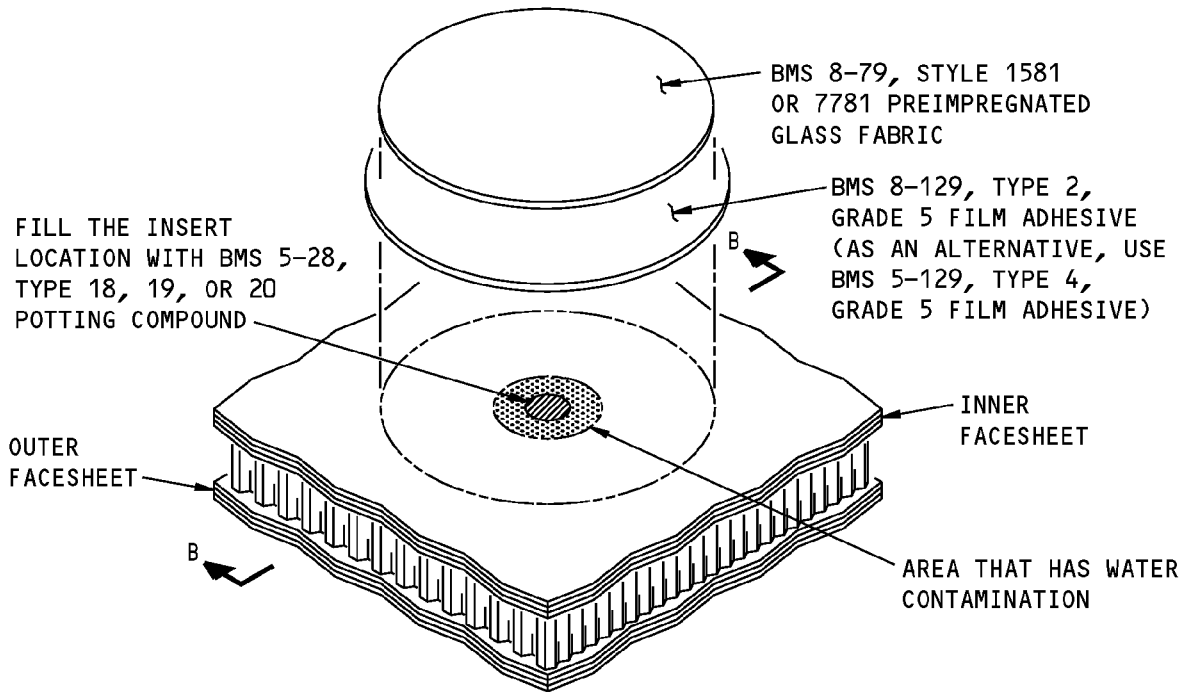
**WATER CONTAMINATION THAT IS NOT AT A  
LIGHTNING DIVERTER STRIP INSERT LOCATION**

(A)



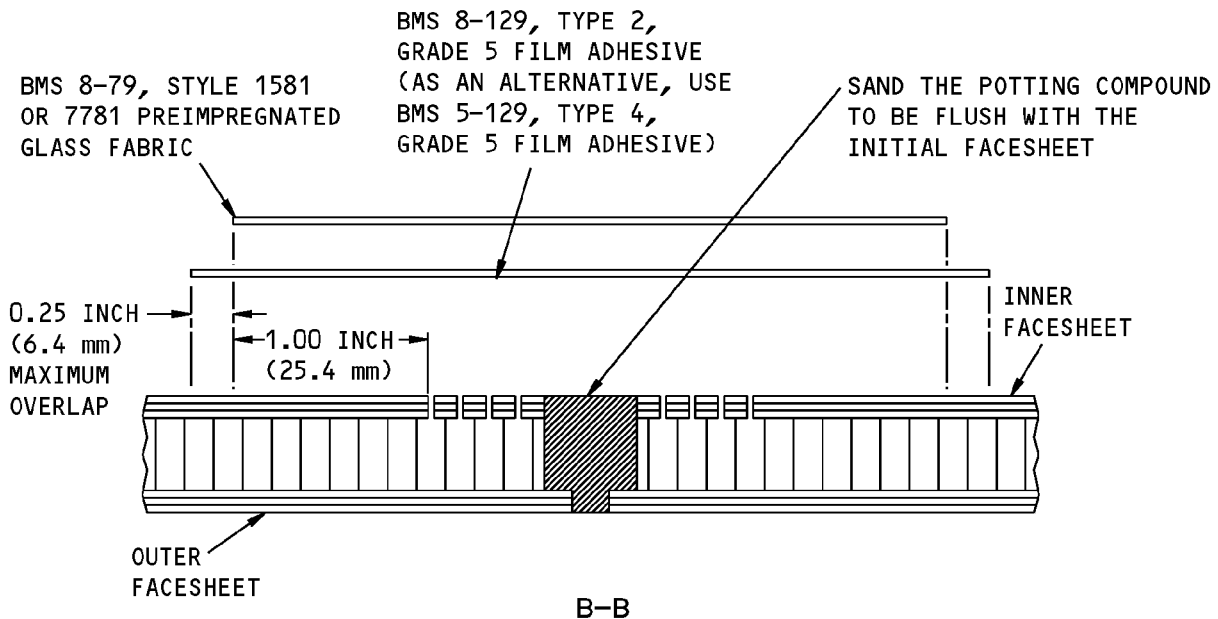
**Layout of the Repair - Preimpregnated Layup Materials  
Figure 203 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**WATER CONTAMINATION THAT IS AT A LIGHTNING DIVERTER STRIP INSERT LOCATION**

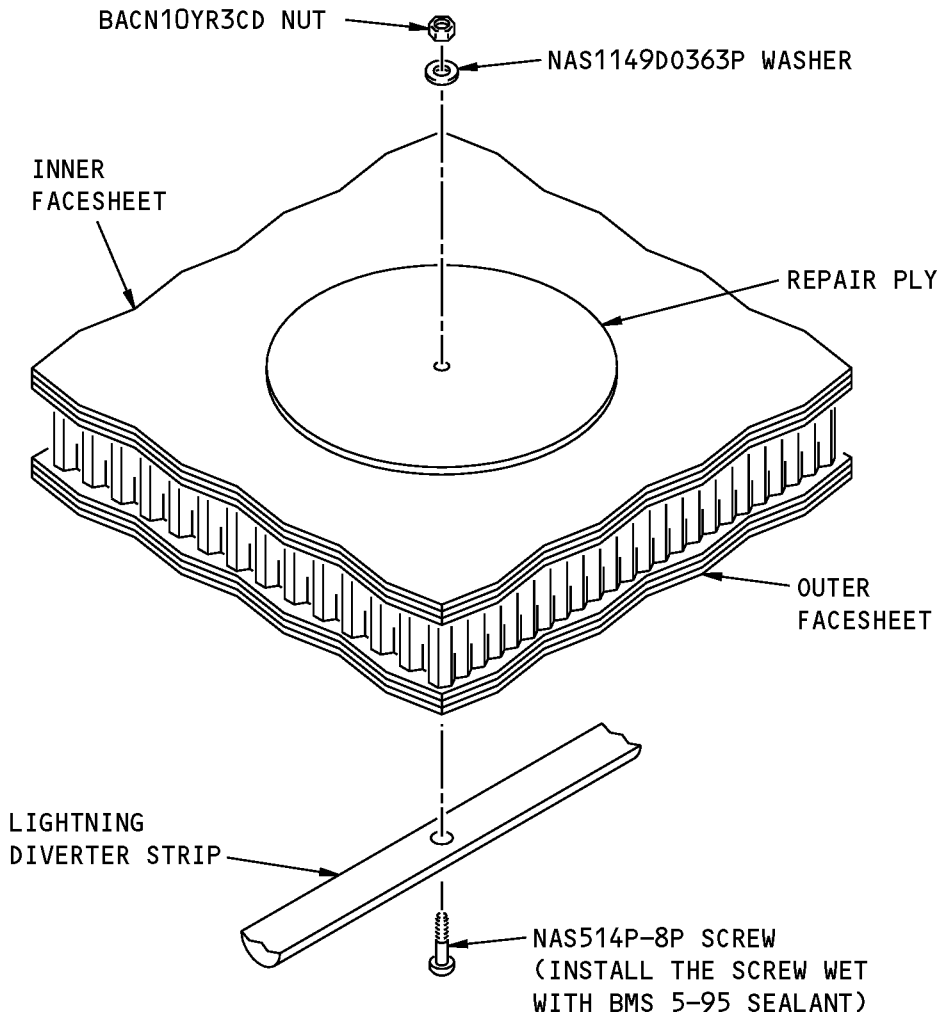
(B)



**Layout of the Repair - Preimpregnated Layup Materials  
Figure 203 (Sheet 2 of 2)**

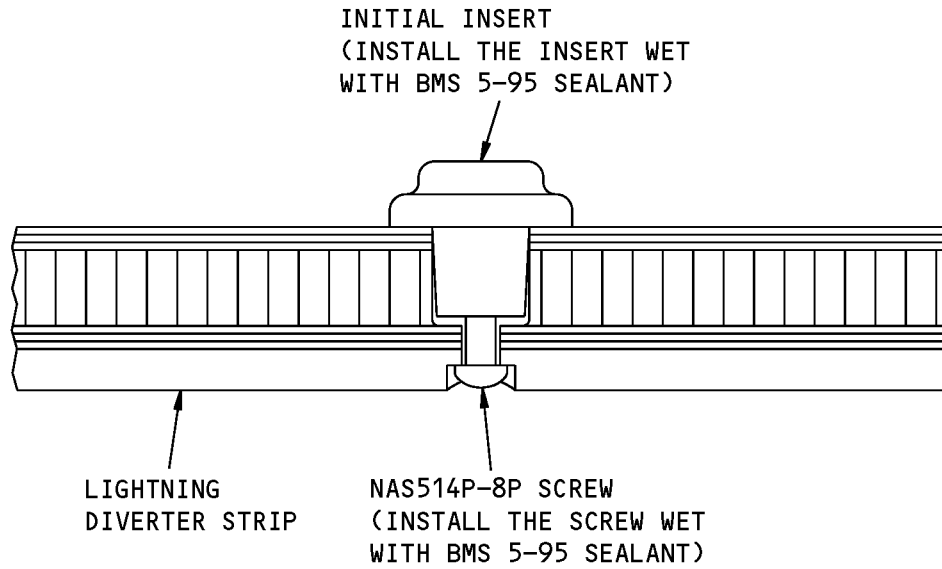


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STRUCTURAL REPAIR MANUAL**

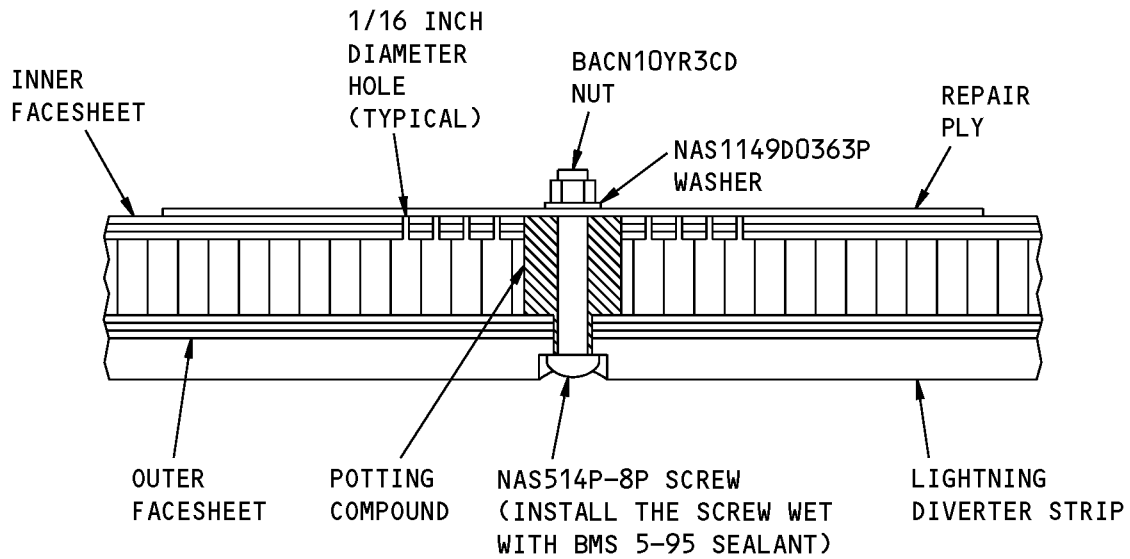


**Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip  
Figure 204 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**SECTION THROUGH THE RADOME BEFORE THE REPAIR**



**SECTION THROUGH THE RADOME WITH THE COMPLETED REPAIR**

**Installation of the Attachment Parts for the Repair at a Lightning Diverter Strip  
Figure 204 (Sheet 2 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**REPAIR 2 - REPAIR WITH PREIMPREGNATED LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET -  
250°F (121°C) CURE**

**1. Applicability**

- A. Repair 2 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose dome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-05 for repairs with preimpregnated layup materials that are applicable to the edgeband areas.
- B. Repair 2:
  - (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
  - (2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

**2. General**

- A. Before you do Repair 2, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 2 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. The materials necessary for Repair 2 are given in Table 201/REPAIR 2.

**Table 201:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 (As an alternative, use BMS 5-129, Type 4, Grade 5)

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS

**4. Repair Instructions**

- A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.
 

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 2 for the necessary taper for each ply of the initial facesheet.

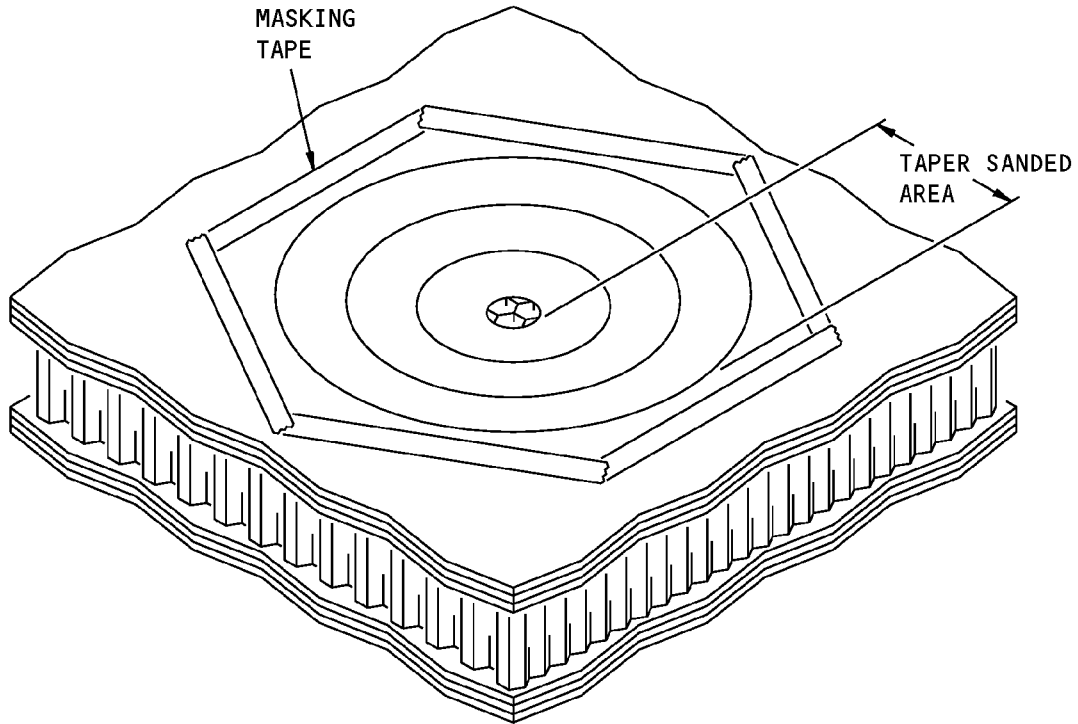


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## **STRUCTURAL REPAIR MANUAL**

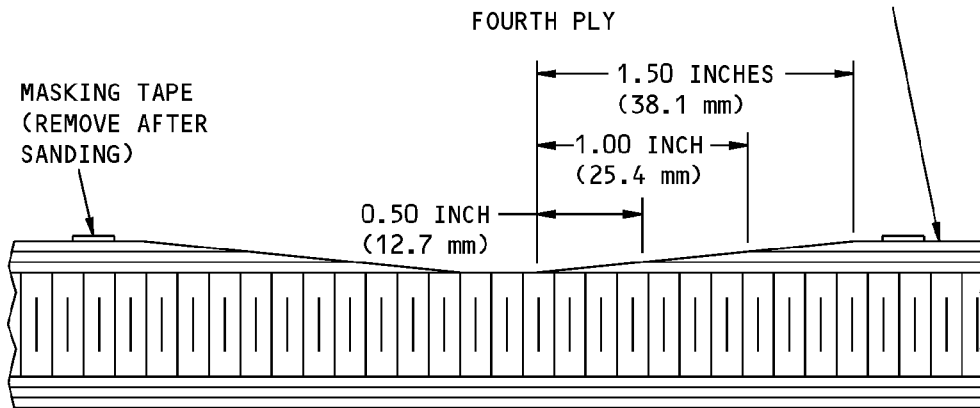
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL  
The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 2 for the layout of the repair parts.
- G. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.
- H. Apply the film adhesive and the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- I. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- J. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- K. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- L. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL
- M. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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STRUCTURAL REPAIR MANUAL**



**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 2.00 INCHES (50.8 mm) FOR THE FOURTH PLY



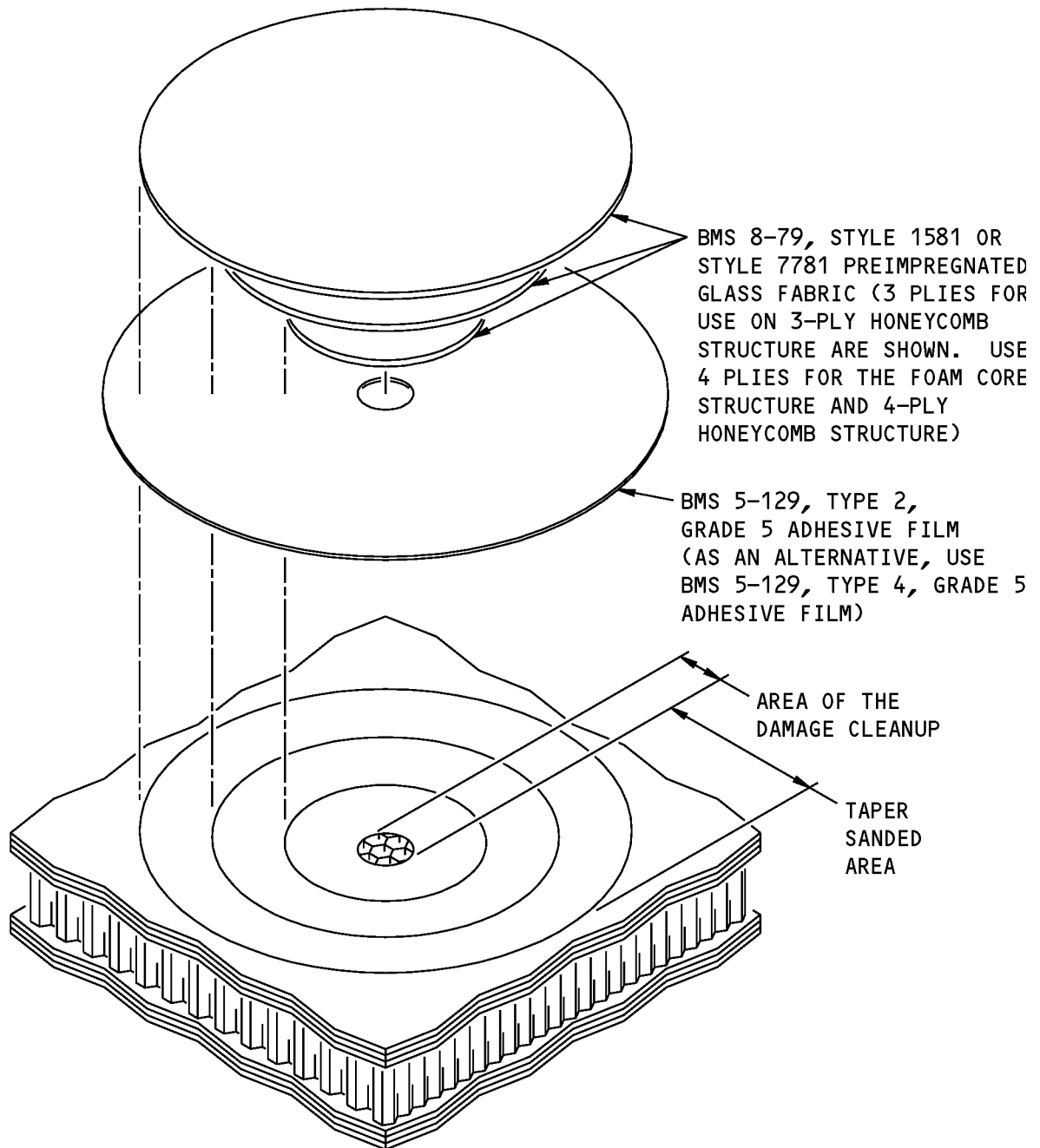
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL



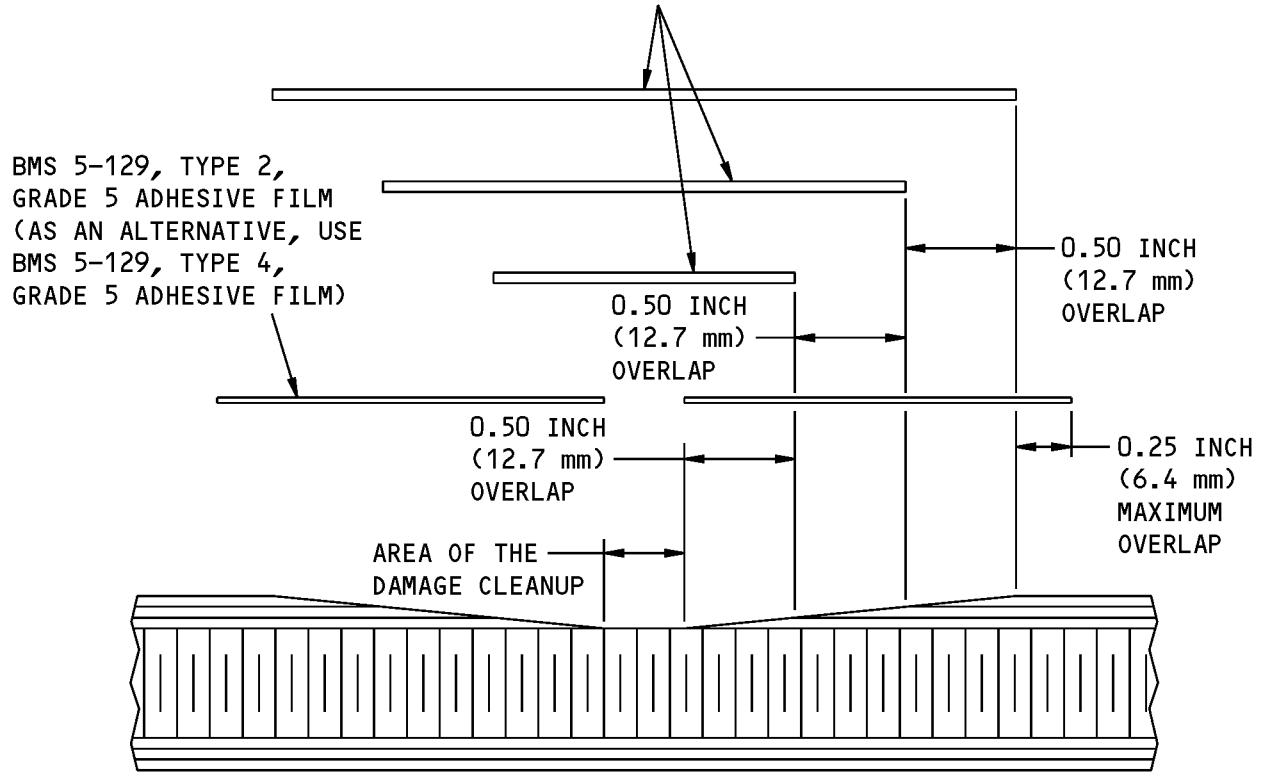
NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)

STRUCTURAL REPAIR MANUAL

BMS 8-79, STYLE 1581 OR SYTLE 7781  
PREIMPREGNATED GLASS FABRIC (3 PLYS  
FOR USE ON 3-PLY HONEYCOMB STRUCTURE  
ARE SHOWN. FOR THE FOAM CORE STRUCTURE  
AND 4-PLY HONEYCOMB STRUCTURE, USE 4  
PLIES WITH A 0.50 INCH (12.7 mm) OVERLAP  
FOR THE FOURTH PLY)



SECTION THROUGH THE CENTER OF THE REPAIR

Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)



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## STRUCTURAL REPAIR MANUAL

### REPAIR 3 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - ROOM TEMPERATURE CURE

#### 1. Applicability

- A. Repair 3 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 3 is applicable to damage cleanup that is 15 inches (381.0 mm) or less in diameter
  - (1) Repair 4 or Repair 5 are alternatives to Repair 3 if the damage cleanup is larger than 15 inches (381.0 mm) in diameter.
- C. Repair 3 is applicable to only one damage area on the nose radome.
  - (1) Repair 4 or Repair 5 are alternatives to Repair 3 if there is more than one damage area.
- D. Repair 3 uses wet layup materials that are cured at room temperature.

#### 2. General

- A. Before you do Repair 3, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 3 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. When you do Repair 3, you must:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 3
  - (2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 3
- D. The materials necessary for Repair 3 are given in Table 201/REPAIR 3.

**Table 201:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 2

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

#### 4. Repair Instructions

- A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL





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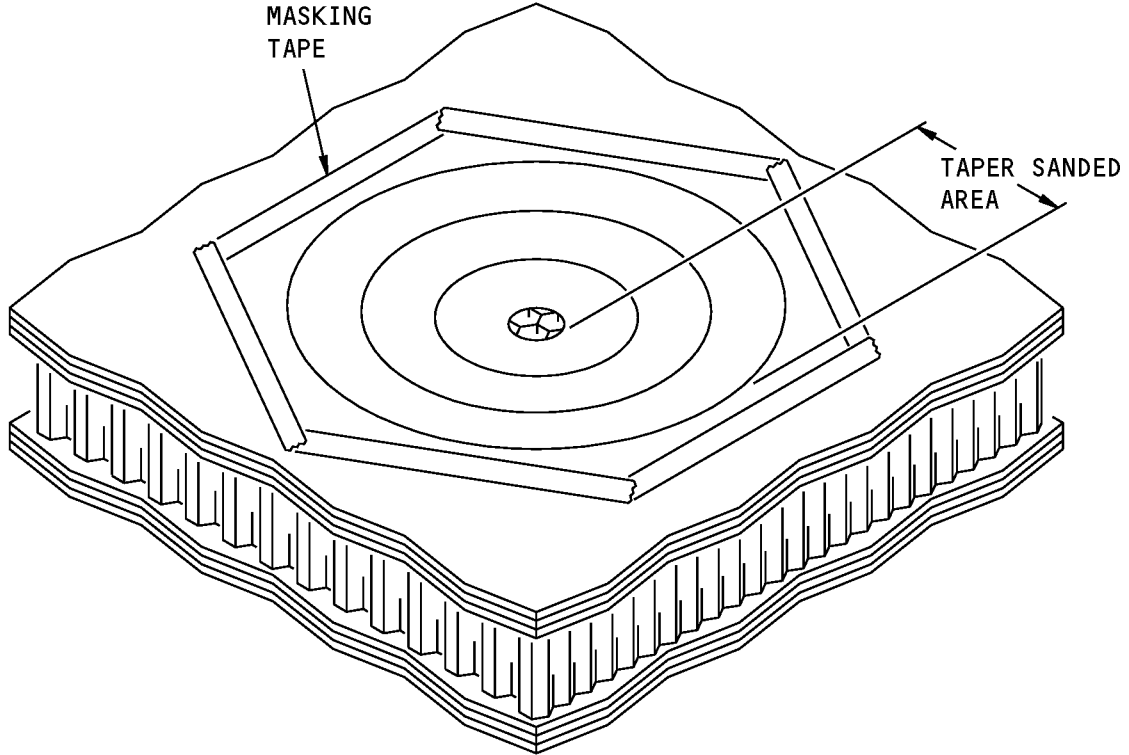
## STRUCTURAL REPAIR MANUAL

- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

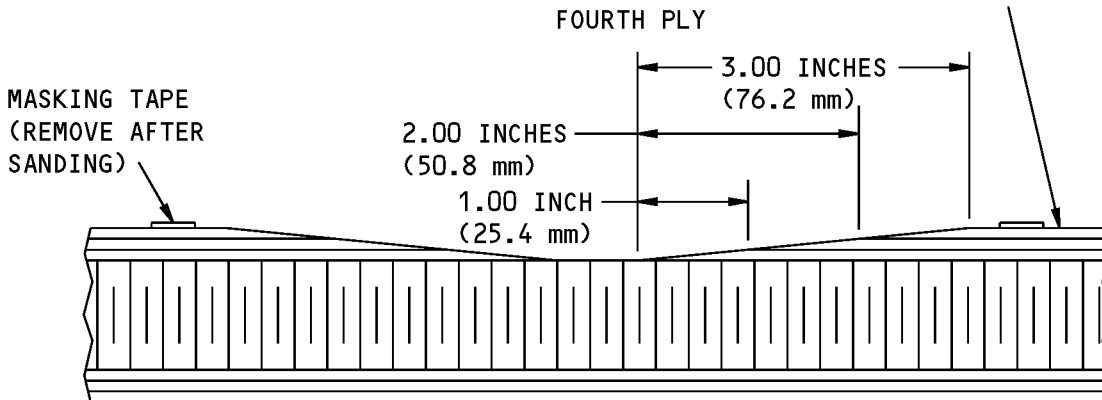
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 3 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 3 for the layout of the repair parts.
- G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- K. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL
- L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



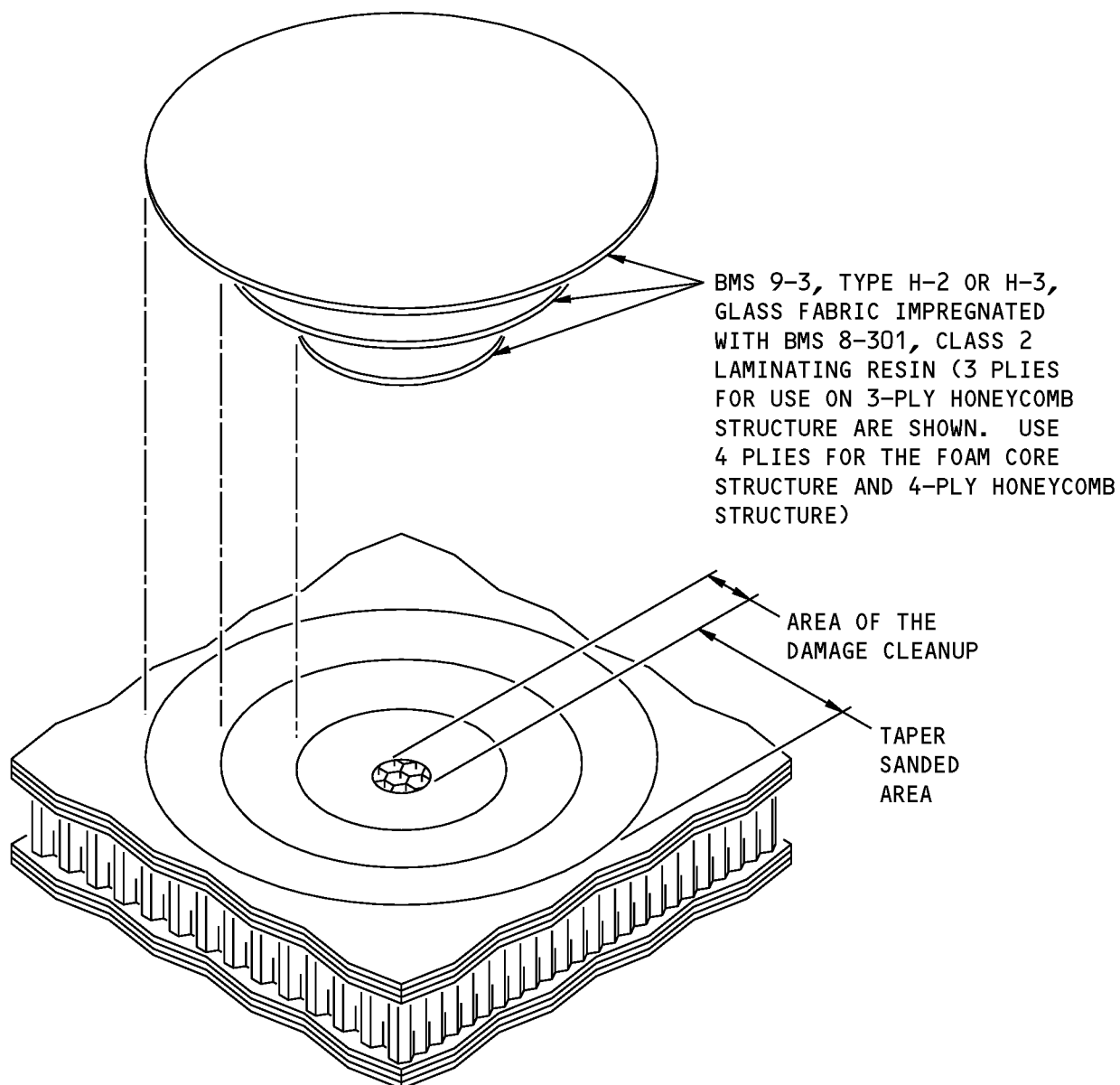
**NOTES**

**SECTION THROUGH THE CENTER OF THE REPAIR**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL



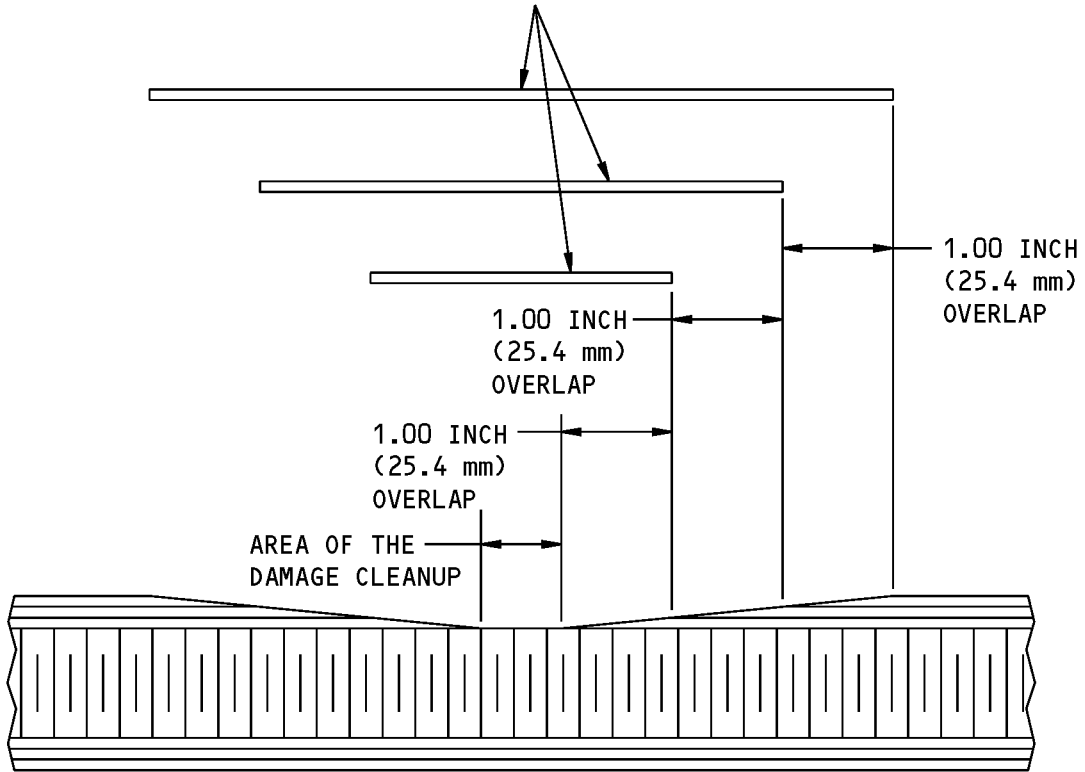
NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)**



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**STRUCTURAL REPAIR MANUAL**

**5. Inspection and Replacement Instructions**

- A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
  - (1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
- B. Replace Repair 3 with a permanent repair no more than 4000 flight cycles after installation.



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# STRUCTURAL REPAIR MANUAL

## REPAIR 4 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - 150°F (66°C) CURE

### 1. Applicability

- A. Repair 4 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 4 uses wet layup materials that are cured at 150°F (66°C).
- C. Refer to Table 201/REPAIR 4 for the limits applicable to Repair 4 for the diameter of the damage cleanup and the number of repair areas.

### 2. General

- A. Before you do Repair 4, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 4 gives instructions for permanent and time-limited repairs. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. When you do a time-limited repair as given in Table 201/REPAIR 4, do the steps that follow:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 4
  - (2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 4
- D. The repair that follows is an alternative to Repair 4:
  - (1) Repair 5 is a permanent repair with no limits on the diameter of the damage cleanup and the number of repair areas.

**Table 201:**

REPAIR LIMITS FOR REPAIR 4		
REPAIR TYPE	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP IN INCHES (MM)	LIMIT ON THE NUMBER OF REPAIRS
Permanent	4.0 (101.6)	There is no limit on the number of repairs of this type
Permanent	30.0 (762.0)	Only one repair of this type is permitted
Time-Limited	30.0 (762.0)	There is no limit on the number of repairs of this type
Time-Limited	50.0 (1270.0)	Only one repair of this type is permitted

- E. The materials necessary for Repair 4 are given in Table 202/REPAIR 4.

**Table 202:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14



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STRUCTURAL REPAIR MANUAL**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Laminating resin	BMS 8-301, Class 2

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-04, REPAIR GENERAL	Repair Procedures for Wet Layup Materials
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

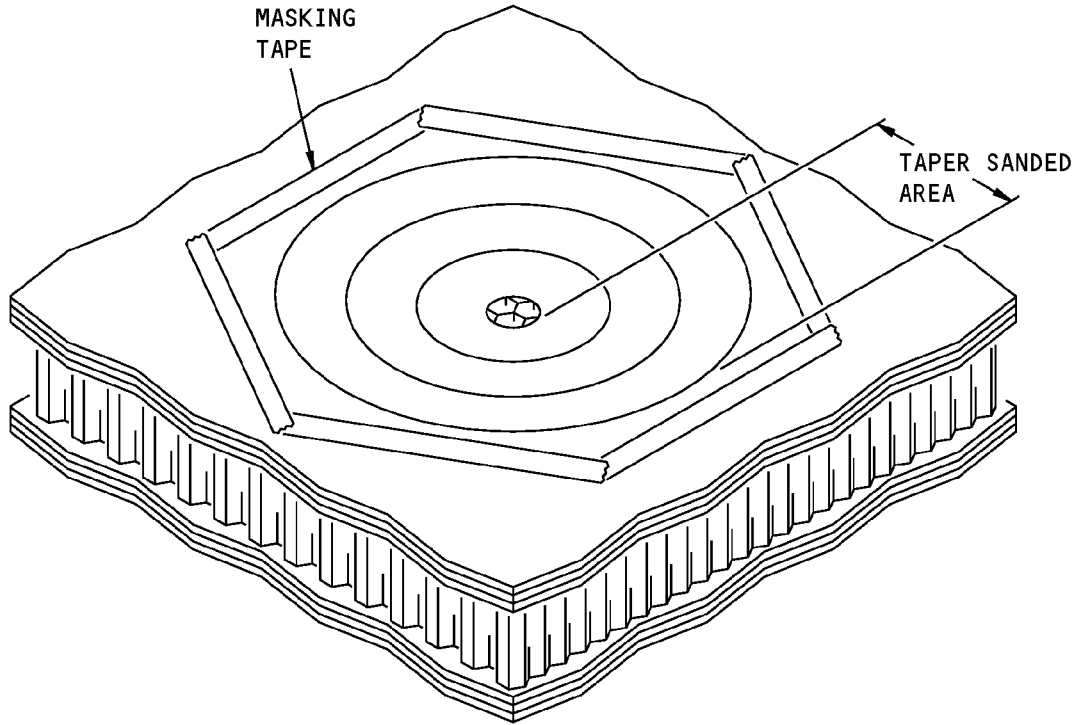
**4. Repair Instructions**

- A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.  
**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 4 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 4 for the layout of the repair parts.
- G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- K. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL
- L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**5. Inspection and Replacement Instructions**

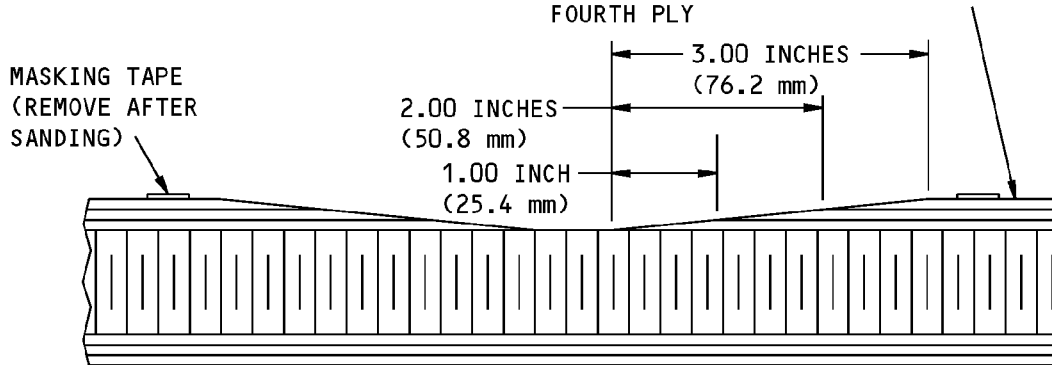
- A. If Repair 4 is a time-limited repair as given in Table 201/REPAIR 4, do the steps that follow:
  - (1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
    - (a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
  - (2) Replace Repair 4 with a permanent repair no more than 4000 flight cycles after installation.

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STRUCTURAL REPAIR MANUAL**



**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



**SECTION THROUGH THE CENTER OF THE REPAIR**

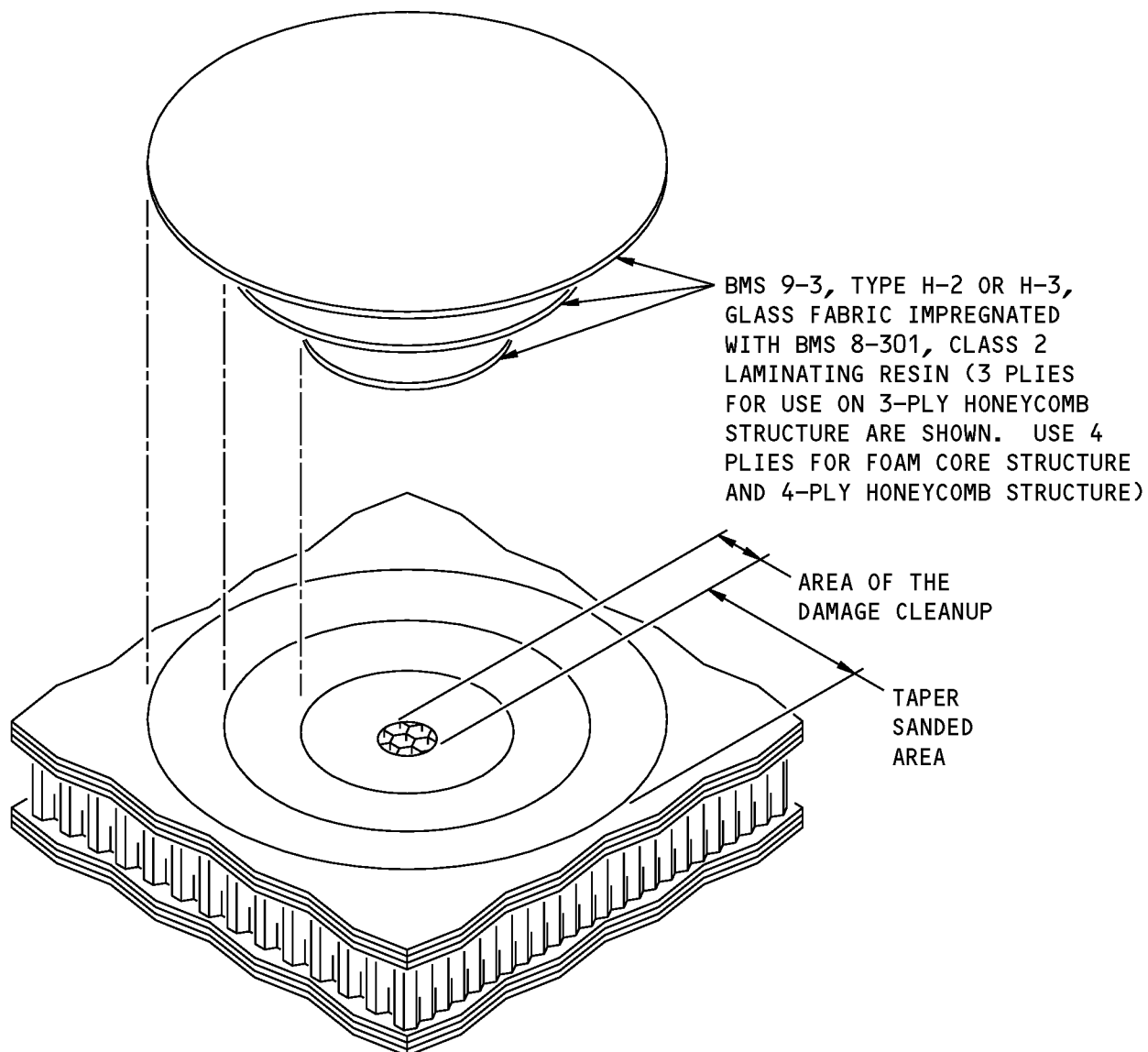
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**



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STRUCTURAL REPAIR MANUAL



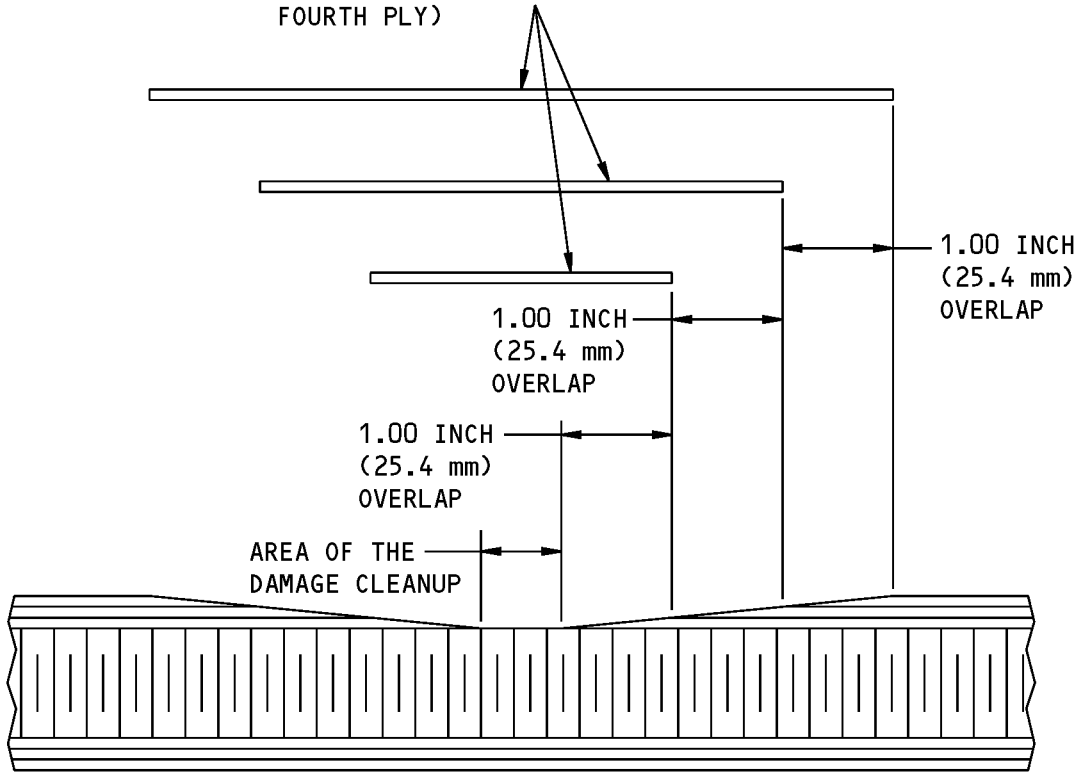
NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 5 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET - 200°F (93°C) CURE

#### 1. Applicability

- A. Repair 5 is applicable to:
- (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 5:
- (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
  - (2) Uses wet layup materials that are cured at 200°F (93°C).

#### 2. General

- A. Before you do Repair 5, refer to Paragraph 4./REPAIR GENERAL to:
- (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 5 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. The materials necessary for Repair 5 are given in Table 201/REPAIR 5.

**Table 201:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 1

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS

#### 4. Repair Instructions

- A. Remove the damaged facesheet as given in Paragraph 5.A./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.
- NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 5 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.

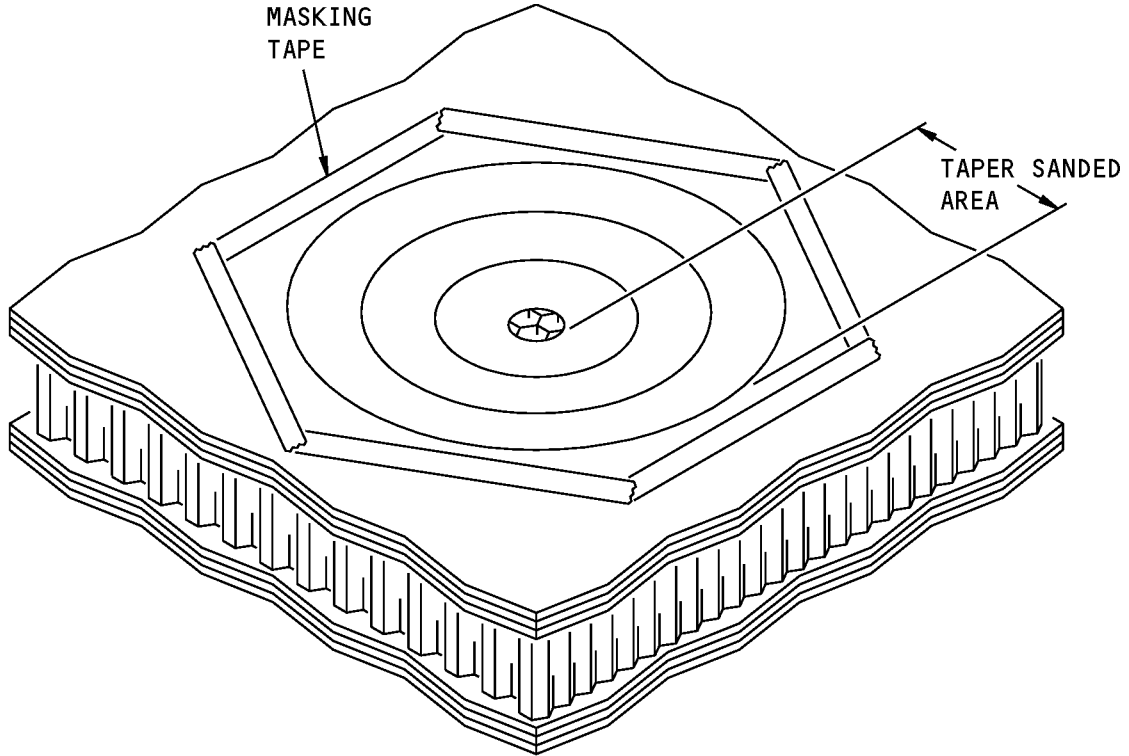


**737-800**

## **STRUCTURAL REPAIR MANUAL**

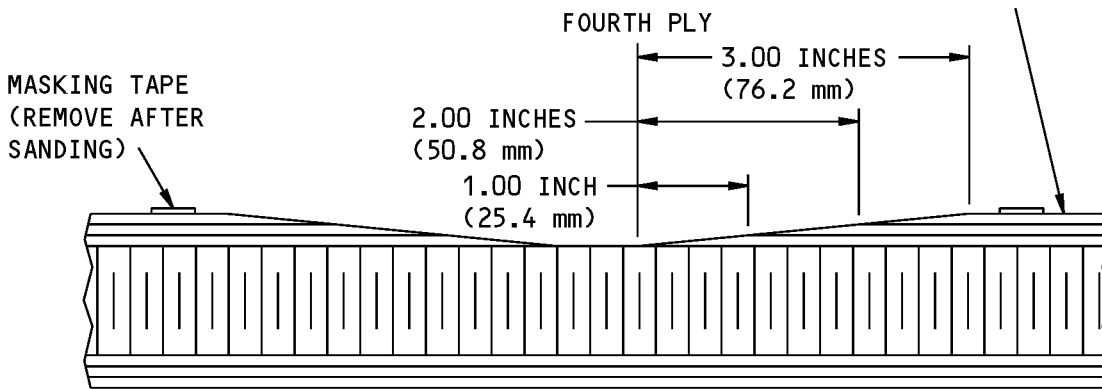
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 5 for the layout of the repair parts.
- G. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- H. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
  - I. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- J. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- K. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL
- L. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



**CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED**

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



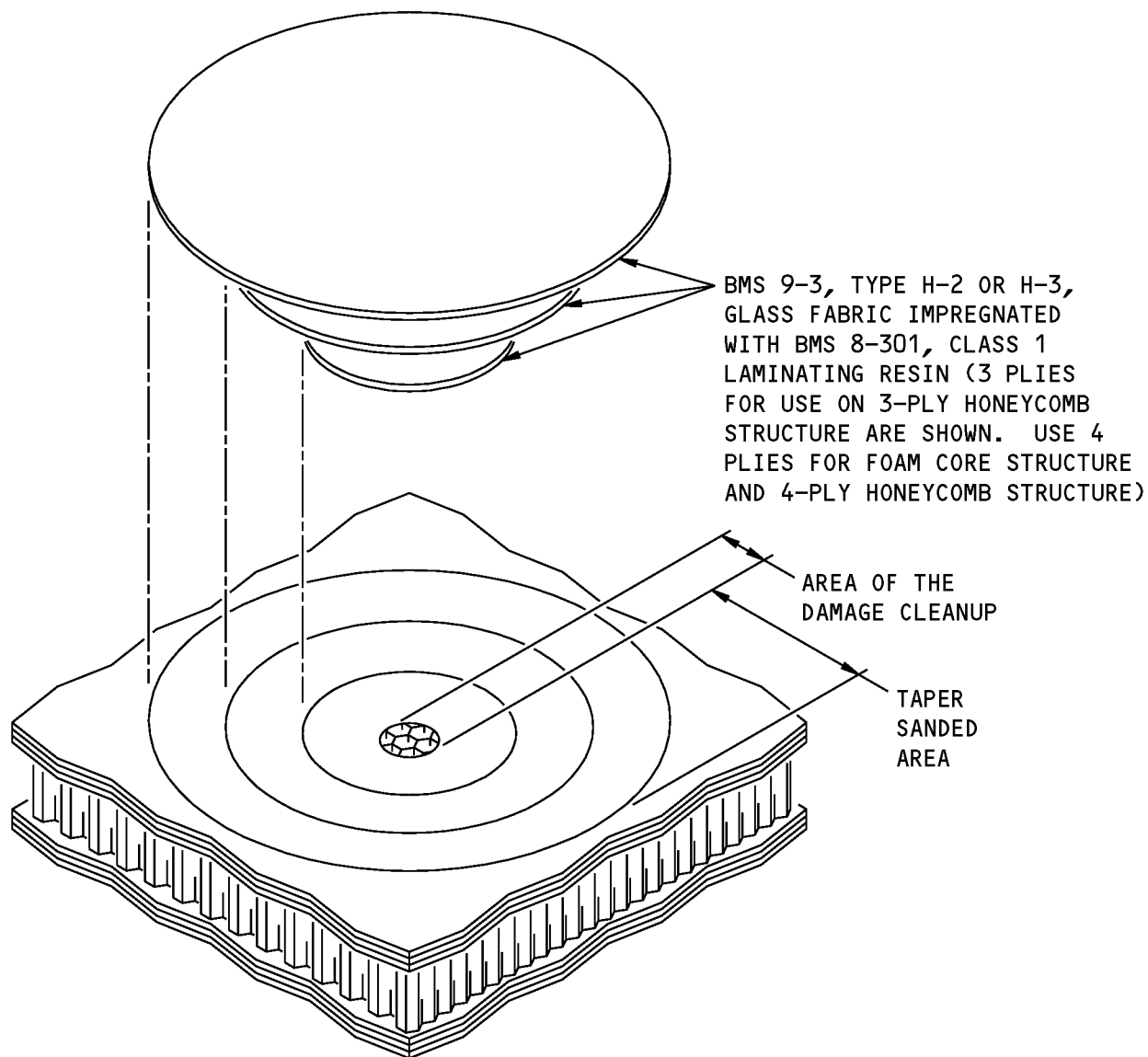
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL



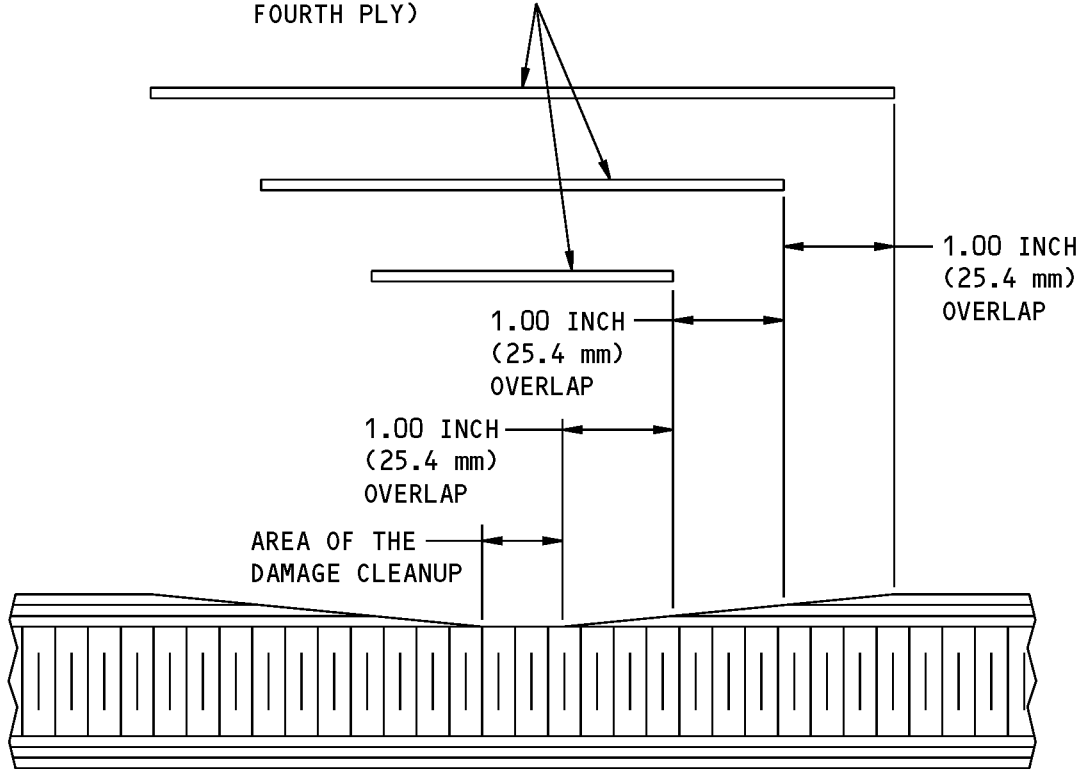
NOTES

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)

STRUCTURAL REPAIR MANUAL

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 1 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



SECTION THROUGH THE CENTER OF THE REPAIR

Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)



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## STRUCTURAL REPAIR MANUAL

### REPAIR 6 - REPAIR WITH PREIMPREGNATED LAYUP MATERIAL FOR DAMAGE TO ONE FACESHEET AND THE CORE - 250°F (121°C) CURE

#### 1. Applicability

A. Repair 6 is applicable to:

- (1) Nose radomes made of honeycomb core structure or foam core structure
- (2) Damage to one facesheet and the core of the nose radome
- (3) Damage that is away from the edgeband of the radome.

(a) Refer to 51-70-05 for repairs with preimpregnated layup materials that are applicable to the edgeband areas.

B. Repair 6:

- (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
- (2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

#### 2. General

A. Before you do Repair 6, refer to Paragraph 4./REPAIR GENERAL to:

- (1) Find the limits of the damage
- (2) Make a decision on the applicable repair option.

B. Repair 6 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 6 are given in Table 201/REPAIR 6.

**Table 201:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129 Type 4, Grade 5
Potting Compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20. Use as an alternative to BMS 5-129, Type 2 Grade 5 film adhesive where the edges of the repair core touches the initial core
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS

#### 4. Repair Instructions

A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL





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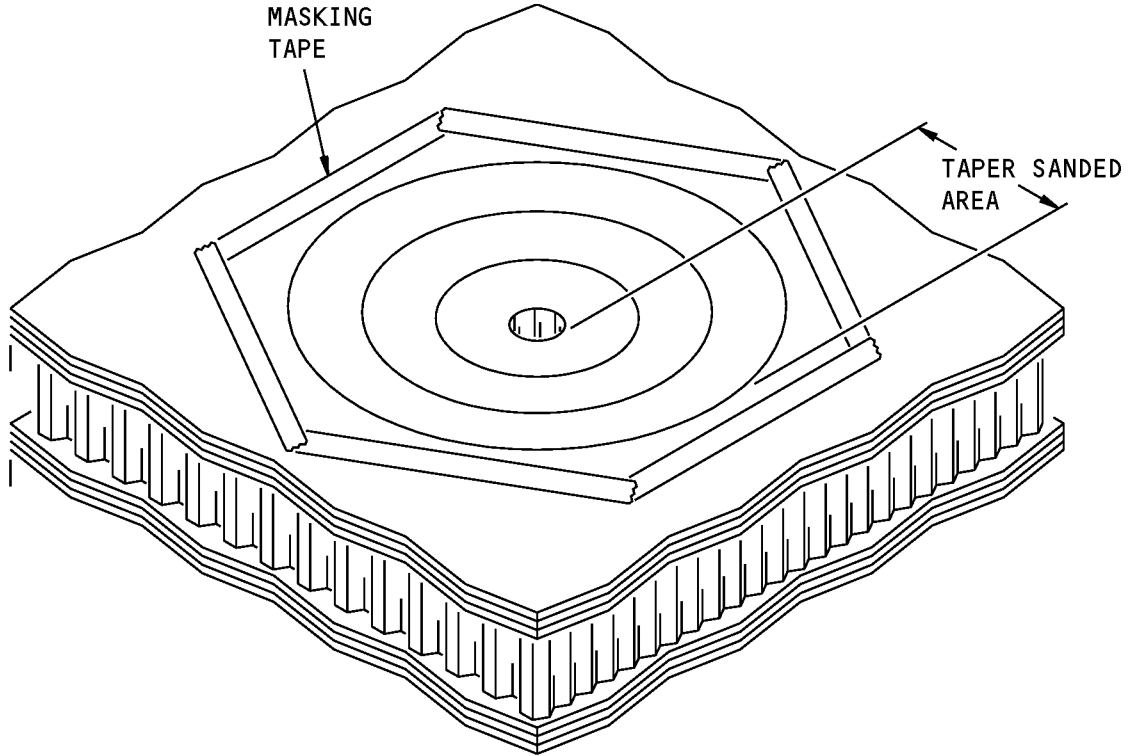
## STRUCTURAL REPAIR MANUAL

- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

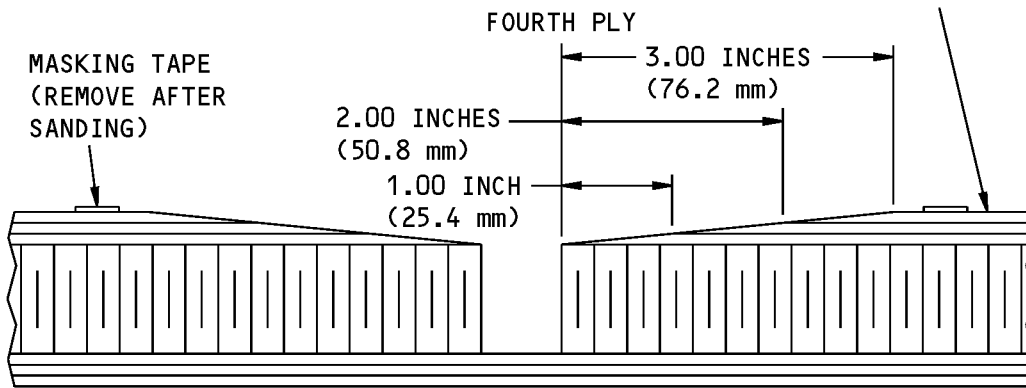
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 6 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.G./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Apply one layer of film adhesive to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL
- I. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- J. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- K. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- L. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- M. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL
- N. Sand the repair core to be smooth with the outer surface of the facesheet.
- O. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- P. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 6 for the layout of the repair parts.
- Q. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.
- R. Apply the film adhesive and the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- S. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- T. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- U. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- V. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- W. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 2.00 INCHES (50.8 mm) FOR THE FOURTH PLY



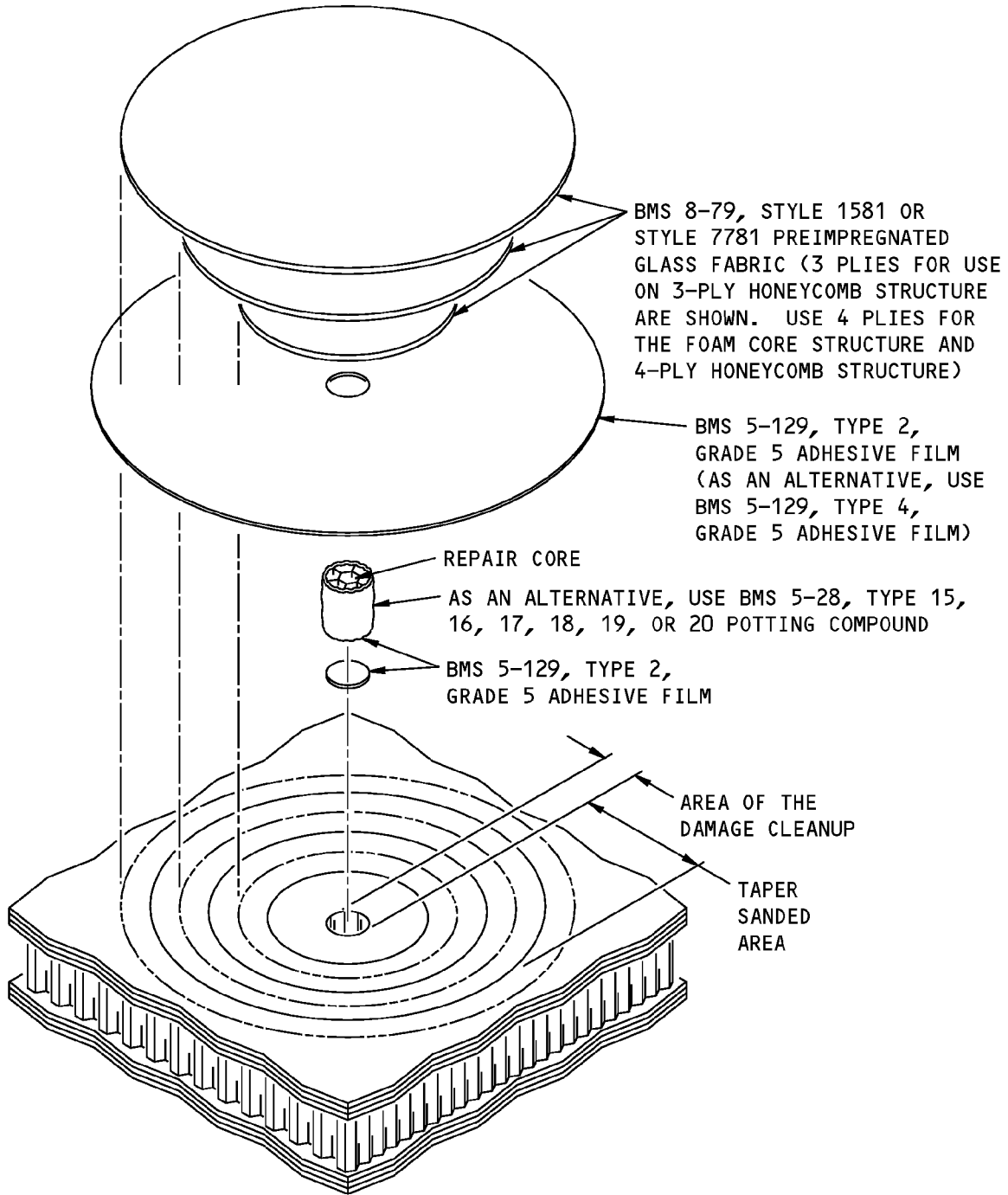
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**



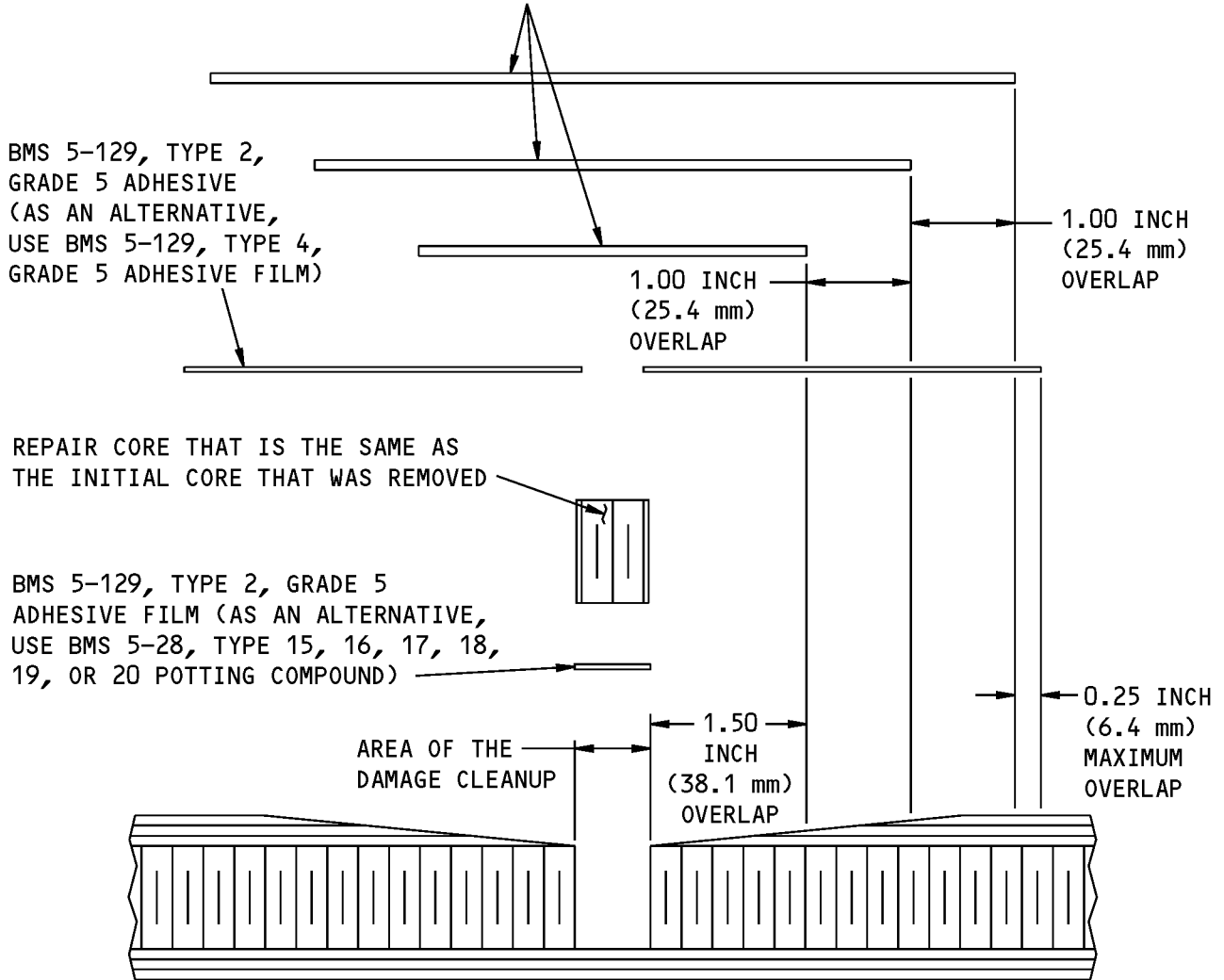
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**

BMS 8-79, STYLE 1581 OR STYLE 7781 PREIMPREGNATED GLASS FABRIC (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



SECTION THROUGH THE CENTER OF THE REPAIR

Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)



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## STRUCTURAL REPAIR MANUAL

### REPAIR 7 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE - ROOM TEMPERATURE CURE

#### 1. Applicability

- A. Repair 7 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 7 is applicable to damage cleanup that is 15 inches (381.0 mm) or less in diameter.
  - (1) Repair 8 or Repair 9 are alternatives to Repair 7 if the damage cleanup is larger than 15 inches (381.0 mm) in diameter.
- C. Repair 7 is applicable to only one damage area on the radome.
  - (1) Repair 8 or Repair 9 are alternatives to Repair 7 if there is more than one damage area.
- D. Repair 7 uses wet layup materials that are cured at room temperature.

#### 2. General

- A. Before you do Repair 7, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 7 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. When you do Repair 7, you must:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 7
  - (2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 7
- D. The materials necessary for Repair 7 are given in Table 201/REPAIR 7.

**Table 201:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material



## 737-800 STRUCTURAL REPAIR MANUAL

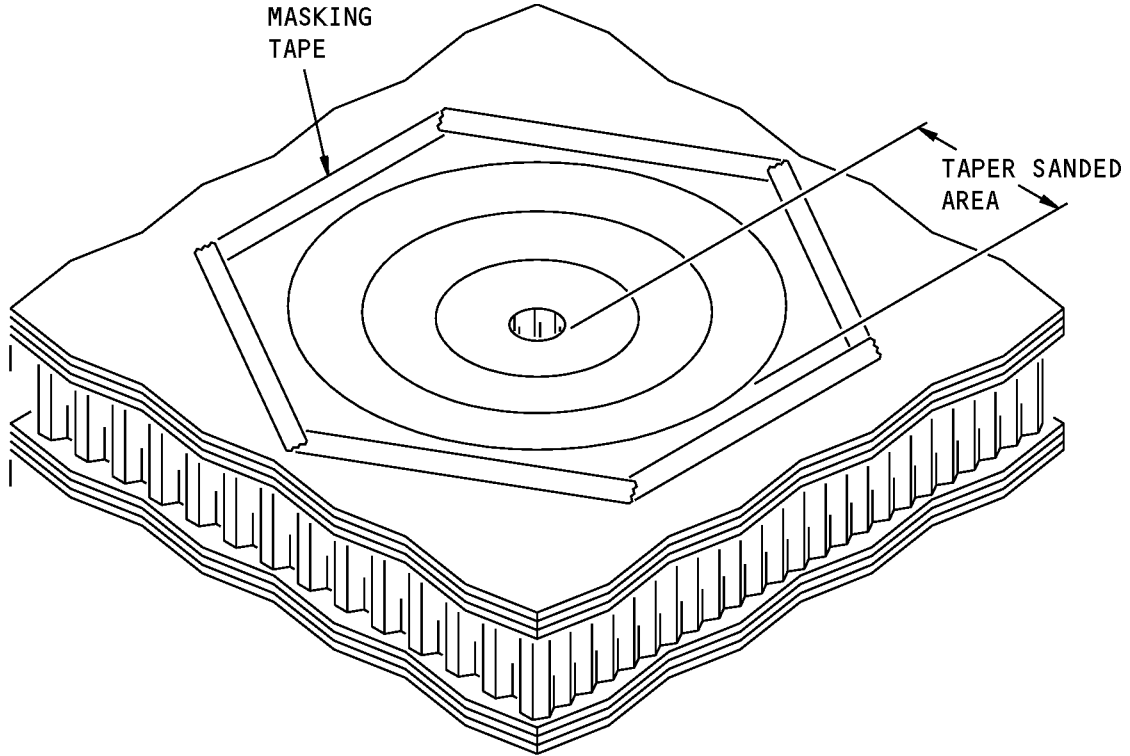
### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

### 4. Repair Instructions

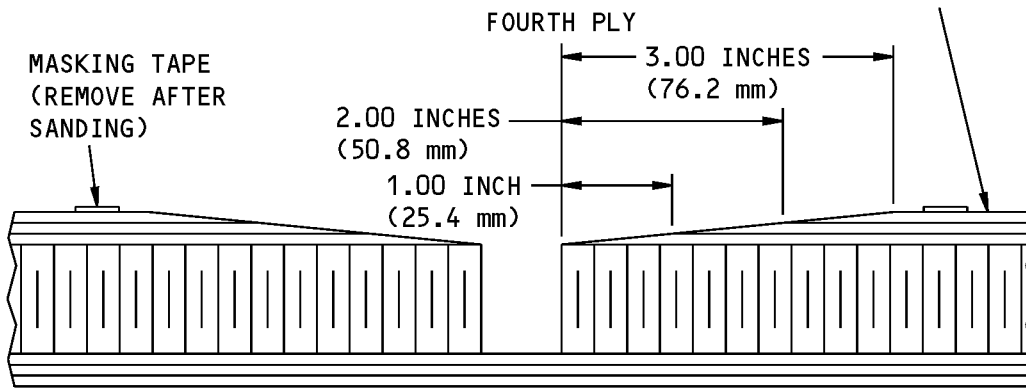
- A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.  
**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 7 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 7 for the layout of the repair parts.
- I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL
- J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL
- O. Sand the repair core to be smooth with the outer surface of the facesheet.
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



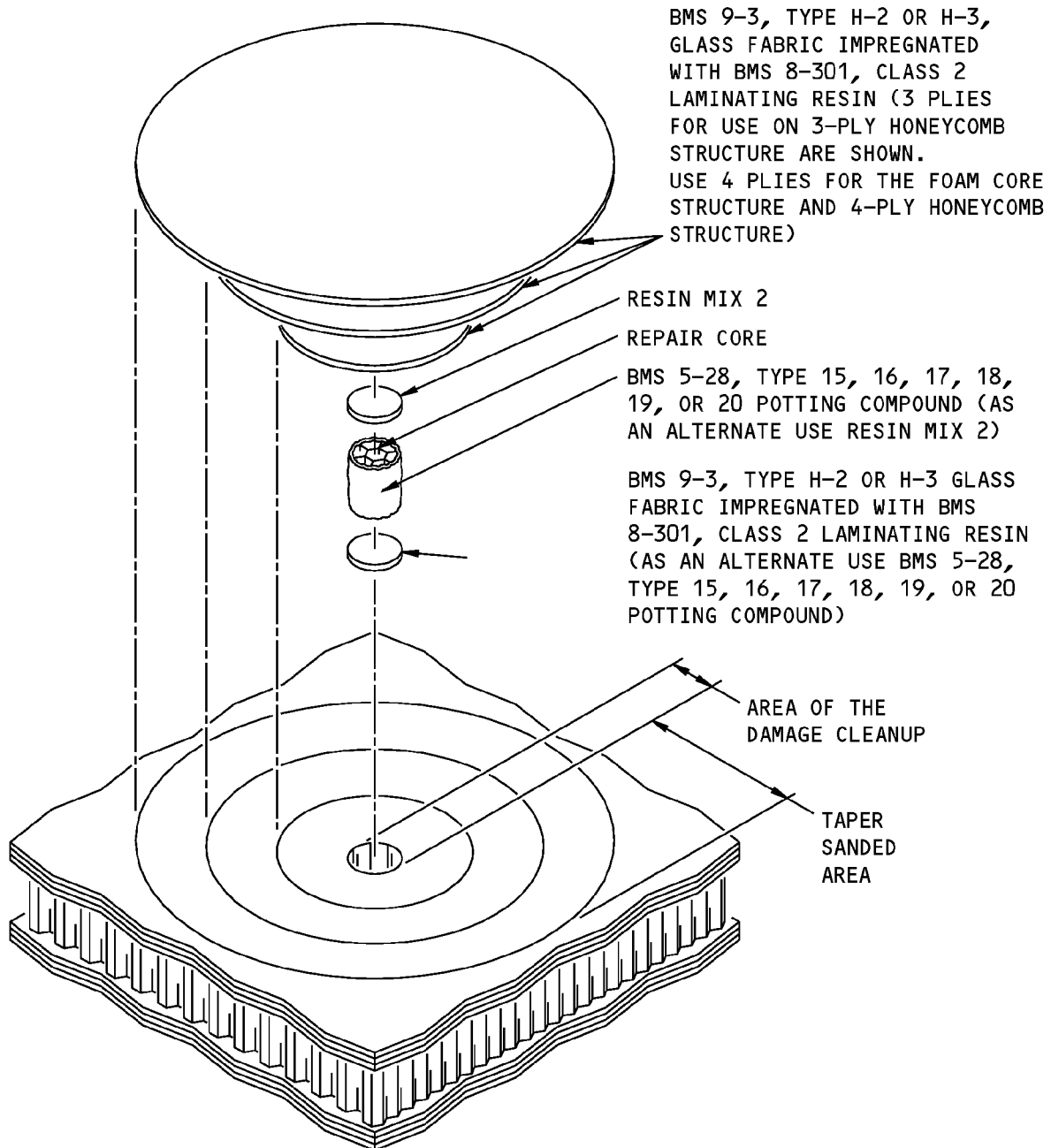
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTES**

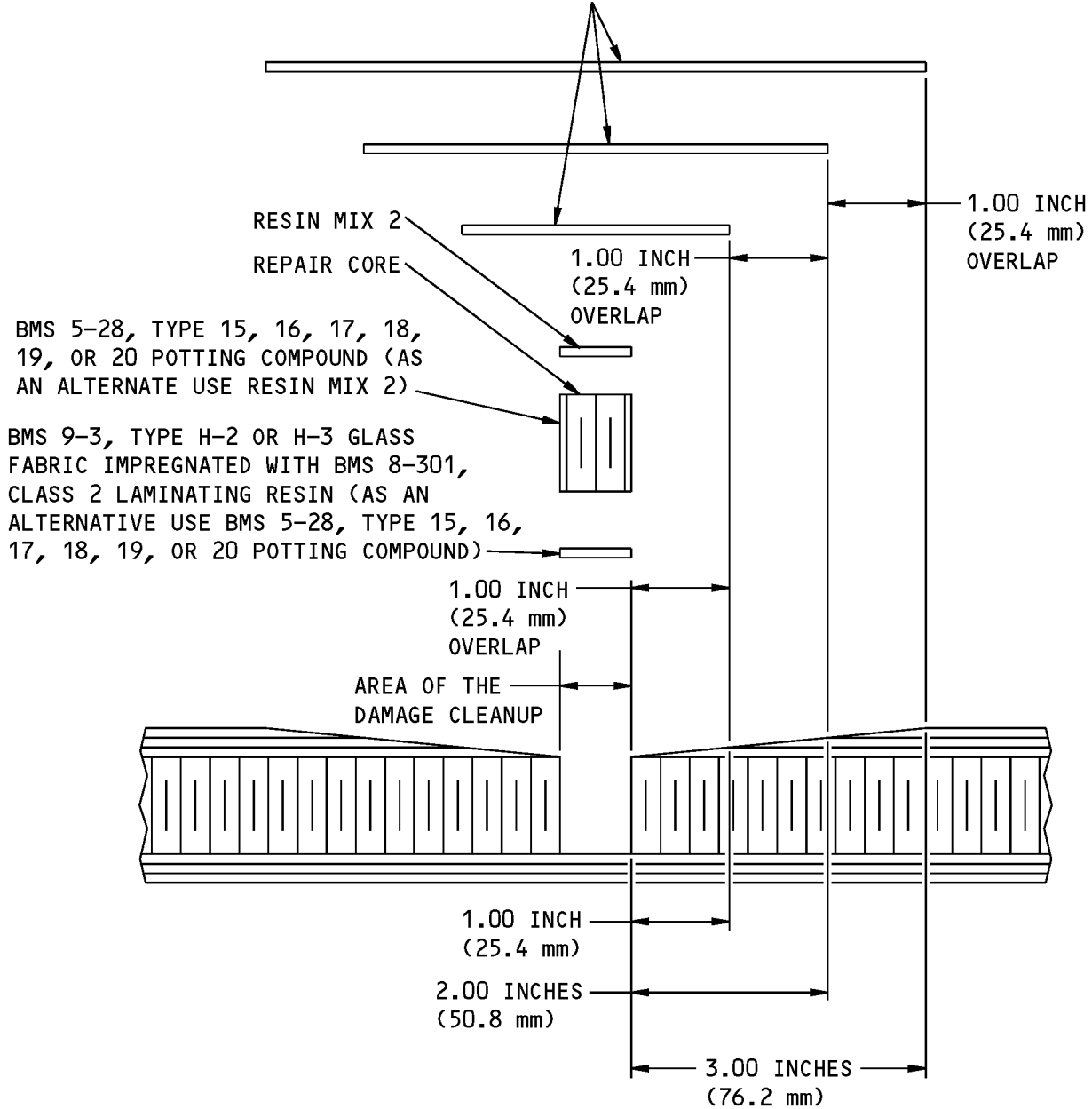
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)**



**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection and Replacement Instructions

- A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
  - (1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
- B. Replace Repair 7 with a permanent repair no more than 4000 flight cycles after installation.



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STRUCTURAL REPAIR MANUAL**

**REPAIR 8 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE -  
150°F (66°C) CURE**

**1. Applicability**

- A. Repair 8 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 8 uses wet layup materials that are cured at 150°F (66°C).
- C. Refer to Table 201/REPAIR 8 for the limits on Repair 8 for the diameter of the damage cleanup and the number of repair areas.

**Table 201:**

<b>REPAIR LIMITS FOR REPAIR 8</b>		
<b>REPAIR TYPE</b>	<b>MAXIMUM DIAMETER OF THE DAMAGE CLEANUP IN INCHES (mm)</b>	<b>LIMIT ON THE NUMBER OF REPAIRS</b>
PERMANENT	4.0 (101.6)	There is no limit on the number of repairs of this type
PERMANENT	30.0 (762.0)	Only one repair of this type is permitted
TIME-LIMITED	30.0 (762.0)	There is no limit on the number of repairs of this type
TIME-LIMITED	50.0 (1270.0)	Only one repair of this type is permitted

**2. General**

- A. Before you do Repair 8, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 8 gives instructions for permanent and time-limited repairs. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. When you do a time-limited repair you must:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 8
  - (2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 8
- D. The repair that follows is an alternative to Repair 8.
  - (1) Repair 9 is a permanent repair with no limits on the diameter of the damage cleanup and the number of damage areas.
- E. The materials necessary for Repair 8 are given in Table 202/REPAIR 8.

**Table 202:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20



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# STRUCTURAL REPAIR MANUAL

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

### 4. Repair Instructions

- A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.  
**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 8 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 8 for the layout of the repair parts.
- I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL
- J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL
- O. Sand the repair core to be smooth with the outer surface of the facesheet.

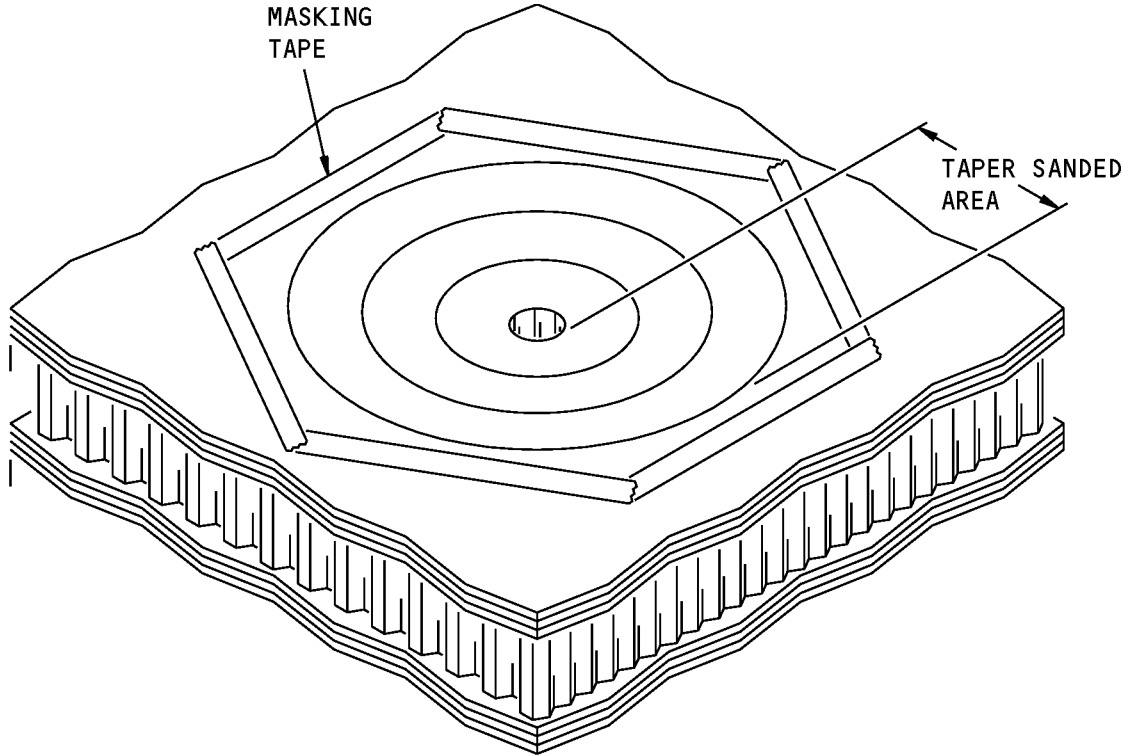


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**STRUCTURAL REPAIR MANUAL**

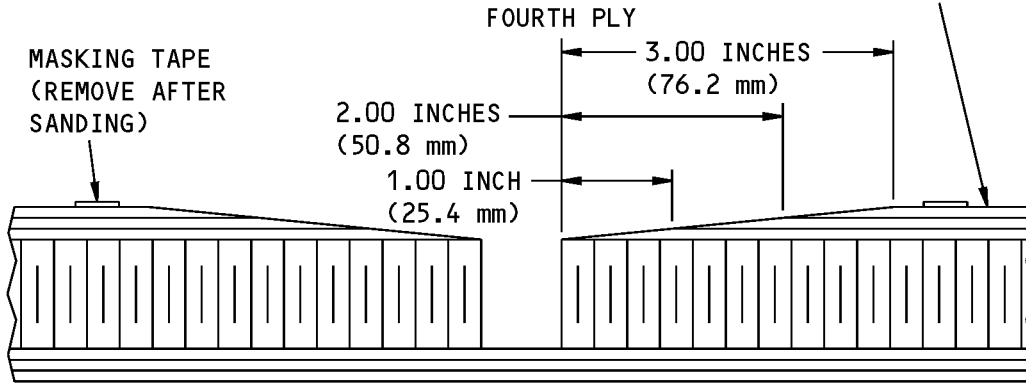
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



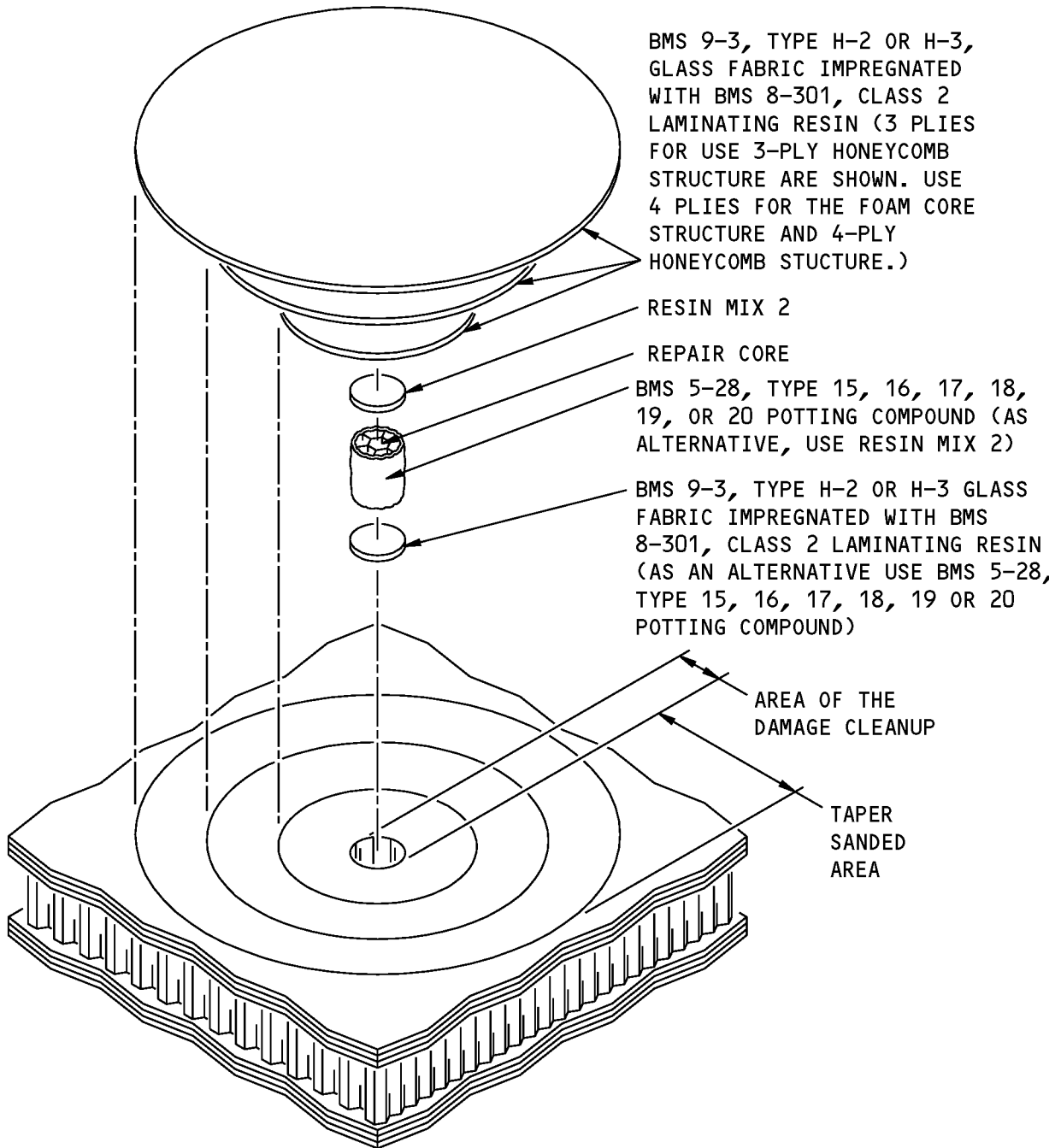
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

**STRUCTURAL REPAIR MANUAL**



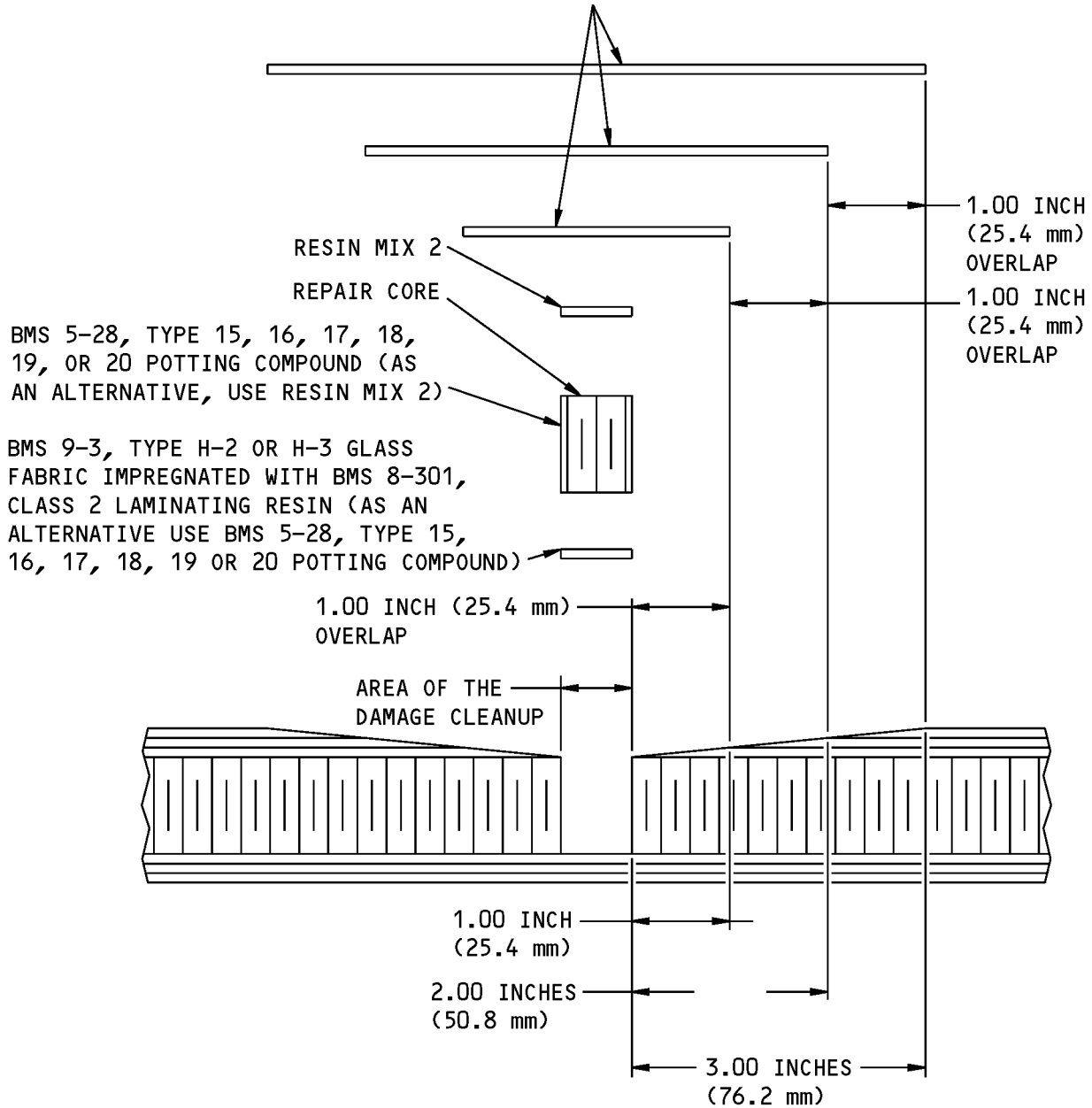
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)**





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## **STRUCTURAL REPAIR MANUAL**

### **5. Inspection and Replacement Instructions**

- A. If Repair 8 is a time-limited repair as given in Table 201/REPAIR 8, do the steps that follow:
- (1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
    - (a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
  - (2) Replace Repair 8 with a permanent repair no more than 4000 flight cycles after installation.



**737-800  
STRUCTURAL REPAIR MANUAL**

**REPAIR 9 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE -  
200°F (93°C) CURE**

**1. Applicability**

- A. Repair 9 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 9:
  - (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
  - (2) Uses wet layup materials that are cured at 200°F (93°C).

**2. General**

- A. Before you do Repair 9, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 9 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. The materials necessary for Repair 9 are given in Table 201/REPAIR 9.

**Table 201:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 1
Resin Mix 1	BMS 8-301, Class 1 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS

**4. Repair Instructions**

- A. Remove the damaged facesheet and the core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL

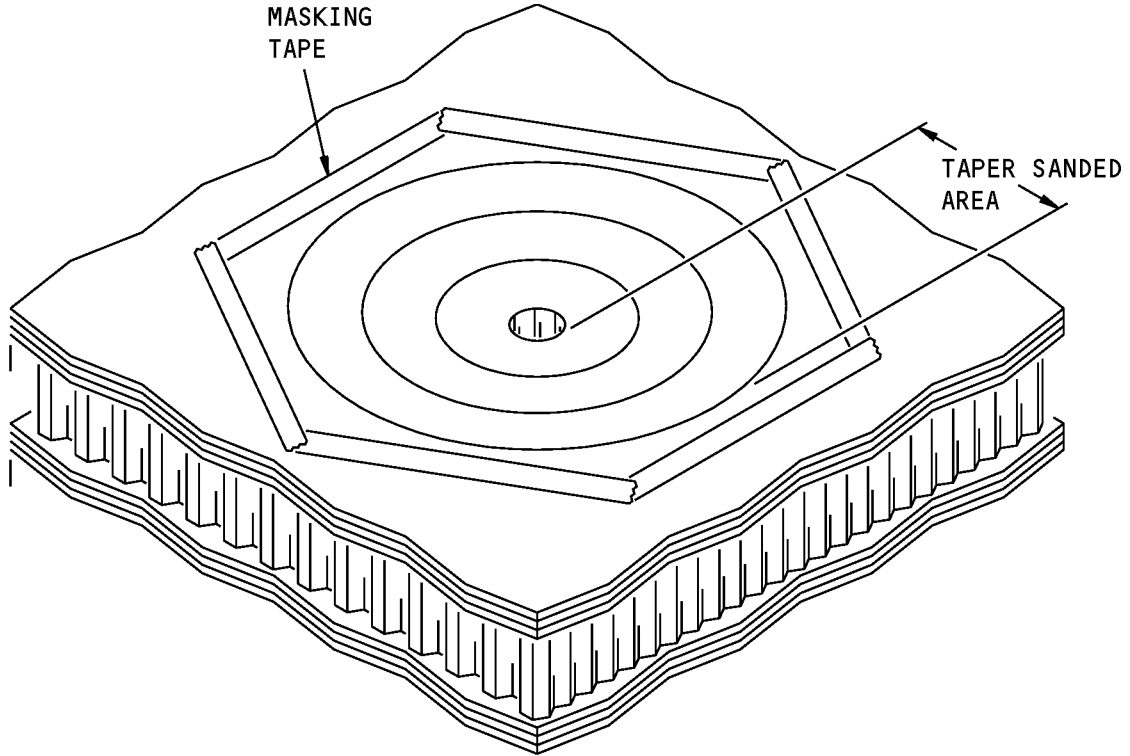
**STRUCTURAL REPAIR MANUAL**

- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

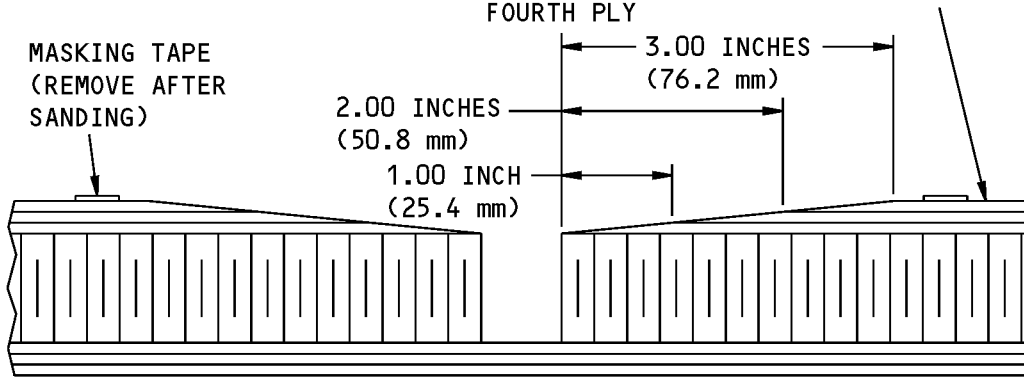
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 9 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 9 for the layout of the repair parts.
- I. Apply one ply of repair fabric to the area below the repair core as given in Paragraph 5.J./REPAIR GENERAL
- J. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- N. Cure the potting compound as given in Paragraph 5.N./REPAIR GENERAL
- O. Sand the repair core to be smooth with the outer surface of the facesheet.
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

**STRUCTURAL REPAIR MANUAL**



CIRCULAR SHAPE IS SHOWN, OVAL SHAPES ARE ALSO PERMITTED

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



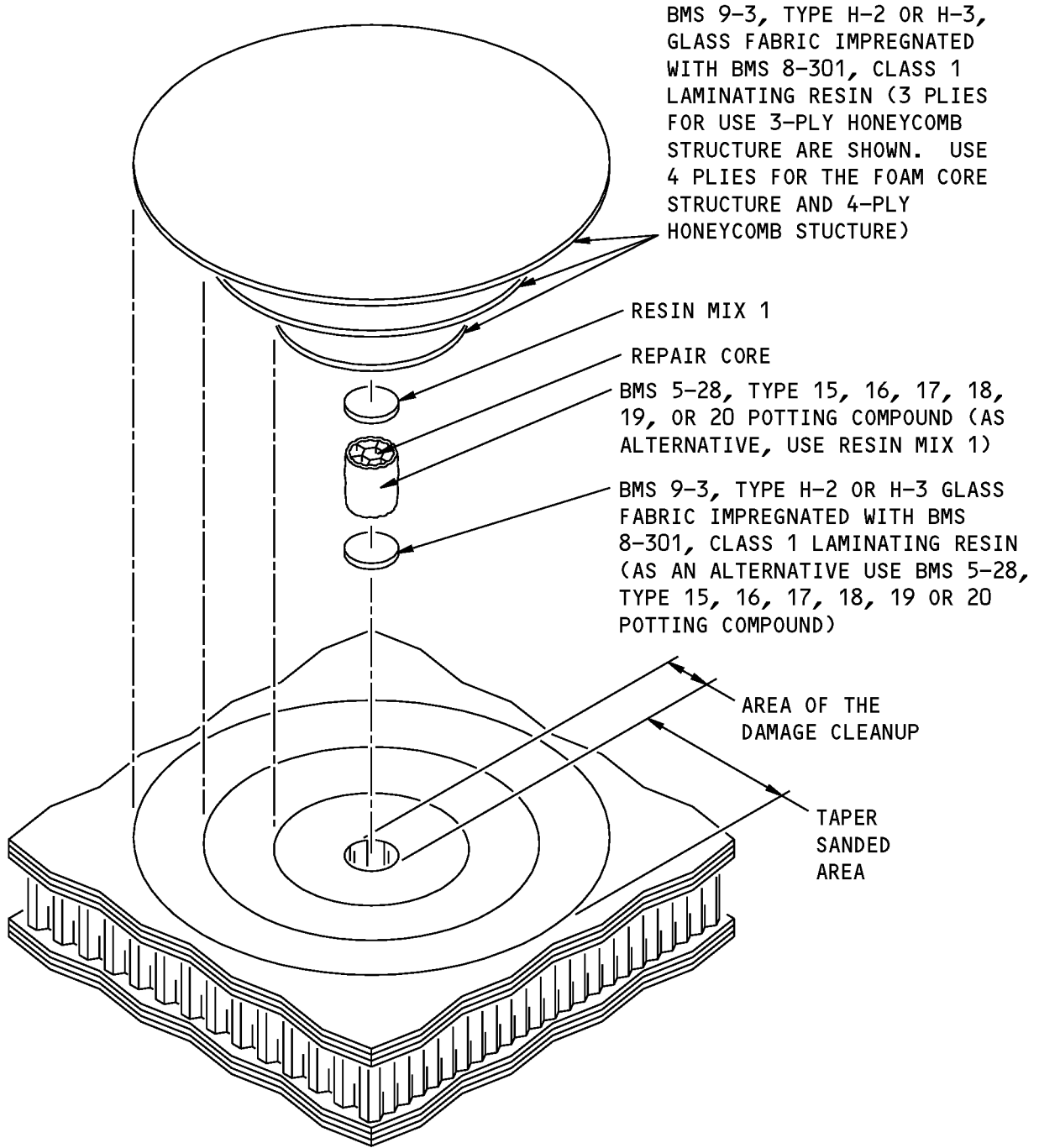
**SECTION THROUGH THE CENTER OF THE REPAIR**

**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201**

**STRUCTURAL REPAIR MANUAL**



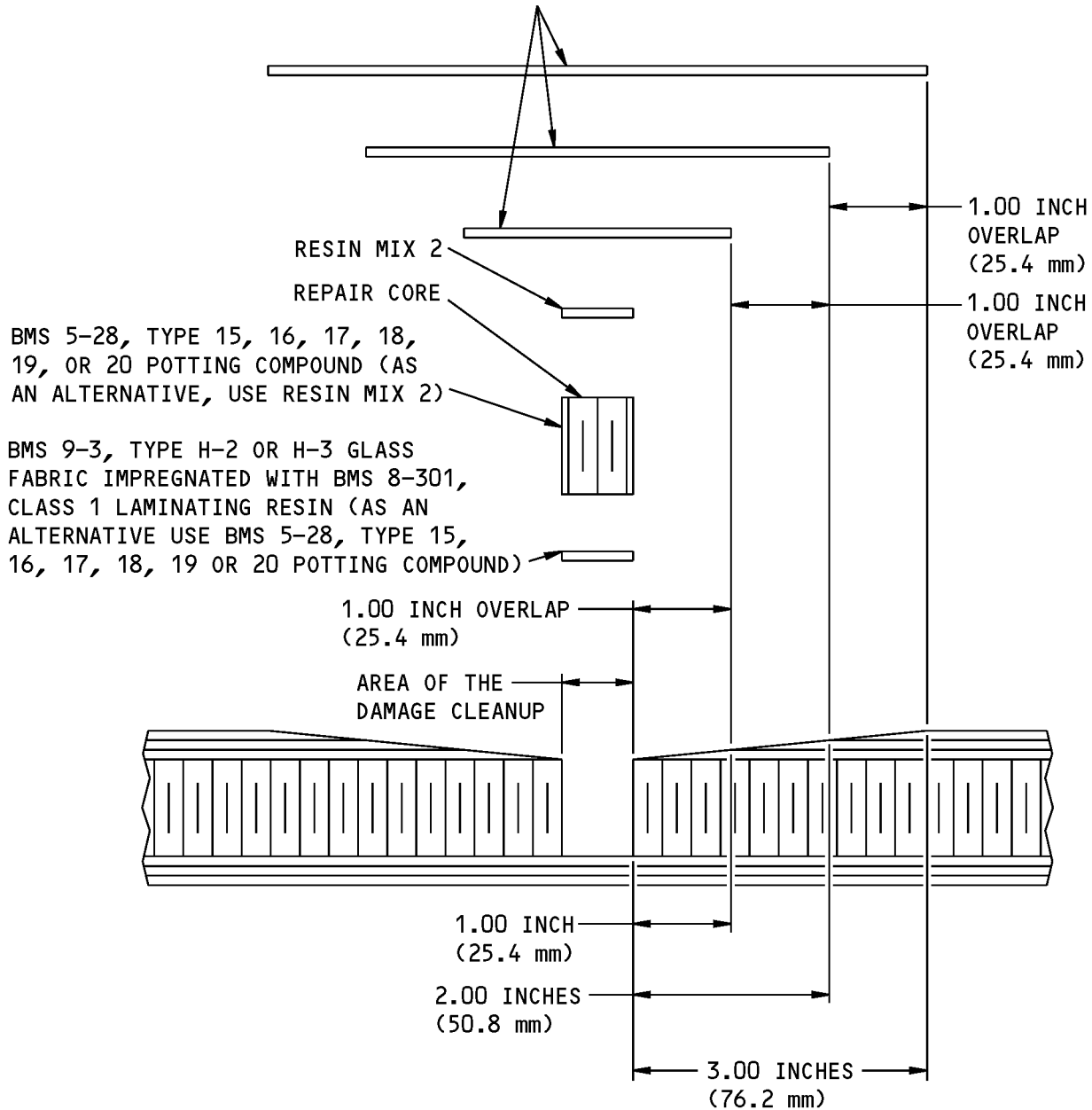
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 1 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN.) FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH A 1.00 INCH (25.4 mm) OVERLAP FOR THE FOURTH PLY)



**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 10 - REPAIR WITH PREIMPREGNATED LAYUP MATERIALS FOR DAMAGE TO TWO FACESHEETS AND THE CORE - 250°F (121°C) CURE

#### 1. Applicability

A. Repair 10 is applicable to:

- (1) Nose radomes made of honeycomb core structure or foam core structure
- (2) Damage to two facesheets and the core of the nose radome
- (3) Damage that is away from the edgeband of the radome.

(a) Refer to 51-70-05 for repairs with preimpregnated layup materials that are applicable to the edgeband areas.

B. Repair 10:

- (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
- (2) Uses preimpregnated layup materials that are cured at 250°F (121°C).

#### 2. General

A. Before you do Repair 10, refer to Paragraph 4./REPAIR GENERAL to:

- (1) Find the limits of the damage
- (2) Make a decision on the applicable repair option.

B. Repair 10 is a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.

C. The materials necessary for Repair 10 are given in Table 201/REPAIR 10.

**Table 201:**

RADOME REPAIR MATERIALS	
REPAIR MATERIALS	BOEING SPECIFICATION
Repair fabric	BMS 8-79, Style 1581 or Style 7781
Film Adhesive	BMS 5-129, Type 2, Grade 5 As an alternative, use BMS 5-129, Type 4, Grade 5
Potting Compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20. Use as an alternative to BMS 5-129, Type 2 Grade 5 film adhesive where the edges of the repair core touches the initial core
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

#### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS

#### 4. Repair Instructions

A. Remove the damaged facesheets and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL



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## STRUCTURAL REPAIR MANUAL

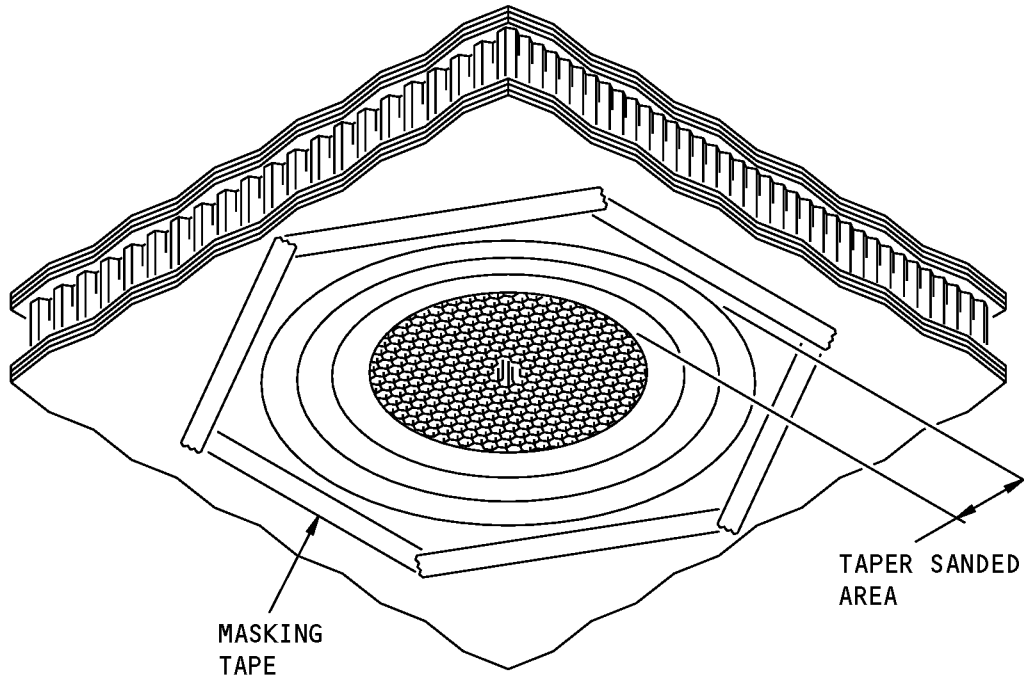
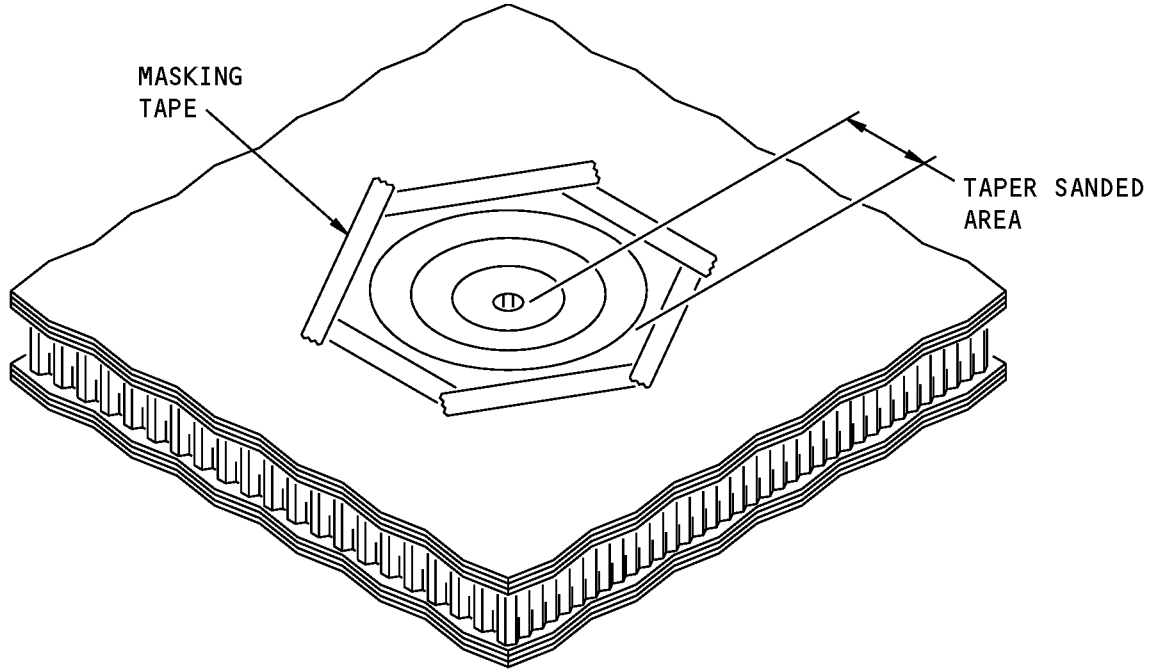
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 10 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.H./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 10 for the layout of the repair parts.
- J. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.
- K. Apply the film adhesive and the fabric repair plies to one surface of the radome as given in Paragraph 5.J./REPAIR GENERAL
- L. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- M. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- N. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- O. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- P. Sand the repair core to be smooth with the initial core surface.
- Q. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- R. Cut one layer of film adhesive cut to the same dimensions as the largest repair ply.
- S. Apply the film adhesive and the fabric repair plies the opposite surface of the radome as given in Paragraph 5.J./REPAIR GENERAL
- T. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- U. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- V. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- W. Cure the repair at 250°F (121°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- X. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL



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STRUCTURAL REPAIR MANUAL**



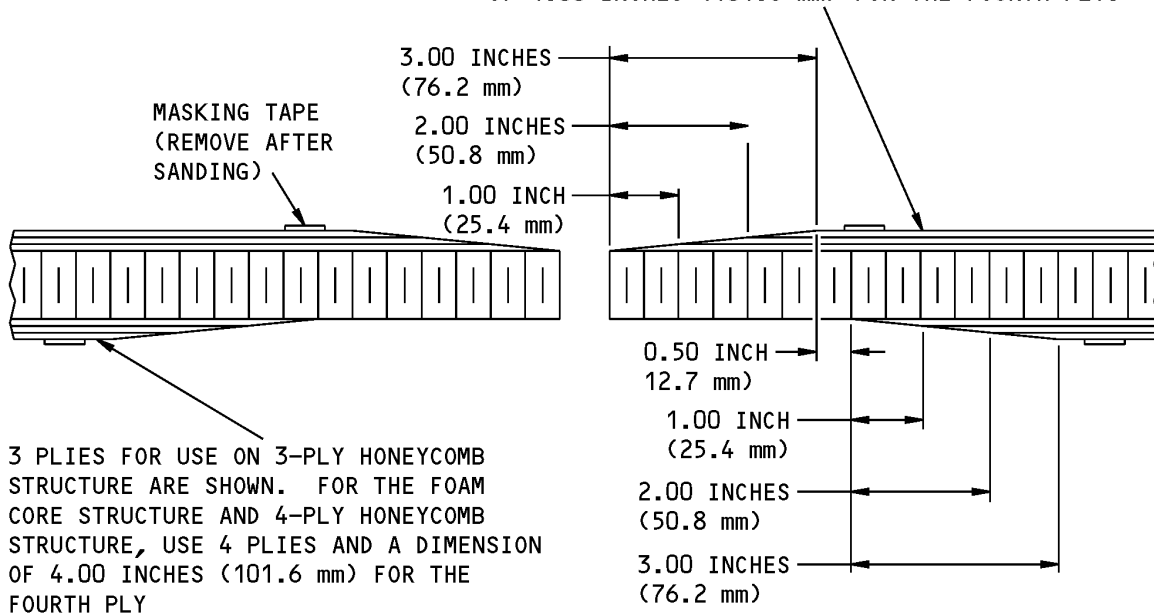
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

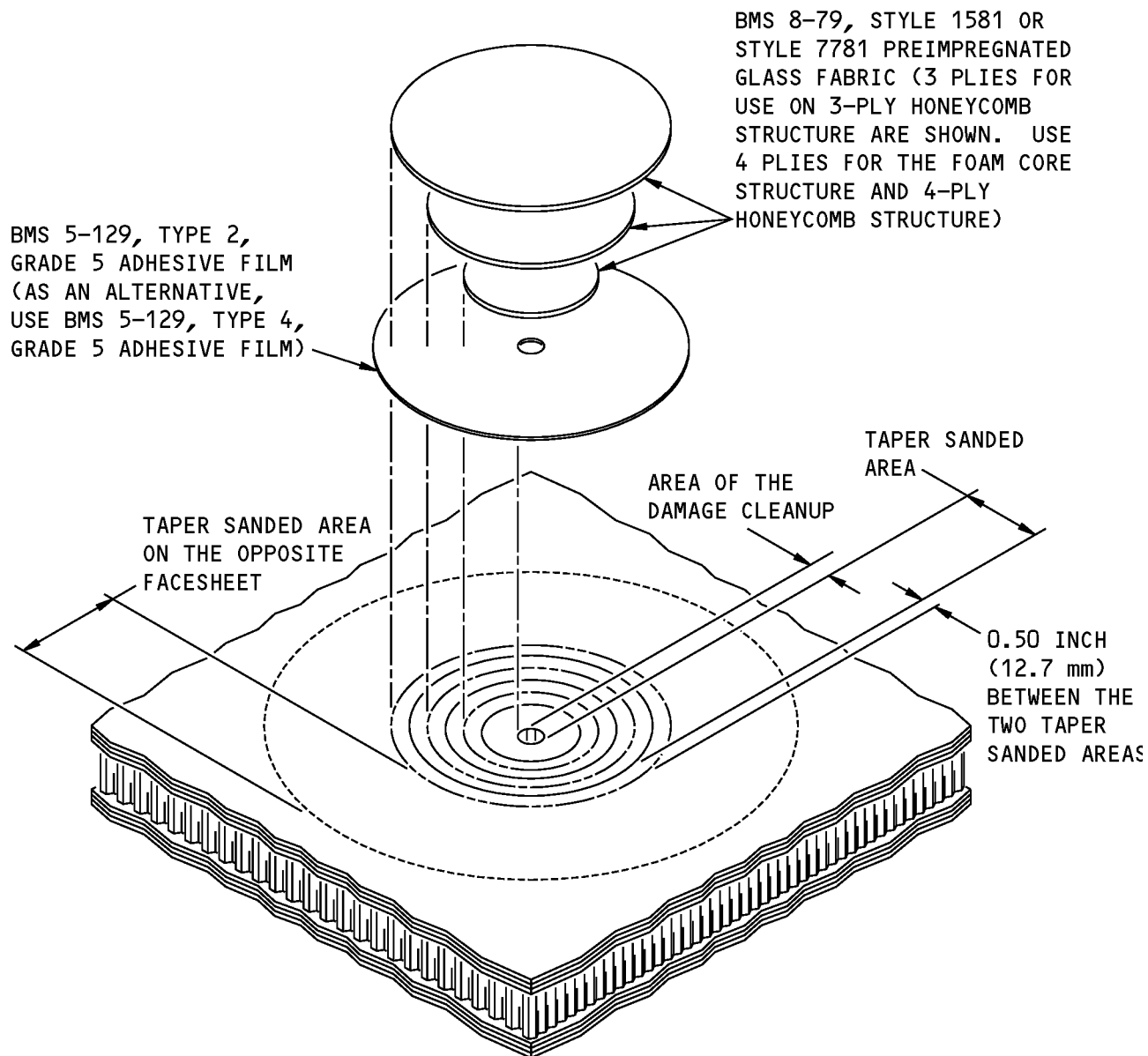
3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY.



**SECTION THROUGH THE CENTER OF THE DAMAGED AREA**

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**



**NOTES**

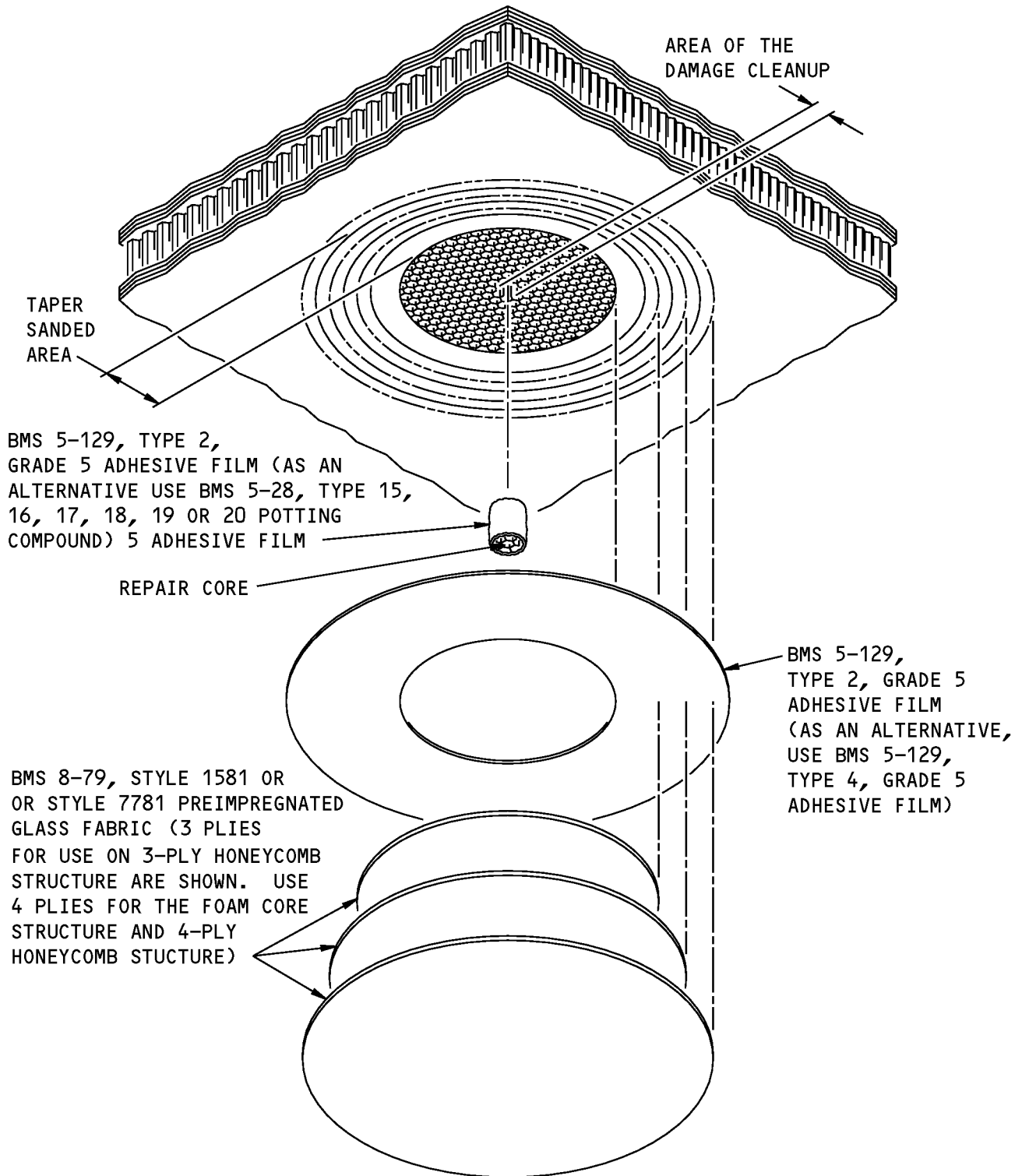
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

1 AS AN ALTERNATIVE, USE BMS 5-129, TYPE 4, GRADE 5 ADHESIVE FILM.

2 AS AN ALTERNATIVE, USE BMS 5-28, TYPE 15, 16, 17, 18, 19, OR 20 POTTING COMPOUND.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 3)**

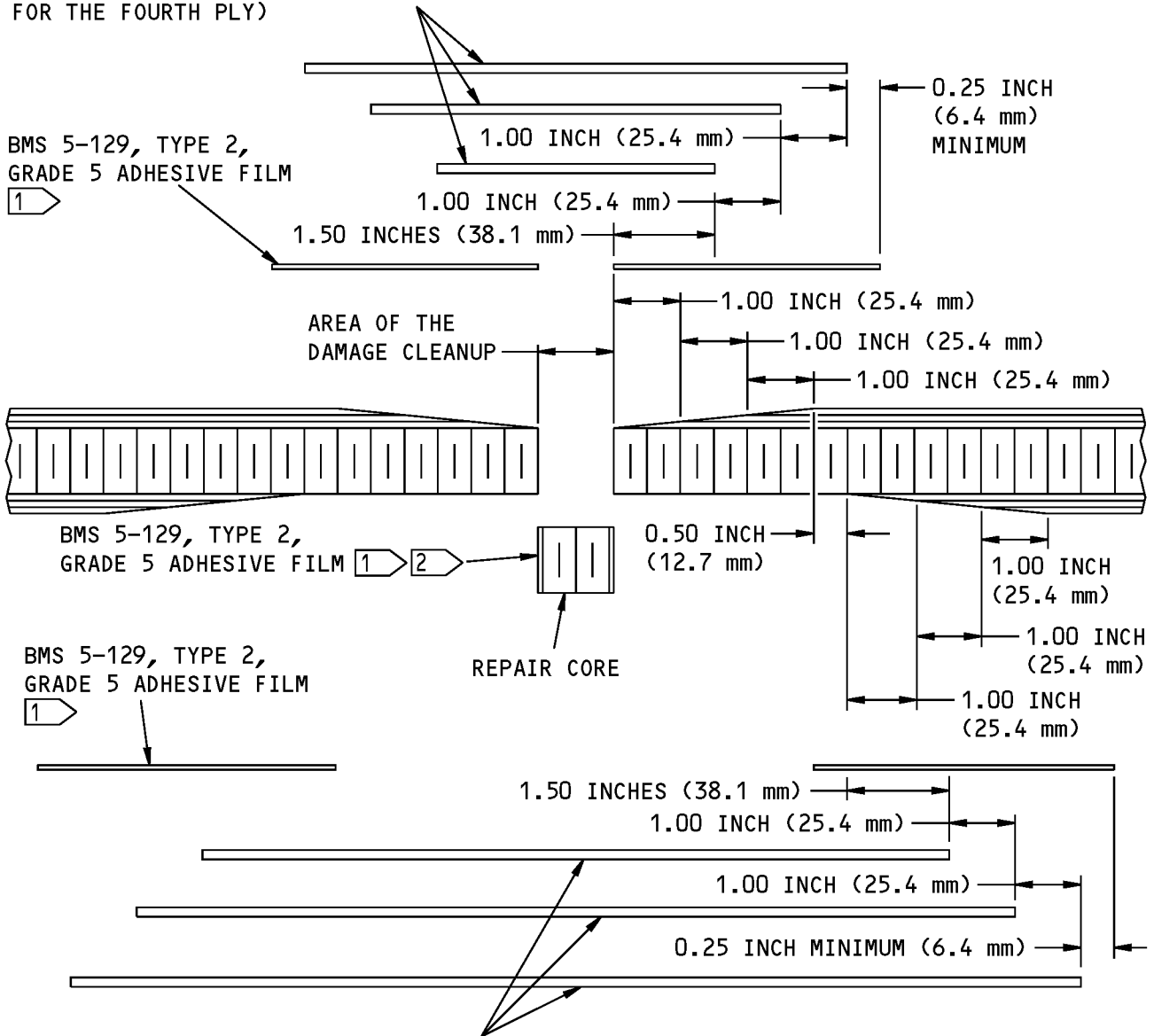
**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**

BMS 8-79, STYLE 1581 OR STYLE 7781 PREIMPREGNATED GLASS FABRIC (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE OR 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH AN OVERLAP OF 1.00 INCH (25.4 mm) FOR THE FOURTH PLY)



BMS 8-79, STYLE 1581 OR STYLE 7781 PREIMPREGNATED GLASS FABRIC (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. USE 4 PLYS FOR THE FOAM CORE STRUCTURE OR 4 PLY HONEYCOMB STRUCTURE, WITH AN OVERLAP OF 1.00 INCH (25.4 mm) FOR THE FOURTH PLY)

**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 3 of 3)**



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## STRUCTURAL REPAIR MANUAL

### REPAIR 11 - REPAIR WITH WET LAYUP MATERIAL FOR DAMAGE TO TWO FACESHEETS AND THE CORE - ROOM TEMPERATURE CURE

#### 1. Applicability

- A. Repair 11 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to two facesheets and the core of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 11 is applicable to damage cleanup that is 15 inches (381.0 mm) or less in diameter.
  - (1) Repair 12 and Repair 13 are alternatives to Repair 11 if the damage cleanup is larger than 15 inches (381.0 mm) in diameter.
- C. Repair 11 is applicable to only one damage area on the radome.
  - (1) Repair 12 and Repair 13 are alternatives to Repair 11 if there is more than one damage area.
- D. Repair 11 uses wet layup materials that are cured at room temperature.

#### 2. General

- A. Before you do Repair 11, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 11 is a time-limited repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. When you do Repair 11, you must:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 11
  - (2) Replace the time-limited repair with a permanent repair as given in Paragraph 5./REPAIR 11
- D. The materials necessary for Repair 11 are given in Table 201/REPAIR 11.

**Table 201:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

## STRUCTURAL REPAIR MANUAL

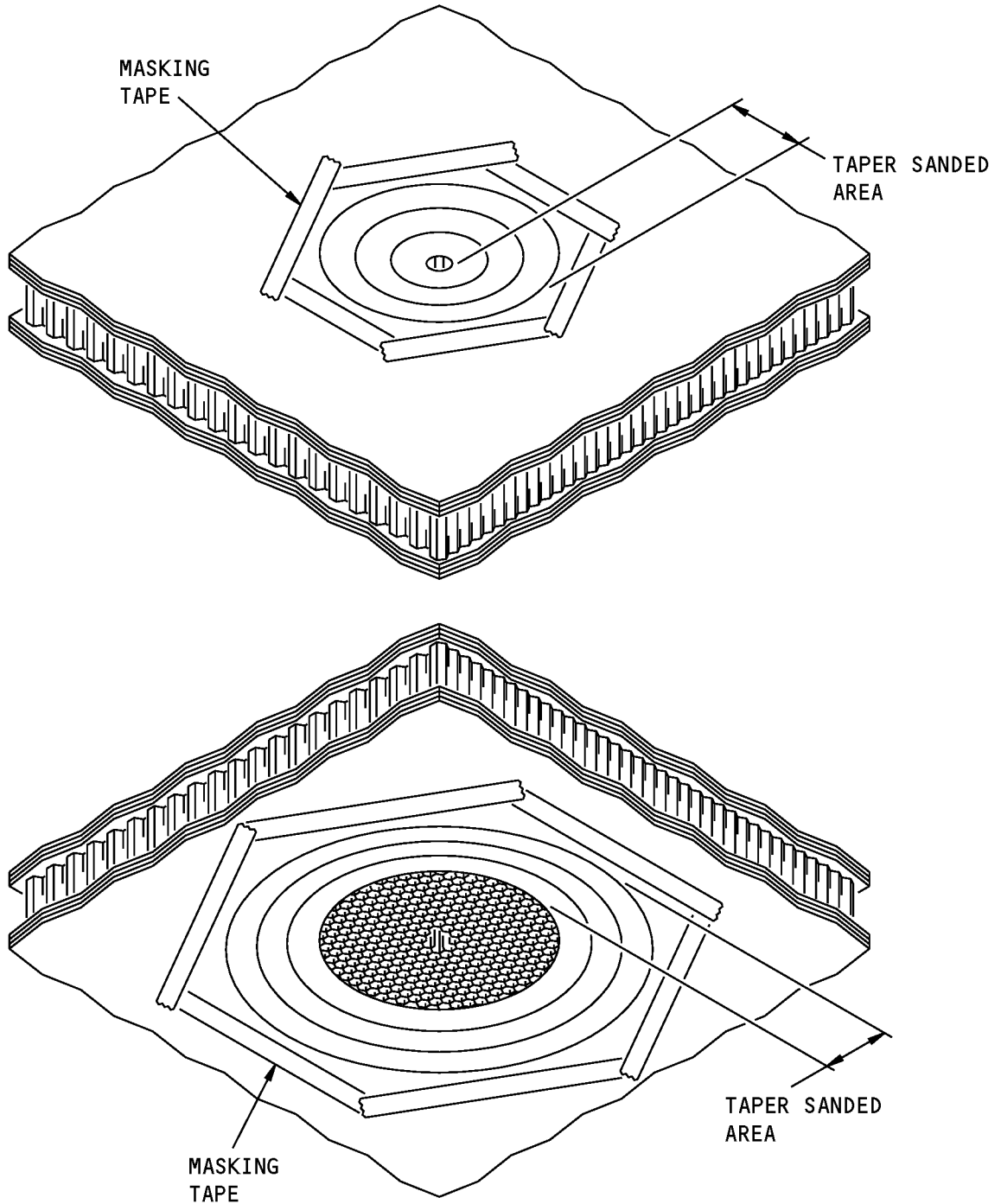
**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

**4. Repair Instructions**

- A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL
- B. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 11 for the necessary taper for each ply of the initial facesheet.
- C. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- D. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- E. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.  
**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 11 for the layout of the repair parts.
- J. Apply the fabric repair plies to one surface of the radome as given in Paragraph 5.J./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- N. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL
- O. Sand the repair core to be smooth with the initial core surface.
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies to the opposite surface of the radome as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at room temperature as given in Paragraph 5.O./REPAIR GENERAL
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL

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STRUCTURAL REPAIR MANUAL**



**NOTES**

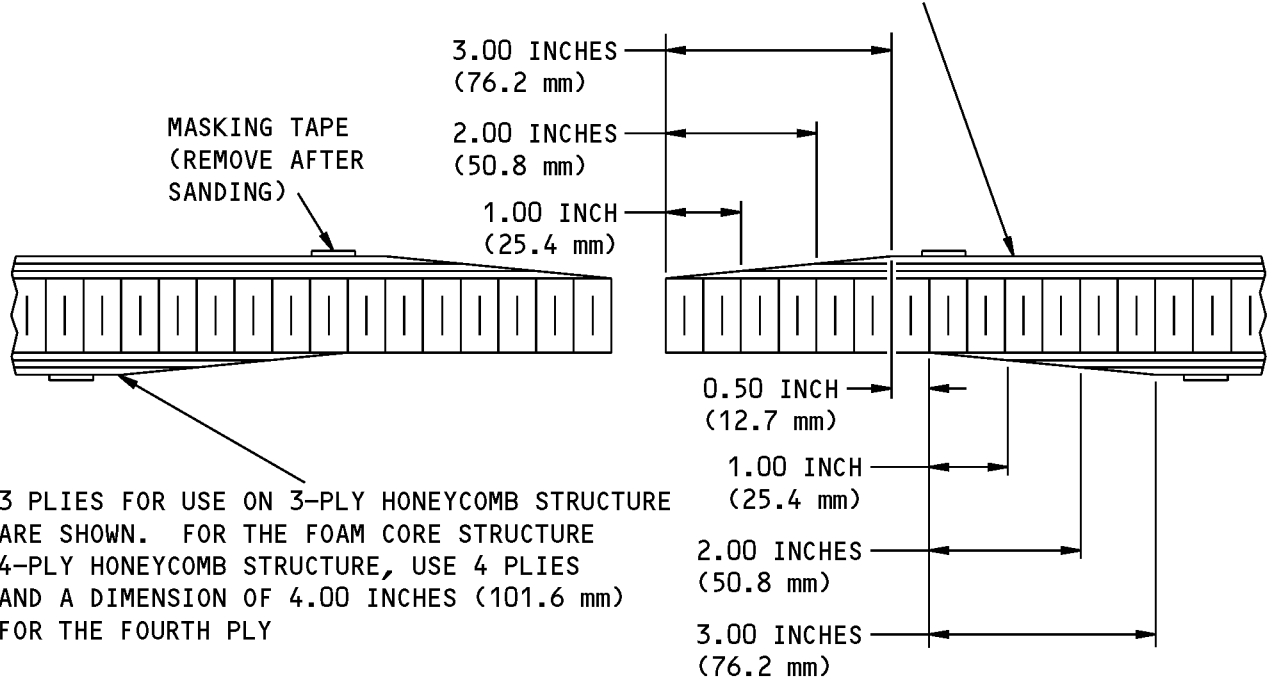
- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 1 of 2)**



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STRUCTURAL REPAIR MANUAL**

3 PLIES FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLIES AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY

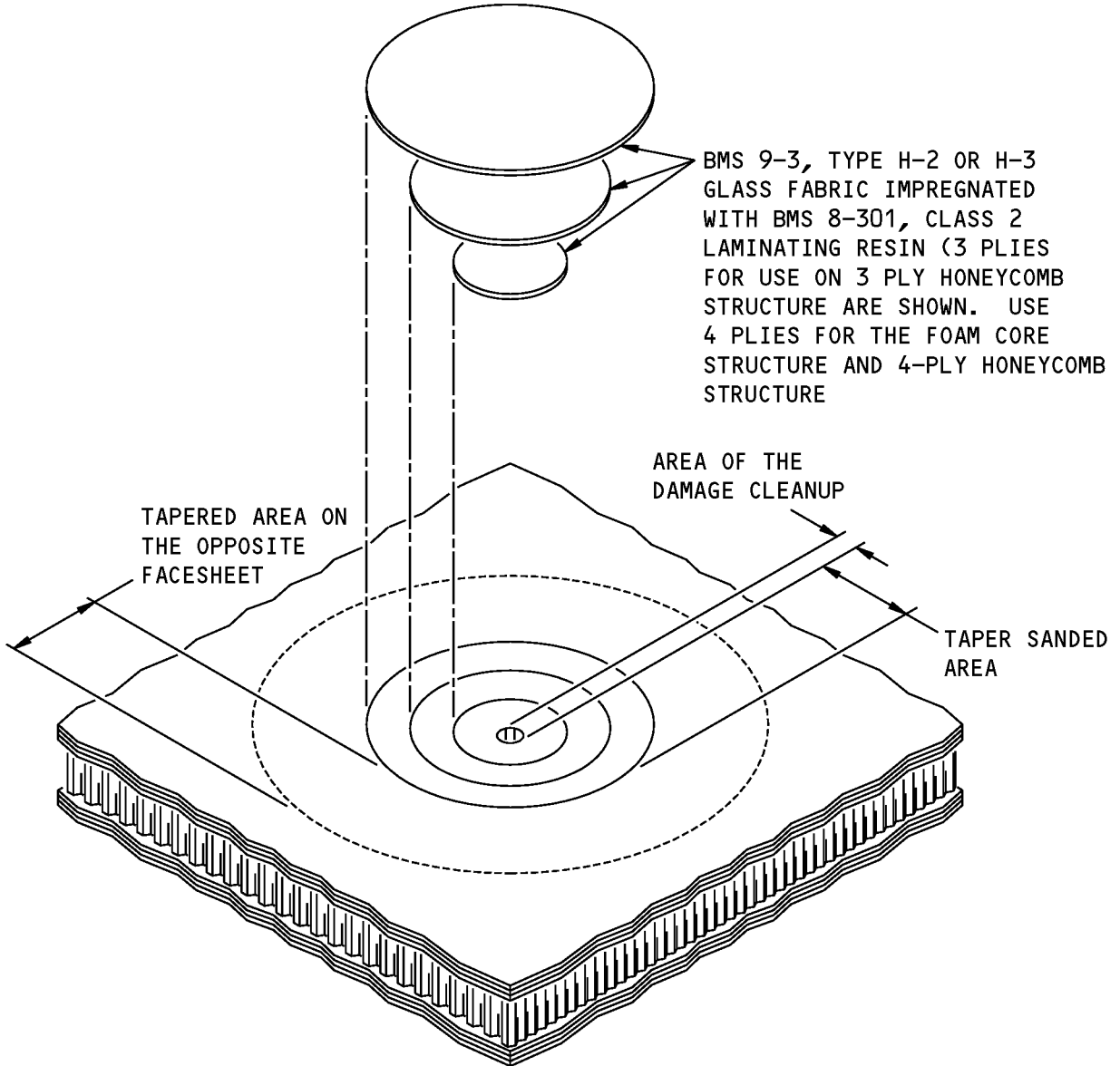


3 PLIES FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE 4-PLY HONEYCOMB STRUCTURE, USE 4 PLIES AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY

**SECTION THROUGH THE CENTER OF THE DAMAGED AREA**

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

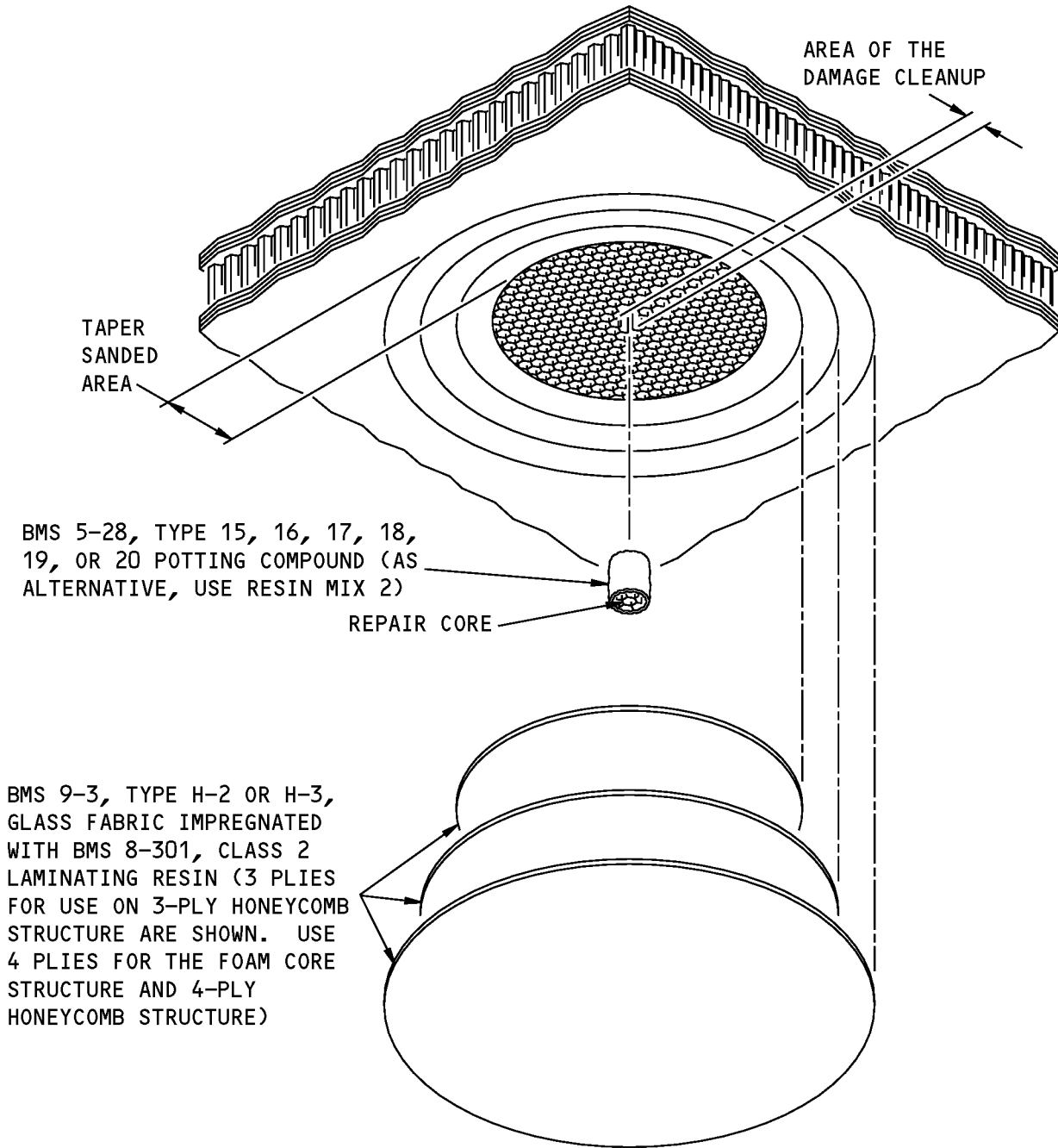


**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
Figure 202 (Sheet 1 of 3)**

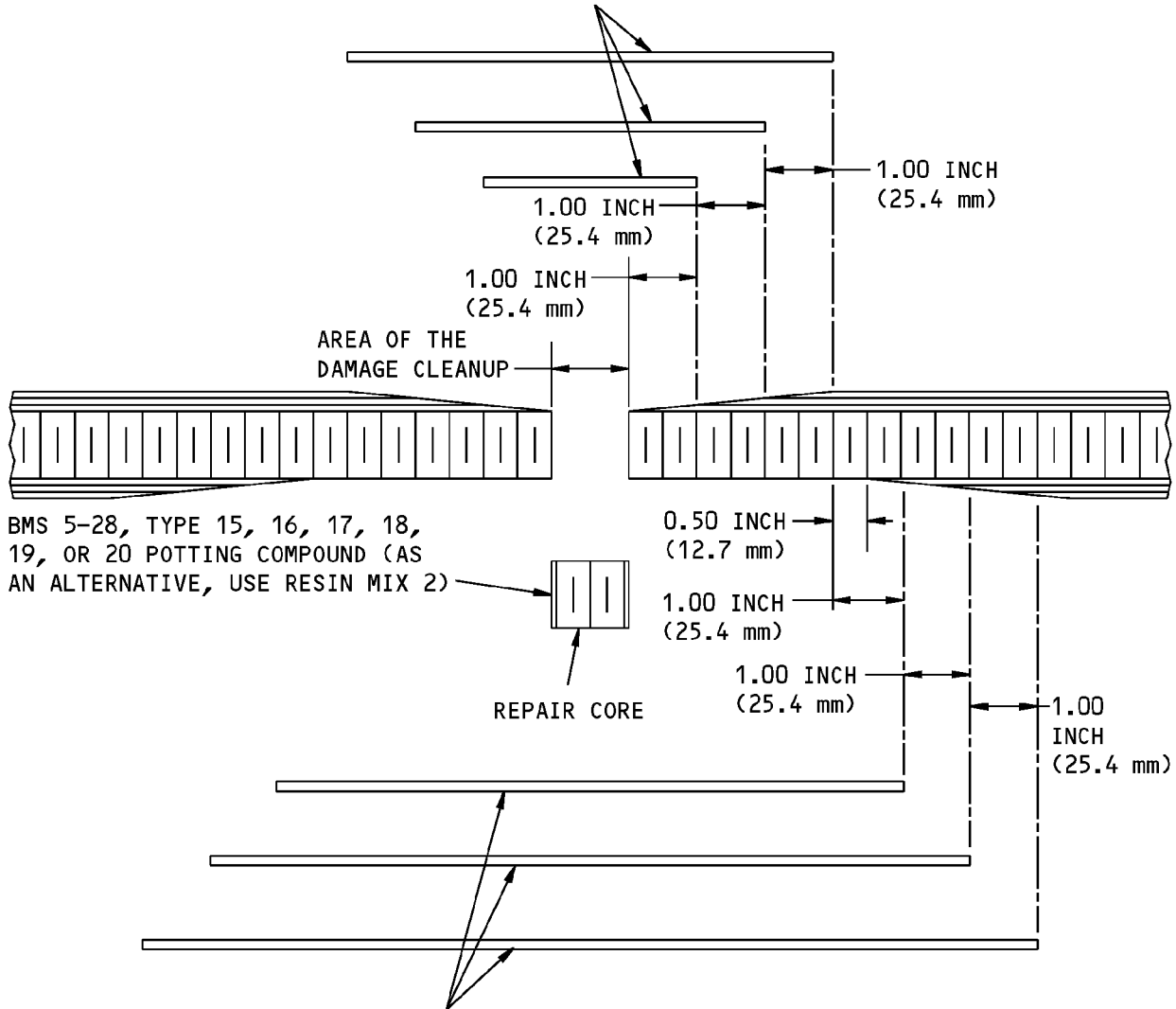
**STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)



BMS 5-28, TYPE 15, 16, 17, 18, 19, OR 20 POTTING COMPOUND (AS AN ALTERNATIVE, USE RESIN MIX 2)

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)

**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 3 of 3)**



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## STRUCTURAL REPAIR MANUAL

### 5. Inspection and Replacement Instructions

- A. Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
  - (1) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
- B. Replace Repair 11 with a permanent repair no more than 4000 flight cycles after installation.



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### STRUCTURAL REPAIR MANUAL

#### REPAIR 12 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO ONE FACESHEET AND THE CORE - 150°F (66°C) CURE

##### 1. Applicability

- A. Repair 12 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to one facesheet of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Refer to Table 201/REPAIR 12 for the limits on Repair 12 for the diameter of the damage cleanup and the number of repair areas.
- C. Repair 12 uses wet layup materials that are cured at 150°F (66°C).

##### 2. General

- A. Before you do Repair 12, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 12 gives instructions for permanent and time-limited repairs. Refer to 51-00-06 for the definitions of the different categories of repairs.
- C. When you do a time-limited repair you must:
  - (1) Inspect the repair as given in Paragraph 5./REPAIR 12
  - (2) Replace the repair with a permanent repair as given in Paragraph 5./REPAIR 12
- D. The repair that follows is an alternative to Repair 12.
  - (1) Repair 13 is a permanent repair with no limits on the diameter of the damage cleanup and the number of damage areas.

**Table 201:**

REPAIR LIMITS FOR REPAIR 12		
REPAIR TYPE	MAXIMUM DIAMETER OF THE DAMAGE CLEANUP IN INCHES (mm)	LIMIT ON THE NUMBER OF REPAIRS
PERMANENT	4.0 (101.6)	There is no limit on the number of repairs of this type
PERMANENT	30.0 (762.0)	Only one repair of this type is permitted
TIME-LIMITED	30.0 (762.0)	There is no limit on the number of repairs of this type
TIME-LIMITED	50.0 (1270.0)	Only one repair of this type is permitted

- E. The materials necessary for Repair 12 are given in Table 202/REPAIR 12.



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 202:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13 , or 14
Laminating resin	BMS 8-301, Class 2
Resin Mix 2	BMS 8-301, Class 2 mixed with milled glass fibers. Use as an to the potting compound on the edges of the repair core which touch the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

**4. Repair Instructions**

- A. Remove the damaged facesheet and core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.
 

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.
- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 12 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 12 for the layout of the repair parts.
- J. Apply the fabric repair plies to one surface as given in Paragraph 5.J./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL



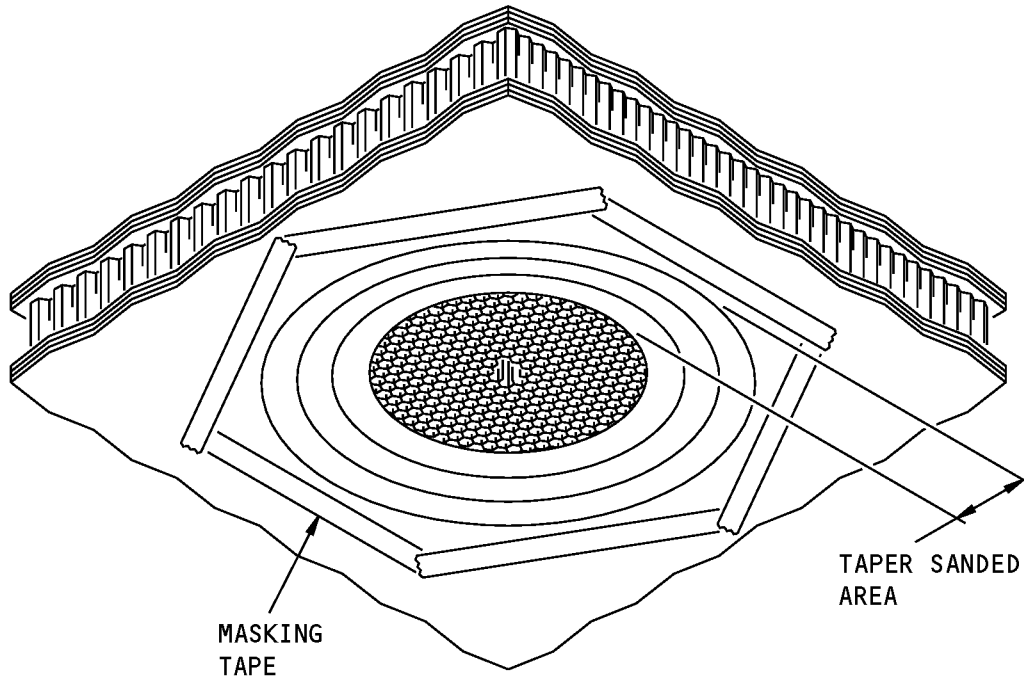
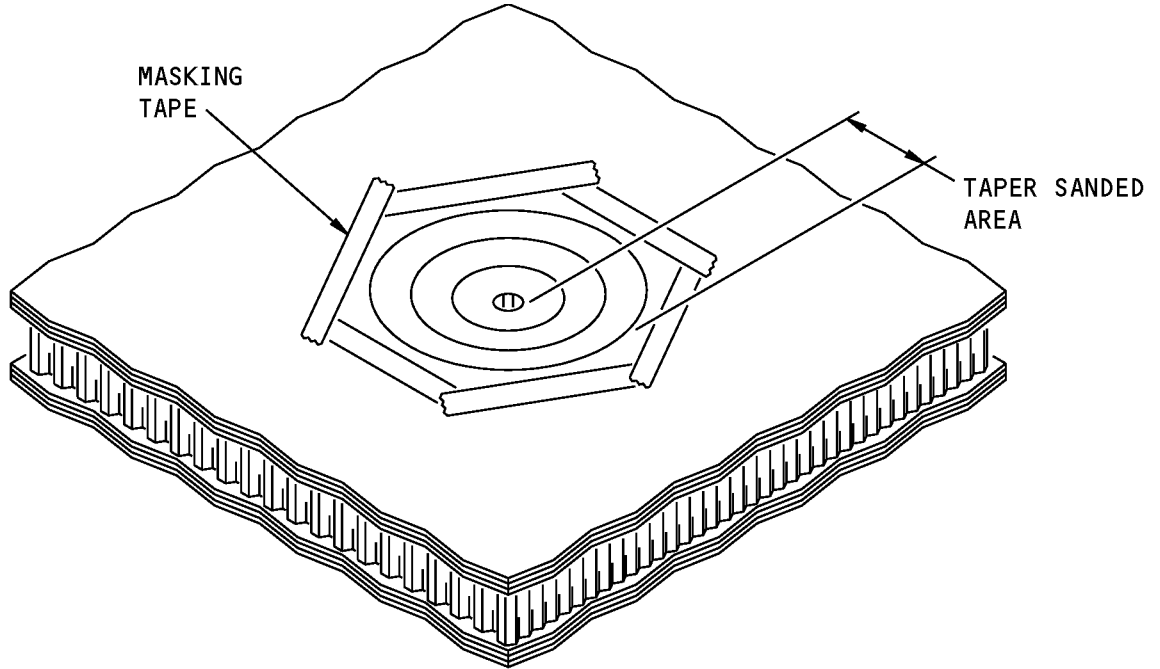
**737-800**

## **STRUCTURAL REPAIR MANUAL**

- N. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- O. Sand the repair core to be smooth with the initial core surface.
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies to the opposite surface as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at 150°F (66°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL



**737-800  
STRUCTURAL REPAIR MANUAL**



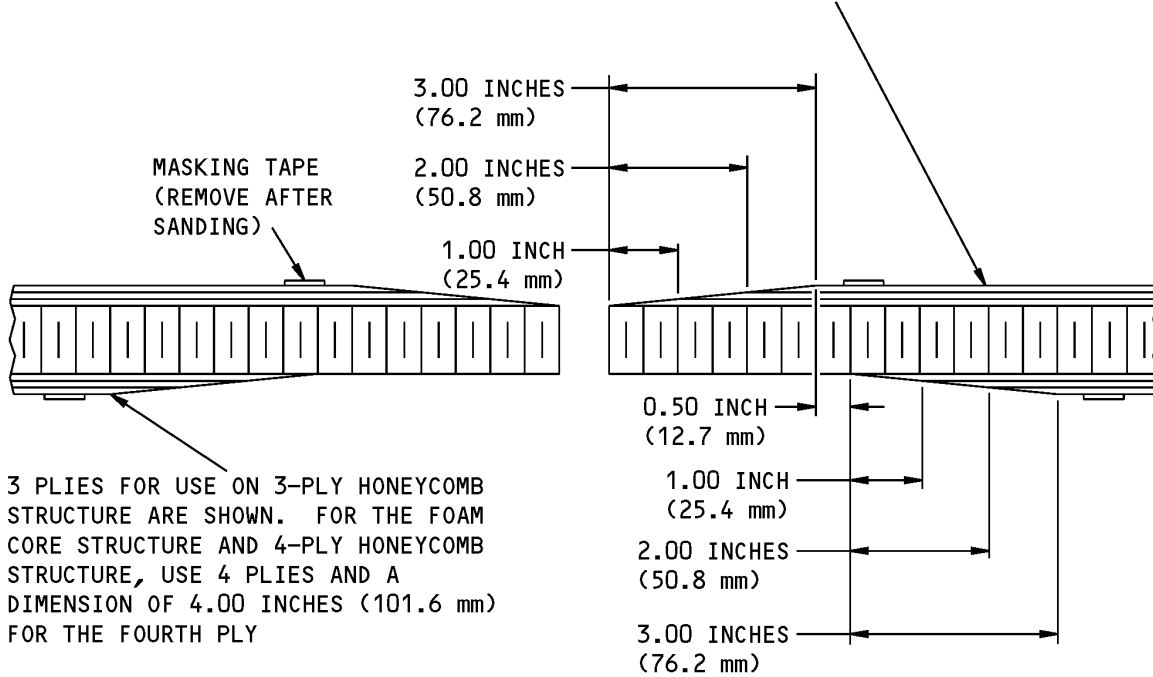
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6) FOR THE FOURTH PLY

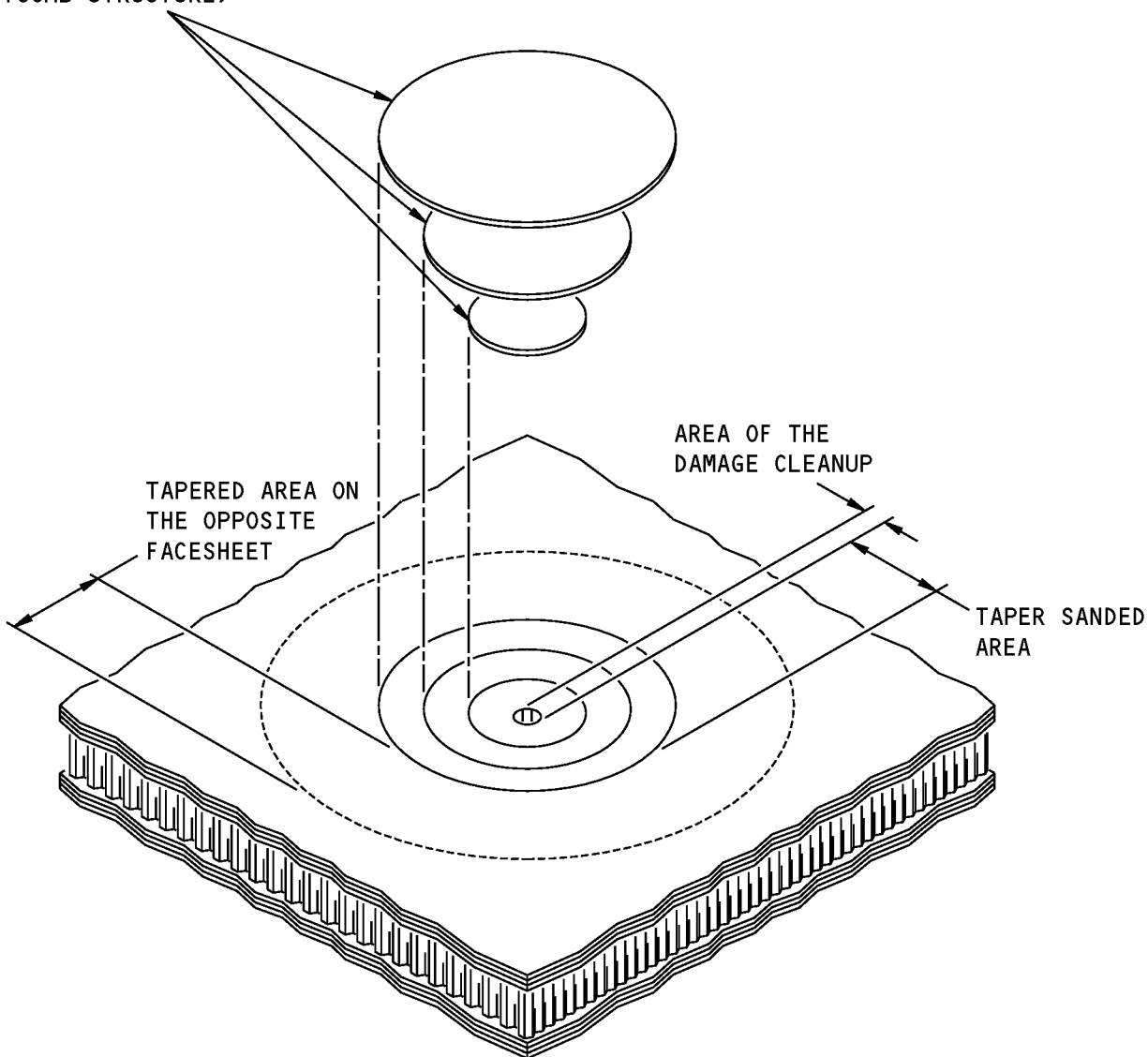


**SECTION THROUGH THE CENTER OF THE DAMAGED AREA**

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC  
 IMPREGNATED WITH BMS 8-301, CLASS 2  
 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY  
 HONEYCOMB STRUCTURE ARE SHOWN. USE 4 PLYS  
 FOR THE FOAM CORE STRUCTURE AND 4-PLY  
 HONEYCOMB STRUCTURE)

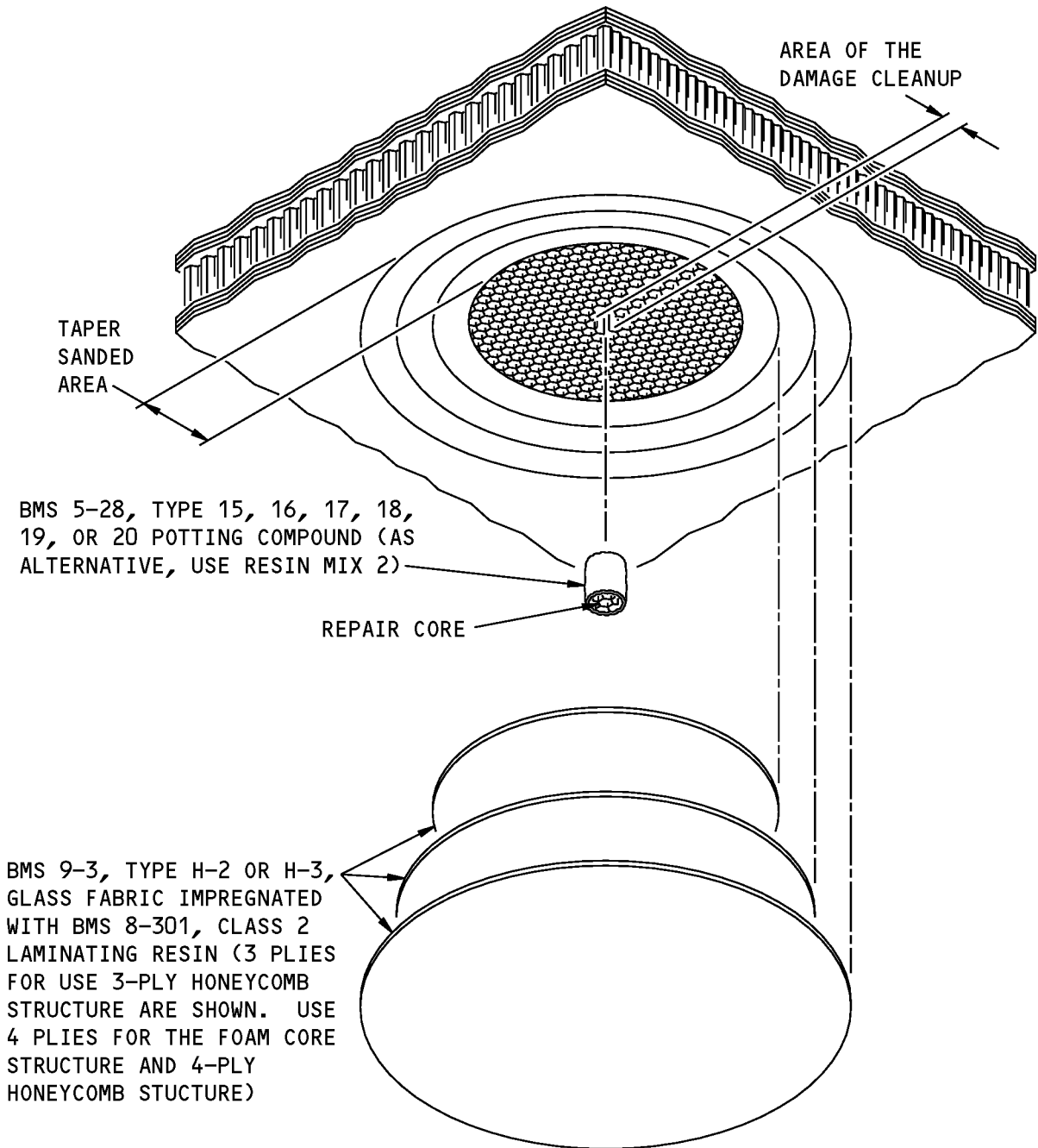


**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
 Figure 202 (Sheet 1 of 3)**

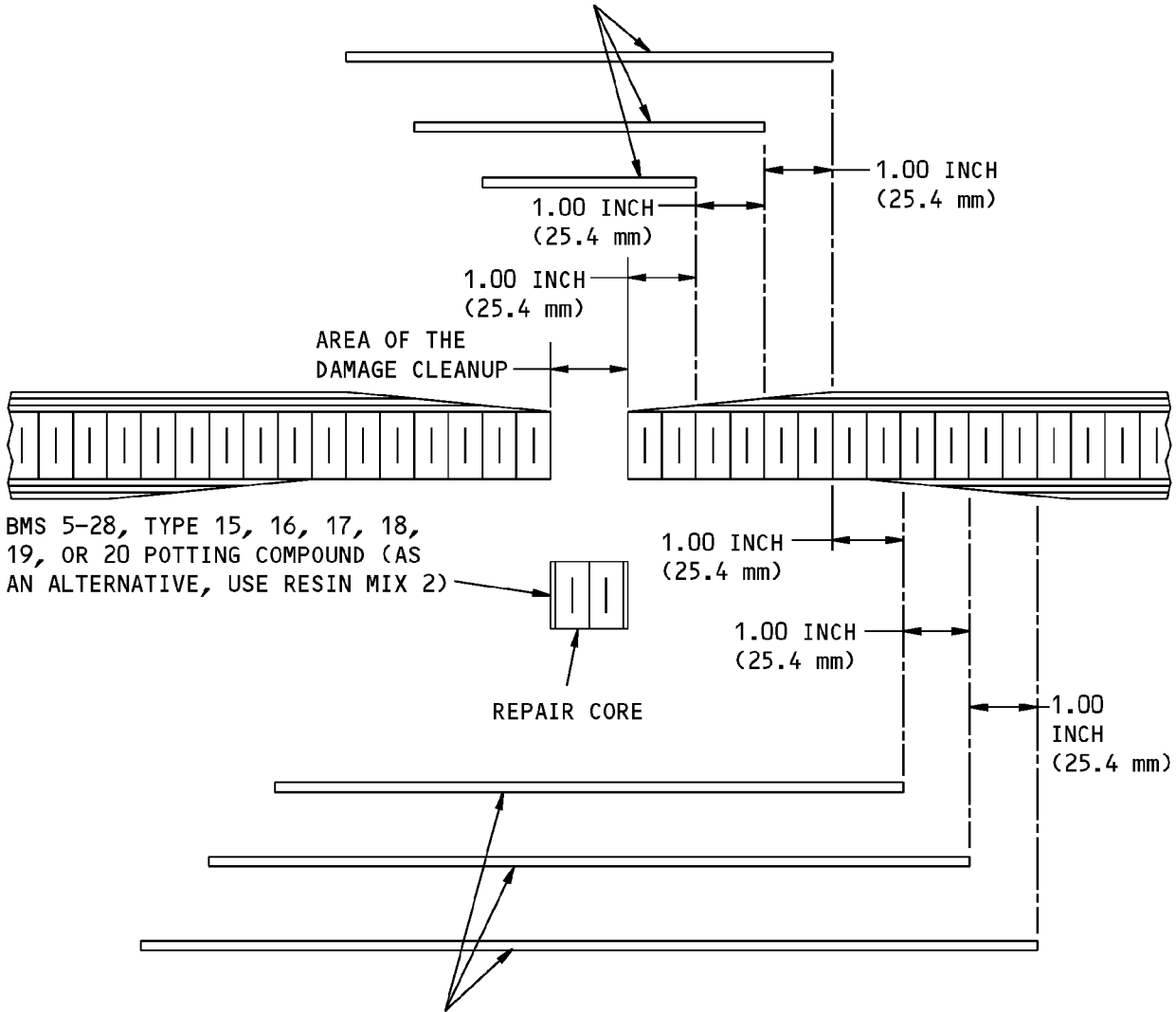
**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)



BMS 5-28, TYPE 15, 16, 17, 18, 19, OR 20 POTTING COMPOUND (AS AN ALTERNATIVE, USE RESIN MIX 2)

REPAIR CORE

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 2 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)

**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 3 of 3)**



**737-800**

**STRUCTURAL REPAIR MANUAL**

**5. Inspection and Replacement Instructions**

- A. If Repair 12 is a time-limited repair as given in Table 201/REPAIR 12, do the steps that follow:
  - (1) Do a visual inspection and a tap test inspection of the repair every 400 flight cycles or more frequently.
    - (a) Do the tap test inspection as given in 737 NDT Part 1, 51-05-01.
  - (2) Replace Repair 12 with a permanent repair no more than 4000 flight cycles after installation.



**737-800  
STRUCTURAL REPAIR MANUAL**

**REPAIR 13 - REPAIR WITH WET LAYUP MATERIALS FOR DAMAGE TO TWO FACESHEETS AND THE CORE -  
200°F (93°C) CURE**

**1. Applicability**

- A. Repair 13 is applicable to:
  - (1) Nose radomes made of honeycomb core structure or foam core structure
  - (2) Damage to two facesheets and the core of the nose radome
  - (3) Damage that is away from the edgeband of the radome.
    - (a) Refer to 51-70-04 for repairs with wet layup materials that are applicable to the edgeband areas.
- B. Repair 13:
  - (1) Has no limits on the dimensions of the damage cleanup or the number of repair areas
  - (2) Uses wet layup materials that are cured at 200°F (93°C).

**2. General**

- A. Before you do Repair 13, refer to Paragraph 4./REPAIR GENERAL to:
  - (1) Find the limits of the damage
  - (2) Make a decision on the applicable repair option.
- B. Repair 13 gives instructions for a permanent repair. Refer to 51-00-06 for the definitions of the different types of repairs.
- C. The materials necessary for Repair 13 are given in Table 201/REPAIR 13.

**Table 201:**

<b>RADOME REPAIR MATERIALS</b>	
<b>REPAIR MATERIALS</b>	<b>BOEING SPECIFICATION</b>
Potting compound	BMS 5-28, Type 15, 16, 17, 18, 19, or 20
Repair fabric	BMS 9-3, Type H-2 or Type H-3, Classes 7, 9, 10, 11, 13, or 14
Laminating resin	BMS 8-301, Class 1
Resin Mix 1	BMS 8-301, Class 1 mixed with milled glass fibers. Use as an alternative to the potting compound on the edges of the repair core which touches the initial core. Use as an alternative to the repair ply used to bond the repair core to the surface of an undamaged facesheet
Honeycomb or foam repair core	For the honeycomb core, use HRH-10/F50-5 flex core. For the foam core, use CMN-2000, Class 4 foam core material

**3. References**

<u>Reference</u>	<u>Title</u>
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS

**4. Repair Instructions**

- A. Remove the damaged facesheets and the core as given in Paragraph 5.A./REPAIR GENERAL and Paragraph 5.B./REPAIR GENERAL



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## STRUCTURAL REPAIR MANUAL

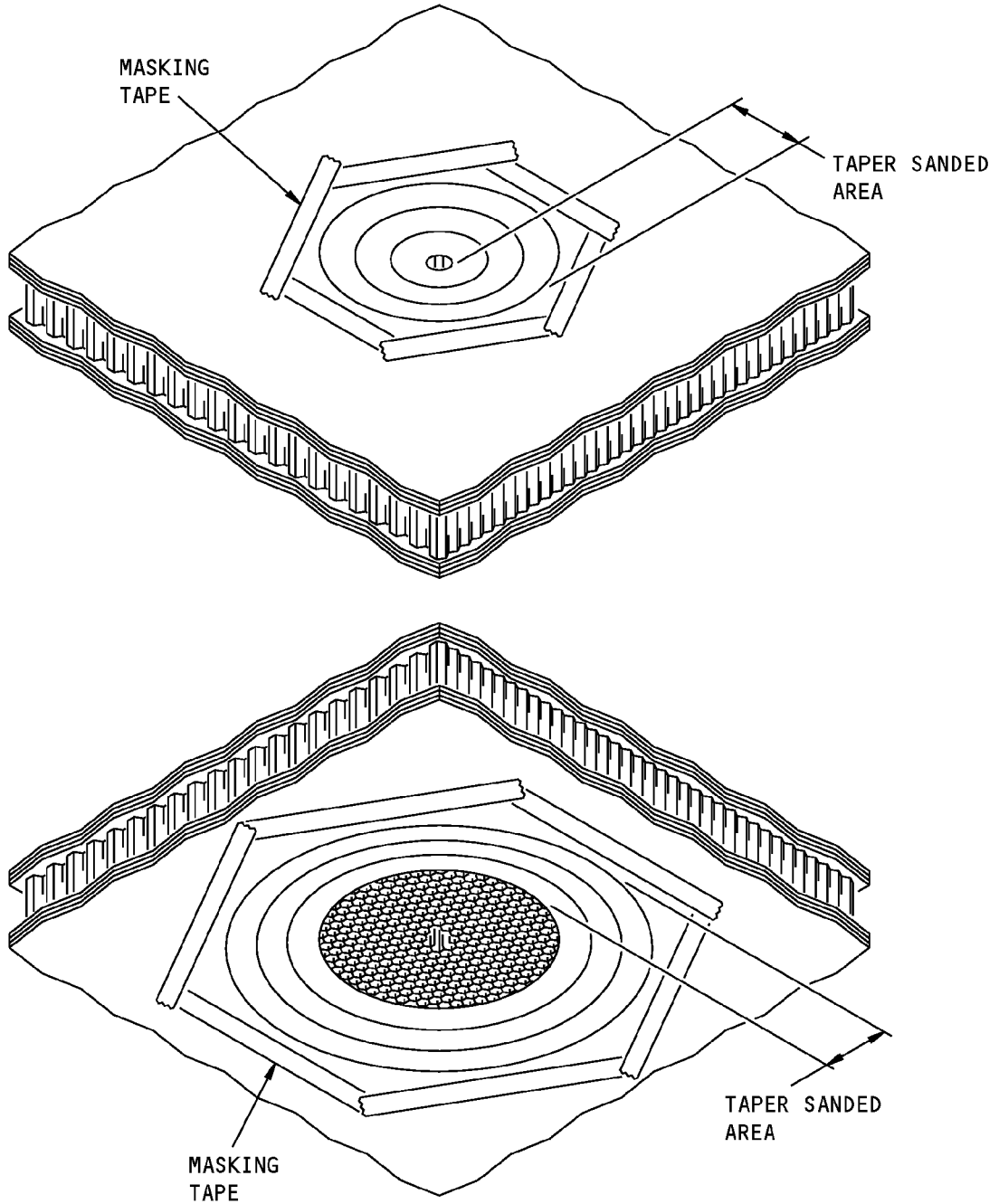
- B. If necessary, make a plaster support as given in Paragraph 5.G./REPAIR GENERAL, to give the repair the same contour as the radome.

**NOTE:** Make sure you apply a mold release coating to the plaster support before you apply the repair materials.

- C. Make the taper as given in Paragraph 5.C./REPAIR GENERAL Refer to Taper Sand that is Necessary for the Repair, Figure 201/REPAIR 13 for the necessary taper for each ply of the initial facesheet.
- D. Remove all of the water or other unwanted material as given in Paragraph 5.D./REPAIR GENERAL The damaged area must be fully dry.
- E. Clean the damaged area as given in Paragraph 5.E./REPAIR GENERAL
- F. Make the repair core as given in Paragraph 5.F./REPAIR GENERAL
- G. Clean the repair core as given in Paragraph 5.E./REPAIR GENERAL
- H. Install the repair core as given in Paragraph 5.H./REPAIR GENERAL
- I. Prepare the repair fabric as given in Paragraph 5.F./REPAIR GENERAL and Paragraph 5.I./REPAIR GENERAL Refer to Layout of the Repair Materials, Figure 202/REPAIR 13 for the layout of the repair parts.
- J. Apply the fabric repair plies to one surface as given in Paragraph 5.J./REPAIR GENERAL
- K. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- L. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- M. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- N. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- O. Sand the repair core to be smooth with the outer surface of the facesheet.
- P. Clean the repair area as given in Paragraph 5.E./REPAIR GENERAL
- Q. Apply the fabric repair plies to the opposite surface as given in Paragraph 5.J./REPAIR GENERAL
- R. Install the vacuum bag system as given in Paragraph 5.K./REPAIR GENERAL
- S. Do a check of the vacuum bag for leaks as given in Paragraph 5.L./REPAIR GENERAL
- T. Apply the pressure for the cure as given in Paragraph 5.M./REPAIR GENERAL
- U. Cure the repair at 200°F (93°C) as given in Paragraph 5.O./REPAIR GENERAL Make sure the temperature meets the cure requirements on both sides of the radome.
- V. Apply the finish to the repair area as given in Paragraph 5.P./REPAIR GENERAL



**737-800  
STRUCTURAL REPAIR MANUAL**



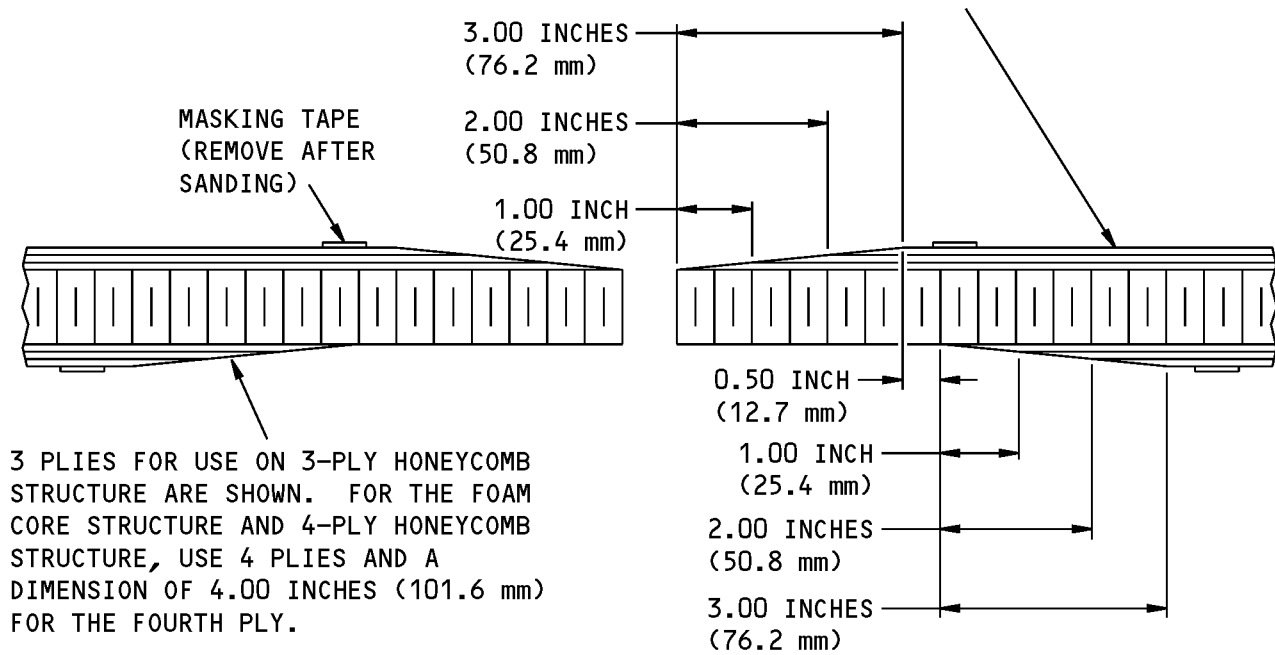
**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY



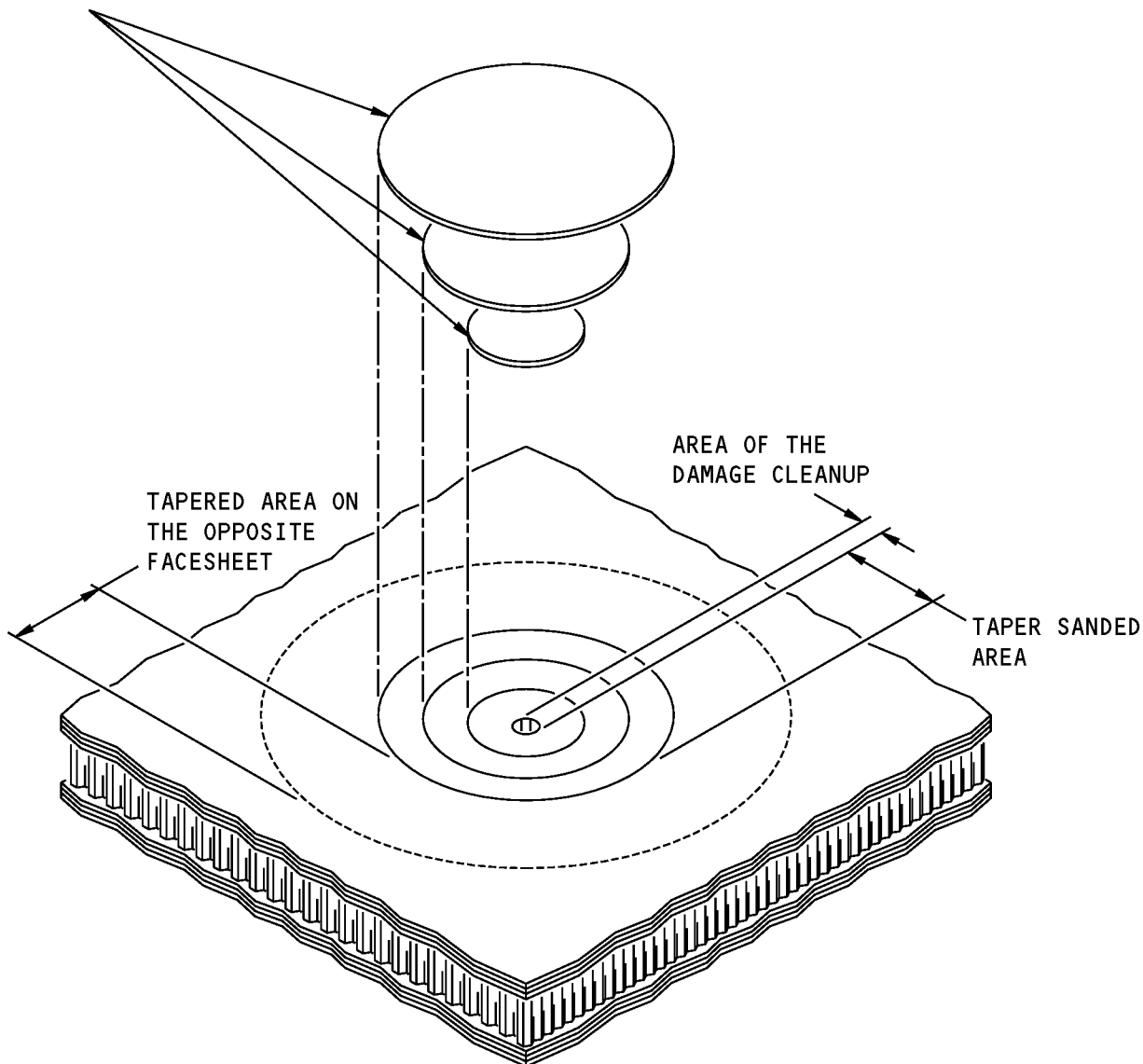
3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS AND A DIMENSION OF 4.00 INCHES (101.6 mm) FOR THE FOURTH PLY.

**SECTION THROUGH THE CENTER OF THE DAMAGED AREA**

**Taper Sand that is Necessary for the Repair  
Figure 201 (Sheet 2 of 2)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC  
 IMPREGNATED WITH BMS 8-301, CLASS 1  
 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY  
 HONEYCOMB STRUCTURE ARE SHOWN. USE FOUR PLYS  
 FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB  
 STRUCTURE WITH A 1.00 INCH (101.6 mm) OVERLAP FOR THE  
 FOR THE FOURTH PLY)

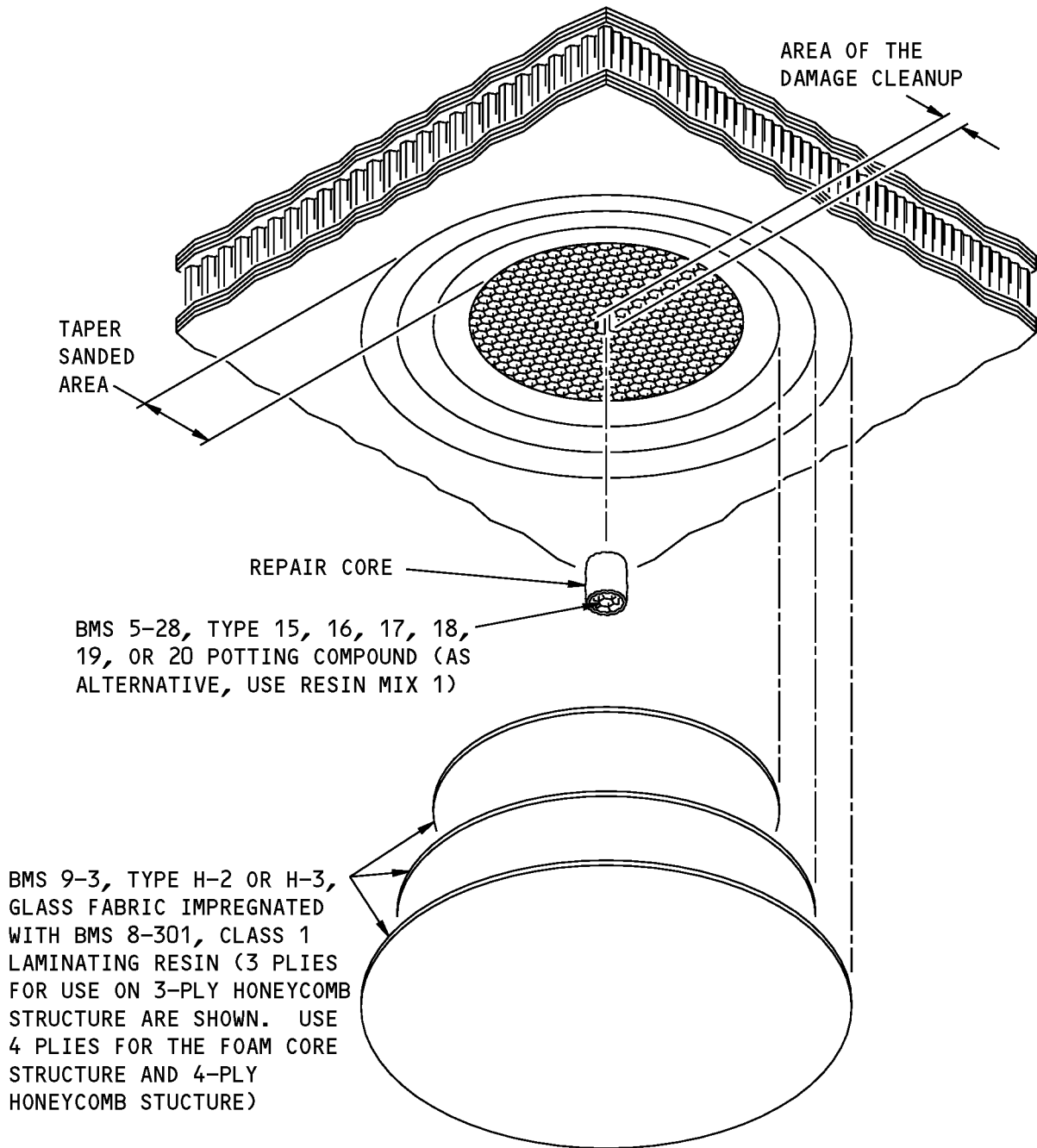


**NOTES**

- THE HONEYCOMB CORE IS SHOWN. THIS REPAIR IS ALSO APPLICABLE TO NOSE RADOME STRUCTURE WITH FOAM CORE.

**Layout of the Repair Materials  
 Figure 202 (Sheet 1 of 3)**

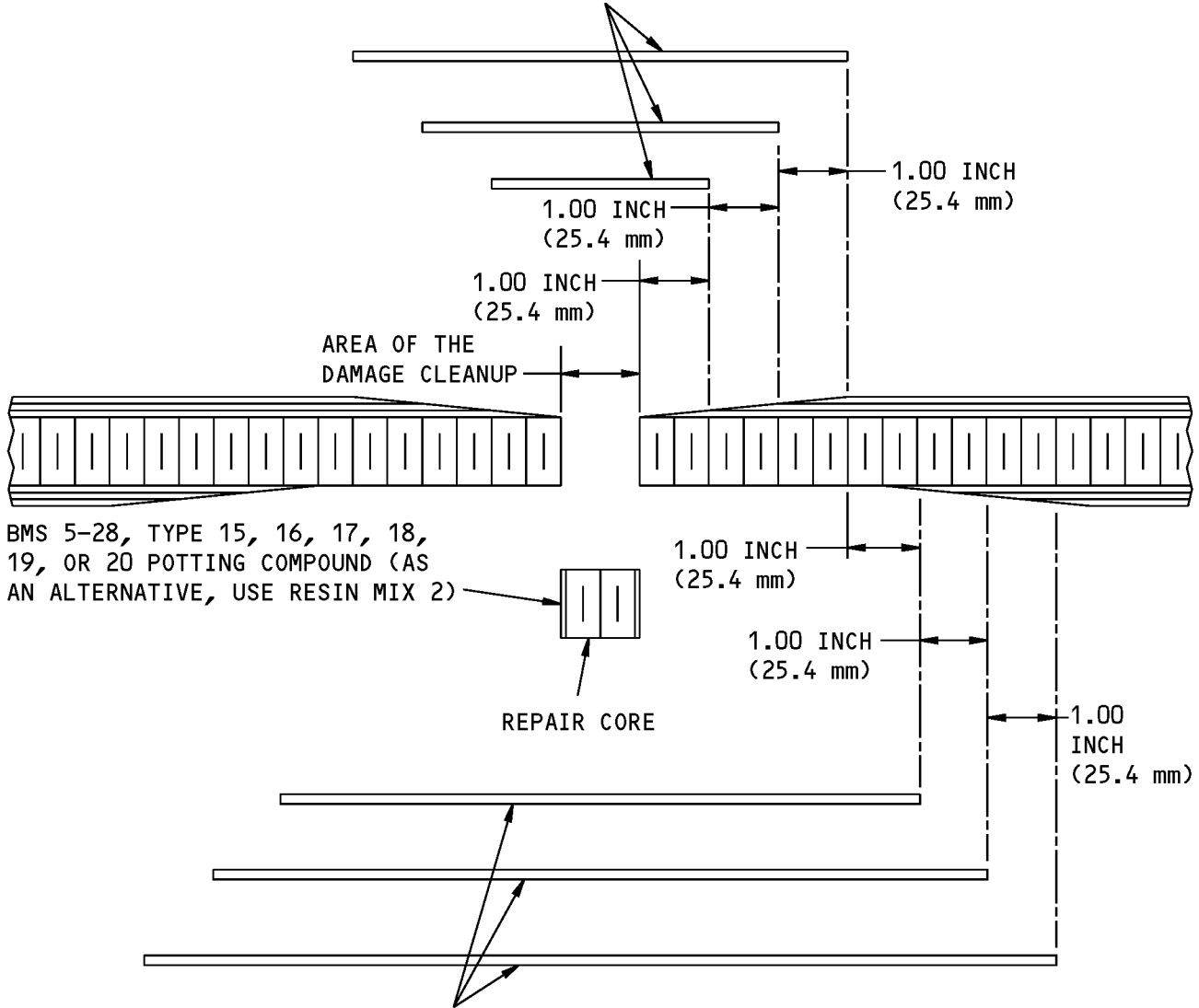
**737-800  
STRUCTURAL REPAIR MANUAL**



**Layout of the Repair Materials  
Figure 202 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**

BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 1 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)



BMS 5-28, TYPE 15, 16, 17, 18, 19, OR 20 POTTING COMPOUND (AS AN ALTERNATIVE, USE RESIN MIX 2)

REPAIR CORE

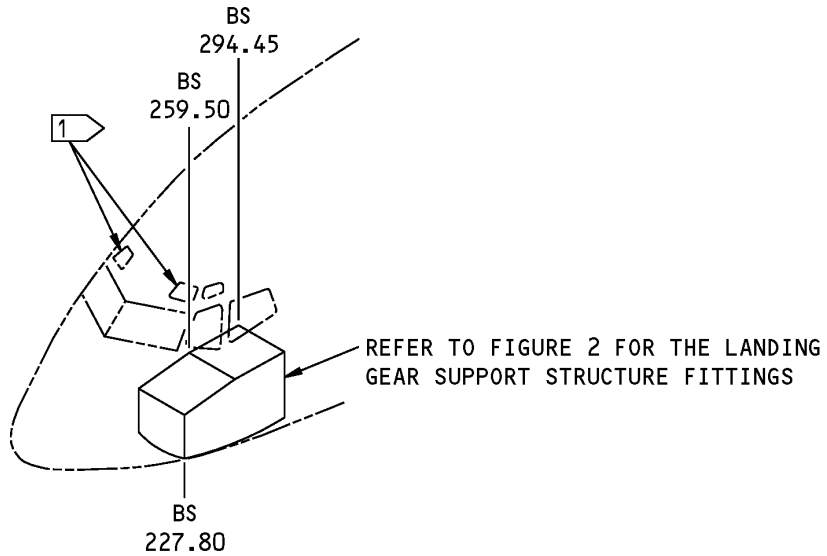
BMS 9-3, TYPE H-2 OR H-3, GLASS FABRIC IMPREGNATED WITH BMS 8-301, CLASS 1 LAMINATING RESIN (3 PLYS FOR USE ON 3-PLY HONEYCOMB STRUCTURE ARE SHOWN. FOR THE FOAM CORE STRUCTURE AND 4-PLY HONEYCOMB STRUCTURE, USE 4 PLYS WITH 1.00 INCH (101.6 mm) OVERLAP FOR THE FOURTH PLY)

**SECTION THROUGH THE CENTER OF THE REPAIR**

**Layout of the Repair Materials  
Figure 202 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 41 LANDING GEAR SUPPORT STRUCTURE FITTINGS**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

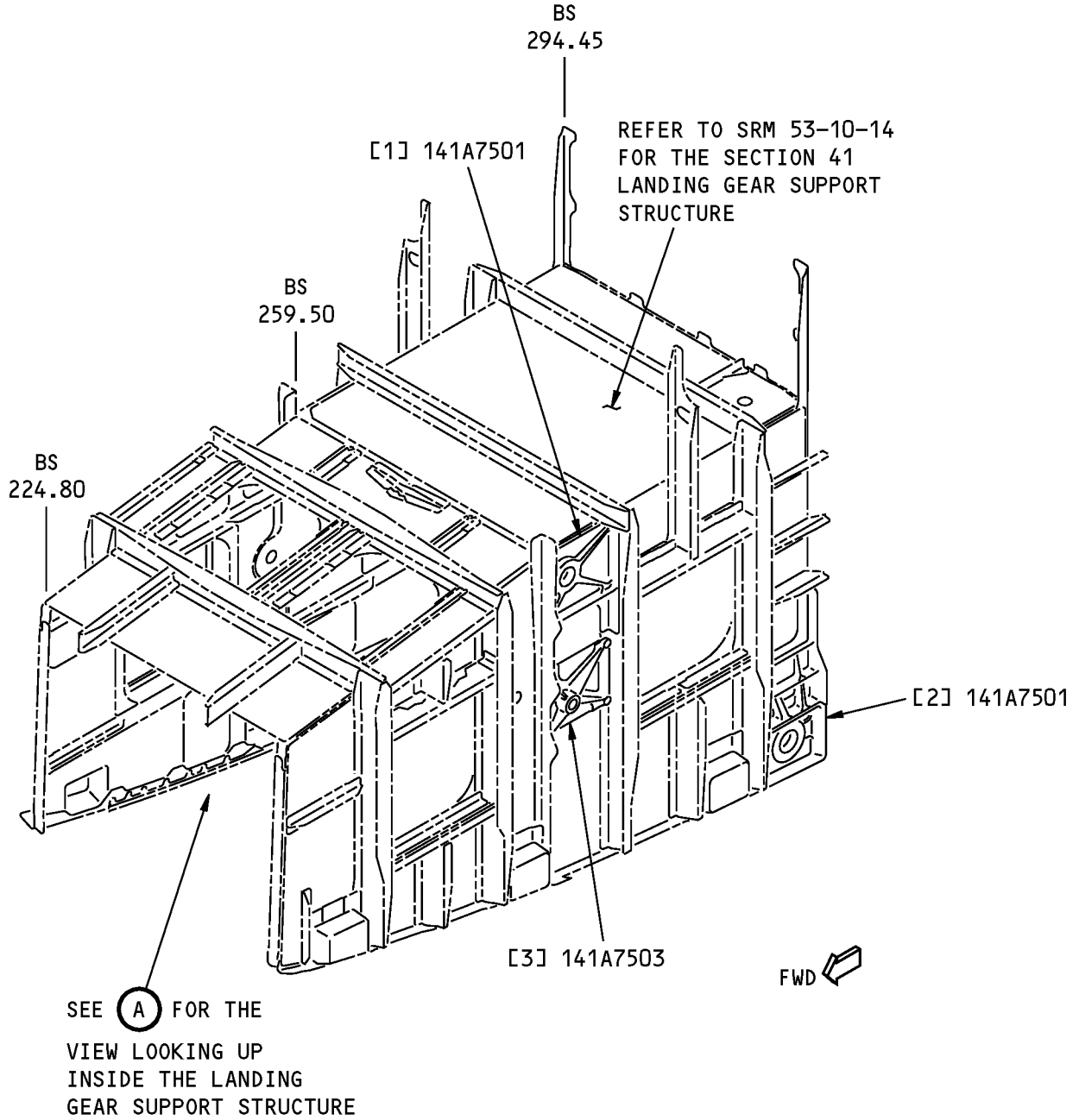
**1** NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Landing Gear Support Structure Fittings Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4101	Functional Collector - Nose Wheel Well
141A7500	Side Panel Installation - Nose Wheel Well
141A7600	Top Panel Installation - Nose Wheel Well

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STRUCTURAL REPAIR MANUAL**



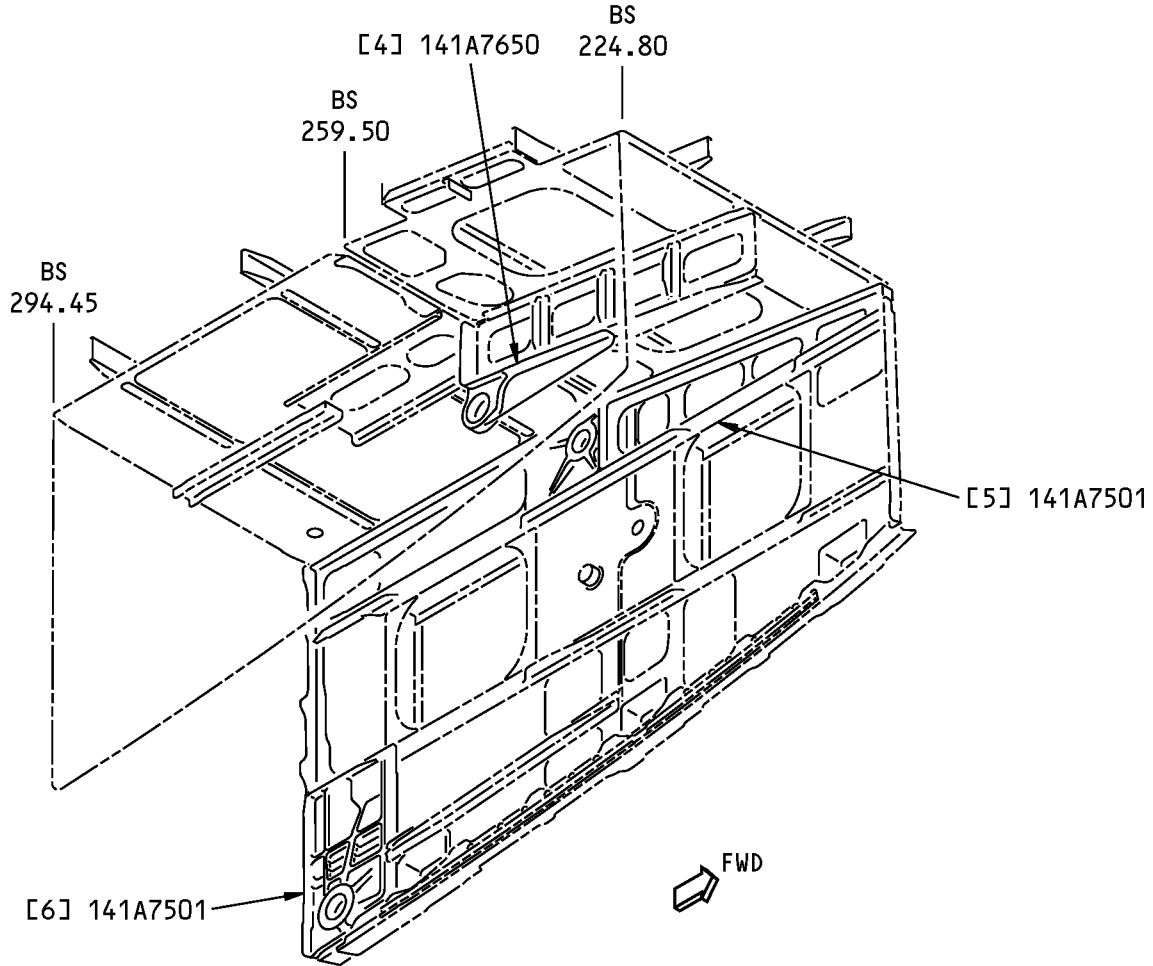
**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
SIDE PANEL (PRESSURIZED SIDE)**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 41 Landing Gear Support Structure Fittings Identification  
Figure 2 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE  
TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

(A)

**Section 41 Landing Gear Support Structure Fittings Identification  
Figure 2 (Sheet 2 of 2)**





**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Drag Brace Outboard Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[2]	Outboard Trunnion Fitting		7075-T73 precision forging as given in BMS 7-186. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[3]	Nose Gear Door Operator Support Fitting		7075-T73 die forging as given in BMS 7-186. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[4]	Nose Landing Gear Retract Actuator Fitting		15-5 PH CRES die forging as given in AMS 5659, Type I, solution treated. Heat treat to 150-170 KSI. Refer to production drawings for the grain direction and the machined thicknesses	
[5]	Drag Brace Beam Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	
[6]	Inboard Trunnion Fitting		7050-T7451 plate as given in AMS 4050. Refer to the engineering drawings for the grain direction and the machined thicknesses	

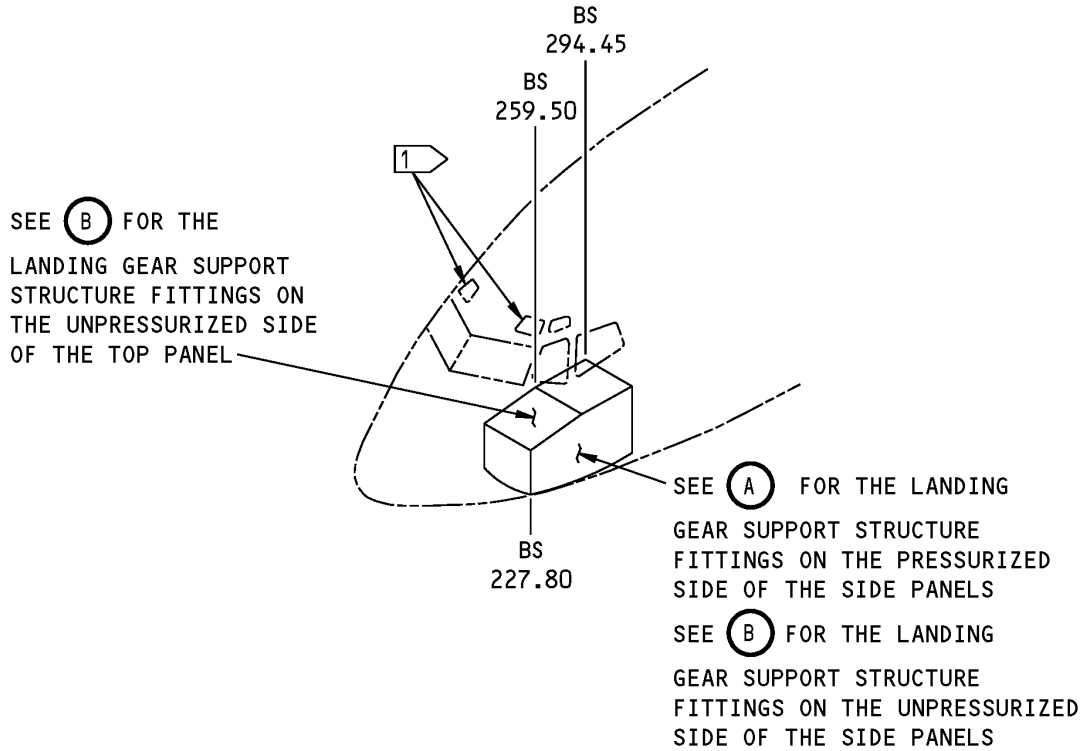
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - NOSE LANDING GEAR SUPPORT STRUCTURE FITTINGS**

**1. Applicability**

- A. This subject gives the allowable damage limits for the Nose Landing Gear support structure fittings shown in Section 41 Landing Gear Support Structure Fittings Location, Figure 101/ALLOWABLE DAMAGE 1.

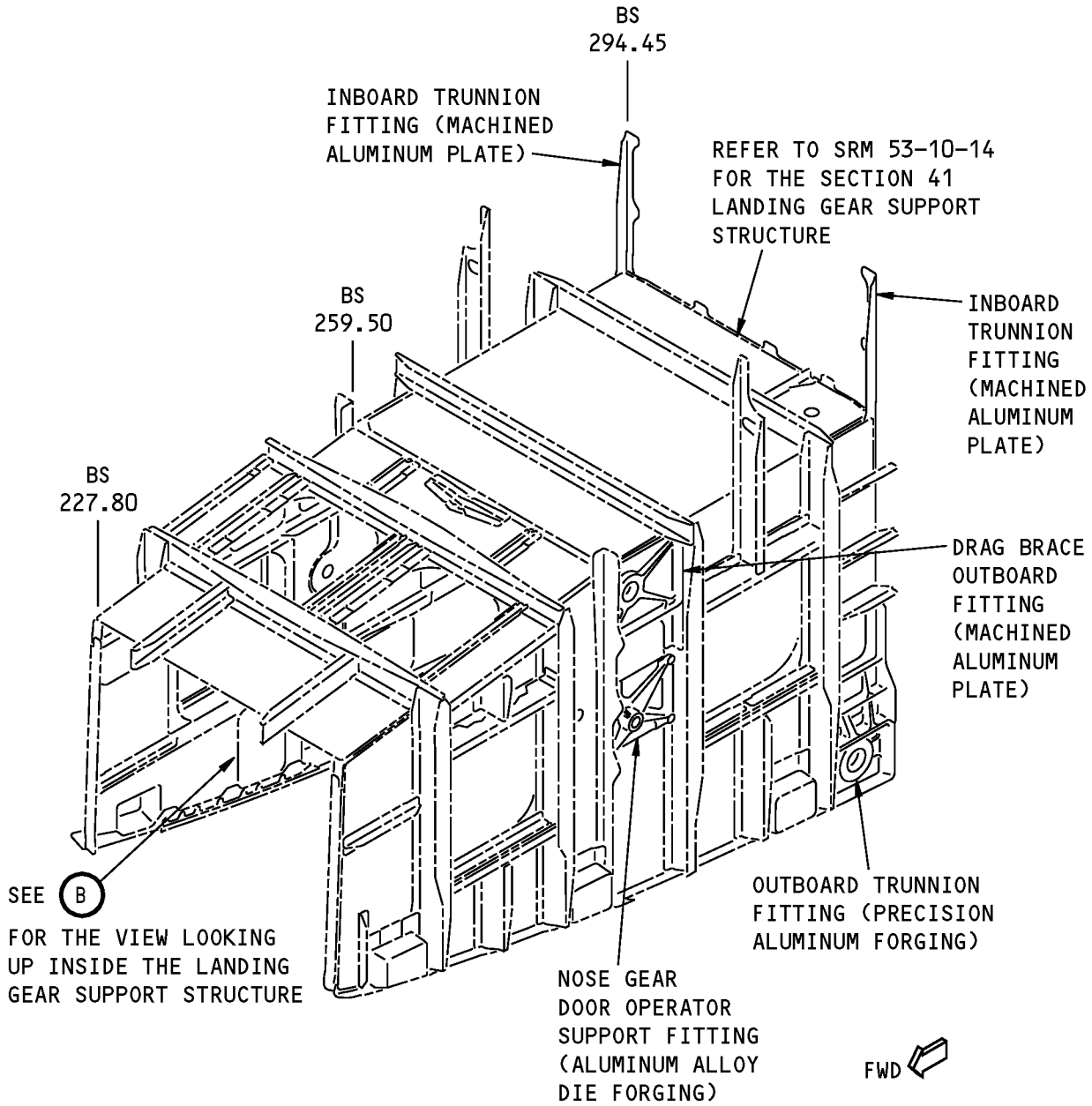


**NOTES**

- 1) NUMBERS 4 AND 5 FLIGHT DECK EYEBROW WINDOWS ARE ONLY COMMON TO LINE NUMBERS 1 THRU 1649.

**Section 41 Landing Gear Support Structure Fittings Location  
Figure 101 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**

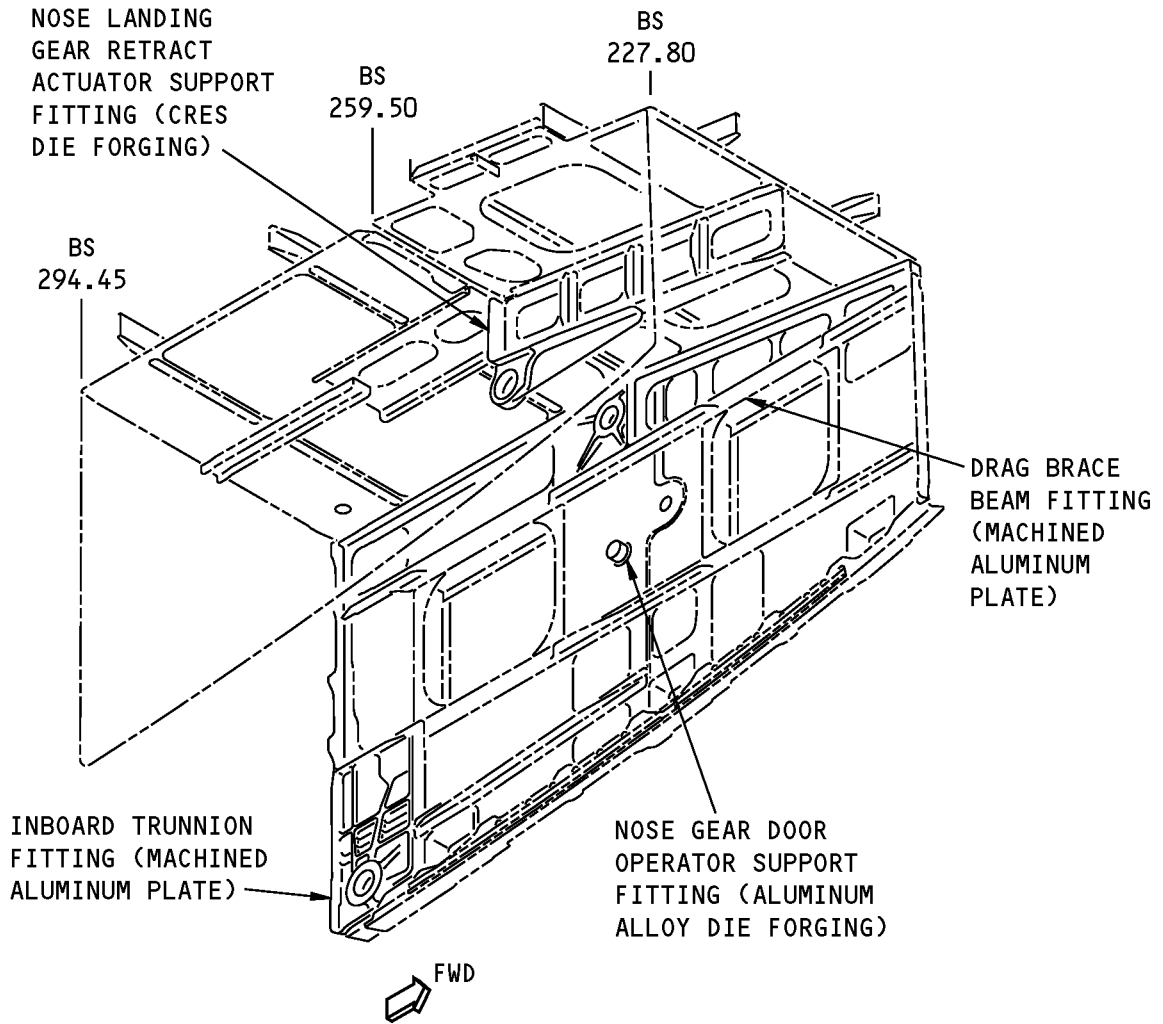


LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
SIDE PANEL (PRESSURIZED SIDE)

(A)

**Section 41 Landing Gear Support Structure Fittings Location  
Figure 101 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW LOOKING UP INSIDE THE LANDING GEAR SUPPORT STRUCTURE  
TOP AND SIDE PANELS (UNPRESSURIZED SIDES)

(B)

**Section 41 Landing Gear Support Structure Fittings Location  
Figure 101 (Sheet 3 of 3)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. Do the steps that follow if you have damage to the aluminum or Corrosion Resistant Steel (CRES) parts:
- (1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.
    - (a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:
      - 1) Dye penetrant inspection. Refer to SOPM 20-20-02.
      - 2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
    - (b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.
  - (2) Remove the damage as necessary. Refer to 51-10-02 for the investigation and cleanup procedures.
  - (3) Refer to 51-30-03 for possible sources of nonmetallic materials you can use to remove the damage.
  - (4) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove the damage.
- B. After you have removed the damage, do the steps that follow:
- (1) Apply a chemical conversion coating to the reworked areas of the aluminum. Refer to 51-20-01.
  - (2) Apply a cadmium plating to the reworked areas of the CRES parts. Refer to SOPM 20-42-05, Type 2, Class 2.
  - (3) Apply one layer of BMS 10-11, Type I primer to the reworked areas of the following parts:
    - Drag Brace Beam Fitting
    - Drag Brace Outboard Fitting
    - Inboard Trunnion Fitting
    - Nose Landing Gear Retract Actuator Support Fitting. Refer to SOPM 20-41-02.
  - (4) Apply two layers of BMS 10-11, Type I primer to the reworked areas of the following parts:
    - Nose Gear Door Operator Support Fitting
    - Outboard Trunnion Fitting. Refer to SOPM 20-41-02.

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-10-03	General - Shot Peening Procedures
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection



## 737-800 STRUCTURAL REPAIR MANUAL

(Continued)

Reference	Title
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-42-05	Bright Cadmium Plating
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

#### 4. Allowable Damage Limits

##### A. Drag Brace Fittings and Trunnion Fittings (Aluminum)

###### (1) Cracks:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

###### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

###### (3) Dents are not permitted.

###### (4) Holes and Punctures are not permitted.

##### B. Nose Gear Door Operator Support Fitting (Aluminum)

###### (1) Cracks:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

###### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

###### (3) Dents are not permitted.

###### (4) Holes and Punctures are not permitted.

**WARNING:** MAKE SURE THAT YOU WEAR EYE PROTECTION WHEN YOU USE THE FLAP PEEN WHEEL. IF YOU DO NOT OBEY, AN INJURY CAN OCCUR.

- (5) Flap peen or shot peen the surfaces of the parts where the damage has been removed, but not the inner surfaces of the lug bores.

- (a) Refer to 51-20-06 for the shot peen intensity and shot number.

- (b) Refer to SOPM 20-10-03 for the flap peen and shot peen procedures.

##### C. Nose Landing Gear Retract Actuator Support Fitting (CRES)

###### (1) Cracks:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C .

###### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .

ALLOWABLE DAMAGE 1

**53-10-90**

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**737-800**

**STRUCTURAL REPAIR MANUAL**

- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.

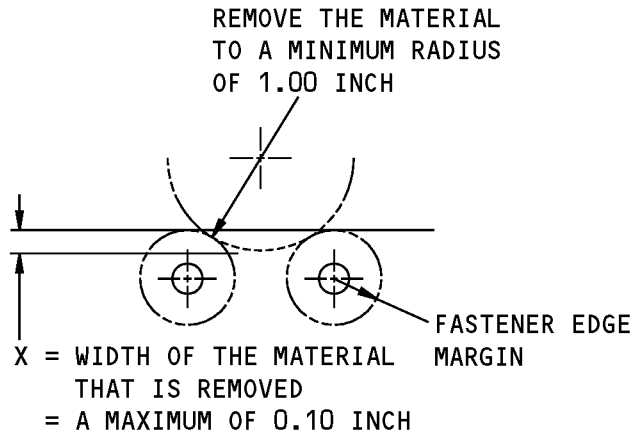
ALLOWABLE DAMAGE 1

**53-10-90**

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Jul 10/2004

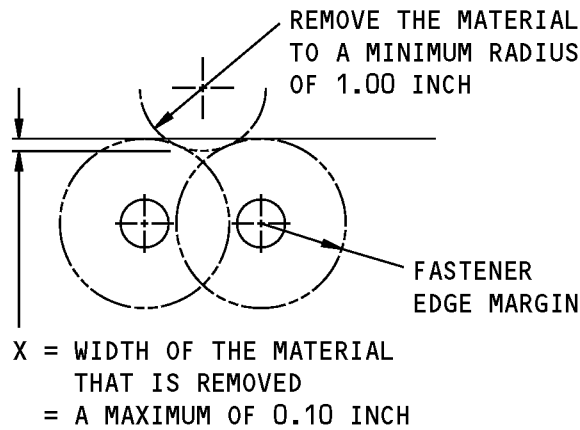
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737-800  
STRUCTURAL REPAIR MANUAL



REMOVAL OF DAMAGED MATERIAL AT  
EDGES WHERE THE FASTENER EDGE  
MARGINS DO NOT HAVE AN OVERLAP

A



REMOVAL OF DAMAGED MATERIAL AT  
EDGES WHERE THE FASTENER EDGE  
MARGINS HAVE AN OVERLAP

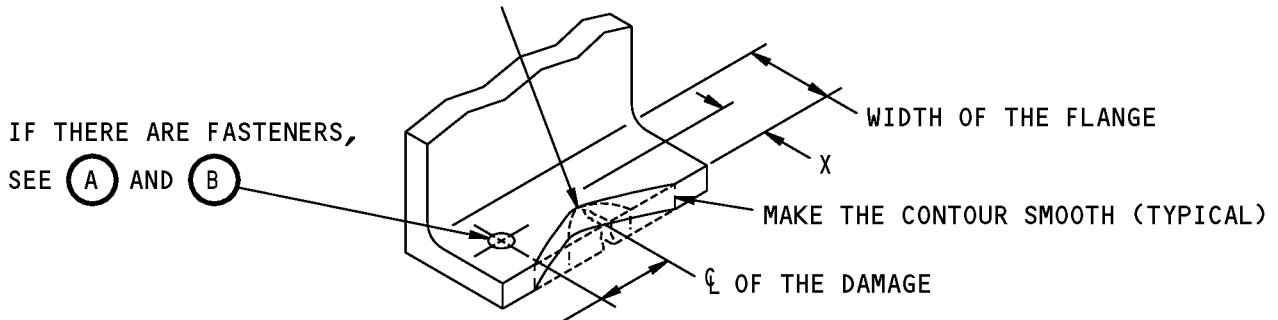
B

Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits  
Figure 102 (Sheet 1 of 5)



**737-800  
STRUCTURAL REPAIR MANUAL**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN



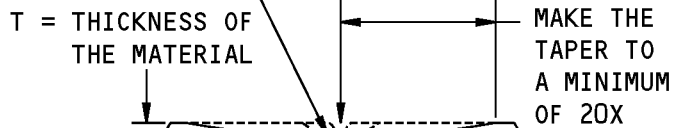
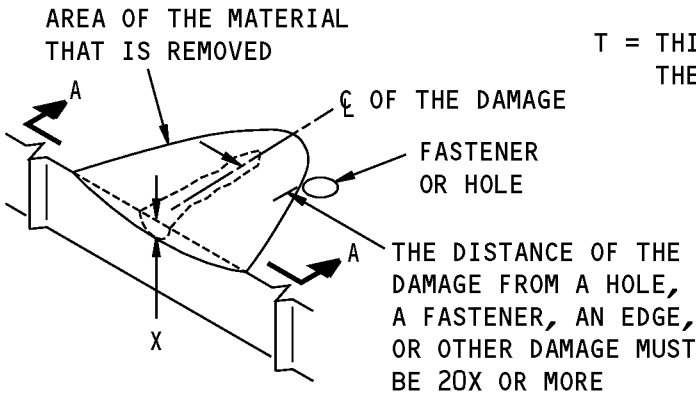
TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(C)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN



A-A

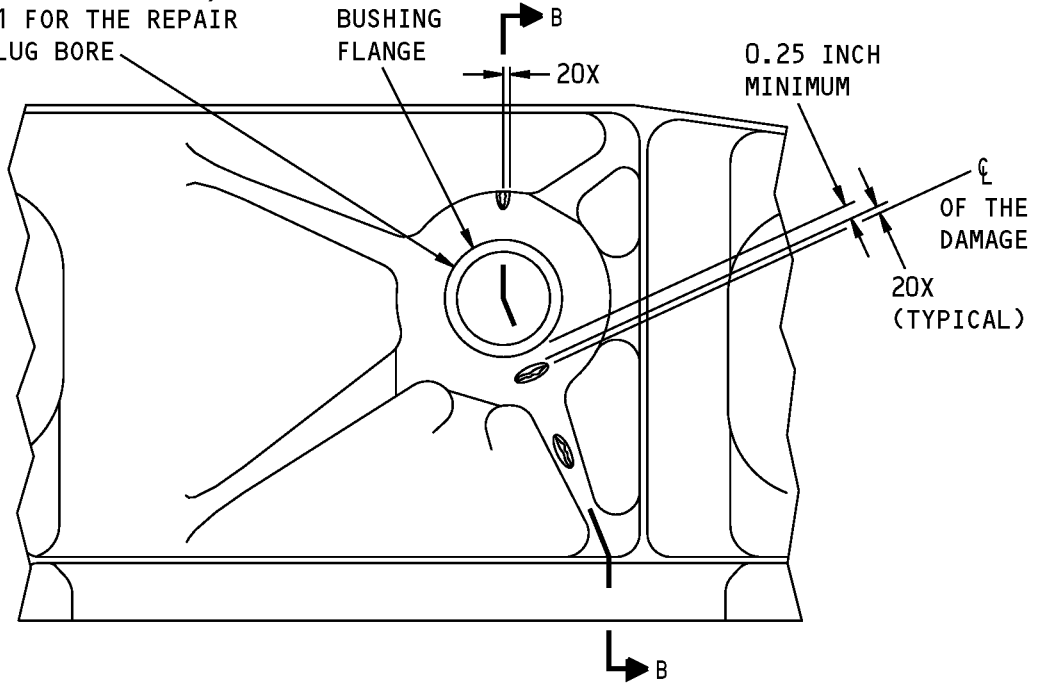
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)

**Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits  
Figure 102 (Sheet 2 of 5)**

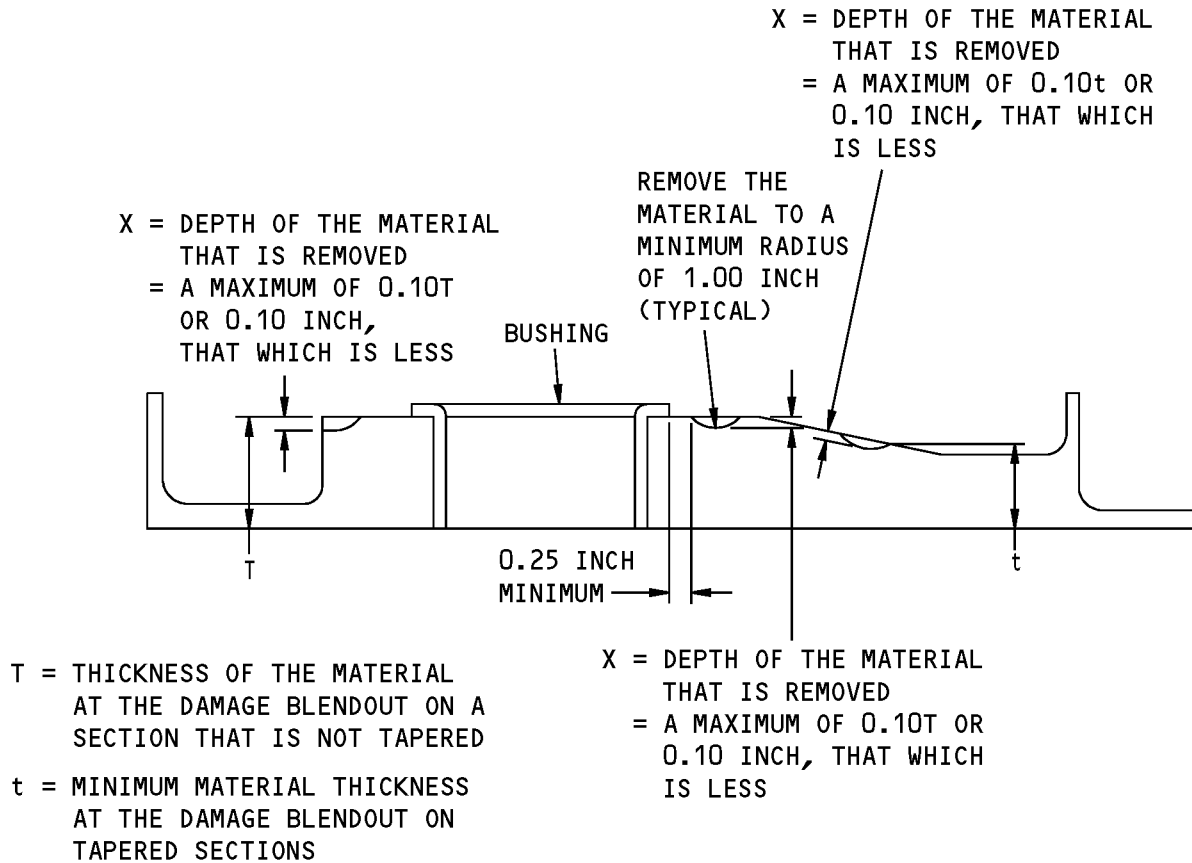
**737-800  
STRUCTURAL REPAIR MANUAL**

DAMAGE TO THE LUG BORE SURFACE IS NOT PERMITTED. IF THERE IS DAMAGE, THEN REFER TO SRM 53-10-90, REPAIR 1 FOR THE REPAIR OF THE LUG BORE



**Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits  
Figure 102 (Sheet 3 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**

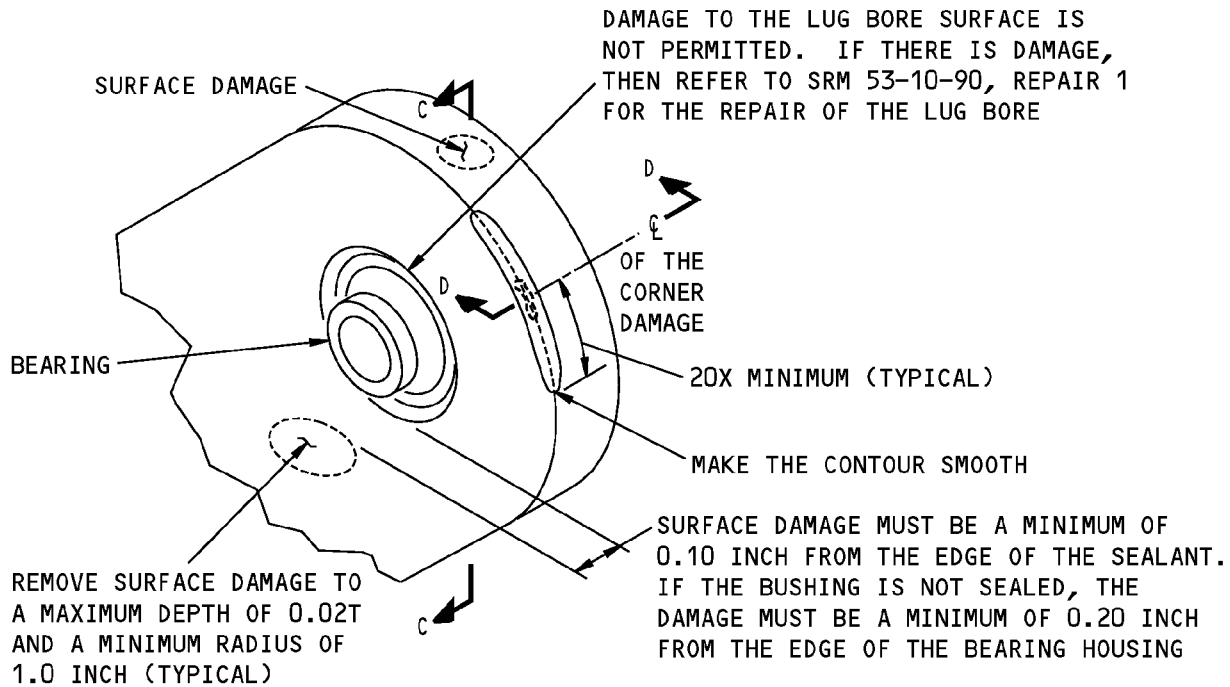


B-B

**NOTE:** DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

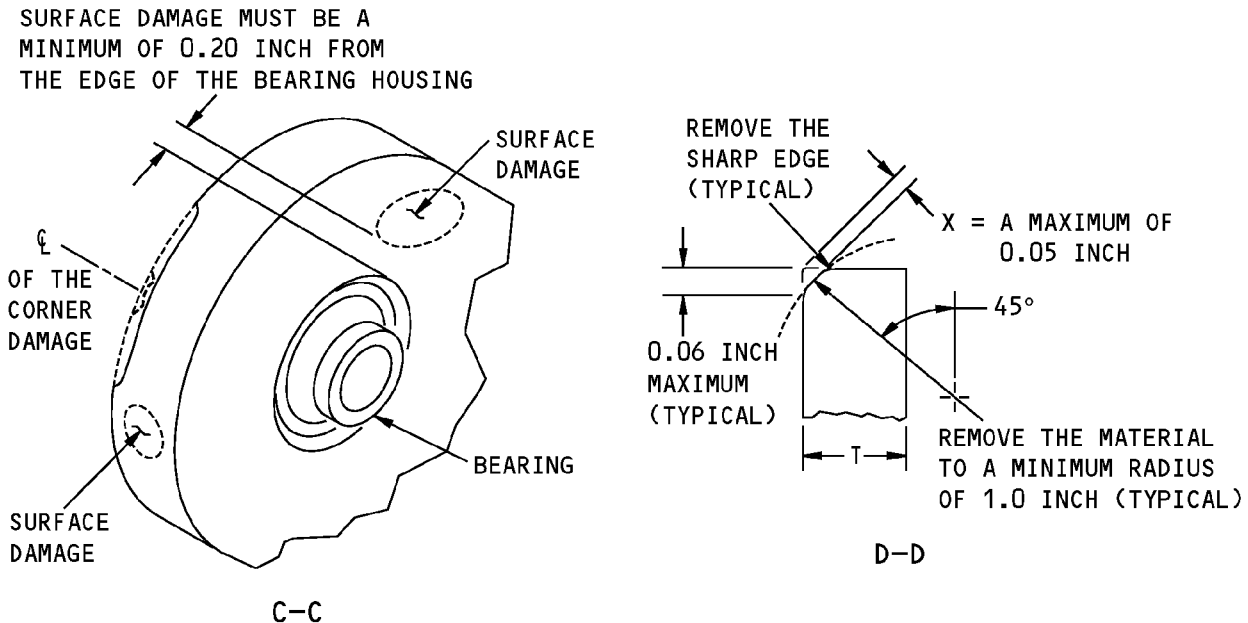
**Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits  
Figure 102 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



**REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BEARING**

**F**



**Section 41 Landing Gear Support Structure Fittings Allowable Damage Limits  
Figure 102 (Sheet 5 of 5)**



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## STRUCTURAL REPAIR MANUAL

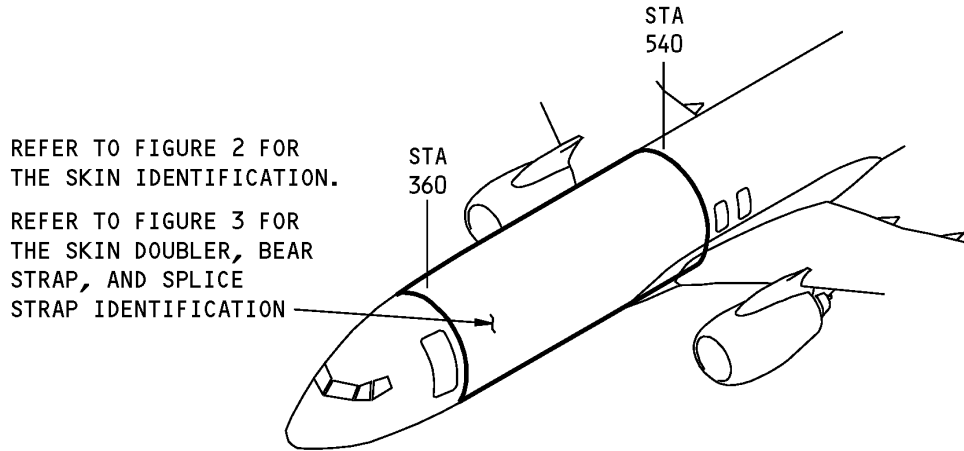
### REPAIR 1 - NOSE LANDING GEAR SUPPORT FITTING STRUCTURE

#### 1. Repair 1

A. This data has been removed.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 43 FUSELAGE SKIN**



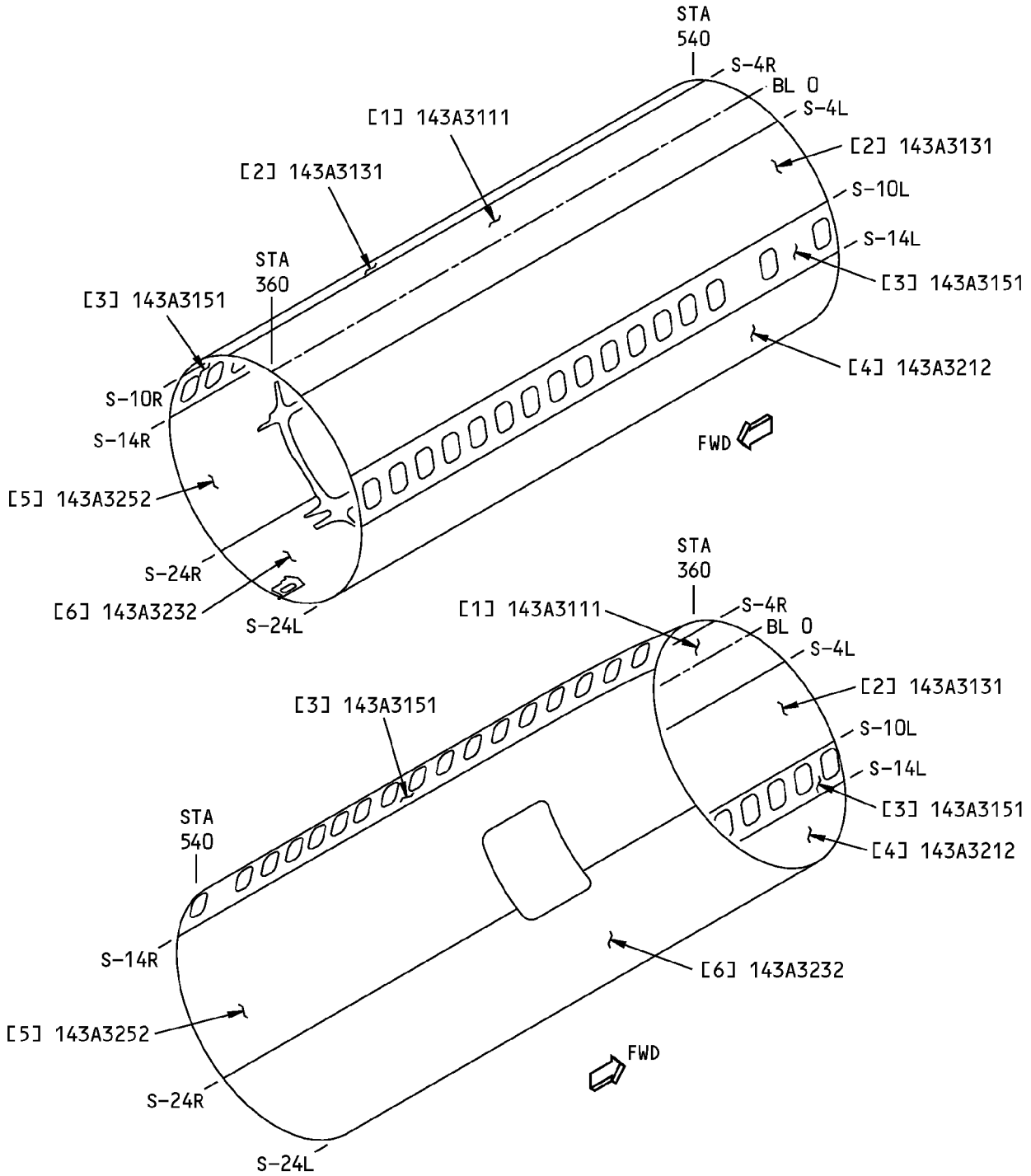
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4310	Functional Collector - Section 43, Upper Lobe
140A4320	Section 43, Lower Lobe - Functional Product Collector
143A3110	Skin Installation - S-4L to S-4R, STA 360 to 540
143A3130	Skin Installation - S-4 to S-10, STA 360 to 540
143A3150	Skin Installation - S-10 to S-14, STA 360 to 540
143A3210	Skin Installation - STA 360 to 540, S-14L to S-24L
143A3230	Skin Installation - Section 43, Lower Lobe, S-24L to S-24R
143A3250	Skin Installation - STA 360 to 540, S-14R to S-24R

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Fuselage Skin Identification  
Figure 2**



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STRUCTURAL REPAIR MANUAL**

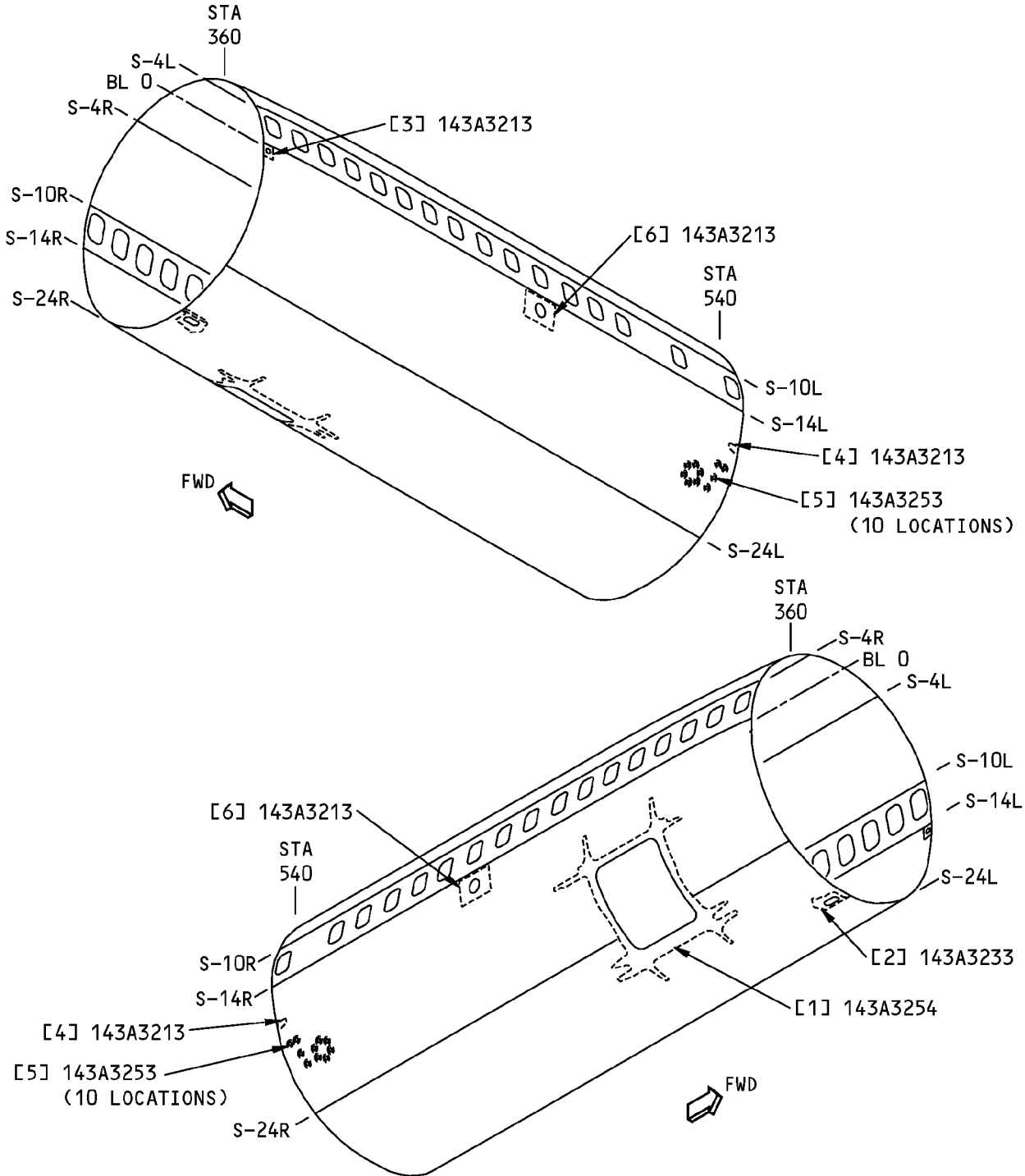
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin Assembly Skin Doublers	0.040 (1.02) 0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5 2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly Skin Doublers	0.040 (1.02) 0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5 2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[4]	Skin	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[5]	Skin	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[6]	Skin	0.090 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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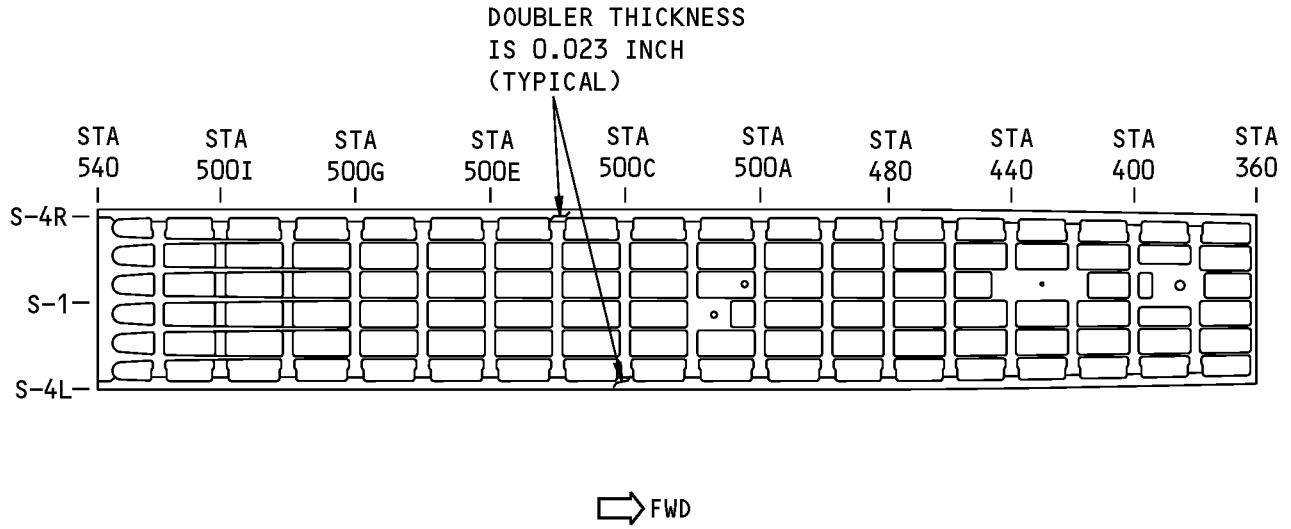


**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 43 Fuselage Skin Doubler, Bear Strap, and Splice Strap Identification  
Figure 3**



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NOTE: CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

VIEW IS ON THE INNER SURFACE OF THE SKIN

Chem-Milled Areas of Figure 2, Item [1]  
Figure 4

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**53-30-01**

IDENTIFICATION 1  
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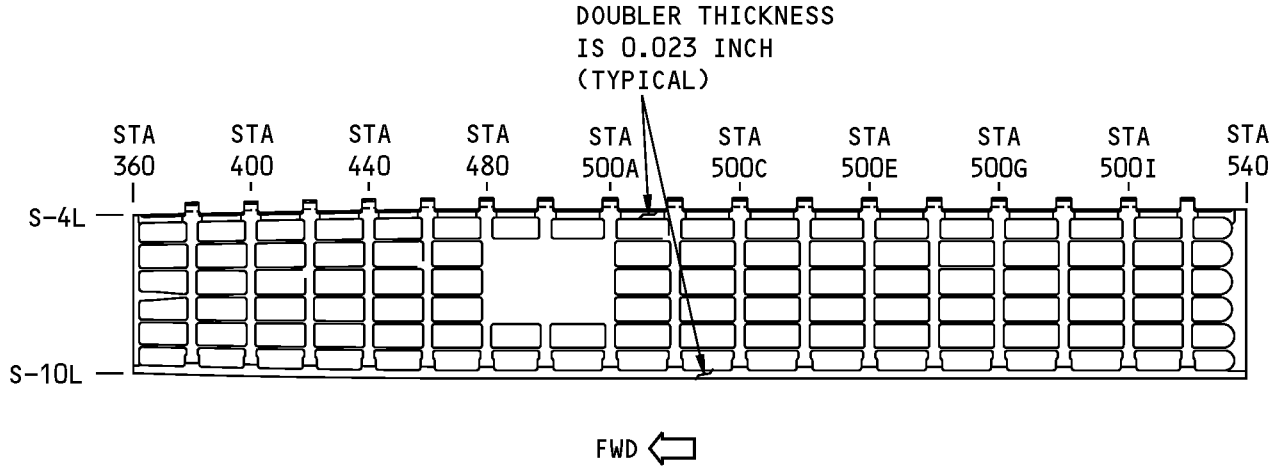
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Bear Strap	0.110 (2.79)	2024-T3 sheet as given in QQ-A-250/4.	
[2]	Doubler	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Doubler (3)	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Doubler (2)	0.150 (3.81)	7075-T73 sheet as given in QQ-A-250/12	
[5]	Doubler (20)	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler (2)	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	

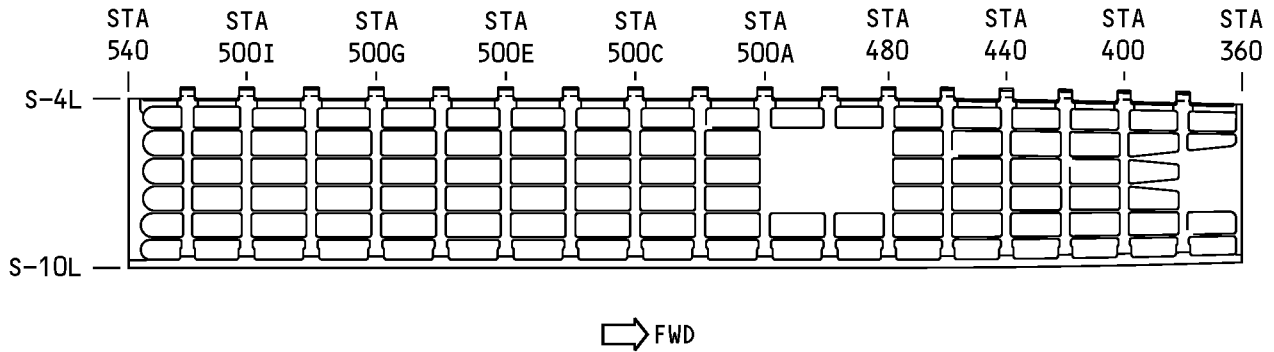
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

VIEW IS ON THE INNER SURFACE OF THE SKIN  
RIGHT SIDE IS SHOWN

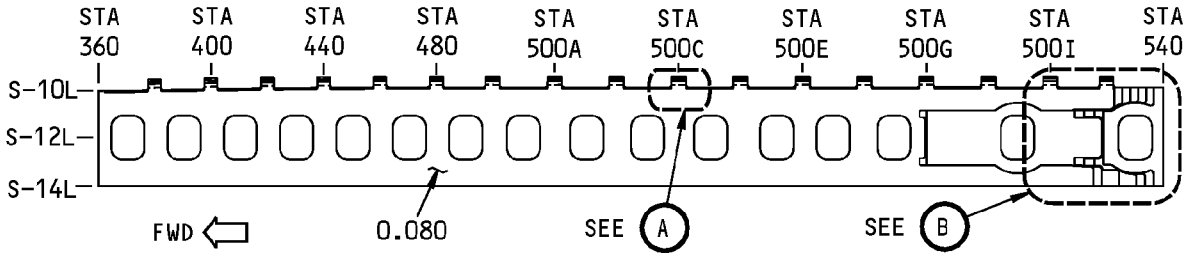


**NOTE:** CHEM-MILLED DOUBLER THICKNESS IS 0.023 INCH. THE SKIN IS NOT CHEM-MILLED.

VIEW IS ON THE INNER SURFACE OF THE SKIN  
LEFT SIDE IS SHOWN

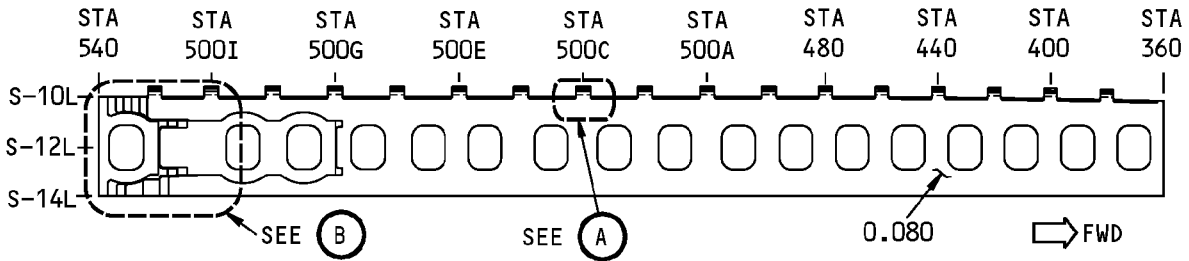
**Chem-Milled Areas of Figure 2, Item [2]  
Figure 5**

**STRUCTURAL REPAIR MANUAL**



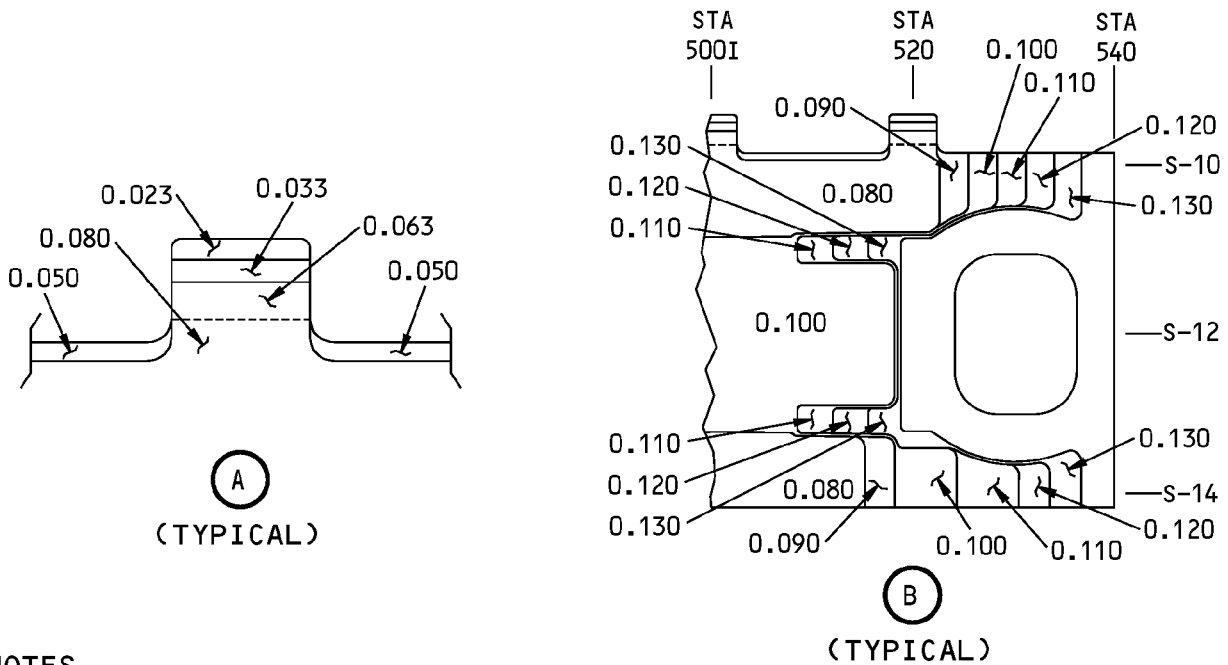
VIEW IS ON THE INNER SURFACE OF THE SKIN

RIGHT SIDE IS SHOWN



VIEW IS ON THE INNER SURFACE OF THE SKIN

LEFT SIDE IS SHOWN

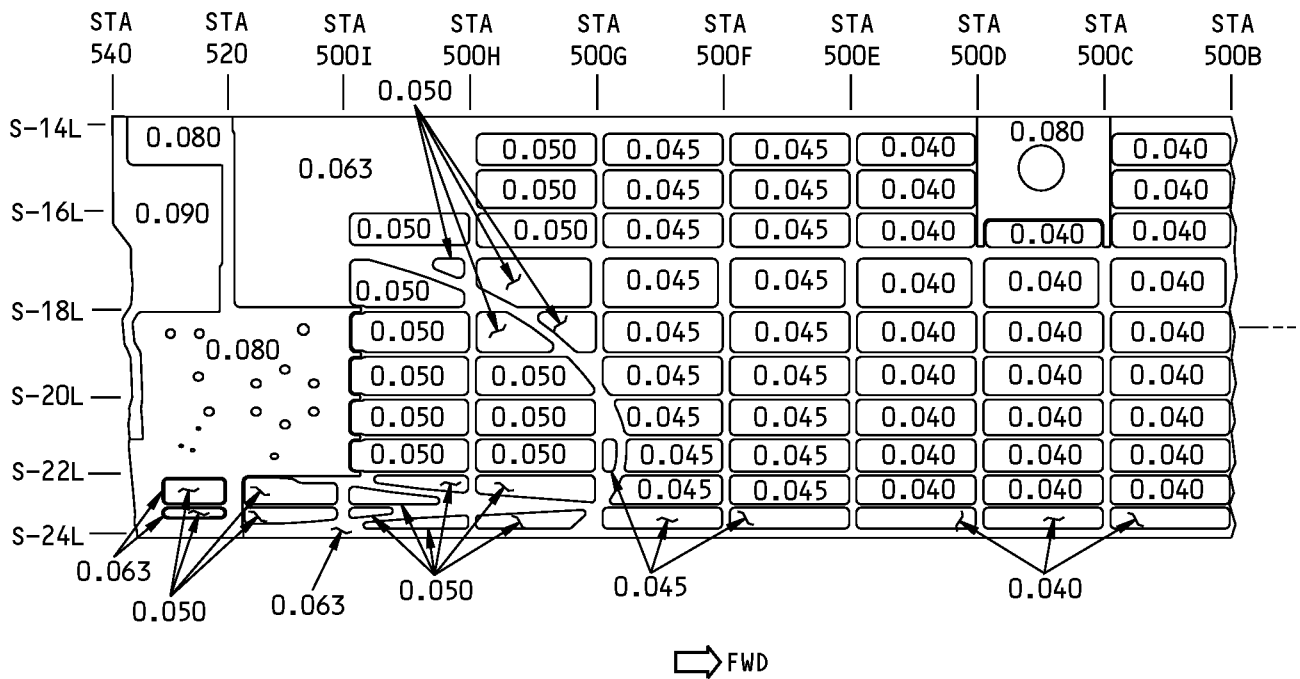
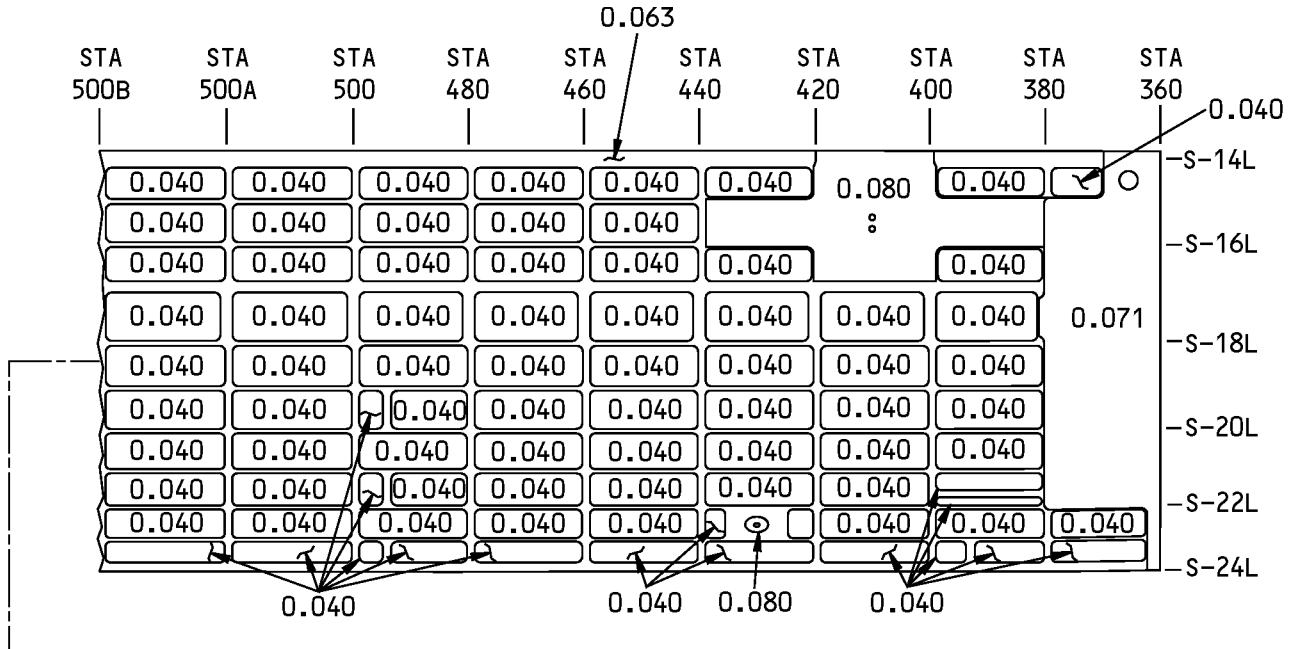


**NOTES**

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

**Chem-Milled Areas of Figure 2, Item [3]  
Figure 6**

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STRUCTURAL REPAIR MANUAL**

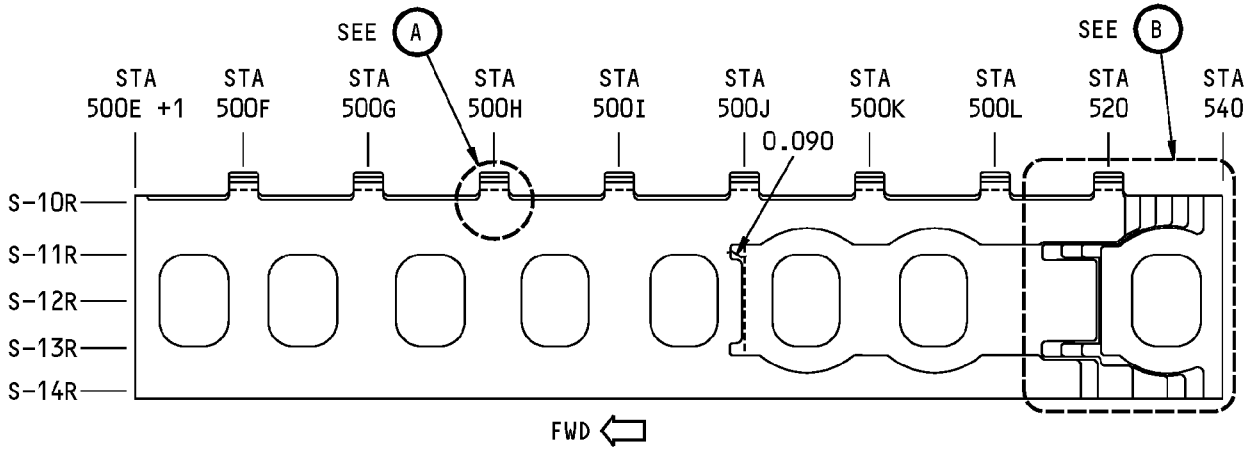


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN**

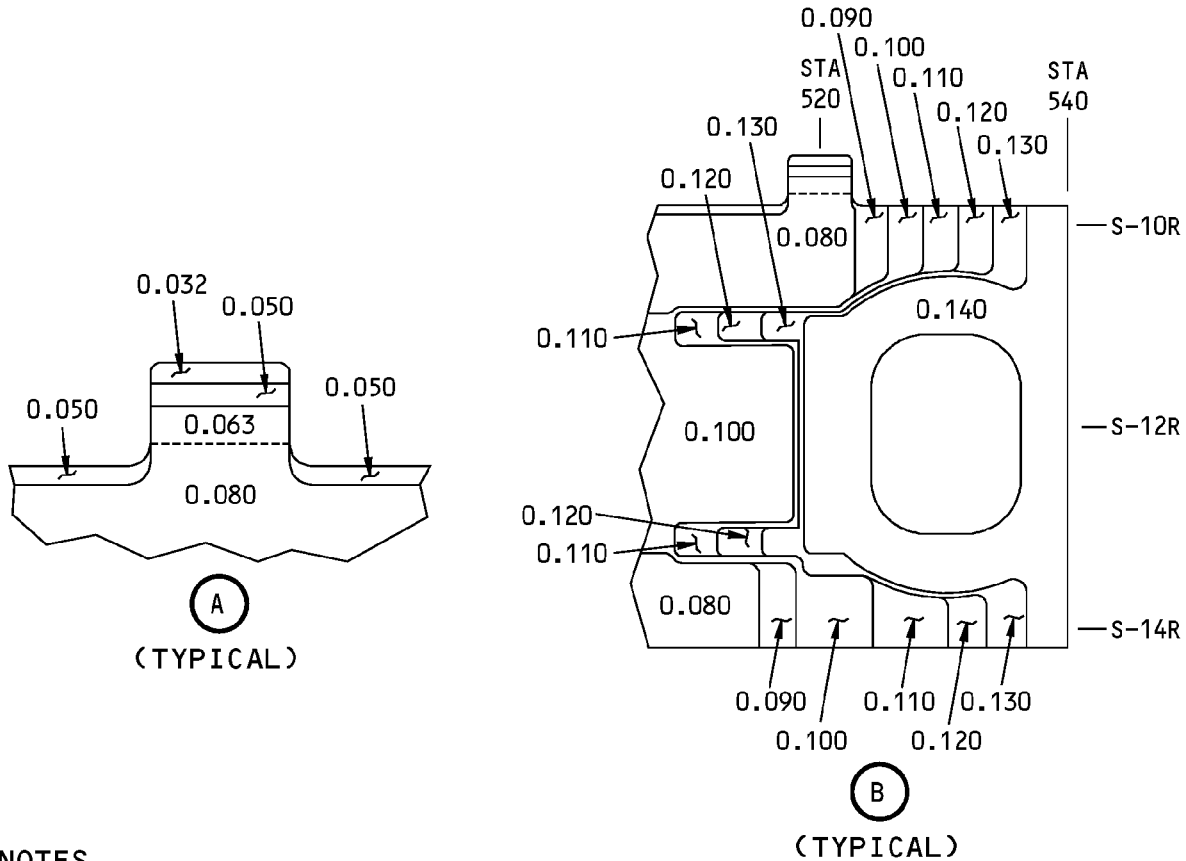
**Chem-Milled Areas of Figure 2, Item [4]  
Figure 7 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



FWD ←

VIEW IS ON THE INNER SURFACE OF THE SKIN  
RIGHT SIDE IS SHOWN

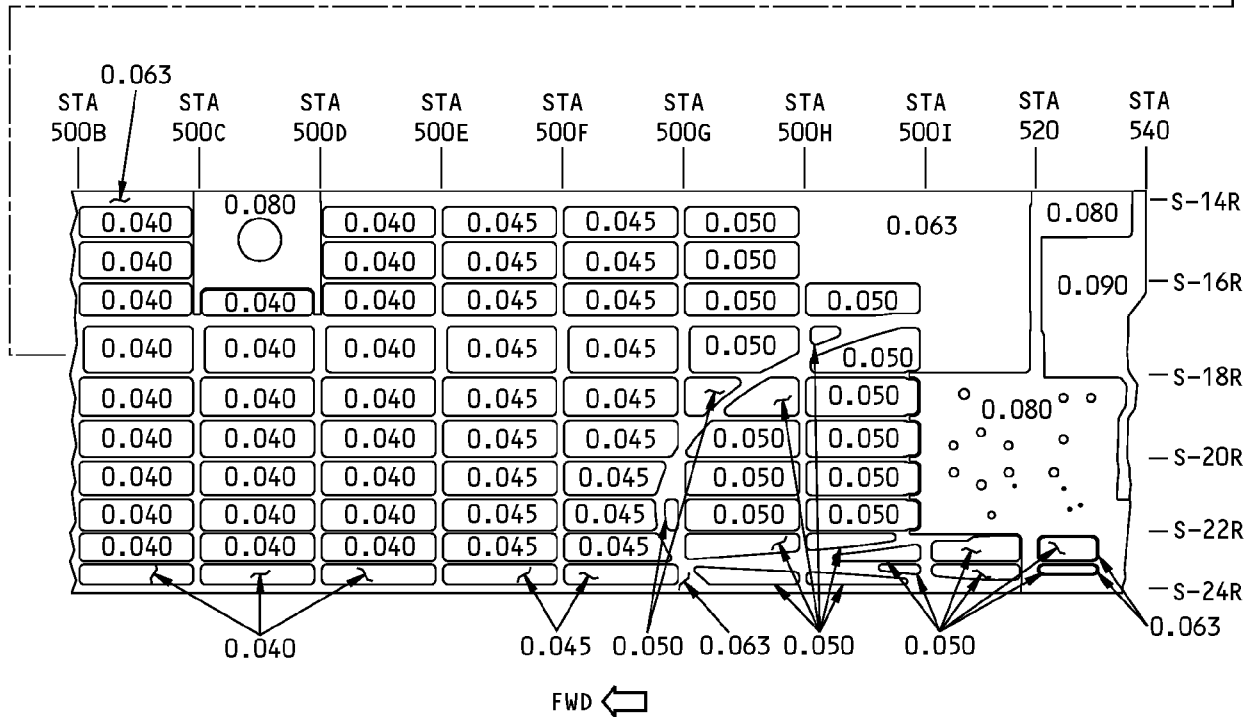
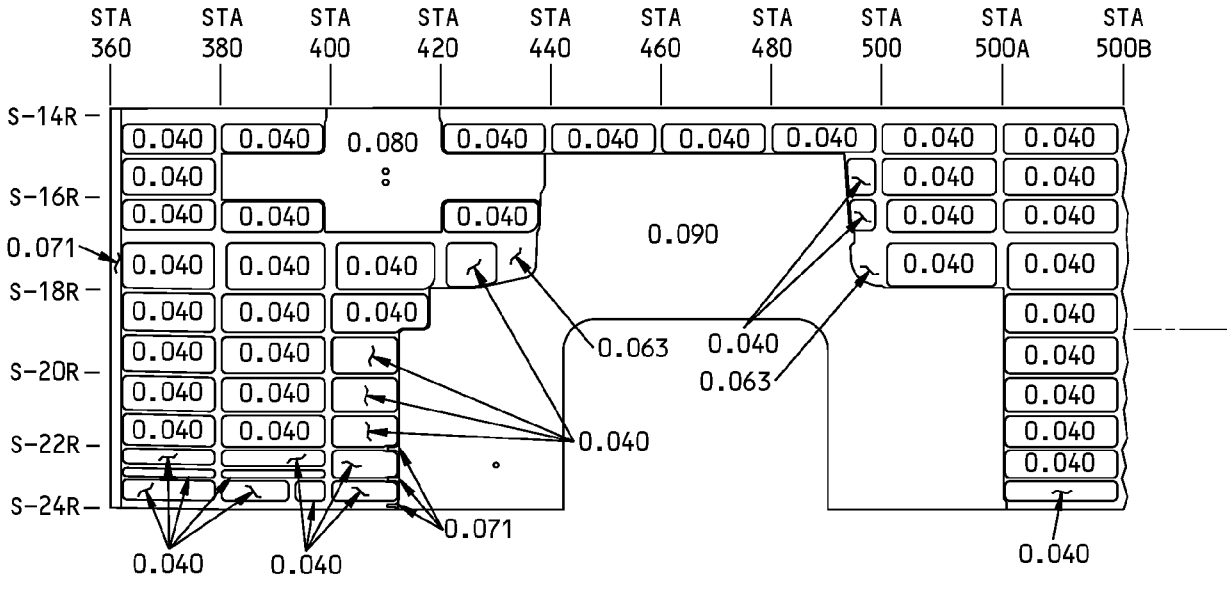


**NOTES**

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

**Chem-Milled Areas of Figure 2, Item [4]  
Figure 7 (Sheet 2 of 2)**

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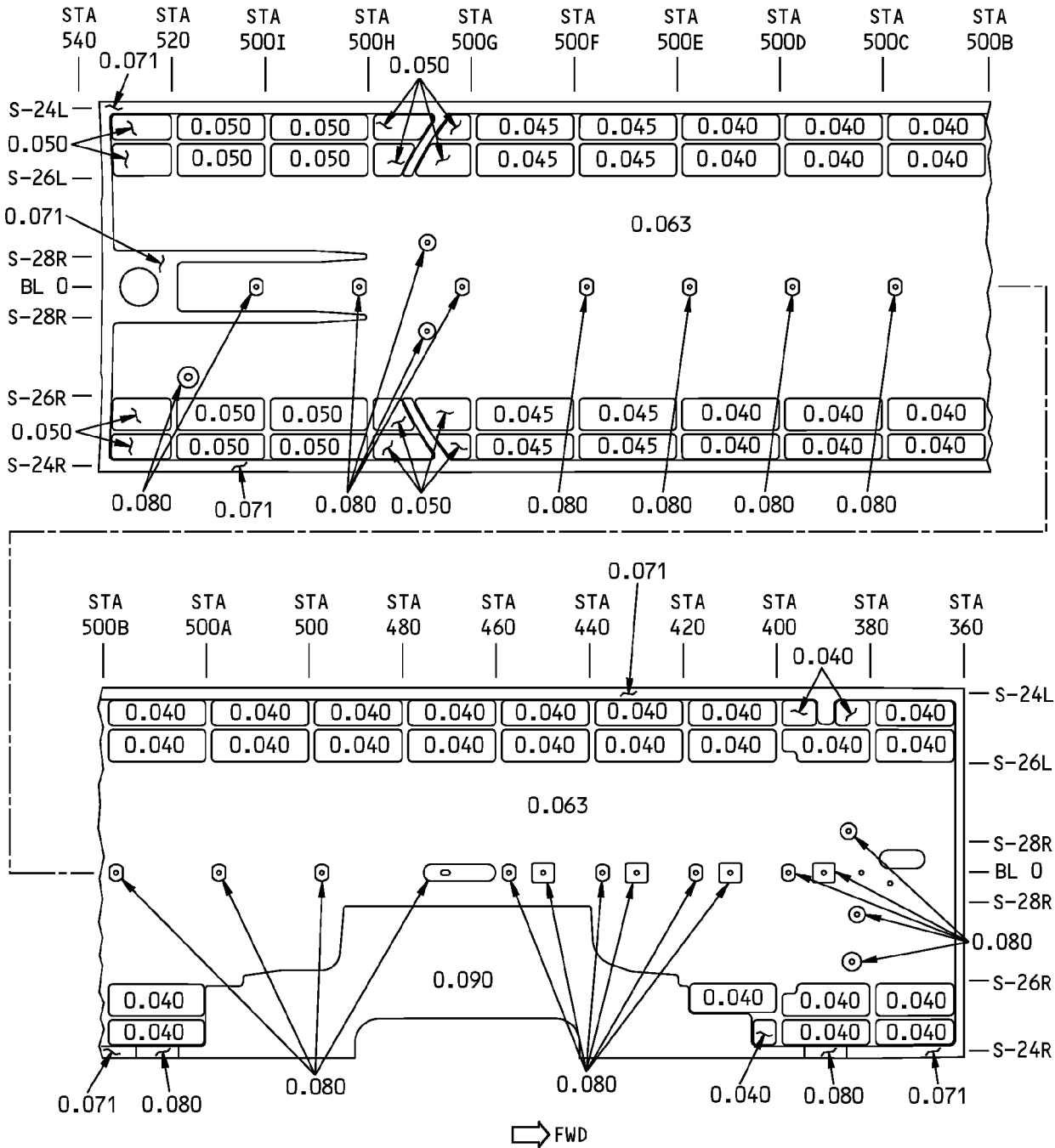
**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

**Chem-Milled Areas of Figure 2, Item [5]  
Figure 8**



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STRUCTURAL REPAIR MANUAL**

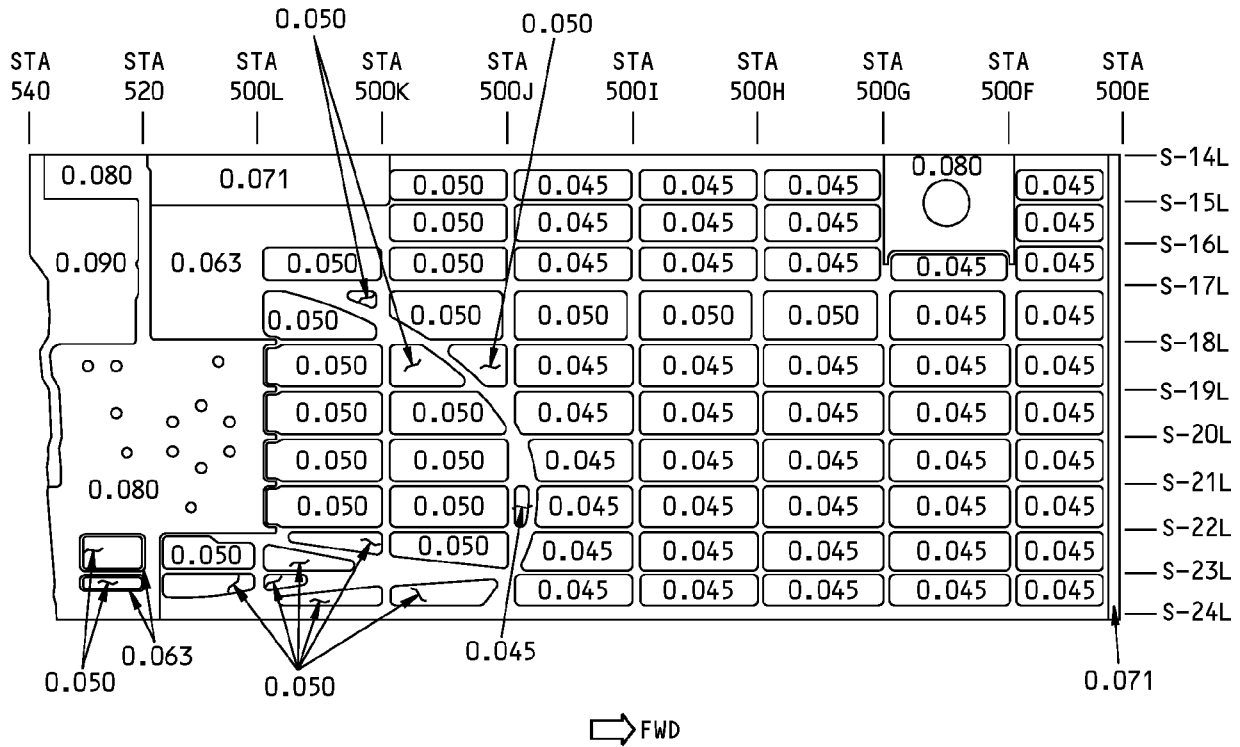


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas of Figure 2, Item [6]  
Figure 9 (Sheet 1 of 2)**

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**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE SKIN IN INCHES.

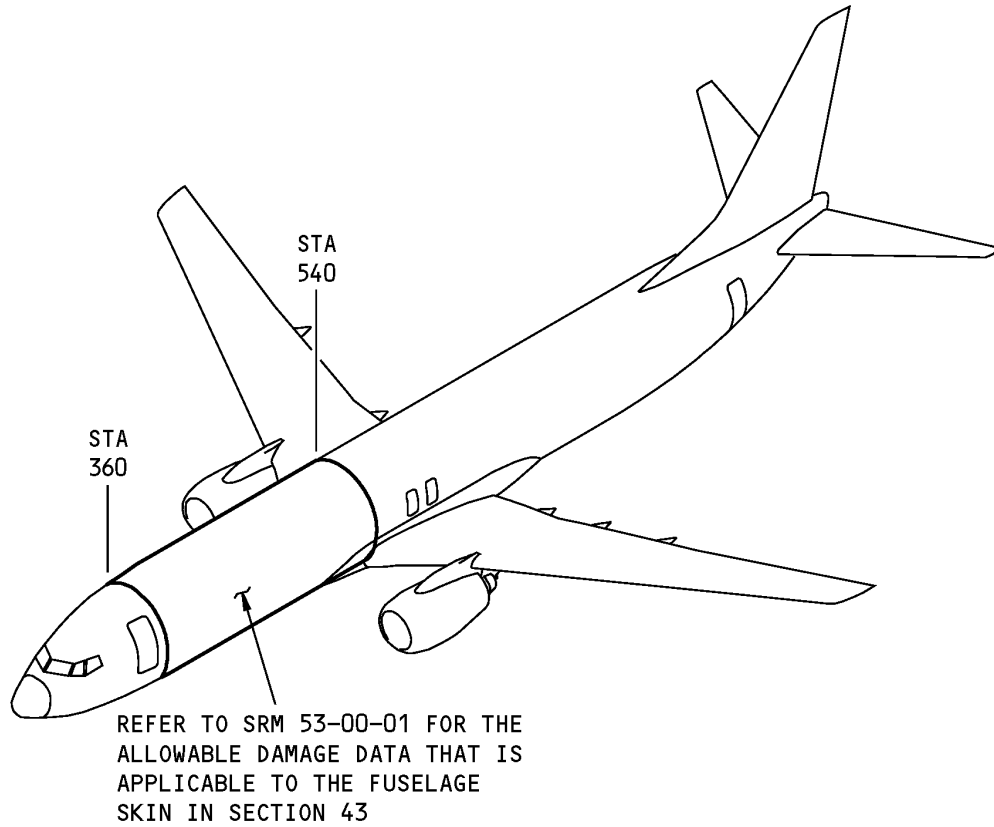
**VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas of Figure 2, Item [6]  
Figure 9 (Sheet 2 of 2)**



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ALLOWABLE DAMAGE GENERAL - SECTION 43 FUSELAGE SKIN

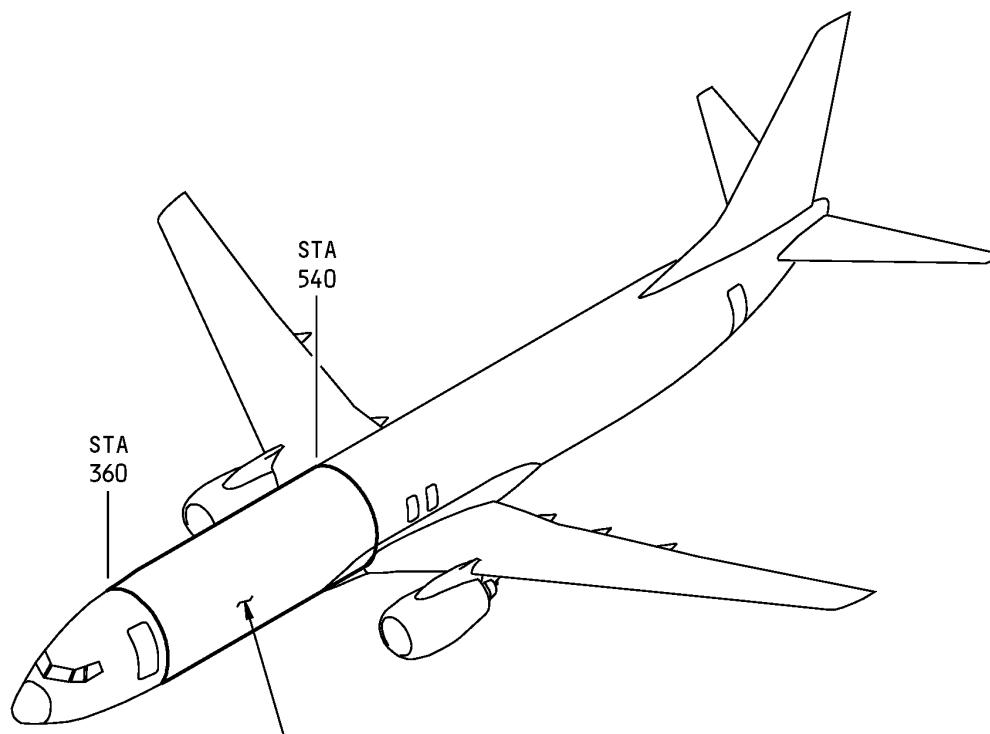


**NOTE:** REFER TO SRM 53-00-70 FOR THE FAIRING SKIN ALLOWABLE DAMAGE.  
THERE ARE NO ALLOWABLE DAMAGE LIMITS FOR BILGE SKINS IN THE STRUCTURAL  
REPAIR MANUAL AT THIS TIME.

**Section 43 Fuselage Skin Location  
Figure 101**

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STRUCTURAL REPAIR MANUAL

REPAIR GENERAL - SECTION 43 FUSELAGE SKIN



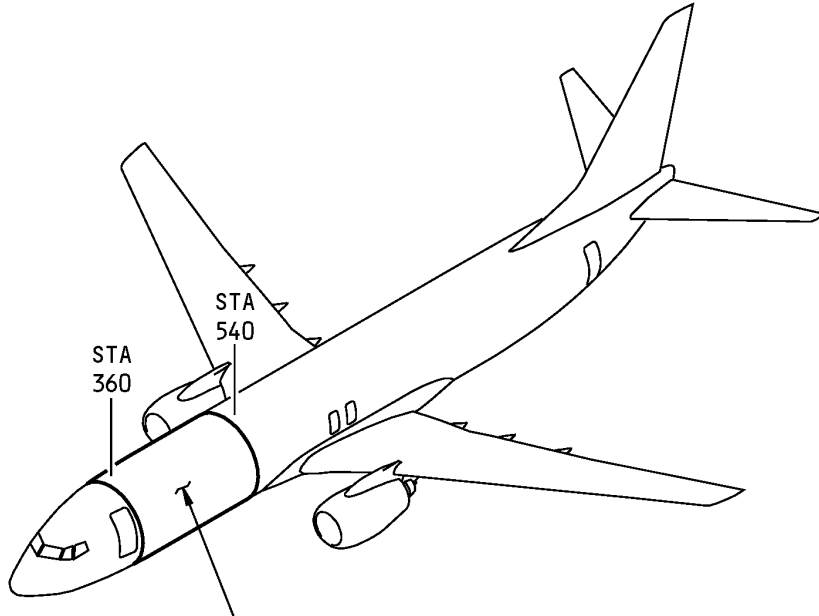
REFER TO SRM 53-00-01 FOR THE  
REPAIR DATA THAT IS APPLICABLE  
TO THE FUSELAGE SKIN IN SECTION 43

**NOTE:** REFER TO SRM 53-00-70 FOR THE FAIRING SKIN REPAIR.  
THERE ARE NO REPAIRS FOR BILGE SKIN IN THE STRUCTURAL REPAIR MANUAL AT THIS  
TIME.

**Section 43 Fuselage Skin Location  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 43 FUSELAGE STRINGERS**



REFER TO FIGURE 2 FOR  
THE LEFT SIDE STRINGERS.

REFER TO FIGURE 3 FOR  
THE RIGHT SIDE STRINGERS

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Stringer Identification  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4310	Functional Collector, Section 43 Upper Lobe
143A3110	Skin Installation, S-4L to S-4R, STA 360 to STA 540
143A3120	Stringer Details, S-3L to S-3R
143A3130	Skin Installation, S-4 to S-10, STA 360 to STA 540
143A3140	Stringer Details, S-4 to S-10
143A3150	Skin Installation, S-10 to S-13, STA 360 to STA 540



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A3160	Stringer Details, S11 to S-13
140A4320	Functional Collector, Section 43, Lower Lobe
143A3210	Skin Installation, Section 43 Lower Lobe, S-14L to S-23L
143A3221	Stringer Details, S-14L to S-23L
143A3230	Skin Installation, Section 43, Lower Lobe, S-24L to S-24R
143A3241	Stringer Details, S-24L to S-24R
143A3250	Skin Panel Installation, S-14R to S-23R
143A3261	Stringer Details, S-14R to S-23R

IDENTIFICATION 1

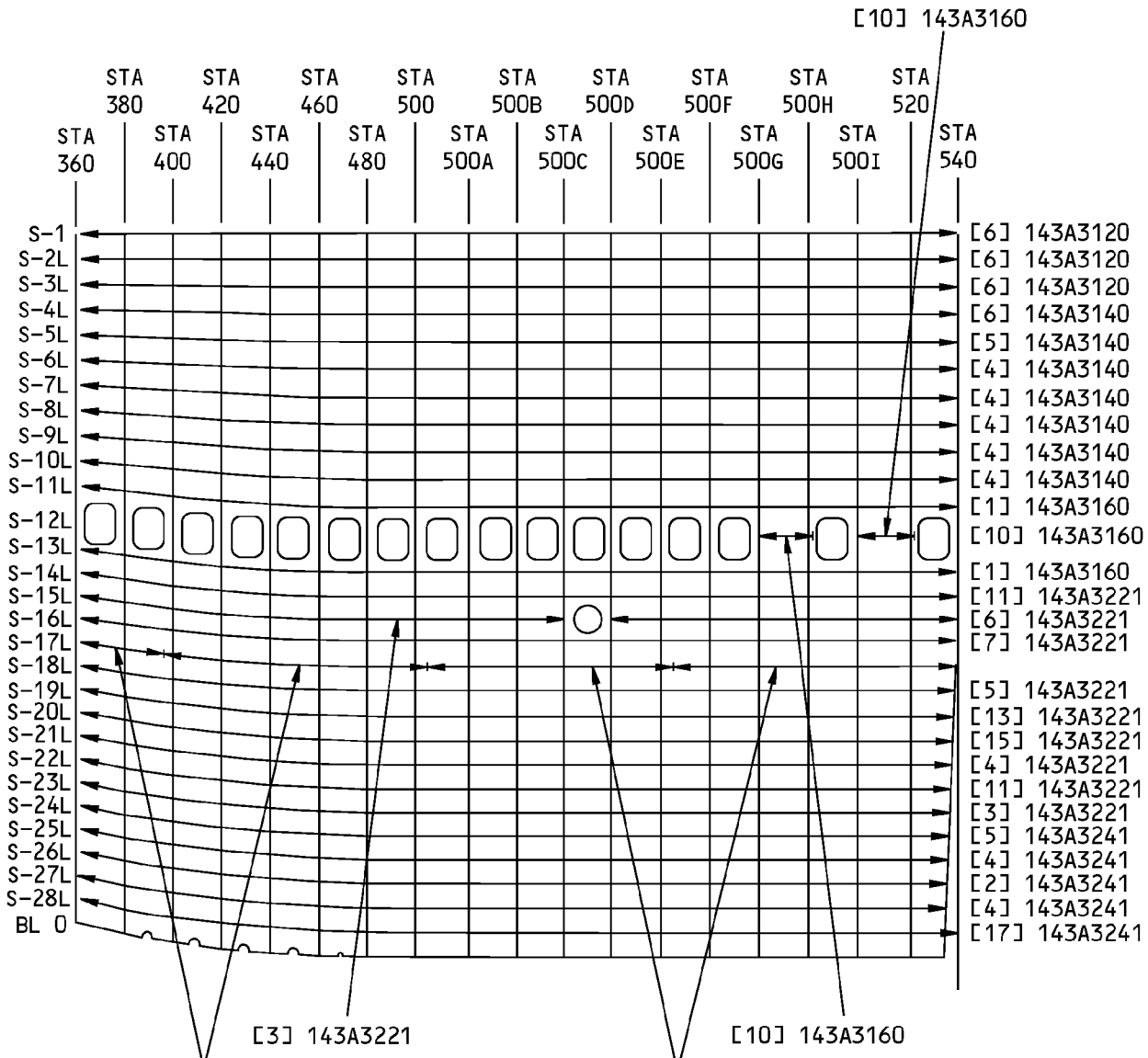
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REFER TO SRM 53-30-13 FOR THE  
CREASE BEAM IDENTIFICATION

REFER TO SRM 53-30-13 FOR THE  
CREASE BEAM IDENTIFICATION

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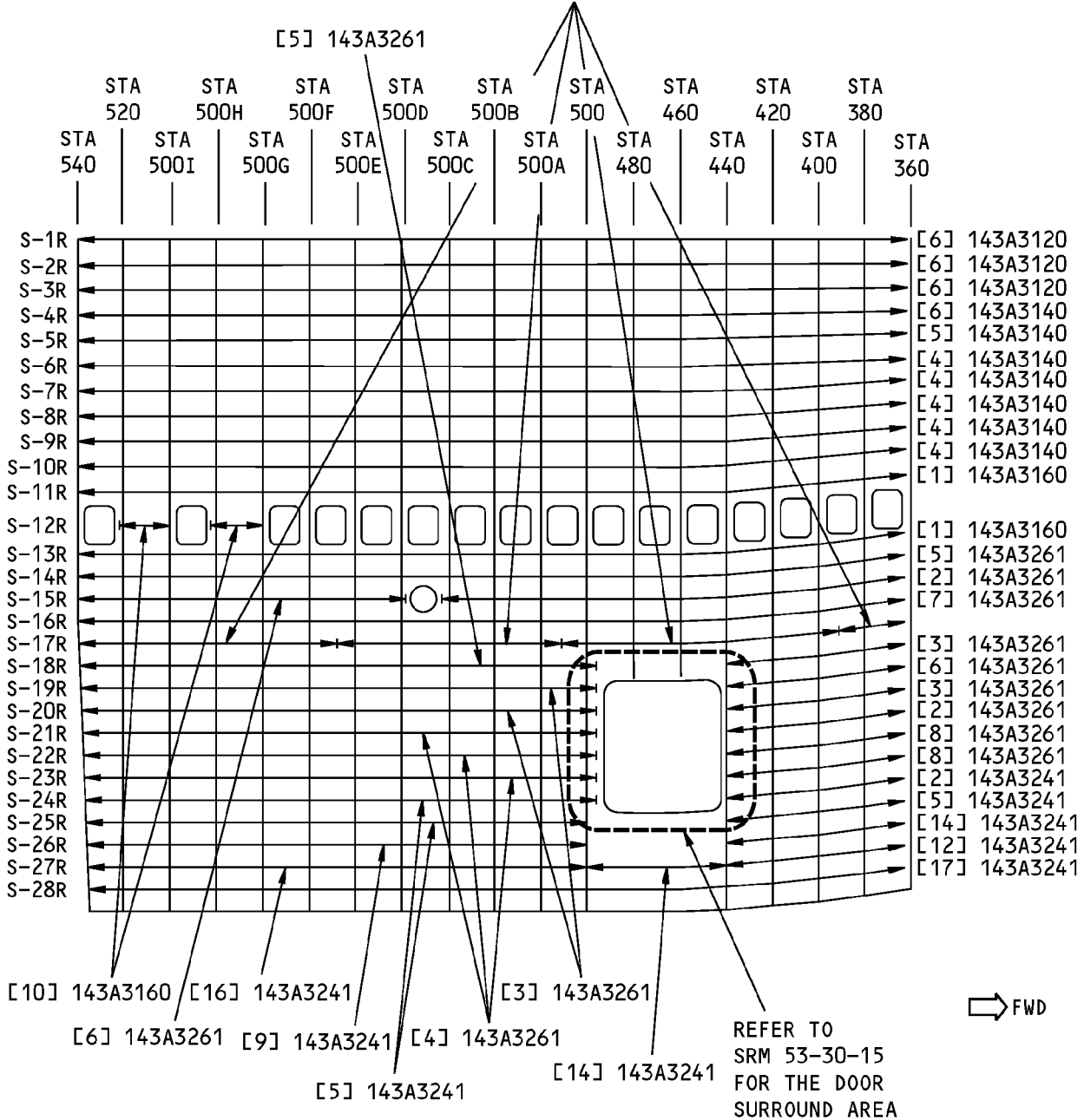
**LEFT SIDE IS SHOWN**

**NOTE:** REFER TO TABLE 2 FOR STRINGER ITEM NUMBER MATERIAL IDENTIFICATION.

**Section 43 Stringer Identification STA 360 to 540  
Figure 2**

**STRUCTURAL REPAIR MANUAL**

REFER TO SRM 53-30-13 FOR THE  
CREASE BEAM IDENTIFICATION



**RIGHT SIDE IS SHOWN**

**NOTE:** REFER TO TABLE 2 FOR THE STRINGER ITEM NUMBER MATERIAL IDENTIFICATION.

**Section 43 Stringer Identification STA 360 to 540  
Figure 3**





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**STRUCTURAL REPAIR MANUAL**

**Table 2:**

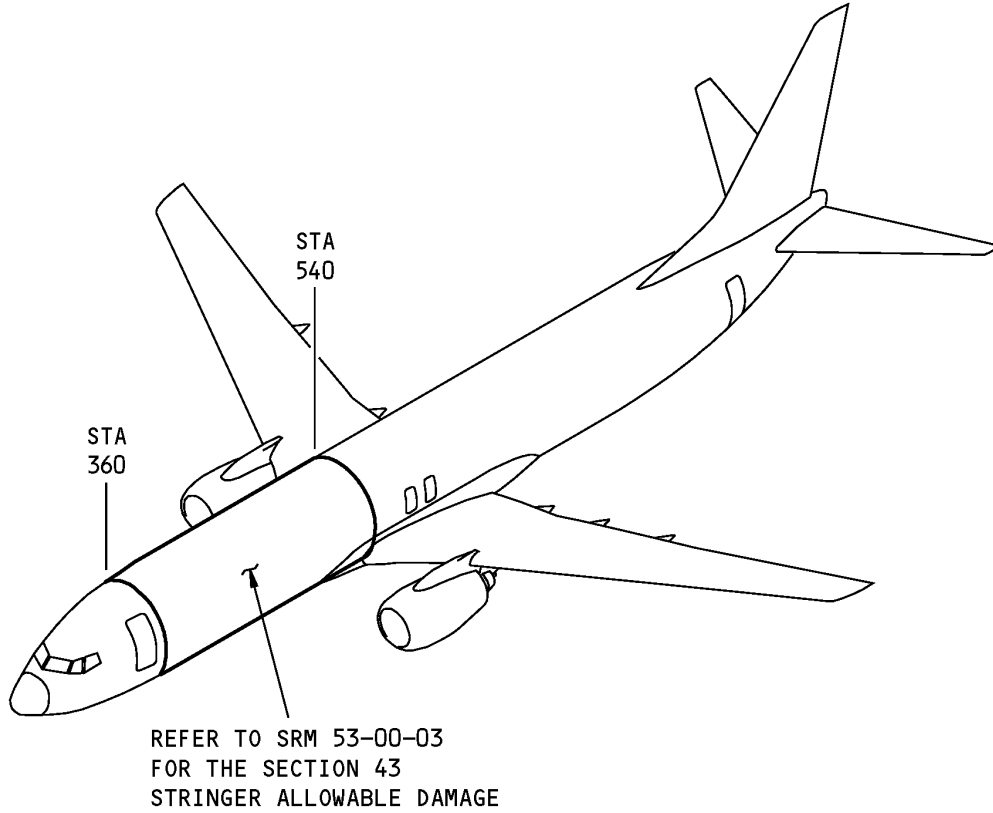
<b>LIST OF MATERIALS FOR FIGURE 2 and 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stringer, tapered	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer, tapered	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer, tapered	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer, tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer, tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer, tapered	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer	—	BAC1498-139 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer	—	BAC1498-141 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer	—	BAC1498-152 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer, tapered	0.060 (1.52)	7075-T62 sheet as given in QQ-A-250/12	
[12]	Stringer	—	BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[13]	Stringer, tapered	0.042 (1.07)	7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer	—	BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer, tapered	0.036 (0.91)	7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer	—	BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer, tapered	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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ALLOWABLE DAMAGE 1 - SECTION 43 FUSELAGE STRINGERS



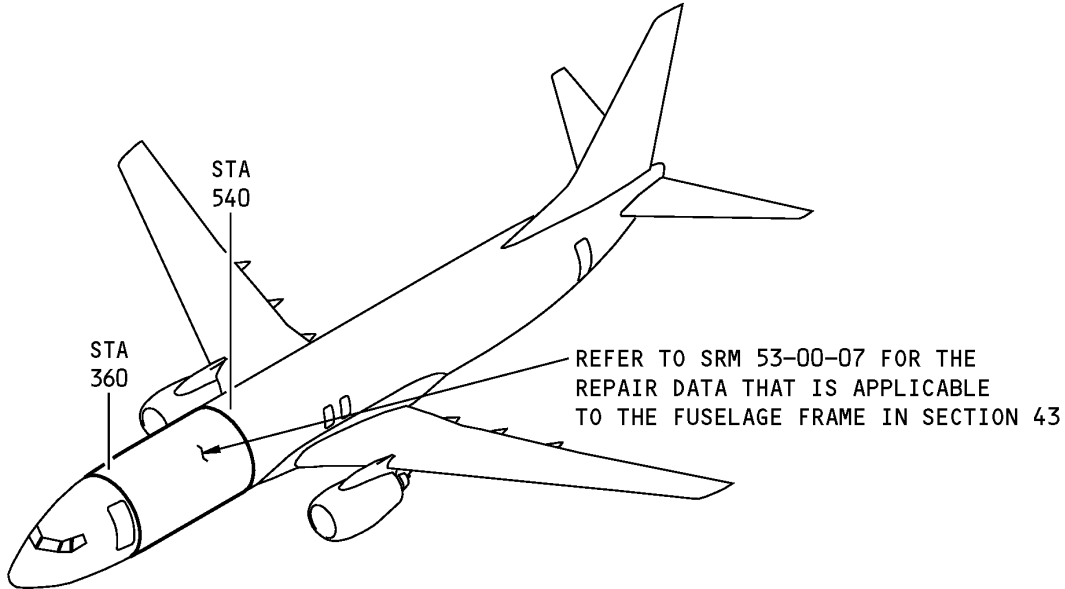
Section 43 Stringer Allowable Damage  
Figure 101

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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 43 FUSELAGE STRINGERS**

**1. Applicability**

- A. Repair 1 is applicable to damaged stringers in body Section 43 shown in Section 43 Stringer Repair, Figure 201/REPAIR 1.



**Section 43 Stringer Repair  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-12 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-30-03	FUSELAGE STRINGERS - SECTION 43
53-30-03, IDENTIFICATION 1	Section 43 Fuselage Stringers



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**STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

A. Refer to Table 201 to find the applicable repairs to the section 43 fuselage stringers.

**NOTE:** If necessary, refer to 53-30-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

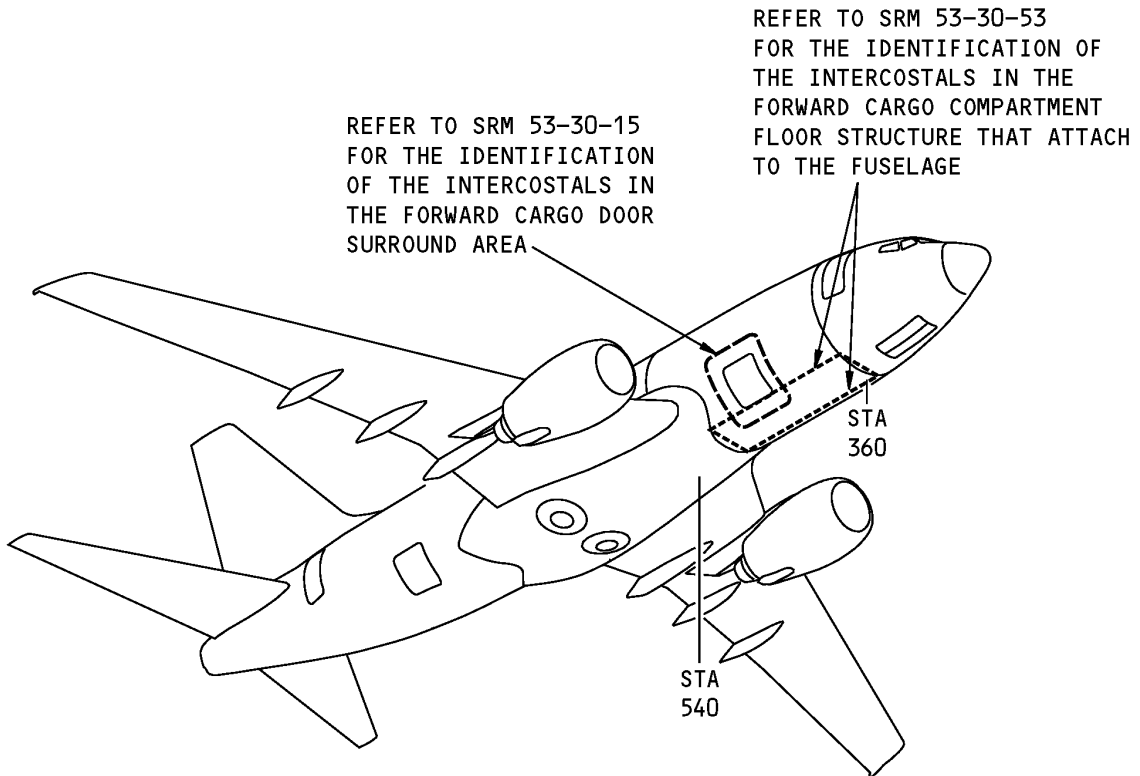
**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 43 FUSELAGE STRINGERS</b>		
<b>STRINGER</b>	<b>LOCATION</b>	<b>REPAIR</b>
S-11L, S-11R, S-13L, S-13R	STA 360 to STA 540	Refer to SRM 51-70-12
All other stringers	STA 360 to STA 540	Refer to SRM 53-00-03
S-17L, S-17R	STA 360 to STA 540	Refer to SRM 53-30-13



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**STRUCTURAL REPAIR MANUAL**

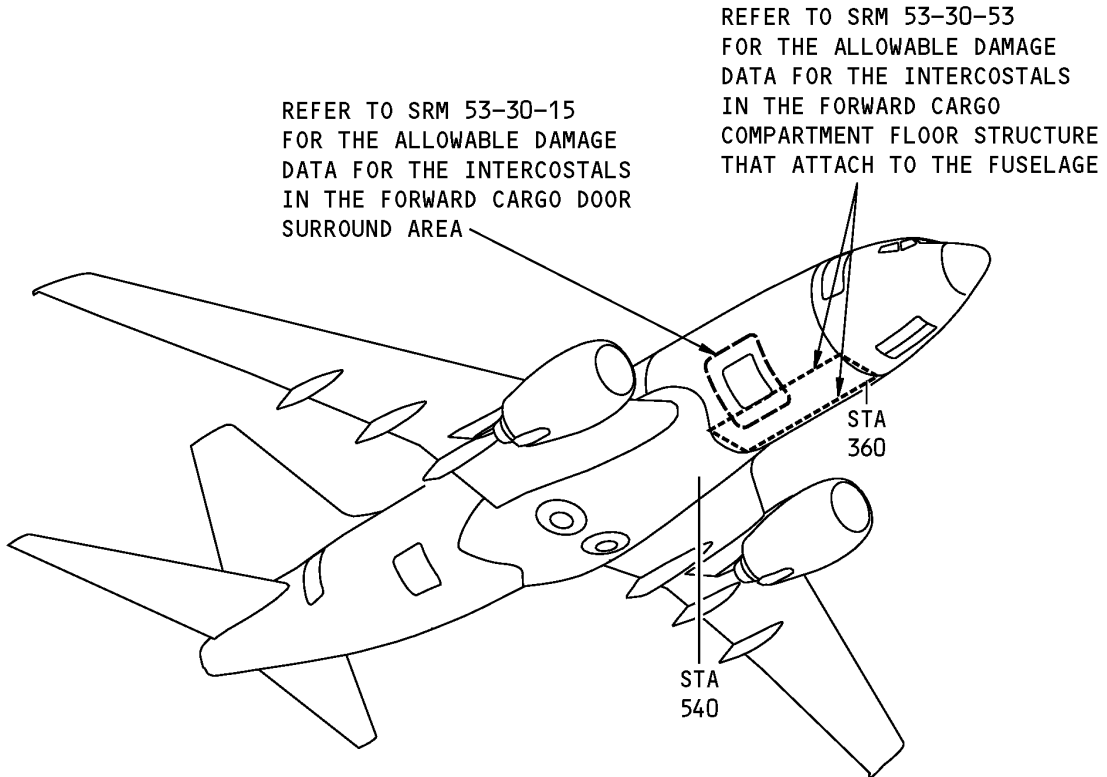
**IDENTIFICATION 1 - SECTION 43 FUSELAGE INTERCOSTALS**



**Section 43 Fuselage Intercostal Identification**  
**Figure 1**

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**STRUCTURAL REPAIR MANUAL**

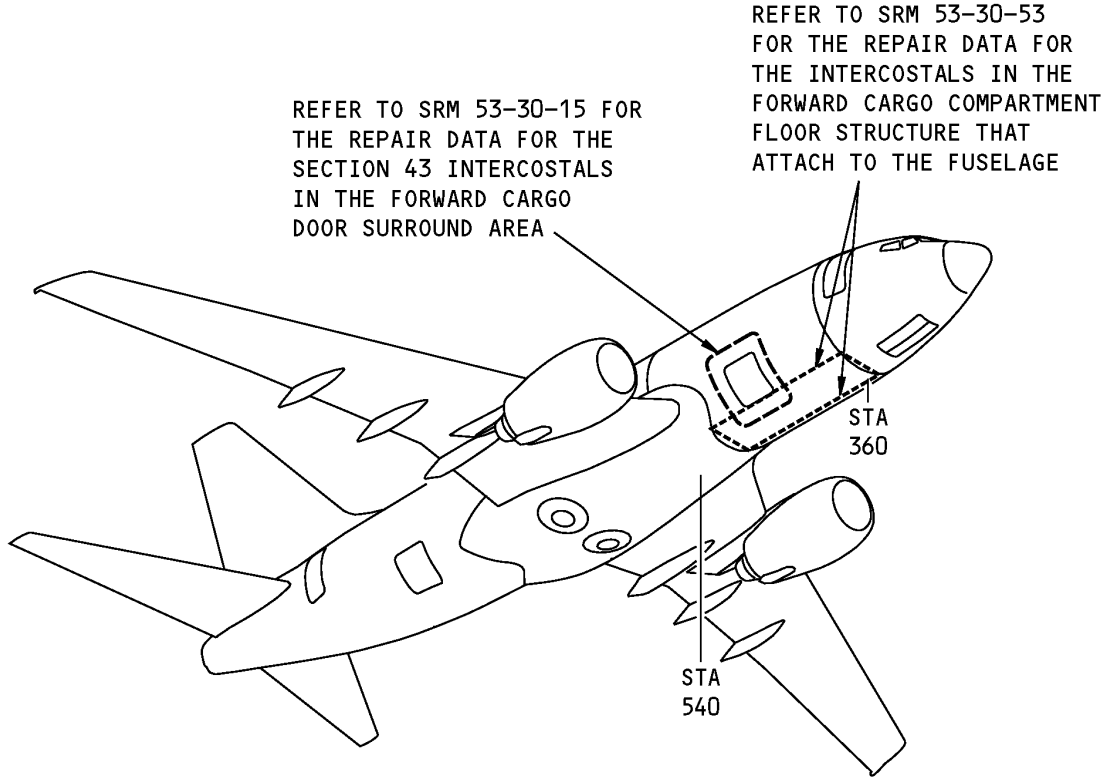
**ALLOWABLE DAMAGE 1 - SECTION 43 FUSELAGE INTERCOSTALS**



**Section 43 Fuselage Intercostal Allowable Damage**  
**Figure 101**

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STRUCTURAL REPAIR MANUAL**

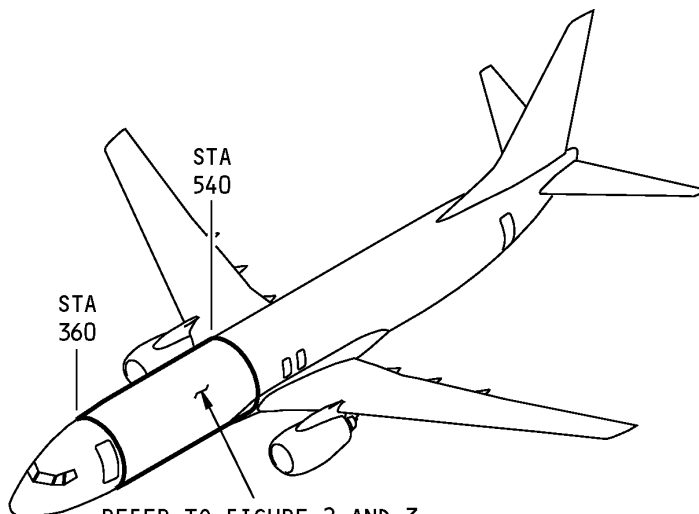
**REPAIR 1 - SECTION 43 FUSELAGE INTERCOSTALS**



**Section 43 Fuselage Intercostal Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 43 FUSELAGE FRAMES**



REFER TO FIGURE 2 AND 3  
FOR THE SECTION 43 FUSELAGE  
FRAME IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Fuselage Frame Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4310	Functional Collector - Section 43, Upper Lobe
140A4320	Section 43 Lower Lobe Functional Product collector
143A1110	Sta 380 Frame Upper Lobe
143A1111	Sta 400 Frame Upper Lobe
143A1112	Sta 420 Frame Upper Lobe
143A1113	Sta 440 Frame Upper Lobe
143A1114	Sta 460 Frame Upper Lobe
143A1120	Sta 480 Frame Upper Lobe
143A1121	Sta 500 Frame Upper Lobe
143A1122	Sta 500A Frame Upper Lobe
143A1123	Sta 500B Frame Upper Lobe
143A1124	Sta 500C Frame Upper Lobe
143A1125	Sta 500D Frame Upper Lobe
143A1130	Sta 500E Frame Upper Lobe

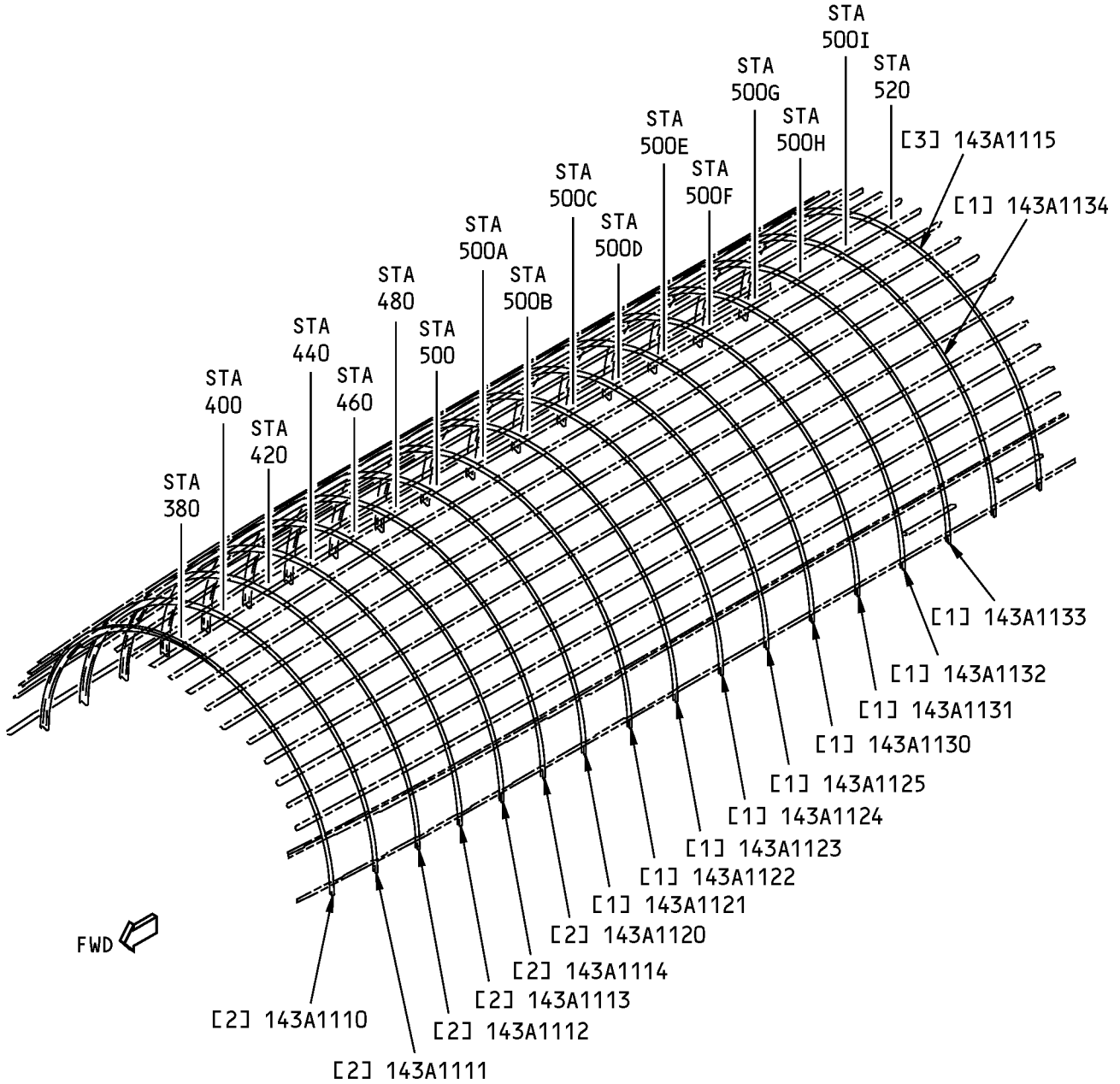




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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A1131	Sta 500F Frame Upper Lobe
143A1132	Sta 500G Frame Upper Lobe
143A1133	Sta 500H Frame Upper Lobe
143A1134	Sta 500I Frame Upper Lobe
143A1210	Sta 380 Frame Lower Lobe
143A1211	Sta 400 Frame Lower Lobe
143A1212	Sta 420 Frame Lower Lobe
143A1213	Sta 440 Frame Lower Lobe
143A1214	Sta 460 Frame Lower Lobe
143A1220	Sta 480 Frame Lower Lobe
143A1221	Sta 500 Frame Lower Lobe
143A1222	Sta 500A Frame Lower Lobe
143A1223	Sta 500B Frame Lower Lobe
143A1224	Sta 500C Frame Lower Lobe
143A1225	Sta 500D Frame Lower Lobe
143A1230	Sta 500E Frame Lower Lobe
143A1231	Sta 500F Frame Lower Lobe
143A1232	Sta 500G Frame Lower Lobe
143A1233	Sta 500H Frame Lower Lobe
143A1234	Sta 500I Frame Lower Lobe

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STRUCTURAL REPAIR MANUAL**

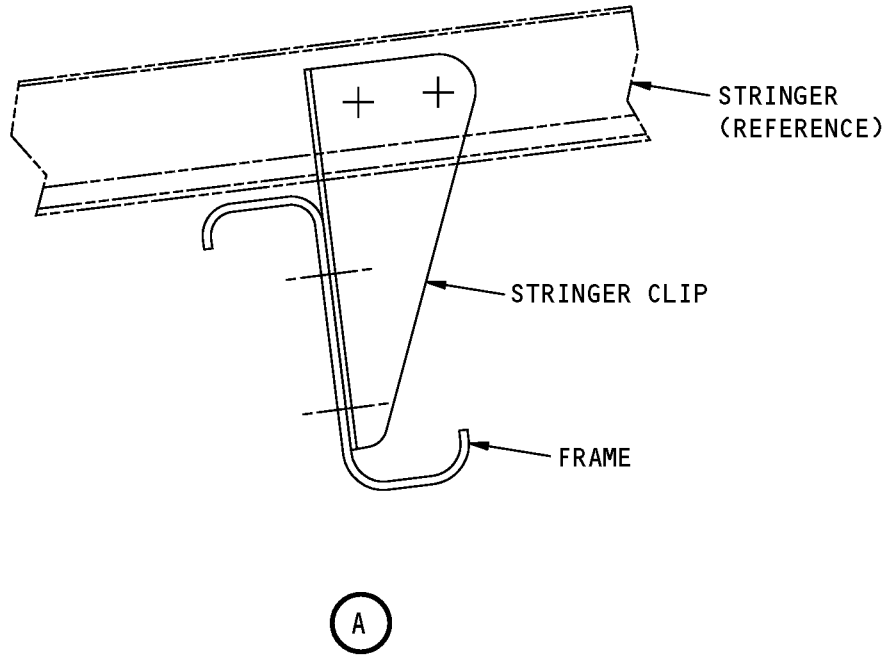


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL SECTION VIEWS OF ITEMS [1] AND [2].

**Upper Lobe Frames - Section 43 Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Upper Lobe Frames - Section 43 Identification  
Figure 2 (Sheet 2 of 2)**



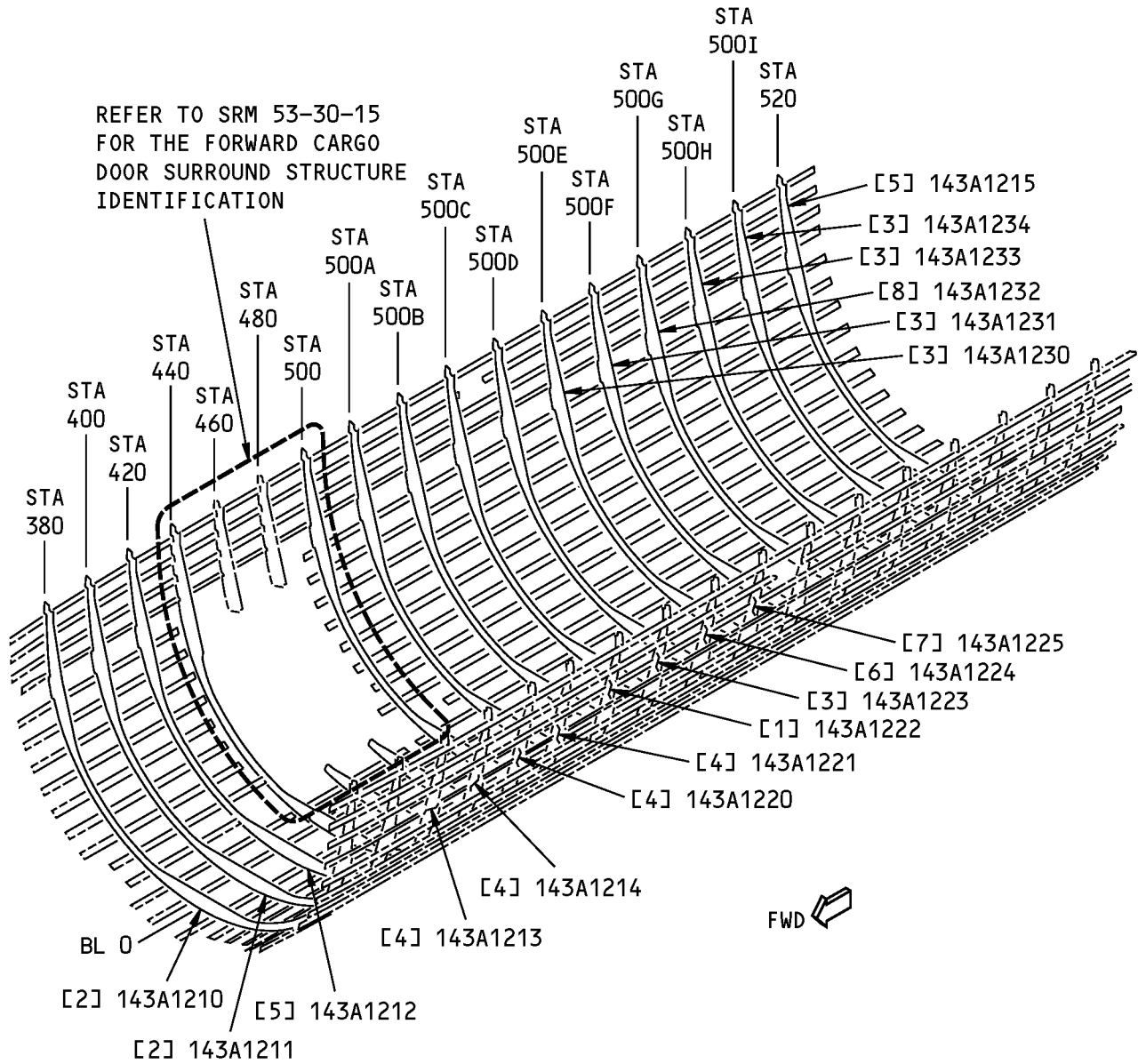
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame		BAC1517-1062 7075-T62 clad formed section	
[2]	Frame Assembly			
	Doubler	0.020 (0.51)	7075-T6 clad sheet	
	Frame		BAC1517-705 7075-T62 clad extrusion	
[3]	Frame		BAC1517-2158 7075-T62 clad extrusion	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

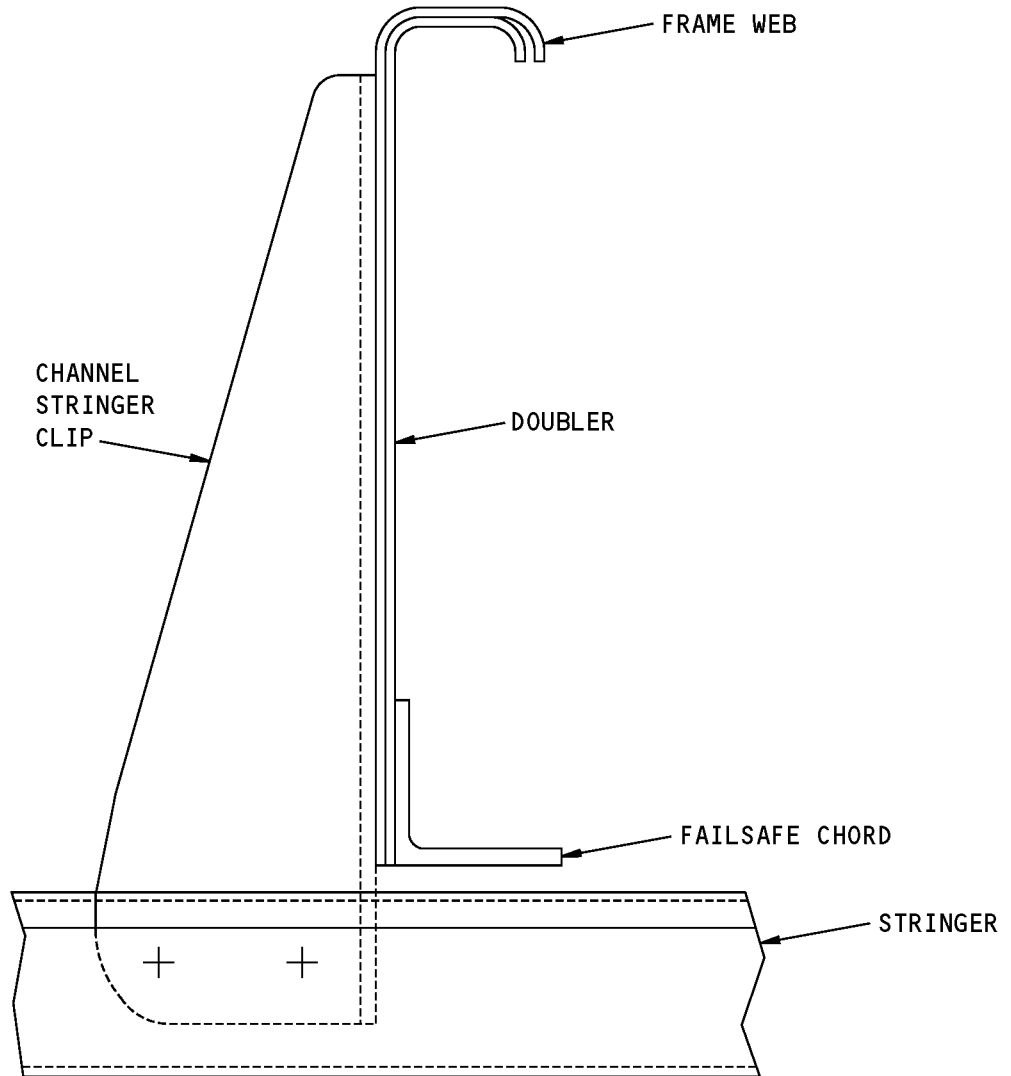


**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL CROSS SECTION OF ITEM [4].

**Lower Lobe Frames - Section 43 Identification  
Figure 3 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



A

**Lower Lobe Frames - Section 43 Identification  
Figure 3 (Sheet 2 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (Center only)	0.032 (0.81)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[2]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (Center only)	0.032 (0.81)	7075-T62 clad sheet	
	Doubler (2)	0.040 (1.02)	7075-T62 clad sheet	
[3]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1505-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler (2)	0.040 (1.02)	7075-T62 clad sheet	
[4]	Frame Assembly (Left only)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[5]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[6]	Frame Assembly (Left and Right)			
	Frame (2)	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.032 (0.81)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
[7]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	



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**STRUCTURAL REPAIR MANUAL**

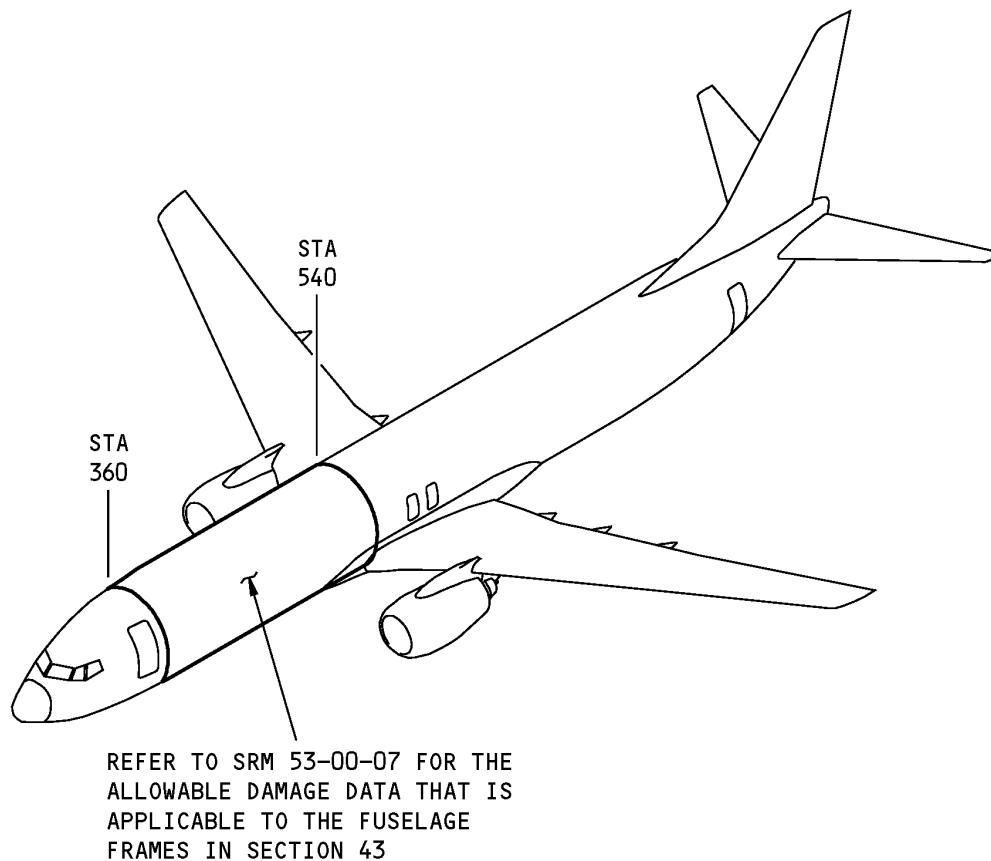
LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Failsafe Chord		BAC1503-101091 7075-T62 extrusion	
	Splice Plate (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
	Channel (Left only)		BAC1493-937 2024-T42 clad sheet	
[8]	Frame Assembly (Left and Right)			
	Frame	0.050 (1.27)	7075-T62 clad sheet	
	Failsafe Chord		BAC1503-100985 7075-T62 extrusion	
	Splice (Right only)	0.050 (1.27)	7075-T62 clad sheet	
	Doubler	0.040 (1.02)	7075-T62 clad sheet	
	Doubler	0.020 (0.51)	7075-T62 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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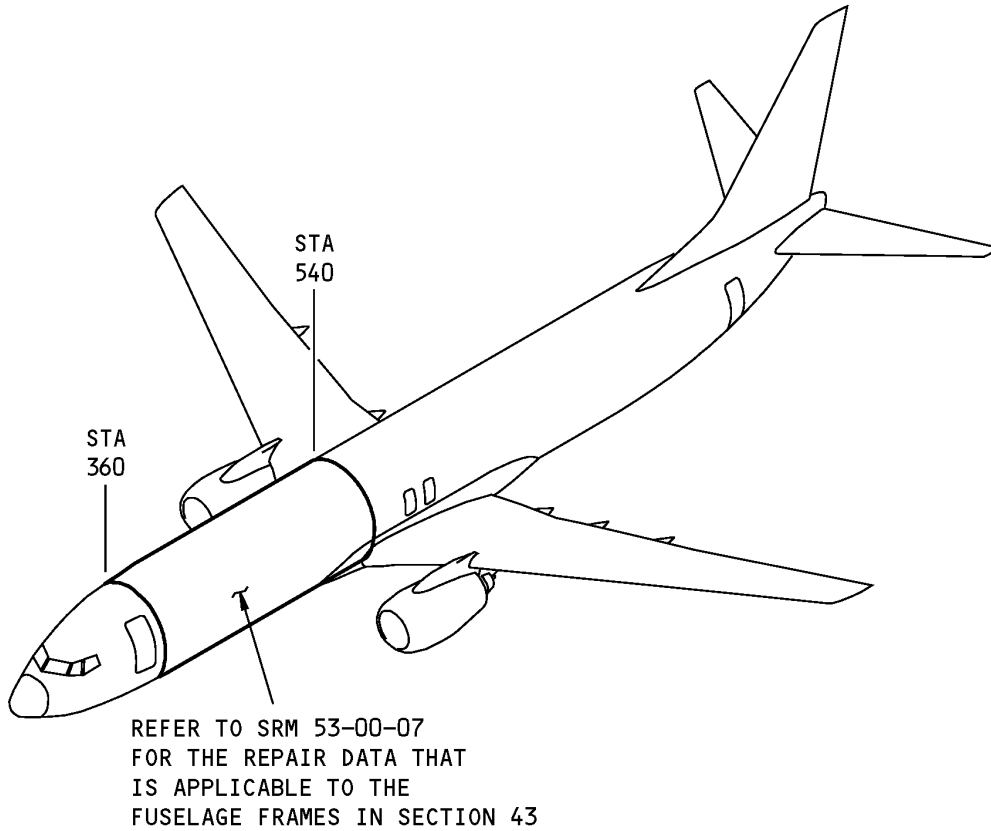
ALLOWABLE DAMAGE GENERAL - SECTION 43 FUSELAGE FRAMES



Section 43 Fuselage Frame Location  
Figure 101

**737-800**  
**STRUCTURAL REPAIR MANUAL**

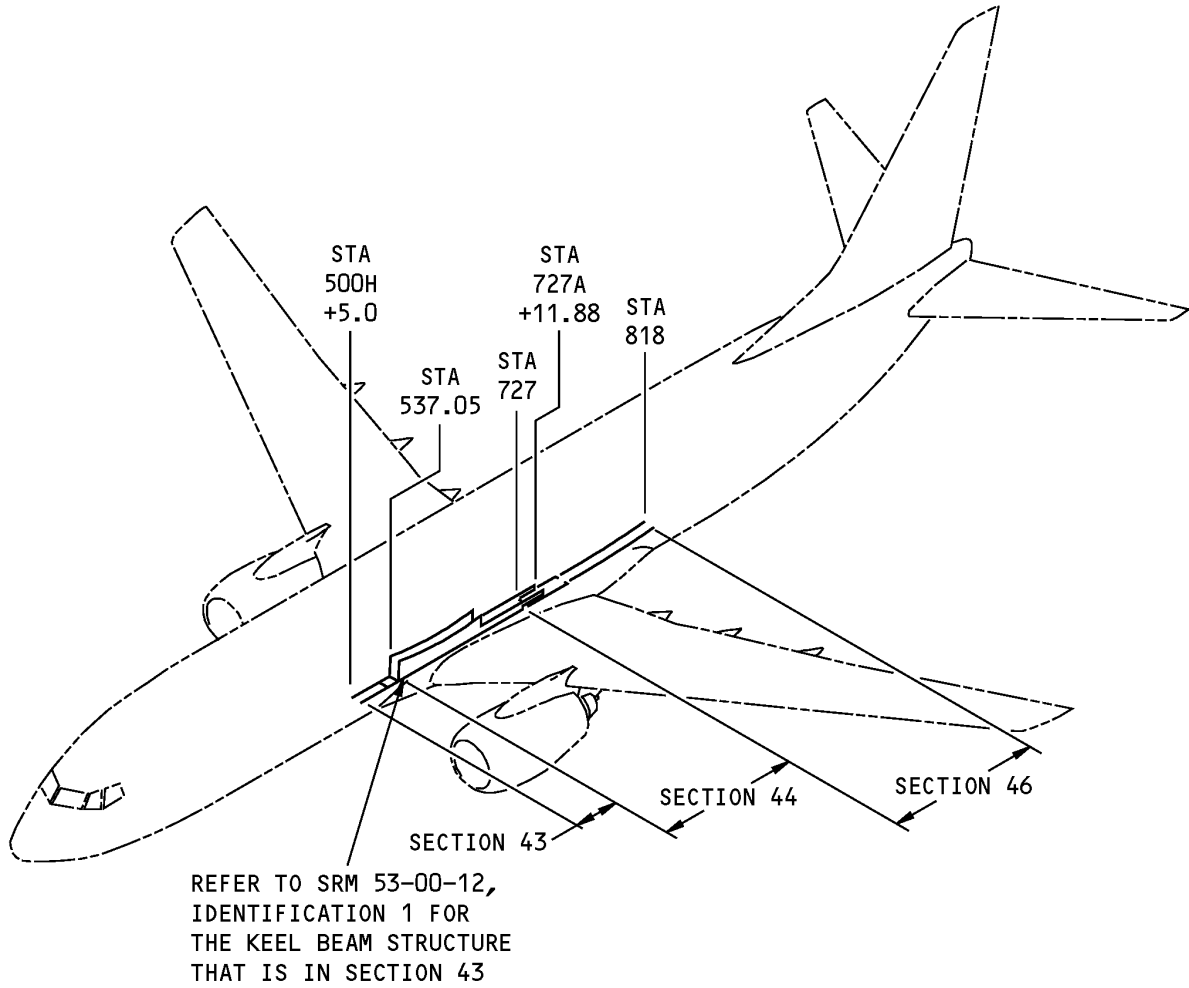
**REPAIR GENERAL - SECTION 43 FUSELAGE FRAMES**



**Section 43 Fuselage Frame Location**  
**Figure 201**

737-800  
STRUCTURAL REPAIR MANUAL

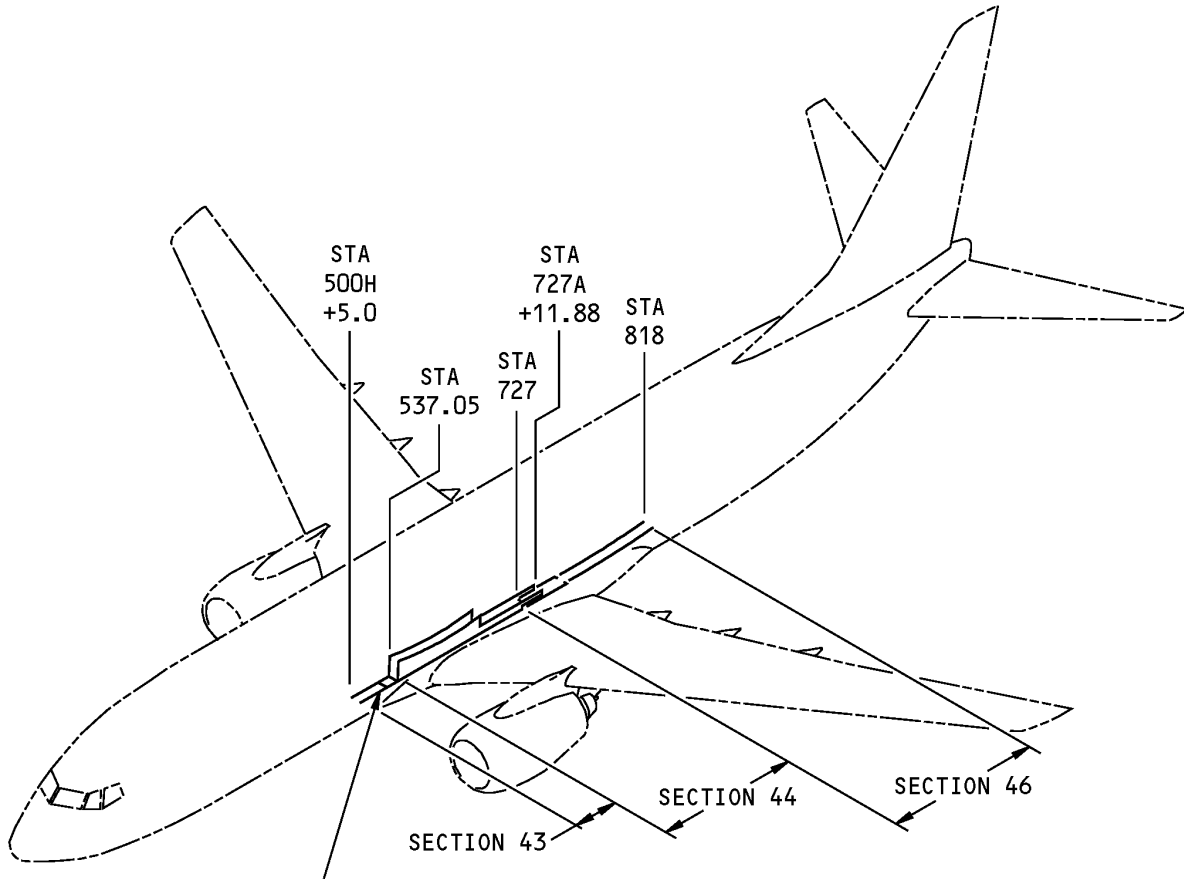
IDENTIFICATION GENERAL - SECTION 43 KEEL BEAM STRUCTURE



Section 43 Keel Beam Structure Identification  
Figure 1

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STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 43 KEEL BEAM STRUCTURE**

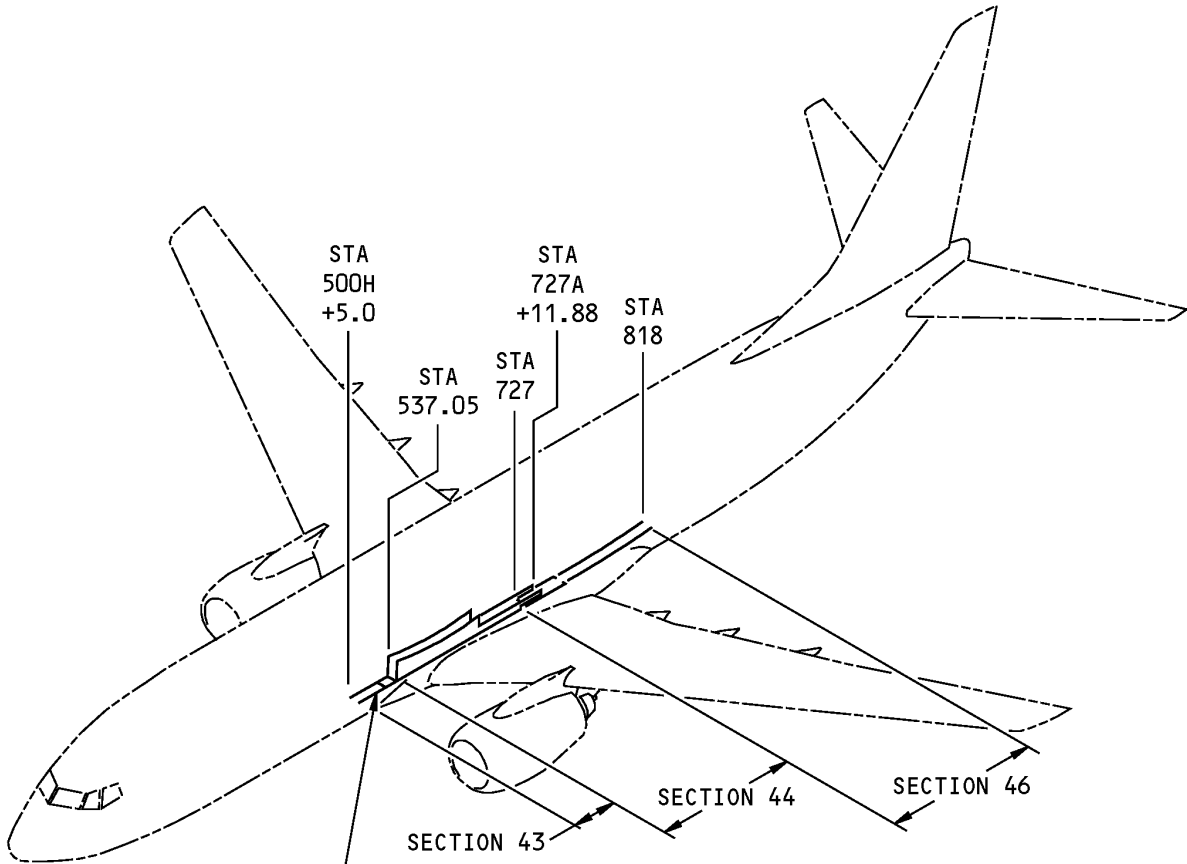


REFER TO SRM 53-00-12,  
ALLOWABLE DAMAGE 1 FOR THE  
KEEL BEAM STRUCTURE THAT IS  
LOCATED IN SECTION 43

**Section 43 Keel Beam Structure Allowable Damage  
Figure 101**

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**REPAIR GENERAL - SECTION 43 KEEL BEAM STRUCTURE**

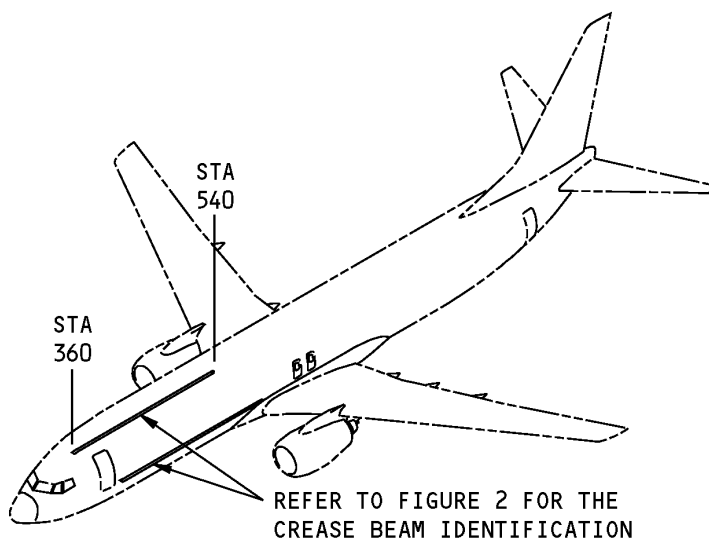


REFER TO SRM 53-00-12,  
REPAIR 1 FOR THE KEEL  
BEAM STRUCTURE THAT IS  
IN SECTION 43

**Section 43 Keel Beam Structure Repair  
Figure 201**

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**IDENTIFICATION 1 - SECTION 43 CREASE BEAM STRUCTURE**

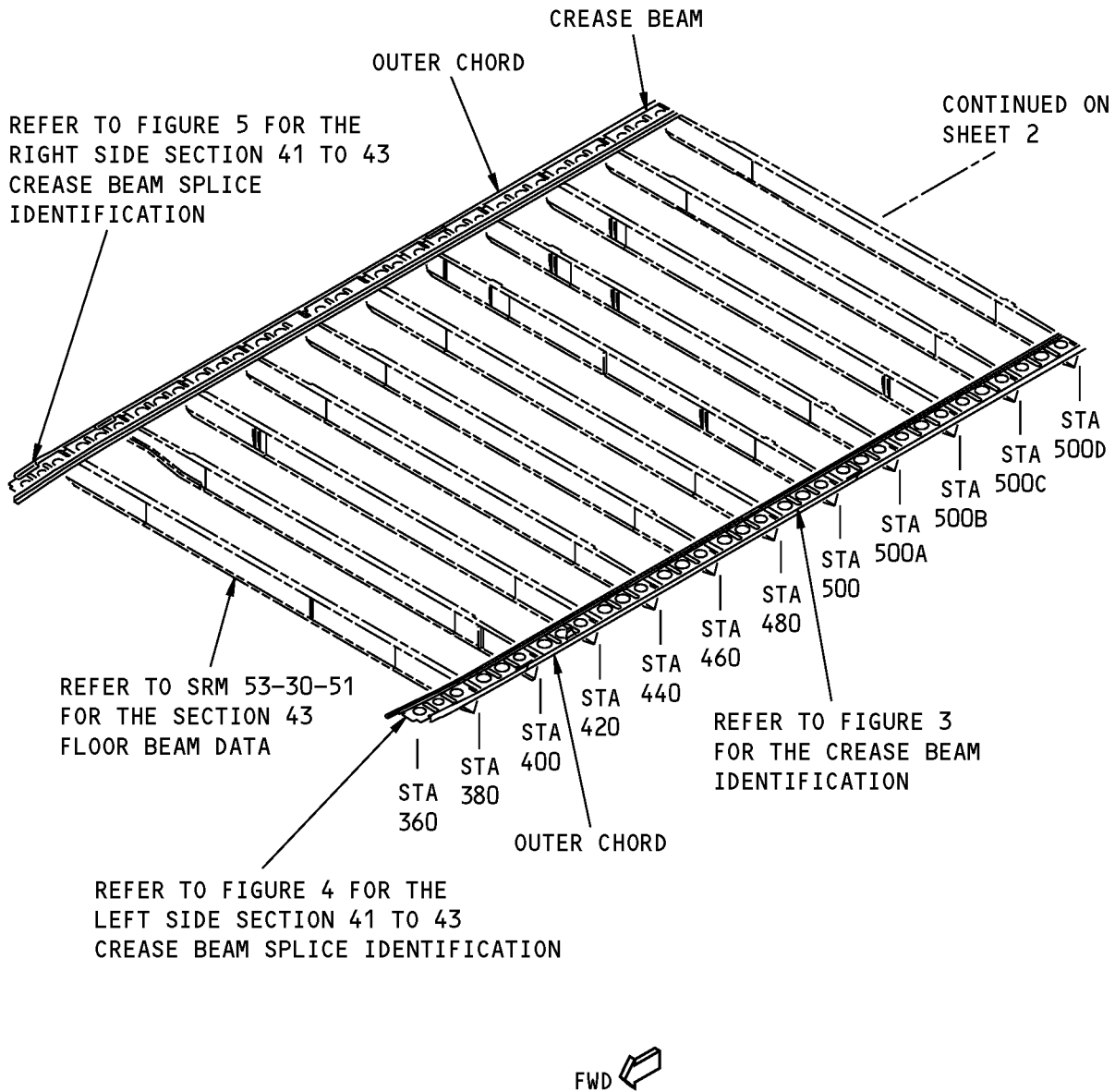


**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Crease Beam and Splice Location  
Figure 1**

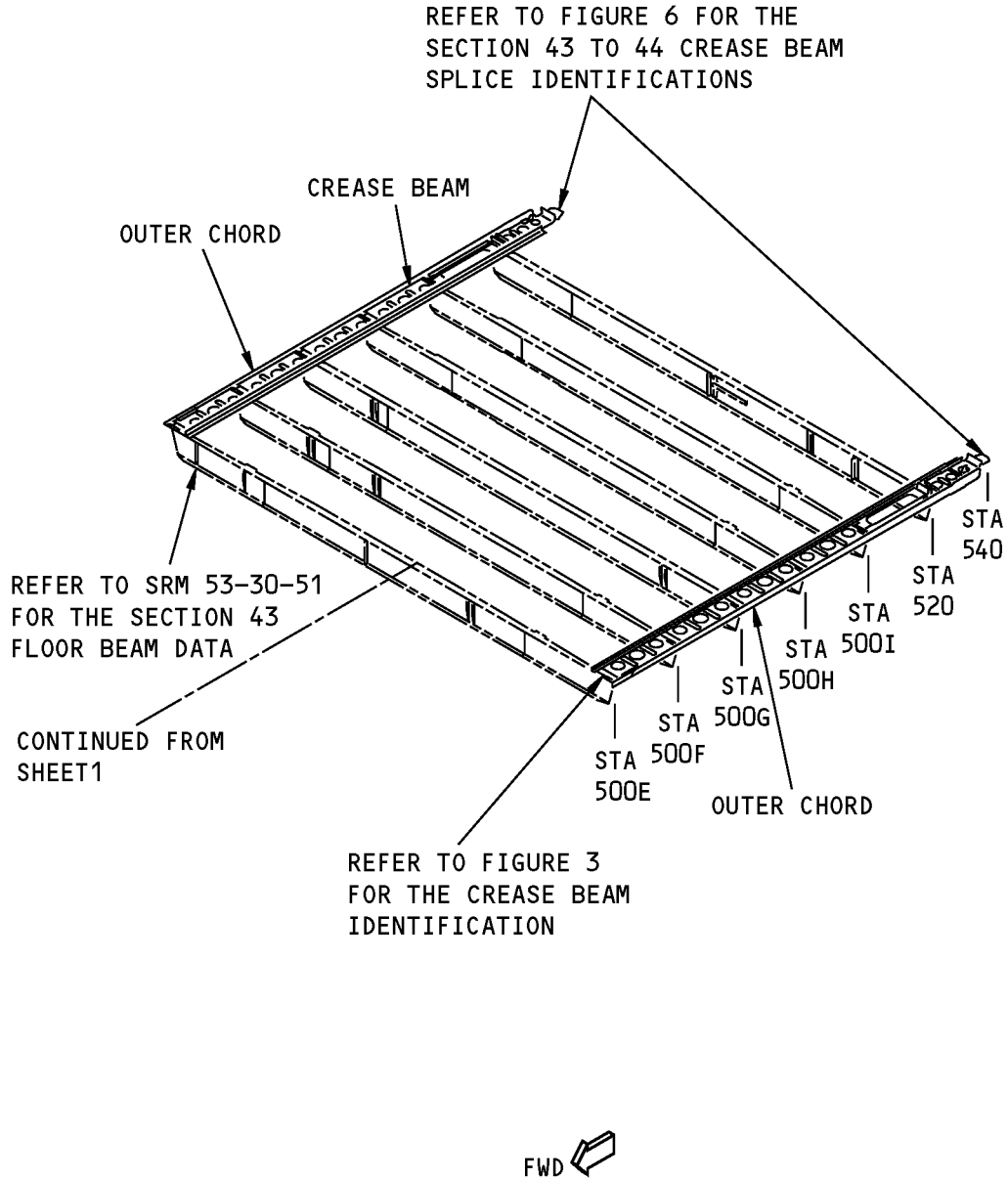
**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0345	Floor to Body Integration Collector, Section 41 to 43
140A0347	Floor to Body Integration Collector, Section 43
140A4406	Final Installation Functional Collector, Section 44
143A5900	Crease Beam Assembly/Installation, Section 43
143A5911	Chords - Crease Beam, Section 43
143A5912	Clip - Crease Beam
143A5913	Crease Beam Shear Webs, Section 43
287A4011	Bracket/CFA, Wire Bundle Support - Upper Lobe



**Section 43 Crease Beam and Splice Identification**  
**Figure 2 (Sheet 1 of 2)**

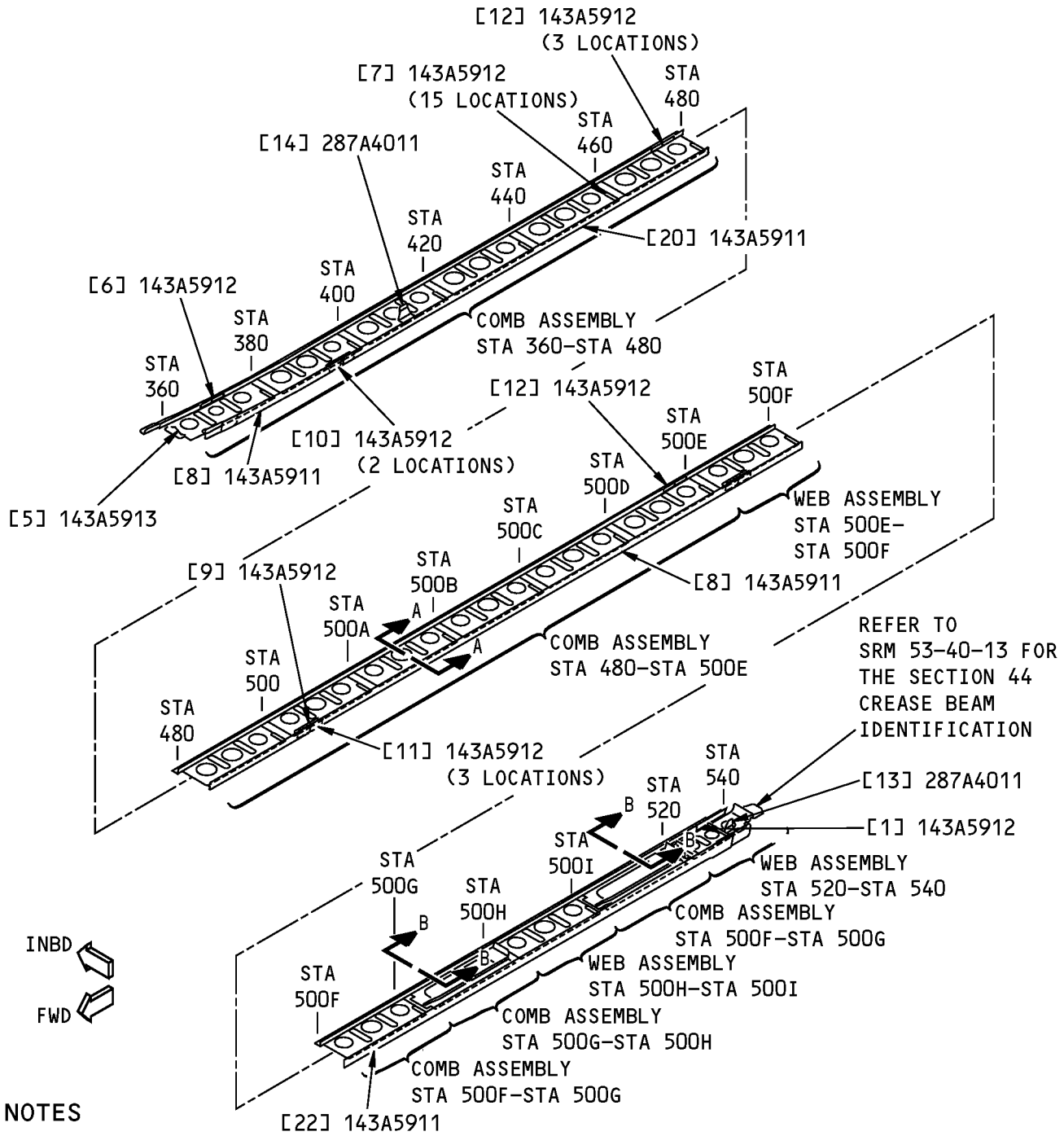
**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 43 Crease Beam and Splice Identification  
Figure 2 (Sheet 2 of 2)**



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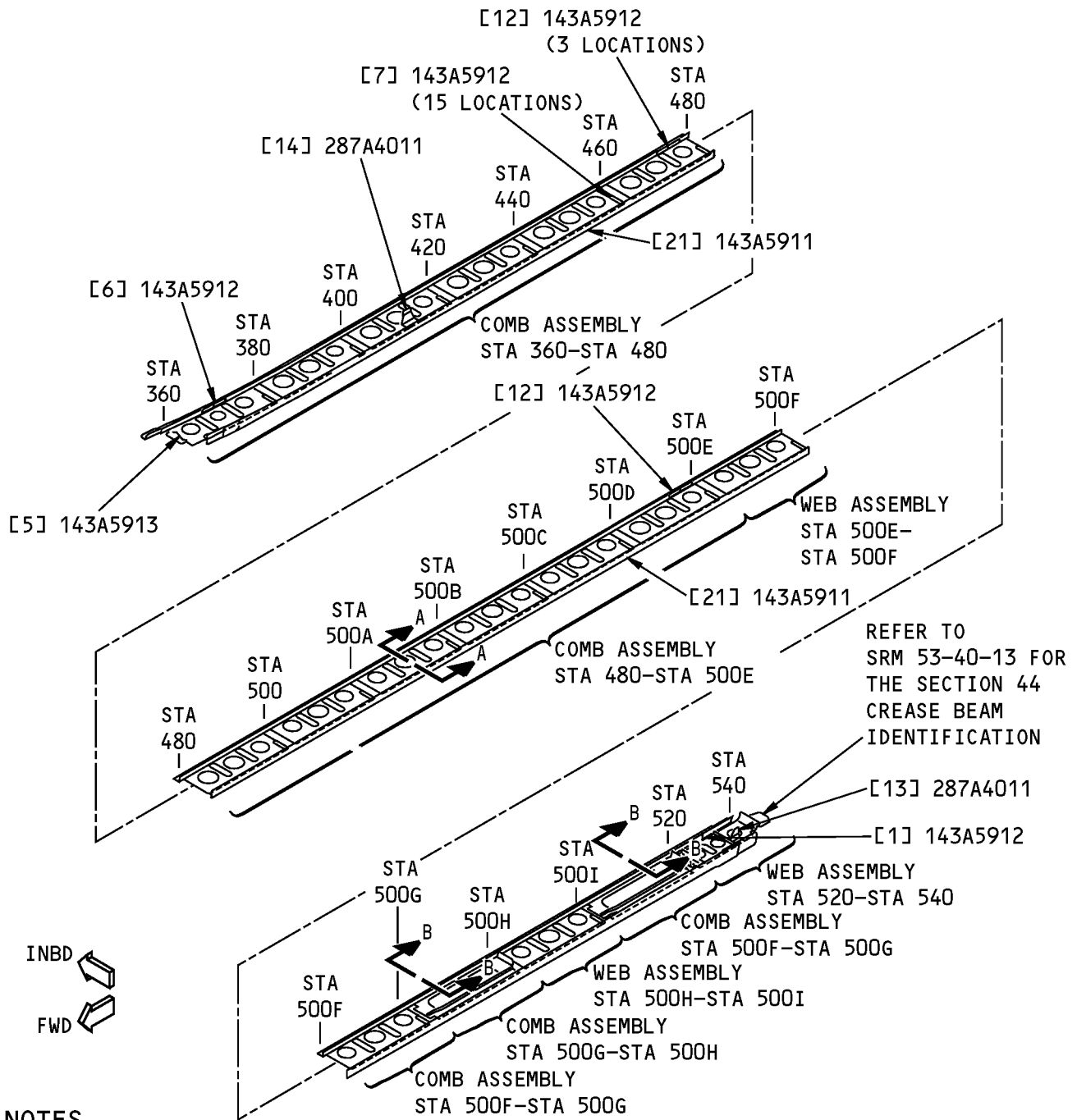
**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE CREASE BEAM IS SHOWN  
FOR AIRPLANE LINE NUMBERS 1 THRU 1195**

**Section 43 Crease Beam Identification  
Figure 3 (Sheet 1 of 5)**

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STRUCTURAL REPAIR MANUAL**



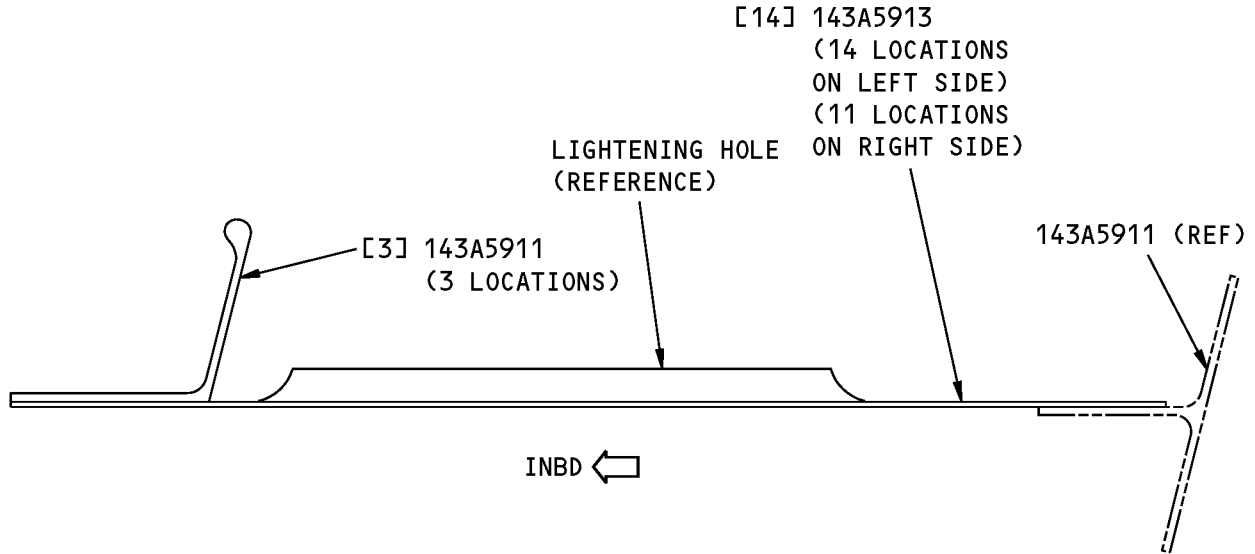
**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

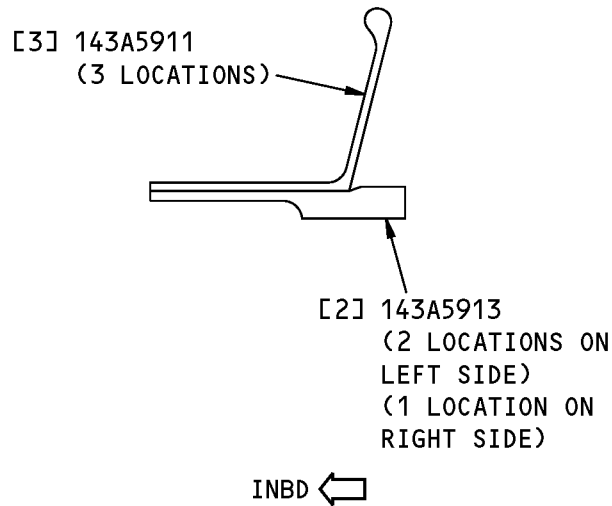
**LEFT SIDE CREASE BEAM IS SHOWN  
FOR AIRPLANE LINE NUMBERS 1196 AND ON**

**Section 43 Crease Beam Identification  
Figure 3 (Sheet 2 of 5)**

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STRUCTURAL REPAIR MANUAL**



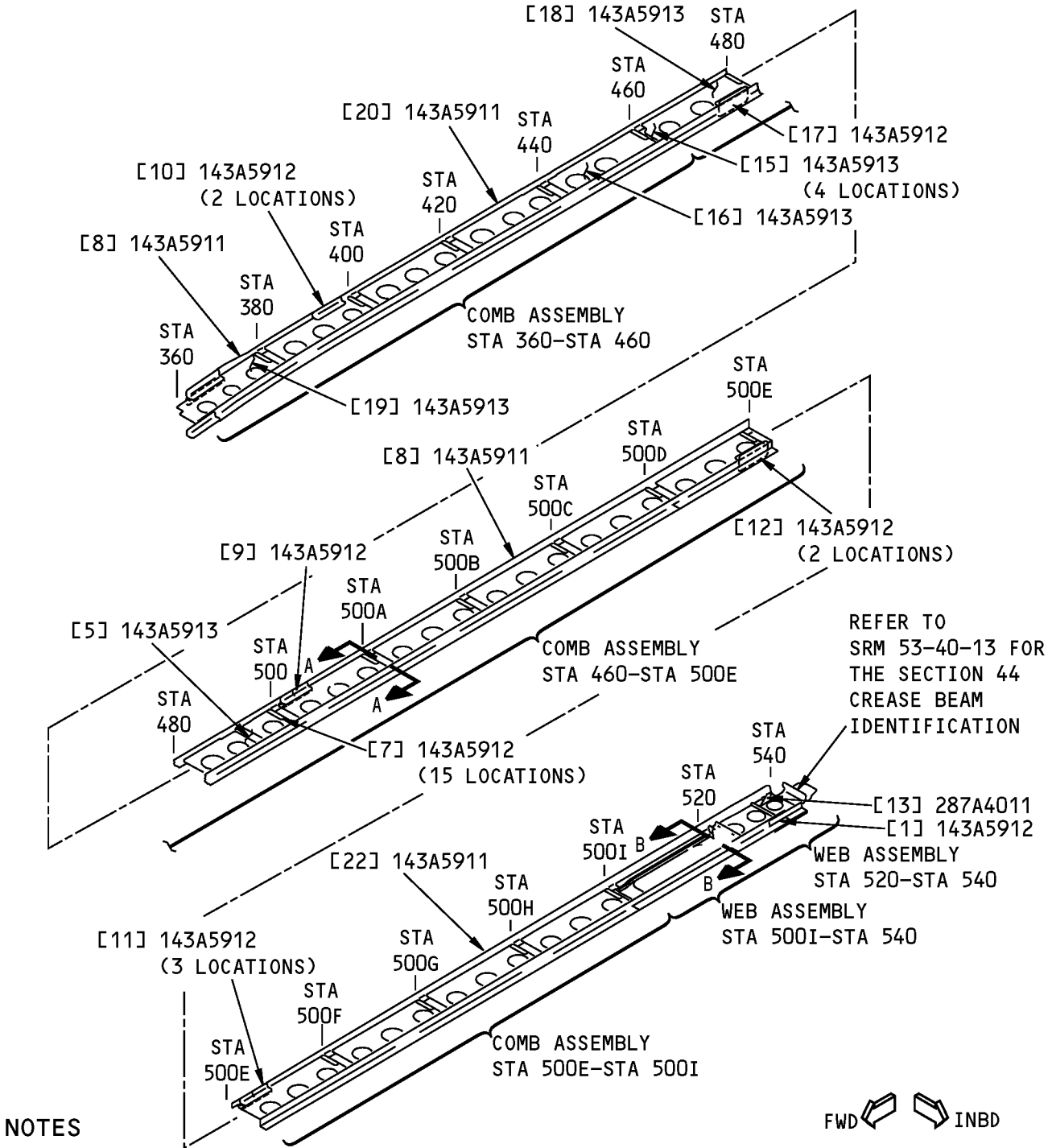
**COMB ASSEMBLY  
(DOES NOT INCLUDE OUTER CHORD)  
A-A**



**TYPICAL WEB ASSEMBLY  
B-B**

**Section 43 Crease Beam Identification  
Figure 3 (Sheet 3 of 5)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

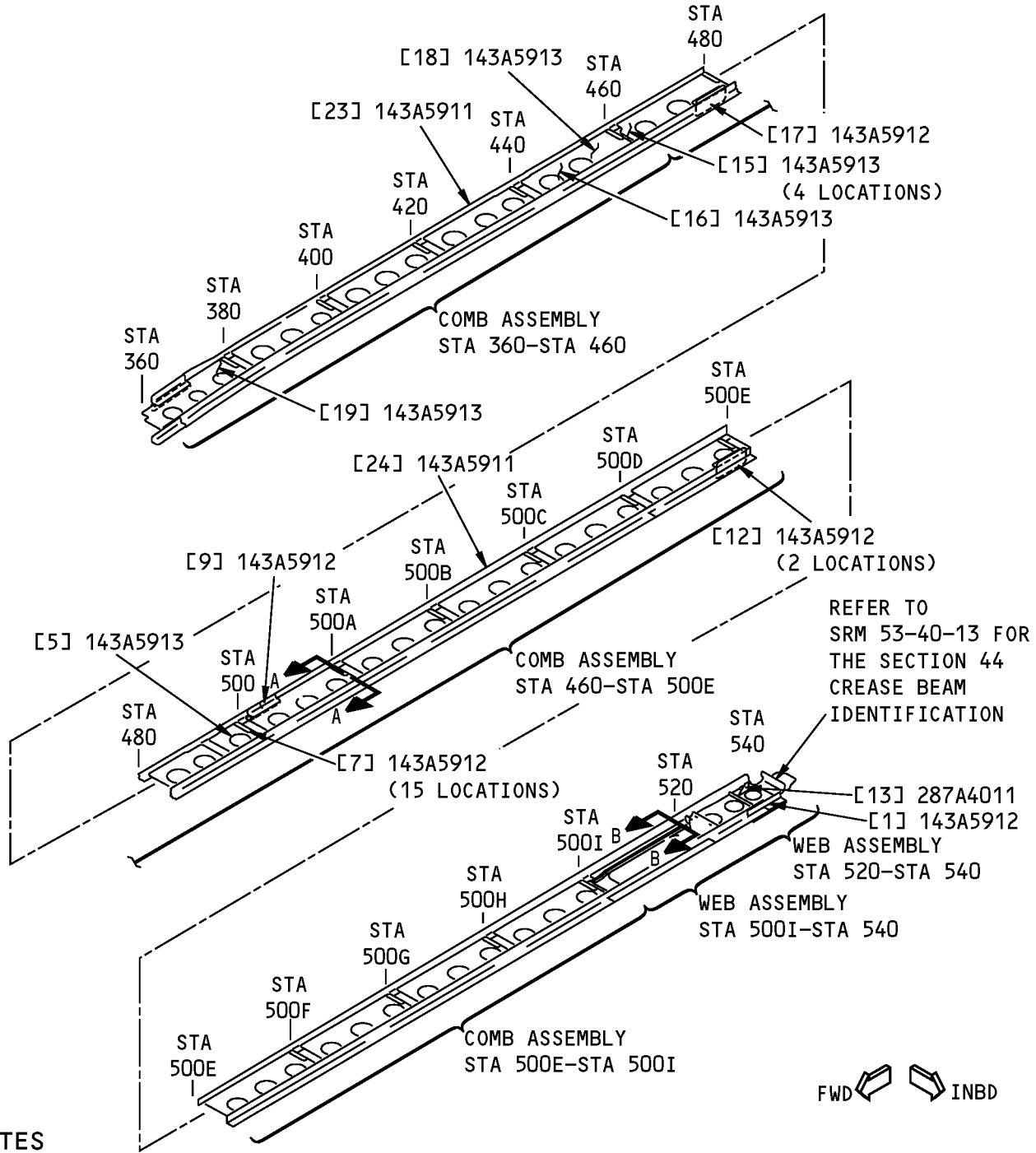
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE CREASE BEAM IS SHOWN  
FOR AIRPLANE LINE NUMBERS 1 THRU 1195**

**Section 43 Crease Beam Identification  
Figure 3 (Sheet 4 of 5)**



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**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE CREASE BEAM IS SHOWN  
FOR AIRPLANE LINE NUMBERS 1196 AND ON**

**Section 43 Crease Beam Identification  
Figure 3 (Sheet 5 of 5)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Angle (Left-2 locations) (Right-1 location)		AND10134-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web (Left-2 locations) (Right-1 location)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[3]	Inner Chord (3 locations)		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Shear Web (Left-14 locations) (Right-11 locations)	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Strap	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5	Left side only
[7]	Strap (15 locations)	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
[8]	Outer Chord (2 locations)		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[9]	Splice Angle		BAC1514-1709 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	Cum Line 001 thru 1195
[10]	Splice Angle (2 locations)		BAC1503-101027 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	Cum Line 001 thru 1195
[11]	Splice Angle (3-locations)		7050-T7451 plate as given in AMS 4050	Cum Line 001 thru 1195
[12]	Splice Strap (Left-3 locations) (Right-2 locations)	0.063 (1.6)	7075-T6 clad sheet as given in QQ-A-250/13	
[13]	Bracket	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[14]	Bracket	0.063 (1.6)	6013-T6 sheet as given in AMS 4347	Left side only
[15]	Shear Web (4 locations)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[16]	Shear Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[17]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[18]	Shear Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[19]	Shear Web	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	Right side only
[20]	Outer Chord		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[21]	Outer Chord, one piece, (LH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on
[22]	Outer Chord, AFT		7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[23]	Outer Chord, FWD, (RH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on

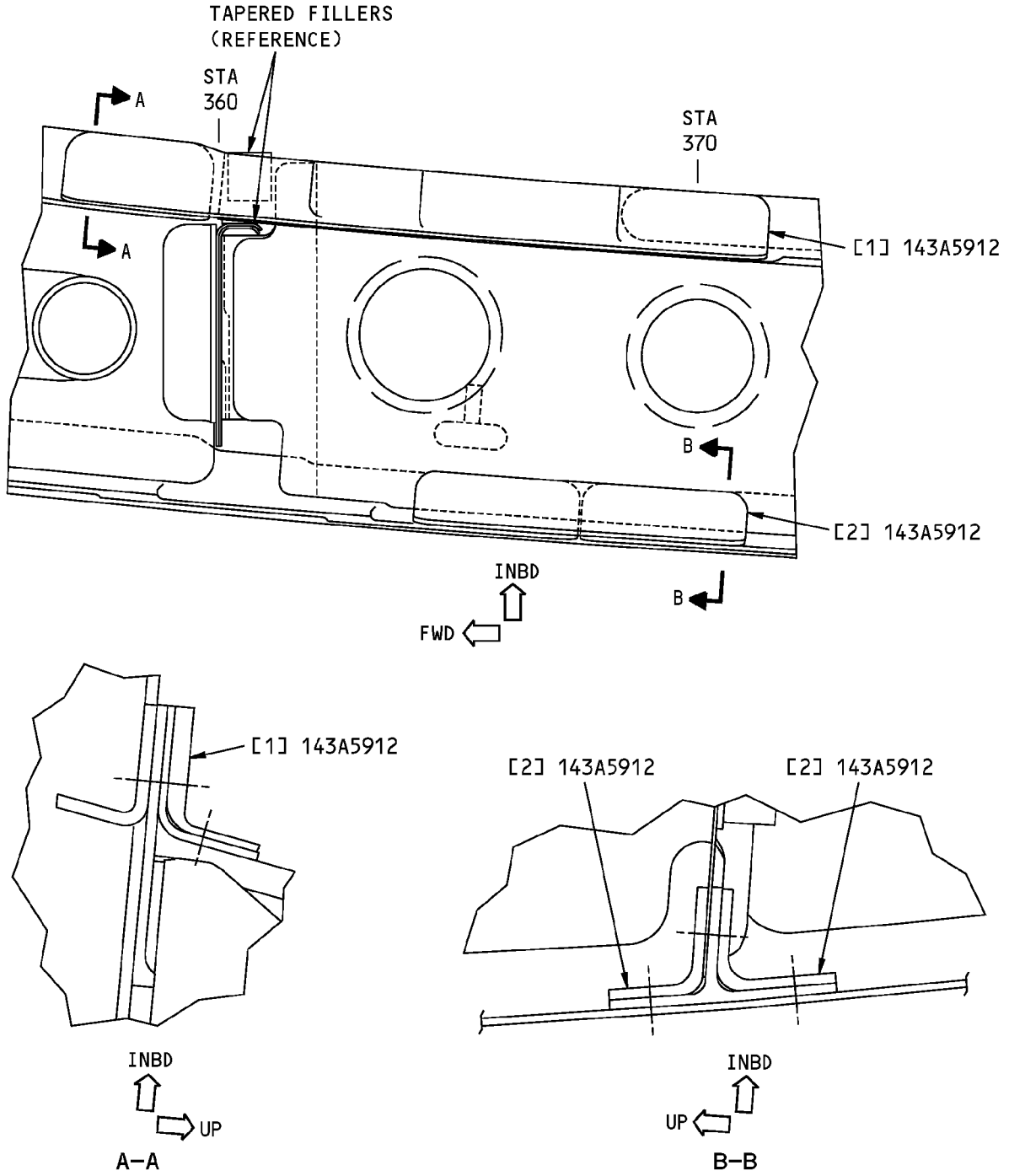


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LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[24]	Outer Chord, AFT, (RH)		BAC1506-2260 7075-T73511 extrusion as given in QQ-A-200/11, or BAC1506-4626 7075-T73511 extrusion as given in QQ-A-200/11, or 7050-T7451 machined plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 1196 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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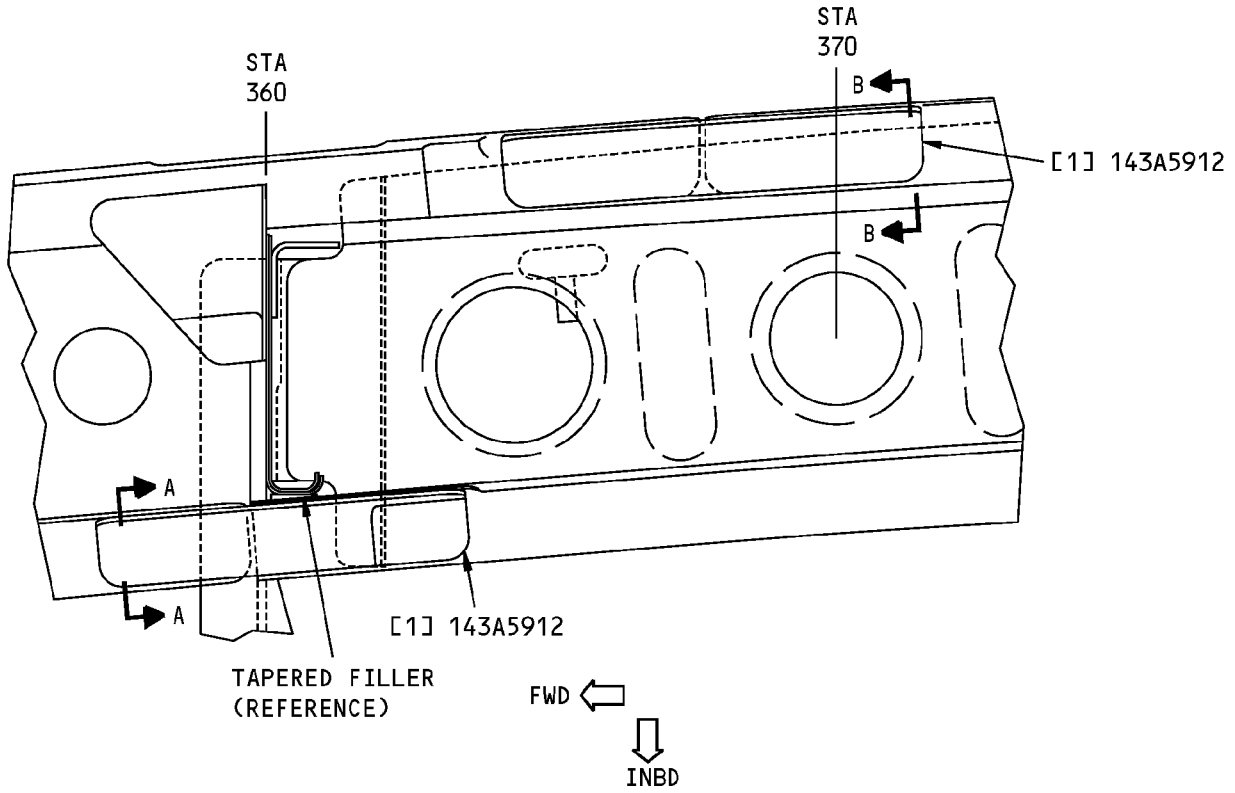


**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

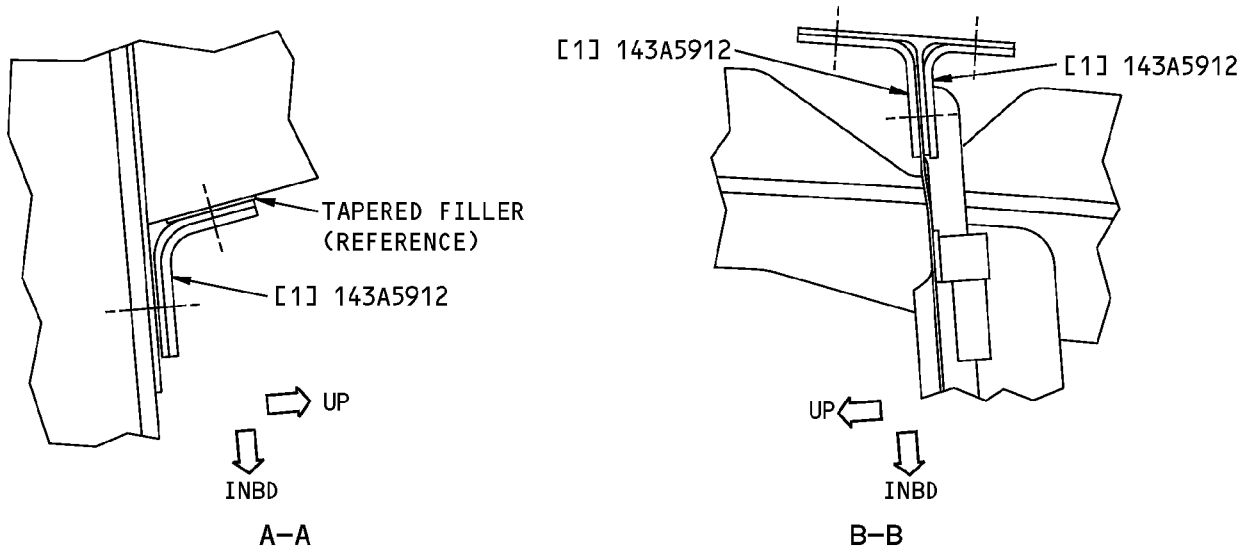
**Left Side Section 41 to 43 Crease Beam Splice Identification  
Figure 4**



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STRUCTURAL REPAIR MANUAL**

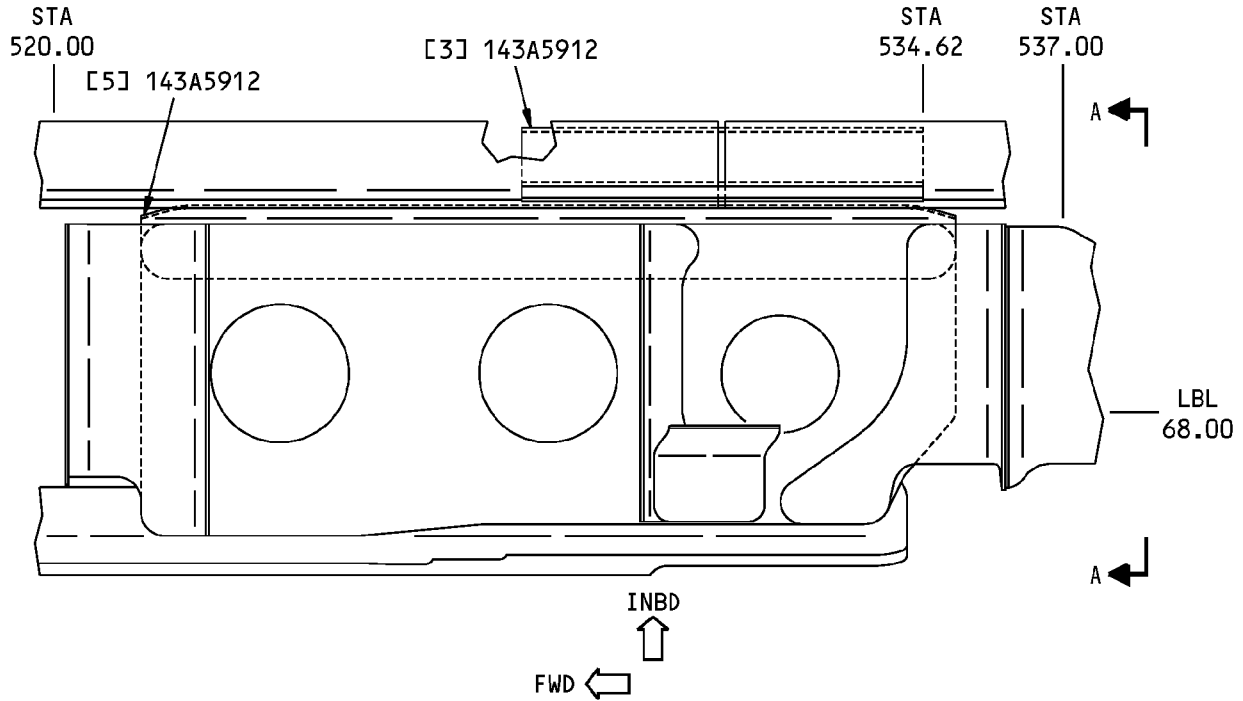


**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.



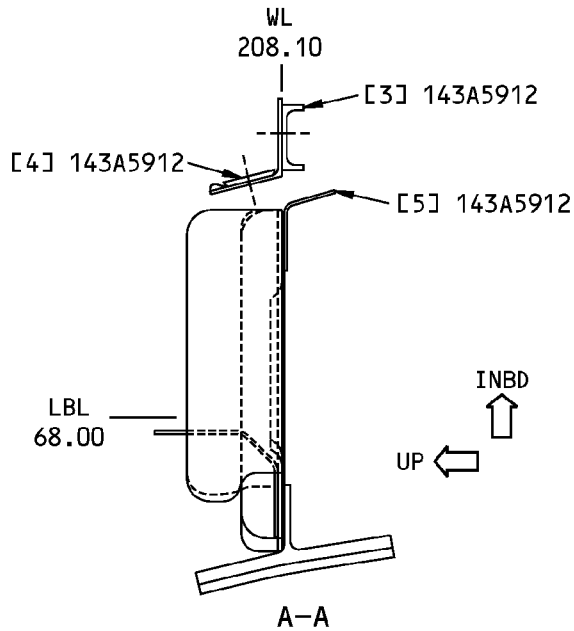
**Right Side Section 41 to 43 Crease Beam Splice Identification  
Figure 5**

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LEFT SIDE SHOWN  
RIGHT SIDE OPPOSITE

**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.



**Section 43 to 44 Crease Beam Splice Identifications  
Figure 6**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURES 4, 5, and 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Splice Angle		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Splice Angle		BAC1514-1709 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Channel		AND10137-1002 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Splice Strap		BAC1511-3749 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle	0.050 (1.3)	7075-T62 clad sheet as given in QQ-A-250/13	

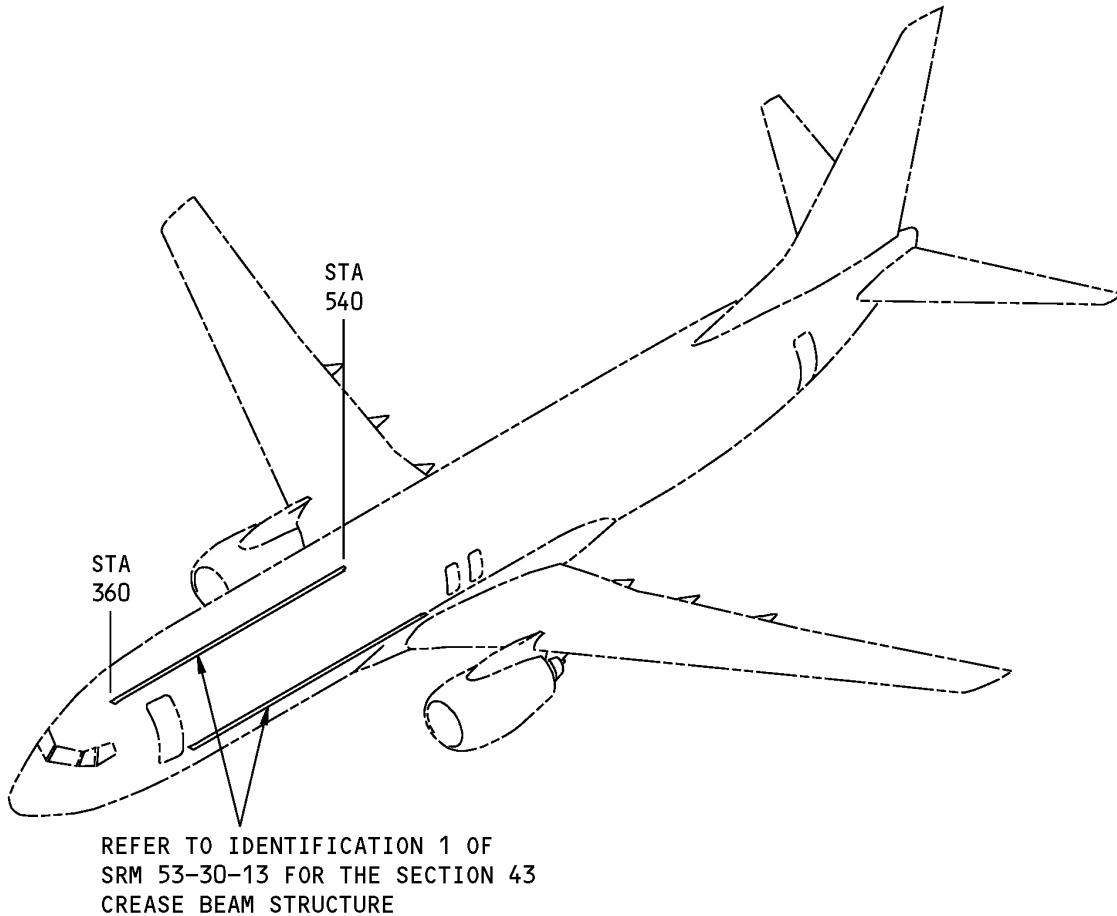
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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REPAIR 1 - SECTION 43 CREASE BEAM STRUCTURE

1. Applicability

- A. Repair 1 is applicable to damage to the crease beam structure as shown in Section 43 Crease Beam Structure Location, Figure 201/REPAIR 1.



Section 43 Crease Beam Structure Location  
Figure 201

2. General

- A. The typical repairs given in 51-70-12 can be used, when applicable, if there is sufficient clearance between the adjacent structure and the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.



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### 3. References

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR 1	Typical Extruded Sections - 0.080 Inch or Less in Thickness
51-70-12, REPAIR 2	Typical Repairs for Thick Extruded Sections
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-30-13	SECTION 43 CREASE BEAM STRUCTURE
53-30-13, IDENTIFICATION 1	Section 43 Crease Beam Structure

### 4. Repair Instructions

#### A. Section 43 Crease Beam Structure

- (1) Refer to Table 201/REPAIR 1 to find the applicable repairs for the crease beam structure in fuselage Section 43.

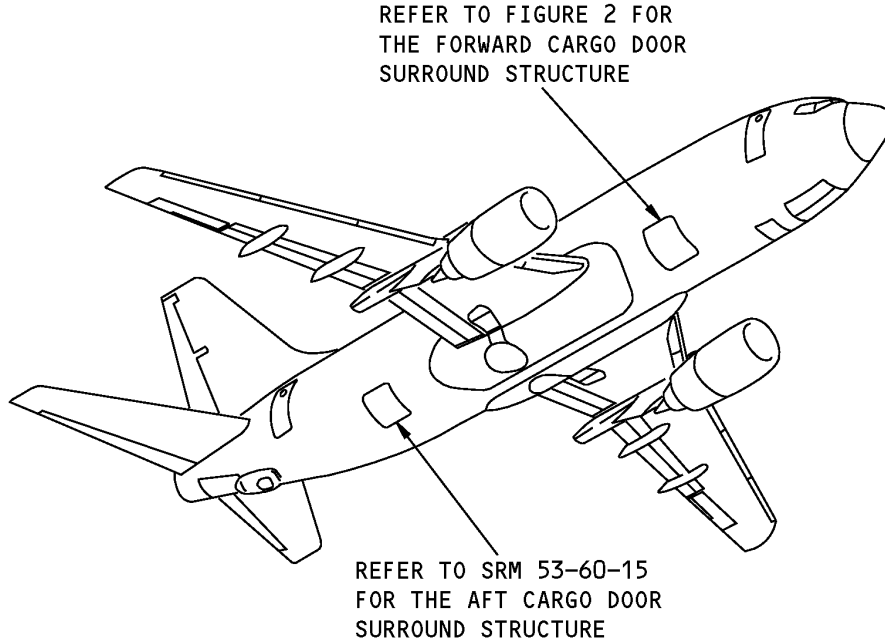
**NOTE:** If necessary, refer to 53-30-13, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 43 CREASE BEAM STRUCTURE	
COMPONENT	REPAIR
Chords	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, Machined Splice Angles, and Clips	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the given SRM 53-30-13, Allowable Damage 1, then replace the damaged part

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**IDENTIFICATION 1 - SECTION 43 FORWARD CARGO DOOR SURROUND STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Forward Cargo Door Surround Structure Locator  
Figure 1**

**Table 1:**

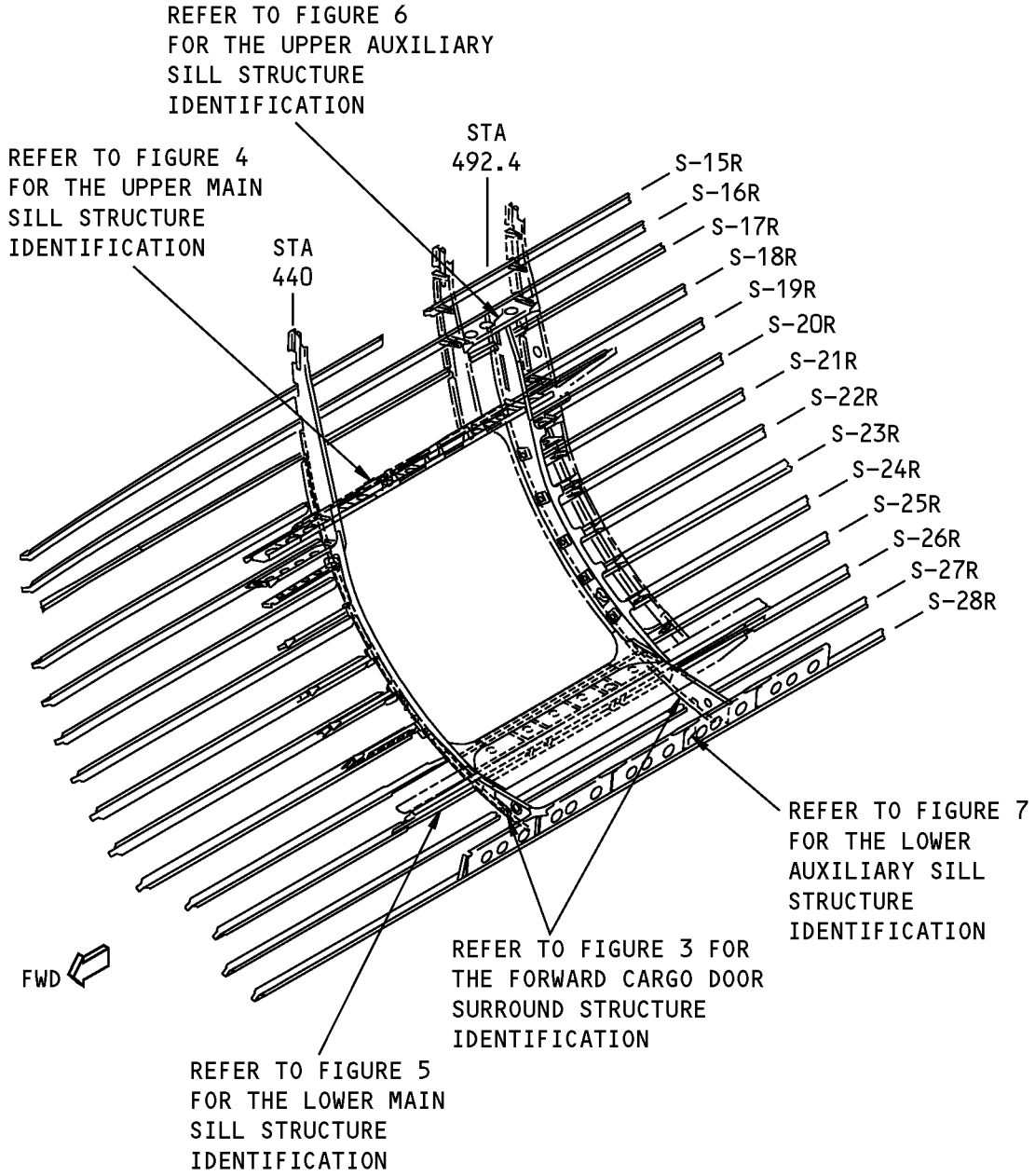
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4320	Section 43 Lower Lobe Functional Product Collector
140A4330	Functional Collector - Forward Cargo Door Surround
140A4331	Section 43 Integration Functional Collector
143A0080	Sill Integration - Lower Main, Forward Cargo Door Surround
143A0081	Sill Integration - Upper Main, Forward Cargo Door Surround



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A0082	Integration Installation - Station 440, Forward Cargo Door Surround
143A0083	Integration Installation - Station 492.4, Forward Cargo Door Surround
143A8100	Sill Installation - Upper Auxiliary, Forward Cargo Door Surround
143A8110	Sill Installation - Upper Main, Forward Cargo Door Surround
143A8120	Sill Installation - Lower Main, Forward Cargo Door Surround
143A8121	Web Assembly - Lower Main Sill, Forward Cargo Door Surround
143A8130	Sill Installation - Lower Auxiliary, Forward Cargo Door Surround
143A8200	Frame Assembly/Installation - Station 440, Forward Cargo Door Surround
143A8201	Frame Assembly/Installation - Station 492.4, Forward Cargo Door Surround
143A8320	Forward Intercostal Installation - Forward Cargo Door Surround
143A8321	Aft Intercostal Installation - Forward Cargo Door Surround, Section 43
143A8330	Scuff Plate Installation - Lower Main Sill, Forward Cargo Door Surround

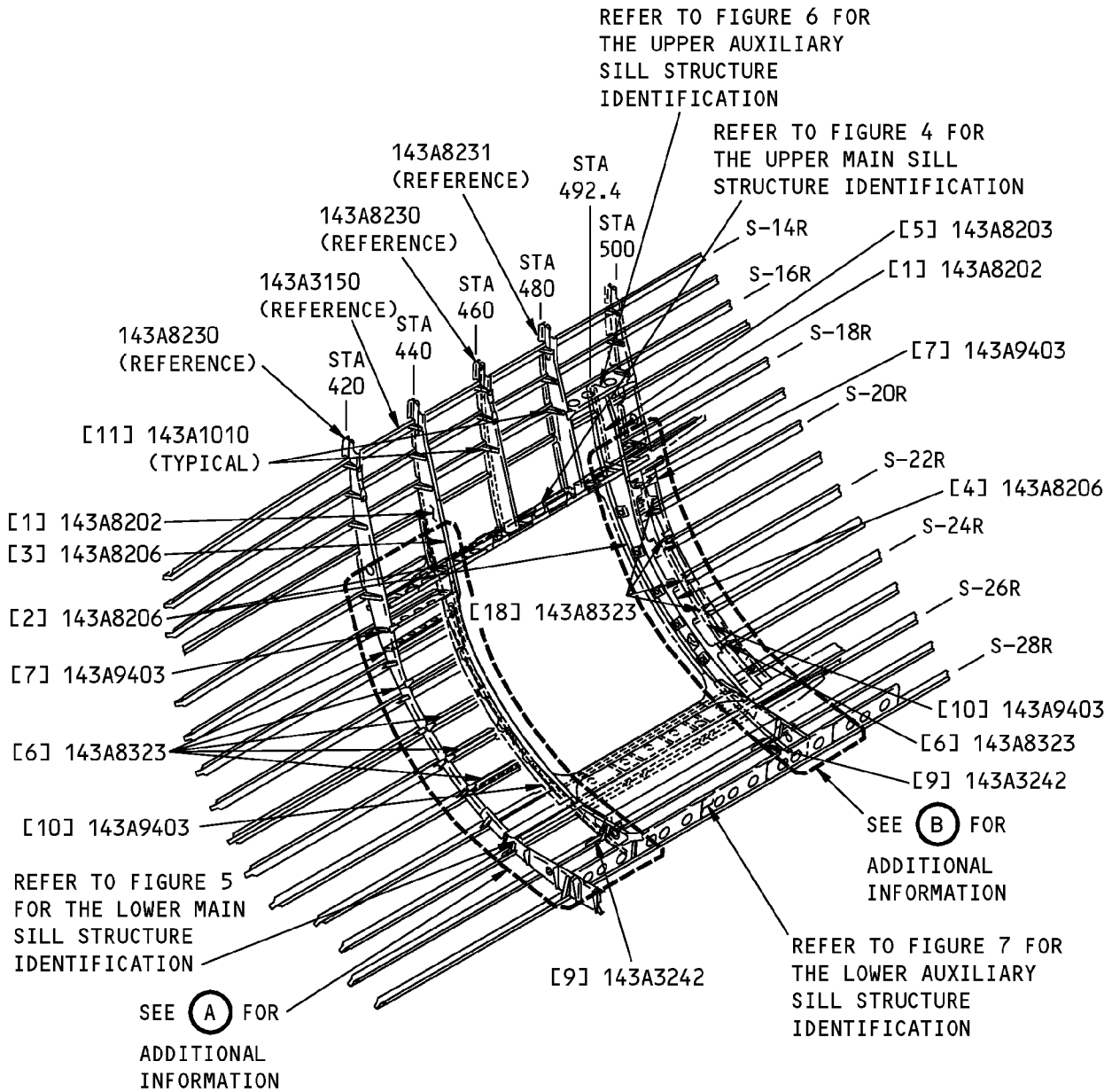
**STRUCTURAL REPAIR MANUAL**



**Forward Cargo Door Surround Structure  
Figure 2**



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STRUCTURAL REPAIR MANUAL**

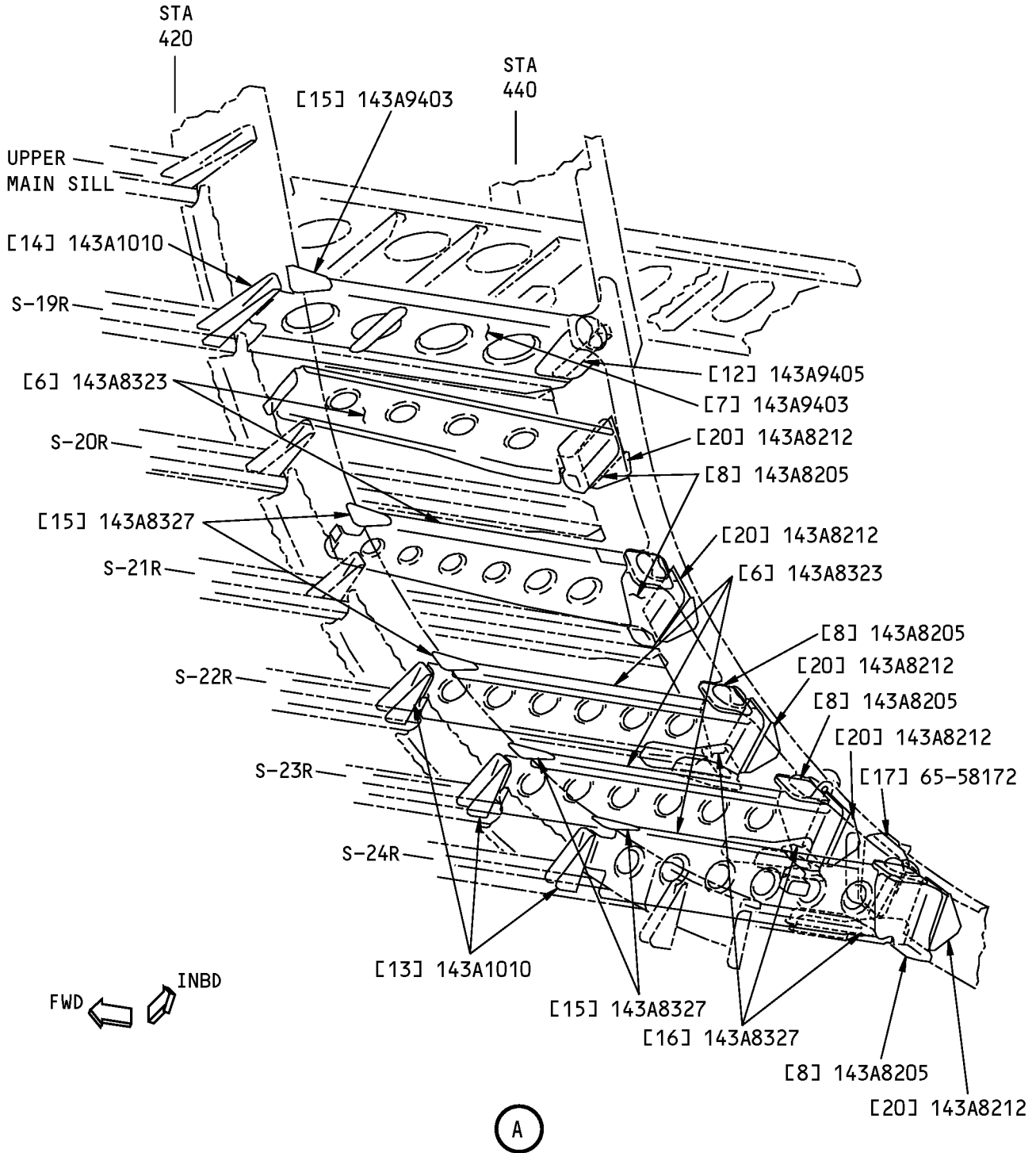


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

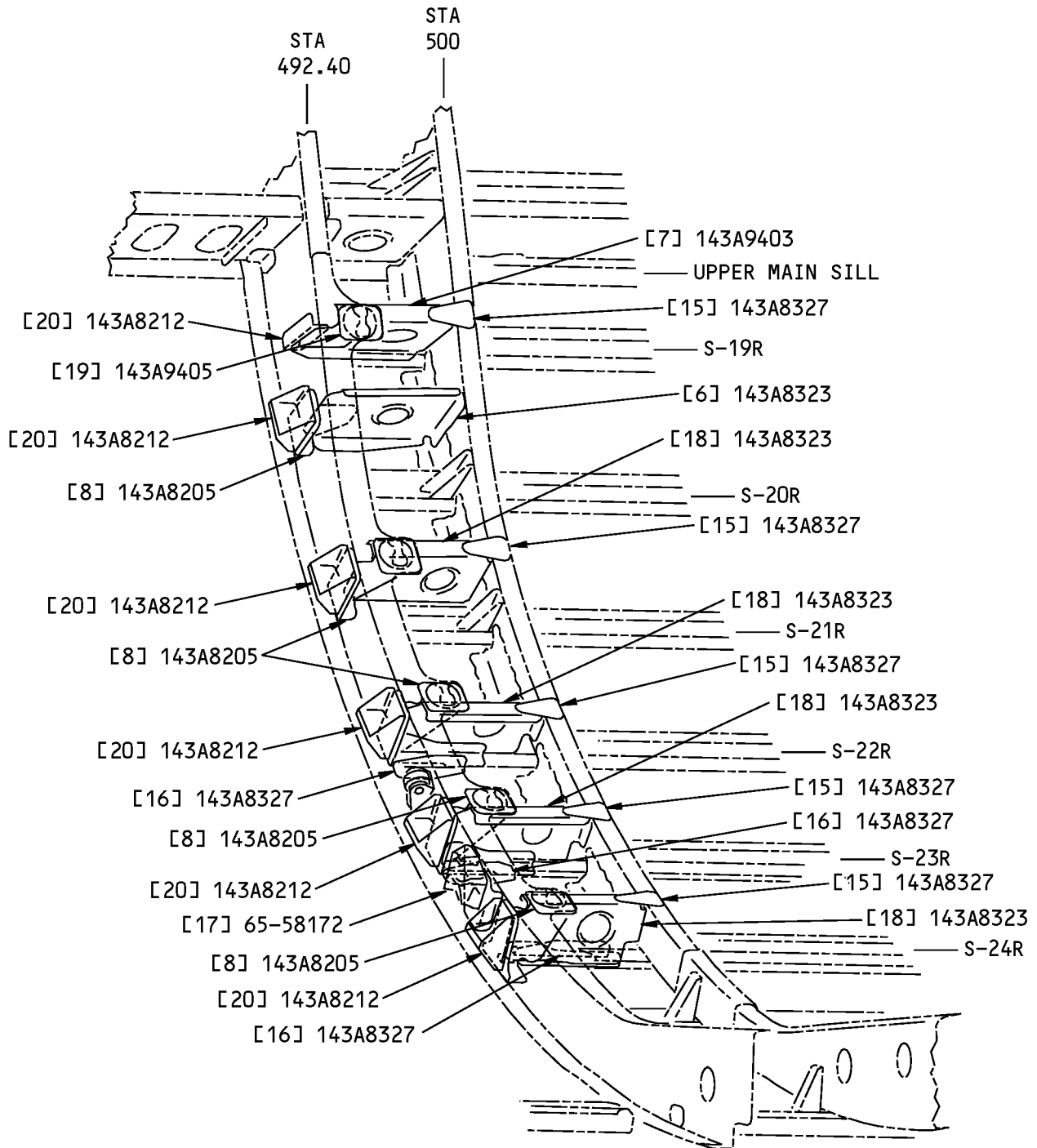
**Forward Cargo Door Surround Structure Identification  
Figure 3 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Forward Cargo Door Surround Structure Identification  
Figure 3 (Sheet 2 of 3)**

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**B**

**Forward Cargo Door Surround Structure Identification  
Figure 3 (Sheet 3 of 3)**



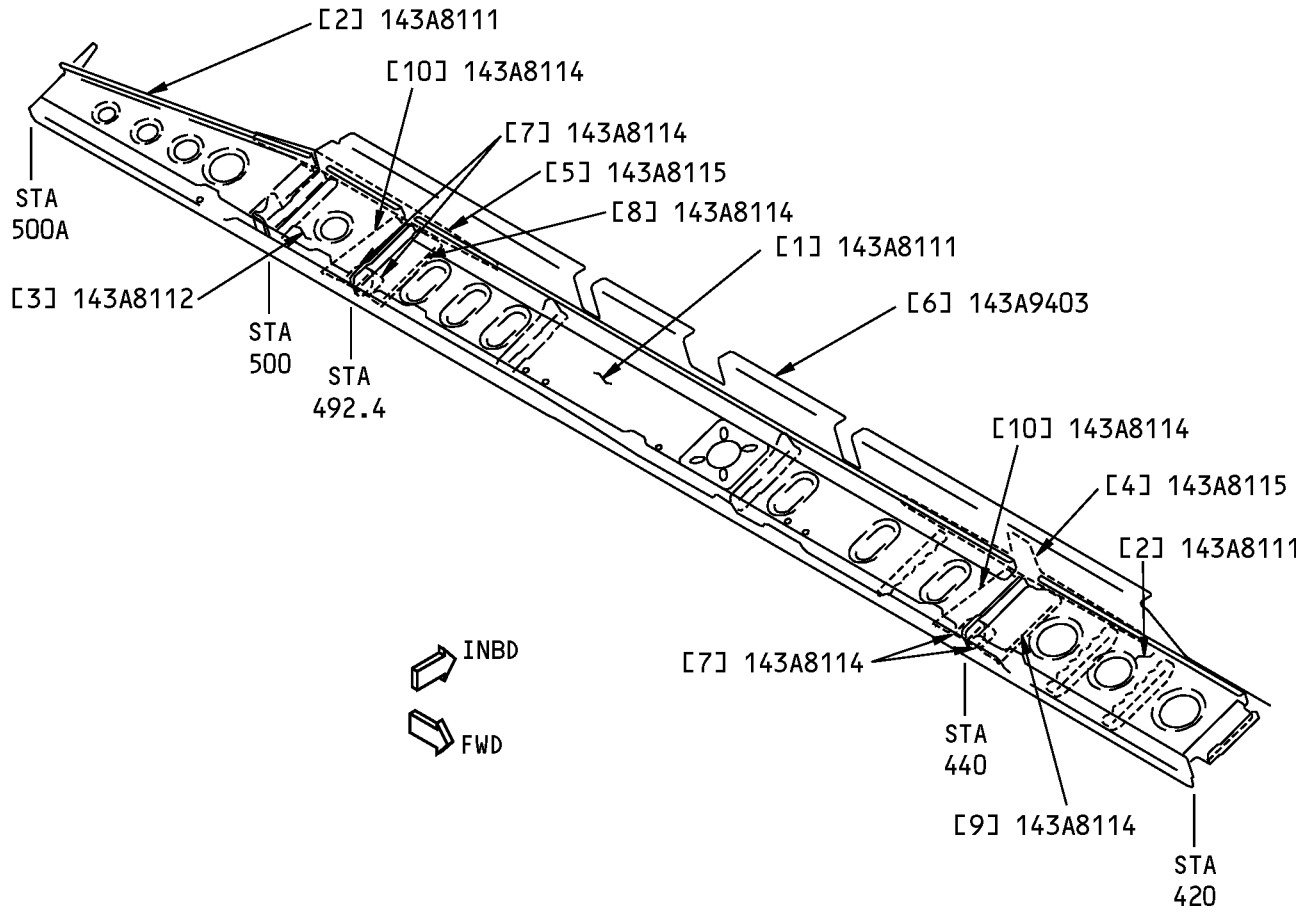
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Edge Frame		7050-T7451 plate as given in AMS 4050. (Grain direction controlled part)	
[2]	Strap, Fail Safe		BAC1512-365 2024-T3511 extrusion as given in QQ-A-200/3	
[3]	Strap, Fail Safe		BAC1512-3464 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Strap, Fail Safe		BAC1520-2799 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Chord, Fail Safe		BAC1514-3146 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Web (5)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Support Fitting		7050-T7451 bare plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[9]	Channel Splice (2)		BAC1493-873 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Reveal Strip (2)	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[11]	Stringer Clip (3)		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Stringer Clip		AND10134-1003 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stringer Clip (3)		BAC1493-856 7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Stringer Clip		BAC1493-854 7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Gusset (5)	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[16]	Stringer Clip (3)		BAC1503-100136 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Roller Stop Fitting		17-4PH forging as given in AMS 5643. Heat treat 180-220 KSI as given in BAC 5619	
[18]	Web (4)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Stringer Clip		AND10134-1005 7075-T73511 extrusion as given in QQ-A-200/11	
[20]	Door Stop Fitting		7075-T73 forging as given in BMS 7-186	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**UPPER MAIN SILL**

**Forward Cargo Door Upper Main Sill Structure Identification  
Figure 4**



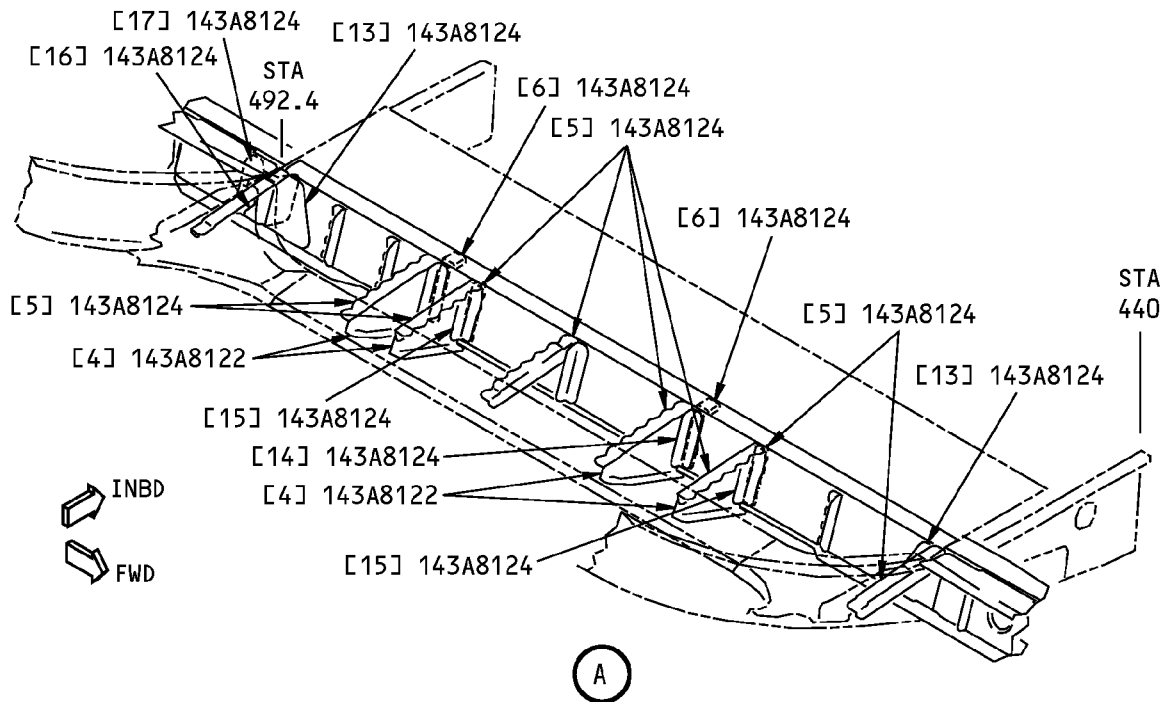
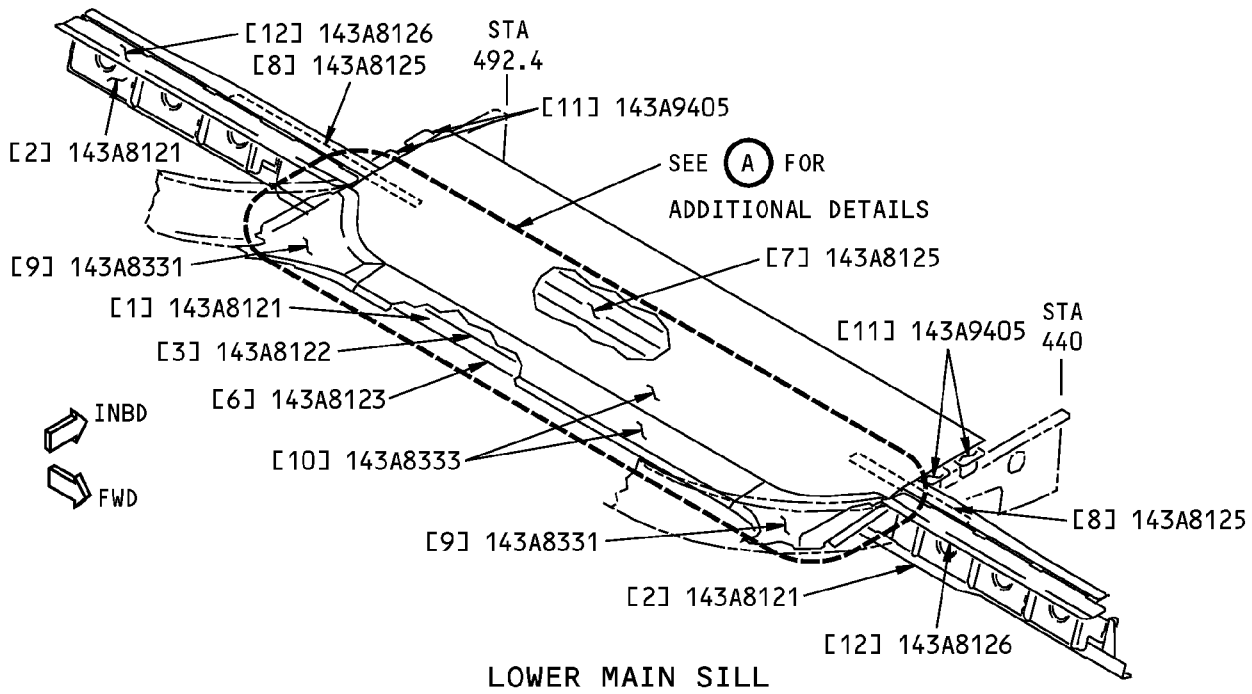
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 3:**

LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Web Assembly (STA 420 to STA 500A) Web Inboard Chord Outboard Chord (STA 420 to STA 500A) Doubler Stiffener	0.050 (1.27)    0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1510-1341 7075-T6511 as given in QQ-A-200/11 BAC1505-101651 7075-T73511 as given in QQ-A-200/11 7075-T6 clad sheet as given in QQ-A-250/13 BAC1503-101018 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web Assembly (STA 420 to STA 440 and STA 500 to STA 500A) Web (2) Stiffener (2)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-101018 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Web (STA 492.4 to STA 500)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Reveal	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Clip (4)		BAC1503-100937 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Clip		BAC1517-2789 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Clip		BAC1517-2788 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTES**

- REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Forward Cargo Door Lower Main Sill Structure  
Figure 5**



**737-800  
STRUCTURAL REPAIR MANUAL**

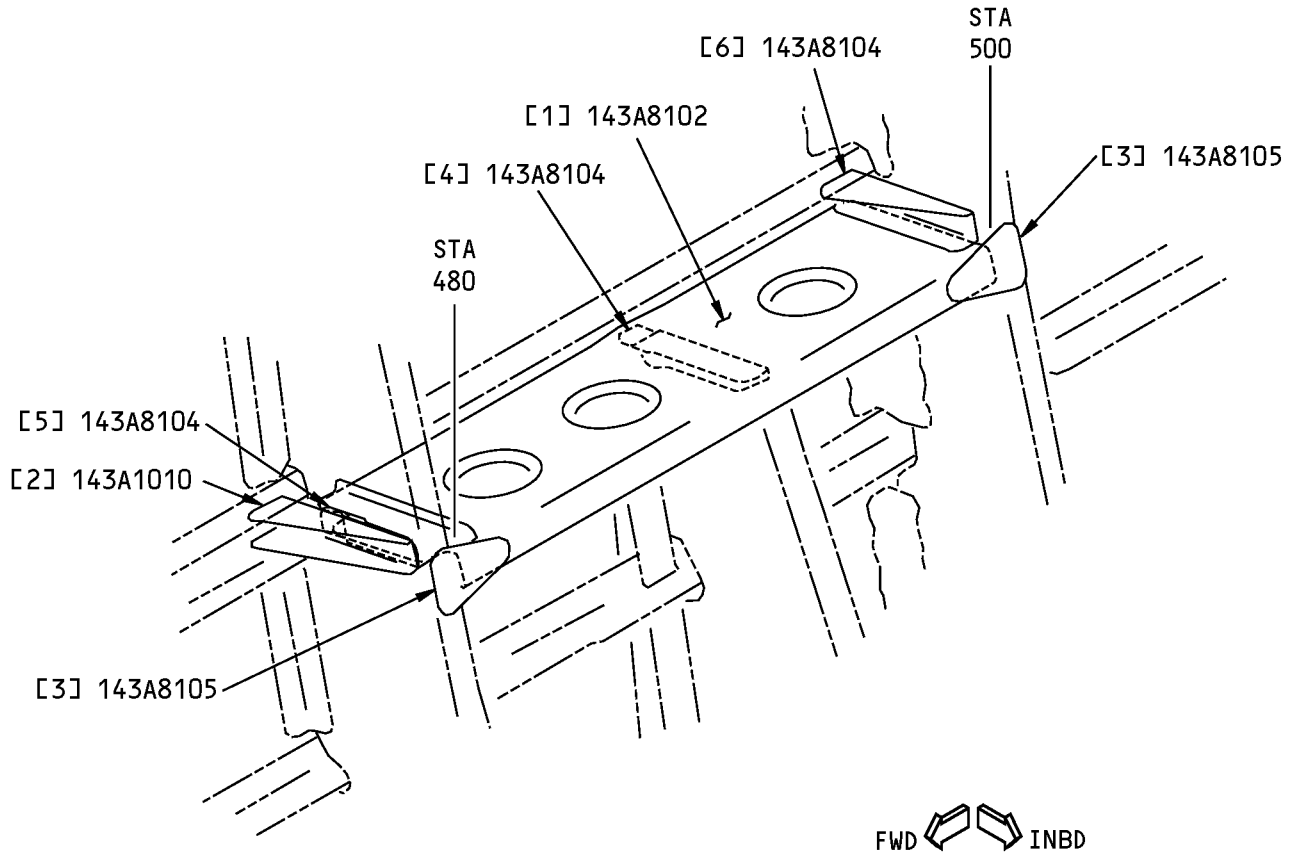
**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web Assembly Web Chord Clip Stiffener (3)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-101639 7075-T6511 extrusion as given in QQ-A-200/11 BAC1503-100137 7075-T73511 extrusion as given in QQ-A-200/11 BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web Assembly (3) Web Stiffener	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Rib (2)		BAC1514-1798 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Clip (12)		BAC1514-3129 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Clip (2)	0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Strap (STA 420 to STA 500A)		BAC1514-1525 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Strap (STA 440) Strap (STA 492.4)		BAC1511-10025 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1511-3754) BAC1511-10028 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1511-3754)	
[9]	Scuff Plate Assembly (2) Scuff Plate Scuff Plate	0.063 (1.6)	A356-T61 investment casting as given in AMS 4218 6061-T6 sheet as given in QQ-A-250/11	
[10]	Scuff Plate (2)	0.040 (1.02)	Titanium sheet as given in SAE-AMS-T-9046A, Code CP-1, Condition A	
[11]	Tee (4)		BAC1505-100261 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Shield (2)	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Clip (2)		BAC1514-3127 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Clip		BAC1517-2729 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Clip		BAC1514-3130 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Clip		BAC1514-3128 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Clip		BAC1517-2728 7075-T73511 extrusion as given in QQ-A-200/11	



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\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**UPPER AUXILIARY SILL STRUCTURE**

**Forward Cargo Door Upper Auxiliary Sill Structure  
Figure 6**



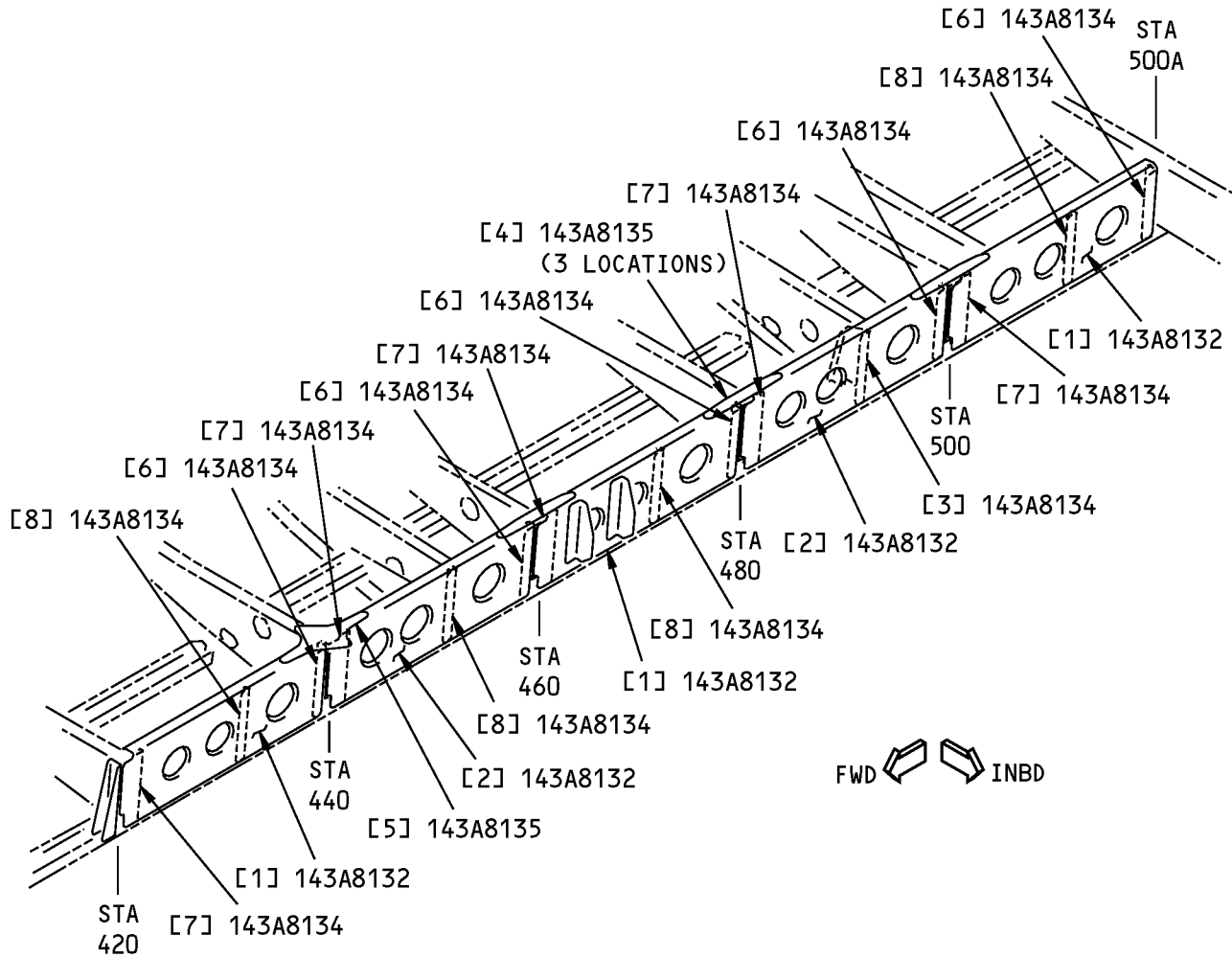
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Stringer Clip		BAC1493-852 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Gusset (2)	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[4]	Clip		BAC1514-3164 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Clip		BAC1510-1332 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: 7050-T7451 as given in AMS 4050)	
[6]	Clip		BAC1510-1363 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Forward Cargo Door Lower Auxiliary Sill Structure  
Figure 7**



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STRUCTURAL REPAIR MANUAL**

**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web (3)	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Channel	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap (3)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Clip (5)		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Clip (5)		BAC1510-1338 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Clip (4)		BAC1503-100397 7075-T73511 extrusion as given in QQ-A-200/11	

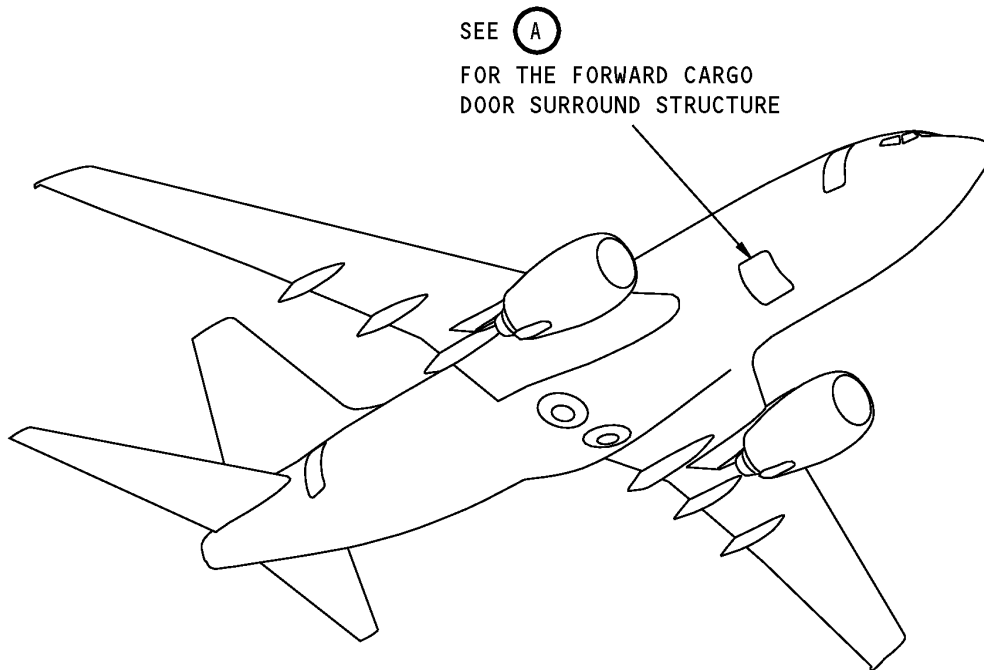
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - FORWARD CARGO DOOR SURROUND STRUCTURE**

**1. Applicability**

- A. This subject gives the allowable damage limits for the Door Surround Structure as shown in Section 43 - Forward Cargo Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 1.



**Section 43 - Forward Cargo Door Surround Structure**  
**Figure 101**

**2. General**

- A. Remove the damaged material as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.



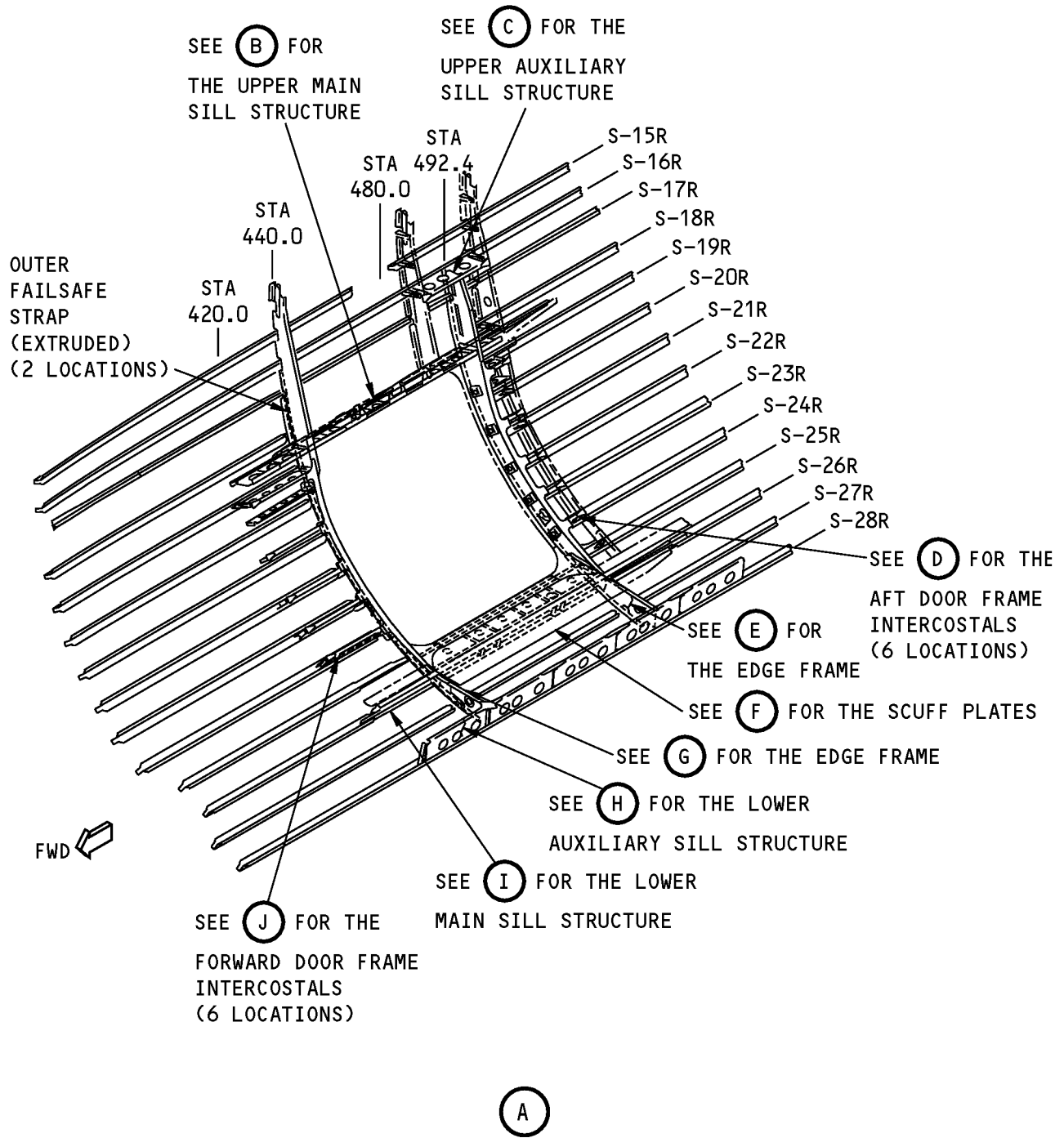
**737-800  
STRUCTURAL REPAIR MANUAL**

- B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01
- C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

**Table 101:**

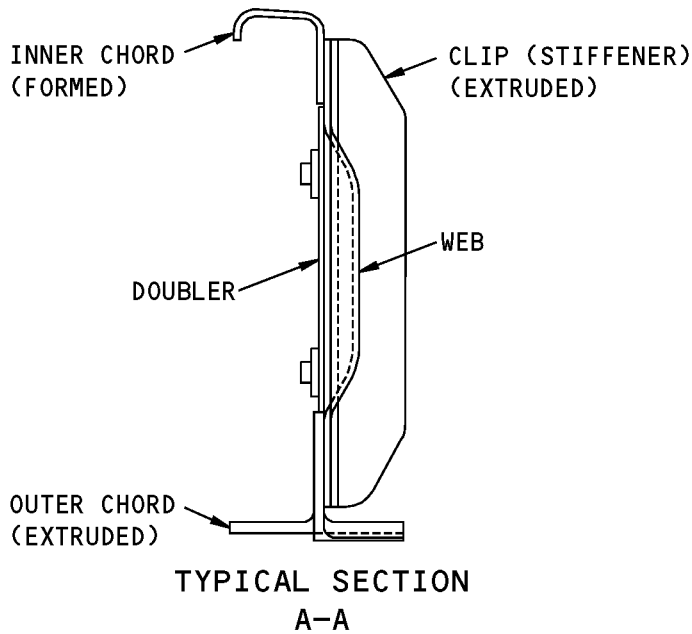
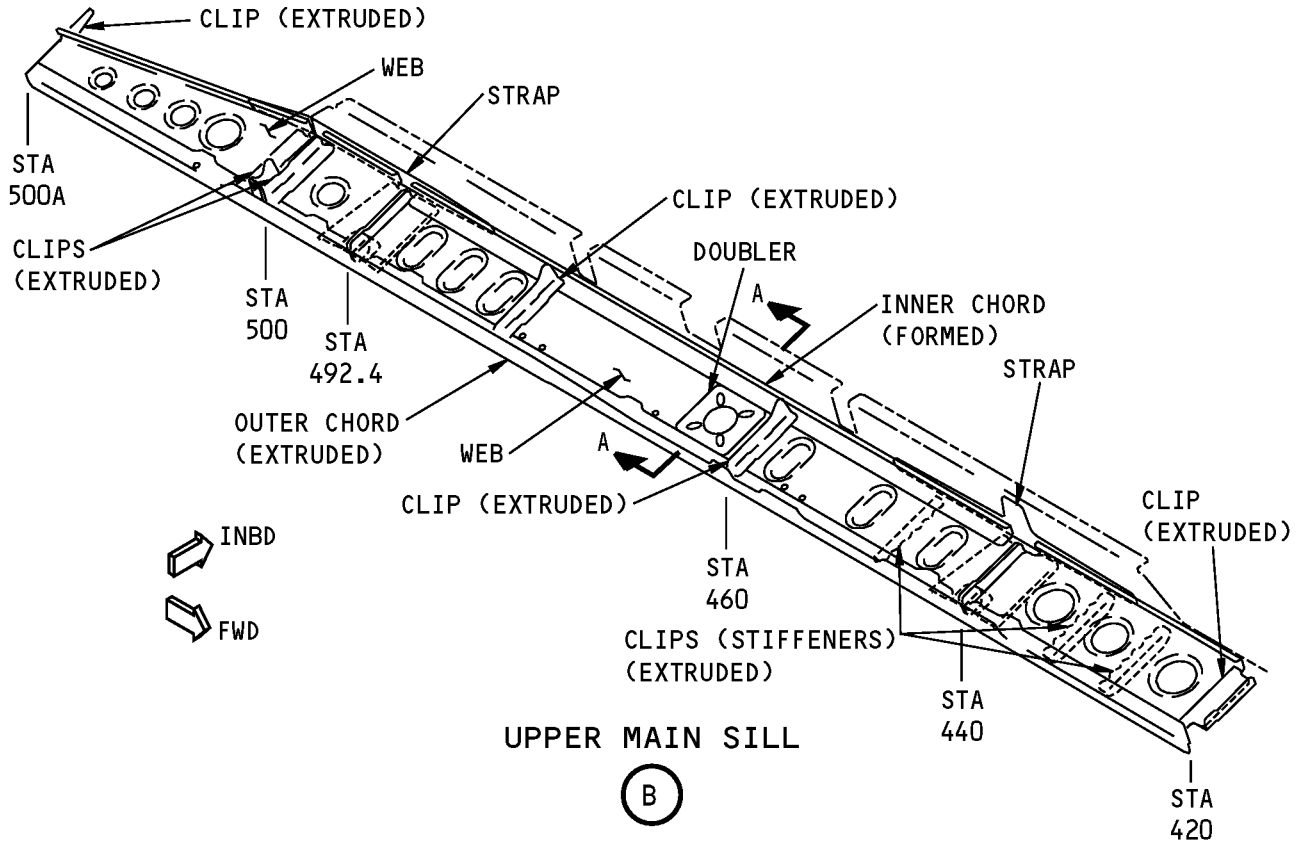
<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>		
<b>TYPE OF STRUCTURE</b>	<b>PART NAME</b>	<b>PARAGRAPH</b>
EDGE FRAME INNER CHORD, INNER STRAP FAIL SAFE STRAP, AND WEB BETWEEN STOP #2 AND STRINGER-17	INNER CHORD	4.A.(1)
	WEB (STOP #2 TO S-18)	4.A.(2)
	FAIL SAFE STRAPS	4.A.(3)
EDGE FRAME EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.B.(1)
	WEB	4.B.(2)
	FAIL SAFE STRAPS	4.B.(3)
	FAIL SAFE CHORD, STIFFENERS, SHEAR TIES AND CLIPS	4.B.(4)
INTERCOSTALS AND STOP BACK-UP, DOOR STOPS AND LATCH FITTINGS	INTERCOSTAL CHORDS	4.C.(1)
	INTERCOSTAL WEBS	4.C.(2)
	STOP BACK-UP FITTINGS	4.C.(3)
	DOOR STOPS	4.C.(4)
	LATCH FITTINGS	4.C.(5)
UPPER MAIN SILL BETWEEN STA 460 AND STA 500	INNER AND OUTER CHORDS	4.D.(1)
	WEBS	4.D.(2)
	INNER STRAP	4.D.(3)
	STIFFENERS AND CLIPS	4.D.(4)
UPPER MAIN SILL EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.E.(1)
	WEBS	4.E.(2)
	STRAPS	4.E.(3)
	STIFFENERS AND CLIPS	4.E.(4)
LOWER MAIN SILL STRAP INNER STRAP AT FOUR FASTENERS EITHER SIDE OF STA 440 AND STA 492.4	INNER STRAP	4.F.(1)
LOWER MAIN SILL EXCLUDING ABOVE	INNER AND OUTER CHORDS	4.G.(1)
	WEB	4.G.(2)
	STRAPS	4.G.(3)
	STIFFENERS, RIBS, AND CLIPS	4.G.(4)
	SCUFF PLATES	4.G.(5)
UPPER AND LOWER AUXILIARY SILL EXCLUDING STRINGERS	WEBS	4.H.(1)
	STRAPS (GUSSETS)	4.H.(2)
	STIFFENERS AND CLIPS	4.H.(3)

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**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 1 of 12)**

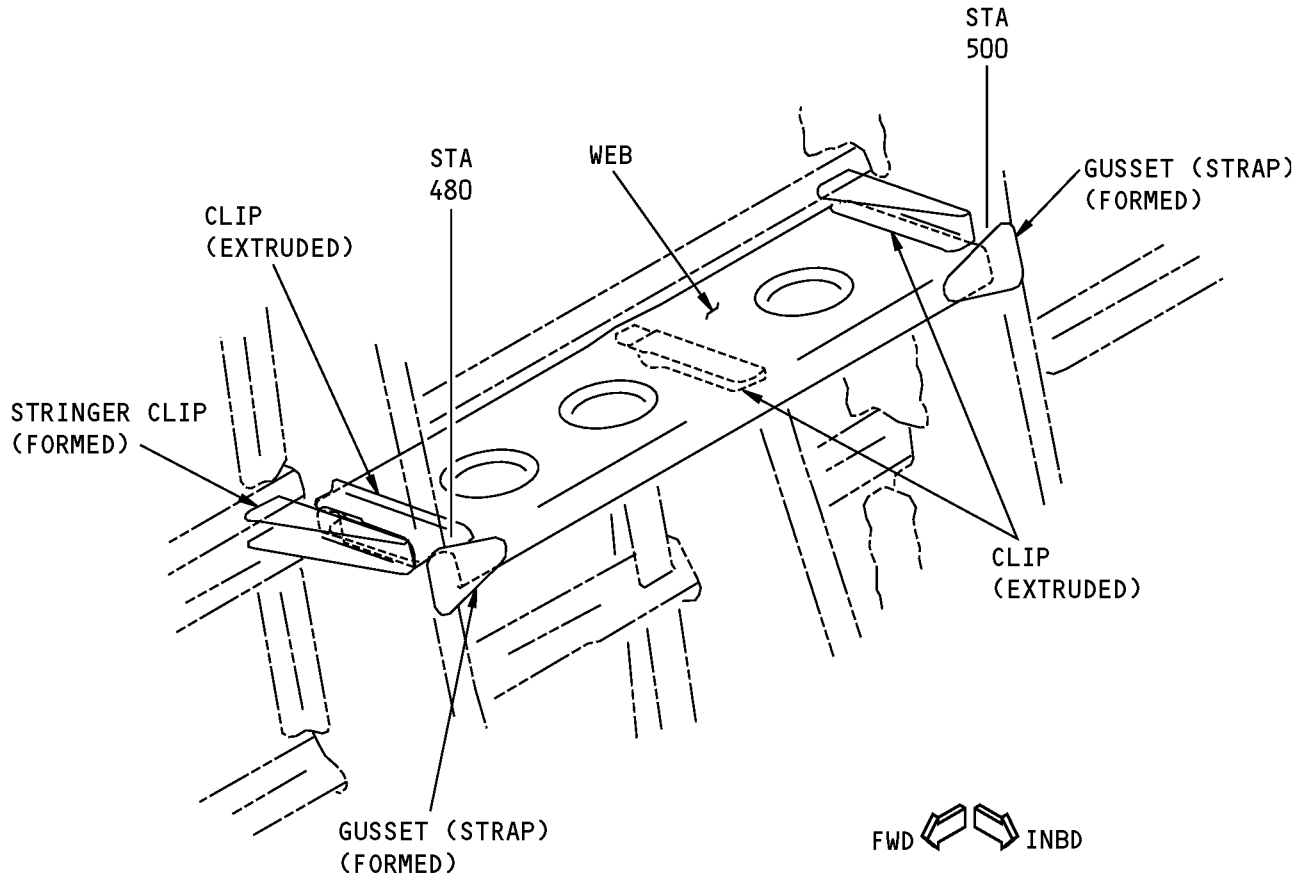
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STRUCTURAL REPAIR MANUAL**



**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 2 of 12)**



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STRUCTURAL REPAIR MANUAL**

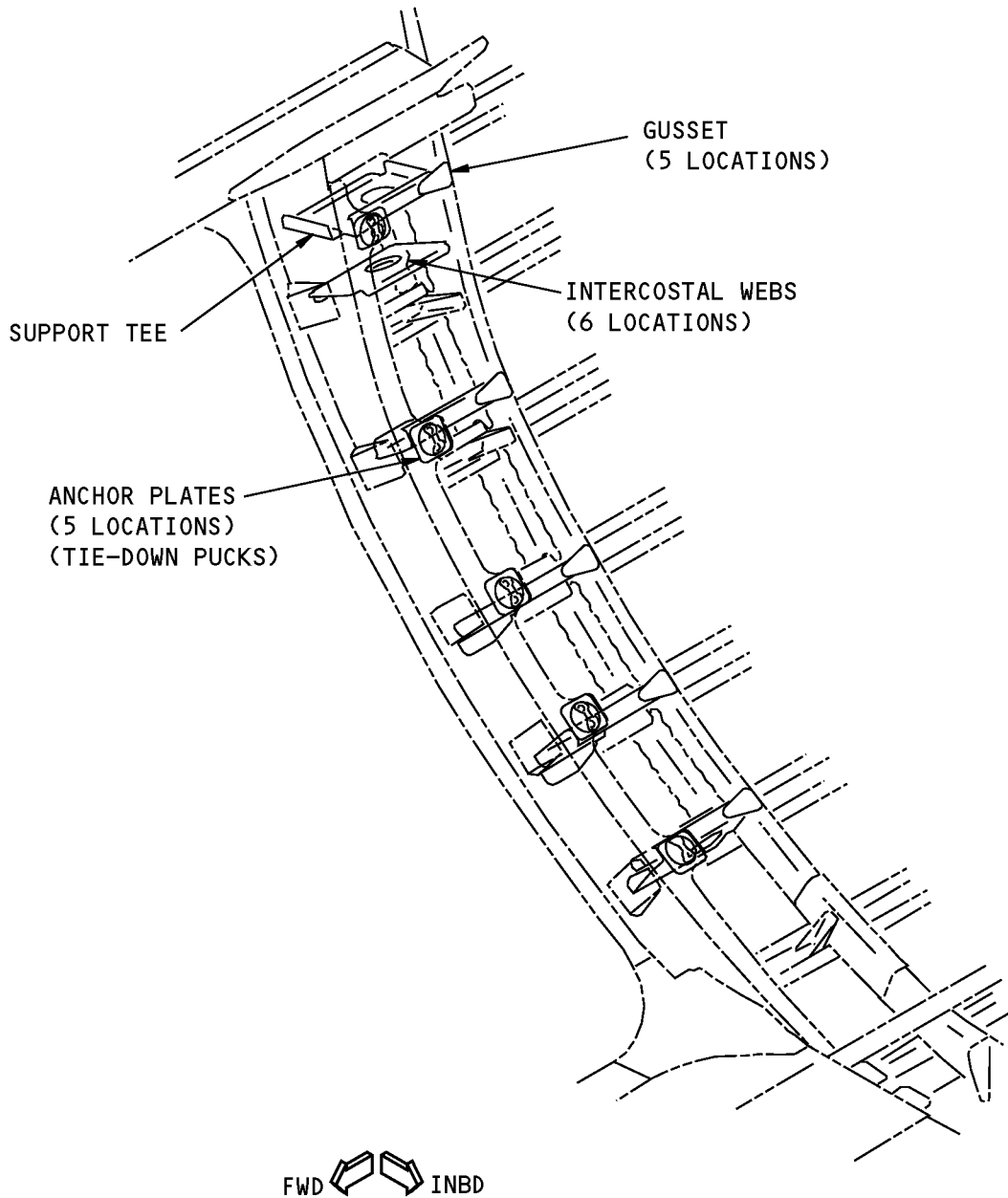


**UPPER AUXILIARY SILL STRUCTURE**



**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 3 of 12)**

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**AFT DOOR FRAME INTERCOSTALS**

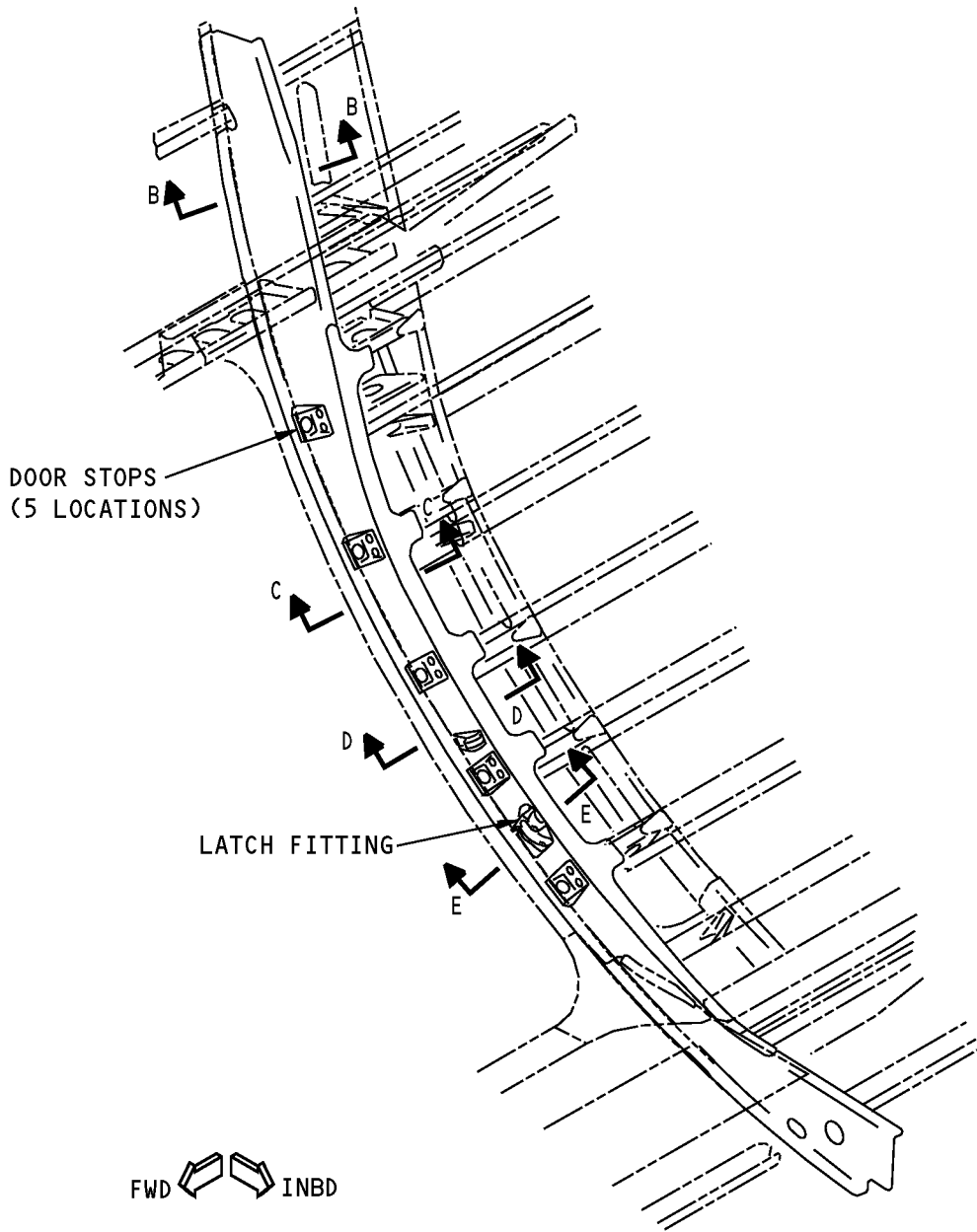
**D**

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 4 of 12)**

D634A210

**53-30-15**  
ALLOWABLE DAMAGE 1  
Page 106  
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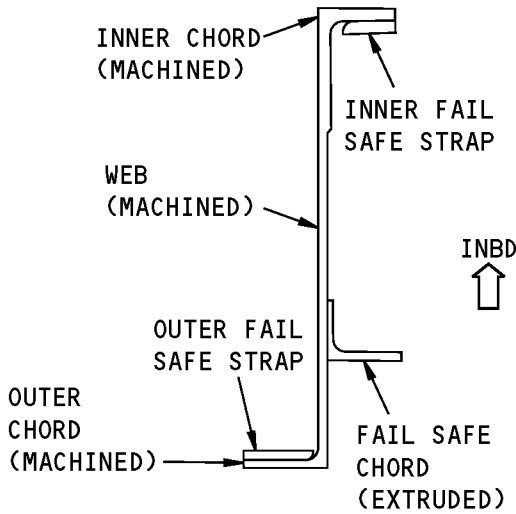


VIEW IS LOOKING AFT  
EDGE FRAME AT STA 492.4

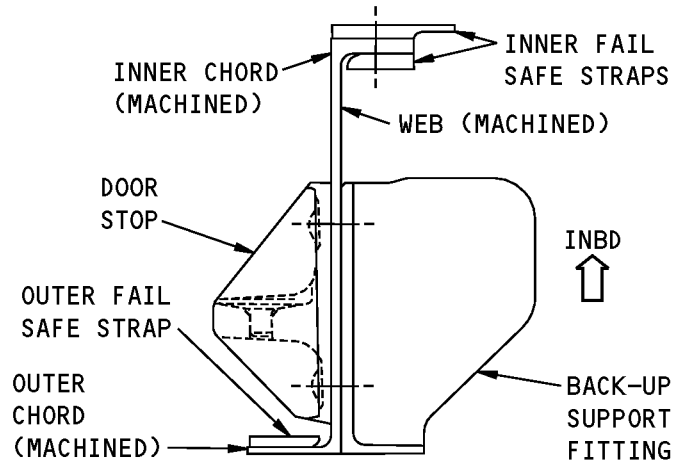
(E)

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 5 of 12)**

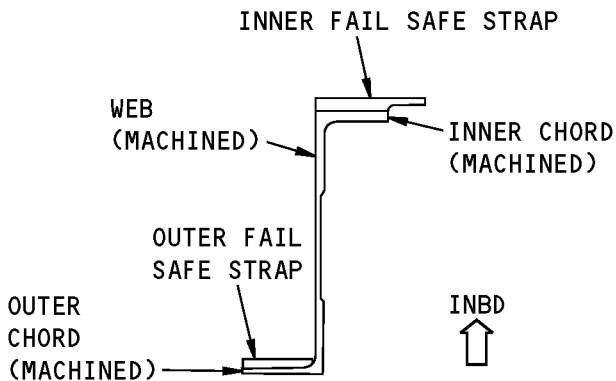
**737-800  
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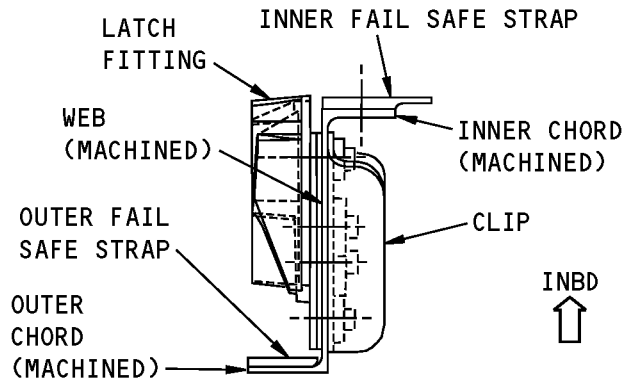
VIEW IS ROTATED 77.4°  
CLOCKWISE  
TYPICAL SECTION  
B-B



VIEW IS ROTATED 70.7°  
CLOCKWISE  
TYPICAL SECTION  
C-C



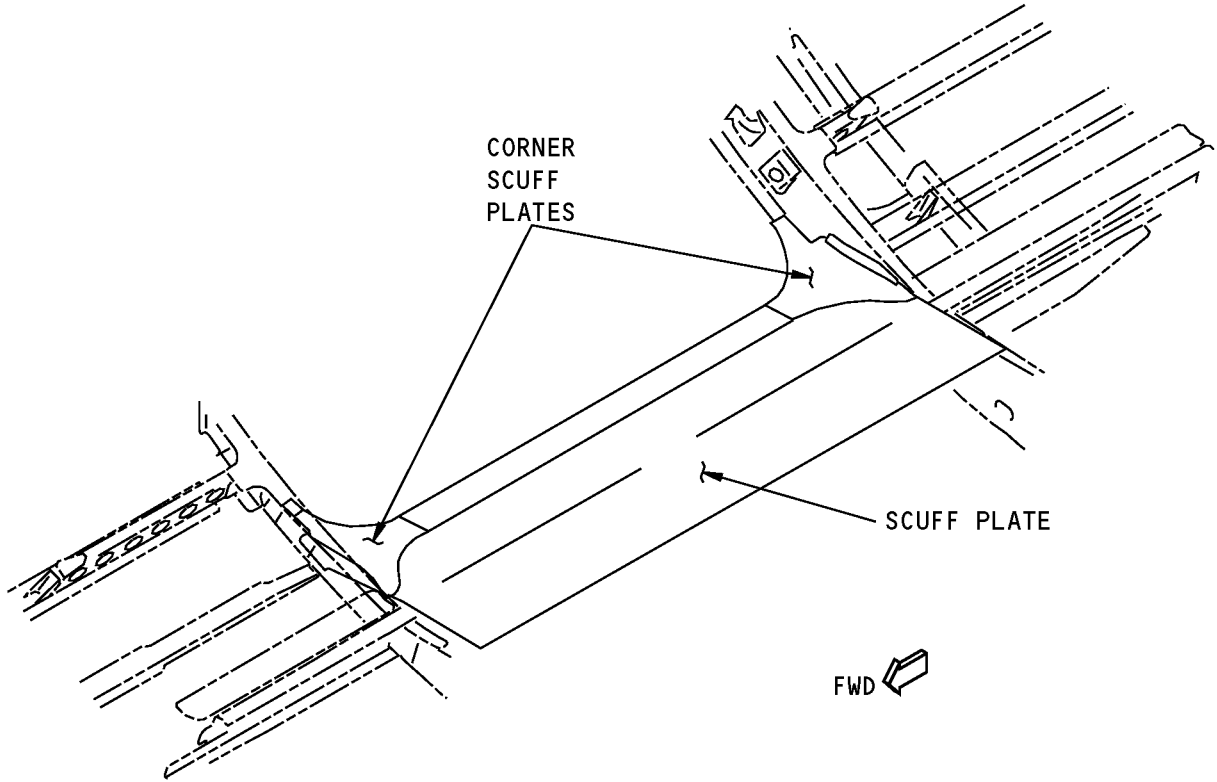
VIEW IS ROTATED 45.5°  
CLOCKWISE  
TYPICAL SECTION  
D-D



VIEW IS ROTATED 34.5°  
CLOCKWISE  
TYPICAL SECTION  
E-E

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 6 of 12)**

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STRUCTURAL REPAIR MANUAL**



**FORWARD CARGO DOOR SCUFF PLATE**

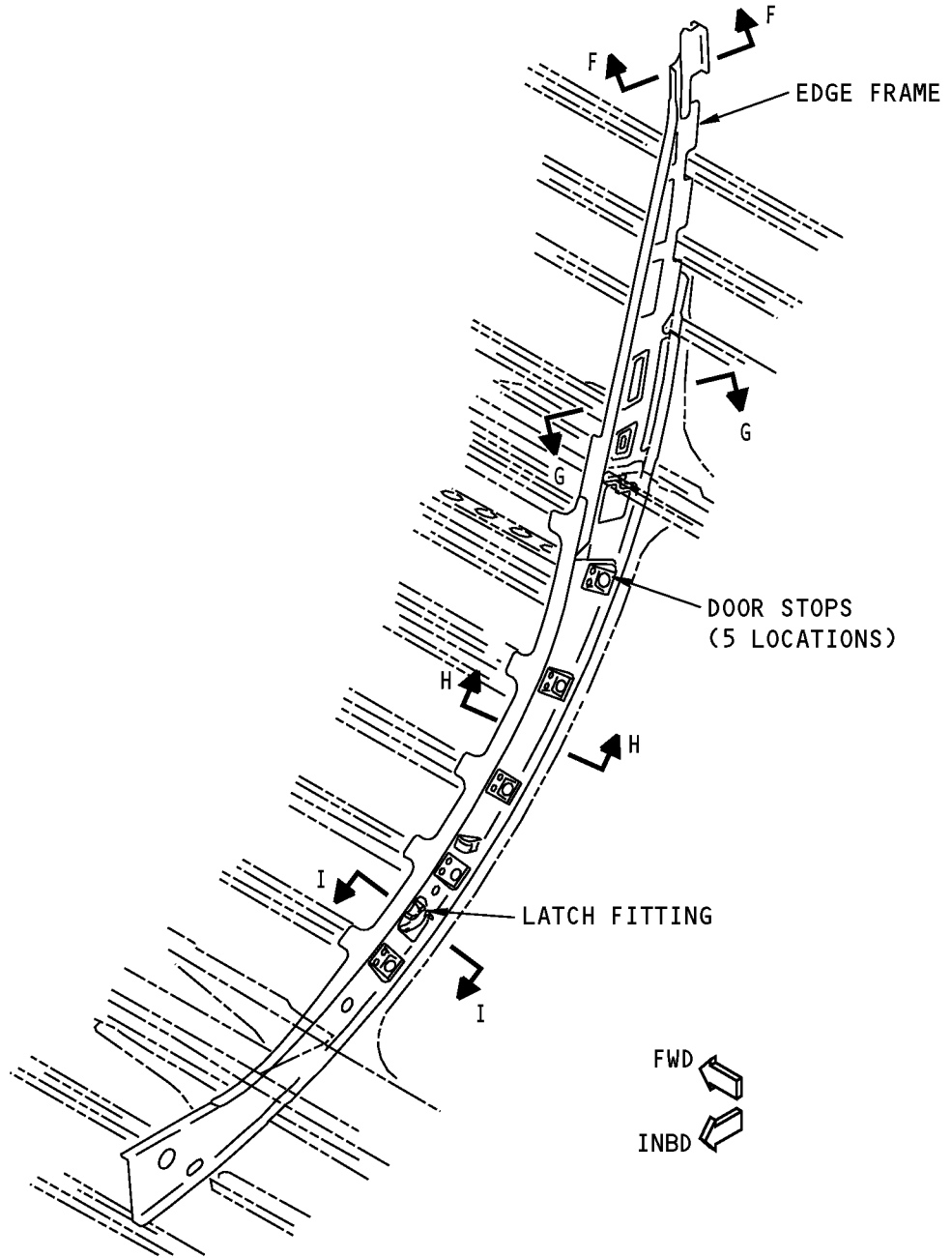
**F**

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 7 of 12)**

D634A210

**53-30-15**  
ALLOWABLE DAMAGE 1  
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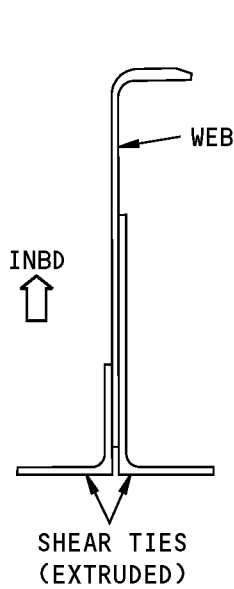


**VIEW IS LOOKING FORWARD  
EDGE FRAME AT STA 440.0**

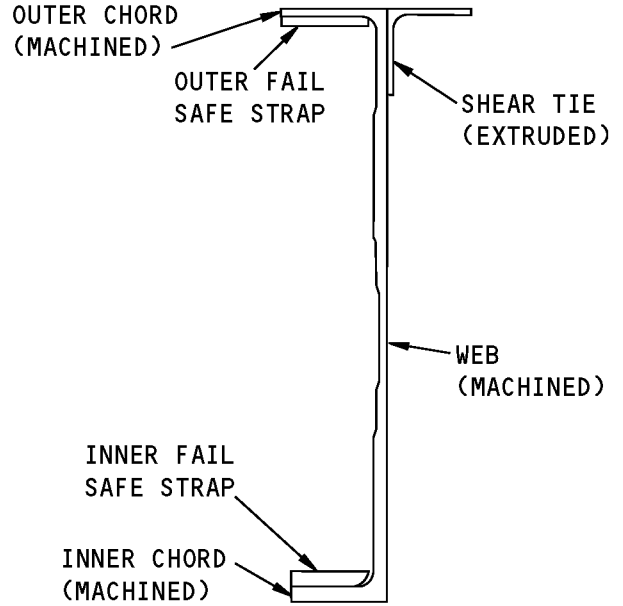
**G**

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 8 of 12)**

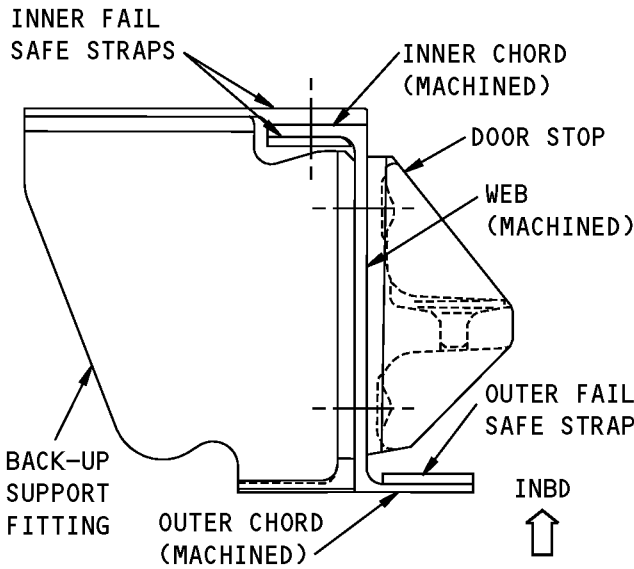
**STRUCTURAL REPAIR MANUAL**



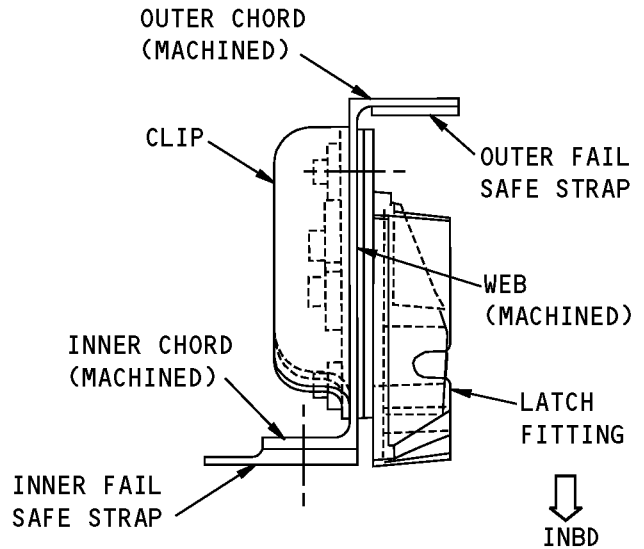
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COUNTERCLOCKWISE  
TYPICAL SECTION  
F-F



VIEW IS ROTATED 76.7°  
COUNTERCLOCKWISE  
TYPICAL SECTION  
G-G



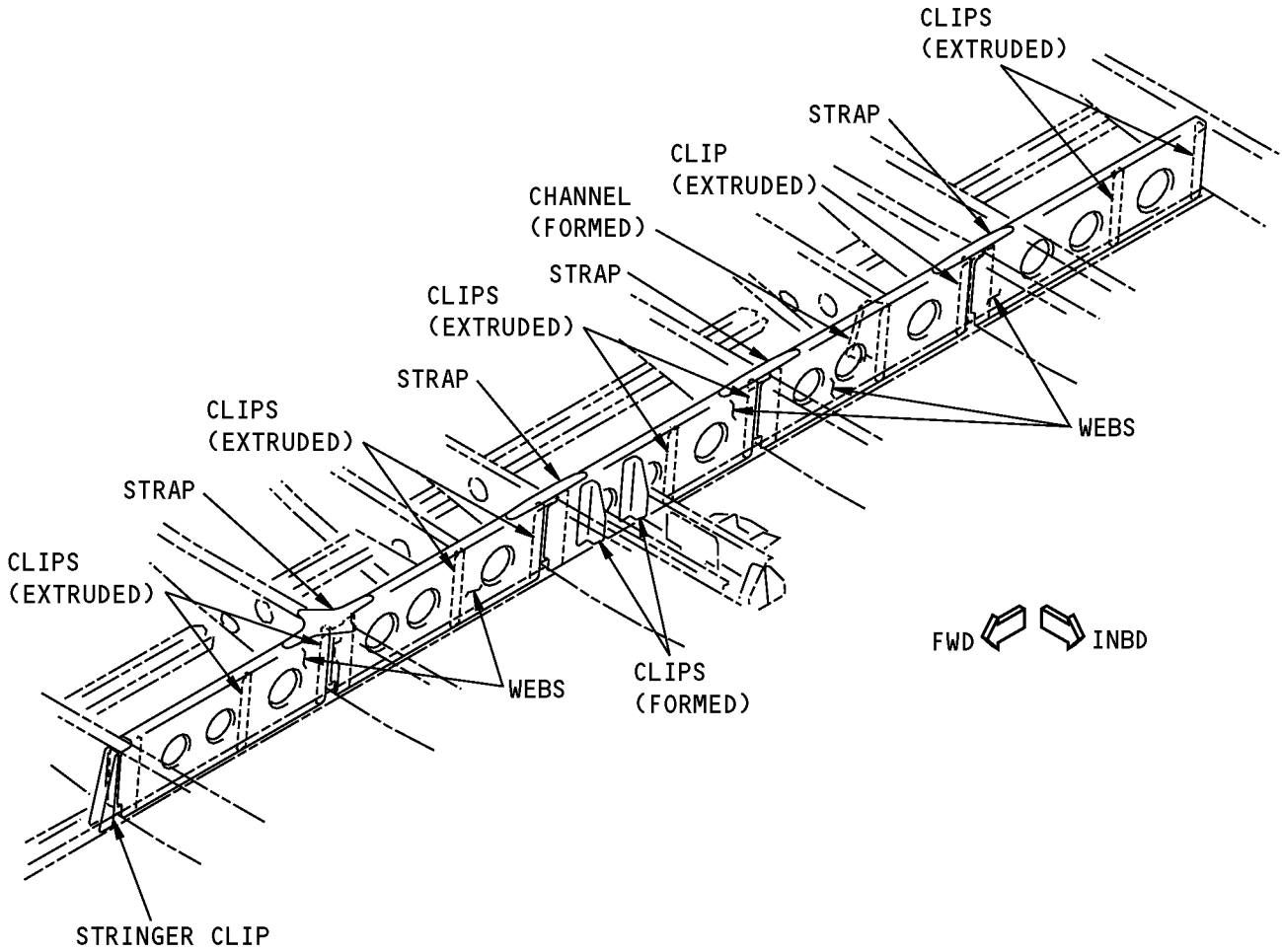
VIEW IS ROTATED 64.9°  
COUNTERCLOCKWISE  
TYPICAL SECTION  
H-H



VIEW IS ROTATED 49.7°  
COUNTERCLOCKWISE  
TYPICAL SECTION  
I-I

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage**  
Figure 102 (Sheet 9 of 12)

**737-800  
STRUCTURAL REPAIR MANUAL**



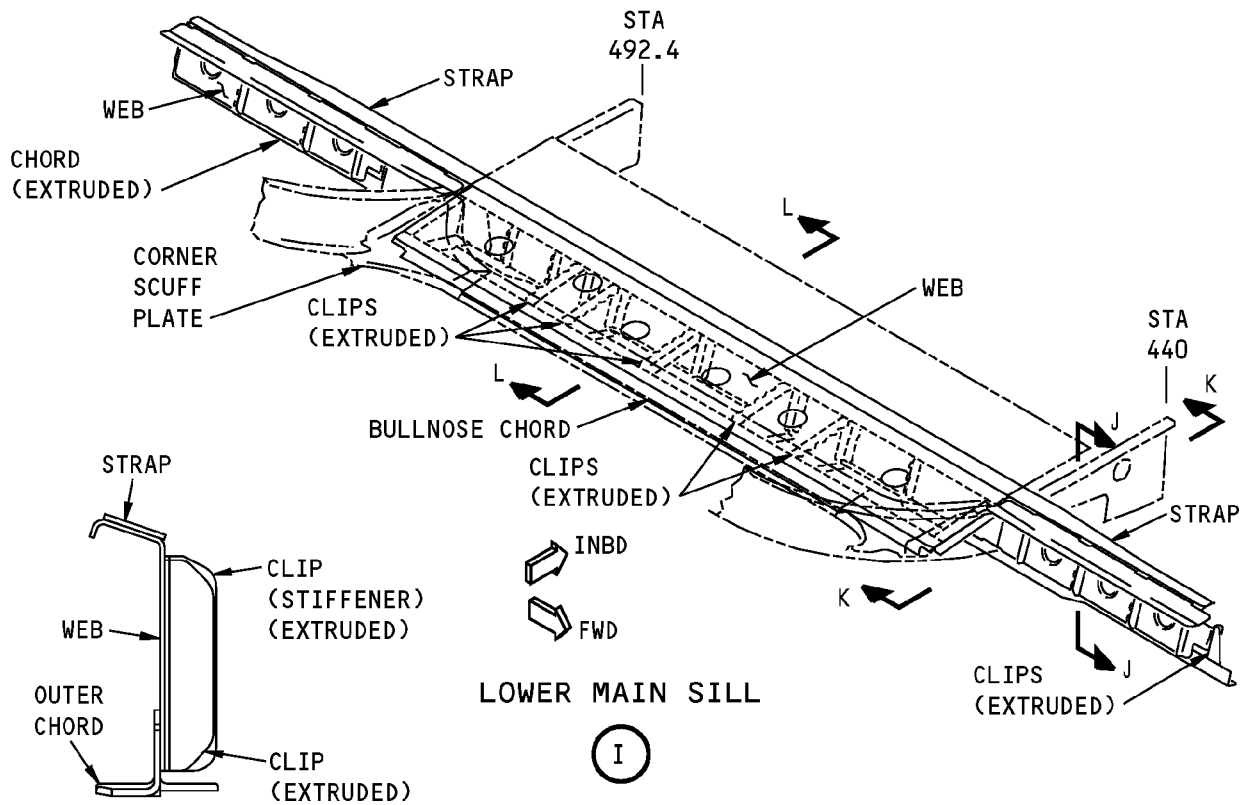
**LOWER AUXILIARY SILL**

**H**

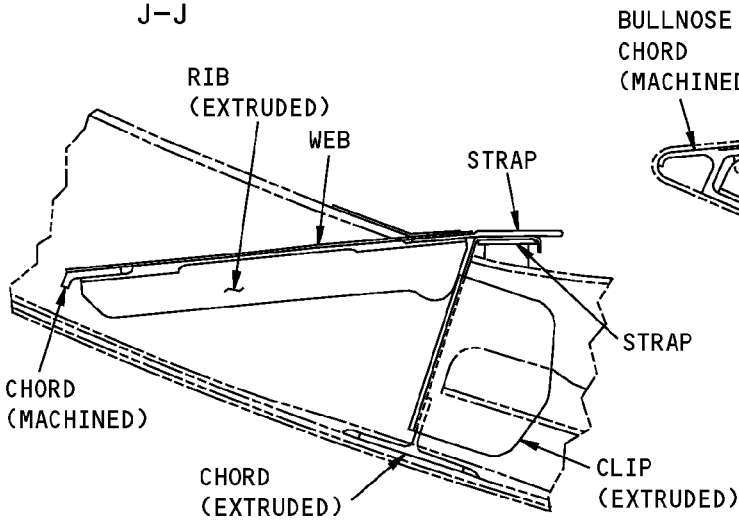
**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 10 of 12)**



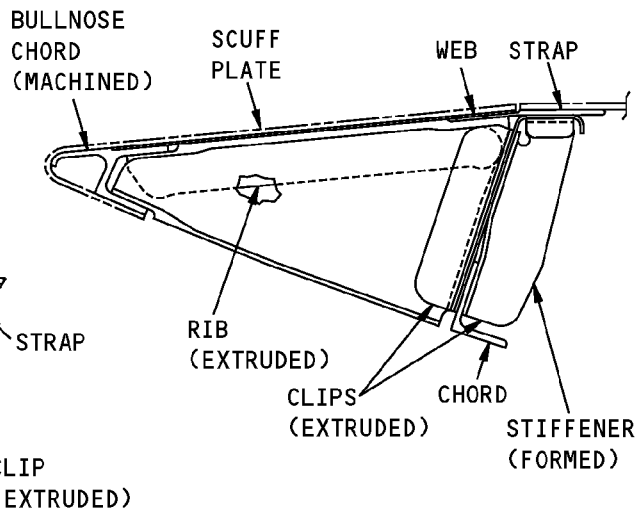
**737-800  
STRUCTURAL REPAIR MANUAL**



**TYPICAL SECTION  
J-J**



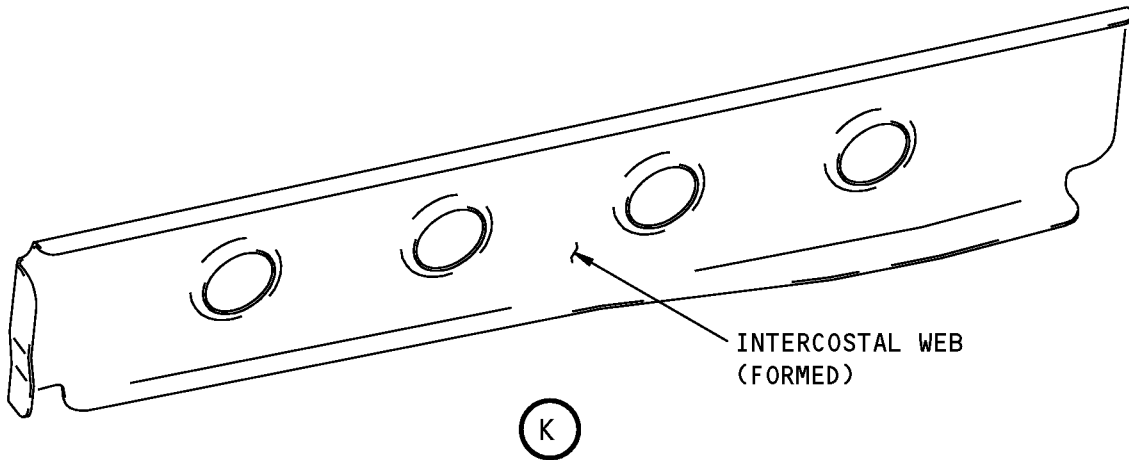
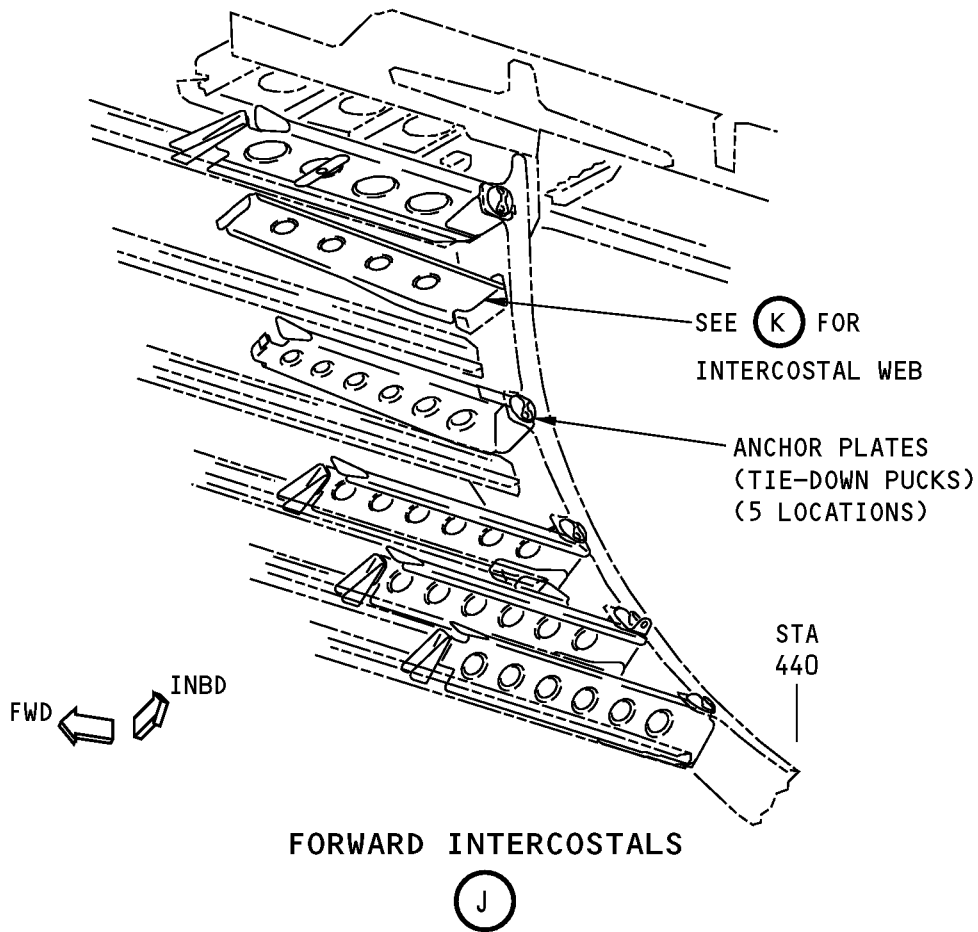
**TYPICAL SECTION  
K-K**



**TYPICAL SECTION  
L-L**

**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 11 of 12)**

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**Section 43 - Forward Cargo Door Surround Structure - Allowable Damage  
Figure 102 (Sheet 12 of 12)**



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### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

- A. Edge Frame - Stop #2 to Stringer S-17
- (1) Inner Chord - Stop #2 to Stringer S-17
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs - Stop #2 to Stringer S-18
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (3) Fail Safe Straps - Stop #2 to Stringer S-17
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
- B. Edge Frame locations other than (A) above
- (1) Inner and Outer Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , and C
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks: Removed damage area is to be less than 0.25 inch in length.



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- 1) Remove the damage area as shown in Figure 103, Details A , B , and F .
  - (b) Nicks, Gouges, Scratches, and Corrosion: Removed damage area is to be less than 0.25 inch in length.
    - 1) Remove the damage area as shown in Figure 103, Details A , B , D , F , and G .
  - (c) Dents are permitted as shown in Figure 103, Detail H .
  - (d) Repair of Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (3) Fail Safe Straps
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , I , and J .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (4) Fail Safe Chord, Stiffeners, Shear Ties, and Clips
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- C. Intercostals and Stop Back-up Fittings, Door Stops, and Latch Fittings
- (1) Intercostal Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , I , and J .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , G , I , and J .
    - (c) Dents are permitted as shown in Figure 103, Detail H .
    - (d) Holes and Punctures are not permitted.
  - (2) Intercostal Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , and F .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .
    - (c) Dents are permitted as shown in Figure 103, Detail H .
    - (d) Holes and Punctures are permitted if they are:

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- 1) A maximum of 0.25 inch in diameter
  - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
  - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (3) Stop Back-up Fittings
- (a) Cracks are not permitted between the Stop fasteners and the first row of fasteners common to the intercostals. For other crack locations:
    - 1) Remove the damage as shown in Figure 103, Details, A, B, C, and K.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted between the Stop fasteners and the first row of fasteners common to the intercostals. For other locations:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and K .
  - (c) Dents are not permitted except for the Tee inboard flange under the cargo net anchor plates. Dents are permitted as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are not permitted except for the Tee inboard flange under the cargo net anchor plates if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (4) Door Stops
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (5) Latch Fittings
- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted on the lug region. For other locations:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , E , and I .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- D. Upper Main Sill - Between Sta 460 and Sta 500
- (1) Inner and Outer Chords
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.



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- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (3) Inner Strap
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (4) Stiffeners and Clips
  - (a) Cracks are not permitted except on the free flange.
    - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted except on the free flange.
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- E. Upper Main Sill other than (D) above
  - (1) Inner and Outer Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , and K .
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , and K .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , and F .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .
    - (c) Dents are permitted as shown in Figure 103, Detail H .
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Straps
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , I , and J .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .

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- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (4) Stiffeners and Clips
  - (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (c) Dents are permitted only in the free flanges as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- F. Lower Main Sill Inner Strap - Within four fasteners either side of Sta 440 and Sta 492.4
  - (1) Inner Strap
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
- G. Lower Main Sill other than (F) above
  - (1) Inner and Outer Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Web
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A , B , and F .
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .
    - (c) Dents are permitted as shown in Figure 103, Detail H .
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Straps

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## STRUCTURAL REPAIR MANUAL

- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , I , and J .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (4) Stiffeners Ribs, and Clips
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (c) Dents are permitted only in the free flanges as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (5) Scuff Plates
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , and F .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , E , F , and G .
  - (c) Dents are permitted as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- H. Lower and Upper Auxiliary Sill - Excluding Stringers
- (1) Webs
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , and F .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , D , F , and G .
  - (c) Dents are permitted as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage

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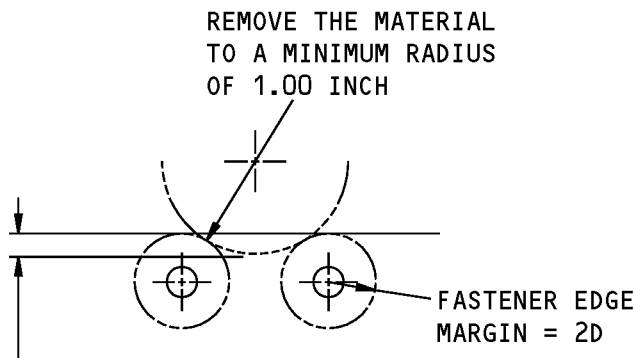


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## STRUCTURAL REPAIR MANUAL

- 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (2) Straps (Gussets)
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , I , and J .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , D , G , I , and J .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) Stiffeners and Clips
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A , B , and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A , B , C , D , and E .
  - (c) Dents are permitted as shown in Figure 103, Detail H .
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

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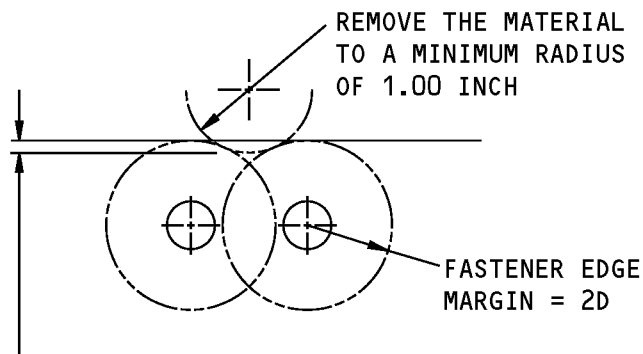


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 $\leq 0.10$  INCH OR 5 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS **1**  
 $\leq 0.20$  INCH OR 10 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS **2**

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

**(A)**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

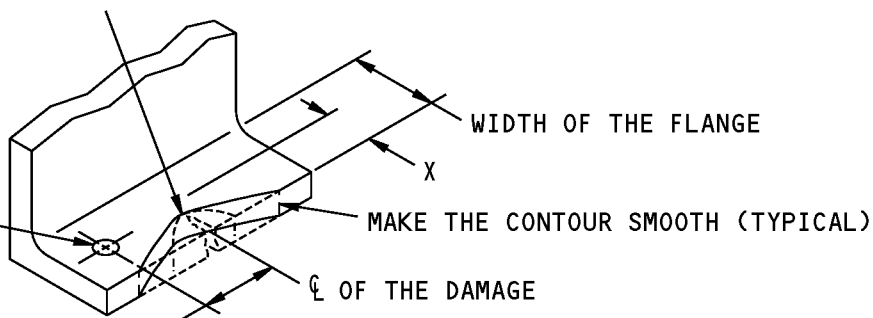


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 $\leq 0.10$  INCH OR 5 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS **1**  
 $\leq 0.20$  INCH OR 10 PERCENT OF THE FLANGE WIDTH, WHICHEVER IS LESS **2**

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

**(B)**

IF THERE ARE FASTENERS, SEE **(A)** AND **(B)**



TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
 $\leq 5$  PERCENT OF THE WIDTH OF THE FLANGE **1**  
 $\leq 10$  PERCENT OF THE WIDTH OF THE FLANGE **2**

REMOVAL OF DAMAGED MATERIAL AT A FLANGE EDGE

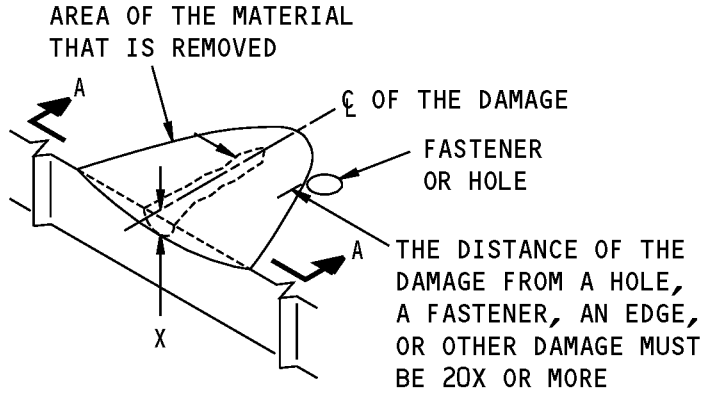
**(C)**

NOTES

- 1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

Allowable Damage Limits  
 Figure 103 (Sheet 1 of 7)

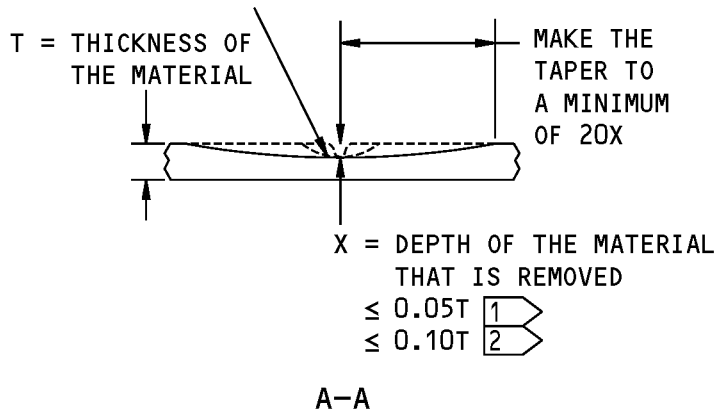
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**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE**

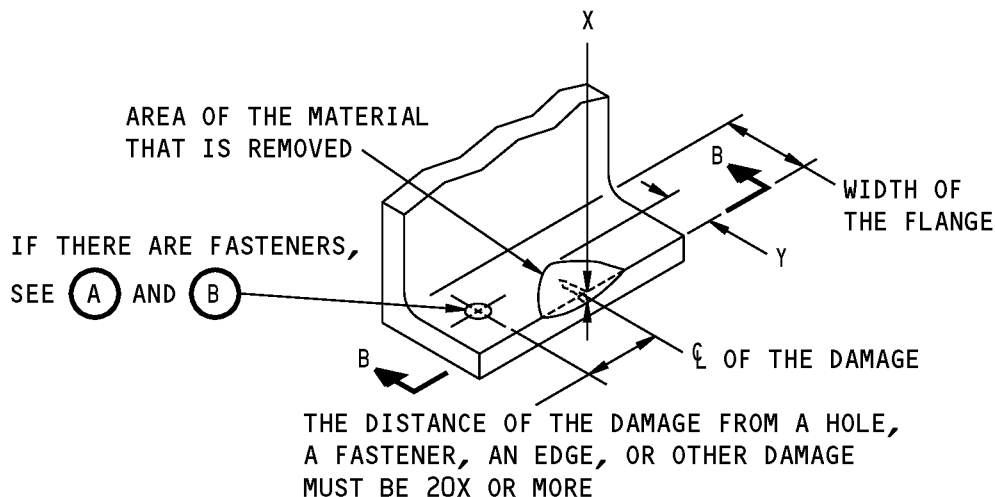
D

REMOVE THE MATERIAL TO A MINIMUM  
RADIUS OF 1.00 INCH (25.4 mm),  
THEN TAPER AS SHOWN



**Allowable Damage Limits  
Figure 103 (Sheet 2 of 7)**

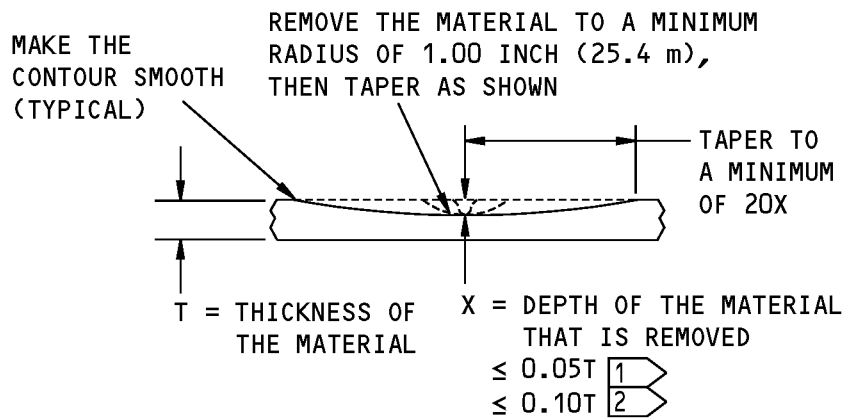
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Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 ≤ 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT A FLANGE EDGE OF A MACHINED OR EXTRUDED PART**

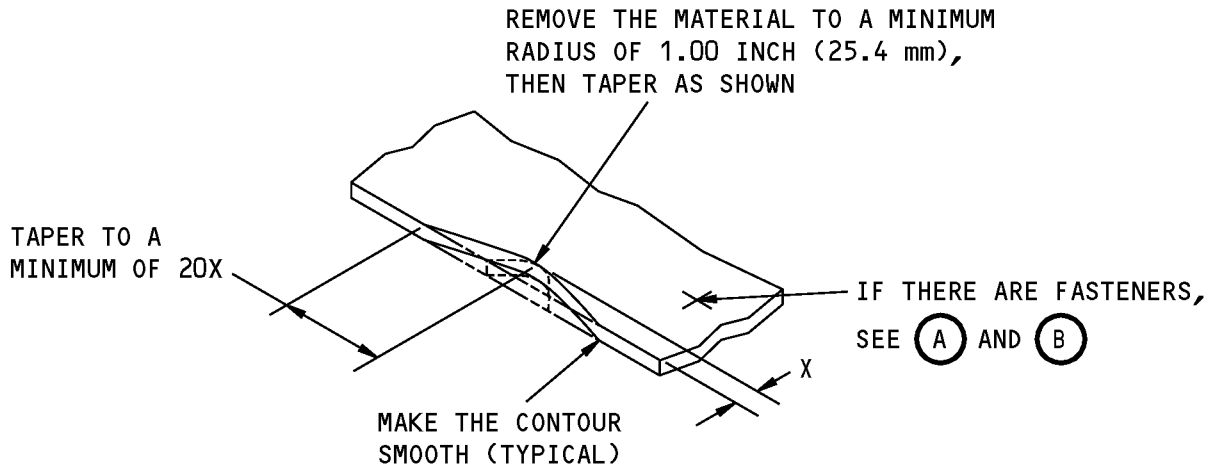
(E)



B-B

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 7)**

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X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH 

1
2

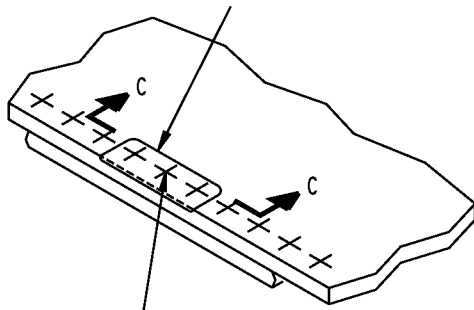
  
 = A MAXIMUM OF 0.10 INCH 

1
2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

**(F)**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

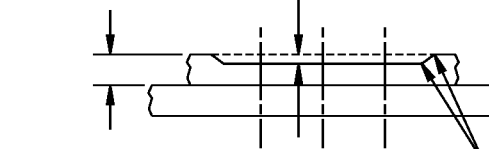
**(G)**

X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T 

1
2

  
 = A MAXIMUM OF 0.10T 

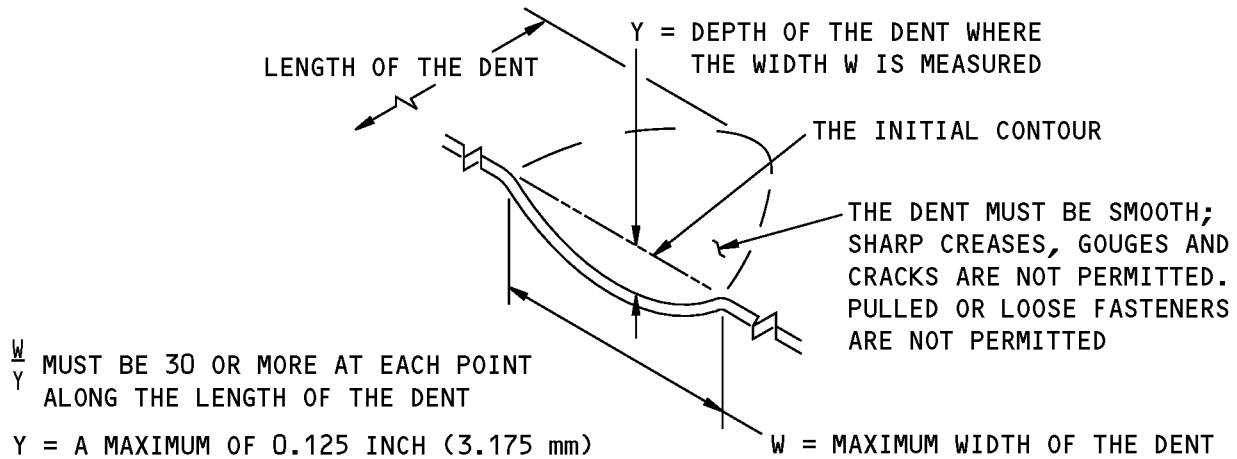
1
2



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)  
 C-C

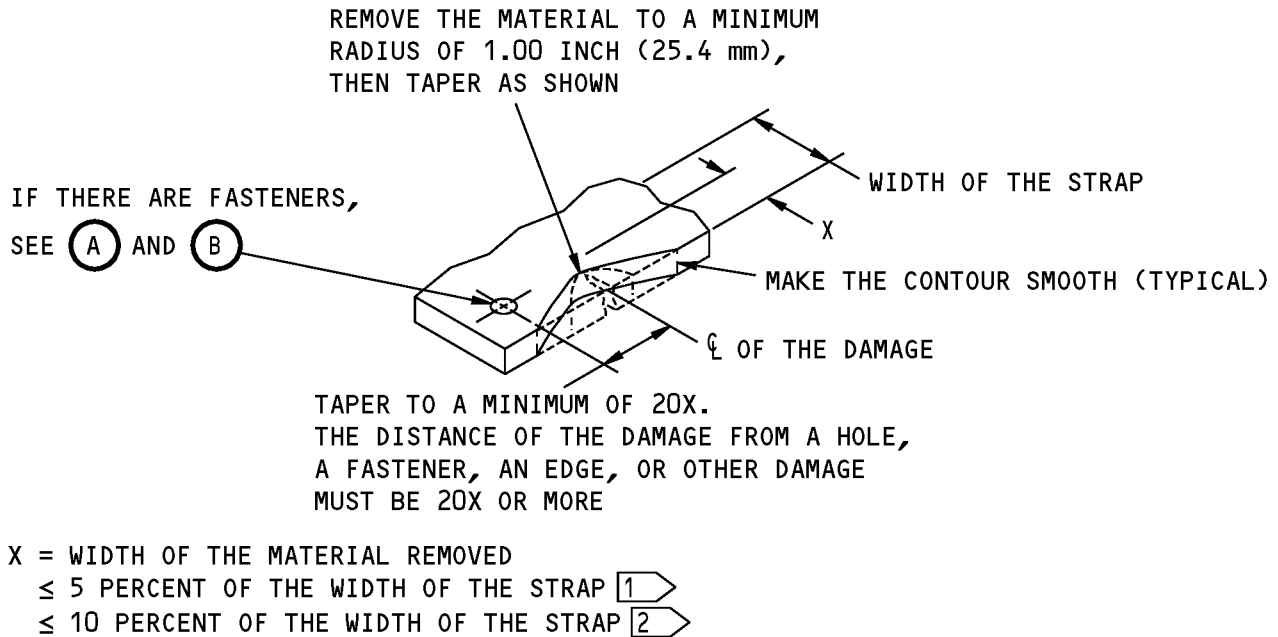
**Allowable Damage Limits  
Figure 103 (Sheet 4 of 7)**

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**DENT THAT IS PERMITTED**

(H)

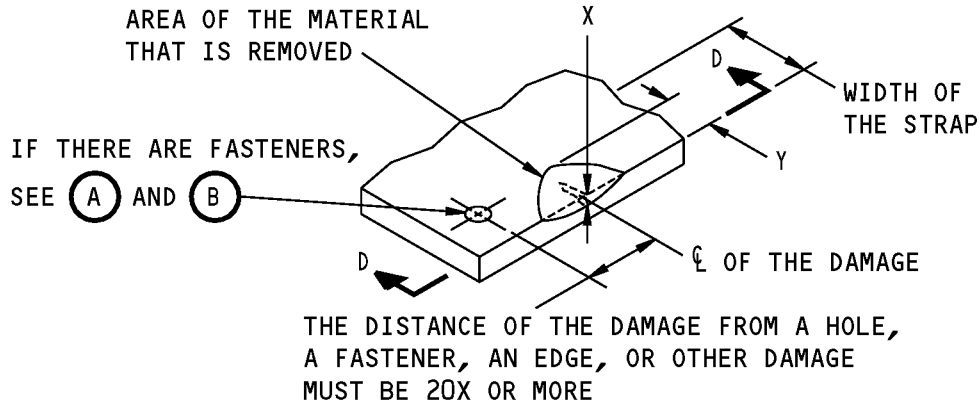


**REMOVAL OF DAMAGED MATERIAL AT A STRAP EDGE**

(I)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 7)**

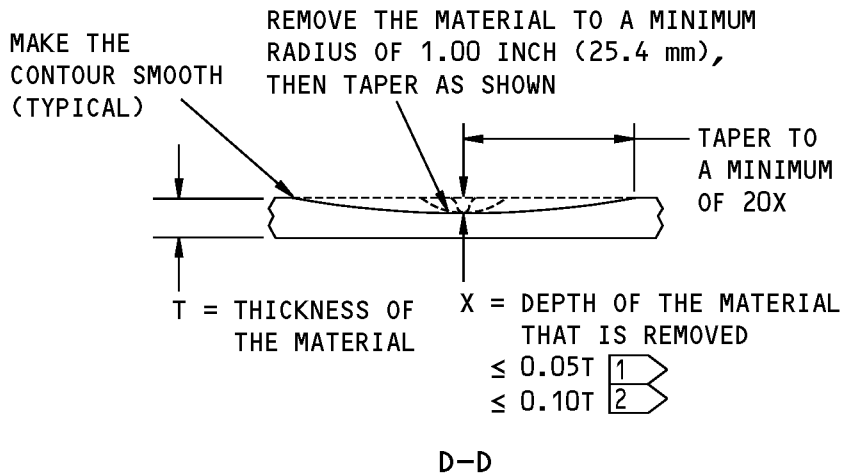
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Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1  
 ≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

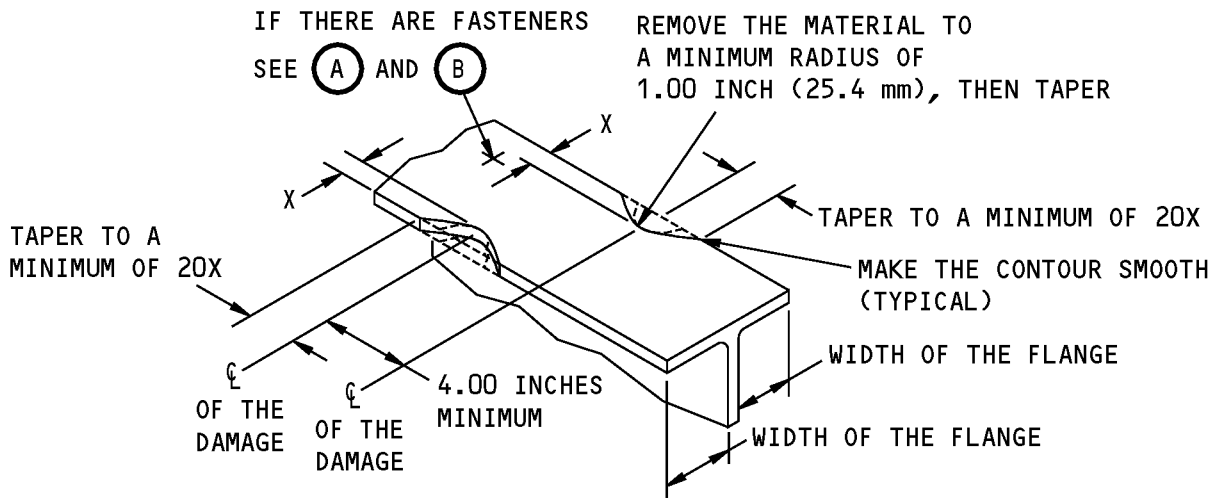
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A MACHINED OR EXTRUDED STRAP**



(J)



**Allowable Damage Limits  
Figure 103 (Sheet 6 of 7)**

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X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE WIDTH OF THE STRAP   
 ≤ 10 PERCENT OF THE WIDTH OF THE STRAP 

**REMOVAL OF DAMAGED MATERIAL ON A FLANGE EDGE**

(K)

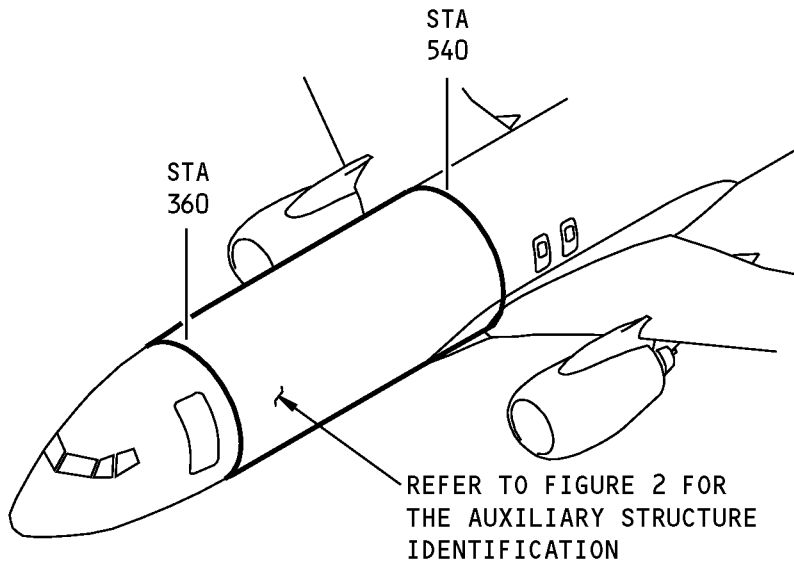
**Allowable Damage Limits  
Figure 103 (Sheet 7 of 7)**





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IDENTIFICATION 1 - SECTION 43 AUXILIARY STRUCTURE



NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

Section 43 Auxiliary Structure Location  
Figure 1

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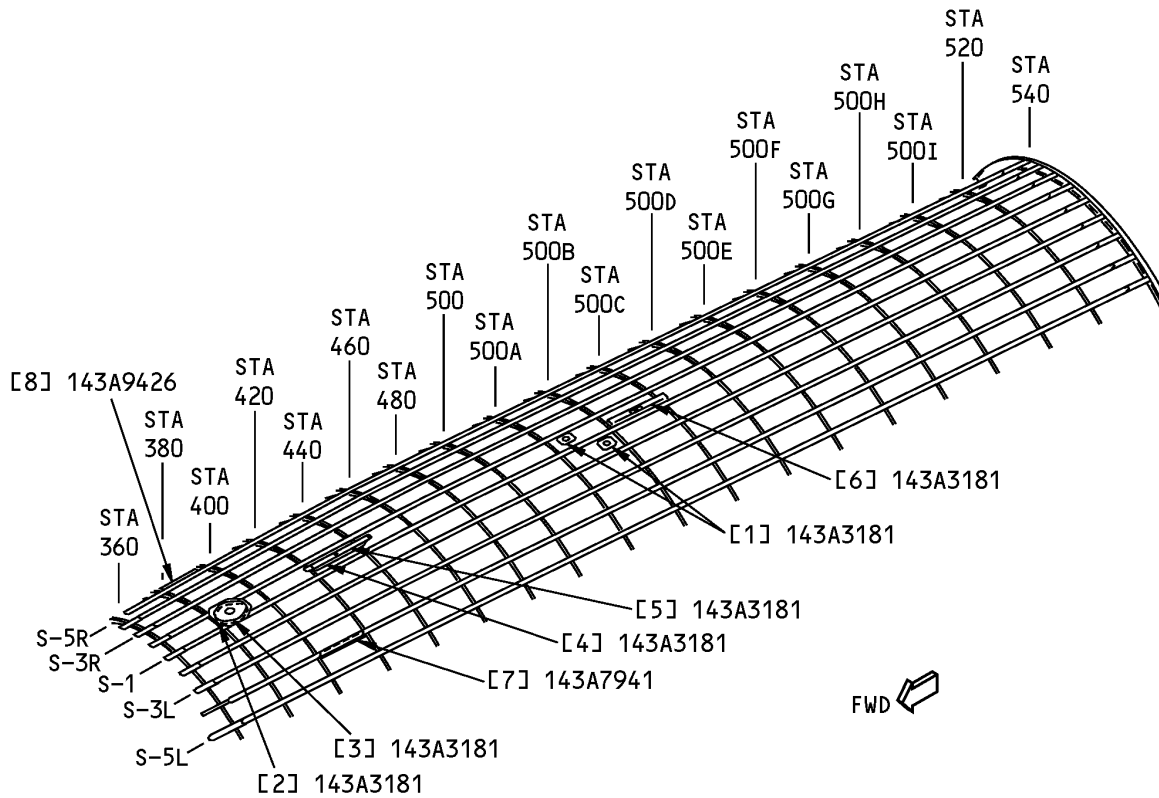
**53-30-30**

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**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4310	Functional Collector - Section 43, Upper Lobe
143A3110	Skin Installation - S-4L to S-4R, STA 360 to 540
143A3180	Provisions Installation - TCAS Antenna
284A0012	Electrical/Electronics Equipment Installation Collector - Final Assembly, Functional Product Collector



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Auxiliary Structure Identification  
Figure 2**



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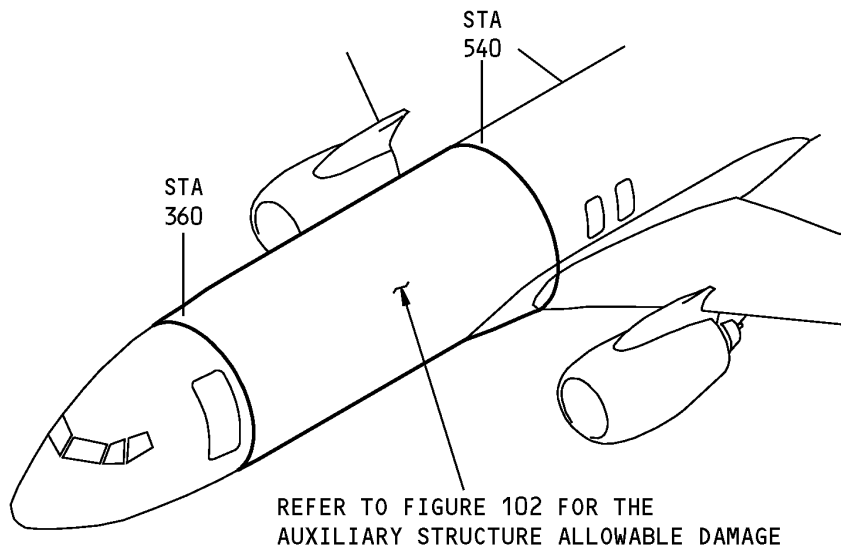
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Tripler, GPS	0.040 (1.02)	2024-T3 clad sheet	
[2]	Adapter Installation Adapter, TCAS Spacer, TCAS	0.025 (0.64) 0.400 (10.16)	2024-T42 clad sheet Molded amorphous nylon as given in BMS 8-323, Type II, Class 4, Form B, Grade 30	
[3]	Tripler, TCAS	0.036 (0.91)	2024-T3 clad sheet	
[4]	Channel, ATC		BAC1498-242 7075-T62 clad sheet	
[5]	Tripler, ATC	0.020 (0.51)	2024-T3 clad sheet	
[6]	Channel		BAC1500-6267 7075-T62 clad sheet	YC071-YC099, YC461- YC470, YC781-YC799, YD041-YD099 only
[7]	Intercostal Assembly Intercostal Clevis Channel	0.050 (1.27) 0.750 (19.05) 0.040 (1.02)	7075-T62 clad sheet 7075-T7351 plate 7075-T6 clad sheet	YC001 to YC070 only
[8]	Intercostal Assembly Intercostal Clevis Channel Strap	0.071 (1.8) 0.800 (20.32) 0.050 (1.27) 0.080 (2.03)	7075-T62 clad sheet 7075-T651 7075-T62 clad sheet 7075-T62 clad sheet	YC071-YC099, YC781- YC799 ONLY

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

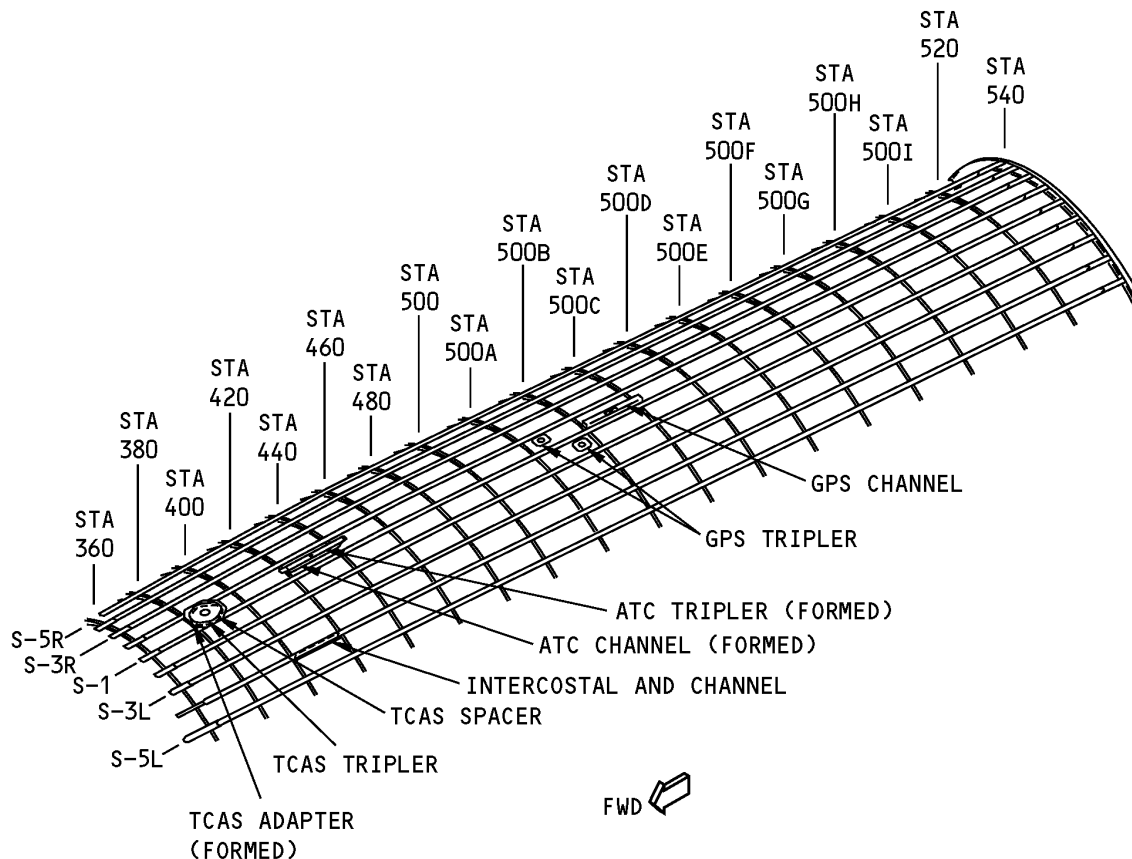
**STRUCTURAL REPAIR MANUAL****ALLOWABLE DAMAGE 1 - SECTION 43 AUXILIARY STRUCTURE****1. Applicability**

- A. This subject gives the allowable damage limits for the auxiliary structure in Section 43 shown in Section 43 Auxiliary Structure Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits given are only applicable to the strength properties of the auxiliary structure. It is possible that the damage in a structure is less than the allowable damage limits, but the structure does not function satisfactorily. If the structure does not function satisfactorily, you can repair it to a serviceable condition as given in Repair 1, or replace the part.



**Section 43 Auxiliary Structure Location  
Figure 101**

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**Section 43 Auxiliary Structure Allowable Damage  
Figure 102**

**2. General**

- A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- B. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- C. After you remove the damage, do the steps that follow:
  - (1) Refer to 51-20-01. Apply a chemical conversion layer to the reworked layer.
  - (2) Refer to SOPM 20-41-02. Apply one layer of BMS 10-11, Type I primer to the reworked area.



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### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Adapter, Doubler, and Triplers

##### (1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, C, and D.

##### (2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, F, and G.

(3) Dents are permitted as shown in Figure 103, Detail H.

(4) Holes and Punctures are not permitted.

#### B. Channels

##### (1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

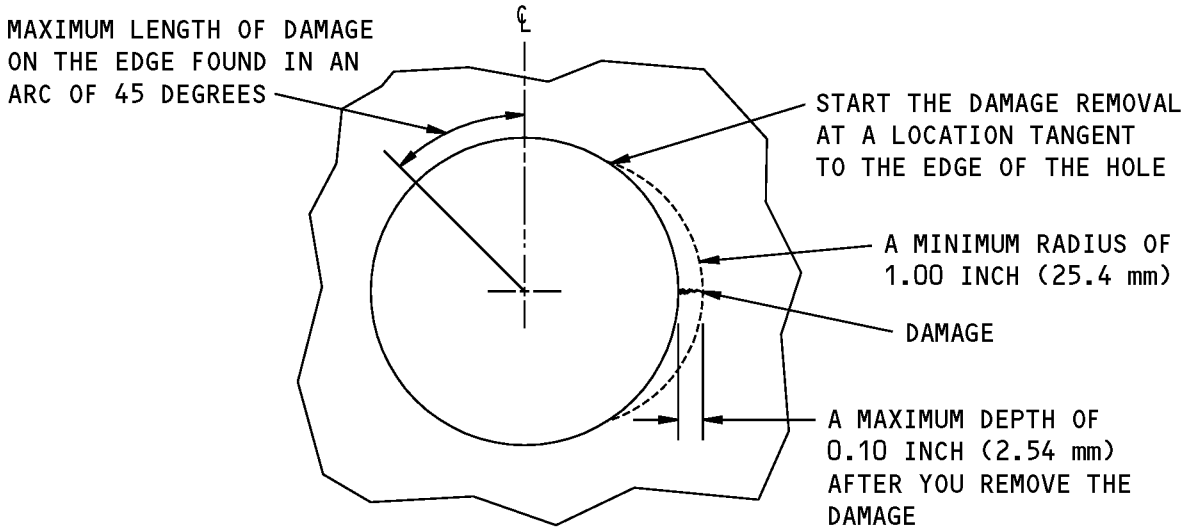
##### (2) Nicks, Scratches, Gouges, and Corrosion:

(a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, F, and G.

(3) Dents are permitted as shown in Figure 103, Detail H.

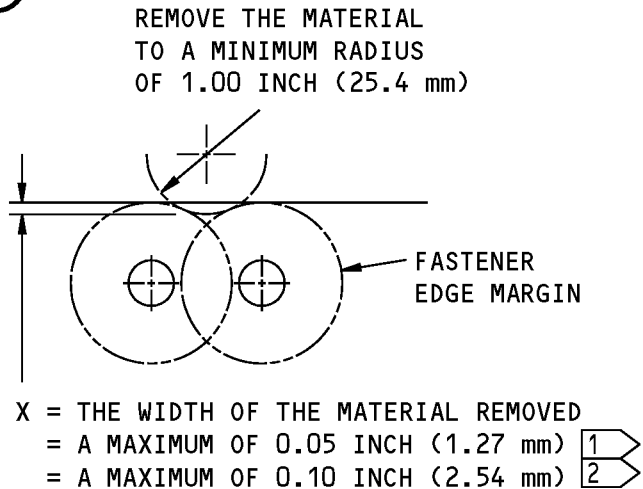
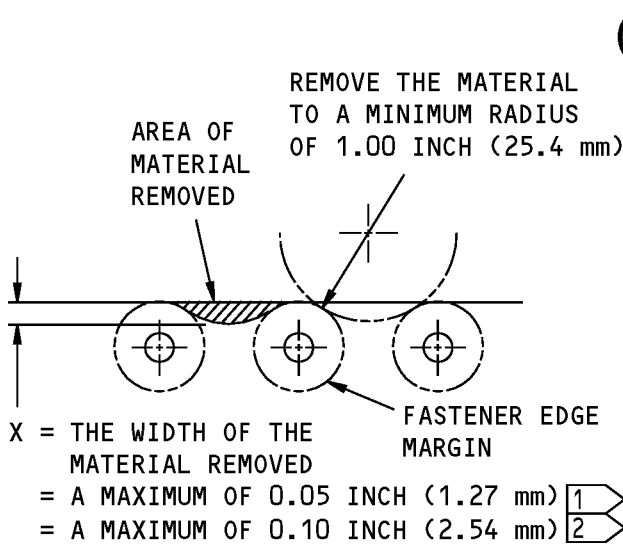
(4) Holes and Punctures are not permitted.

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**NOTE:** THERE MUST BE A MINIMUM 2D EDGE MARGIN BETWEEN THE EDGE OF THE HOLE AND ANY FASTENER HOLES AFTER YOU REMOVE THE DAMAGE.

**REMOVAL OF DAMAGED MATERIAL AT THE CENTER HOLE**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)

(C)

**NOTES**

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 4)**

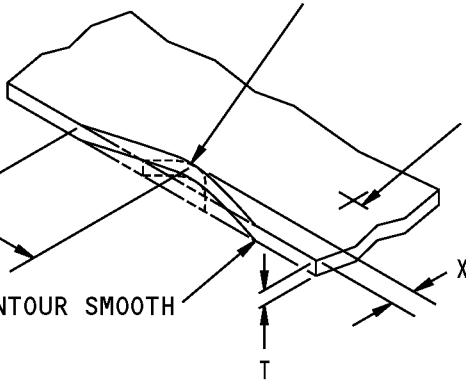
**STRUCTURAL REPAIR MANUAL**

REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH  
(25.4 mm), THEN TAPER AS SHOWN

TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE  
FROM A HOLE, A FASTENER,  
AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE

MAKE THE CONTOUR SMOOTH  
(TYPICAL)

IF THERE ARE FASTENERS,  
SEE (B) AND (C)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.05 INCH (1.27 mm) 1  
= A MAXIMUM OF 0.10 INCH (2.54 mm) 2

T = THICKNESS OF THE MATERIAL

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(D)

REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH  
(25.4 mm), THEN TAPER AS SHOWN

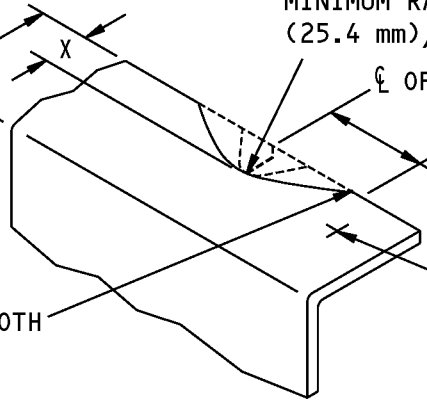
W = WIDTH OF  
THE FLANGE

ℓ OF THE DAMAGE

TAPER TO A MINIMUM OF 20X

MAKE THE CONTOUR SMOOTH  
(TYPICAL)

IF THERE ARE FASTENERS,  
SEE (B) AND (C)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

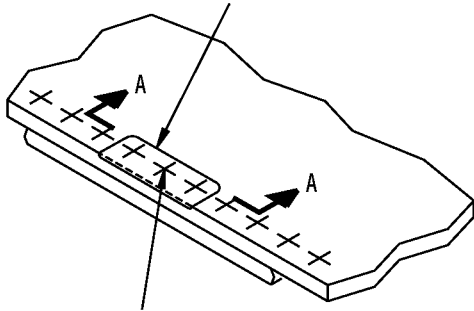
(E)

**Allowable Damage Limits  
Figure 103 (Sheet 2 of 4)**



**STRUCTURAL REPAIR MANUAL**

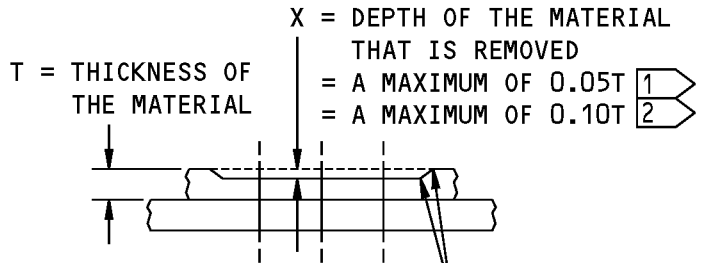
THE REMOVAL OF MATERIAL IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

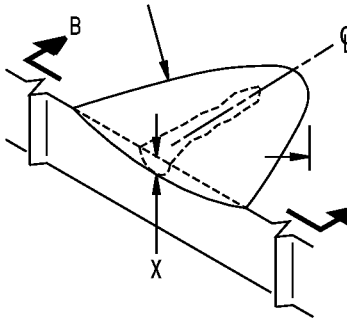
(F)



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

A-A

AREA OF THE MATERIAL THAT IS REMOVED

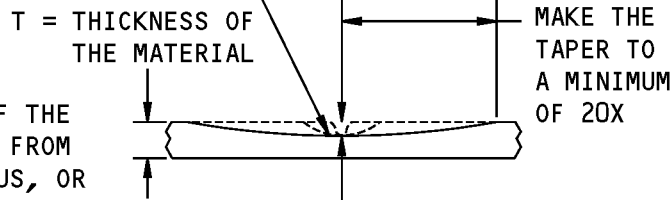


OF THE DAMAGE  
 FASTENER OR HOLE  
 THE DISTANCE OF THE DAMAGE REMOVAL FROM A HOLE, A RADIUS, OR OTHER DAMAGE MUST BE 0.125 INCH (3.2 mm) OR MORE

REMOVAL OF DAMAGED MATERIAL ON A SURFACE

(G)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN

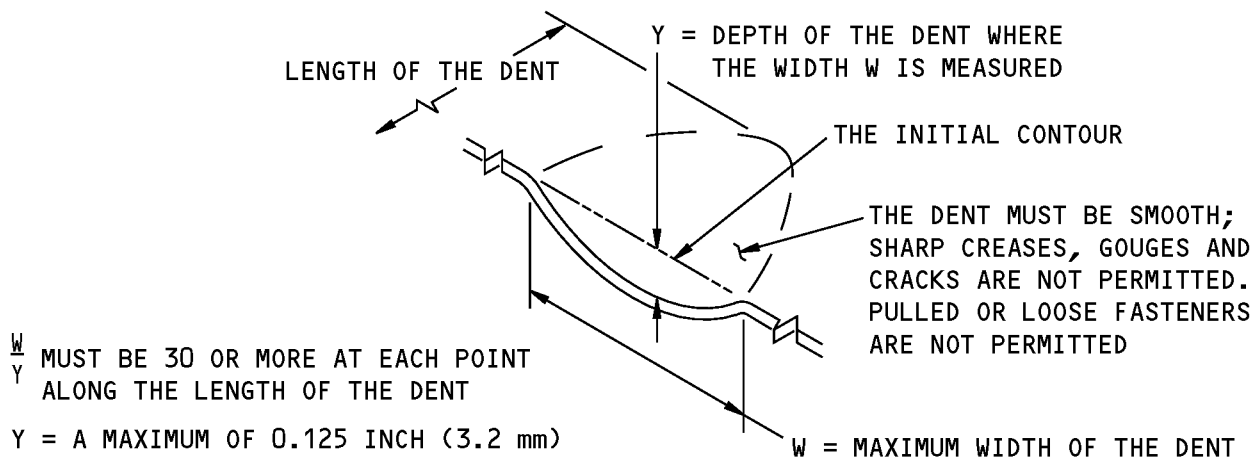


X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05T 1  
 = A MAXIMUM OF 0.10T 2

B-B

**Allowable Damage Limits  
 Figure 103 (Sheet 3 of 4)**

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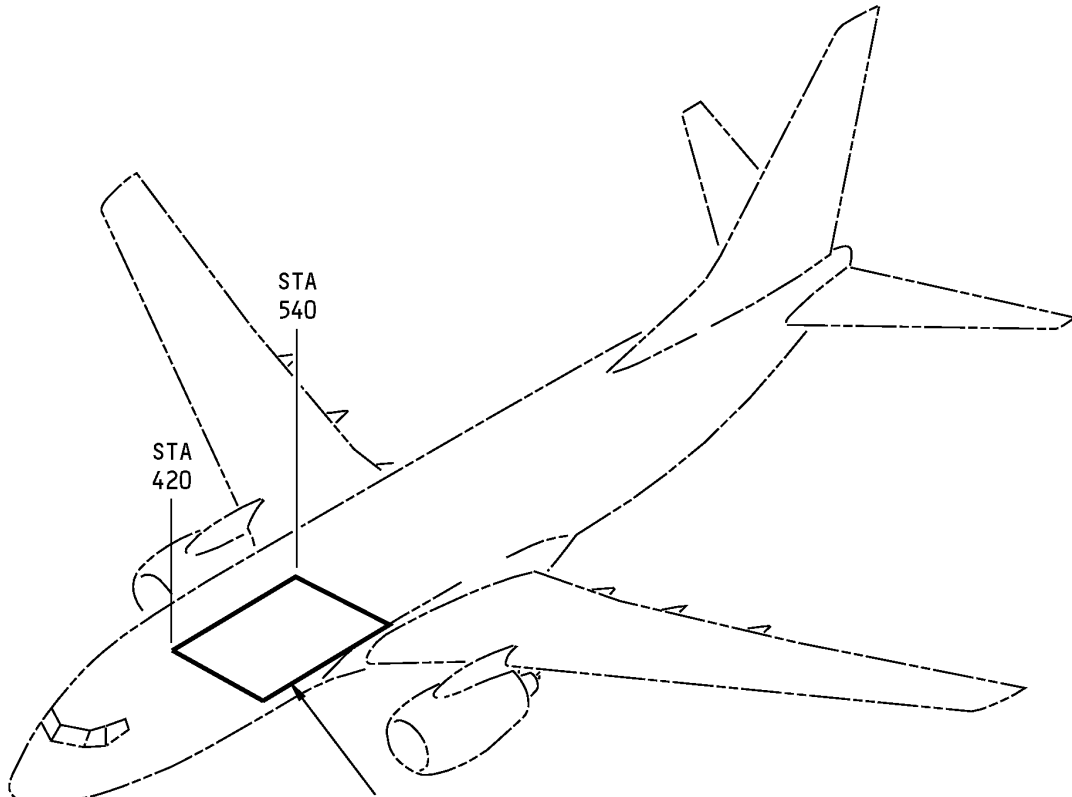
**DENT THAT IS PERMITTED**



**Allowable Damage Limits  
Figure 103 (Sheet 4 of 4)**

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IDENTIFICATION GENERAL - SECTION 43 PASSENGER COMPARTMENT FLOOR PANELS

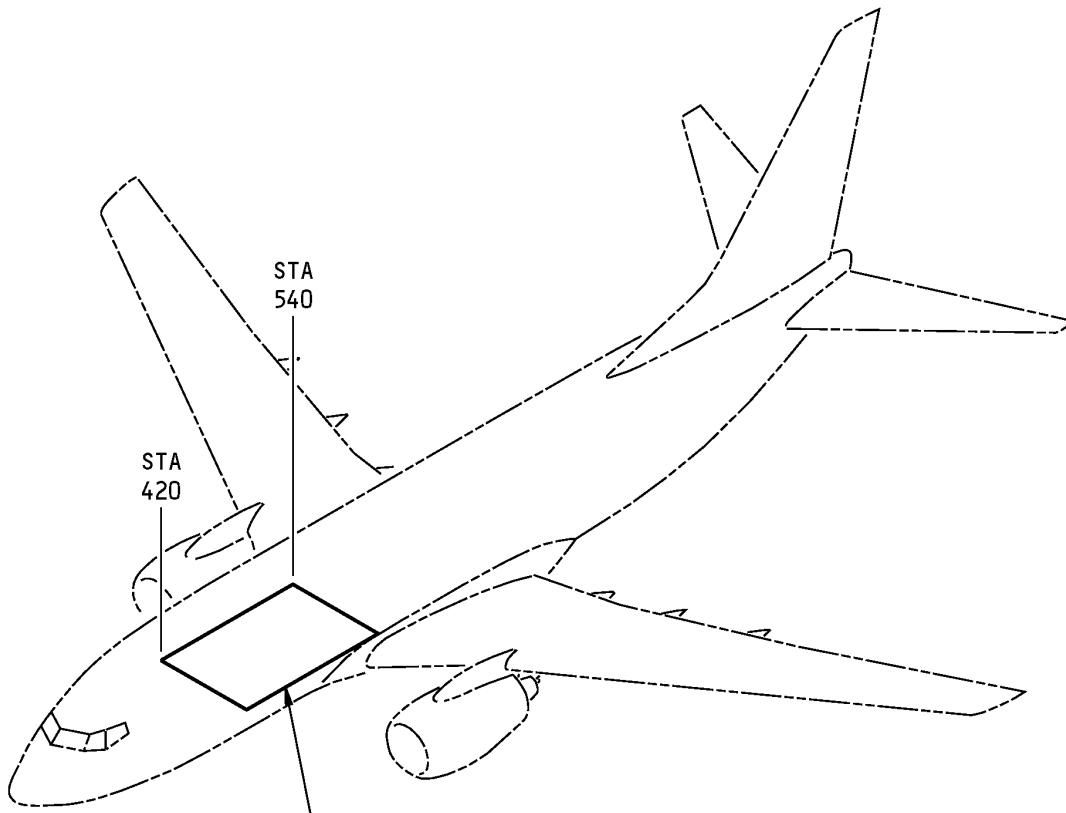


REFER TO SRM 53-00-50 FOR THE  
GENERAL IDENTIFICATION DATA  
THAT IS APPLICABLE TO THE  
PASSENGER COMPARTMENT FLOOR  
PANELS IN SECTION 43

**Section 43 Passenger Compartment Floor Panel Location  
Figure 1**

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**ALLOWABLE DAMAGE GENERAL - SECTION 43 PASSENGER COMPARTMENT FLOOR PANELS**

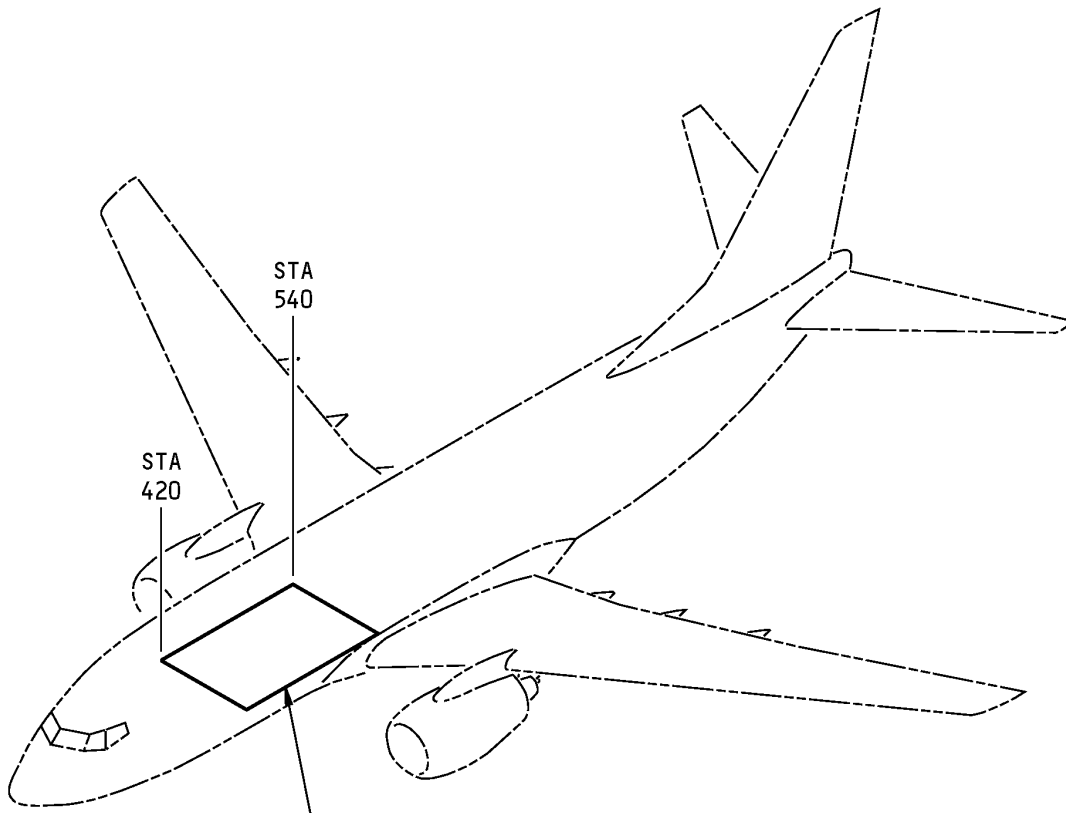


REFER TO SRM 53-00-50 FOR THE  
GENERAL ALLOWABLE DAMAGE DATA  
THAT IS APPLICABLE TO THE  
PASSENGER COMPARTMENT FLOOR  
PANELS IN SECTION 43

**Section 43 Passenger Compartment Floor Panel Location  
Figure 101**

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**REPAIR GENERAL - SECTION 43 PASSENGER COMPARTMENT FLOOR PANELS**

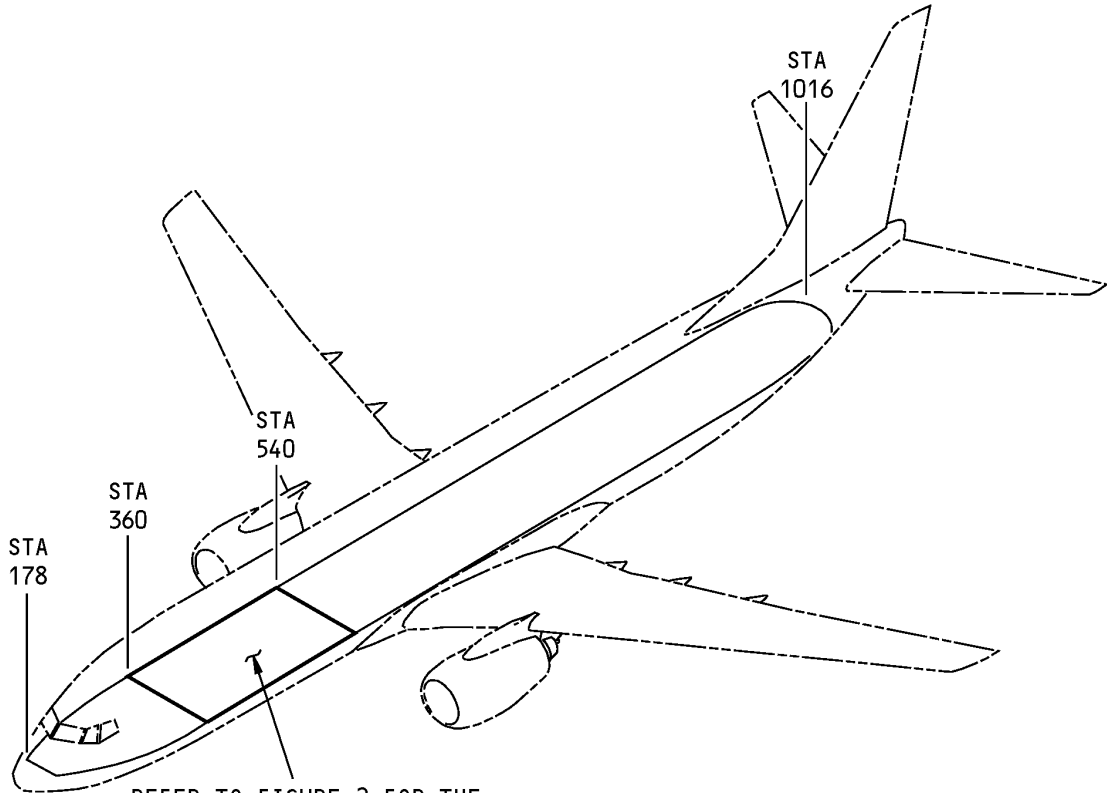


REFER TO SRM 53-00-50 FOR THE  
GENERAL REPAIR DATA THAT IS  
APPLICABLE TO THE PASSENGER  
COMPARTMENT FLOOR PANELS IN  
SECTION 43

**Section 43 Passenger Compartment Floor Panel Location  
Figure 201**

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**IDENTIFICATION 1 - SECTION 43 TRANSVERSE FLOOR BEAMS**



REFER TO FIGURE 2 FOR THE FLOOR BEAM IDENTIFICATION  
REFER TO IDENTIFICATION 2 OF SRM 53-30-51 FOR THE FLOOR STRUCTURE IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Floor Beam Structure Location  
Figure 1**

**Table 1:**

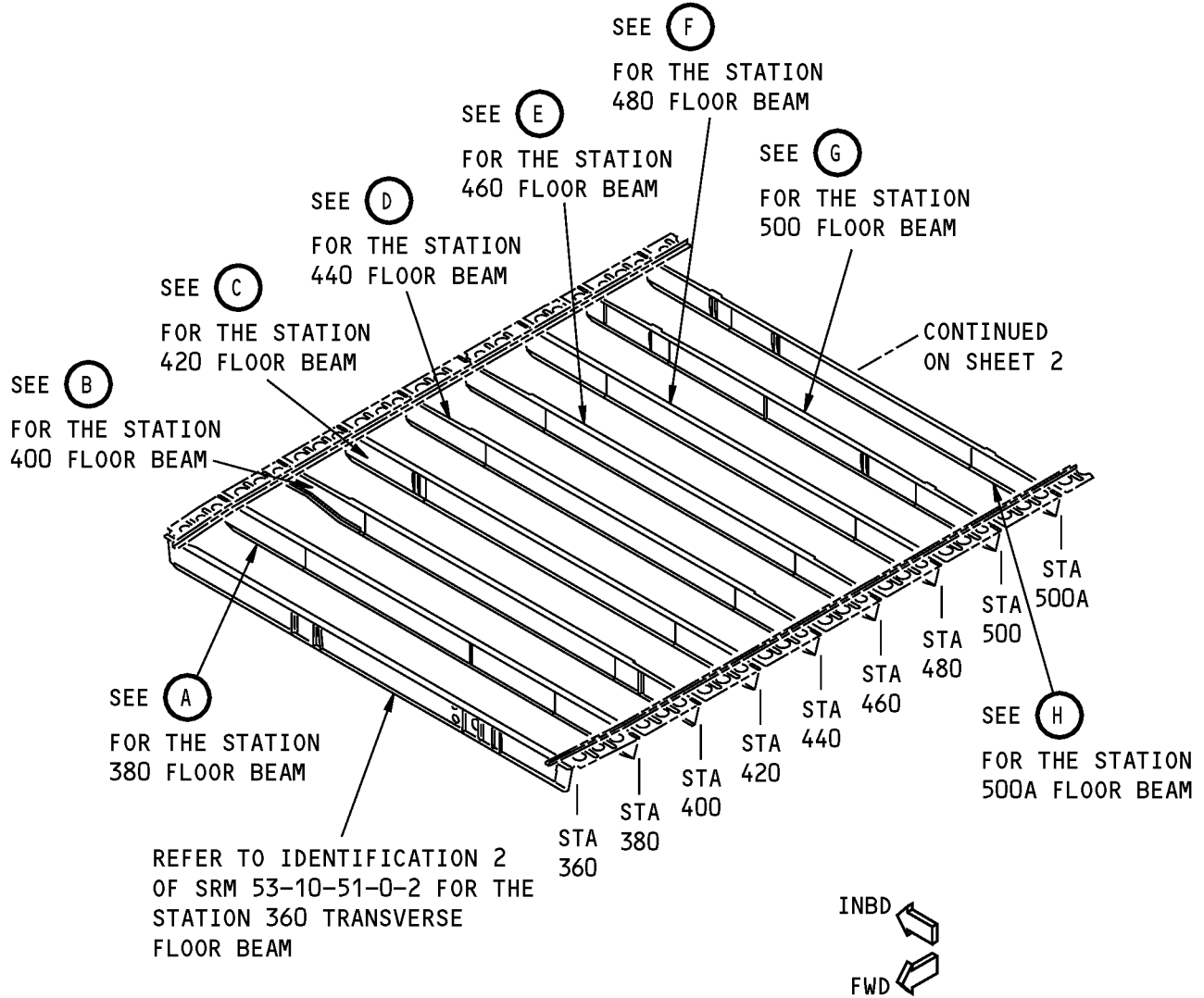
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0346	Floor Grid Collector, Section 43
143A5502	Beam Detail and Installation - Passenger Floor, Station 380
143A5503	Beam Detail and Installation - Passenger Floor, Station 400
143A5504	Beam Detail and Installation - Passenger Floor, Station 420
143A5505	Beam Detail and Installation - Passenger Floor, Station 440
143A5506	Beam Detail and Installation - Passenger Floor, Station 460



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A5510	Beam Detail and Installation - Passenger Floor, Station 480
143A5511	Beam Detail and Installation - Passenger Floor, Station 500
143A5512	Beam Detail and Installation - Passenger Floor, Station 500A
143A5513	Beam Detail and Installation - Passenger Floor, Station 500B
143A5514	Beam Detail and Installation - Passenger Floor, Station 500C
143A5515	Beam Detail and Installation - Passenger Floor, Station 500D
143A5516	Beam Detail and Installation - Passenger Floor, Station 500E
143A5517	Beam Detail and Installation - Passenger Floor, Station 500F
143A5518	Beam Detail and Installation - Passenger Floor, Station 500G
143A5519	Beam Detail and Installation - Passenger Floor, Station 500H
143A5520	Beam Detail and Installation - Passenger Floor, Station 500I
143A5521	Beam Detail and Installation - Passenger Floor, Station 520

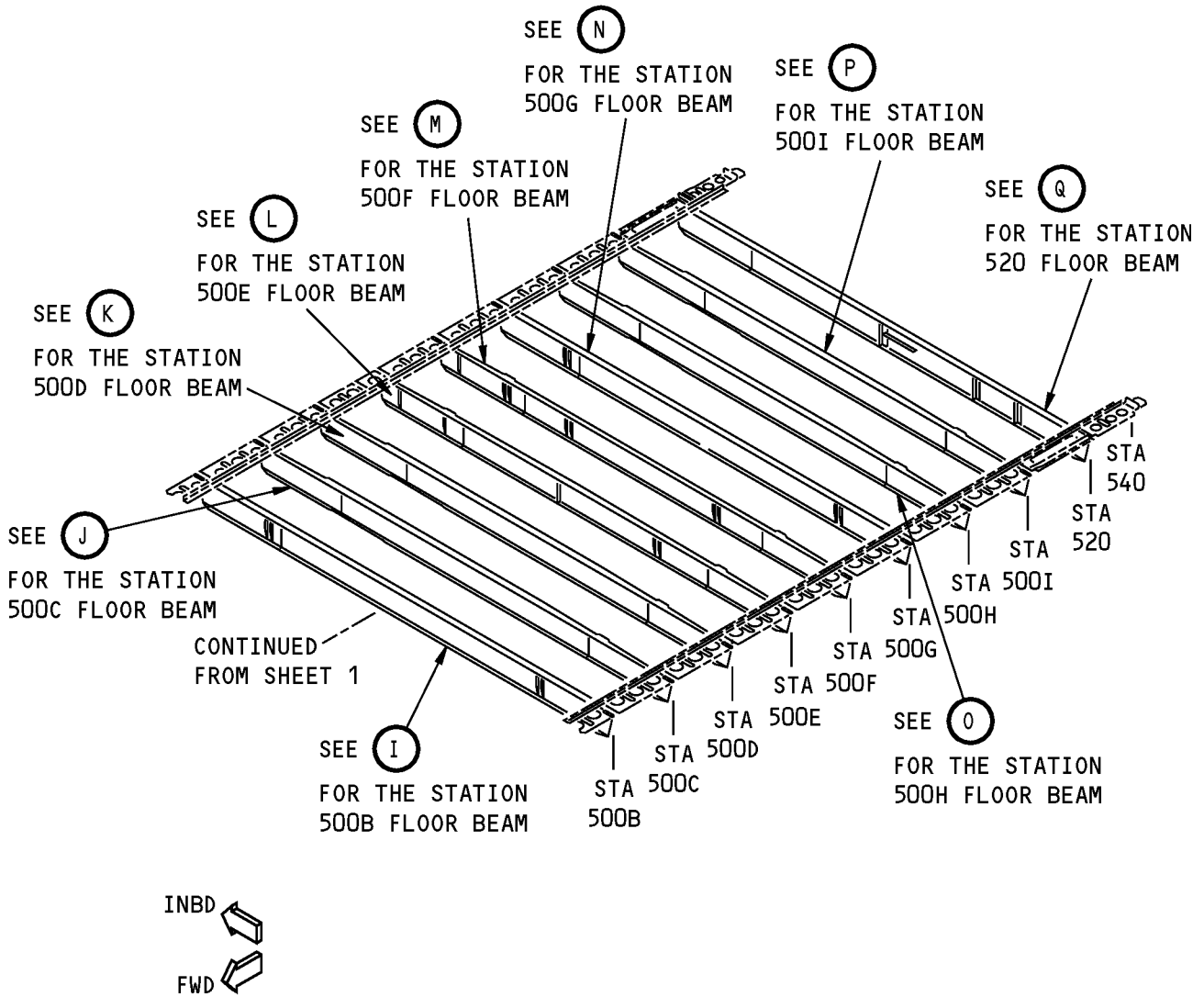
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**Section 43 Transverse Floor Beams  
Figure 2 (Sheet 1 of 2)**

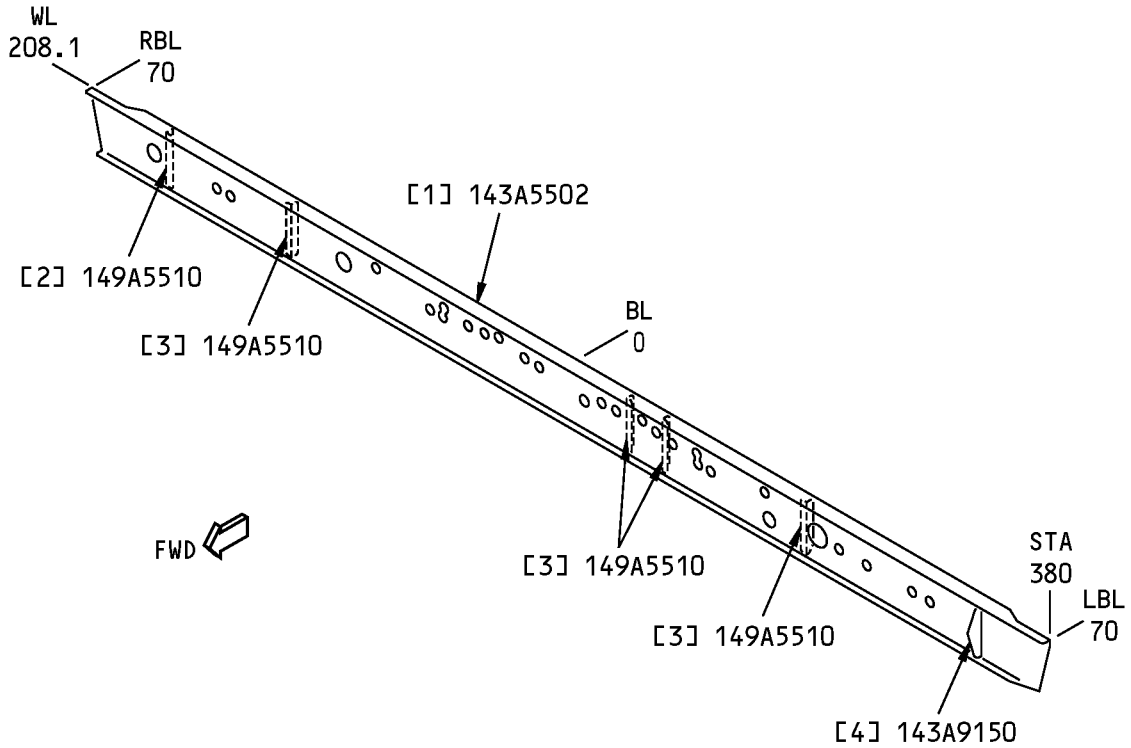


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**Section 43 Transverse Floor Beams  
Figure 2 (Sheet 2 of 2)**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 380**

**A**

**Section 43 Transverse Floor Beams  
Figure 3**



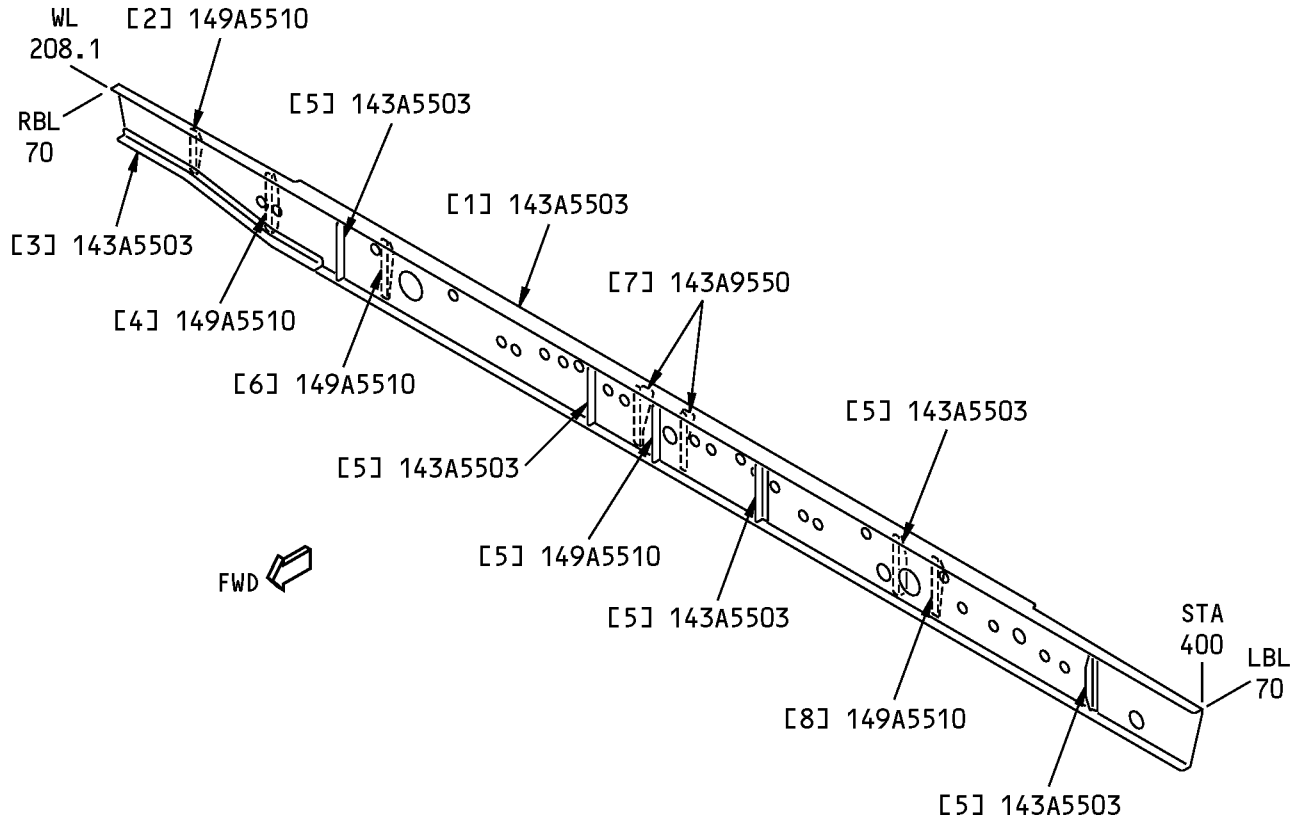
**737-800  
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL A</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1214 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (3)		BAC 1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 400**

**(B)**

**Section 43 Transverse Floor Beam Identification  
Figure 4**



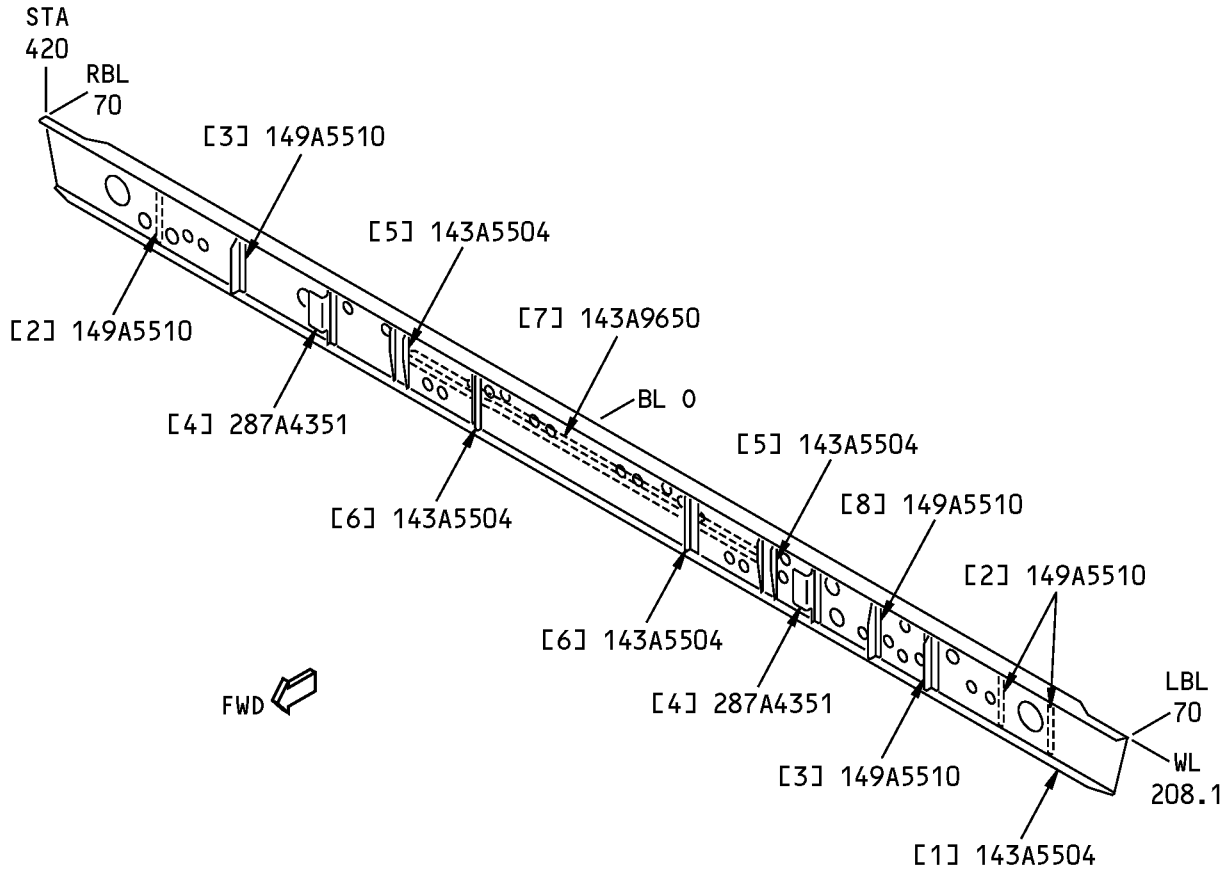
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**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL B</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1214 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for chem-milled thicknesses	
[2]	Stiffener		BAC1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Lower Chord		BAC1503-100889 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-1512 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener (6)		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Bracket (2)		BAC1503-100187 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Angle Stiffener		BAC1503-100436 7075-T511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 420

(C)

**Section 43 Transverse Floor Beam Identification  
Figure 5**



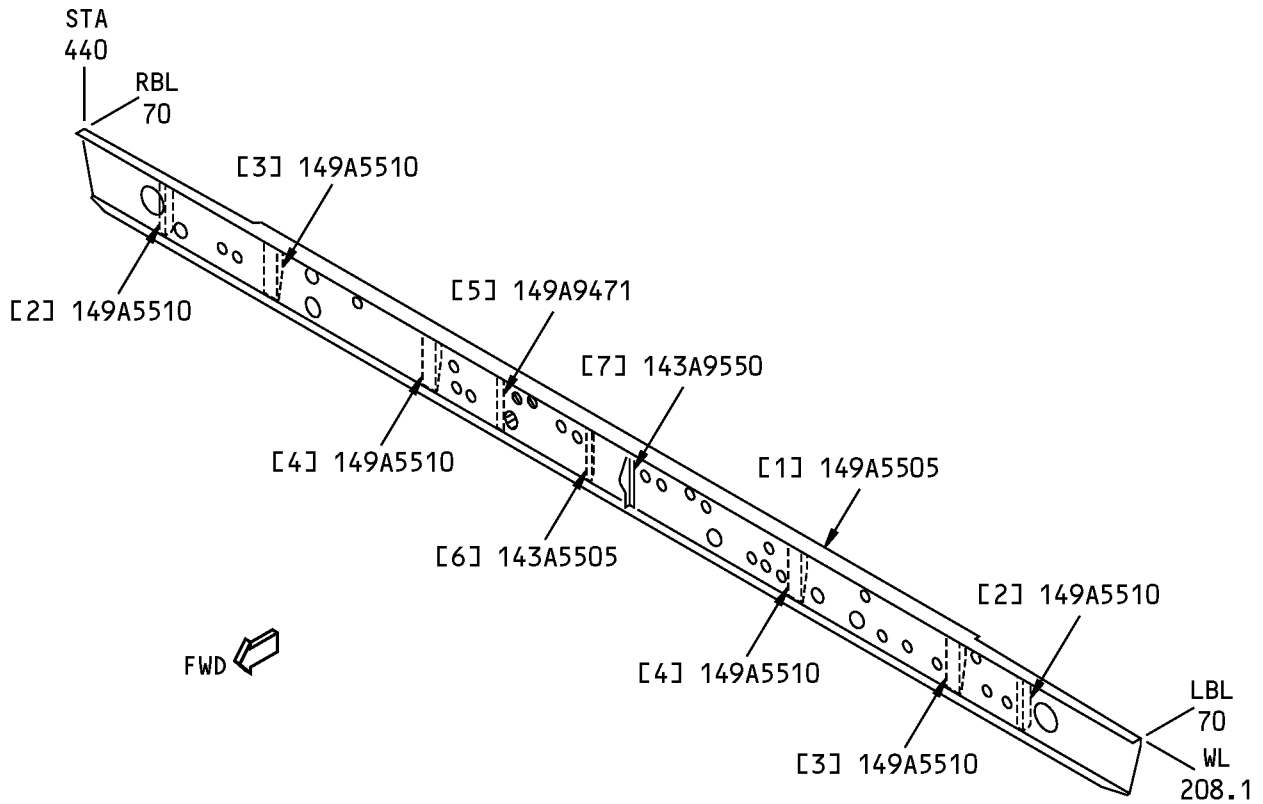
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL C</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Bracket (2)	0.050 (1.3)	6013-T6 sheet as given in AMS 4347	
[5]	Channel Stiffener (2)		BAC1509-100657 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Angle Stiffener (2)		BAC1490-2529 2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Angle Stiffener		BAC1490-2581 2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 440

D

**Section 43 Transverse Floor Beam Identification  
Figure 6**





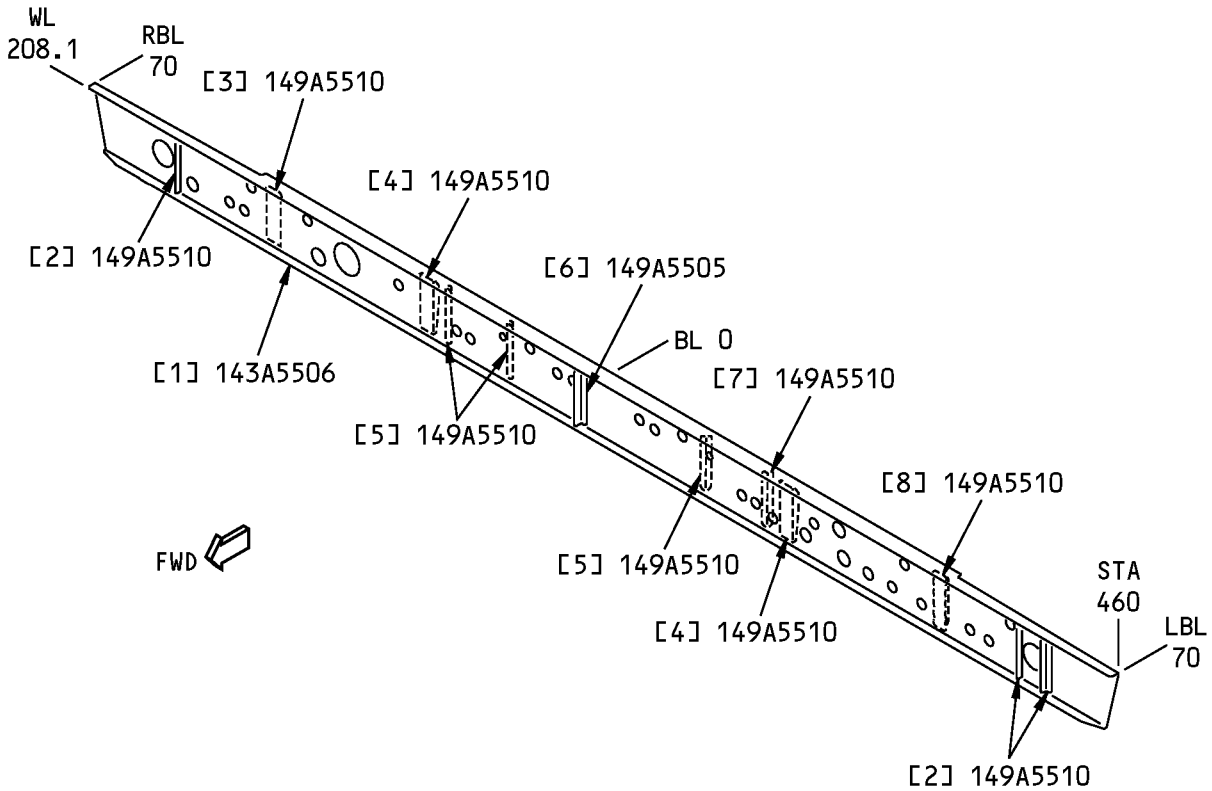
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**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL D</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/3	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Bracket	1.0 (25.4)	7050-T7451 plate as given in AMS 4050	
[6]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM STATION AT 460**

**E**

**Section 43 Transverse Floor Beam Identification  
Figure 7**



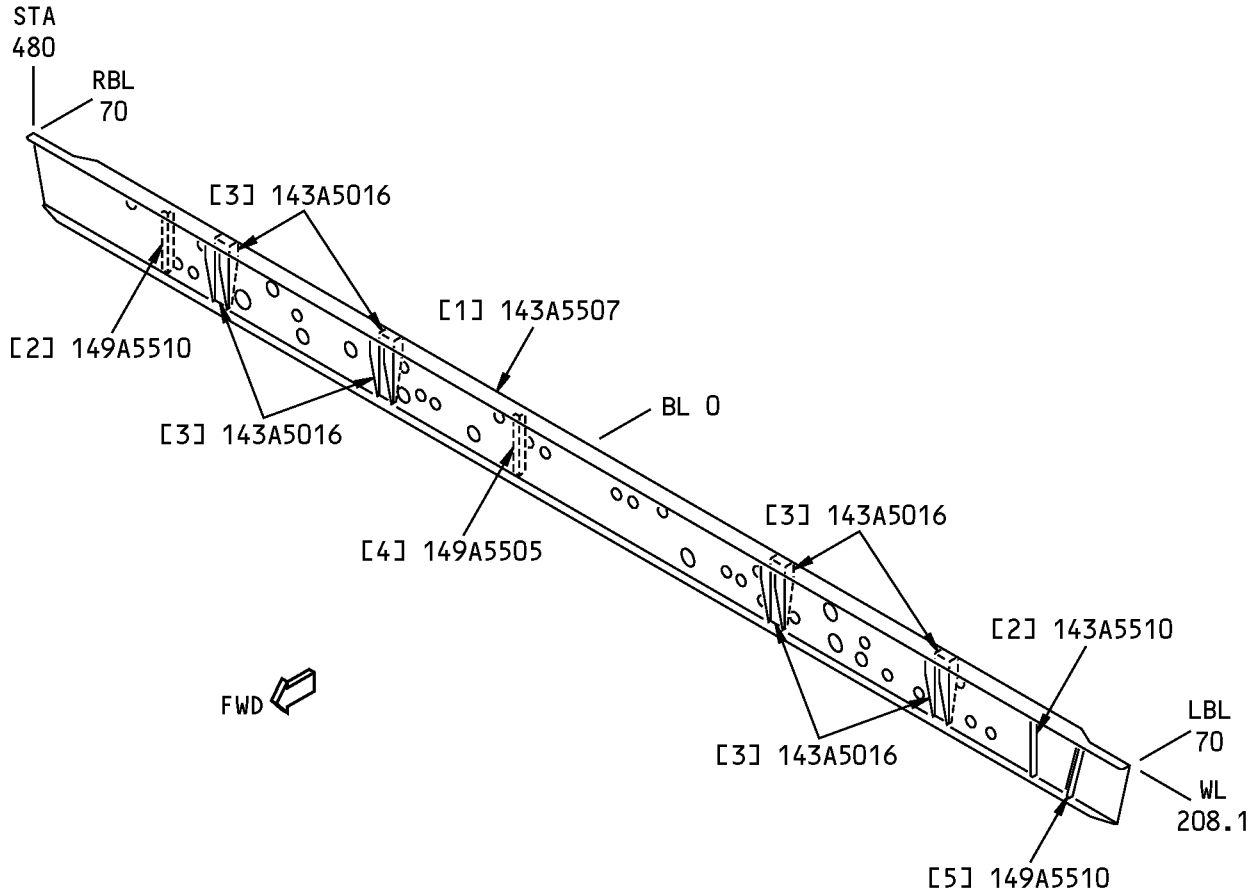
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL E</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Tee Stiffener		AND10136-2401 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener (3)		AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle Stiffener		BAC1503-100066 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Tee Stiffener		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 480

(F)

**Section 43 Transverse Floor Beam Identification  
Figure 8**



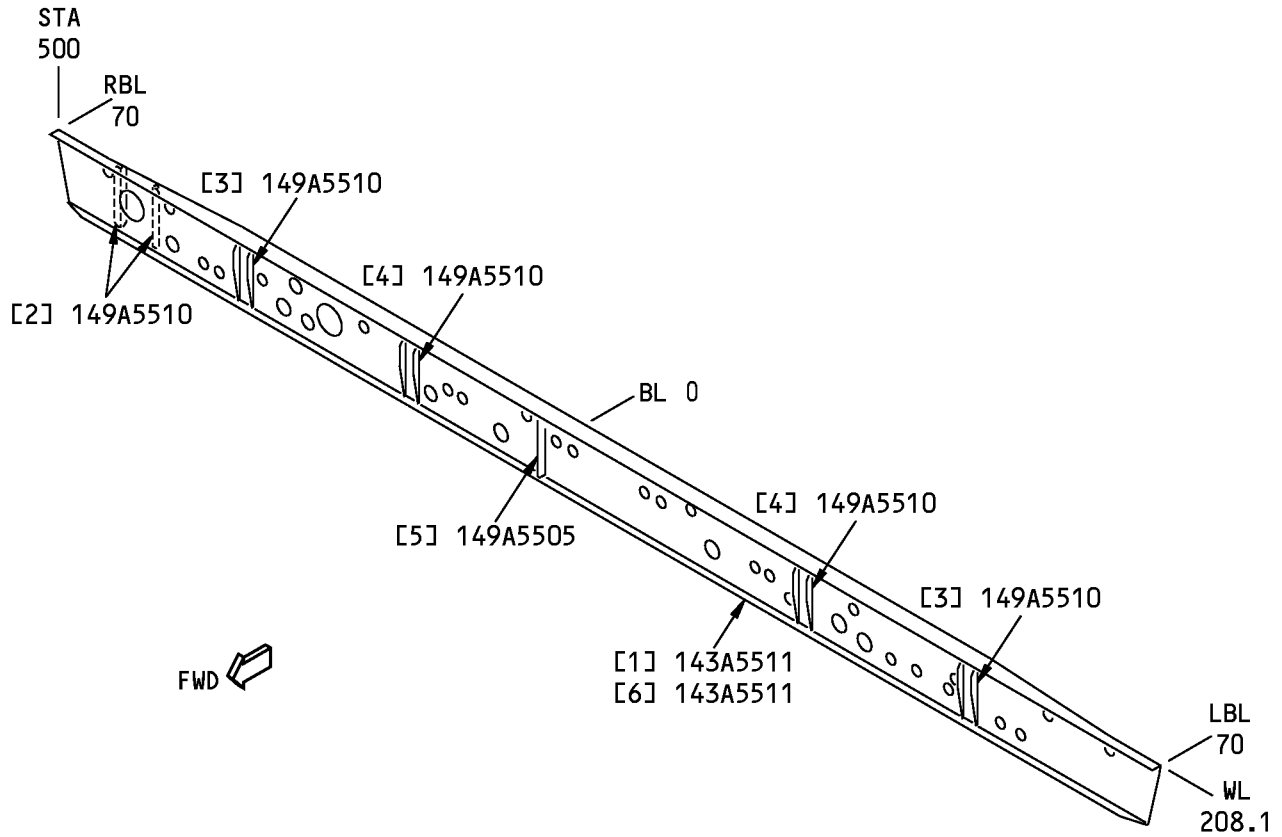
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**Table 7:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL F</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener		BAC1504-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Support (8)	1.10 (27.9)	7050-T7451 plate as given in AMS 4050	
[4]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		AND10133-06010 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500

(G)

**Section 43 Transverse Floor Beam Identification  
Figure 9**



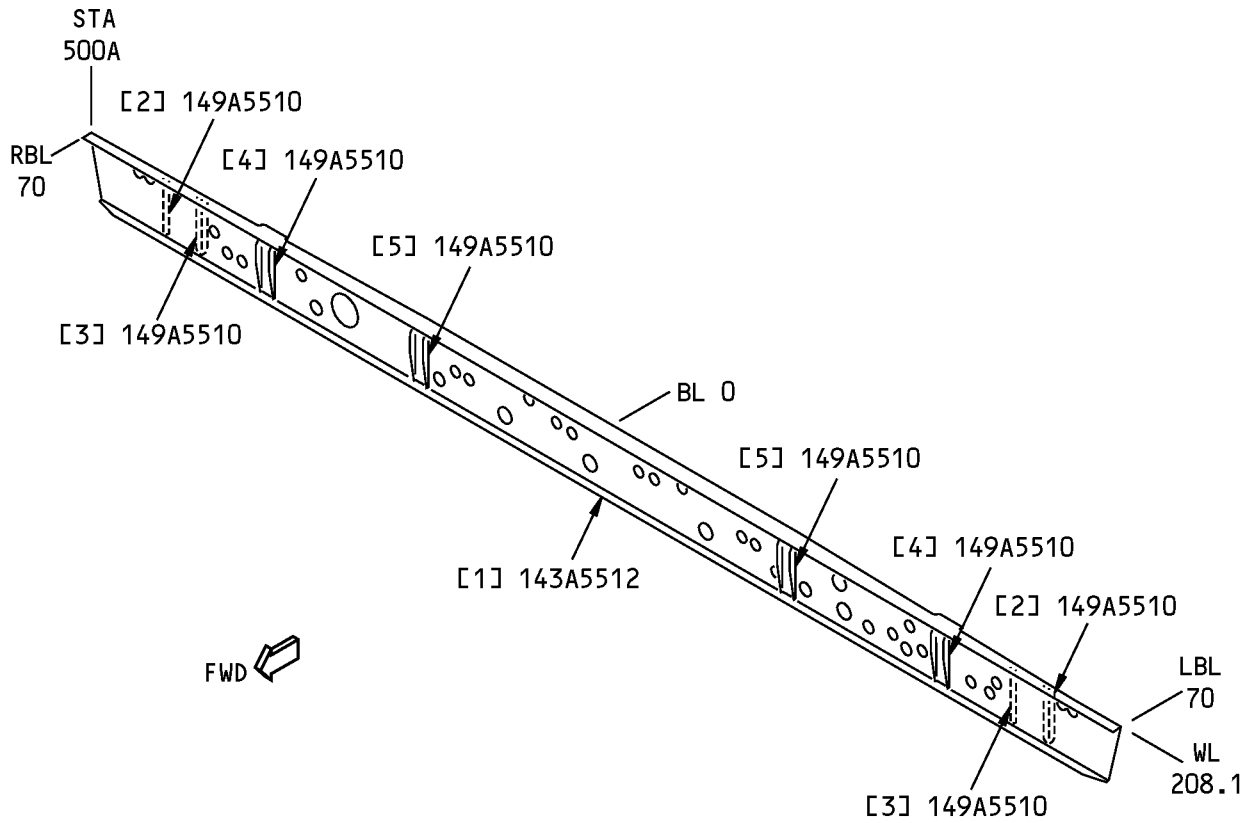
**737-800  
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**Table 8:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL G</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	Line numbers 001 thru 2224
[2]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener, Channel		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Bracket		AND10134-1003 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Transverse Beam		BAC1518-1294 7075-T73511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	Line numbers 2225 and on.

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500A**



**Section 43 Transverse Floor Beam Identification  
Figure 10**





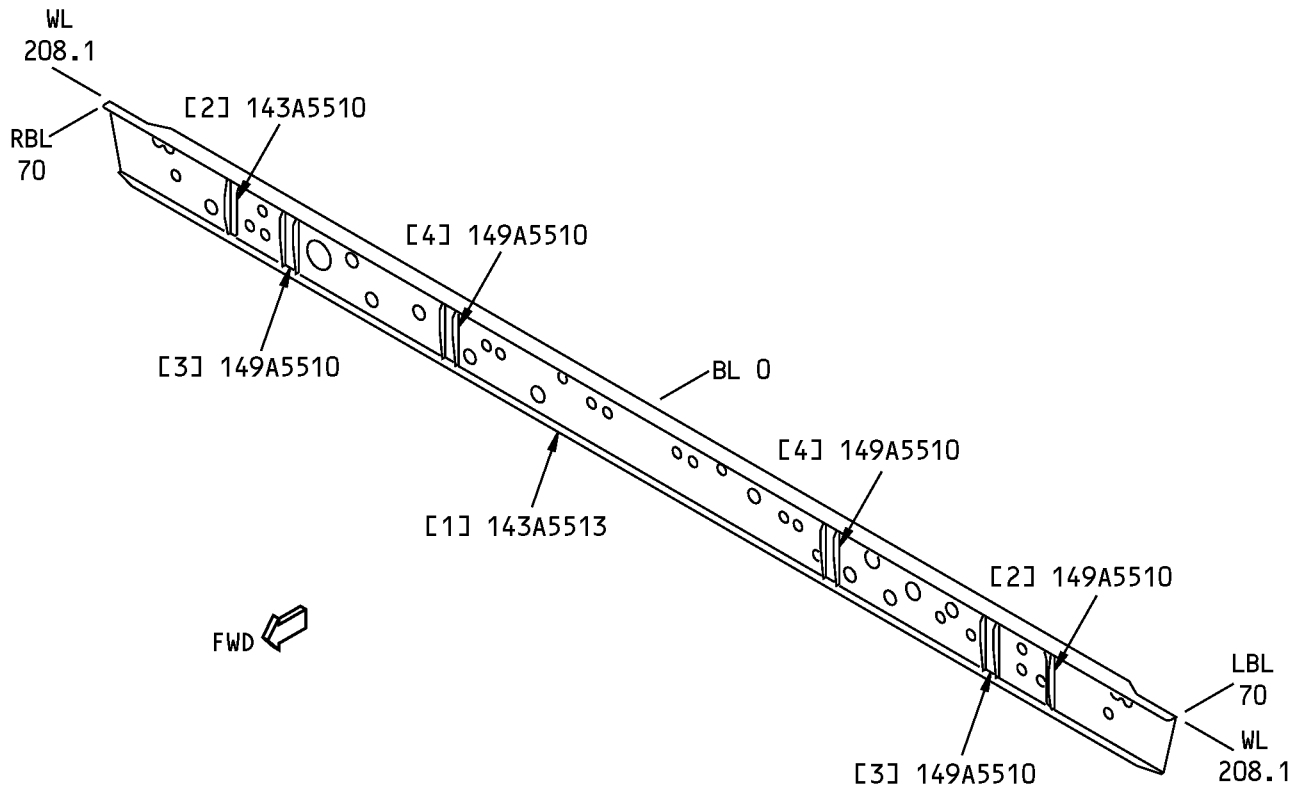
**737-800**  
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**Table 9:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL H</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener		BAC1503-100442 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 10 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500B

I

**Section 43 Transverse Floor Beam Identification  
Figure 11**



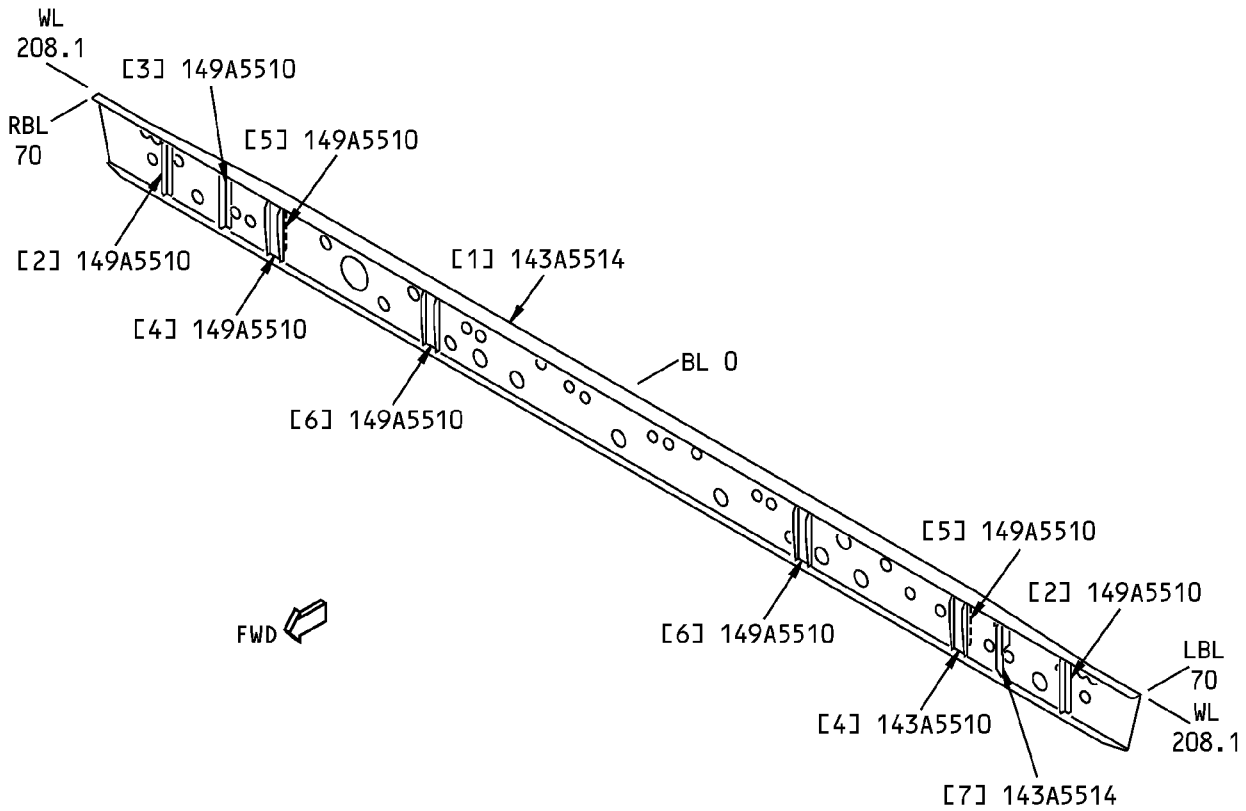
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STRUCTURAL REPAIR MANUAL**

**Table 10:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL I</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Stiffener (2)		BAC1503-100066 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 11 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500C

J

**Section 43 Transverse Floor Beam Identification  
Figure 12**



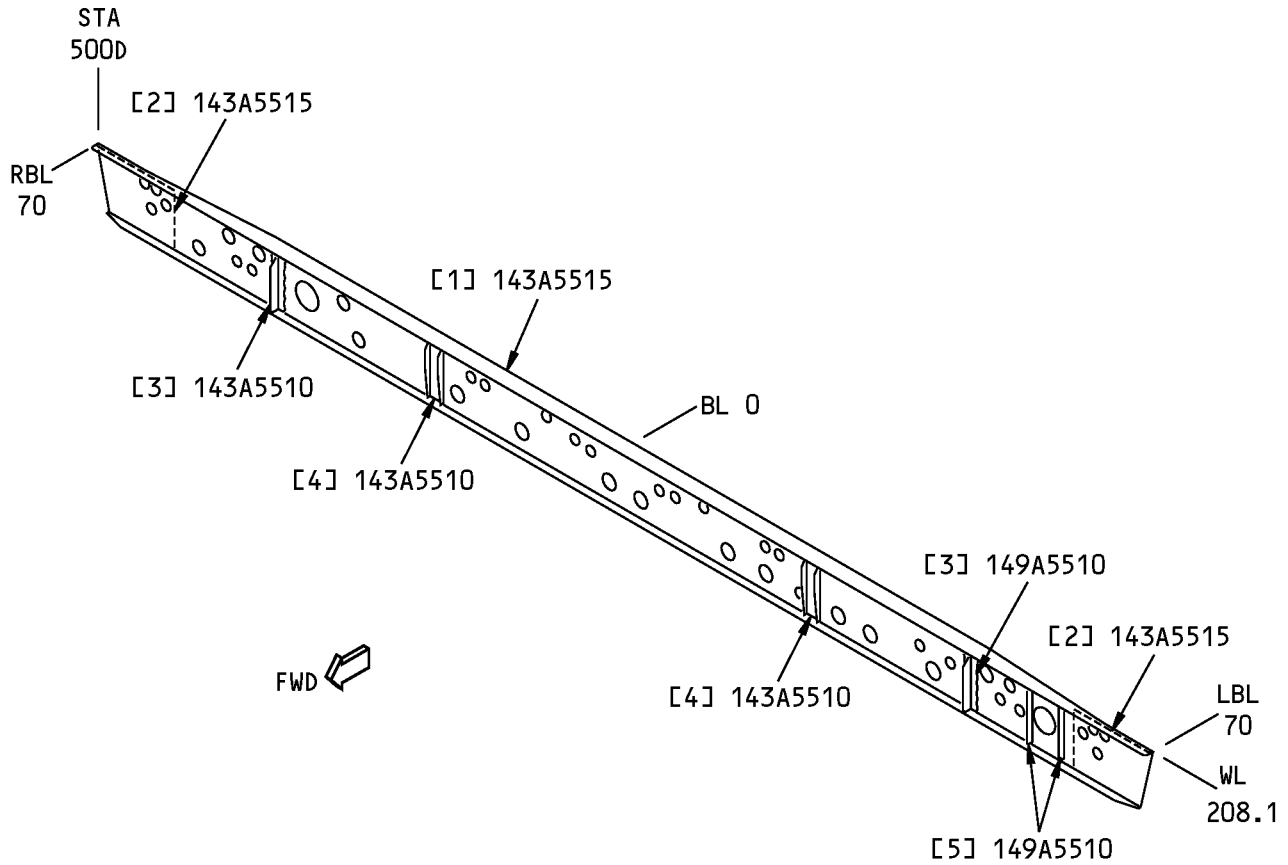
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**Table 11:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL J</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle Stiffener		BAC1503-100442 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		AND10136-2402 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 12 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500D**

**(K)**

**Section 43 Transverse Floor Beam Identification  
Figure 13**



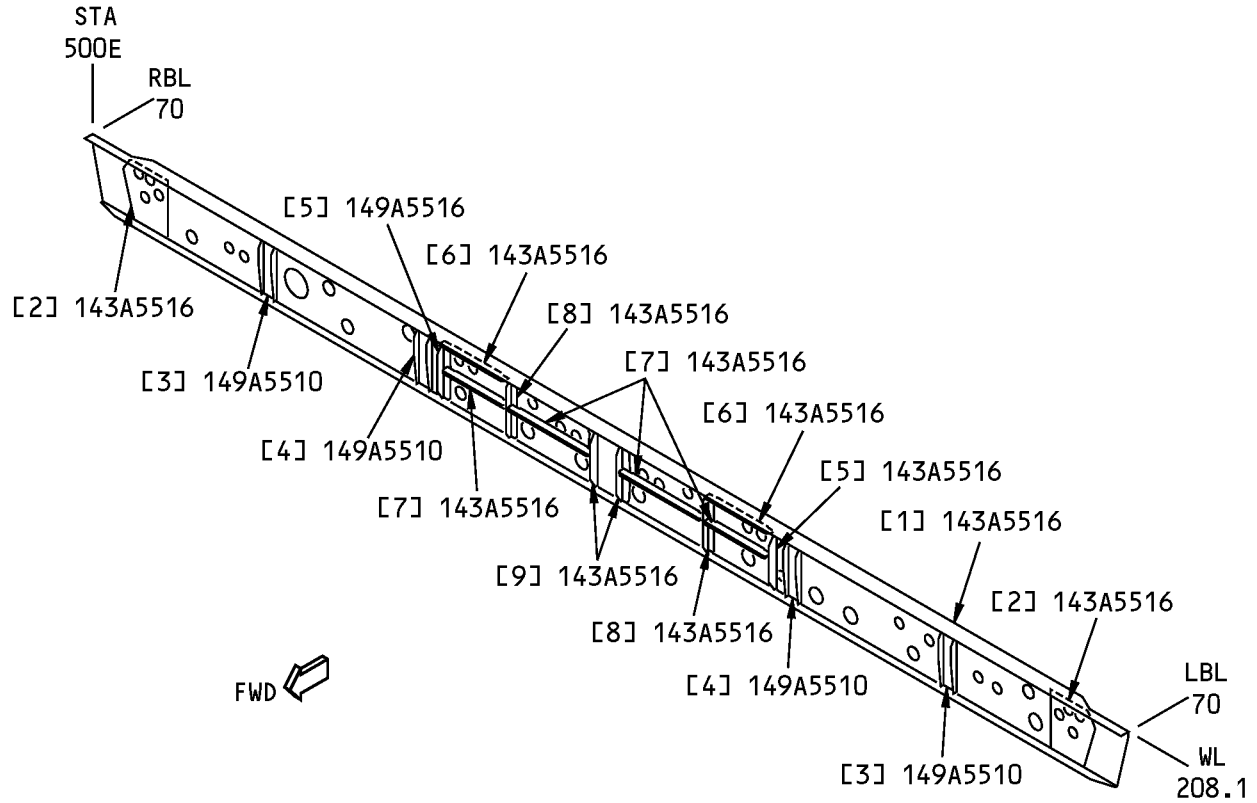
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 12:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL K</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Tee Stiffener (2)		BAC1505-100364 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500E



**Section 43 Transverse Floor Beam Identification  
Figure 14**





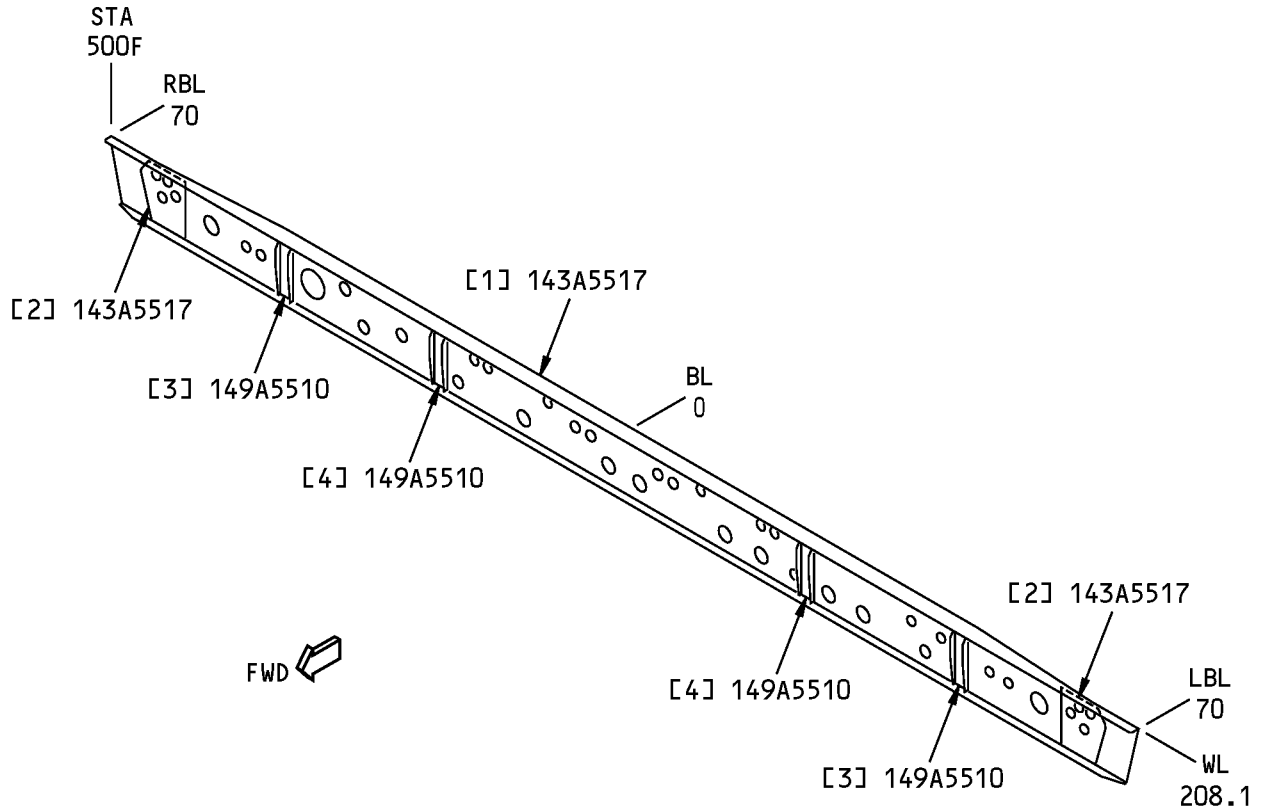
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**Table 13:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL L</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1503-100436 7075-T6511 n extrusion as given in QQ-A-200/11	
[4]	Angle Stiffener (2)		BAC1509-100657 7050-T6511 extrusion as given in QQ-A-200/11	
[5]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1504-8252 7075-T3511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Stiffener		BAC1503-100648 7075-T6511 extrusion as given in QQ-A-200/11	
[16]	Stiffener		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 14 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500F**



**Section 43 Transverse Floor Beam Identification  
Figure 15**



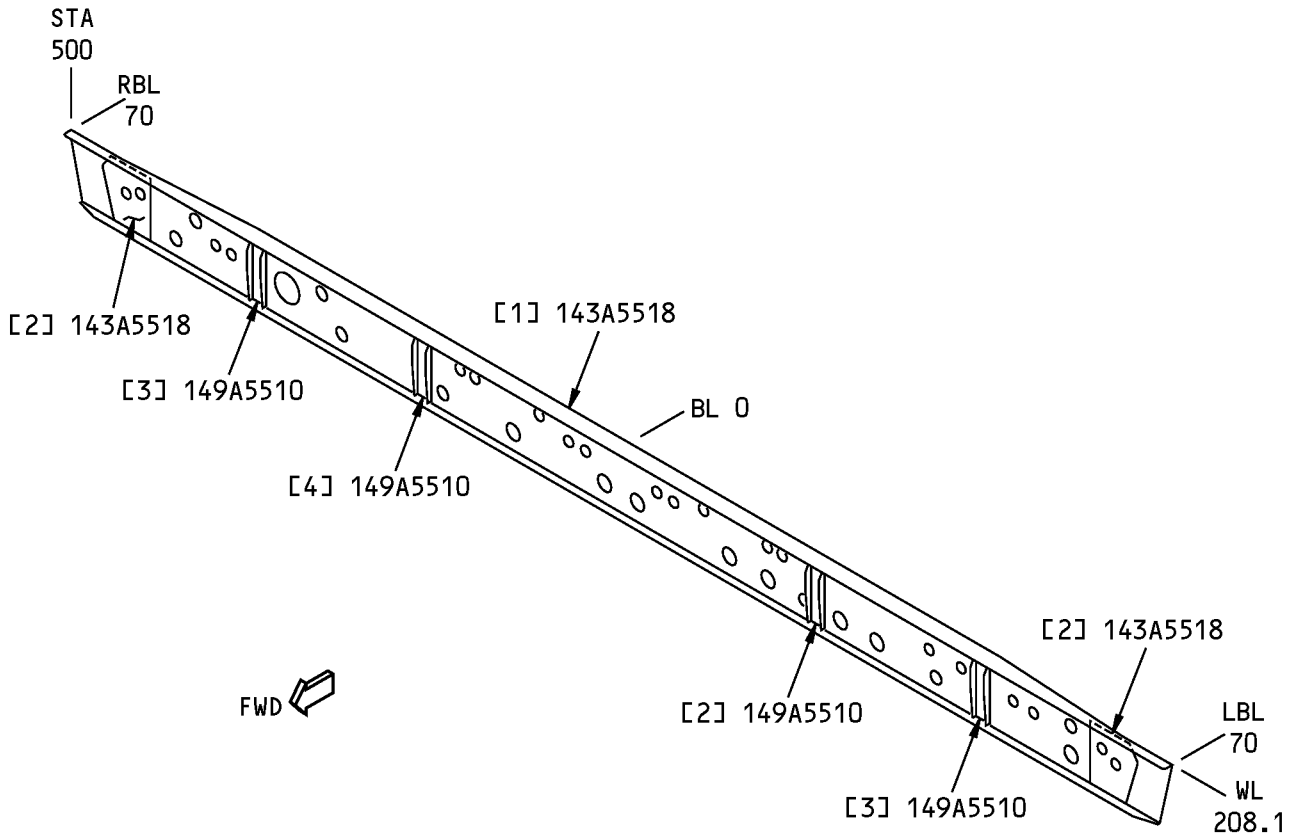
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**Table 14:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL M</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 15 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500G



**Section 43 Transverse Floor Beam Identification  
Figure 16**



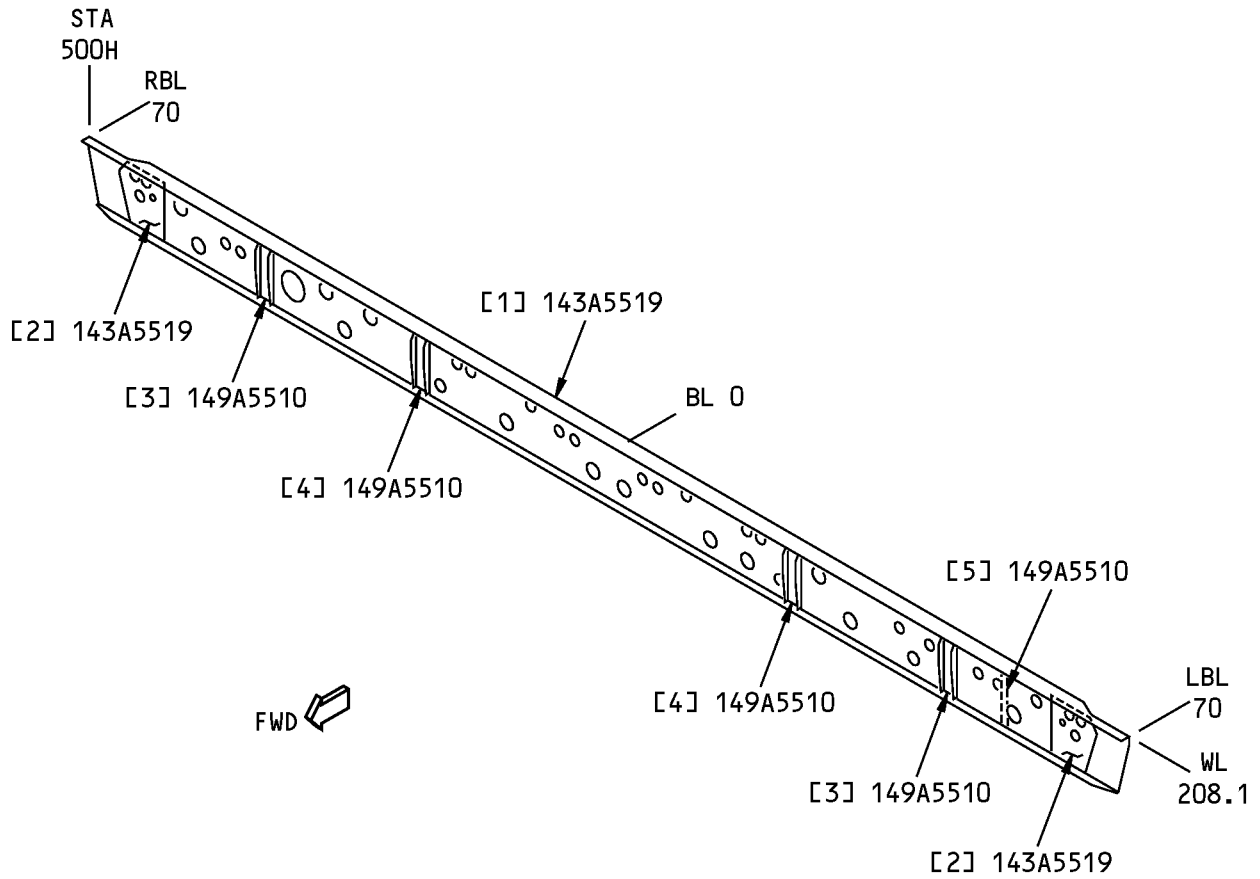
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**STRUCTURAL REPAIR MANUAL**

**Table 15:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL N</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 16 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500H

0

**Section 43 Transverse Floor Beam Identification  
Figure 17**



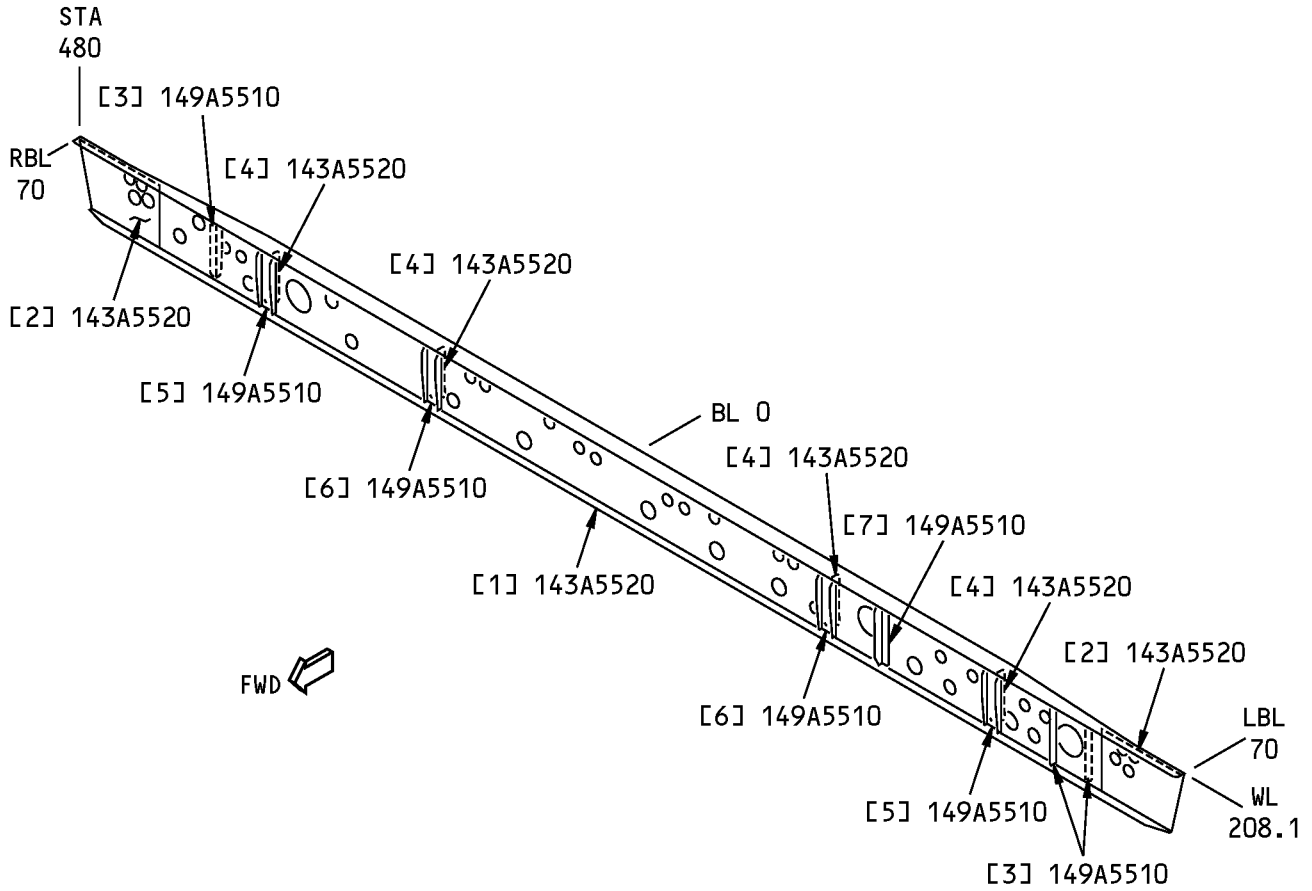
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**Table 16:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL O</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Angle Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 17 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 500I

P

**Section 43 Transverse Floor Beam Identification  
Figure 18**





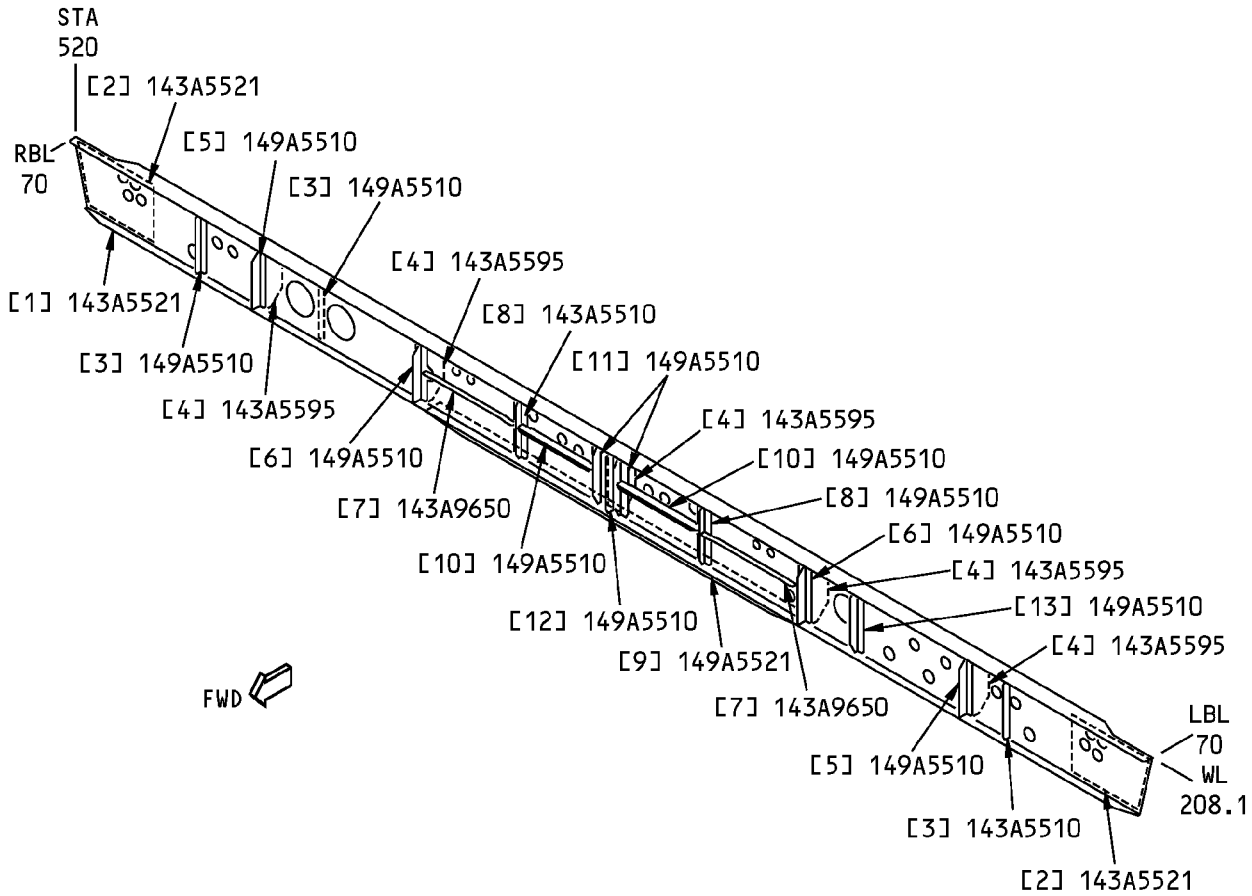
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**Table 17:**

<b>LIST OF MATERIALS FOR FIGURE 2, DETAIL P</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle (4)		BAC1503-100593 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Channel Stiffener (2)		BAC1509-100447 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Channel Stiffener (2)		BAC1509-100657 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Angle Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 18 FOR THE LIST OF MATERIALS.

VIEW IS LOOKING AFT  
FLOOR BEAM AT STATION 520



**Section 43 Transverse Floor Beam Identification  
Figure 19**



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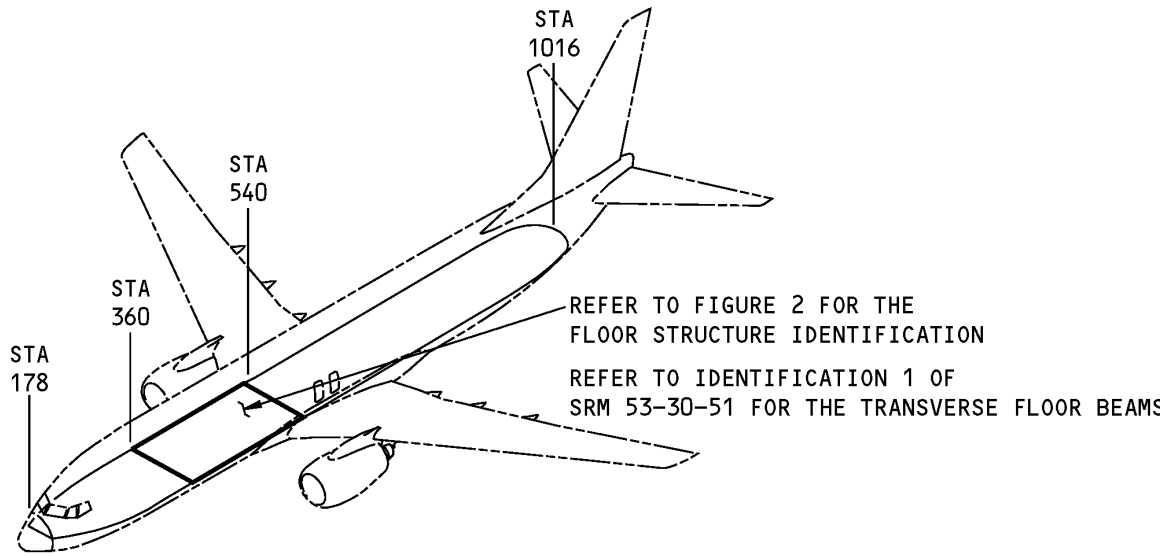
**Table 18:**

LIST OF MATERIALS FOR FIGURE 2, DETAIL Q				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Transverse Beam		BAC1518-1213 7075-T6511 extrusion as given in QQ-A-200/11. Refer to Boeing production drawing for the chem-milled thicknesses	
[2]	Doubler (2)	0.125 (3.2)	7075-T6 sheet as given in QQ-A-250/13	
[3]	Angle Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Channel (5)		BAC1503-100701 7050-T7451 plate as given in AMS 4050	
[5]	Tee Stiffener (2)		AND10136-1503 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1505-101210 7075-T6511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (2)		BAC1490-2581 2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Tee Stiffener (2)		BAC1505-100122 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Strap	0.125 (3.2)	7075-T6 clad sheet as given in QQ-A-250/12	
[10]	Angle Stiffener (2)		BAC1504-8252 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle Stiffener (2)		BAC1503-100147 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle Stiffener		BAC1490-2711 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Angle Stiffener		BAC1503-100917 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 43 FLOOR STRUCTURE**



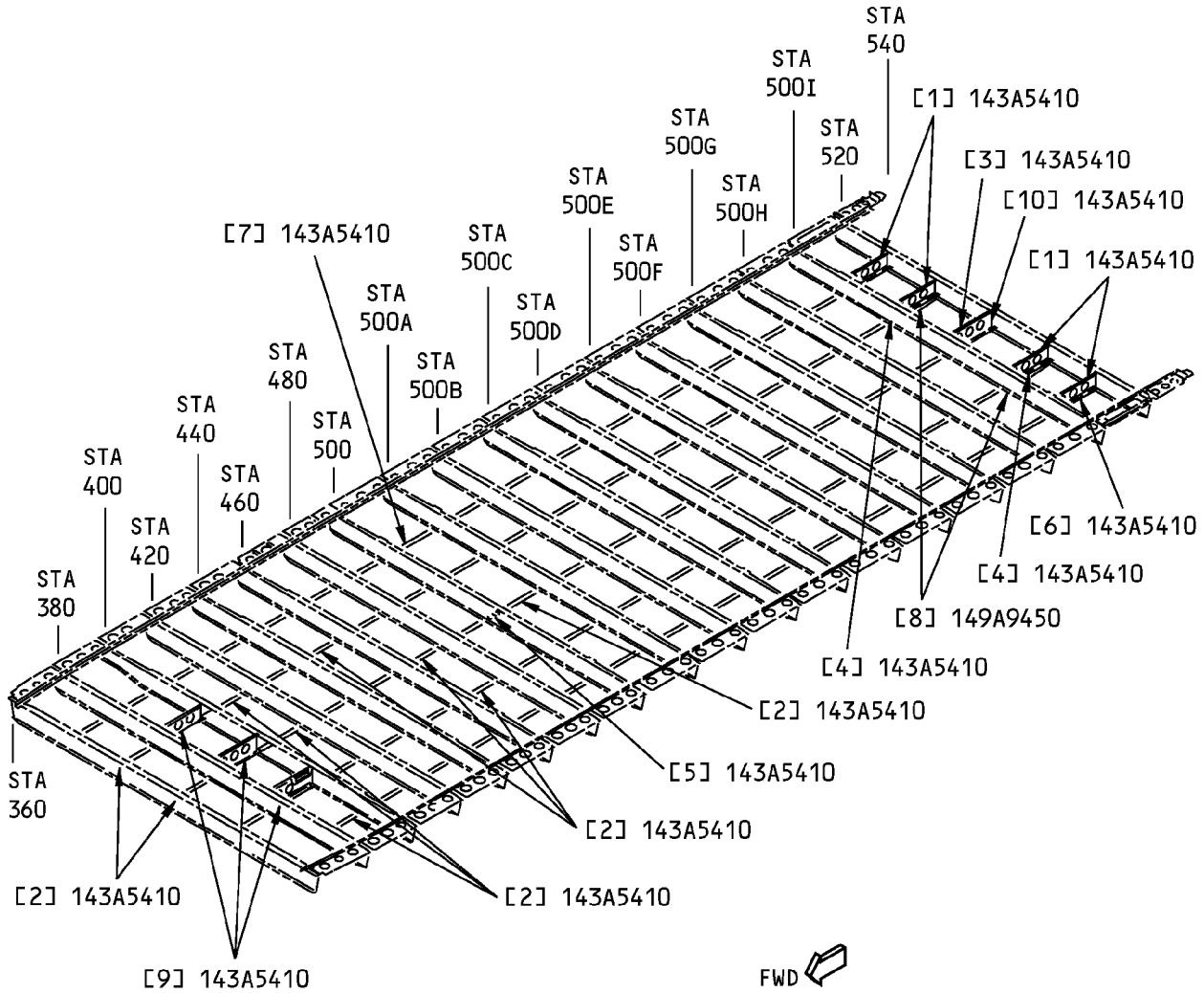
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0346	Floor Grid Collector, Section 43
143A5400	Stabilizer Installation Section 43

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS. THE FLOOR STRUCTURE SHOWN IS THE BASIC CONFIGURATION. REFER TO BOEING DRAWINGS FOR OPTIONAL FLOOR STRUCTURE.

**Section 43 Floor Structure Identification  
Figure 2**



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**Table 2:**

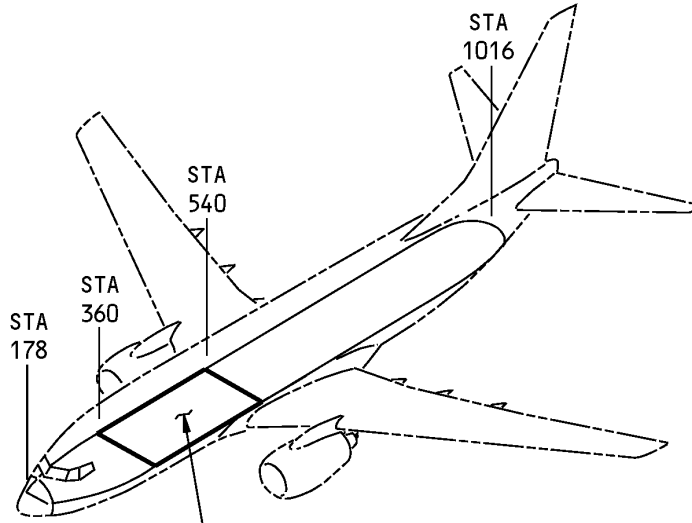
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web Assembly Web Angle	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5 BAC1490-2506 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Strap (9)		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	
[3]	Angle		BAC1490-2631 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Tee (2)		BAC1505-100425 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Splice	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Angle (2)		BAC1490-2529 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Strap	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Channel Assembly (2) Channel Doubler (2)	0.063 (1.6) 0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[9]	Stabilizer Assembly Angle Intercostal (3) Upper Chord (2)	0.050 (1.27)	BAC1490-2631 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1490-2843 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Web	0.025 (0.64)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**REPAIR 1 - SECTION 43 TRANSVERSE FLOOR BEAMS**



REFER TO SRM 53-00-51 FOR TYPICAL  
REPAIRS TO THE TRANSVERSE FLOOR BEAMS

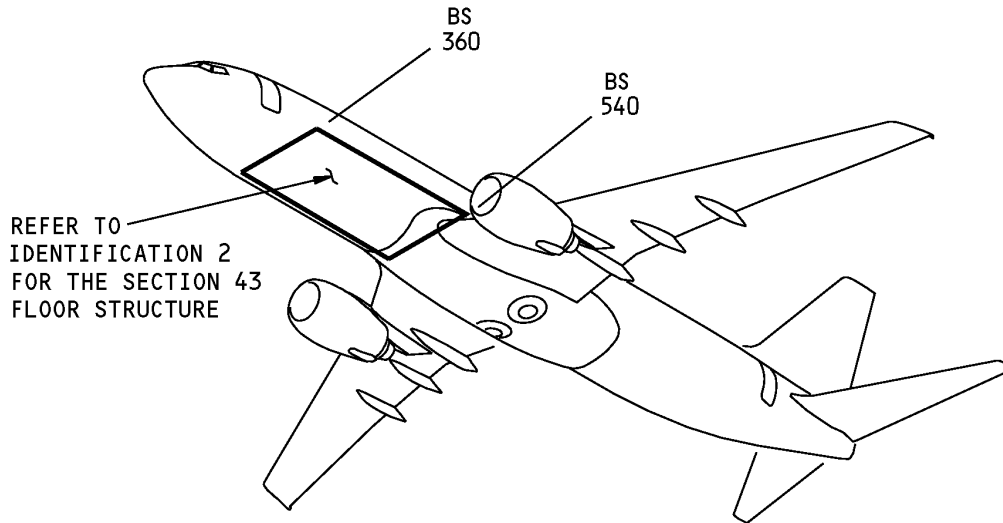
**Section 43 Floor Beam Location**  
**Figure 201**

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REPAIR 2 - SECTION 43 FLOOR STRUCTURE

1. Applicability

- A. Repair 2 is applicable to damage to the floor structure as shown in Section 43 Floor Structure Repairs, Figure 201/REPAIR 2.



**NOTE:** THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11 , SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

**Section 43 Floor Structure Repairs  
Figure 201**

2. General

- A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.





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**STRUCTURAL REPAIR MANUAL**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-51	FUSELAGE FLOOR STRUCTURE - SECTION 43

**4. Repair Instructions**

A. Section 43 Floor Structure

- (1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 43 floor structure.

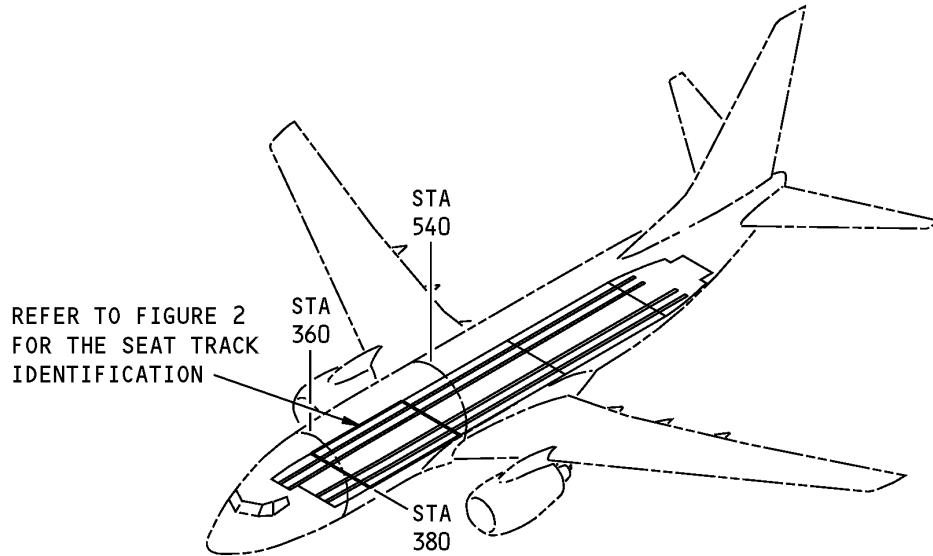
**NOTE:** If necessary, refer to 53-30-51, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 43 FLOOR STRUCTURE	
COMPONENT	REPAIR
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-30-13, Allowable Damage 1, then replace the damaged part.

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**IDENTIFICATION 1 - SECTION 43 SEAT TRACKS**



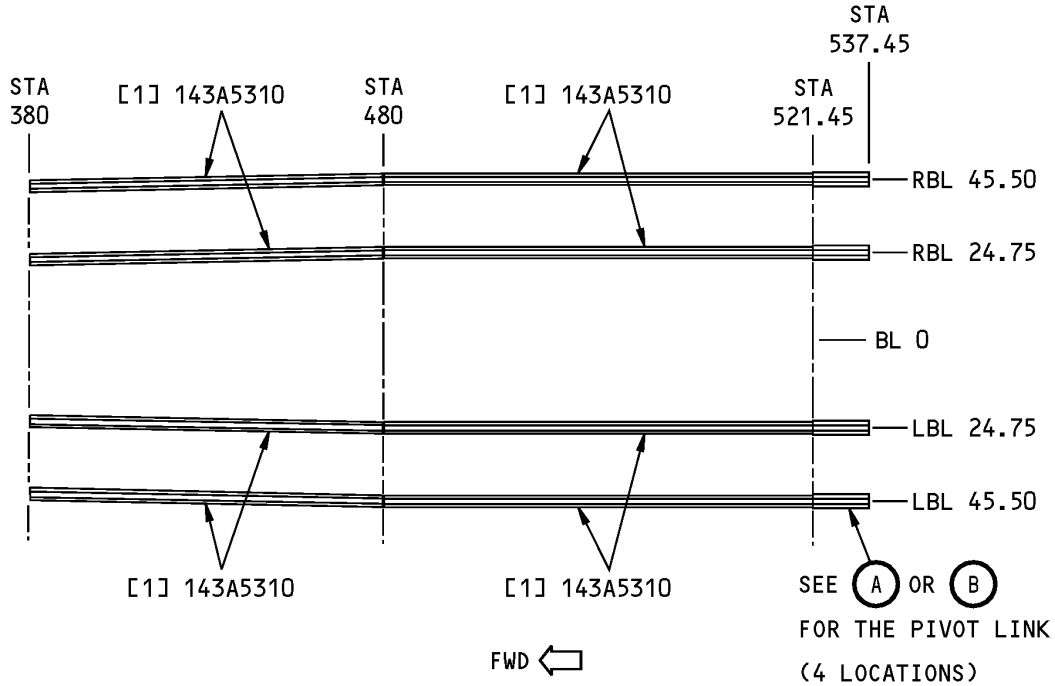
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Seat Track Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0346	Floor Grid Collector, Section 43
143A5300	Seat Track Installation, Section 43

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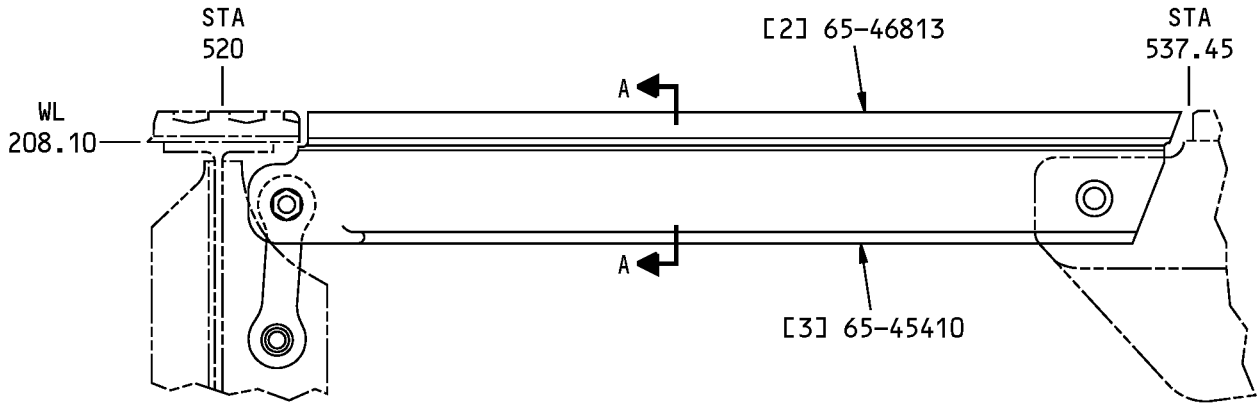


**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0346 TO SEE THE DIFFERENT CONFIGURATIONS.

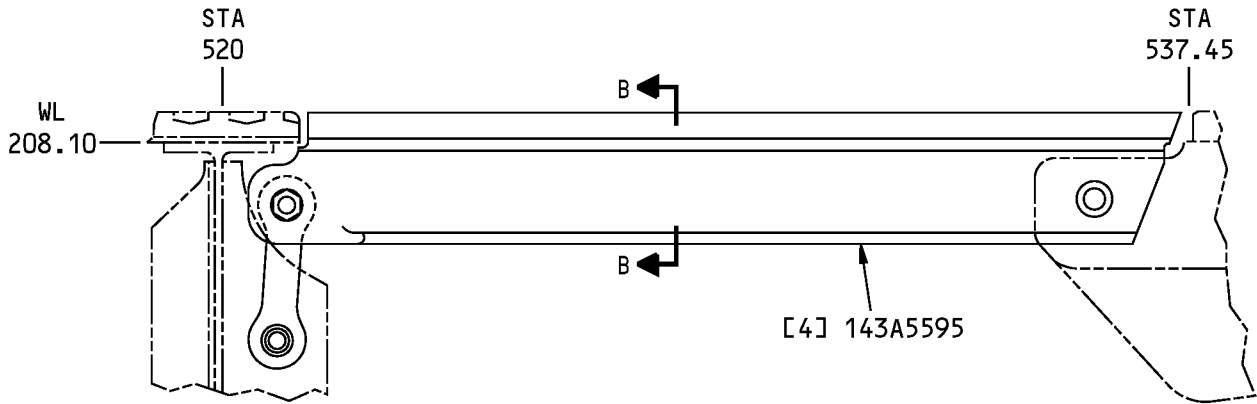
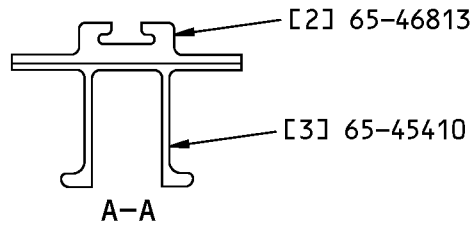
**Section 43 Seat Track Identification  
Figure 2 (Sheet 1 of 2)**

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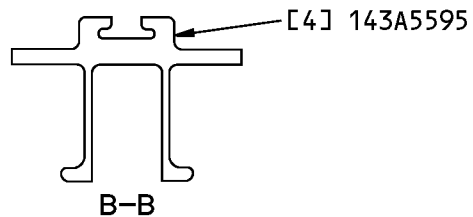
**FOR CUM LINE NUMBERS 1 THRU 1221**

**(A)**



**FOR CUM LINE NUMBERS 1222 AND ON**

**(B)**



**Section 43 Seat Track Identification  
Figure 2 (Sheet 2 of 2)**



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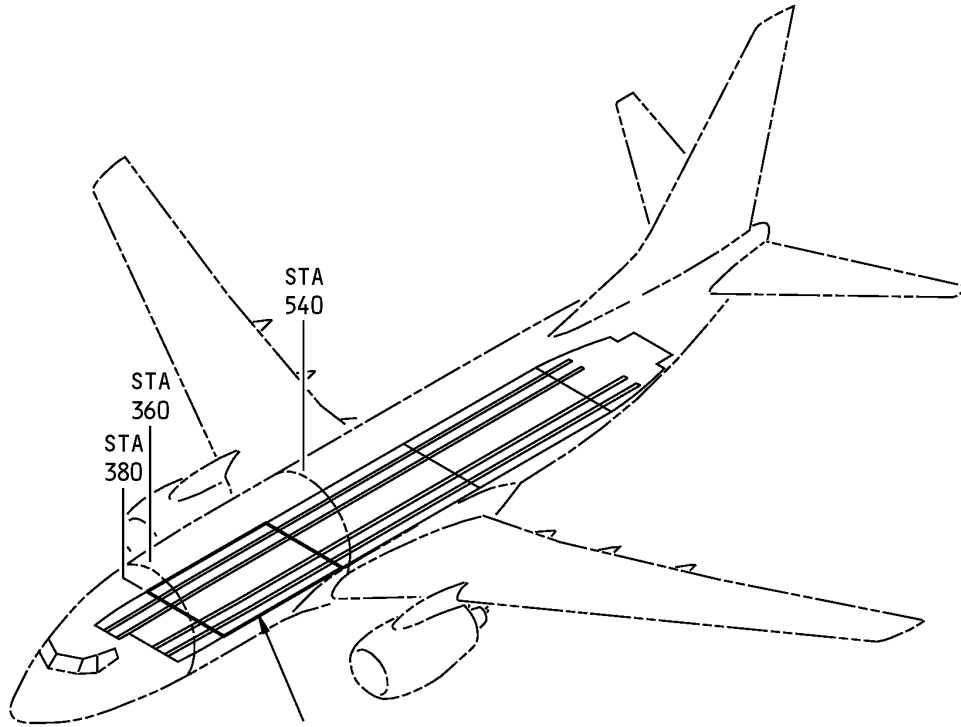
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Seat Track (8)		BAC1520-2789 7178-T6511 extrusion as given in QQ-A-200/13	
[2]	Seat Track (4)		BAC1520-1342 7178-T6511 extrusion as given in QQ-A-200/13	For Cum Line Numbers 1 Thru 1221
[3]	Channel (4)		BAC1508-129 7075-T6511 extrusion as given in QQ-A-200/11	For Cum Line Numbers 1 Thru 1221
[4]	Pivot Link (4)		BAC1520-2979 7178-T6511 extrusion as given in QQ-A-200/13	For Cum Line Numbers 1222 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE GENERAL - SECTION 43 SEAT TRACKS**

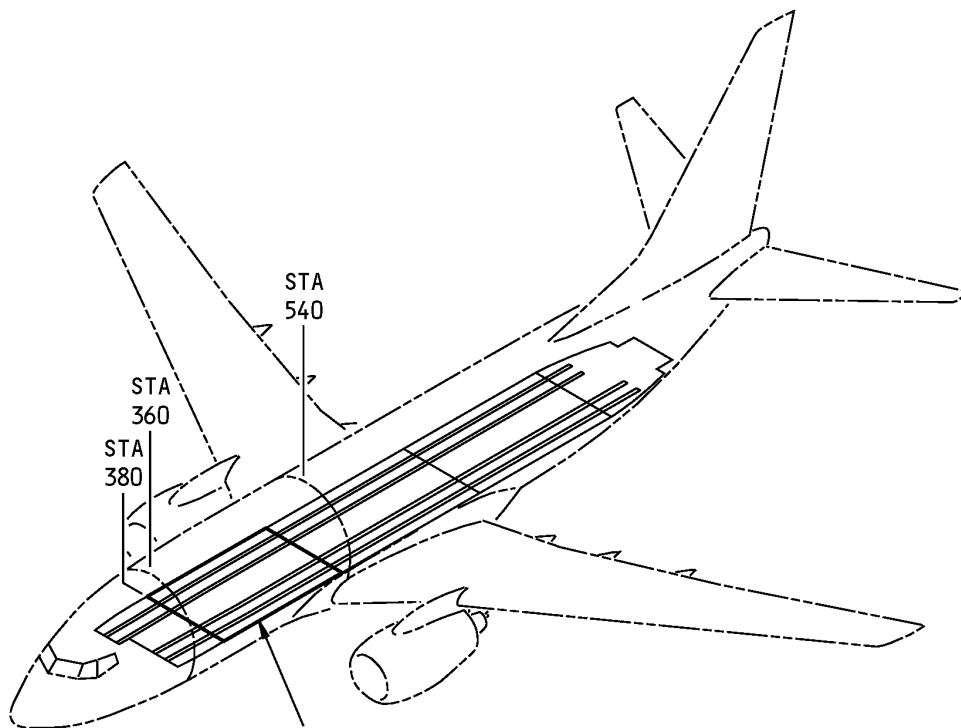


REFER TO SRM 53-00-52  
FOR THE ALLOWABLE DAMAGE  
DATA THAT IS APPLICABLE TO  
THE SEAT TRACKS IN SECTION 43

**Section 43 Seat Track Allowable Damage  
Figure 101**

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**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 43 SEAT TRACKS**

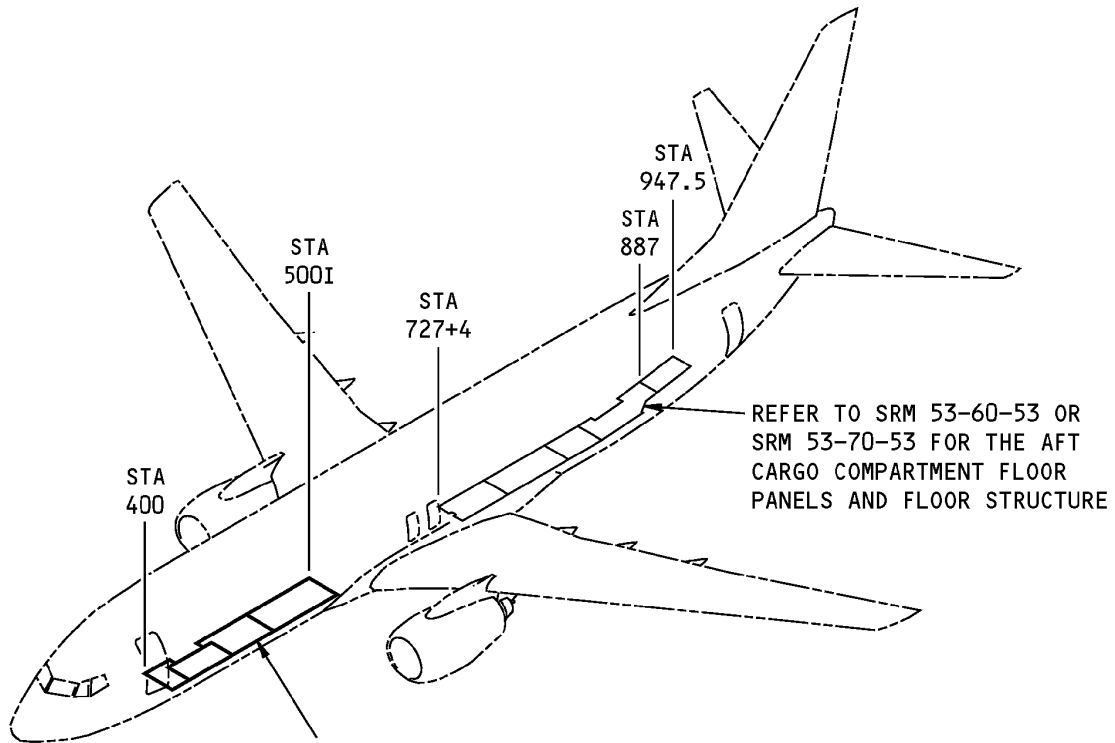


REFER TO SRM 53-00-52  
FOR THE REPAIRS THAT ARE  
APPLICABLE TO THE SEAT  
TRACKS IN SECTION 43

**Section 43 Seat Track Repairs**  
**Figure 201**

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**IDENTIFICATION 1 - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR PANELS**



REFER TO IDENTIFICATION 2  
FOR THE SECTION 43 CARGO  
COMPARTMENT FLOOR STRUCTURE.

REFER TO FIGURE 2 FOR THE  
CARGO COMPARTMENT FLOOR  
PANEL IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

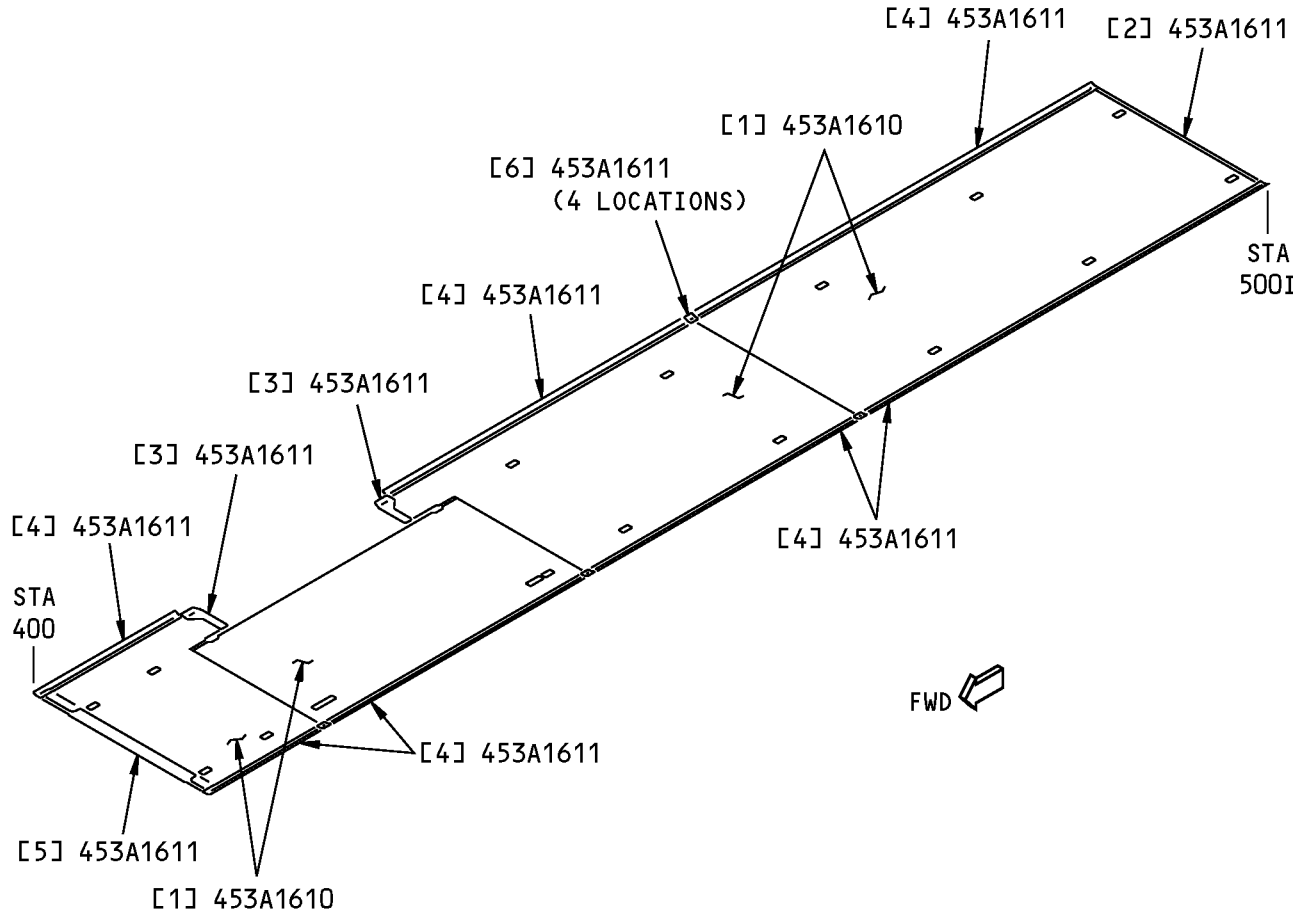
**Section 43 Cargo Compartment Floor Panel Locations  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
400A9101	Functional Product Collector - Payloads - Final Assembly
453A1600	Deck Panel Installation - Forward Cargo
453A1610	Panel Assembly - Deck, Forward Cargo Compartment



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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Cargo Compartment Floor Panel Identification  
Figure 2**



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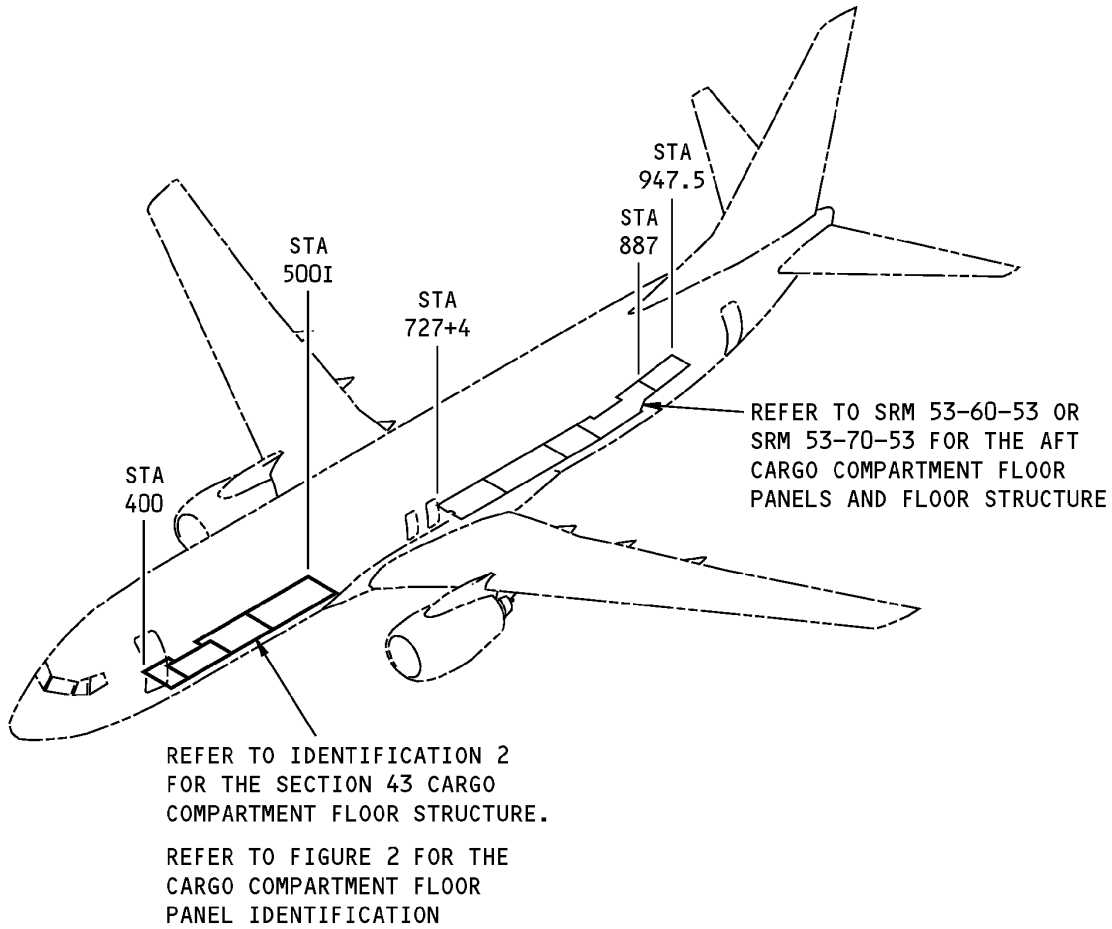
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Deck Panel	0.070 (1.79)	GILLINER 1266 Gill Coated (white) fiberglass	Refer to the Engineering Drawing
		0.090 (2.29)	GILLINER 1266 Gill Coated (white) fiberglass	
		0.071 (1.80)	2024-T3 clad sheet	
		0.090 (2.29)	Conolite P/N A90RG1W	
		0.058 (1.47)	BMS 7-326, Class 2/1, Grade C, Type VII	
[2]	Cap Strip		BAC1513-286 2024-T3511 extrusion	
[3]	Tiedown Plate	0.20 (5.08)	2024-T3 clad sheet	
[4]	Capstrip	0.063 (1.60)	2024-T3 clad sheet	
[5]	Capstrip	0.080 (2.03)	2024-T3 clad sheet	
[6]	Splice Plate	0.063 (1.6)	2024-T3 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Cargo Compartment Floor Structure Locations  
Figure 1**

**Table 1:**

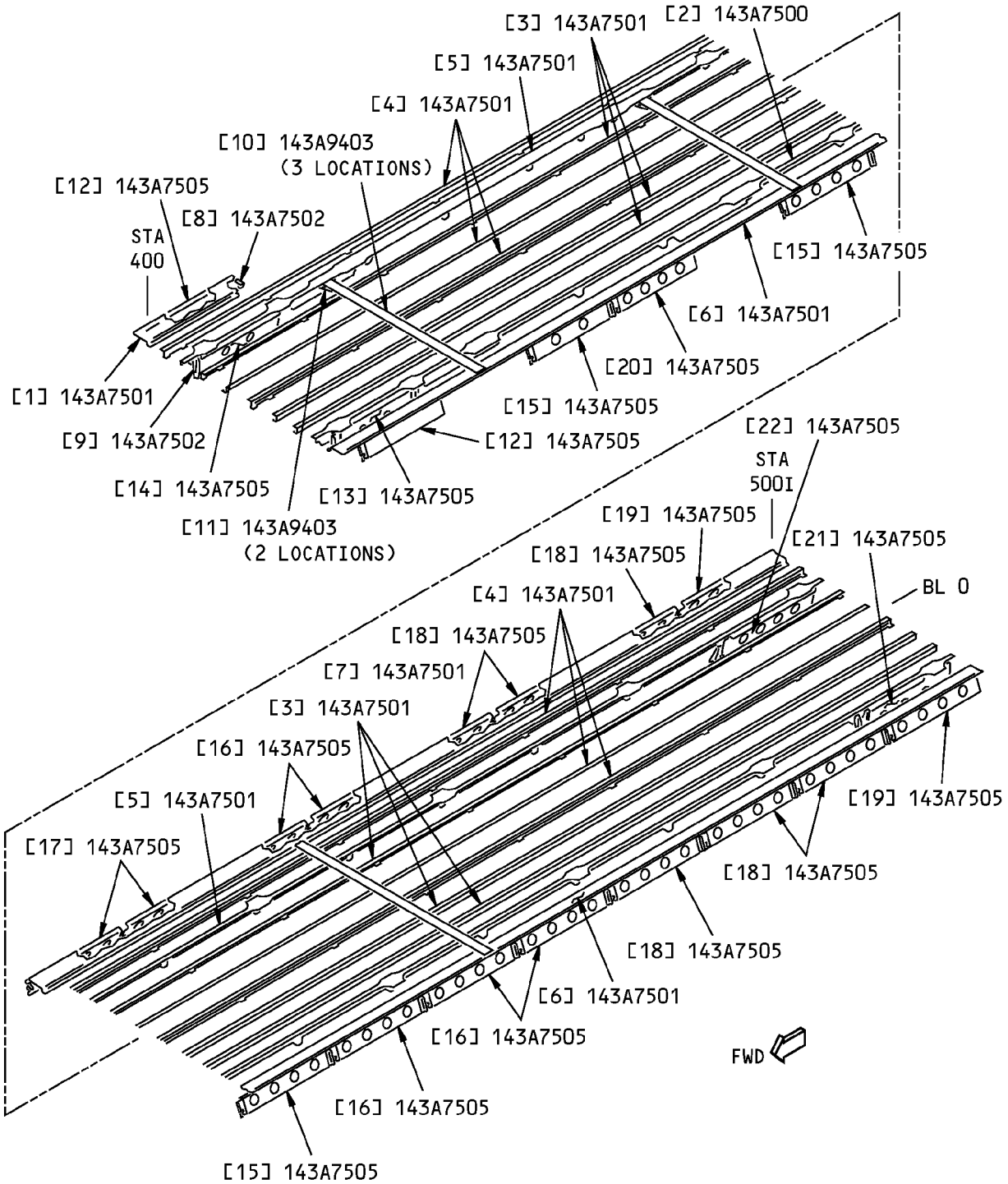
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
400A9101	Functional Product Collector - Payloads - Final Assembly
140A4320	Section 43 lower Lobe Functional Product Collector
453A1600	Deck Panel Installation - Forward Cargo
143A7500	Cargo Floor Installation - Section 43
143A7501	Details - Cargo Floor Support, Section 43
143A7502	Clip - Details, Cargo Floor Support Section 43



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A7503	Intercostal Detail - Cargo Floor Support
143A7505	Cargo Floor Support Installation - Section 43
143A9403	Web - Intercostal Forward Door Surround
453A1611	Capstrip - Forward Cargo Compartment

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Cargo Compartment Floor Structure Identification  
Figure 2**



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**Table 2:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>(1)</sup>	MATERIAL	EFFECTIVITY
[1]	Channel		BAC1496-444 7075-T6 clad sheet	
[2]	Track - Tiedown Assembly Track Support Tee  Track - Tiedown		AND10136-1405 7050-T76511 extrusion as given in AMS 4340  BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[2]	Track - Tiedown Assembly Track Support Tee  Track - Tiedown  Splice		AND10136-1405 7050-T76511 extrusion as given in AMS 4340  BAC1520-1397 7050-T73511 extrusion as given in AMS 4340  BAC1503-101166 7050-T73511 extrusion	
[3]	Channel		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[4]	Zee		BAC1517-1167 7050-T76511 extrusion as given in AMS 4340	
[5]	Track - Tiedown		BAC1520-1397 7050-T76511 as given in AMS 4340. Refer to the engineering drawing for the machined thicknesses	
[6]	Channel Assembly Channel Clip	0.040 (1.02)	BAC1496-444 7075-T62 clad sheet  7075-T6 clad sheet	
[7]	Channel Assembly Channel Clip	0.040 (1.02)	BAC1496-444 7075-T62 clad sheet  7075-T6 clad sheet	
[8]	Clip		BAC1503-100593 7075-T73511 extrusion Refer to the engineering drawing for the machined thicknesses	
[9]	Clip		BAC1503-100449 7075-T73511 extrusion	
[10]	Bracket (2)		BAC1505-100581 7075-T6511 extrusion	
[11]	Support Bracket	0.071 (1.80)	2024-T42 clad sheet	
[12]	Baffle Assembly Clip Baffle	0.032 (0.81) 0.020 (0.51)	7075-T62 clad sheet  7075-T6 clad sheet	
[13]	Intercostal Assembly Clip Clip Intercostal	0.900 (22.9)  0.050 (1.27)	7050-T7451 plate as given in AMS 4050  BAC1503-100350 7050-T73511 extrusion  7075-T62 clad sheet	
[14]	Intercostal Assembly Clip (2) Intercostal	0.050 (1.27)	7050-T7451 plate as given in AMS 4050  7075-T62 clad sheet	



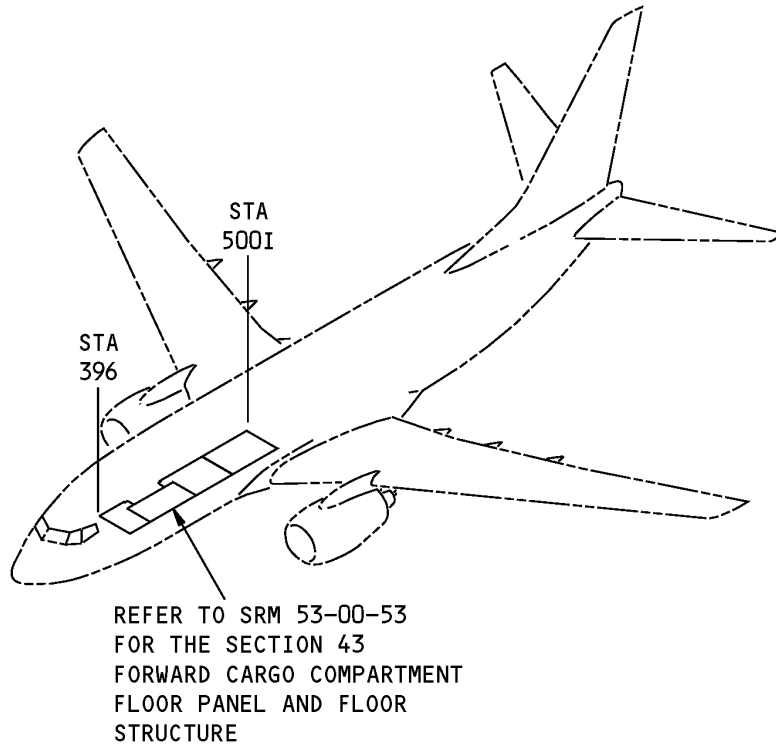
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LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[15]	Baffle Assembly Clip Clip Baffle	0.032 (0.81) 0.020 (0.51) 0.020 (0.51)	7075-T62 clad sheet 7075-T62 clad sheet 7075-T6 clad sheet	
[16]	Baffle Assembly Clip (2) Clip (2) Baffle (2)	0.032 (0.81) 0.020 (0.51) 0.020 (0.51)	7075-T62 clad sheet 7075-T62 clad sheet 7075-T6 clad sheet	
[17]	Baffle Assembly Clip (2) Clip (2) Baffle (2) Clip	0.032 (0.81) 0.020 (0.51) 0.020 (0.51)	7075-T62 clad sheet 7075-T62 clad sheet 7075-T6 clad sheet BAC1503-100179 7075-T73511 extrusion	
[18]	Baffle Assembly Clip (3) Clip (3) Baffle (3)	0.032 (0.81) 0.020 (0.51) 0.020 (0.51)	7075-T62 clad sheet 7075-T62 clad sheet 7075-T6 clad sheet	
[19]	Intercostal Assembly (2) Clip Clip Intercostal	0.032 (0.81) 0.020 (0.51) 0.032 (0.81)	7075-T62 clad sheet 7075-T62 clad sheet 7075-T62 clad sheet	
[20]	Baffle Assembly Clip Baffle	0.032 (0.81) 0.020 (0.51)	7075-T62 clad sheet 7075-T6 clad sheet	
[21]	Intercostal Assembly Clip Clip Intercostal	0.900 (22.9) 0.050 (1.27)	7050-T7451 plate as given in AMS 4050 BAC1514-2570 7075-T73511 extrusion 7075-T62 clad sheet	
[22]	Intercostal Assembly Clip (3) Intercostal	0.050 (1.27)	7050-T7451 plate as given in AMS 4050 7075-T62 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

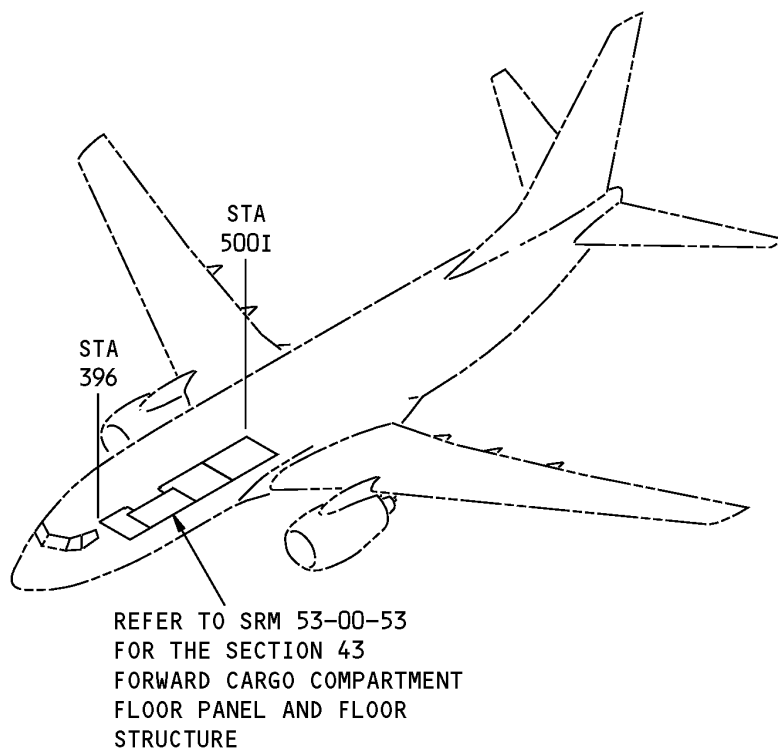
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**ALLOWABLE DAMAGE GENERAL - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR STRUCTURE**



**Section 43 Forward Cargo Compartment Floor Structure**  
**Figure 101**

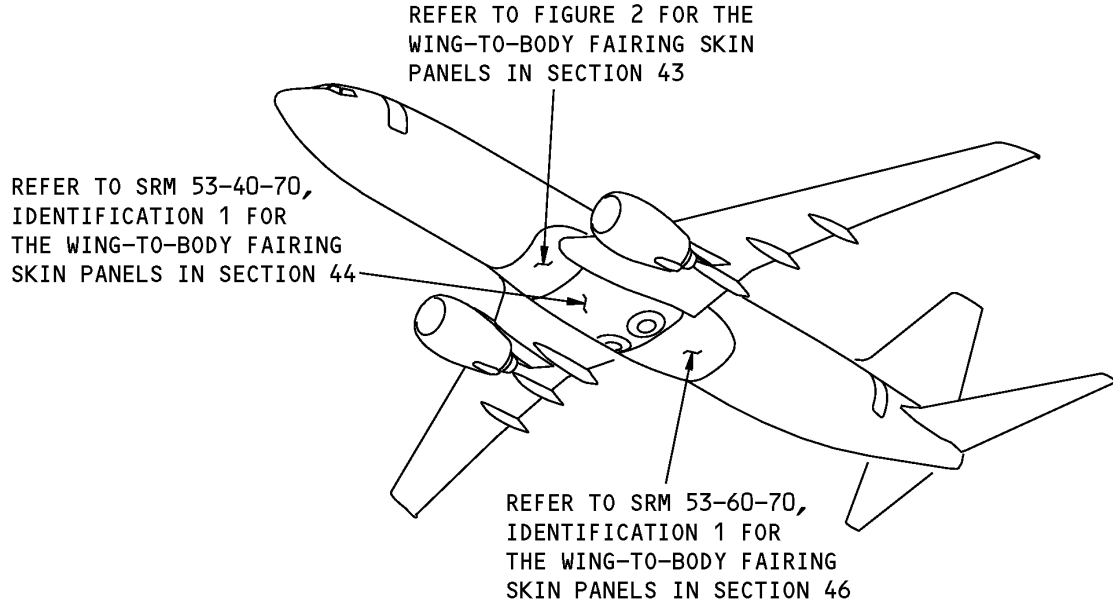


REPAIR GENERAL - SECTION 43 FORWARD CARGO COMPARTMENT FLOOR STRUCTURE

**Section 43 Forward Cargo Compartment Floor Structure  
Figure 201**

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**IDENTIFICATION 1 - SECTION 43 - WING-TO-BODY FAIRING SKIN PANELS**



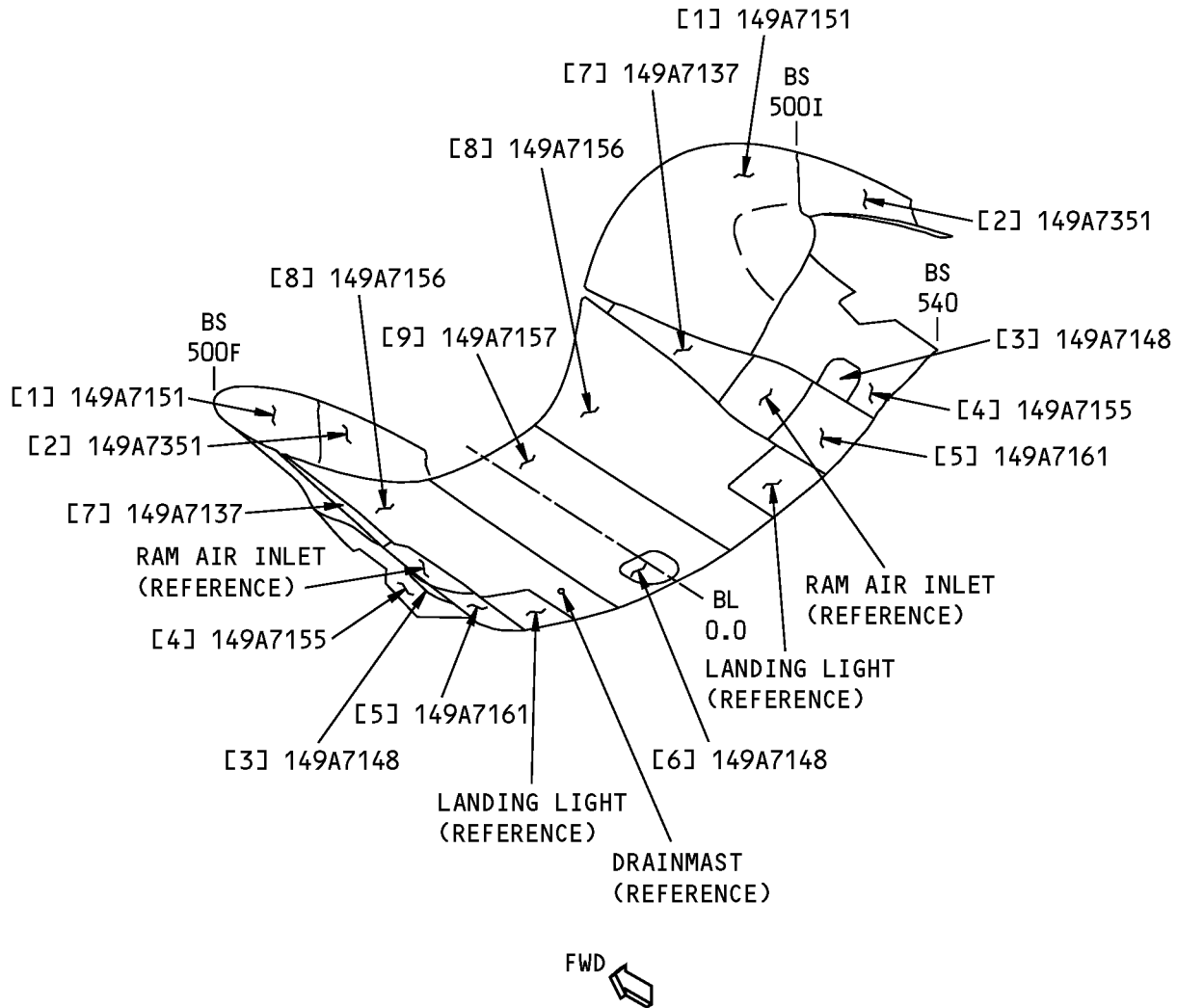
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Wing-to-Body Fairing Skin Panels Identification  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
149A7011	Functional Collector - Section 49 Panel Installations
149A7102	Mid Forward Fairing Panel Installation
149A7103	Upper Forward Fairing Panel Installation

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 43 Wing-to-Body Fairing Skin Panels Identification  
Figure 2**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>†1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Upper Forward Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class II, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0	
	Core (Bubble area only)	0.30 (7.62)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[2]	Forward Overwing Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.70 (17.8)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[3]	Forward Fairing Access Door Assembly			
	Door	0.100 (2.54)	2024-T42 sheet as given in QQ-A-250/4	
	Stiffener	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	
	Doubler	0.100 (2.54)	2024-T42 sheet as given in QQ-A-250/4	
[4]	Forward Underwing Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781)	



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0	
[5]	Ram Air Inlet Lip Assembly - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.50 (12.7)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[6]	Forward Fairing Access Door Assembly			
	Door	0.125 (3.18)	2024-T42 sheet as given in QQ-A-250/4	
	Doubler	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	
[7]	Ram Air Inlet Ramp - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.25 (6.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[8]	Forward Fairing BSTA 500A to FS Lower - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781), and Style 120 (Optional: 220)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.90 (22.8)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 and Grade 5.0	



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[9]	Mid Forward Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), and Style 1581 (Optional: 7781)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781)	
	Core	1.10 (27.9)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

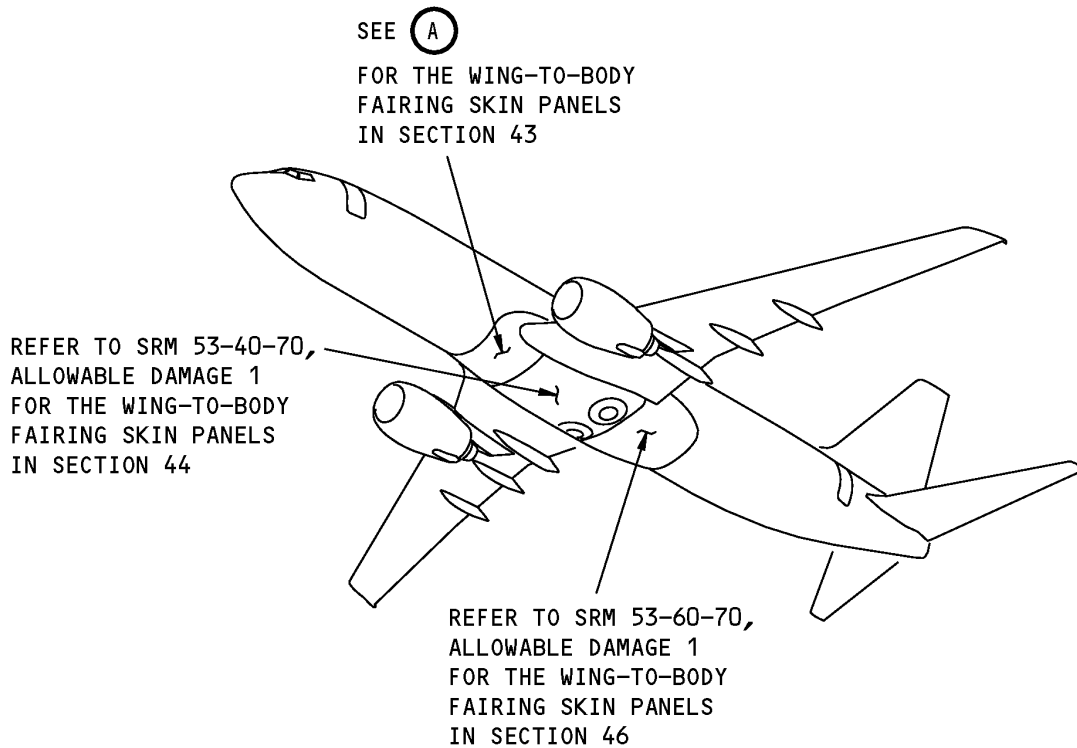
**NOTE:** Refer to the production drawings for the ply lay-up.

Refer to the production drawings for the core ribbon direction.

## STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - SECTION 43 WING-TO-BODY FAIRING SKIN PANELS**1. Applicability**

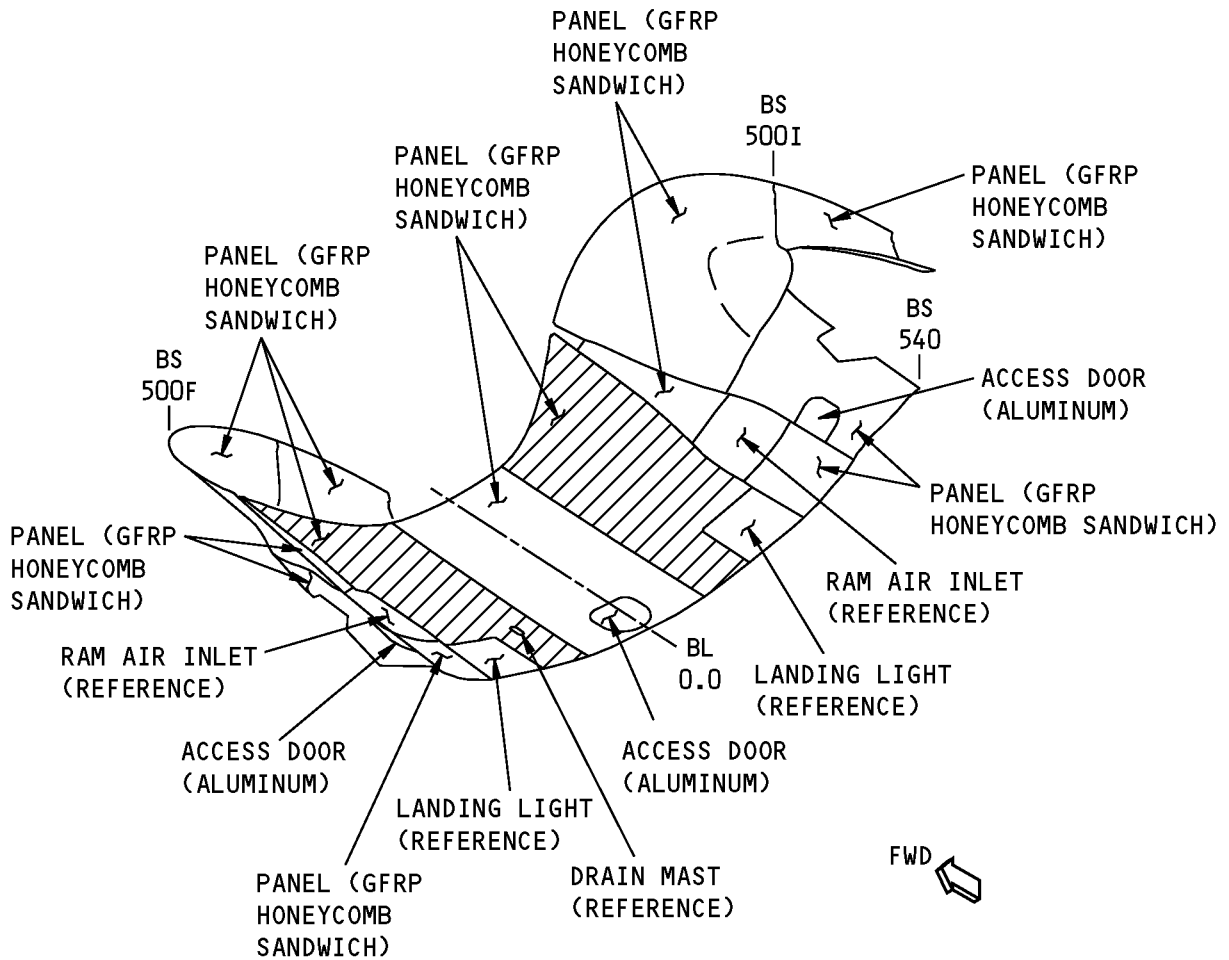
- A. This subject gives the allowable damage limits for the section 43 wing-to-body fairing skin panels shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

**NOTES**

- GFRP = GLASS FIBER REINFORCED PLASTIC

**Section 43 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



 EXPANDED ALUMINUM FOIL MESH LIGHTNING PROTECTION (BMS 8-336)

A

**Section 43 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 2 of 2)**





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## STRUCTURAL REPAIR MANUAL

### 2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich panels.

- (1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

- (a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.
  - (c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.
- (2) Remove all the contamination and water from the structure.
    - (a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
    - (b) Refer to 51-70-04 for the cleanup procedures.
  - (3) Some GFRP panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the expanded aluminum foil mesh, do the steps that follow:
    - (a) Refer to 51-70-14 for the allowable damage limits for the expanded aluminum foil mesh.
    - (b) Seal the damaged area as given in 51-70-14.
  - (4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh with the steps that follow:
    - (a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
      - 1) Make a temporary seal.
        - a) Apply aluminum foil tape (speed tape).
        - b) Keep a record of the location.
        - c) Make sure the tape is in satisfactory condition at normal maintenance intervals.
      - 2) Make a permanent seal.
        - a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
        - b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.
        - c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.
    - (b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
      - 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

ALLOWABLE DAMAGE 1

**53-30-70**

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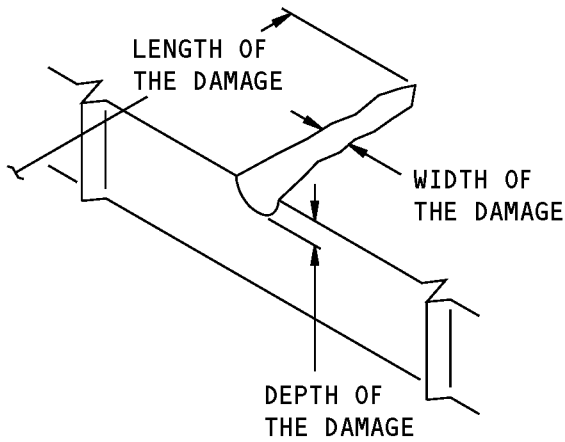
## 737-800

# STRUCTURAL REPAIR MANUAL

- 2) Make a temporary seal with aluminum foil tape (speed tape).
  - 3) Keep a record of the location.
  - 4) Repair the damage no later than 24 months from the time the seal was made.
- B. Do the steps that follow for the skin panels made of formed aluminum sheet:
- (1) Refer to Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.
  - (2) Remove the damaged material as necessary.
    - (a) Refer to 51-10-02 for the inspection and removal of damage.
    - (b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
    - (c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.
  - (4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.
- C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

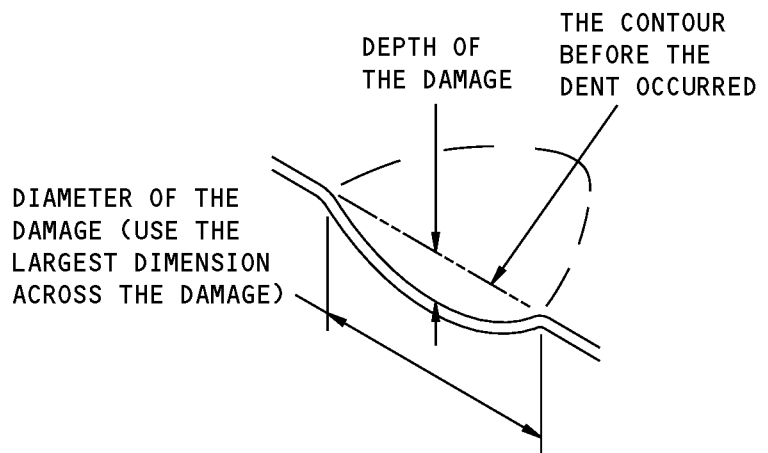
**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGE BAND AREAS	4.B
FORMED ALUMINUM SHEET PANELS	4.C



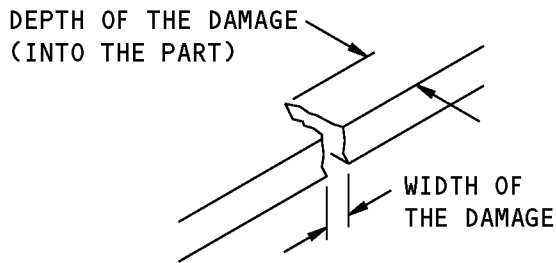
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**

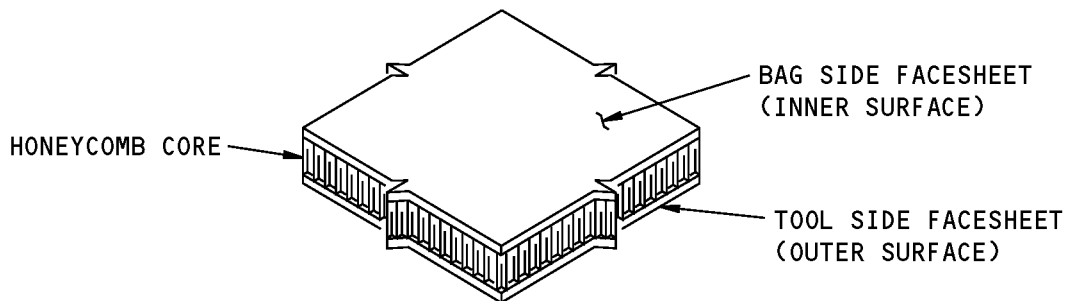


**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 102**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 103**

**3. References**

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Allowable Damage Limits**

A. GFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(1) Cracks are permitted if:

- (a) They are a maximum of one facesheet and the core in depth
- (b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1
- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

## STRUCTURAL REPAIR MANUAL

- (d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

- (3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (c) They are sealed as given in Paragraph 2.

- (4) Dents are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

- (5) Holes and Punctures are permitted if:

- (a) They are a maximum of one facesheet and the core in depth

- (b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

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**STRUCTURAL REPAIR MANUAL**

- (d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (6) Delaminations are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

**Table 102:**

<b>DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 43 WING-TO-BODY FAIRING SKIN</b>			
<b>PANEL DRAWING NUMBER</b>	<b>BAGSIDE FACESHEET OR TOOLSIDE FACESHEET</b>		
	<b>MAXIMUM DAMAGE DIMENSION "D" OR "d" IN INCHES (mm)</b>	<b>MINIMUM DAMAGE SPACING DIMENSION "A" IN INCHES (mm)</b>	<b>MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES IN INCHES (mm)</b>
			<b>"B" "C"</b>
149A7137	2.0 (50.8)	1.7 x (D + d) (43.2)x(D + d)	2.0D 2.0d (50.8)D (50.8)d
149A7151	3.0 (76.2)	3.8 x (D + d) (96.5)x(D + d)	4.1D 4.1d (104.1)D (104.1)d
149A7155	3.0 (76.2)	1.5 x (D + d) (38.1)x(D + d)	1.7D 1.7d (43.7)D (43.7)d
149A7156	1.8 (45.7)	4.8 x (D + d) (121.9)x(D + d)	5.5D 5.5d (139.7)D (139.7)d
149A7157	3.0 (76.2)	2.3 x (D + d) (58.4)x(D + d)	2.5D 2.5d (63.5)D (63.5)d
149A7161	2.0 (50.8)	1.7 x (D + d) (43.2)x(D + d)	1.9D 1.9d (48.3)D (48.3)d
149A7351	1.9 (48.3)	1.5 x (D + d) (38.1)x(D + d)	1.7D 1.7d (43.2)D (43.2)d

**B. GFRP Honeycomb Sandwich Panels - Edgeband Area**



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## STRUCTURAL REPAIR MANUAL

- (1) Cracks are permitted if they are:
  - (a) A maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage
  - (b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges
  - (c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.
  - (d) Sealed as given in Paragraph 2.
- (2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
- (3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:
  - (a) A maximum of one ply in depth  
**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.
  - (b) A maximum of 1.0 inch (25.4 mm) in length
  - (c) A maximum of 0.25 inch (6.4 mm) in width
  - (d) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges
  - (e) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.
  - (f) Sealed as given in Paragraph 2.
- (4) Dents are not permitted.
- (5) Holes and Punctures are permitted if they are:
  - (a) A maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage
  - (b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges
  - (c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.
  - (d) Sealed as given in Paragraph 2.
- (6) Delaminations are permitted if they are:
  - (a) A maximum of 1.00 inch (25.4 mm) measured across the largest dimension of the damage
  - (b) A minimum distance of 0.5 inch (12.7 mm) away from the edge of fastener holes or material edges
  - (c) A minimum distance of 3.0 inches (76.2 mm) away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:

ALLOWABLE DAMAGE 1

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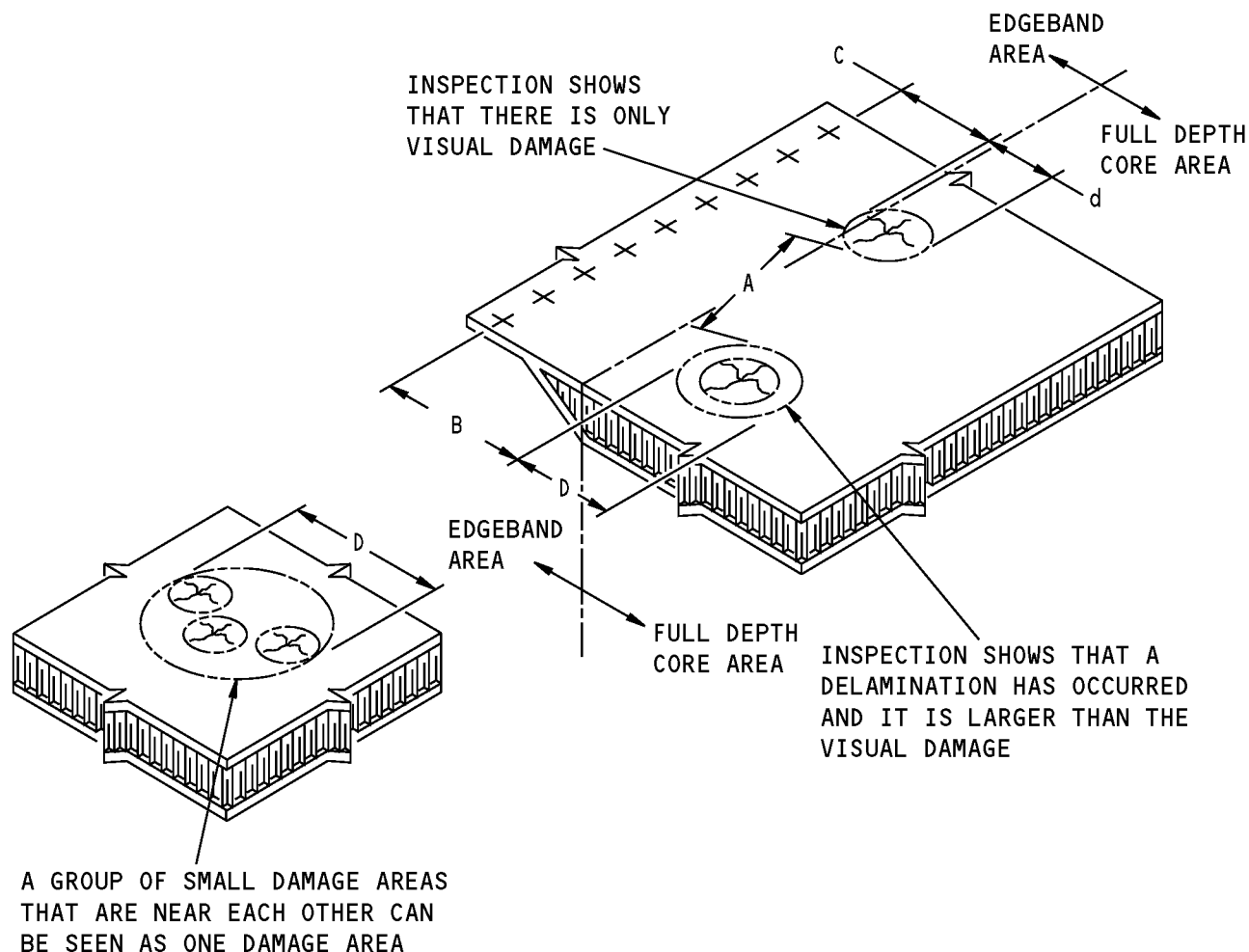
## 737-800

# STRUCTURAL REPAIR MANUAL

- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (7) Edge damage is permitted if it is:
- (a) A maximum of 0.10 inch (2.54 mm) in depth
  - (b) A maximum of 0.50 inch (6.4 mm) in width
  - (c) A minimum of distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (8) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 105/ALLOWABLE DAMAGE 1.
- C. Panels Made of Formed Aluminum Sheet
- (1) Cracks:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Details A , B , and C .
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .
- (3) Dents are permitted if they:
- (a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 106/ALLOWABLE DAMAGE 1, Detail E
  - (b) Are a minimum distance of 3.0D (D = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.
- (4) Holes and Punctures are permitted if:
- (a) They are a maximum of 0.25 inch (6.4 mm) measured across the largest dimension of the damage
  - (b) The edge of the damage is a minimum of 1.0 inch (25.4 mm) away from a fastener hole, an edge, or other damage
  - (c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.



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STRUCTURAL REPAIR MANUAL**



**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

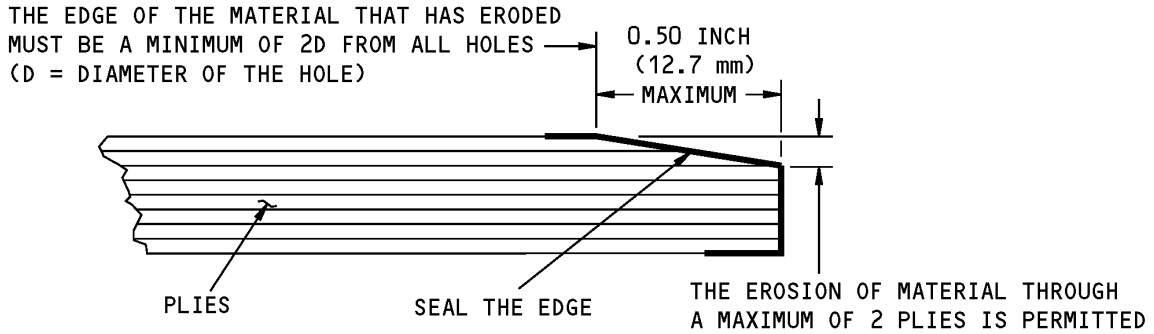
A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

**GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits  
Figure 104**

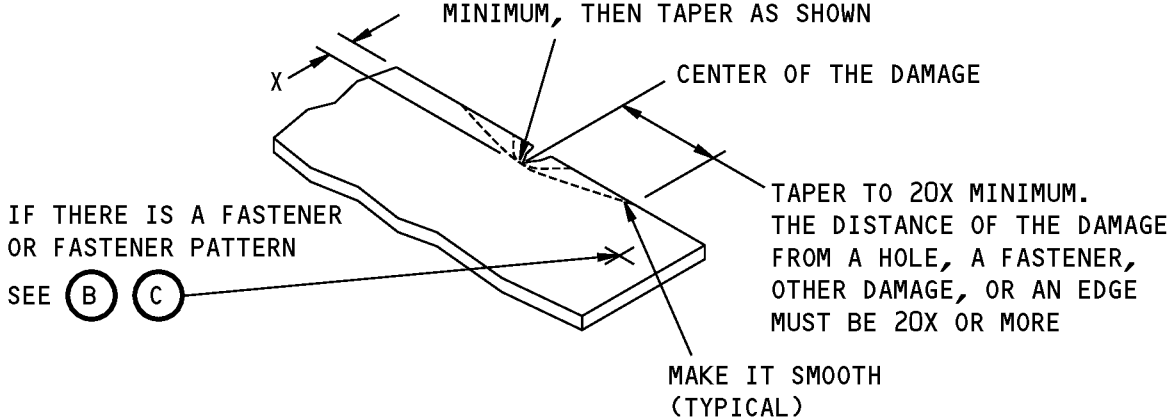
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STRUCTURAL REPAIR MANUAL



GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge  
Figure 105

**STRUCTURAL REPAIR MANUAL**

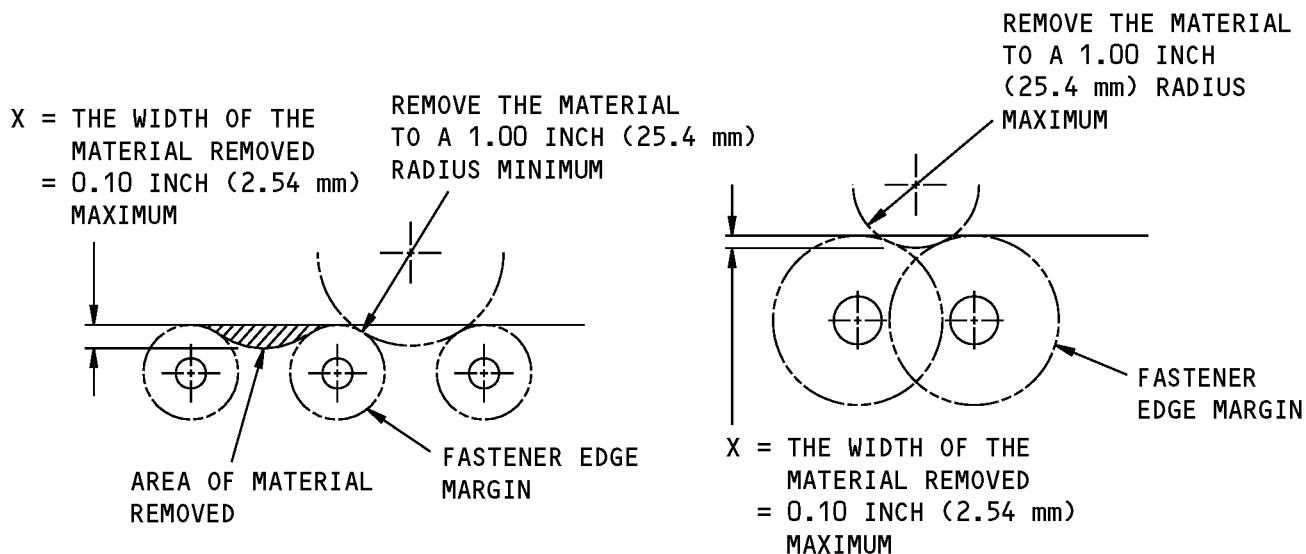
REMOVE THE MATERIAL TO A 1.00 INCH (25.4 mm) RADIUS MINIMUM, THEN TAPER AS SHOWN



X = THE WIDTH OF THE MATERIAL REMOVED  
= 0.10 INCH (2.54 mm) THICKNESS MAXIMUM

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(A)



REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

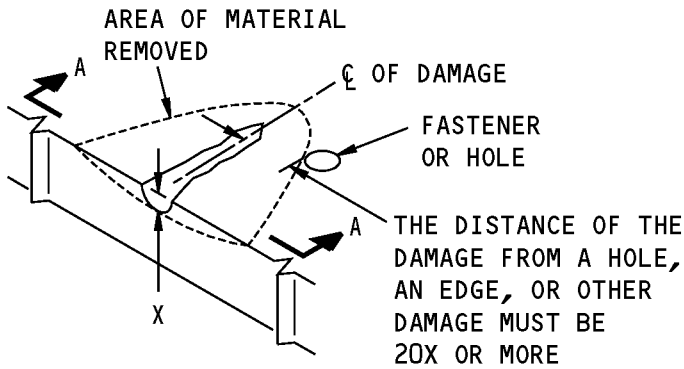
(B)

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(C)

**Aluminum Panel - Allowable Damage Limits**  
**Figure 106 (Sheet 1 of 3)**

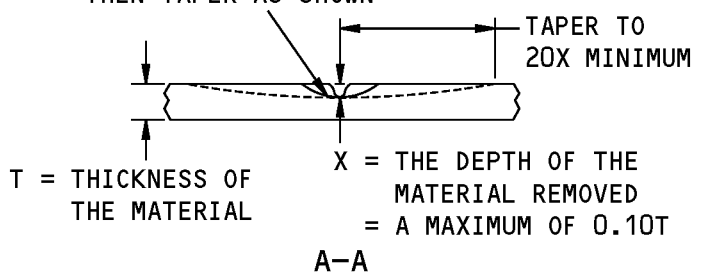
**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)

REMOVE THE MATERIAL TO A 1.00 INCH (25.4 mm) RADIUS MINIMUM, THEN TAPER AS SHOWN



THE CONTOUR BEFORE THE DENT OCCURRED

Y = THE DEPTH OF THE DENT WHERE THE WIDTH W IS MEASURED

LENGTH OF THE DENT

THE DENT MUST BE SMOOTH; SHARP CREASES, GOUGES AND CRACKS ARE NOT PERMITTED. PULLED OR LOOSE FASTENERS ARE NOT PERMITTED

$\frac{W}{Y}$  MUST BE 30 OR MORE

Y = A MAXIMUM OF 0.25 INCH (6.4 mm)

W = THE WIDTH OF THE DENT

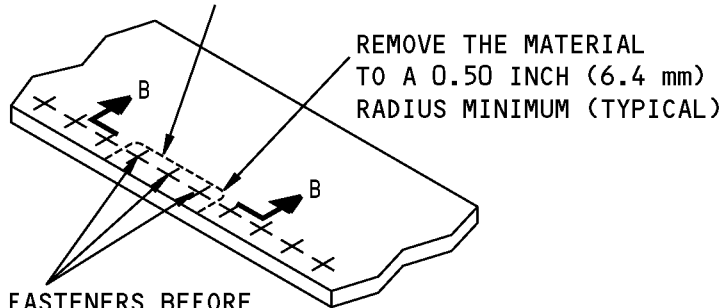
**DENT THAT IS PERMITTED**

(E)

**Aluminum Panel - Allowable Damage Limits  
Figure 106 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
A GROUP OF TEN IS PERMITTED  
TO A DEPTH OF X MAXIMUM

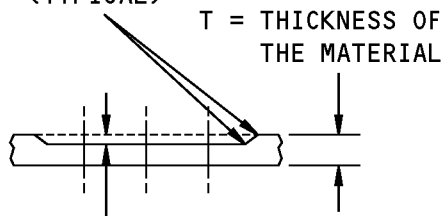


REMOVE THE FASTENERS BEFORE  
THE DAMAGED MATERIAL IS  
REMOVED. AFTER THE DAMAGED  
MATERIAL IS REMOVED, INSTALL  
THE REMOVED FASTENERS. AS  
APPLICABLE, INSTALL NEW FASTENERS  
THAT ARE THE SAME TYPE AND SIZE  
(UP TO THE FIRST OVERSIZE) AS  
THE FASTENERS THAT YOU REMOVED

**REMOVAL OF CORROSION  
AROUND THE FASTENERS**



MAKE IT  
SMOOTH  
(TYPICAL)



X = THE DEPTH OF THE  
MATERIAL REMOVED  
= A MAXIMUM OF 0.10T

B-B

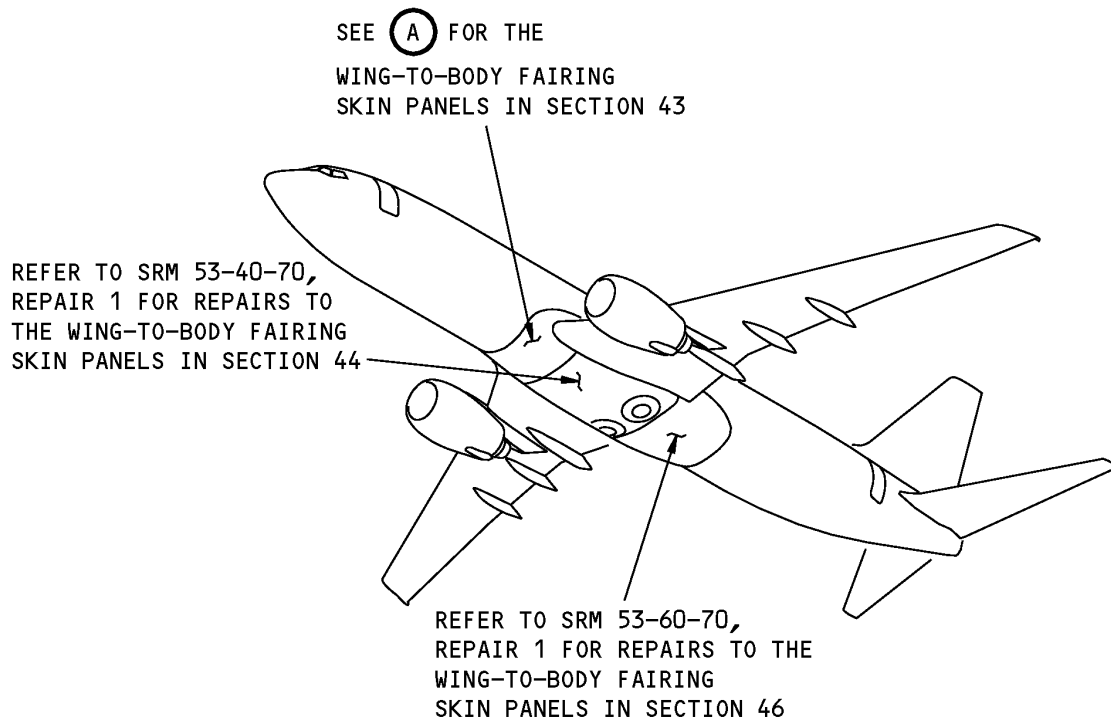
**Aluminum Panel - Allowable Damage Limits  
Figure 106 (Sheet 3 of 3)**

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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 43 WING-TO-BODY FAIRING SKIN PANELS**

**1. Applicability**

- A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.
- B. Repair 1 is applicable to damage that is more than the limits permitted in 53-30-70, Allowable Damage 1.

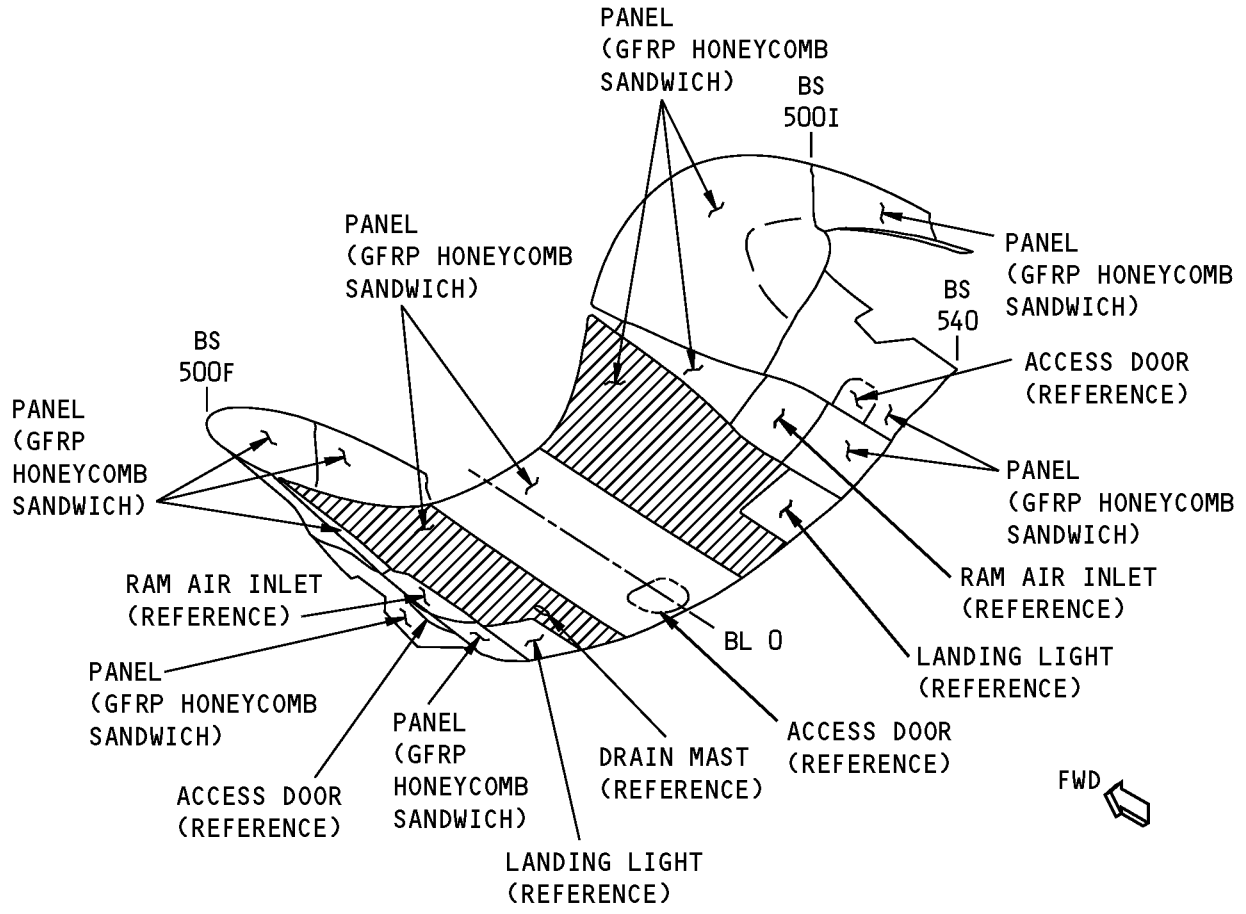


**NOTES**

- GFRP = GLASS FIBER REINFORCED PLASTIC

**Section 43 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



 EXPANDED ALUMINUM FOIL MESH LIGHTNING PROTECTION (BMS 8-336)

A

**Section 43 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

### 2. General

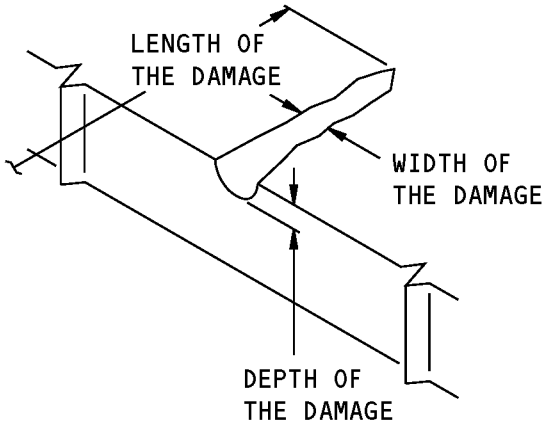
- A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Get access to the damaged area.
  - (1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.
    - (a) Refer to 51-40-02 for the fastener removal procedures.
    - (b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.
- C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

- (1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
  - (3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.
- D. Some GFRP wing-to-body fairing skin panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 43 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the BMS 8-336 expanded aluminum foil mesh.
- E. Do the repair as given in Paragraph 4./REPAIR 1
- F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.
  - (1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.
    - (a) Refer to 51-40-02 for the fastener installation procedures.
    - (b) Refer to 51-40-03 for fastener substitution.
  - (2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- G. Restore the aircraft wing-to-body fairing skin panels exterior finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

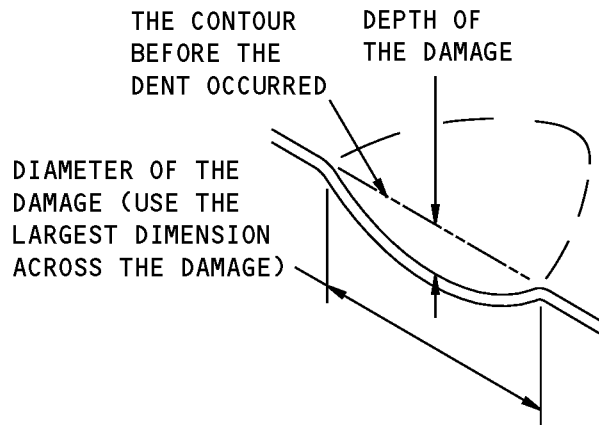


**STRUCTURAL REPAIR MANUAL**



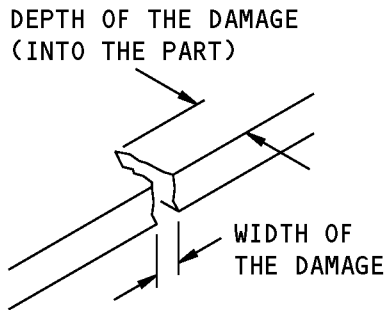
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

(A)



**DEFINITIONS FOR  
DENT DAMAGE**

(B)

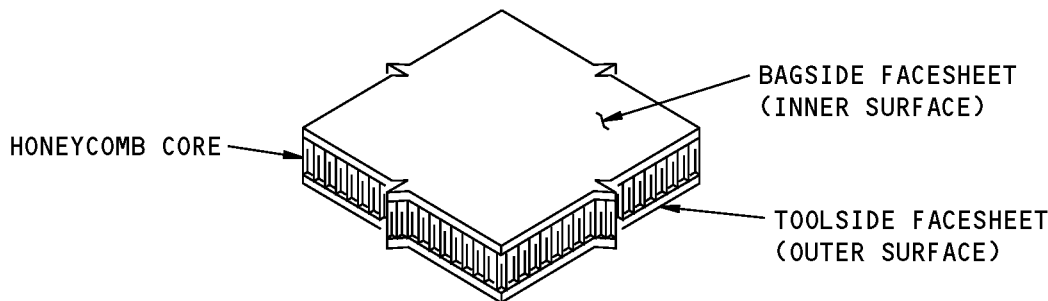


**DEFINITIONS FOR  
EDGE DAMAGE**

(C)

**Damage Definitions  
Figure 202**

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STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 203**

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
53-30-70	FUSELAGE FAIRING SKIN - SECTION 43
53-30-70, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Skin Panels
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Repair Instructions**

**NOTE:** If necessary, refer to 53-30-70, Identification 1 to find the material or the build-up of the part that you want to repair.

- A. For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:
  - (1) Fill the dent with BMS 5-28, Type 7 potting compound
  - (2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.
- B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:
  - (1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels

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(2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels.

C. For repairs made with wet layup materials, do as follows, as applicable:

- (1) Use one repair ply of fabric for each initial ply that was damaged.
- (2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.
- (3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

**Table 201:**

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A PREIMPREGNATED LAYUP REPAIR
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches diameter  3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	Damage that is a maximum of: - 6.0 inches diameter  3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressures. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.



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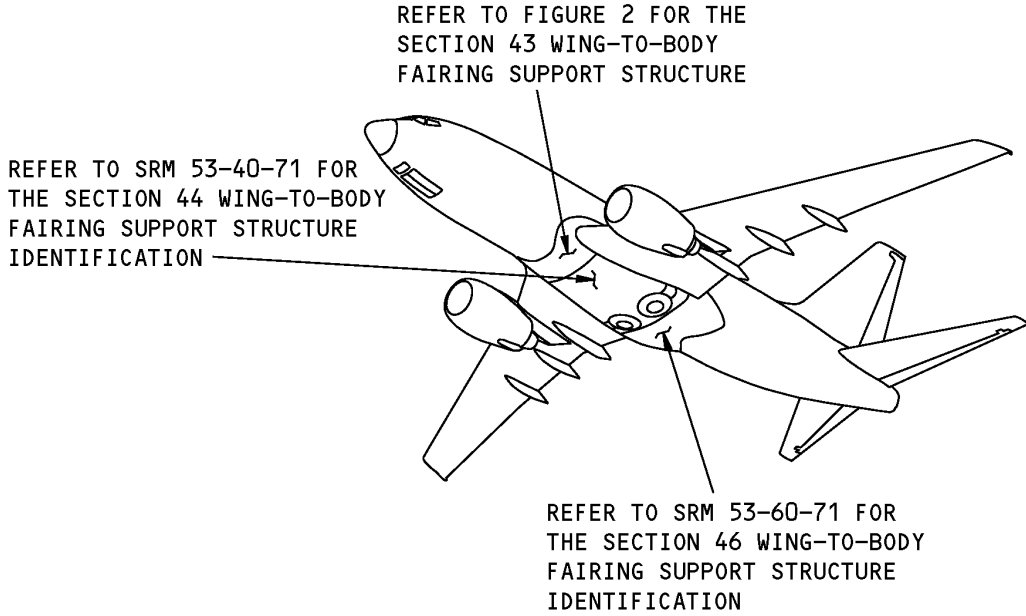
Table 202:

REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A PREIMPREGNATED LAYUP REPAIR
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches diameter  - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of: - 6.0 inches diameter  - 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressures. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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**IDENTIFICATION 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 43 Wing-to-Body Fairing Support Structure Location  
Figure 1**

**Table 1:**

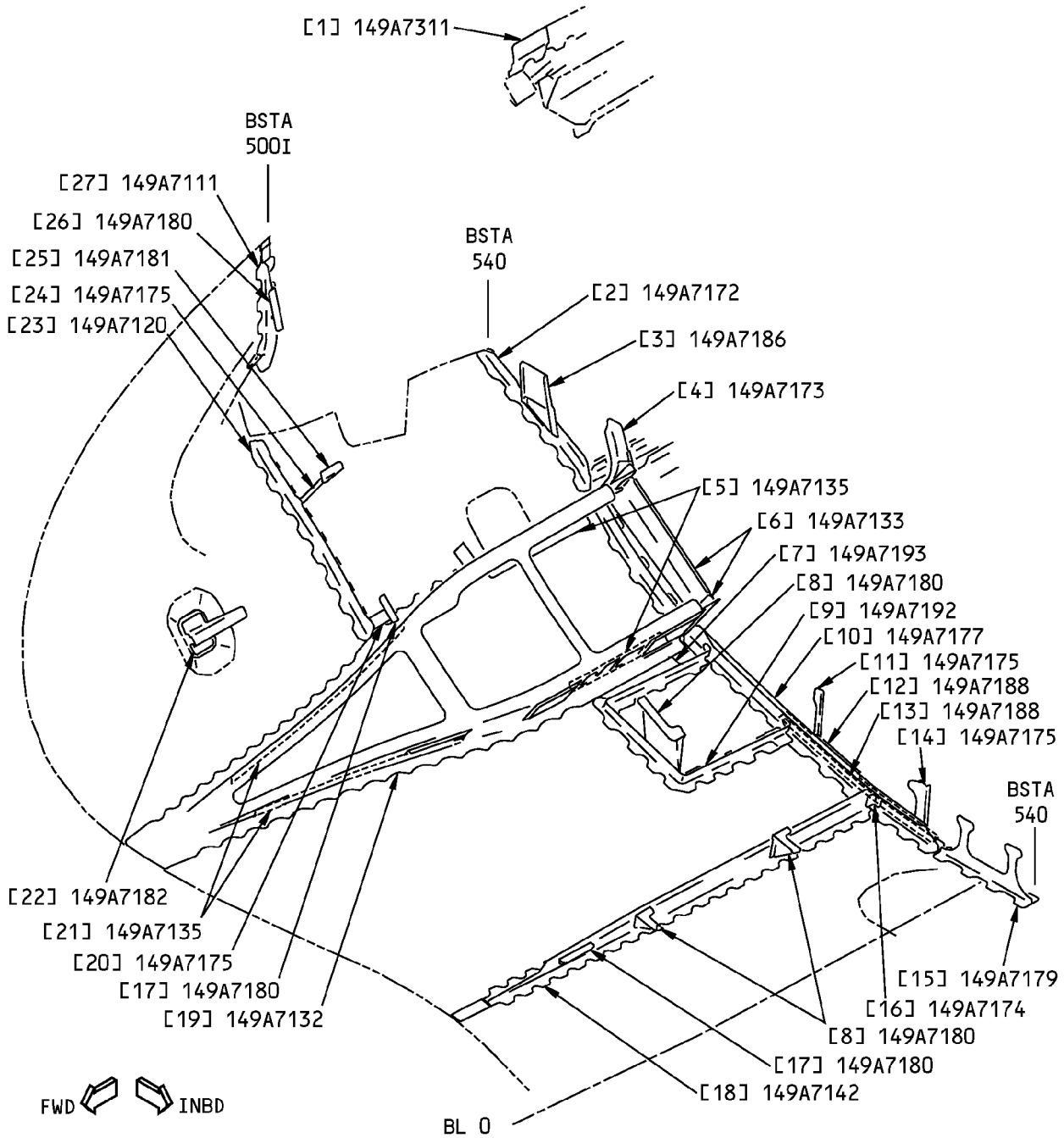
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7002	Functional Collector - Section 49, Ram Air Inlet
149A7005	Functional Collector - Section 49, Support Structure
149A7009	Functional Collector - Section 49, Support Structure
149A7011	Functional Collector - Section 49, Panel Installation



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
149A7101	Support Installation - Strakelet, Forward Fairing
149A7130	Support Installation - Ram Air Inlet, Forward Fairing
149A7140	Support Installation - Intercostal, Forward Fairing
149A7190	Frame Installation - Landing Light, Forward Fairing

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE**

**Section 43 Wing-to-Body Fairing Support Structure (Sta 500A to Sta 540) Identification**

**Figure 2**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>†1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Clip		BAC1517-2801 7075-T62 sheet as given in QQ-A-250/12	
[2]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[3]	Support Fitting	0.900 (2.3)	7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[4]	Support Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[5]	Angle	0.100 (2.5)	7075-T73 sheet as given in QQ-A-250/12	
[6]	Clip	0.050 (1.3)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Cover Plate	0.100 (2.5)	6061-T4 sheet as given in QQ-A-250/11	
[8]	Clip		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[9]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[10]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[11]	Angle Support		BAC1514-2639 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Deflector	0.032 (0.8)	6013-T6 sheet as given in AMS 4347	
[13]	Retainer	0.040 (1.0)	6013-T4 sheet as given in AMS 4347	
[14]	Vertical Support		BAC1510-1364 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[15]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[16]	Angle		BAC1503-100607 7075-T73511 extrusion as given in QQ-A-200/11	
[17]	Clip		BAC1514-2882 7075-T73511 extrusion as given in QQ-A-200/11	
[18]	Intercostal		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[19]	Forward Fairing Ram Air Inlet - Bonded Part		Epoxy impregnated fiberglass woven fabric. Refer to Figure 3 and Table 3 for the ply lay-up	
[20]	Vertical Support		AND10137-1201 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Angle		AND10134-1006 7075-T73 extrusion as given in QQ-A-200/11	
[22]	Clip	0.100 (2.5)	7075-T62 aluminum sheet as given in QQ-A-250/12	
[23]	Frame		BAC1506-3922 7075-T73 extrusion as given in QQ-A-200/11	
[24]	Vertical Support		BAC1503-100079 7075-T73511 extrusion as given in QQ-A-200/11	



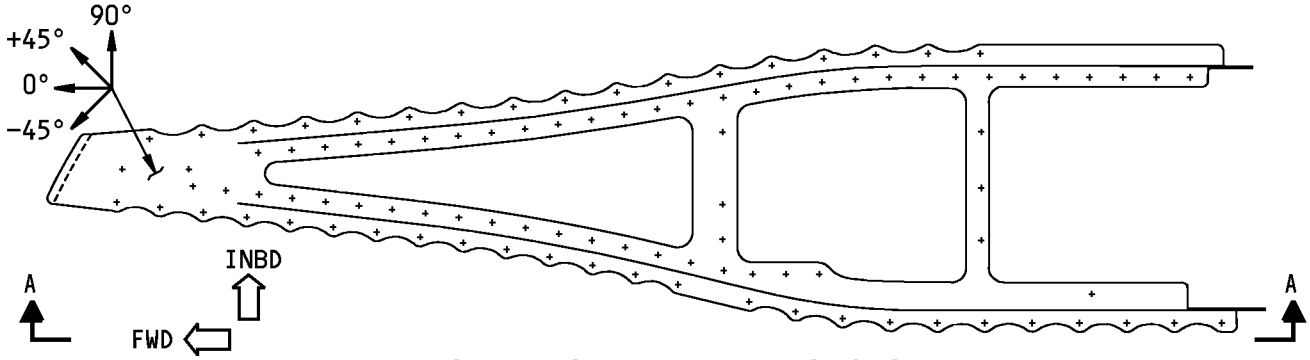


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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[25]	Clip		BAC1514-2731 7075-T73511 extrusion as given in QQ-A-200/11	
[26]	Clip		BAC1503-101044 7075-T73511 extrusion as given in QQ-A-200/11	
[27]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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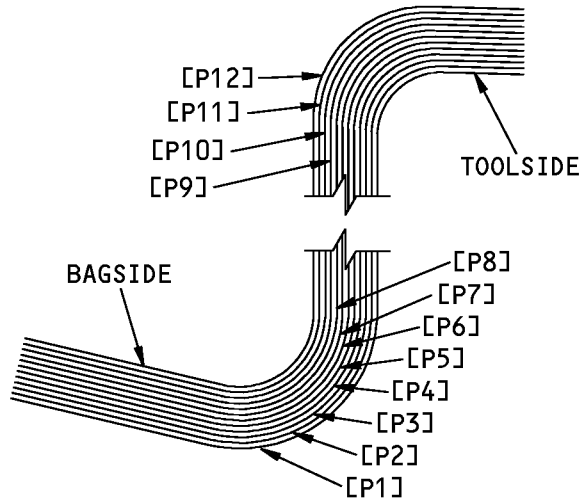
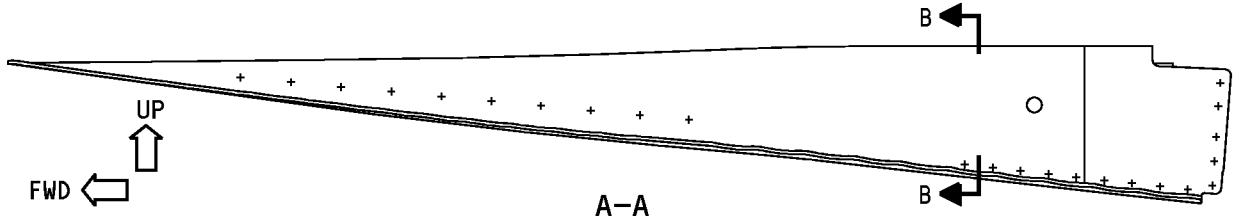


LEFT SIDE BONDED PART IS SHOWN,  
RIGHT SIDE BONDED PART IS OPPOSITE

VIEW IS ON THE BAGSIDE

PLY LAYUP DIRECTION

(A)



B-B  
(TYPICAL)

**Ply Direction and Ply Sequence for the Forward Fairing Ram Air Inlet B**  
**Figure 3**



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**Table 3:**

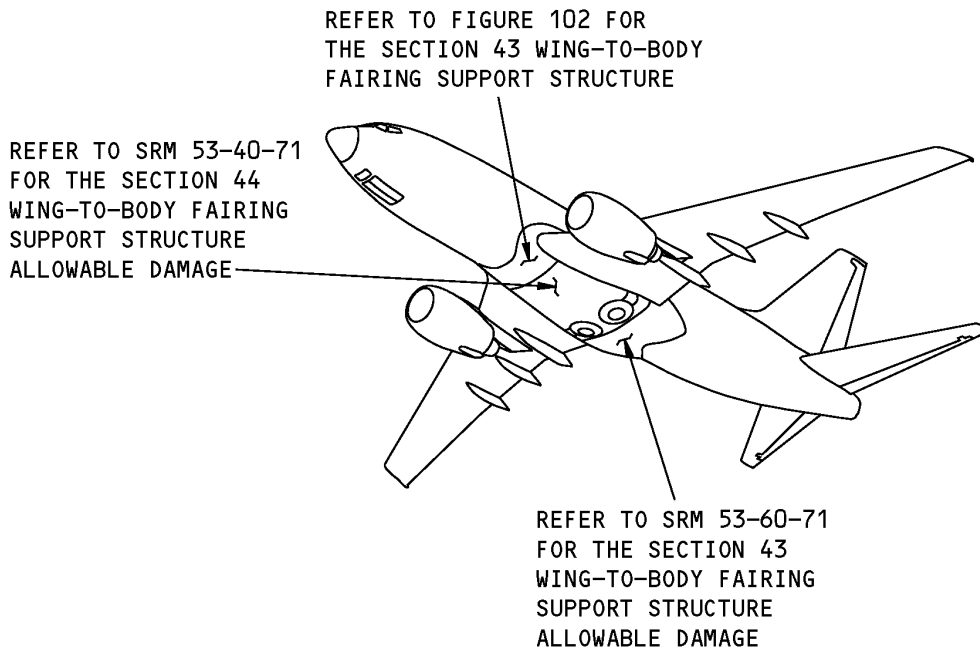
<b>PLY MATERIAL AND DIRECTION FOR FIGURE 3</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1 through P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B
P13	Optional	1 mil white Tedlar film as given in BAC 5317-2 to bagside area of part

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**ALLOWABLE DAMAGE 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE**

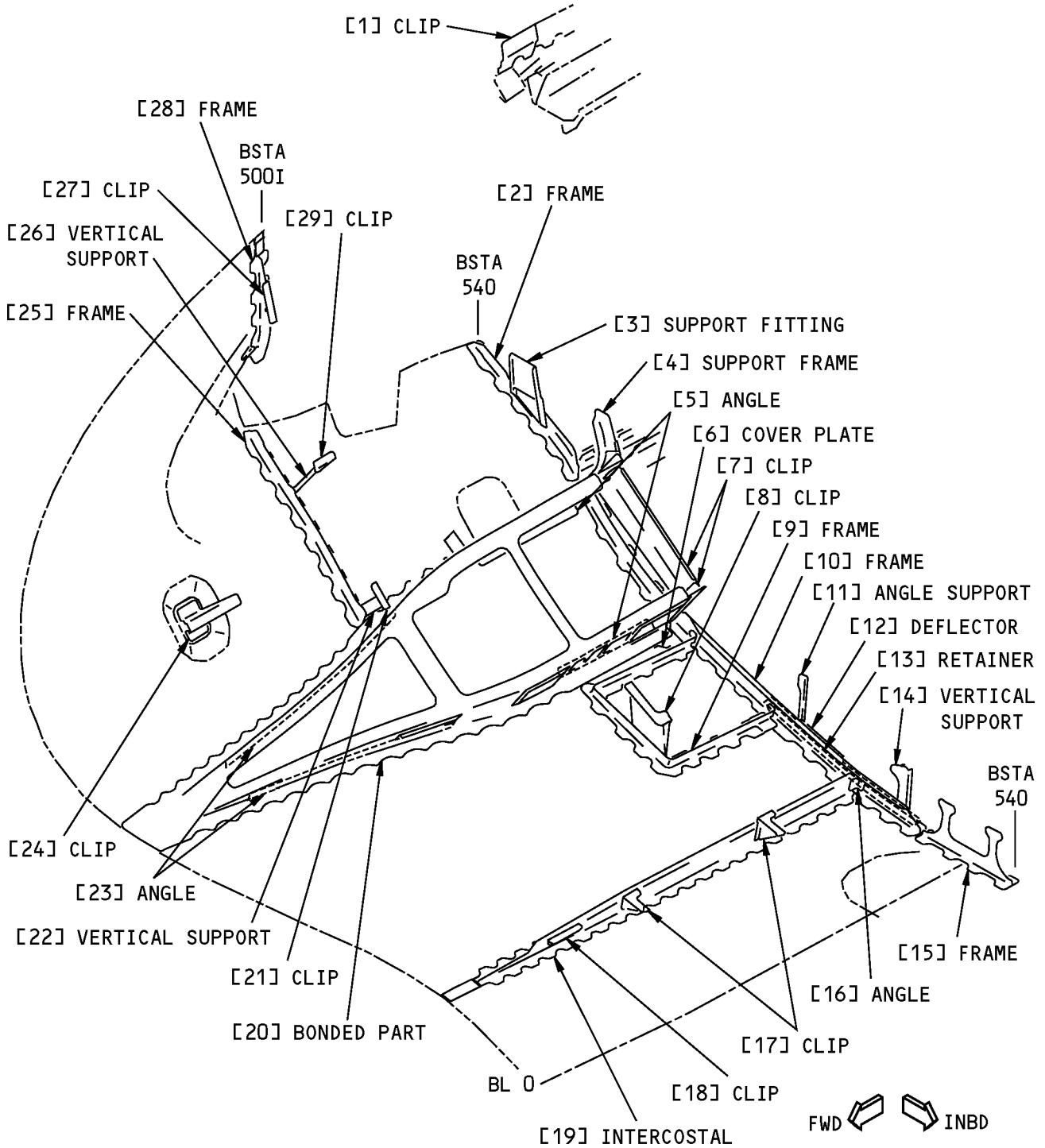
**1. Applicability**

- A. This subject gives the allowable damage limits for the section 43 wing-to-body fairing support structure shown in Section 43 Wing-to-Body Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.
  - (1) For the composite part, the allowable damage limits are only applicable if they are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1



**Section 43 Wing-to-Body Fairing Support Structure Location  
Figure 101**

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MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

**Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location  
Figure 102**

ALLOWABLE DAMAGE 1

**53-30-71**

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### 2. General

A. Do the steps that follow if you have damage to the aluminum parts:

**NOTE:** The steps that follow do not apply to dent damage.

- (1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.
  - (a) The methods that follow are permitted as an alternative to the detailed close visual inspection:
    - 1) Penetrant inspection. Refer to SOPM 20-20-02.
    - 2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .
  - (2) Remove the damaged material as necessary.
    - (a) Refer to 51-10-02 for the inspection and removal of damage.
    - (b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
    - (c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (3) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.
  - (4) Apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

B. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) solid laminate panels.

- (1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

- (a) Refer to Damage Definitions, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.
- (2) Remove all the contamination and water from the structure.
  - (a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (b) Refer to 51-70-04 for the cleanup procedures.
- (3) Seal all damaged areas with the steps that follow:
  - (a) Seal the damage that is not more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1
    - 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.
    - 2) Make a temporary seal.
      - a) Apply aluminum foil tape (speed tape).
      - b) Keep a record of the location.

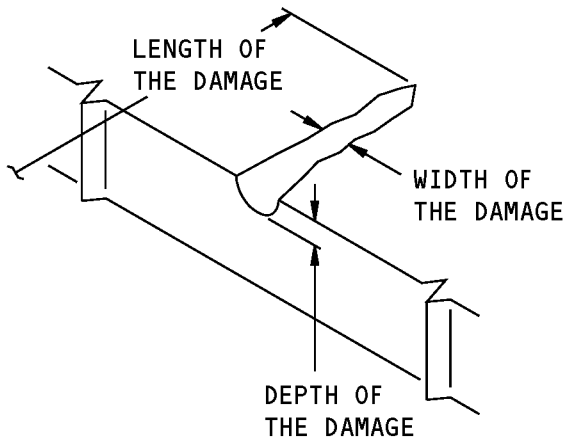


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- c) Make sure the tape is in satisfactory condition at each scheduled maintenance interval.
  - 3) Make a permanent seal.
    - a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
    - b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.
    - c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.
  - (b) Seal the damage that is more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1.
    - 1) Use a vacuum and heat to remove moisture from the solid laminate. Refer to 51-70-04.
    - 2) Make a temporary seal.
      - a) Apply aluminum foil tape (speed tape).
      - b) Keep a record of the location.
      - c) Repair the damage permanently no later than 24 months from the time the temporary seal was made.
- C. Refer to Table 101/ALLOWABLE DAMAGE 1 for the references for the allowable damage limits.

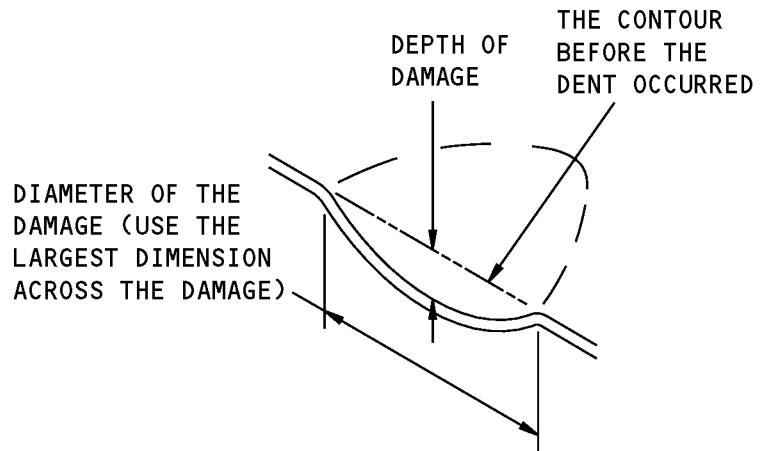
**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
ALUMINUM PARTS	4.A
GFRP SOLID LAMINATE BONDED PART	4.B



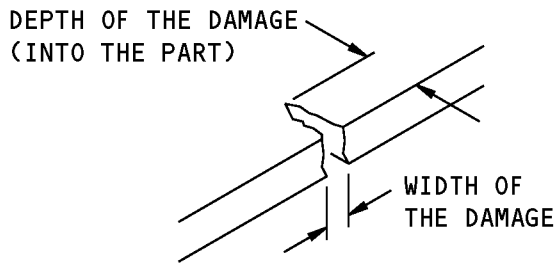
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**



**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 103**





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### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Support Structure
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 6, 51-00-00	Structures - General

### 4. Allowable Damage Limits

#### A. Aluminum Parts

- (1) The allowable damage limits that follow are applicable to the parts listed in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 102:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Formed)	[12]	Deflector (Formed)
[5]	Angle (Formed)	[13]	Retainer (Formed)
[6]	Cover Plate (Formed)	[24]	Clip (Formed)
[7]	Clip (Formed)		

- (a) Cracks:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and L .
- (b) Nicks, Gouges, Scratches, and Corrosion:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .
- (c) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail D if:
- 1) They do not extend across an attached structure.



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- (d) Holes and Punctures are not permitted.
- (2) The allowable damage limits that follow are applicable to the parts listed in Table 103/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 103:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Frame (Machined)	[25]	Frame (Extruded)
[9]	Frame (Machined)	[28]	Frame (Machined)
[15]	Frame (Machined)		

- (a) Cracks:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , G , H , and I .
- (b) Nicks, Gouges, Scratches, and Corrosion:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , I , J , and K .
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (3) The allowable damage limits that follow are applicable to the parts listed in Table 104/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 104:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[10]	Frame (Machined)	[19]	Intercostal (Machined)

- (a) Cracks:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , G , H , and I .
- (b) Nicks, Gouges, Scratches, and Corrosion:
- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , G , H , I , J , and K .
- (c) Dents are not permitted.
- (d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail M .
- (4) The allowable damage limits that follow are applicable to the parts listed in Table 105/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 105:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Clip (Machined)	[23]	Angle (Extruded)
[16]	Angle (Extruded)	[27]	Clip (Extruded)
[17]	Clip (Machined)	[29]	Clip (Extruded)

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ITEM	DESCRIPTION	ITEM	DESCRIPTION
[18]	Clip (Extruded)		

- (a) Cracks:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and H .
- (b) Nicks, Gouges, Scratches, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (5) The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 106:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Support Fitting (Machined)	[14]	Vertical Support (Extruded)
[4]	Support Frame (Machined)	[22]	Vertical Support (Extruded)
[11]	Angle Support (Extruded)	[26]	Vertical Support (Extruded)

- (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , and H .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 104/ALLOWABLE DAMAGE 1, Detail M .
- B. GFRP Solid Laminate Bonded Part (Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 102/ALLOWABLE DAMAGE 1.
- (1) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
  - (2) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:
    - (a) A maximum of one ply in depth
 

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than one ply in depth.
    - (b) A maximum of 3.0 inches (76.2 mm) in length
    - (c) A minimum distance of 0.50 inch (12.7 mm) away from the edge of other damage, fastener holes or material edges.
 

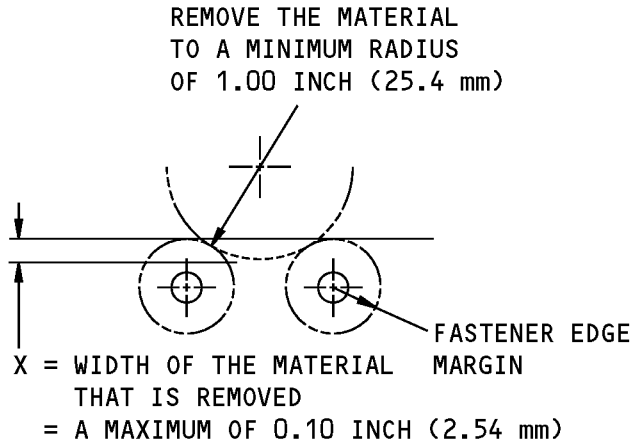
**NOTE:** Other damage does not include nicks, gouges, and scratches that:

      - Do not cause damage to the glass fiber plies
      - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

**STRUCTURAL REPAIR MANUAL**

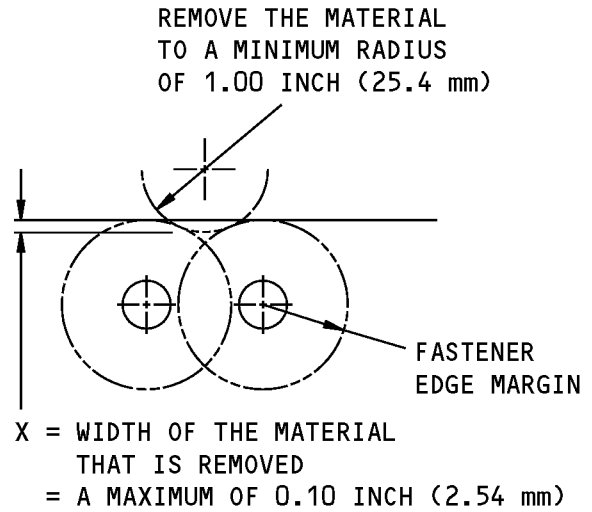
- (d) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (3) Dents are permitted if they are:
- A maximum of 2.0 in. (50.8 mm) measured across the largest dimension of the damage
  - A maximum of 2 plies in depth.
  - A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (d) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (4) Holes and Punctures are permitted if they are:
- A maximum of 0.625 in. (15.875 mm) measured across the largest dimension of the damage
  - A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (c) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (5) Delaminations are permitted if they are:
- A maximum of 0.625 in. (15.875 mm) measured across the largest dimension of the damage
  - A minimum distance away from the edge of other damage, the edge of a hole, or material edges as shown in GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits, Figure 105/ALLOWABLE DAMAGE 1.
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (c) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (6) Edge damage is permitted if it is:
- A maximum of 2 plies in depth
  - A maximum of 0.5 in. (12.700 mm) away from the edge of a fastener hole
  - Sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (7) Edge Erosion is permitted as shown in GFRP Solid Laminate Bonded Part - Sealing of Erosion Damage at an Edge , Figure 106/ALLOWABLE DAMAGE 1.

**STRUCTURAL REPAIR MANUAL**



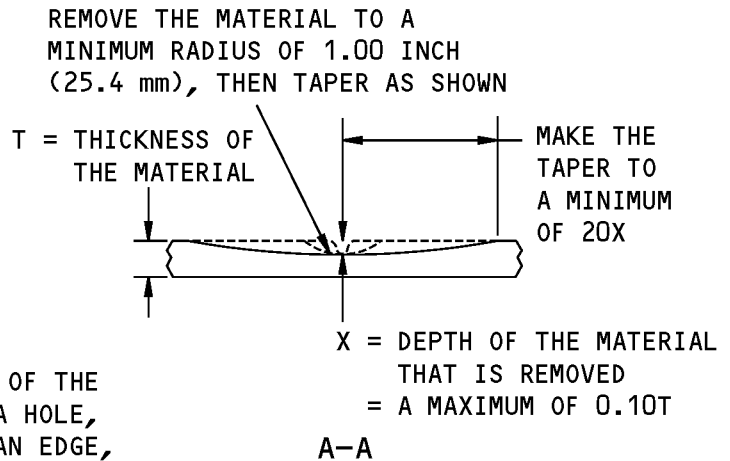
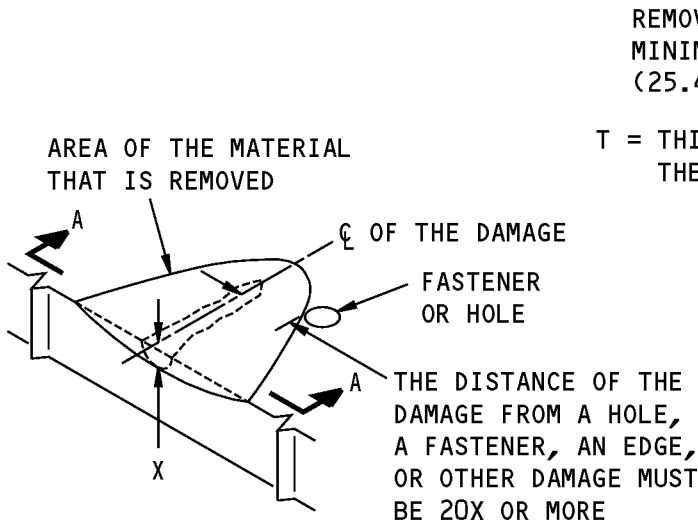
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)

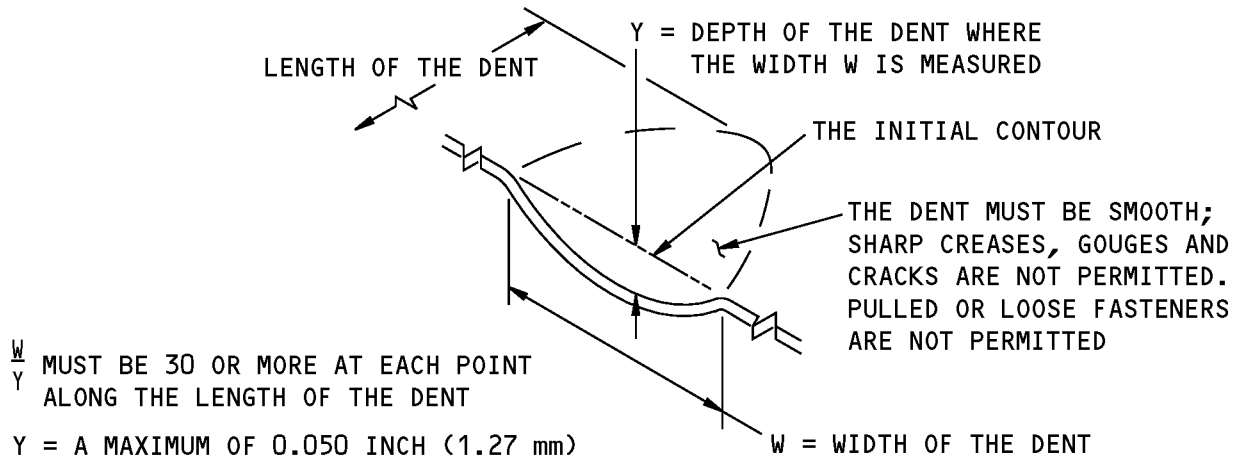


**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(C)

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 1 of 10)**

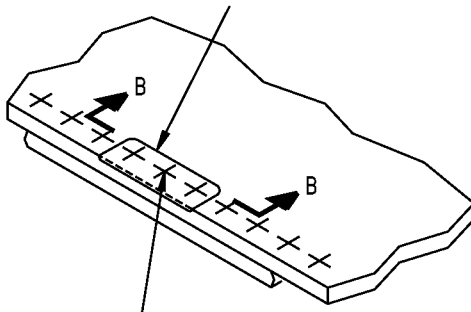
**737-800  
STRUCTURAL REPAIR MANUAL**



DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR DENT THAT IS PERMITTED

(D)

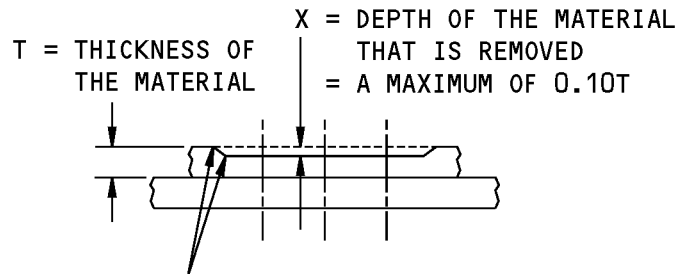
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

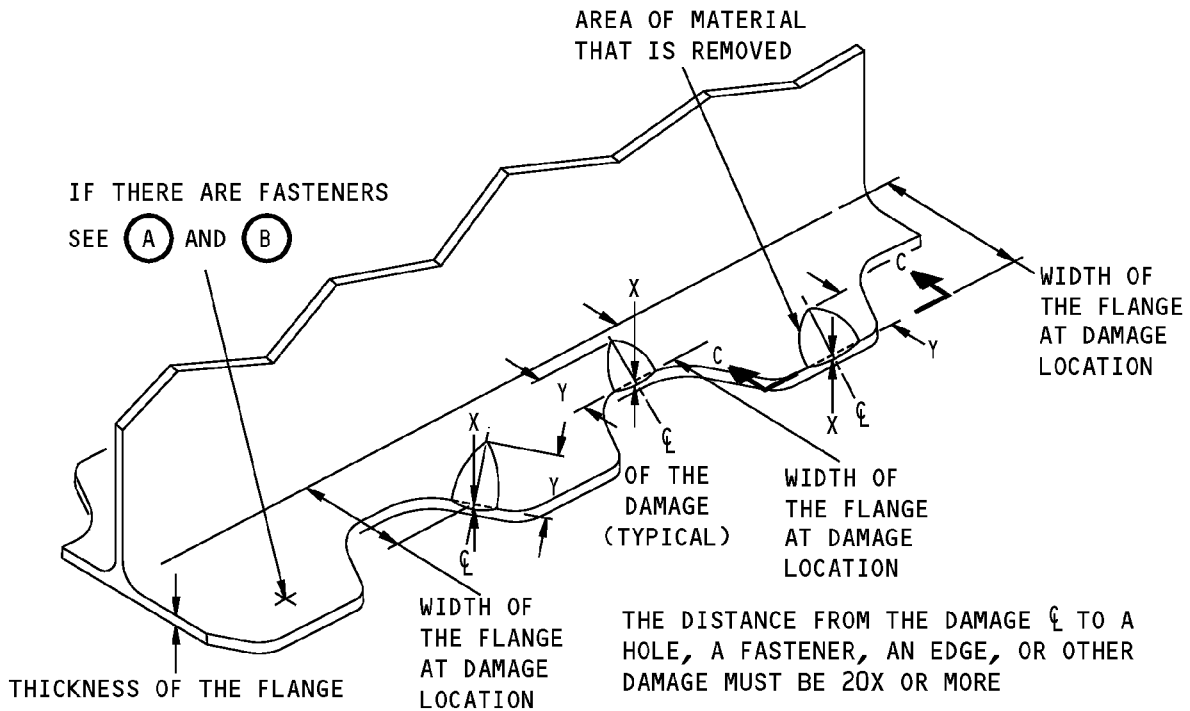
(E)



MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

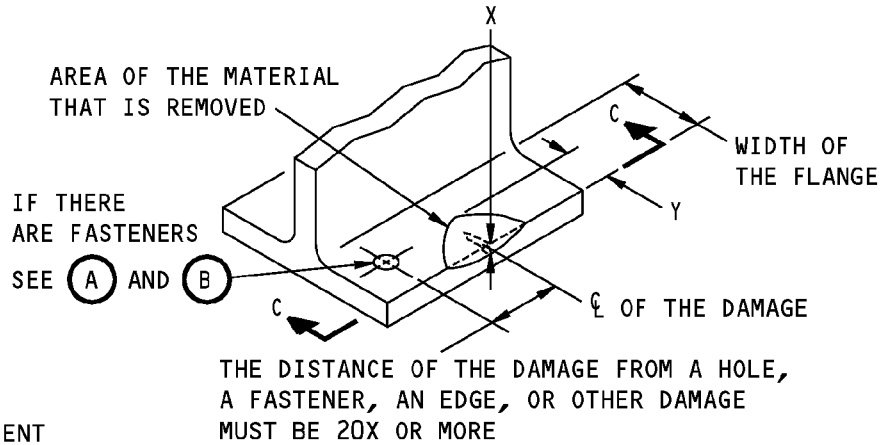
**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 2 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.

- X = DEPTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION
- Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 70 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION



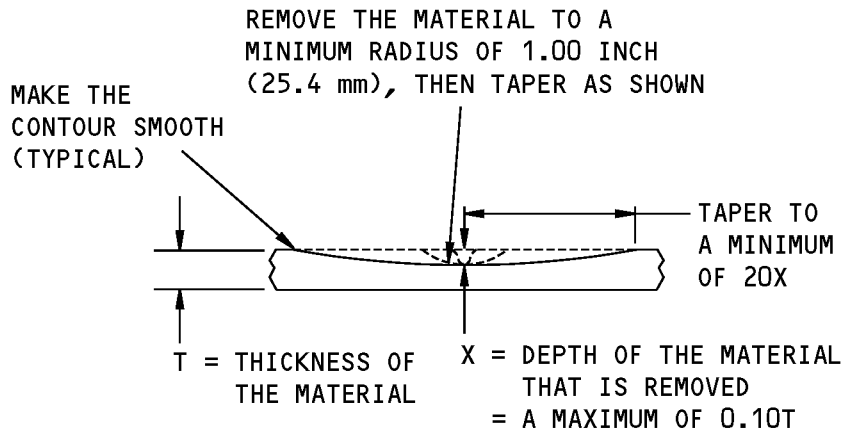
**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS.

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(F)

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 3 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**

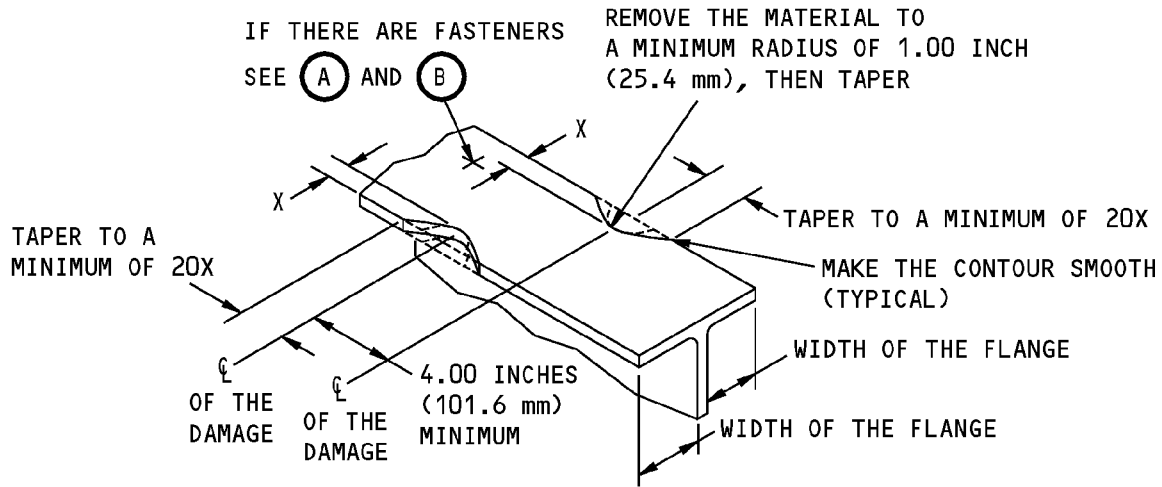


C-C

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 4 of 10)**



STRUCTURAL REPAIR MANUAL

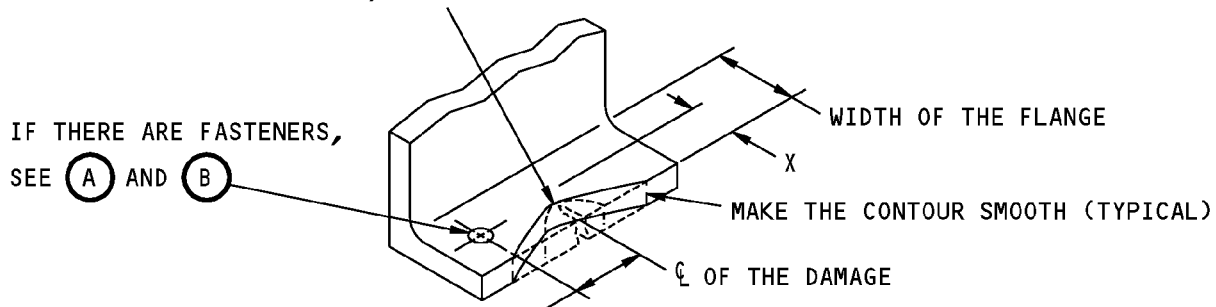


X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

(G)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



TAPER TO A MINIMUM OF 20X.  
 THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

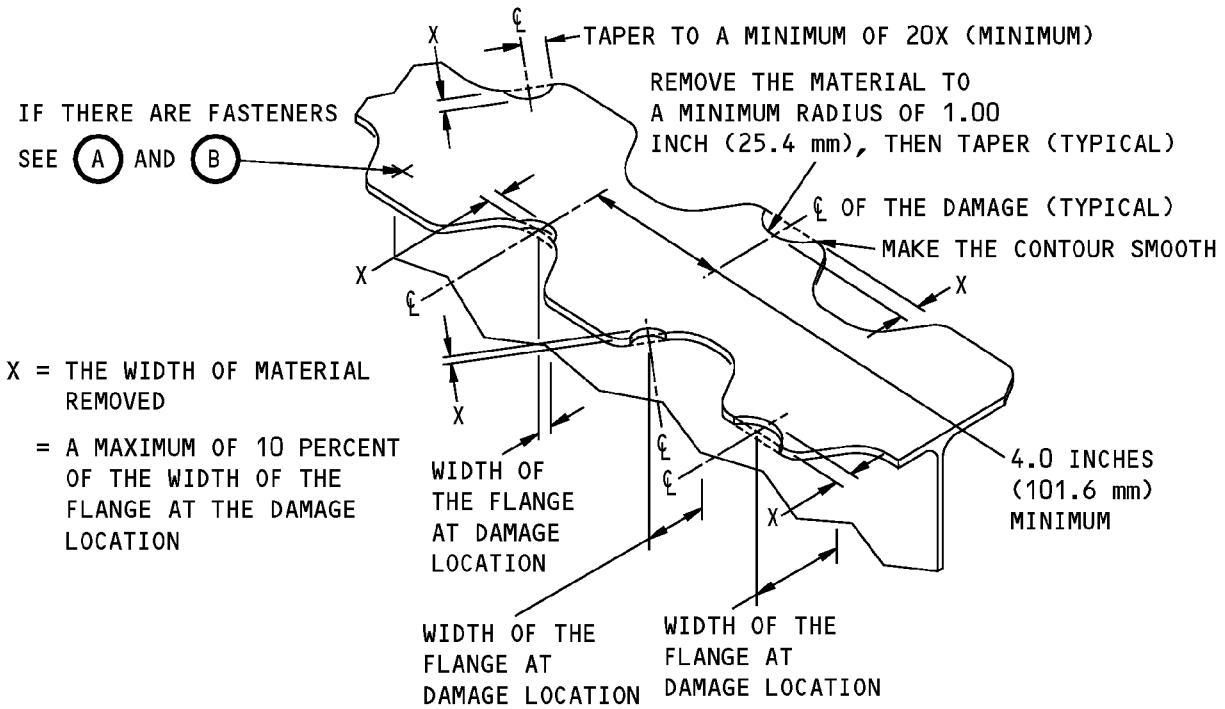
X = WIDTH OF THE MATERIAL REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

(H)

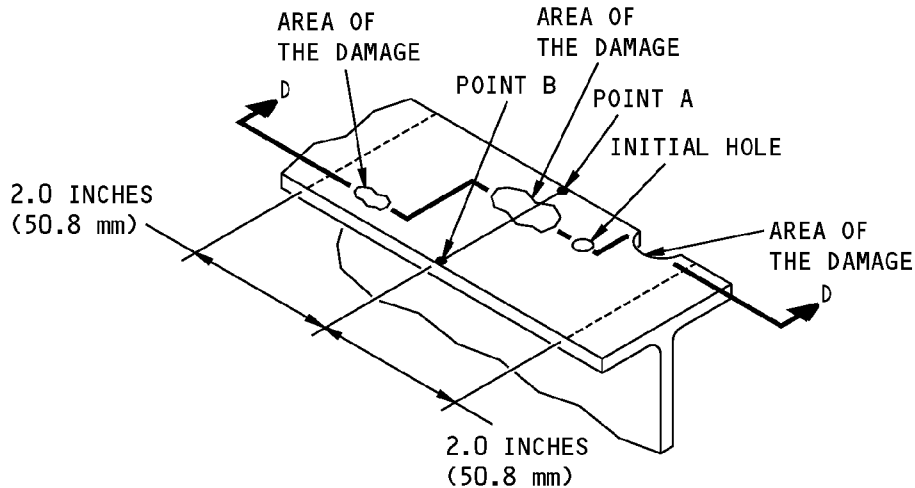
Allowable Damage Limits - Aluminum Parts  
 Figure 104 (Sheet 5 of 10)

**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE**

(I)

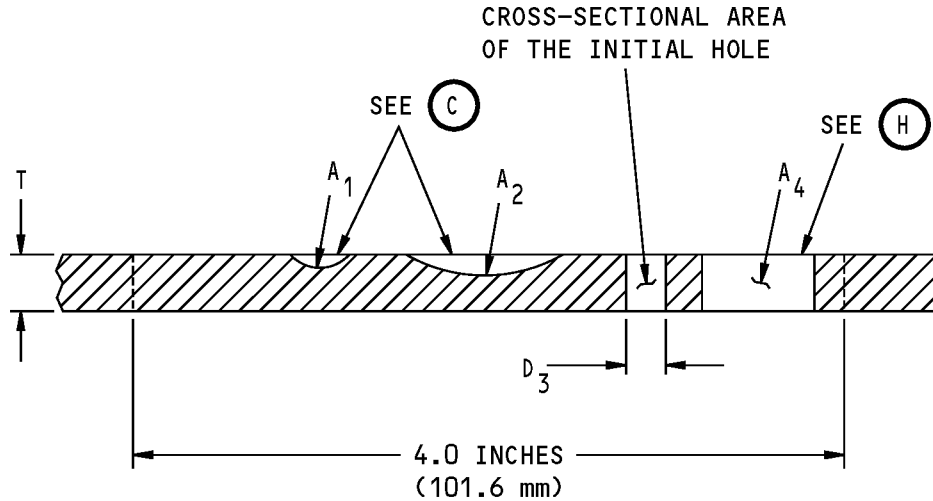


**REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE  
(A TEE SECTION IS SHOWN)**

(J)

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 6 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



D<sub>3</sub> = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

A<sub>i</sub> = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 = 4T - D<sub>3</sub>T

A<sub>1</sub> = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

A<sub>2</sub> = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

A<sub>4</sub> = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left( \frac{A_1 + A_2 + A_4}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

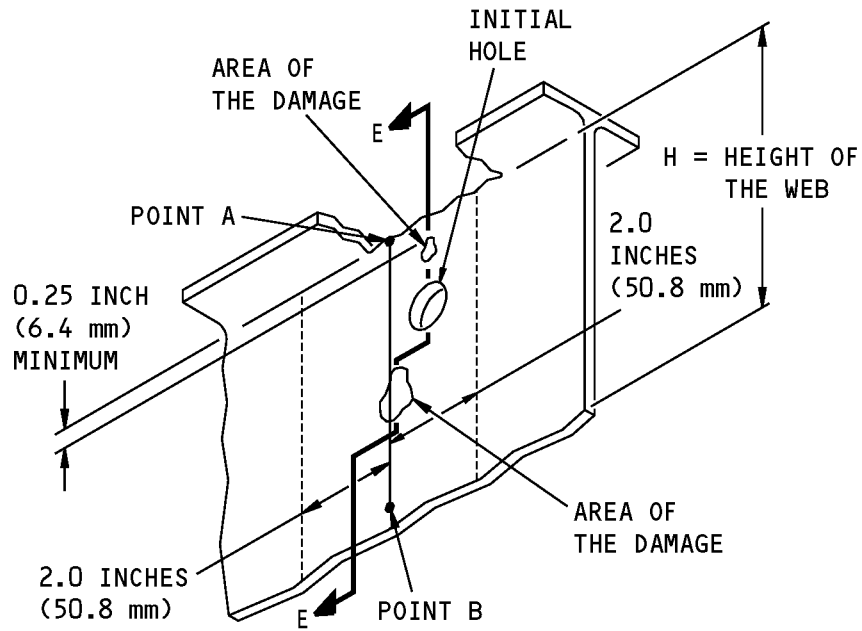
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 7 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION**

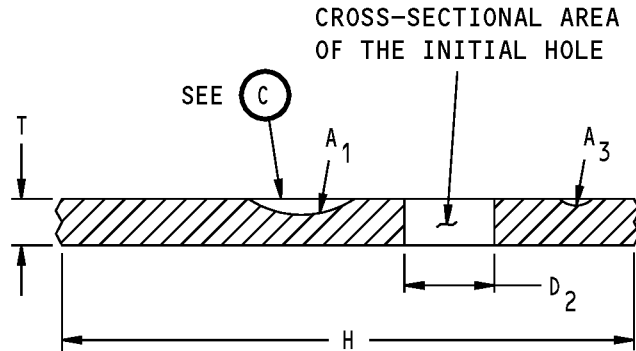
(K)

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 8 of 10)**

D634A210

**53-30-71**  
ALLOWABLE DAMAGE 1  
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STRUCTURAL REPAIR MANUAL**



$D_2$  = DIAMETER OF THE INITIAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE WEB  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $HT - D_2T$

$A_1$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

$A_3$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_1 + A_3}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

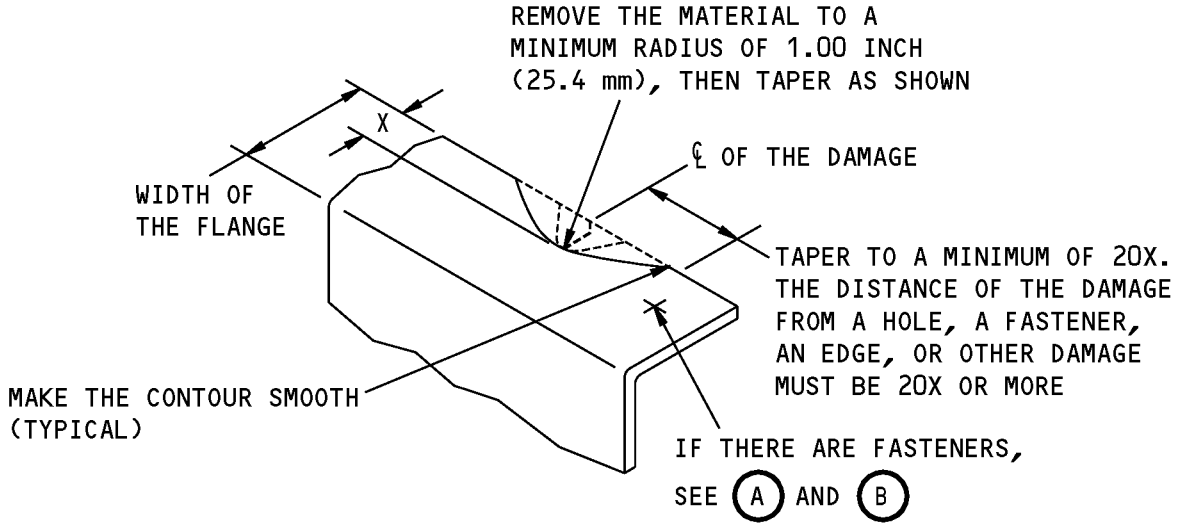
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

**(ROTATED 90° CLOCKWISE)  
E-E**

**Allowable Damage Limits - Aluminum Parts  
Figure 104 (Sheet 9 of 10)**

**STRUCTURAL REPAIR MANUAL**

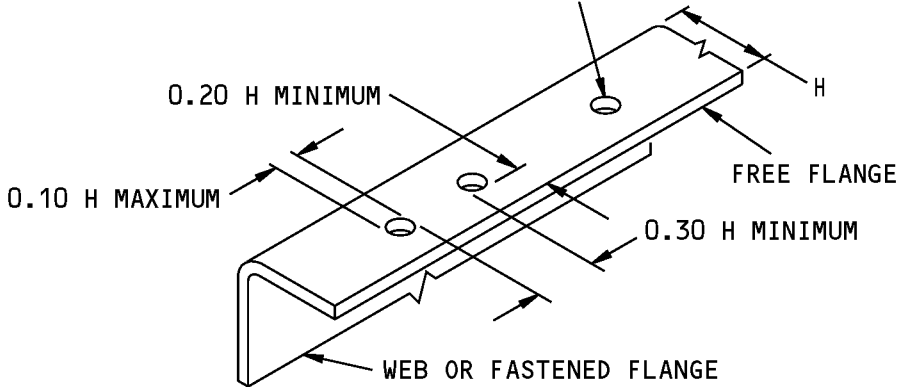


X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(L)

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF FLANGE. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD RIVETS



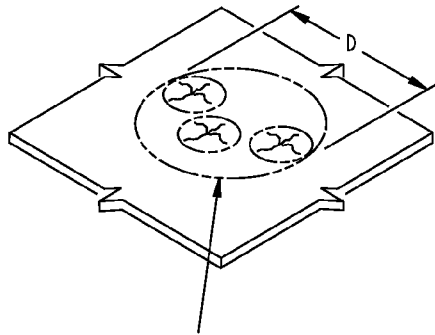
NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

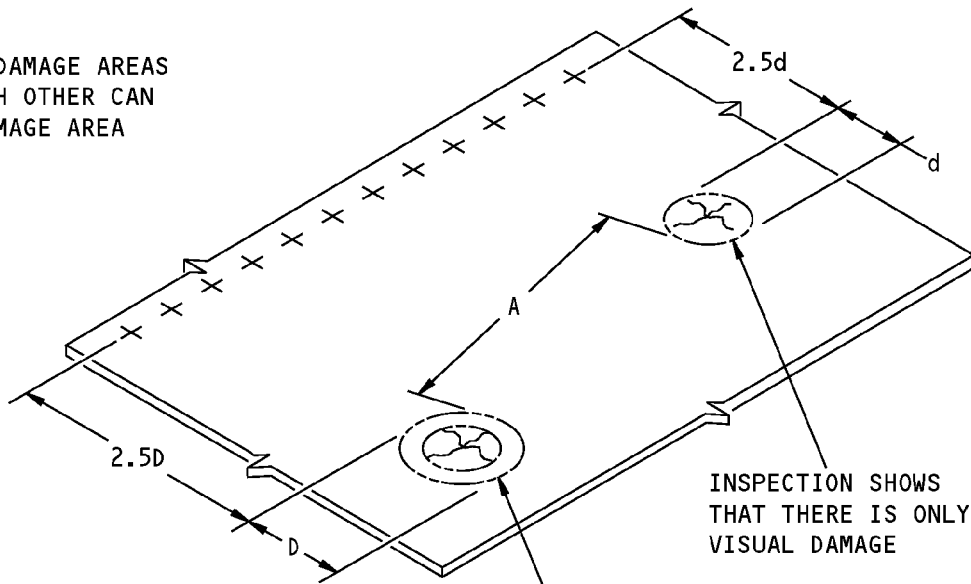
(M)

**Allowable Damage Limits - Aluminum Parts**  
**Figure 104 (Sheet 10 of 10)**

**737-800  
STRUCTURAL REPAIR MANUAL**



A GROUP OF SMALL DAMAGE AREAS THAT ARE NEAR EACH OTHER CAN BE SEEN AS ONE DAMAGE AREA



INSPECTION SHOWS THAT THERE IS ONLY VISUAL DAMAGE

INSPECTION SHOWS THAT A DELAMINATION HAS OCCURRED AND IT IS LARGER THAN THE VISUAL DAMAGE

**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

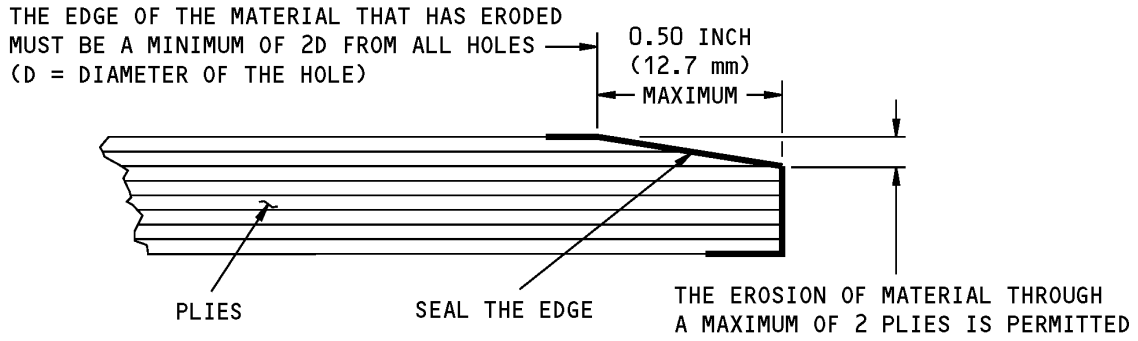
d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

**GFRP Solid Laminate Bonded Part - Damage Size and Spacing Limits  
Figure 105**

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STRUCTURAL REPAIR MANUAL**



**GFRP Solid Laminate Bonded Part - Sealing of Erosion Damage at an Edge  
Figure 106**



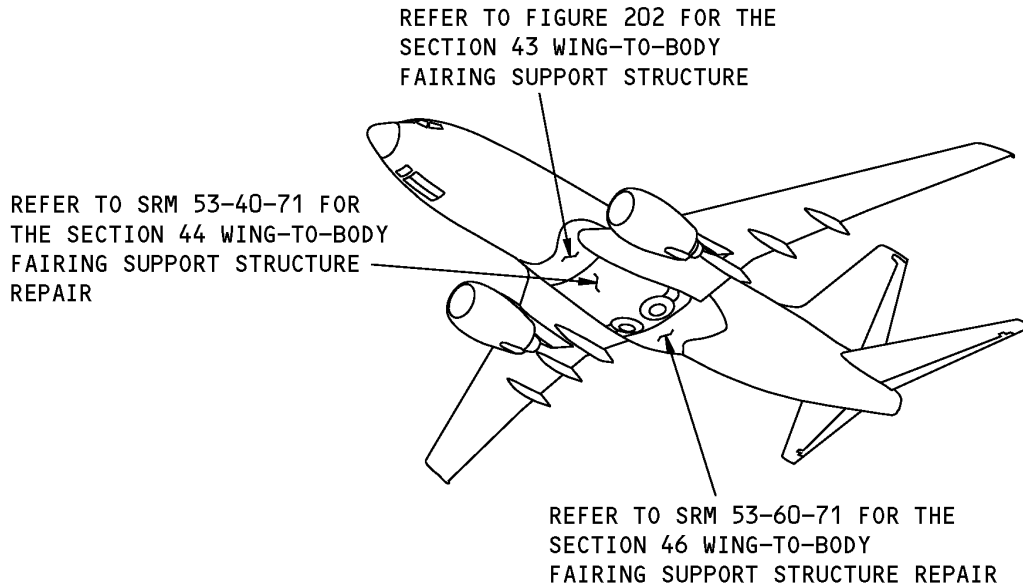
**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 43 WING-TO-BODY FAIRING SUPPORT STRUCTURE**

**1. Applicability**

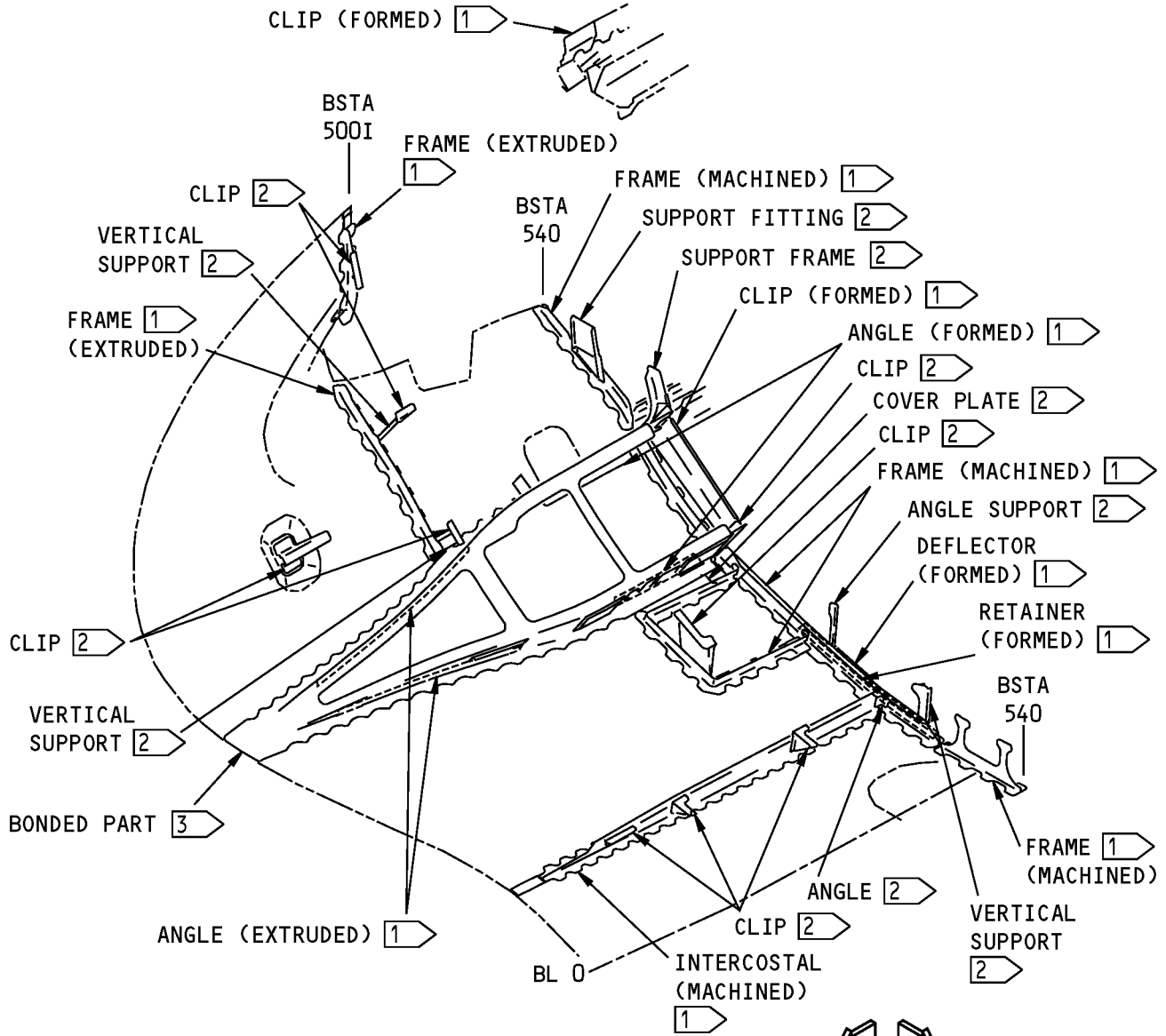
A. Repair 1 is applicable to damage:

- (1) To all the metal and composite parts of the wing-to-body fairing support structure in section 43 shown in Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1.
- (2) That is more than the limits permitted in 53-30-71, Allowable Damage 1.



**Section 43 Wing-to-Body Fairing Support Structure Location  
Figure 201**

**STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE**

**NOTES**

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-30-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.
- 3 REFER TO PARAGRAPH 4.B TO FIND THE APPLICABLE REPAIR FOR THIS PART.

**Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location  
Figure 202**



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STRUCTURAL REPAIR MANUAL**

**2. General**

A. Get access to the damaged area.

- (1) Remove the fairing skin panel(s) at the damage location as necessary.

B. Metal Repairs

- (1) The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- (2) Refer to Paragraph 4.A./REPAIR 1 for a repair.

C. Composite Repairs

(1) Get access to the damaged area.

- (a) If necessary, remove the wing-to-body fairing support structure panel that you want to repair.

- 1) Refer to 51-40-02 for the fastener removal procedures.

- 2) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.

- (2) Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

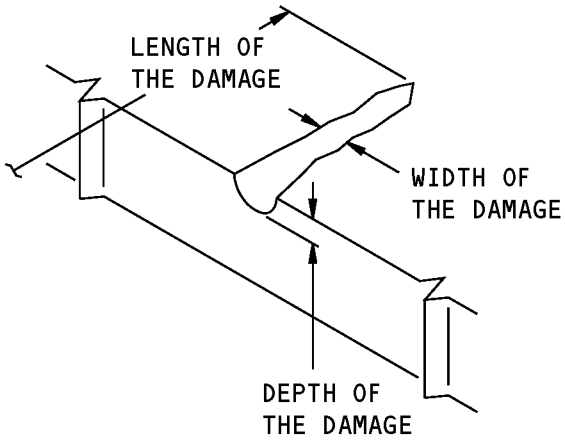
**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

- (3) Refer to Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1, and Table 201 to find the applicable repair for the composite part that you want to repair.

**NOTE:** If necessary, refer to 53-30-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

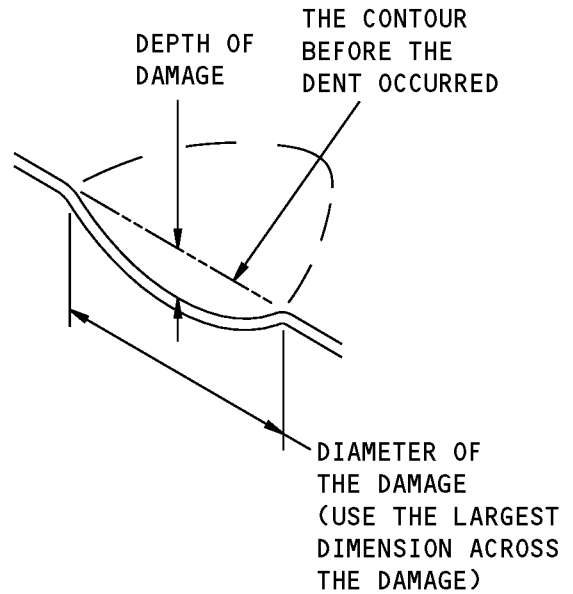
**Table 201:**

<b>REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - COMPOSITE PARTS</b>	
<b>TYPE OF COMPONENT</b>	<b>REPAIR</b>
Solid Laminate Panel	Refer to Paragraph 4.B



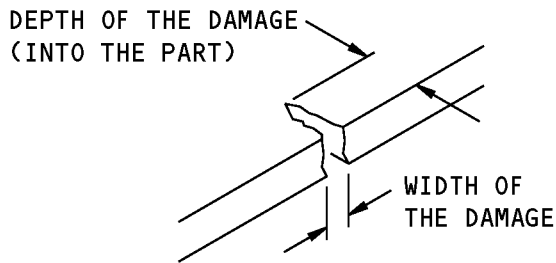
DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE

(A)



DEFINITIONS FOR  
DENT DAMAGE

(B)



DEFINITIONS FOR  
EDGE DAMAGE

(C)

Damage Definitions  
Figure 203



# 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71	FUSELAGE FAIRING STRUCTURE - SECTION 43
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

### 4. Repair Instructions

#### A. Metal Repairs

- (1) Refer to Section 43 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 43 Wing-to-Body Fairing Support Structure (Sta 460 to Sta 540) Location, Figure 202/REPAIR 1, and Table 202 to find the applicable repair for the metal part that you want to repair.

**NOTE:** If necessary, refer to 53-30-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

**Table 202:**

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12

#### B. Composite Repairs - Solid Laminate Panels

**NOTE:** If necessary, refer to 53-30-71, Identification 1 to find the material and the build-up of the part that you want to repair.

- (1) For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:
  - (a) Fill the dent with BMS 5-28, Type 7 potting compound.
  - (b) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.



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STRUCTURAL REPAIR MANUAL

- (2) If Paragraph 4.B.(1)/REPAIR 1 is not applicable, then refer to Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panel.
  - (3) For repairs made with wet layup materials, do as follows:
    - (a) Use one repair ply of fabric for each initial ply that was damaged.
    - (b) Make an inspection of the interim repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then you must replace the interim repair with a permanent repair.
- NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.
- (4) For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

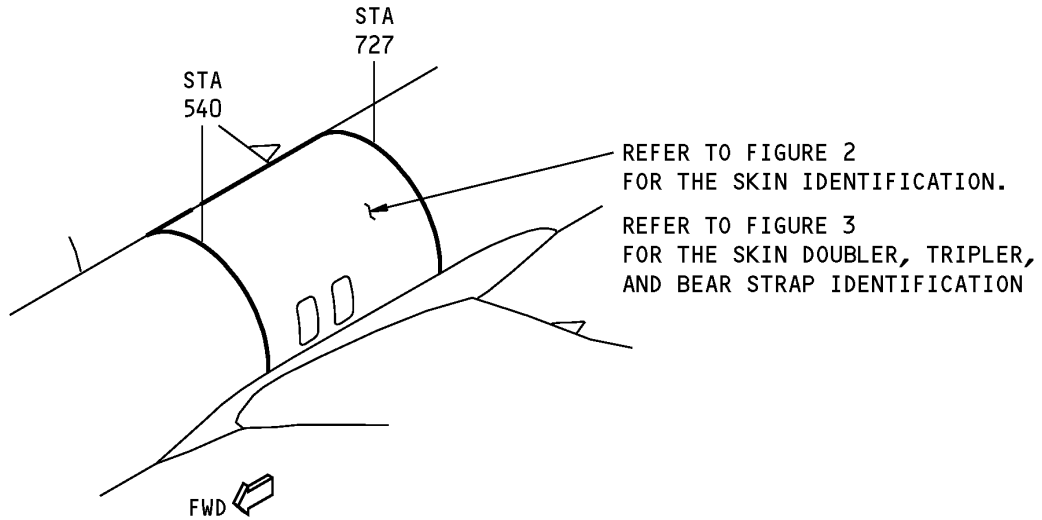
Table 203:

REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SUPPORT STRUCTURE PANEL				
REPAIR TYPE	CATEGORY B WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A PREIMPREGNATED LAYUP REPAIR
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) diameter  3.0 inches (76.20 mm) minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of: - 6.0 inches (152.40 mm) diameter  3.0 inches (76.20 mm) minimum clearance from: -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C.(3)	SRM 51-70-04 and Paragraph 4.C.(3)	SRM 51-70-04 and Paragraph 4.C.(3)	SRM 51-70-05 and Paragraph 4.C.(4)

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete area.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 44 FUSELAGE SKIN**



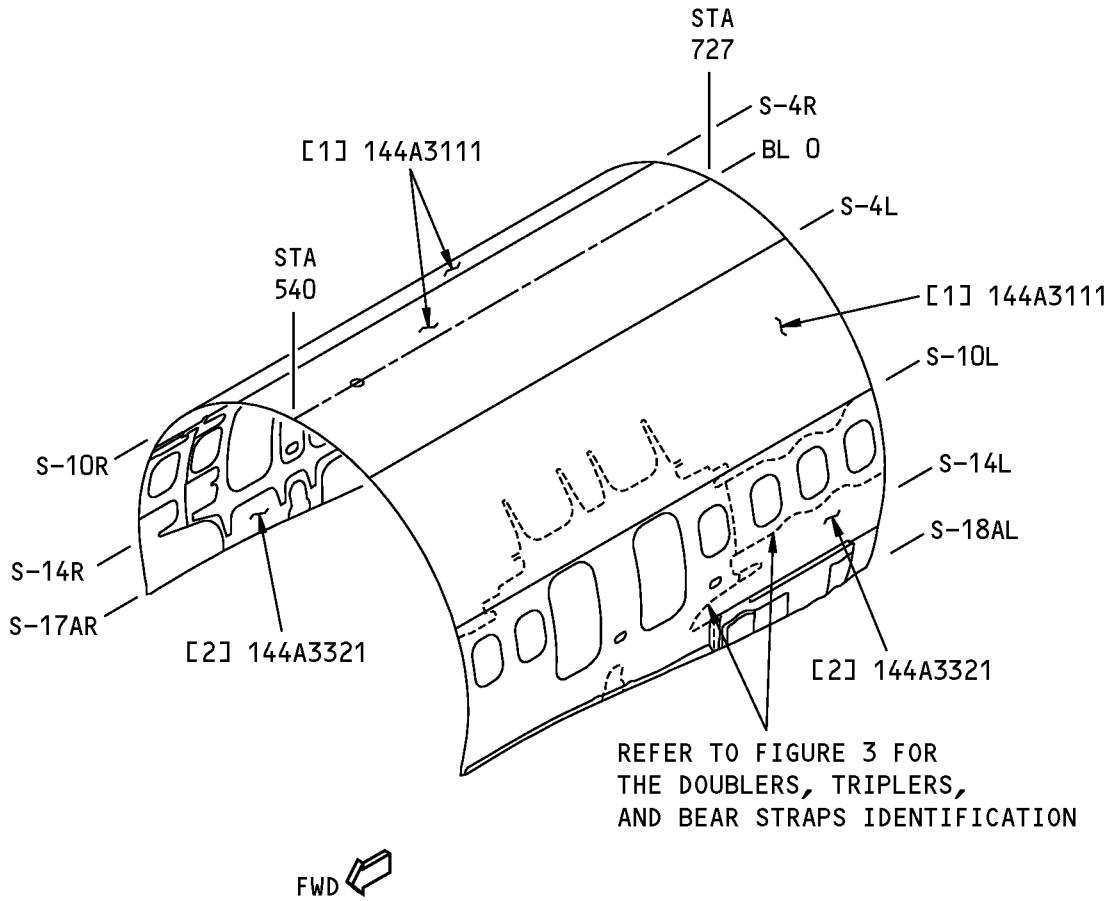
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4401	Section 44 Crown Panel Assembly Functional Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4404	Crown Panel Integration Functional Collector-Sect 44
140A4405	Side Panel Integration Functional Collector - Section 44
144A3101	Skin Installation - S-9L to S-9R, STA 540 to 727
144A3102	Skin Installation - S-10L to S-10R, STA 540 to 727
144A3301	Skin Installation - STA 540 to STA 727, S-10 to S-18A
144A3302	Skin Installation - STA 540 to STA 727, S-10 to S-18A
144A3311	Skin Assembly - STA 540 to STA 727, S-10 to S-18A

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 44 Fuselage Skin Identification  
Figure 2**





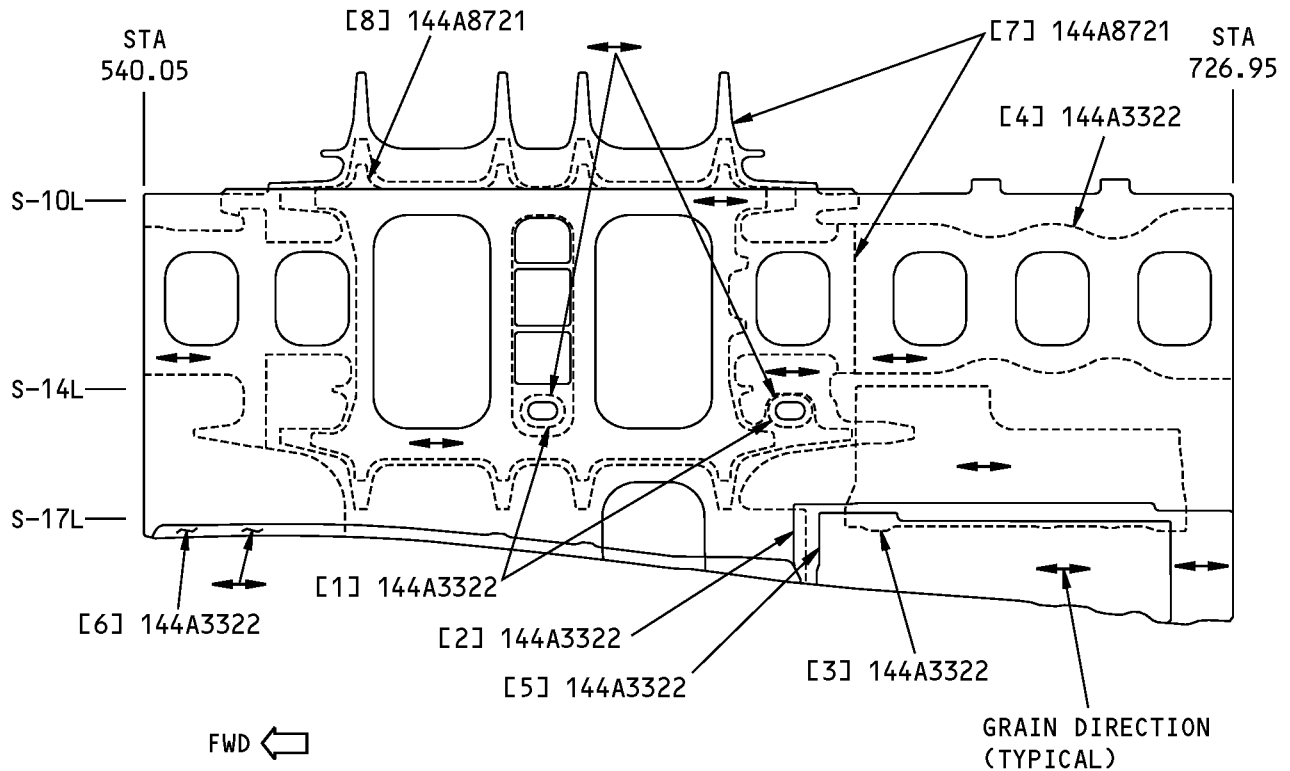
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin Assembly Skin Doubler	0.050 (1.27) 0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5 2024-T3 Clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Assembly	0.145 (3.68)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 44 Fuselage Skin Doubler, Tripler, and Bear Strap Identification  
Figure 3**



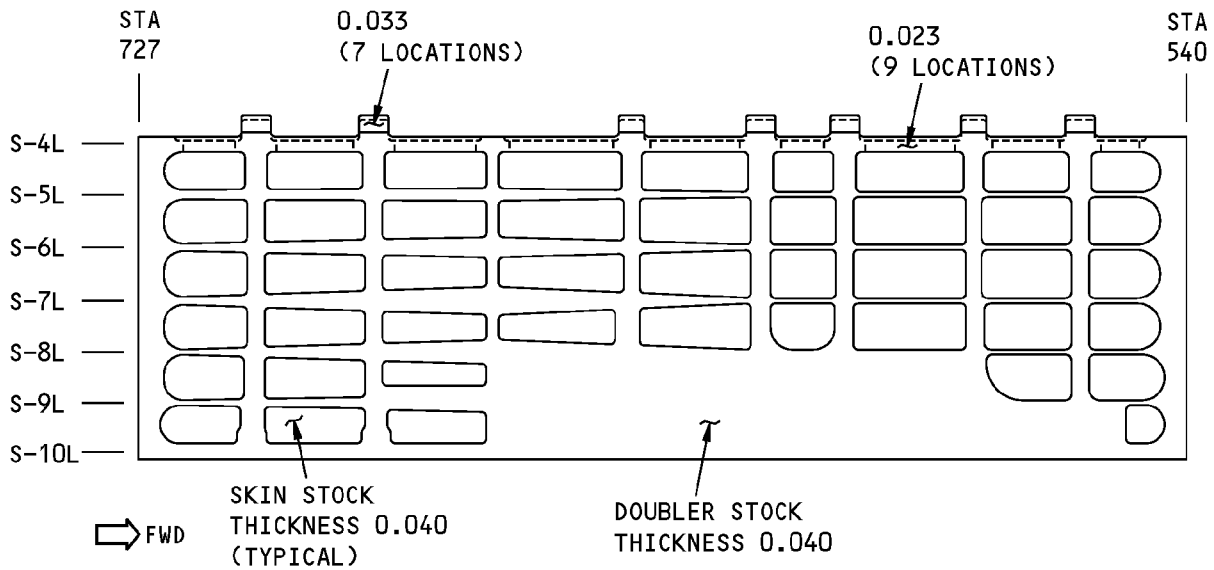
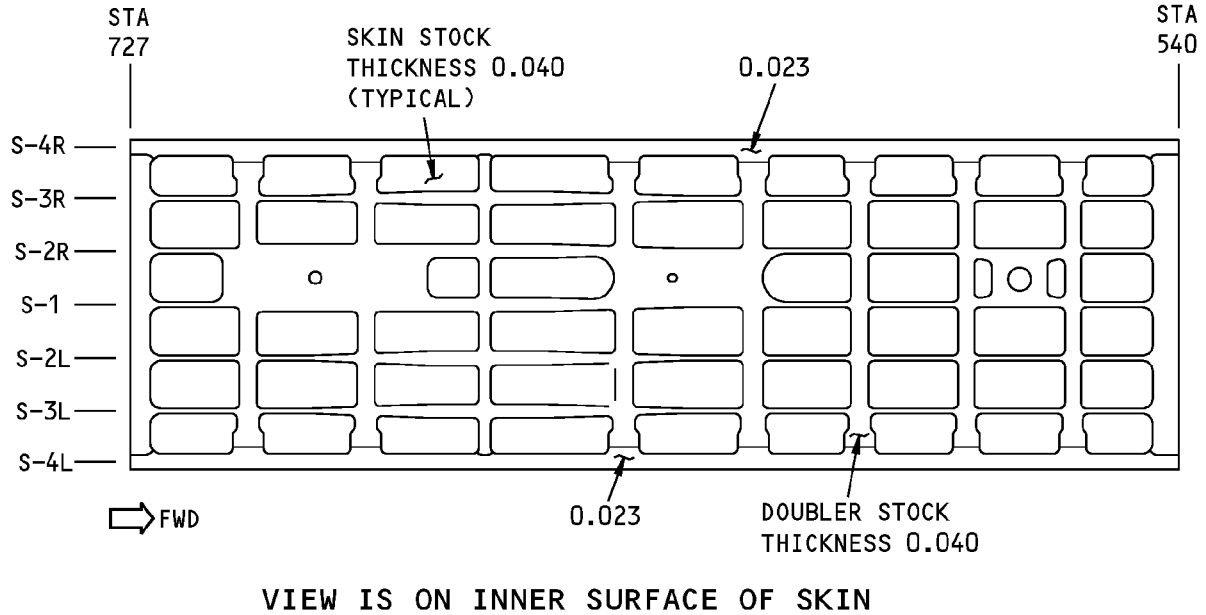
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Doubler (2)	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[2]	Doubler - External	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[3]	Doubler - External	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[4]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[5]	Doubler	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[6]	Doubler - External	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	
[7]	Bear Strap	0.135 (3.43)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part. Refer to Figure 8 for the thicknesses of the machined and tapered areas	
[8]	Cub Strap	0.130 (3.3)	2024-T3 clad sheet as given in QQ-A-250/5. This is a controlled part. The grain direction is parallel to the length of the part	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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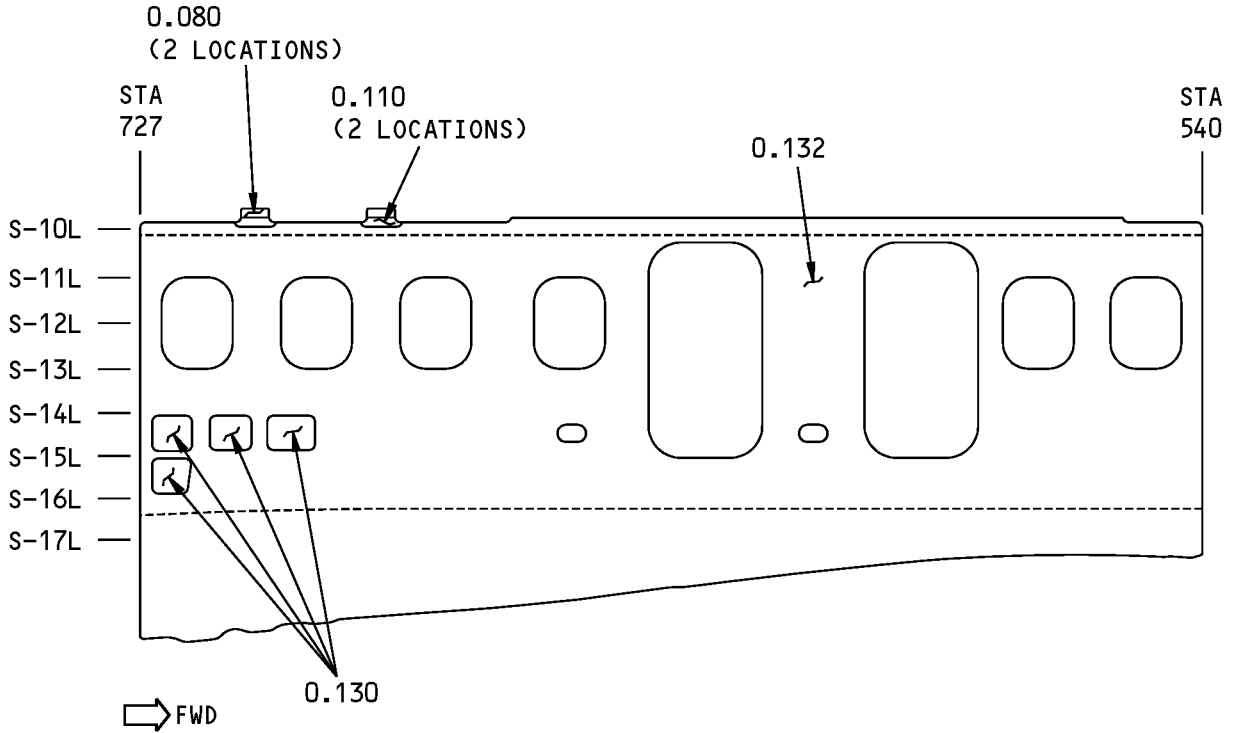
LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW IS ON INNER SURFACE OF SKIN

**NOTES**

- ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE DOUBLER IN INCHES. THIS SKIN PANEL IS LAMINATED AND ONLY THE DOUBLER IS CHEM-MILLED. POCKETS WITH NO DIMENSIONS ARE CHEM-MILLED THROUGH THE DOUBLER.

**Chem-Milled Areas of Figure 2, Item [1]  
Figure 4**

**737-800  
STRUCTURAL REPAIR MANUAL**

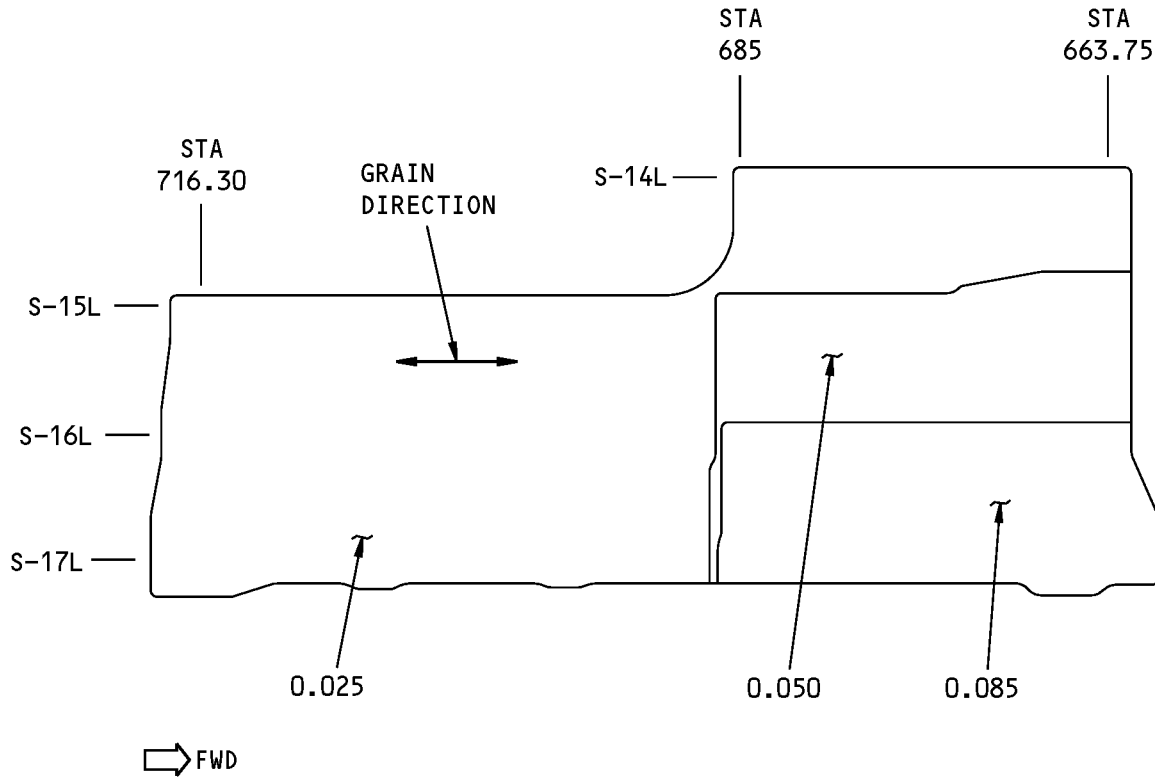


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas of Figure 2, Item [2]  
Figure 5**

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STRUCTURAL REPAIR MANUAL**

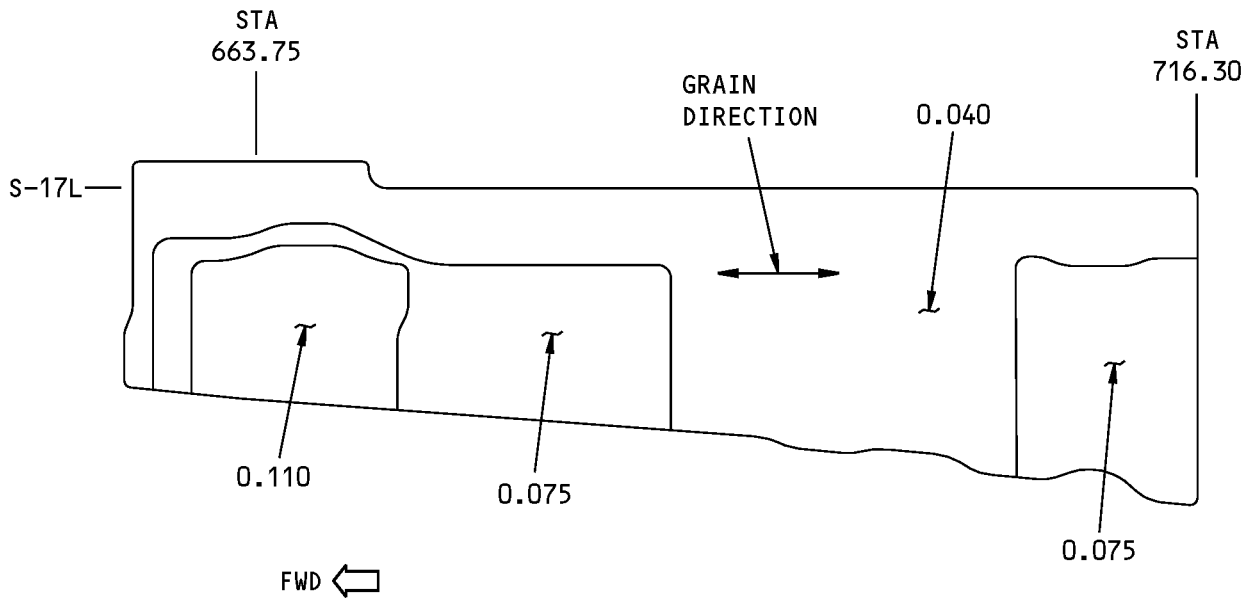


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW IS ON THE INNER SURFACE OF THE SKIN

**Chem-Milled Areas of Figure 3, Item [3]  
Figure 6**

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STRUCTURAL REPAIR MANUAL**

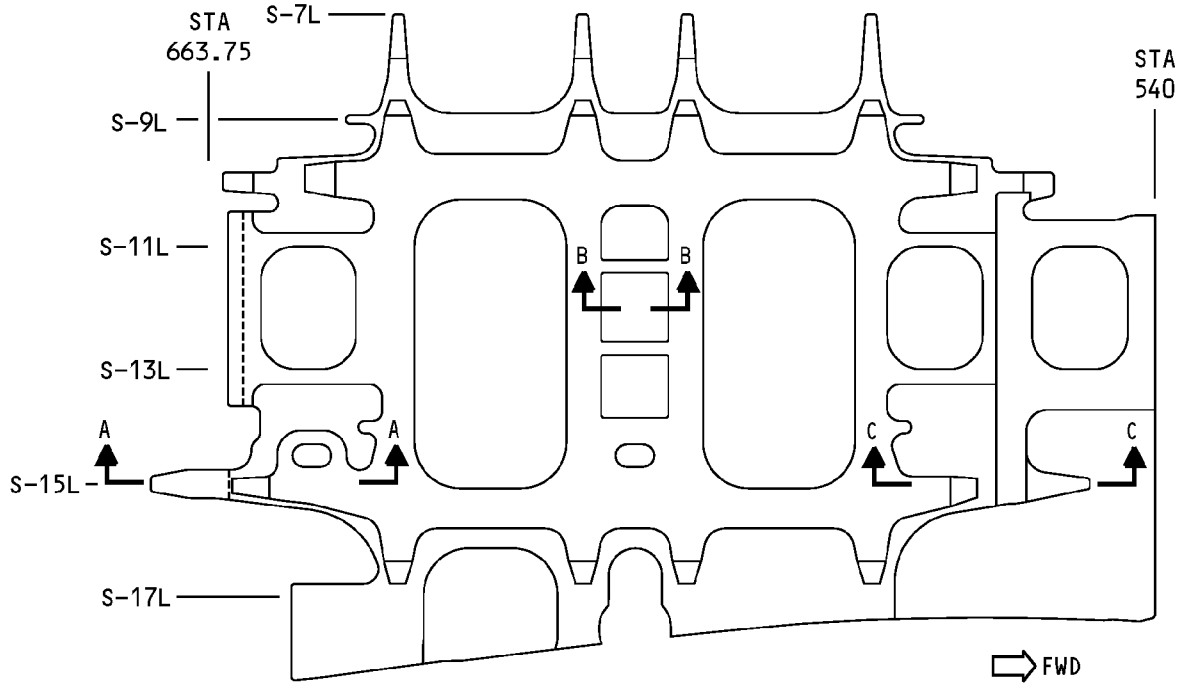


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

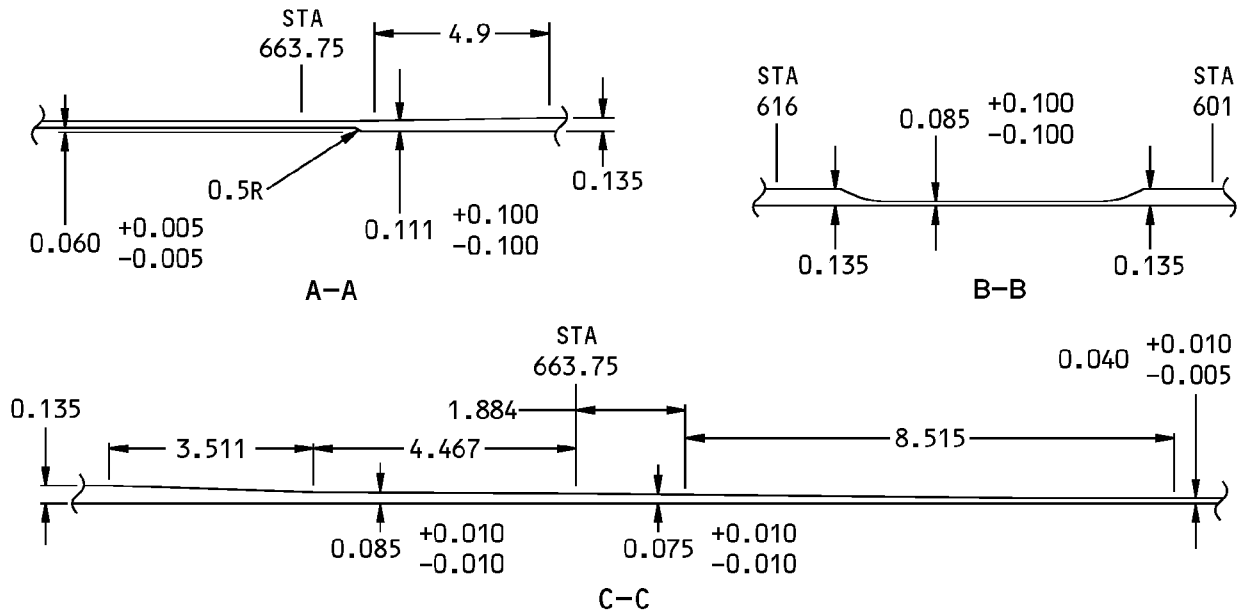
**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Machined Areas of Figure 3, Item [5]  
Figure 7**

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STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
VIEW IS ON THE INNER SURFACE OF THE SKIN



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

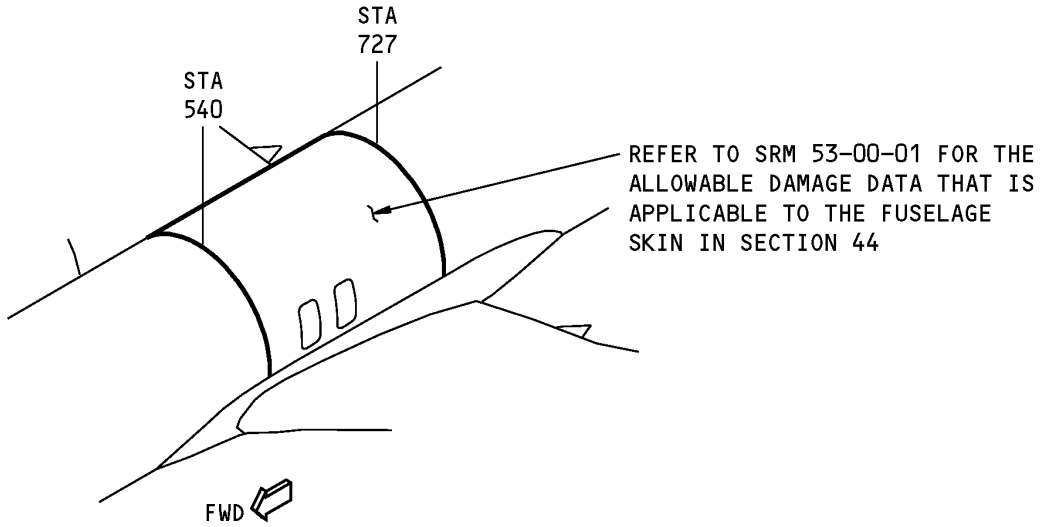
**Machined Areas of Figure 3, Item [6]  
Figure 8**





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ALLOWABLE DAMAGE GENERAL - SECTION 44 FUSELAGE SKIN

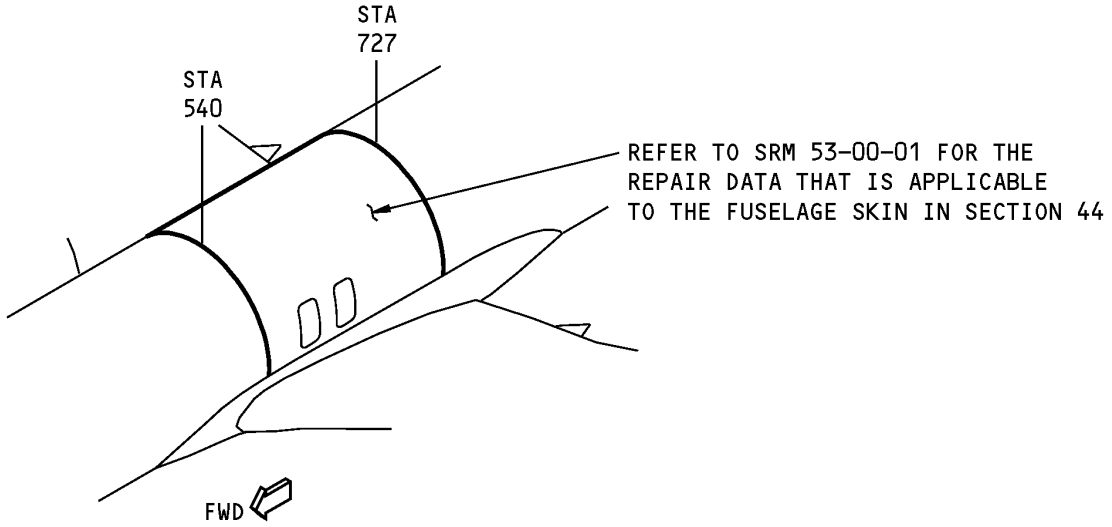


Section 44 Fuselage Skin Location  
Figure 101



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STRUCTURAL REPAIR MANUAL

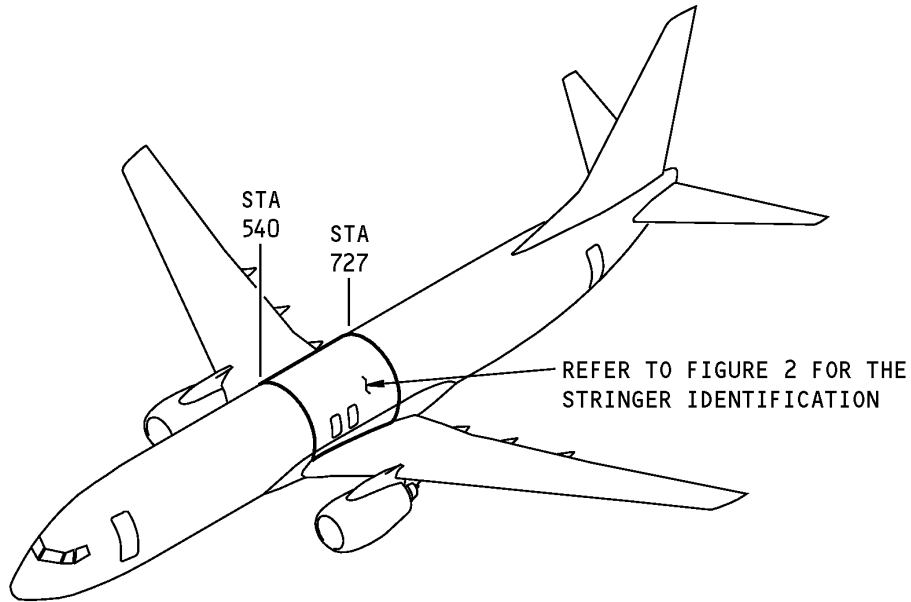
REPAIR GENERAL - SECTION 44 FUSELAGE SKIN



Section 44 Fuselage Skin Location  
Figure 201

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 44 FUSELAGE STRINGERS**



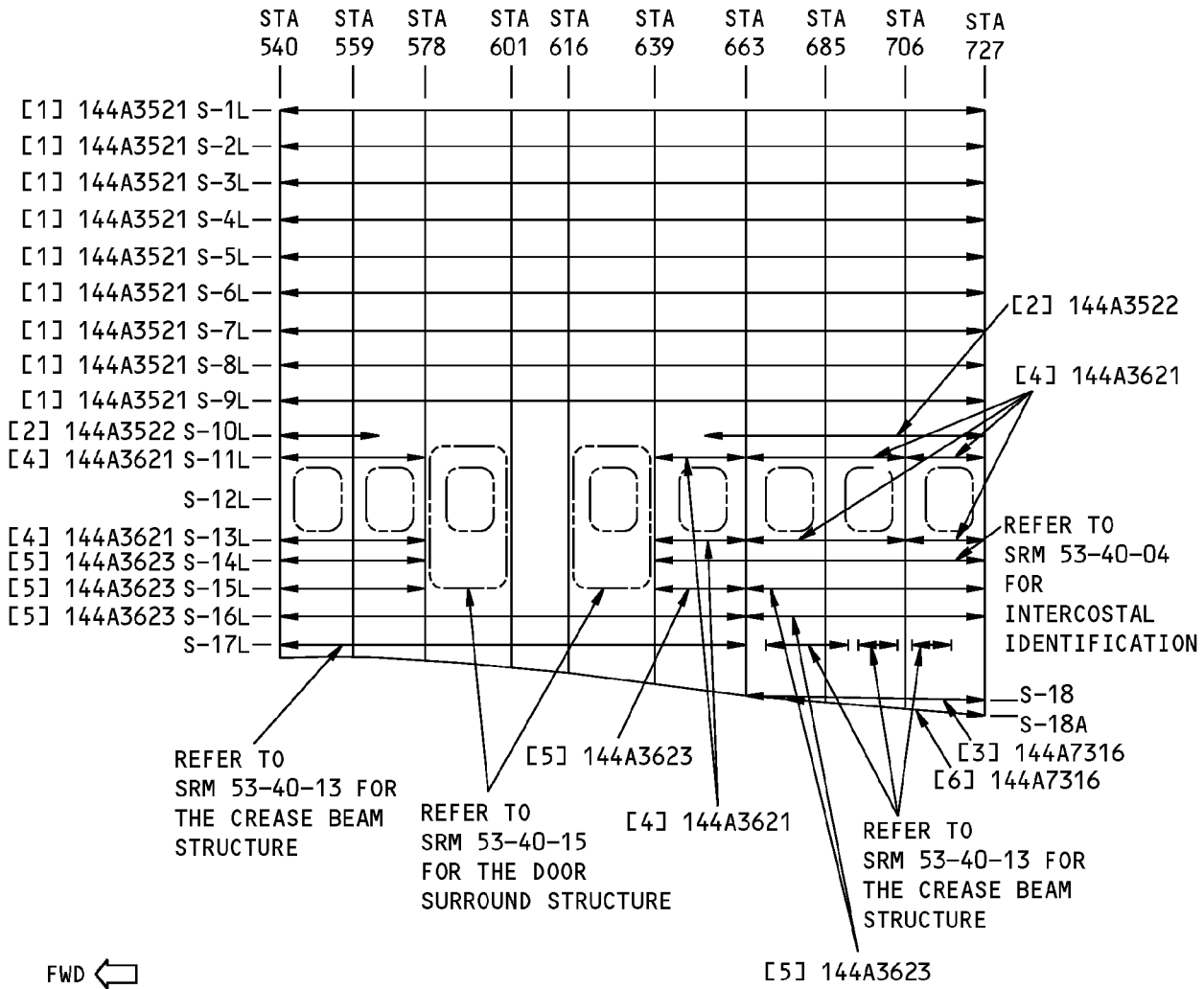
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Stringer Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4401	Section 44 Crown Panel Assembly, Functional Collector
144A3101	Skin Installation - S-9L to S-9R, STA 540 to STA 727
140A4402	Side Panel Assembly Functional Collector - Section 44
144A3602	Stringer Installation - S-14 to S-16
144A3301	Skin Installation - STA 540 to STA 727, S-10 to S-18A
140A4404	Crown Panel Integration Functional Collector - Section 44
144A3102	Skin Installation - S-10L to S-10R, STA 540 to STA 727
140A4405	Side Panel Integration Functional Collector - Section 44
144A3302	Skin Installation - STA 540 to STA 727, S-10 to S-18A

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 44 Stringer Identification - Station 540 to Station 727  
Figure 2**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

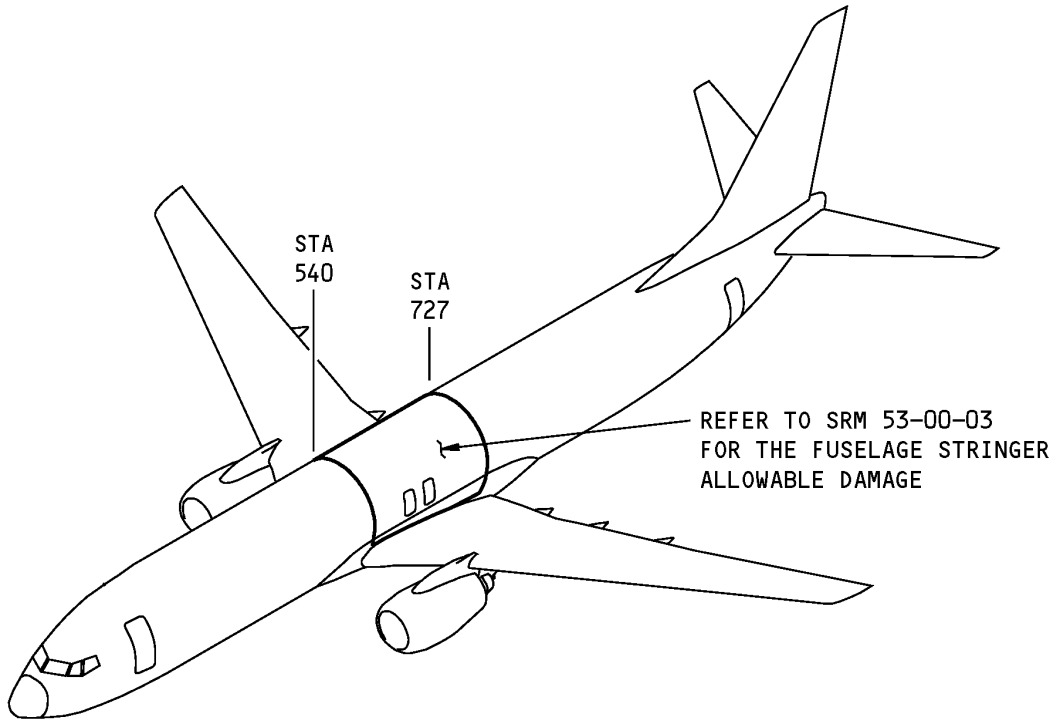
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer, Tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer (STA 543.41 to STA 572.39 and STA 651.93 to STA 724.85)  Stringer (STA 543.41 to STA 577.68 and STA 639.32 to STA 724.85)         Stringer (STA 540 to STA 578 and STA 639 to STA 727)		BAC1498-167 7075-T62 sheet as given in QQ-A-250/12  BAC1498-167 7075-T62 sheet as given in QQ-A-250/12         BAC1498-167 7075-T62 sheet as given in QQ-A-250/12	YC001 - YC003 ONLY  YC004 - YC007 YC051 - YC055 YC071 - YC073 YC101 - YC102 YC111, YC121, YC301 - YC302 YC321 - YC331, YC381, YC401 - YC404 YC501 - YC506 YC571 - YC577 YC601 - YC605 ONLY  YC008 - YC050 YC056 - YC070 YC103 - YC110 YC112 - YC120 YC122 - YC299 YC303 - YC320 YC332 - YC380 YC382 - YC399 YC405 - YC499 YC507 - YC570 YC578 - YC599 YC606 - YD999 ONLY
[3]	Strap	0.500 (12.7)	7075-T7351 plate as given in QQ-A-250/12	
[4]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Stringer, machined		7050-T7451 machined plate as given in AMS 4050. (Grain direction controlled part)	
[6]	Stringer		7075-T62 extruded bar as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 44 FUSELAGE STRINGERS**



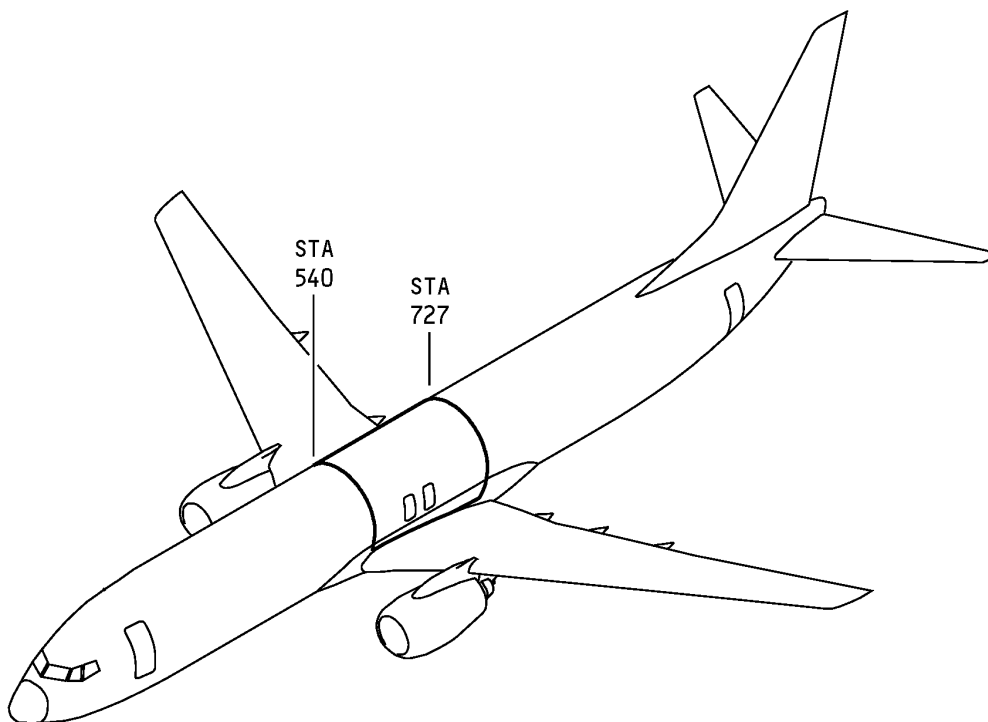
**Section 44 Stringer Allowable Damage**  
**Figure 101**

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STRUCTURAL REPAIR MANUAL

REPAIR 1 - SECTION 44 FUSELAGE STRINGERS

1. Applicability

- A. Repair 1 is applicable to damage to the stringers in Body Section 44 shown in Section 44 Stringer Repair, Figure 201/REPAIR 1.



Section 44 Stringer Repair  
Figure 201

2. General

- A. The typical repairs given in 51-70-12, and 51-70-13 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12, and 51-70-13 before you start a repair.



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### 3. References

Reference	Title
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-40-03	FUSELAGE STRINGERS - SECTION 44
53-40-03, IDENTIFICATION 1	Section 44 Fuselage Stringers

### 4. Repair Instructions

A. Refer to Table 201 to find the applicable repairs to the section 44 fuselage stringers.

**NOTE:** Refer to 53-40-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

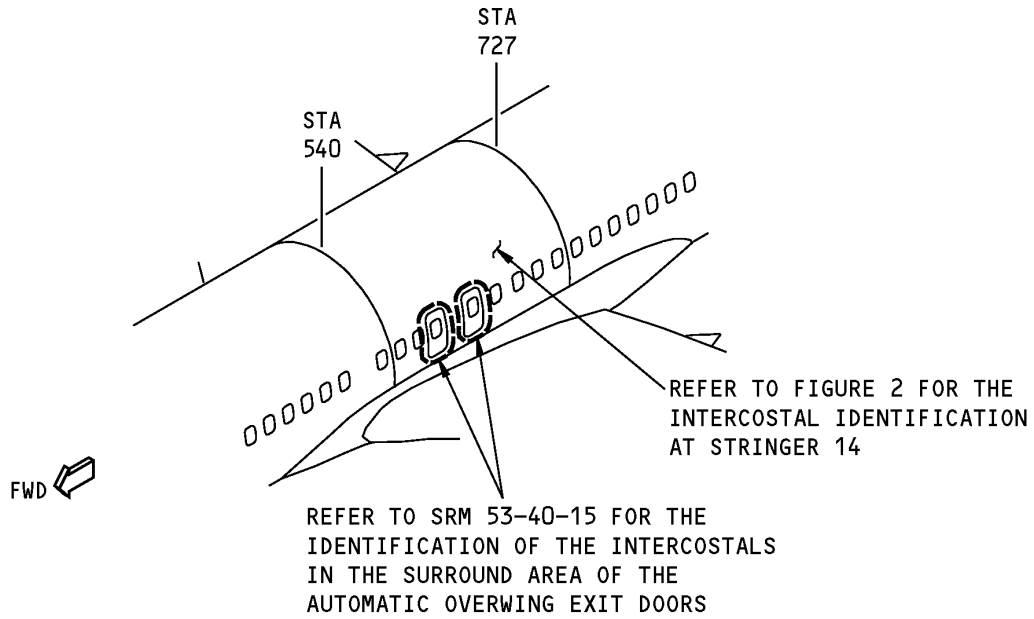
**Table 201:**

REPAIR REFERENCES FOR THE SECTION 44 FUSELAGE STRINGERS		
STRINGER	LOCATION	REPAIR
S-11L, S-11R, S-13L, S-13R	STA 540 to STA 727	Refer to SRM 51-70-12
S-14L, S-14R	STA 540 to STA 578	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-40-03, then replace the damaged part
S-15L, S-15R, S-16L, S-16R	STA 540 to STA 727	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-40-03, then replace the damaged part
S-18L, S-18R, S-18AL, S-18AR	STA 663 to STA 727	Refer to SRM 51-70-13
All other stringers	STA 540 to STA 727	Refer to SRM 53-00-03



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**IDENTIFICATION 1 - SECTION 44 INTERCOSTALS**

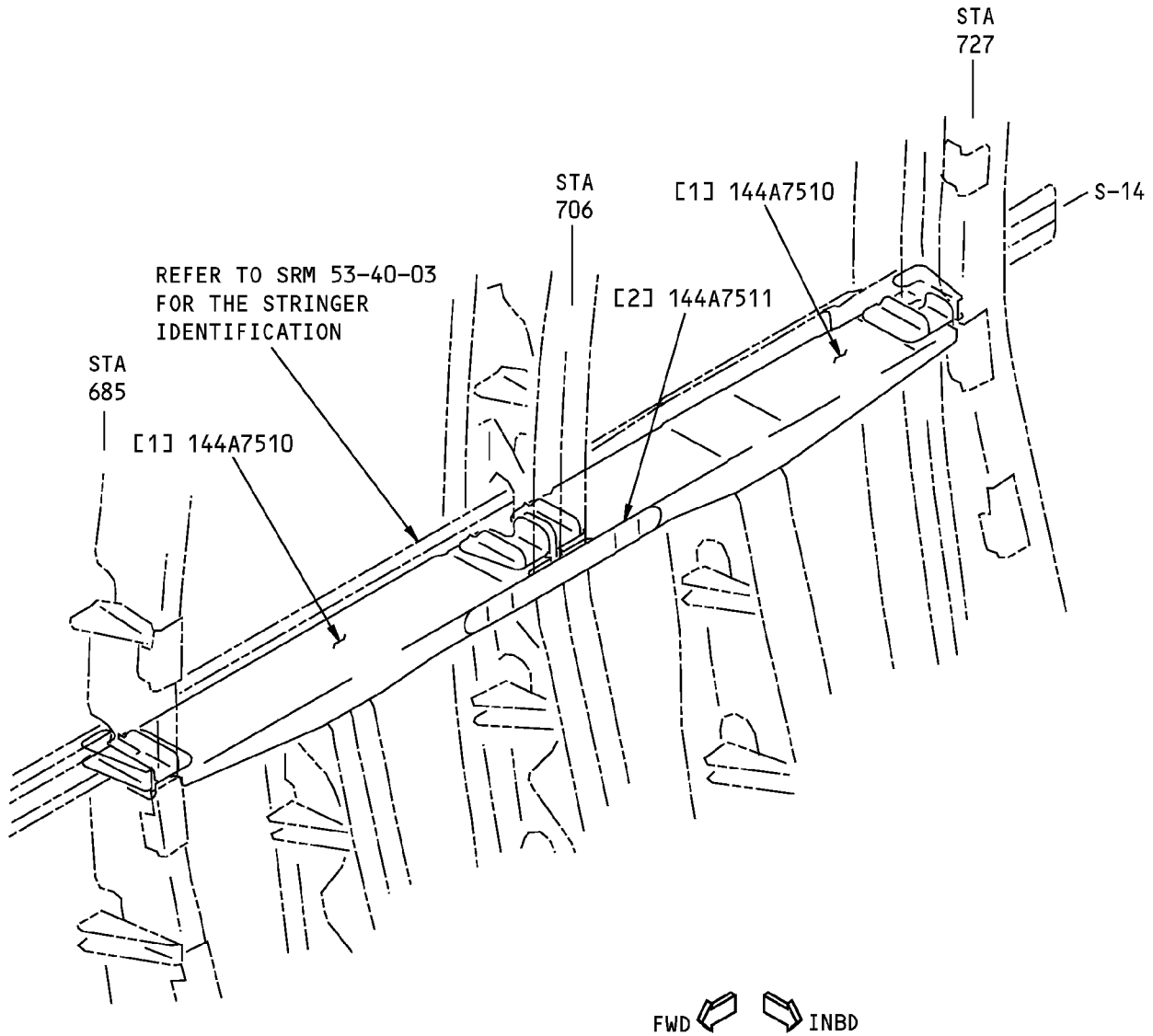


**Section 44 Intercostal Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4402	Side Panel Assembly Functional Collector - Section 44
144A7500	Intercostal Installation - Stringer 14

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN,  
LEFT SIDE IS OPPOSITE**

**Section 44 Intercostal Identification  
Figure 2**



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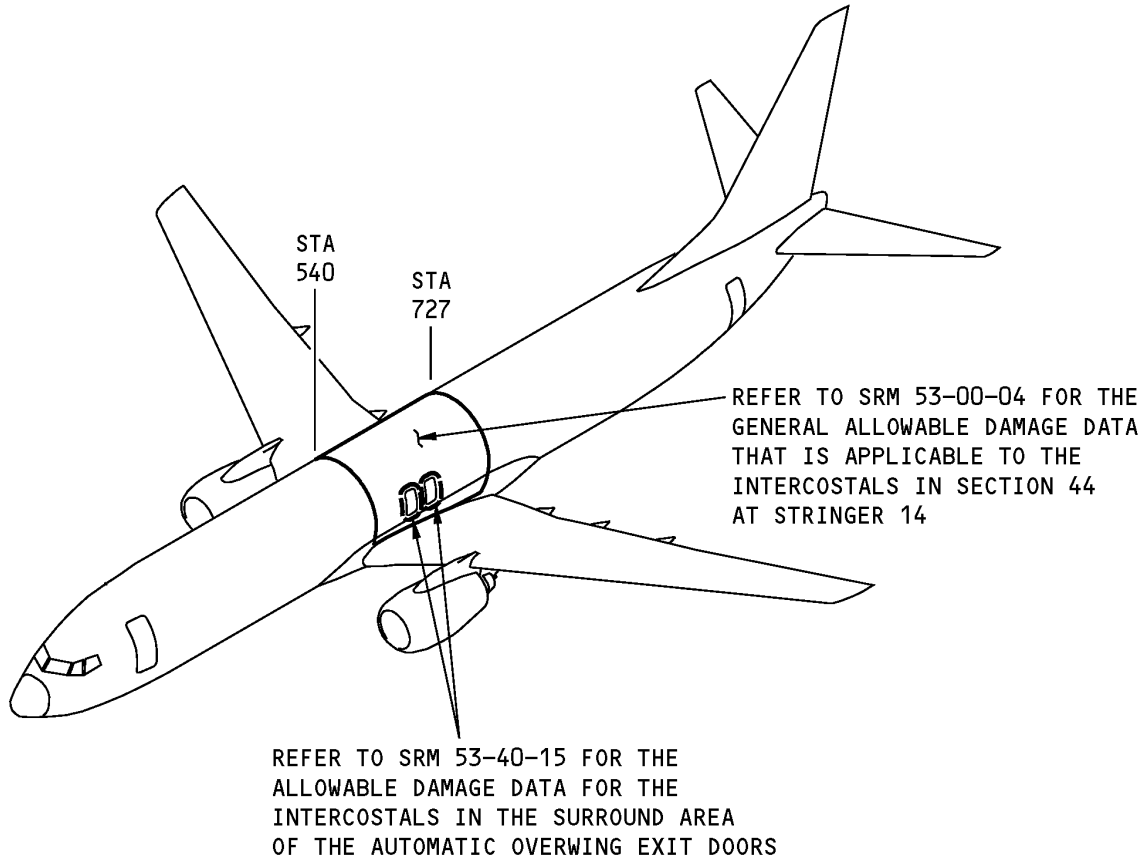
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web, Aft and Forward		7050-T7451 bare plate as given in AMS4050	
[2]	Strap	0.125 (3.18)	7075-T73 bare sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 44 FUSELAGE INTERCOSTALS**



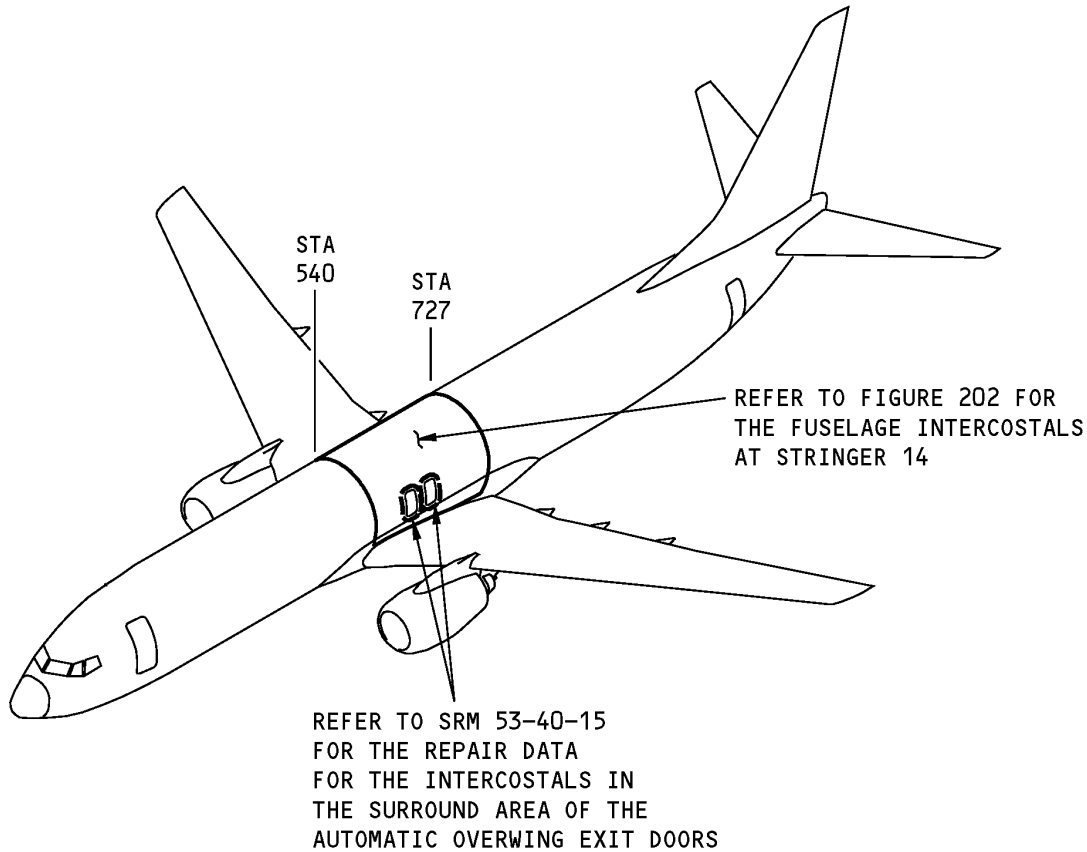
**Section 44 Fuselage Intercostal Locations**  
**Figure 101**

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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 44 FUSELAGE INTERCOSTALS**

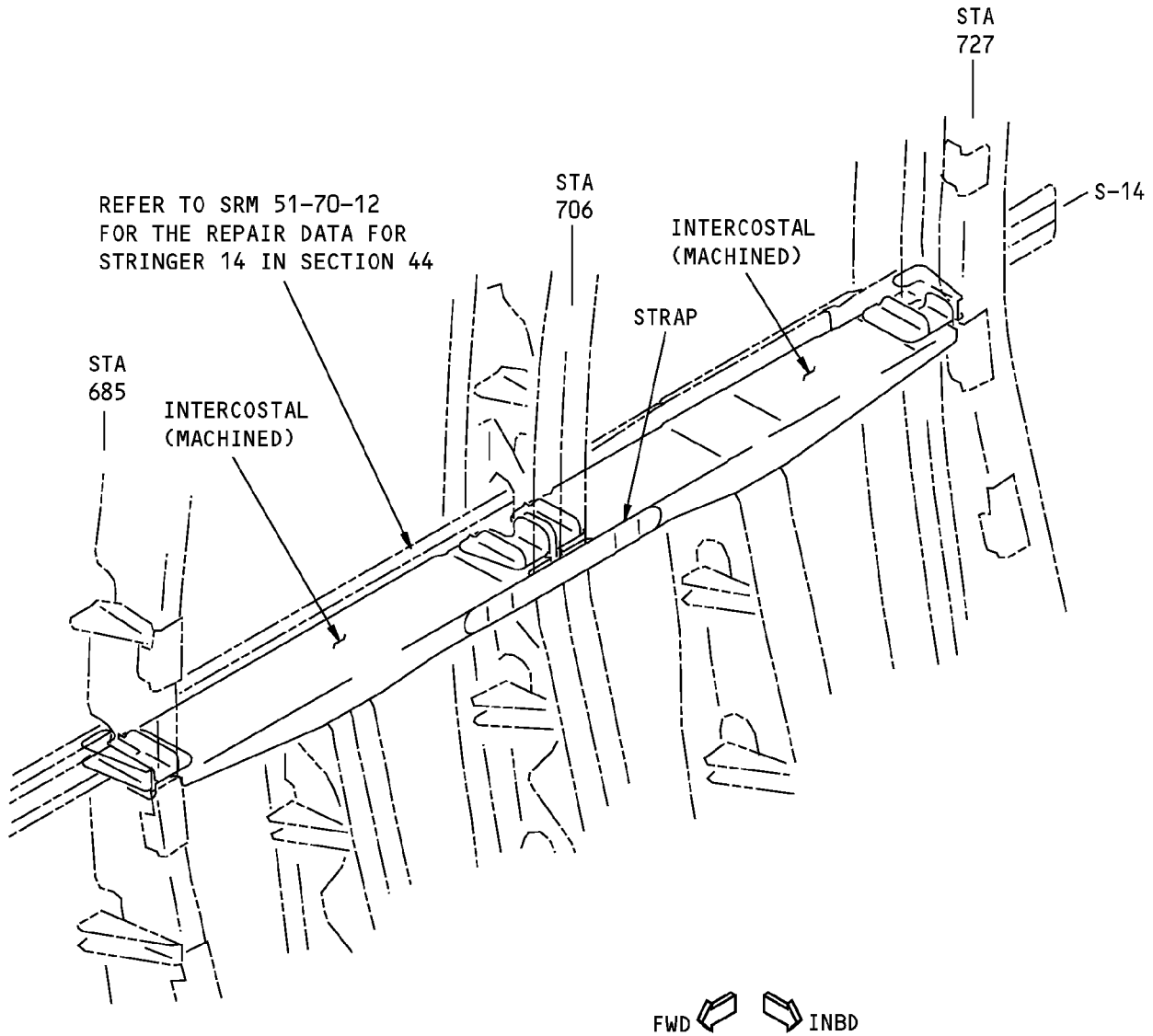
**1. Applicability**

- A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 44 Intercostal Location, Figure 201/REPAIR 1.



**Section 44 Intercostal Location**  
**Figure 201**

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**RIGHT SIDE IS SHOWN,  
LEFT SIDE IS OPPOSITE**

**Section 44 Fuselage Intercostal Structure  
Figure 202**



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**2. General**

- A. The typical repair given in 51-70-12 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-11, REPAIR GENERAL	Typical Formed Section Repair
51-70-12	EXTRUDED SECTION REPAIRS
51-70-12, REPAIR GENERAL	Typical Extruded Section Repairs
53-00-04, ALLOWABLE DAMAGE 1	Fuselage Intercostals
53-40-04	FUSELAGE INTERCOSTALS - SECTION 44
53-40-04, IDENTIFICATION 1	Section 44 Intercostals

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 1 and Figure 202 to find the applicable repair for the part you want to repair.

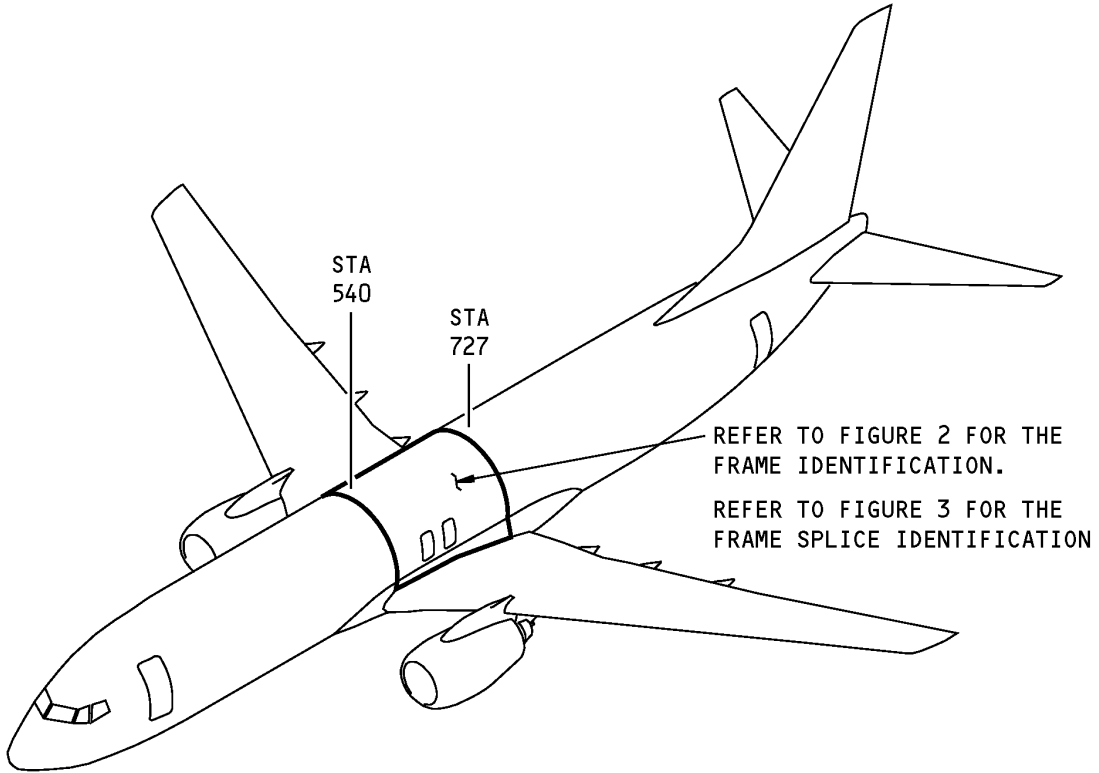
**NOTE:** If necessary, refer to 53-40-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	REPAIR
Machined parts	Refer to SRM 51-70-12 or Refer to SRM 51-70-11
Straps	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-00-04, Allowable Damage 1, replace the damaged part

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**IDENTIFICATION 1 - SECTION 44 FUSELAGE FRAMES**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Fuselage Frame Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4401	Section 44 - Crown Panel Assembly, Functional Collector
140A4402	Side Panel Assembly, Functional Collector - Section 44
140A4404	Crown Panel Integration, Functional Collector - Section 44
144A1101	Frame Installation - STA 559, S-10L to S-10R
144A1102	Frame Installation - STA 578, S-10L to S-10R
144A1104	Frame Installation - STA 616, S-10L to S-10R

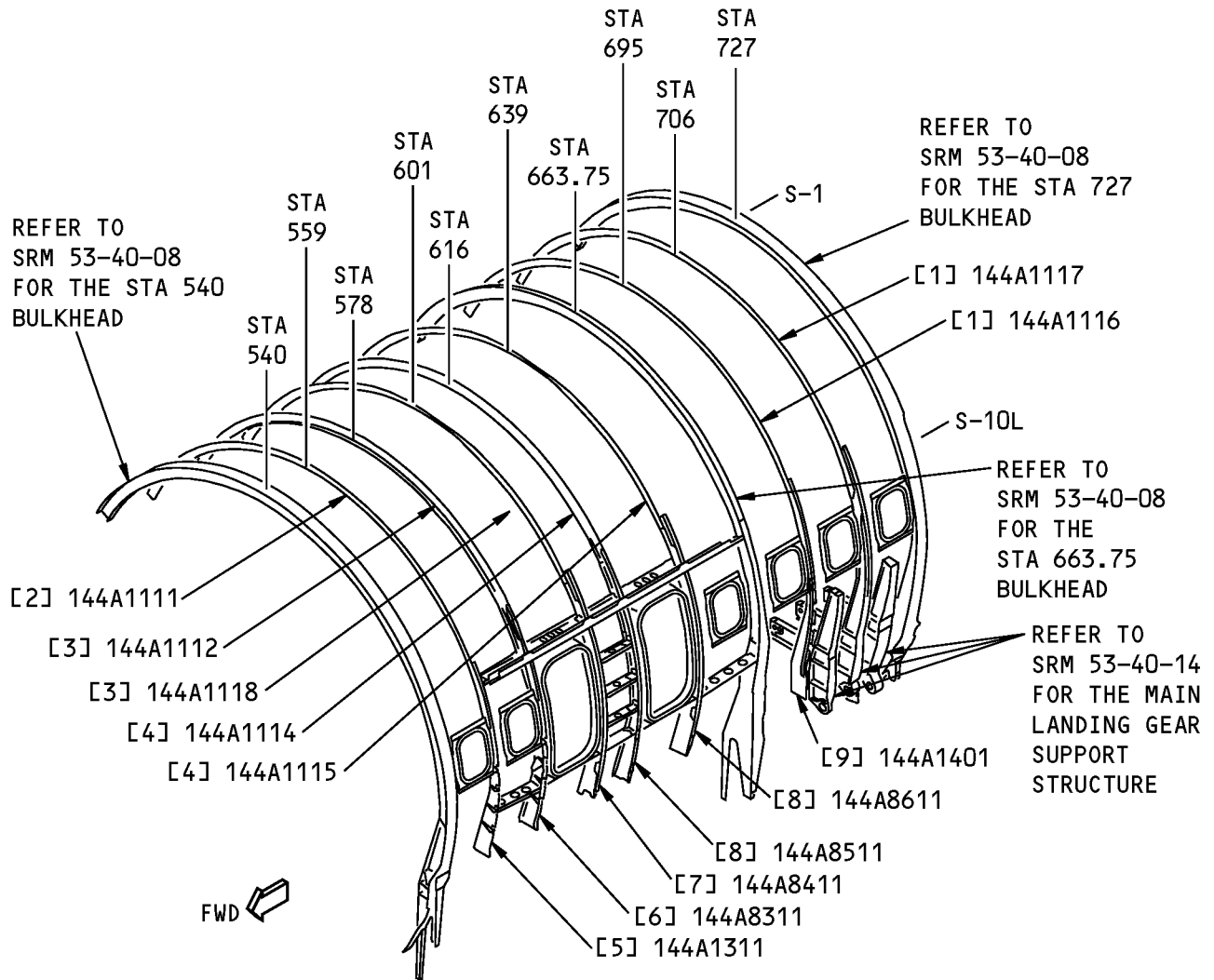




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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
144A1105	Frame Installation - STA 639, S-10L to S-10R
144A1106	Frame Installation - STA 685, S-10L to S-10R
144A1107	Frame Installation - STA 706, S-10L to S-10R
144A1108	Frame Splice Installation - STA 559 to STA 706
144A1109	Frame Installation - STA 601, S-10L to S-10R
144A1400	Frame Installation - STA 685
144A3101	Skin Installation S-9L to S-9R, STA 540 to 727
144A3301	Skin Installation-STA 540 to STA 727, S-10 to S-18A
144A8301	Frame Installation - STA 578
144A8501	Frame Installation - STA 616
144A8601	Frame Installation - STA 639

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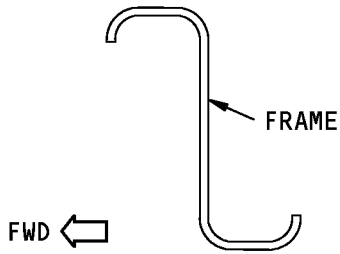
**LEFT SIDE AND CROWN FRAMES ARE SHOWN,  
RIGHT SIDE FRAMES ARE OPPOSITE THE LEFT SIDE FRAMES**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAILS A THRU D FOR TYPICAL SECTION VIEWS OF THE FRAMES.

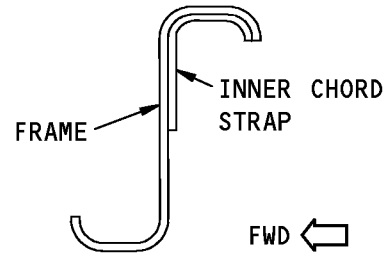
**Section 44 Fuselage Frames Identification  
Figure 2 (Sheet 1 of 2)**

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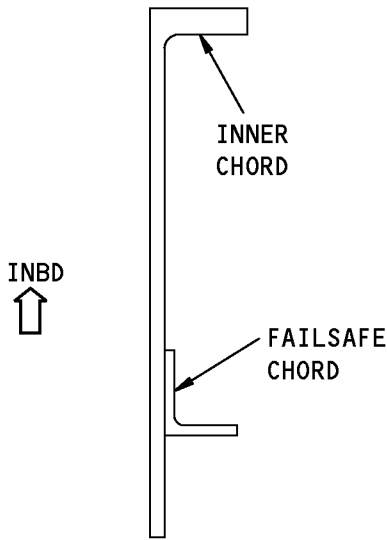
TYPICAL SECTION THROUGH AN  
ITEM [1] AND ITEM [2] FRAME

(A)



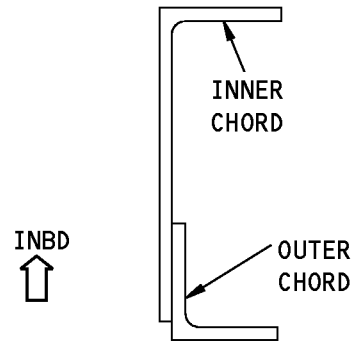
TYPICAL SECTION THROUGH AN  
ITEM [3] AND ITEM [4]  
FRAME ASSEMBLY

(B)



TYPICAL SECTION THROUGH AN  
ITEM [5] AND ITEM [9]  
FRAME ASSEMBLY

(C)



TYPICAL SECTION THROUGH AN  
ITEM [6], ITEM [7] AND  
ITEM [8] FRAME ASSEMBLY

(D)

**Section 44 Fuselage Frames Identification  
Figure 2 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>†1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame		BAC1517-706 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame		BAC1517-1062 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly Frame Inner Chord Strap (2)	0.056 (1.42)	BAC1517-706 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly Frame Inner Chord Strap (2)	0.056 (1.42)	BAC1517-2757 7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Frame Assembly Inner Chord Failsafe Chord	1.000 (25.4)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part) AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly Inner Chord  Outer Chord	1.750 (44.45) 1.375 (34.9)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part) 7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part) BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	Line numbers 7 thru 9 only. Line numbers 36 and on. Line numbers 7 thru 9 only. Line numbers 36 and on.
[7]	Frame Assembly Inner Chord  Outer Chord	1.375 (34.9)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part) BAC1514-3229 7075-T73 extrusion given in QQ-A-200/11 BAC1514-3229 7075-T73 extrusion given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	Line numbers 7 thru 9 only. Line numbers 36 and on.
[8]	Frame Assembly Inner Chord  Outer Chord	1.750 (44.45)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part) BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11	Line numbers 7 thru 9 only.

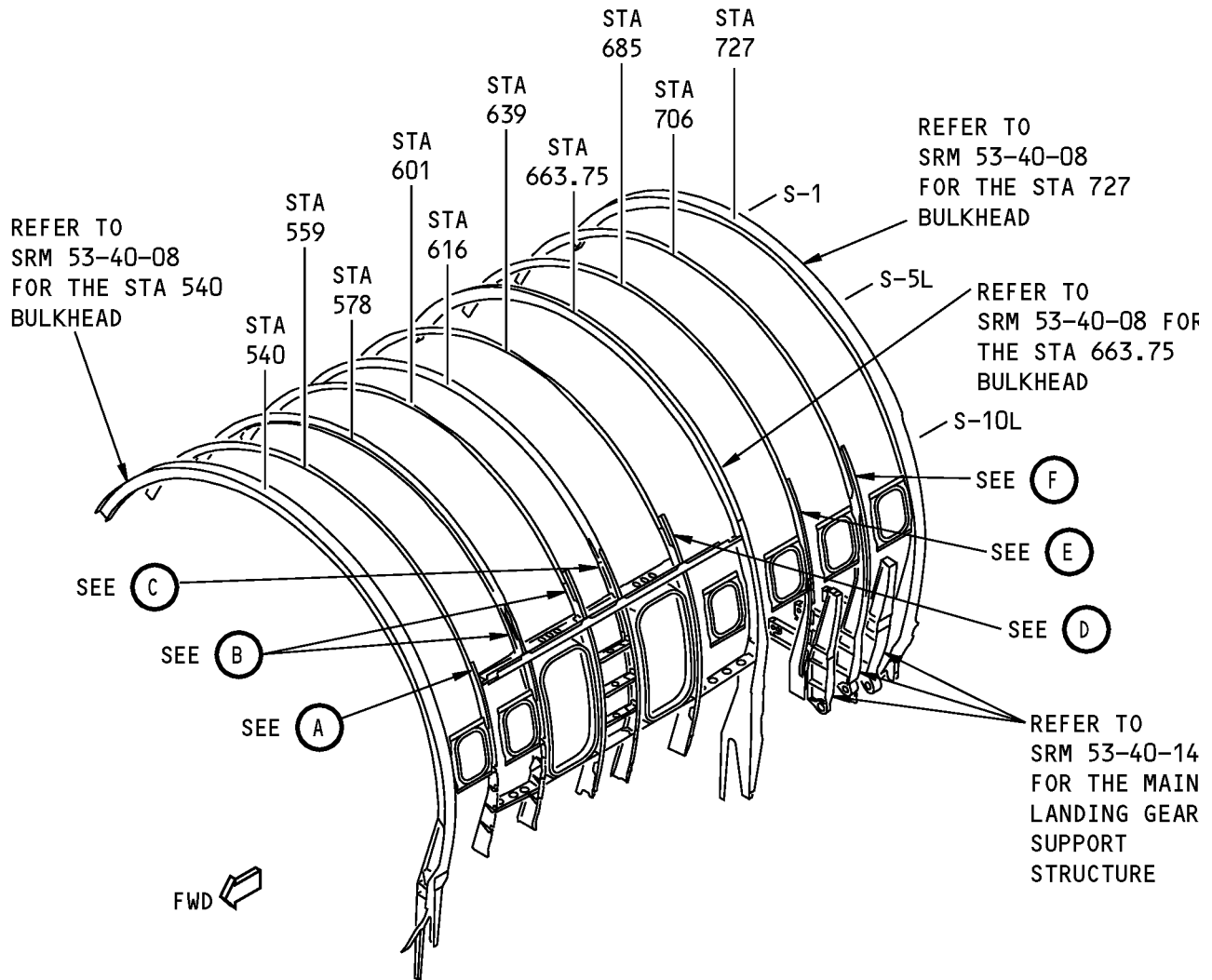


**737-800**  
**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
			BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)	Line numbers 36 and on.
[9]	Frame Assembly Inner Chord  Failsafe Chord	1.250 (31.8)	7050-T7451 plate as given in AMS 4050, machined to different thicknesses (Grain direction controlled part)  AND10134-1204 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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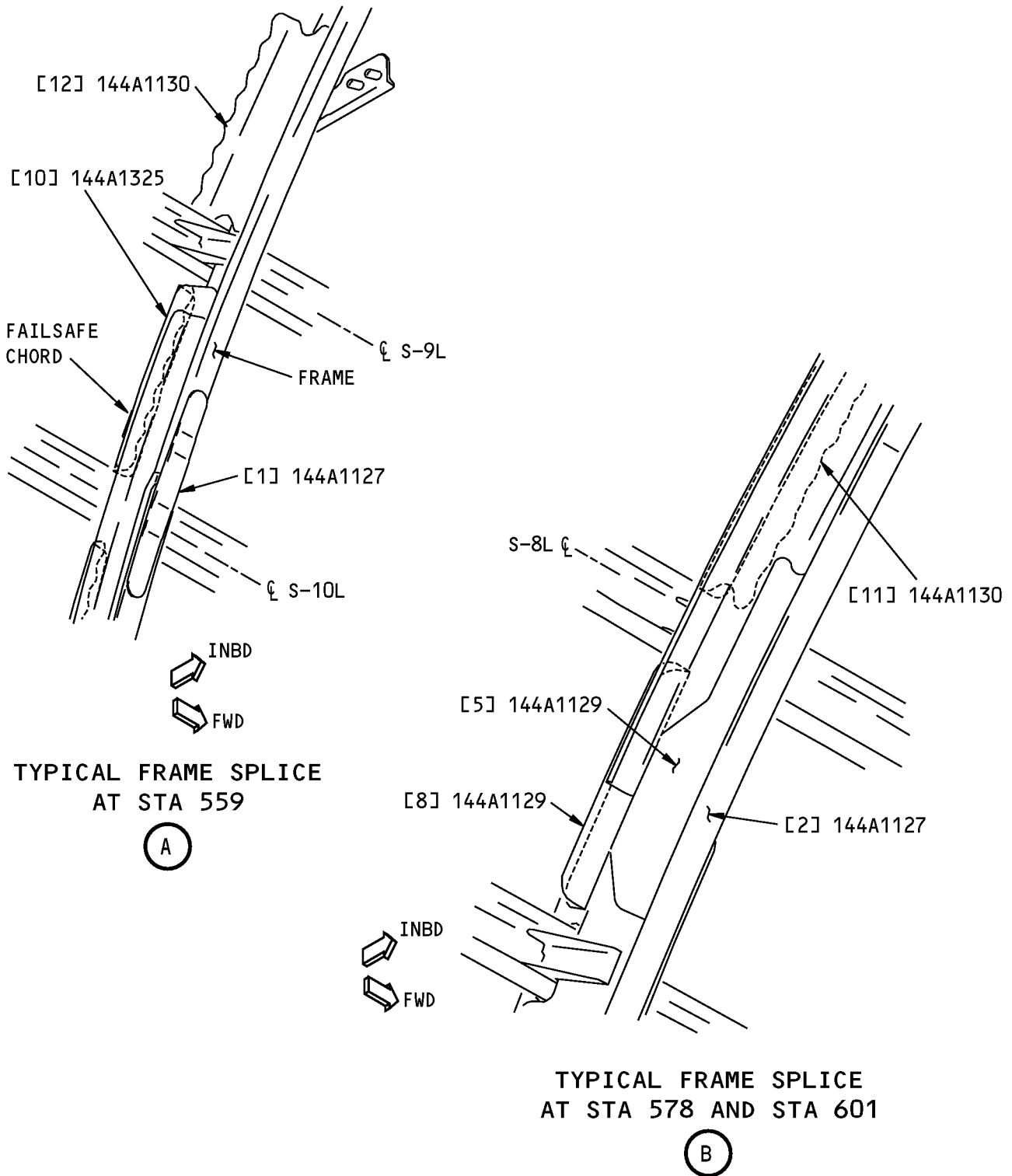
LEFT SIDE AND CROWN FRAMES ARE SHOWN,  
RIGHT SIDE FRAMES ARE OPPOSITE THE LEFT SIDE FRAMES

**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

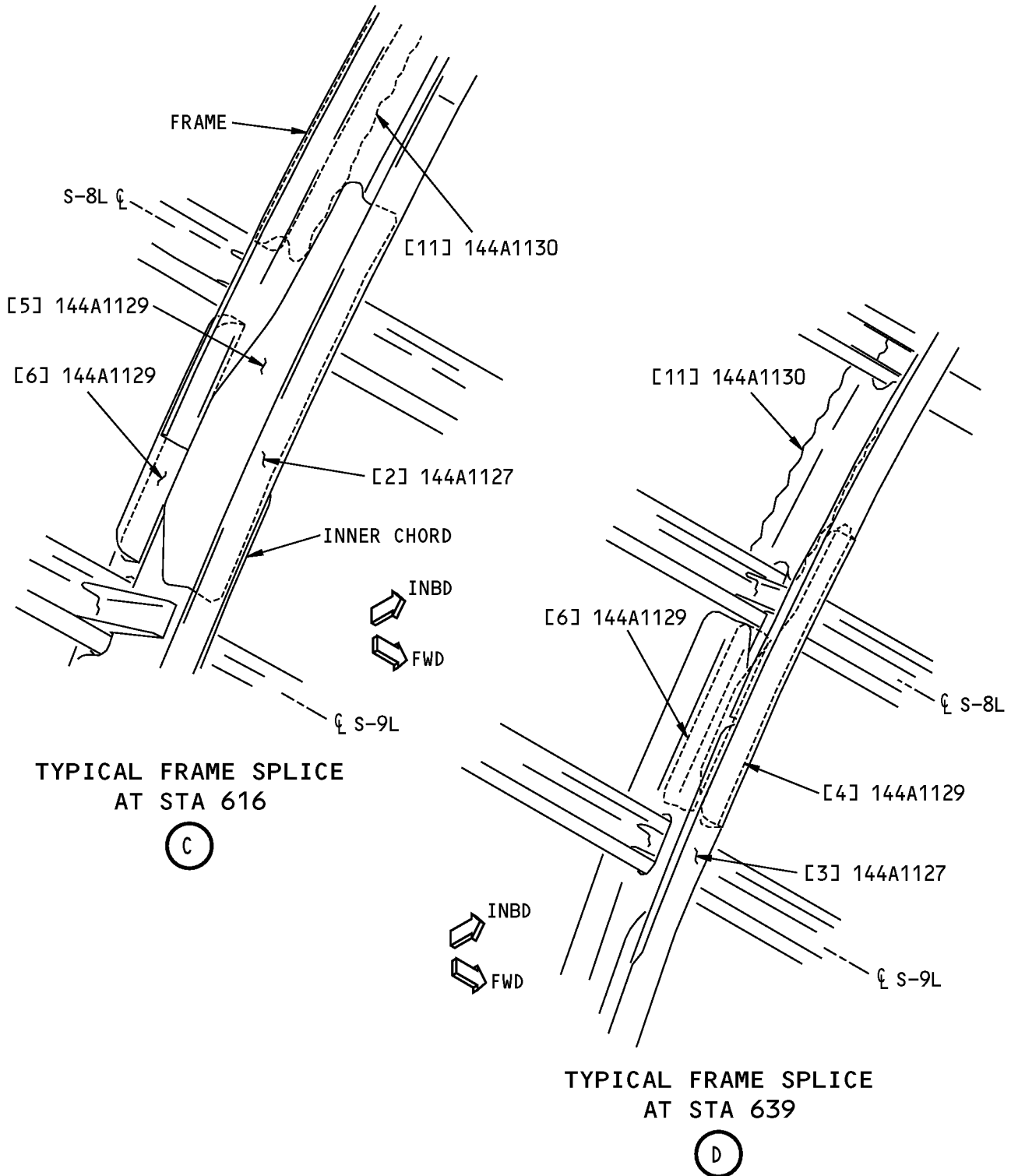
**Section 44 Fuselage Frame Splices Identification  
Figure 3 (Sheet 1 of 4)**

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STRUCTURAL REPAIR MANUAL**



**Section 44 Fuselage Frame Splices Identification  
Figure 3 (Sheet 2 of 4)**

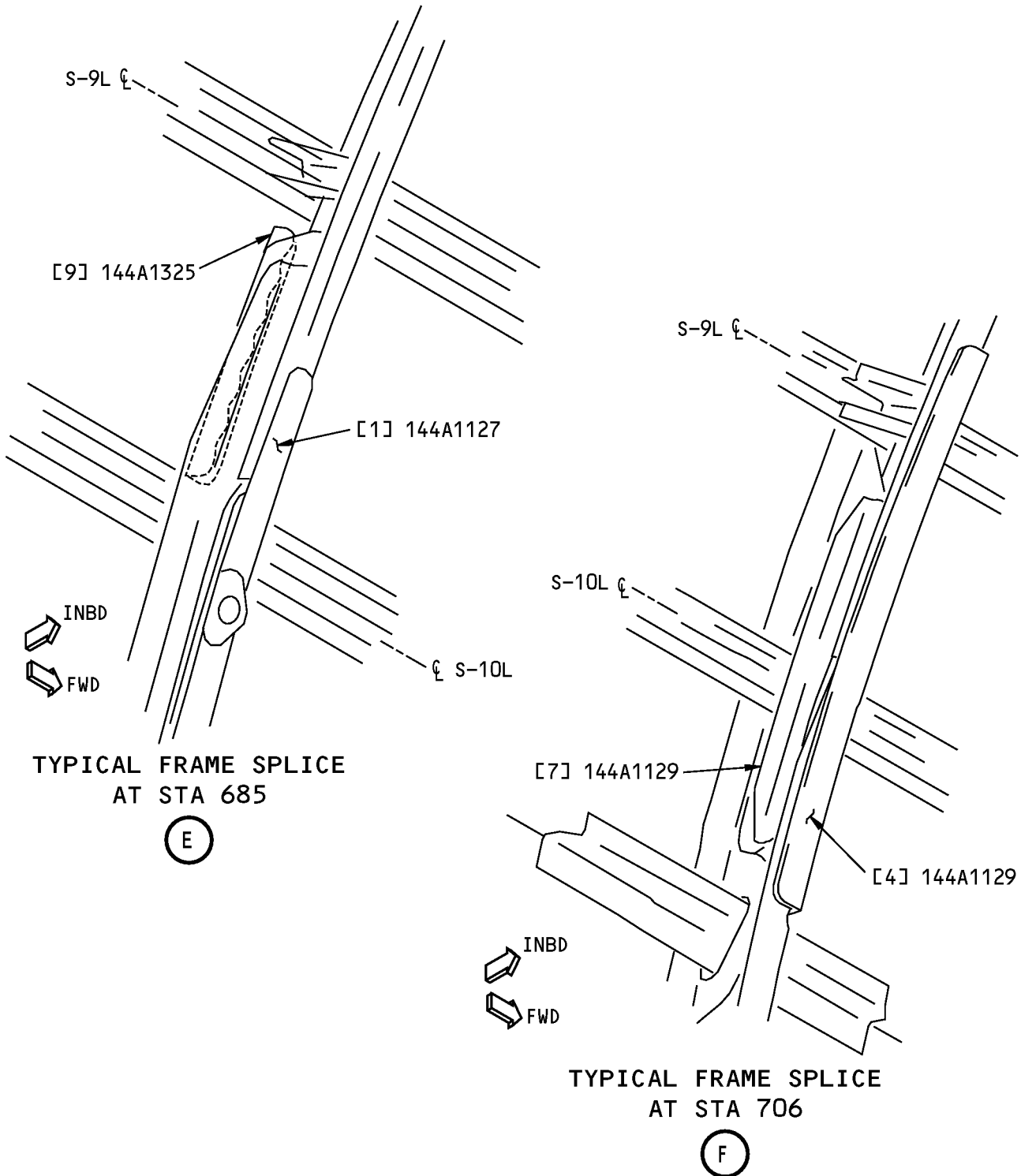
**737-800  
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**Section 44 Fuselage Frame Splices Identification  
Figure 3 (Sheet 3 of 4)**



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STRUCTURAL REPAIR MANUAL**



**Section 44 Fuselage Frame Splices Identification  
Figure 3 (Sheet 4 of 4)**



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STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Splice Strap	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Splice Strap	0.071 (1.80)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Splice Strap	0.125 (3.18)	7075-T6 bare sheet as given in QQ-A-250/12	Line numbers 7 thru 9 only.
		0.125 (3.18)	7050-TT6 clad sheet as given in QQ-A-250/13	Line numbers 36 and on.
[4]	Splice Angle	0.125 (3.18)	7050-T7451 sheet as given in AMS 4050 (Grain direction controlled part)	
[5]	Splice Angle	0.125 (3.18)	7050-T7451 sheet as given in AMS 4050 (Grain direction controlled part)	Line numbers 7 thru 147 only.
		0.125 (3.18)	7050-T7451 plate as given in AMS 4050 (optional: BAC1503-100898 7075-T73511 Extrusion as given in QQ-A-200/11) (Grain direction controlled part)	Line numbers 151 and on.
[6]	Splice Angle		BAC1503-100096 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Splice Angle		BAC1503-2743 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Splice Angle		BAC1503-1831 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Shear Tie		BAC1503-101154 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1514-3165)	
[10]	Shear Tie		BAC1514-3165 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Shear Tie		BAC1503-101154 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1503-100283)	
[12]	Shear Tie		BAC1503-101144 7075-T73511 extrusion as given in QQ-A-200/11. (Optional: BAC1503-100283)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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## STRUCTURAL REPAIR MANUAL

### ALLOWABLE DAMAGE 1 - SECTION 44 FUSELAGE FRAMES

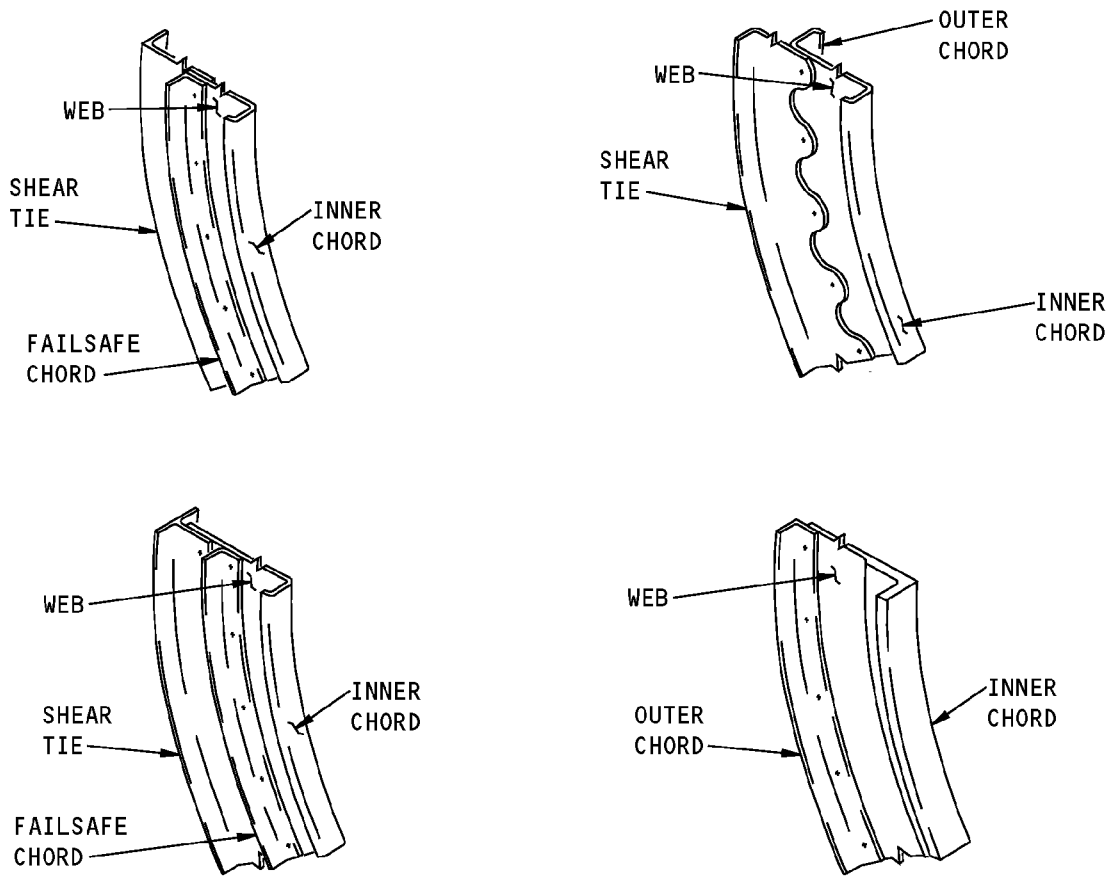
#### 1. Applicability

- A. This subject gives the allowable damage limits for the fuselage frames in body section 44 as shown in Allowable Damage - Typical Section 44 Fuselage Frames, Figure 101/ALLOWABLE DAMAGE 1.
- B. This subject is not applicable to what follows:
  - (1) Frame splices
  - (2) Bulkhead frames at STA 540, STA 663.75, or STA 727
  - (3) Main landing gear support frames at STA 695, STA 706, or STA 716
  - (4) Frame sections where the floor beams or stub beams are attached
  - (5) Frame sections that include doublers or other repair parts.

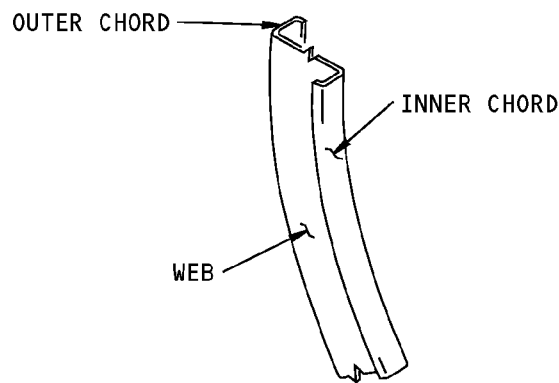
#### 2. General

- A. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- B. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove damage.
- C. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply two layers of BMS 10-11, Type I primer to the bare surfaces of the reworked areas. Refer to SOPM 20-41-02.
  - (3) Apply corrosion inhibiting compound to the reworked areas, as necessary. Refer to 51-20-01.

**STRUCTURAL REPAIR MANUAL**



**TYPICAL BUILT-UP FRAME SECTIONS (ALUMINUM)**



**TYPICAL ZEE FRAME (ALUMINUM)**

**Allowable Damage - Typical Section 44 Fuselage Frames  
Figure 101**



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**STRUCTURAL REPAIR MANUAL**

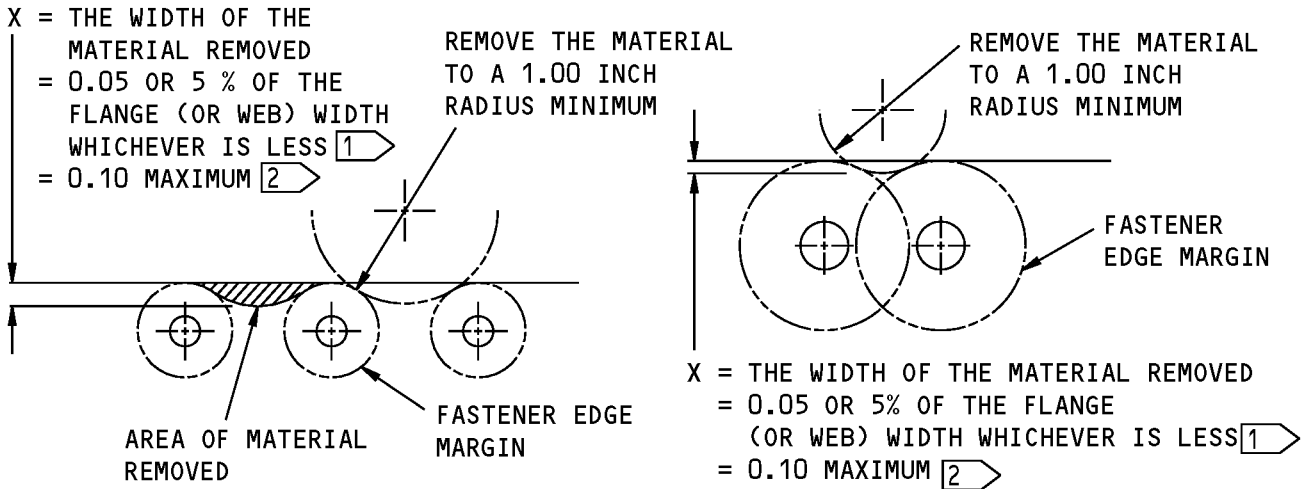
**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

- A. Inner Chord, Outer Chord, Failsafe Chord, and Shear Ties
  - (1) Cracks:
    - (a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B and D .
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C and D .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- B. Webs (Does not include chord flanges, shear tie flanges or the area under those flanges)
  - (1) Cracks:
    - (a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B and E .
  - (2) Nicks, Gouges, Scratches and Corrosion:
    - (a) Remove damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , C and E .
  - (3) Dents:
    - (a) Refer to Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail G for damage that is permitted.
  - (4) Holes and Punctures:
    - (a) Rework the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 1, Detail F .

**STRUCTURAL REPAIR MANUAL**

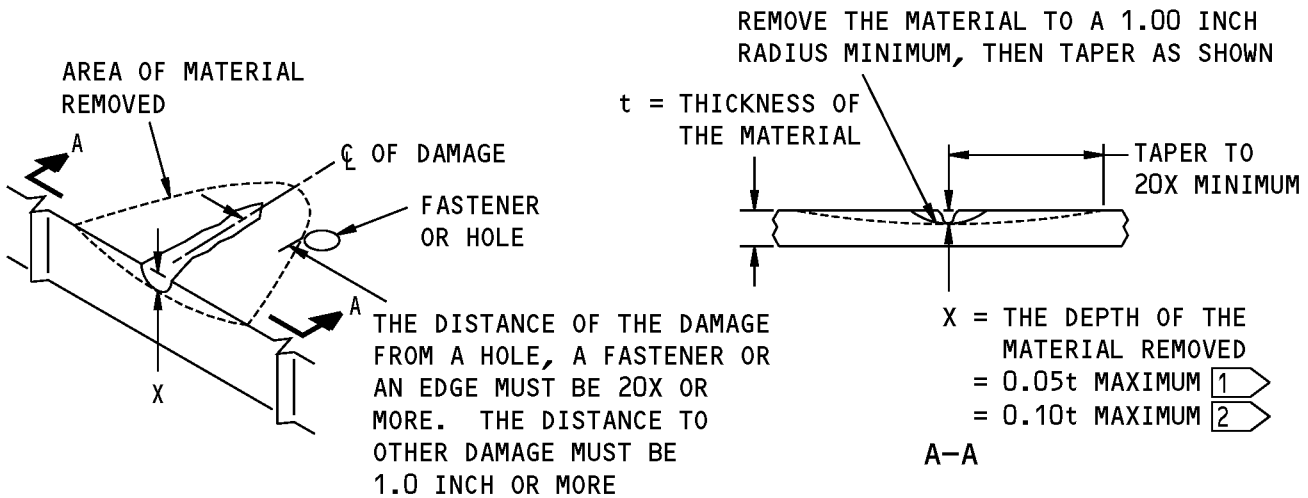


**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**A**

**B**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

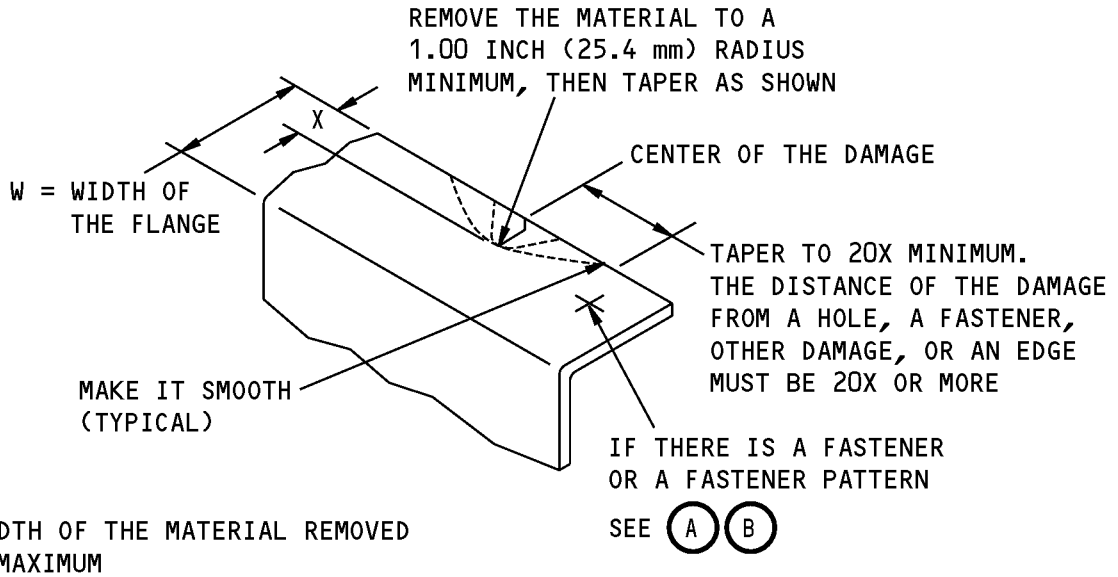
**C**

**1** FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

**2** FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

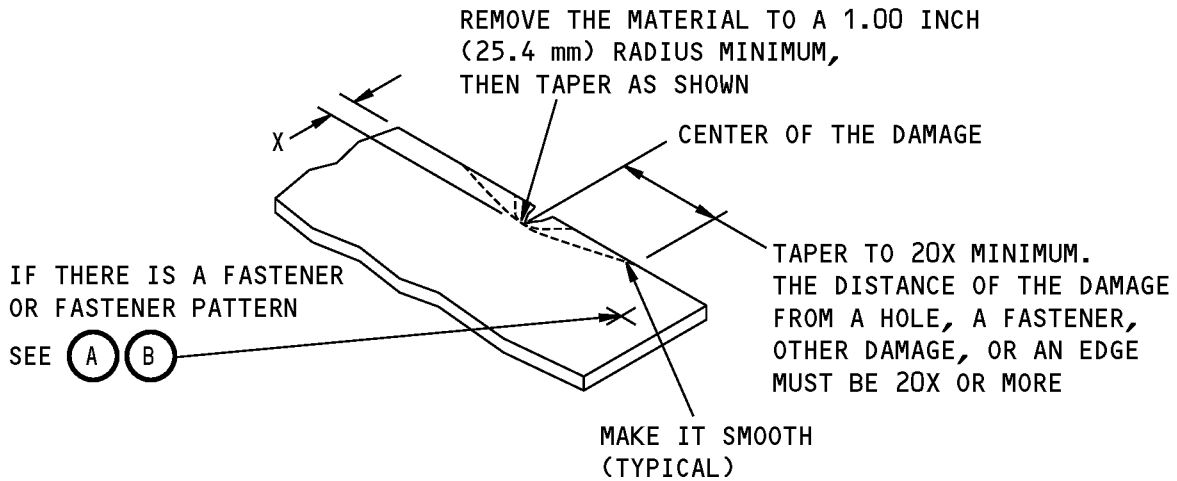
**Allowable Damage Limits  
 Figure 102 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(D)



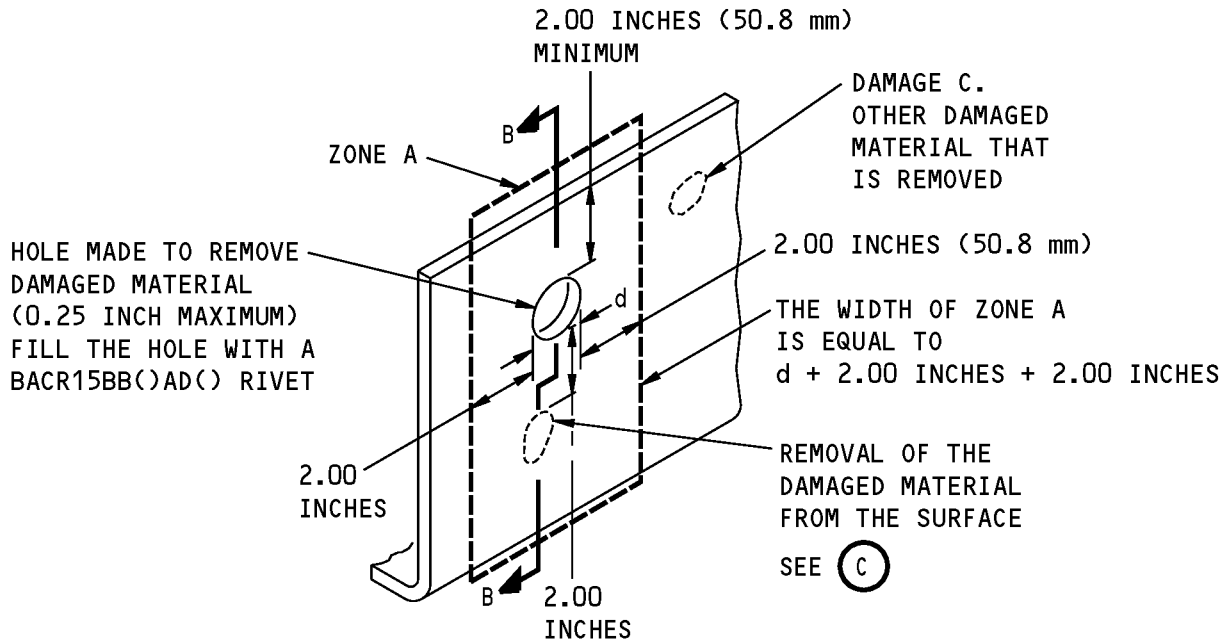
X = THE WIDTH OF THE MATERIAL REMOVED = 0.10 INCH MAXIMUM (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(E)

**Allowable Damage Limits  
Figure 102 (Sheet 2 of 4)**

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**NOTE:** DAMAGE C IS NOT LOCATED IN ZONE A AND SHOULD NOT BE INCLUDED TO CALCULATE THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IN THE EXAMPLE GIVEN IN B-B.

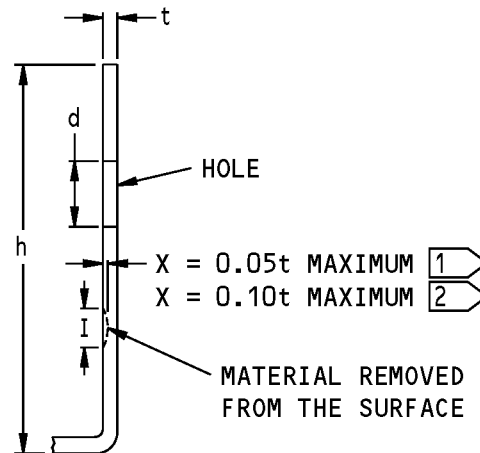
**CROSS-SECTIONAL AREA REMOVAL IN A WEB**

(F)

**EXAMPLE:** THE CROSS-SECTIONAL AREA WHICH HAS BEEN REMOVED IS

$$td + XI \leq 0.05th \quad \boxed{1}$$

$$td + XI \leq 0.10th \quad \boxed{2}$$



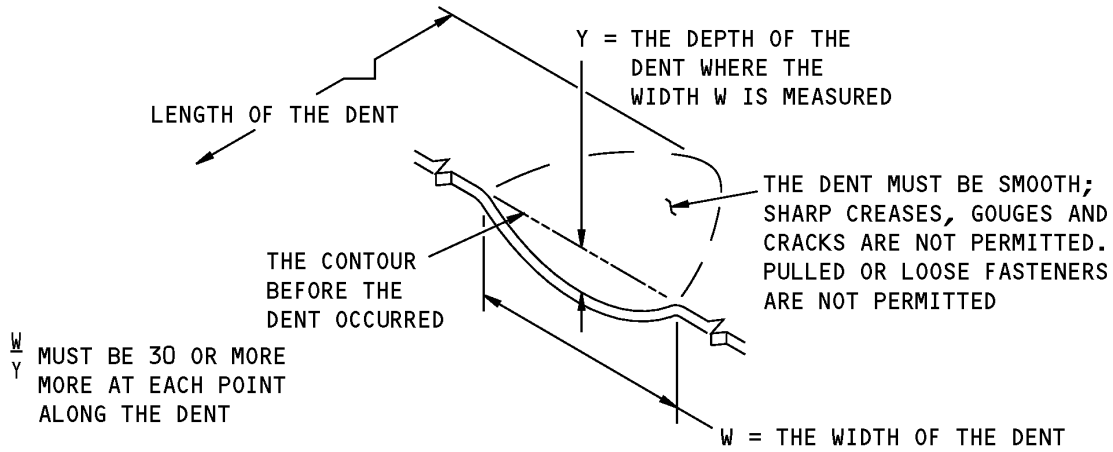
**NOTE:** THE CROSS-SECTIONAL AREA IN ZONE A MUST NOT DECREASE MORE THAN 10 PERCENT FROM THE INITIAL CROSS-SECTIONAL AREA MINUS THE FASTENER HOLES.

B-B

**Allowable Damage Limits  
Figure 102 (Sheet 3 of 4)**



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Y = 0.125 INCH MAXIMUM (3.18 mm)

DENT THAT IS PERMITTED

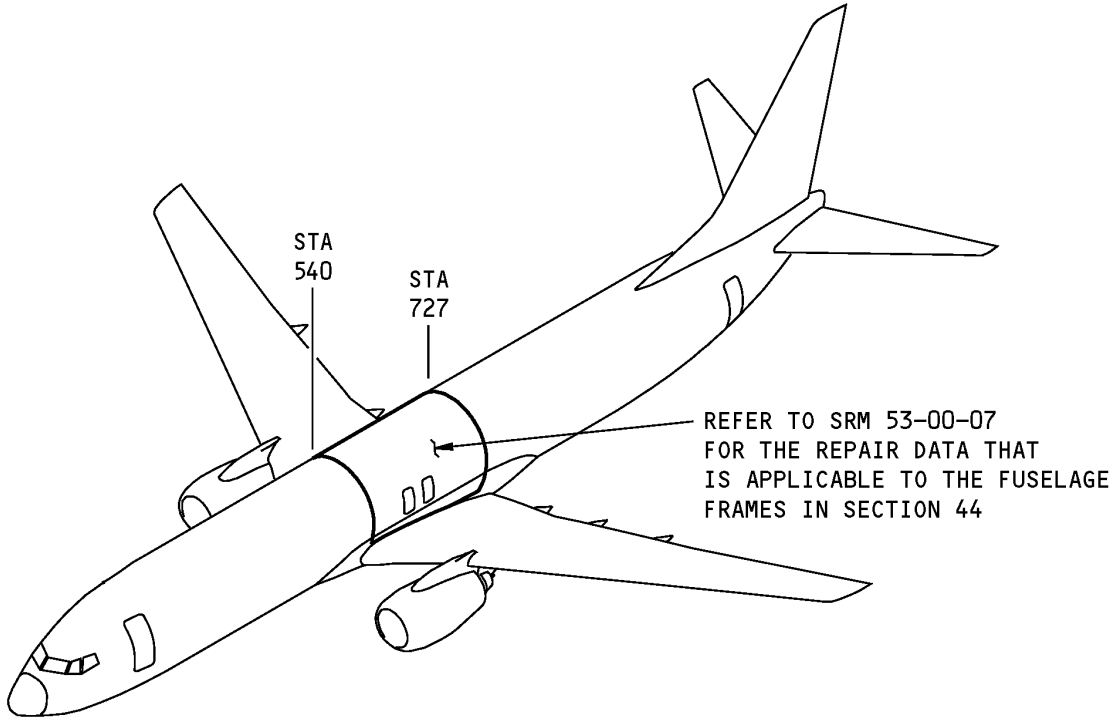


Allowable Damage Limits  
Figure 102 (Sheet 4 of 4)



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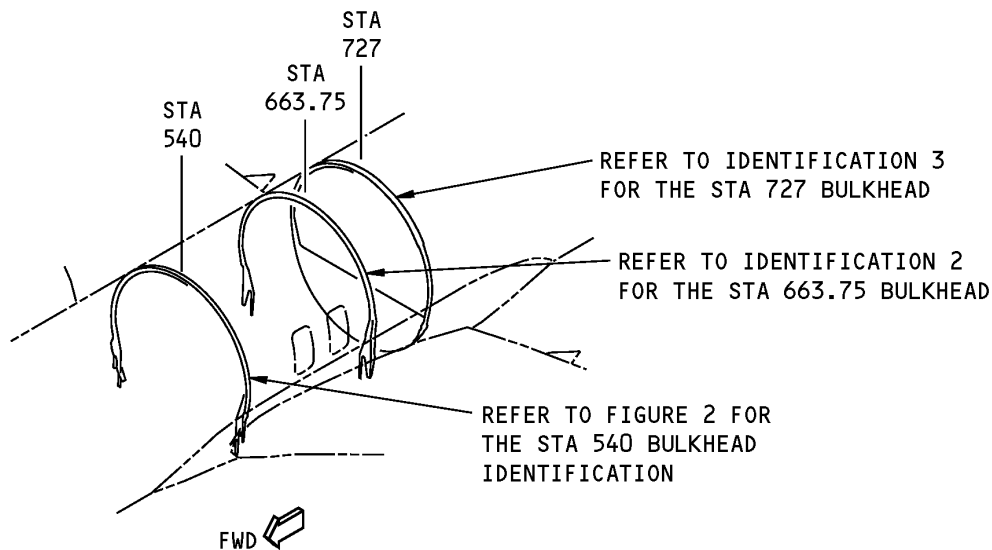
**REPAIR GENERAL - SECTION 44 FUSELAGE FRAMES**



**Section 44 Fuselage Frame Location**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - BODY STATION 540 FRONT SPAR BULKHEAD**



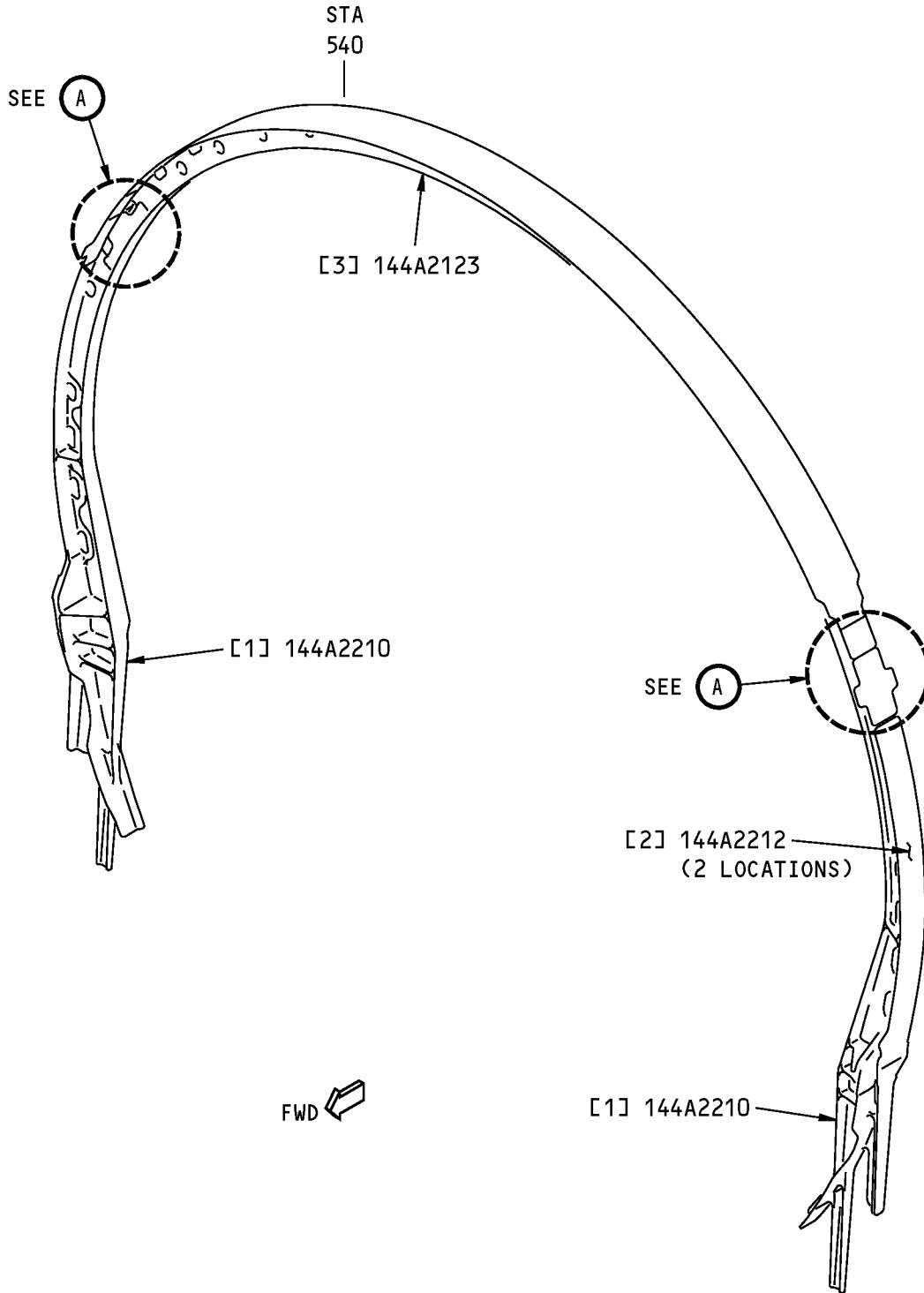
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 540 Front Spar Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
111A0000	Functional Product Collector, Wing Center Section
111A2000	Front Spar Installation, Wing Center Section
111A2001	Front Spar Assembly, Wing Center Section
144A2101	Frame Installation - Front Spar, Station 540, S-10L TO S-10R
144A2111	Frame Assembly - Front Spar, Station 540, S-10L To S-10R
144A2201	Frame Fitting Assembly - Station 540, Lower

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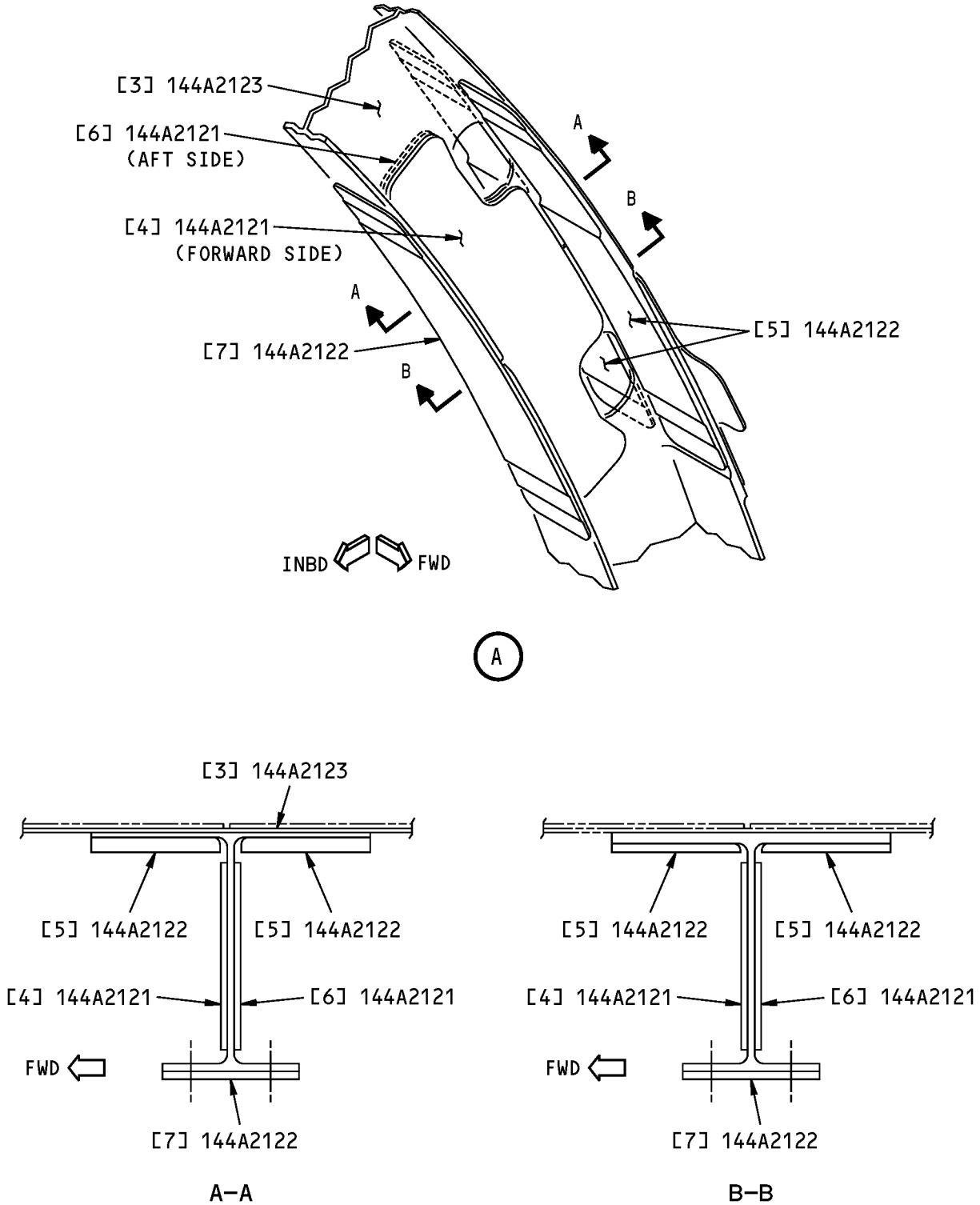


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 540 Front Spar Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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**Station 540 Front Spar Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



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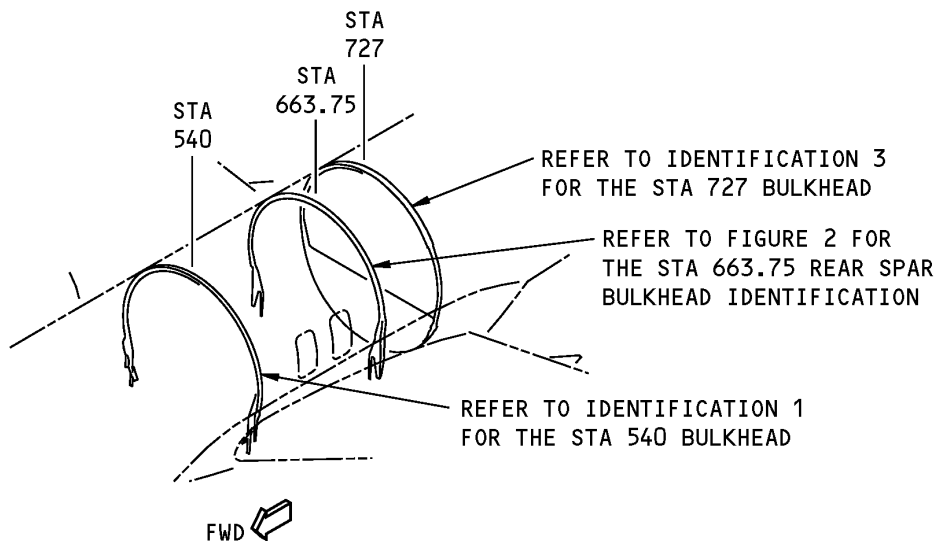
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Fitting		7075-T73 die forging as given in BMS 7-186	
[2]	Strap	0.500 (12.7)	7075-T651 plate as given in QQ-A-250/12 (Grain direction controlled part)	
[3]	Bond Assembly Frame Strap	0.040 (1.02)	BAC1518-1239 7075-T62 extrusion as given in QQ-A-200/11 2024-T3 sheet as given in QQ-A-250/4 (chem-milled)	
[4]	Web Splice (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Splice Strap, Outboard (4)	0.300 (7.62)	7075-T7351 plate as given in QQ-A-250/12	
[6]	Web Splice (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[7]	Splice Strap, Inboard (2)	0.160 (4.06)	7075-T6 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - BODY STATION 663.75 REAR SPAR BULKHEAD**



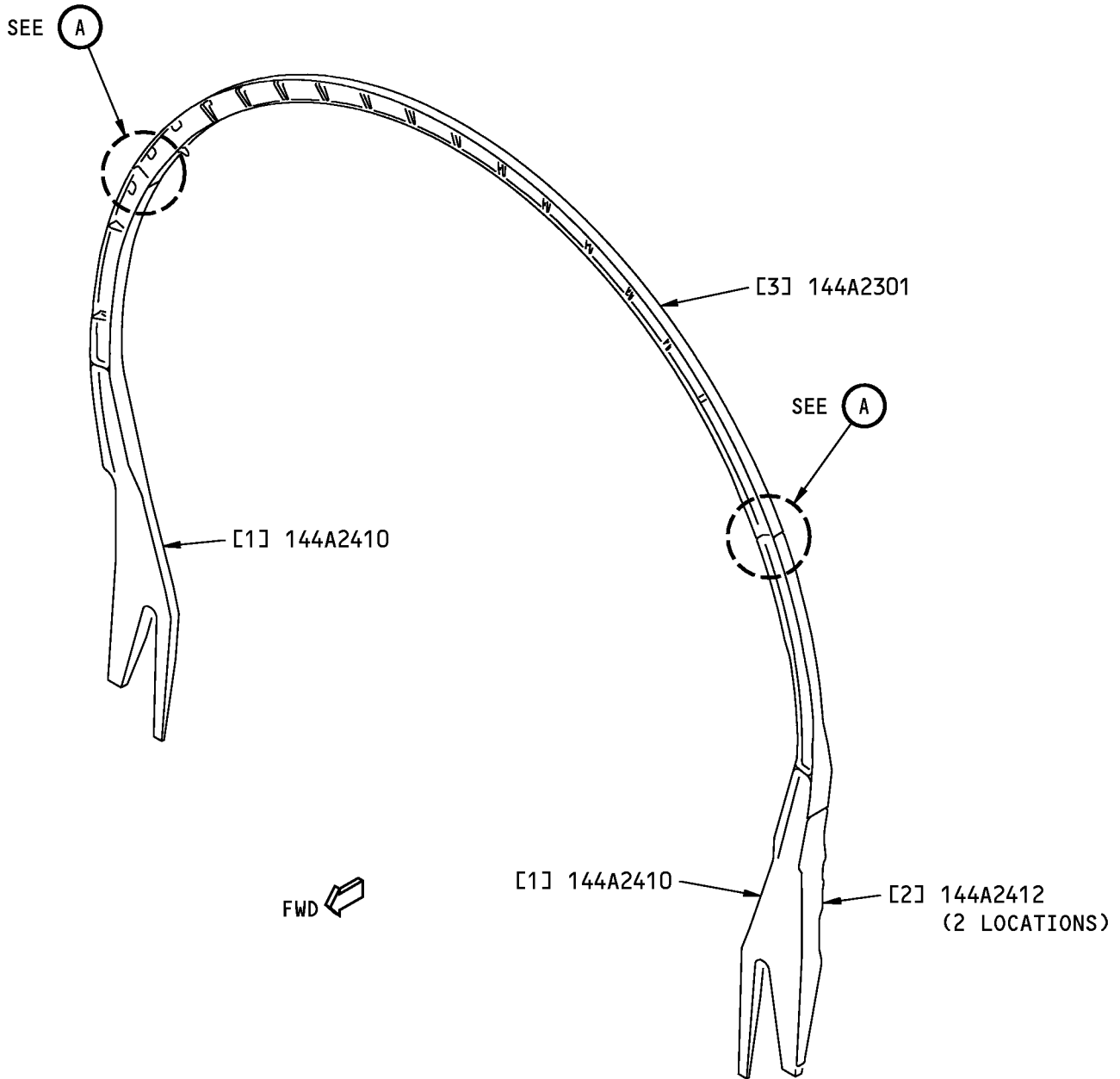
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 663.75 Rear Spar Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4401	Section 44, Crown Panel Assembly Functional Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4403	Lower Lobe Functional Collector - Section 44
144A2301	Frame Installation - Station 663.75, S-9L To S-9R
144A2400	Frame Installation - Rear Spar, Station 663.75
144A1108	Frame Splice Installation - Station 599 to Station 706

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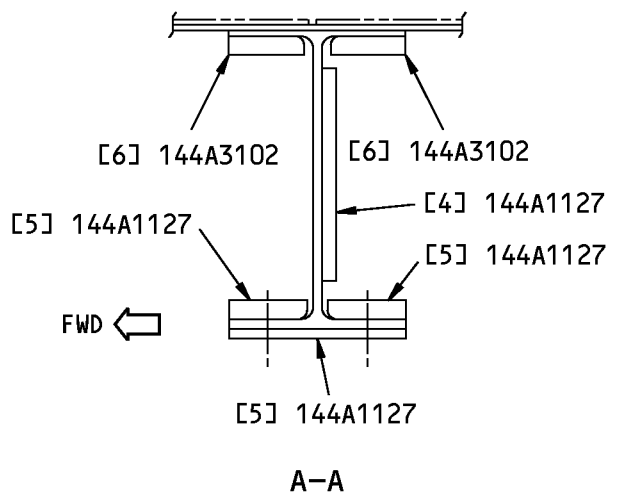
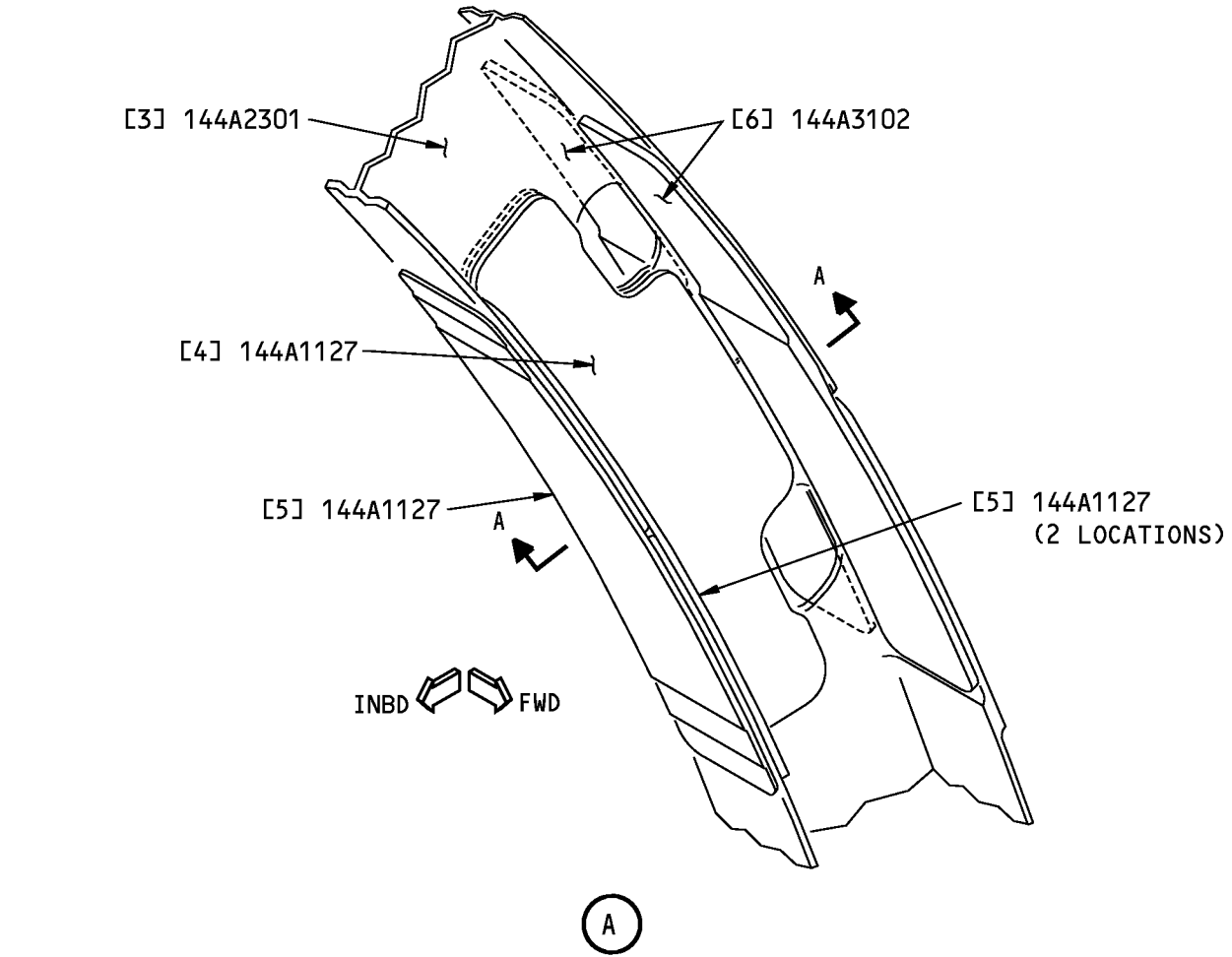
**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**SECTION 44 REAR SPAR BULKHEAD**

**Station 663.75 Rear Spar Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**



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**Station 663.75 Rear Spar Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



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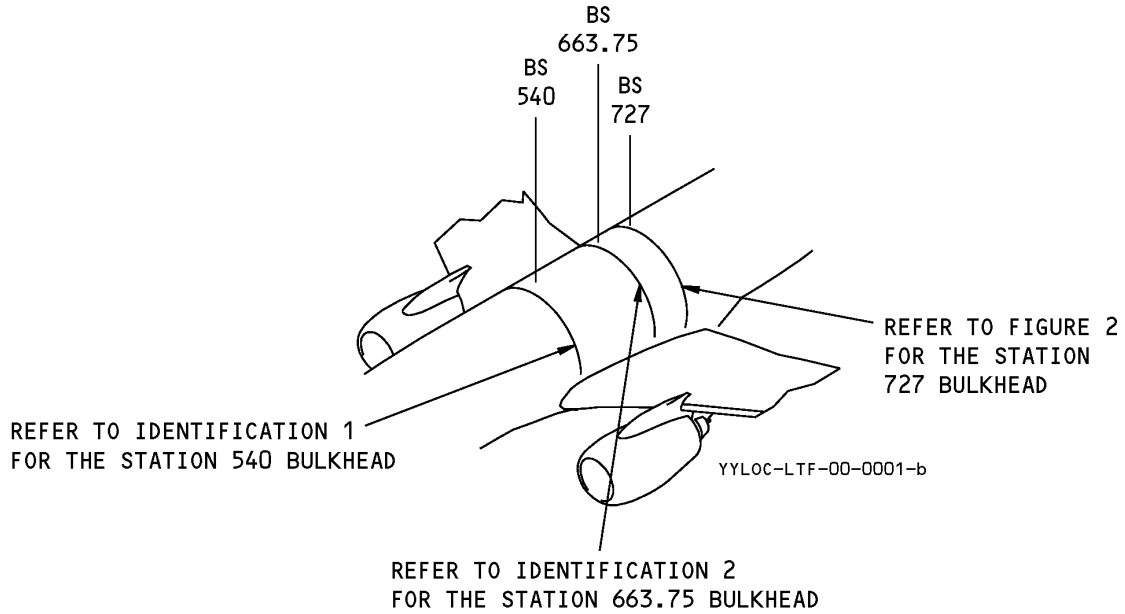
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Fitting		7075-T73 die forging as given in BMS 7-186	
[2]	Strap	0.500 (12.7)	7075-T651 aluminum plate as given in QQ-A-250/12 (Grain direction controlled part)	
[3]	Frame		BAC1518-1227 7075-T62 extrusion as given in QQ-A-200/11	Line numbers 1 thru 171
			BAC1518-1258 7075-T62 extruded shape as given in QQ-A-200/11 (Optional: BAC1518-1296 Extrusion)	Line numbers 172 and on
[4]	Splice Plate	0.125 (3.175)	7075-T6 Bare sheet as given in QQ-A-250/12	
[5]	Splice Strap (3)	0.140 (3.556)	7075-T6 Bare sheet as given in QQ-A-250/12	
[6]	Splice Strap (2)	0.313 (7.95)	7075-T7351 Bare plate as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 3 - BODY STATION 727 WHEEL WELL BULKHEAD**



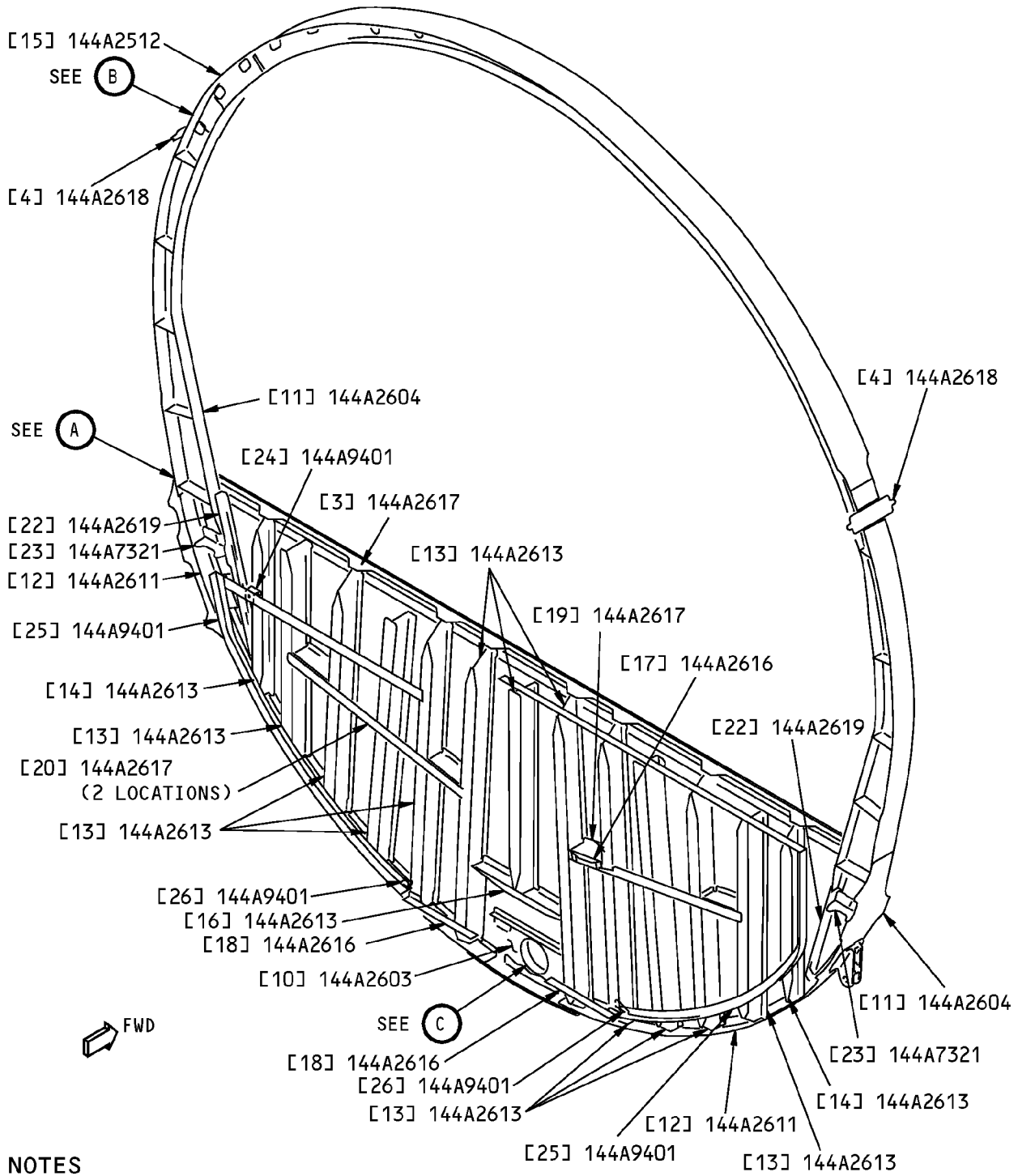
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 727 Wheel Well Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
140A4403	Lower Lobe Functional Collector - Section 44
140A4404	Crown Panel Integration, Section 44
144A2500	Frame Installation - Upper, Station 727.00, Bulkhead
144A2600	Bulkhead Installation - Station 727.00
144A2604	Frame Assembly - Lower, Station 727.00, Bulkhead

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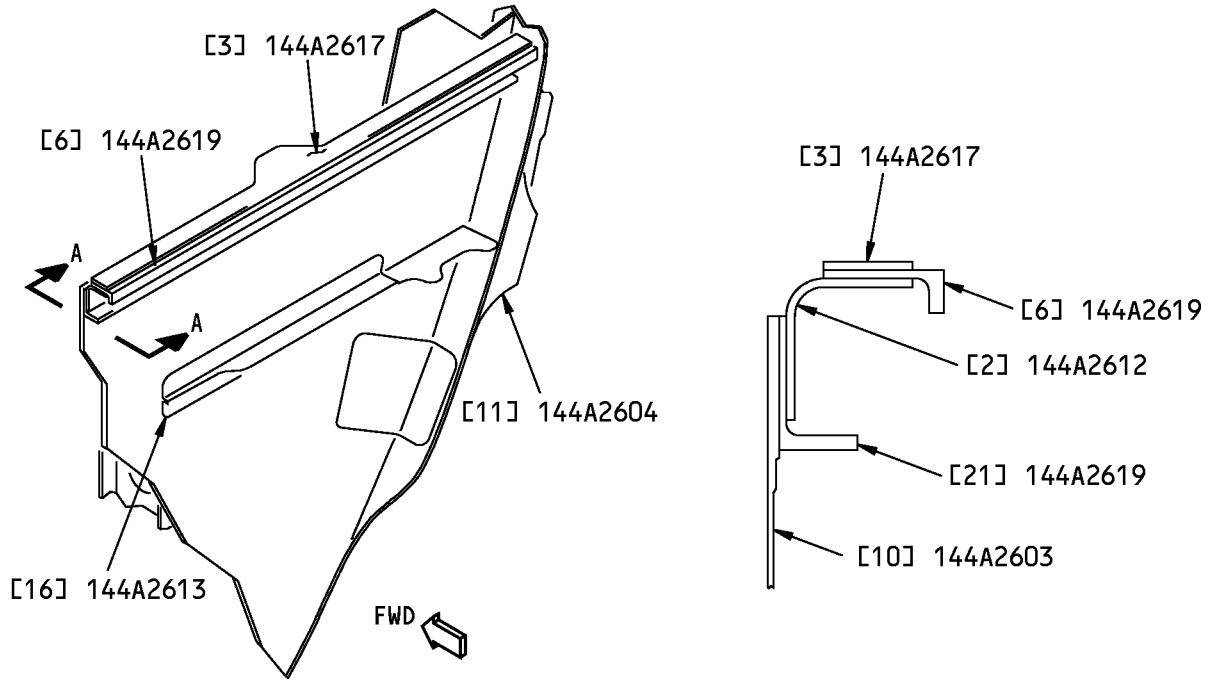


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

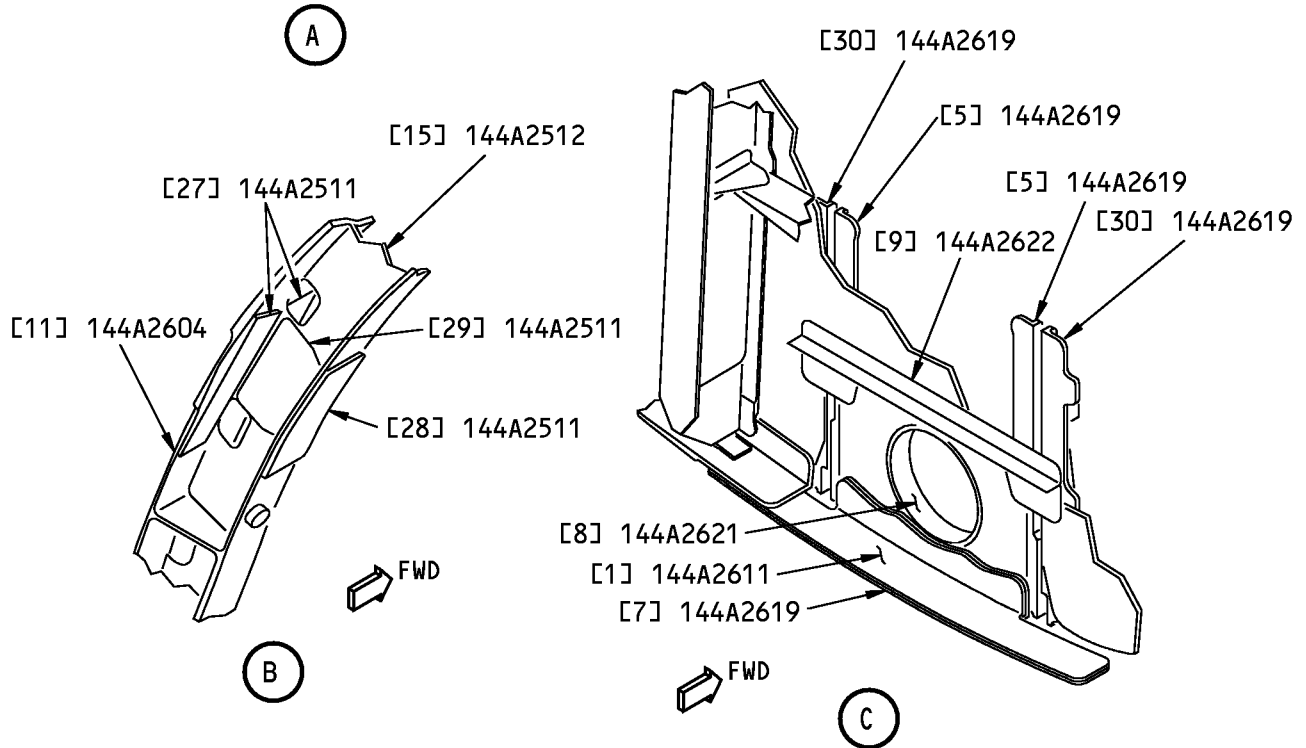
**Station 727 Wheel Well Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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RIGHT SIDE IS SHOWN,  
LEFT SIDE IS OPPOSITE

A-A



**Station 727 Wheel Well Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Chord		BAC1490-2900 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Chord-Compression	0.050 (1.27)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[3]	Strap	0.063 (1.6)	7075-T6 sheet as given in QQ-A-250/12	
[4]	Strap (2 locations)	0.250 (6.35)	2024-T351 plate as given in QQ-A-250/4	
[5]	Fitting (2)	3.000 (76.2)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	
[6]	Chord-Compression		BAC1503-100637 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Outer Chord		BAC1503-101048 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Seal Ring	1.250 (31.75)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[9]	Backup-Tee		BAC1505-101439 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Web Assembly Strap-Horizontal (2) Web	0.080 (2.03) 0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5 2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 3 for chem-milled thicknesses	
[11]	Frame Assembly (2) Chord-Failsafe  Bonded Assembly Frame-Lower Strap	  5.000 (127.0) 0.190 (4.82)	 BAC1490-2887 7075-T62 clad sheet as given in QQ-A-250/13  7050-T7451 plate as given in BMS 7-323 (Grain direction controlled part) 2024-T3 sheet as given in QQ-A-250/4	
[12]	Chord (2)		BAC1490-2899 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Beam (11)		BAC1520-2785 7150-T77511 as given in BMS 7-306 (Optional: 7150-T7451 extrusion as given in AMS 4050)	
[14]	Vertical Beam (2)	2.250 (57.15)	7150-T77511 extruded bar as given in BMS 7-306	
[15]	Frame Assembly Bonded Assembly Strap- Failsafe Frame	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5 BAC1518-1161 7075-T73 extrusion as given in QQ-A-200/11	
[16]	Stiffener (3)	2.250 (57.15)	7150-T77511 extruded bar as given in BMS 7-306	
[17]	Stiffener (4)		BAC1505-101655 2024-T3511 extrusion as given in QQ-A-200/3	
[18]	Stiffener (2)		AND10136-2007 7075-T6511 extrusion as given in QQ-A-200/11	

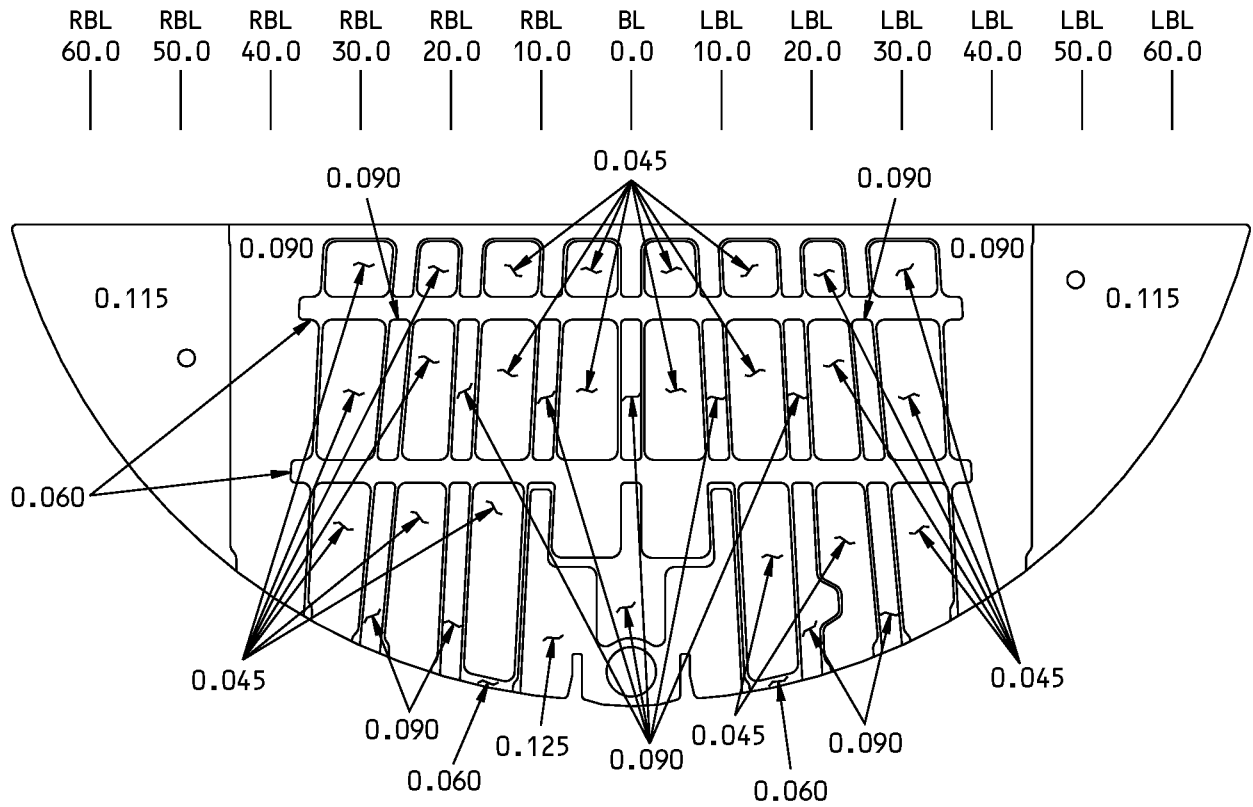


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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[19]	Intercostal (4)	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[20]	Strap (2)	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13	
[21]	Chord-Compression		BAC1503-100427 7075-T73511 extrusion as given in QQ-A-200/11	
[22]	Chord-Inner (2)		BAC1505-100587 7075-T73511 extrusion as given in QQ-A-200/11	
[23]	Tee-Aft (2)	3.400 (86.36)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	
[24]	Channel	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[25]	Angle (2)		BAC1490-2596 7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Splice Plate (2)	0.250 (6.35)	7050-T7451 plate as given in AMS 4050	
[27]	Outer Splice (4)	0.375 (9.52)	7075-T7351 plate as given in QQ-A-250/12	
[28]	Inner Splice (2)	0.125 (3.18)	7075-T6 clad sheet as given in QQ-A-250/13	
[29]	Splice Plate (2)	0.080 (2.03)	7075-T6 clad sheet as given in QQ-A-250/13	
[30]	Fitting (2)	2.700 (68.58)	7050-T7451 plate as given in BMS 7-323, Type 1 (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**Chem-milled Thickness for Figure 2, Item [10]  
Figure 3**





737-800

# STRUCTURAL REPAIR MANUAL

## ALLOWABLE DAMAGE 1 - FRONT SPAR BULKHEAD STRUCTURE - STATION 540

### 1. Applicability

A. This subject gives the allowable damage limits for the Front Spar Bulkhead Structure at Station 540.00 shown in Station 540 Front Spar Bulkhead Location, Figure 101/ALLOWABLE DAMAGE 1.

### 2. General

A. Remove the parts as necessary to get access to the damaged area.

B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

- (1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Fittings, I-Beam, and Tees	4.A
Straps, Webs, and Fillers	4.B
Clips and Support Brackets	4.C

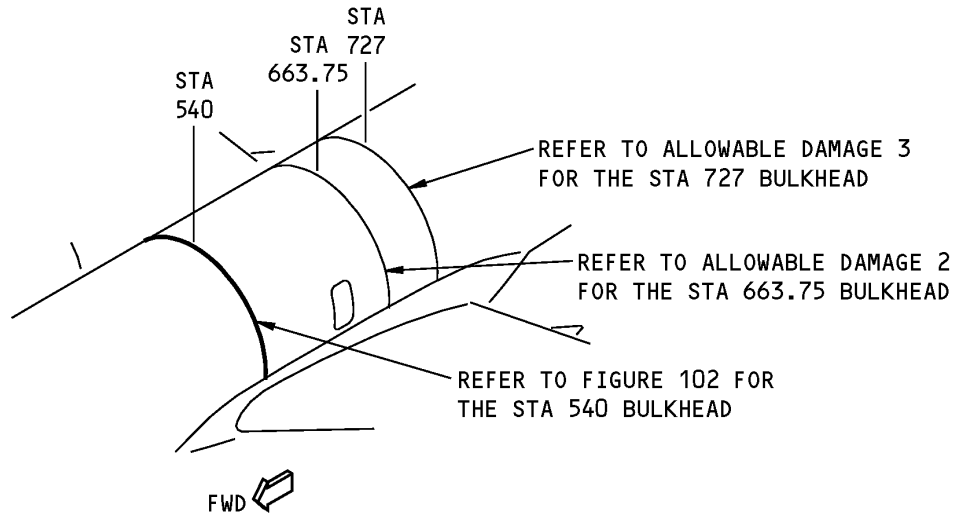
C. Remove the damage as necessary.

- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
- (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.

D. After you remove the damage, do the steps that follow:

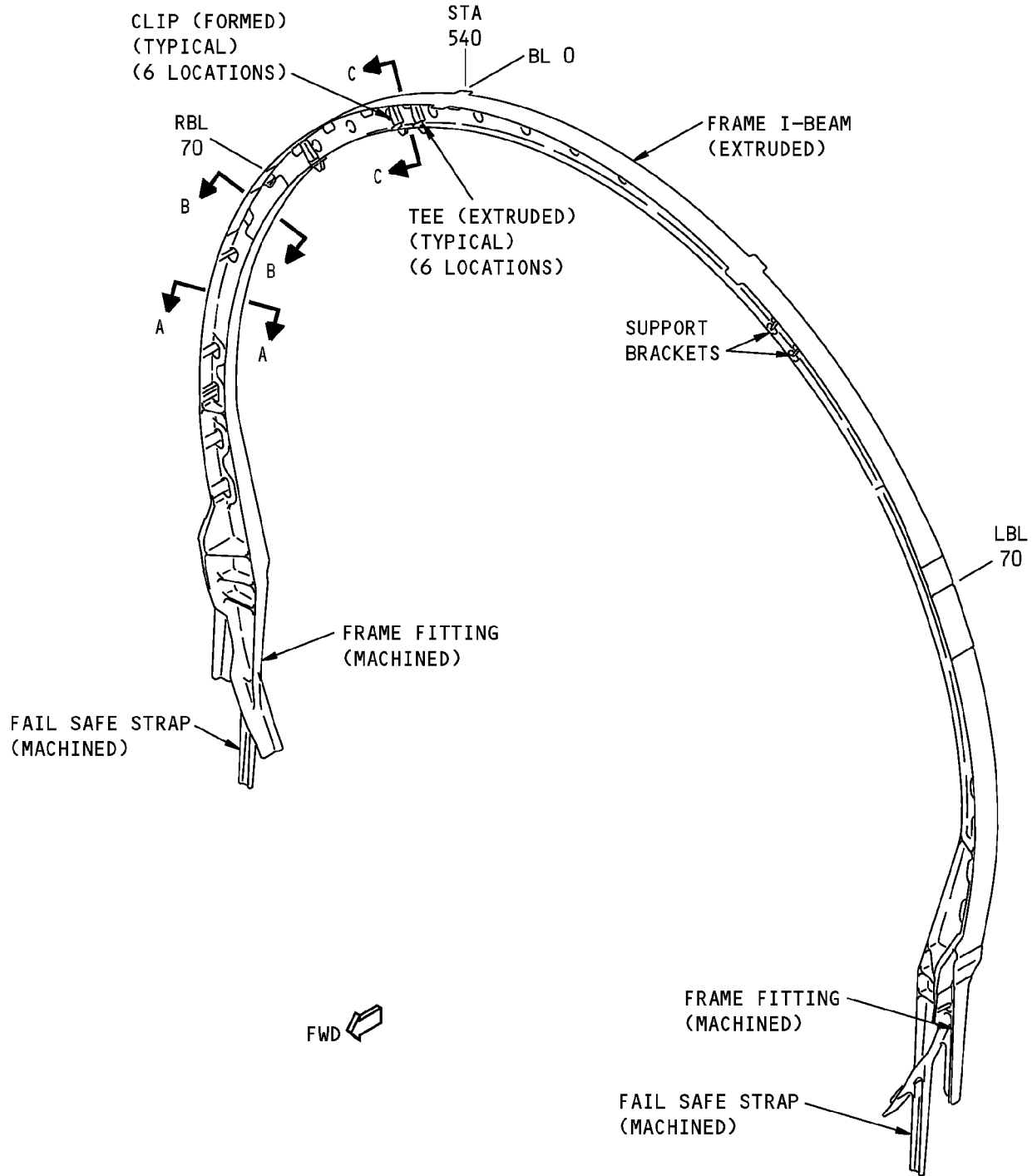
- (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
- (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
- (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

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STRUCTURAL REPAIR MANUAL**



**Station 540 Front Spar Bulkhead Location  
Figure 101**

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STRUCTURAL REPAIR MANUAL**

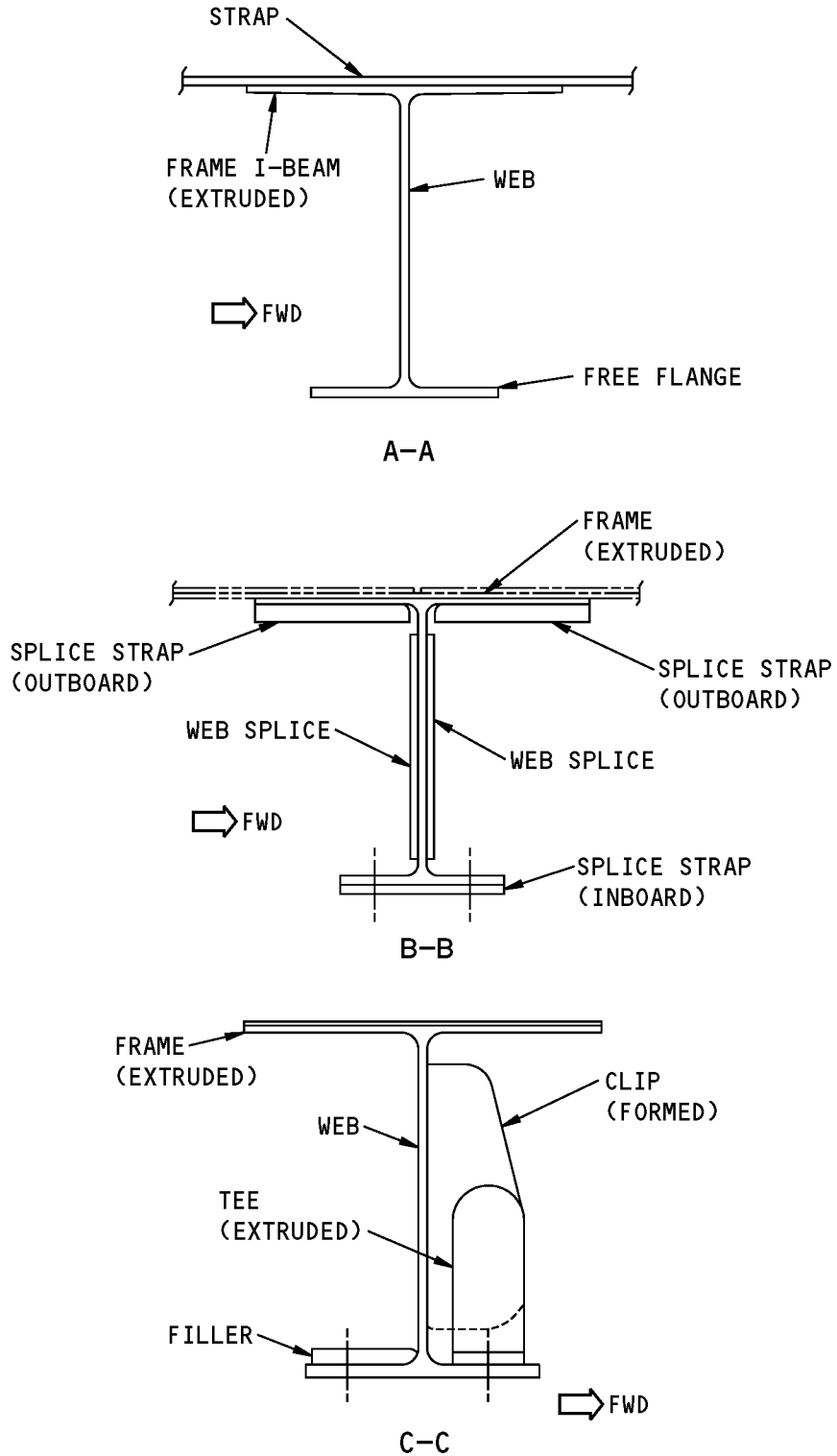


**SECTION 44 FRONT SPAR BULKHEAD**

**NOTE:** ALL PARTS ARE ALUMINIUM EXCEPT AS NOTED.

**Station 540 Front Spar Bulkhead Structure  
Figure 102 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



**Station 540 Front Spar Bulkhead Structure  
Figure 102 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06	SHOT PEENING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02, GENERAL	Fastener Installation and Removal
51-40-05, GENERAL	Fastener Hole Sizes
SOPM 20-10-03	General - Shot Peening Procedures
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

#### A. Fittings, I-Beams, and Tees

##### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , E , I , and M .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , D , E , F , I , and N .

1) After you remove the damage from the fitting, shot peen the fitting surface.

a) Refer to 51-20-06 for shot peen intensity and shot number.

b) Refer to SOPM 20-10-03 for flap peen and shot peen procedures.

##### (3) Dents are not permitted

##### (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail L if:

(a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup

(b) A minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge

(c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole as shown in zone 2 of the web.

#### B. Clips and Support Brackets

##### (1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and E .

##### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , and E .

##### (3) Dents are not permitted.

##### (4) Holes and Punctures are not permitted.

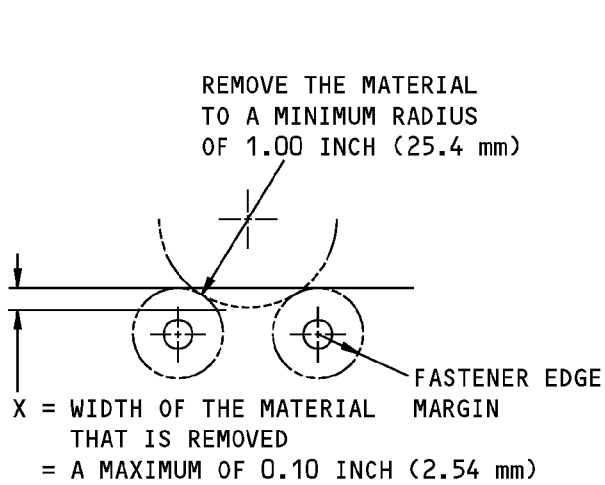


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**STRUCTURAL REPAIR MANUAL**

C. Straps, Webs, and Fillers

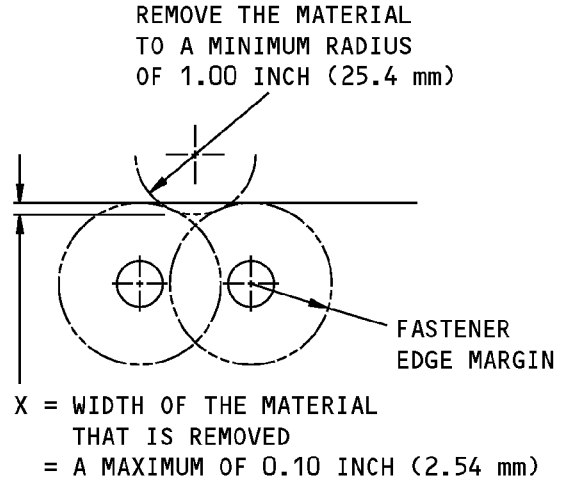
- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , G , and J .
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , D , G , J , and K .
- (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail H if:
  - (a) They do not extend across attached structures
  - (b) They do not have an "oil can" condition.
- (4) Holes and Punctures are permitted if:
  - (a) They are maximum of 0.25 inch (6.4 mm) in diameter after cleanup
  - (b) They are a minimum of 1.00 inch (25.4 mm) away from the edge of a fastener hole, other damage, or material edge
  - (c) You install a 2117-T3 or 2117-T4 rivet without sealant in the hole as shown in zone 2 of the web.

**STRUCTURAL REPAIR MANUAL**



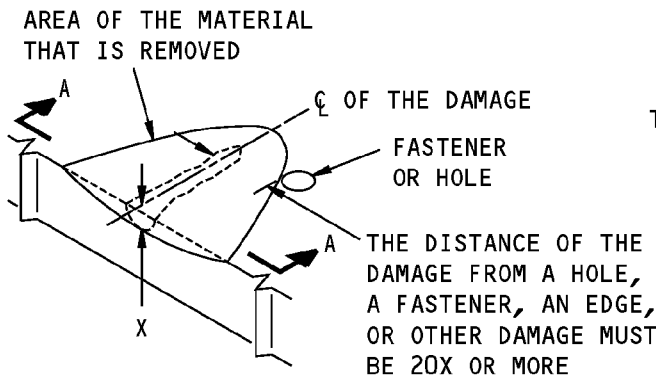
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



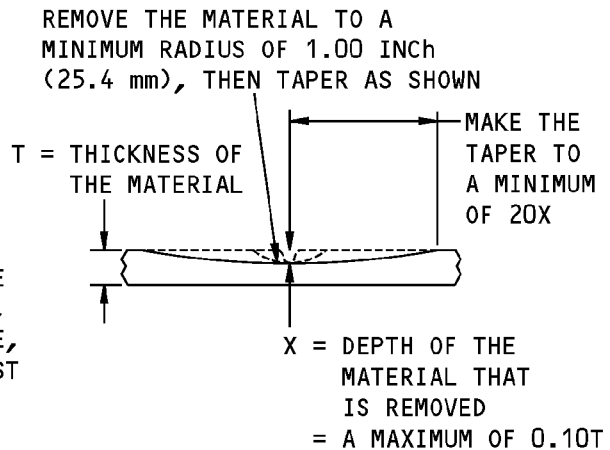
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(C)

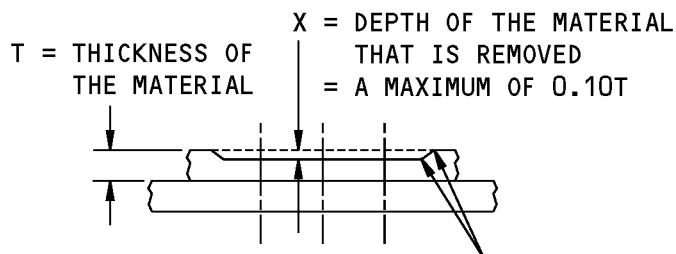
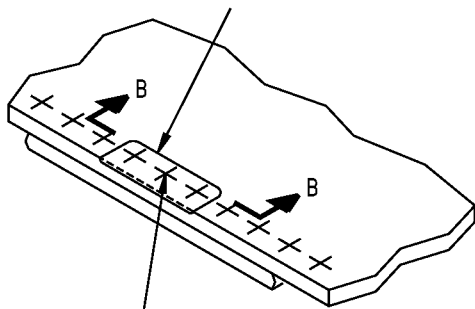


A-A

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 9)**

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X

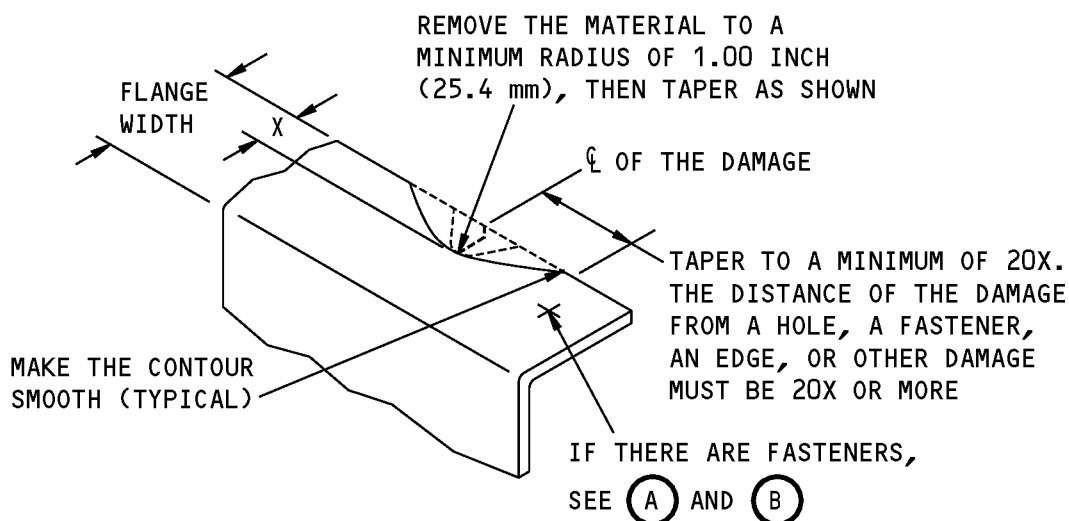


REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OF A SURFACE**

(D)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH (1.3 mm) FOR FLANGES OF THE MACHINED OR EXTRUDED PART  
 = A MAXIMUM OF 0.10 INCH (2.54 mm) FOR FLANGES OF THE FORMED PART  
 = A MAXIMUM OF 0.20 INCH (5.1 mm) FOR ALL OTHER STRUCTURE

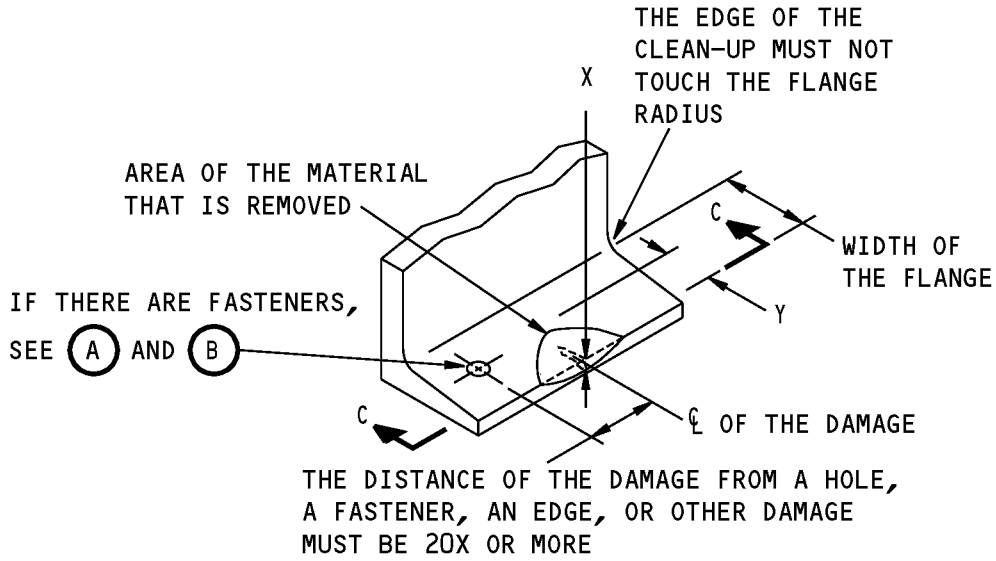
**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FLANGE**

(E)

**Allowable Damage Limits  
 Figure 103 (Sheet 2 of 9)**



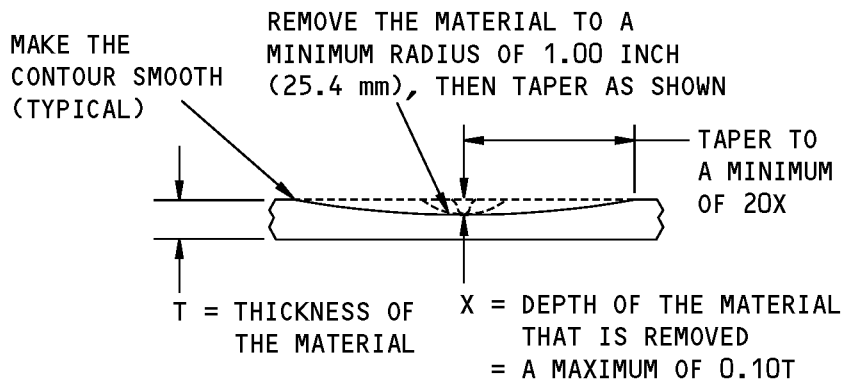
**STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART**

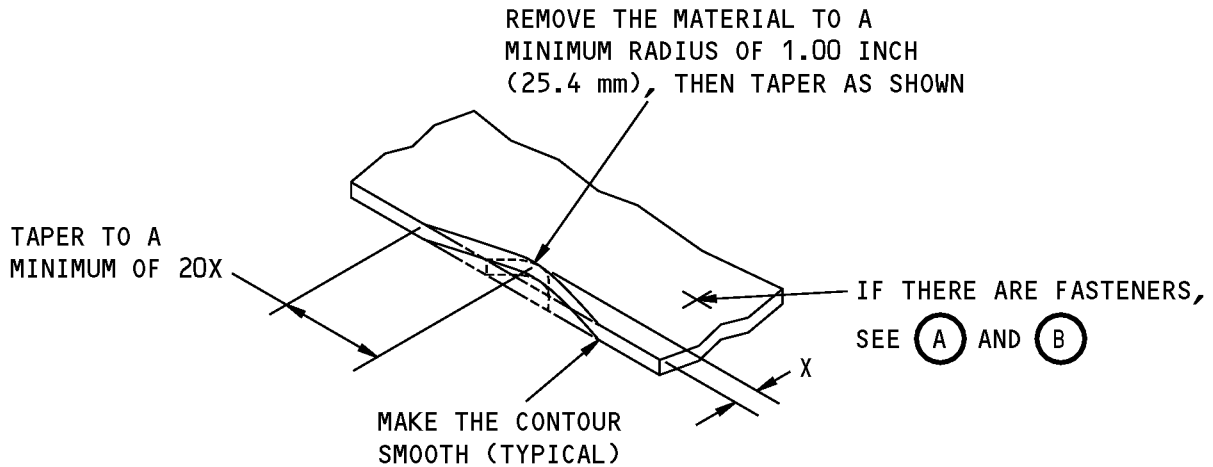
(F)



C-C

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 9)**

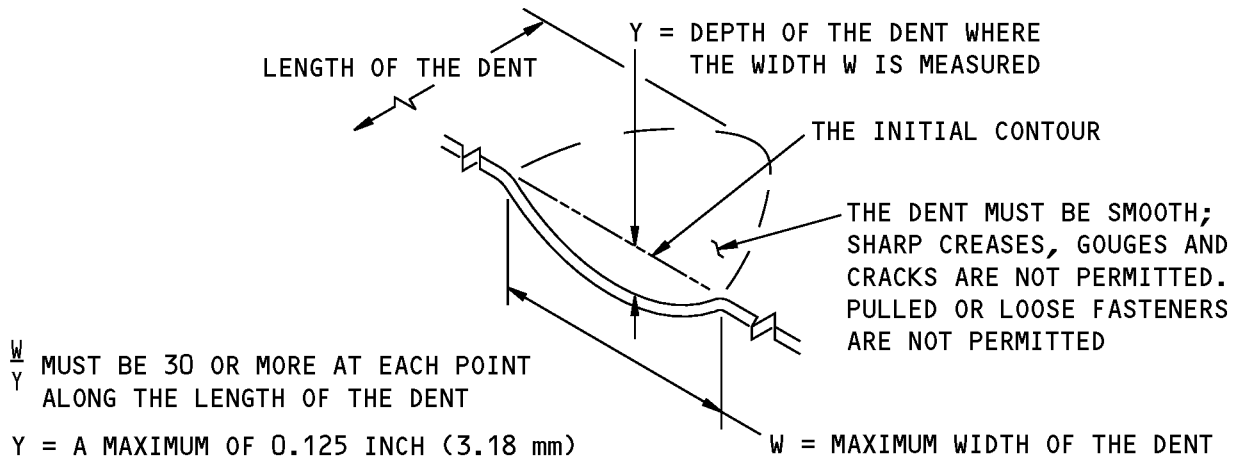
**737-800  
STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(G)

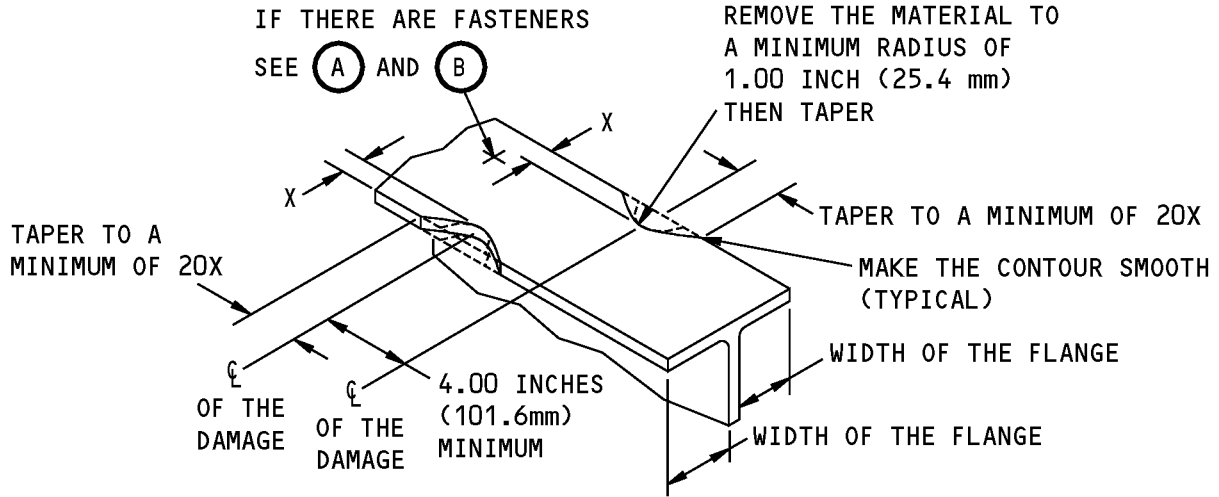


**DENT THAT IS PERMITTED**

(H)

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 9)**

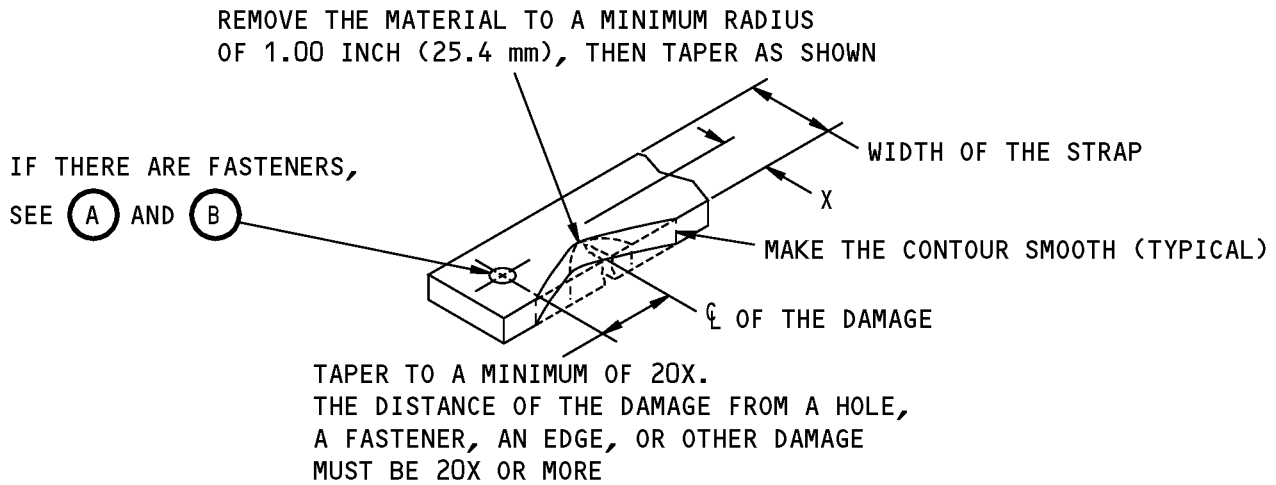
**STRUCTURAL REPAIR MANUAL**



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(I)**



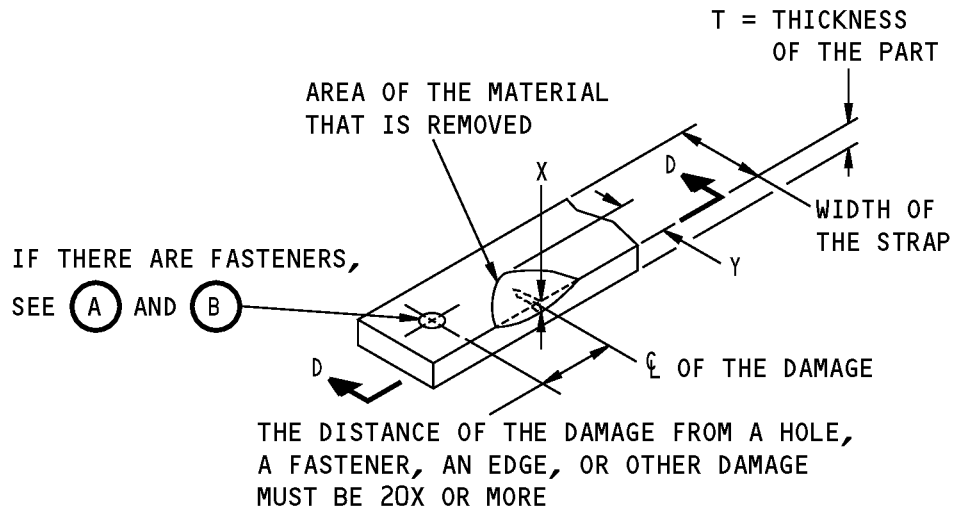
X = WIDTH OF THE MATERIAL REMOVED  
 = A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP**

**(J)**

**Allowable Damage Limits  
 Figure 103 (Sheet 5 of 9)**

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STRUCTURAL REPAIR MANUAL**

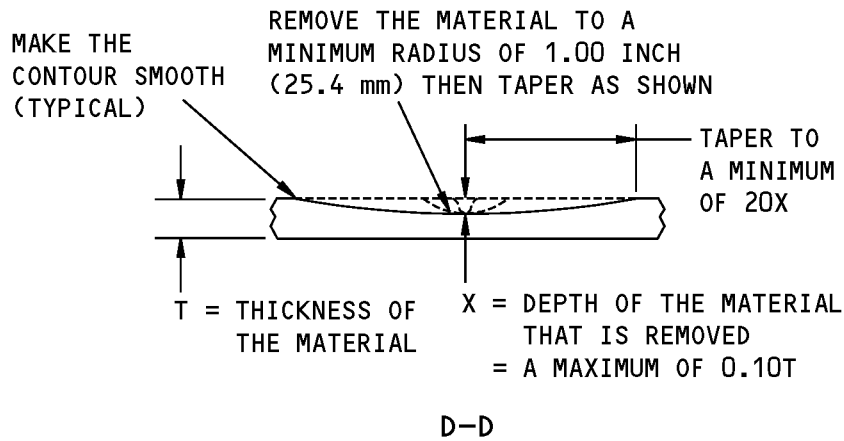


Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

X = A MAXIMUM OF 0.10T

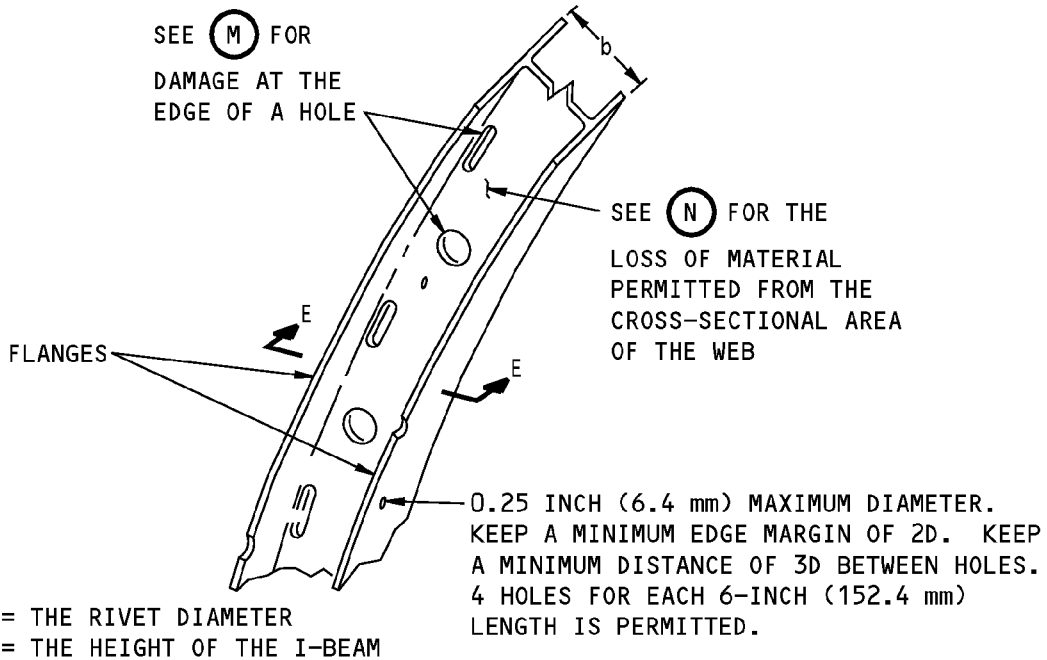
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A STRAP**

(K)



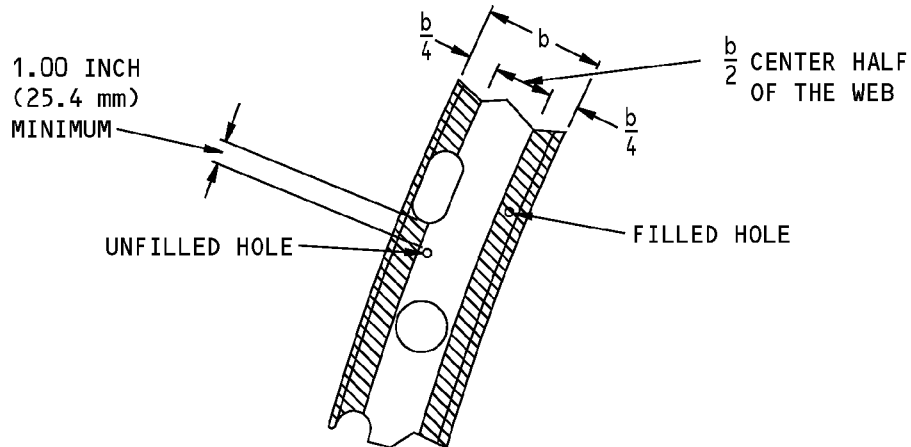
**Allowable Damage Limits  
Figure 103 (Sheet 6 of 9)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**ALLOWABLE DAMAGE LIMITS FOR HOLES  
IN THE FREE FLANGES AND THE WEB OF AN I-BEAM**

(L)

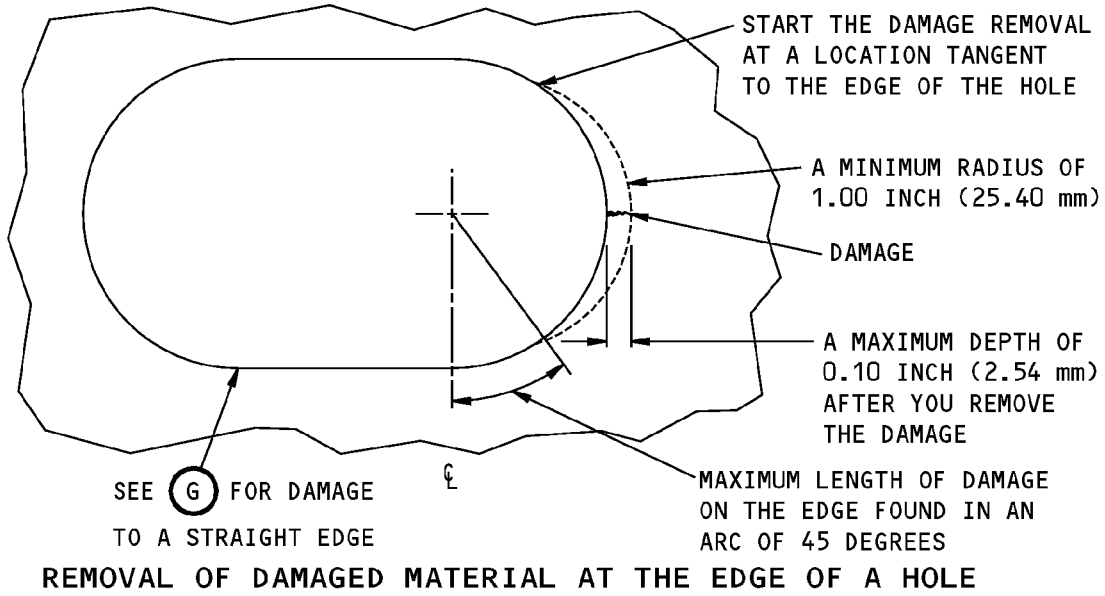


- ZONE 1 - HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER
- ZONE 2 - HOLES AND PUNCTURES ARE PERMITTED UP TO 0.25 INCH (6.4 mm) IN DIAMETER IF THEY ARE FILLED WITH 2117-T3 OR 2117-T4 RIVETS.

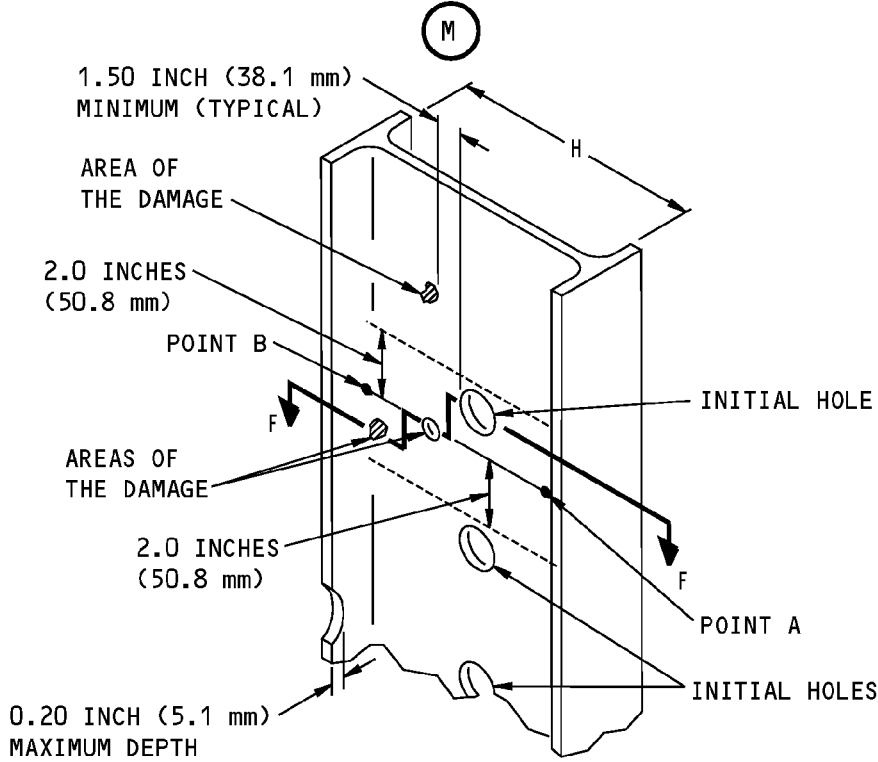
E-E

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 9)**

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL AT THE EDGE OF A HOLE**

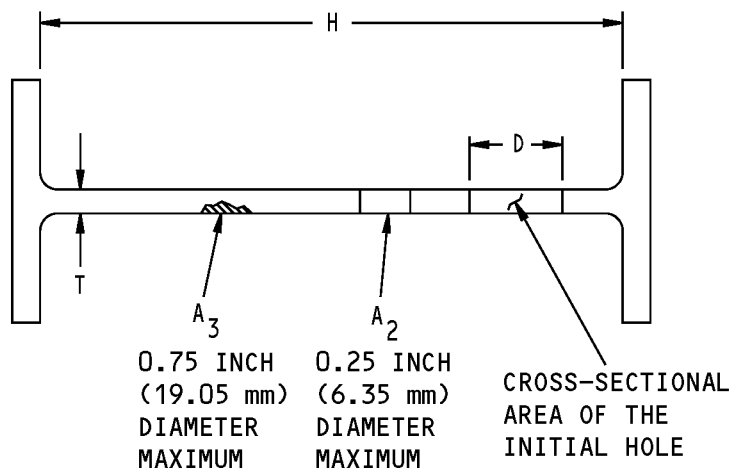


**LOSS OF MATERIAL PERMITTED FROM THE CROSS-SECTIONAL AREA OF THE I-BEAM WEB**

**(N)**

**Allowable Damage Limits  
Figure 103 (Sheet 8 of 9)**

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STRUCTURAL REPAIR MANUAL**



D = DIAMETER OF THE INITIAL HOLE

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_1$  = INITIAL AREA OF THE WEB

= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $HT - DT$

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

$A_3$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_2 + A_3}{A_1} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED} \\ = 10 \text{ PERCENT MAXIMUM}$$

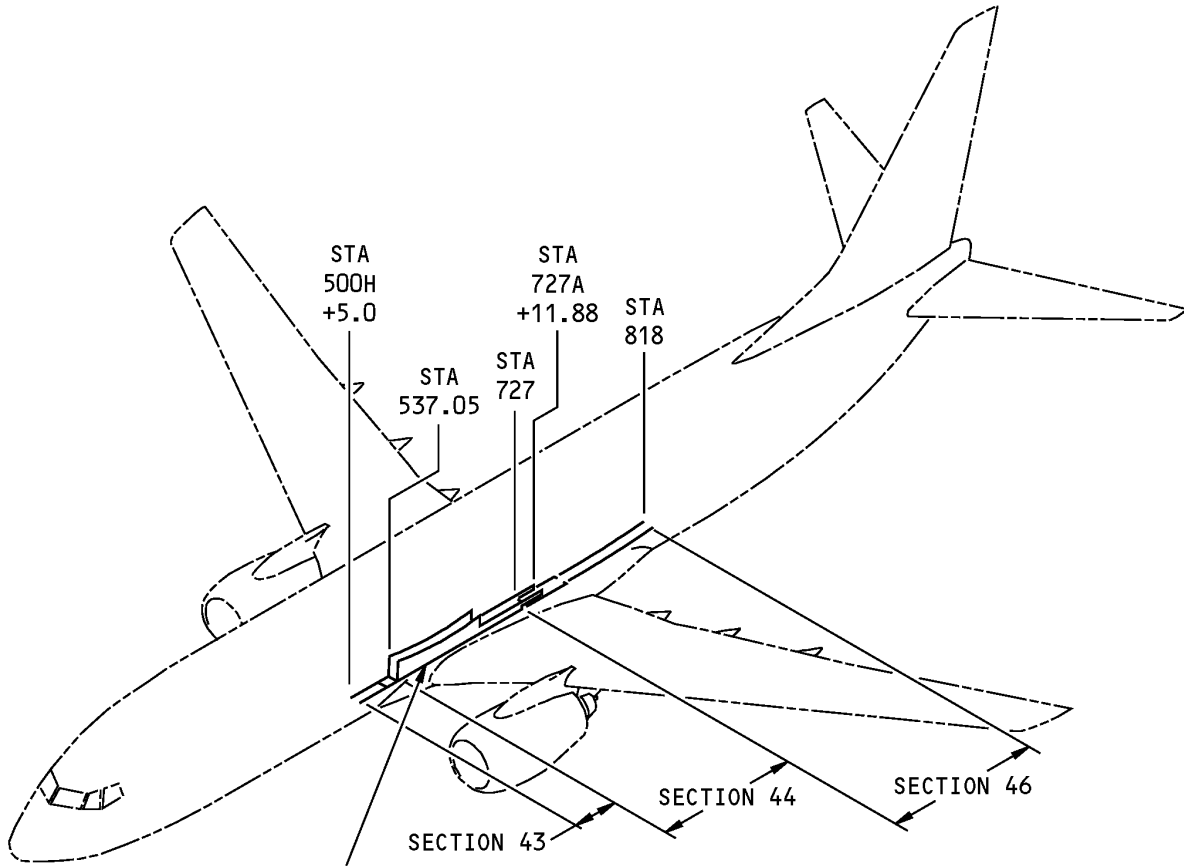
THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES (50.8 mm) ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL AREA OF THE WEB.

F-F

**Allowable Damage Limits  
Figure 103 (Sheet 9 of 9)**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION GENERAL - SECTION 44 KEEL BEAM STRUCTURE**



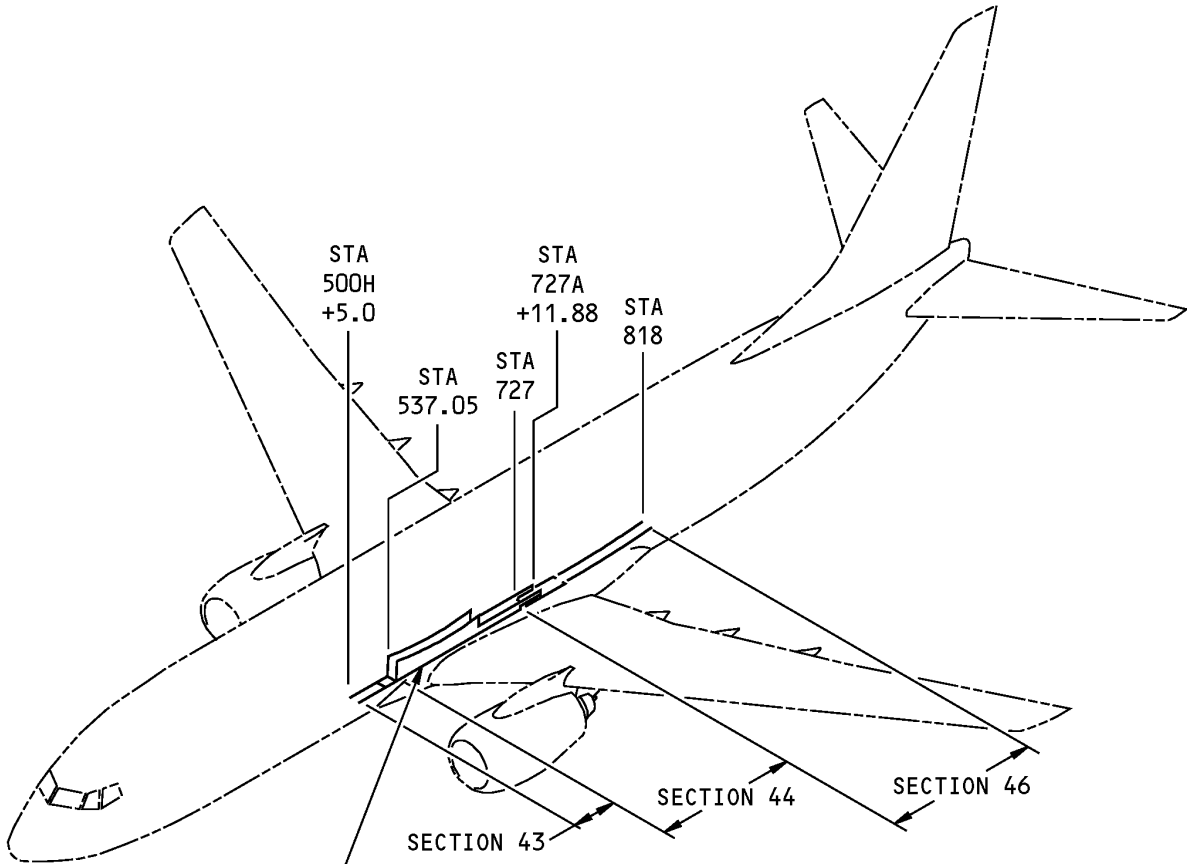
REFER TO SRM 53-00-12,  
IDENTIFICATION 1 FOR THE  
KEEL BEAM STRUCTURE THAT  
IS LOCATED IN SECTION 44

**Section 44 Keel Beam Structure Identification  
Figure 1**



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**ALLOWABLE DAMAGE GENERAL - SECTION 44 KEEL BEAM STRUCTURE**

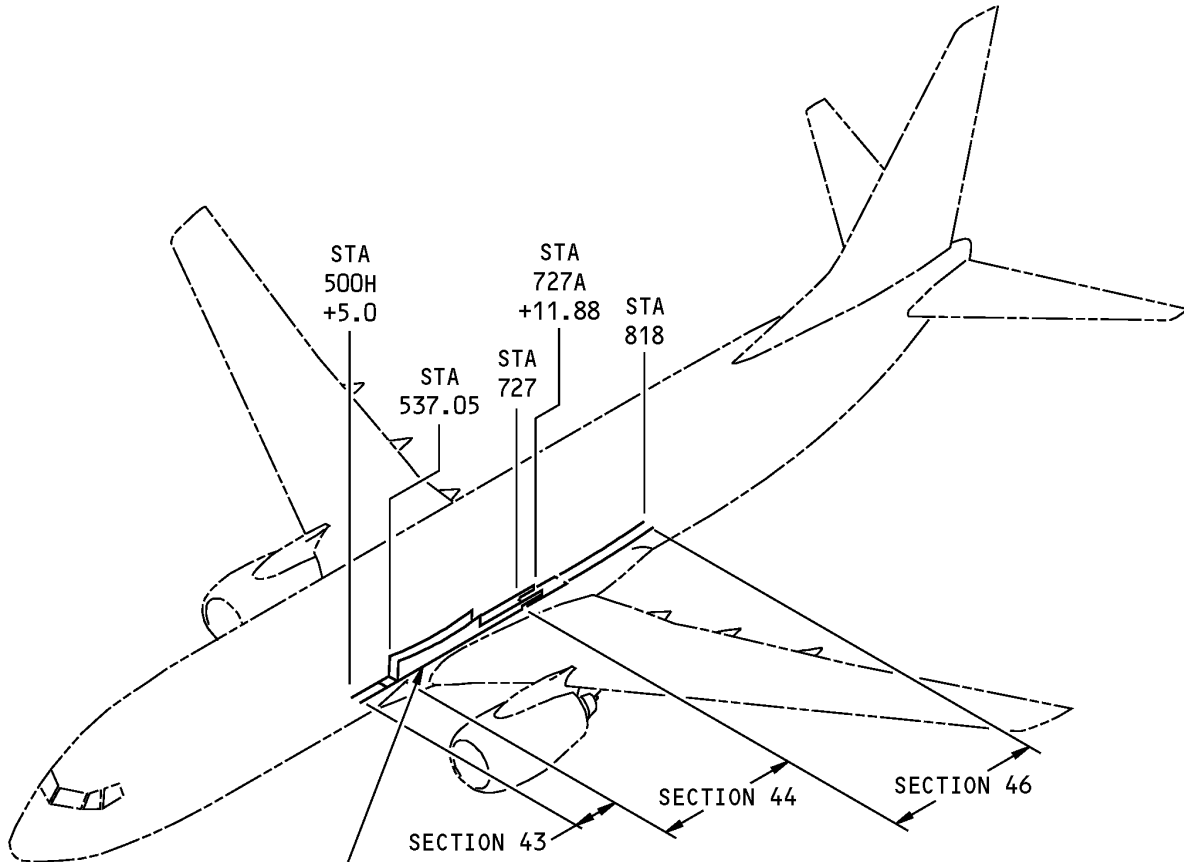


REFER TO SRM 53-00-12,  
ALLOWABLE DAMAGE 1 FOR THE  
KEEL BEAM STRUCTURE THAT  
IS LOCATED IN SECTION 44

**Section 44 Keel Beam Structure Allowable Damage  
Figure 101**

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**REPAIR GENERAL - SECTION 44 KEEL BEAM STRUCTURE**

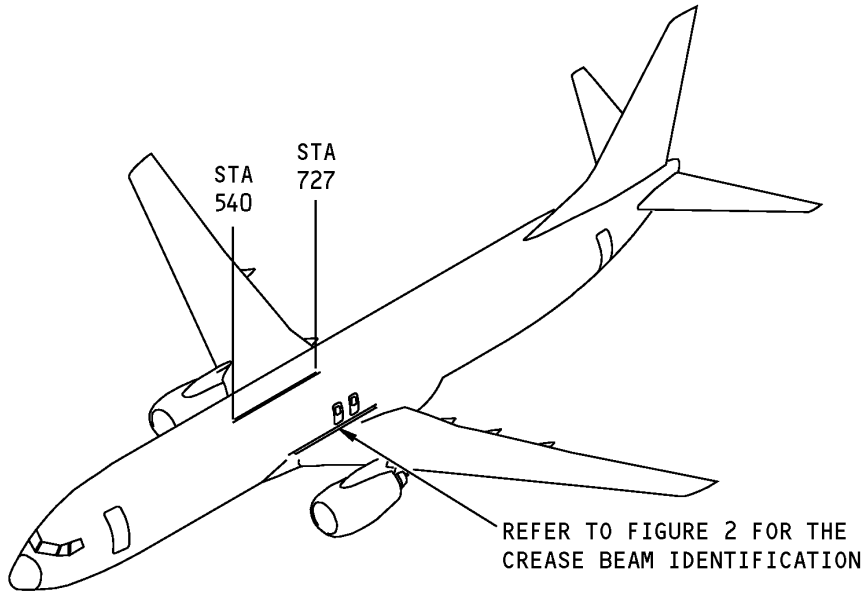


REFER TO SRM 53-00-12,  
REPAIR 1 FOR THE KEEL  
BEAM STRUCTURE THAT IS  
LOCATED IN SECTION 44

**Section 44 Keel Beam Structure Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 44 CREASE BEAM STRUCTURE**



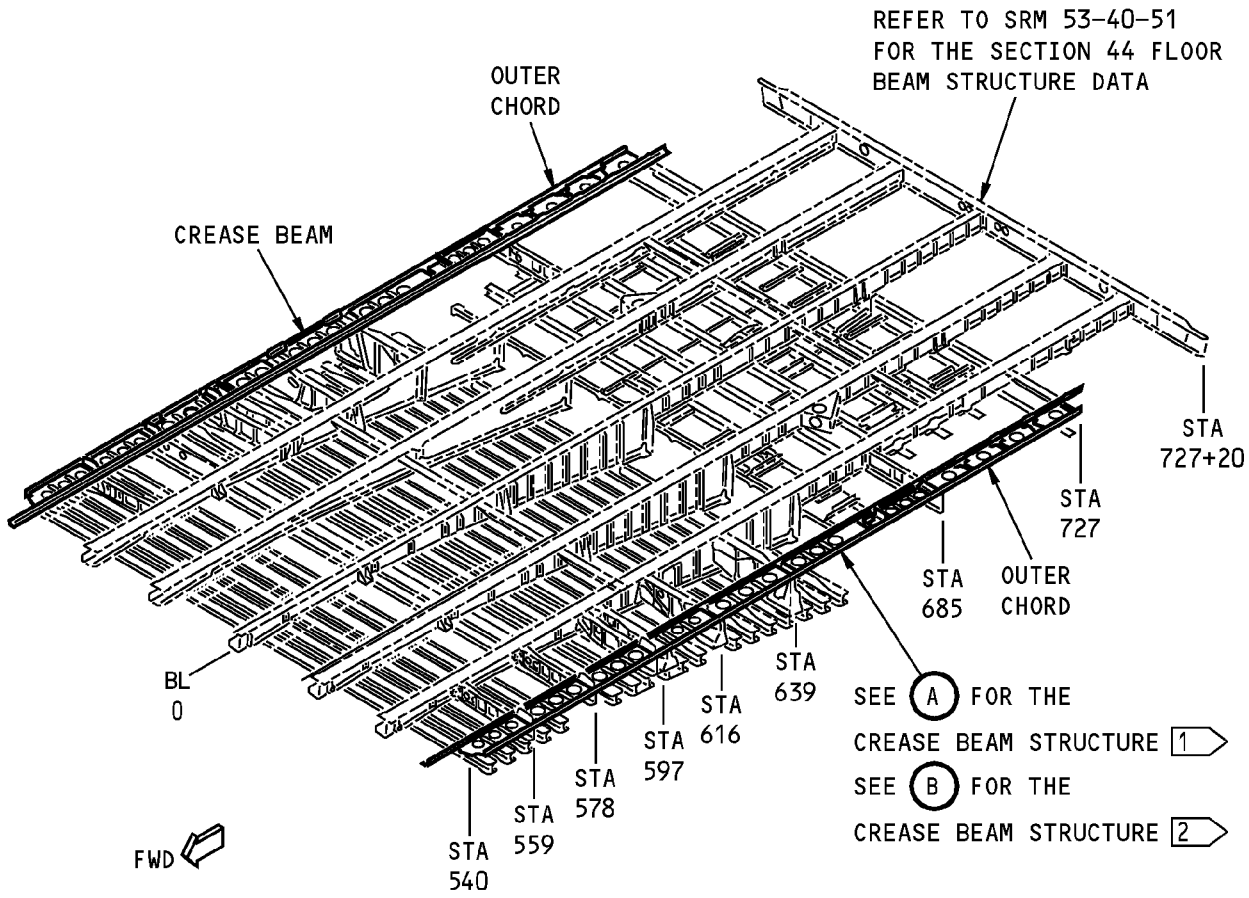
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Crease Beam Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4405	Side Panel Integration Functional Collector - Section 44
144A5900	Crease Beam Installation, Section 44
144A5910	Inner Chord - Crease Beam, Section 44
144A5920	Web Assemblies - Crease Beam, Section 44
144A5925	Shear Webs - Crease Beam, Section 44

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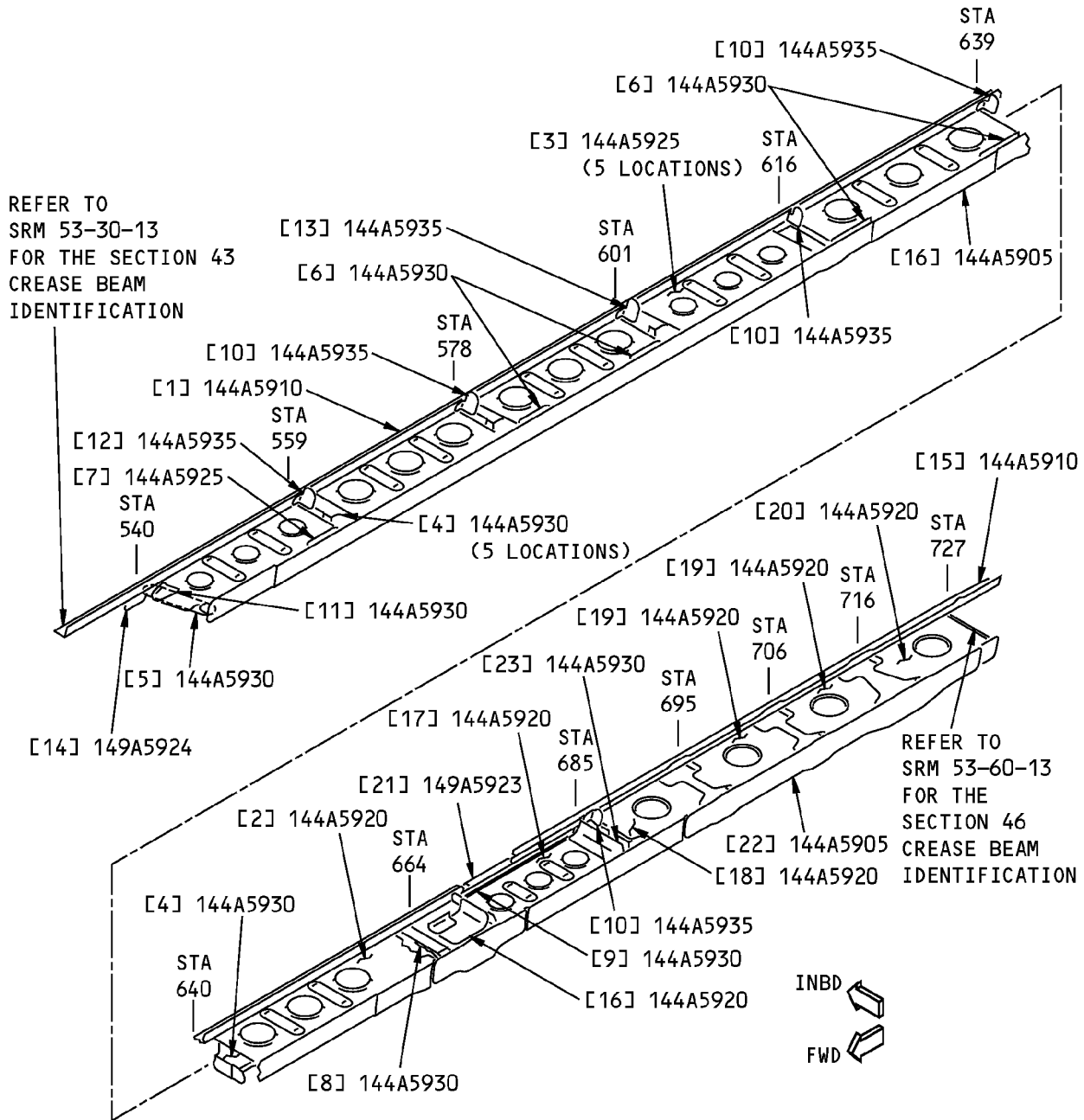


**NOTES**

- 1 AIRPLANE LINE NUMBERS 1 THRU 1185
- 2 AIRPLANE LINE NUMBERS 1186 AND ON

**Section 44 Crease Beam Identification  
Figure 2 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



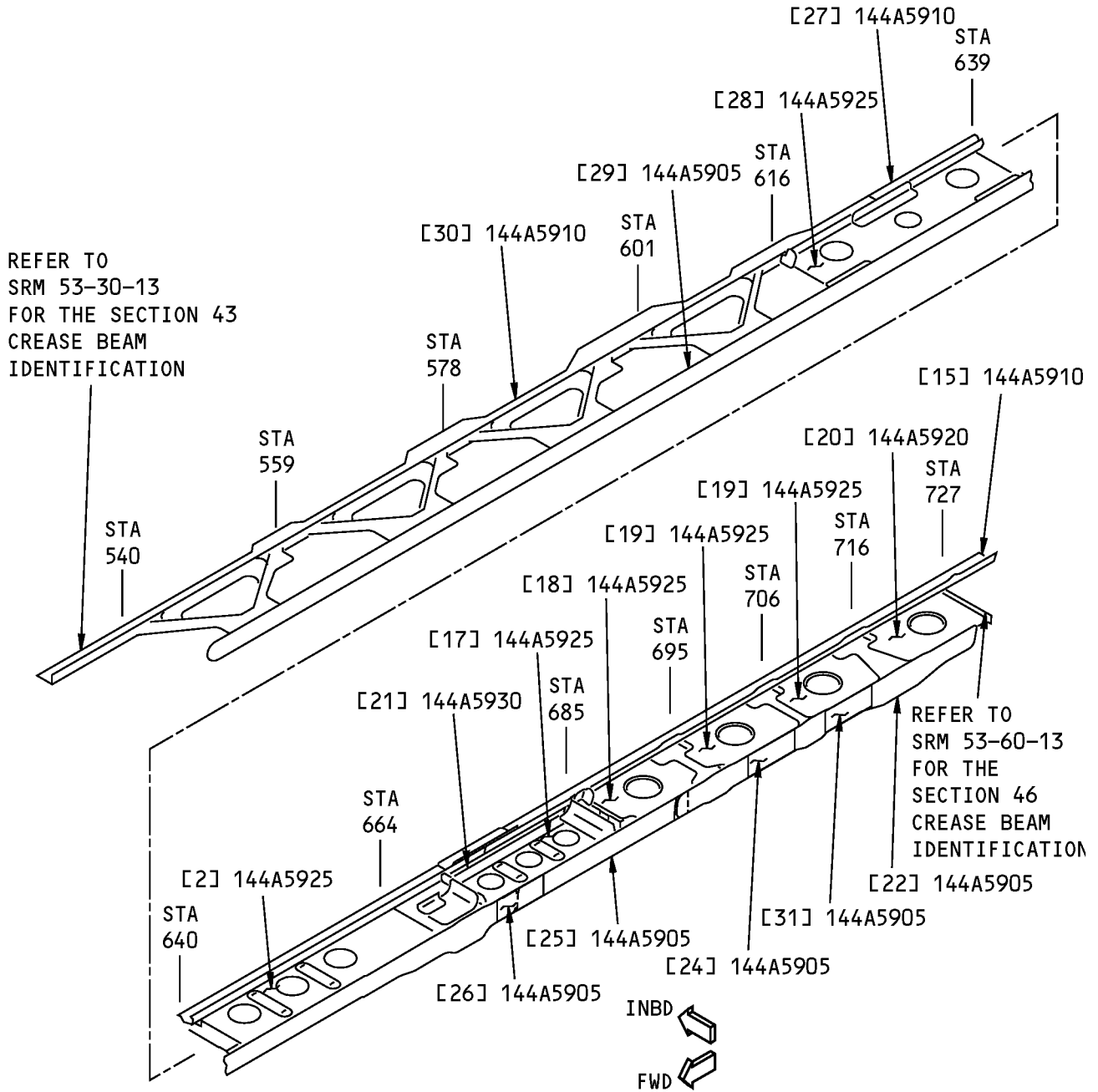
**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
CREASE BEAM**

**A**

**Section 44 Crease Beam Identification  
Figure 2 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
CREASE BEAM**

**B**

**Section 44 Crease Beam Identification  
Figure 2 (Sheet 3 of 3)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2 Sheet 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Inner Chord		BAC1514-3355 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web Assembly Shear Web Angle	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100618 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Shear Web (5)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Clip-Frame (6)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Angle		BAC1503-101015 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Splice Angle (4)	0.125 (3.18)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Doubler (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Angle		BAC1514-3158 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1489-158 7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Angle (3)		BAC1503-100142 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-100747 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Support Angle		BAC1503-101040 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Support Angle		BAC1503-100325 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Support Angle		BAC1514-837 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Inner Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[16]	Angle Assembly Angle (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[17]	Web Assembly Shear Web Angle (2)	0.056 (1.42)  0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13  7075-T62 clad sheet as given in QQ-A-250/13	
[18]	Web Assembly Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	



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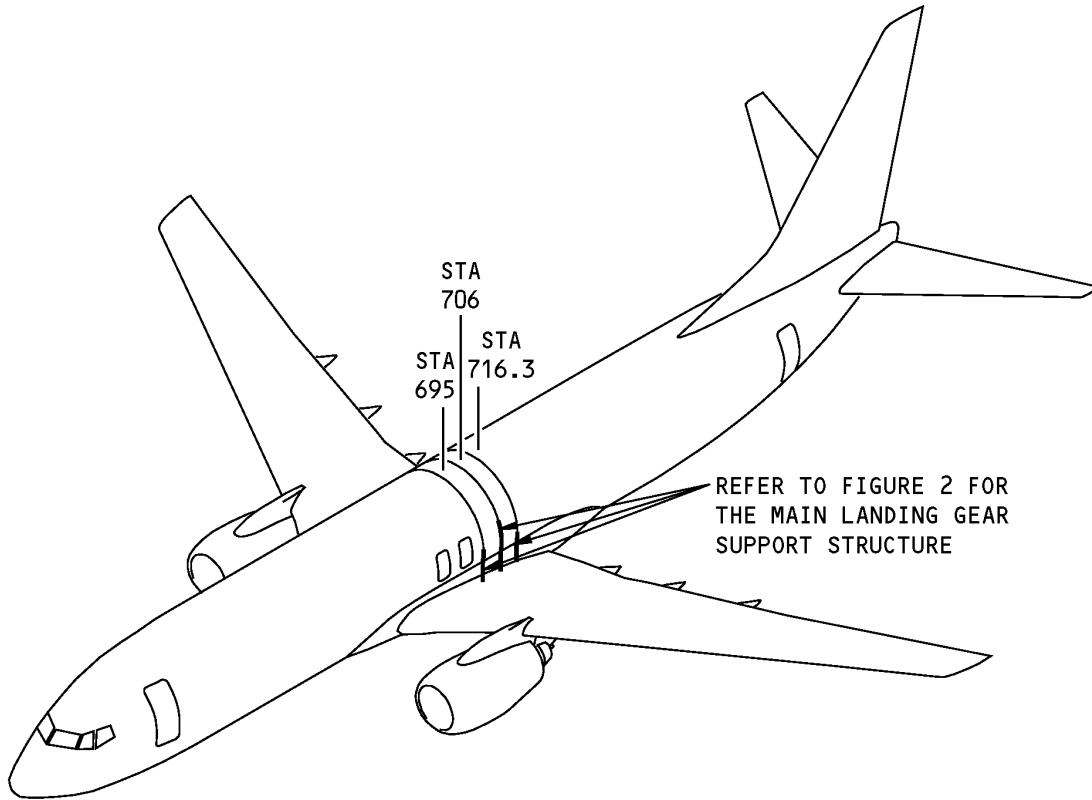
LIST OF MATERIALS FOR FIGURE 2 Sheet 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Angle		BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
[19]	Web Assembly Shear Web Angle (2)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)	
[20]	Web Assembly Shear Web Angle Angle	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3167 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: AND10133-1204)  BAC1503-100306 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Splice Channel		BAC1413-587 7075-T62 clad sheet as given in QQ-A-250/13	
[22]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[23]	Angle	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
[24]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[25]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[26]	Splice Strap	0.160 (4.06)	7075-T6 clad sheet as given in QQ-A-250/13	
[27]	Inner Chord		BAC1514-3355 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Web	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[29]	Outer Chord		7050-T7451 plate as given in AMS 4050	
[30]	Inner Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[31]	Outer Chord		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**IDENTIFICATION 1 - MAIN LANDING GEAR SUPPORT STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Main Landing Gear Support Structure Location  
Figure 1**

**Table 1:**

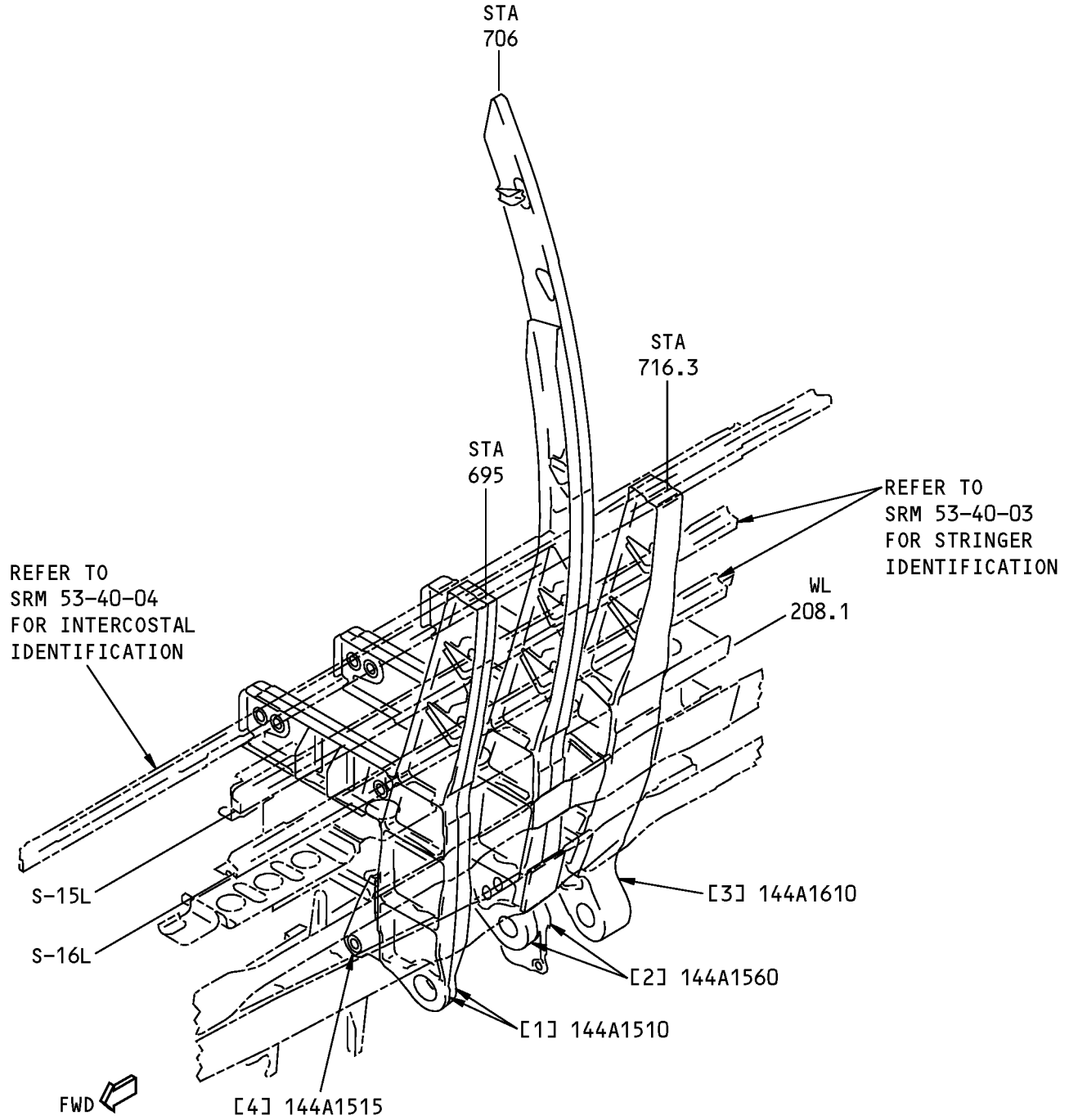
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A1001	Wing Left - Product Collector
001A4001	Fuselage Product Collector
115A0001	Functional Product Collector - Fixed Trailing Edge, Left Wing
115A0002	Functional Product Collector - Fixed Trailing Edge, Right Wing
115A0003	Collector - Functional Product, Fixed Trailing Edge to Rear Spar, Left Wing
115A0004	Collector - Functional Product, Fixed Trailing Edge to Rear Spar, Right Wing



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
115A1001	Main Landing Gear Beam Installation
115A5002	Installation - Main Landing Gear Forward Trunnion Support
115A5005	Installation - Main Landing Gear Forward Trunnion Bearing
140A4402	Side Panel Assembly Functional Collector - Section 44
144A1500	Frame Installation - Station 695 and Station 706
144A1510	Frame Fitting Assembly - Station 695
144A1560	Frame Fitting Assembly - Station 706
144A1600	Frame Installation - Main Landing Gear Beam Support, Station 716.3
144A1605	Main Landing Gear Beam Support Fitting Assembly - Station 716.3

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Main Landing Gear Support Structure Identification  
Figure 2**



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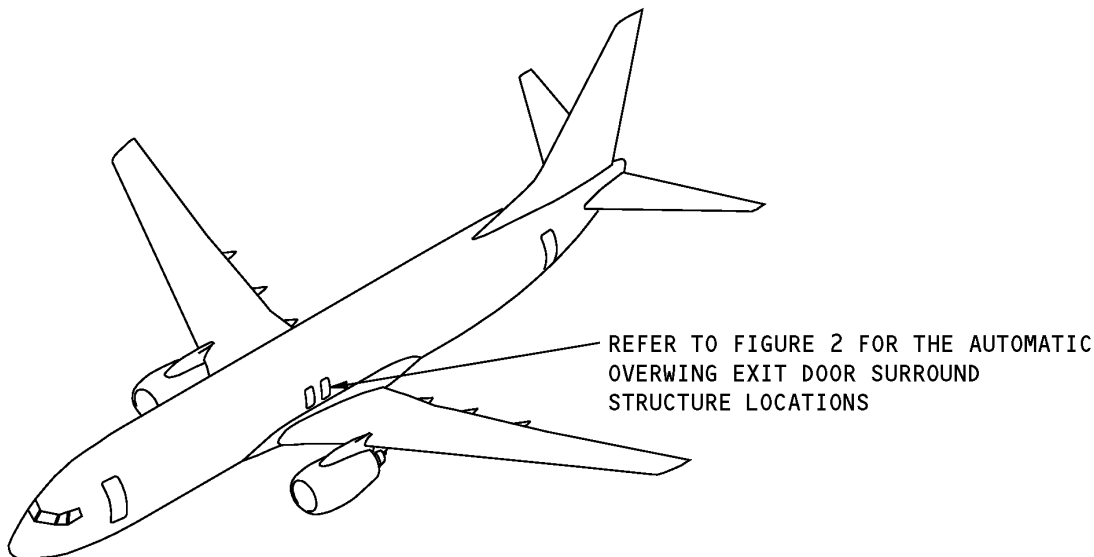
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Side Strut Support- Forward, Aft		7075-T73 forging as given in BMS 7-186	
[2]	Support Fitting - Forward, Aft		7075-T73 forging as given in BMS 7-186	
[3]	Main Landing Gear Beam Support		7050-T74 forging as given in BMS 7-214	
[4]	Main Landing Gear Uplock Fitting	4.00 (101.6)	7050-T7451 plate as given in BMS 7-323, Type I. (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 1 - AUTOMATIC OVERWING EXIT DOOR SURROUND STRUCTURE**



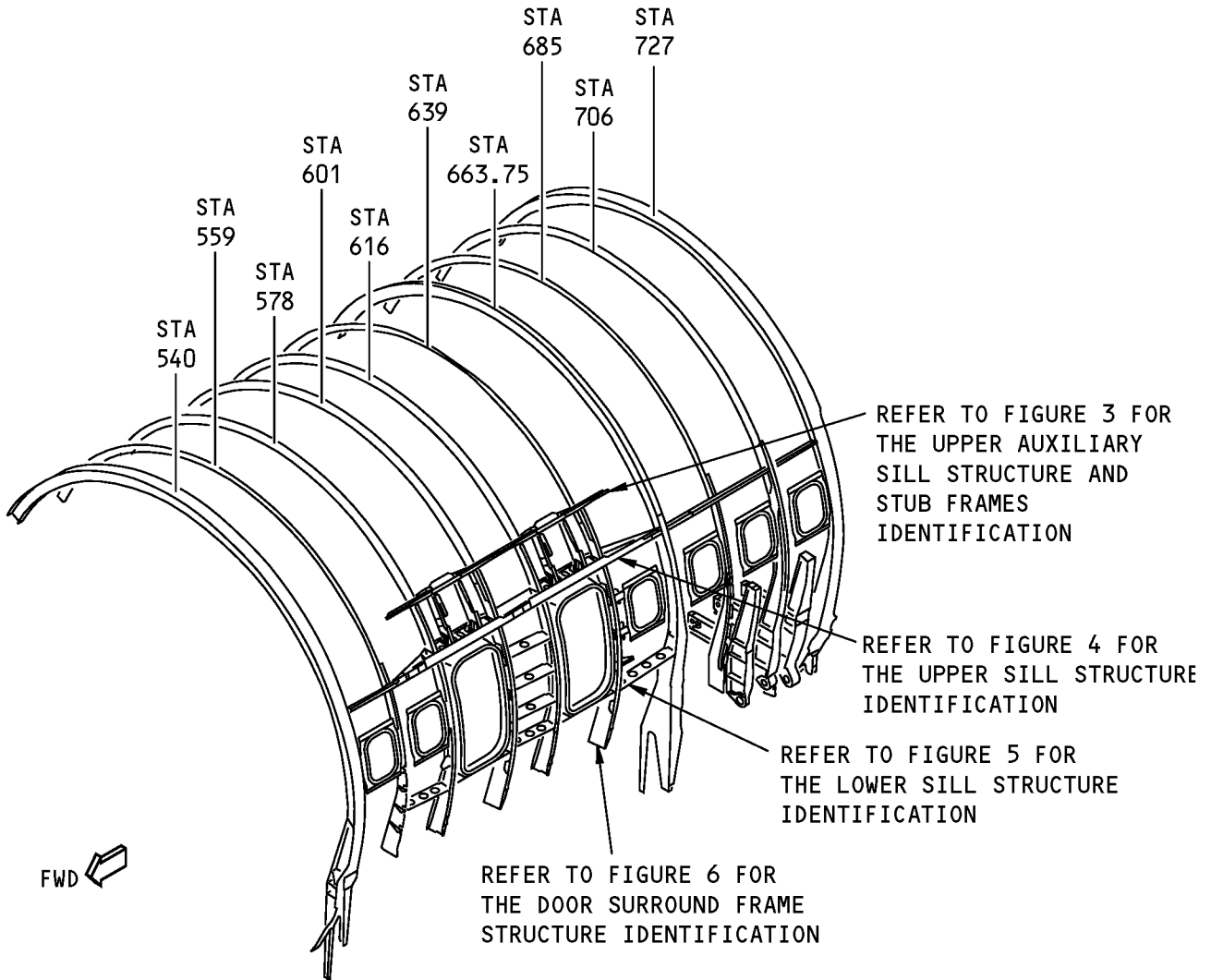
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Automatic Overwing Exit Door Surround Structure  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4402	Side Panel Assembly Functional Collector - Section 44
144A8101	Sill Installation - Upper, Emergency Escape Hatch
144A8102	Sill Installation - Upper Auxiliary, Emergency Escape Hatch
144A8201	Sill Installation - Lower, Emergency Escape Hatch
144A8301	Frame Installation - Station 578
144A8311	Frame Assembly - Station 578
144A8401	Frame Installation - Station 601
144A8411	Frame Assembly - Station 601
144A8501	Frame Installation - Station 616
144A8511	Frame Assembly - Station 616
144A8601	Frame Installation - Station 639
144A8611	Frame Assembly - Station 639
144A8801	Door Stop Installation
144A8802	Hinge Installation

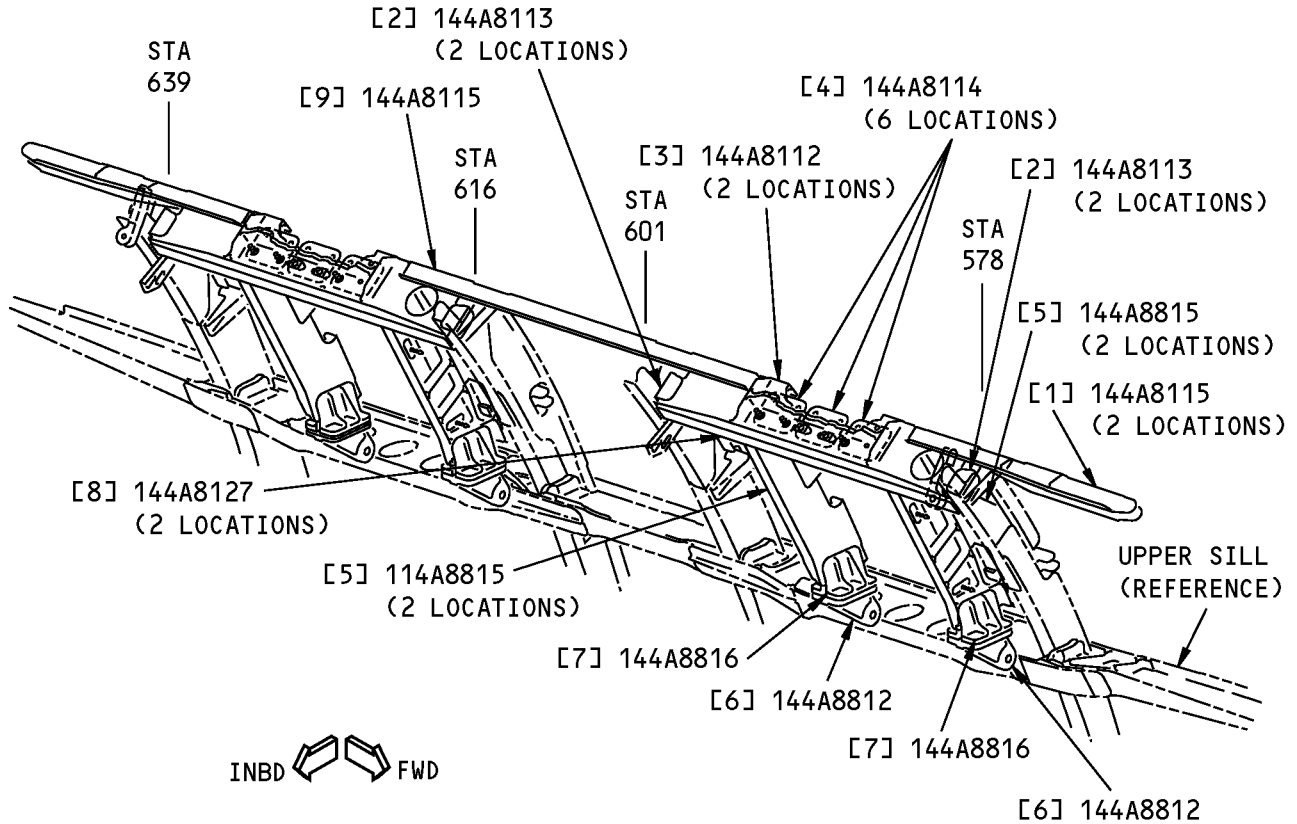
**737-800  
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**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Upper Sill, Lower Sill, and Upper Auxiliary Sill Structure Identification  
Figure 2**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS. THE PARTS SHOWN BETWEEN STA 578 AND STA 601 ARE ALSO USED BETWEEN STA 616 AND STA 639.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
UPPER AUXILIARY SILL AND STUB FRAMES**

**Upper Auxiliary Sill Structure and Stub Frames Identification  
Figure 3**



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**STRUCTURAL REPAIR MANUAL**

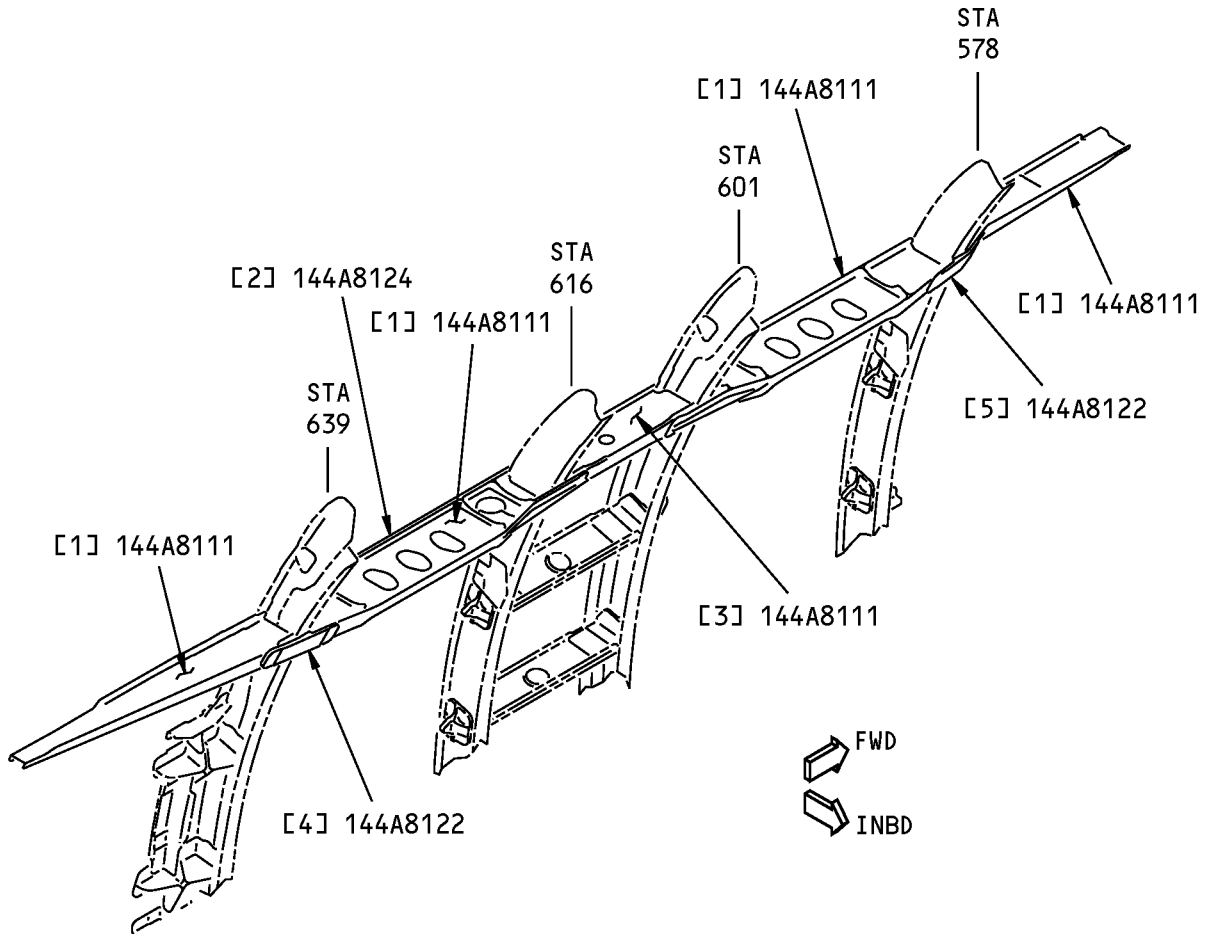
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Splice Fitting - S-8 (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[2]	Clip (4)		BAC1503-100710 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Intercostal (2)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[4]	Clevis Fitting (6)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Stub Frame (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[6]	Hinge Fitting (4)		Ti-6Al-4V titanium plate as given in MIL-T-9046, Code AB-1, condition mill annealed	
[7]	Backup Fitting (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[8]	Drainage Tray	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[9]	Fitting, S-8		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Upper Sill Structure Identification  
Figure 4**



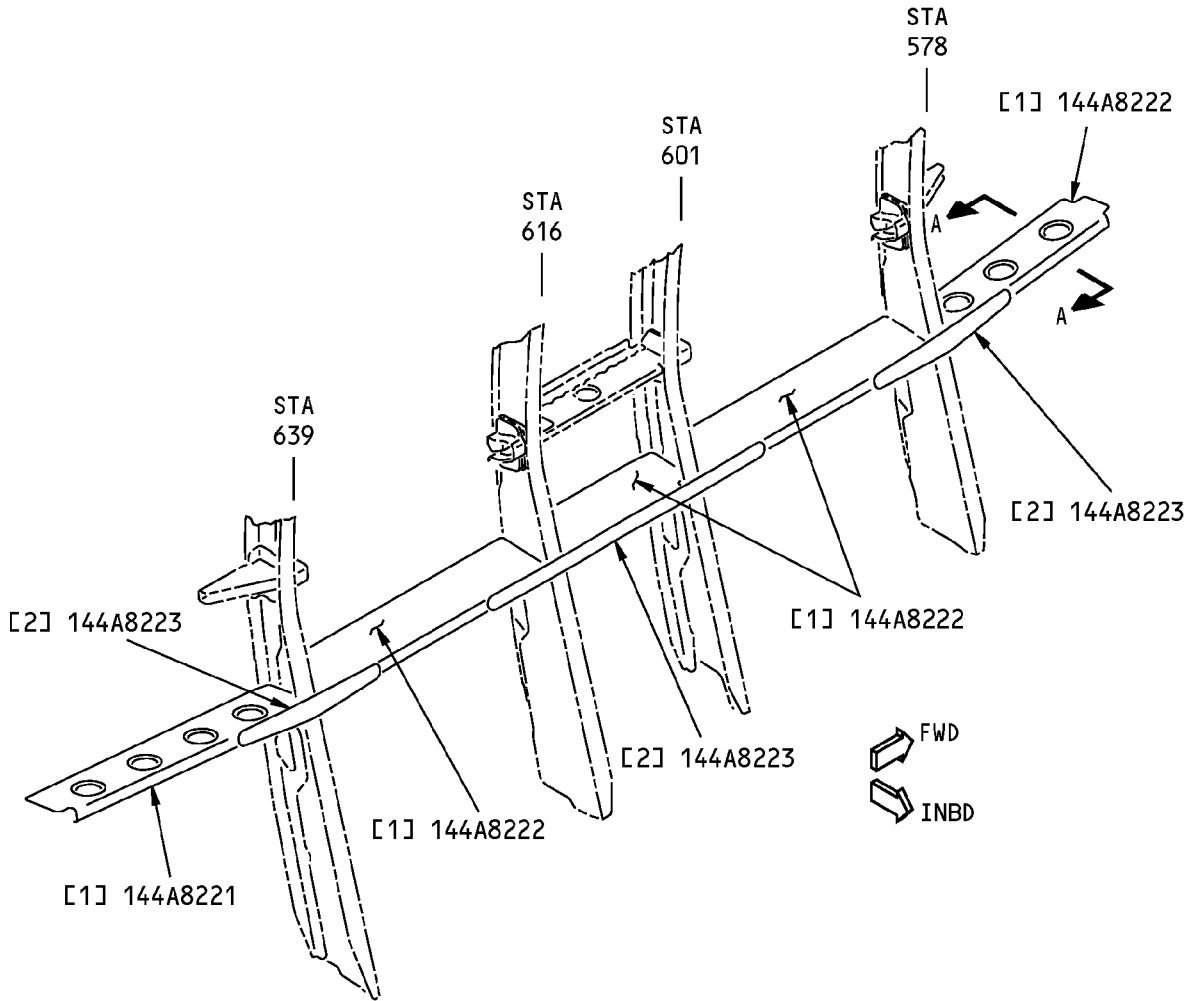
**737-800**  
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**Table 3:**

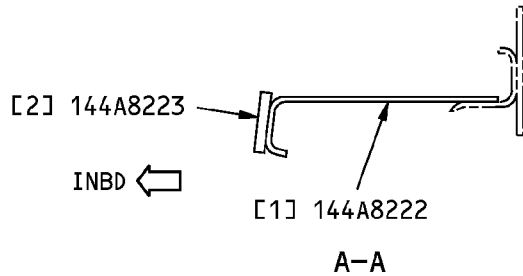
<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal (4)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	
[2]	Chord - Outboard Upper Sill	0.125	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Intercostal		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[4]	Strap	0.50 (12.7)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[5]	Strap	0.80 (20.3)	7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
LOWER SILL STRUCTURE**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Lower Sill Structure Identification  
Figure 5**



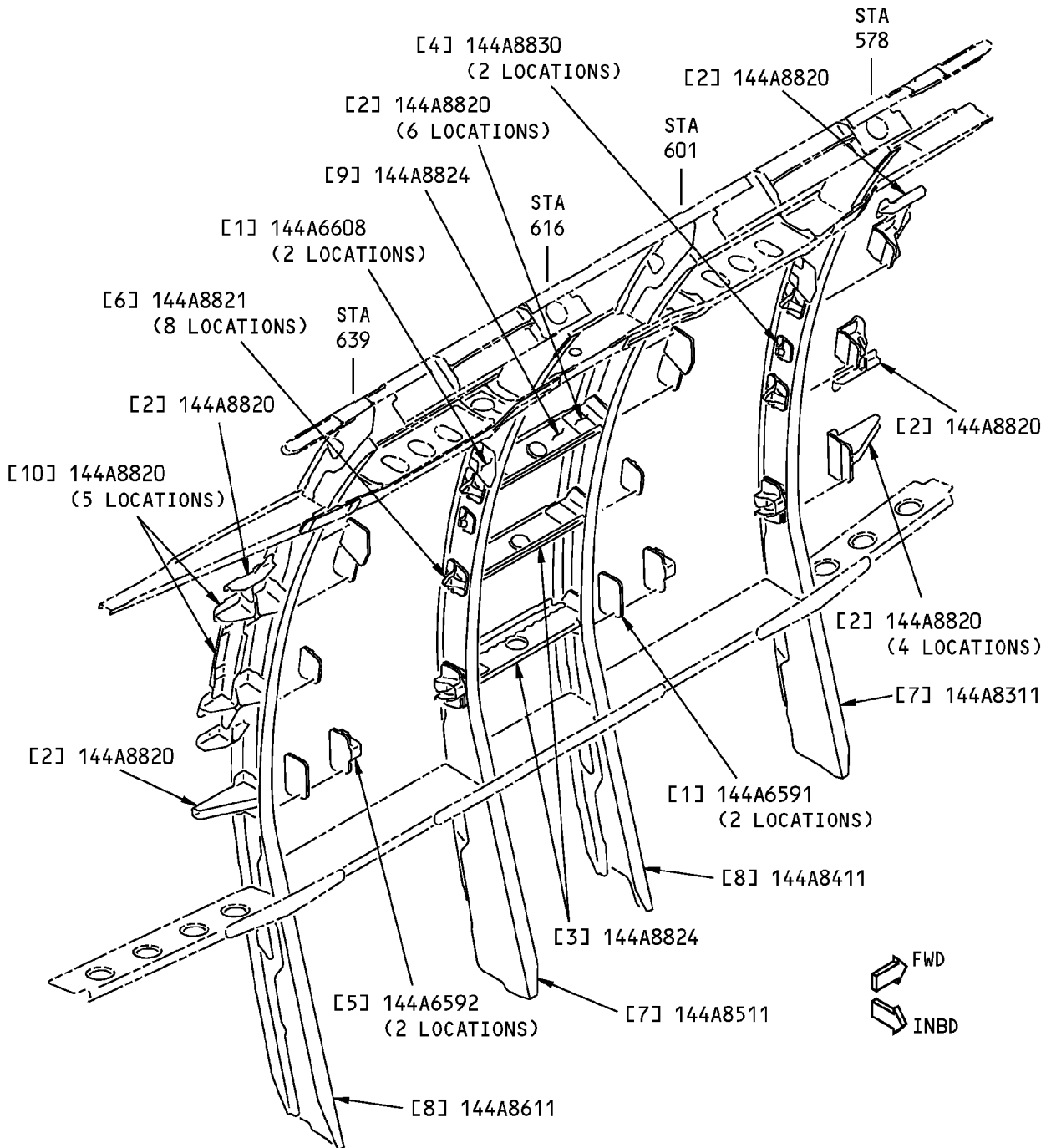
**737-800  
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal (5)	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/13	
[2]	Strap (3)		2024-T351 plate as given in QQ-A-250/4	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Door Surround Frame Structure Identification  
Figure 6**



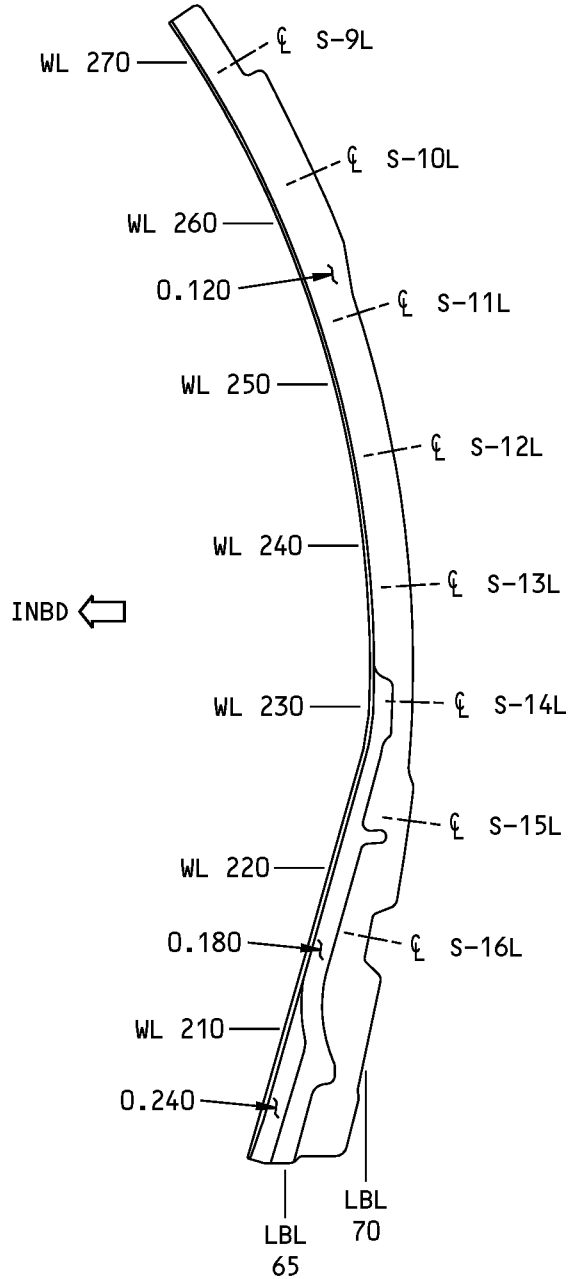
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**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Serrated Plate (2)		15-5PH CRES plate as given in BMS 7-240, Type 1. Heat treat 180-200 KSI	
[2]	Backup Fitting (11)		7050-T7451 plate as given in BMS 7-323 (Grain direction controlled part)	
[3]	Intercostal Assembly (2) Intercostal Chord	0.056 (1.32)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Down Lock Stop Block (2)		BAC1505-100297 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Track (2)		15-5PH CRES bar as given in AMS 5659. Heat treat 180-200 KSI	
[6]	Stop Fitting (8)		15-5PH CRES bar as given in AMS 5659. Heat treat 180-170 KSI	
[7]	Frame (STA 616) Outer Chord  Inner Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)  7050-T7451 plate as given in AMS 4050 (Grain direction controlled part). Refer to Figure 7 for the machined thicknesses	
[8]	Frame (STA 639) Outer Chord  Inner Chord		BAC1514-3229 7075-T73 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 or 7075-T6511 extruded bar)  7050-T7451 plate as given in AMS 4050 (Grain direction controlled part). Refer to Figure 8 for the machined thicknesses	
[9]	Intercostal Assembly Intercostal Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Backup Fitting (5)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

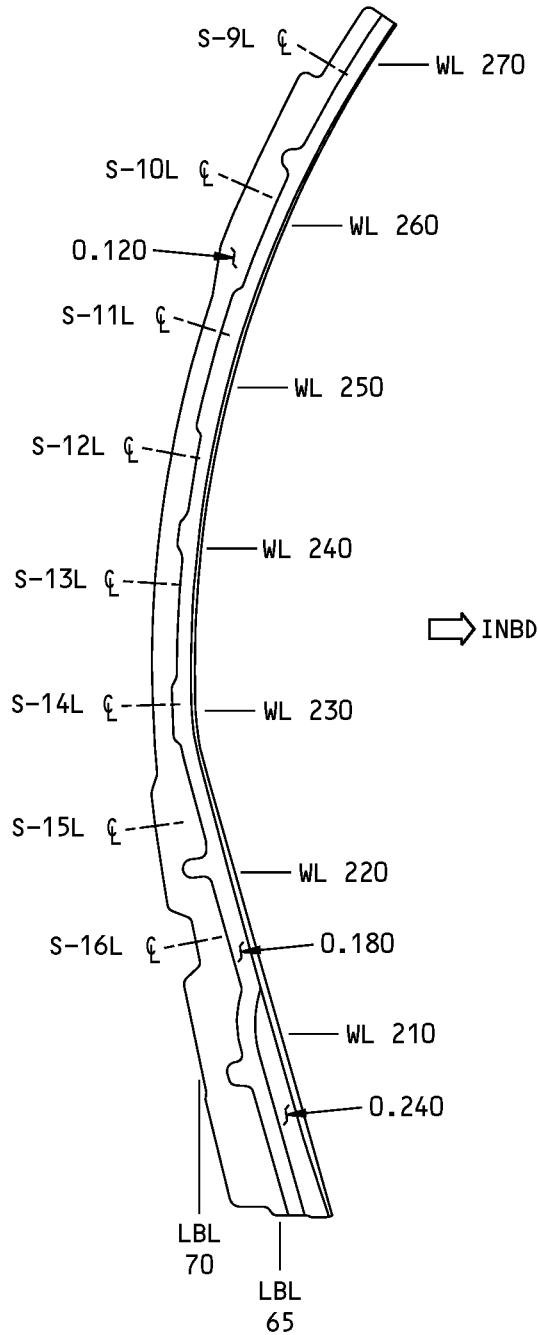
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**VIEW LOOKING AFT  
STATION 616 IS SHOWN, STATION 578 IS SIMILAR**

**Machined Thicknesses for the Inner Chord, Figure 6, Item [7]  
Figure 7**

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**VIEW LOOKING FORWARD**

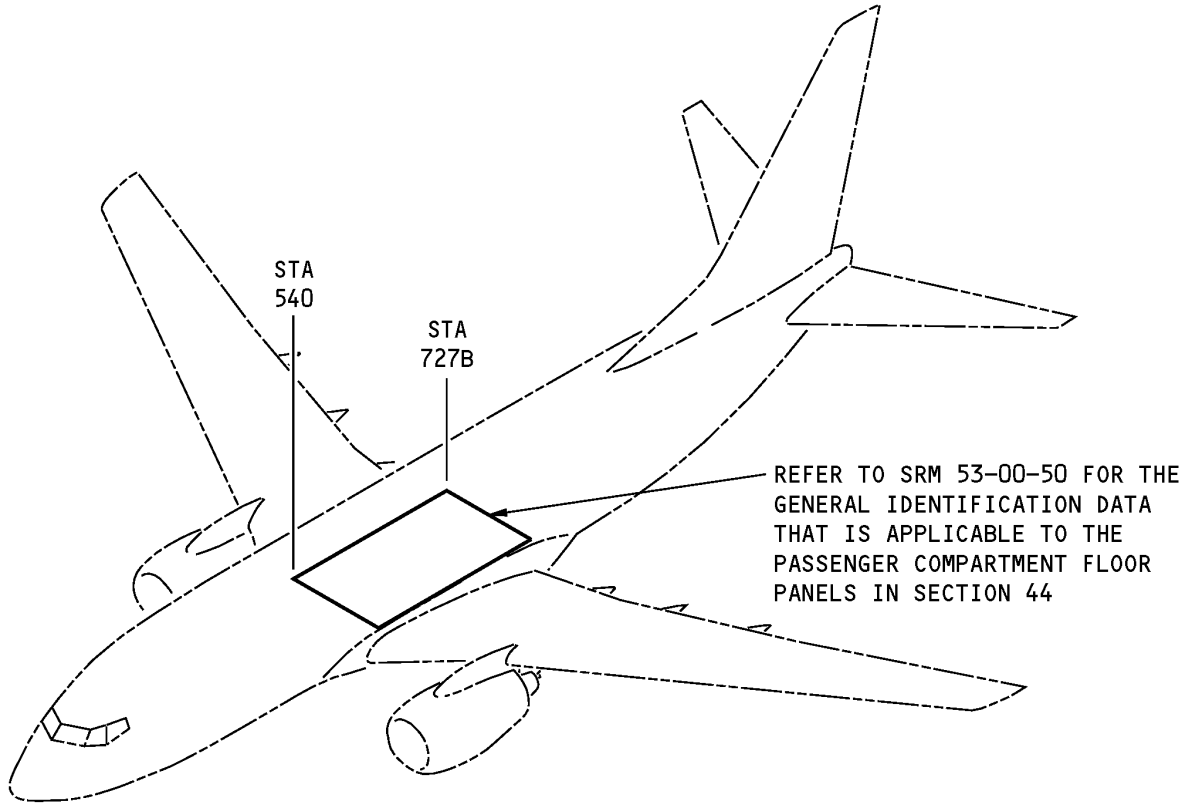
**STATION 639 IS SHOWN, STATION 601 IS SIMILAR**

**Machined Thicknesses for the Inner Chord, Figure 6, Item [8]  
Figure 8**



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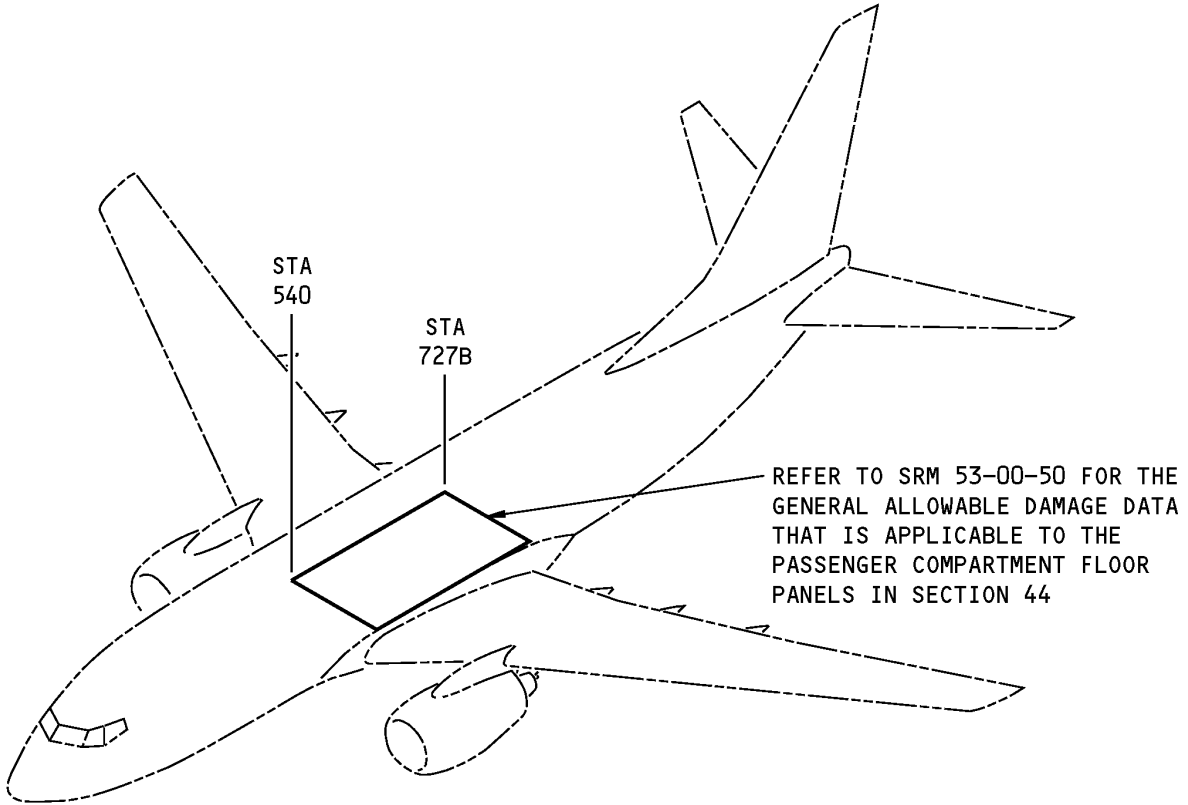
IDENTIFICATION GENERAL - SECTION 44 PASSENGER COMPARTMENT FLOOR PANELS



Section 44 Passenger Compartment Floor Panel Location  
Figure 1

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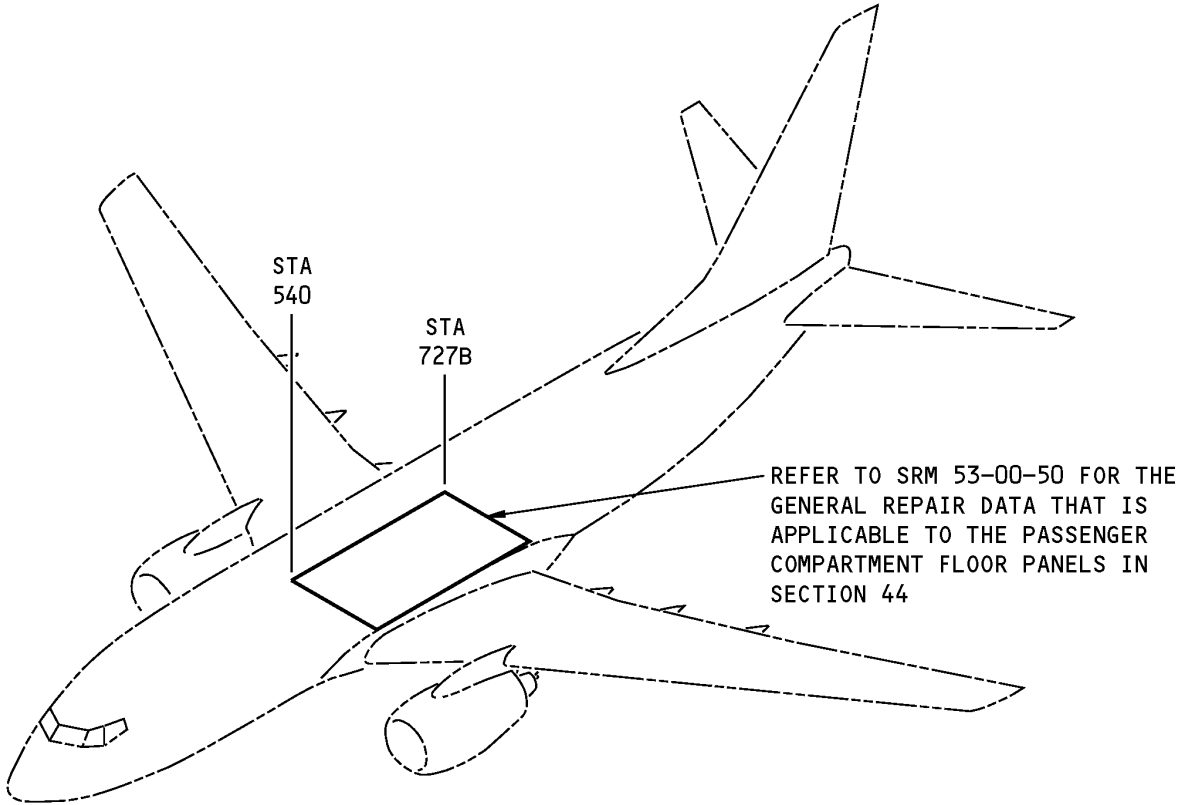
**ALLOWABLE DAMAGE GENERAL - SECTION 44 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 44 Passenger Compartment Floor Panel Location  
Figure 101**

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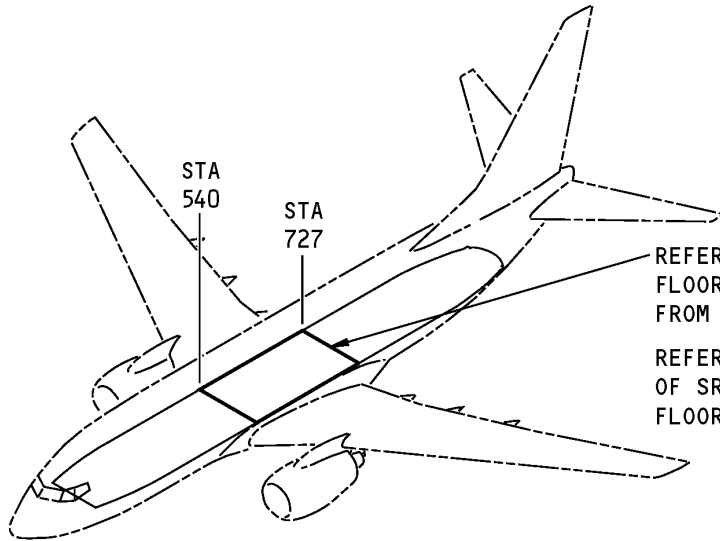
**REPAIR GENERAL - SECTION 44 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 44 Passenger Compartment Floor Panel Location**  
**Figure 201**

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**IDENTIFICATION 1 - SECTION 44 FLOOR BEAM STRUCTURE**



REFER TO FIGURES 3 THRU 5 FOR THE FLOOR BEAM STRUCTURE IDENTIFICATION FROM STA 540 THRU STA 727B

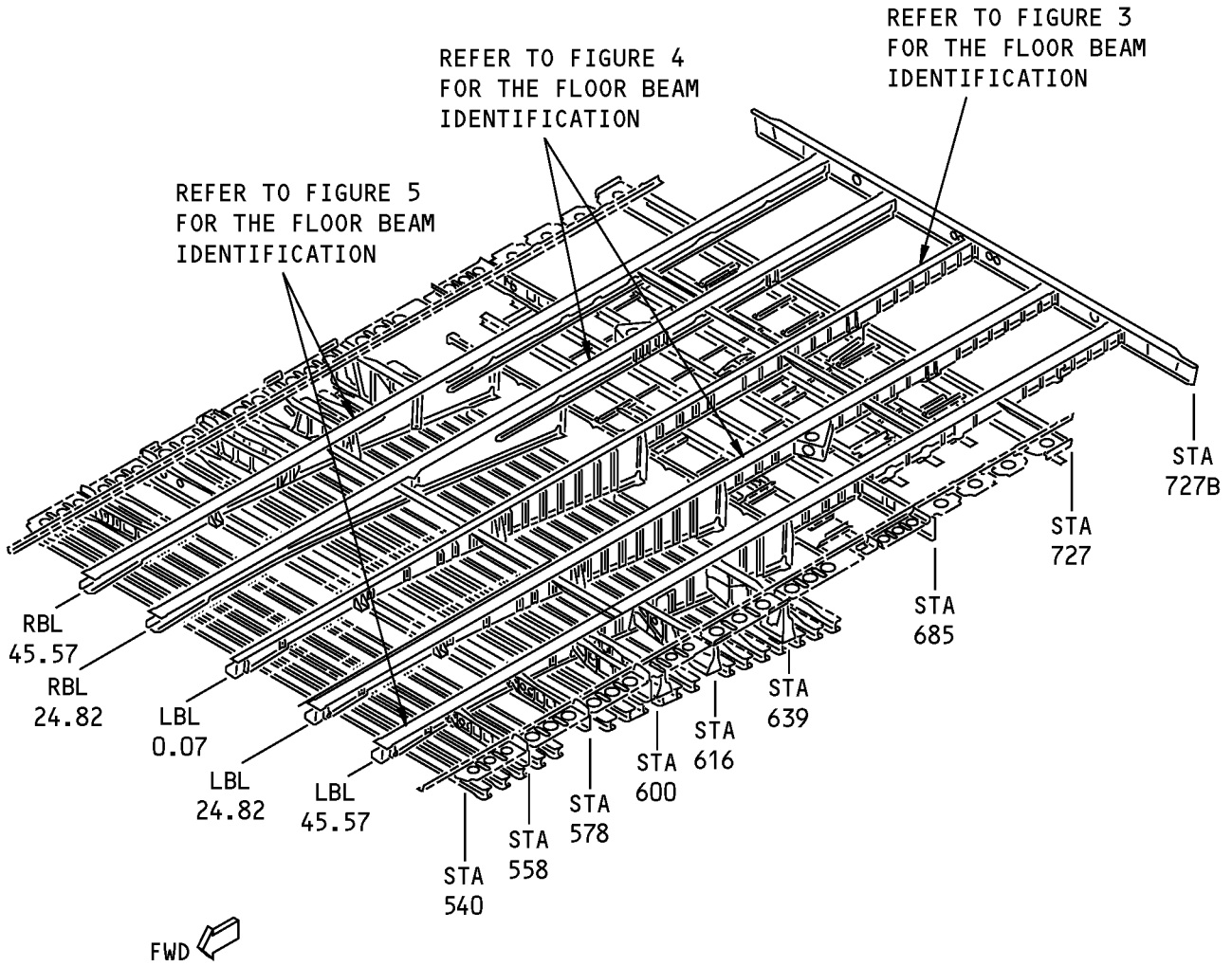
REFER TO IDENTIFICATION 2 OF SRM 53-40-51 FOR THE FLOOR STRUCTURE IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Floor Structure Location  
Figure 1**

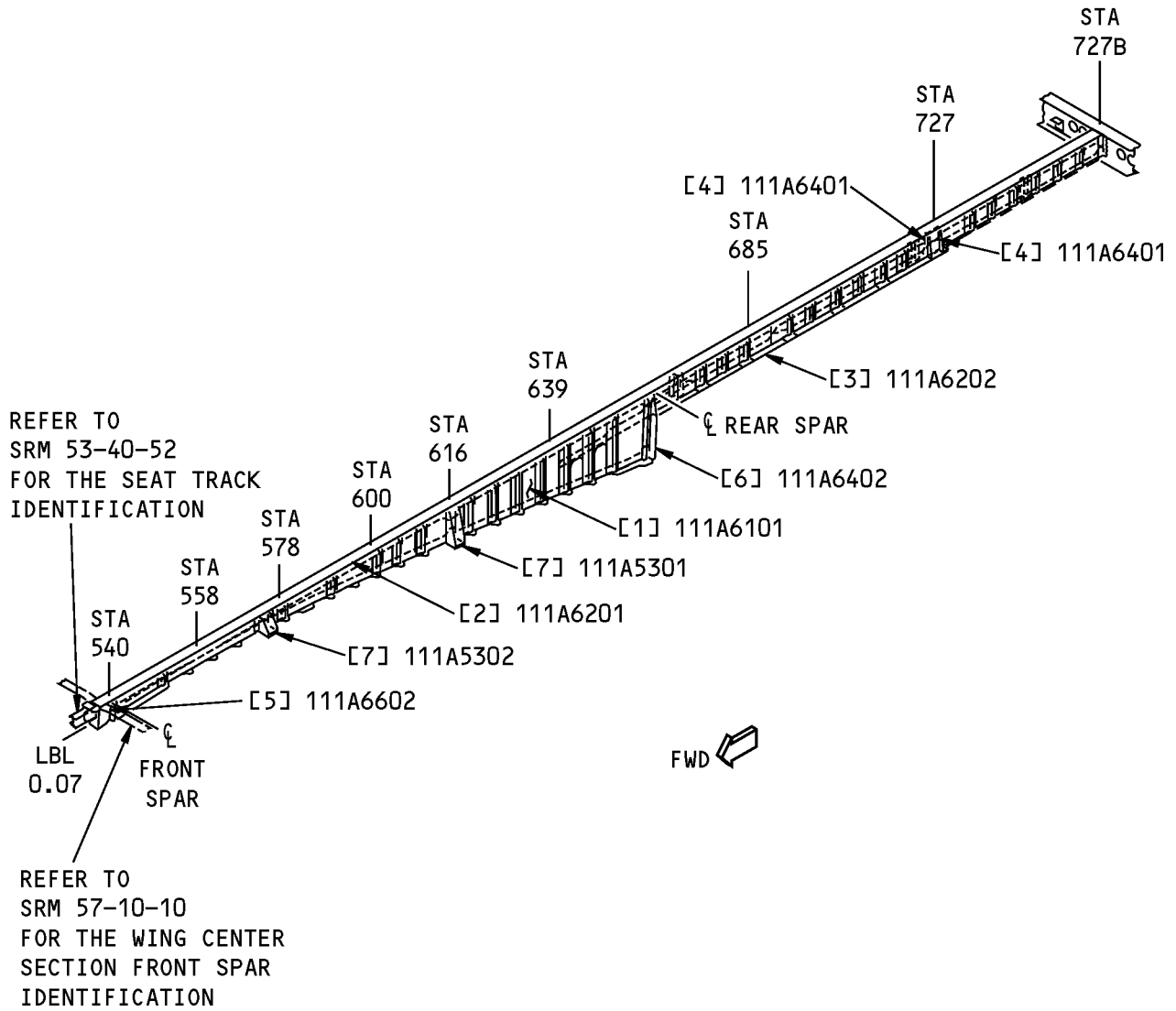
**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
111A0000	Functional Product Collector, Wing Center Section
111A6000	Floor Beam Installation - Wing Center Section
111A6001	Floor Beam Assembly - LBL 0.07, Wing Center Section
111A6002	Floor Beam Assembly - BL 24.82, Wing Center Section
111A6003	Floor Beam Assembly - BL 45.57, Wing Center Section
111A6401	Fitting - Floor Beam, Body Station 727, Wing Center Section



**Section 44 Floor Beam Location  
Figure 2**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**FLOOR BEAM AT LBL 0.07**

**LBL 0.07 Floor Beam Identification  
Figure 3**



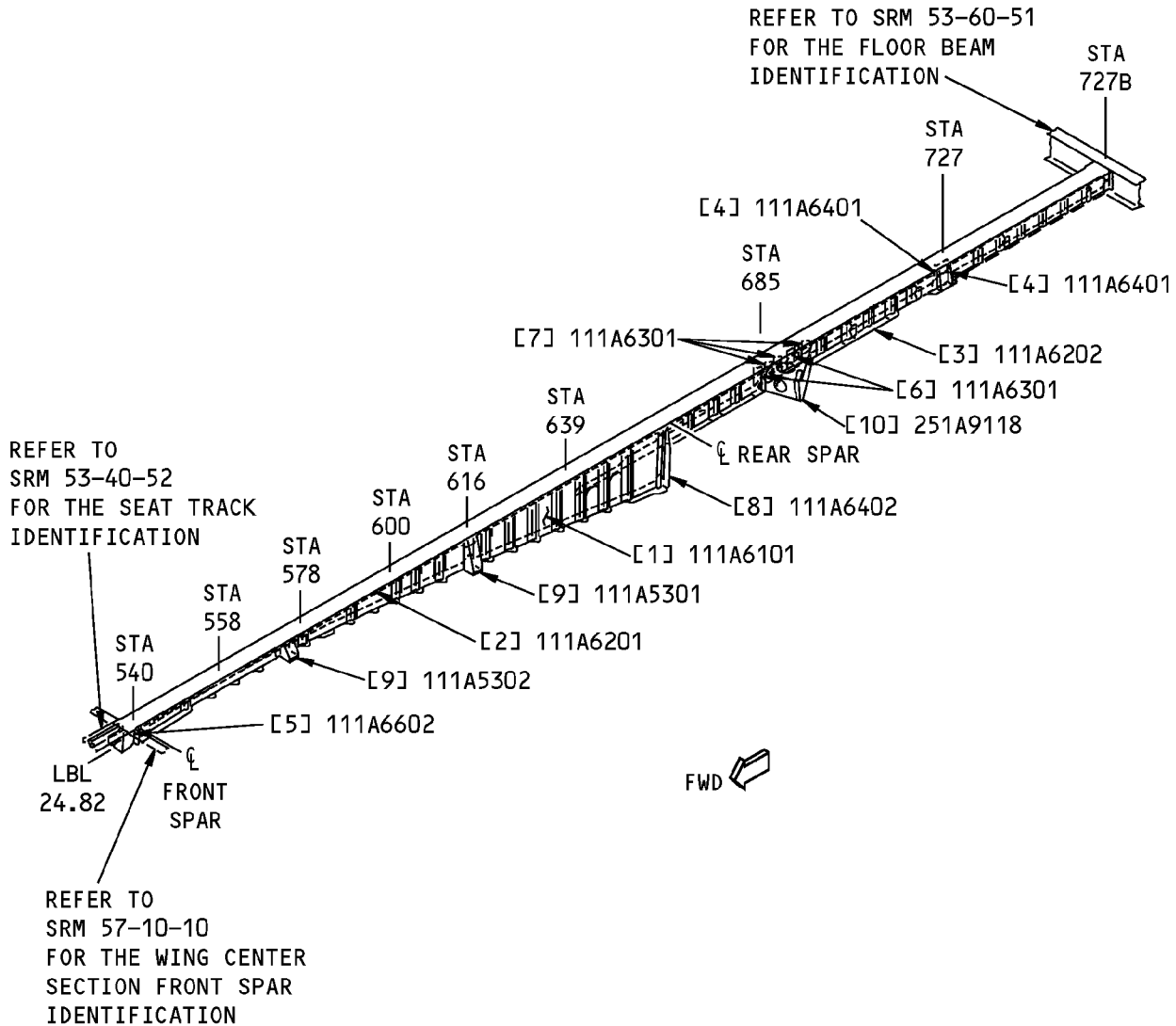
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1505-100096 7150-T77511 extrusion as given in BMS 7-306	
[3]	Lower Chord		BAC1505-101652 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Fitting (2)		7075-T73 die forging as given in BMS 7-186	
[5]	Angle		BAC1503-100937 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Fitting		BAC1506-4253 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[7]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
FLOOR BEAM AT LBL 24.82**

**LBL 24.82 Floor Beam Identification  
Figure 4**





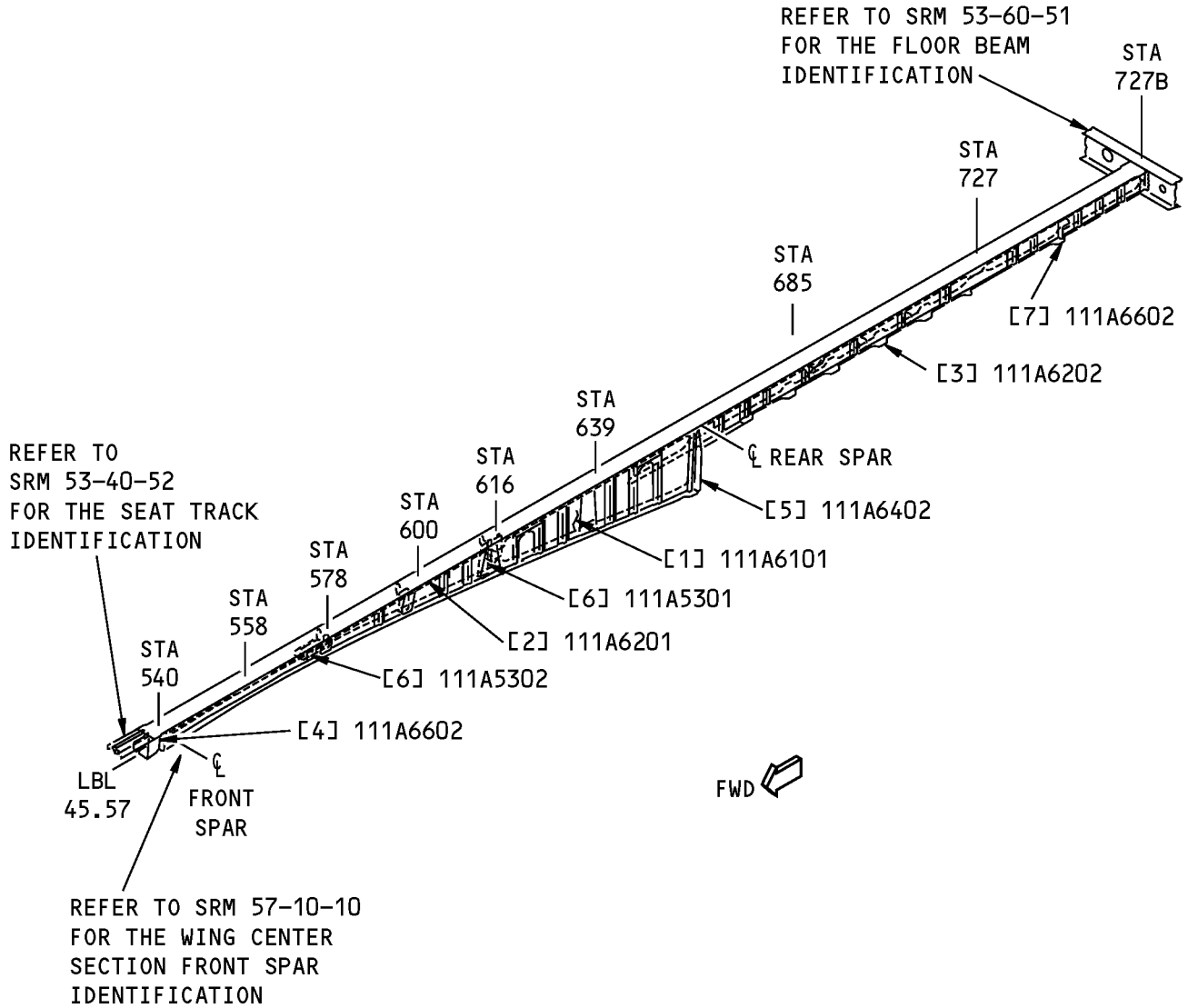
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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1506-1108 7150-T77511 extrusion as given in BMS 7-306 (Optional: BAC1505-101448)	
[3]	Lower Chord		BAC1505-101654 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Fitting (2)		7075-T73 die forging as given in BMS 7-186	
[5]	Angle		BAC1517-2374 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener (2)		BAC1503-100081 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener (3)		AND10134-1003 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Fitting		BAC1506-4253 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[9]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	
[10]	Bracket (3)	0.063 (1.6)	6013-T4 sheet as given in AMS 4347	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
FLOOR BEAM AT LBL 45.57**

**LBL 45.57 Floor Beam Identification  
Figure 5**



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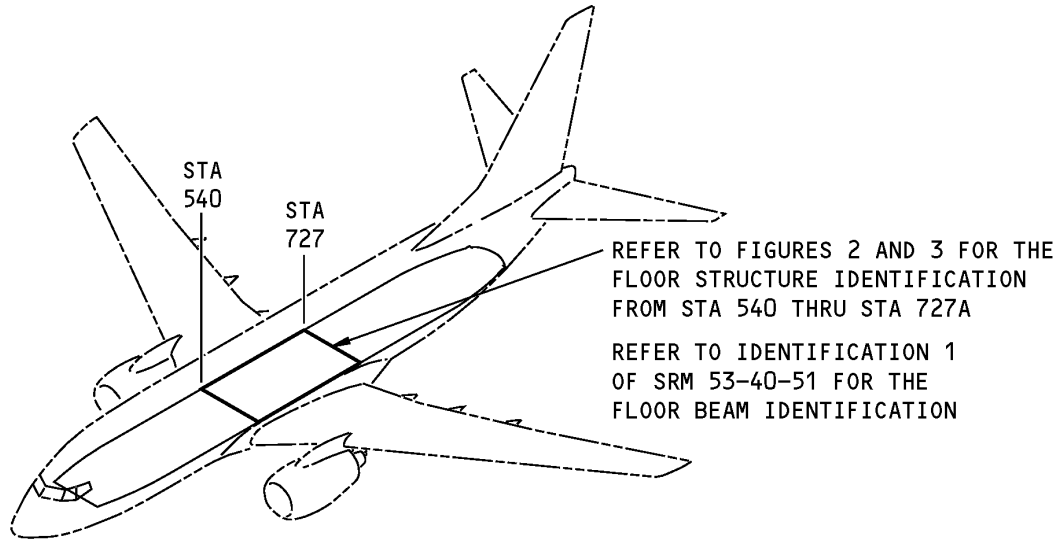
**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web		7050-T7451 plate as given in AMS 4050. Refer to the Boeing production drawing for the machined thicknesses	
[2]	Upper Chord		BAC1506-1108 7150-T77511 extrusion as given in BMS 7-306) (Optional: BAC1505-101448)	
[3]	Lower Chord		BAC1505-101654 7150-T77511 extrusion as given in BMS 7-306. Refer to the Boeing production drawing for the machined thicknesses	
[4]	Angle		BAC1503-11780 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Fitting		BAC1506-4252 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7075-T73511 extruded bar)	
[6]	Tension Fitting (2)		7050-T7451 plate as given in AMS 4050	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 44 FLOOR STRUCTURE**



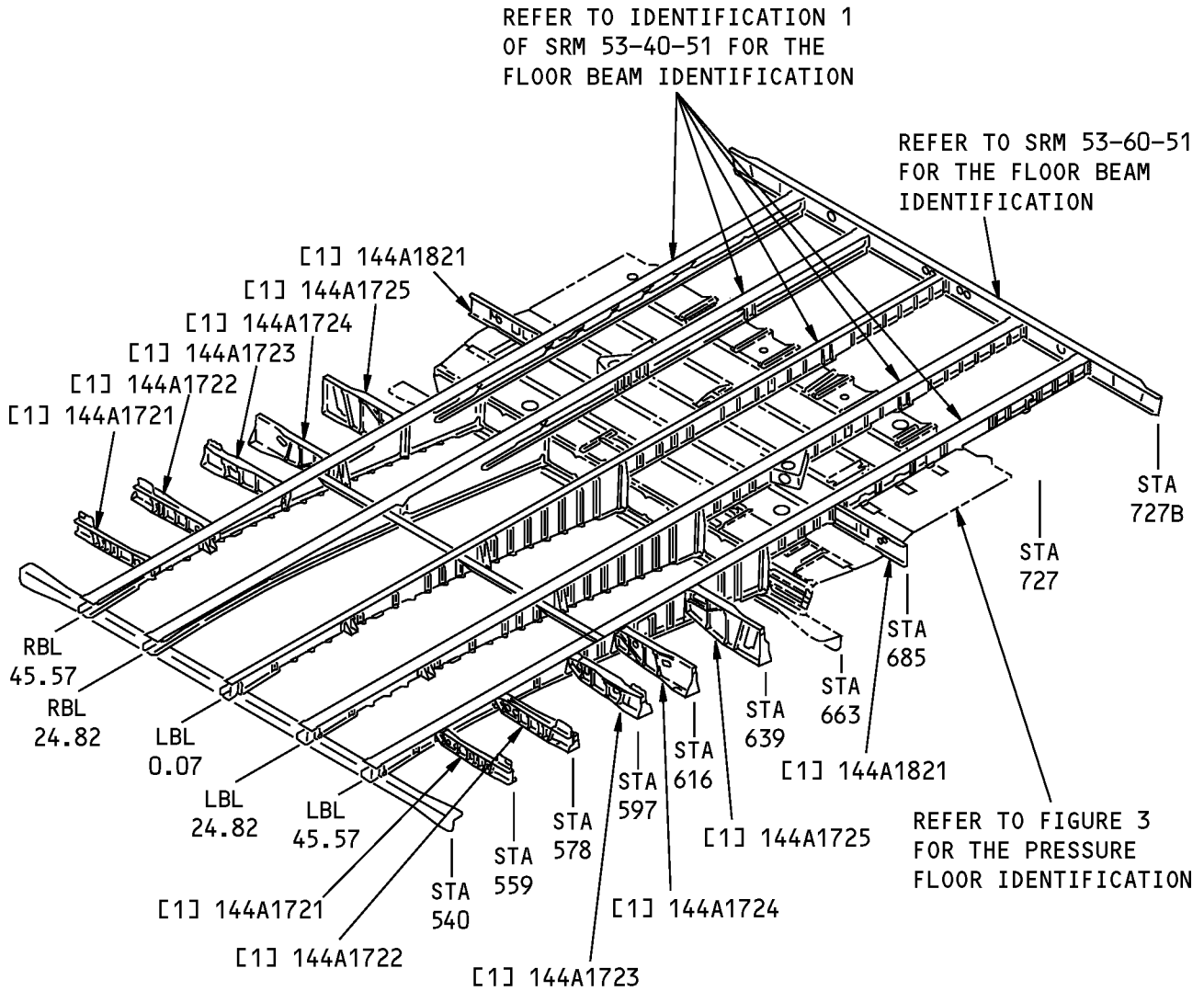
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4403	Lower Lobe Functional Collector - Section 44
144A7700	Installation - Pressure Floor
144A7710	Assembly - Pressure Floor

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 44 Floor Structure Identification  
Figure 2**

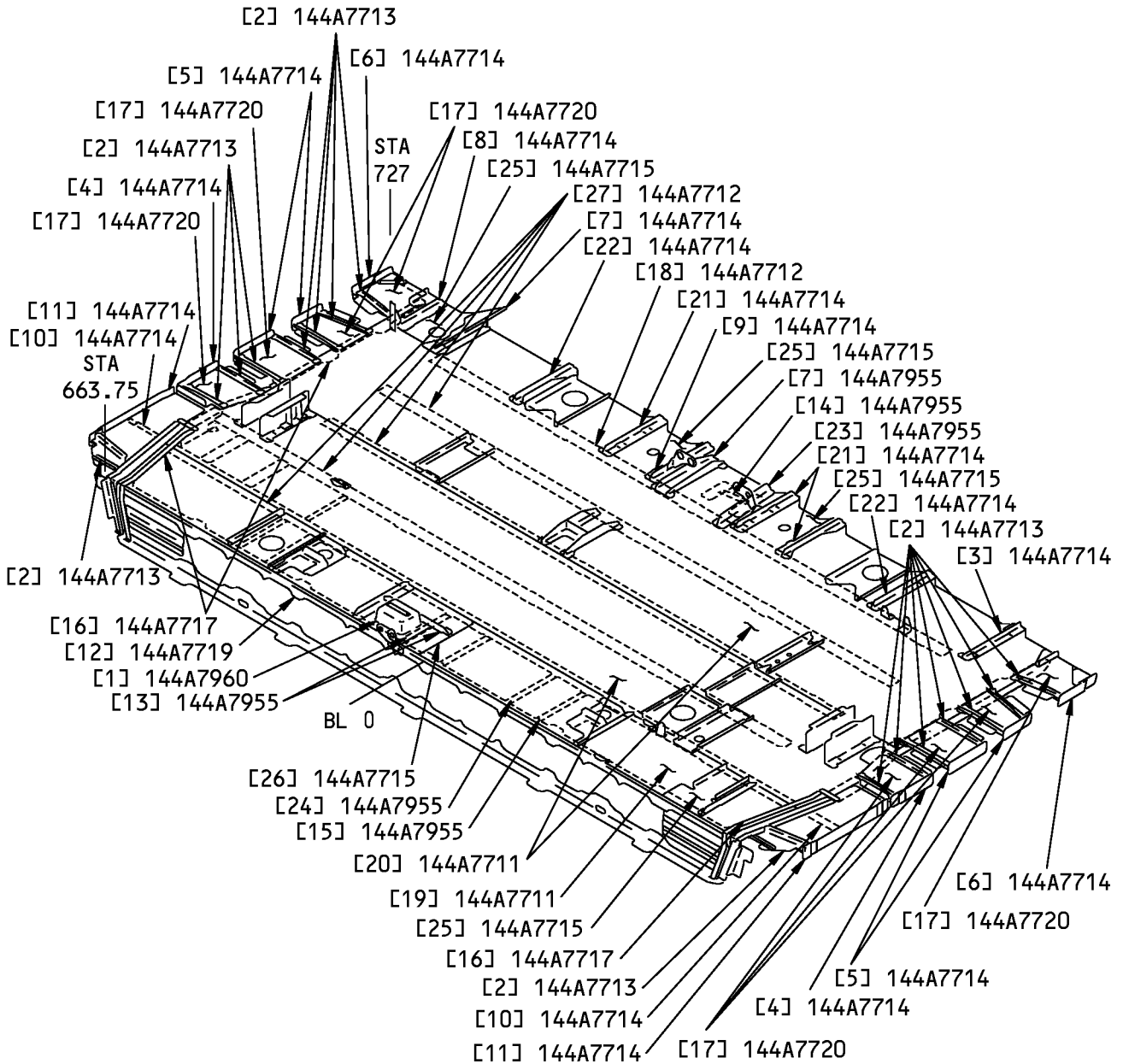


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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stub Beam (6)		7050-T7451 plate as given in BMS 7-323, Type I	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 44 Pressure Floor Identification  
Figure 3**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Pressure Box		Epoxy Preimpregnated Glass (EPGF) as given in BMS 8-139, Style 1581 or 7781, Class I. Refer to Figure 4 for a typical pressure box ply layout	
[2]	Angle (16)		BAC1490-2824 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Stiffener		BAC1505-100420 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Stiffener (2)		BAC1506-4350 2024-T42 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[5]	Stiffener (4)		BAC1506-4349 2024-T3511 extrusion as given in QQ-A-200/3 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[6]	Stiffener (2)		BAC1506-4347 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[7]	Stiffener (2)		7050-T7451 plate as given in AMS 4050	
[8]	Stiffener		BAC1514-3230 7075-T76511 extrusion as given in QQ-A-200/11	
[9]	Stiffener		BAC1505-47676 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-101696)	
[10]	Stiffener (2)		BAC1514-3232 2024-T3511 extrusion as given in QQ-A-200/3	
[11]	Stiffener (2)		BAC1505-100952 2024-T3511 extrusion as given in QQ-A-200/3	
[12]	Chord	0.090 (2.29)	Ti-6Al-4V sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[13]	Stiffener (2)		BAC1503-100105 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Channel		BAC1509-100696 7075-T6511 extrusion as given in QQ-A-200/11	
[15]	Stiffener (2)		BAC1506-4441 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Chord (4)		7050-T7451 plate as given in AMS 4050	
[17]	Web, Closeout (8)	0.056 (1.42)	2024-T42 clad sheet as given in QQ-A-250/5	
[18]	Spanwise Stiffener (5)		BAC1520-2784 7150-T77511 extrusion as given in BMS 7-306	
[19]	Web	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[20]	Web (2)	0.056 (1.42)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Stiffener (3)		BAC1505-47676 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1506-4366)	
[22]	Stiffener (2)		BAC1506-4366 7075-T6511 extrusion as given in QQ-A-200/11	
[23]	Stiffener		BAC1505-100074 7075-T6511 extrusion as given in QQ-A-200/11	



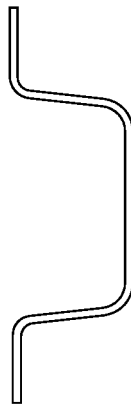
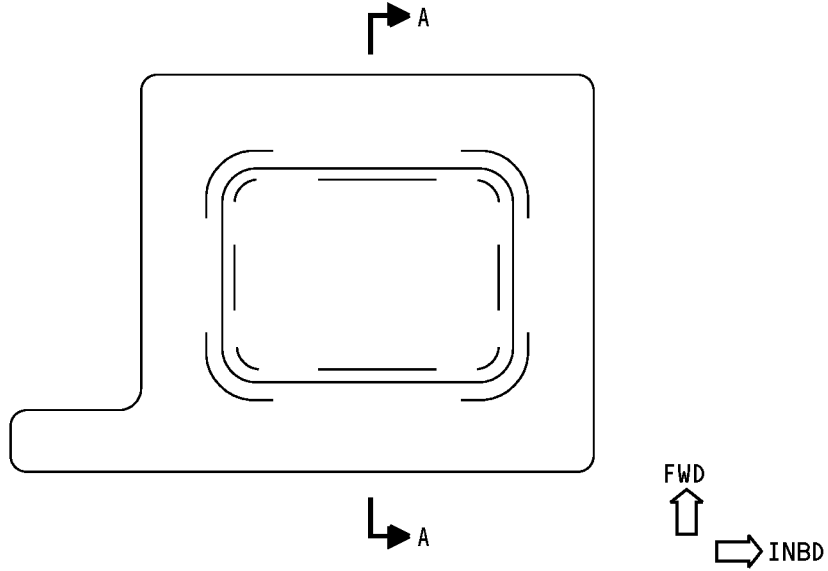


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LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[24]	Stiffener		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part).	
[25]	Doubler (3)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[26]	Doubler (2)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[27]	Stiffener (4)		BAC1520-2784 7150-T77511 extrusion as given in BMS 7-306. (Optional: 7150-T77511 extruded bar as given in BMS 7-306 or BAC1518-1297 7150-T77511 extrusion as given in BMS 7-306).	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**Ply Layup for Figure 3, Item [1]  
Figure 4**



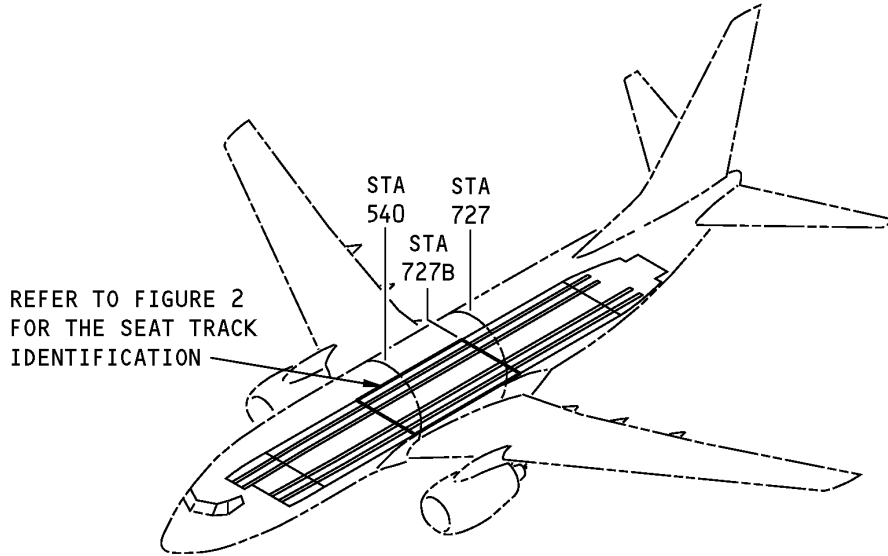
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**Table 4:**

<b>PLY MATERIAL AND DIRECTION FOR FIGURE 3, ITEM [1]</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1 thru P10	0 or 90 degrees	EPGF as given in BMS 8-139, Style 1581 or 7781, Class I

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**IDENTIFICATION 1 - SECTION 44 SEAT TRACKS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

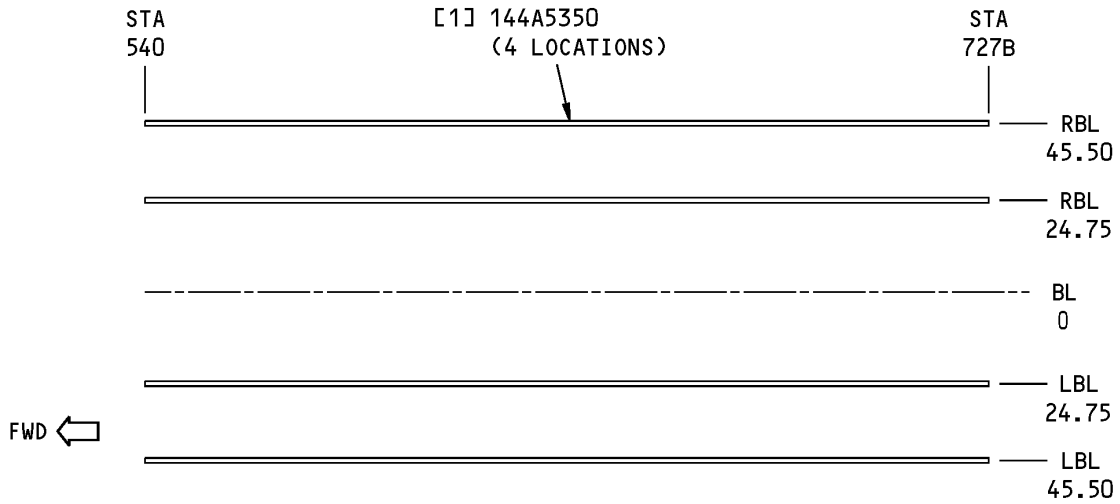
**Section 44 Seat Track Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4001	Fuselage Miscellaneous Functional Collector
144A5300	Seat Track Installation, Section 44



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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A4001 TO SEE THE DIFFERENT CONFIGURATIONS.

**Section 44 Seat Track Identification  
Figure 2**

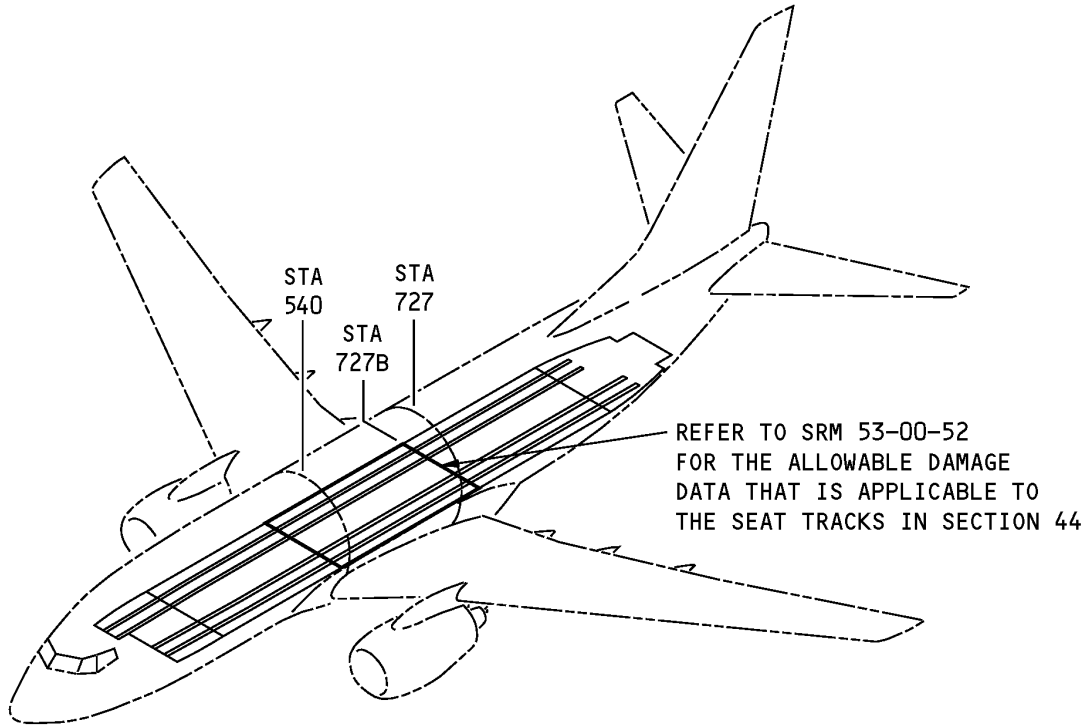
**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Seat Track Crown (4)		BAC1520-2779 7178-T6511 extrusion as given in QQ-A-200/13	

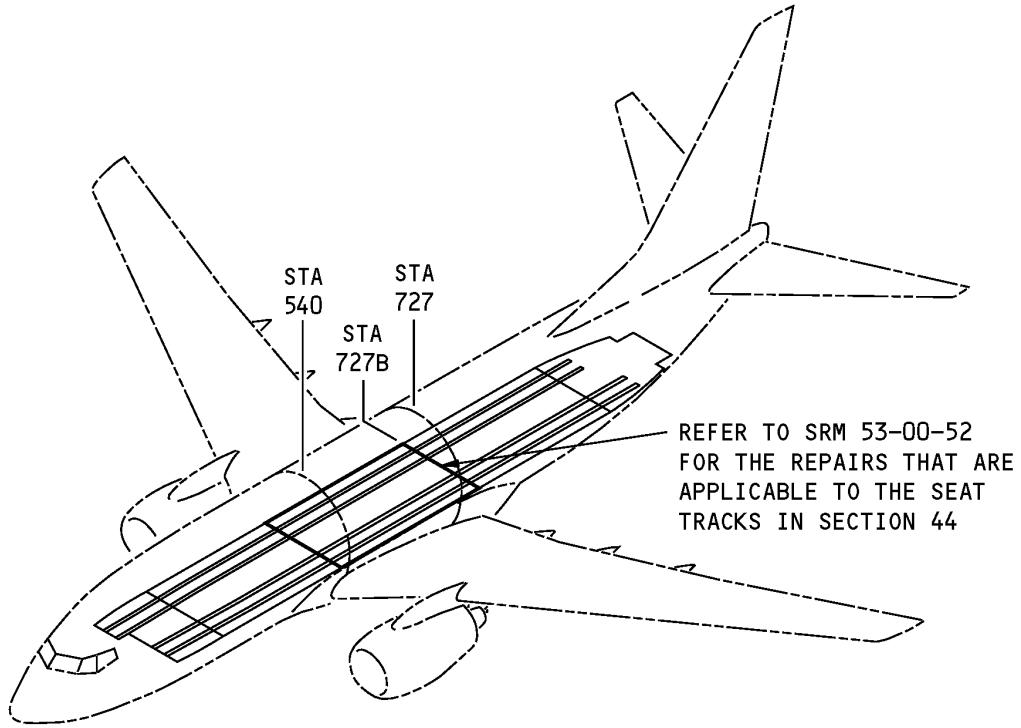
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE GENERAL - SECTION 44 SEAT TRACKS**



**Section 44 Seat Track Allowable Damage**  
**Figure 101**



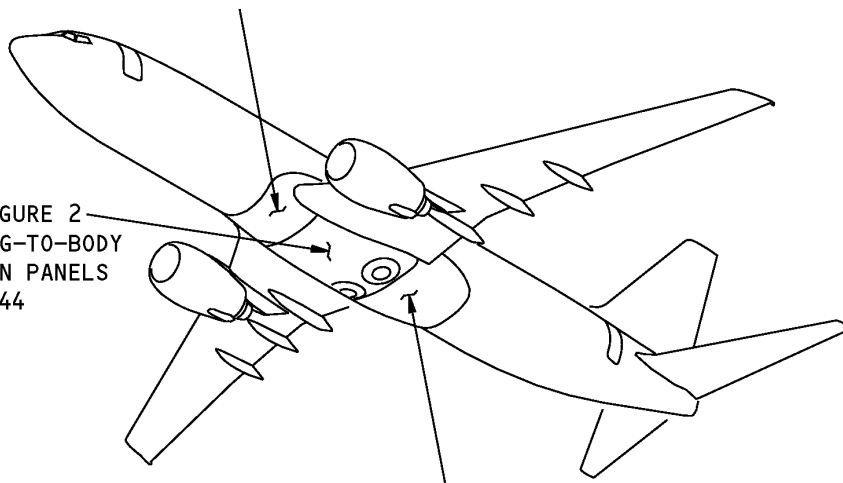
**Section 44 Seat Track Repairs  
Figure 201**

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**IDENTIFICATION 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS**

REFER TO SRM 53-30-70, IDENTIFICATION 1 FOR THE WING-TO-BODY FAIRING SKIN PANELS IN SECTION 43

REFER TO FIGURE 2 FOR THE WING-TO-BODY FAIRING SKIN PANELS IN SECTION 44



REFER TO SRM 53-60-70, IDENTIFICATION 1 FOR THE WING-TO-BODY FAIRING SKIN PANELS IN SECTION 46

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

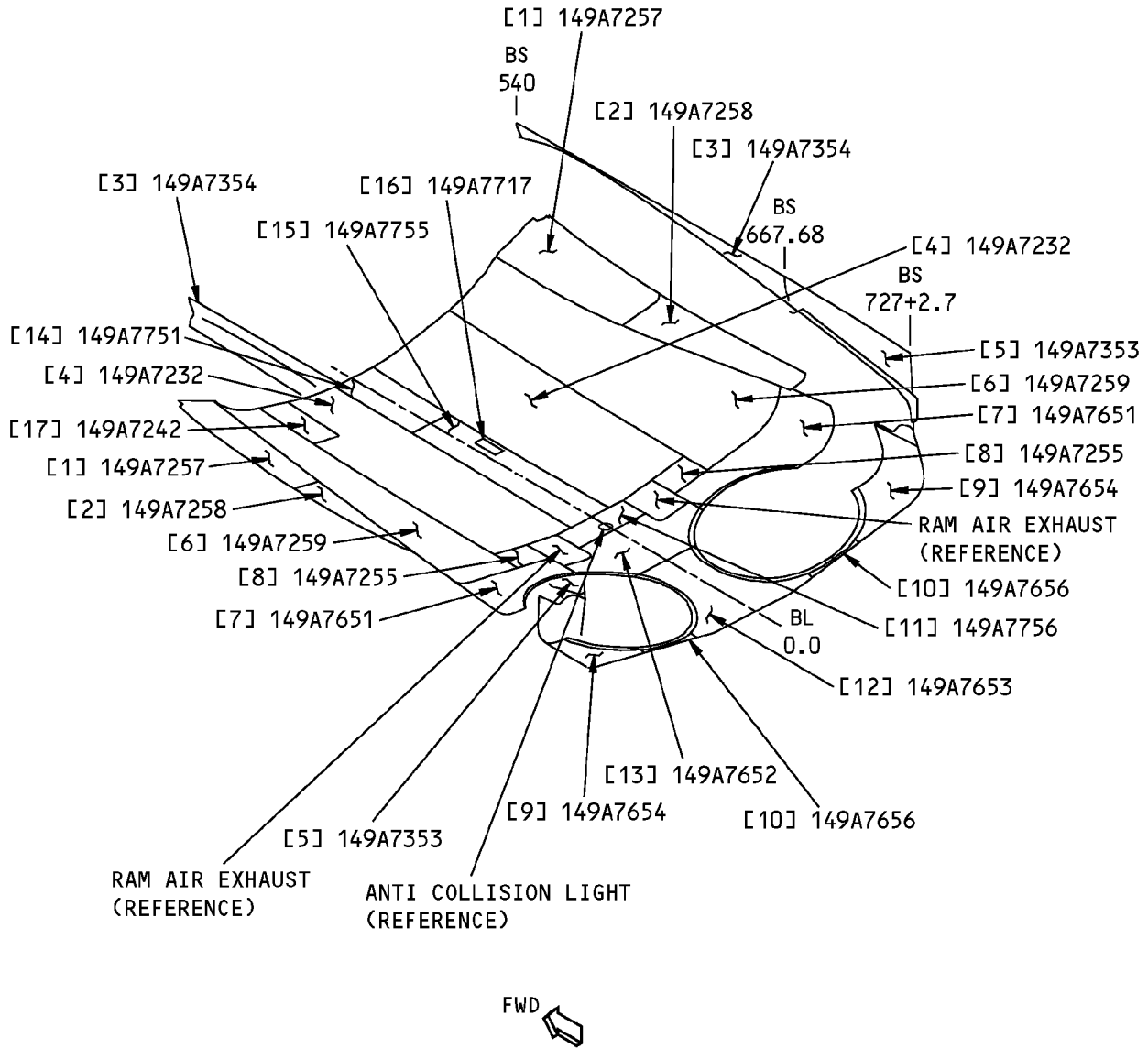
**Section 44 Wing-to-Body Fairing Skin Panels Identification  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
149A7011	Functional Collector - Section 49 Panel Installations
149A7201	ECS Bay Panel Installation
149A7202	Front Spar to Rear Spar Underwing Panel Installation
149A7230	ECS Access Door Installation, Front to Rear Spar
149A7240	High Pressure Connect Door Installation
149A7301	Overwing Fairing Panel Installation
149A7602	Wheel Well Panel Installation
149A7709	Under Keel, Front Spar to Rear Spar Panel Installation



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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 44 Wing-to-Body Fairing Skin Panels Identification  
Figure 2**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Underwing Bolt Cover, FS to STA 595.71 - Bonded Part  Skin Ply  Doubler Ply  Filler Ply  Core Core	     0.40 (10.2) 0.50 (12.7) 0.60 (15.2)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>*[2]</sup>  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>*[3]</sup>	
[2]	Underwing Bolt Cover, STA 595.71 to RS - Bonded Part  Skin Ply  Doubler Ply  Filler Ply  Core	     0.50 (12.7) 0.70 (17.8) 0.80 (20.3) 0.90 (22.9)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>*[2]</sup>  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>*[3]</sup>	
[3]	Overwing Fairing, STA 557.1 to STA 643 - Bonded Part  Skin Ply  Doubler Ply  Filler Ply  Core  Core	     0.25 (6.4)  0.50 (12.7)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>*[2]</sup>  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>*[2]</sup>  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>*[3]</sup>  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI (OX), Grade 3.0 <sup>*[3]</sup>	
[4]	ECS Access Door - FS to RS - Bonded Part		Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich	



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
	Skin Ply and Doubler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW <sup>[2]</sup>	
	Doubler Ply		CFRP unidirectional tape as given in BMS 8-168, Type II, Class I, Grade 190 <sup>[2]</sup>	
	Isolation Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class I, Type I, Grade 5.5 <sup>[3]</sup>	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class I, Type I, Grade 8.0 <sup>[3]</sup>	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup>	
[5]	Overwing Fairing, STA 643 to STA 727 + 2.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup>	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0 <sup>[3]</sup>	
[6]	Underwing, FS to RS - Bonded Part		Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich	
	Skin Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW <sup>[2]</sup>	
	Doubler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW <sup>[2]</sup>	
	Filler Ply		CFRP woven fabric as given in BMS 8-168, Type II, Class II, Style 3K-70-PW <sup>[2]</sup>	
	Core	0.90 (22.9)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 4.0 <sup>[3]</sup>	
[7]	Forward Outboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup>	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Core	0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup>	
[8]	ECS Bay, FS to RS - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup>	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup>	
[9]	Aft Outboard Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup>	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	
	Core	0.30 (7.6) 0.40 (10.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup>	
[10]	Aft Wheel Well - Bonded Part	0.10 (2.5)	Fiberglass filler as given in BACF3U035N250	
[11]	Under Keel - STA 649.7 to STA 660.7 - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup>	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup>	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup>	
[12]	Aft Center Wheel Well - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	<p>Skin Ply</p> <p>Doubler Ply</p> <p>Filler Ply</p> <p>Core</p>	0.40 (10.2)	<p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class I, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup></p> <p>Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup></p>	
[13]	<p>Forward Inboard Wheel Well - Bonded Part</p> <p>Skin Ply</p> <p>Doubler Ply</p> <p>Filler Ply</p> <p>Core</p>	0.50 (12.7)	<p>Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich</p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class I, Style 120 (Optional: 220) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class I, Style 1581 (Optional: 7781) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-139, Class I, Style 120 (Optional: 220) or Style 1581 (Optional: 7781) <sup>[2]</sup></p> <p>Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0 <sup>[3]</sup></p>	
[14]	<p>Under Keel - STA 534.9 to STA 572 Bonded Part</p> <p>Skin Ply</p> <p>Doubler Ply</p> <p>Filler Ply</p> <p>Core</p>	0.50 (12.7)	<p>Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside</p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup></p> <p>Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0 <sup>[3]</sup></p>	
[15]	<p>Under Keel - STA 572.1 to STA 649.6 - Bonded Part</p> <p>Skin Ply</p> <p>Doubler Ply</p>		<p>Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with Aluminum Flame Spray as given in BAC 5056, Type I on the toolside</p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220) <sup>[2]</sup></p> <p>Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781) <sup>[2]</sup></p>	

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), or Style 1581 (Optional: 7781), or Style 1584 <sup>[2]</sup>	
	Core	0.90 (22.9)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 5.0 <sup>[3]</sup>	
[16]	Under Keel Sump Drain Door	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[17]	High Pressure Connect Access Door	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

\*[2] Refer to the production drawings for the ply layup.

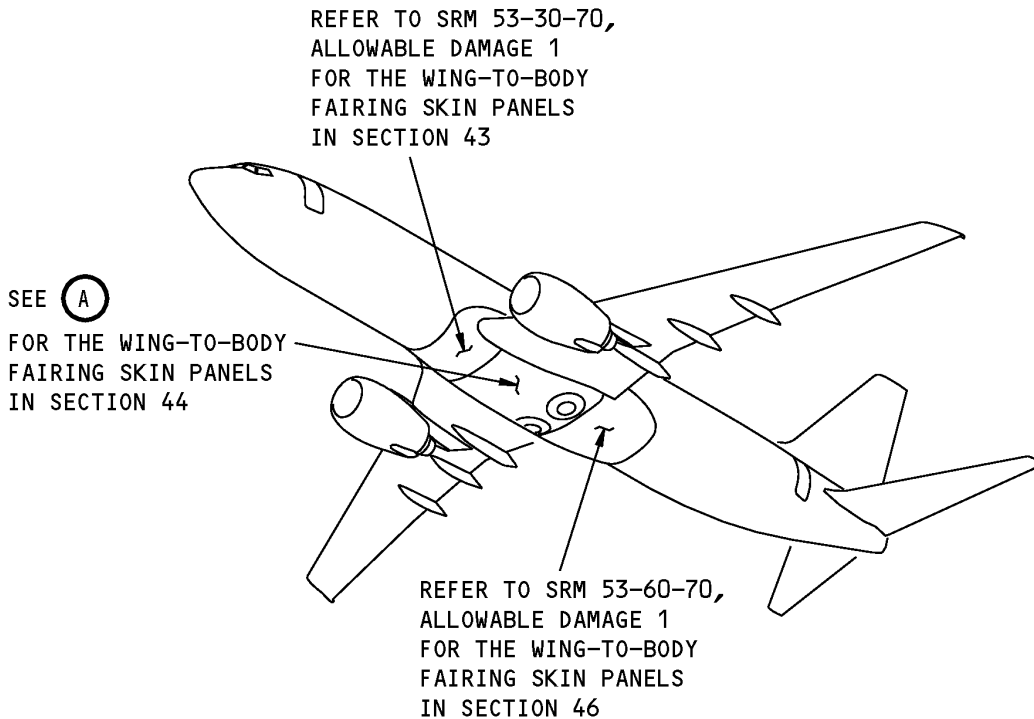
\*[3] Refer to the production drawings for the core ribbon direction.

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**ALLOWABLE DAMAGE 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS**

**1. Applicability**

- A. This subject gives the allowable damage limits for the section 44 wing-to-body fairing skin panels shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

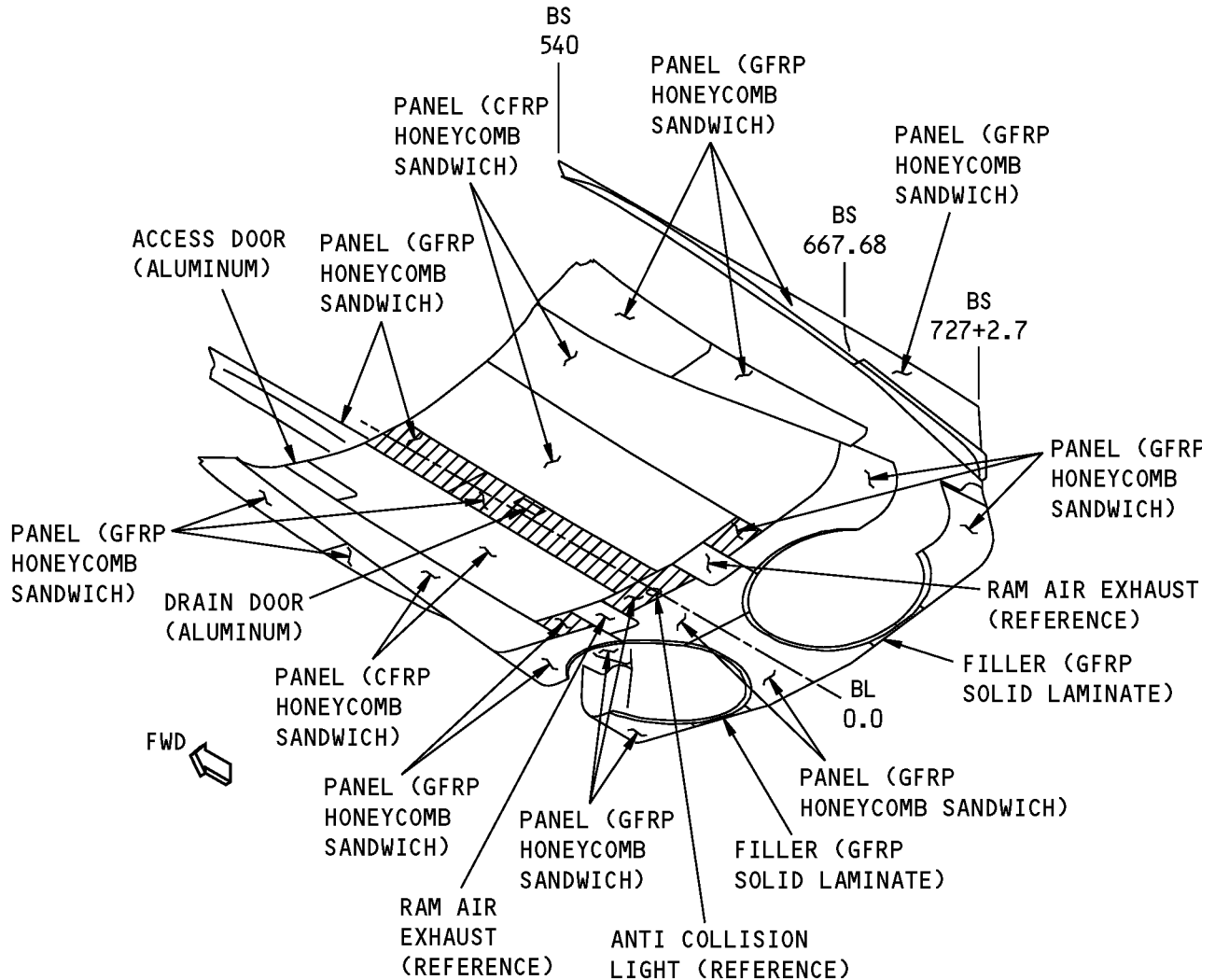


**NOTES**

- GFRP = GLASS FIBER REINFORCED PLASTIC
- CFRP = CARBON FIBER REINFORCED PLASTIC

**Section 44 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 1 of 2)**

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ALUMINUM FLAME SPRAY (BAC5056, TYPE I) ON THE TOOLSIDE

A

Section 44 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 2 of 2)





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## STRUCTURAL REPAIR MANUAL

### 2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) or Carbon Fiber Reinforced Plastic (CFRP) honeycomb sandwich panels.

- (1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

- (a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A , B , and C for the definitions of the length, width, and depth of damage.
  - (c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.
- (2) Remove all the contamination and water from the structure.
- (a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (b) Refer to 51-70-04 for the cleanup procedures.
- (3) Some GFRP panels have a flame-sprayed aluminum coating as shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the flame-sprayed aluminum coating, do the steps that follow:
- (a) Refer to 51-70-14 for the allowable damage limits for the flame-sprayed aluminum coating.
  - (b) Seal the damaged area as given in 51-70-14.
- (4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh nor a flame-sprayed aluminum coating with the steps that follow:
- (a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
    - 1) Make a temporary seal.
      - a) Apply aluminum foil tape (speed tape).
      - b) Keep a record of the location.
      - c) Make sure the tape is in satisfactory condition at normal maintenance intervals.
    - 2) Make a permanent seal.
      - a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
      - b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.
      - c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.
  - (b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
    - 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

ALLOWABLE DAMAGE 1

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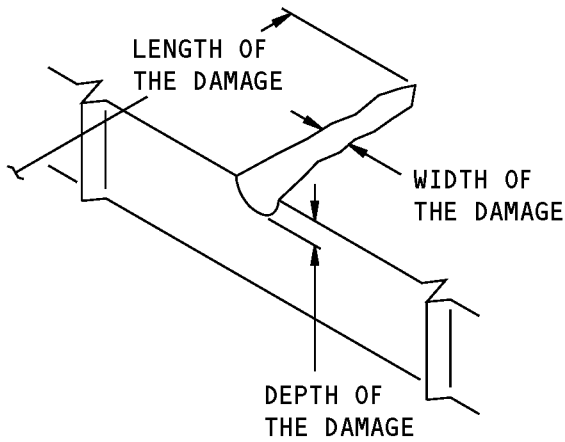


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**STRUCTURAL REPAIR MANUAL**

- 2) Make a temporary seal with aluminum foil tape (speed tape).
  - 3) Keep a record of the location.
  - 4) Repair the damage no later than 24 months from the time the seal was made.
- B. Do the steps that follow for the skin panels made of formed aluminum sheet:
- (1) Refer to Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.
  - (2) Remove the damaged material as necessary.
    - (a) Refer to 51-10-02 for the inspection and removal of damage.
    - (b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
    - (c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.
  - (4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.
- C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

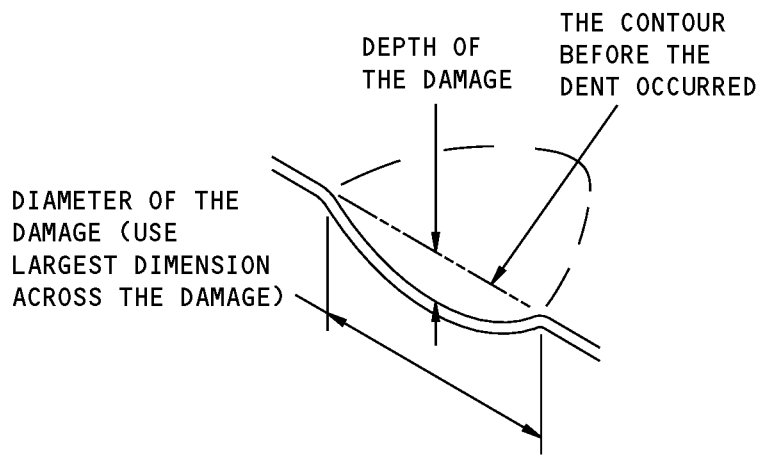
**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
CFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGE BAND AREAS	4.B
CFRP/HONEYCOMB SANDWICH PANELS - EDGE BAND AREAS	4.B
GFRP SOLID LAMINATE PANELS	4.C
FORMED ALUMINUM SHEET PANELS	4.D



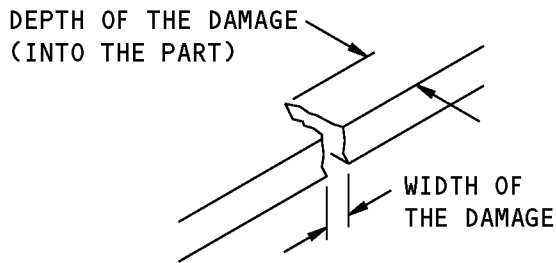
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**

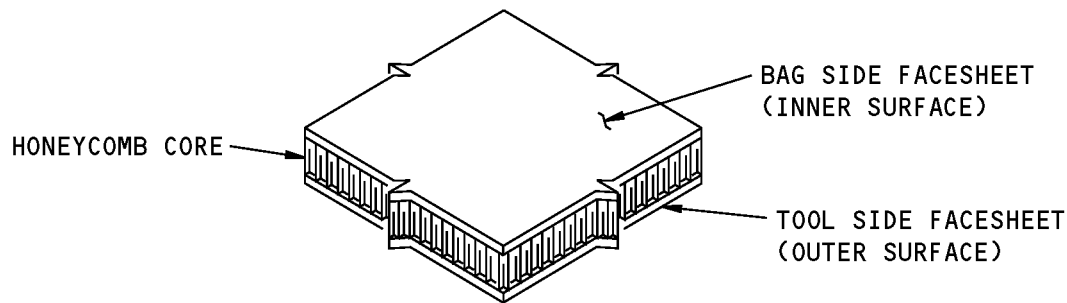


**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 102**

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**Definitions of the Facesheets  
Figure 103**

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Allowable Damage Limits**

**A. GFRP Honeycomb Sandwich Panels and CFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area**

(1) Cracks are permitted if:

- (a) They are a maximum of one facesheet and the core in depth
- (b) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1
- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1



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- (d) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1.

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (2) Nicks, Gouges and Scratches that do not cause damage to the glass or carbon fibers are permitted.

- (3) Nicks, Gouges and Scratches that cause damage to the glass or carbon fibers are permitted if:

- (a) The dimension of the damage is less than the limits given in Table 102/ALLOWABLE DAMAGE 1 and Figure 104/ALLOWABLE DAMAGE 1

- (b) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (c) They are sealed as given in Paragraph 2.

- (4) Dents are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

- (5) Holes and Punctures are permitted if:

- (a) They are a maximum of one facesheet and the core in depth

- (b) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

ALLOWABLE DAMAGE 1

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- (d) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (6) Delaminations are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits , Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

**Table 102:**

DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 44 WING-TO-BODY FAIRING SKIN				
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET			
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES)	
			"B"	"C"
149A7232	2.0	1.5(D + d)	1.7D	1.7d
149A7255	2.0	1.5(D + d)	1.7D	1.7d
149A7257	2.0	1.5(D + d)	1.7D	1.7d
149A7258	2.0	1.5(D + d)	1.7D	1.7d
149A7259	2.0	1.5(D + d)	1.7D	1.7d
149A7353	2.0	1.5(D + d)	1.7D	1.7d
149A7354	2.0	1.5(D + d)	1.7D	1.7d
149A7651	2.0	1.5(D + d)	1.7D	1.7d
149A7652	2.0	1.5(D + d)	1.7D	1.7d
149A7653	2.0	1.5(D + d)	1.7D	1.7d
149A7654	2.0	1.5(D + d)	1.7D	1.7d
149A7751	2.0	1.5(D + d)	1.7D	1.7d
149A7755	2.0	1.5(D + d)	1.7D	1.7d

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DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 44 WING-TO-BODY FAIRING SKIN			
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES)
149A7756	2.0	1.5(D + d)	1.7D 1.7d

B. GFRP Honeycomb Sandwich Panels and CFRP Honeycomb Sandwich Panels - Edgeband Area

- (1) Nicks, Gouges and Scratches that do not cause damage to the glass or carbon fibers are permitted.
- (2) Nicks, Gouges and Scratches that cause damage to the glass or carbon fibers are permitted if they are:

- (a) A maximum of one ply in depth

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

- (b) A maximum of 1.0 inch in length
- (c) A maximum of 0.25 inch in width
- (d) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (e) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (f) Sealed as given in Paragraph 2.

- (3) Dents that do not cause damage to the fibers are permitted.
- (4) Dents that do cause damage to the fibers or the damage depth is more than 1 ply are permitted if they are:

- (a) A maximum of 0.625 inch measured across the largest of the damage.
- (b) A maximum of 2 plies in depth.
- (c) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges.
- (d) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.

- (e) Sealed as given in Paragraph 2

- (5) Holes and Punctures are permitted if they are:

- (a) A maximum of 0.625 inch measured across the largest dimension of the damage
- (b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (c) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass or carbon fiber plies
- Are sealed as given in Paragraph 2.



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- (d) Sealed as given in Paragraph 2.
- (6) Delaminations are permitted if they are:
- A maximum of 0.625 inch measured across the largest dimension of the damage
  - A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
  - A minimum distance of 3.0 inches away from the edge of other damage
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (7) Edge damage is permitted if it is:
- A maximum of 0.10 inch in depth
  - A maximum of 0.50 inch in width
  - A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (8) Edge Erosion is permitted as shown in GFRP and CFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge, Figure 105/ALLOWABLE DAMAGE 1.
- C. GFRP Solid Laminate Panels (does not include the solid laminate areas in honeycomb sandwich panels)
- Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
  - Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:
    - A maximum of 1 ply in depth

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

    - A maximum of 3.0 inches in length
    - A minimum distance of 0.50 inch away from the edge of other damage, fastener holes or material edges.

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

    - Do not cause damage to the glass or carbon fiber plies
    - Are sealed as given in Paragraph 2.
  - Sealed as given in Paragraph 2.
  - Dents are permitted if they are:
    - A maximum of 2.0 inch measured across the largest dimension of the damage
    - A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

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- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (c) Sealed as given in Paragraph 2.
- (4) Holes and Punctures are permitted if they are:
- (a) A maximum of 0.625 inch measured across the largest dimension of the damage
  - (b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (c) Sealed as given in Paragraph 2.
- (5) Delaminations are permitted if they are:
- (a) A maximum of 0.625 inch measured across the largest dimension of the damage
  - (b) A minimum distance away from the edge of other damage, the edge of a hole, or the edge of the material as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (c) Sealed as given in Paragraph 2.
- (6) Edge damage is permitted if it is:
- (a) A maximum of 2 plies in depth
  - (b) A maximum of 0.50 inch in away from a fastener hole edge
  - (c) A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass or carbon fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (7) Edge Erosion is permitted as shown in GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge, Figure 107/ALLOWABLE DAMAGE 1.
- D. Panels Made of Formed Aluminum Sheet
- (1) Cracks:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A , B , and C .
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A , B , C , D , and F .
- (3) Dents are permitted if they:

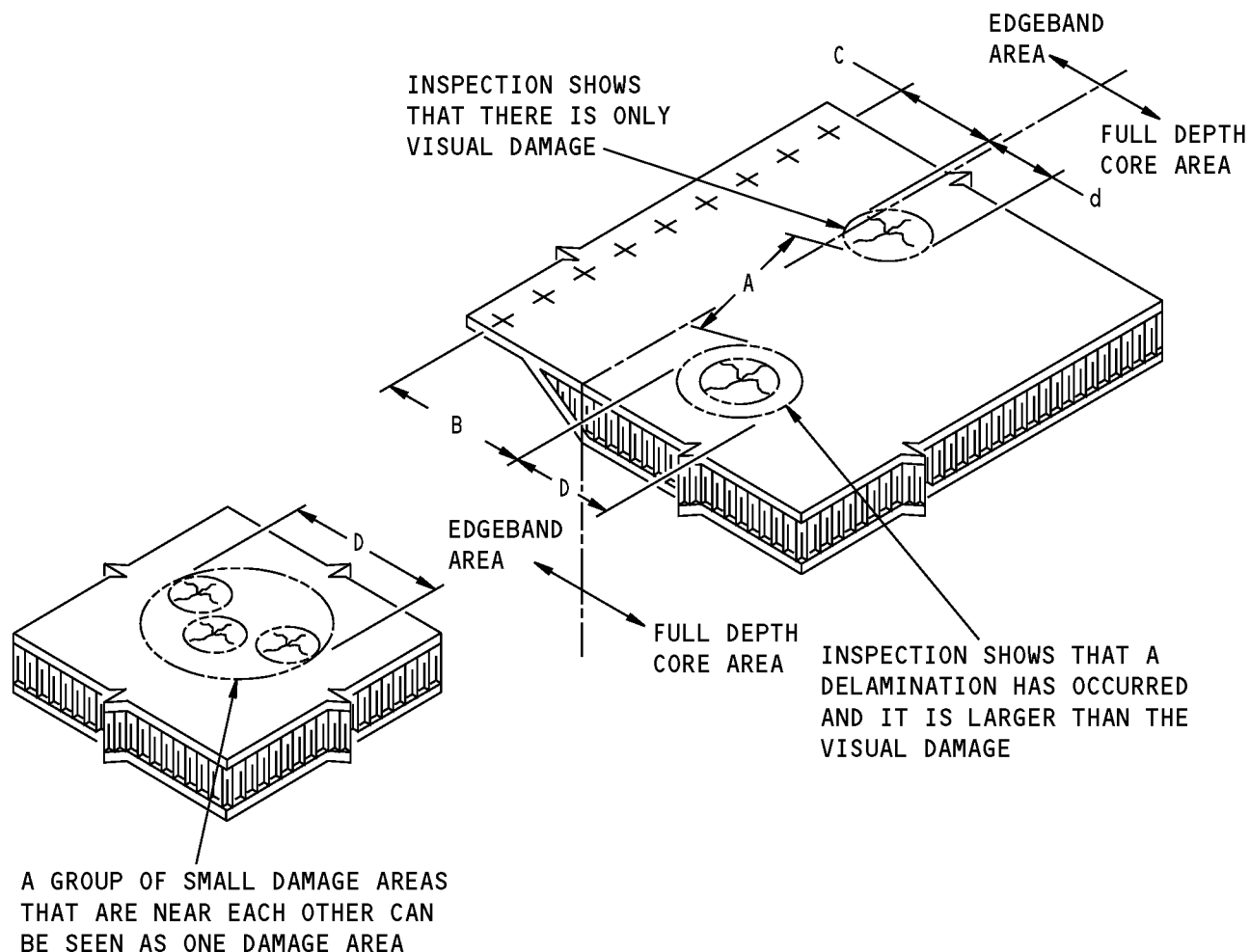


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- (a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Detail E
  - (b) Are a minimum distance of  $3.0D$  ( $D$  = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.
- (4) Holes and Punctures are permitted if:
- (a) They are a maximum of 0.25 measured across the largest dimension of the damage
  - (b) The edge of the damage is a minimum of 1.0 inch away from a fastener hole, an edge, or other damage
  - (c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.

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**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

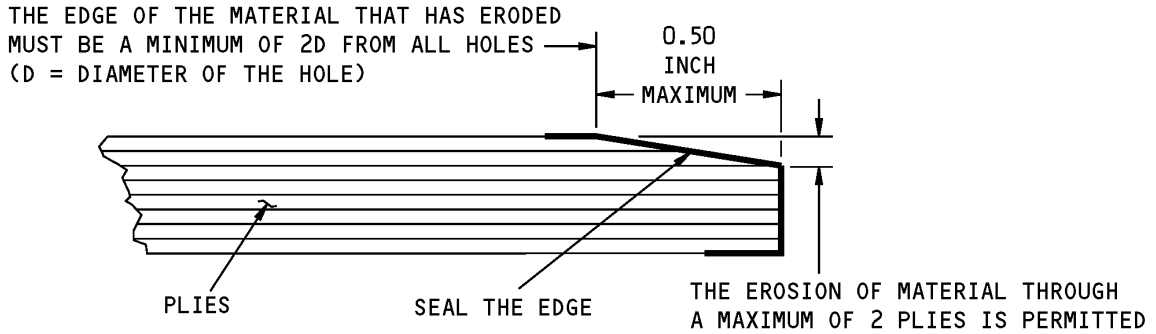
A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

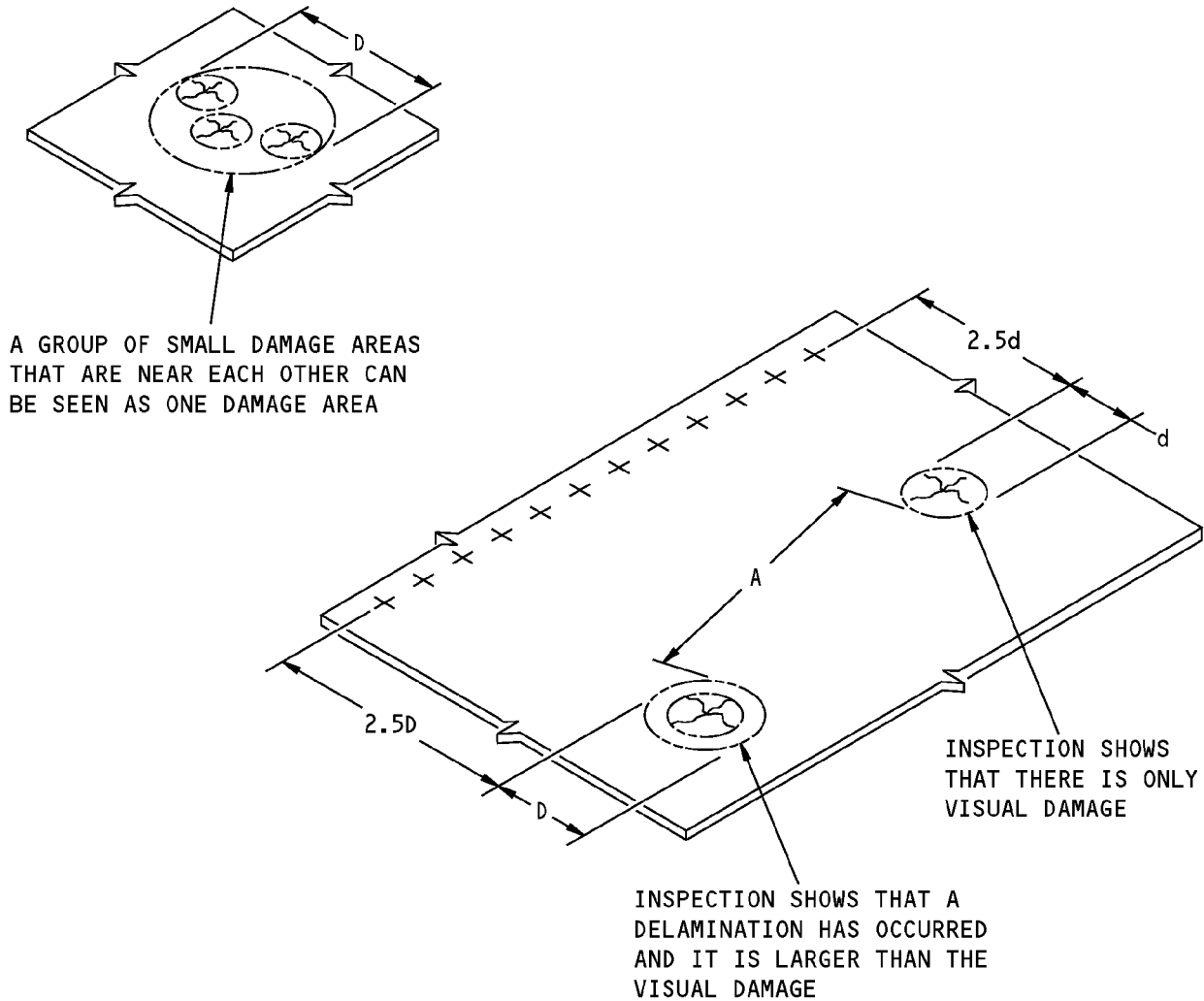
**GFRP and CFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits  
Figure 104**

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GFRP and CFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge  
Figure 105

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**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

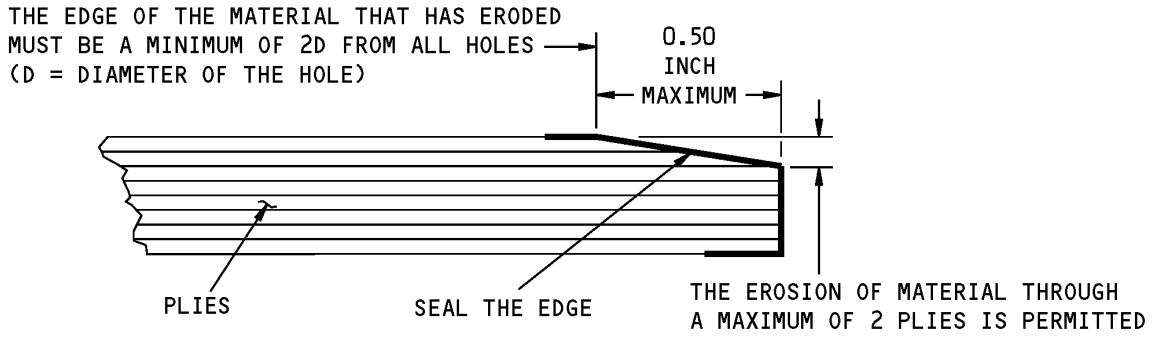
d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

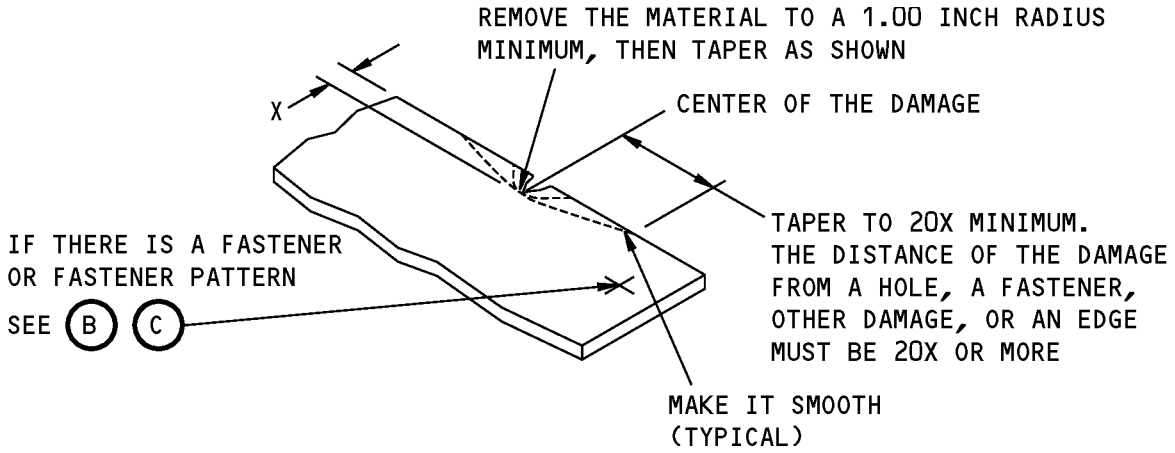
**GFRP Solid Laminate Panels - Damage Size and Spacing Limits  
Figure 106**

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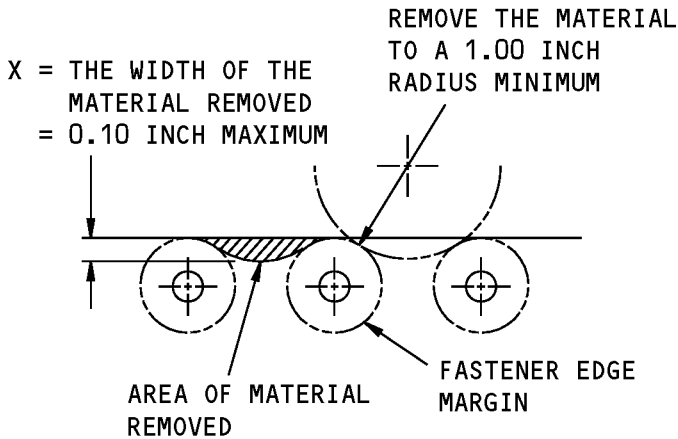
GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge  
Figure 107

**STRUCTURAL REPAIR MANUAL**



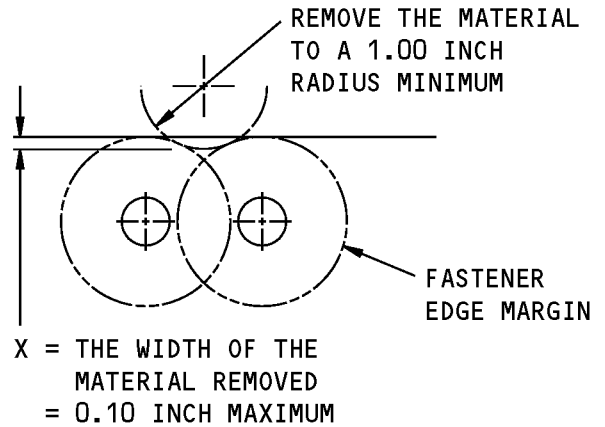
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(A)



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(B)

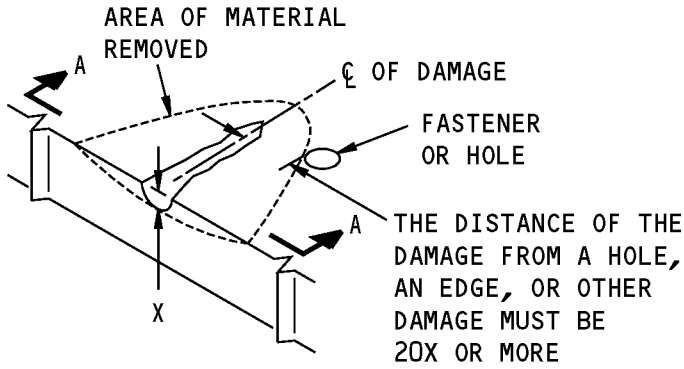


**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(C)

**Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 1 of 3)**

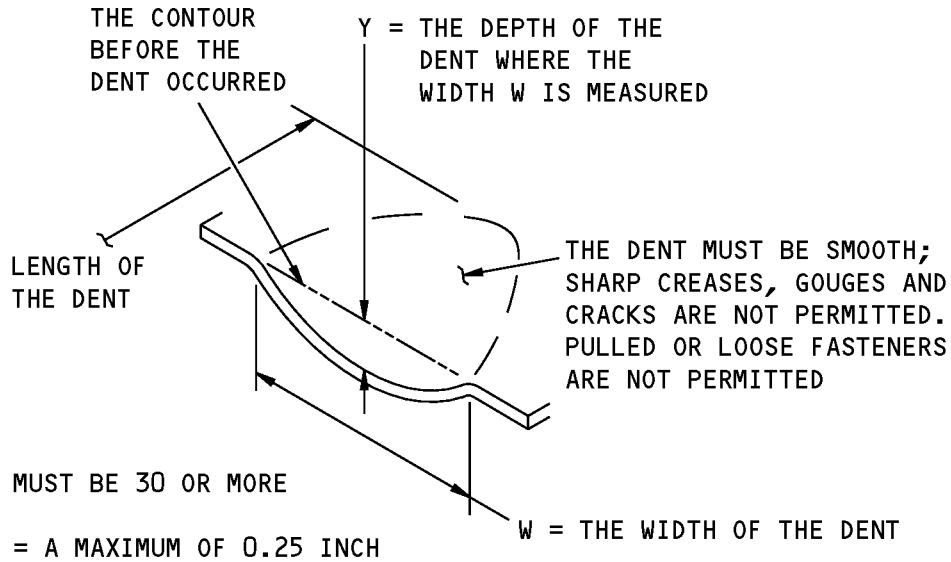
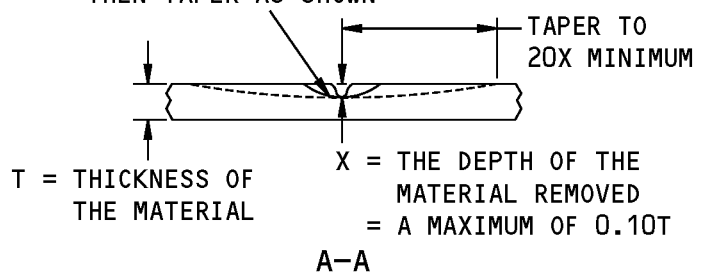
**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**(D)**

REMOVE THE MATERIAL TO A 1.00 INCH RADIUS MINIMUM, THEN TAPER AS SHOWN



**DENT THAT IS PERMITTED**

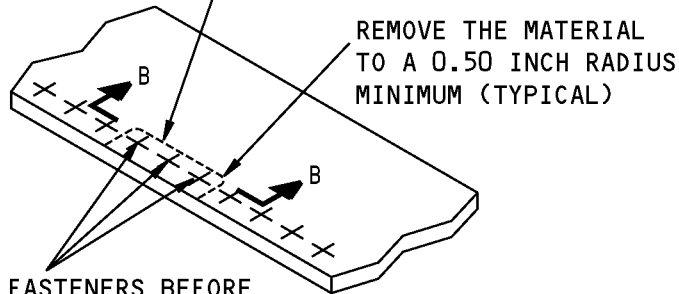
**(E)**

**Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 2 of 3)**



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THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
A GROUP OF TEN IS PERMITTED  
TO A DEPTH OF X MAXIMUM



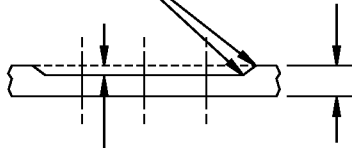
REMOVE THE FASTENERS BEFORE  
THE DAMAGED MATERIAL IS  
REMOVED. AFTER THE DAMAGED  
MATERIAL IS REMOVED, INSTALL  
THE REMOVED FASTENERS. AS  
APPLICABLE, INSTALL NEW FASTENERS  
THAT ARE THE SAME TYPE AND SIZE  
(UP TO THE FIRST OVERSIZE) AS  
THE FASTENERS THAT YOU REMOVED

REMOVAL OF CORROSION  
AROUND THE FASTENERS



MAKE IT  
SMOOTH  
(TYPICAL)

T = THICKNESS OF  
THE MATERIAL



X = THE DEPTH OF THE  
MATERIAL REMOVED  
= A MAXIMUM OF 0.10T

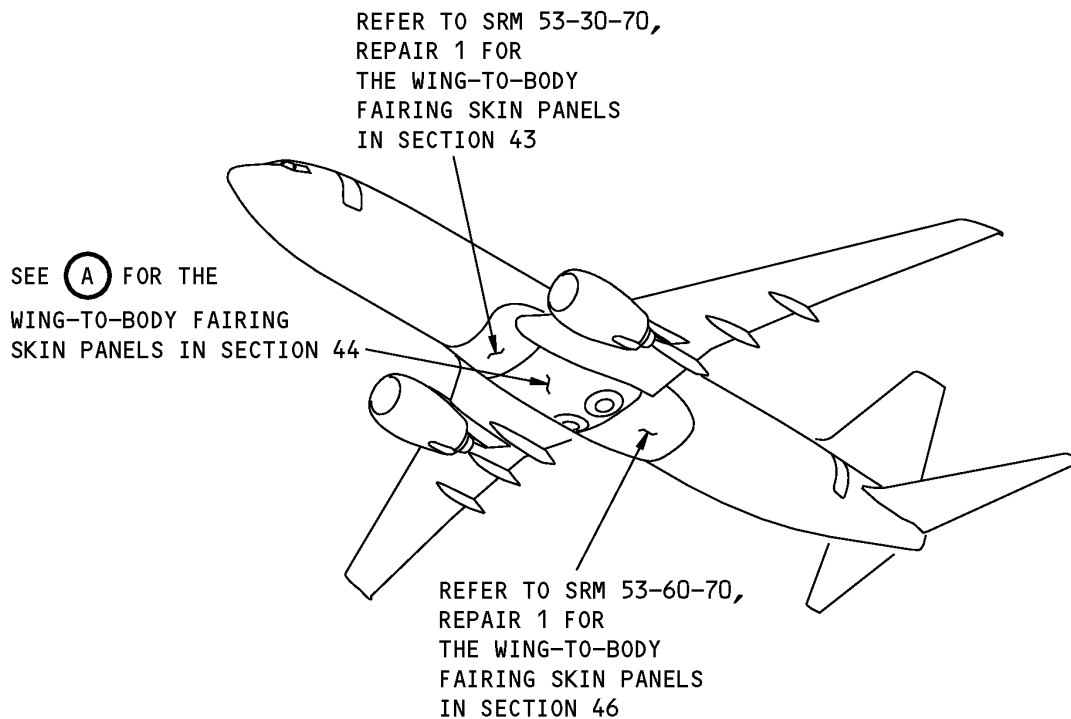
B-B

Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 3 of 3)

## STRUCTURAL REPAIR MANUAL

**REPAIR 1 - SECTION 44 WING-TO-BODY FAIRING SKIN PANELS MADE OF COMPOSITE MATERIALS****1. Applicability**

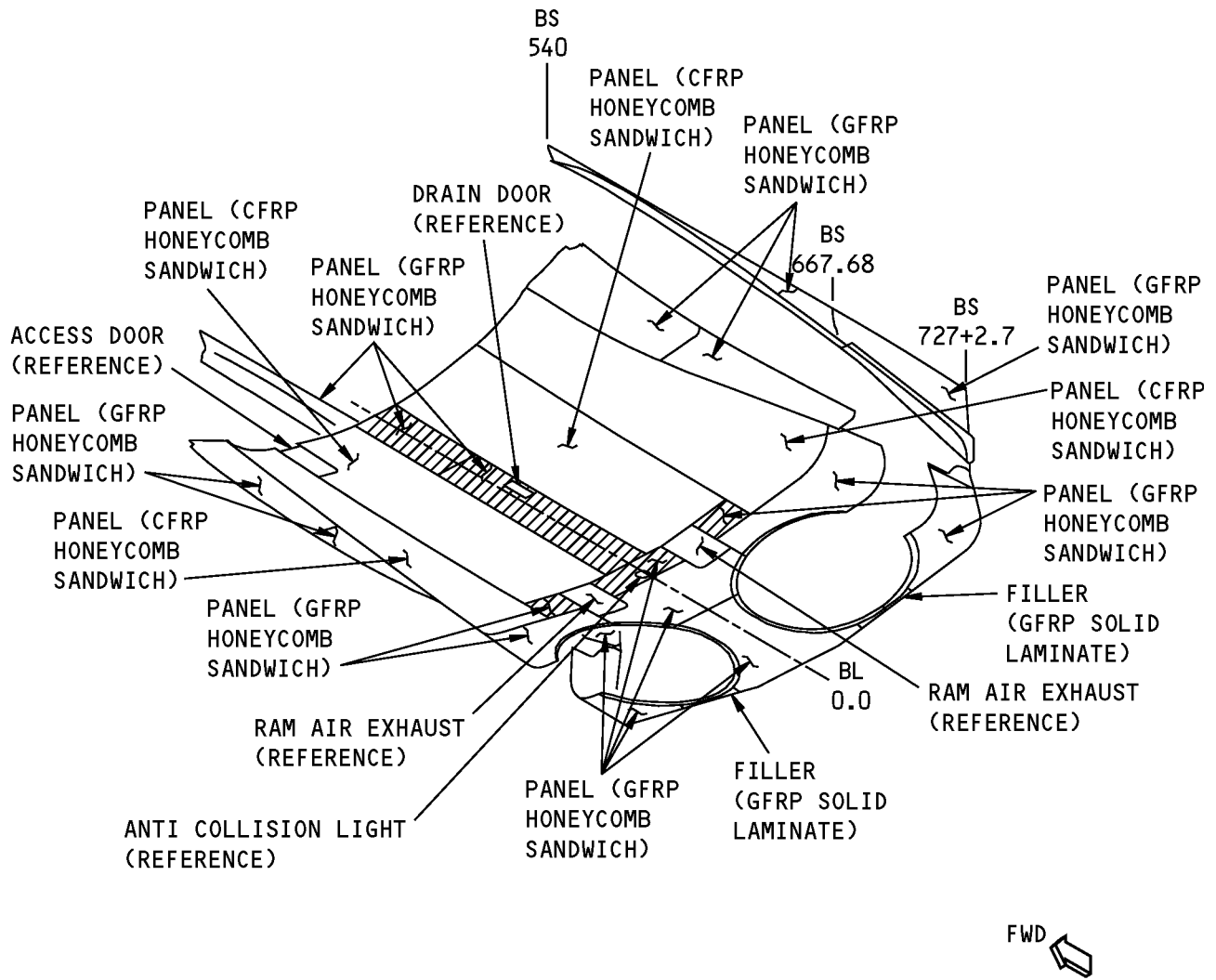
- A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.
- B. Repair 1 is applicable to damage that is more than the limits permitted in 53-40-70, Allowable Damage 1.


**NOTES**

- GFRP = GLASS FIBER REINFORCED PLASTIC
- CFRP = CARBON FIBER REINFORCED PLASTIC

**Section 44 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



 ALUMINUM FLAME SPRAY (BAC5056, TYPE I) ON THE TOOLSIDE

A

**Section 44 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

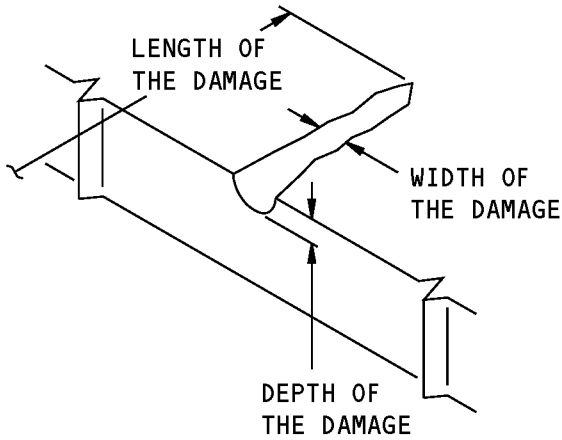
### 2. General

- A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Get access to the damaged area.
  - (1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.
    - (a) Refer to 51-40-02 for the fastener removal procedures.
    - (b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.
- C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

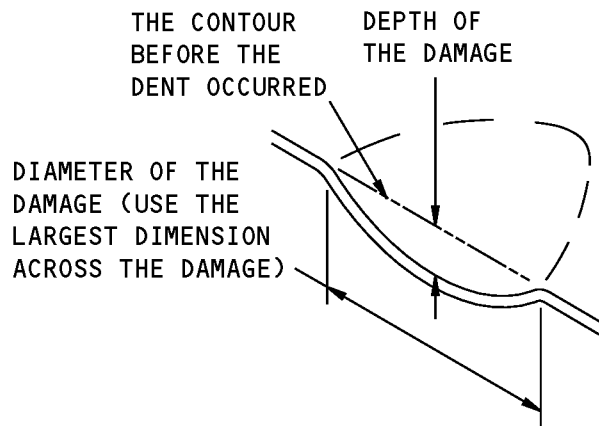
- (1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
  - (3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.
- D. Some GFRP wing-to-body fairing skin panels have a flame-sprayed aluminum coating as shown in Section 44 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the flame-sprayed aluminum coating.
- E. Do the repair as given in Paragraph 4./REPAIR 1
- F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.
  - (1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.
    - (a) Refer to 51-40-02 for the fastener installation procedures.
    - (b) Refer to 51-40-03 for fastener substitution.
  - (2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- G. Restore the aircraft wing-to-body fairing skin panels exterior finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



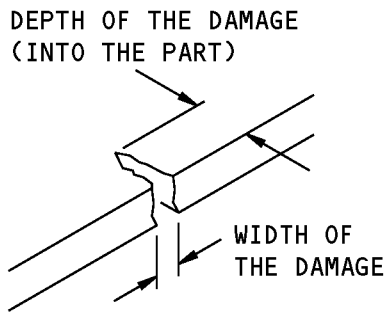
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**

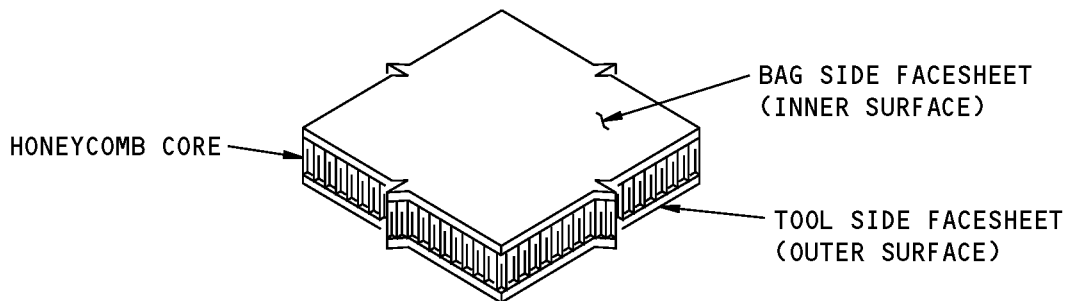


**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 202**

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**Definitions of the Facesheets  
Figure 203**

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
53-40-70	FUSELAGE FAIRING SKIN - SECTION 44
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Repair Instructions**

**NOTE:** If necessary, refer to 53-40-70, Identification 1 for the material and build-up of the part that you want to repair.

- A. For dents that are a maximum of 2 inches in diameter and have no fiber damage or delamination, do the steps that follow:
  - (1) Fill the dent with BMS 5-28, Type 7 potting compound.
  - (2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.
- B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:
  - (1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels

**STRUCTURAL REPAIR MANUAL**

- (2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels
- (3) Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panels.

C. For repairs made with wet layup materials, do as follows, as applicable:

- (1) Use one repair ply of fabric for each initial ply that was damaged.
- (2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.
- (3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

**Table 201:**

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A PREIMPREGNATED LAYUP REPAIR
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Contact Boeing for repair instructions	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  3.0 inches minimum clearance from:  -other repairs -fastener holes -panel edges	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  3.0 inches minimum clearance from:  -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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**Table 202:**

<b>REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE</b>	Contact Boeing for repair instructions	Damage that is a maximum of:  - 6.0 inches (152.4 mm) across the largest dimension of the damage  - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of:  - 6.0 inches (152.4 mm) across the largest dimension of the damage  - 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

**Table 203:**

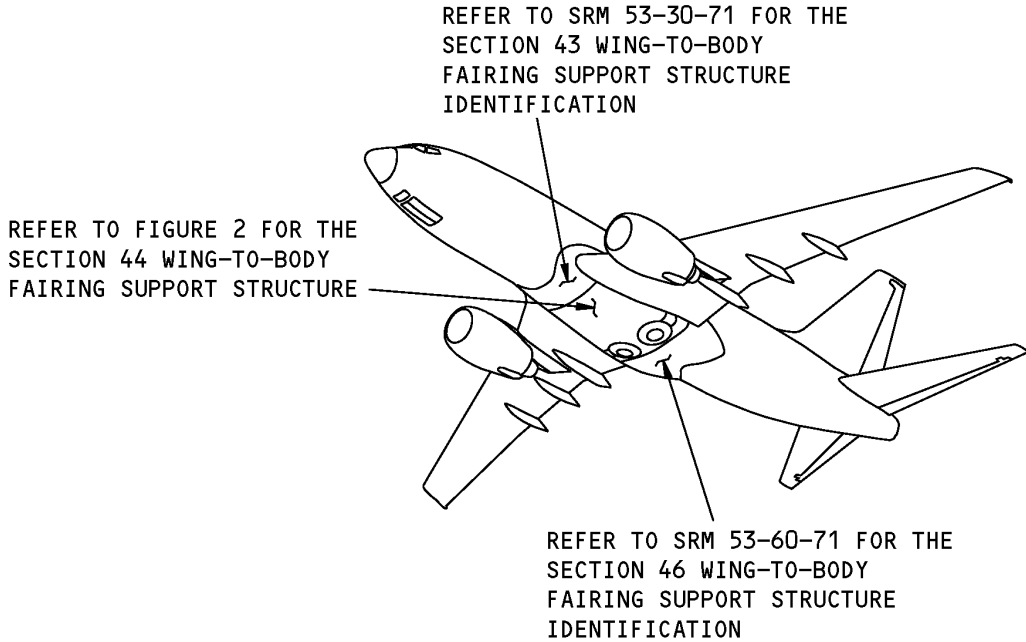
<b>REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SKIN PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE AND LIMITS</b>	Contact Boeing for repair instructions	Damage that is a maximum of:  - 6.0 inches (152.4 mm) across the largest dimension of the damage  3.0 inches (76.2 mm) minimum clearance from:  - other repairs - fastener holes - panel edges	Damage that is a maximum of:  - 6.0 inches (152.4 mm) across the largest dimension of the damage  3.0 inches (76.2 mm) minimum clearance from:  - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete area.



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**IDENTIFICATION 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 44 Wing-to-Body Fairing Support Structure Location  
Figure 1**

**Table 1:**

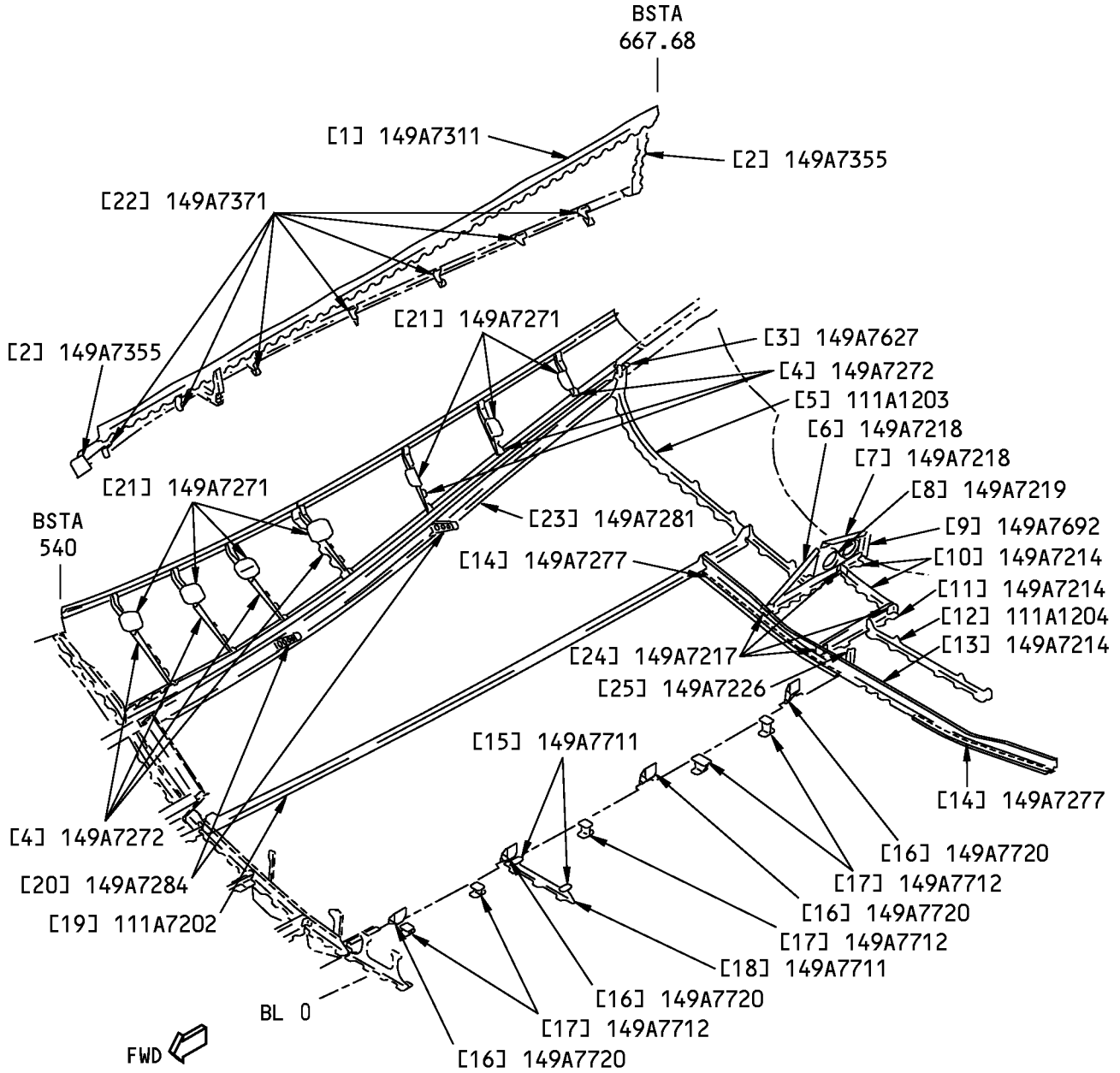
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
112A3301	Rib Chord Installation - Upper Panel, BBL 70.85
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7003	Functional Collector - Support Structure, Under Keel
149A7004	Functional Collector - Front Spar to Rear Spar
149A7011	Functional Collector - Section 49, Panel Installation



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
149A7210	Support Installation - ECS Bay
149A7270	Support Installation - Bolt Cover Underwing
149A7280	Beam Installation - Underwing Bay
149A7301	Panel Installation - Overwing Fairing
149A7601	Support Installation - Wheel Well, Wing-to-Body Fairing
149A7701	Support Installation - Under Keel
149A7702	Hinge Installation - Under Keel

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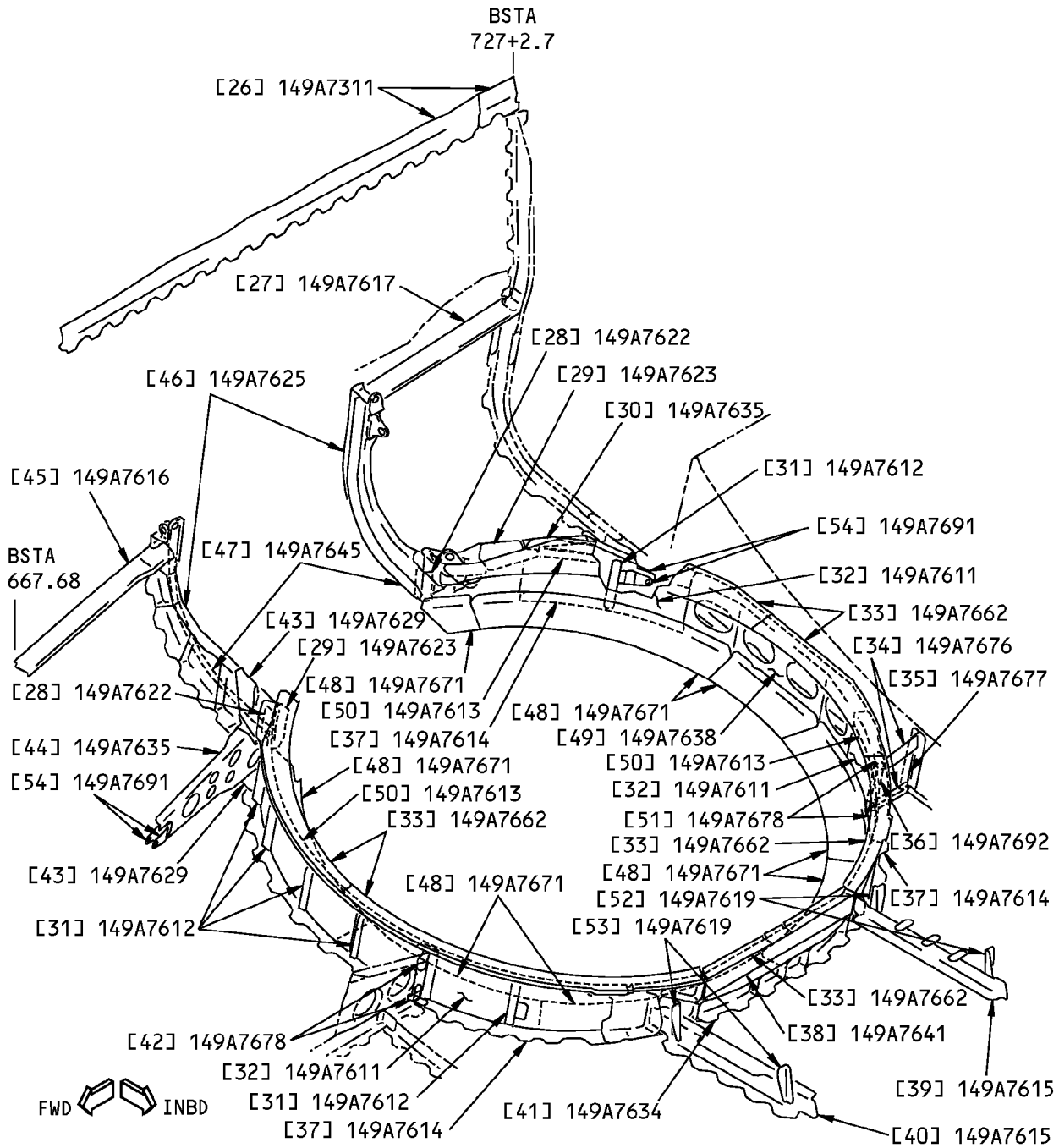


**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 540 TO BSTA 667.68**

**Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 7277) Identification  
Figure 2 (Sheet 1 of 2)**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 667.68 TO BSTA 727+2.7**

**Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727) Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Clip		BAC1517-2801 7075-T62 extrusion as given in QQ-A-250/12	
[2]	Splice Plate	0.080 (2.03)	6061-T62 sheet as given in QQ-A-250/11	
[3]	Clip		BAC1506-4373 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Support		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[5]	Tee Chord		BAC1505-101671 7075-T73 extrusion as given in QQ-A-200/11	
[6]	Angle		BAC1503-3471 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Angle		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[8]	Web	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Clip	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Frame		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	
[11]	Frame		BAC1506-4475 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Tee Chord		BAC1506-4400 2024-T3511 extrusion as given in QQ-A-200/3	
[13]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[14]	Seal Retainer	0.040 (1.02)	6013-T4 sheet as given in AMS 4347	
[15]	Clip		BAC1505-100206 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[17]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[18]	Support Frame		BAC1518-1203 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Lower Chord		BAC1506-4274 7075-T73 extrusion as given in QQ-A-200/11	
[20]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[21]	Attachment Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[22]	Bracket		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
[23]	Beam		BAC1510-1343 7075-T73 extrusion as given in QQ-A-200/11	
[24]	Tee Clip		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[25]	Angle		BAC1503-100710 7075-T73511 extrusion as given in QQ-A-200/11	
[26]	Clip	0.160 (4.06)	7075-T62 sheet as given in QQ-A-250/12	
[27]	Intercostal		BAC1509-100611 7075-T73511 extrusion as given in QQ-A-200/11	
[28]	Shear Tie	0.063 (1.60)	7075-T73 sheet as given in QQ-A-250/12	
[29]	Support	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[30]	Brace		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[31]	Stiffener		AND10133-0701 7075-T73511 extrusion as given in QQ-A-200/11	
[32]	Web	0.040 (1.02)	Laminated aluminum sheet as given in BMS 5-69, Type VIII	
[33]	Seal Retainer	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[34]	Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[35]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[36]	Clip	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[37]	Lower Chord		BAC1503-101070 7075-T73 extrusion as given in QQ-A-200/11	
[38]	Seal Support	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[39]	Support Fitting		BAC1518-1224 7075-T73511 extrusion as given in QQ-A-200/11	
[40]	Support Fitting		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[41]	Fitting		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[42]	T-Clip		BAC1506-2462 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: BAC1505-100984)	
[43]	Gusset		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[44]	Brace		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	



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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[45]	Intercostal		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[46]	Former		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[47]	Seal Retainer	0.040 (1.02)	6061-T42 sheet as given in QQ-A-250/11	
[48]	Fairing	0.063 (1.60)	2024-T42 sheet as given in QQ-A-250/4	
[49]	Fitting		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[50]	Upper Chord		BAC1503-101070 7075-T73 extrusion as given in QQ-A-200/11	
[51]	T-Clip		BAC1506-101576 7075-T73511 extrusion as given in QQ-A-200/11	
[52]	Shear Clip		AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11	
[53]	Shear Clip		AND10133-1002 7075-T6511 extrusion as given in QQ-A-200/11	
[54]	Attachment Bracket	0.500 (12.7)	7050-T7451 plate as given in AMS 4050	

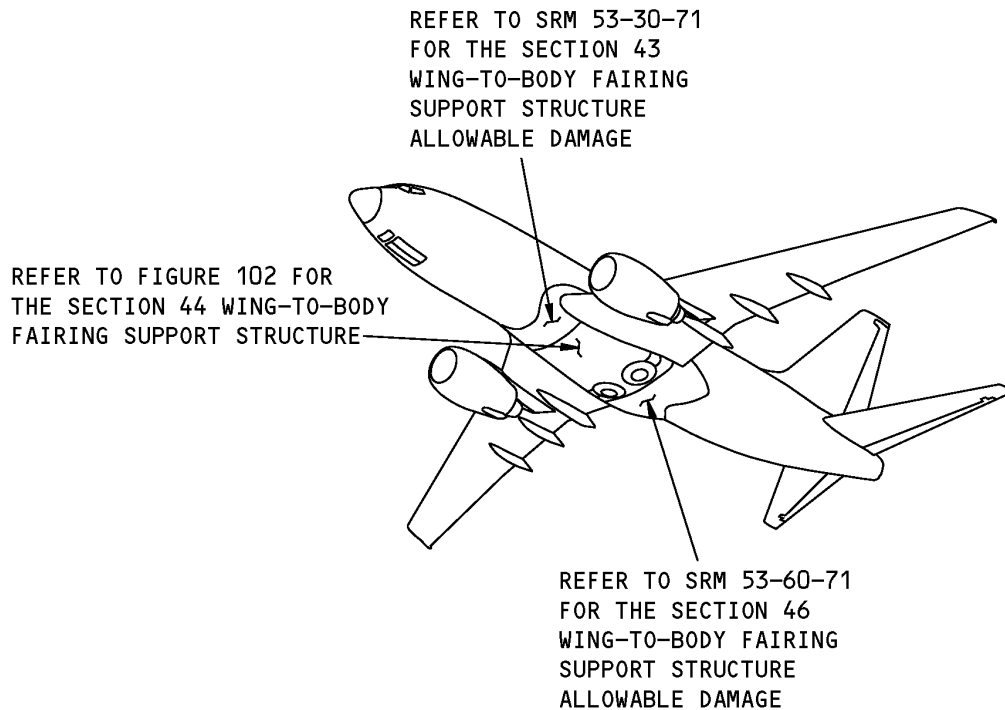
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE**

**1. Applicability**

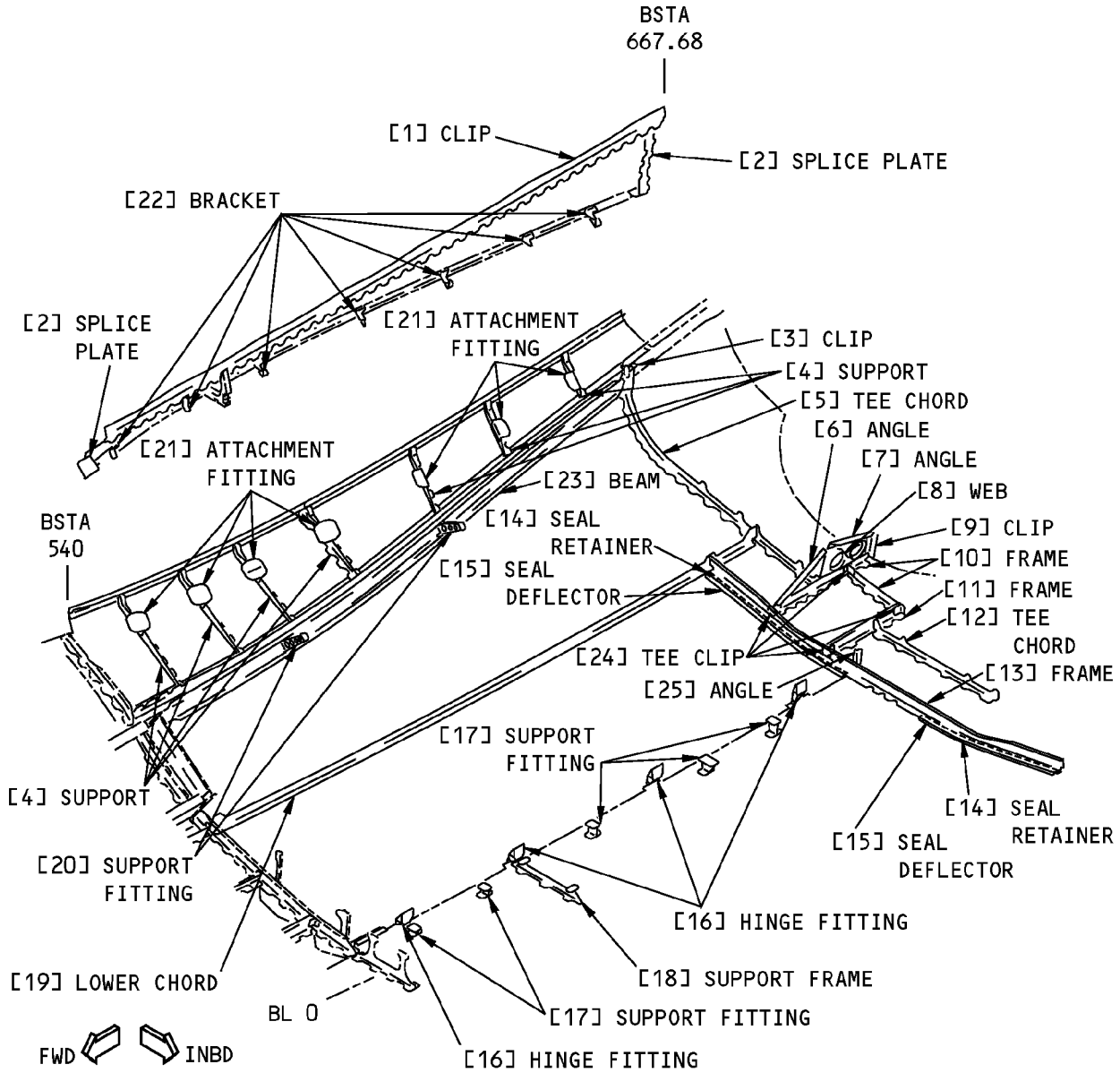
- A. This subject gives the allowable damage limits for the section 44 wing-to-body fairing support structure shown in Section 44 Wing-to-Body Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.



**Section 44 Wing-to-Body Fairing Support Structure Location**  
**Figure 101**



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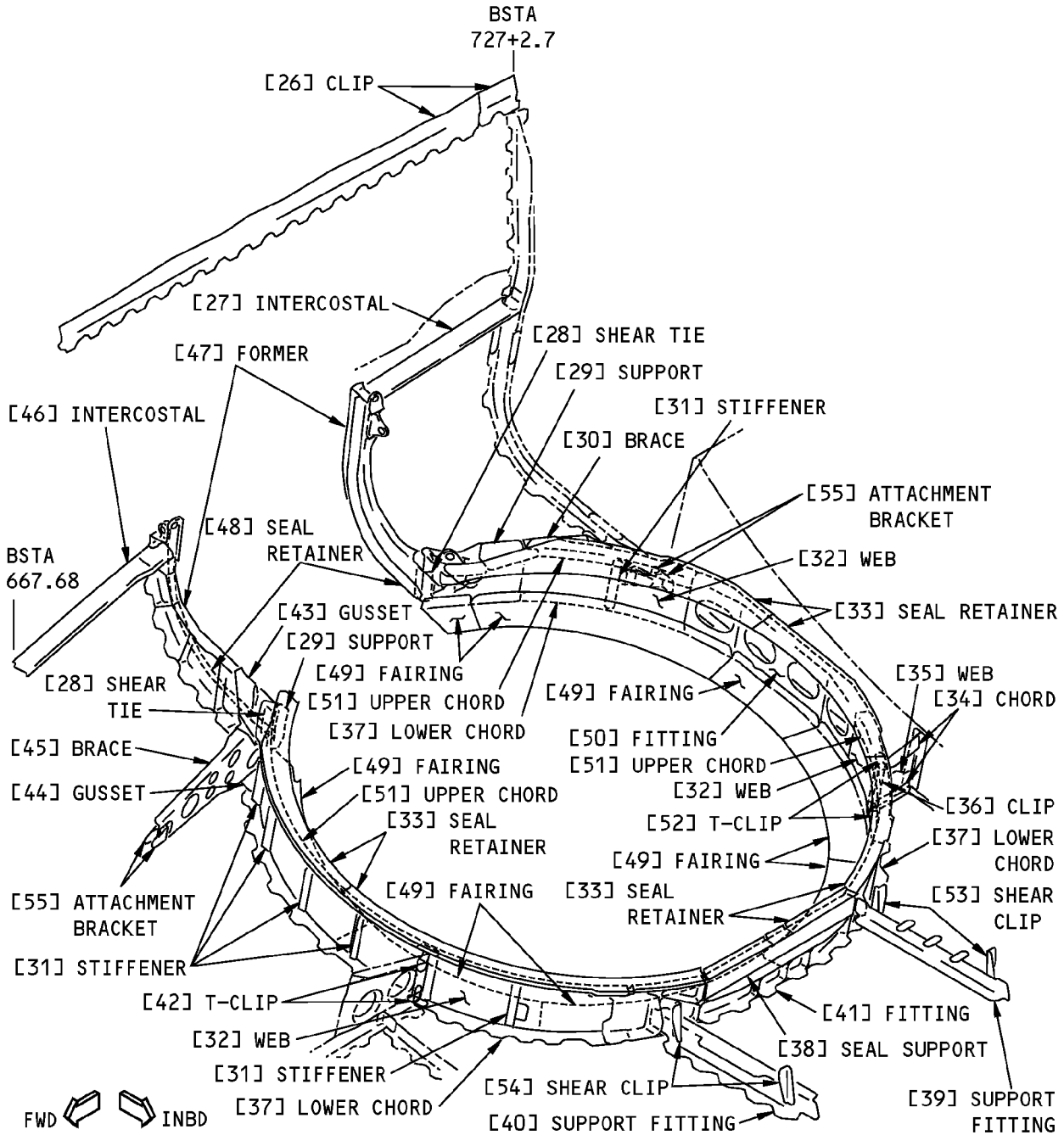


MATERIAL: ALUMINUM

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 540 TO BSTA 667.68

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 7277) Location  
Figure 102 (Sheet 1 of 2)

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MATERIAL: ALUMINUM

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 667.68 TO BSTA 727+2.7

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727) Location  
Figure 102 (Sheet 2 of 2)



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**2. General**

A. Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.

**NOTE:** The steps that follow do not apply to dent damage.

- (1) The methods that follow are permitted as an alternative to the detailed close visual inspection:
  - (a) Penetrant inspection. Refer to SOPM 20-20-02.
  - (b) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4 .

B. Remove the damaged material as necessary.

- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
- (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

C. Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.

D. Apply the primer as follows:

- (1) For the parts given in Table 101/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

**Table 101:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Splice Plate (Formed)	[17]	Support Fitting (Machined)
[3]	Clip (Extruded)	[18]	Support Frame (Extruded)
[4]	Support (Machined)	[19]	Lower Chord (Extruded)
[5]	Tee Chord (Extruded)	[20]	Support Fitting (Machined)
[6]	Angle (Extruded)	[21]	Attachment Fitting (Machined)
[7]	Angle (Extruded)	[22]	Bracket (Machined)
[10]	Frame (Extruded)	[23]	Beam (Extruded)
[11]	Frame (Extruded)	[24]	Tee Clip (Machined)
[12]	Tee Chord (Extruded)	[25]	Angle (Extruded)
[13]	Frame (Machined)	[46]	Intercostal (Machined)
[14]	Seal Retainer (Formed)	[53]	Shear Clip (Extruded)
[15]	Seal Deflector (Formed)	[54]	Shear Clip (Extruded)
[16]	Hinge Fitting (Machined)		

- (2) For the parts given in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.



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**Table 102:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Web (Clad sheet)	[39]	Support Fitting (Extruded)
[9]	Clip (Formed)	[40]	Support Fitting (Machined)
[27]	Intercostal (Extruded)	[41]	Fitting (Machined)
[28]	Shear Tie (Formed)	[42]	T-Clip (Extruded)
[29]	Support (Formed)	[43]	Gusset (Machined)
[30]	Brace (Machined)	[44]	Gusset (Machined)
[31]	Stiffener (Extruded)	[45]	Brace (Machined)
[32]	Web (Laminated sheet)	[47]	Former (Machined)
[33]	Seal Retainer (Formed)	[48]	Seal Retainer (Formed)
[34]	Chord (Formed)	[49]	Fairing (Formed)
[35]	Web (Clad sheet)	[50]	Fitting (Machined)
[36]	Clip (Formed)	[51]	Upper Chord (Extruded)
[37]	Lower Chord (Extruded)	[52]	T-Clip (Extruded)
[38]	Seal Support (Formed)		

- (3) For the parts given in Table 103/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.

**Table 103:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Extruded)	[26]	Clip (Formed)

- (4) For the parts given in Table 104/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type II, primer to the reworked areas. Refer to SOPM 20-41-02.

**Table 104:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[27]	Intercostal (Extruded)	[48]	Seal Retainer (Formed)
[33]	Chord (Formed)	[49]	Fairing (Formed)
[38]	Seal Support (Formed)		

- (5) For the parts given in Table 105/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1, apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II enamel, color 707 grey, to the reworked areas. Refer to SOPM 20-41-02.



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**Table 105:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[55]	Attachment Bracket (Machined)		

E. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
53-60-71, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Support Structure
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

**4. Allowable Damage Limits**

A. The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 106:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[9]	Clip (Formed)	[34]	Chord (Formed)
[26]	Clip (Formed)	[36]	Clip (Formed)
[28]	Shear Tie (Formed)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and L .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

B. The allowable damage limits that follow are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.



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**Table 107:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[14]	Seal Retainer (Formed)	[38]	Seal Support (Formed)
[15]	Seal Deflector (Formed)	[48]	Seal Retainer (Formed)
[29]	Support (Formed)	[49]	Fairing (Formed)
[33]	Seal Retainer (Formed)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and L .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and L .
  - (3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:
    - (a) They do not extend across an attached structure.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .
- C. The allowable damage limits that follow are applicable to the parts listed in Table 108/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 108:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Splice Plate (Formed)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , and M .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- D. The allowable damage limits that follow are applicable to the parts listed in Table 109/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 109:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[32]	Web (Laminated sheet)	[35]	Web (Clad sheet)

- (1) Cracks:



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- (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , M , and P .
  - (3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:
    - (a) They do not extend across an attached structure.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail P .
- E. The allowable damage limits that follow are applicable to the parts listed in Table 110/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 110:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Web (Clad sheet)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and M .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , M , P , and S .
  - (3) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail D if:
    - (a) They do not extend across an attached structure.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail P .
- F. The allowable damage limits that follow are applicable to the parts listed in Table 111/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 111:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[19]	Lower Chord (Extruded)	[39]	Support Fitting (Extruded)

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and G .
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and G .
- (3) Dents are not permitted.

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- (4) Holes and Punctures are not permitted.
- G. The allowable damage limits that follow are applicable to the parts listed in Table 112/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 112:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Tee Chord (Extruded)	[41]	Fitting (Machined)
[10]	Frame (Extruded)	[50]	Fitting (Extruded)
[12]	Tee Chord (Extruded)	[51]	Upper Chord (Extruded)
[18]	Support Frame (Extruded)		

- (1) Cracks:
- (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , H , and I .
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , I , J , and K .
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.
- H. The allowable damage limits that follow are applicable to the parts listed in Table 113/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 113:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[11]	Frame (Extruded)	[40]	Support Fitting (Machined)
[13]	Frame (Machined)		

- (1) Cracks:
- (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , H , and I .
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , I , J , and K .
- (3) Dents are not permitted.
- (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .
- I. The allowable damage limits that follow are applicable to the parts listed in Table 114/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.





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**Table 114:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Clip (Extruded)	[25]	Angle (Extruded)
[3]	Clip (Extruded)	[37]	Lower Chord (Extruded)
[4]	Slice Plate (Machined)	[42]	T-Clip (Extruded)
[17]	Support Fitting (Machined)	[43]	Gusset (Machined)
[21]	Attachment Fitting (Machined)	[52]	T-Clip (Extruded)
[22]	Bracket (Machined)	[53]	Shear Clip (Extruded)
[23]	Beam (Extruded)	[54]	Shear Clip (Extruded)
[24]	Tee Clip (Machined)		

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

J. The allowable damage limits that follow are applicable to the parts listed in Table 115/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 115:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[6]	Angle (Extruded)	[7]	Angle (Extruded)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .

(3) Dents are not permitted.

(4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .

K. The allowable damage limits that follow are applicable to the parts listed in Table 116/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.



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Table 116:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[27]	Intercostal (Extruded)	[46]	Intercostal (Machined)
[45]	Brace (Machined)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , J , and P .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail N .
- L. The allowable damage limits that follow are applicable to the parts listed in Table 117/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 117:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[31]	Stiffener (Extruded)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , and H .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Detail O .
- M. The allowable damage limits that follow are applicable to the parts listed in Table 118/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 118:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[30]	Brace (Machined)	[47]	Former (Machined)
[44]	Gusset (Machined)	[55]	Attachment Bracket (Machined)

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .



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(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , and Q .

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

N. The allowable damage limits that follow are applicable to the parts listed in Table 119/ALLOWABLE DAMAGE 1 and shown in Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 119:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[16]	Hinge Fitting (Machined)	[20]	Support Fitting (Machined)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , and H .

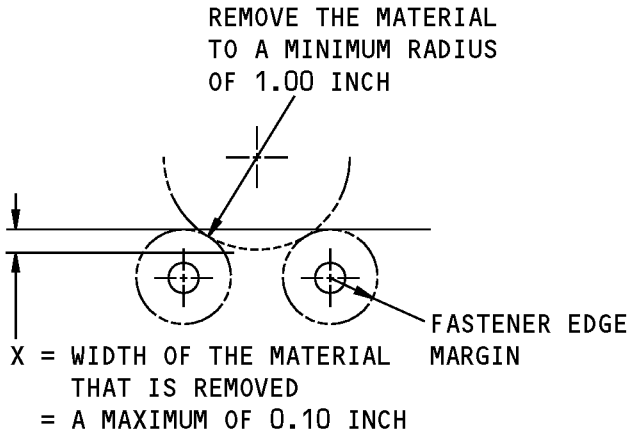
(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 103/ALLOWABLE DAMAGE 1, Details A , B , C , E , F , H , and R .

(3) Dents are not permitted.

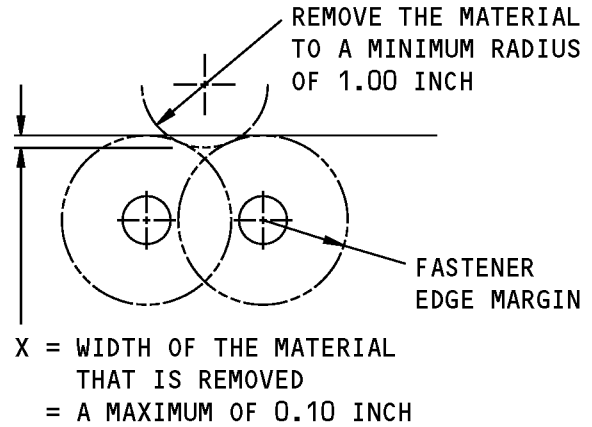
(4) Holes and Punctures are not permitted.

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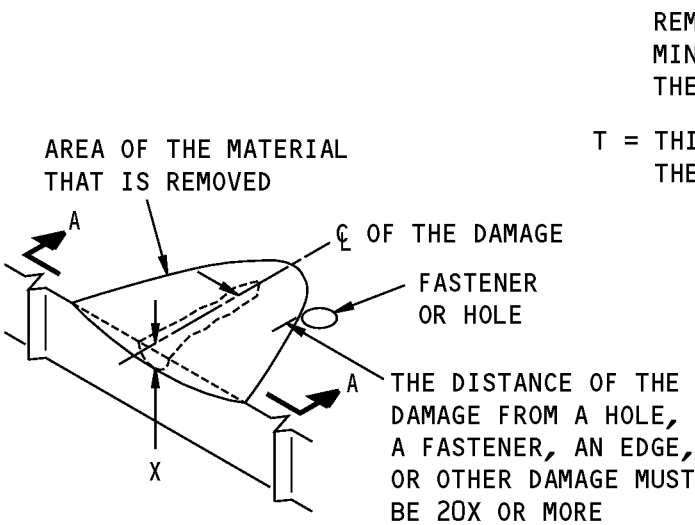
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



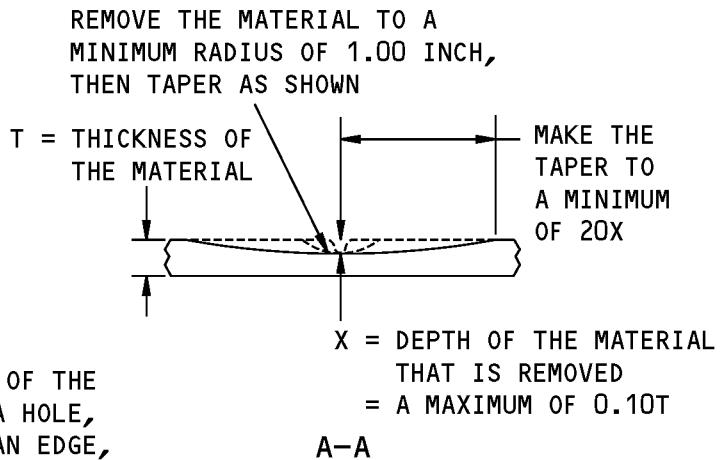
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



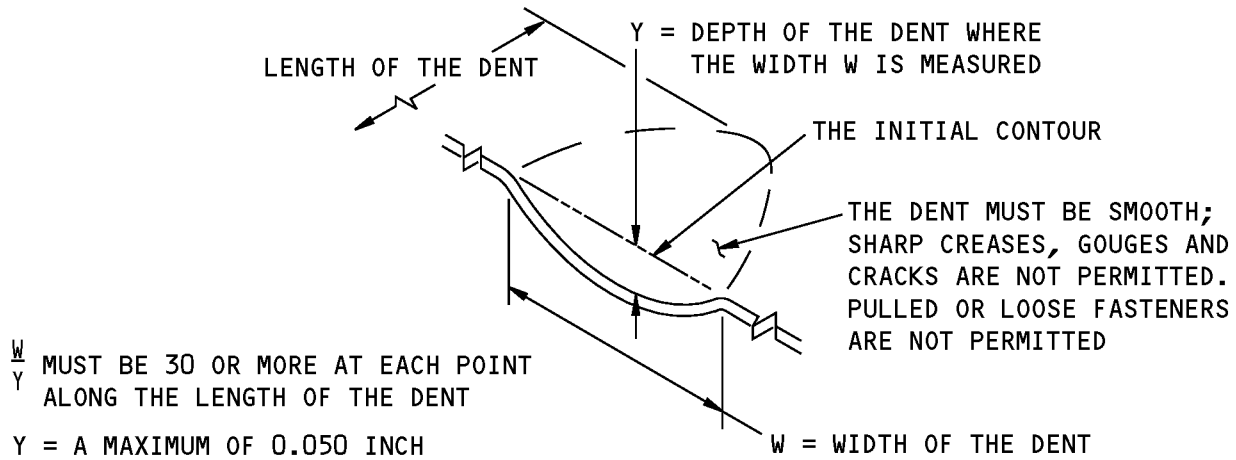
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(C)



**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 1 of 16)**

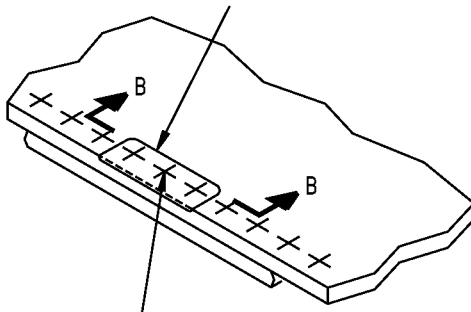
**737-800  
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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR  
DENT THAT IS PERMITTED

D

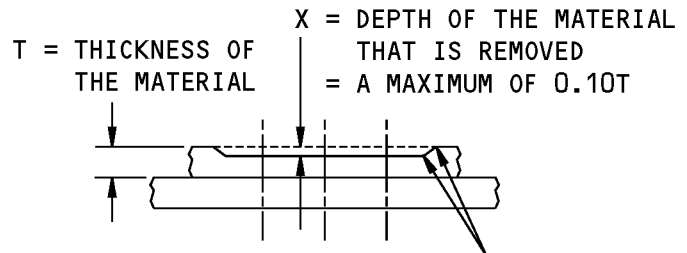
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

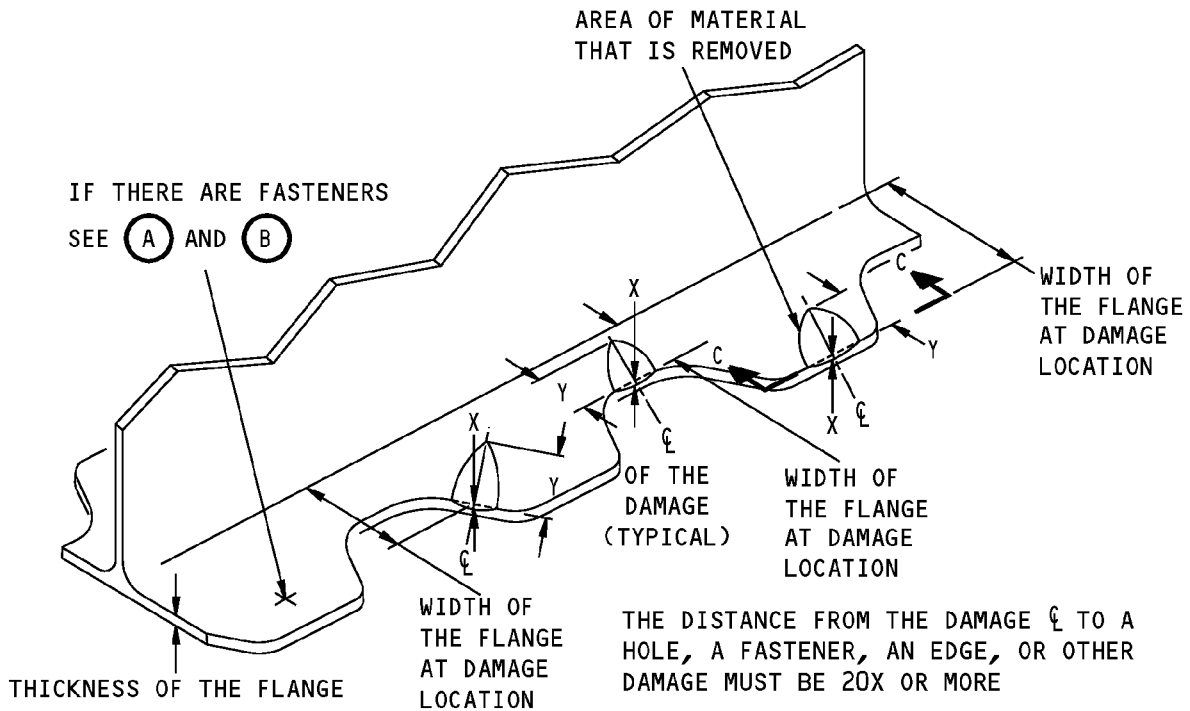
E



B-B

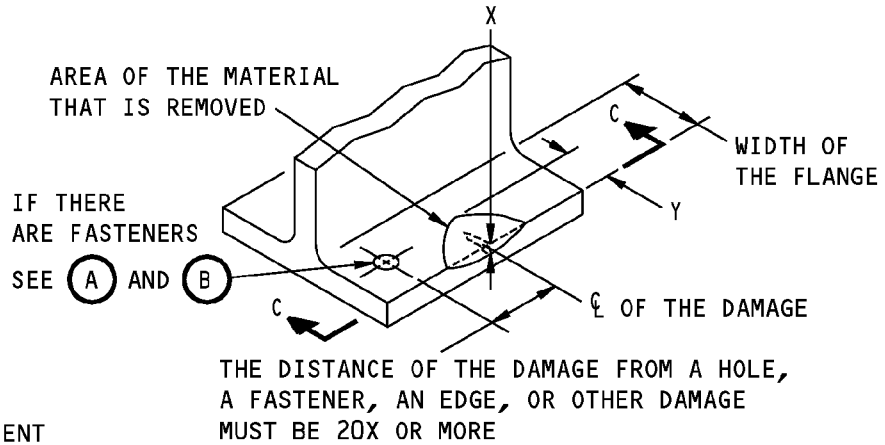
**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 2 of 16)**

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**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.

- X = DEPTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION
- Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION



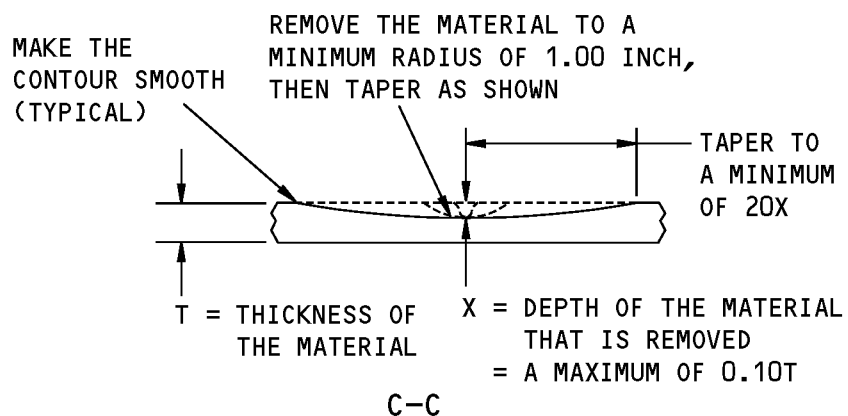
**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS.

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(F)

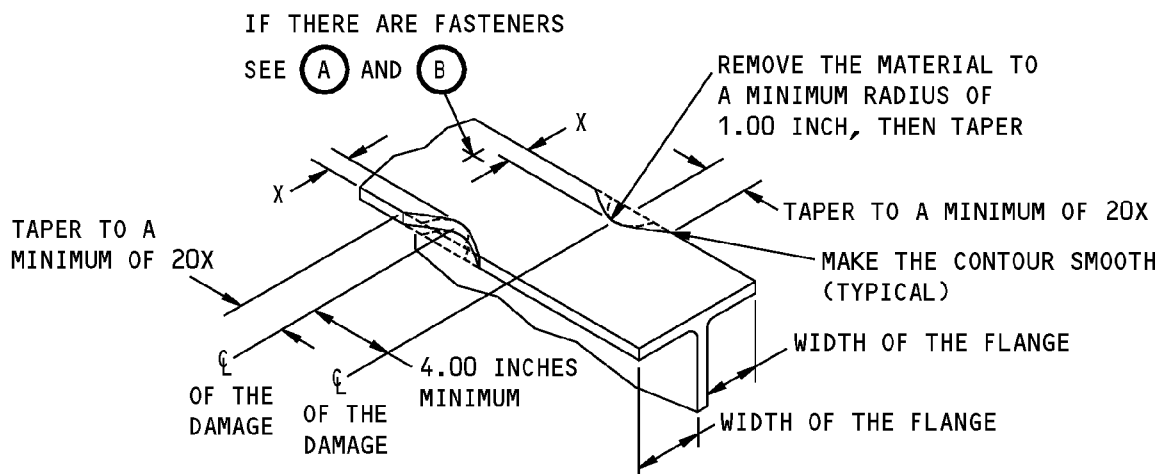
**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 3 of 16)**

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STRUCTURAL REPAIR MANUAL



Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 4 of 16)

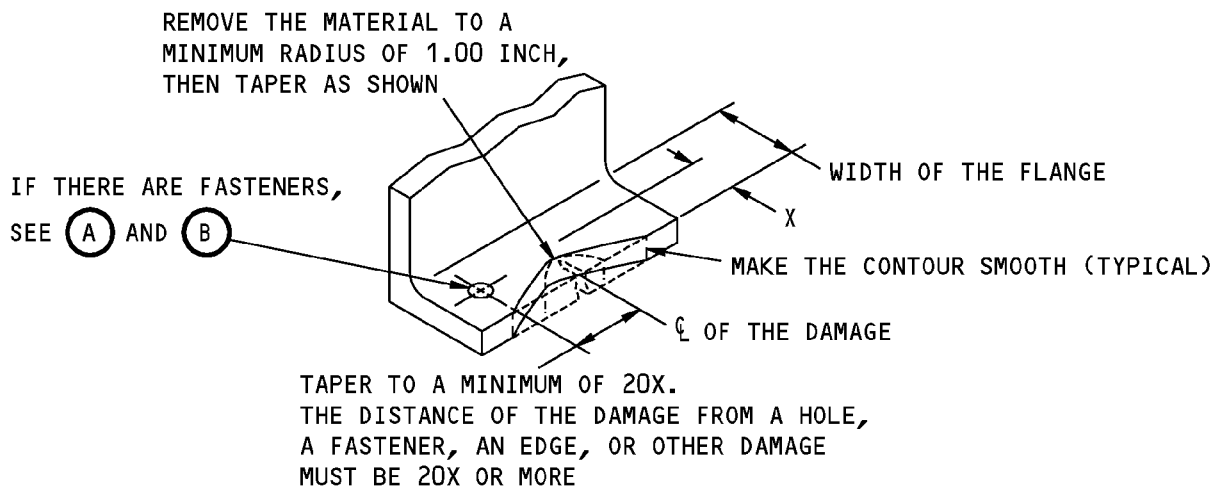
STRUCTURAL REPAIR MANUAL



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

(G)



X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

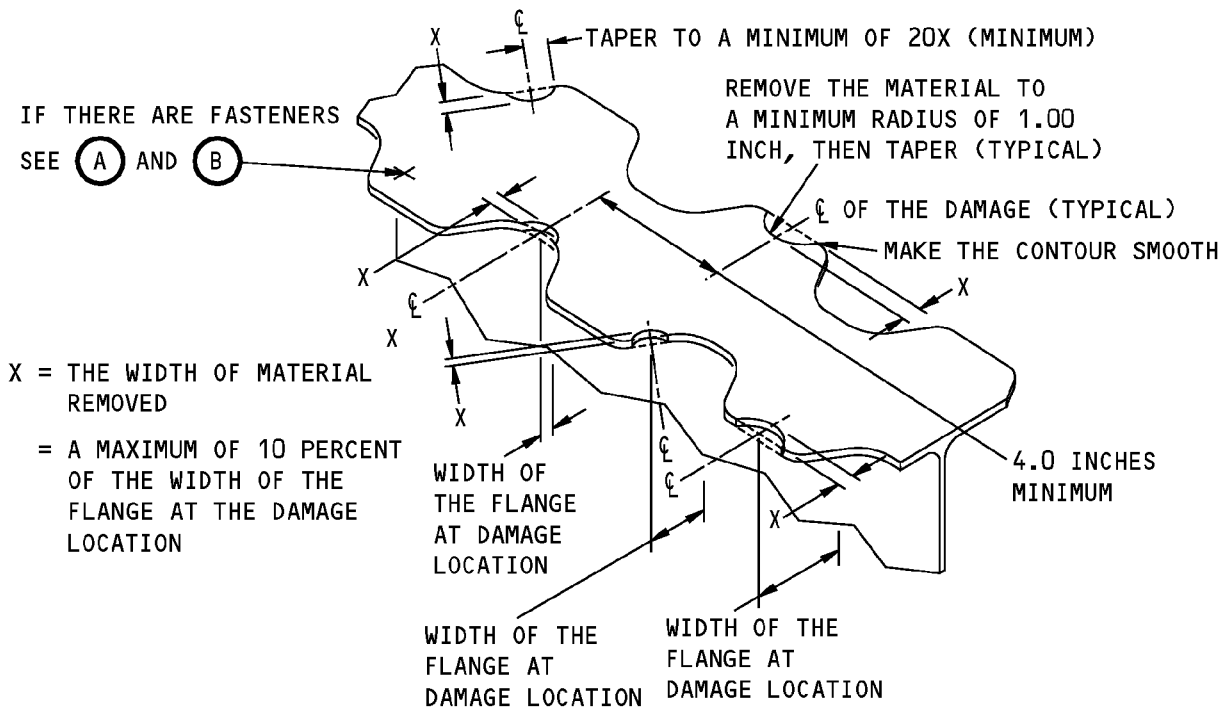
REMOVAL OF DAMAGED MATERIAL AT AN EDGE

(H)

Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 5 of 16)

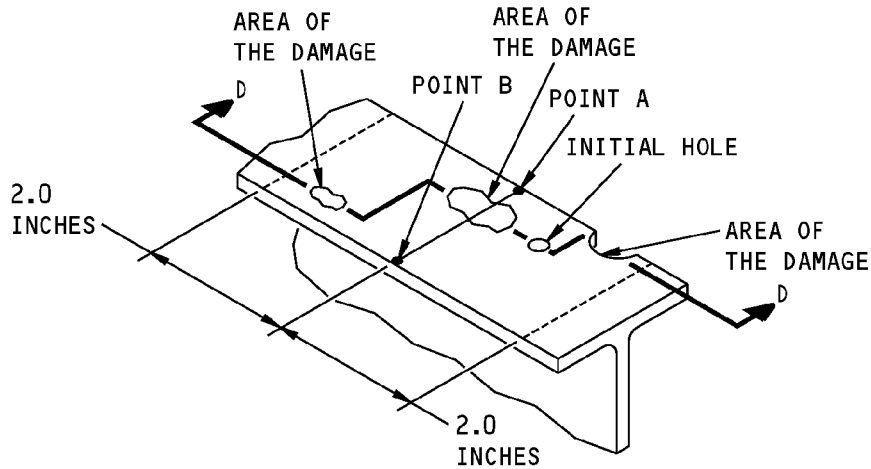


**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE**

(I)

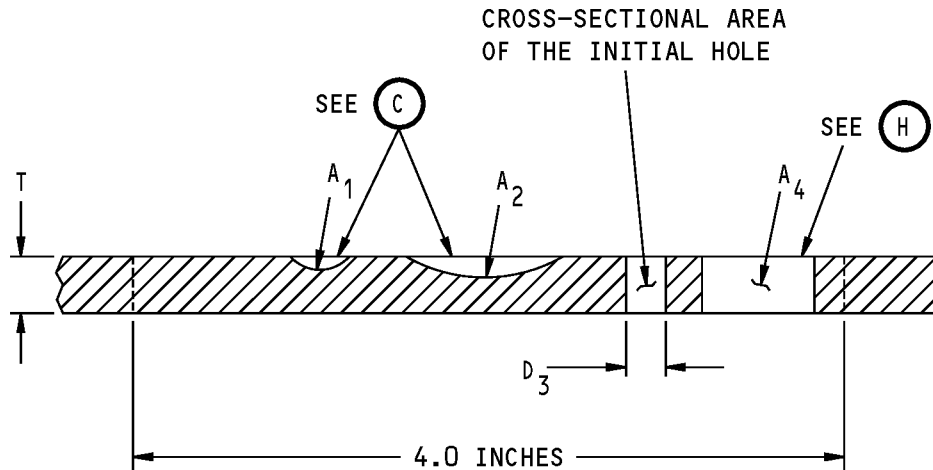


**REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE  
 (A TEE SECTION IS SHOWN)**

(J)

**Allowable Damage Limits - Aluminum Parts  
 Figure 103 (Sheet 6 of 16)**

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STRUCTURAL REPAIR MANUAL**



$D_3$  = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $4T - D_3T$

$A_1$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

$A_2$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

$A_4$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left( \frac{A_1 + A_2 + A_4}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

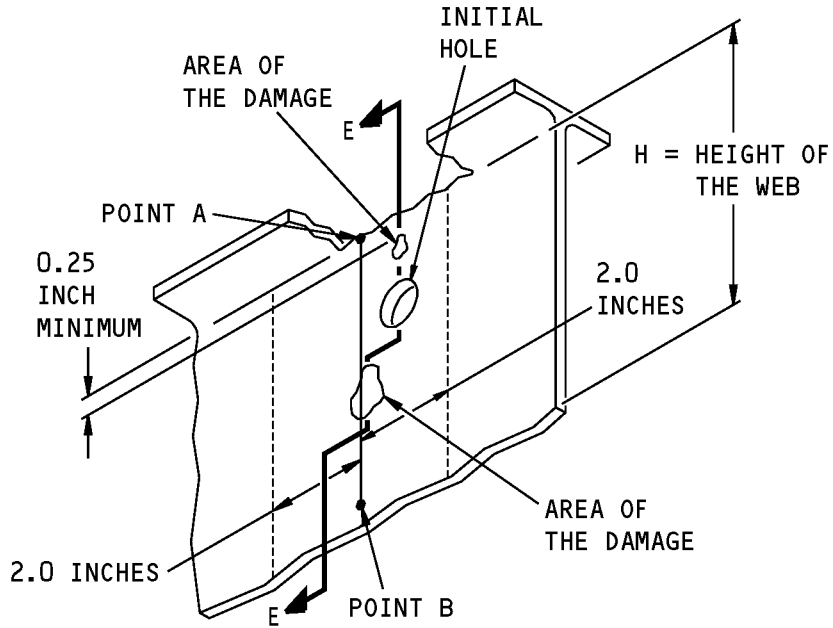
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 7 of 16)**

**737-800  
STRUCTURAL REPAIR MANUAL**

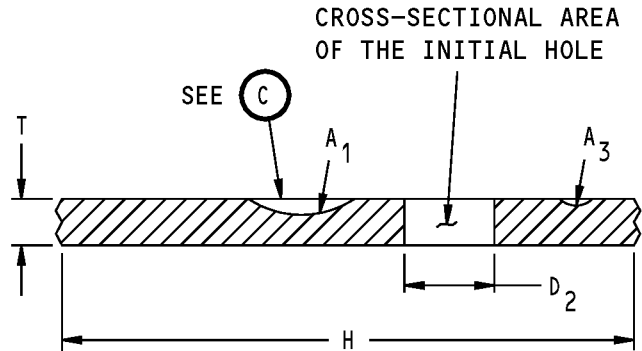


**REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION**

(K)

**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 8 of 16)**

**737-800  
STRUCTURAL REPAIR MANUAL**



$D_2$  = DIAMETER OF THE INITIAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE WEB  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $HT - D_2T$

$A_1$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

$A_3$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_1 + A_3}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

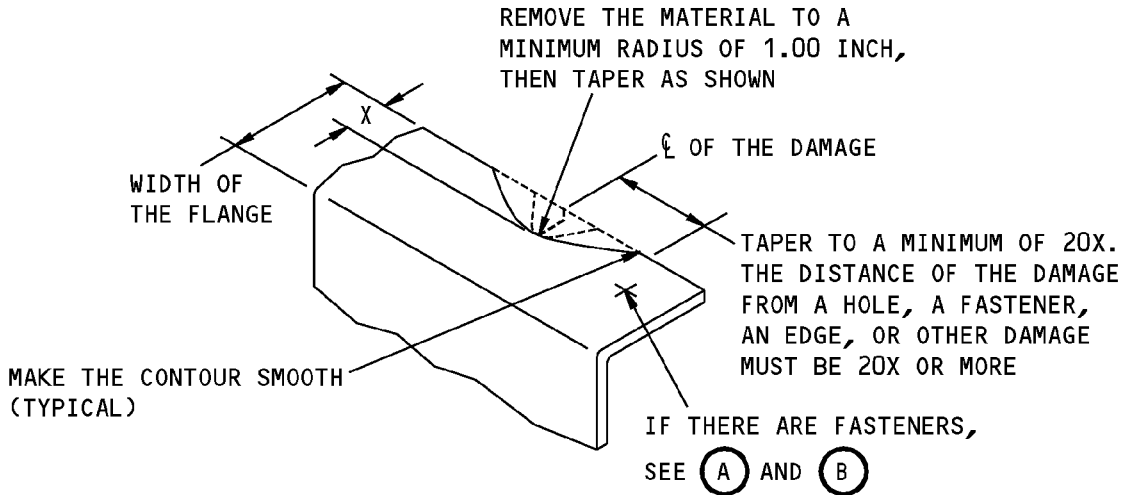
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

**(ROTATED 90° CLOCKWISE)  
E-E**

**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 9 of 16)**

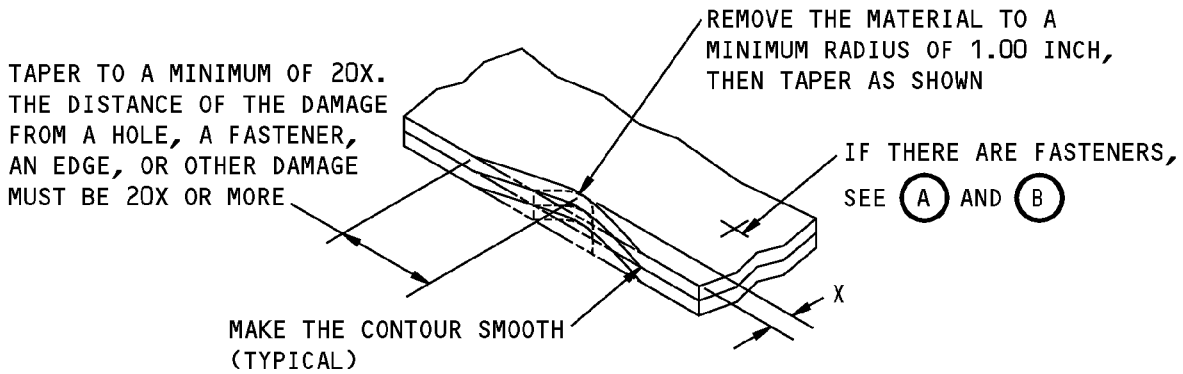
STRUCTURAL REPAIR MANUAL



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

(L)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTIPLE-PLY SKINS OR WEBS.

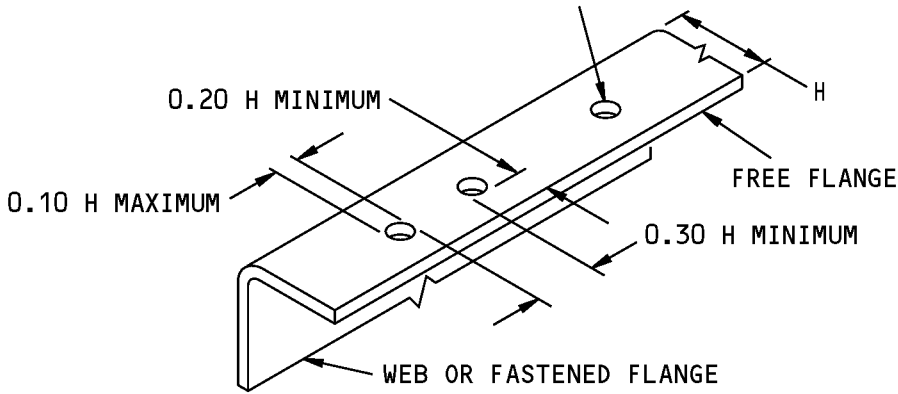
REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB

(M)

Allowable Damage Limits - Aluminum Parts  
 Figure 103 (Sheet 10 of 16)

**STRUCTURAL REPAIR MANUAL**

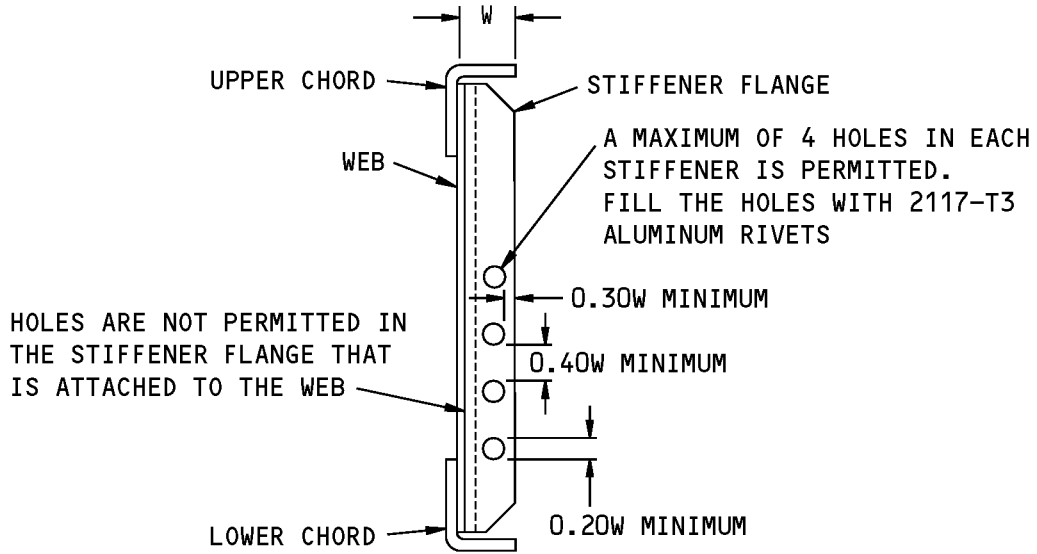
A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD RIVETS



**NOTE:** NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

(N)

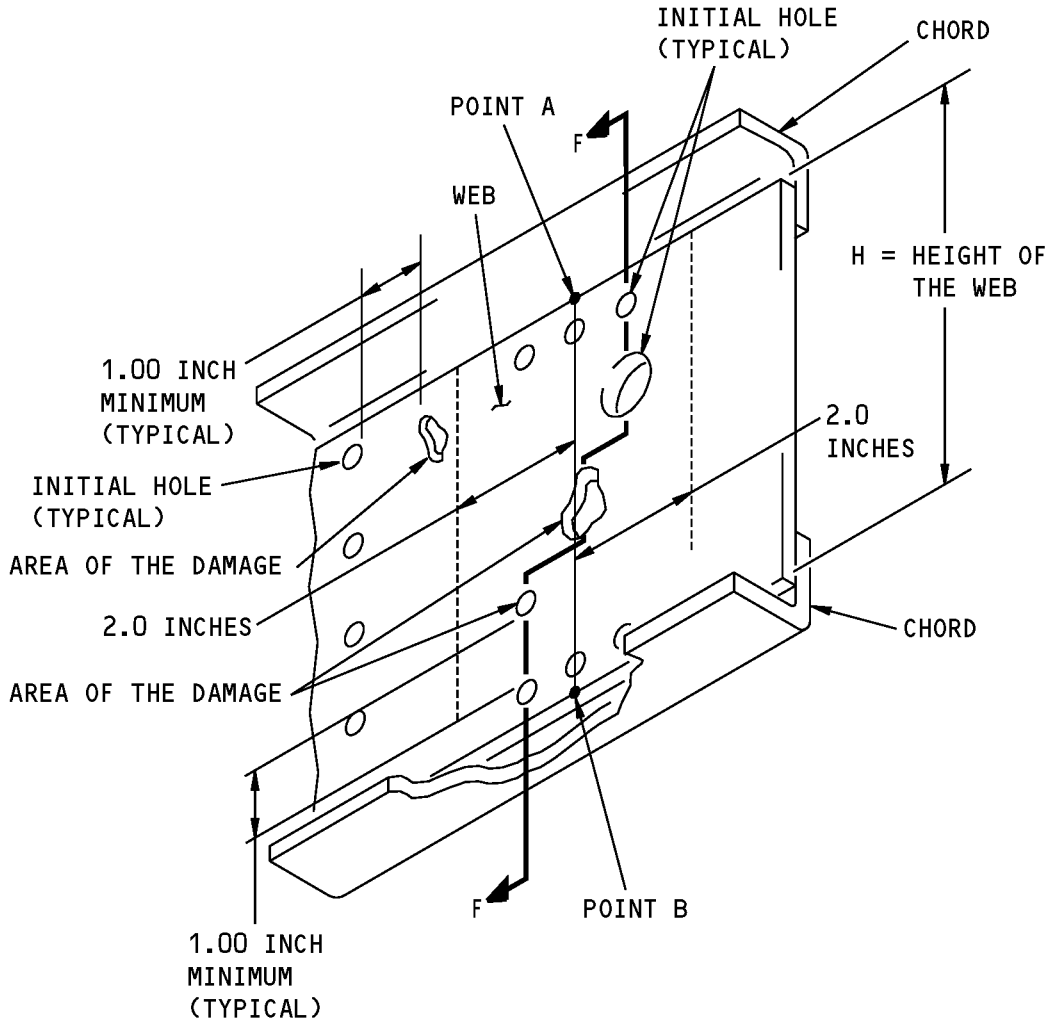


W = THE WIDTH OF THE STIFFENER FLANGE

**HOLES THAT ARE PERMITTED TO REMOVE DAMAGED MATERIAL IN WEB STIFFENERS**

(O)

**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 11 of 16)**

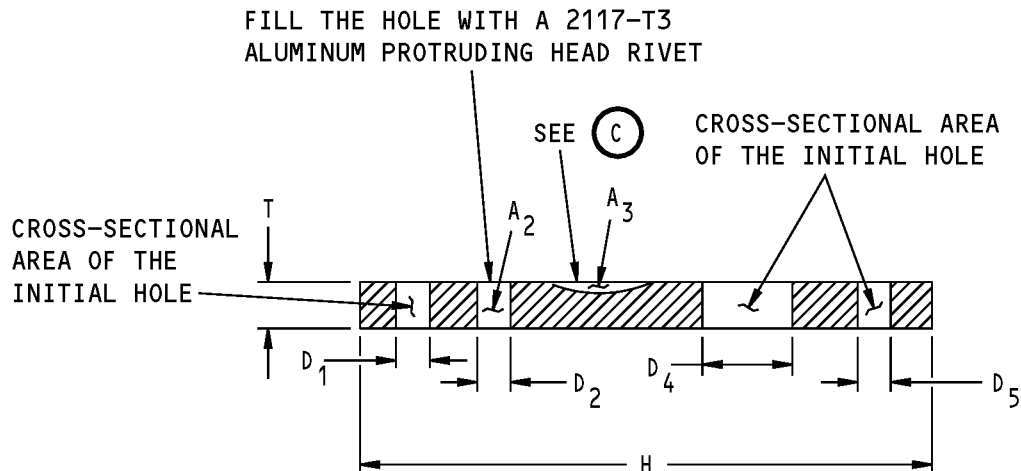


**REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER**

(P)

**Allowable Damage Limits - Aluminum Parts**  
**Figure 103 (Sheet 12 of 16)**

STRUCTURAL REPAIR MANUAL



$D_1, D_4, D_5$  = DIAMETER OF THE INITIAL HOLE

$D_2$  = DIAMETER OF THE HOLE AT LOCATION 2

$D_3$  = DIAMETER OF THE HOLE AT LOCATION 3

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE WEB

$A_i$  = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 $= HT - D_1T - D_4T - D_5T$

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

$A_3$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_2 + A_3}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

$$= 10 \text{ PERCENT MAXIMUM}$$

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

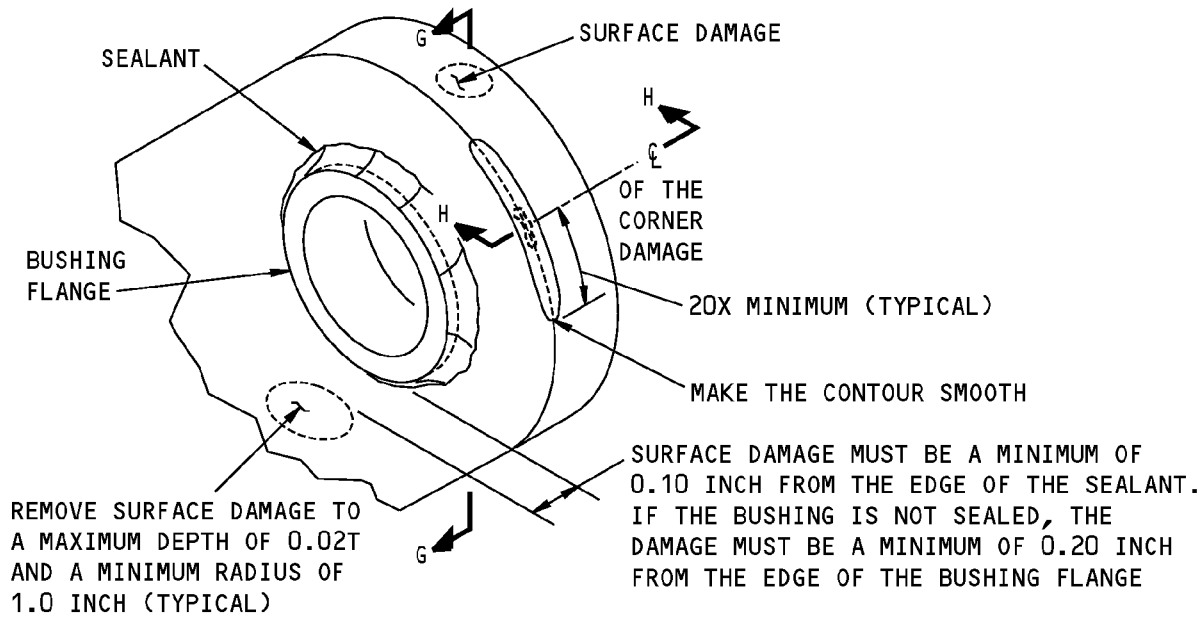
(ROTATED 90° CLOCKWISE)

F-F

Allowable Damage Limits - Aluminum Parts  
 Figure 103 (Sheet 13 of 16)



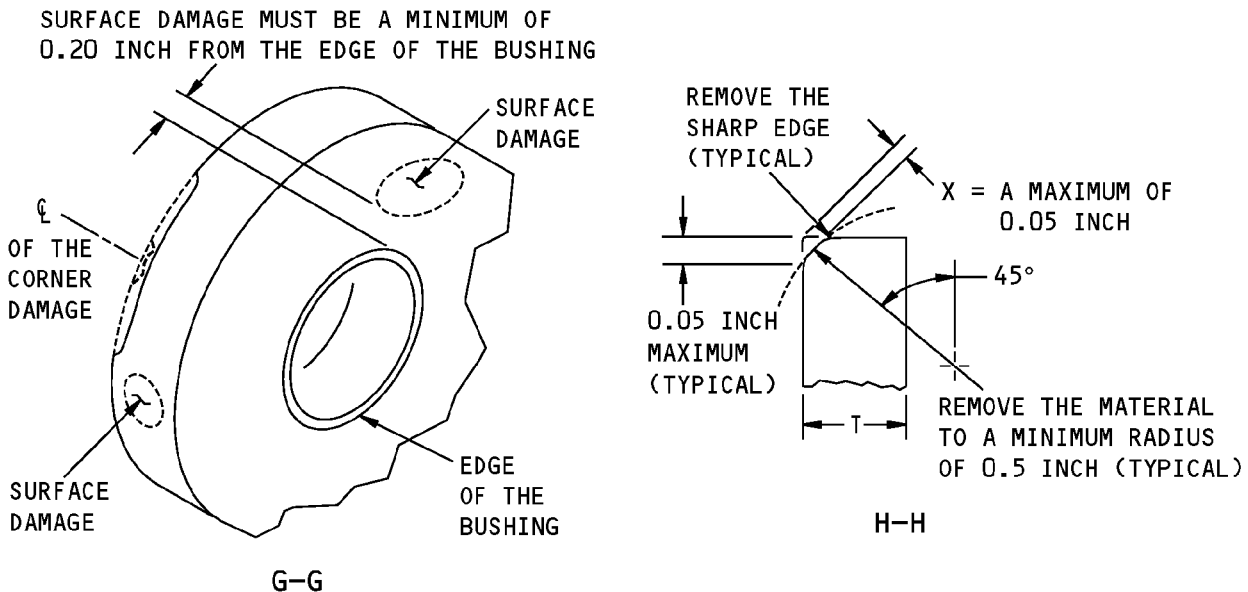
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

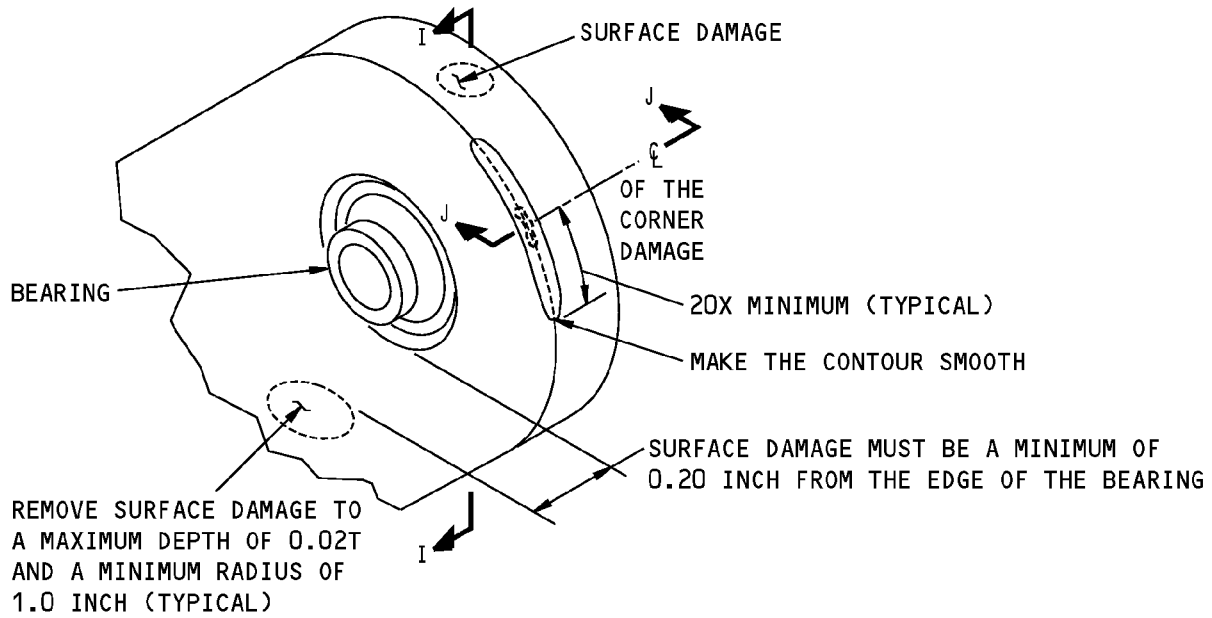
**REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BUSHING**

**Q**



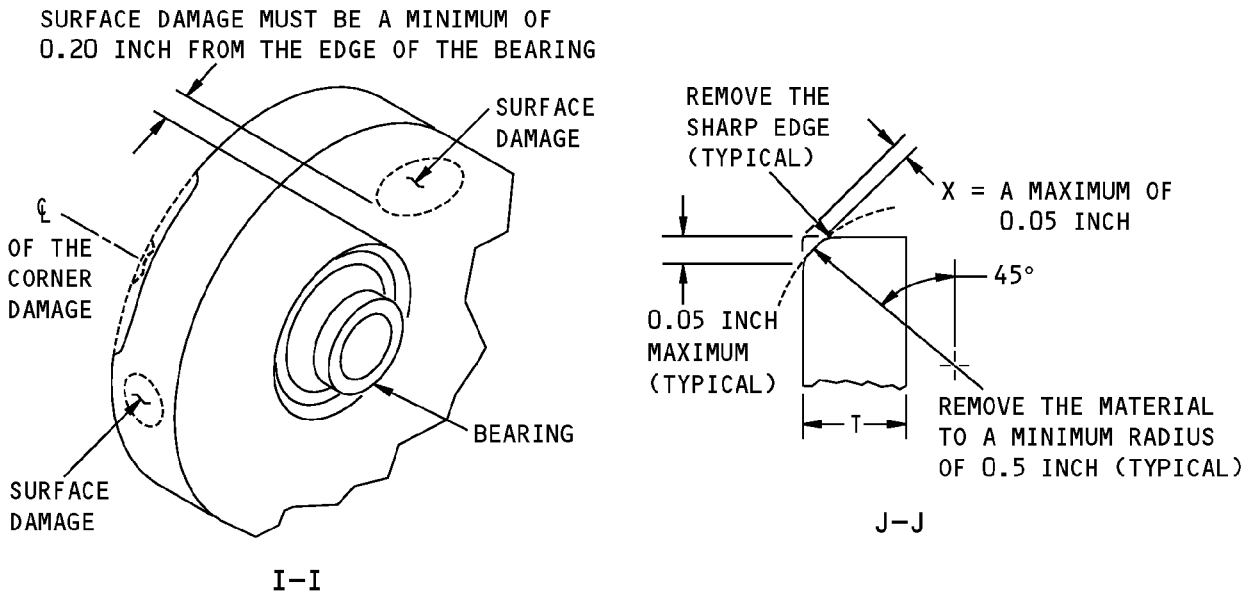
**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 14 of 16)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BEARING**

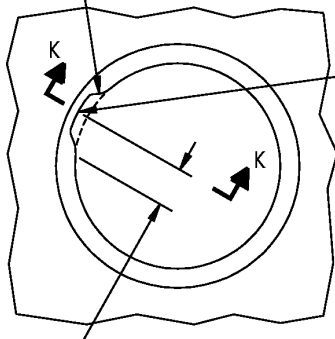
(R)



**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 15 of 16)**

**STRUCTURAL REPAIR MANUAL**

REMOVAL OF MATERIAL IS PERMITTED  
IN ONE LOCATION ONLY

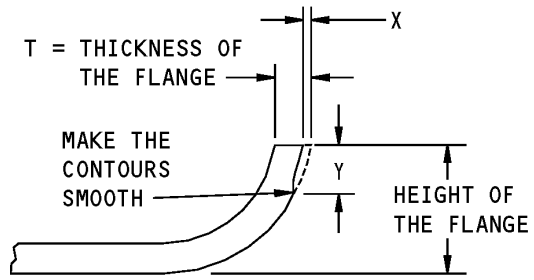


REMOVE THE  
MATERIAL TO A  
MINIMUM RADIUS  
OF 1.00 INCH,  
THEN TAPER AS  
SHOWN

TAPER TO A MINIMUM OF 20X

REMOVAL OF DAMAGED MATERIAL AT  
AN EDGE OF A FLANGED HOLE

(S)



T = THICKNESS OF  
THE FLANGE

MAKE THE  
CONTOURS  
SMOOTH

HEIGHT OF  
THE FLANGE

X = DEPTH OF THE MATERIAL THAT IS  
REMOVED  
= A MAXIMUM OF 0.10T

Y = LENGTH OF THE MATERIAL THAT IS  
REMOVED  
= A MAXIMUM OF 10 PERCENT  
OF THE FLANGE HEIGHT

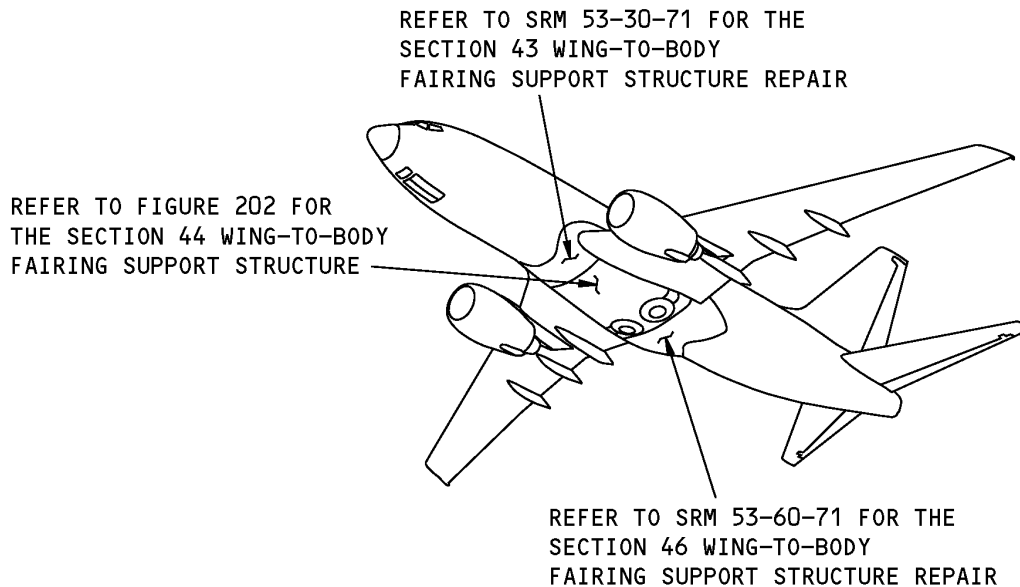
K-K

**Allowable Damage Limits - Aluminum Parts  
Figure 103 (Sheet 16 of 16)**

**STRUCTURAL REPAIR MANUAL****REPAIR 1 - SECTION 44 WING-TO-BODY FAIRING SUPPORT STRUCTURE****1. Applicability**

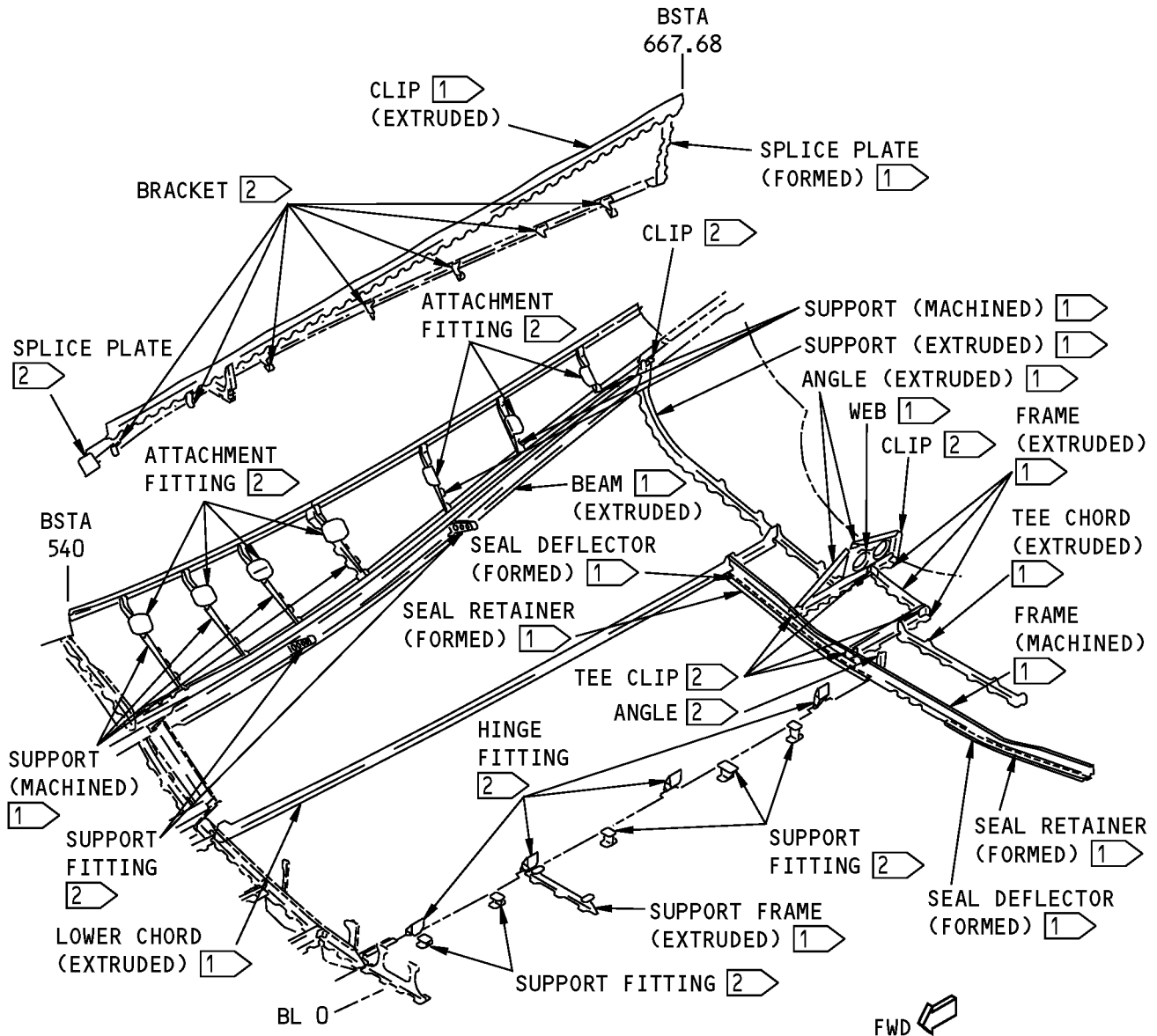
A. Repair 1 is applicable to damage:

- (1) To all the metal parts of the wing-to-body fairing support structure in Section 44 shown in Section 44 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 202/REPAIR 1.
- (2) That is more than the limits permitted in 53-40-71, Allowable Damage 1.



**Section 44 Wing-to-Body Fairing Support Structure Location  
Figure 201**

STRUCTURAL REPAIR MANUAL



MATERIAL: ALUMINUM

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE

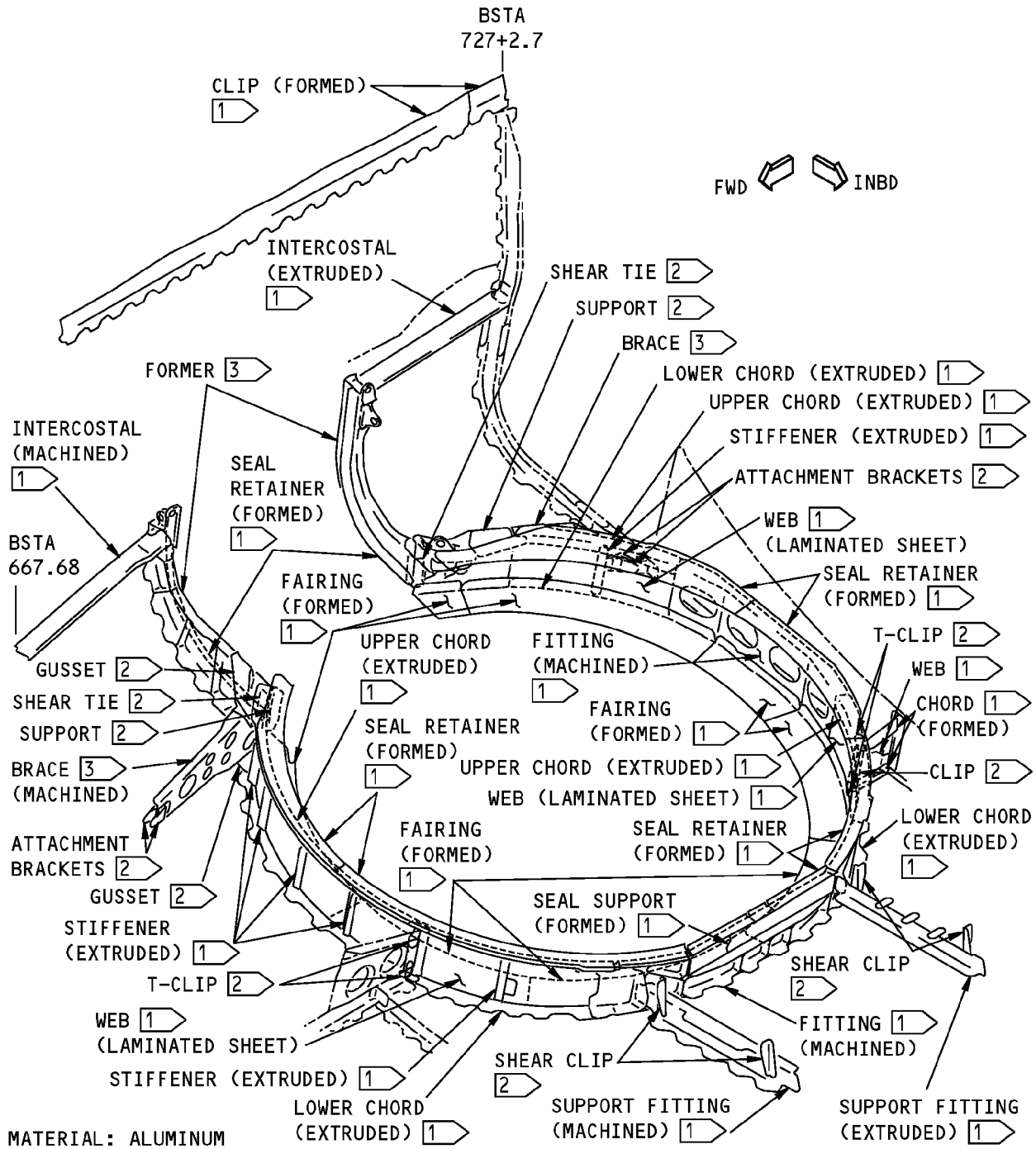
BSTA 540 TO BSTA 667.68

NOTES

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE IS NO REPAIR FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-40-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.
- 3 THERE IS NO REPAIR FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location  
Figure 202 (Sheet 1 of 2)

**737-800  
STRUCTURAL REPAIR MANUAL**



**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 667.68 TO BSTA 727+2.7**

**Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location  
Figure 202 (Sheet 2 of 2)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Get access to the damaged area.
  - (1) Remove the fairing skin panel(s) at the damage location as necessary.
- B. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- C. Refer to Paragraph 4./REPAIR 1 for a repair.

**3. References**

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71, REPAIR 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71	FUSELAGE FAIRING STRUCTURE - SECTION 44
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71, REPAIR 1	Section 46 Wing-to-Body Fairing Support Structure

**4. Repair Instructions**

- A. Refer to Section 44 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 44 Wing-to-Body Fairing Support Structure (Sta 540 to Sta 727 + 2.7) Location, Figure 202/REPAIR 1, and Table 201 to find the applicable repair for the part that you want to repair.

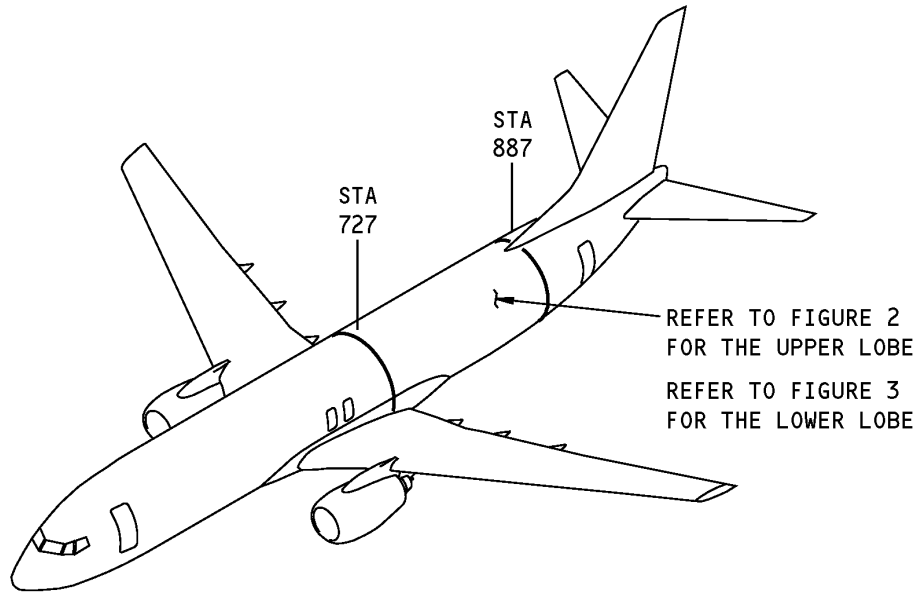
**NOTE:** If necessary, refer to 53-40-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 FUSELAGE SKIN**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

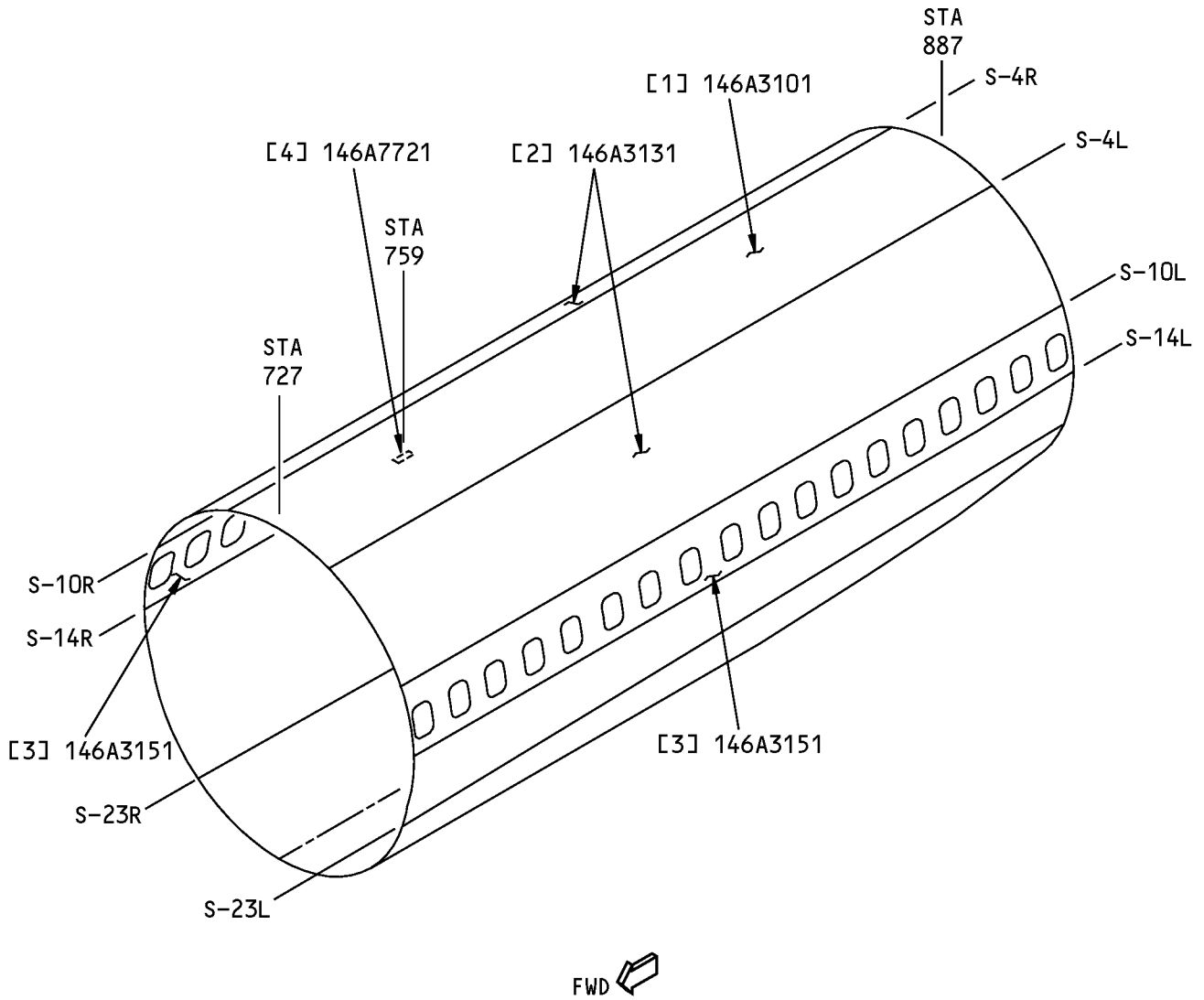
**Section 46 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4610	Functional Collector, Section 46 Upper Lobe
146A3100	Skin Installation, S-4L to S-4R, Station 727-888
146A3130	Skin Installation, S-4 to S-10, Station 727-888
146A3150	Skin Installation, S-10 to S-14, Station 727-888
140A4620	Functional Collector, Section 46 Lower Lobe
146A3200	Skin Installation, S-14L to S-23L, Station 727-888
146A3230	Skin Installation, S-23L to S-23R, Station 727-888
146A3250	Skin Installation, S-14R to S-23R, Station 727-888



**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Fuselage Skin Identification  
Figure 2**



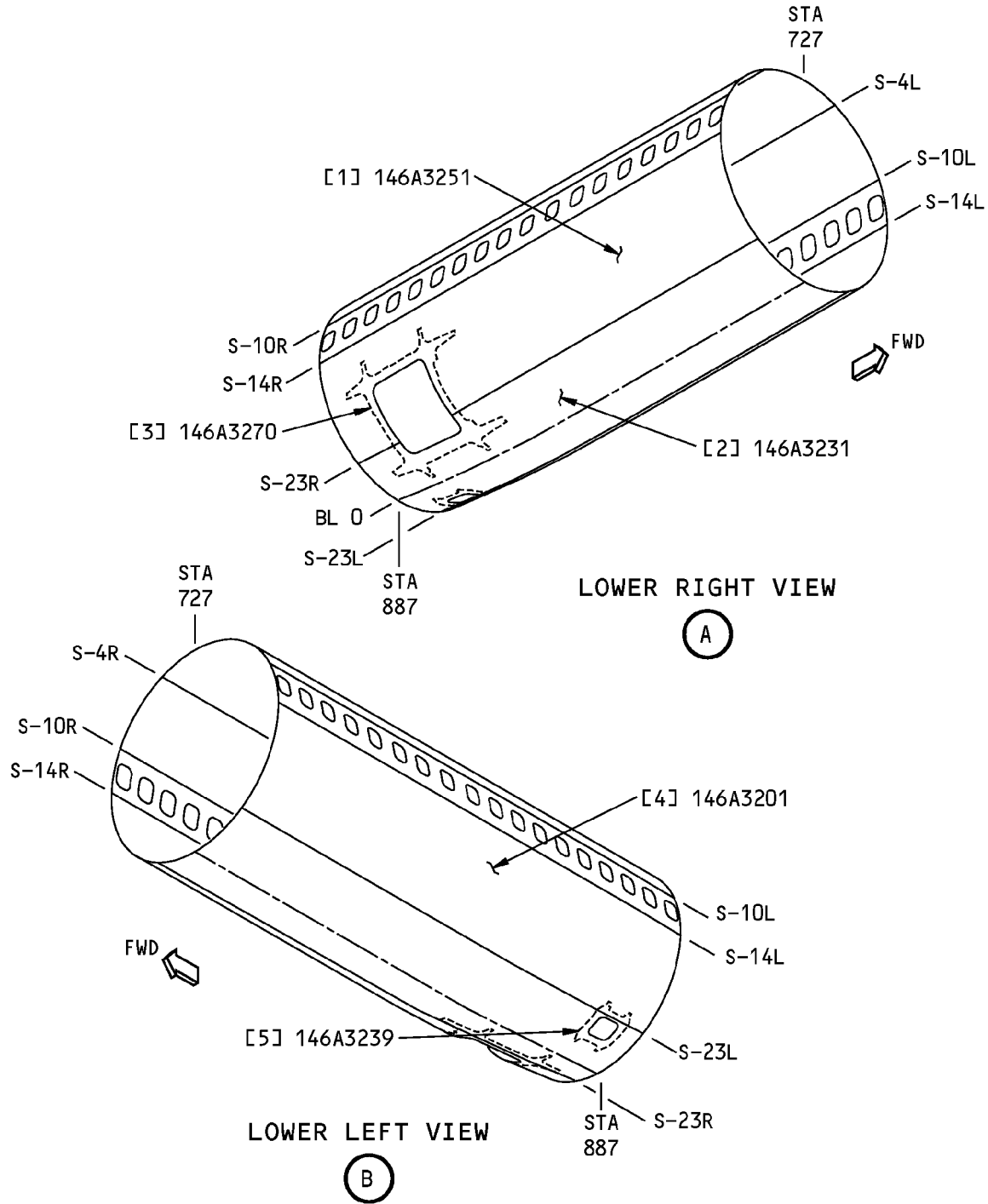
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin Panel Assembly Skin Doubler	0.040 (1.02) 0.040 (1.02)	2024-T3 clad sheet 2024-T3 clad sheet. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin Panel Assembly Skin Doubler	0.040 (1.02) 0.040 (1.02)	2024-T3 clad sheet 2024-T3 clad sheet. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[3]	Skin Panel Assembly Skin Doubler	0.100 (2.54) 0.100 (2.54)	2024-T3 clad sheet 2024-T3 clad sheet. Refer to Figure 6 for the thicknesses of the chem-milled areas.	
[4]	Doubler	0.080 (2.03)	2024-T3 clad sheet	For airplanes that have the SATCOM Antenna

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 46 Lower Lobe Skin Identification  
Figure 3**



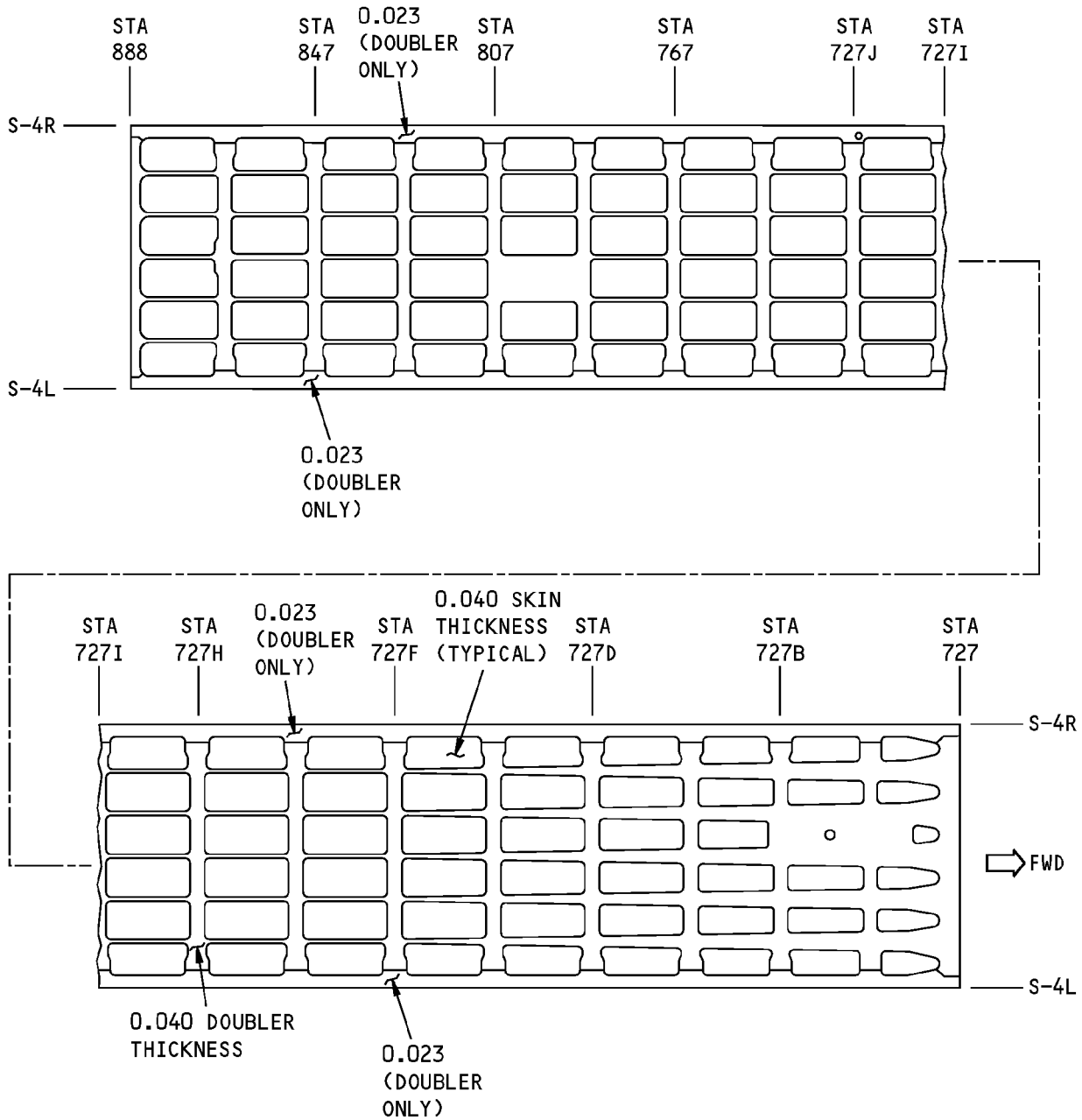
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.100 (2.54)	2024-T3 clad sheet. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[2]	Skin	0.160 (4.06)	2024-T3 clad sheet. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[3]	Bear Strap	0.130 (3.30)	2024-T3 bare sheet	
[4]	Skin	0.100 (2.54)	2024-T3 clad sheet. Refer to Figure 9 for the thicknesses of the chem-milled areas	
[5]	Doubler	0.090 (2.23)	2024-T3 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

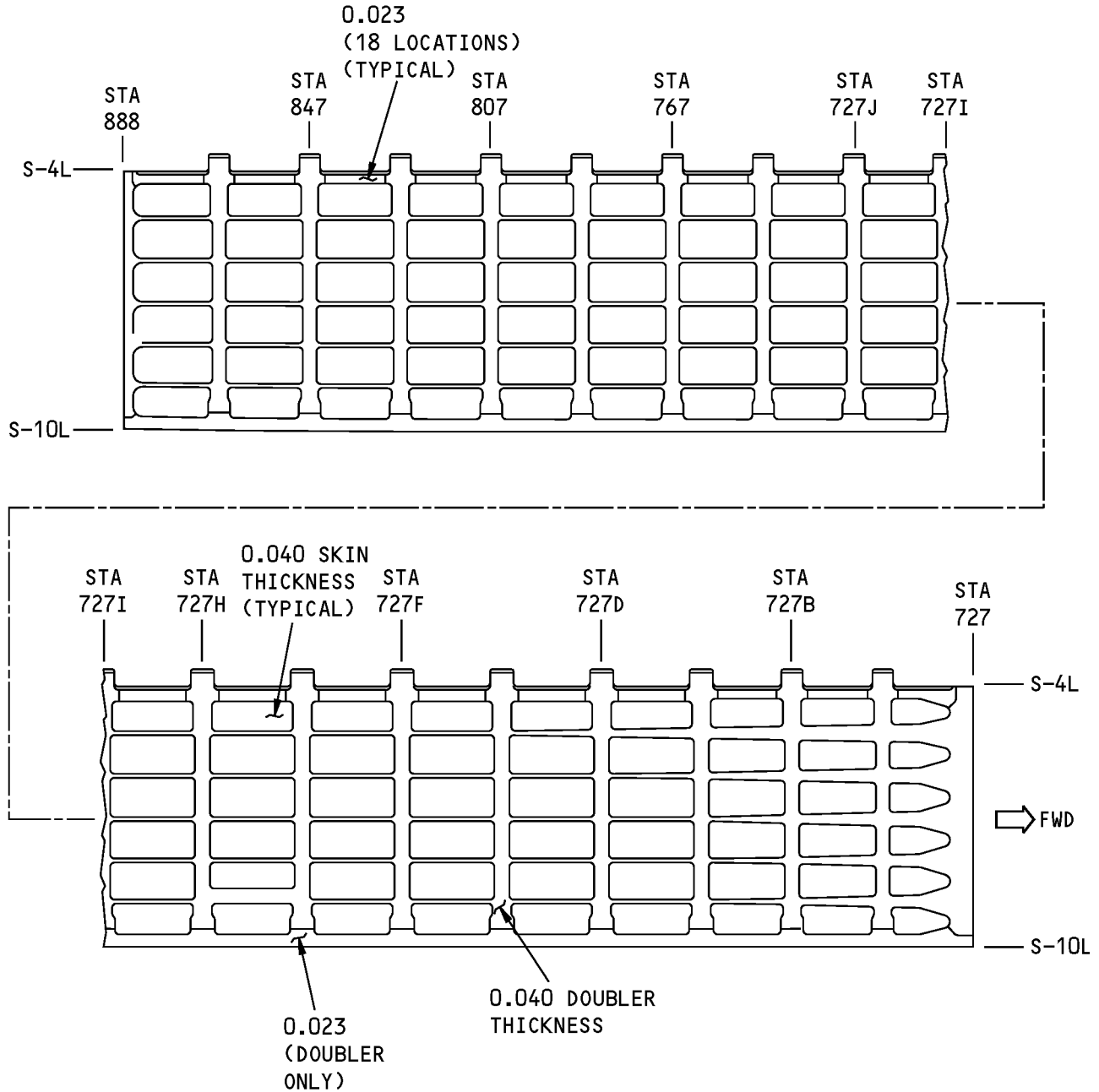
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** SKIN PANEL ASSEMBLY IS MADE FROM TWO BONDED SHEETS OF ALUMINUM AND ONLY THE INNER DOUBLER IS CHEM-MILLED. ALL POCKETS SHOWN ARE THROUGH THE INNER DOUBLER ONLY. ALL OTHER AREAS ARE THE THICKNESSES SHOWN.

**Chem-Milled Areas of Figure 2, Item [1]  
Figure 4**

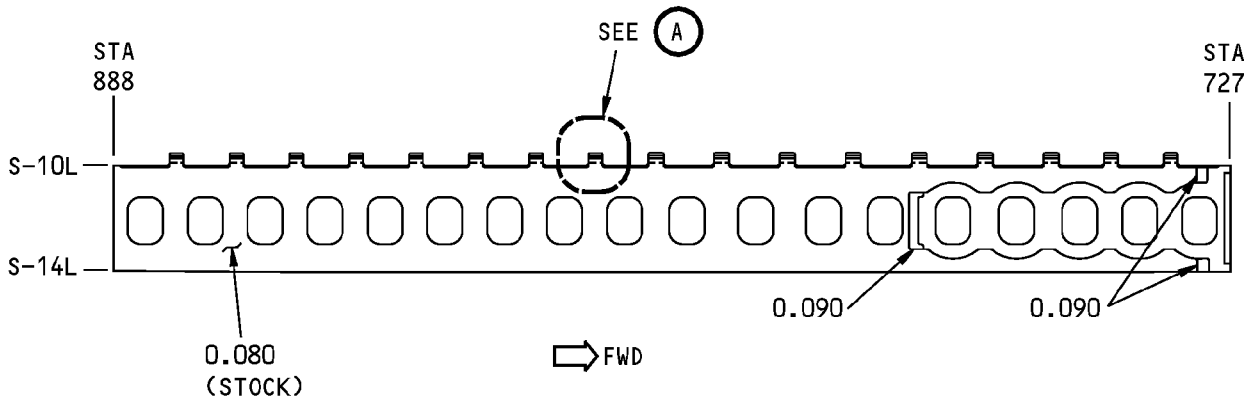
**737-800  
STRUCTURAL REPAIR MANUAL**



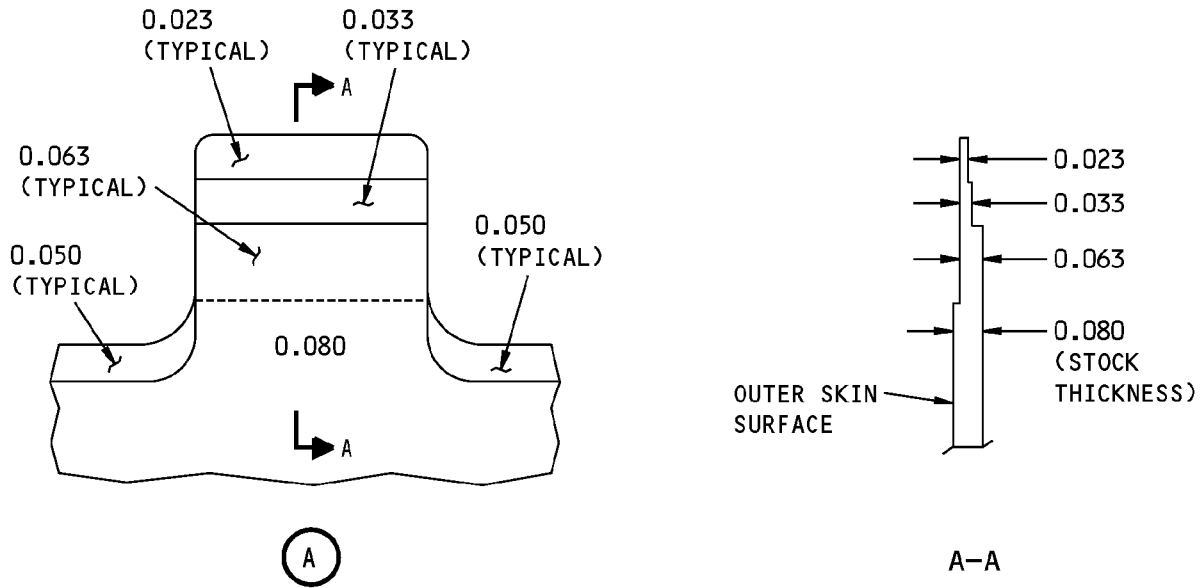
**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES OF THE DOUBLER IN INCHES. THIS SKIN PANEL IS LAMINATED AND ONLY THE DOUBLER IS CHEM-MILLED. POCKETS WITH NO DIMENSIONS ARE CHEM-MILLED THROUGH THE DOUBLER.

**Chem-Milled Areas of Figure 2, Item [2]  
Figure 5**

**737-800  
STRUCTURAL REPAIR MANUAL**

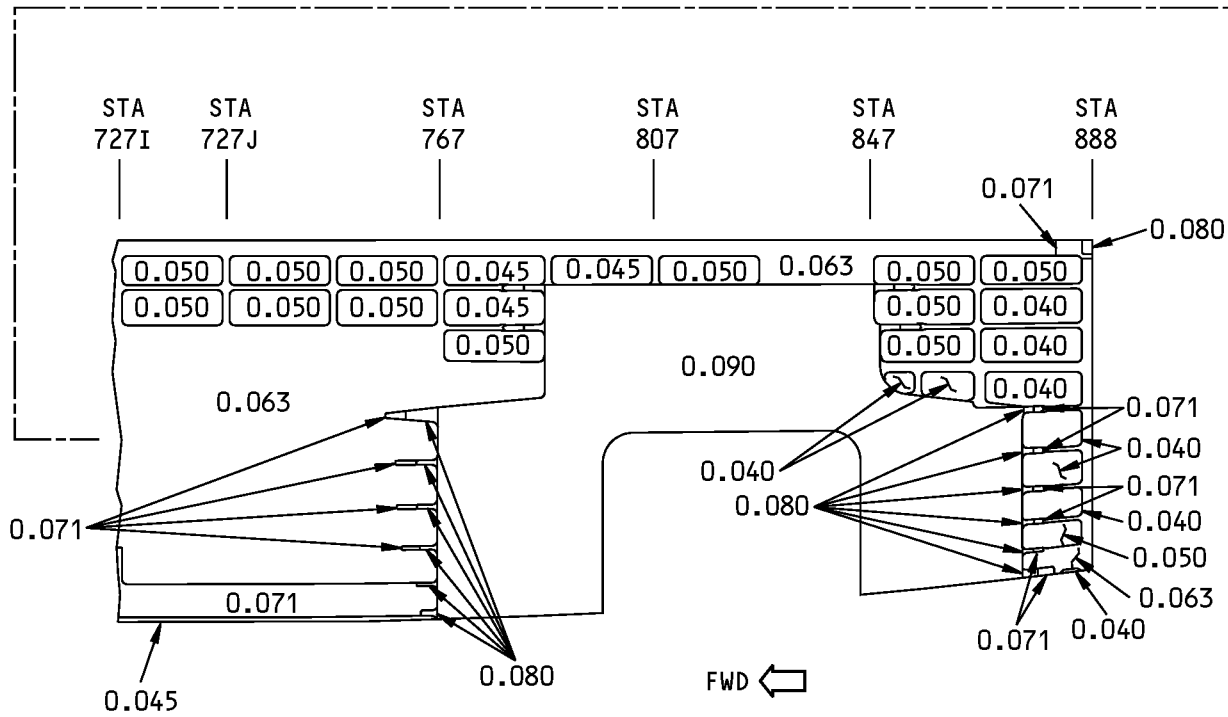
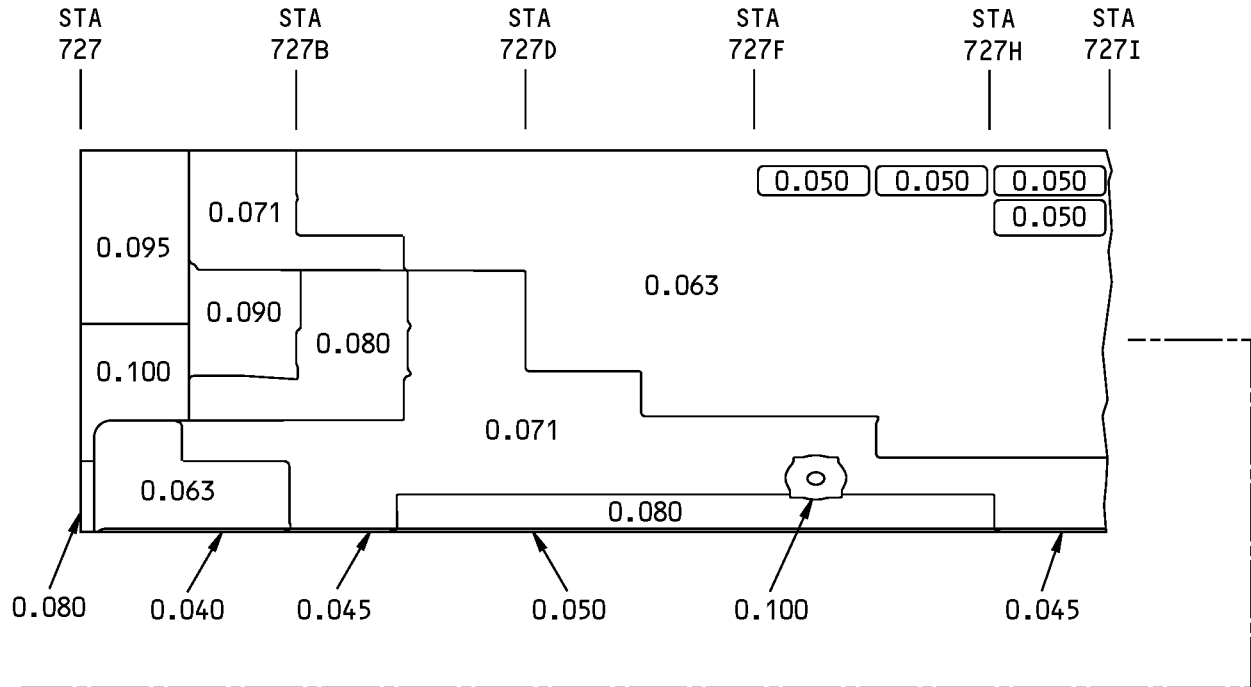


**RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
VIEW IS ON INNER SURFACE OF SKIN**



**Chem-Milled Areas of Figure 2, Item [3]  
Figure 6**

**737-800  
STRUCTURAL REPAIR MANUAL**

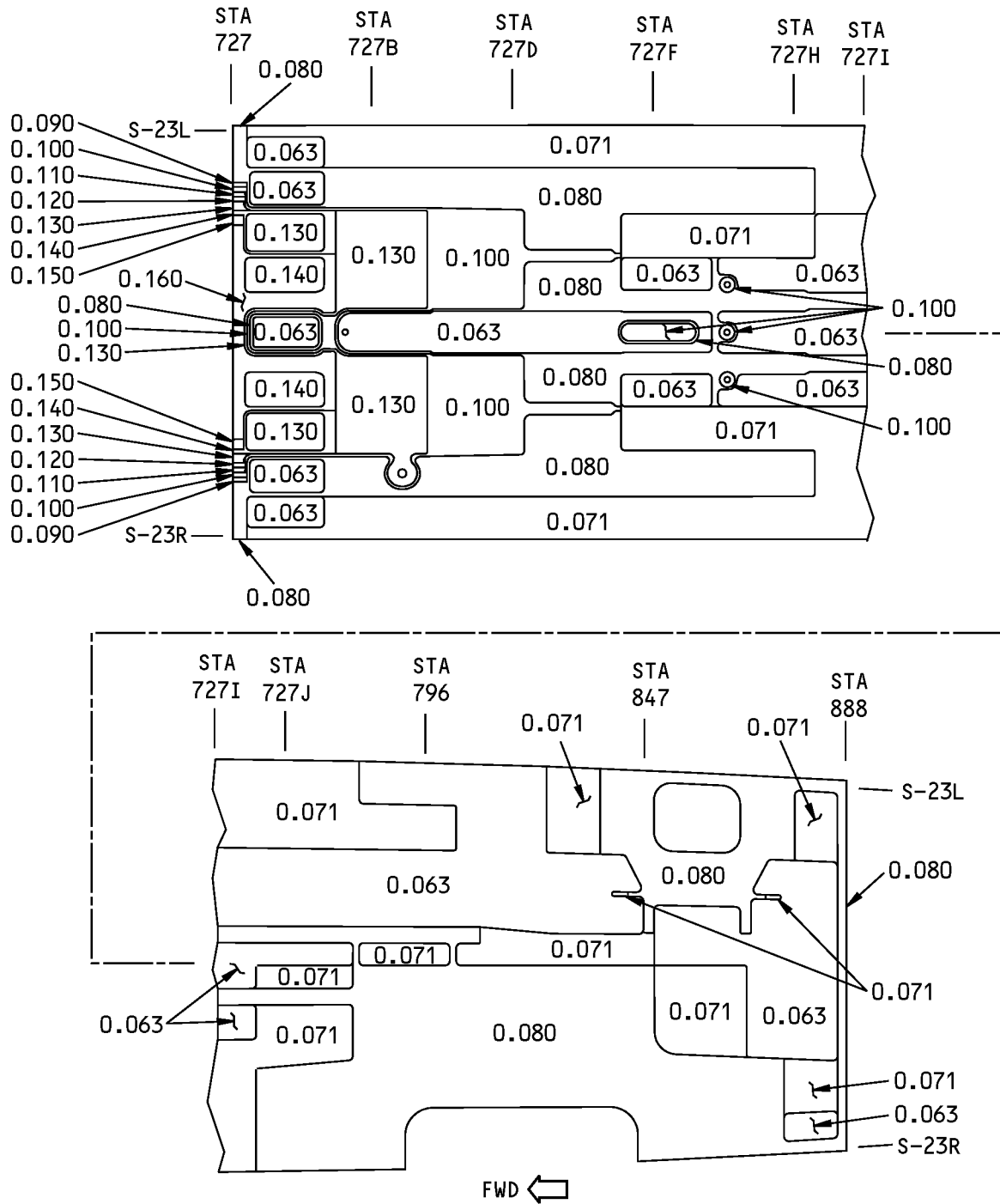


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Chem-Milled Areas of Figure 3, Item [1]  
Figure 7**



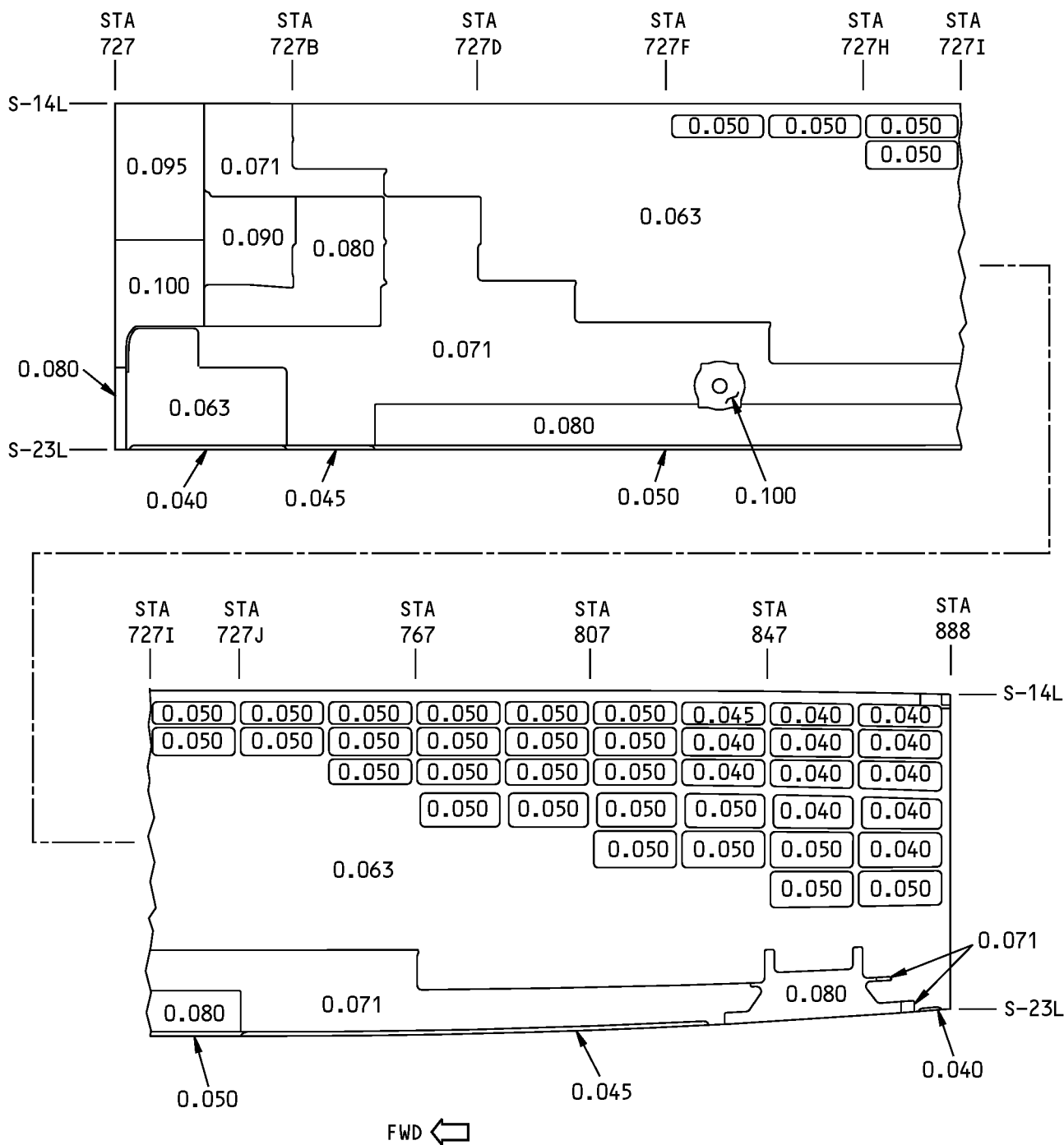
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Chem-Milled Areas of Figure 3, Item [2]  
Figure 8**

**737-800  
STRUCTURAL REPAIR MANUAL**

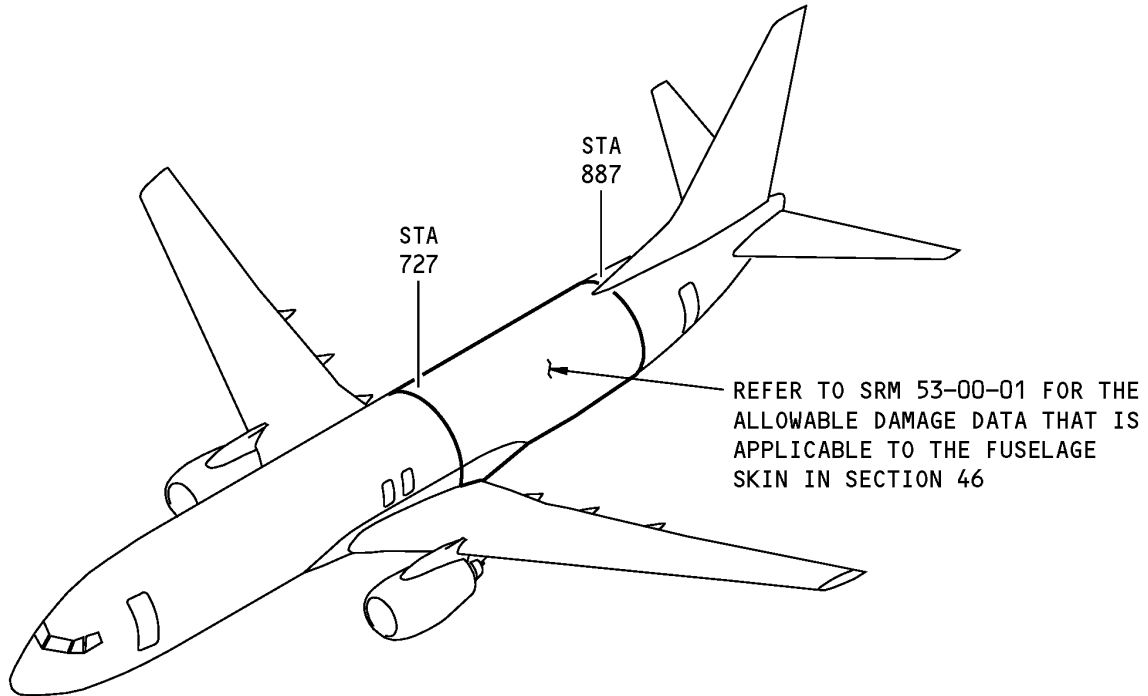


**Chem-Milled Areas of Figure 3, Item [4]  
Figure 9**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 46 FUSELAGE SKIN**



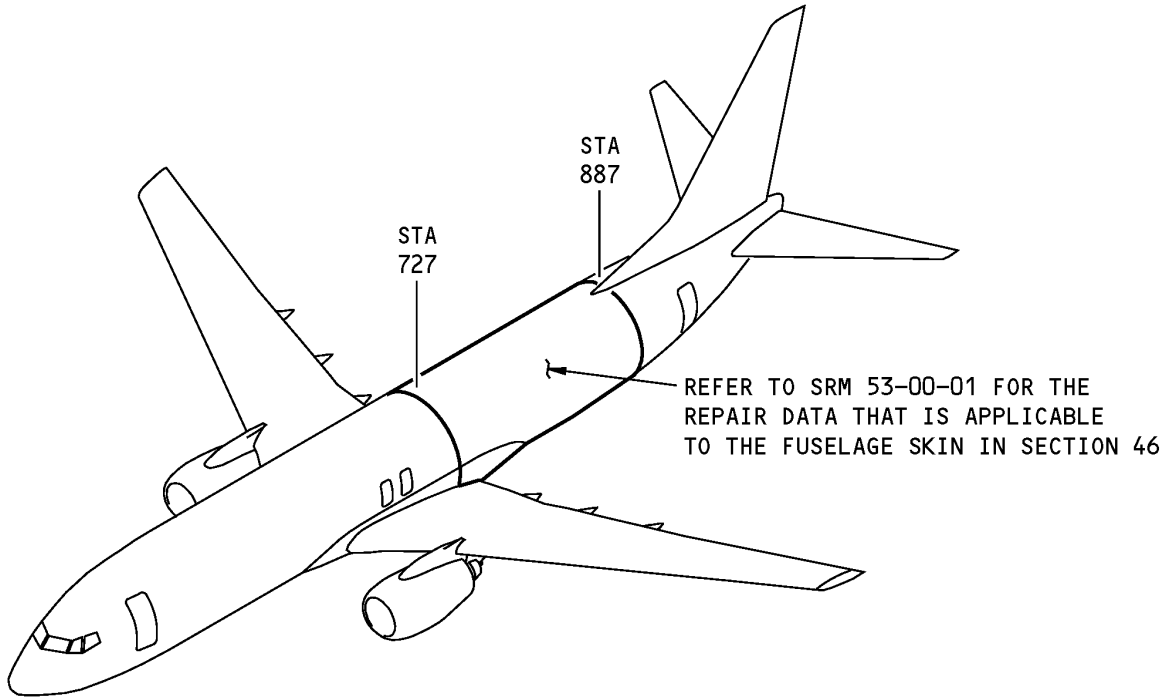
**NOTE:** REFER TO SRM 53-00-70 FOR THE FAIRING SKIN ALLOWABLE DAMAGE.  
THERE IS NO ALLOWABLE DAMAGE FOR BILGE SKIN IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

**Section 46 Fuselage Skin Location**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 46 FUSELAGE SKIN**

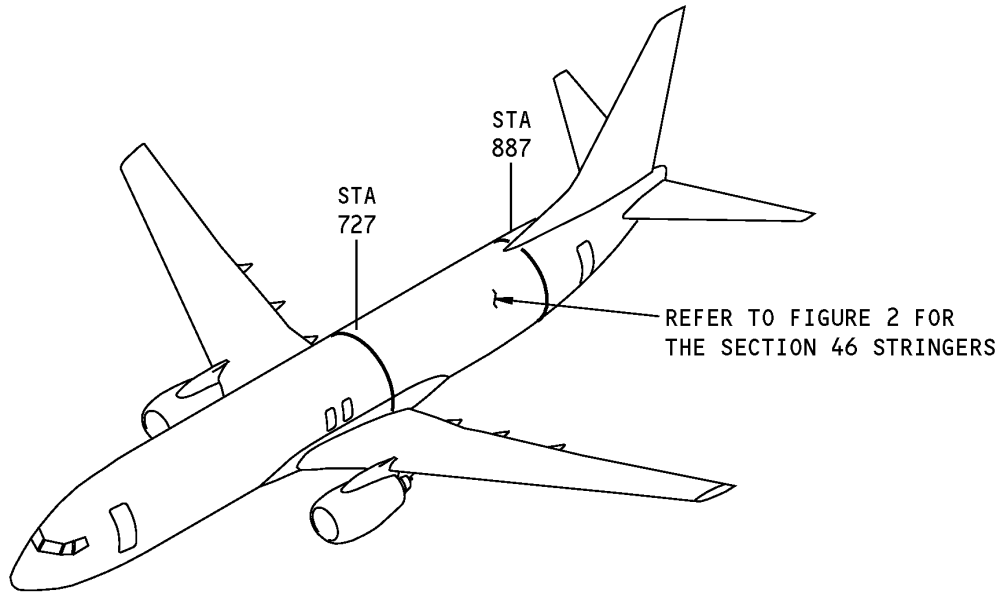


**NOTE:** REFER TO SRM 53-00-70 FOR THE FAIRING SKIN REPAIR.  
THERE ARE NO REPAIRS FOR BILGE SKIN IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

**Section 46 Fuselage Skin Location**  
**Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 FUSELAGE STRINGERS**



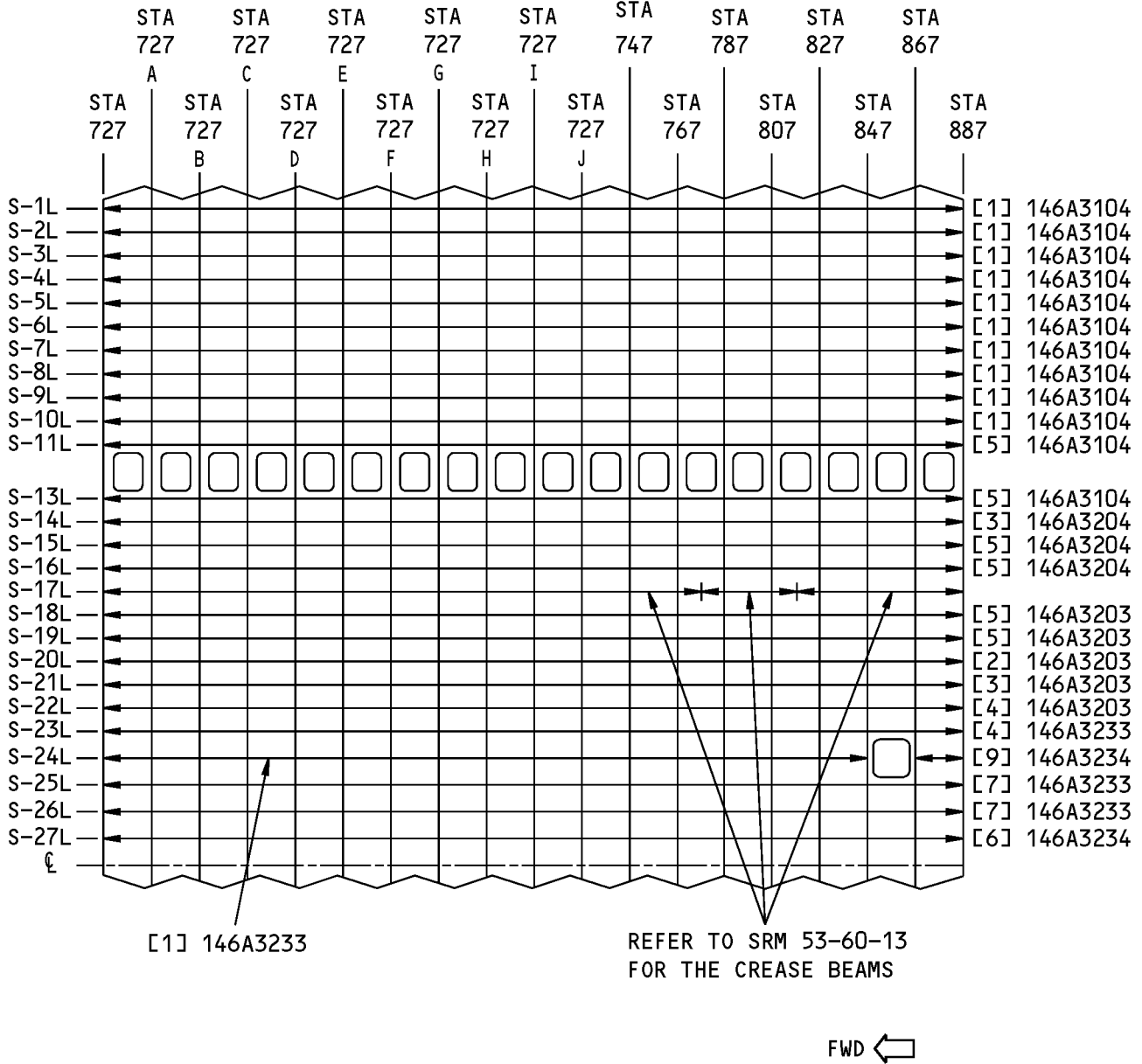
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Stringer Identification  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4610	Functional Collector - Section 46 Upper Lobe
146A3100	Skin Installation S-4L to S-4R, Station 727 to Station 888
146A3130	Skin Installation S-4 to S-10, Station 727 to Station 888
146A3150	Skin Installation S-10 to S-14, Station 727 to Station 888
140A4620	Functional Collector, Section 46 Lower Lobe
146A3200	Skin Installation S-14L to S-23L, Station 727 to Station 888
146A3230	Skin Installation S-23L to S-23R, Station 727 to Station 888
146A3250	Skin Installation S-14R to S-23R, Station 727 to Station 888
146A3233	Stringer Assembly S-24L to S-24R, Section 46

STRUCTURAL REPAIR MANUAL



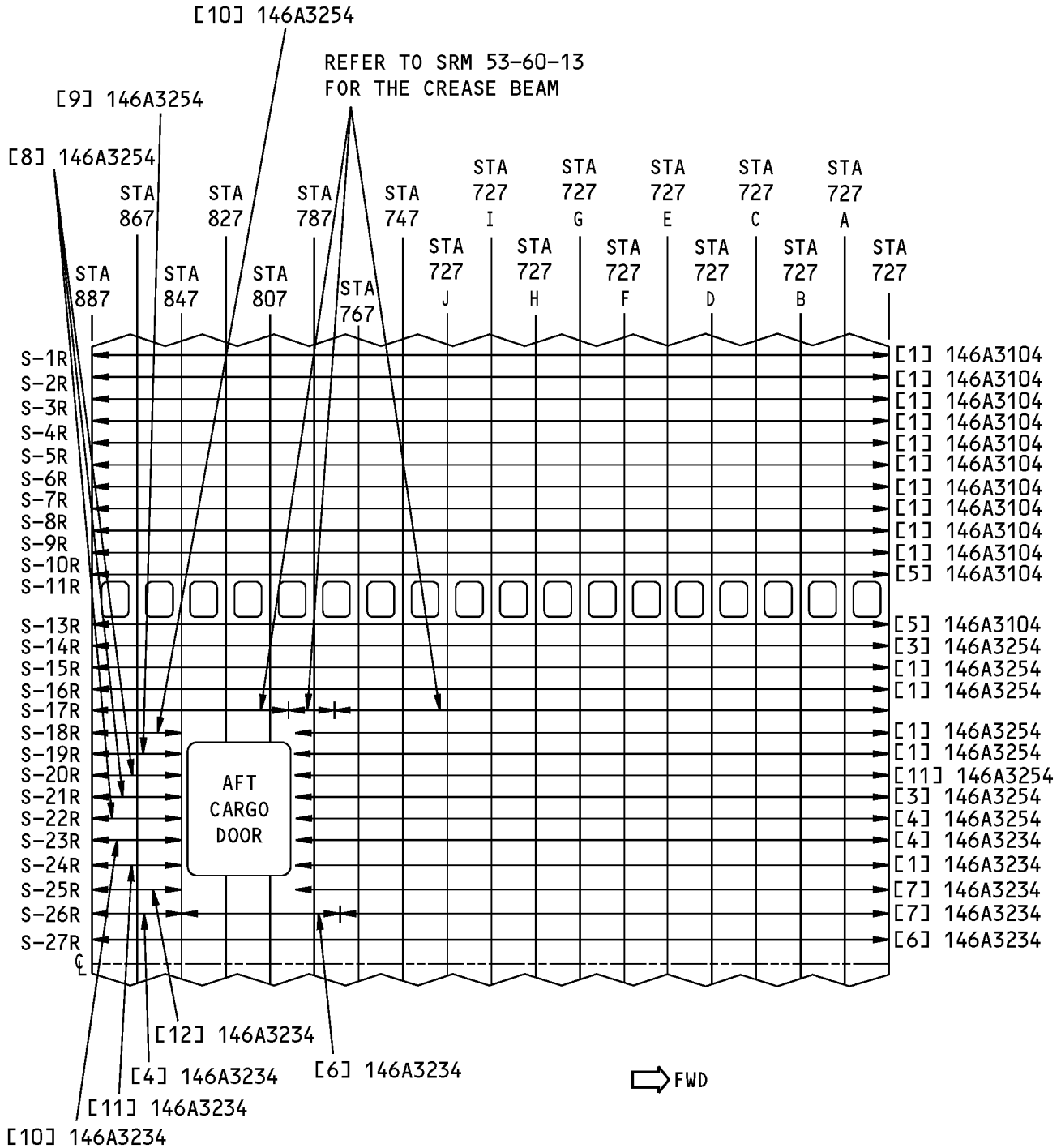
NOTES

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN

Section 46 Stringer Identification  
Figure 2 (Sheet 1 of 2)

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.  
**RIGHT SIDE IS SHOWN**  
**Section 46 Stringer Identification**  
**Figure 2 (Sheet 2 of 2)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer, Tapered	0.071 (1.8)	7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer, Tapered	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer, Tapered	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer, Tapered	0.063 (1.6)	7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1517-1485 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1520-2844)	
[6]	Stringer, Tapered	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer, Tapered	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-157 7075-T62 extrusion as given in QQ-A-250/12	
[9]	Stringer		BAC1498-158 7075-T62 extrusion as given in QQ-A-250/12	
[10]	Stringer		BAC1498-159 7075-T62 extrusion as given in QQ-A-250/12	
[11]	Stringer		BAC1498-161 7075-T62 extrusion as given in QQ-A-250/12	
[12]	Stringer		BAC1498-162 7075-T62 extrusion as given in QQ-A-250/12	

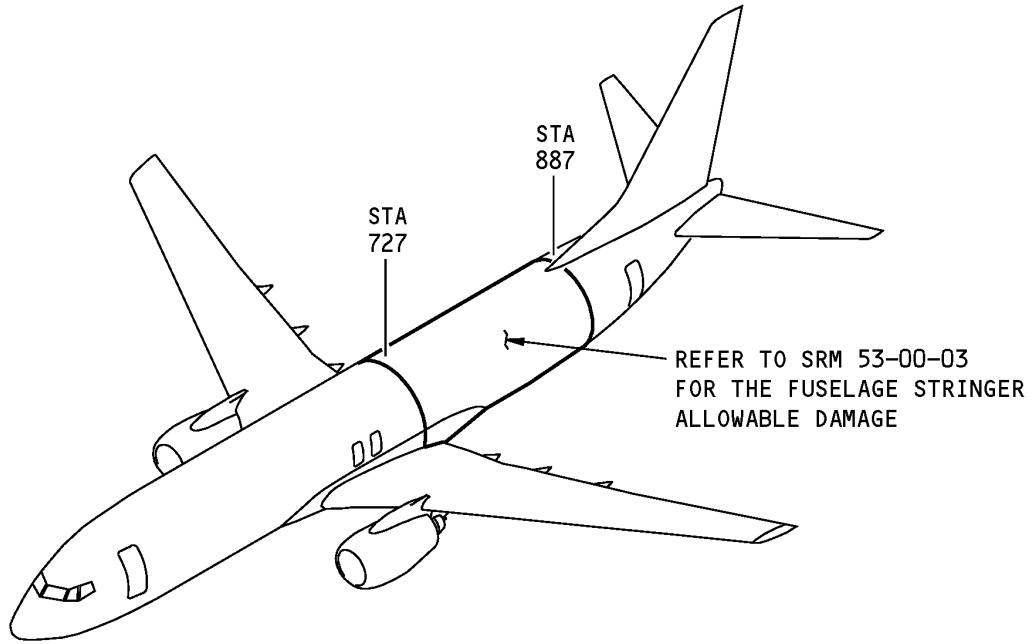
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).





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STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 46 FUSELAGE STRINGERS**



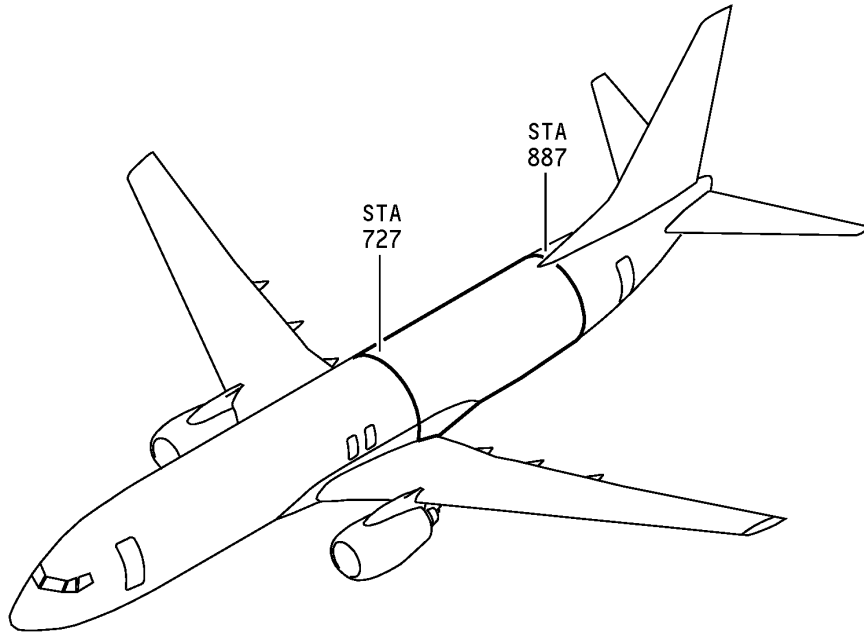
**Section 46 Stringer Allowable Damage  
Figure 101**

**737-800  
STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 46 FUSELAGE STRINGERS**

**1. Applicability**

- A. Repair 1 is applicable to damage to the stringers in body Section 46 shown in Section 46 Stringer Repairs, Figure 201/REPAIR 1.



**Section 46 Stringer Repairs  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-12 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-60-03	FUSELAGE STRINGERS - SECTION 46



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**STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 46 fuselage stringers.

**NOTE:** If necessary, refer to 53-60-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

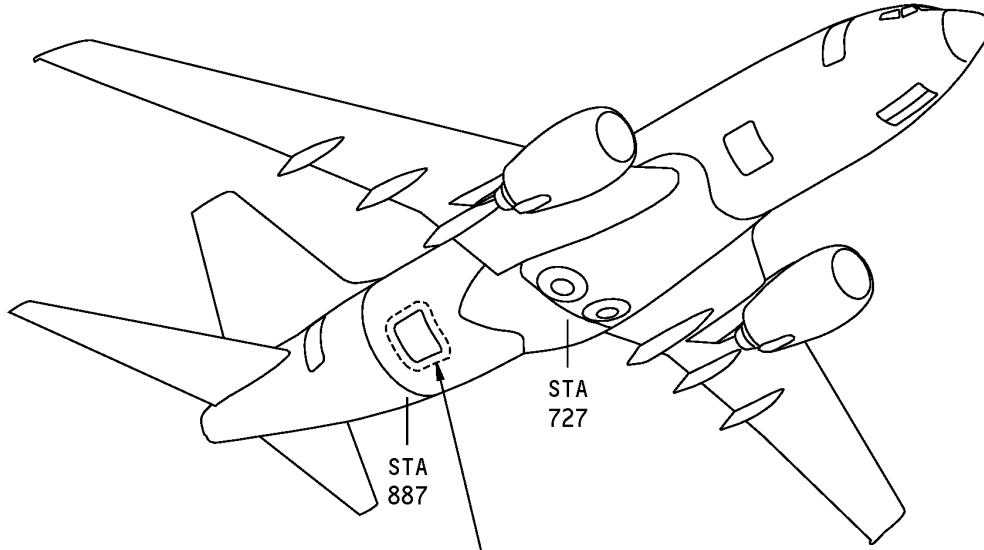
**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 46 FUSELAGE STRINGERS</b>		
<b>STRINGER</b>	<b>LOCATION</b>	<b>REPAIR</b>
S-11L, S-11R, S-13L, S-13R,	STA 727 to STA 887	Refer to SRM 51-70-12
S-17L, S-17R	STA 727 to STA 887	Refer to SRM 53-60-13
All other stringers	STA 727 to STA 887	Refer to SRM 53-00-03



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**STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 FUSELAGE INTERCOSTALS**



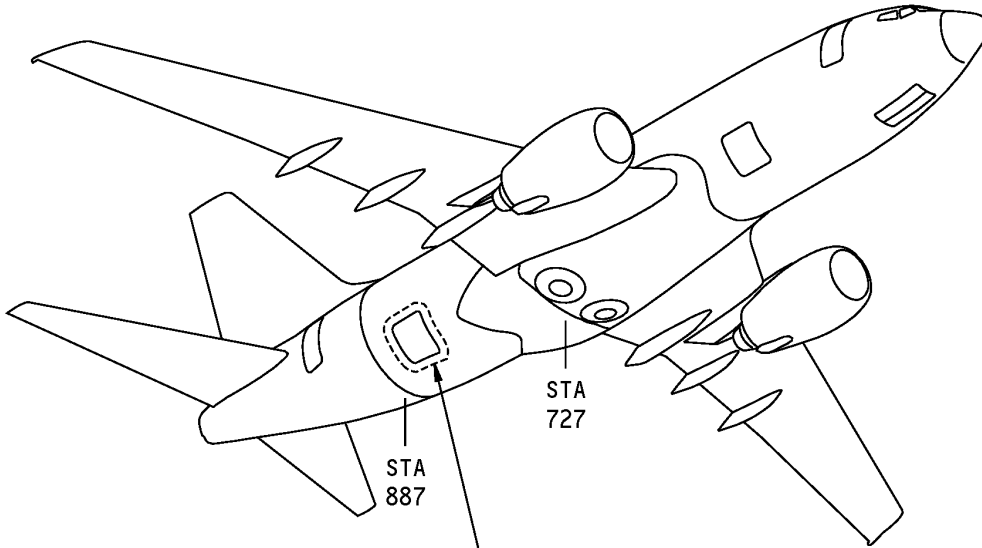
REFER TO SRM 53-60-15  
FOR THE IDENTIFICATION  
OF SECTION 46 INTERCOSTALS  
THAT ARE IN THE AFT CARGO  
DOOR SURROUND AREA

**Section 46 Fuselage Intercostal Identification**  
**Figure 1**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 46 FUSELAGE INTERCOSTALS**



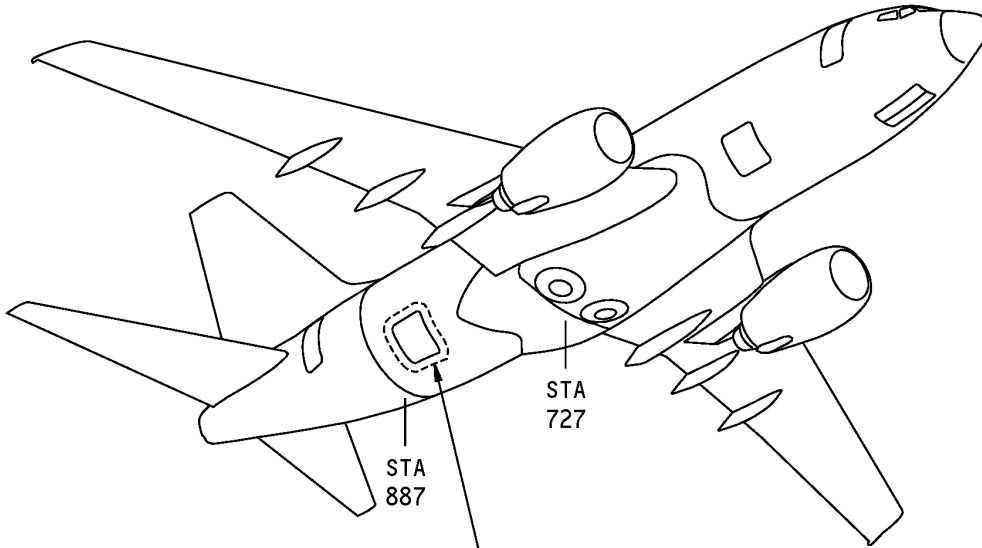
REFER TO SRM 53-60-15 FOR  
THE ALLOWABLE DAMAGE DATA  
FOR THE SECTION 46  
INTERCOSTALS IN THE AFT  
CARGO DOOR SURROUND AREA

**Section 46 Fuselage Intercostal Allowable Damage**  
**Figure 101**



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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 46 FUSELAGE INTERCOSTALS**

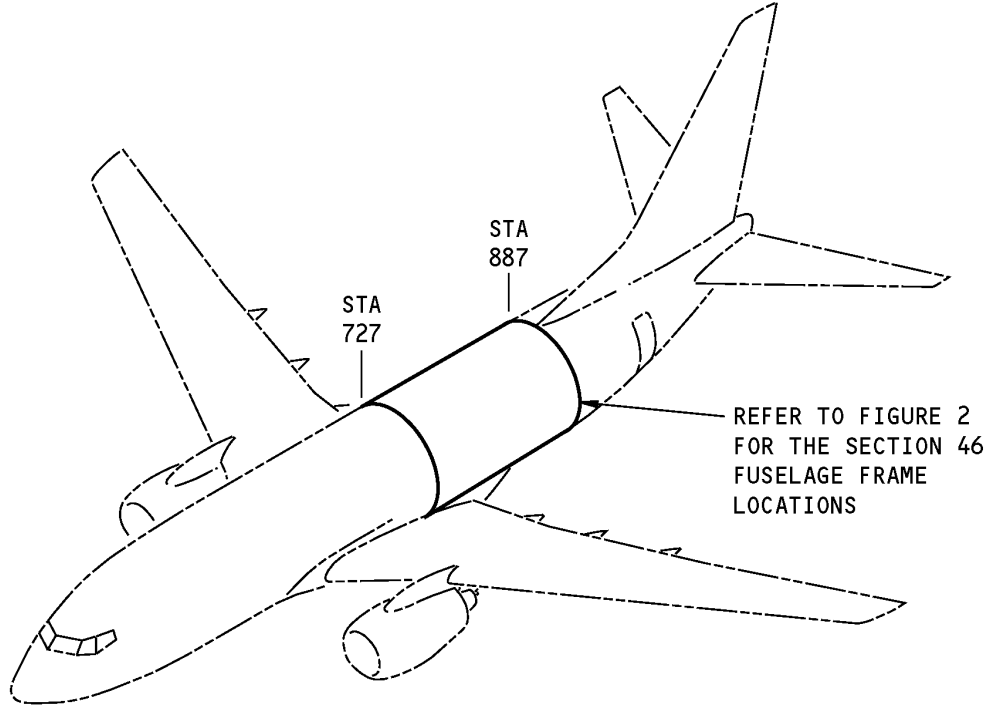


REFER TO SRM 53-60-15  
FOR THE REPAIR DATA  
FOR THE SECTION 46  
INTERCOSTALS IN THE AFT  
CARGO DOOR SURROUND AREA

**Section 46 Fuselage Intercostal Repair**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 FUSELAGE FRAMES**



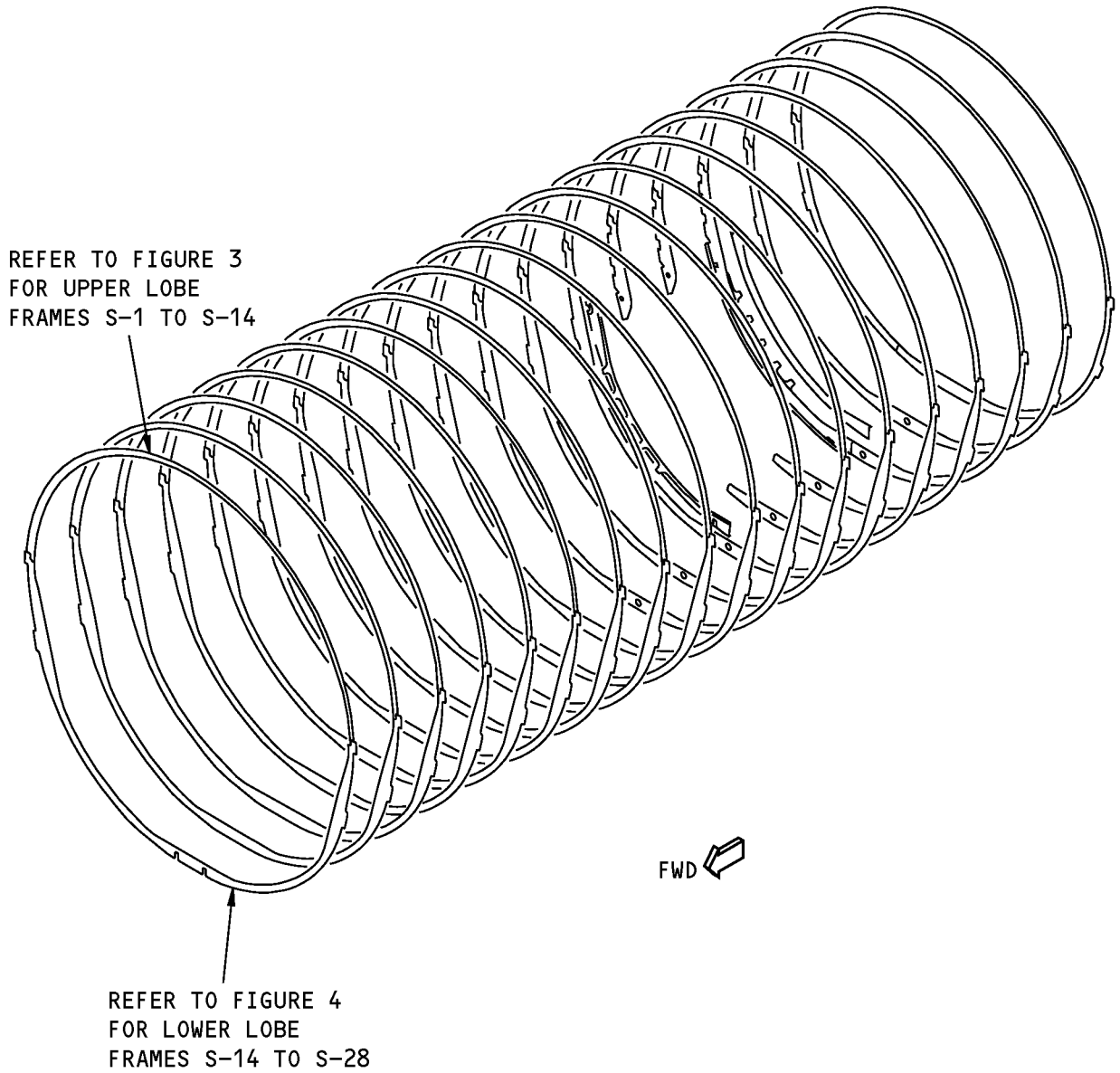
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Fuselage Frame Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4610	Functional Collector - Section 46, Upper Lobe
140A4620	Functional Collector - Section 46, Lower Lobe

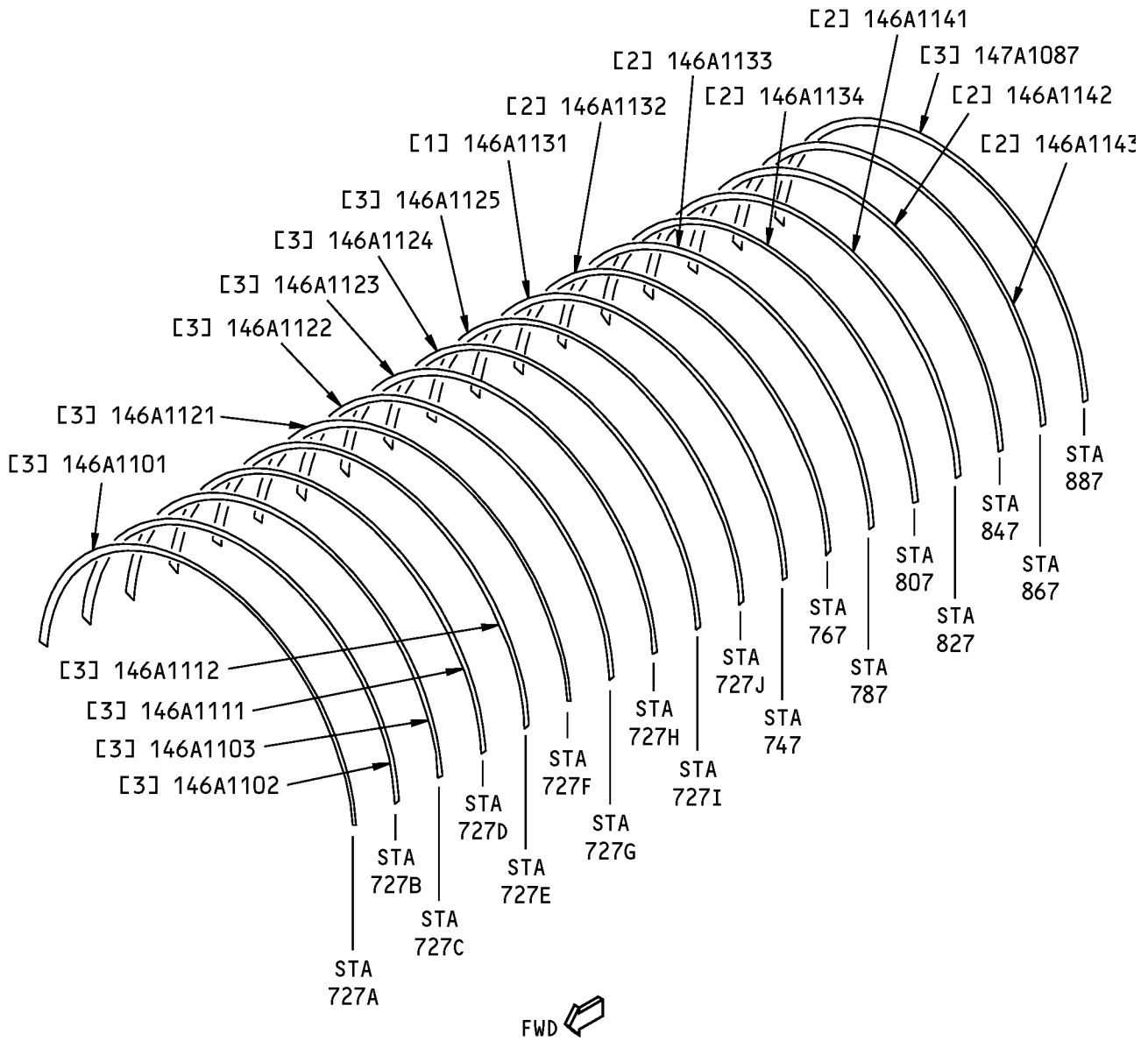
**737-800  
STRUCTURAL REPAIR MANUAL**



**Section 46 Frame Locations  
Figure 2**



**737-800  
STRUCTURAL REPAIR MANUAL**

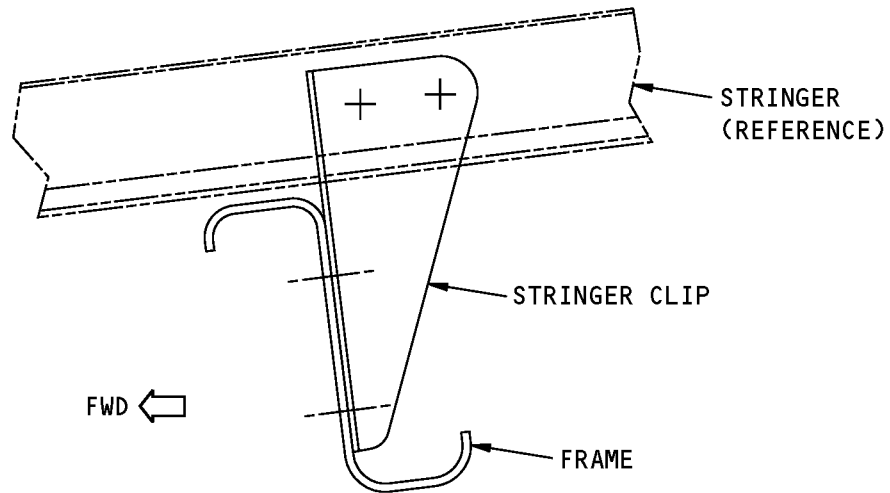


**SECTION 46 UPPER LOBE FRAME (STRINGER 1 TO 14)**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A FOR A TYPICAL SECTION VIEW OF THE FRAMES.

**Section 46 Upper Lobe Frame Identification  
Figure 3 (Sheet 1 of 2)**



**TYPICAL SECTION THROUGH A FRAME**

**A**

**Section 46 Upper Lobe Frame Identification  
Figure 3 (Sheet 2 of 2)**



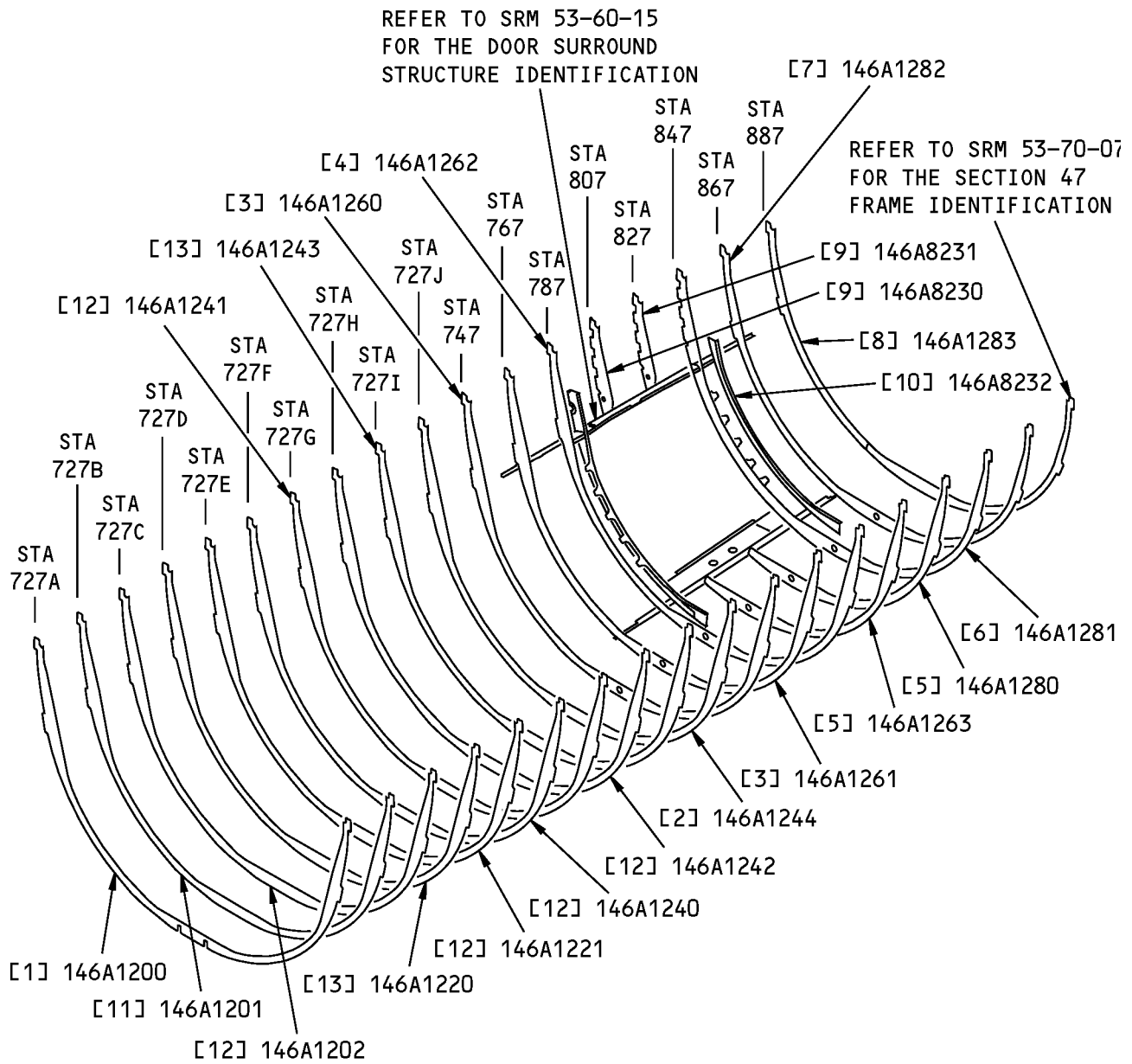
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame		BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Doubler Frame	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13 BAC1517-705 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame		BAC1517-1062 7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL**



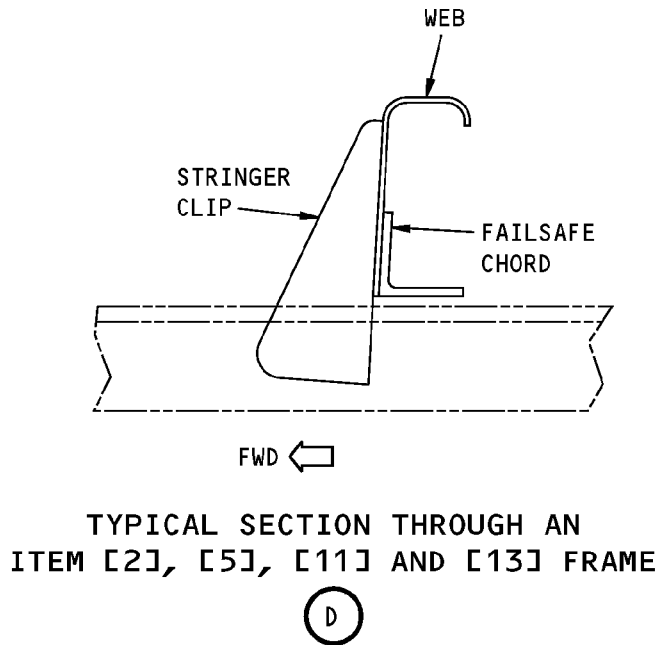
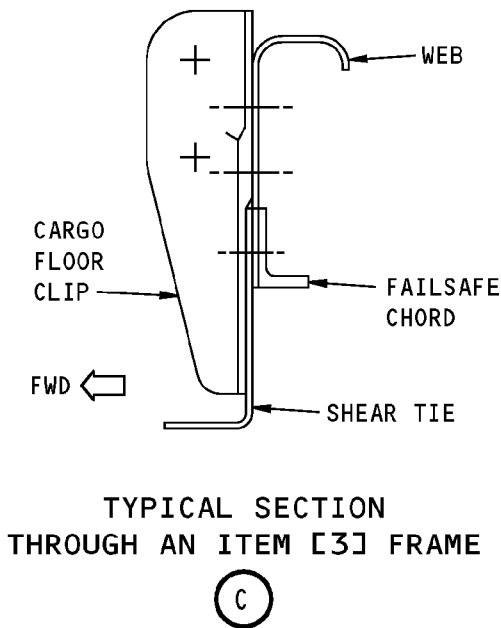
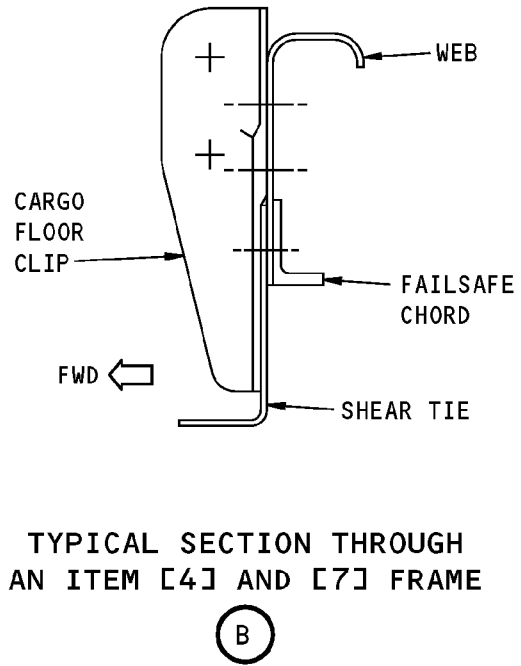
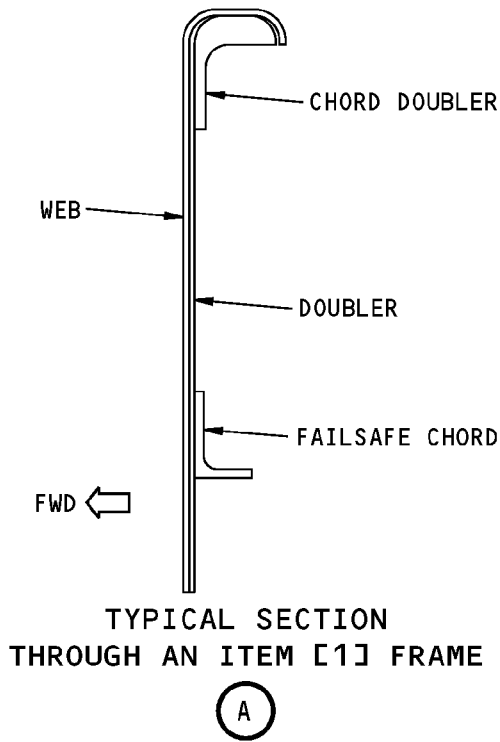
**SECTION 46 LOWER LOBE FRAME (STRINGER 14 TO 28)**

**NOTES**

- REFER TO TABLE 3 FOR THE LIST OF MATERIALS.
- REFER TO DETAIL A THRU H FOR A TYPICAL SECTION VIEW OF THE FRAMES.

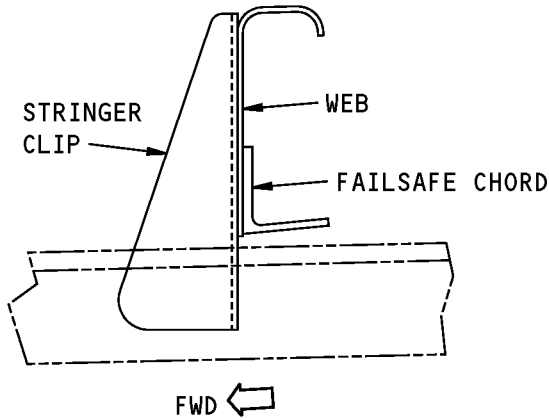
**Section 46 Lower Lobe Frame Identification  
Figure 4 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



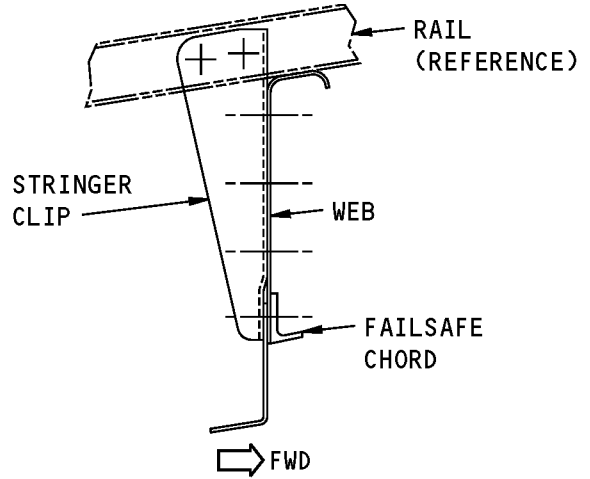
**Section 46 Lower Lobe Frame Identification  
Figure 4 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



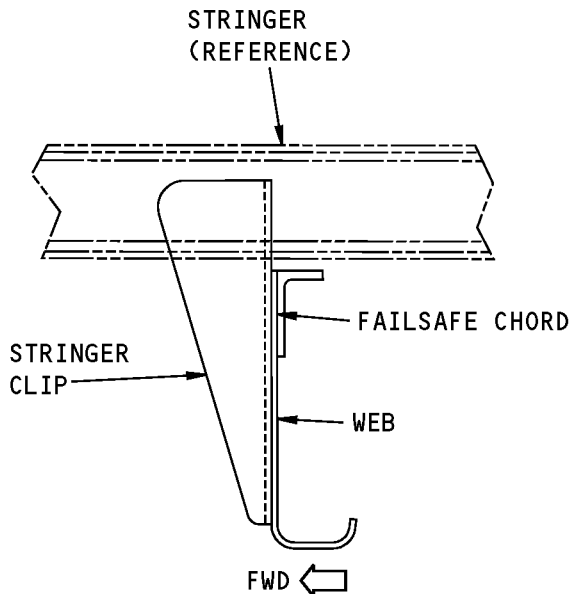
TYPICAL SECTION THROUGH AN ITEM [6] FRAME

(E)



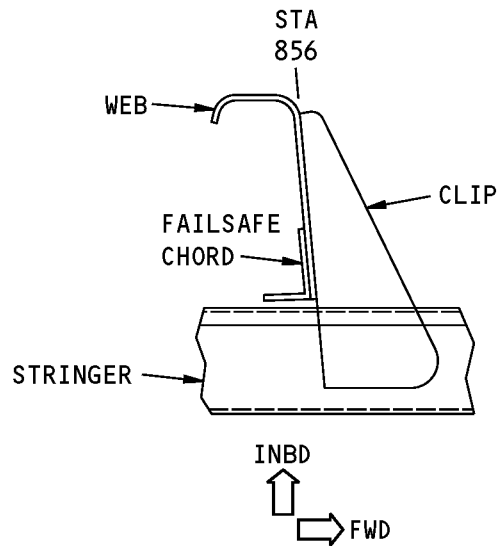
TYPICAL SECTION THROUGH AN ITEM [8] FRAME

(F)



TYPICAL SECTION THROUGH AN ITEM [9] AND [12] FRAME

(G)



TYPICAL SECTION THROUGH AN ITEM [10] FRAME

(H)

**Section 46 Lower Lobe Frame Identification  
Figure 4 (Sheet 3 of 3)**



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STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Web (2) Fail-Safe Chord (2)  Fail-Safe Chord  Stiffener  Splice Doubler (2) Doubler (2)	0.063 (1.6)      0.071 (1.8) 0.040 (1.02) 0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11  AND10134-1005 7075-T62 extrusion as given in QQ-A-200/11  BAC1511-10026 7075-T73511 extrusion as given in QQ-A-200/11  7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 7075-T6 clad sheet as given in QQ-A-250/13	
[2]	Frame Assembly Web (2) Fail-Safe Chord  Splice	0.063 (1.6)   0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11  7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Frame Assembly Web (2) Fail-Safe Chord  Splice	0.063 (1.6)   0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11  7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Frame Assembly Web (2) Fail-Safe Chord  Splice	0.063 (1.6)   0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11  7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Frame Assembly Web Fail-Safe Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly  Web Fail-Safe Chord  Frame Assembly Web  Failsafe Chord	0.063 (1.6)    0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11  7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11	FOR CUM LINES 1 THRU 238  FOR CUM LINES 1 THRU 238  FOR CUM LINES 239 AND ON  FOR CUM LINES 239 AND ON
[7]	Frame Assembly Web (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	



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LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Fail-Safe Chord Splice	0.063 (1.6)	BAC1514-3141 7075-T62 extrusion as given in QQ-A-200/11 7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly Web (2) Fail-Safe Chord Splice (2)	0.056 (1.42) 0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-3140 7075-T62 extrusion as given in QQ-A-200/11 7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Frame Assembly Web Failsafe Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11 or 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Frame Assembly Web Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-1261 7075-T62 extrusion as given in QQ-A-200/11	
[11]	Frame Assembly Web (2) Fail-Safe Chord Splice Stiffener	0.063 (1.6) 0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11 7075-T62 clad sheet as given in QQ-A-250/13 BAC1511-10026 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Frame Assembly Web (2) Fail-Safe Chord Splice	0.063 (1.6) 0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-101071 7075-T62 extrusion as given in QQ-A-200/11 7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Frame Assembly Web (2) Fail-Safe Chord Splice Channel Channel	0.063 (1.6) 0.071 (1.8)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-101071 7075-T62 extrusion as given in QQ-A-200/11 7075-T62 clad sheet as given in QQ-A-250/13 BAC1493-938 2024-T42 clad sheet as given in QQ-A-250/5 BAC1493-927 2024-T42 clad sheet as given in QQ-A-250/5	

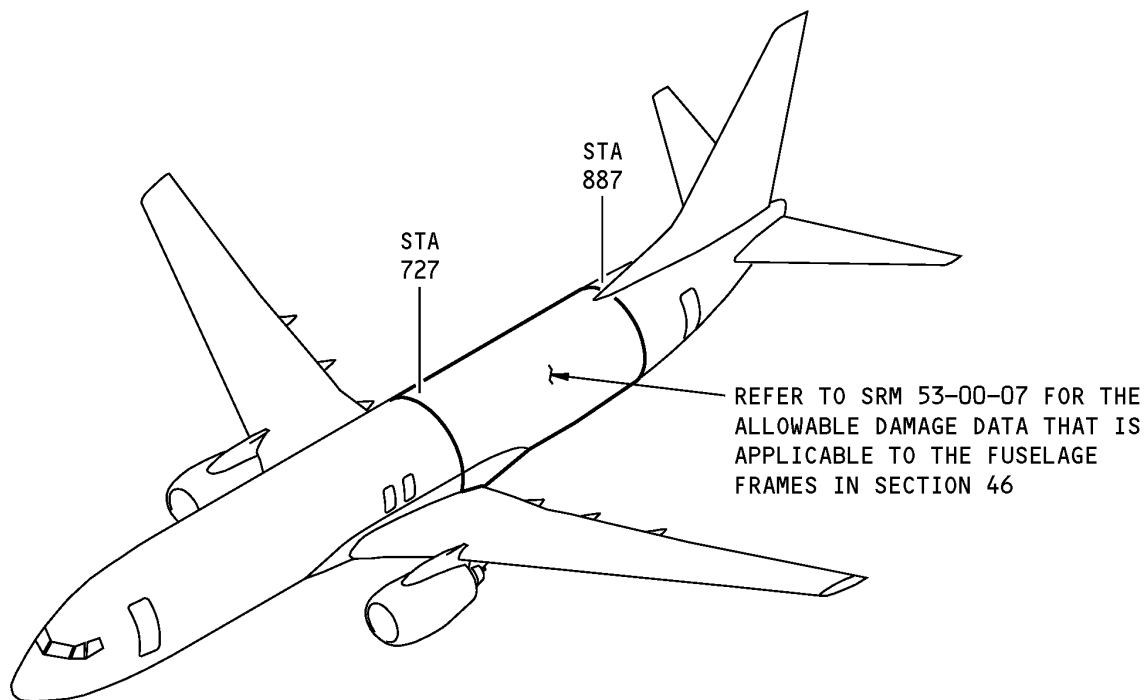
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).





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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 46 FUSELAGE FRAMES**

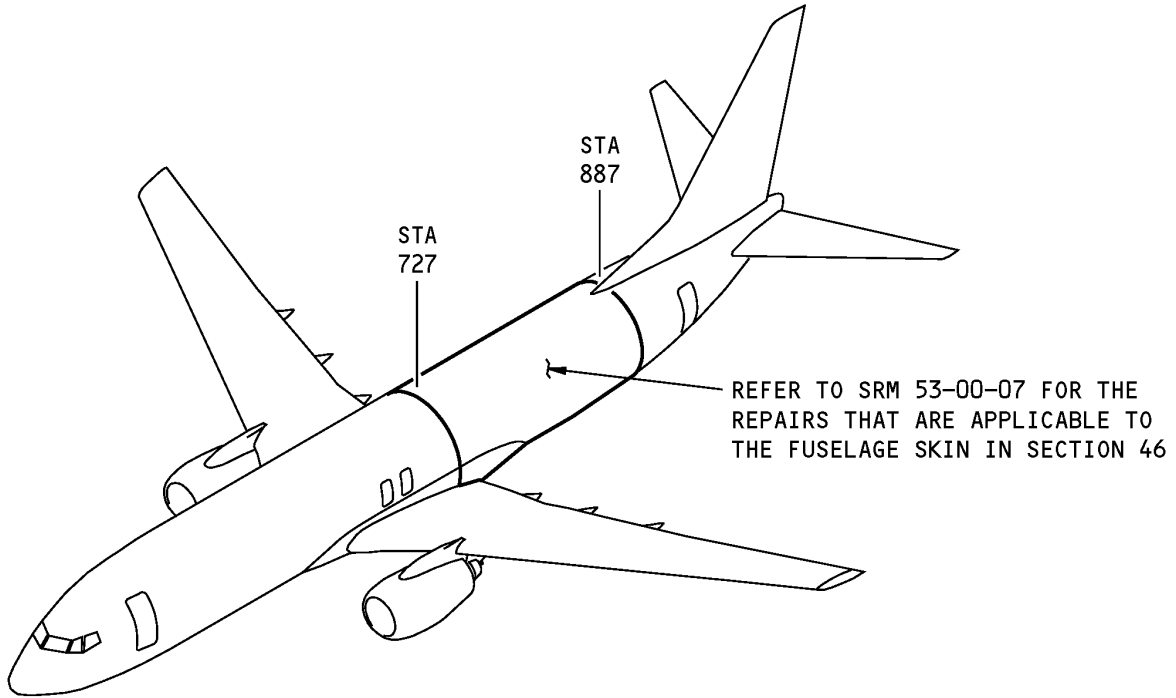


**Section 46 Fuselage Frame Location**  
**Figure 101**



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**STRUCTURAL REPAIR MANUAL**

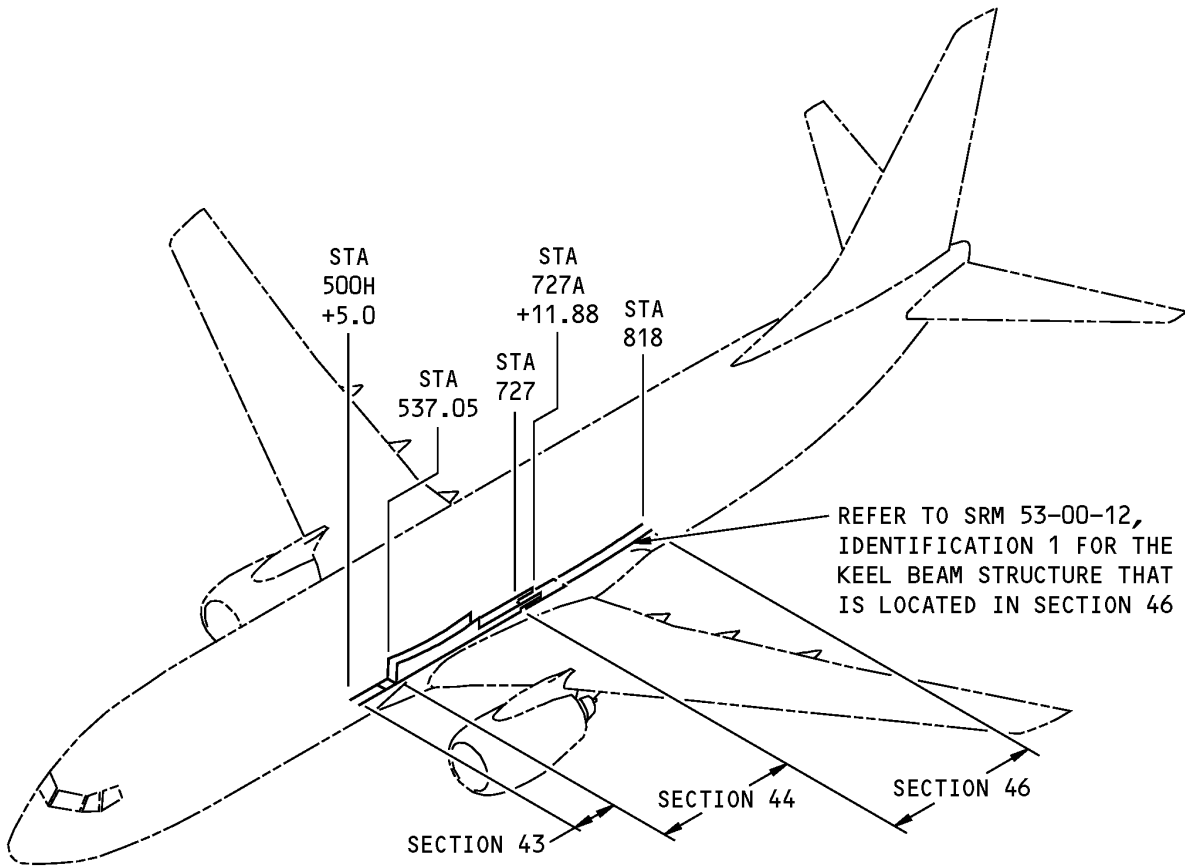
**REPAIR GENERAL - SECTION 46 FUSELAGE FRAMES**



**Section 46 Fuselage Frame Location**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

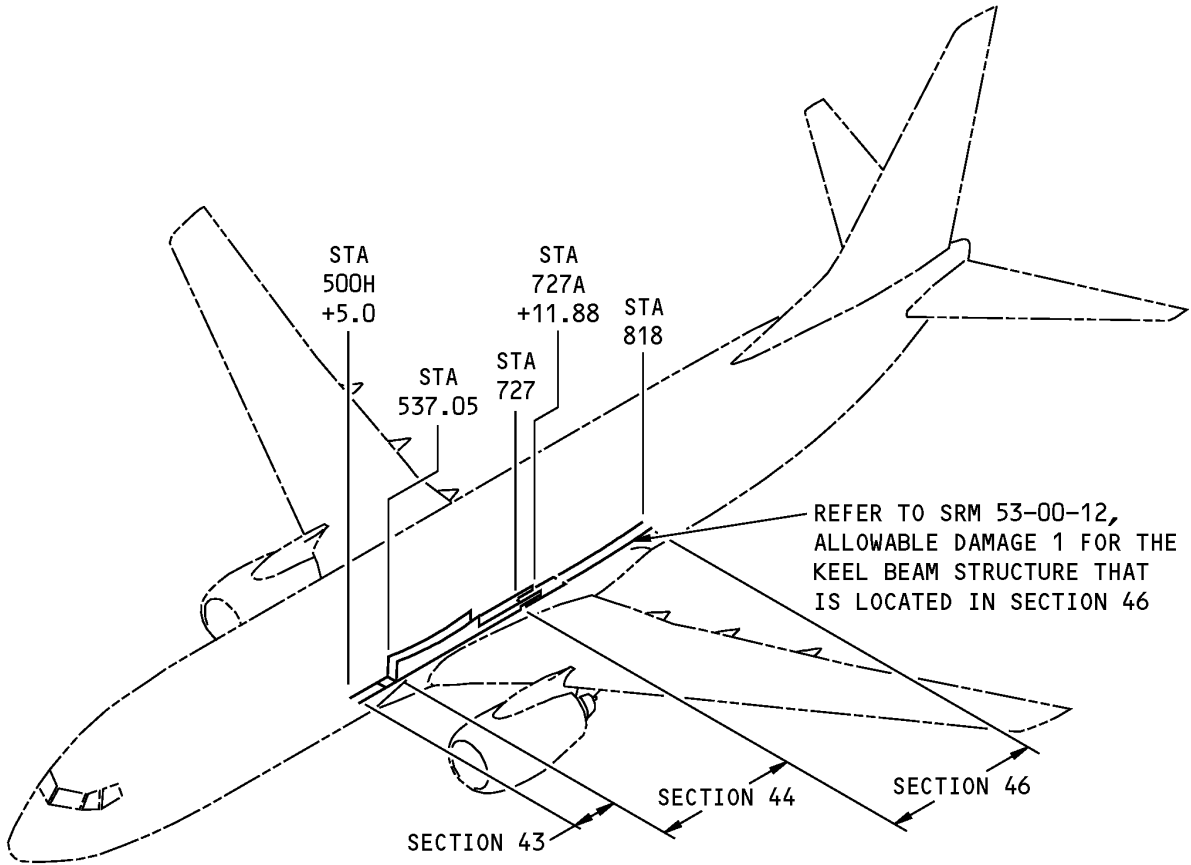
**IDENTIFICATION GENERAL - SECTION 46 KEEL BEAM STRUCTURE**



**Section 46 Keel Beam Structure Identification  
Figure 1**

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STRUCTURAL REPAIR MANUAL**

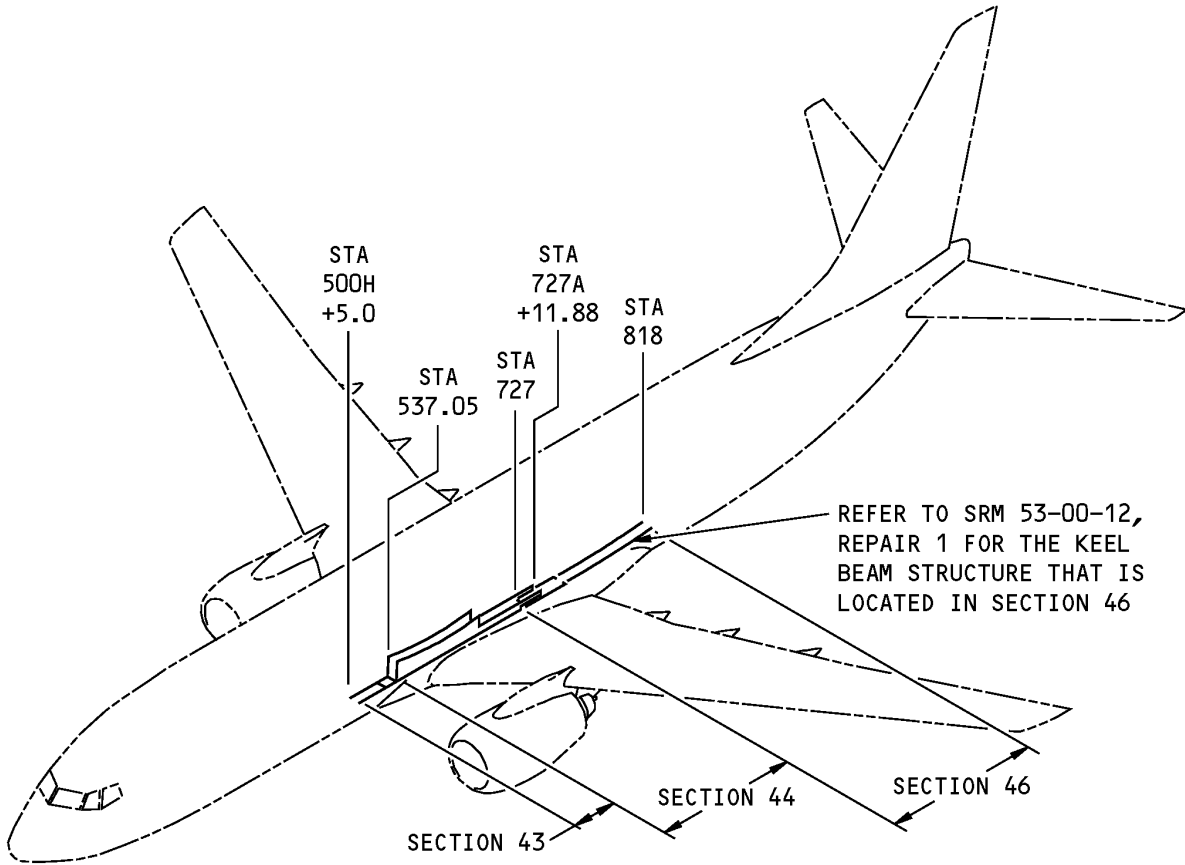
**ALLOWABLE DAMAGE GENERAL - SECTION 46 KEEL BEAM STRUCTURE**



**Section 46 Keel Beam Structure Allowable Damage  
Figure 101**

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STRUCTURAL REPAIR MANUAL**

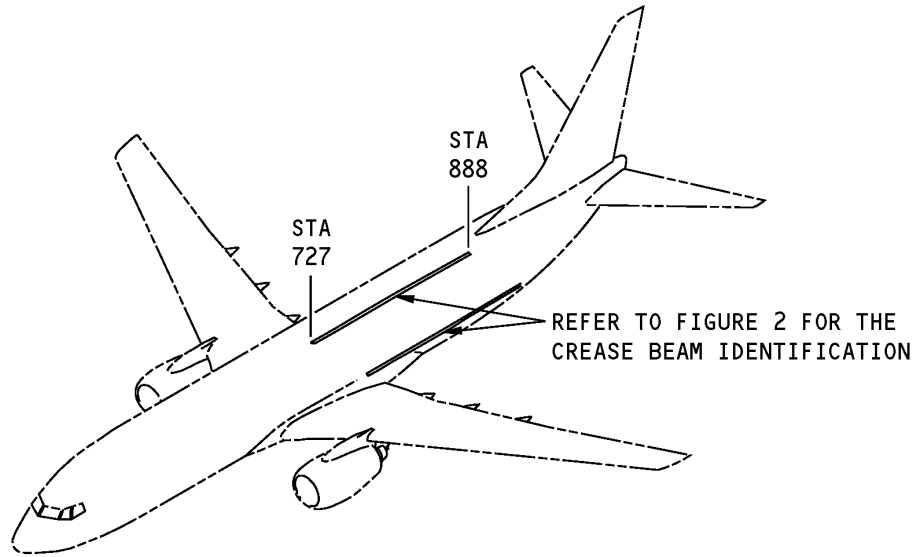
**REPAIR GENERAL - SECTION 46 KEEL BEAM STRUCTURE**



**Section 46 Keel Beam Structure Repair  
Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 CREASE BEAM STRUCTURE**

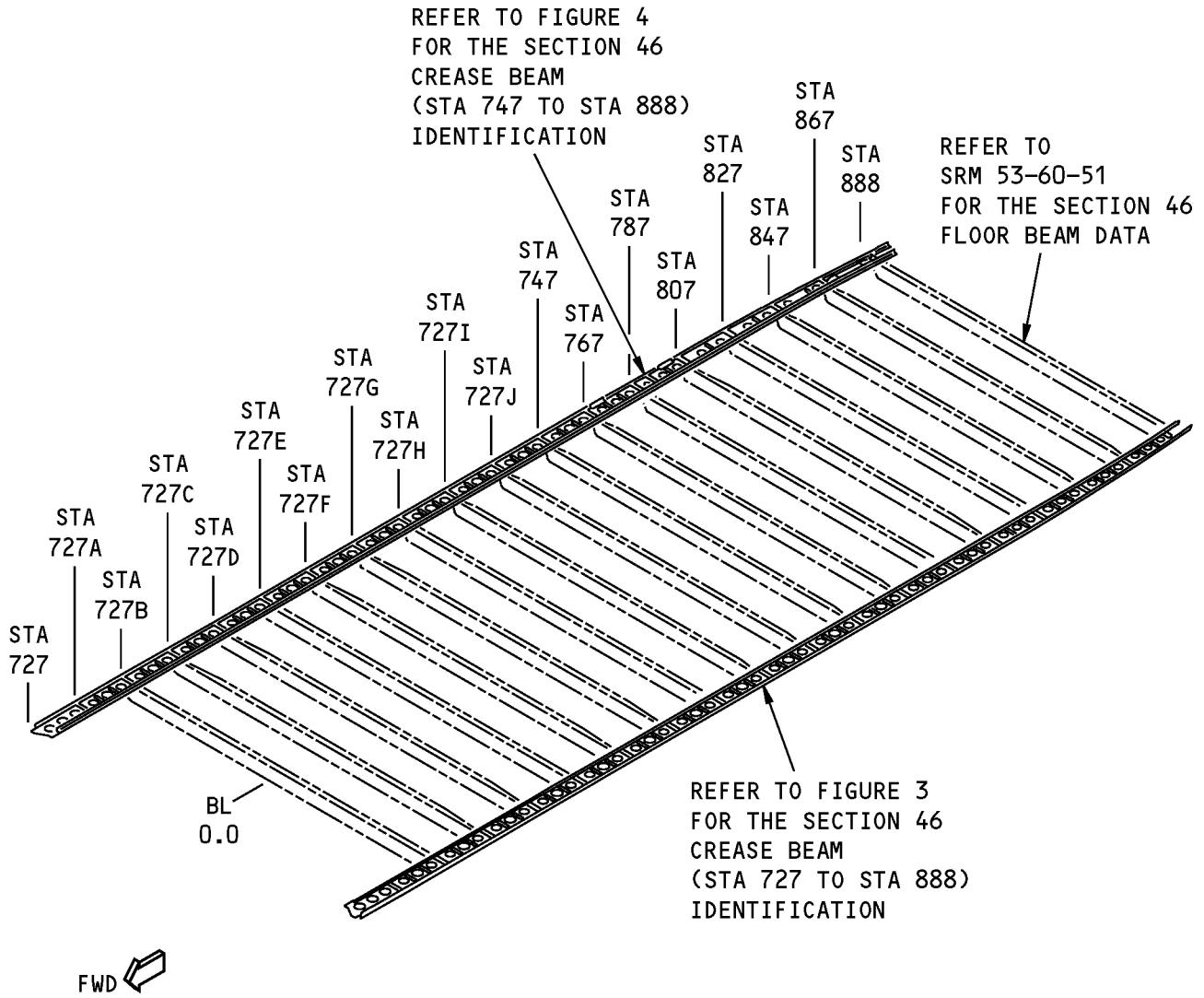


**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Crease Beam Location  
Figure 1**

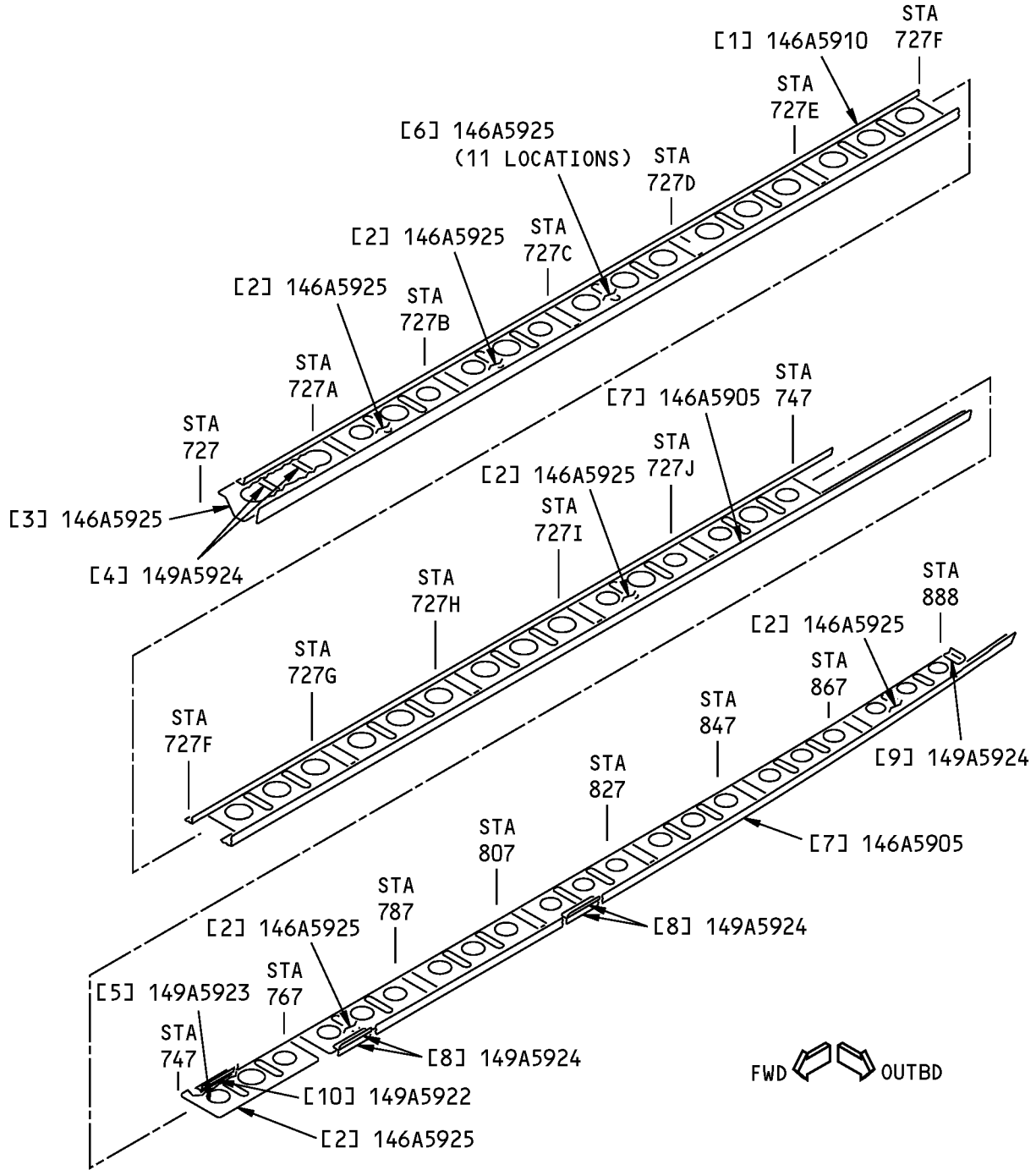
**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A0351	Floor to Body Integration Collector, Section 46
140A4620	Functional Collector Section 46 Lower Lobe
146A3200	Skin Installation - S-14L TO S-23L, Station 727 - Station 888
146A3250	Skin Installation - S-14R TO S-23R, Station 727 - Station 888
146A5900	Crease Beam Installation, Section 46



**Section 46 Crease Beam Locations  
Figure 2**

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STRUCTURAL REPAIR MANUAL**



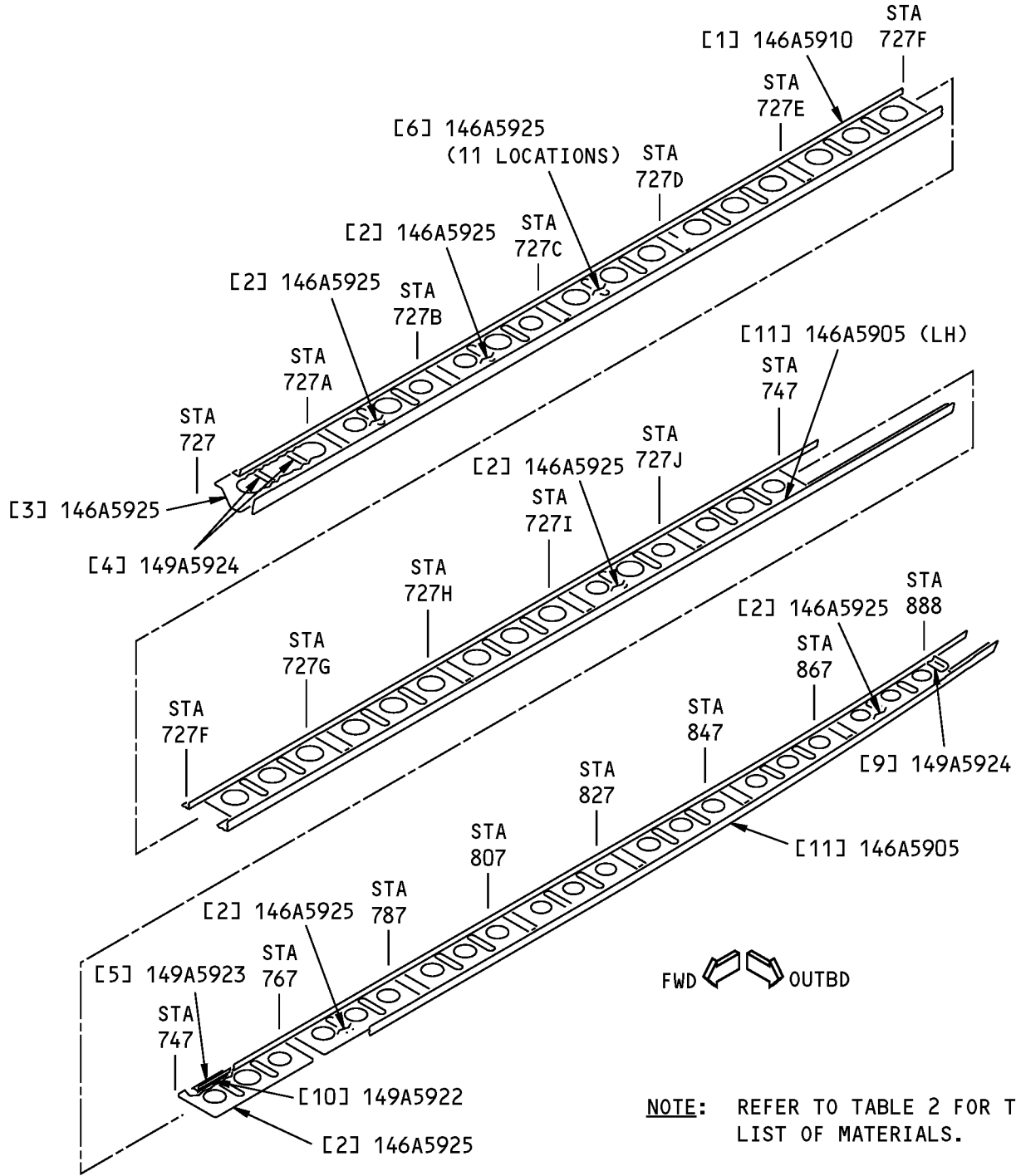
**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

LEFT SIDE IS SHOWN, (STA 727 TO STA 888)  
RIGHT SIDE IS OPPOSITE (STA 727 TO STA 747)  
FOR AIRPLANE LINE NUMBERS 1 THRU 1995

**Section 46 Crease Beam (STA 727 to STA 888) Identification  
Figure 3 (Sheet 1 of 2)**



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STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, (STA 727 TO STA 888)  
RIGHT SIDE IS OPPOSITE (STA 727 TO STA 747)  
FOR AIRPLANE LINE NUMBERS 1996 AND ON

**Section 46 Crease Beam (STA 727 to STA 888) Identification  
Figure 3 (Sheet 2 of 2)**



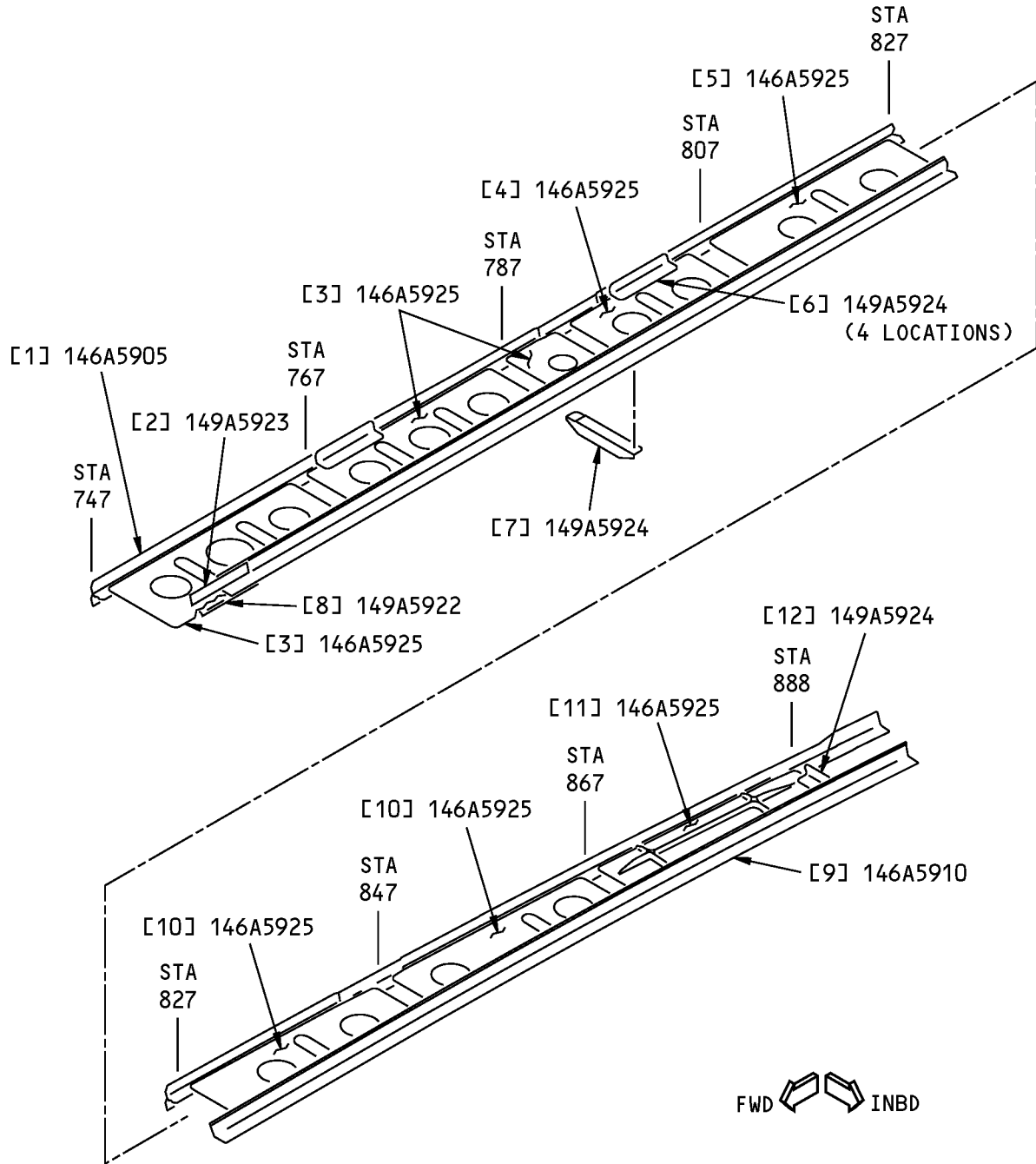
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Inner Chord		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Shear Web (2)	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Shear Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Angle		BAC1503-100360 7075-T73511 as given in QQ-A-200/11	
[5]	Splice Channel		BAC1493-196 7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Shear Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Outer Chord (3 locations)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[8]	Splice Angle (4 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
[9]	Attach Angle		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Splice Strap		BAC1511-3735 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Outer Chord (LH)		BAC1506-2260 or BAC1506-4632 7075-T73511 extrusion as given in QQ-A-200/11	Cum Line 1196 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

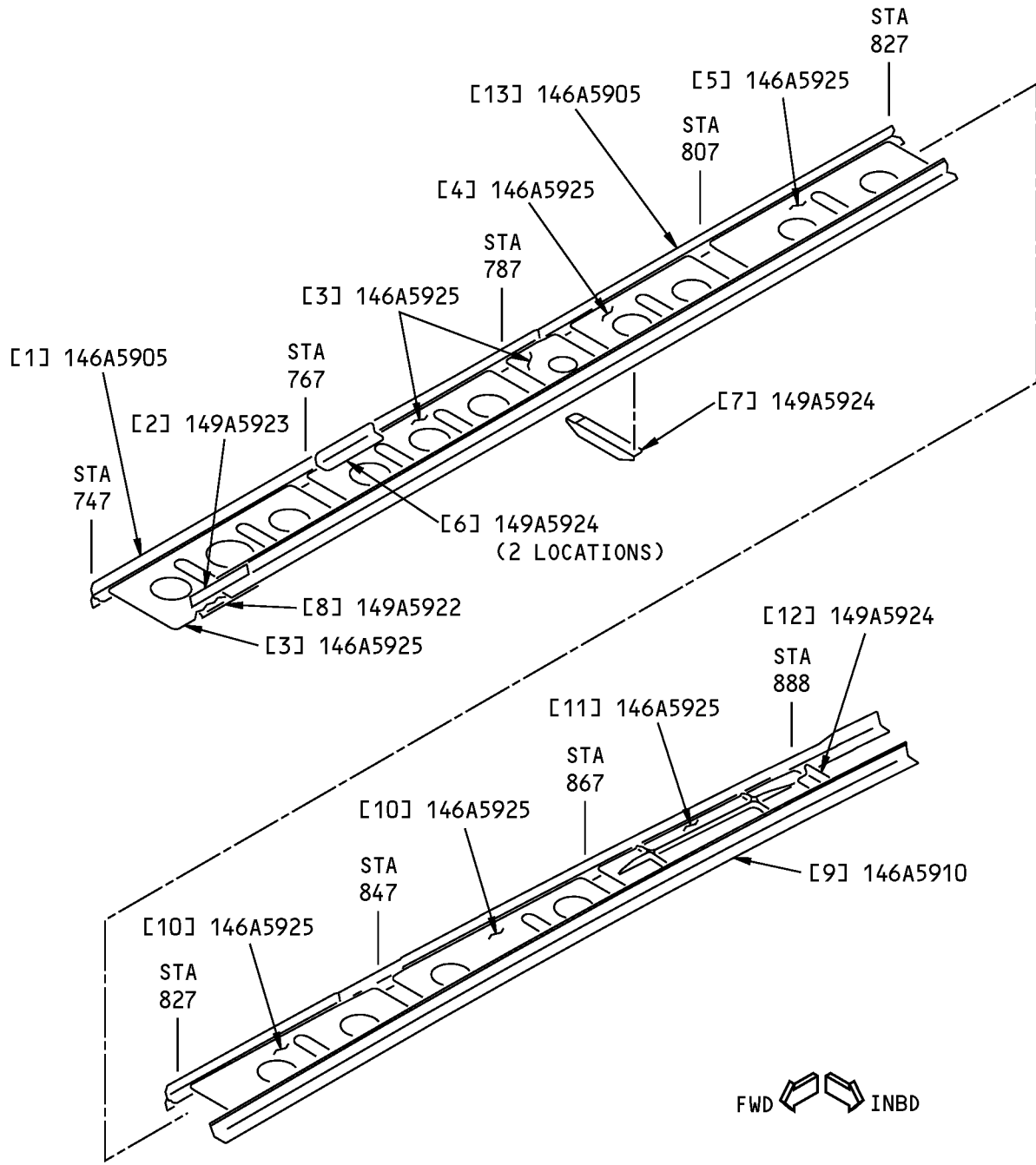


**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN (STA 747 TO STA 888)  
FOR AIRPLANE LINE NUMBERS 1 THRU 1195**

**Section 46 Crease Beam (STA 747 to STA 888) Identification  
Figure 4 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**RIGHT SIDE IS SHOWN (STA 747 TO STA 888)  
FOR AIRPLANE LINE NUMBERS 1196 AND ON**

**Section 46 Crease Beam (STA 747 to STA 888) Identification  
Figure 4 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL**

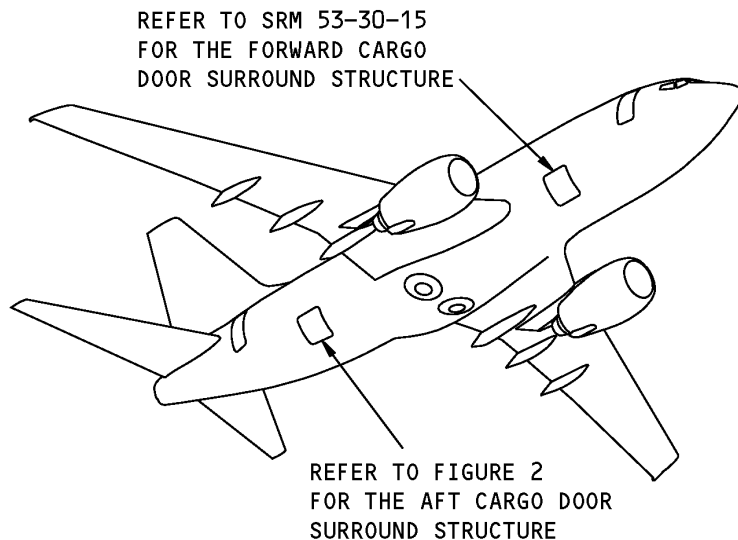
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Outer Chord (3 locations)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	Cum Line 001 thru 1195
[2]	Splice Channel		BAC1493-196 7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Shear Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Shear Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Shear Web Assembly			
	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
	Doubler	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Splice Angle (4 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 001 thru 1195
	Splice Angle (2 locations)	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	Cum Line 1196 and on
[7]	Attach Angle		BAC1503-101045 7075-T3511 extrusion as given in QQ-A-200/11	
[8]	Splice Strap (3)		BAC1511-3735 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Inner Chord		BAC1515-531 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Shear Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Shear Web		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[12]	Attach Angle (2)		AND10133-1201 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Outer Chord		BAC1506-2260 or BAC1506-4632 7075-T73511 extrusion as given in QQ-A-200/11	Cum Line 1196 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 1 - SECTION 46 AFT CARGO DOOR SURROUND STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Aft Cargo Door Surround Structure  
Figure 1**

**Table 1:**

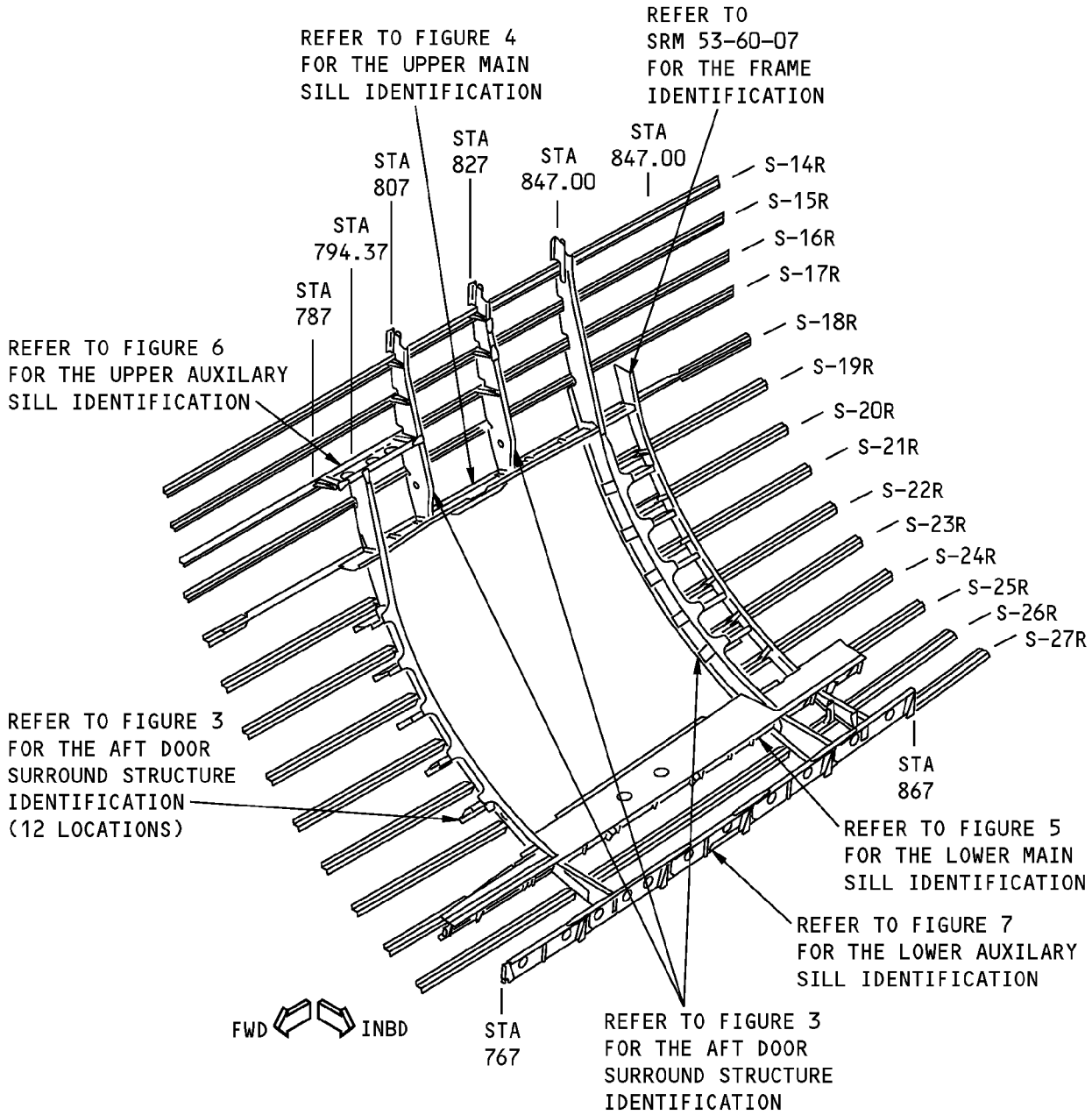
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4620	Functional Collector Section 46 Lower Lobe
140A4630	Functional Collector - Aft Cargo Door Surround
140A4631	Integration Collector - Aft Cargo Door Surround, Section 46
146A0080	Sill Integration - Upper Main, Aft Cargo Door Surround
146A0081	Sill Integration - Lower Main, Aft Cargo Door Surround
146A0082	Frame Integration - Forward Edge Frame, Station 794.37, Aft Cargo Door Surround
146A0083	Frame Integration - Aft Edge Frame, Station 847.00, Aft Cargo Door Surround
146A8100	Sill Installation - Upper Auxiliary, Aft Cargo Door Surround
146A8110	Sill Installation - Upper Main, Aft Cargo Door Surround
146A8120	Sill Installation - Lower Main, Aft Cargo Door Surround
146A8130	Sill Installation - Lower Auxiliary, Aft Cargo Door Surround
146A8200	Frame Assembly/Installation - Station 794.37, Aft Cargo Door Surround
146A8201	Frame Assembly/Installation - Station 847, Aft Cargo Door Door Surround
146A8230	Frame Installation/Assembly - Station 807, Aft Cargo Door Surround



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
146A8231	Frame Assembly/Installation - Station 827, Aft Cargo Door Surround
146A8232	Frame Assembly/Installation - Station 855.95 Aft Cargo Door Surround
146A8320	Intercostal Installation - Forward, Aft Cargo Door Surround
146A8321	Intercostal Installation - Aft, Aft Cargo Door Surround
146A8340	Scuff Plate Installation - Lower Main Sill, Aft Cargo Door Surround

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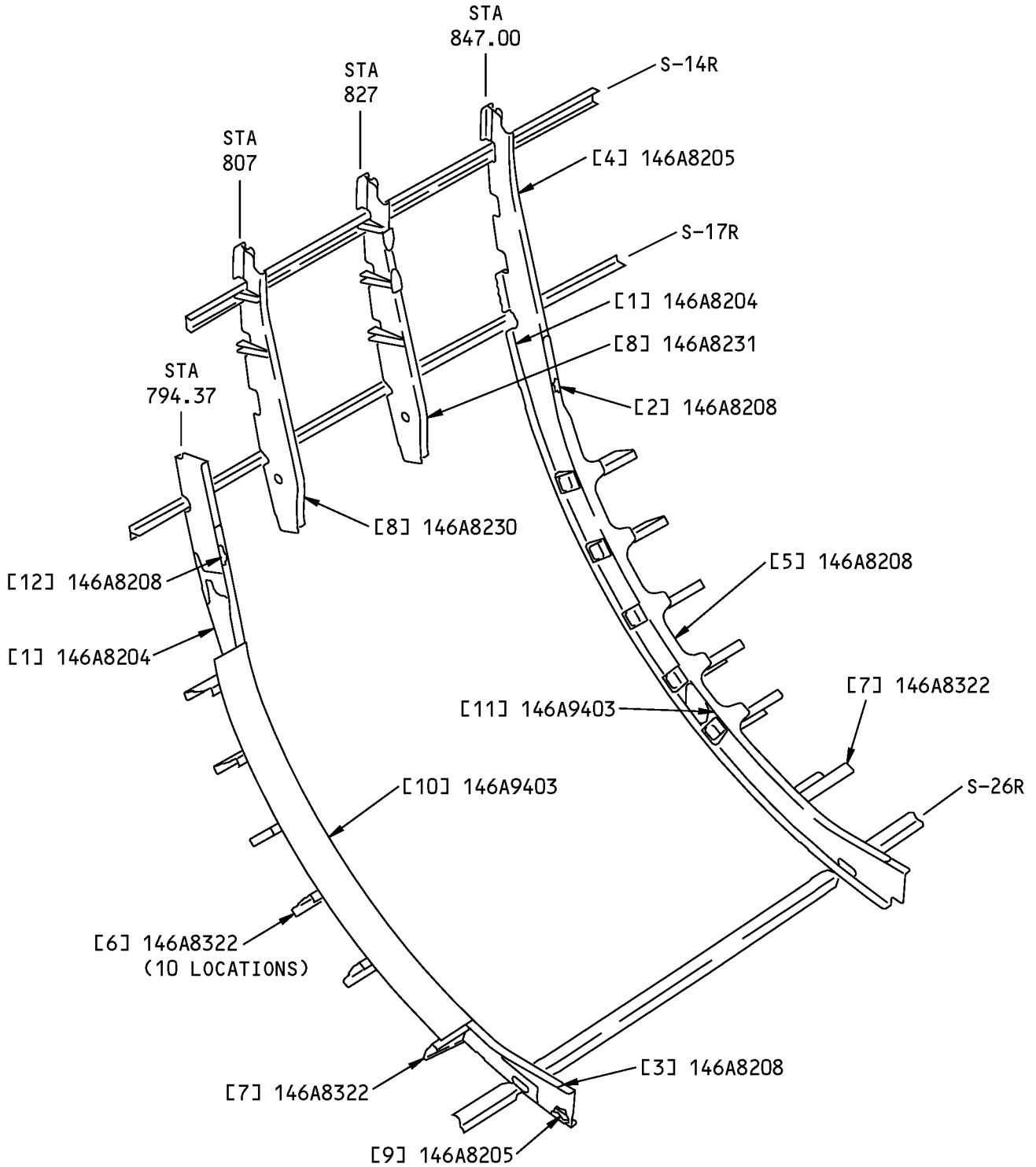


**NOTE:** REFER TO THE BOEING PRODUCTION DRAWING FOR THE SHEAR TIE IDENTIFICATION.

**Section 46 Aft Cargo Door Surround Structure Locations  
Figure 2**



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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Aft Cargo Door Surround Structure Identification  
Figure 3**



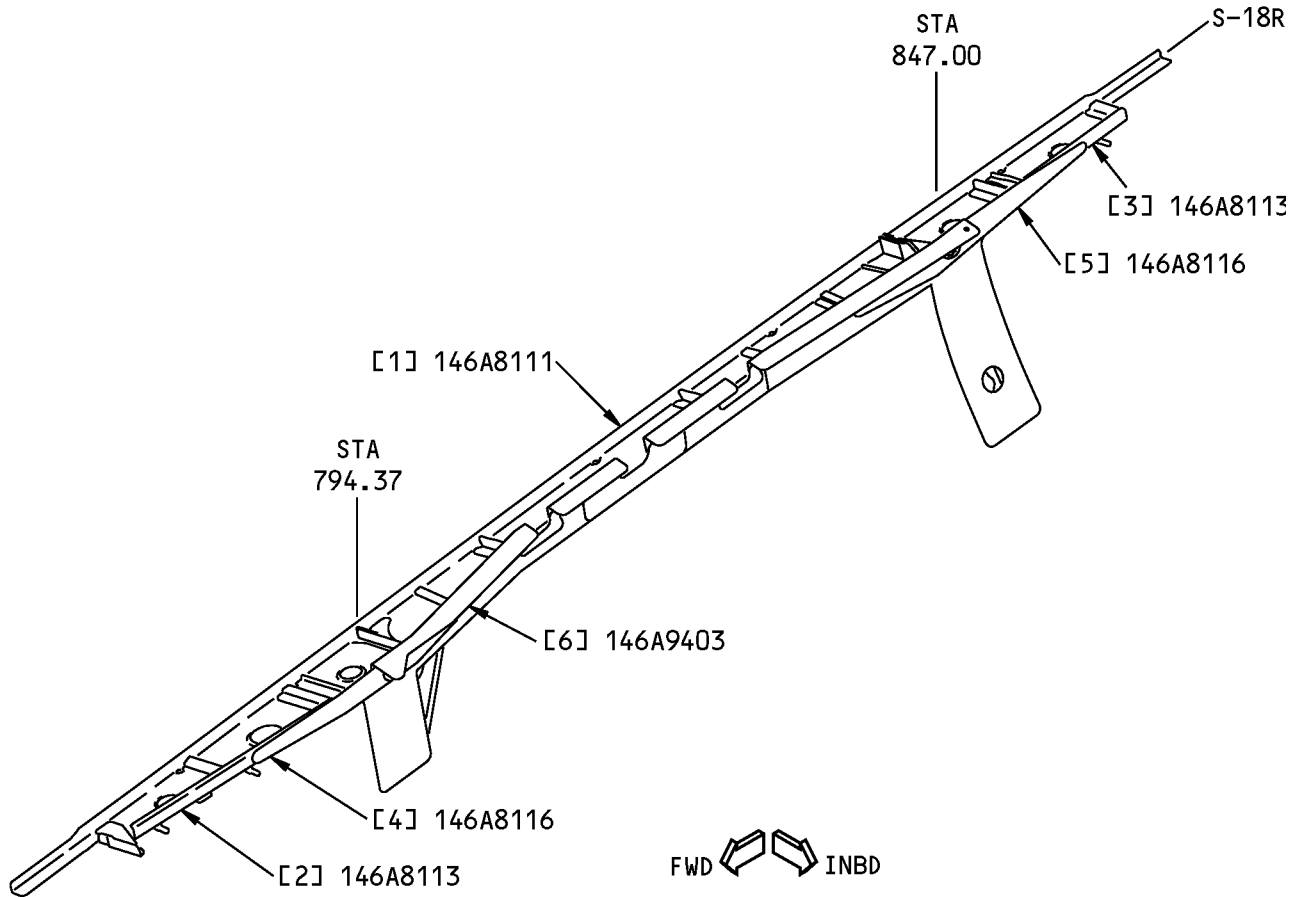
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame		7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part)	
[2]	Failsafe Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[3]	Failsafe Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[4]	Failsafe Chord		BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Failsafe Strap	0.190 (4.83)	7075-T73 sheet as given in QQ-A-250/12	
[6]	Web - Intercostal (10)	0.056 (1.42)	7075-T62 clad sheet as given in BMS 7-302, Type II	
[7]	Web - Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Frame Assembly (2) Web Fail Safe Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100985 7075-T62 extrusion as given in QQ-A-200/11	
[9]	Chord - Failsafe		BAC1514-3142 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Forward Reveal	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[11]	Aft Reveal	0.050 (1.27)	6013-T6 sheet as given in AMS 4347	
[12]	Failsafe Strap		BAC1512-3462 2024-T3511extrusion as given in QQ-A-200/3	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 46 Upper Main Sill Structure Identification  
Figure 4**



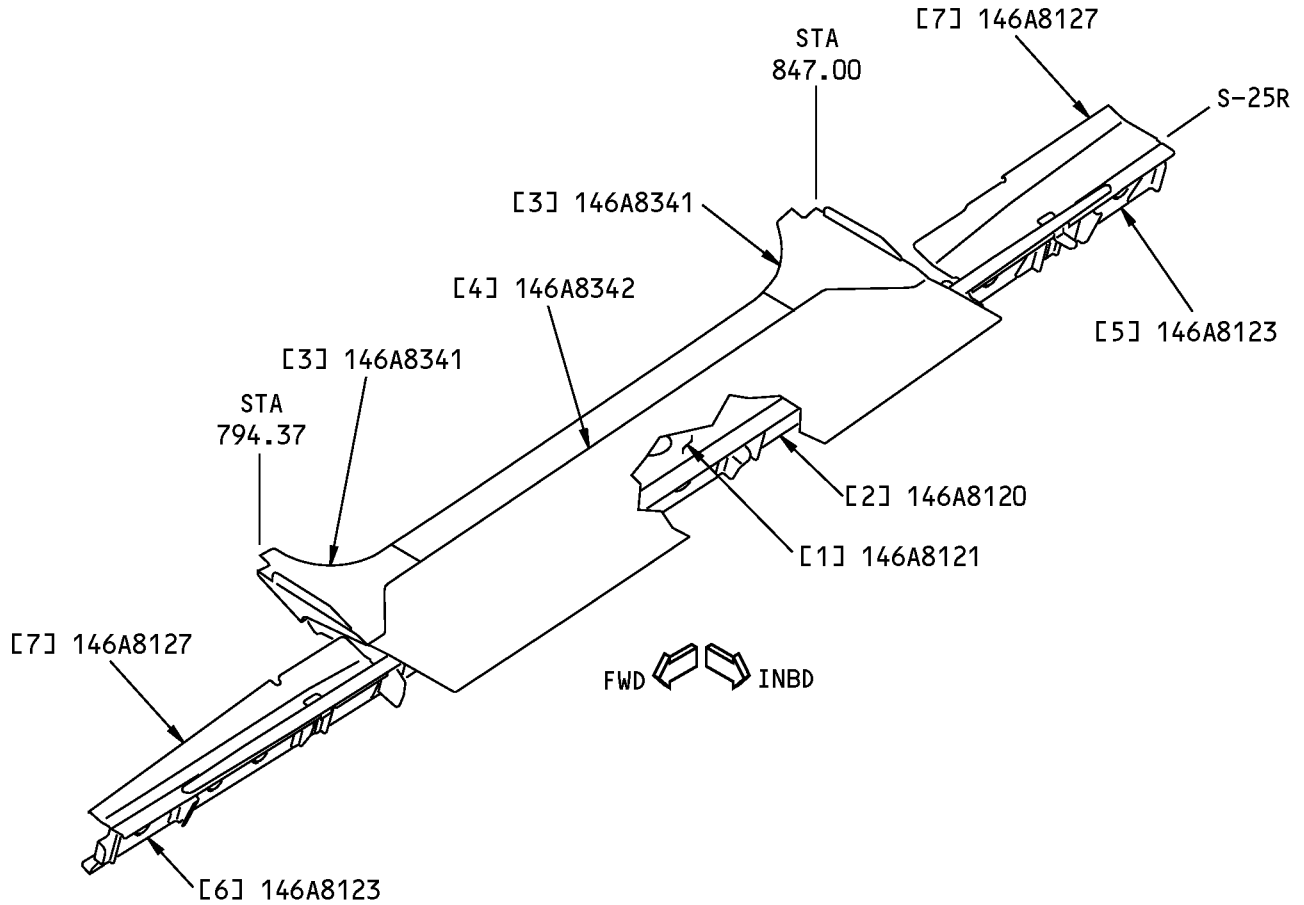
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**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web Assembly STA 794.37 to STA 847			
	Web	0.045 (1.14)	7075-T6 clad sheet as given in QQ-A-250/13	
	Outer Chord		BAC1505-101670 7075-T62 extrusion as given in QQ-A-200/11	
	Inner Chord		BAC1496-441 7075-T62 clad sheet as given in QQ-A-250/13	
	Splice Angle		BAC1504-8253 7075-T73511 extrusion as given in QQ-A-200/11	
[2]	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.180 (4.57)	7075-T6 sheet as given in QQ-A-250/12	
[5]	Strap	0.160 (4.06)	2024-T3 sheet as given in QQ-A-250/4	
[6]	Upper Reveal	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 46 Lower Main Sill Structure Identification  
Figure 5**



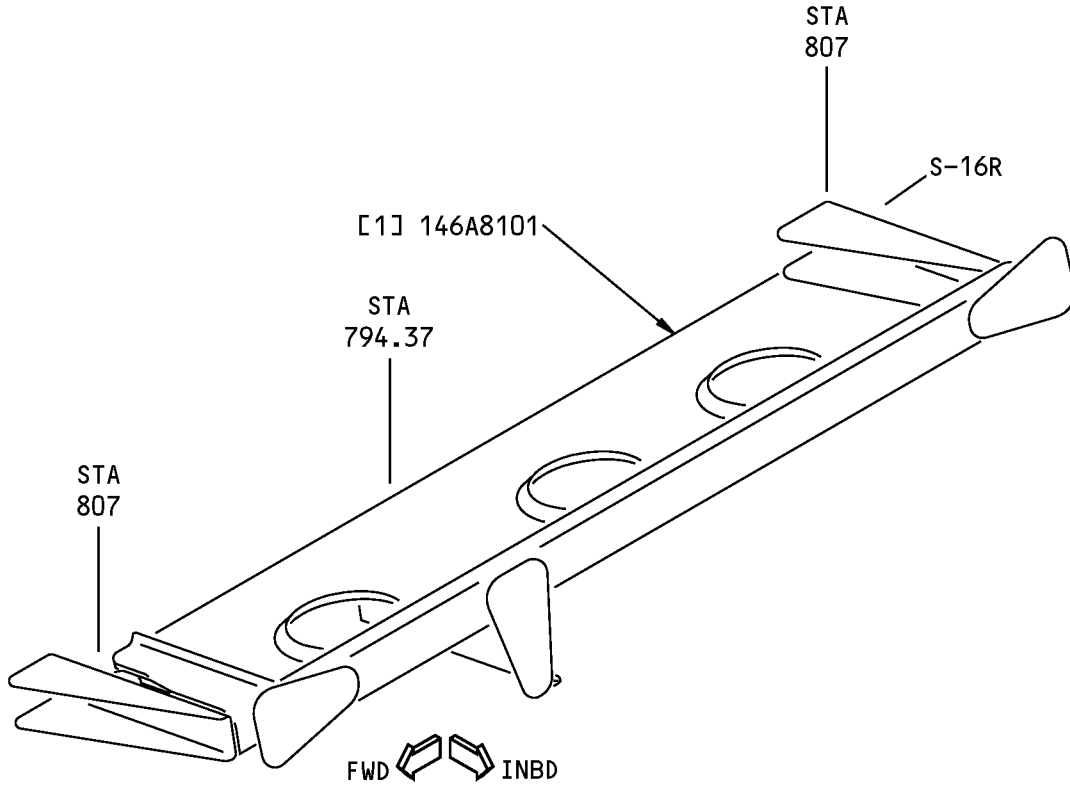
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web Assembly Web Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1503-100933 7075-T73 extrusion as given in QQ-A-200/11	
[2]	Lower Main Sill Web (2) Chord Rib (5) Strap Strap Strap	0.045 (1.14)    0.100 (2.54) 0.215 (5.46) 0.160 (4.06)	7075-T62 clad sheet as given in QQ-A-250/13 7050-T7451 plate as given in AMS 4050. (Grain Direction controlled part) BAC1503-101077 chem-milled as given in BAC 5772, Type II 7075-T62 clad sheet as given in QQ-A-250/13 2024-T3 sheet as given in QQ-A-250/4 2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Scuff Plate Assembly (2) Scuff Plate Scuff Plate	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11 A356-T61 aluminum investment casting as given in AMS 4218	
[4]	Scuff Plate Assembly (2) Scuff Plate Scuff Plate Scuff Plate	0.063 (1.6) 0.040 (1.02)	6061-T6 sheet as given in QQ-A-250/11 Titanium sheet as given in SAE-AMS-T-9046A, Code CP-1, Condition A A356-T61 aluminum investment casting as given in AMS 4218	
[5]	Web	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Shield (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**Section 46 Upper Auxiliary Sill Structure Identification  
Figure 6**



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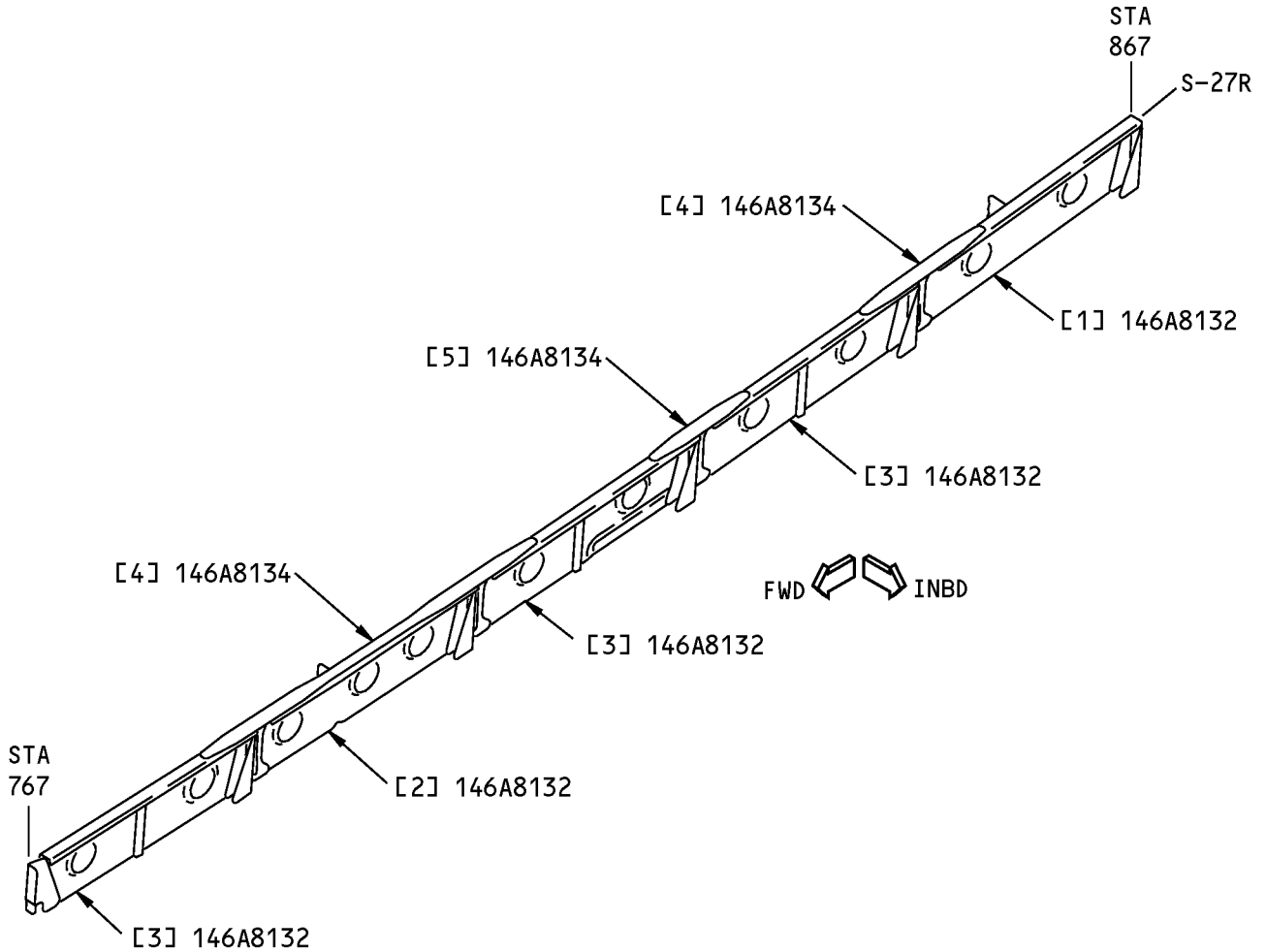
**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**Section 46 Lower Auxiliary Sill Structure Identification  
Figure 7**



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**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Web	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[3]	Web	0.036 (0.91)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Strap	0.070 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	

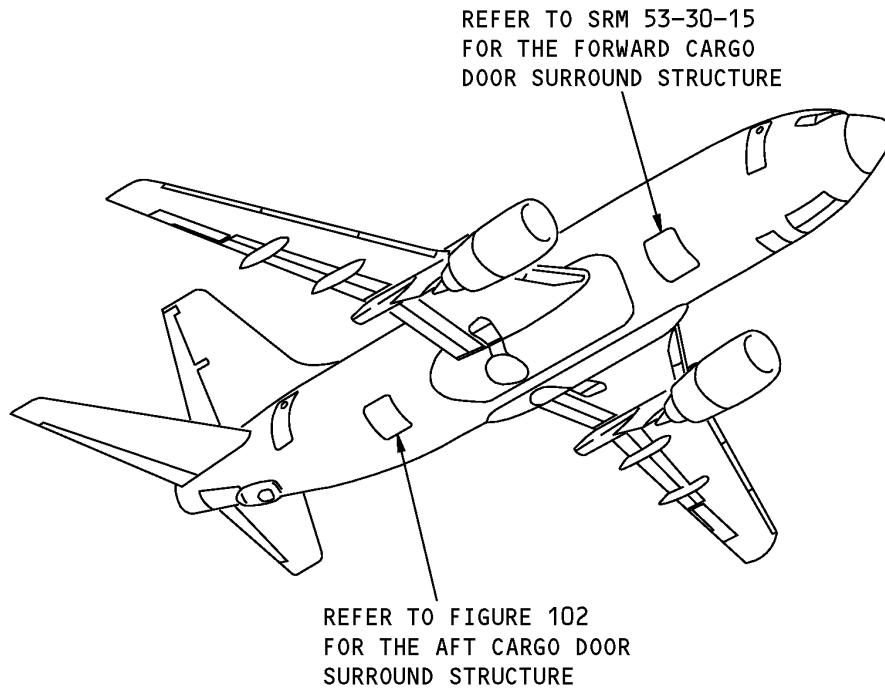
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE 1 - AFT CARGO DOOR SURROUND STRUCTURE**

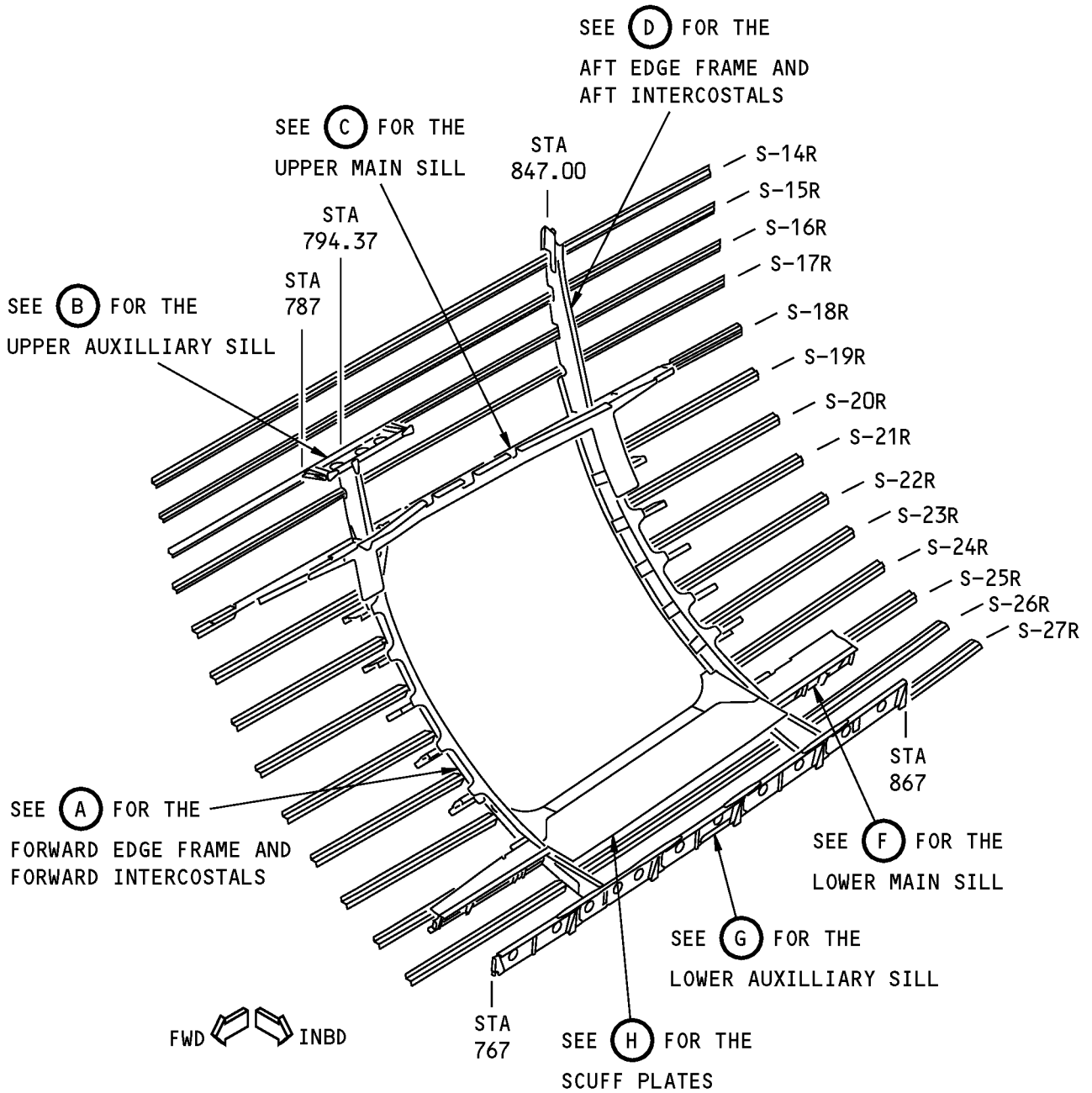
**1. Applicability**

- A. This subject gives the allowable damage limits for the door surround structure as shown in Section 46 Aft Cargo Door Surround Structure, Figure 101/ALLOWABLE DAMAGE 1.



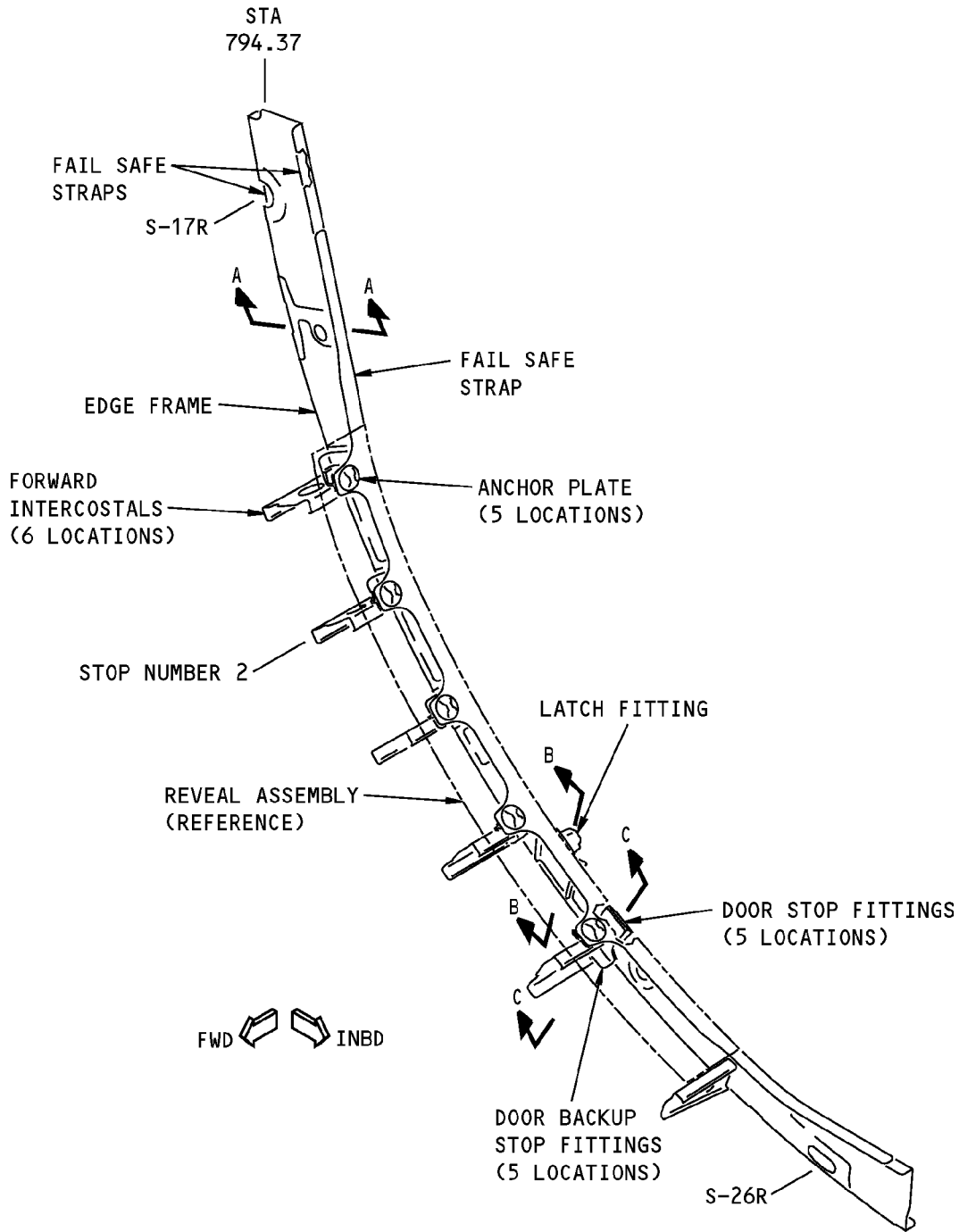
**Section 46 Aft Cargo Door Surround Structure**  
**Figure 101**

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**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 1 of 11)**

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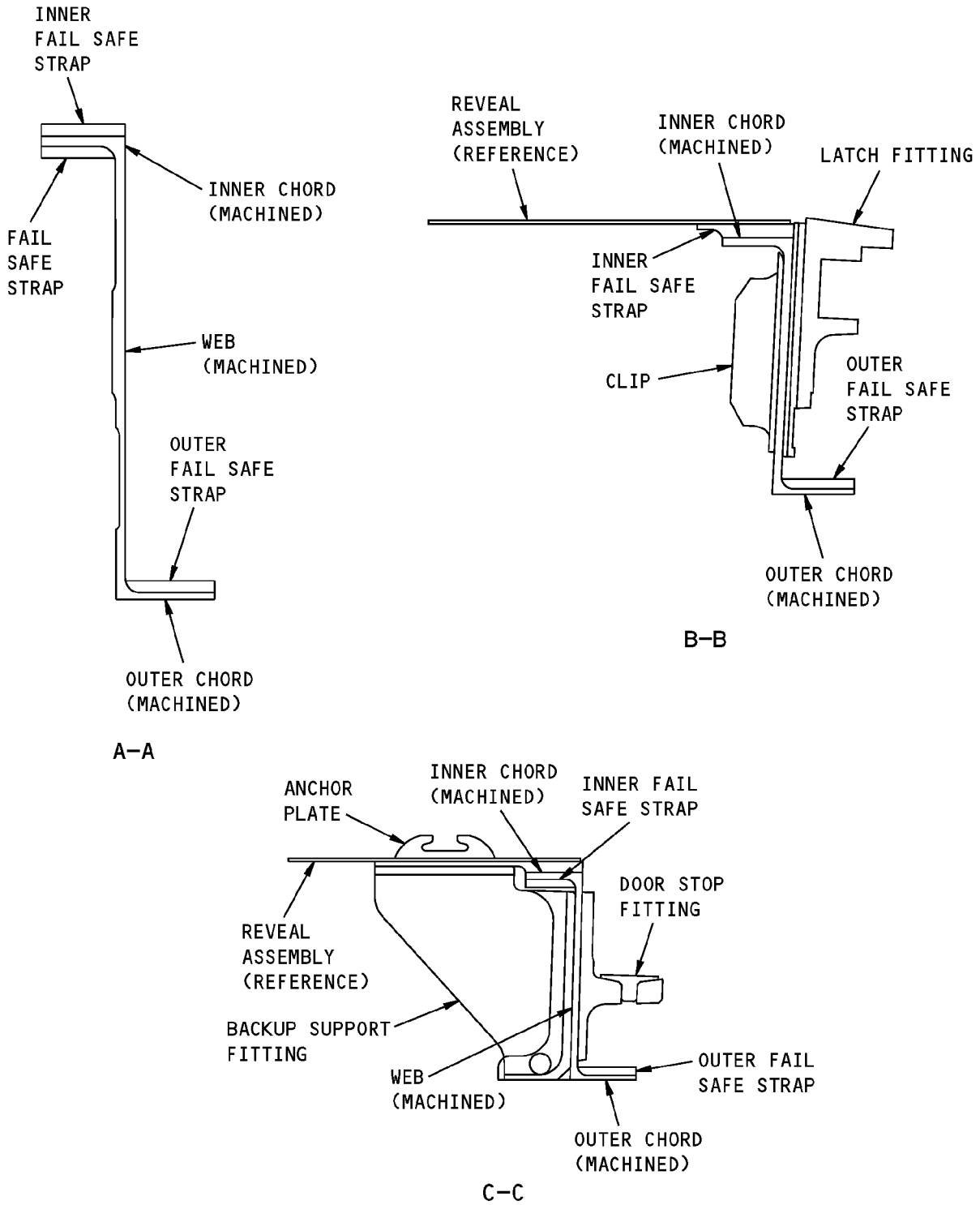


**FORWARD EDGE FRAME AND FORWARD INTERCOSTALS**

(A)

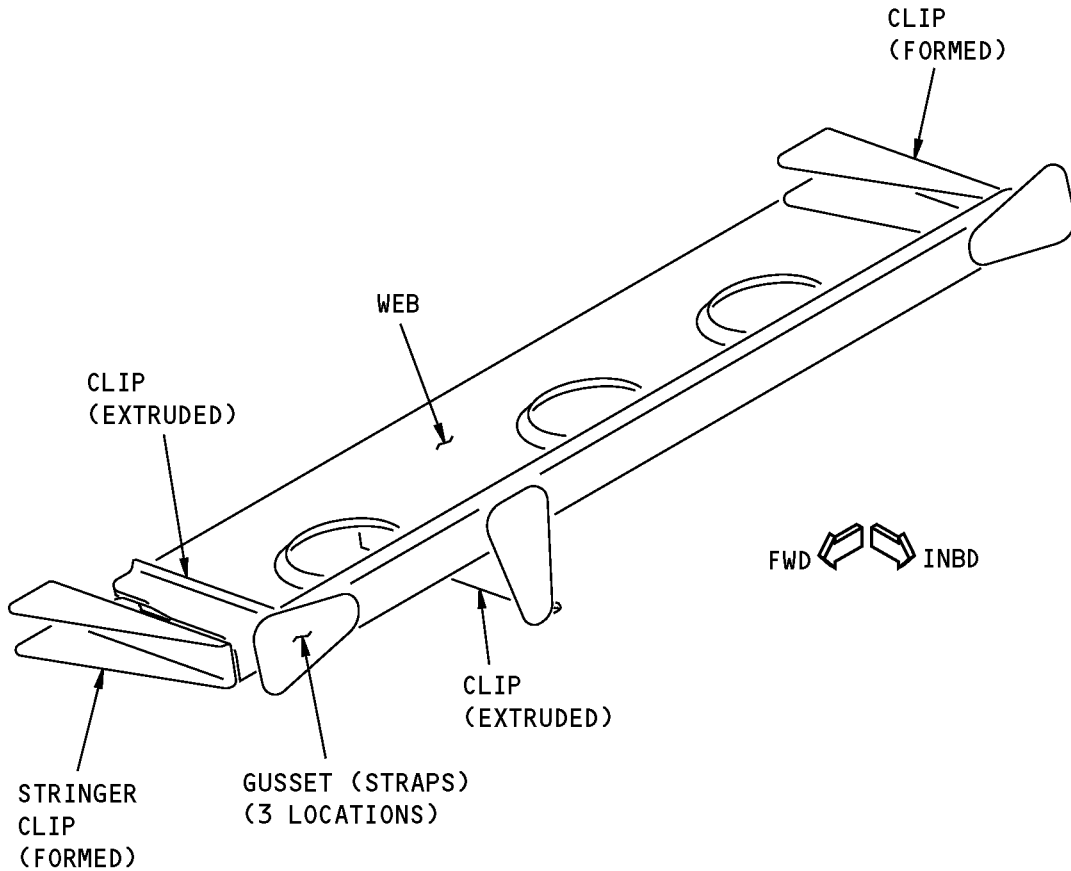
**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 2 of 11)**

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**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 3 of 11)**

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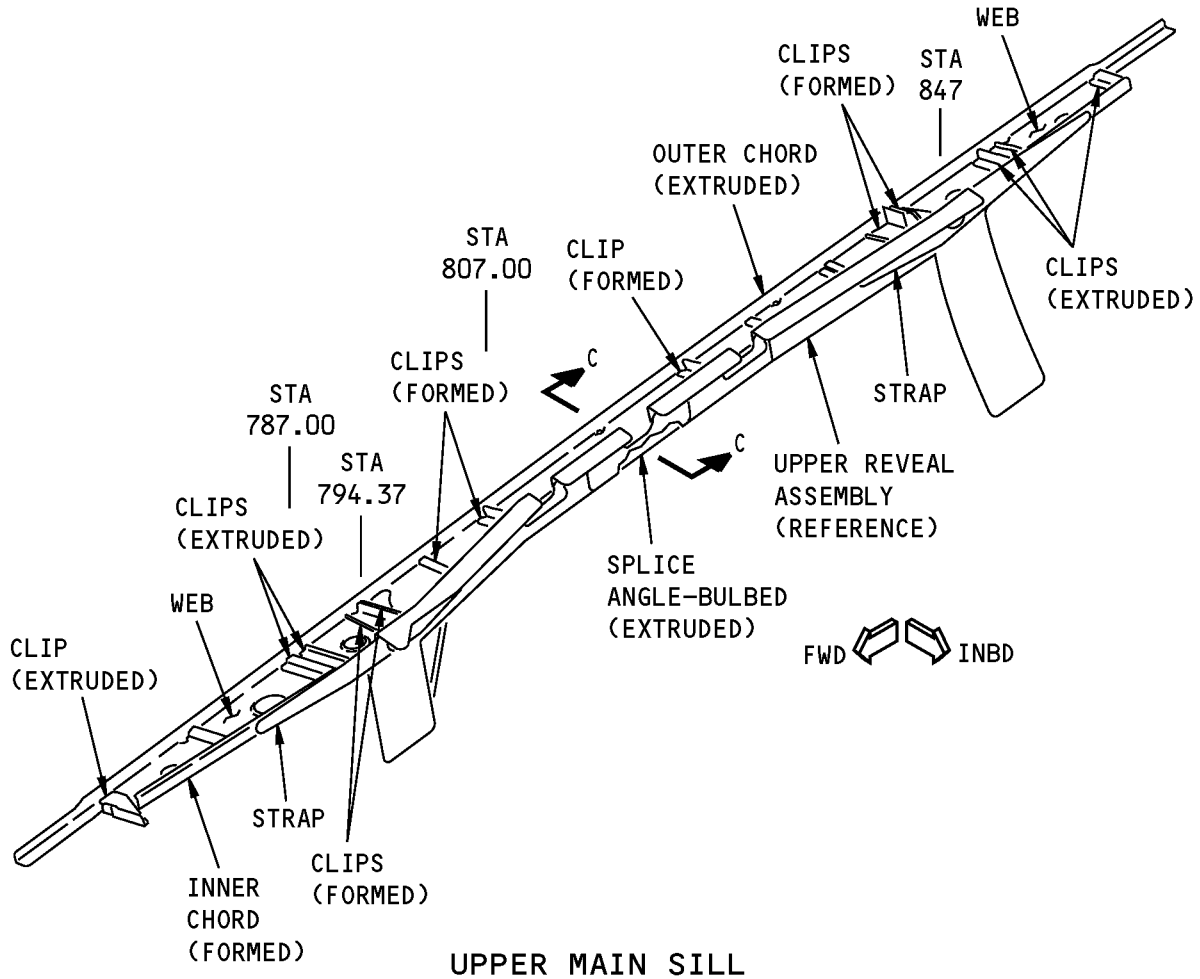


**UPPER AUXILLIARY SILL**

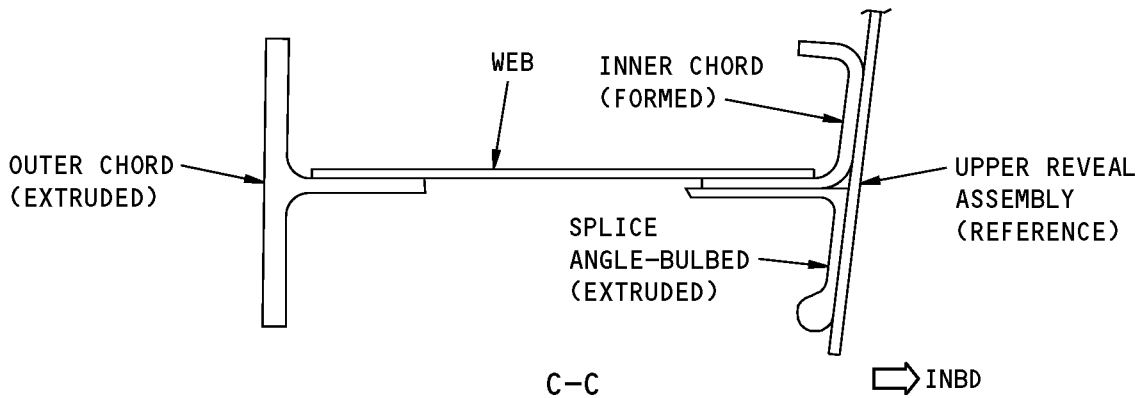
(B)

**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 4 of 11)**

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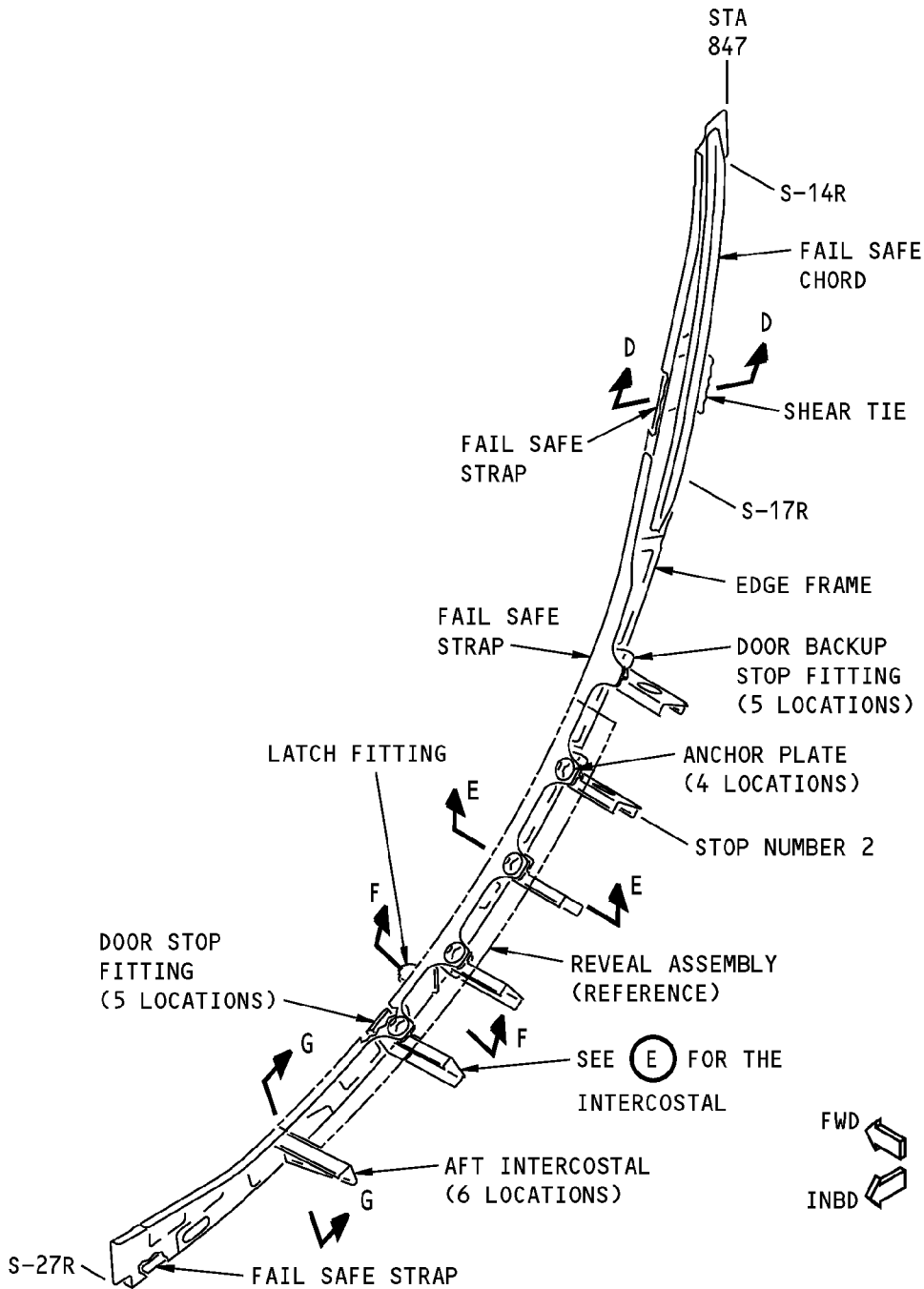
(C)



**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 5 of 11)**



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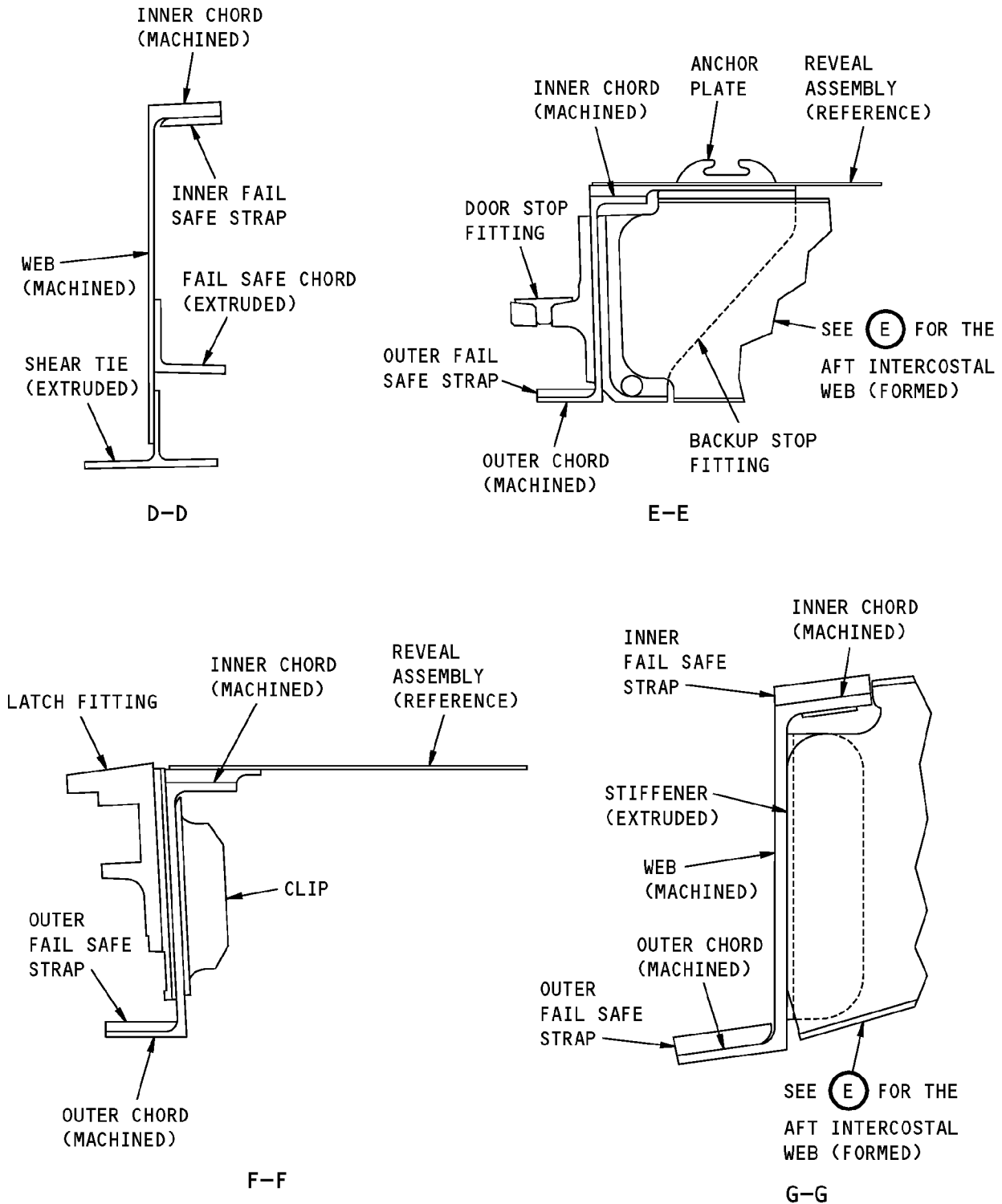


**AFT EDGE FRAME AND AFT INTERCOSTALS**

(D)

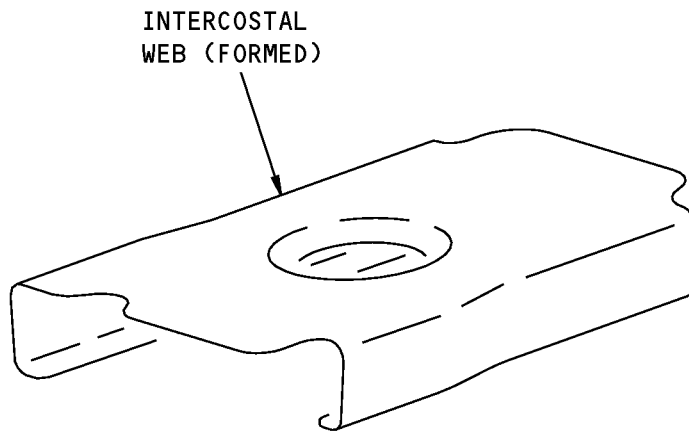
**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 6 of 11)**

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**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 7 of 11)**

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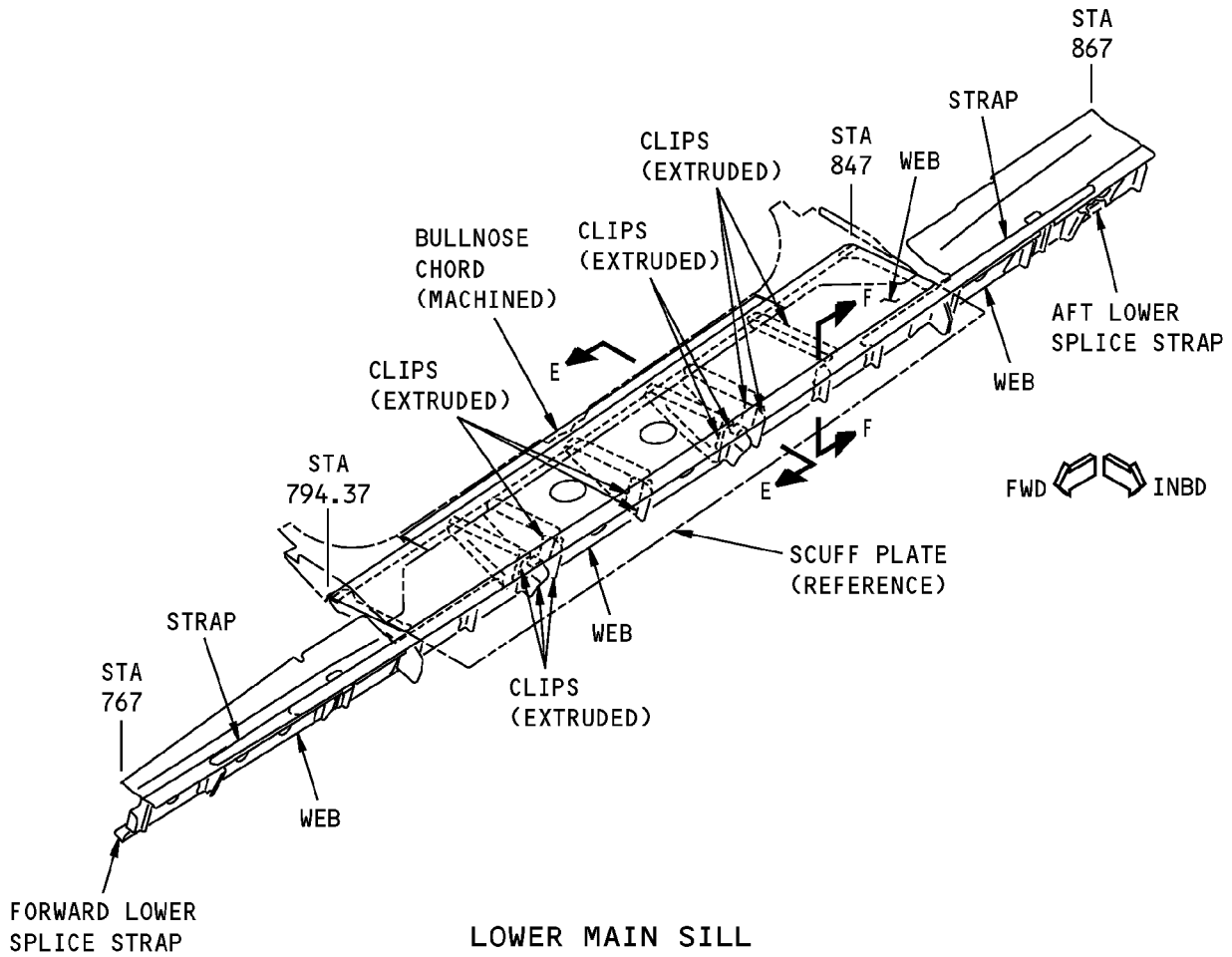


**TYPICAL INTERCOSTAL**

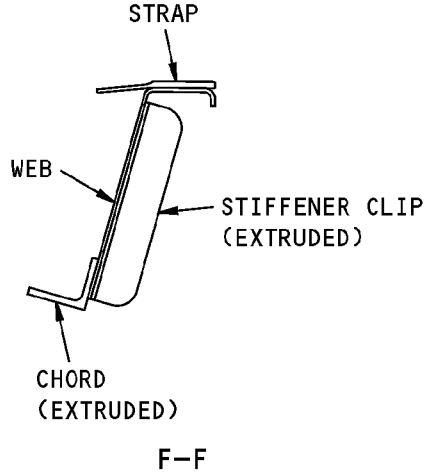
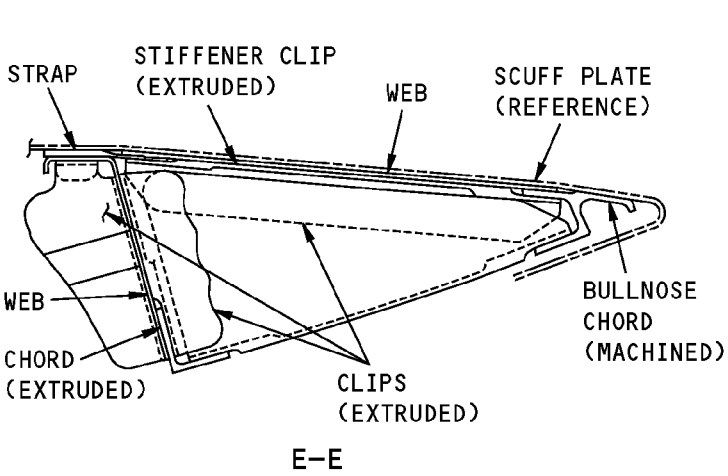
**E**

**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 8 of 11)**

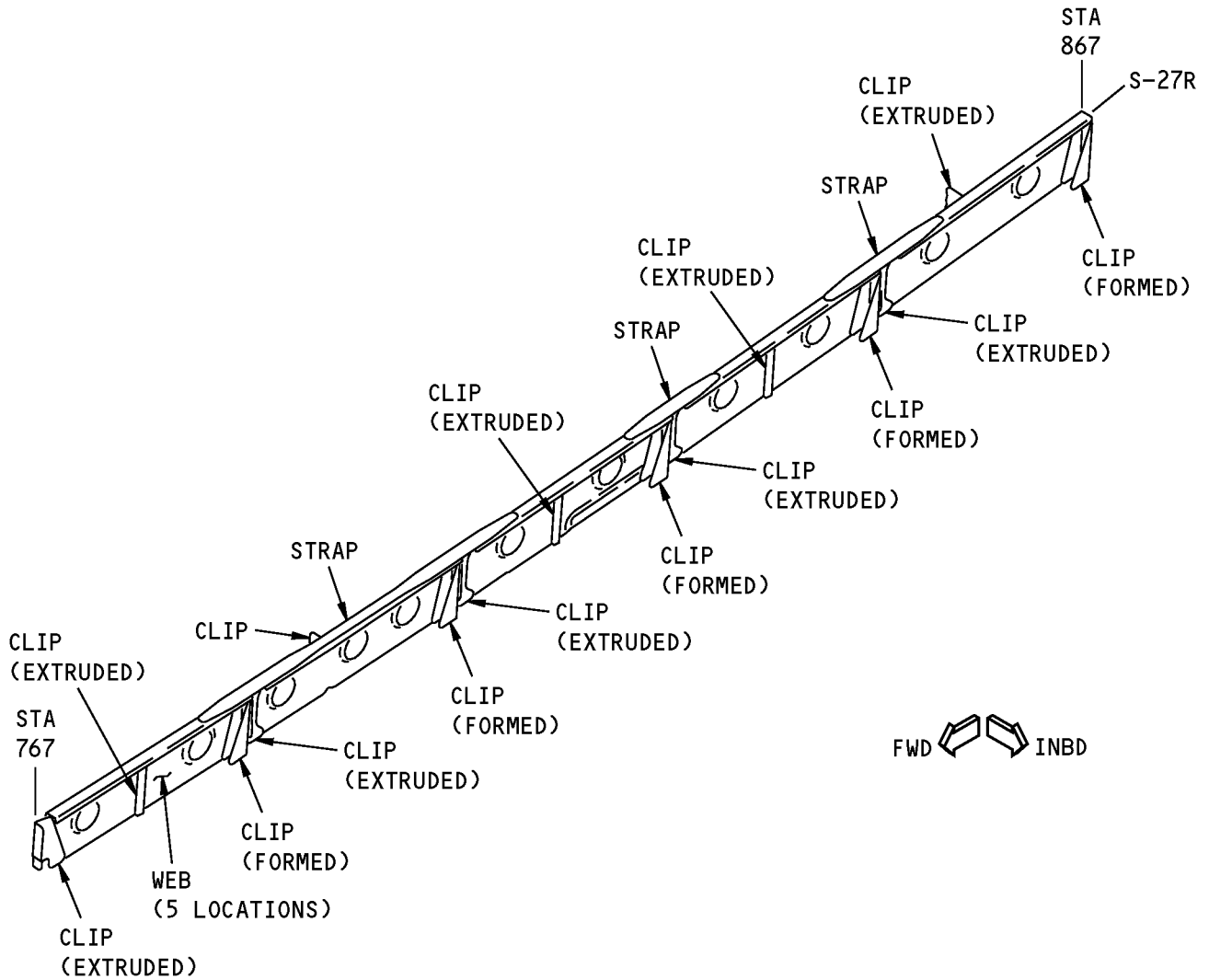
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(F)



**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 9 of 11)**

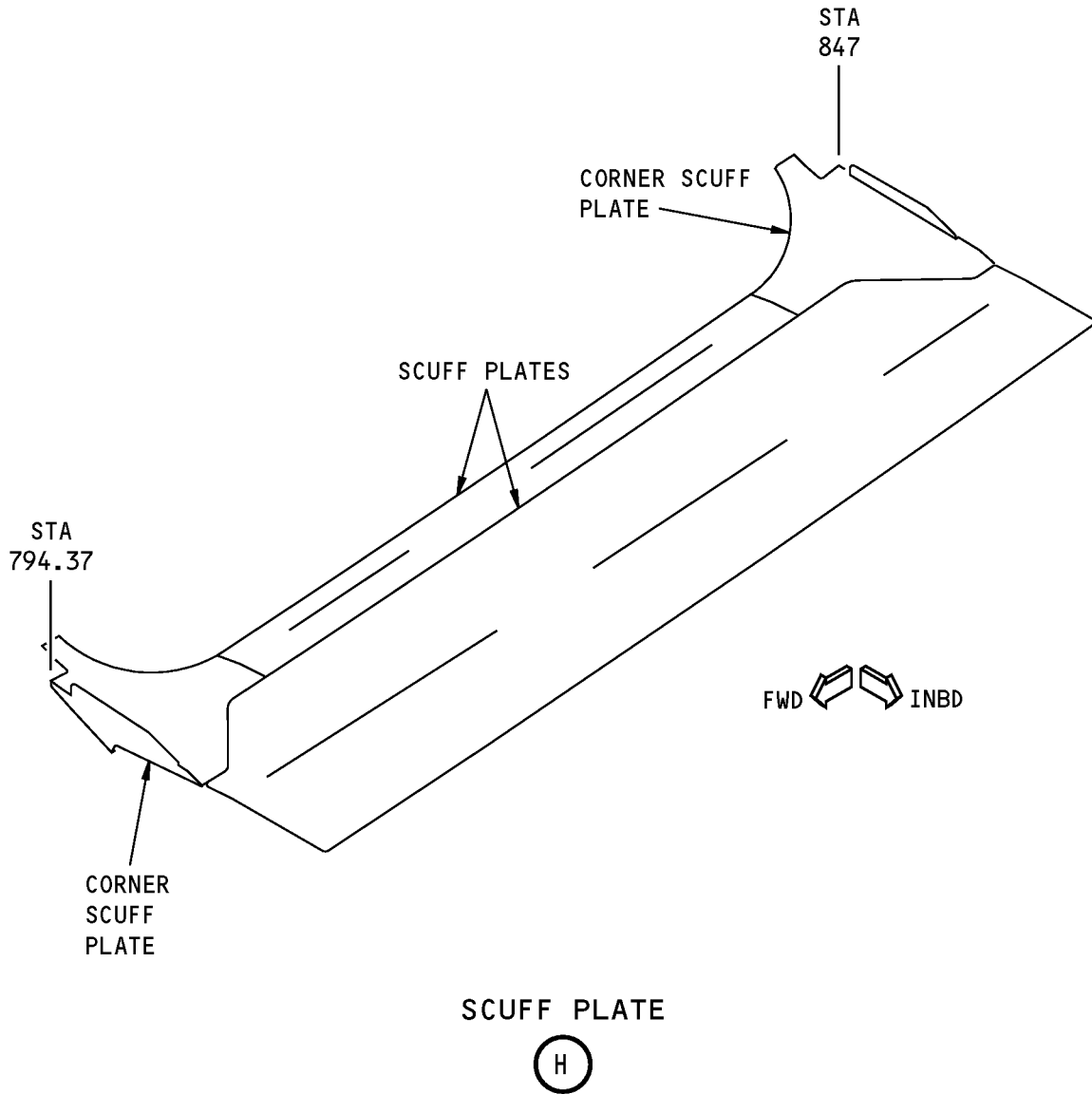


**LOWER AUXILLIARY SILL**

**G**

**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 10 of 11)**

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**Section 46 Aft Cargo Door Surround Structure Allowable Damage  
Figure 102 (Sheet 11 of 11)**



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**2. General**

- A. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you need to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you need to remove the damage.
  - (4) Make the edges of the blendouts and holes smooth to a finish of 125 microinches Ra or smoother.
- B. Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01.
- C. Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.
- D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage of the different parts.

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>		
<b>TYPE OF STRUCTURE</b>	<b>PART NAME</b>	<b>PARAGRAPH</b>
EDGE FRAME BETWEEN STOP #2 AND STRINGER -17	INNER CHORD	4.A.(1)
	WEB (STOP #2 TO S-18)	4.A.(2)
	FAIL SAFE STRAPS	4.A.(3)
EDGE FRAME THAT IS NOT BETWEEN STOP #2 AND STRINGER-17	INNER AND OUTER CHORDS	4.B.(1)
	WEB	4.B.(2)
	FAIL SAFE STRAPS	4.B.(3)
	FAIL SAFE CHORD	4.B.(4)
	STIFFENERS	4.B.(4)
	SHEAR TIES	4.B.(4)
INTERCOSTALS, STOP BACK-UP, DOOR STOPS, AND LATCH FITTINGS	CLIPS	4.B.(4)
	INTERCOSTAL CHORDS	4.C.(1)
	INTERCOSTAL WEBS	4.C.(2)
	STOP BACK-UP FITTINGS	4.C.(3)
	DOOR STOPS	4.C.(4)
UPPER MAIN SILL BETWEEN STA 787 AND STA 807	LATCH FITTINGS	4.C.(5)
	CHORDS	4.D.(1)
	WEBS	4.D.(2)
	STRAPS, DOUBLERS	4.D.(3)
	STIFFENERS AND CLIPS	4.D.(4)
	BULBED SPLICED ANGLE	4.D.(5)



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PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
UPPER MAIN SILL THAT IS NOT BETWEEN STA 787 AND STA 807	CHORDS	4.E.(1)
	WEBS	4.E.(2)
	STRAPS	4.E.(3)
	STIFFENERS AND CLIPS	4.E.(4)
LOWER MAIN SILL SPLICE STRAP WITHIN FOUR FASTENERS AFT AND FWD OF STA 794.37 AND STA 847.0	INNER LOWER STRAPS	4.F.(1)
LOWER MAIN SILL	CHORDS	4.G.(1)
	WEBS	4.G.(2)
	STRAPS	4.G.(3)
	STIFFENERS AND CLIPS	4.G.(4)
	SCUFF PLATES	4.G.(5)
LOWER AND UPPER AUXILIARY SILL	WEBS	4.H.(1)
	STRAPS AND GUSSETS	4.H.(2)
	CLIPS (STIFFENERS)	4.H.(3)

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

- A. Edge Frame Between Stop #2 and Stringer S-17
  - (1) Inner Chord Between Stop #2 and Stringer S-17
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs - Stop #2 to Stringer S-18
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (3) Fail Safe Straps Stop #2 to Stringer S-17





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- (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- B. Edge Frame That is not Between Stop #2 and Stringer S-17
- (1) Inner and Outer Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and C.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Web
    - (a) Cracks:
      - 1) Remove the damaged area as shown in Figure 103, Details A, B, and F.
      - 2) The damage area that is removed must be less than 0.25 inch in length.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damaged area as shown in Figure 103, Details A, B, D, F, and G.
      - 2) The damage area that is removed must be less than 0.25 inch in length.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Fail Safe Straps
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, I, and J.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, G, I, and J.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (4) Fail Safe Chord, Stiffeners, Shear Ties, and Clips
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, and K.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.
    - (c) Dents are not permitted.

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- (d) Holes and Punctures are not permitted.
- C. Intercostals, Stop Back-up Fittings, Door Stops and Latch Fittings
  - (1) Intercostal Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, I, and J.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, G, I, and J.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are not permitted.
  - (2) Intercostal Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and F.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, F, and G.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Stop Back-up Fittings
    - (a) Cracks:
      - 1) Damage is not permitted between the Stop fasteners and the first row of fasteners common to the intercostals.
      - 2) For other crack locations:
        - a) Remove the damage as shown in Figure 103, Details, A, B, C, and K.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Damage is not permitted between the Stop fasteners and the first row of fasteners common to the intercostals.
      - 2) For other locations:
        - a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.
    - (c) Dents:
      - 1) Damage is permitted in the Tee inboard flange under the cargo net anchor plates (tie-down pucks).
      - 2) For other locations:
        - a) Damage is permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures:
      - 1) Damage is permitted in the Tee inboard flange under the cargo net anchor plates (tie-down pucks).

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- 2) For other locations, damage is permitted if it is:
  - a) A maximum of 0.25 inch in diameter
  - b) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
  - c) You fill the hole with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- (4) Door Stops
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (5) Latch Fittings
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion: are not permitted on the lug region.
    - 1) Damage is not permitted in the lug area.
    - 2) For other locations:
      - a) Remove the damage as shown in Figure 103, Details A, B, C, E, and I.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- D. Upper Main Sill Between Sta 787.00 and Sta 808.00
  - (1) Chords
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (3) Inner Strap and Doublers
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (4) Stiffeners and Clips
    - (a) Cracks are permitted only on the free flange:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and C.
    - (b) Nicks, Gouges, Scratches, and Corrosion are permitted only on the free flange:



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- 1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (5) Bulbed Splice Angle
  - (a) Cracks are not permitted.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, E and L.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- E. Upper Main Sill That is Not Between Sta 787.00 and Sta 808.00
  - (1) Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, and K.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and K.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and F.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, F and G.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Straps
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, I, and J.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (4) Stiffeners and Clips
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and C.

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- (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.
  - (c) Dents are permitted only in the free flange as shown in Figure 103, Detail H.
  - (d) Holes and Punctures are permitted only in the free flange as shown in Figure 103, Detail M if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- F. Lower Main Sill Splice Strap Within Four Fasteners at Sta 847.0 and Sta 794.37
- (1) Inner Lower Straps
    - (a) Cracks are not permitted.
    - (b) Nicks, Gouges, Scratches, and Corrosion are not permitted.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
- G. Lower Main Sill
- (1) Chords
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.
    - (c) Dents are not permitted.
    - (d) Holes and Punctures are not permitted.
  - (2) Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and F.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, F and G.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (3) Straps
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, I, and J.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.

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- (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
  - (4) Stiffeners and Clips
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and C.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.
    - (c) Dents are permitted only in the free flange as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted in the free flange as shown in Figure 103, Detail M if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (5) Scuff Plates
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, and F.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, C, D, E, F, and G.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- H. Lower and Upper Auxiliary Sill
- (1) Webs
    - (a) Cracks:
      - 1) Remove the damage as shown in Figure 103, Details A, B, and F.
    - (b) Nicks, Gouges, Scratches, and Corrosion:
      - 1) Remove the damage as shown in Figure 103, Details A, B, D, F, and G.
    - (c) Dents are permitted as shown in Figure 103, Detail H.
    - (d) Holes and Punctures are permitted if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
      - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
  - (2) Straps and Gussets
    - (a) Cracks:

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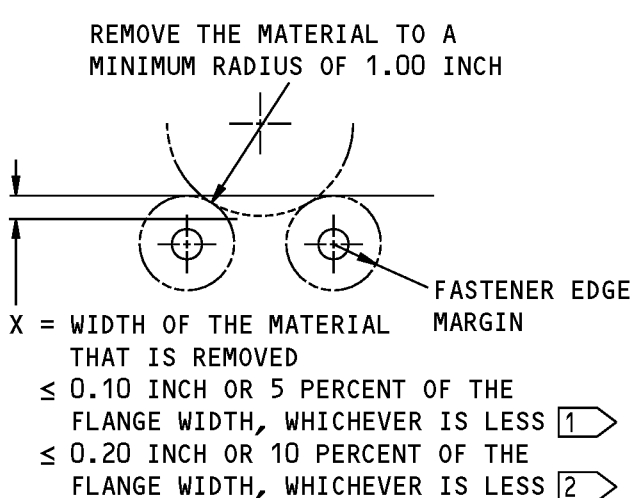


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## STRUCTURAL REPAIR MANUAL

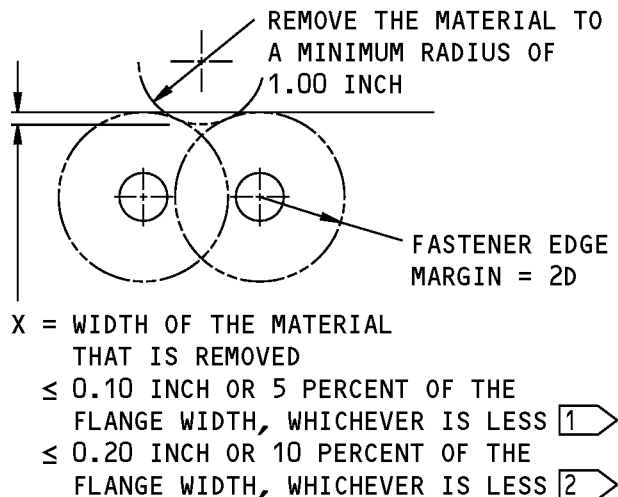
- 1) Remove the damage as shown in Figure 103, Details A, B, I, and J.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A, B, D, G, I and J.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) Stiffener Clips
- (a) Cracks:
    - 1) Remove the damage as shown in Figure 103, Details A, B, and C.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Figure 103, Details A, B, C, D and E.
  - (c) Dents are permitted as shown in Figure 103, Detail H.
  - (d) Holes and Punctures are permitted in the free flanges as shown in Figure 103, Detail M if they are:
    - 1) A maximum of 0.25 inch in diameter
    - 2) A minimum of 4D (D = the diameter of the damage) away from a fastener hole, the part edge, or other damage
    - 3) They are filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**(A)**

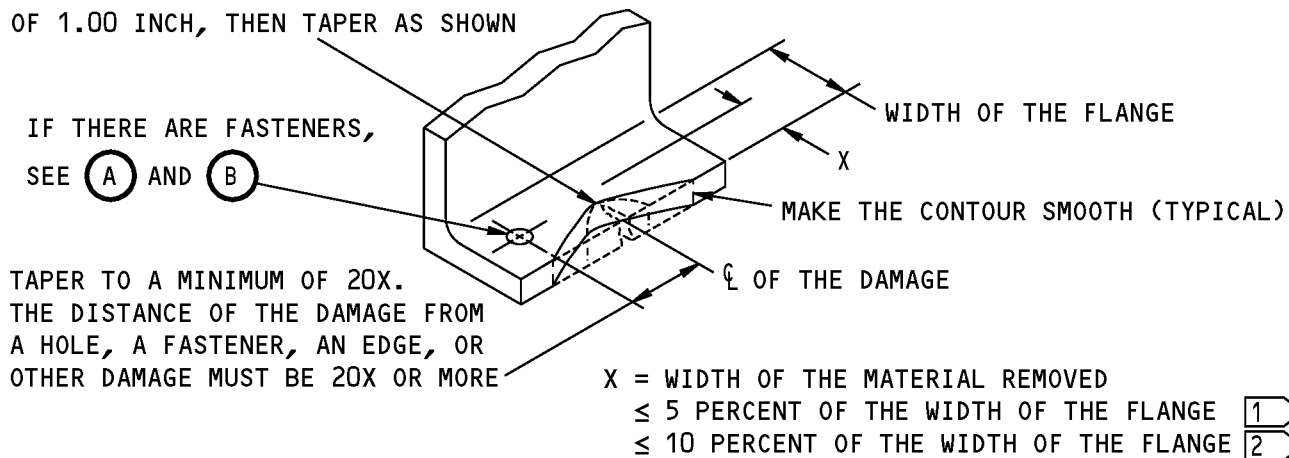


**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**(B)**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

IF THERE ARE FASTENERS, SEE **(A)** AND **(B)**



**REMOVAL OF DAMAGED MATERIAL AT A FLANGE EDGE**

**(C)**

**NOTES**

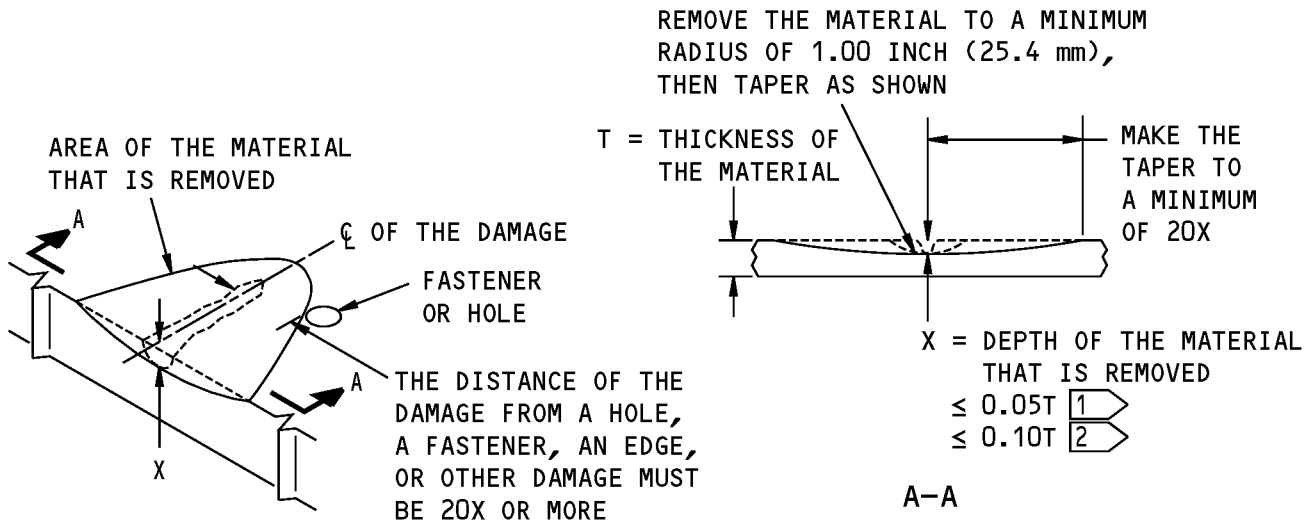
1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 9)**



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STRUCTURAL REPAIR MANUAL**

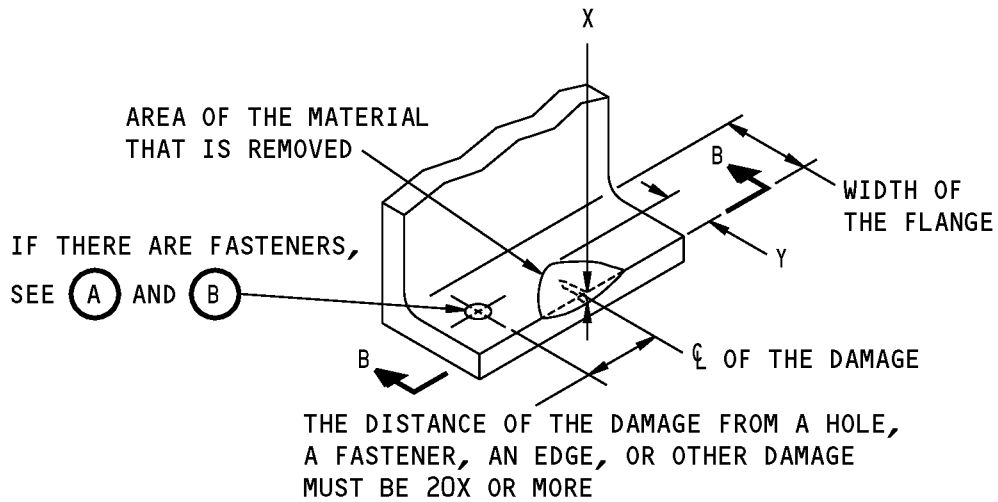


**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE**



**Allowable Damage Limits  
Figure 103 (Sheet 2 of 9)**

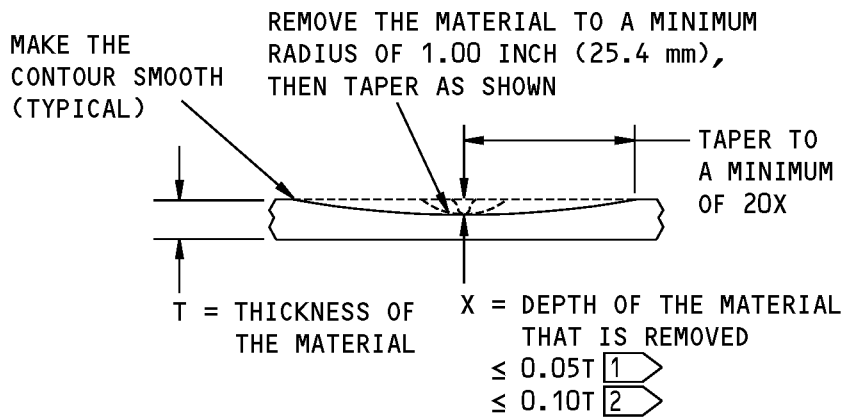
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 $\leq 5$  PERCENT OF THE WIDTH OF THE FLANGE 1  
 $\leq 10$  PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL ON A FLANGE SURFACE  
AT AN EDGE OF A MACHINED OR EXTRUDED PART**

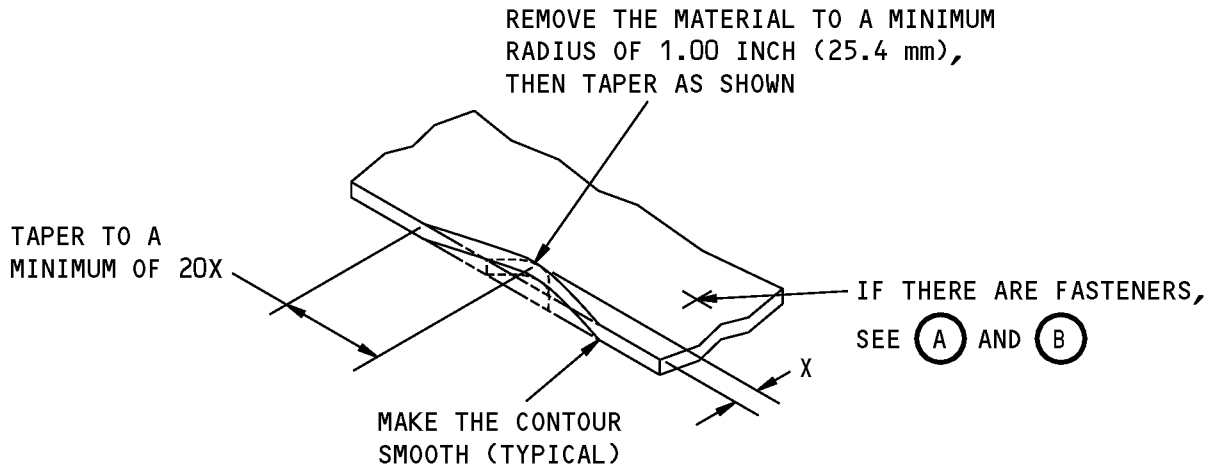
(E)



B-B

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 9)**

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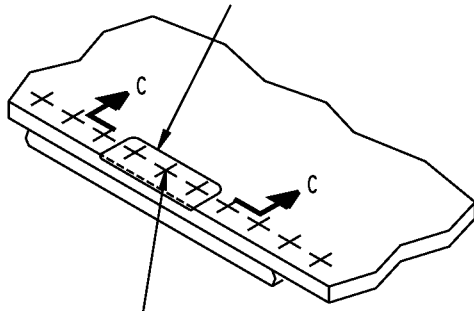
X = WIDTH OF THE MATERIAL THAT IS REMOVED

- ≤ 0.05 INCH 1
- ≤ 0.10 INCH 2

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB**

(F)

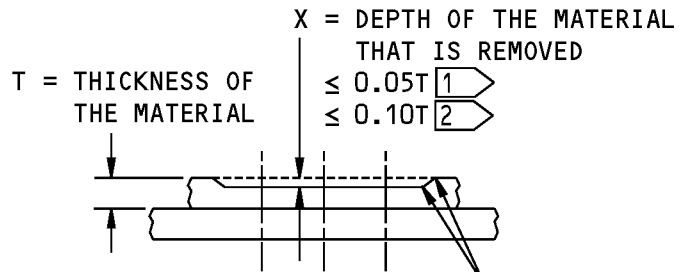
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(G)

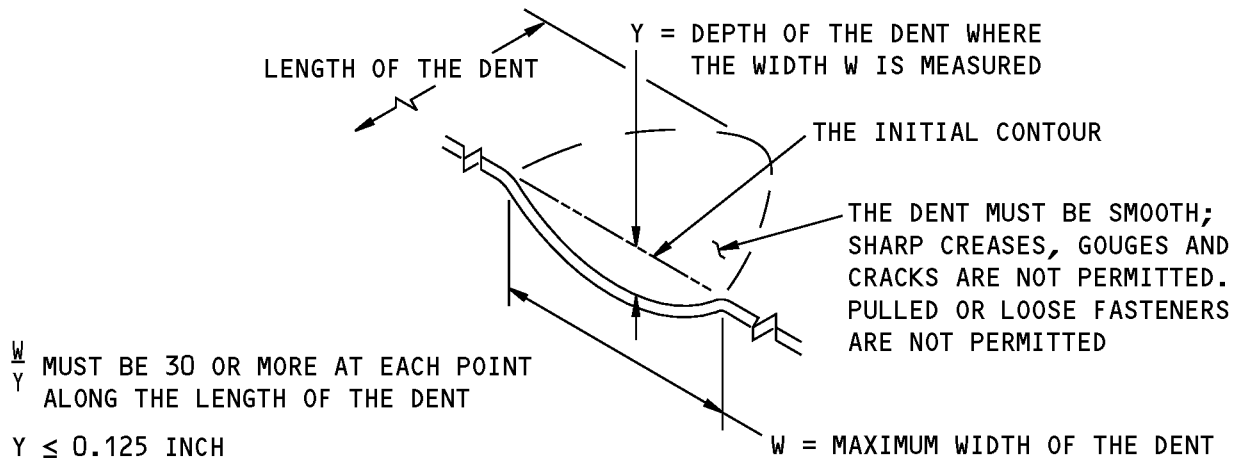


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

C-C

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 9)**

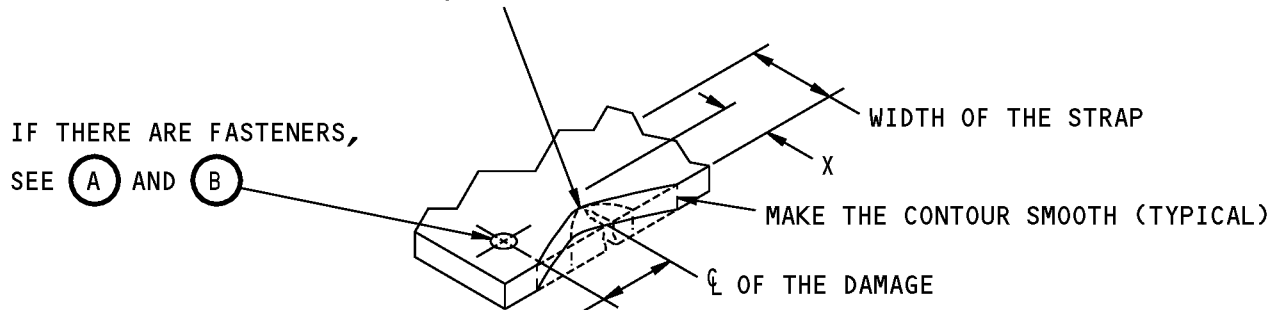
**737-800  
STRUCTURAL REPAIR MANUAL**





**DENT THAT IS PERMITTED**

(H)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

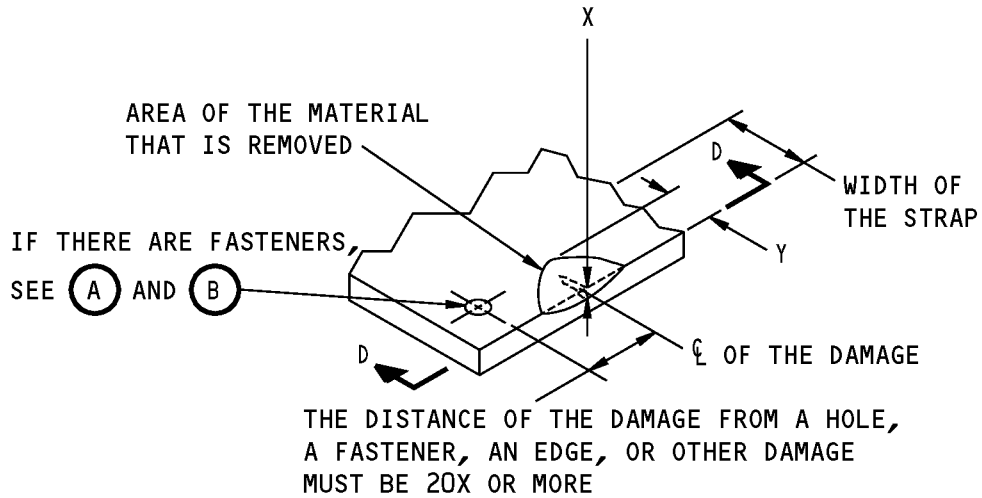
X = WIDTH OF THE MATERIAL REMOVED  
 $\leq 5$  PERCENT OF THE WIDTH OF THE STRAP   
 $\leq 10$  PERCENT OF THE WIDTH OF THE STRAP 

**REMOVAL OF DAMAGED MATERIAL AT A STRAP EDGE**

(I)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 9)**

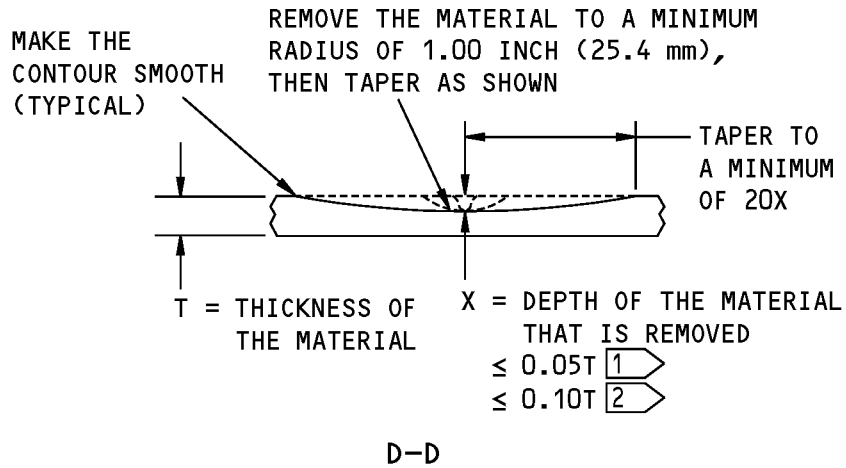
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE WIDTH OF THE STRAP 1  
 ≤ 10 PERCENT OF THE WIDTH OF THE STRAP 2

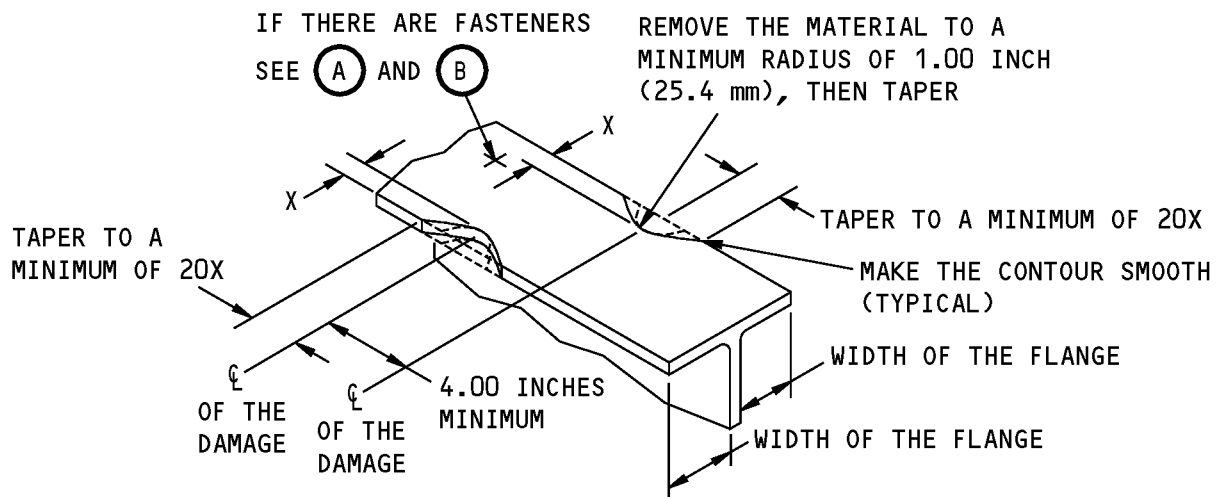
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A MACHINED OR EXTRUDED STRAP**

(J)



**Allowable Damage Limits  
Figure 103 (Sheet 6 of 9)**

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STRUCTURAL REPAIR MANUAL**



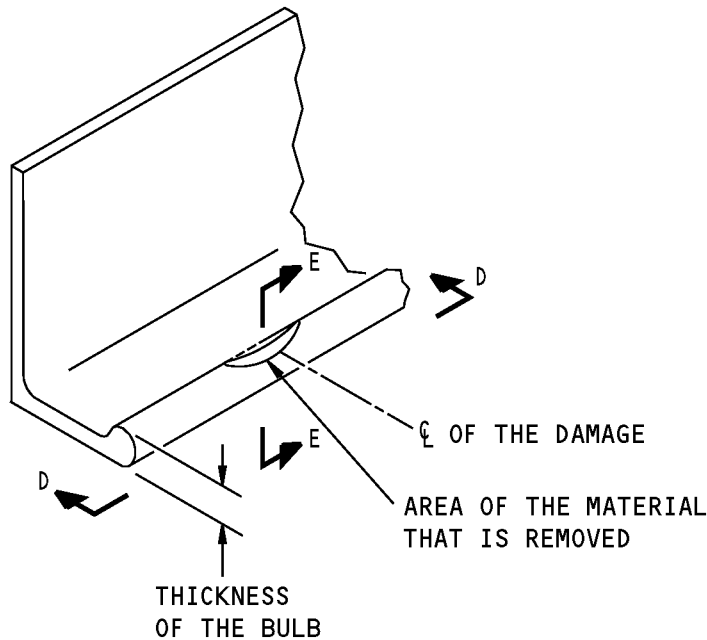
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 ≤ 5 PERCENT OF THE WIDTH OF THE FLANGE **1**  
 ≤ 10 PERCENT OF THE WIDTH OF THE FLANGE **2**

**REMOVAL OF DAMAGED MATERIAL ON A FLANGE EDGE**

**(K)**

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 9)**

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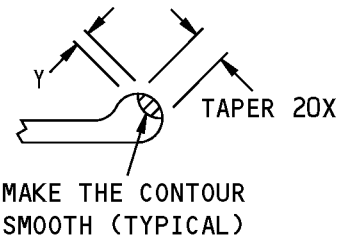
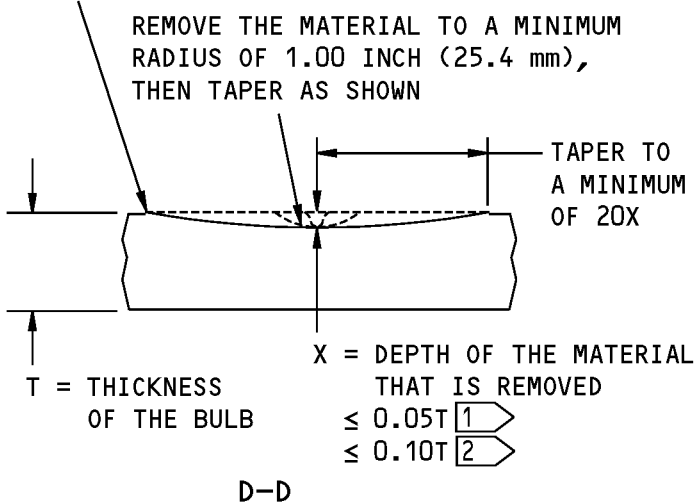
Y = WIDTH OF THE MATERIAL REMOVED

- ≤ 5 PERCENT OF THE THICKNESS OF THE BULB 1
- ≤ 10 PERCENT OF THE THICKNESS OF THE BULB 2

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED EXTRUSION**

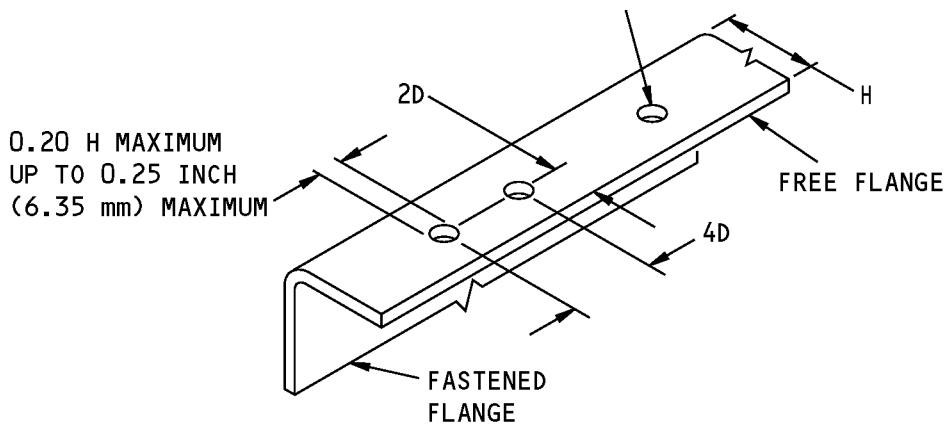
L

MAKE THE CONTOUR  
SMOOTH (TYPICAL)



**Allowable Damage Limits  
Figure 103 (Sheet 8 of 9)**

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH (6.35 mm). FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT



NOTE: HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE



Allowable Damage Limits  
Figure 103 (Sheet 9 of 9)

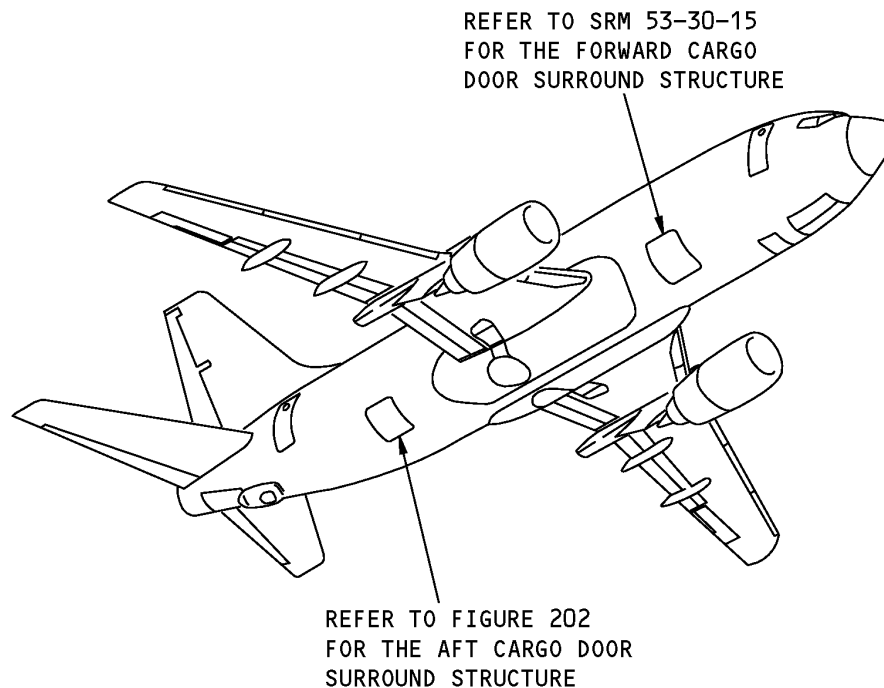


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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - AFT CARGO DOOR SURROUND STRUCTURE**

**1. Applicability**

- A. Repair 1 is applicable to damage to the Aft Cargo Door Surround Structures shown in Section 46 Aft Cargo Door Surround Structure, Figure 201/REPAIR 1.



**Section 46 Aft Cargo Door Surround Structure**  
**Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.



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**STRUCTURAL REPAIR MANUAL**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-60-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 46

**4. Repair Instructions**

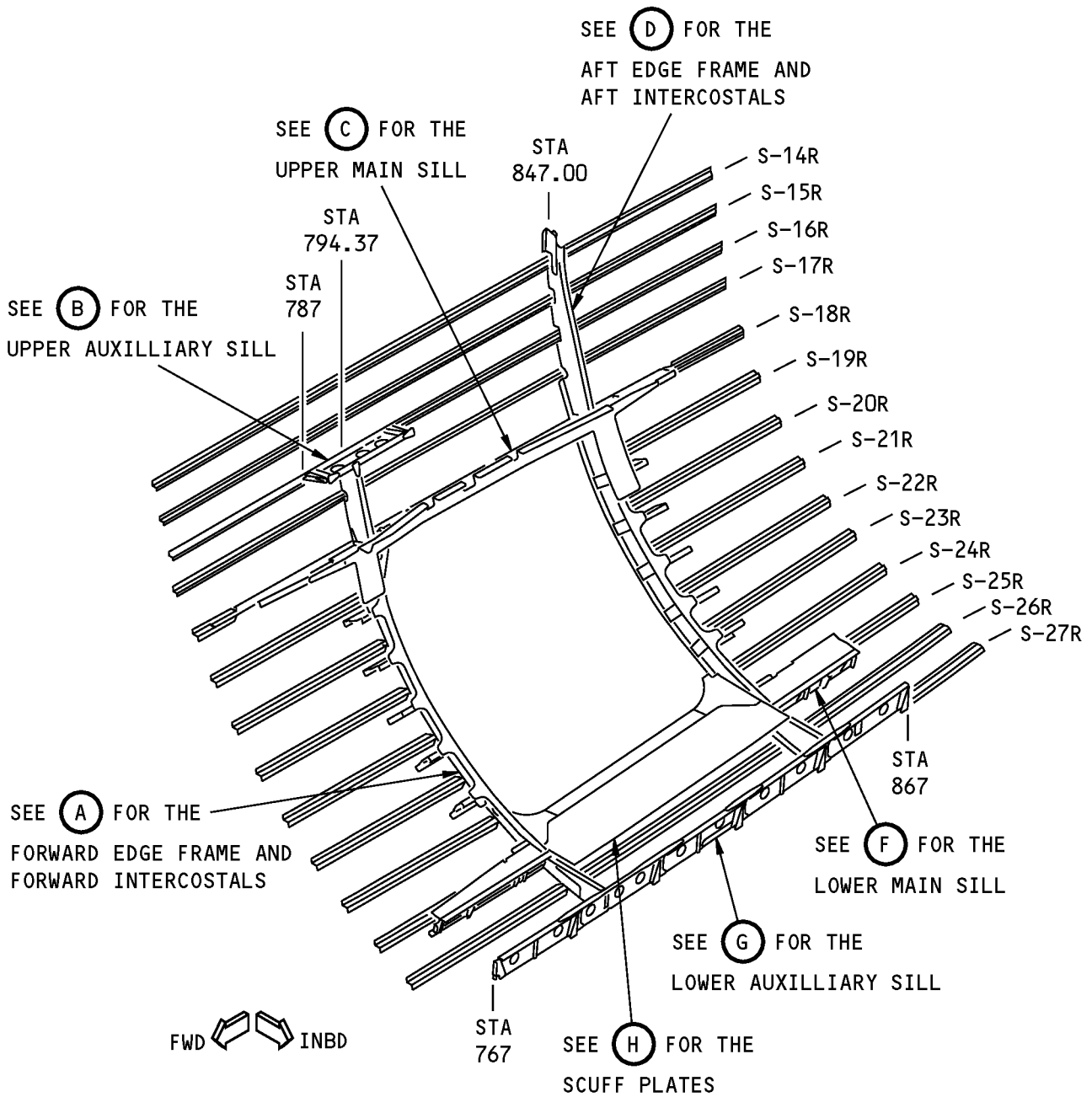
- A. Refer to Section 46 Aft Cargo Door Surround Structure, Figure 201/REPAIR 1 and Section 46 Aft Cargo Door Surround Structure Repairs, Figure 202/REPAIR 1, and Table 201/REPAIR 1 to find the applicable repair for the part you want to repair.

**NOTE:** If necessary, refer to 53-60-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

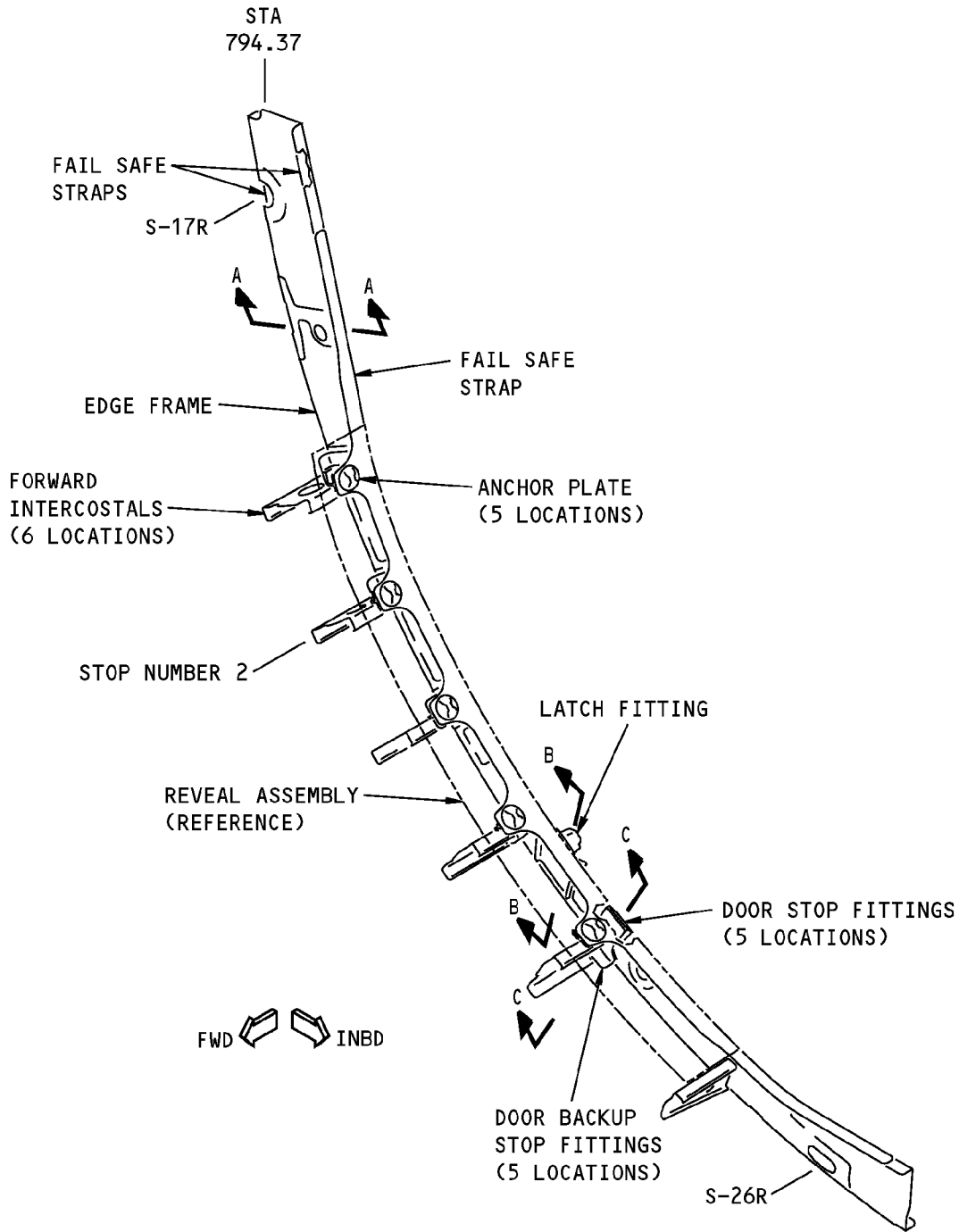
REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURE	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13
Straps, Doublers, Forgings, and Castings	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-60-15, Allowable Damage, replace the damaged part
Machined Inner Chord between Stop #2 and S-17R. (Boeing Production Drawing Number 143A8204-X)	Repairs should be considered a time-limited repair unless approved otherwise (See Inspection Instructions)

**STRUCTURAL REPAIR MANUAL**



**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

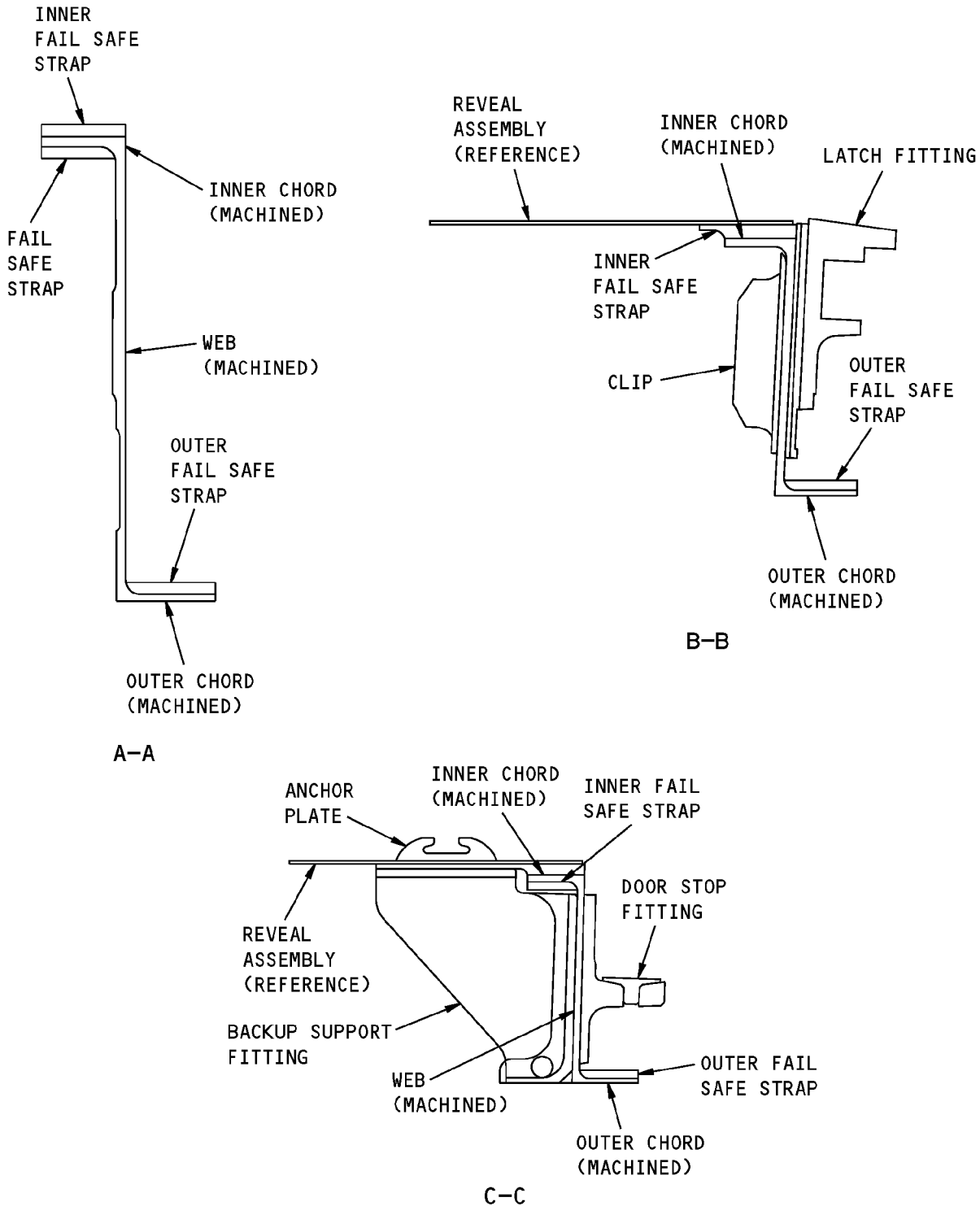


**FORWARD EDGE FRAME AND FORWARD INTERCOSTALS**

(A)

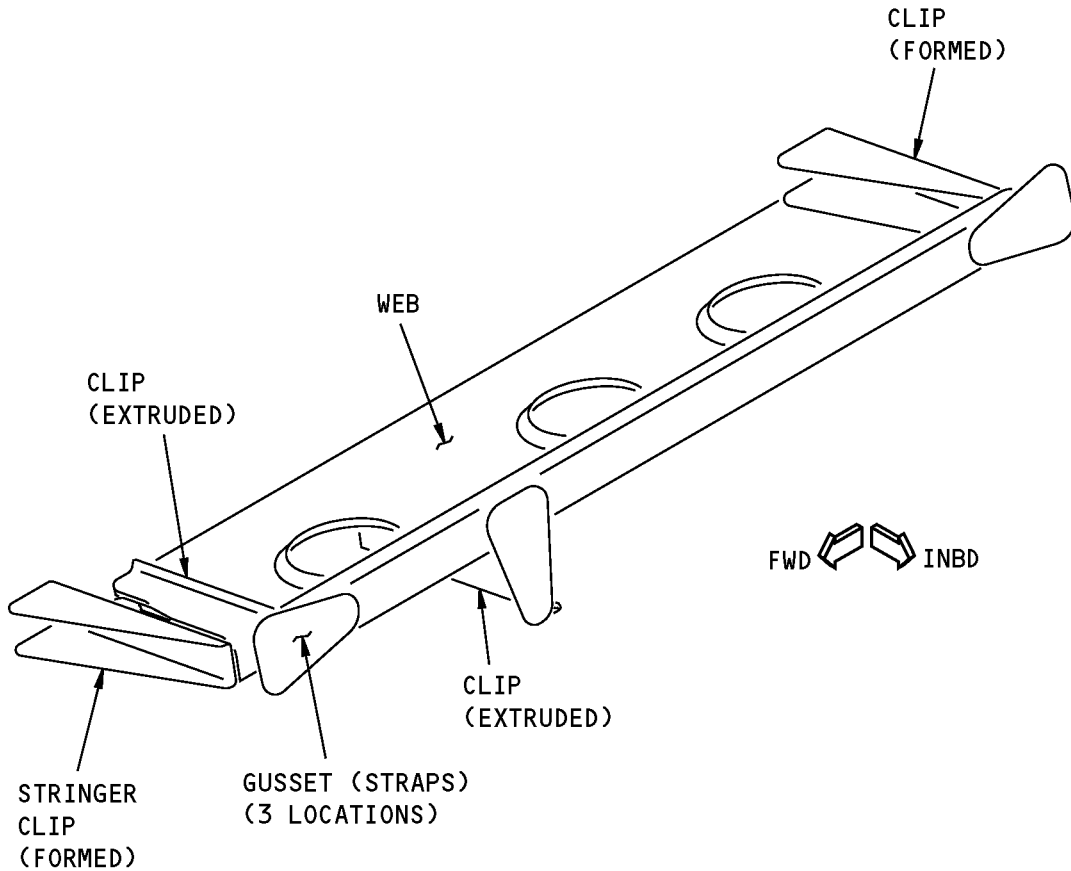
**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 2 of 11)**

**STRUCTURAL REPAIR MANUAL**



**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 3 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

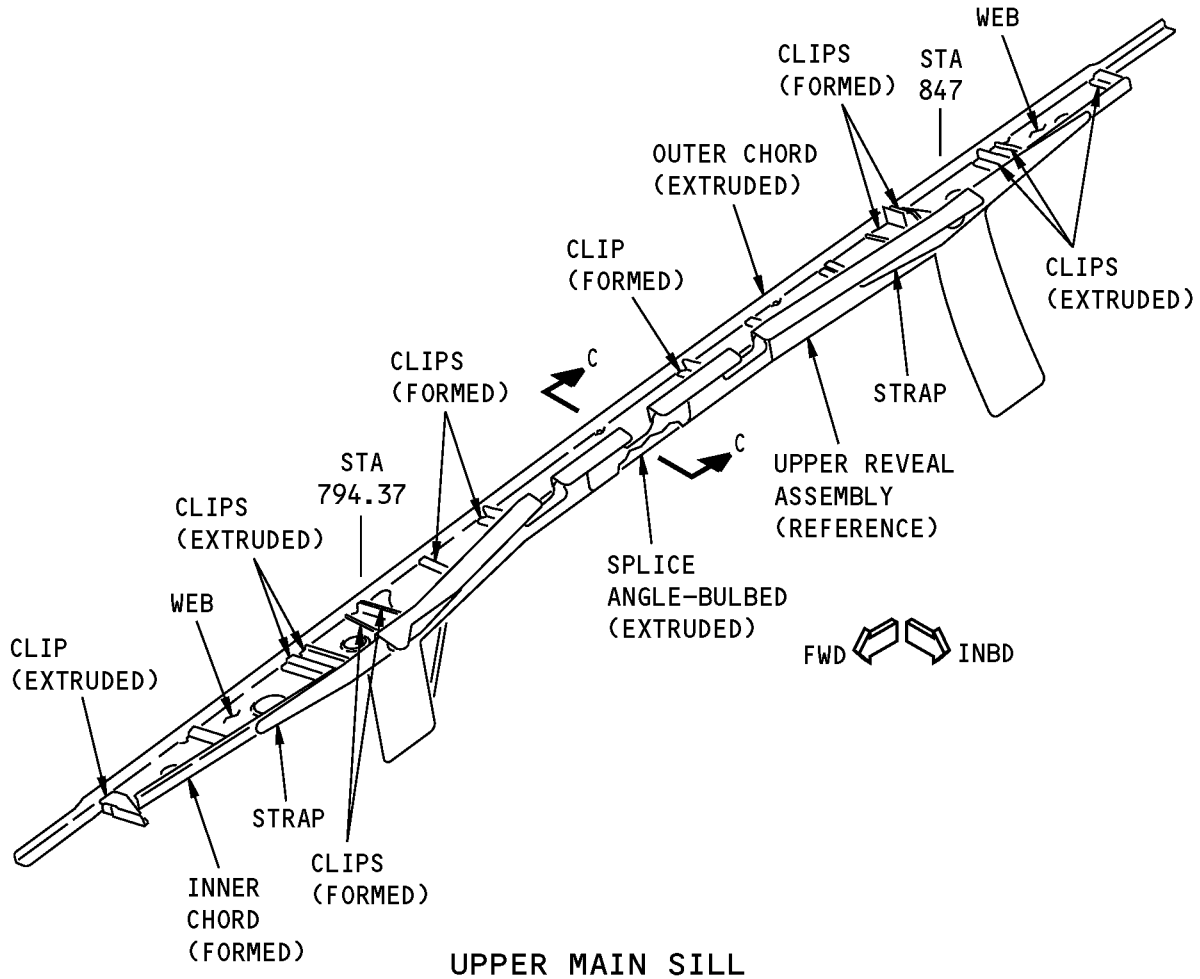


**UPPER AUXILLIARY SILL**

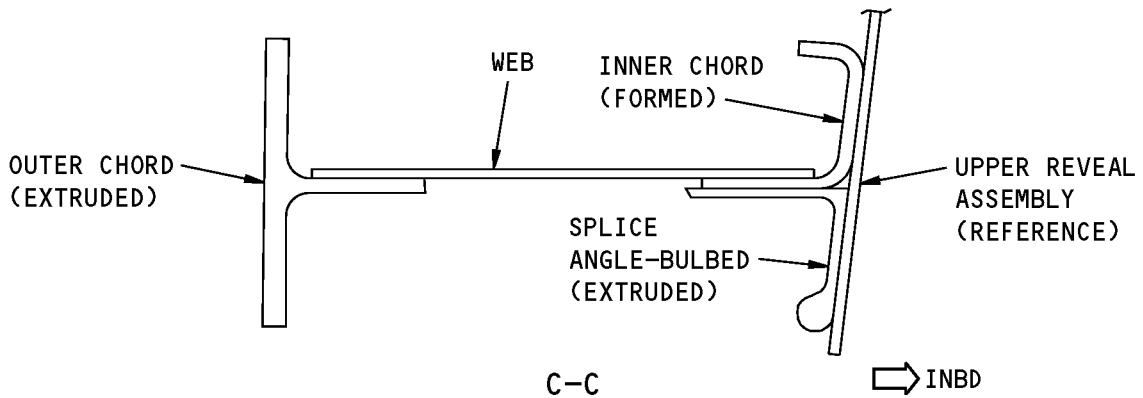
(B)

**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 4 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

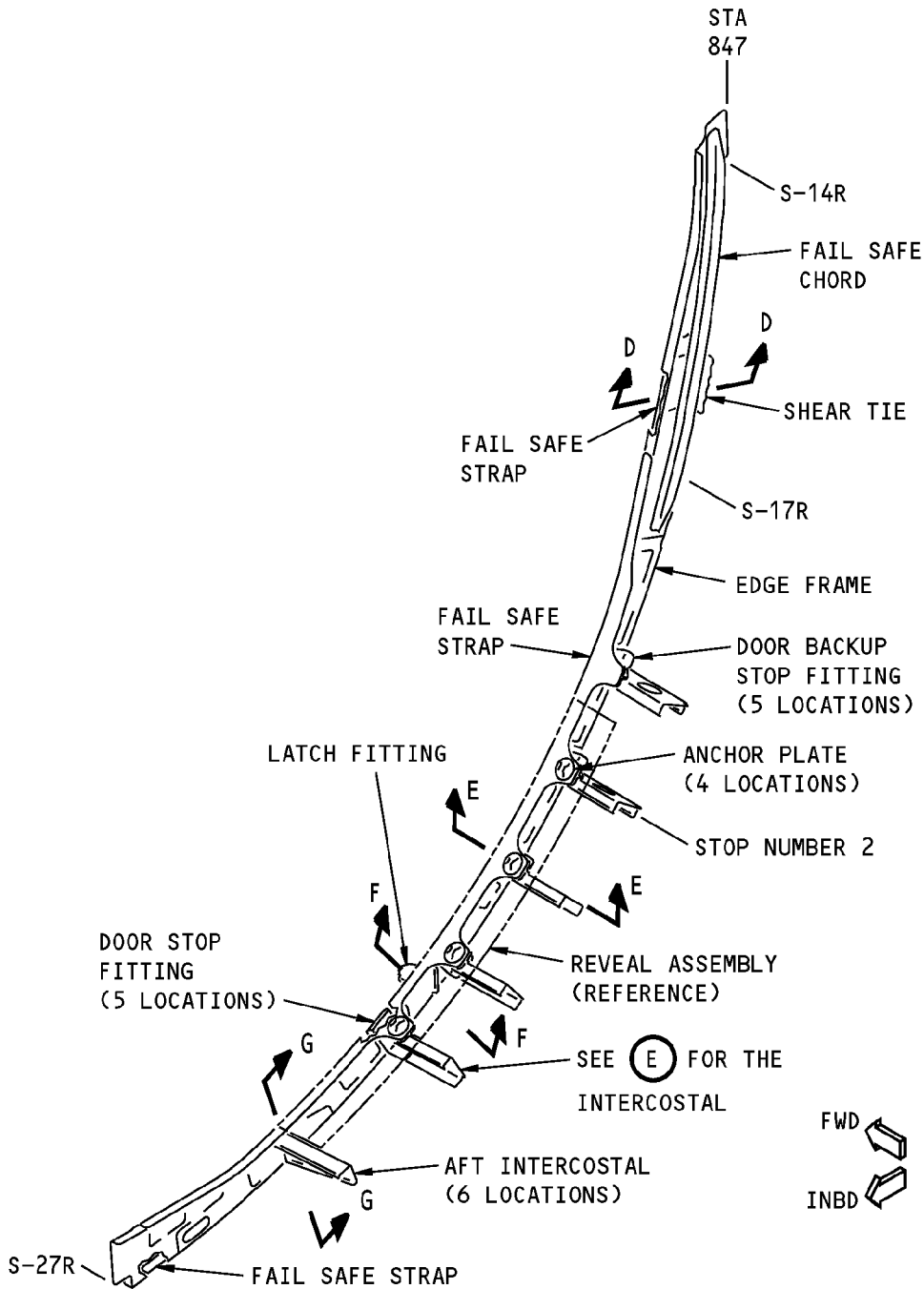


(C)



**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 5 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



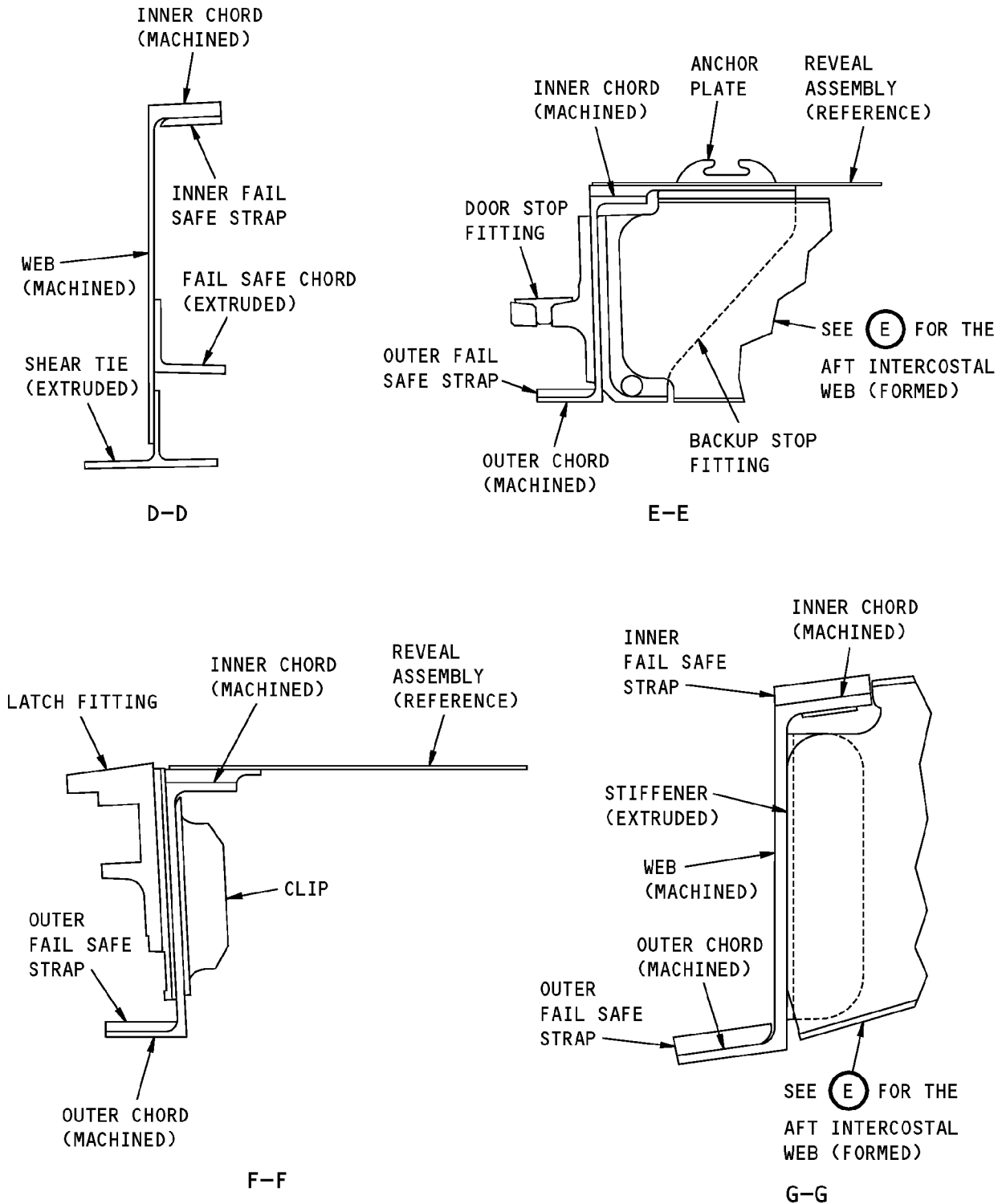
**AFT EDGE FRAME AND AFT INTERCOSTALS**

(D)

**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 6 of 11)**

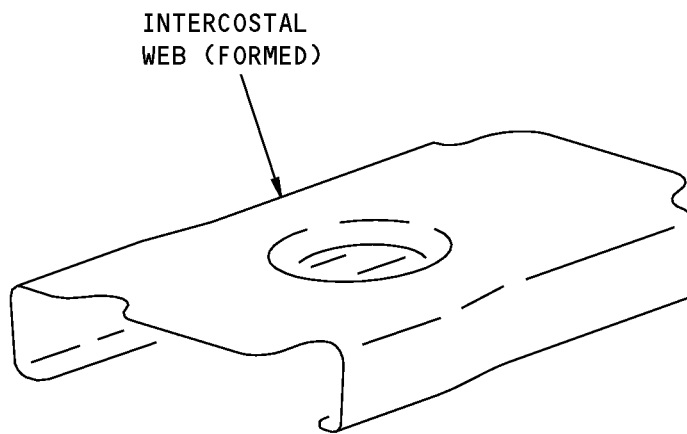


**STRUCTURAL REPAIR MANUAL**



**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 7 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

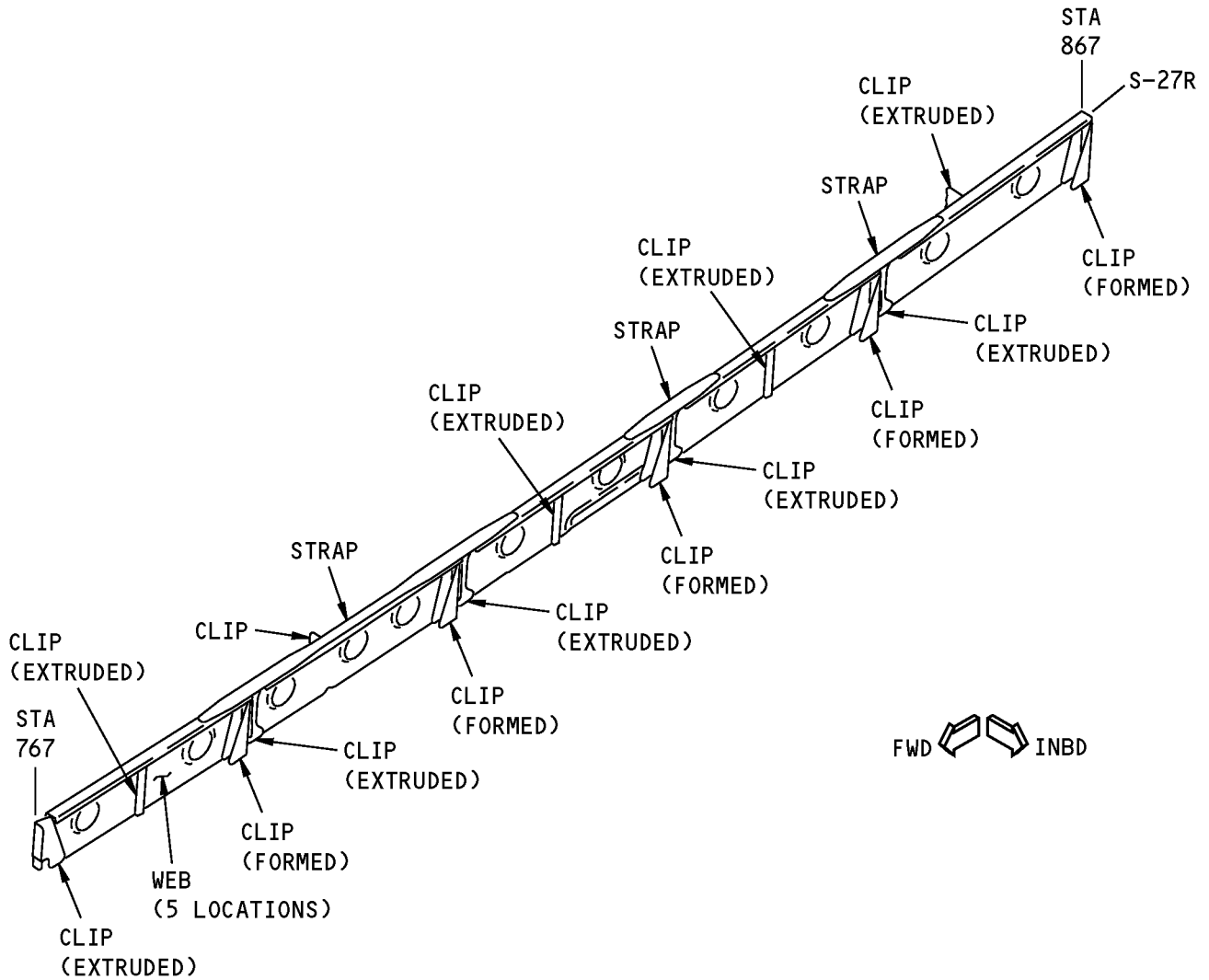


**TYPICAL INTERCOSTAL**

**E**

**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 8 of 11)**



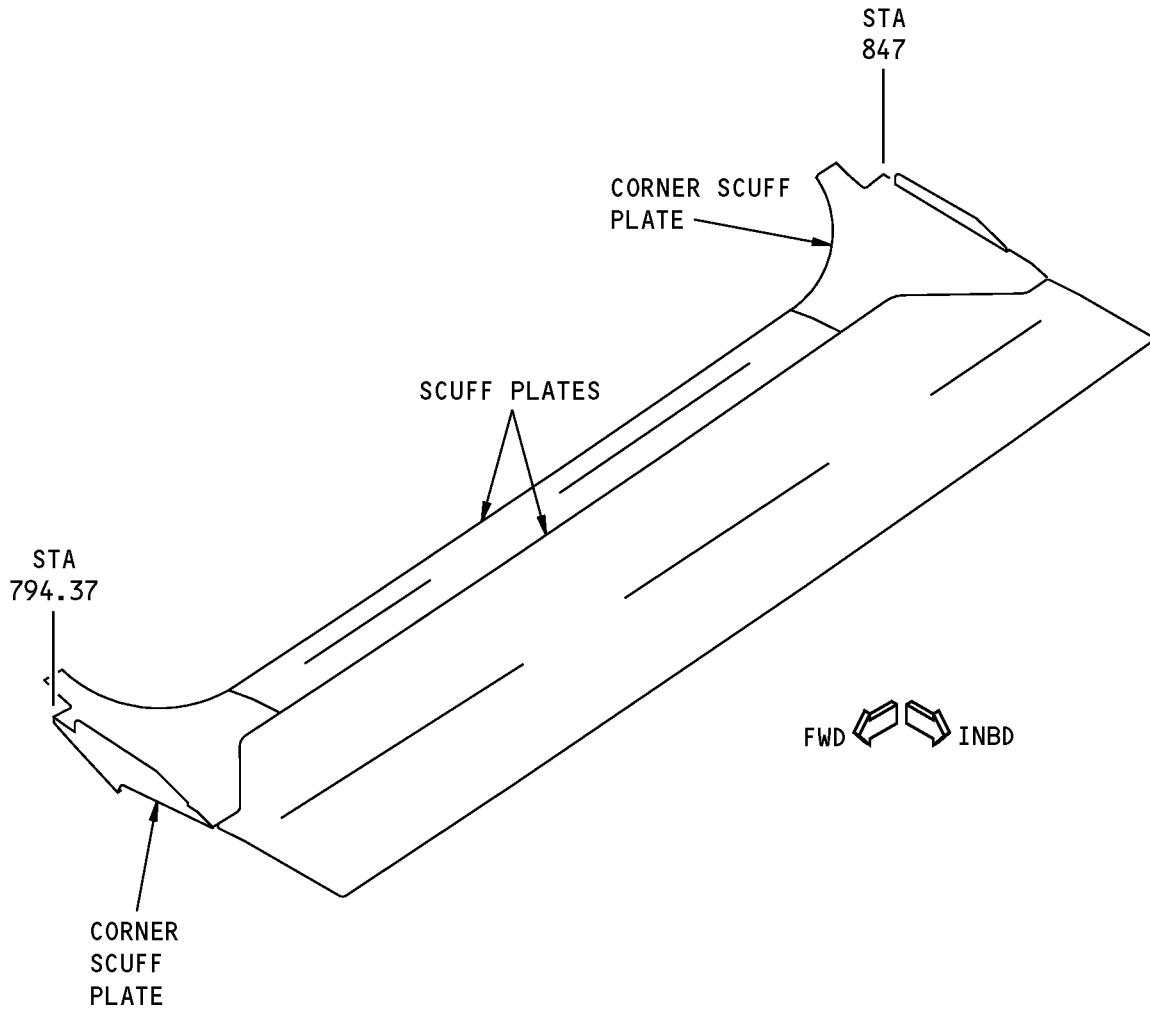


**LOWER AUXILLIARY SILL**

**G**

**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 10 of 11)**

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STRUCTURAL REPAIR MANUAL**



SCUFF PLATE

(H)

**Section 46 Aft Cargo Door Surround Structure Repairs  
Figure 202 (Sheet 11 of 11)**



**737-800**

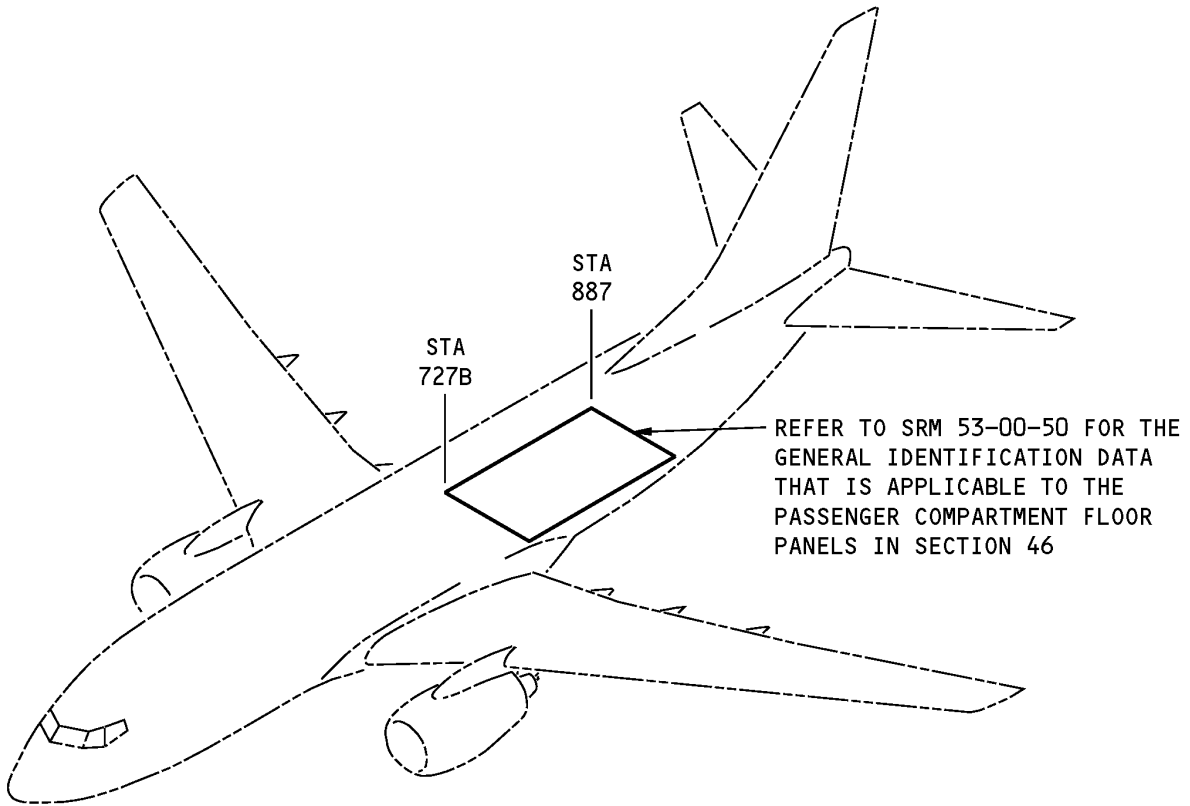
## **STRUCTURAL REPAIR MANUAL**

### **5. Inspection Instructions**

- A. For airplanes that have completed Service Bulletin 737-21-1149 do an external surveillance inspection of the repair at every 2000 flight cycles or do an internal surveillance inspection of the repair at every 9,000 flight cycles.
- B. For airplanes that have not completed Service Bulletin 737-21-1149 do an external surveillance inspection of the repair at every 4000 flight cycles or do an internal surveillance inspection of the repair at every 18,000 flight cycles.
- C. For airplanes that have completed Service Bulletin 737-21-1149 general chord repairs are not permitted between Stop #2 and S-17R. If there is damage in this area, contact The Boeing Company for a specific repair or replace the part.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION GENERAL - SECTION 46 PASSENGER COMPARTMENT FLOOR PANELS**

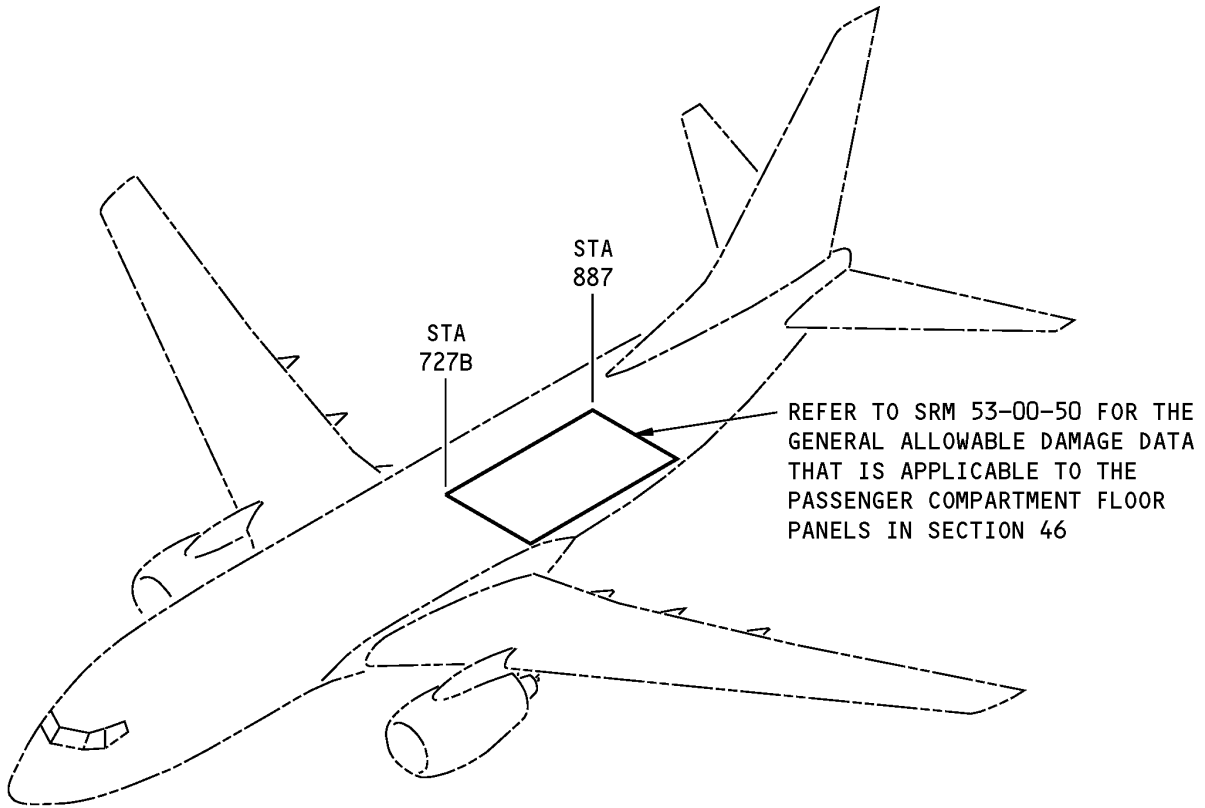


**Section 46 Passenger Compartment Floor Panel Location  
Figure 1**



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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 46 PASSENGER COMPARTMENT FLOOR PANELS**

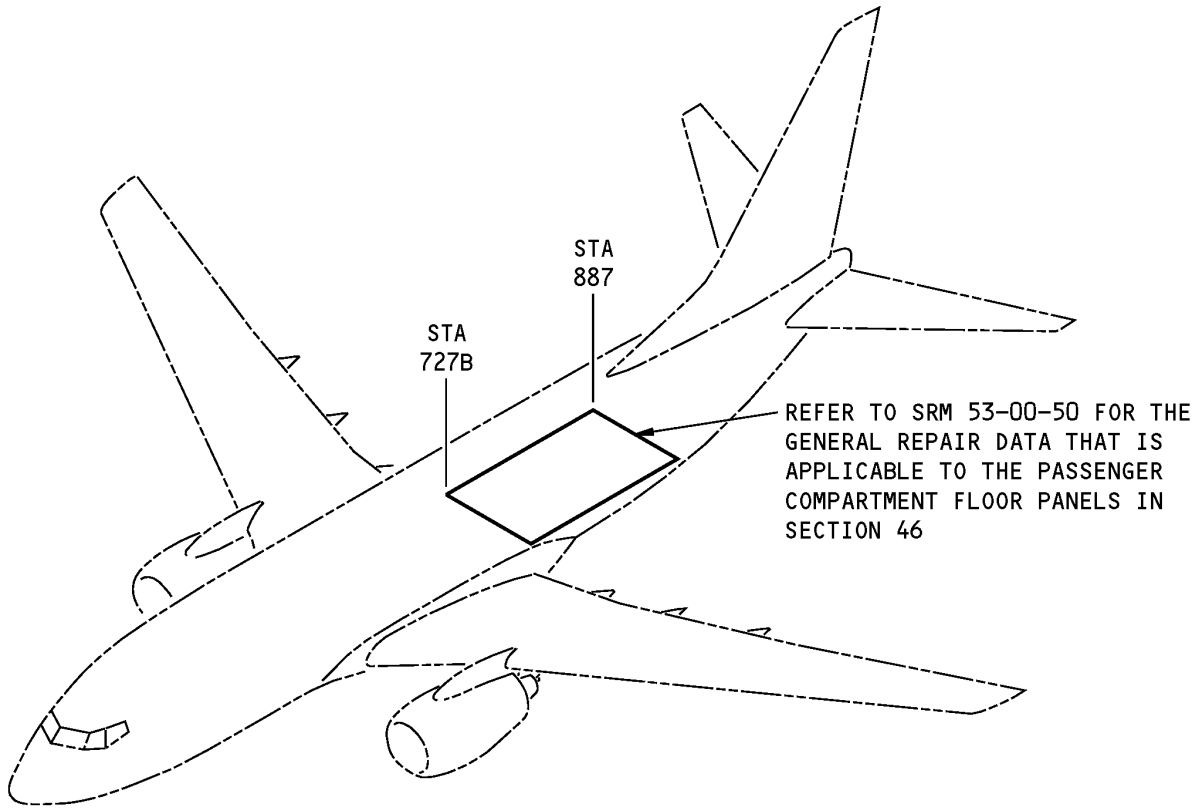


**Section 46 Passenger Compartment Floor Panel Location**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

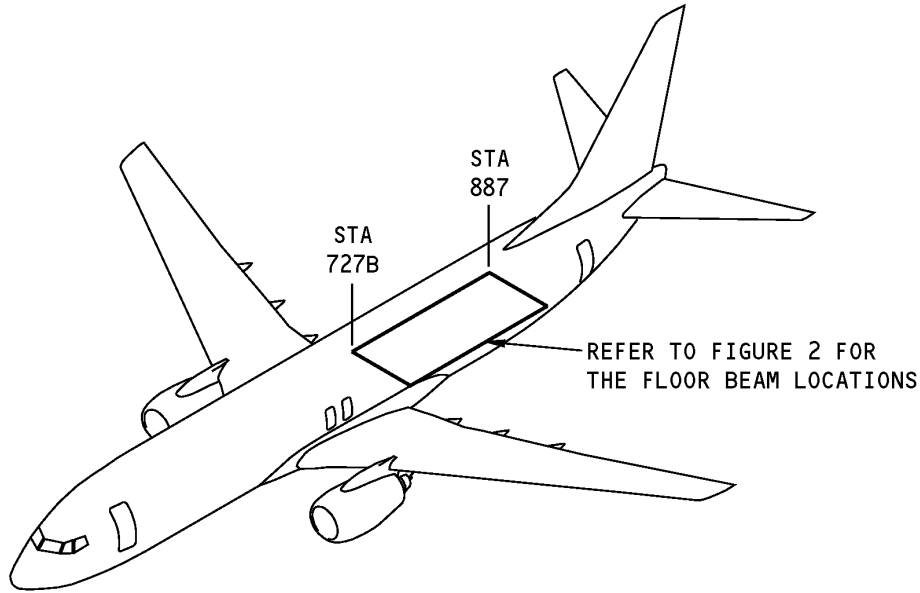
**REPAIR GENERAL - SECTION 46 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 46 Passenger Compartment Floor Panel Location**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 FLOOR BEAMS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Floor Beams  
Figure 1**

**Table 1:**

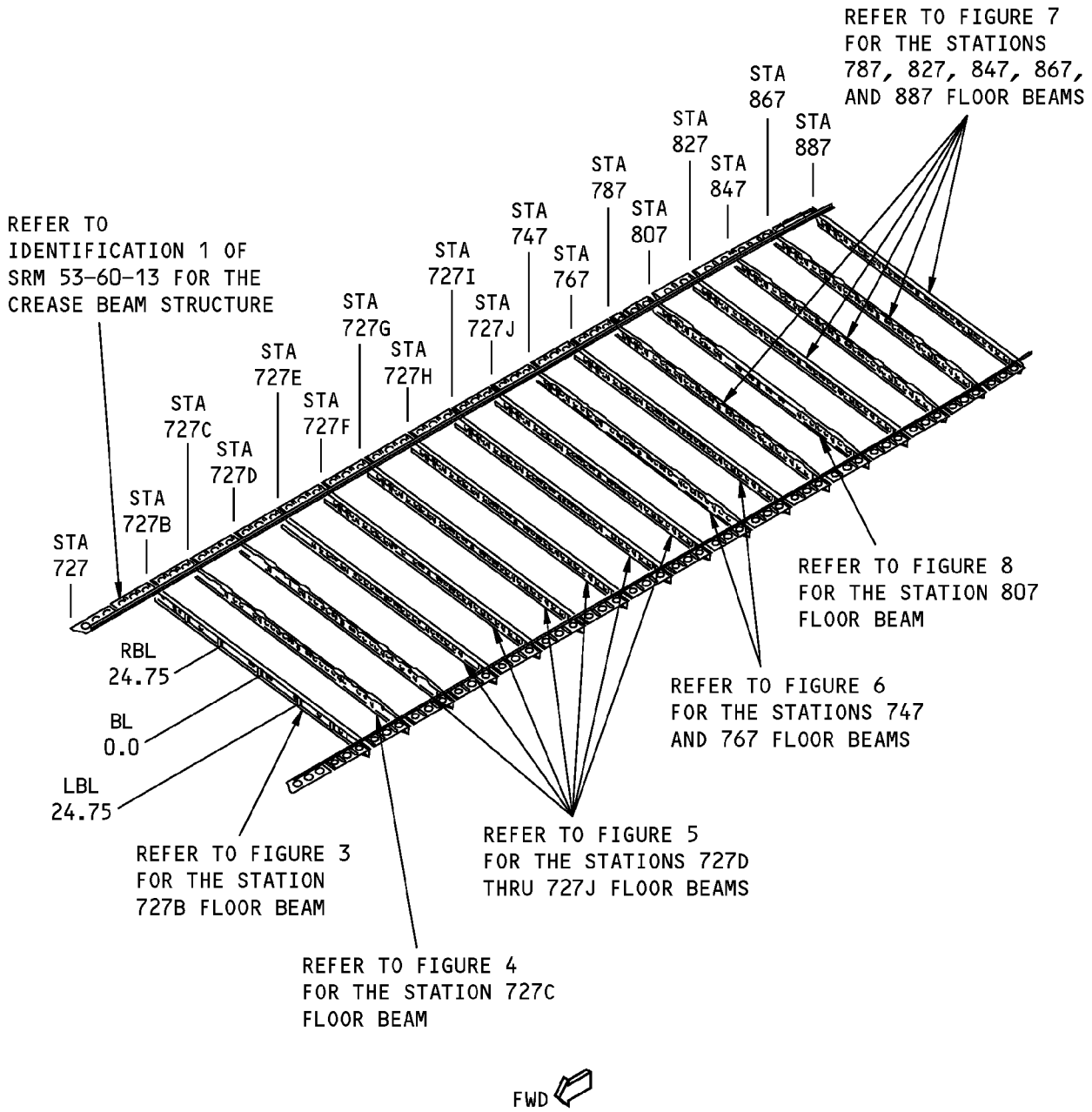
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A0350	Functional Collector - Floor Grid, Section 46
146A5502	Beam Installation - Passenger Floor, Station 727B
146A5503	Beam Installation - Passenger Floor, Station 727C
146A5504	Beam Installation - Passenger Floor, Station 727D
146A5505	Beam Installation - Passenger Floor, Station 727E
146A5506	Beam Installation - Passenger Floor, Station 727F
146A5507	Beam Installation - Passenger Floor, Station 727G
146A5508	Beam Installation - Passenger Floor, Station 727H
146A5509	Beam Installation - Passenger Floor, Station 727I
146A5510	Beam Installation - Passenger Floor, Station 727J
146A5511	Beam Installation - Passenger Floor, Station 747
146A5512	Beam Installation - Passenger Floor, Station 767
146A5513	Beam Installation - Passenger Floor, Station 787
146A5514	Beam Installation - Passenger Floor, Station 807



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**STRUCTURAL REPAIR MANUAL**

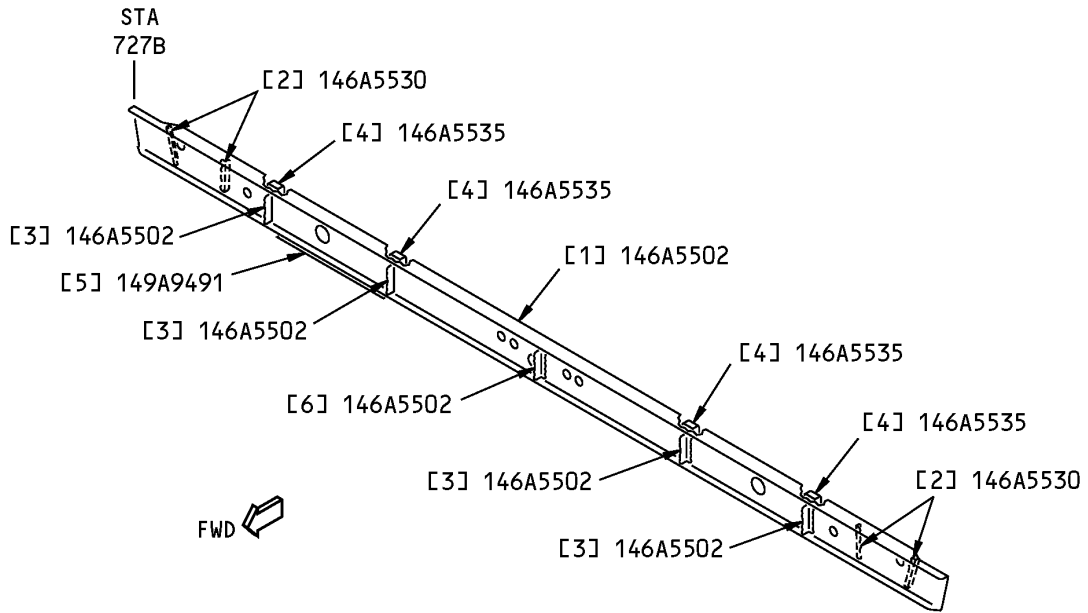
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
146A5515	Beam Installation - Passenger Floor, Station 827
146A5516	Beam Installation - Passenger Floor, Station 847
146A5517	Beam Installation - Passenger Floor, Station 867
146A5518	Beam Installation - Passenger Floor, Station 887

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STRUCTURAL REPAIR MANUAL**



**Section 46 Floor Beam Locations  
Figure 2**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

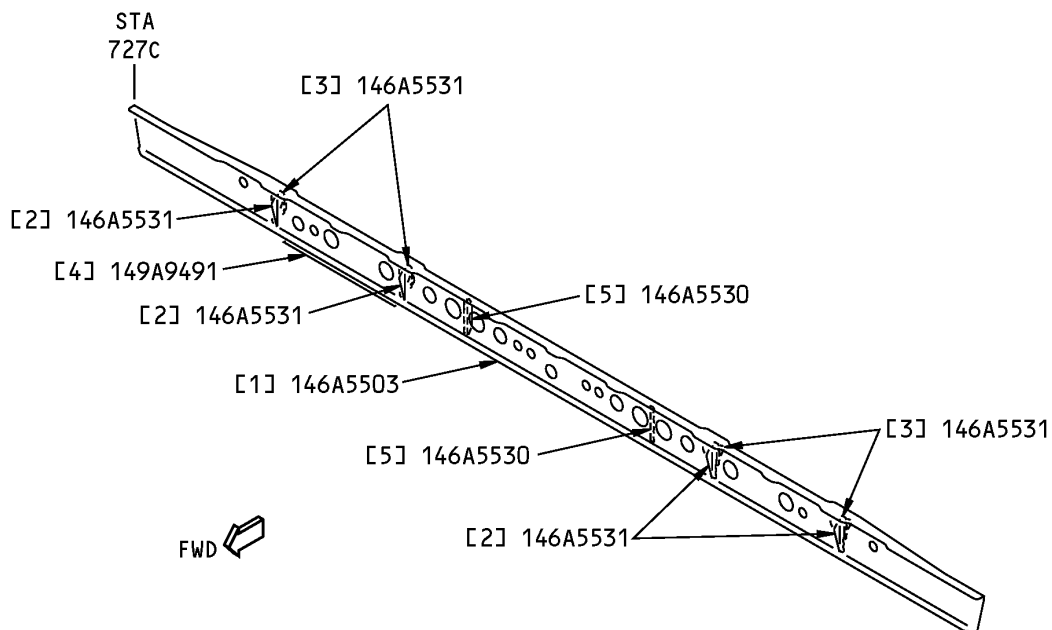
**Station 727B Floor Beam Identification  
Figure 3**

**Table 2:**

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle (4)		AND10133-0601 7075-T73511 extrusion as given in QQ-A-200/11	
[3]	Stiffener (4)		BAC1503-100142 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Termination Fitting (4)		7050-T7451 plate as given in AMS 4340	
[5]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	
[6]	Stiffener		BAC1503-100142 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

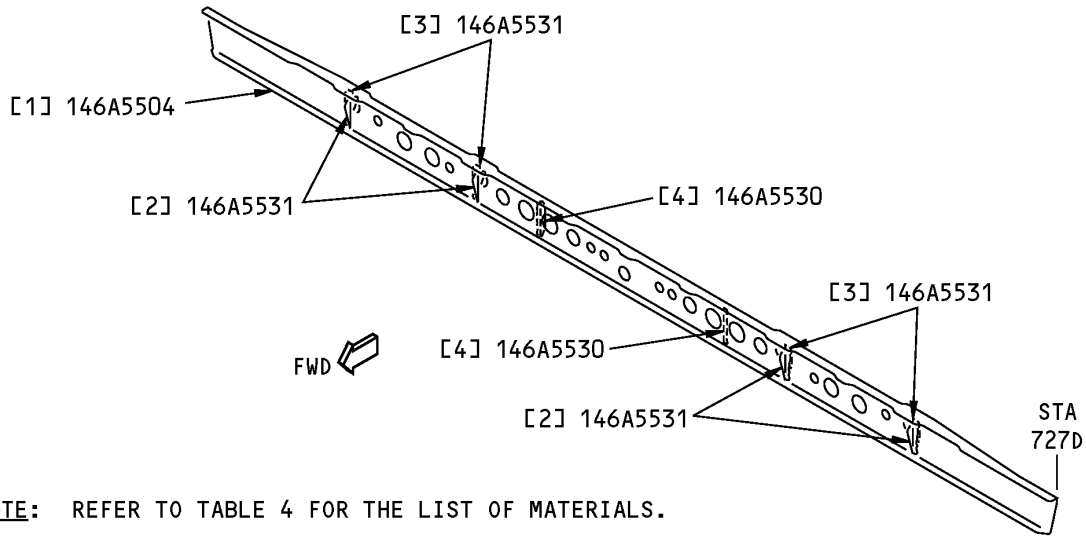
**Station 727C Floor Beam Identification  
Figure 4**

**Table 3:**

LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	
[5]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**STATION 727D FLOOR BEAM IS SHOWN,  
STATION 727E THRU 727J FLOOR BEAMS ARE ALMOST THE SAME**

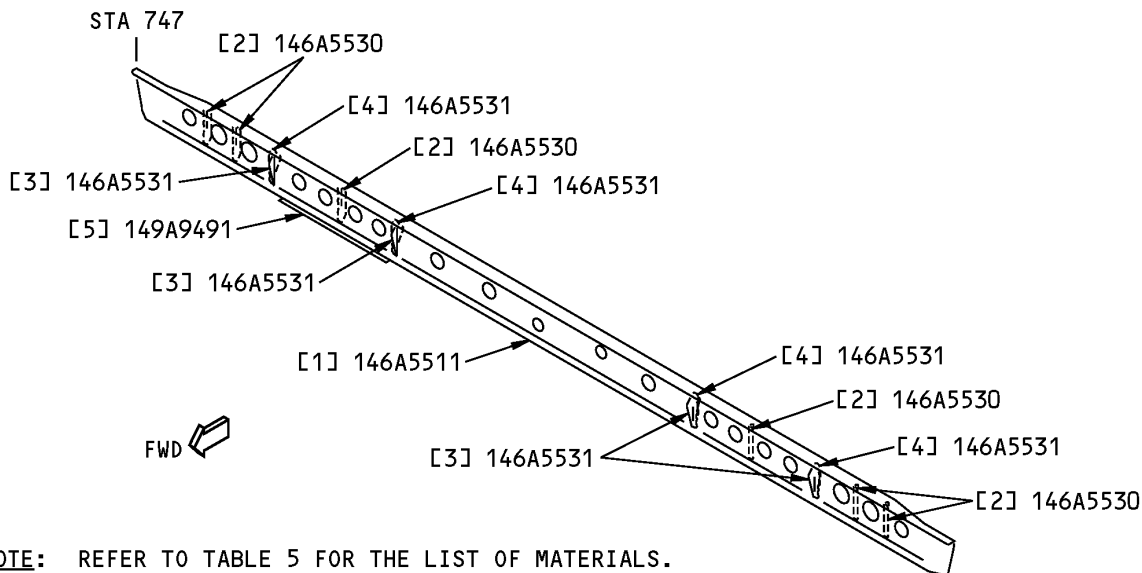
**Stations 727D thru 727J Floor Beam Identification  
Figure 5**

**Table 4:**

LIST OF MATERIALS FOR FIGURE 5				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

**STATION 747 FLOOR BEAM IS SHOWN,  
STATION 767 FLOOR BEAM IS ALMOST THE SAME**

**Stations 747 and 767 Floor Beam Identification  
Figure 6**

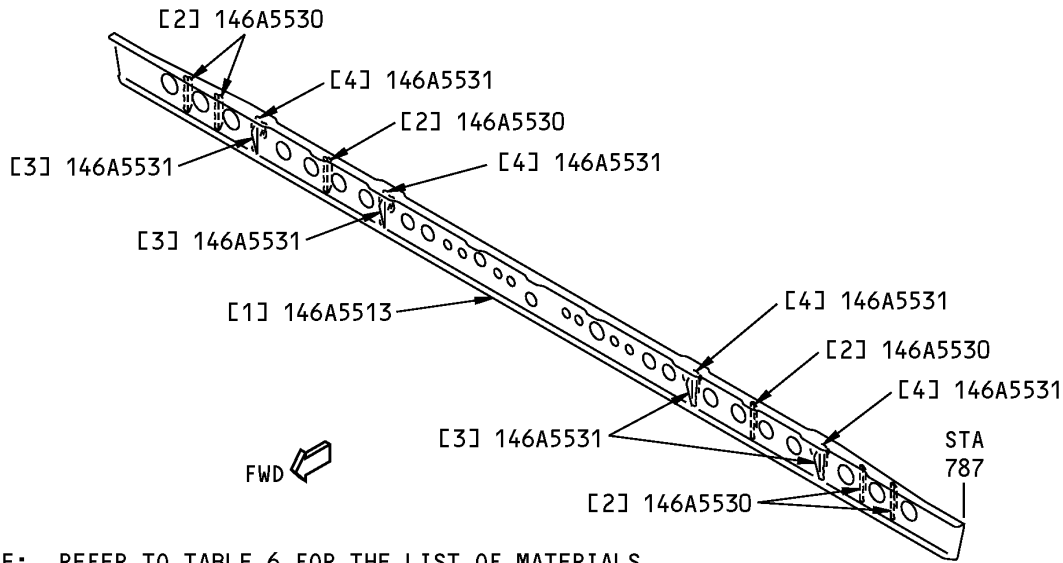
**Table 5:**

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Depressor Strip		BAC1503-295 2024-T3511 extrusion as given in QQ-A-200/3	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

**STATION 787 FLOOR BEAM IS SHOWN,  
STATIONS 827, 847, 867, AND 887 FLOOR BEAMS ARE ALMOST THE SAME**

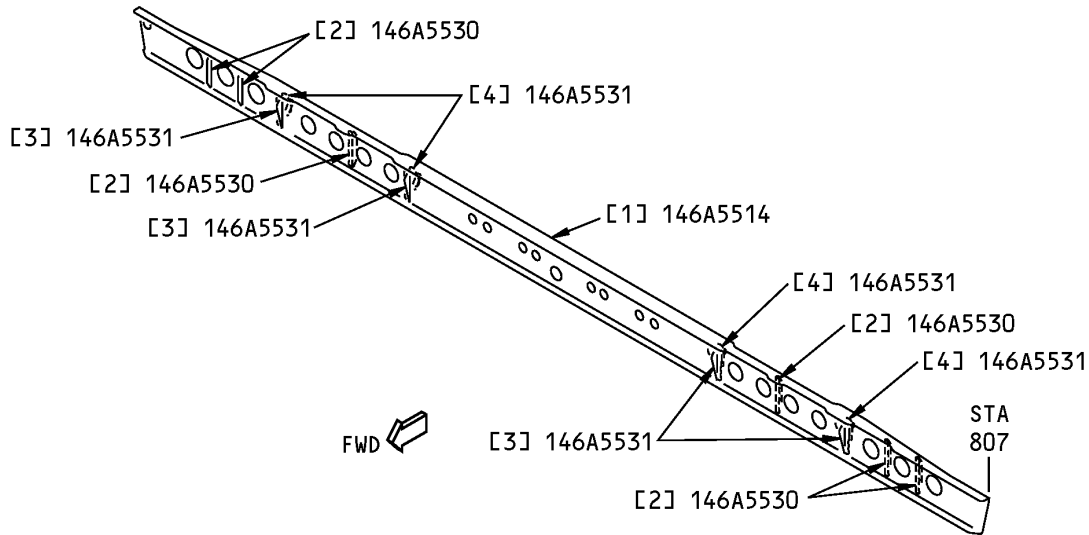
**Stations 787, 827, 847, 867, and 887 Floor Beam Identification  
Figure 7**

**Table 6:**

LIST OF MATERIALS FOR FIGURE 7				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

**Station 807 Floor Beam Identification  
Figure 8**

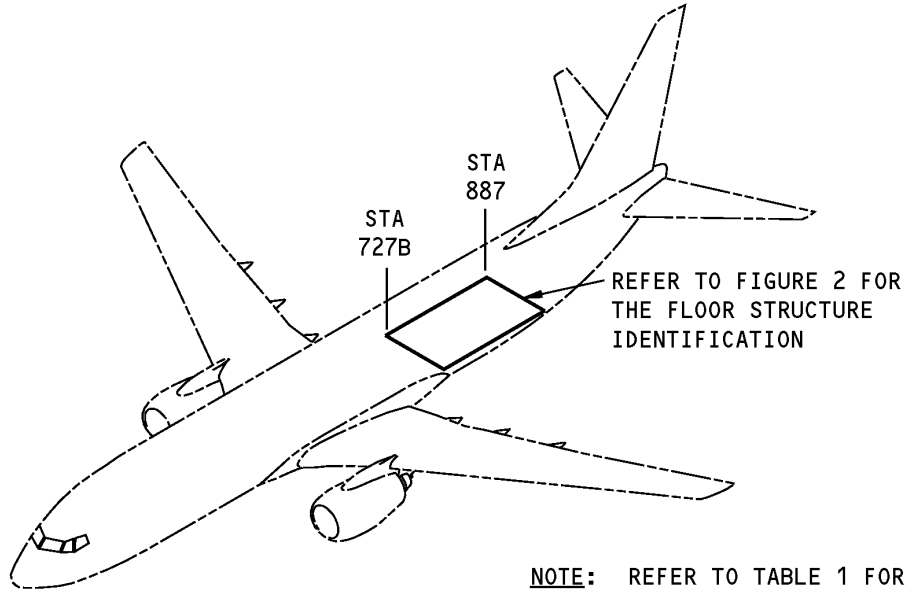
**Table 7:**

LIST OF MATERIALS FOR FIGURE 8				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11	
[3]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	
[4]	Angle - Seat Track (4)		BAC1503-100987 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 2 - SECTION 46 FLOOR STRUCTURE**

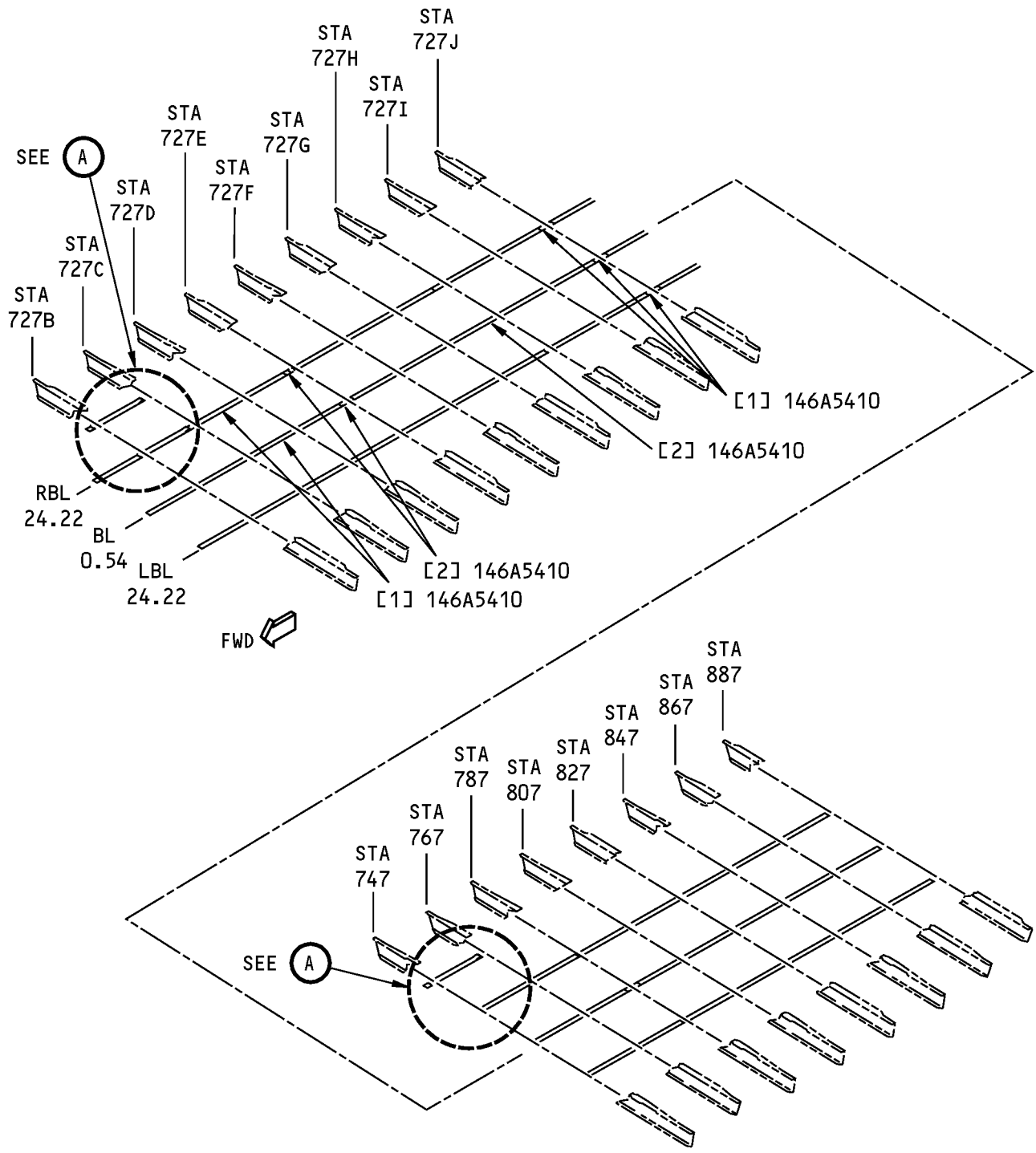


**Section 46 Floor Structure Location  
Figure 1**

**Table 1:**

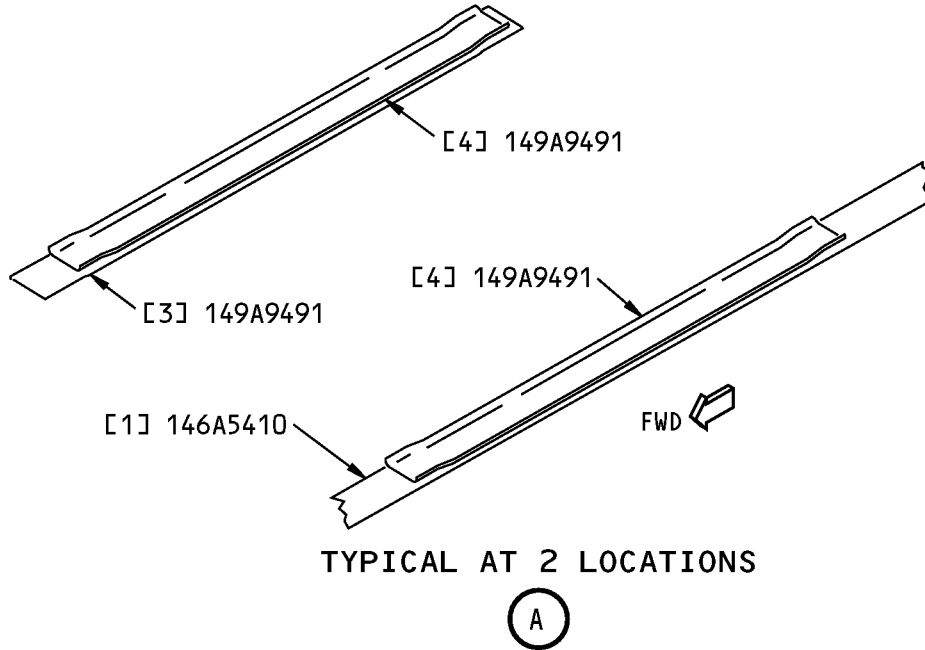
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A0350	Functional Collector - Floor Grid, Section 46
146A5400	Stabilization Installation - Floor, Section 46

**STRUCTURAL REPAIR MANUAL**



**Section 46 Floor Structure Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Floor Structure Identification  
Figure 2 (Sheet 2 of 2)**



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**STRUCTURAL REPAIR MANUAL**

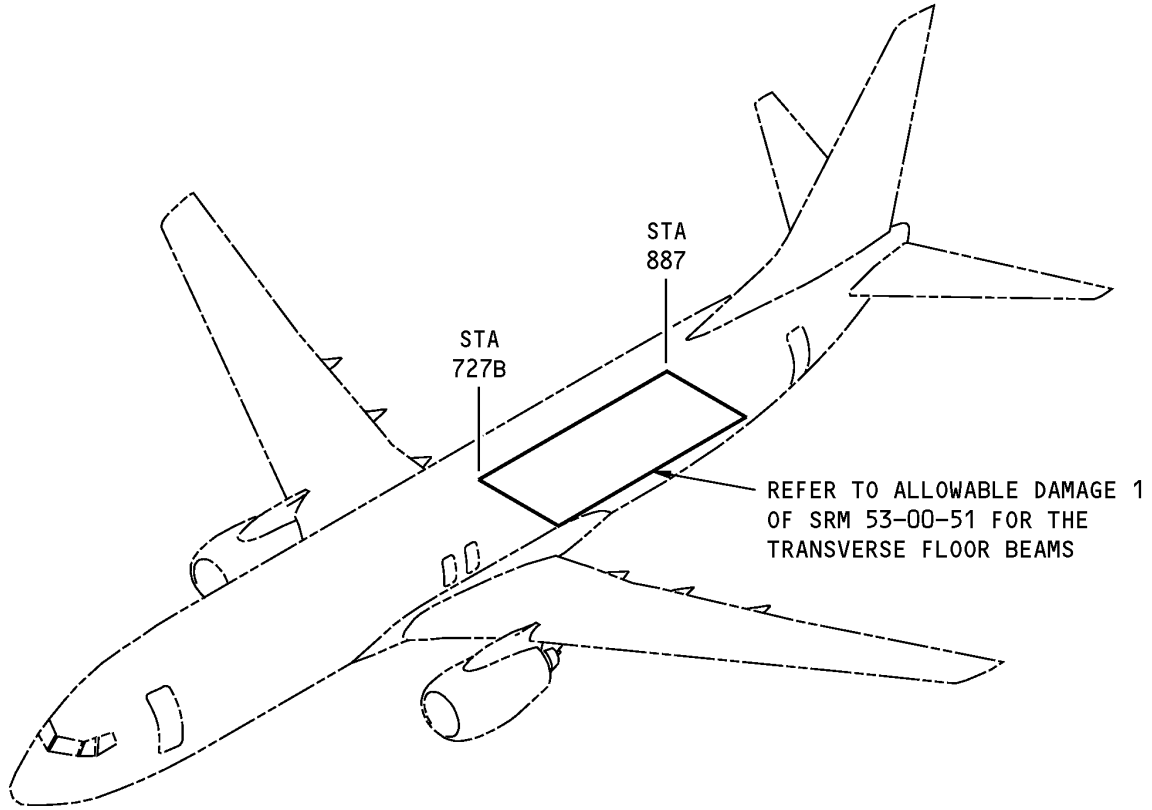
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stabilizer Strap (9)		BAC1513-295 7075-T76511 extrusion as given in QQ-A-200/15	
[2]	Splice (6)	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
[3]	Depressor Strip (2)		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	
[4]	Support Channel (4)		BAC1493-370 2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 46 TRANSVERSE FLOOR BEAMS**

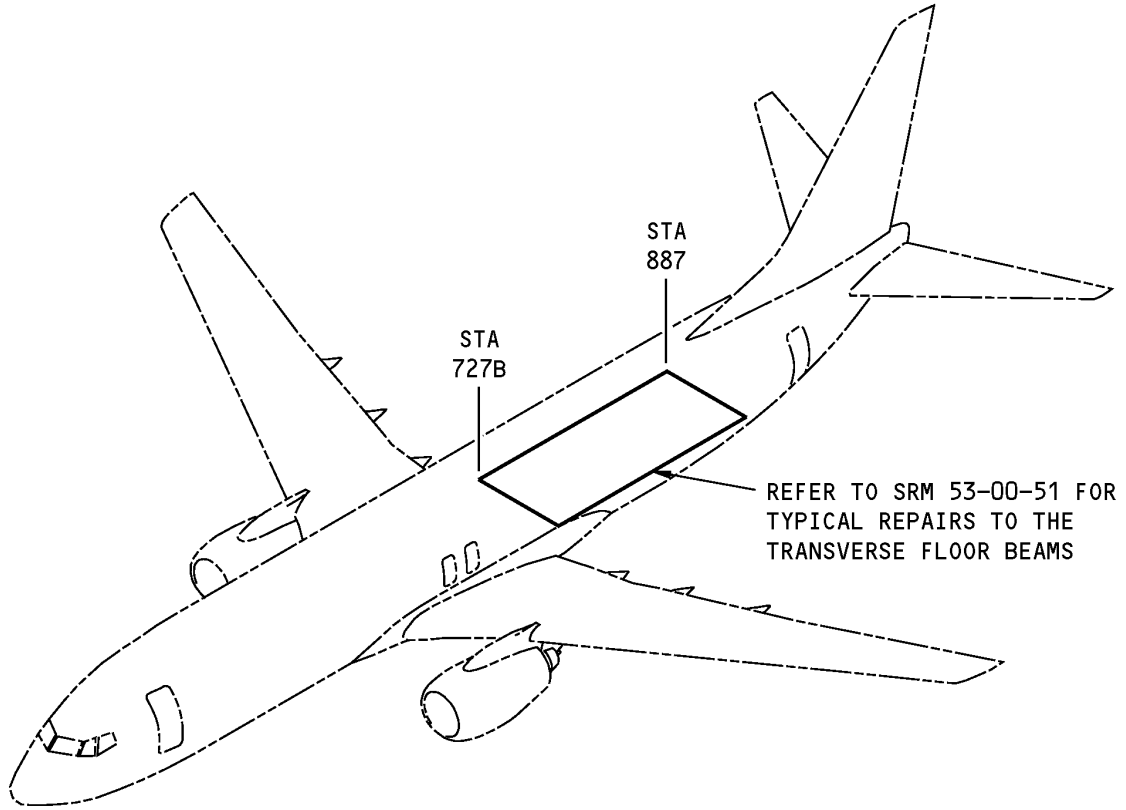


**Section 46 Transverse Floor Beams**  
**Figure 101**



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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 46 TRANSVERSE FLOOR BEAMS**



**Section 46 Transverse Floor Beams**  
**Figure 201**





737-800

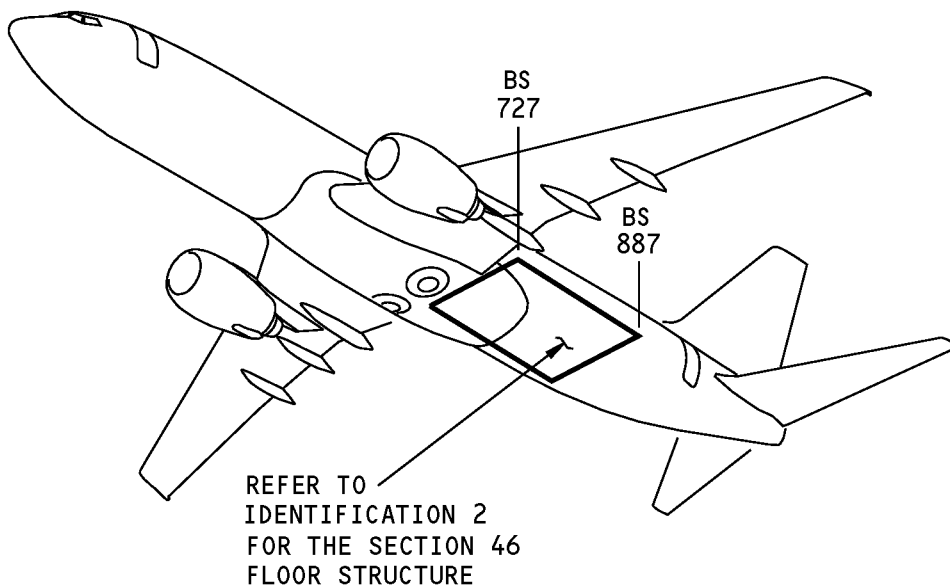
## STRUCTURAL REPAIR MANUAL

### REPAIR 2 - SECTION 46 FLOOR STRUCTURE

#### 1. Applicability

- A. Repair 2 is applicable to damage to the floor structure as shown in Section 46 Floor Structure Repairs, Figure 201/REPAIR 2.

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**STRUCTURAL REPAIR MANUAL**



**NOTE:** THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11 , SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

**Section 46 Floor Structure Repairs**  
**Figure 201**



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**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-60-51	FUSELAGE FLOOR STRUCTURE - SECTION 46

**4. Repair Instructions**

- A. Section 46 Floor Structure

- (1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 46 floor structure.

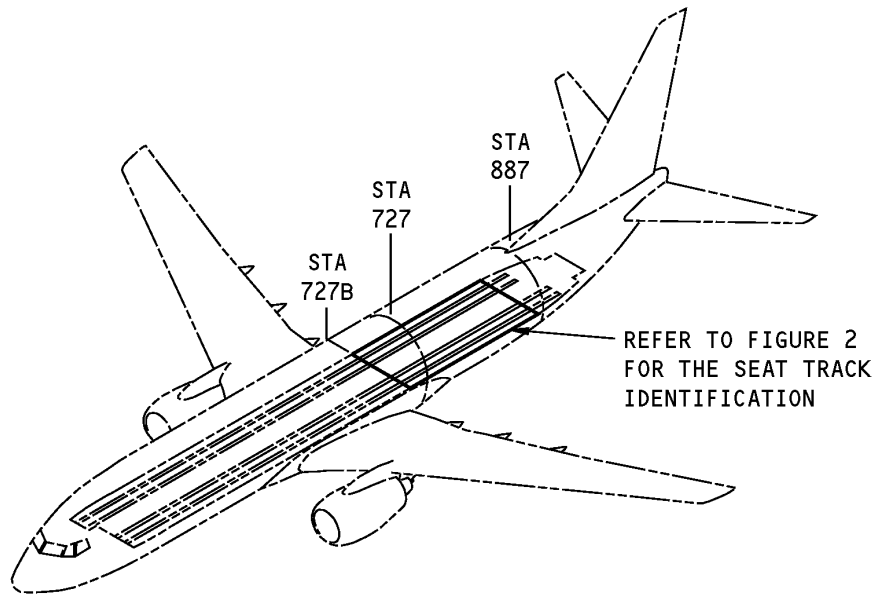
**NOTE:** If necessary, refer to 53-60-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 46 FLOOR STRUCTURE</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-30-13, Allowable Damage 1, then replace the damaged part.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 SEAT TRACKS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

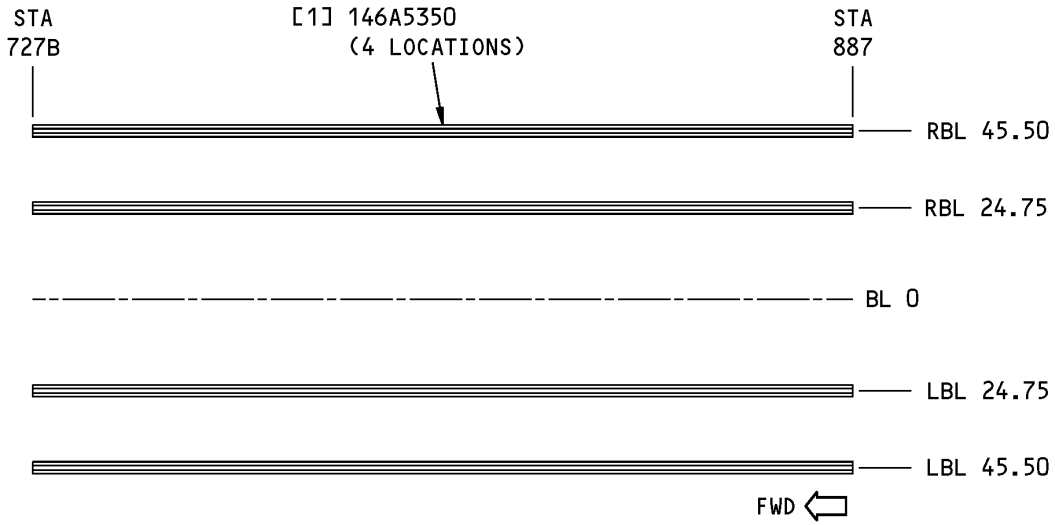
**Section 46 Seat Track Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0350	Functional Collector - Floor Grid, Section 46
146A5300	Seat Track Installation, Section 46



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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0350 TO SEE THE DIFFERENT CONFIGURATIONS.

**Section 46 Seat Track Identification  
Figure 2**

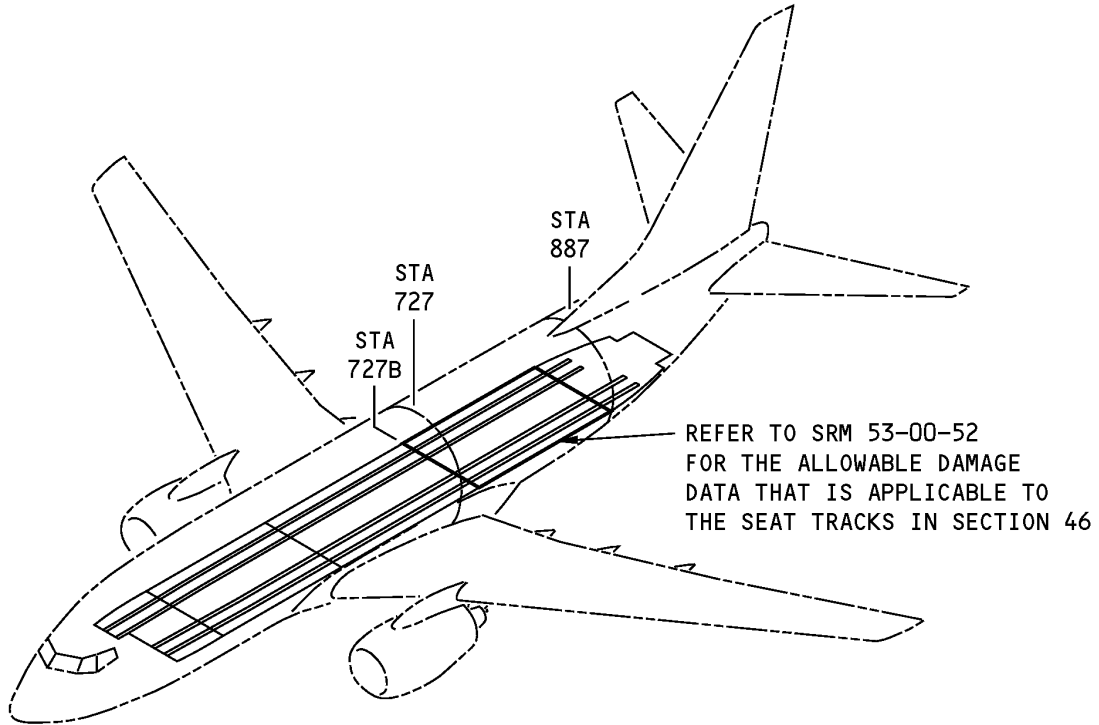
**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Seat Track		BAC1520-2789 7178-T6511 extrusion as given in QQ-A-200/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

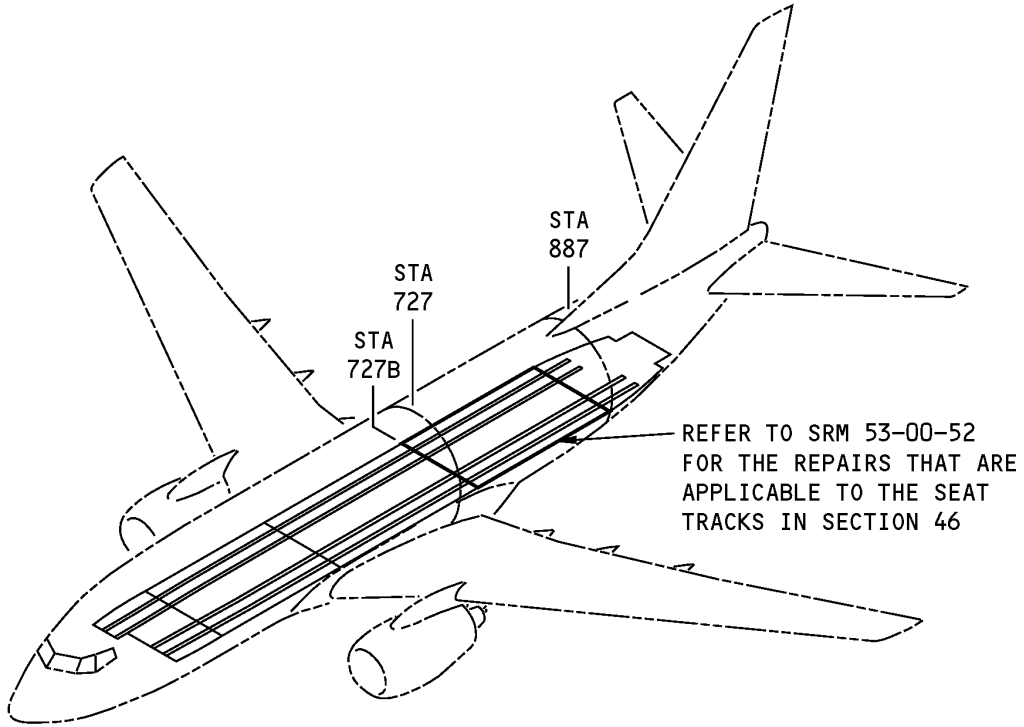
**ALLOWABLE DAMAGE GENERAL - SECTION 46 SEAT TRACKS**



**Section 46 Seat Track Allowable Damage  
Figure 101**

**737-800**  
**STRUCTURAL REPAIR MANUAL**

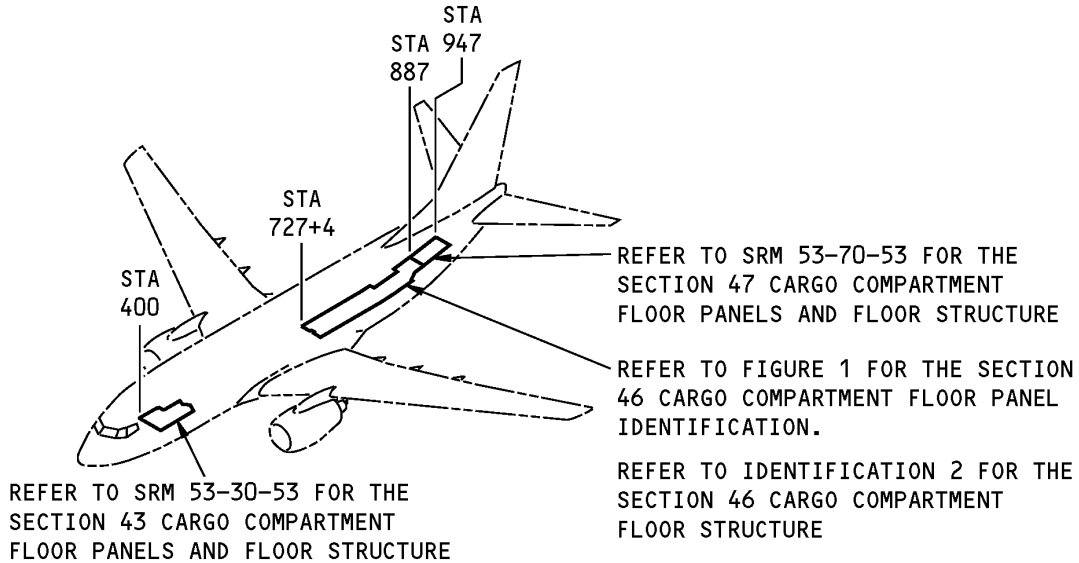
**REPAIR GENERAL - SECTION 46 SEAT TRACKS**



**Section 46 Seat Track Repairs**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 46 CARGO COMPARTMENT FLOOR PANELS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Cargo Compartment Floor Panel Locations  
Figure 1**

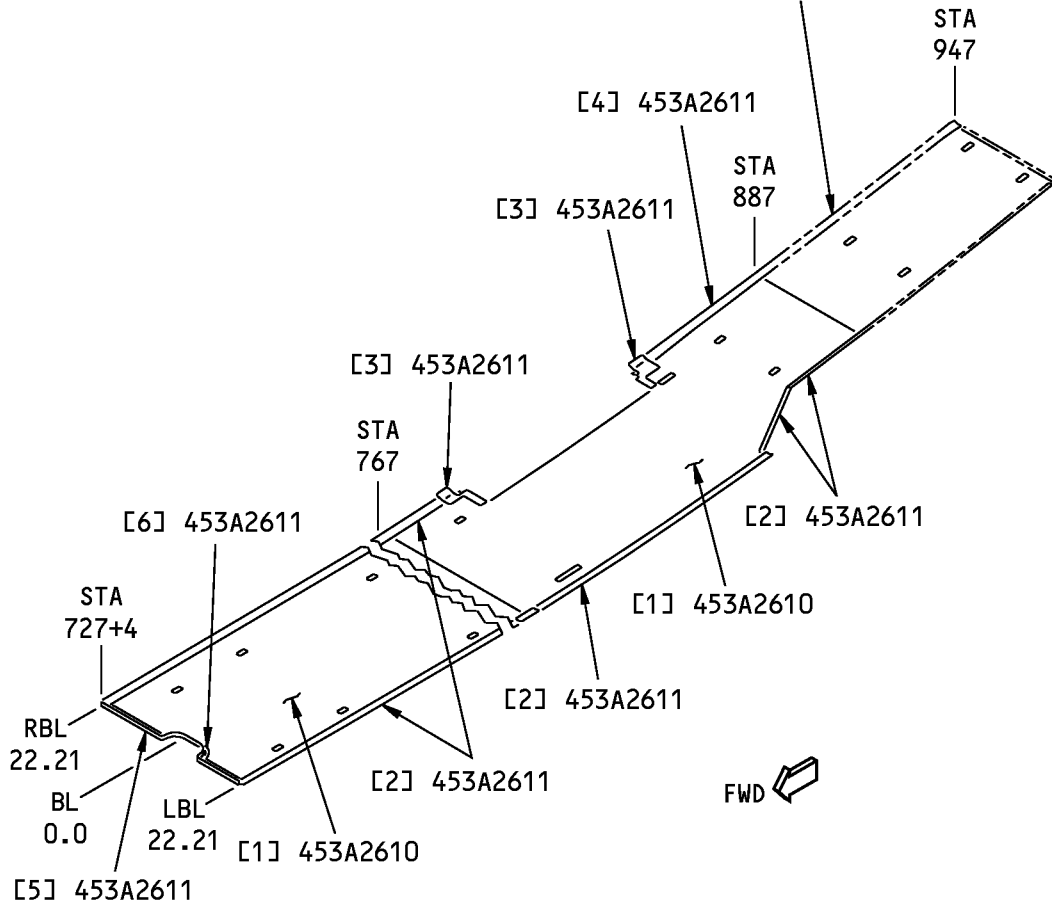
**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
400A9101	Functional Product Collector - Payloads - Final Assembly
453A2600	Deck Panel Installation - Aft Cargo



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REFER TO SRM 53-70-53,  
IDENTIFICATION 1, FOR  
THE SECTION 47 CARGO  
COMPARTMENT FLOOR  
PANEL IDENTIFICATION



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Cargo Compartment Floor Panel Identification  
Figure 2**



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**STRUCTURAL REPAIR MANUAL**

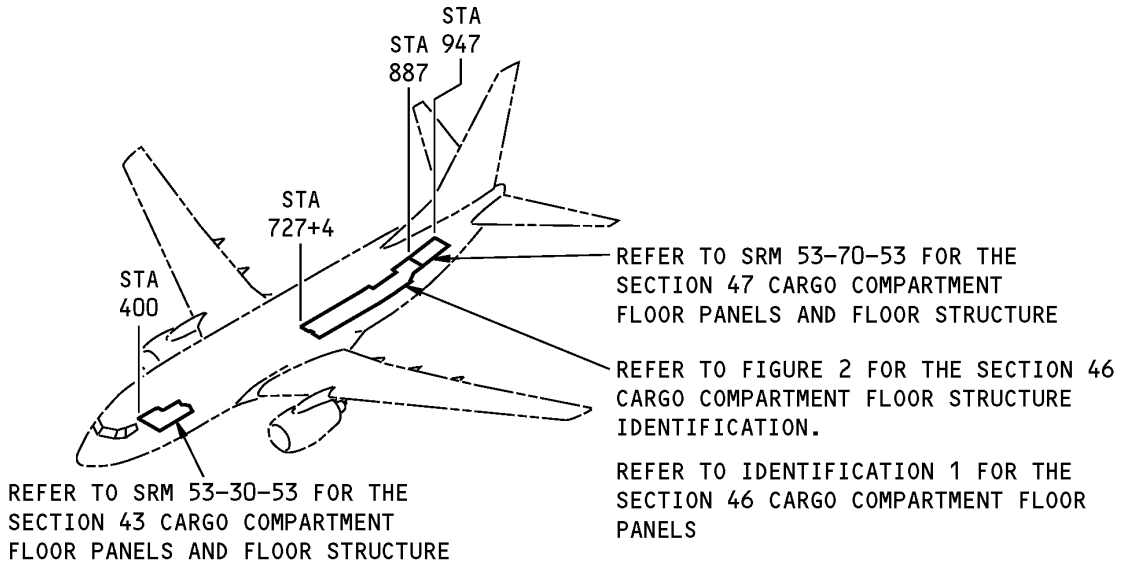
**Table 2:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Deck Panel	0.070 (1.79)	GILLINER 1266 Gill Coated (white) fiberglass	Refer to the Engineering Drawing
		0.090 (2.29)	GILLINER 1266 Gill Coated (white) fiberglass	
		0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	
		0.090 (2.29)	Conolite P/N A90RG1W	
		0.058 (1.47)	BMS 7-326, Class 2/1, Grade C, Type VII	
[2]	Cap Strip	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Scuff Plate	0.125 (3.18)	7075-T6 formed plate as given in QQ-A-250/13	
[4]	Cap Strip	0.063 (1.6)	6013-T6 formed sheet as given in AMS 4347	
[5]	Cap Strip	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Stiffener	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 46 CARGO COMPARTMENT FLOOR STRUCTURE**



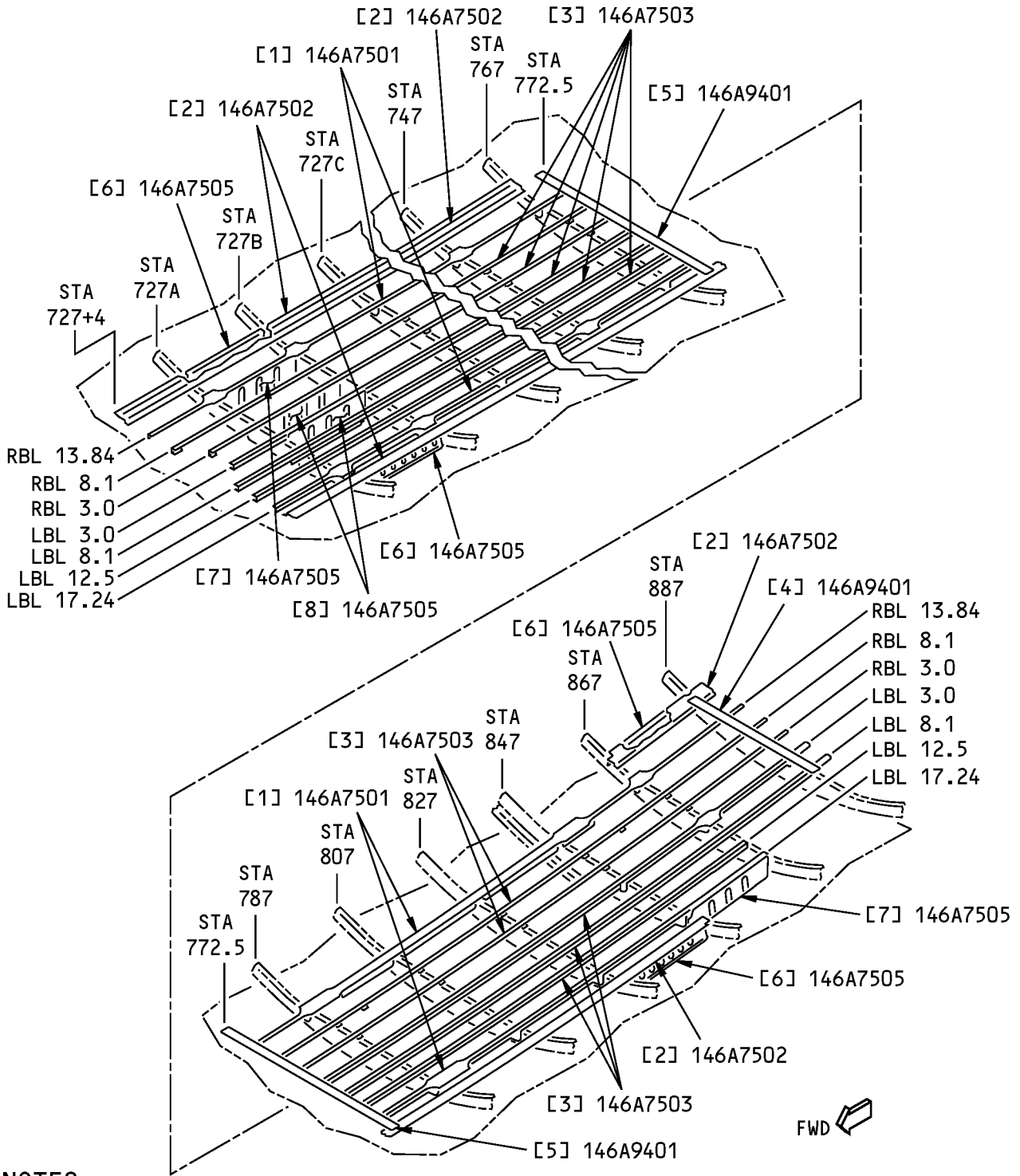
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Cargo Compartment Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4620	Functional Collector Section 46 Lower Lobe
146A7500	Support Installation - Cargo Deck, Section 46
146A7501	Track Assembly - Cargo Support, Section 46
146A7502	Zee Assembly - Cargo Floor, Section 46
146A7503	Rail Assembly - Cargo Deck Support, Section 46
146A7505	Intercostals - Cargo Deck Support, Section 46
146A7506	Splice - Cargo Deck Support, Section 46
146A9401	Support Assembly - Payloads, Aft Cargo

**STRUCTURAL REPAIR MANUAL**

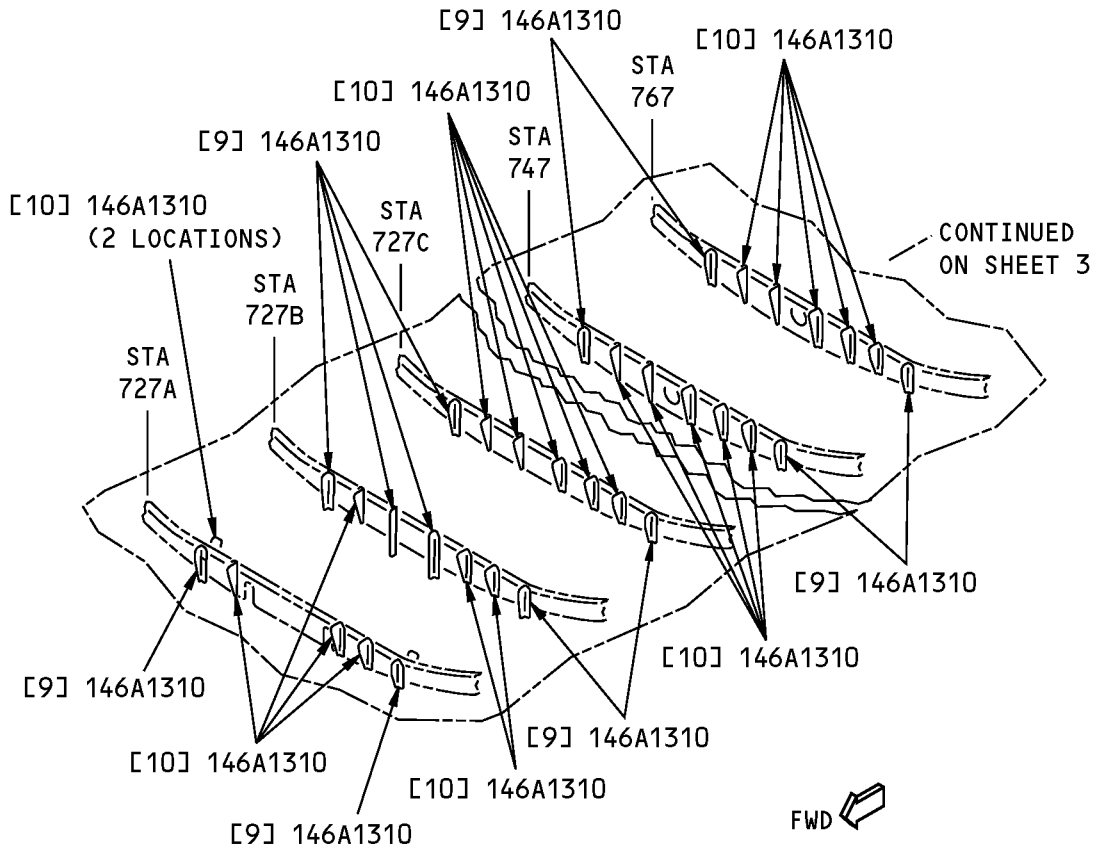


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Cargo Compartment Floor Structure Identification  
Figure 2 (Sheet 1 of 3)**

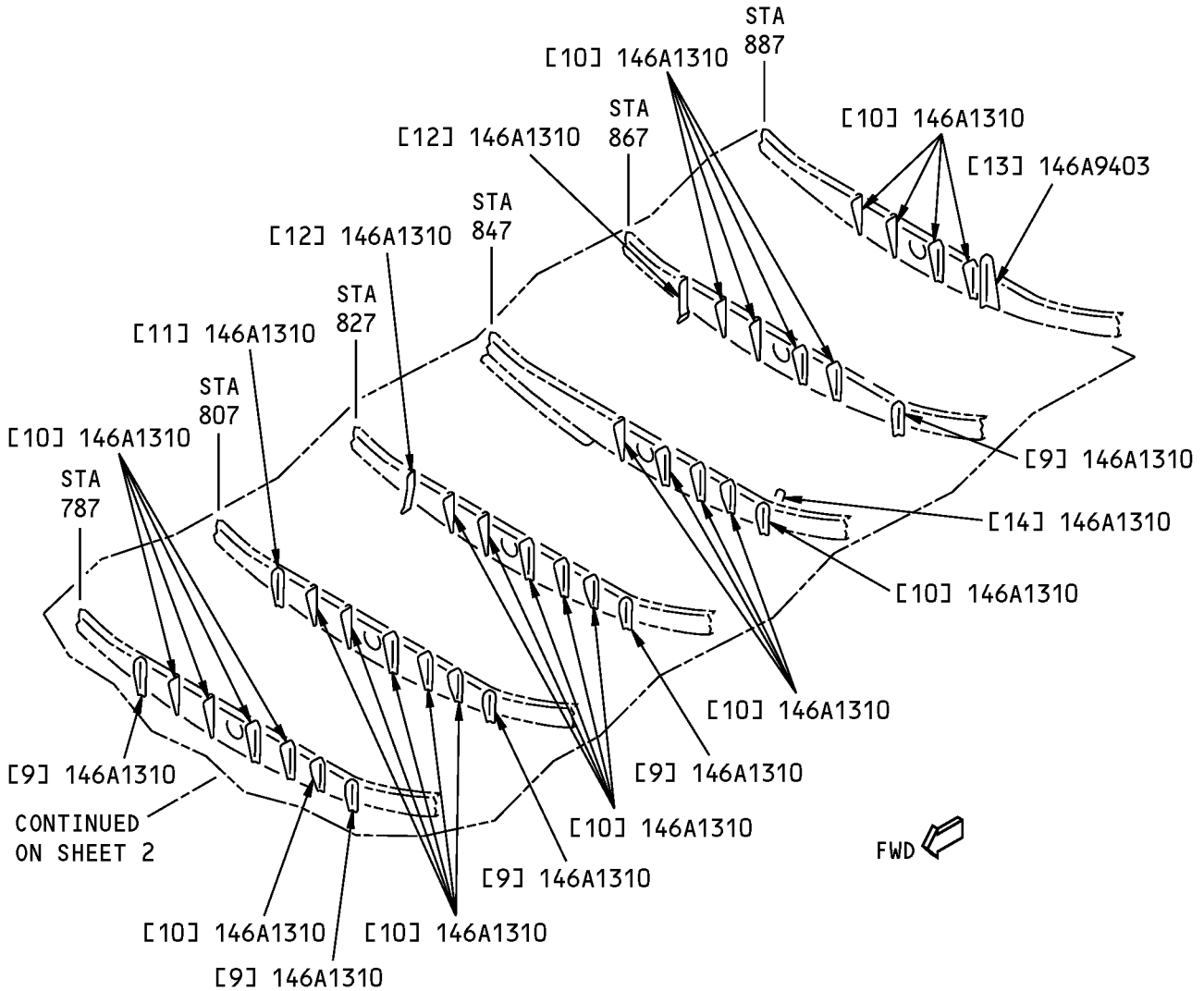
**737-800  
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(SHOWN WITH RAILS REMOVED)

**Section 46 Cargo Compartment Floor Structure Identification  
Figure 2 (Sheet 2 of 3)**

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STRUCTURAL REPAIR MANUAL**



**(SHOWN WITH RAILS REMOVED)**

**Section 46 Cargo Compartment Floor Structure Identification  
Figure 2 (Sheet 3 of 3)**



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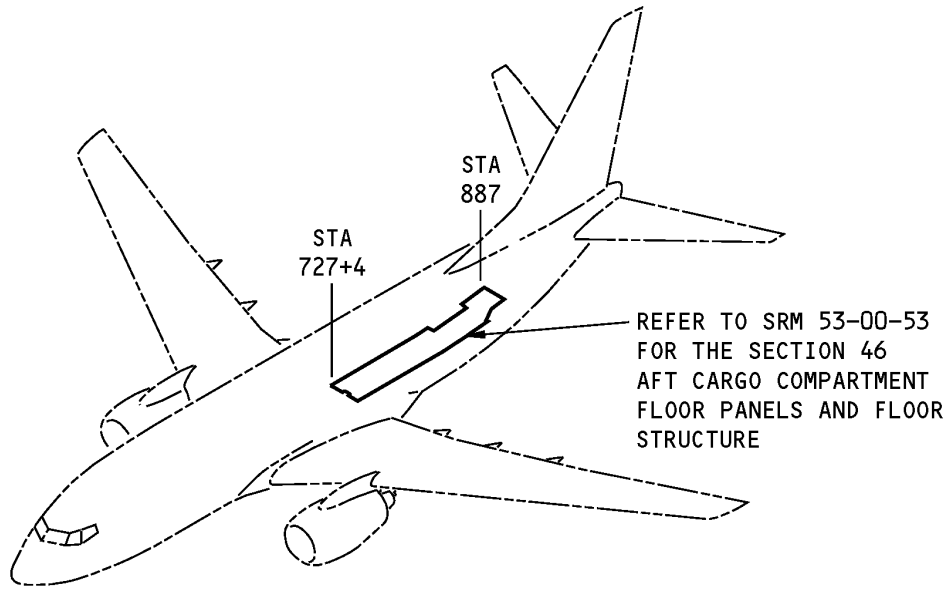
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Track		BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[2]	Intercostal - Track		BAC1496-377 7075-T62 clad formed sheet as given in QQ-A-250/13	
[3]	Zee		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[4]	Tee		BAC1505-100543 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Tee		BAC1505-100581 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Intercostal - Zee	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal - Track	0.045 (1.143)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Intercostal - Rail	0.036 (0.914)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Clip		BAC1503-100703 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip		BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Clip - Station 807		BAC1503-100219 7075-T73511 extrusion as given in QQ-A-200/11	
[12]	Clip - Station 827 and 867		7075-T7351 machined plate as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[13]	Clip - Station 887	0.056 (1.422)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Clip - Station 847		BAC1505-101508 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE GENERAL - SECTION 46 AFT CARGO COMPARTMENT FLOOR STRUCTURE**



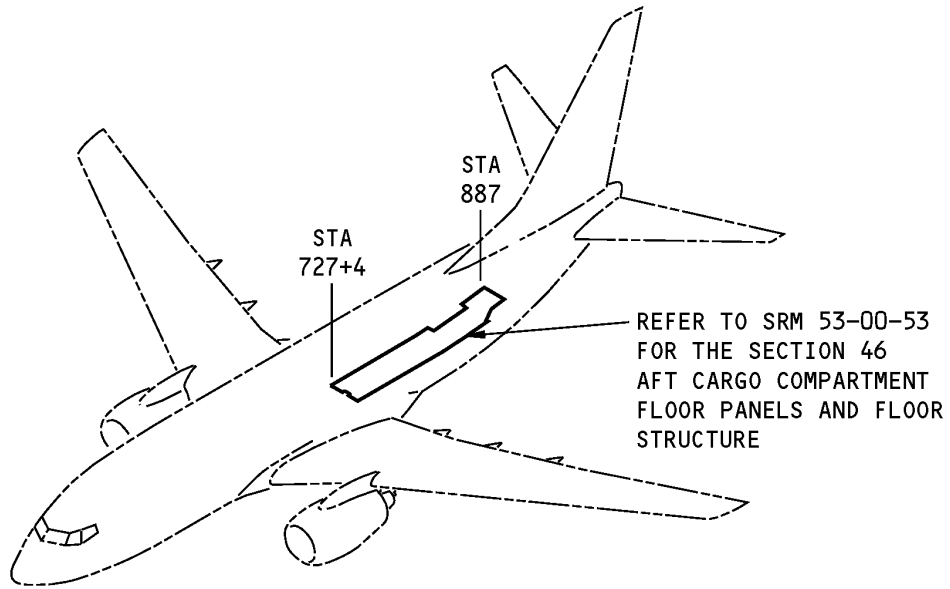
**Section 46 Aft Cargo Compartment Floor Structure  
Figure 101**





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**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 46 AFT CARGO COMPARTMENT FLOOR STRUCTURE**



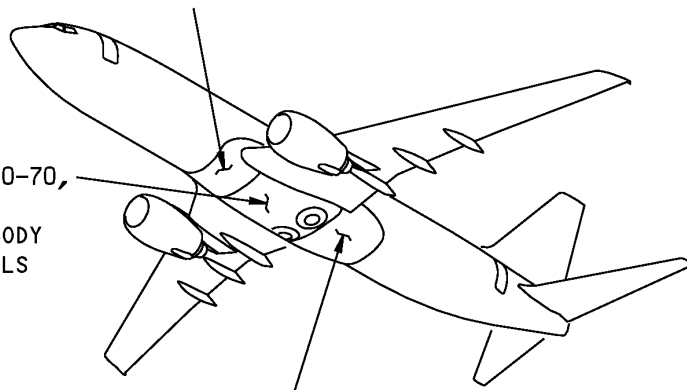
**Section 46 Aft Cargo Compartment Floor Structure**  
**Figure 201**

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**IDENTIFICATION 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS**

REFER TO SRM 53-30-70, IDENTIFICATION 1  
FOR THE WING-TO-BODY FAIRING  
SKIN PANELS IN SECTION 43

REFER TO SRM 53-40-70,  
IDENTIFICATION 1  
FOR THE WING-TO-BODY  
FAIRING SKIN PANELS  
IN SECTION 44



REFER TO FIGURE 2 FOR THE  
WING-TO-BODY FAIRING SKIN  
PANELS IN SECTION 46

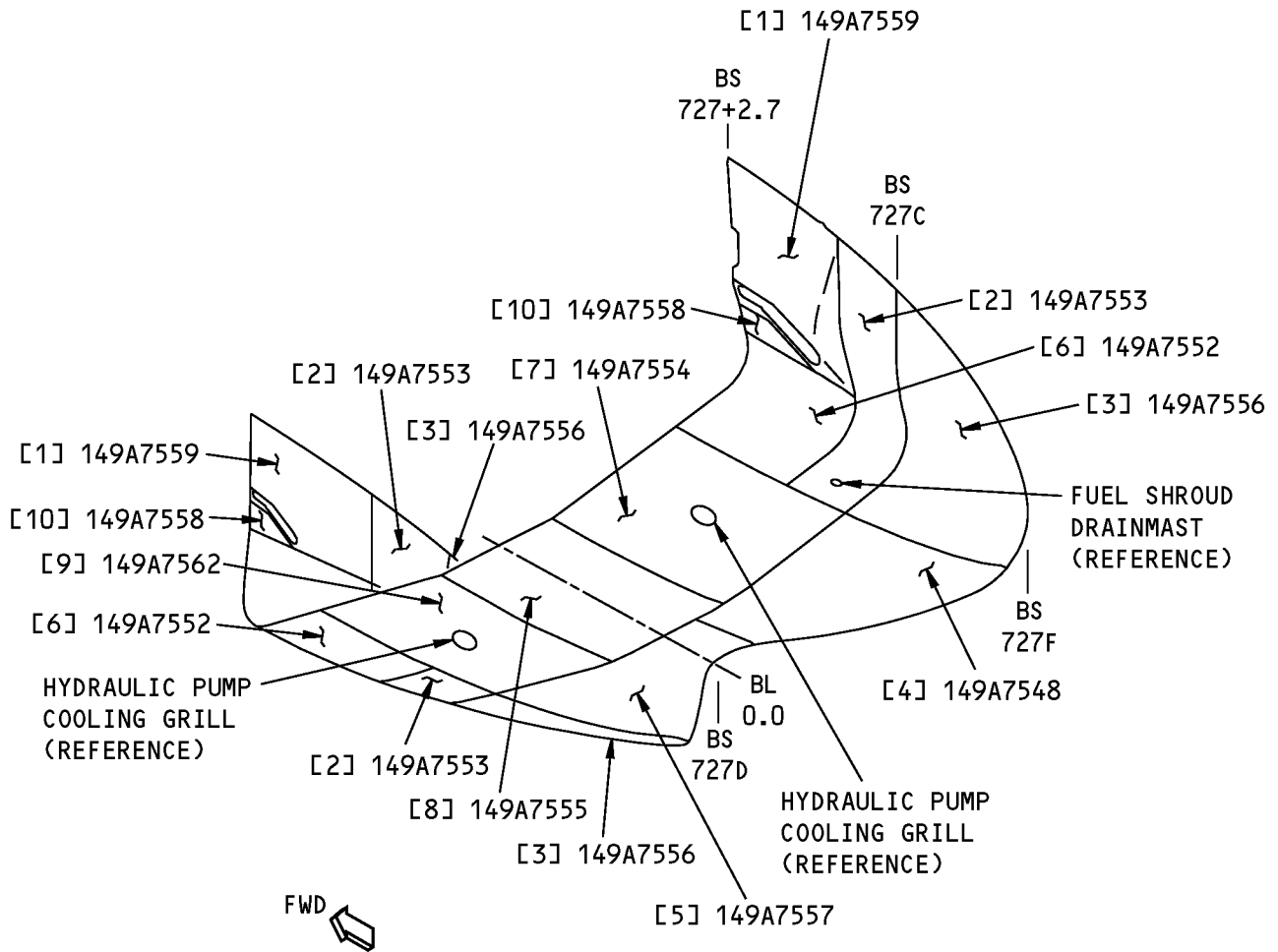
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Wing-to-Body Fairing Skin Panels Identification  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
149A7011	Functional Collector - Section 49 Panel Installations
149A7503	Lower Aft Fairing Panel Installation
149A7504	Flap Track, Aft Fairing Panel Installation
149A7507	Aft Fairing Panel Installation
149A7508	Lower Aft Fairing Panel Installation

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 46 Wing-to-Body Fairing Skin Panels Identification  
Figure 2**

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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>†1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Upper Flap Track, BSTA 727 + 2.7 to BSTA 727B - Bonded Part  Skin Ply  Doublers Ply  Filler Ply  Core  Rub Strip	0.70 (17.8)      0.032 (0.81)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0  AISI 302 CRES sheet as given in AMS 5516, annealed condition	
[2]	Upper Aft Fairing, BSTA 727B to BSTA 727C - Bonded Part  Skin Ply  Doublers Ply  Filler Ply  Core	0.40 (10.2)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, 3/16 OX, Grade 3.0	
[3]	Upper Aft Fairing, BSTA 727C to Aft - Bonded Part  Skin Ply  Doublers Ply  Filler Ply  Core	0.40 (10.2)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584  Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[4]	Lower Aft Fairing, BSTA 727C to Aft - Bonded Part  Skin Ply		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply  Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type VI, Grade 3.0	
[5]	Lower Aft Fairing, BSTA 727C to Aft - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[6]	Lower Aft Fairing, BSTA 727 + 2.7 to BSTA 727B - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.30 (7.6)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[7]	Lower Aft Fairing, BSTA 727 + 2.7 to BSTA 727C - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	



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STRUCTURAL REPAIR MANUAL

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	0.80 (20.3)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[8]	Lower Aft Fairing, BSTA 727 + 2.7 to BSTA 727C - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220), Style 1581 (Optional: 7781), or Style 1584	
	Core	0.60 (15.2)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
[9]	Brake Accumulator Access Door, Aft Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich with aluminum foil mesh lightning protection ply	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Doubler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (optional 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Lightning Protection Ply		Phosphoric acid anodized expanded aluminum foil as given in BMS 8-336, Type I, Class I, Grade 016 in accordance with BAC 5555 and primed in accordance with BAC 5514-589	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class IV, Type V, Grade 3.0	
	Core	1.00 (25.4)	Non-metallic honeycomb as given in BMS 8-124, Class I, Type I, Grade 5.5	

IDENTIFICATION 1

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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[10]	Flap Track Access Panel, Aft Fairing - Bonded Part		Glass Fiber Reinforced Plastic (GFRP) Solid Laminate	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 120 (Optional: 220)	
	Skin Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Filler Ply		Epoxy impregnated fiberglass woven fabric as given in BMS 8-79, Class III, Grade B, Style 1581 (Optional: 7781)	
	Rub Strip	0.032 (0.81)	AISI 302 CRES sheet as given in AMS 5516, annealed condition	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

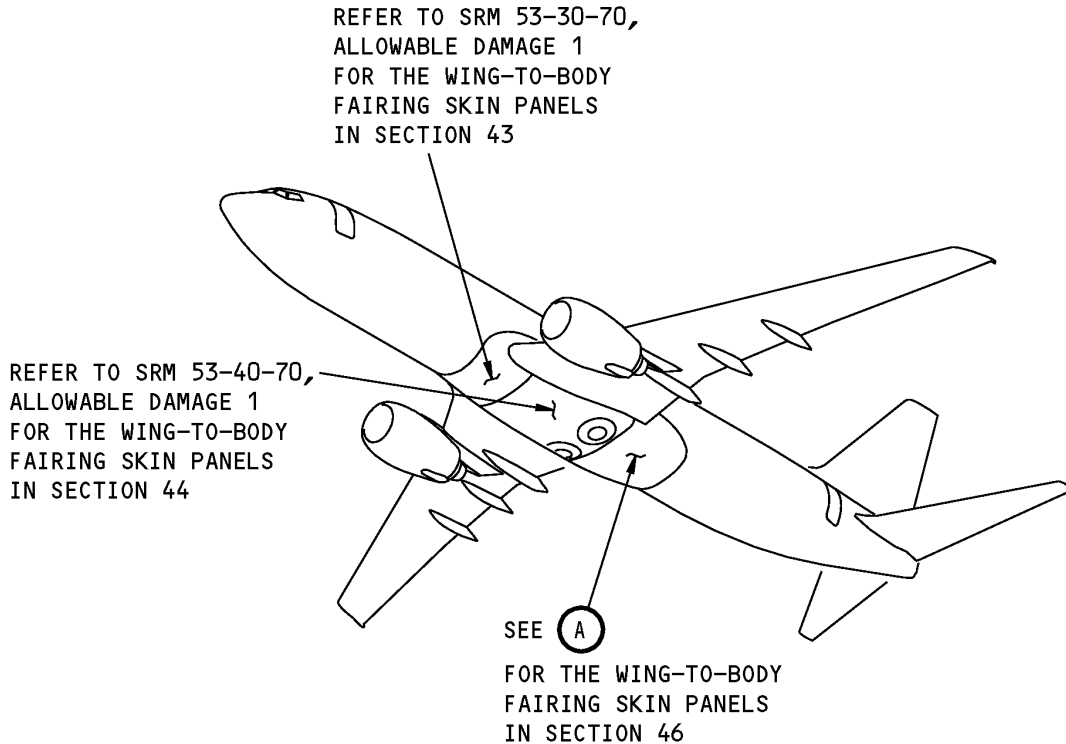
**NOTE:** Refer to the production drawings for the ply lay-up and core ribbon direction.

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STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS

1. Applicability

- A. This subject gives the allowable damage limits for the section 46 wing-to-body fairing skin panels shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. The allowable damage limits are only applicable if they are sealed as given in Paragraph 2.

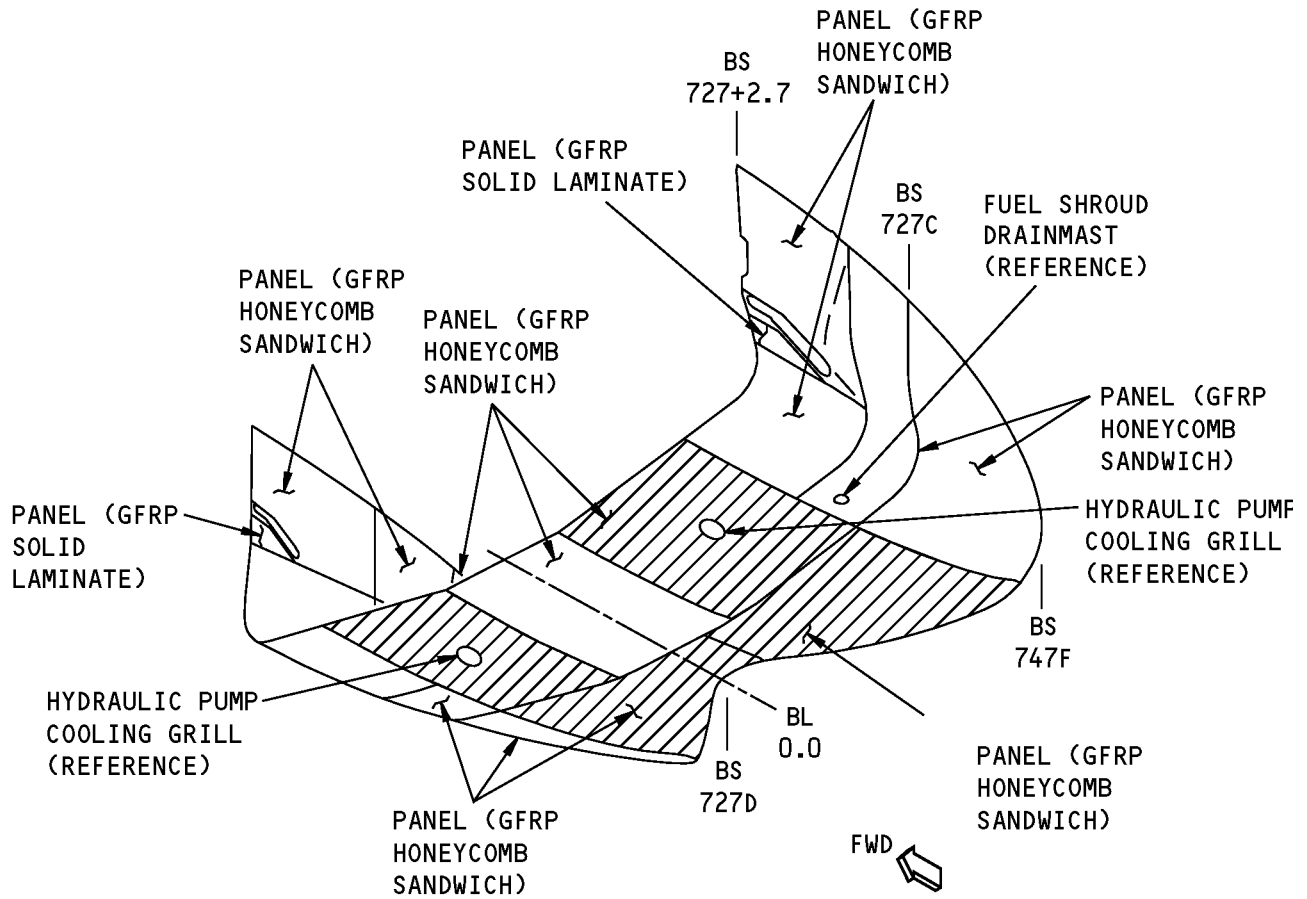


NOTES

- GFRP = GLASS FIBER REINFORCED PLASTIC

Section 46 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 1 of 2)





 EXPANDED ALUMINUM FOIL MESH LIGHTING PROTECTION (BMS 8-336)

A

Section 46 Wing-to-Body Fairing Skin Panels Location  
Figure 101 (Sheet 2 of 2)



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## STRUCTURAL REPAIR MANUAL

### 2. General

A. Do the steps that follow for the skin panels made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich panels.

- (1) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

- (a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (b) Refer to Damage Definitions, Figure 102/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
  - (c) Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.
- (2) Remove all the contamination and water from the structure.
    - (a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
    - (b) Refer to 51-70-04 for the cleanup procedures.
  - (3) Some GFRP panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1. If damage occurs to the expanded aluminum foil mesh, do the steps that follow:
    - (a) Refer to 51-70-14 for the allowable damage limits for the expanded aluminum foil mesh.
    - (b) Seal the damaged area as given in 51-70-14.
  - (4) Seal all damaged areas that do not have BMS 8-336 expanded aluminum foil mesh nor a flame-sprayed aluminum coating with the steps that follow:
    - (a) Seal the damaged areas that are not more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
      - 1) Make a temporary seal.
        - a) Apply aluminum foil tape (speed tape).
        - b) Keep a record of the location.
        - c) Make sure the tape is in satisfactory condition at normal maintenance intervals.
      - 2) Make a permanent seal.
        - a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
        - b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.
        - c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.
    - (b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4./ALLOWABLE DAMAGE 1
      - 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

ALLOWABLE DAMAGE 1

**53-60-70**

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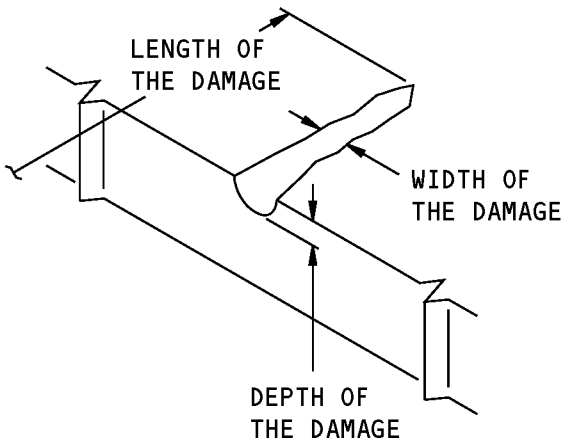
## 737-800

# STRUCTURAL REPAIR MANUAL

- 2) Make a temporary seal with aluminum foil tape (speed tape).
  - 3) Keep a record of the location.
  - 4) Repair the damage no later than 24 months from the time the seal was made.
- B. Do the steps that follow for the skin panels made of formed aluminum sheet:
- (1) Refer to Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 101/ALLOWABLE DAMAGE 1 for the location of the aluminum panels.
  - (2) Remove the damaged material as necessary.
    - (a) Refer to 51-10-02 for the inspection and removal of damage.
    - (b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
    - (c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (3) Apply a chemical conversion coating to the bare surfaces of the aluminum. Refer to 51-20-01.
  - (4) Apply one layer of BMS 10-11, Type I primer to the bare surfaces of the aluminum. Refer to SOPM 20-41-02.
- C. Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- D. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
GFRP/HONEYCOMB SANDWICH PANELS - FULL DEPTH HONEYCOMB CORE AREAS	4.A
GFRP/HONEYCOMB SANDWICH PANELS - EDGE BAND AREAS	4.B
GFRP SOLID LAMINATE PANELS	4.C
FORMED ALUMINUM SHEET PANELS	4.D



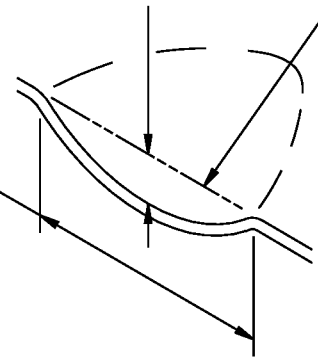
DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE

(A)

DIAMETER OF THE  
DAMAGE (USE THE  
LARGEST DIMENSION  
ACROSS THE DAMAGE)

DEPTH OF  
THE DAMAGE

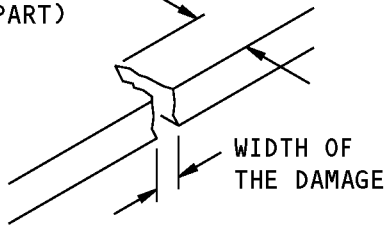
THE CONTOUR  
BEFORE THE  
DENT OCCURRED



DEFINITIONS FOR  
DENT DAMAGE

(B)

DEPTH OF THE DAMAGE  
(INTO THE PART)

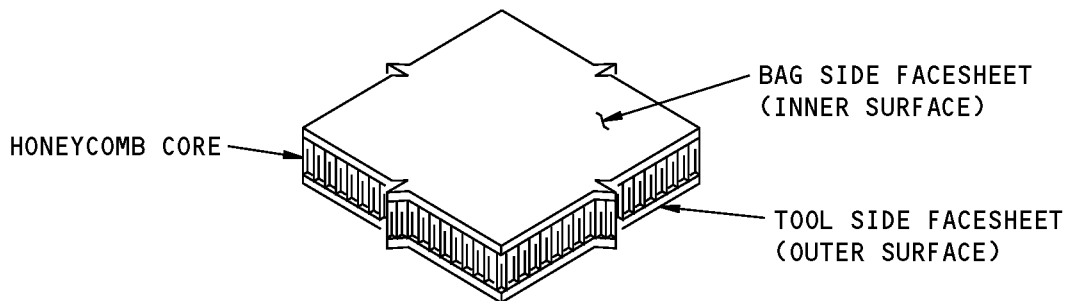


DEFINITIONS FOR  
EDGE DAMAGE

(C)

Damage Definitions  
Figure 102

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STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 103**

**3. References**

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-70-01, REPAIR GENERAL	Procedures to Rework or Fill Allowable Dents on the External Aerodynamic Surfaces of Metallic Parts
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Allowable Damage Limits**

A. GFRP Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area

(1) Cracks are permitted if:

- (a) They are a maximum of one facesheet and the core in depth
- (b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1
- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

## STRUCTURAL REPAIR MANUAL

- (d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

- (3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (c) They are sealed as given in Paragraph 2.

- (4) Dents are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

- (5) Holes and Punctures are permitted if:

- (a) They are a maximum of one facesheet and the core in depth

- (b) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1



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**STRUCTURAL REPAIR MANUAL**

- (d) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (e) They are sealed as given in Paragraph 2.

- (6) Delaminations are permitted if:

- (a) The dimension of the damage is less than the limits given in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (b) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

- (c) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 104/ALLOWABLE DAMAGE 1 and Table 102/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) They are sealed as given in Paragraph 2.

**Table 102:**

DAMAGE DIMENSION DATA FOR THE FULL DEPTH HONEYCOMB CORE AREAS - SECTION 46 WING-TO-BODY FAIRING SKIN			
PANEL DRAWING NUMBER	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" OR "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES) "B" "C"
149A7548	3.0	(1.5)x(D + d)	1.7D 1.7d
149A7552	3.0	(1.5)x(D + d)	1.7D 1.7d
149A7553	3.0	(1.5)x(D + d)	1.7D 1.7d
149A7554	2.2	(4.8)x(D + d)	5.3D 5.3d
149A7555	2.3	(3.8)x(D + d)	4.2D 4.2d
149A7556	3.0	(1.5)x(D + d)	1.7D 1.7d
149A7557	3.0	(1.5)x(D + d)	1.7D 1.7d
149A7559	1.7	(5.7)x(D + d)	6.0D 6.0d
149A7562	3.0	(1.5)x(D + d)	1.7D 1.7d

**B. GFRP Honeycomb Sandwich Panels - Edgeband Area**

- (1) Cracks are permitted if they are:

ALLOWABLE DAMAGE 1

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## STRUCTURAL REPAIR MANUAL

- (a) A maximum of 0.25 inch measured across the largest dimension of the damage
- (b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (c) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) Sealed as given in Paragraph 2.

- (2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
- (3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

- (a) A maximum of one ply in depth

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

- (b) A maximum of 1.0 inch in length
- (c) A maximum of 0.25 inch in width
- (d) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (e) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (f) Sealed as given in Paragraph 2.

- (4) Dents are not permitted.

- (5) Holes and Punctures are permitted if they are:

- (a) A maximum of 0.25 inch measured across the largest dimension of the damage
- (b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (c) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) Sealed as given in Paragraph 2.

- (6) Delaminations are permitted if they are:

- (a) A maximum of 1.00 inch measured across the largest dimension of the damage
- (b) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- (c) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) Sealed as given in Paragraph 2.

- (7) Edge damage is permitted if it is:

ALLOWABLE DAMAGE 1

**53-60-70**

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## STRUCTURAL REPAIR MANUAL

- (a) A maximum of 0.10 inch in depth
- (b) A maximum of 0.50 inch in width
- (c) A minimum of distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) Sealed as given in Paragraph 2.

- (8) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 105/ALLOWABLE DAMAGE 1.

C. GFRP Solid Laminate Panels (does not include the solid laminate areas in honeycomb sandwich panels)

- (1) Cracks are permitted if they are:

- (a) A maximum of 0.50 inch measured across the largest dimension of the damage
- (b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (c) Sealed as given in Paragraph 2.

- (2) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.

- (3) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

- (a) A maximum of 1 ply in depth

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than 1 ply in depth.

- (b) A maximum of 3.0 inches in length

- (c) A minimum distance of 0.50 inch away from the edge of other damage, fastener holes or material edges

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.

- (d) Sealed as given in Paragraph 2.

- (4) Dents are permitted if they are:

- (a) A maximum of 2.0 inch measured across the largest dimension of the damage

- (b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies

## STRUCTURAL REPAIR MANUAL

- Are sealed as given in Paragraph 2.
- (c) A maximum of 2 plies in depth
- (d) Sealed as given in Paragraph 2.
- (5) Holes and Punctures are permitted if they are:
- (a) A maximum of 0.625 inch measured across the largest dimension of the damage
- (b) A minimum distance away from the edge of other damage, fastener holes or material edges as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.
- (c) Sealed as given in Paragraph 2.
- (6) Delaminations are permitted if they are:
- (a) A maximum of 0.625 inch measured across the largest dimension of the damage
- (b) A minimum distance away from the edge of other damage, the edge of a hole, or the edge of the material as shown in GFRP Solid Laminate Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.
- (c) Sealed as given in Paragraph 2.
- (7) Edge damage is permitted if it is:
- (a) A maximum of 2 plies in depth
- (b) A maximum of 0.50 inch away from a fastener hole edge.
- (c) A minimum distance of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole
- NOTE:** Other damage does not include nicks, gouges, and scratches that:
- Do not cause damage to the glass fiber plies
  - Are sealed as given in Paragraph 2.
- (d) Sealed as given in Paragraph 2.
- (8) Edge Erosion is permitted as shown in GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge, Figure 107/ALLOWABLE DAMAGE 1.
- D. Panels Made of Formed Aluminum Sheet
- (1) Cracks:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A, B, and C.
- (2) Nicks, Gouges, Scratches, and Corrosion:
- (a) Remove the damage as shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Details A, B, C, D, and F.
- (3) Dents are permitted if they:

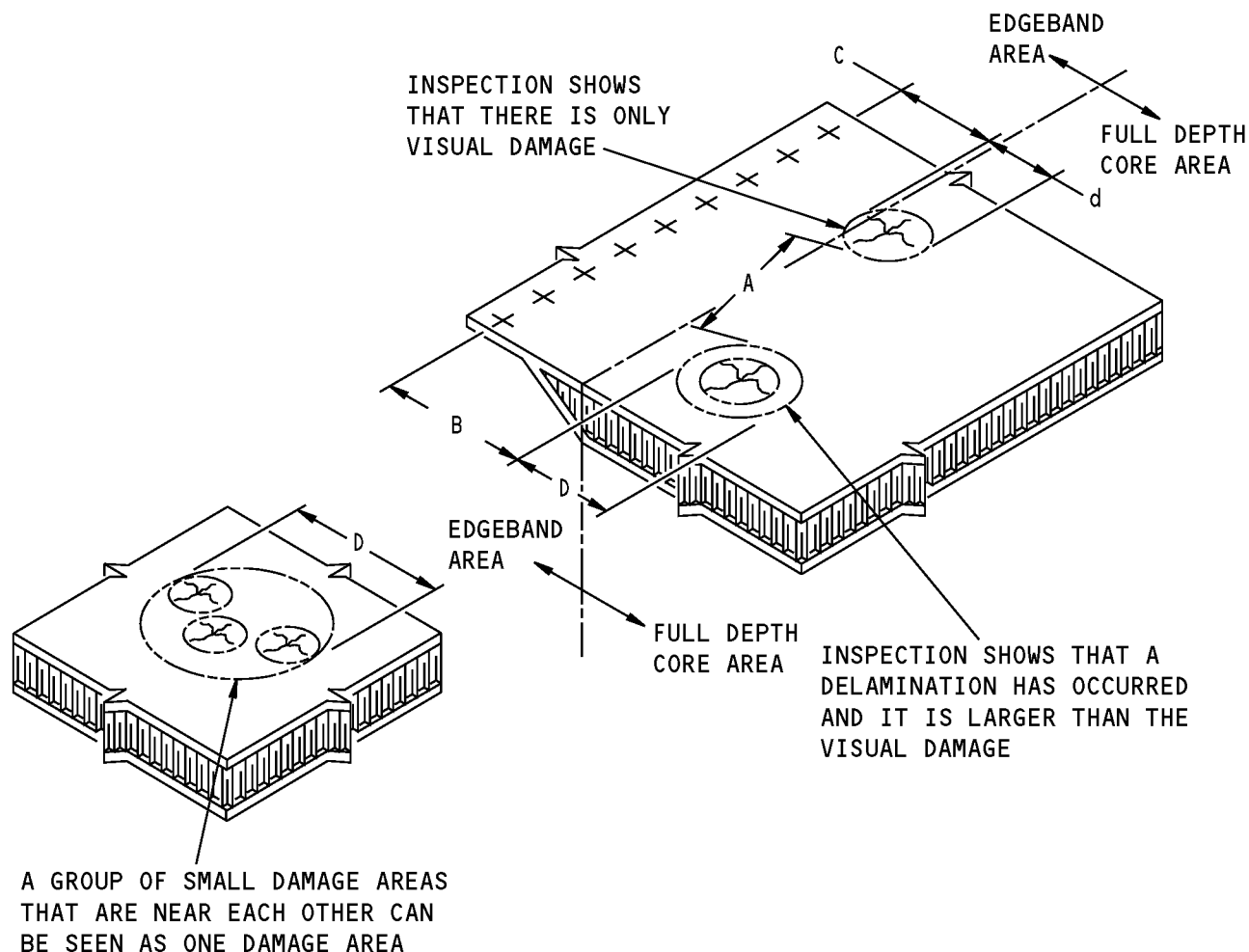


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**STRUCTURAL REPAIR MANUAL**

- (a) Agree with the conditions shown in Aluminum Panel - Allowable Damage Limits, Figure 108/ALLOWABLE DAMAGE 1, Detail E
  - (b) Are a minimum distance of  $3.0D$  ( $D$  = the largest dimension across the damage) away from the edge of other damage, the edge of a hole, or the edge of the material.
- (4) Holes and Punctures are permitted if:
- (a) They are a maximum of 0.25 measured across the largest dimension of the damage
  - (b) The edge of the damage is a minimum of 1.0 inch away from a fastener hole, an edge, or other damage
  - (c) They are filled with a 2017-T3 or 2117-T4 aluminum flush head rivet without sealant.

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STRUCTURAL REPAIR MANUAL**



**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

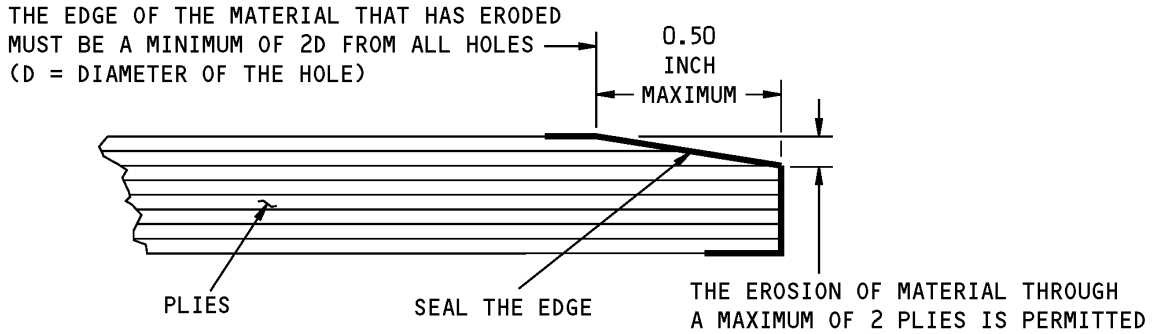
A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C, REFER TO TABLE 102.

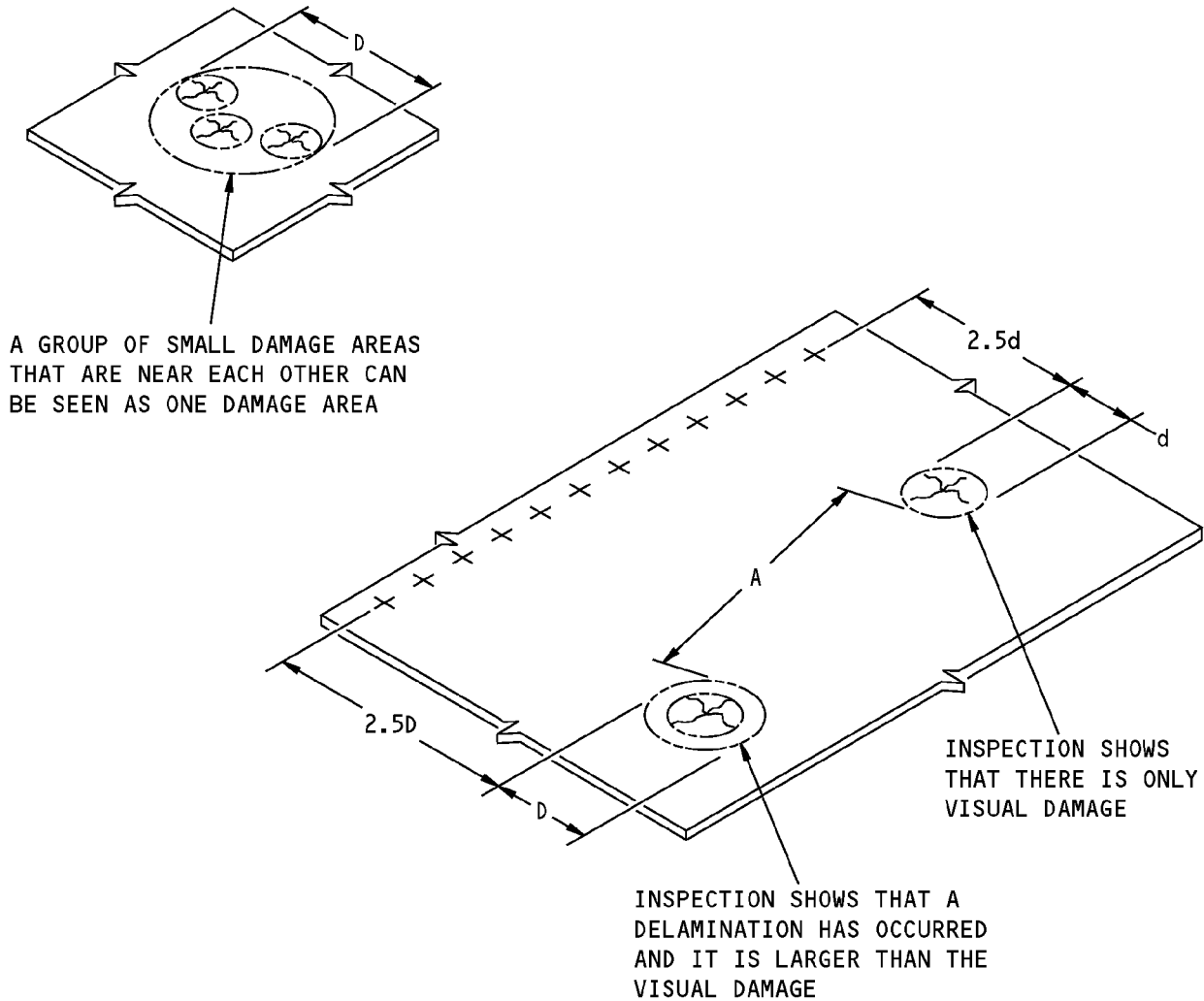
**GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits  
Figure 104**

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STRUCTURAL REPAIR MANUAL**



**GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge  
Figure 105**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

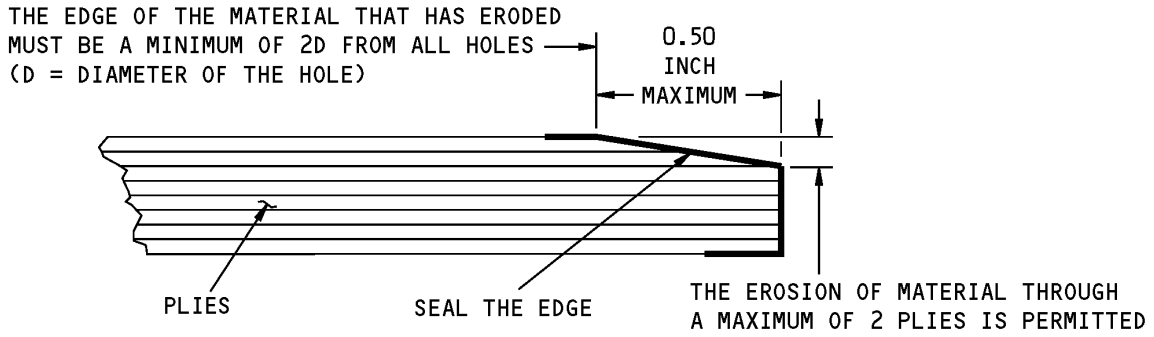
d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

THE MINIMUM A THAT IS PERMITTED IS 2.5D.

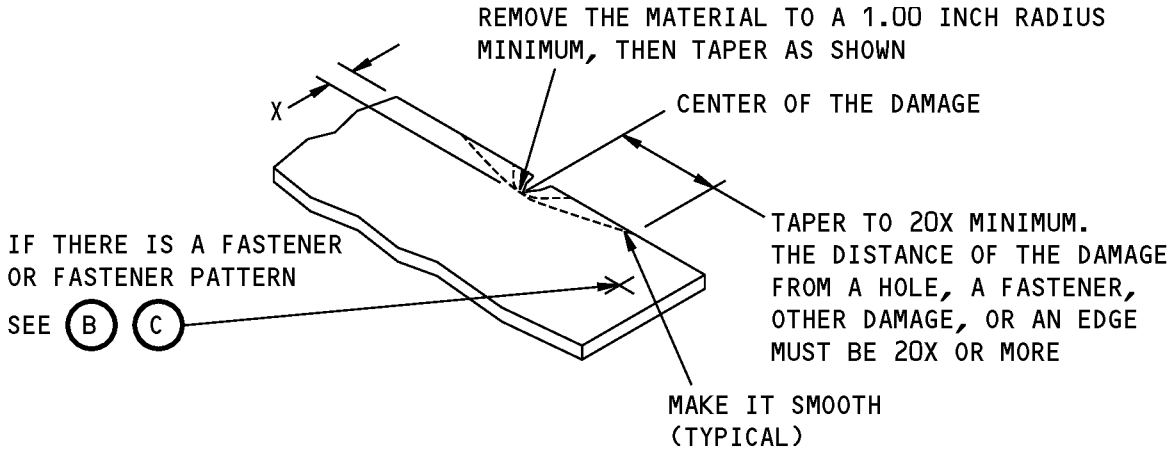
**GFRP Solid Laminate Panels - Damage Size and Spacing Limits  
Figure 106**

**737-800  
STRUCTURAL REPAIR MANUAL**



**GFRP Solid Laminate Panels - Sealing of Erosion Damage at an Edge  
Figure 107**

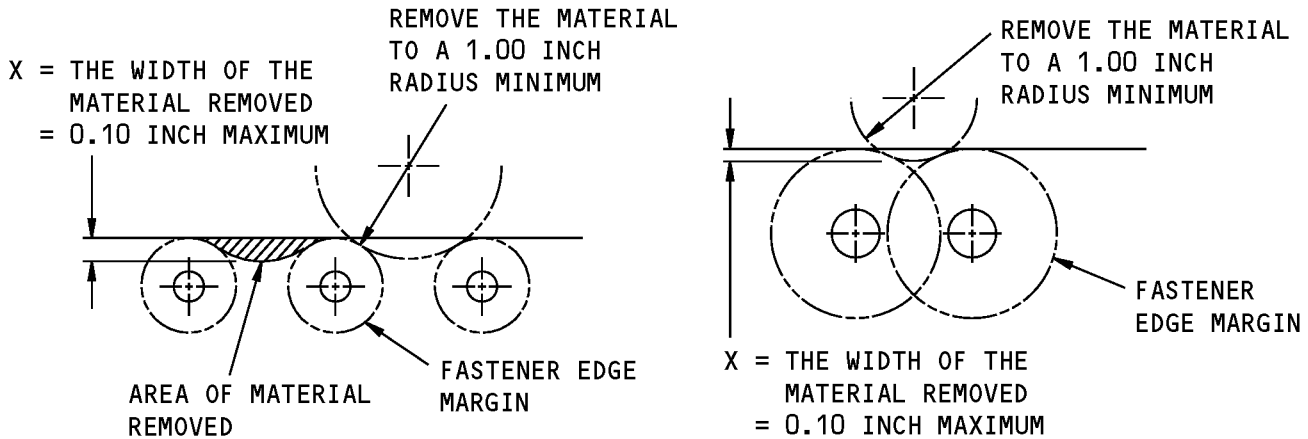
**STRUCTURAL REPAIR MANUAL**



X = THE WIDTH OF THE MATERIAL REMOVED  
= 0.10 INCH THICKNESS MAXIMUM

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(A)



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(B)

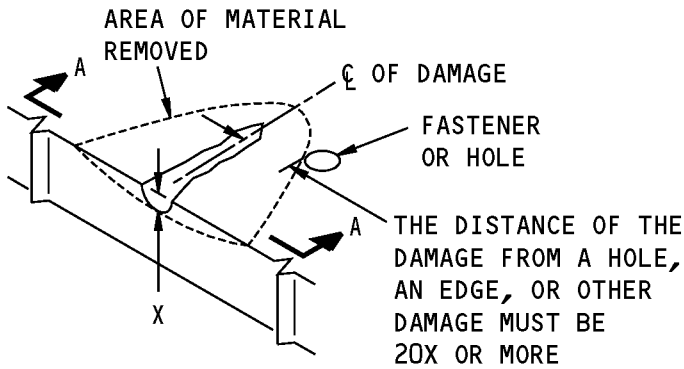
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(C)

**Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 1 of 3)**



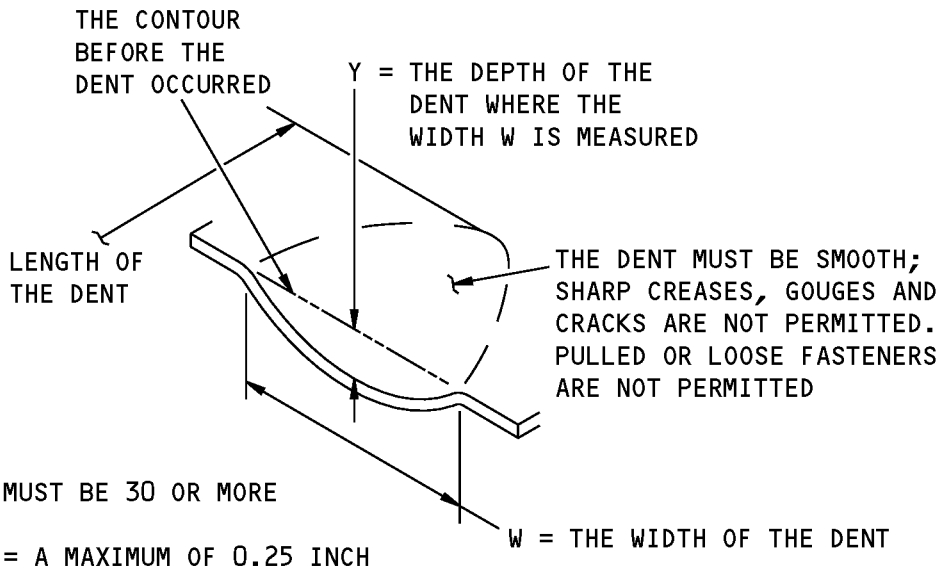
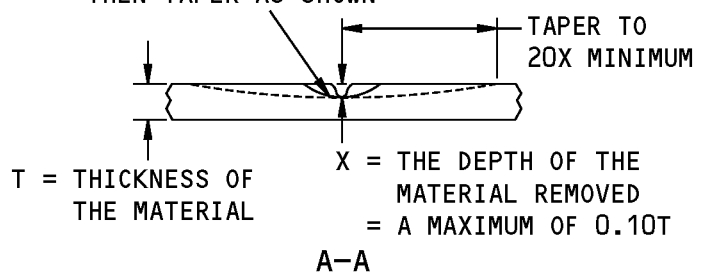
**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)

REMOVE THE MATERIAL TO A 1.00 INCH RADIUS MINIMUM, THEN TAPER AS SHOWN



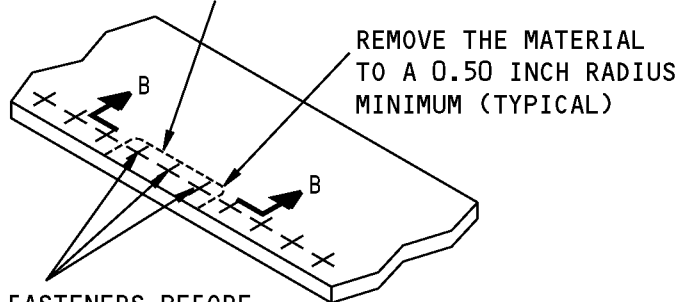
**DENT THAT IS PERMITTED**

(E)

**Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL

THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
A GROUP OF TEN IS PERMITTED  
TO A DEPTH OF X MAXIMUM



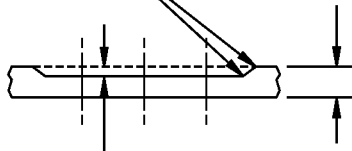
REMOVE THE FASTENERS BEFORE  
THE DAMAGED MATERIAL IS  
REMOVED. AFTER THE DAMAGED  
MATERIAL IS REMOVED, INSTALL  
THE REMOVED FASTENERS. AS  
APPLICABLE, INSTALL NEW FASTENERS  
THAT ARE THE SAME TYPE AND SIZE  
(UP TO THE FIRST OVERSIZE) AS  
THE FASTENERS THAT YOU REMOVED

REMOVAL OF CORROSION  
AROUND THE FASTENERS



MAKE IT  
SMOOTH  
(TYPICAL)

T = THICKNESS OF  
THE MATERIAL



X = THE DEPTH OF THE  
MATERIAL REMOVED  
= A MAXIMUM OF 0.10T

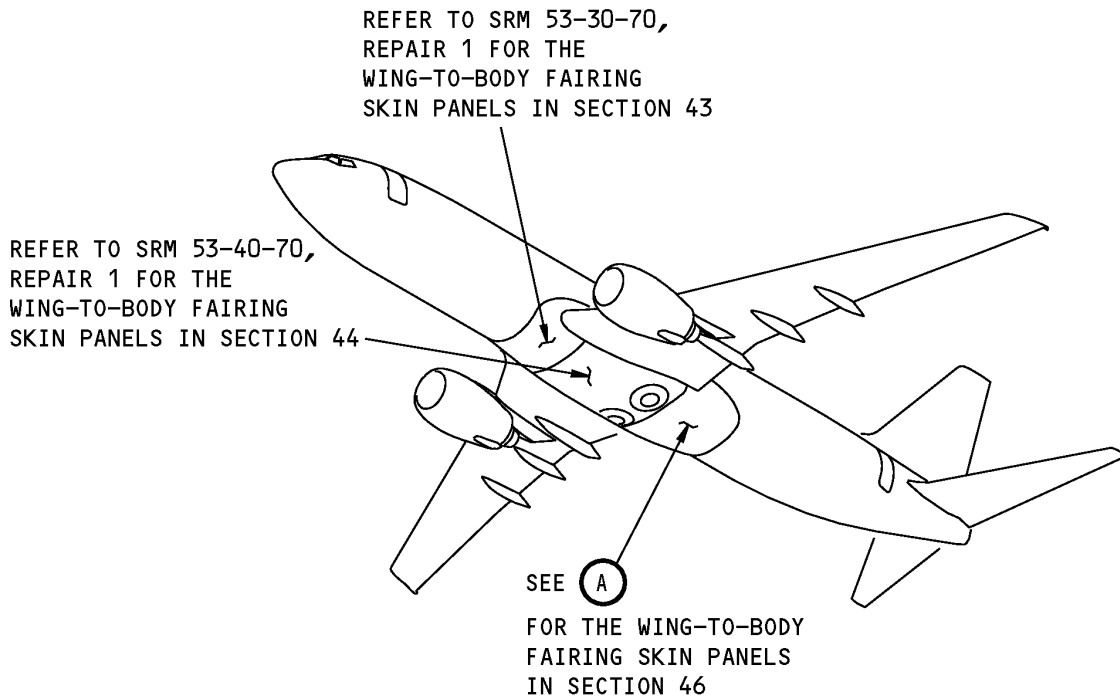
B-B

Aluminum Panel - Allowable Damage Limits  
Figure 108 (Sheet 3 of 3)

## STRUCTURAL REPAIR MANUAL

**REPAIR 1 - SECTION 46 WING-TO-BODY FAIRING SKIN PANELS MADE OF COMPOSITE MATERIALS****1. Applicability**

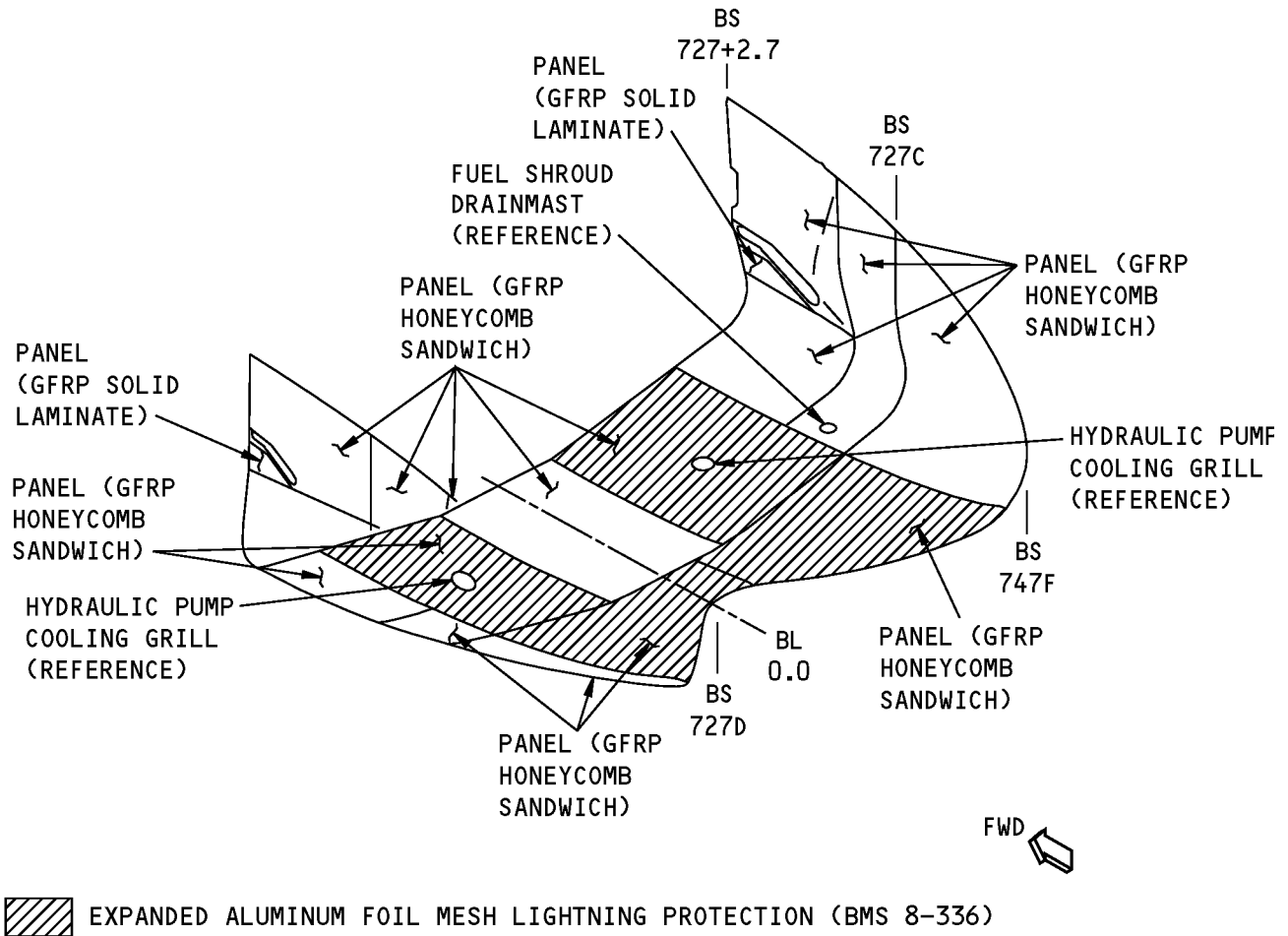
- A. Repair 1 is applicable to the wing-to-body fairing skin panels shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1.
- B. Repair 1 is applicable to damage that is more than the limits permitted in 53-60-70, Allowable Damage 1.

**NOTES**

- GFRP = GLASS FIBER REINFORCED PLASTIC

**Section 46 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



A

**Section 46 Wing-to-Body Fairing Skin Panels Location  
Figure 201 (Sheet 2 of 2)**



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## STRUCTURAL REPAIR MANUAL

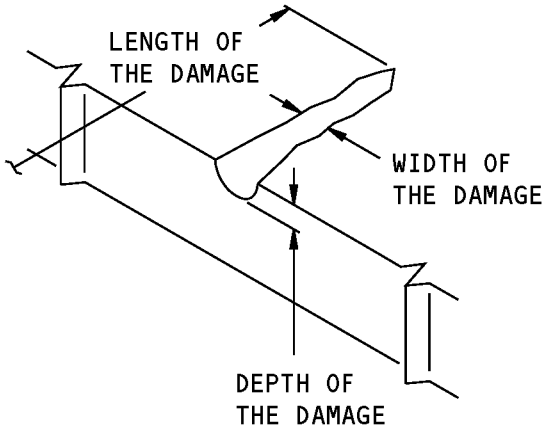
### 2. General

- A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Get access to the damaged area.
  - (1) If necessary, remove the wing-to-body fairing skin panels as given in AMM 53-51-21/401.
    - (a) Refer to 51-40-02 for the fastener removal procedures.
    - (b) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.
- C. Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

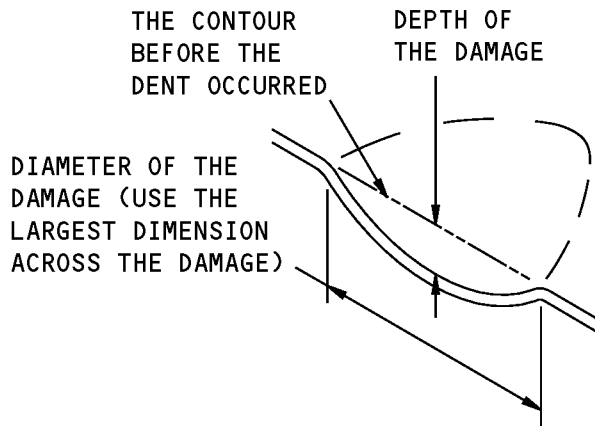
- (1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (2) Refer to Damage Definitions, Figure 202/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
  - (3) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.
- D. Some GFRP wing-to-body fairing skin panels have BMS 8-336 expanded aluminum foil mesh as shown in Section 46 Wing-to-Body Fairing Skin Panels Location, Figure 201/REPAIR 1. If damage occurs, refer to 51-70-14 for the procedures to repair the BMS 8-336 expanded aluminum foil mesh.
- E. Do the repair as given in Paragraph 4./REPAIR 1
- F. Put the wing-to-body fairing skin panels back to the initial condition, as applicable.
  - (1) Install the wing-to-body fairing skin panels as given in AMM 53-51-21/401, if they were removed.
    - (a) Refer to 51-40-02 for the fastener installation procedures.
    - (b) Refer to 51-40-03 for fastener substitution.
  - (2) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.
- G. Restore the aircraft wing-to-body fairing skin panels exterior decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

**STRUCTURAL REPAIR MANUAL**



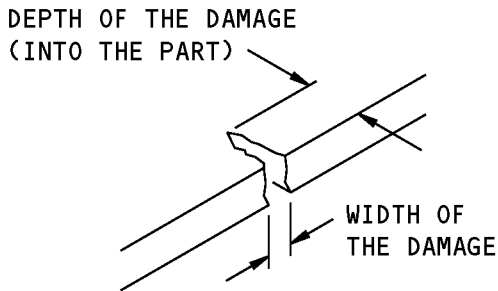
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**

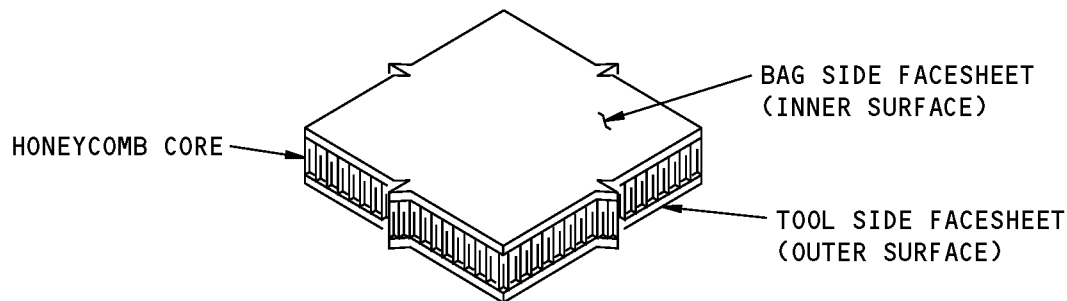


**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 202**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 203**

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03	FASTENER SUBSTITUTION
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-14	STRUCTURES WITH ALUMINUM COATINGS AND FOILS
51-70-14, REPAIR GENERAL	Structures With Aluminum Coatings and Foils
53-60-70	FUSELAGE FAIRING SKIN - SECTION 46
53-60-70, ALLOWABLE DAMAGE 1	Section 46 Wing-to-Body Fairing Skin Panels
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 53-51-21/401	Aft Wing-to-Body Fairing Removal/Installation
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Repair Instructions**

**NOTE:** If necessary, refer to 53-60-70, Identification 1 for the material and build-up of the part that you want to repair.

- A. For dents that are a maximum of 2 inches in diameter and have no fiber damage or delamination, do the steps that follow:
  - (1) Fill the dent with BMS 5-28, Type 7 potting compound
  - (2) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.
- B. If Paragraph 4.A./REPAIR 1 is not applicable, then refer to:

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- (1) Table 201/REPAIR 1 for the repair data that is applicable to damage to the full depth honeycomb core areas of the sandwich panels
- (2) Table 202/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels
- (3) Table 203/REPAIR 1 for the repair data that is applicable to damage to the solid laminate panels.

C. For repairs made with wet layup materials, do as follows, as applicable:

- (1) Use one repair ply of fabric for each initial ply that was damaged.
- (2) Add two structural plies of fabric for each surface that is repaired. Put one structural ply at ±45 degrees to the core ribbon direction and the other at 0 or 90 degrees.
- (3) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.

D. For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.

**Table 201:**

REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN PANELS FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A WET LAYUP REPAIR	CATEGORY A PREIMPREGNATED LAYUP REPAIR
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Contact Boeing for repair instruction	Damage that is a maximum of:  - 6.0 inches (152.4 mm) diameter  3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	Damage that is a maximum of:  - 6.0 inches (152.4 mm) diameter  3.0 inches minimum clearance from: - other repairs - fastener holes - panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.



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**Table 202:**

<b>REPAIR DATA FOR THE EDGEBANDS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SKIN HONEYCOMB SANDWICH PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE</b>	Contact Boeing for repair instruction	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  - 30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

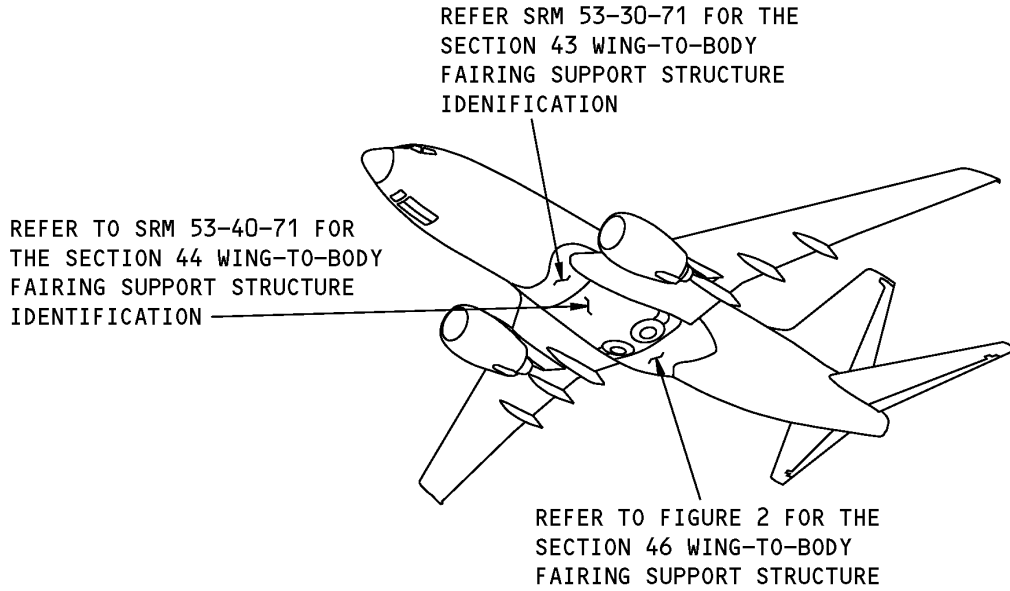
**Table 203:**

<b>REPAIR DATA FOR THE 250°F (121°C) CURE SOLID LAMINATE WING-TO-BODY FAIRING SKIN PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE AND LIMITS</b>	Contact Boeing for repair instructions	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of:  - 6.0 inches (152.40 mm) across the largest dimension of the damage  3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	There are no size limits on the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.C	SRM 51-70-05 and Paragraph 4.D

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 50% of the panel area. For a given solid laminate area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete area.

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**IDENTIFICATION 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE**



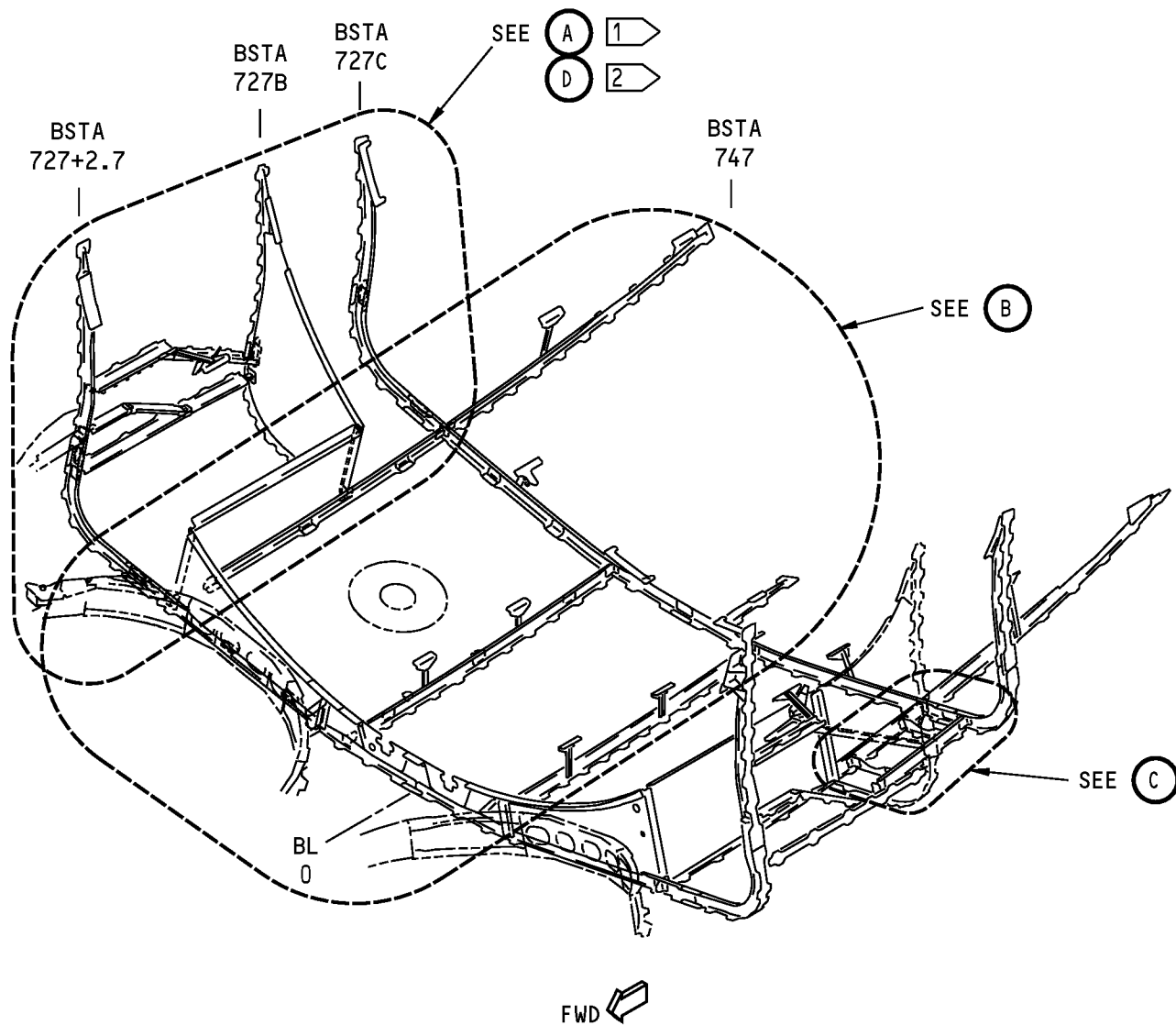
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 46 Wing-to-Body Fairing Support Structure Location  
Figure 1**

**Table 1:**



REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
143A7800	Installation - Wing-to-Body Fairing Support Structure
146A7800	Wing-to-Body Fairing Attachment Installation
149A7011	Functional Collector - Section 49, Panel Installation
149A7013	Functional Collector - Section 49, Aft Fairing
149A7501	Support Installation - Aft Fairing
149A7502	Support Installation - Aft Fairing
149A7505	Support Installation - Aft Fairing
149A7506	Support Installation - Aft Fairing

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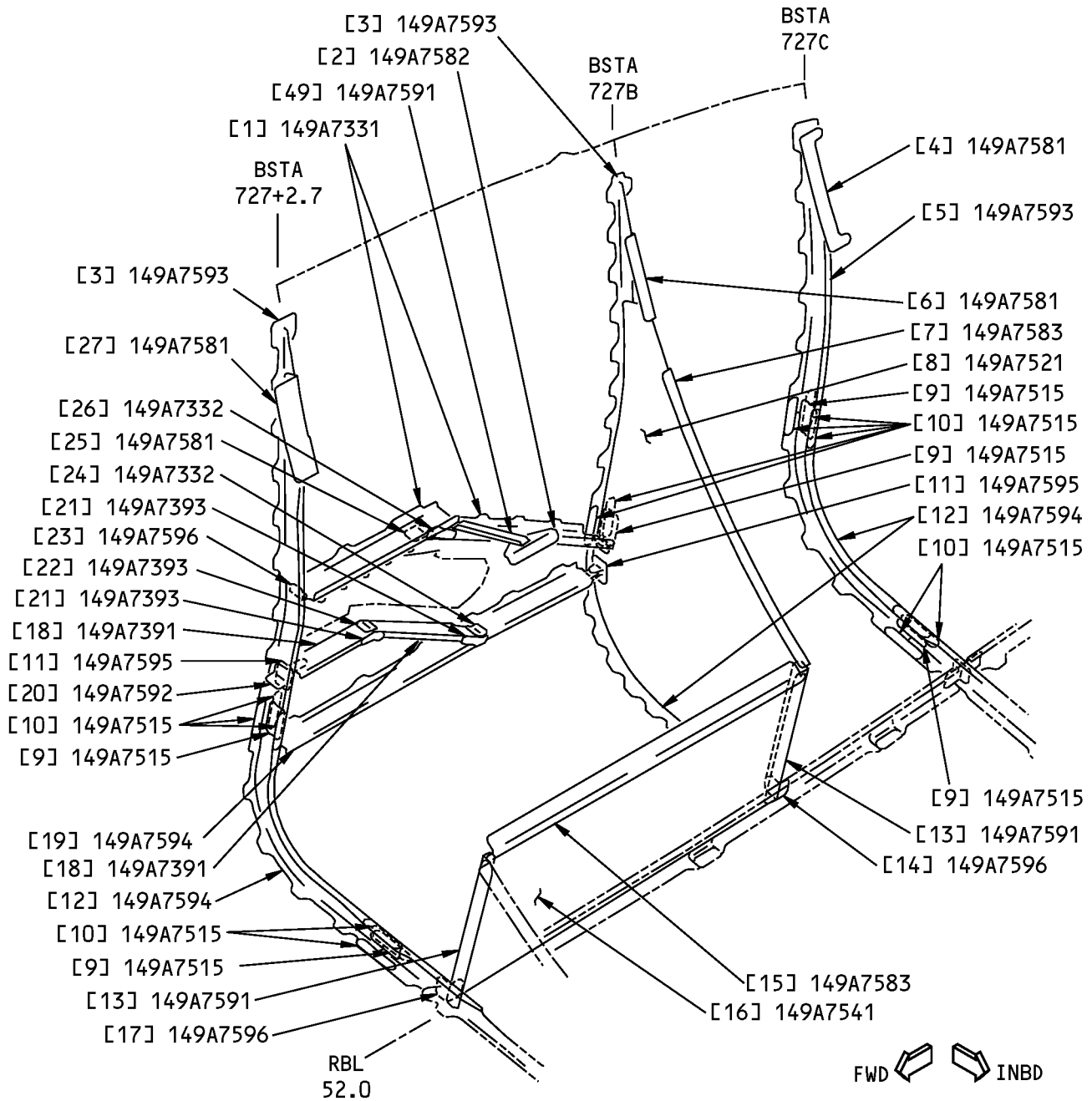
**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

-  FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537
-  FOR AIRPLANES WITH LINE NUMBERS 1538 AND ON

**Section 46 Wing-to-Body Fairing Support Structure (Sta 727 to Sta 747) Identification  
Figure 2 (Sheet 1 of 5)**

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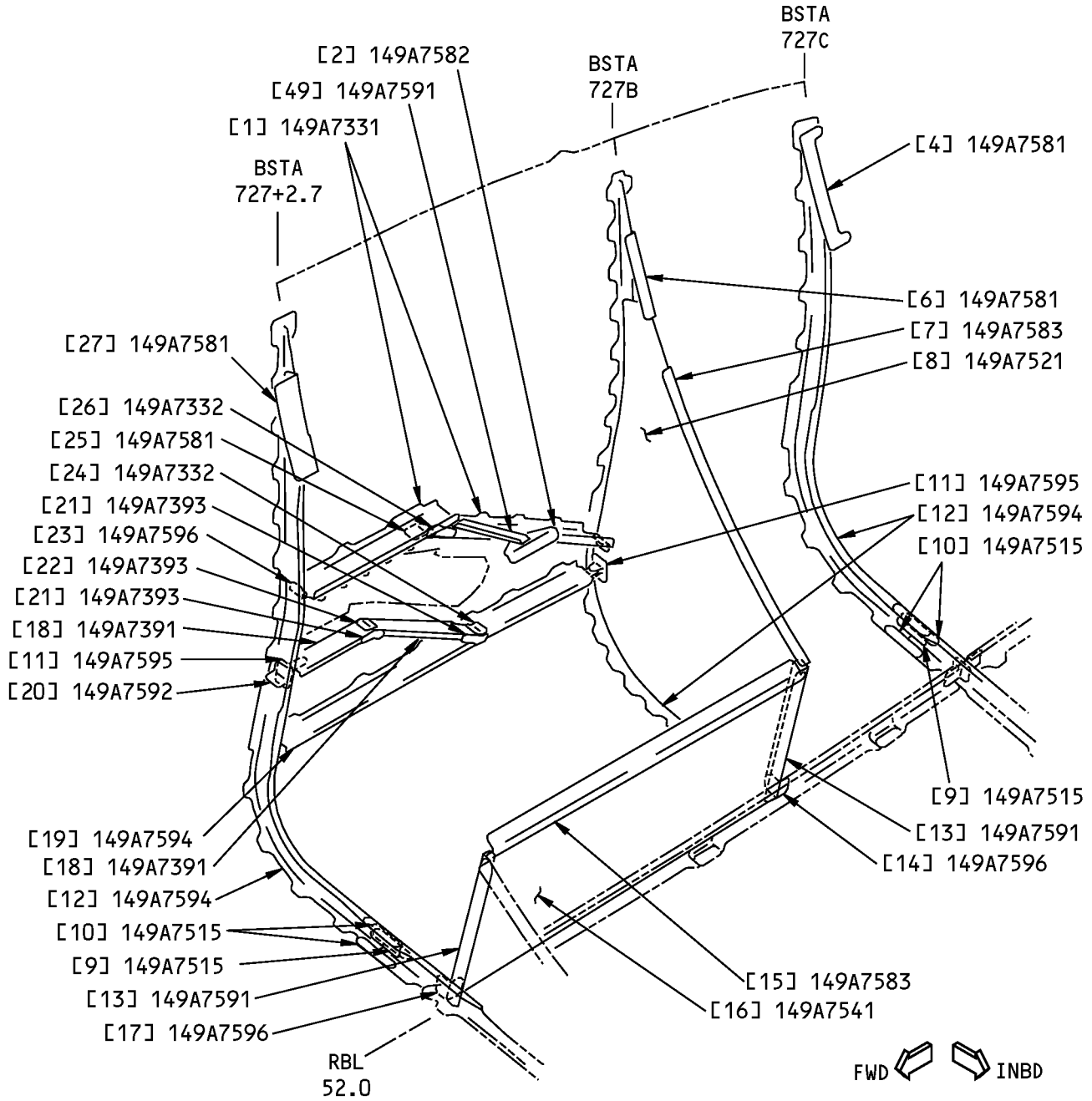


RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD



Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Identification  
Figure 2 (Sheet 2 of 5)

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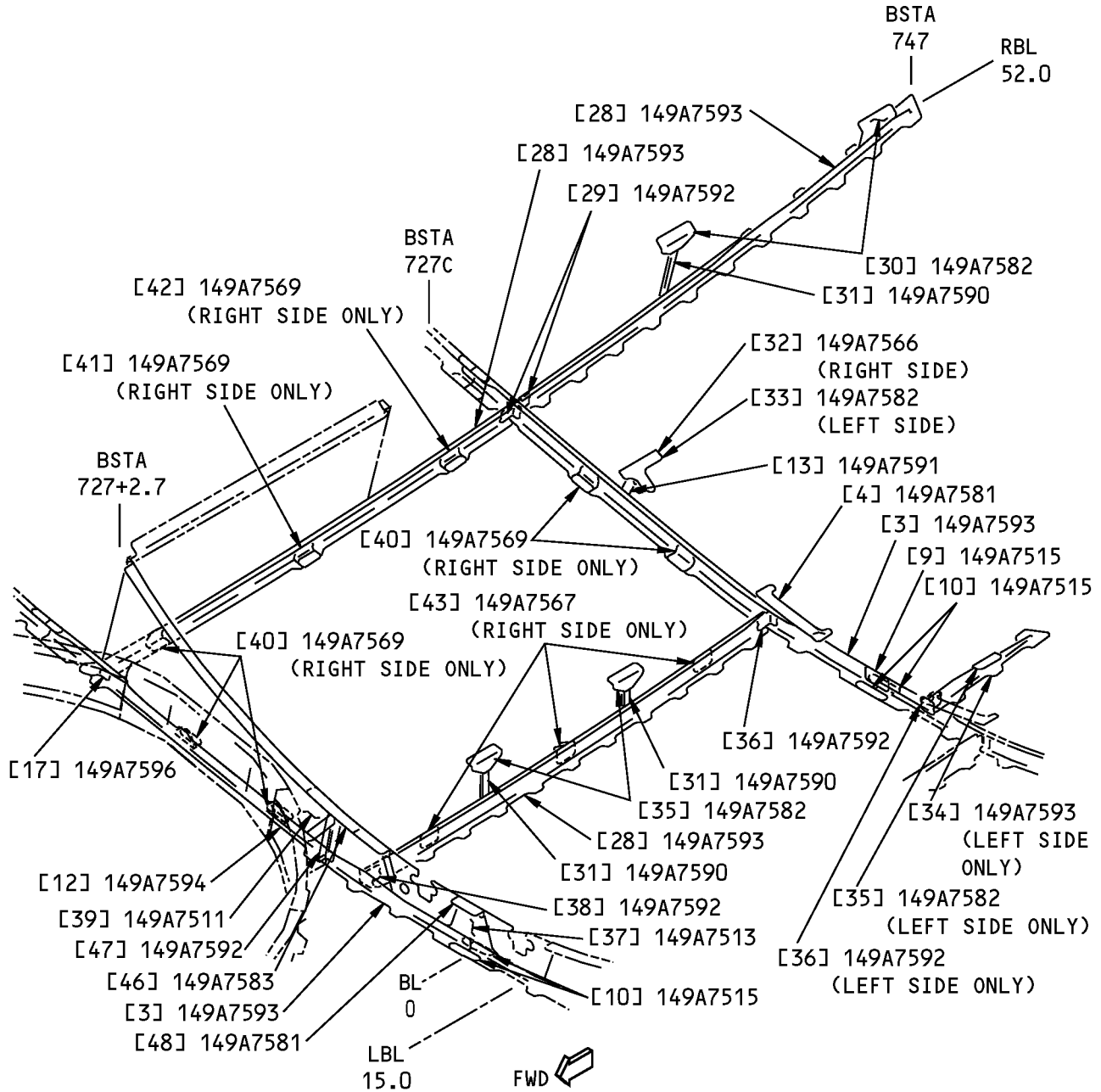


RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

A 2

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Identification  
Figure 2 (Sheet 3 of 5)**

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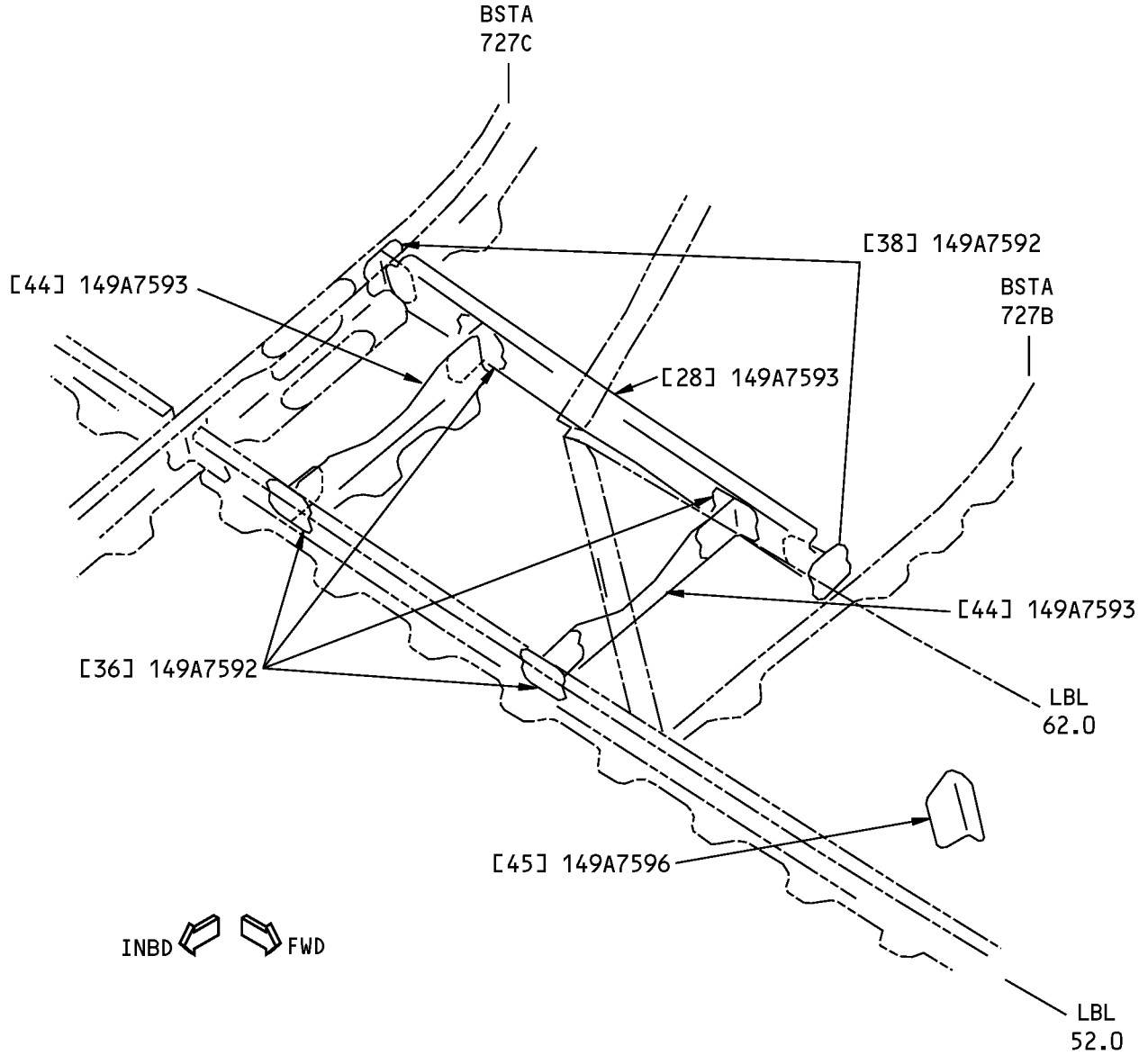


RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
(EXCEPT AS NOTED)  
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

**B**

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Identification  
Figure 2 (Sheet 4 of 5)**

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LEFT SIDE ONLY  
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0



**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Identification  
Figure 2 (Sheet 5 of 5)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>†1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame		BAC1509-100665 7075-T73 extrusion as given in QQ-A-200/11	
[2]	Clip		BAC1514-3272 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[3]	Frame		BAC1506-4251 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Clip		BAC1505-101698 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[5]	Frame		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	
[6]	Clip		BAC1503-101044 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[7]	L-Chord		BAC1503-100533 7075-T73 extrusion as given in QQ-A-200/11	
[8]	Aft Fairing BSTA 727B - Bonded Part Skin Core	0.300 (7.62)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich Refer to Figure 3 and Table 3 for the ply lay-up Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 3 for the core ribbon direction	
[9]	Splice Plate	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[10]	Splice Plate	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[11]	Clevis		7075-T73511 extruded bar as given in QQ-A-200/11	
[12]	Corner Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[13]	Stiffener		BAC1503-100079 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Attachment Angle		BAC1503-100607 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[15]	L-Chord		BAC1514-3269 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Lower Flap Track BSTA 727 + 2.7 - BSTA 727B - Bonded Part Skin Core	0.300 (7.62)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich Refer to Figure 4 and Table 4 for the ply lay-up Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 4 for the core ribbon direction	
[17]	Attachment Angle		BAC1503-101048 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	





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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
[18]	Frame		BAC1509-100664 7075-T73 extrusion as given in QQ-A-200/11	
[19]	Frame		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[20]	Tee Clip		BAC1506-2673 7075-T73511 extrusion as given in QQ-A-200/11	
[21]	Splice Clip	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[22]	Splice Clip	0.063 (1.60)	7075-T73 sheet as given in QQ-A-250/12	
[23]	Attachment Angle		BAC1503-100362 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[24]	Splice Clip	0.080 (2.03)	7075-T73 sheet as given in QQ-A-250/12	
[25]	Splice Clip	0.125 (3.18)	7075-T73 sheet as given in QQ-A-250/12	
[26]	Splice Clip	0.100 (2.54)	7075-T73 sheet as given in QQ-A-250/12	
[27]	Clip		7050-T7451 plate as given in BMS 7-323, Type I	
[28]	Intercostal		BAC1506-4251 7075-T73 extrusion as given in QQ-A-200/11	
[29]	Tee Clip		BAC1505-100809 7075-T73511 extrusion as given in QQ-A-200/11	
[30]	Clip		BAC1514-3269, 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[31]	Channel Support		AND10137-0604 7075-T73511 extrusion as given in QQ-A-200/11	
[32]	Clip		7050-T7451 plate as given in BMS 7-323, Type I. Refer to the production drawings for the grain direction	
[33]	Clip		BAC1503-100279 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[34]	Intercostal		BAC1505-101645 7075-T73 extrusion as given in QQ-A-200/11	
[35]	Clip		BAC1514-3271 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[36]	Tee Clip		BAC1505-101168 7075-T73511 extrusion as given in QQ-A-200/11	
[37]	Web	0.100 (2.54)	7050-T73 sheet as given in QQ-A-250/12	
[38]	Tee Clip		BAC1505-100295 7075-T73511 extrusion as given in QQ-A-200/11	

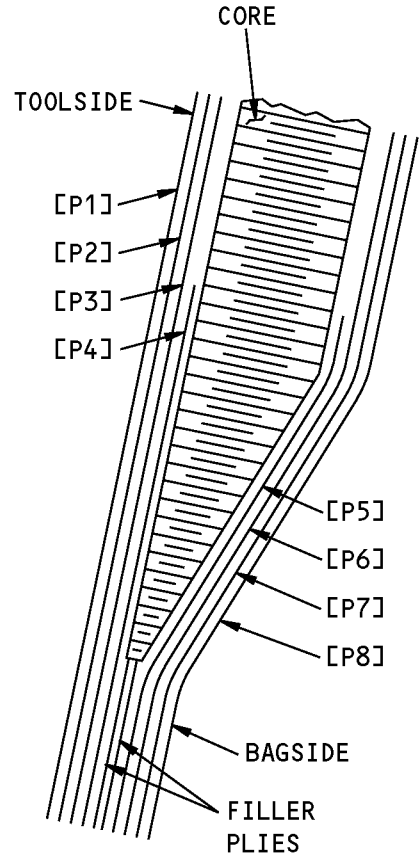
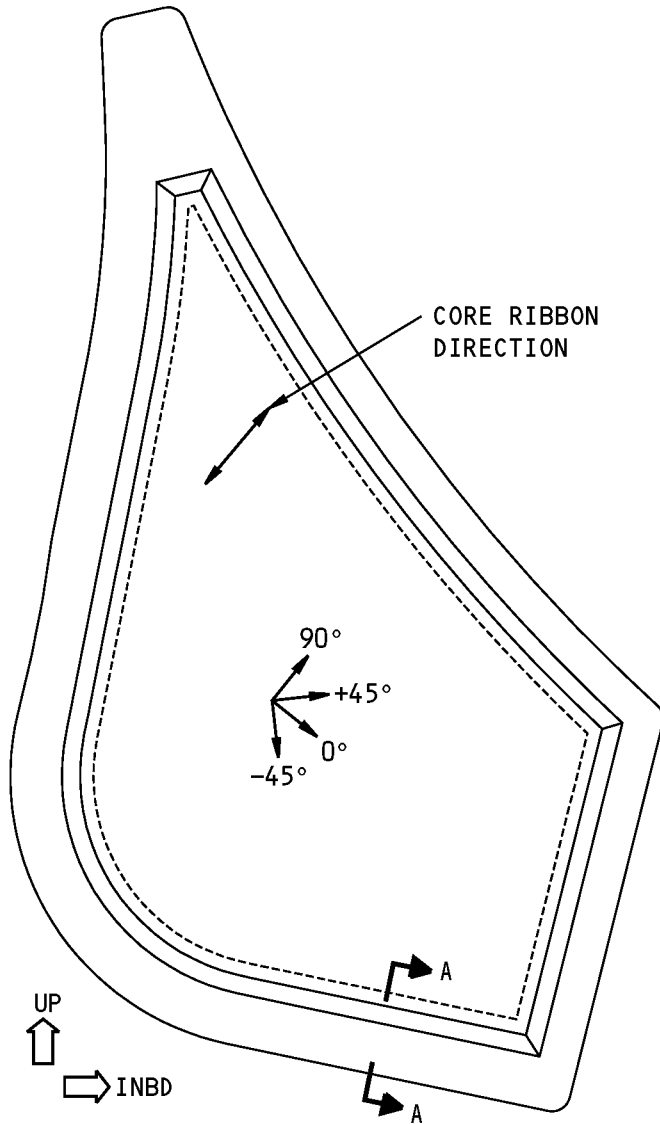


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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[39]	Aft Fairing BSTA 727 + 2.7 - Bonded Part Skin Core	0.300 (7.62)	Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich Refer to Figure 5 and Table 5 for the ply lay-up Honeycomb core non-metallic as given in BMS 8-124, Class IV, Type V, Grade 3.0. Refer to Figure 5 for the core ribbon direction	
[40]	Latch Support	0.100 (2.54)	7075-T62 sheet as given in QQ-A-250/12	
[41]	Latch Support		BAC1514-1279 7075-T73511 extrusion as given in QQ-A-200/11	
[42]	Latch Support	0.112 (2.85)	7075-T62 sheet as given in QQ-A-250/12	
[43]	Clevis		7050-T7451 plate as given in AMS 4050. Refer to the production drawings for the grain direction	
[44]	Frame		BAC1503-100891 7075-T73 extrusion as given in QQ-A-200/11	
[45]	Attachment Angle		BAC1503-100490 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in BMS 7-323, Type I)	
[46]	L-Chord		AND10133-1402 7075-T73 extrusion as given in QQ-A-200/11	
[47]	Tee Clip		BAC1505-100246 7075-T73511 extrusion as given in QQ-A-200/11	
[48]	Clip		BAC1503-100095 7075-T73511 extrusion as given in QQ-A-200/11	
[49]	Stiffener		BAC1509-100061 7075-T73511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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LEFT SIDE BONDED PART IS SHOWN,  
RIGHT SIDE BONDED PART IS OPPOSITE

VIEW IS ON THE BAGSIDE

PLY LAYUP DIRECTION AND  
CORE RIBBON DIRECTION

(A)

A-A  
(TYPICAL)

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Fairing Bonded Part, Sta 727B, Figure 2, Item [8] Figure 3**



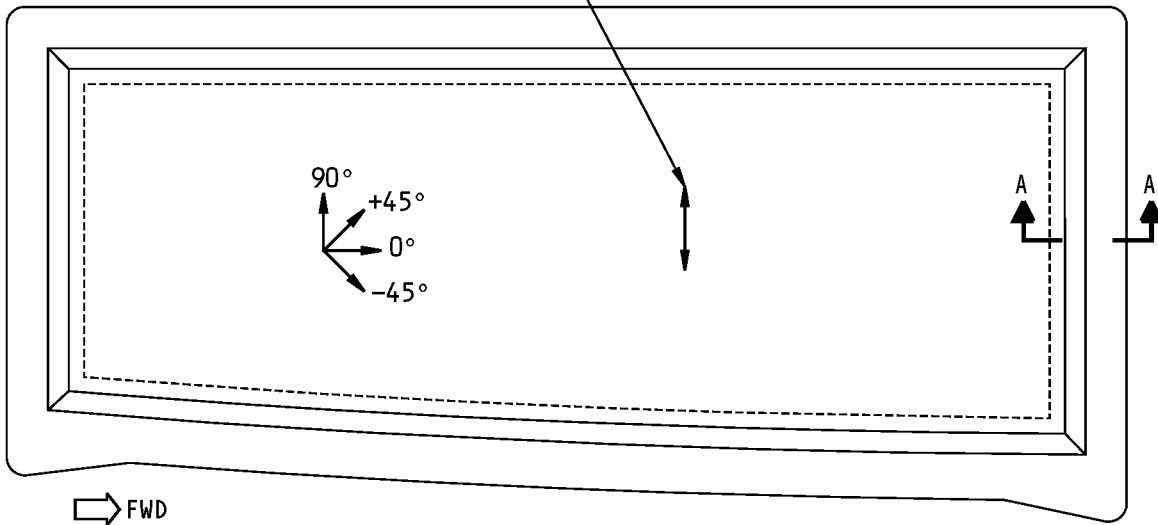
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 3</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1, P2, P3, P6, P7, P8	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B
P4, P5	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part

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CORE RIBBON DIRECTION

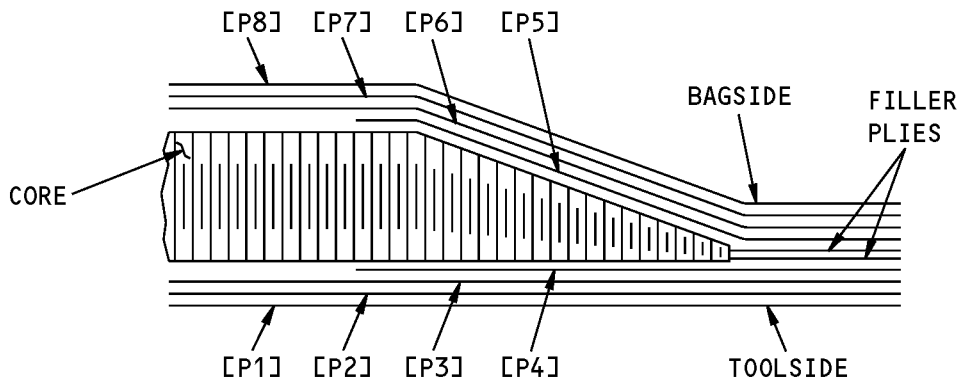


LEFT SIDE BONDED PART IS SHOWN,  
RIGHT SIDE BONDED PART IS OPPOSITE

VIEW IS ON THE BAGSIDE

PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

(A)



A-A  
(TYPICAL)

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Lower Flap Track Bonded Part, Sta 7277 to Sta 727B, Figure 2, Item [16]  
Figure 4**

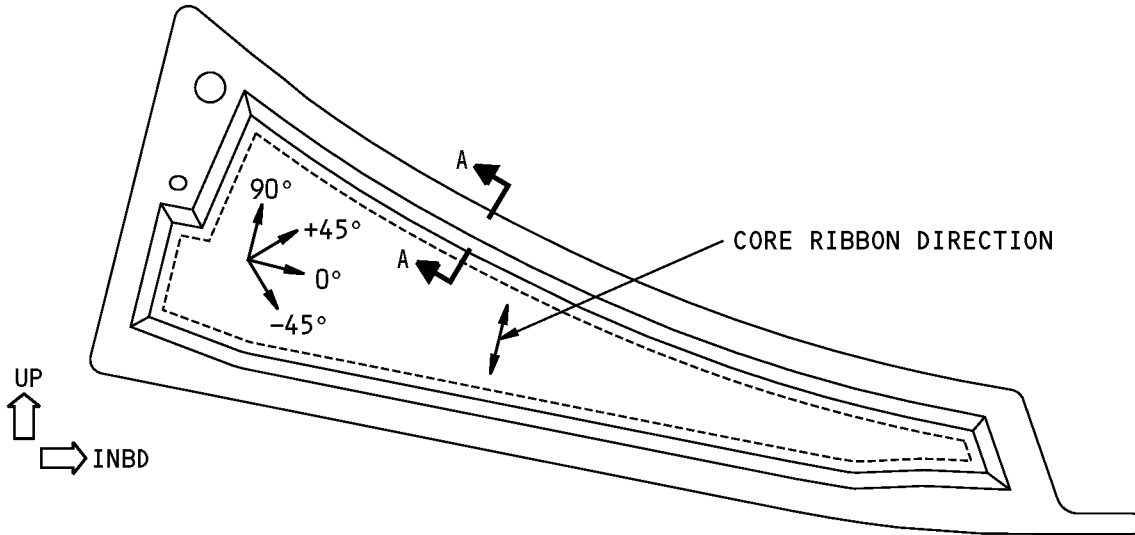


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**STRUCTURAL REPAIR MANUAL**

**Table 4:**

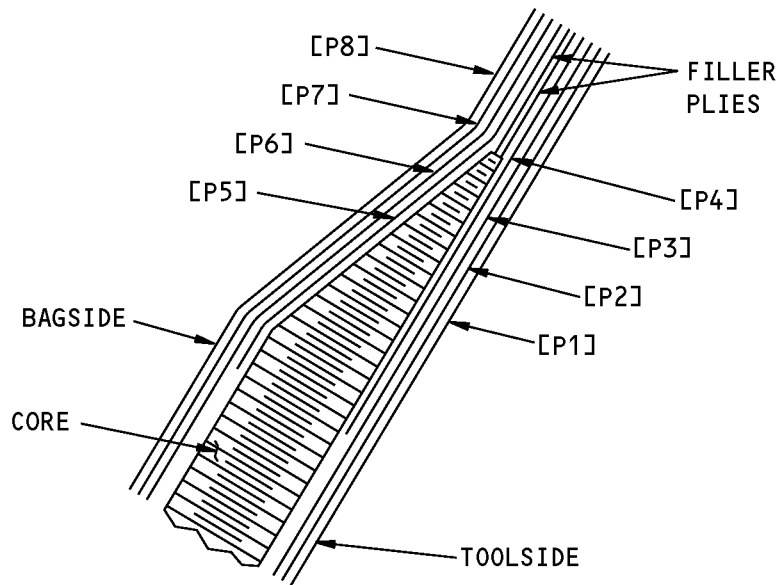
<b>TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 4</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1, P2, P3, P6, P7, P8	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B.
P4, P5	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B.
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part

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LEFT SIDE BONDED PART IS SHOWN,  
RIGHT SIDE BONDED PART IS ALMOST THE SAME  
VIEW IS ON THE BAGSIDE  
PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION

(A)



A-A  
(TYPICAL)

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Fairing Bonded Part, Sta 7277, Figure 2, Item [39] Figure 5**



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**Table 5:**

<b>TYPICAL PLY MATERIAL AND DIRECTION FOR FIGURE 5</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P4, P5	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 1581 or Style 7781, Class III, Grade B.
P1, P2, P3, P6, P7, P8	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Style 120 or Style 220, Class III, Grade B.
Filler Plies	Optional	BMS 8-79, Class III, Grade B, Style 120 (optional 220), Style 1581 (optional 7781), or Style 1584
P9	Optional	1 mil white Tedlar film as given in BAC 5317-2 on bagside area of part



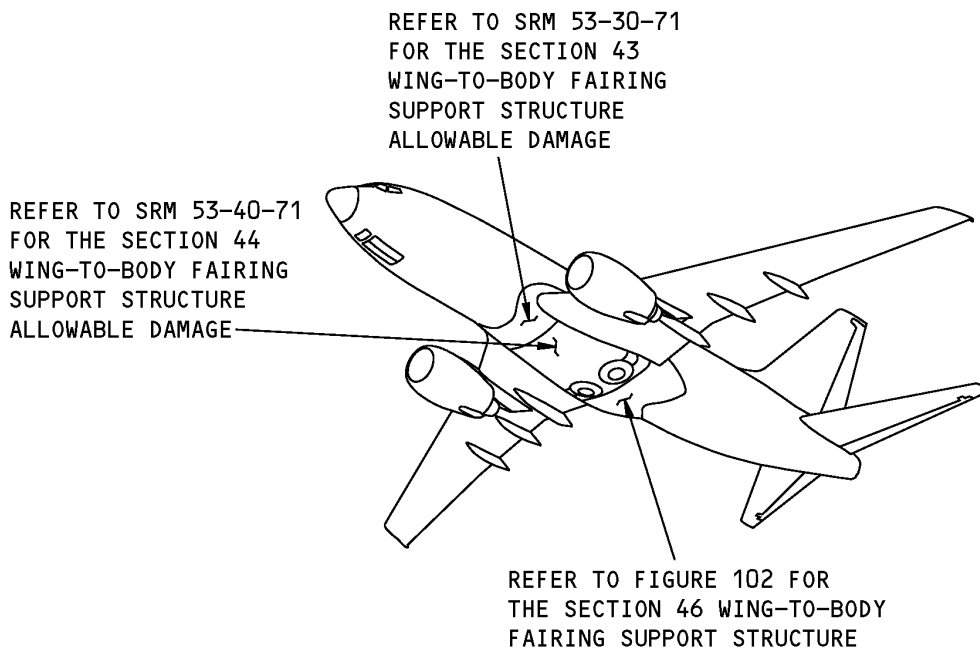
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE**

**1. Applicability**

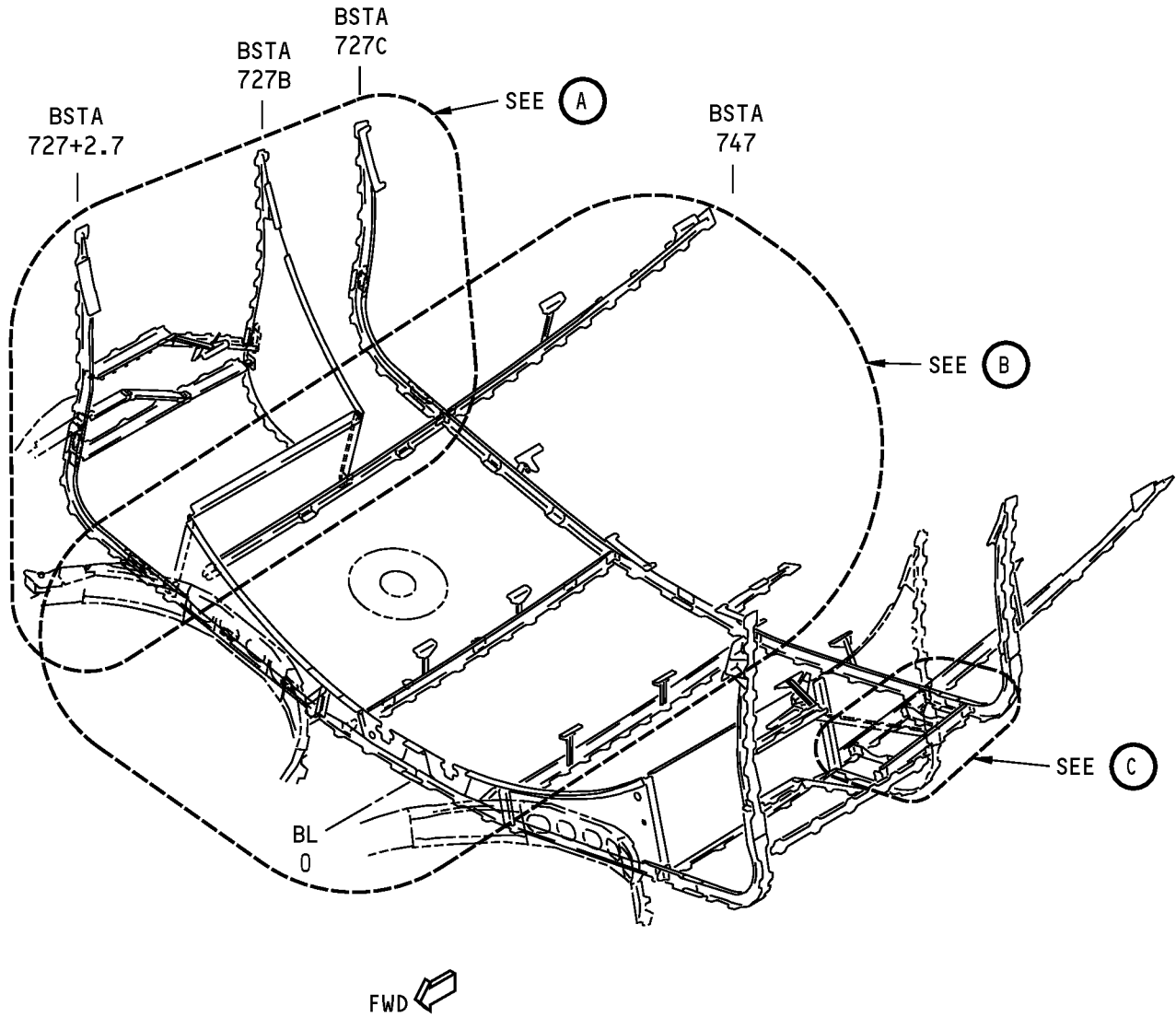
A. This subject gives the allowable damage limits for the section 46 wing-to-body fairing support structure shown in Section 46 Wing-to-Body Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

(1) For the composite parts, the allowable damage limits are only applicable if they are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1



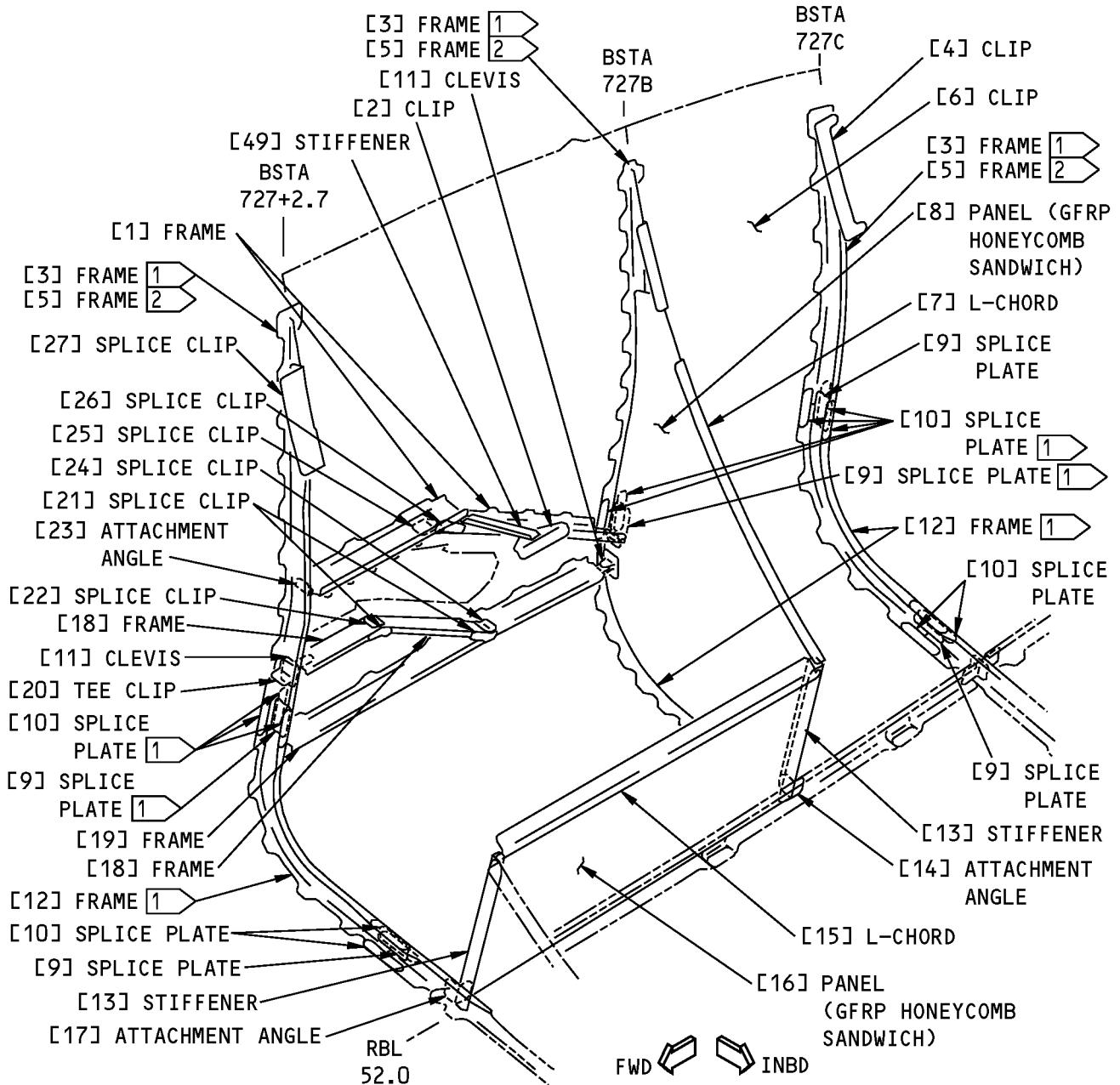
**Section 46 Wing-to-Body Fairing Support Structure Location  
Figure 101**

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**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 102 (Sheet 1 of 4)**



**STRUCTURAL REPAIR MANUAL**



MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

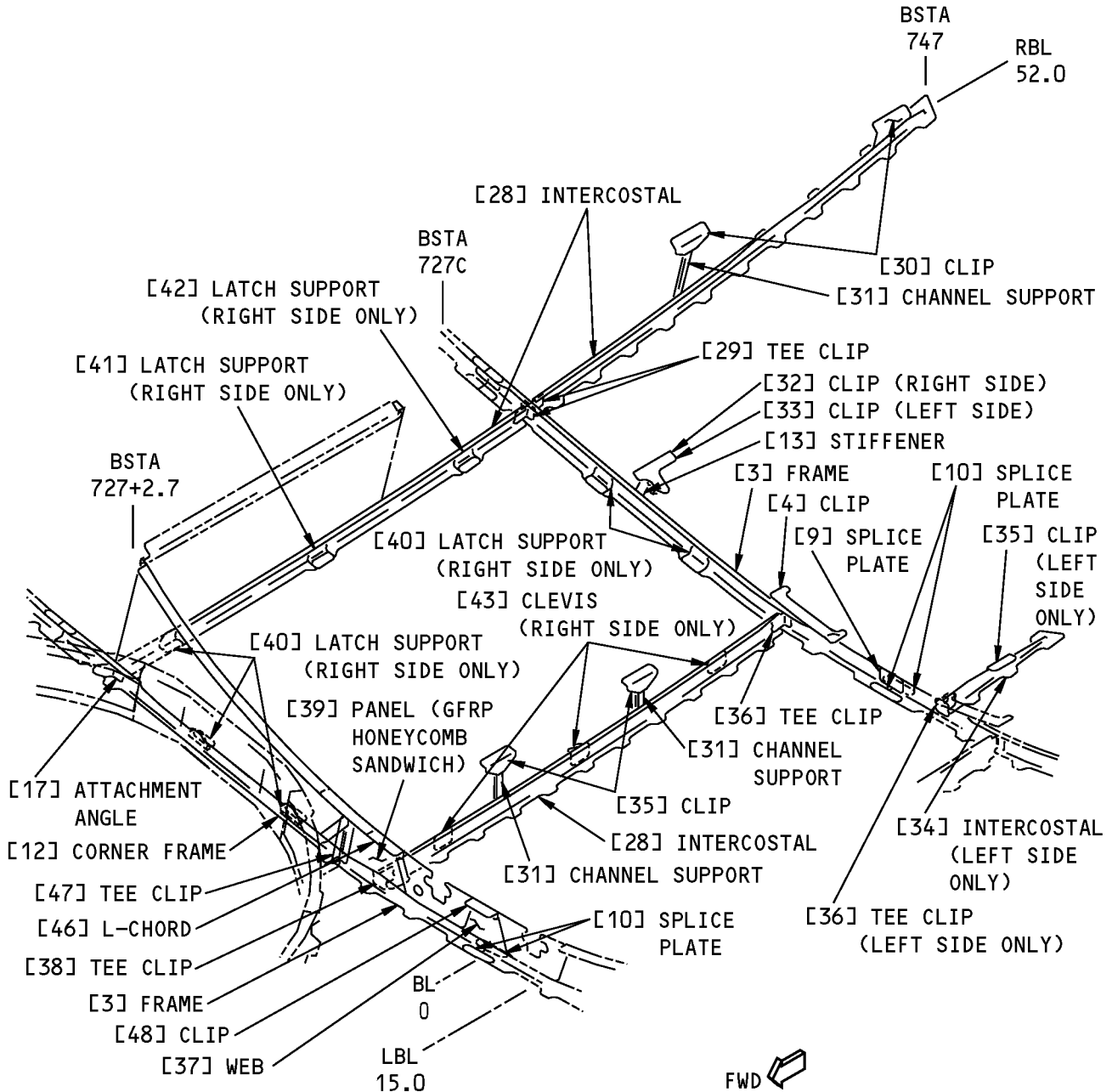
RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
 BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

(A)

-  FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537
-  FOR AIRPLANES WITH LINE NUMBERS 1538 AND ON

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
 Figure 102 (Sheet 2 of 4)**

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STRUCTURAL REPAIR MANUAL**



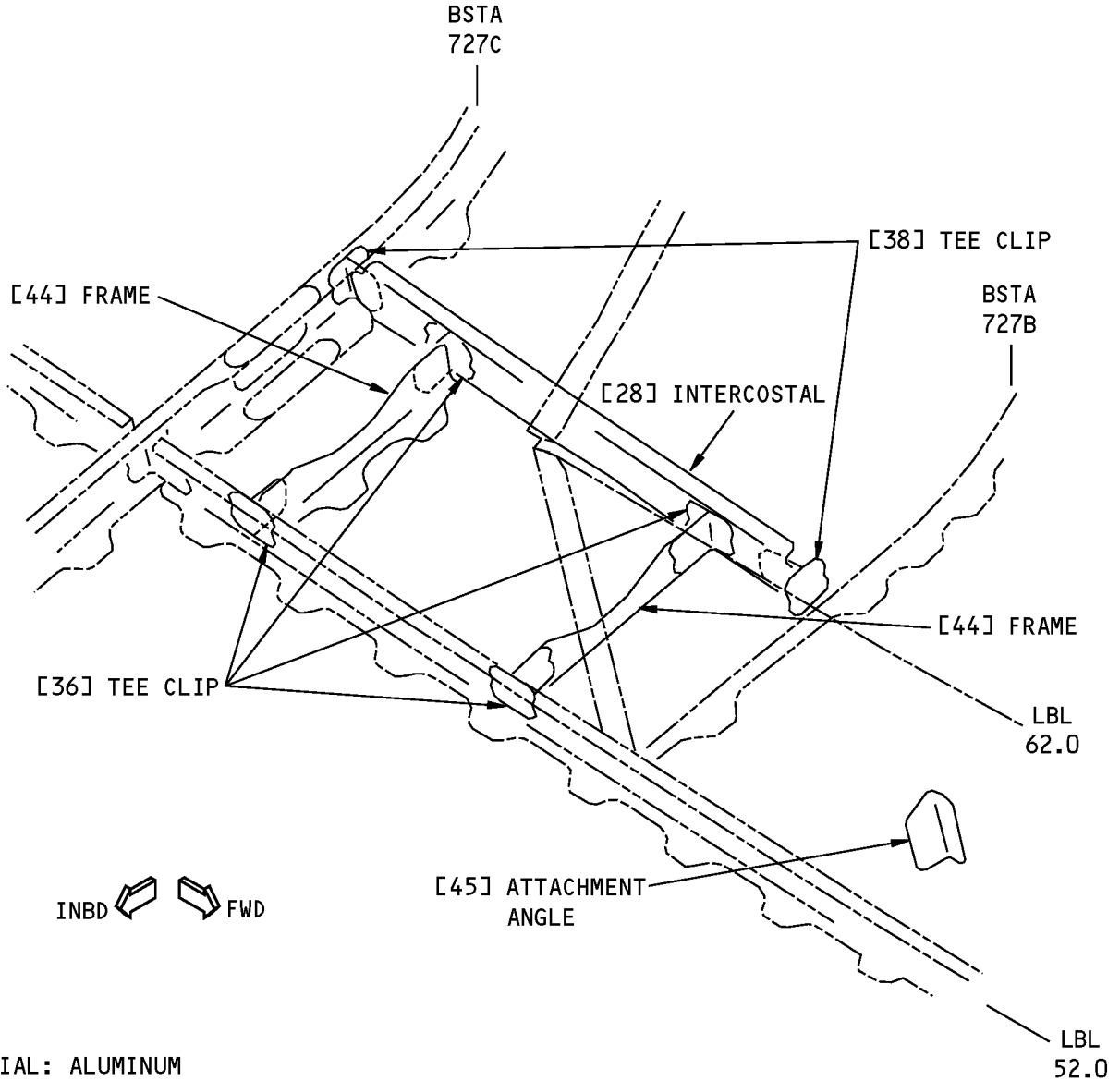
MATERIAL: ALUMINUM (EXCEPT WHERE NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
(EXCEPT AS NOTED)  
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

**B**

Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 102 (Sheet 3 of 4)

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LEFT SIDE ONLY  
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0

(C)

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 102 (Sheet 4 of 4)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

A. Do the steps that follow if you have damage to the aluminum parts:

**NOTE:** The steps that follow do not apply to dent damage.

- (1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.
  - (a) The methods that follow are permitted as an alternative to the detailed close visual inspection:
    - 1) Penetrant inspection. Refer to SOPM 20-20-02.
    - 2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.
  - (2) Remove the damaged material as necessary.
    - (a) Refer to 51-10-02 for the inspection and removal of damage.
    - (b) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
    - (c) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
  - (3) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.
  - (4) Apply two layers of BMS 10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

B. Do the steps that follow if you have damage to the composite parts:

- (1) Do the steps that follow for the support structure made of Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich material:
  - (a) Do an inspection of the damaged area to find the length, width and depth of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to NDT, Part 1, 51-01-02 for inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator, can be used.

- 1) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
    - 2) Refer to Damage Definitions, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
    - 3) Refer to Definitions of the Facesheets, Figure 104/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.
  - (2) Remove all the contamination and water from the structure.
    - (a) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
    - (b) Refer to 51-70-04 for the cleanup procedures.
  - (3) Seal all damaged areas with the steps that follow:
    - (a) Seal the damage that is not more than one ply deep and that agrees with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1
      - 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.

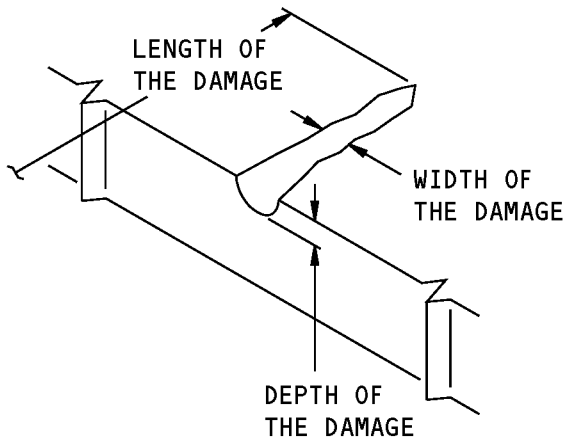


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**STRUCTURAL REPAIR MANUAL**

- 2) Make a temporary seal.
    - a) Apply aluminum foil tape (speed tape).
    - b) Keep a record of the location.
    - c) Make sure the tape is in satisfactory condition at each scheduled maintenance interval.
  - 3) Make a permanent seal.
    - a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
    - b) Apply one layer of BMS 10-79, Type 3 or BMS 10-103, Type 1 primer. Refer to SOPM 20-44-04.
    - c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM PAGEBLOCK 51-21-99/701.
- (b) Seal the damaged areas that are more than one ply deep and that agree with the allowable damage limits given in Paragraph 4.B./ALLOWABLE DAMAGE 1
- 1) Use a vacuum and heat to remove moisture from the solid laminate or the honeycomb cells. Refer to 51-70-04.
  - 2) Make a temporary seal.
    - a) Apply aluminum foil tape (speed tape).
    - b) Keep a record of the location.
    - c) Repair the damage no later than 24 months from the time the seal was made.
- C. Refer to Table 101/ALLOWABLE DAMAGE 1 for the paragraph references for the allowable damage limits.

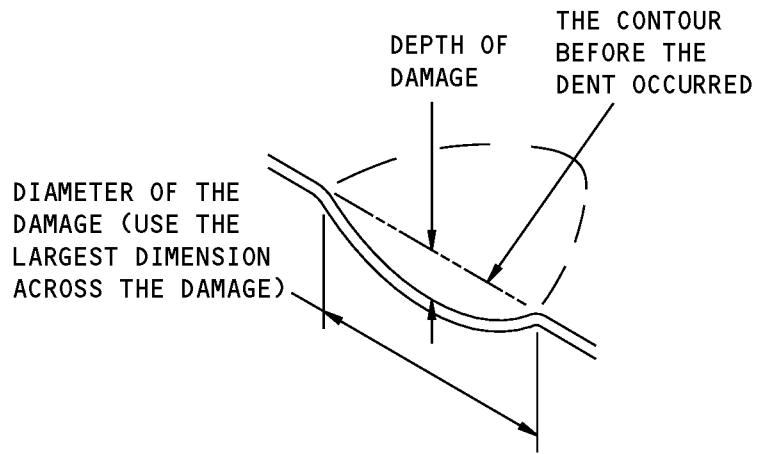
**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
ALUMINUM PARTS	4.A
GFRP HONEYCOMB SANDWICH PANELS FULL DEPTH HONEYCOMB CORE AREA	4.B.(1)
GFRP HONEYCOMB SANDWICH PANELS EDGE BAND AREA	4.B.(2)



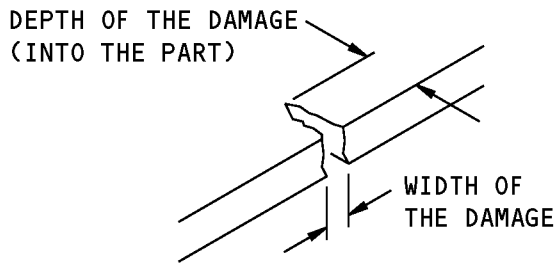
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

**A**



**DEFINITIONS FOR  
DENT DAMAGE**

**B**



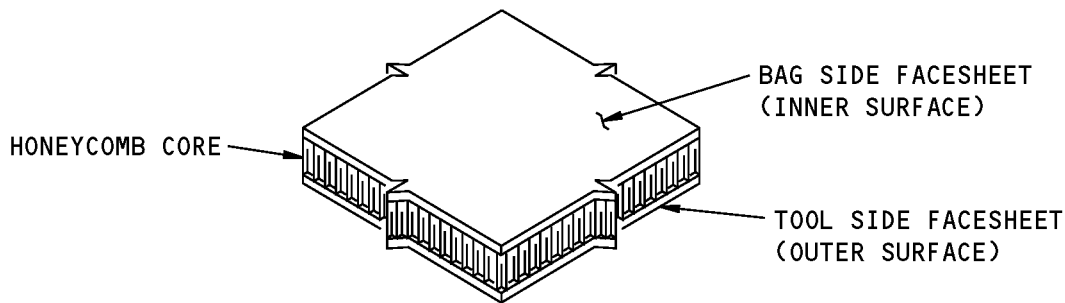
**DEFINITIONS FOR  
EDGE DAMAGE**

**C**

**Damage Definitions  
Figure 103**



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STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 104**

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05, GENERAL	Repair Sealing
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
53-30-71, ALLOWABLE DAMAGE 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71, ALLOWABLE DAMAGE 1	Section 44 Wing-to-Body Fairing Support Structure
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

**4. Allowable Damage Limits**

A. Aluminum Parts

- (1) The allowable damage limits that follow are applicable to the parts listed in Table 102/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 102:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[22]	Splice Clip (Formed)	[40]	Latch Support (Formed)
[24]	Splice Clip (Formed)	[42]	Latch Support (Formed)

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ITEM	DESCRIPTION	ITEM	DESCRIPTION
[25]	Splice Clip (Formed)		

- (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and L.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, and L.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (2) The allowable damage limits that follow are applicable to the parts listed in Table 103/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 103:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[9]	Splice Plate (Formed)	[21]	Splice Clip (Formed)
[10]	Splice Plate (Formed)	[26]	Splice Clip (Formed)

- (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and M.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, and M.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- (3) The allowable damage limits that follow are applicable to the parts listed in Table 104/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

**Table 104:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[37]	Web (Sheet)		

- (a) Cracks:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and M.
- (b) Nicks, Gouges, Scratches, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, M, and P.
- (c) Dents are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail D if:



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- 1) They do not extend across an attached structure.
- (d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details K and O.
- (4) The allowable damage limits that follow are applicable to the parts listed in Table 105/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 105:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Frame (Extruded)	[18]	Frame (Extruded)
[3]	Frame (Extruded)	[19]	Frame (Machined)
[5]	Frame (Machined)	[28]	Intercostal (Extruded)
[12]	Corner Frame (Machined)	[34]	Intercostal (Extruded)

- (a) Cracks:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, G, H, and I.
- (b) Nicks, Gouges, Scratches, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, H, I, J, and K.
- (c) Dents are not permitted.
- (d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail N.
- (5) The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 106:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Clip (Extruded)	[30]	Clip (Extruded)
[4]	Clip (Extruded)	[32]	Clip (Machined)
[6]	Clip (Extruded)	[33]	Clip (Extruded)
[7]	L-Chord (Extruded)	[35]	Clip (Extruded)
[13]	Stiffener (Extruded)	[36]	Tee Clip (Extruded)
[14]	Attachment Angle (Extruded)	[38]	Tee Clip (Extruded)
[15]	L-Chord (Extruded)	[41]	Latch Support (Extruded)
[17]	Attachment Angle (Extruded)	[44]	Frame (Extruded)
[20]	Tee Clip (Extruded)	[45]	Attachment Angle (Extruded)
[23]	Attachment Angle (Extruded)	[46]	L-Chord (Extruded)
[27]	Clip (Machined)	[47]	Tee Clip (Extruded)
[29]	Tee Clip (Extruded)	[48]	Clip (Extruded)

- (a) Cracks:



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- 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.
- (b) Nicks, Gouges, Scratches, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.
- (6) The allowable damage limits that are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 107:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[31]	Channel Support (Extruded)	[49]	Stiffener (Extruded)

- (a) Cracks:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.
- (b) Nicks, Gouges, Scratches, and Corrosion:
  - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.
- (c) Dents are not permitted.
- (d) Holes and Punctures are permitted as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Detail N.
- (7) The allowable damage limits that follow are applicable to the parts listed in Table 108/ALLOWABLE DAMAGE 1 and shown in Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 102/ALLOWABLE DAMAGE 1.

Table 108:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[11]	Clevis (Extruded)	[43]	Clevis (Machined)

- (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, and H.
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits - Aluminum Parts, Figure 105/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, H, and Q.
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.
- B. Composite Parts
- (1) Honeycomb Sandwich Panels - Full Depth Honeycomb Core Area
    - (a) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
    - (b) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if:



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## STRUCTURAL REPAIR MANUAL

- 1) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1
  - 2) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 3) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (c) Dents are permitted if:
- 1) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1
  - 2) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1
  - 3) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (d) Holes and Punctures are permitted if:
- 1) They are a maximum of one facesheet and the core in depth
  - 2) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1
  - 3) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1
  - 4) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 5) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (e) Delaminations are permitted if:
- 1) The dimension of the damage is less than the limits given in Table 109/ALLOWABLE DAMAGE 1

ALLOWABLE DAMAGE 1

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**STRUCTURAL REPAIR MANUAL**

- 2) They are in the full depth core area and are a minimum distance away from fastener holes or material edges as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1
- 3) They are a minimum distance away from the edge of other damage as shown in GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits, Figure 106/ALLOWABLE DAMAGE 1 and Table 109/ALLOWABLE DAMAGE 1

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

- 4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

**Table 109:**

DAMAGE DIMENSIONS FOR FULL DEPTH HONEYCOMB CORE AREAS - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE			
PANEL DRAWING NUMBER FIGURE AND ITEM REFERENCE	BAGSIDE FACESHEET OR TOOLSIDE FACESHEET		
	MAXIMUM DAMAGE DIMENSION "D" OR "d" (INCHES)	MINIMUM DAMAGE SPACING DIMENSION "A" (INCHES)	MINIMUM DAMAGE DISTANCE "B" AND "C" FROM FASTENER HOLES OR MATERIAL EDGES (INCHES) "B" "C"
149A7511 Figure 102, Item [8]	3.0	(1.5)x(D + d)	2.0D 2.0d
149A7521 Figure 102, Item [39]	3.0	(1.5)x(D + d)	2.0D 2.0d
149A7541 Figure 102, Item [16]	2.3	(1.8)x(D + d)	2.0D 2.0d

(2) GFRP Honeycomb Sandwich Panels - Edgeband Area

- (a) Nicks, Gouges and Scratches that do not cause damage to the glass fibers are permitted.
- (b) Nicks, Gouges and Scratches that cause damage to the glass fibers are permitted if they are:

- 1) A maximum of one ply in depth

**NOTE:** Use the limits for holes and punctures if the depth of the damage is more than one ply in depth.

- 2) A maximum of 1.0 inch in length
- 3) A maximum of 0.25 inch in width
- 4) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
- 5) A minimum distance of 3.0 inches away from the edge of other damage

**NOTE:** Other damage does not include nicks, gouges, and scratches that:

- Do not cause damage to the glass fiber plies
- Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

- 6) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1

- (c) Dents are not permitted.
- (d) Holes and Punctures are permitted if they are:

- 1) A maximum of 0.25 inch measured across the largest dimension of the damage

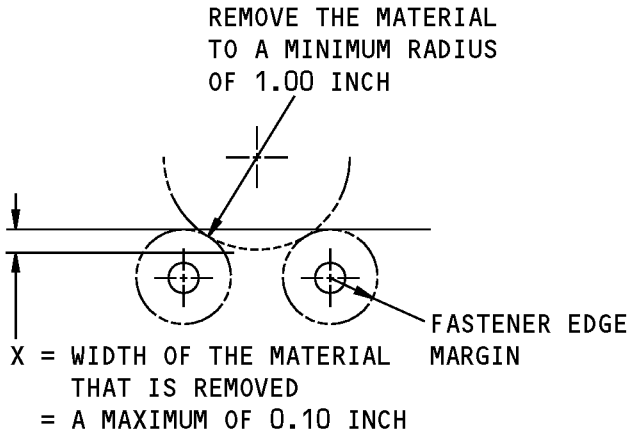


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## STRUCTURAL REPAIR MANUAL

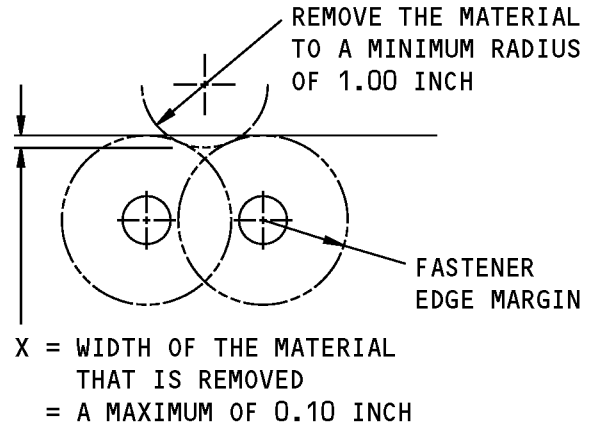
- 2) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
  - 3) A minimum distance of 3.0 inches away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (e) Delaminations are permitted if they are:
- 1) A maximum of 1.00 inch measured across the largest dimension of the damage
  - 2) A minimum distance of 0.5 inch away from the edge of fastener holes or material edges
  - 3) A minimum distance of 3.0 inches away from the edge of other damage  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 4) Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (f) Edge damage is permitted if it is:
- 1) A maximum of 0.10 inch in depth
  - 2) A maximum of 0.50 inch in width
  - 3) A minimum of 2.5D (D = the largest dimension across the damage) away from the edge of other damage or the edge of a hole  
**NOTE:** Other damage does not include nicks, gouges, and scratches that:
    - Do not cause damage to the glass fiber plies
    - Are sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
  - 4) Sealed as given in Paragraph 2.B./ALLOWABLE DAMAGE 1
- (g) Edge Erosion is permitted as shown in GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge , Figure 107/ALLOWABLE DAMAGE 1.

**STRUCTURAL REPAIR MANUAL**



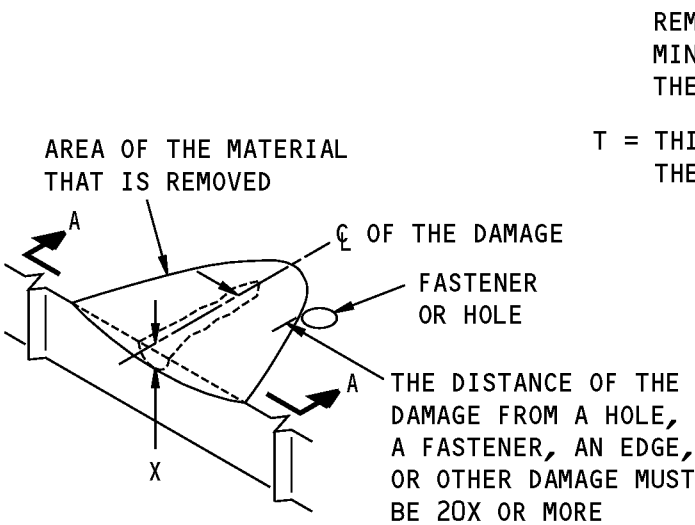
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



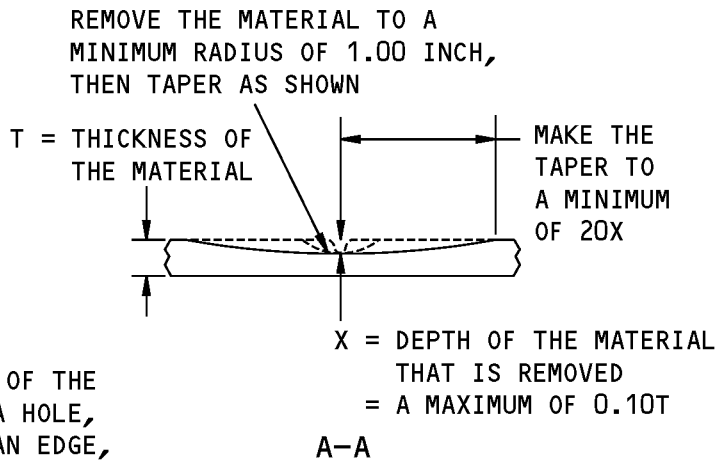
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



REMOVAL OF DAMAGED MATERIAL ON A SURFACE

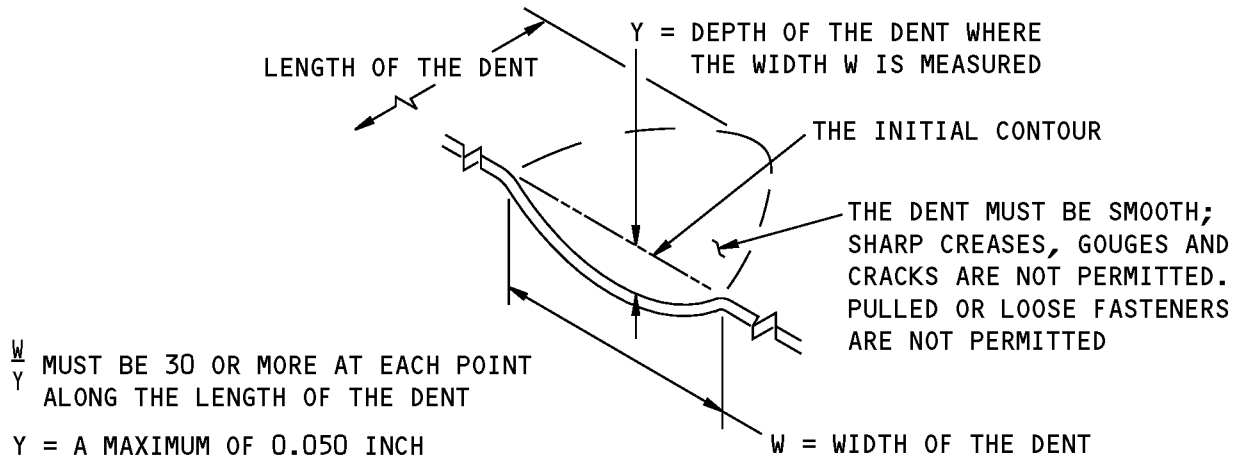
(C)



Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 1 of 14)



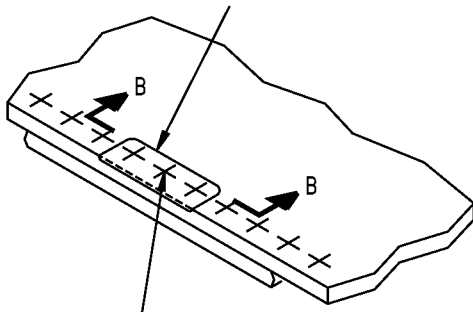
**737-800  
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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR DENT THAT IS PERMITTED

(D)

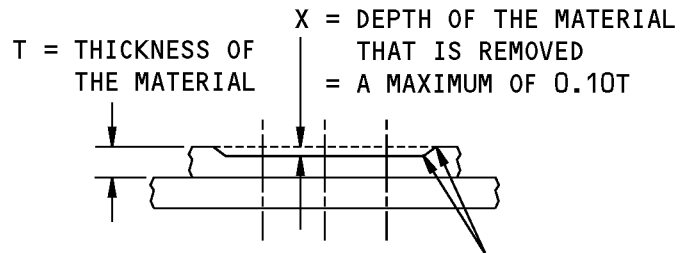
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

(E)

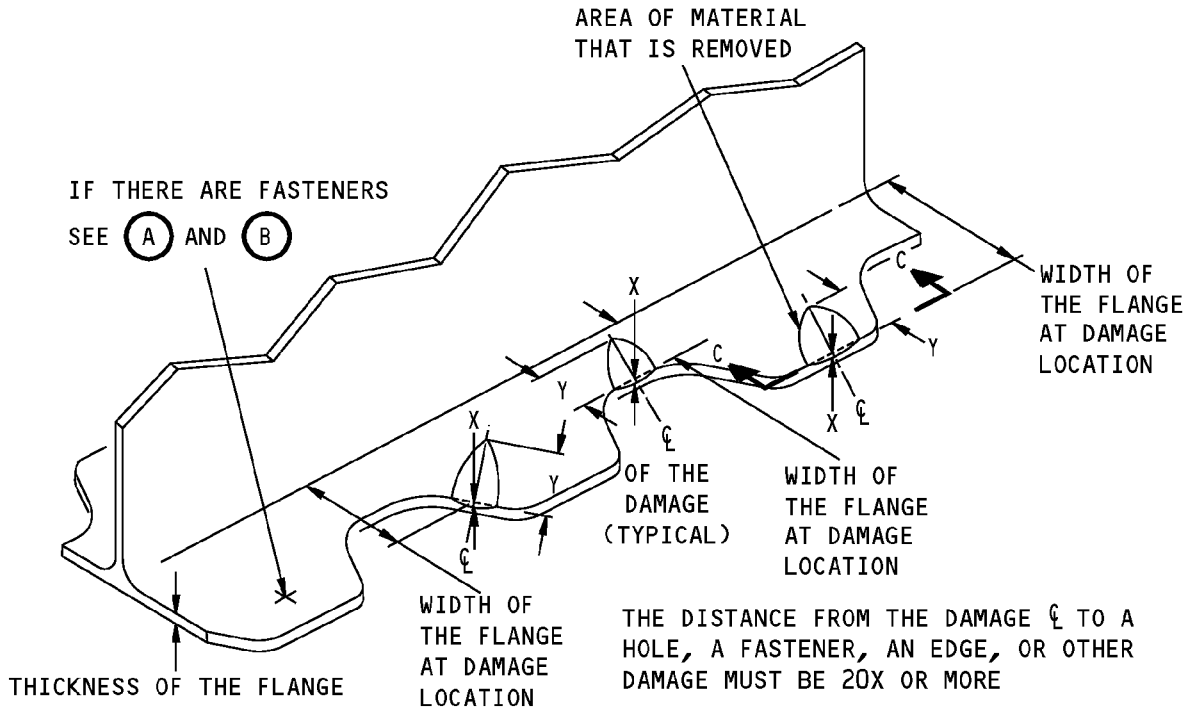


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

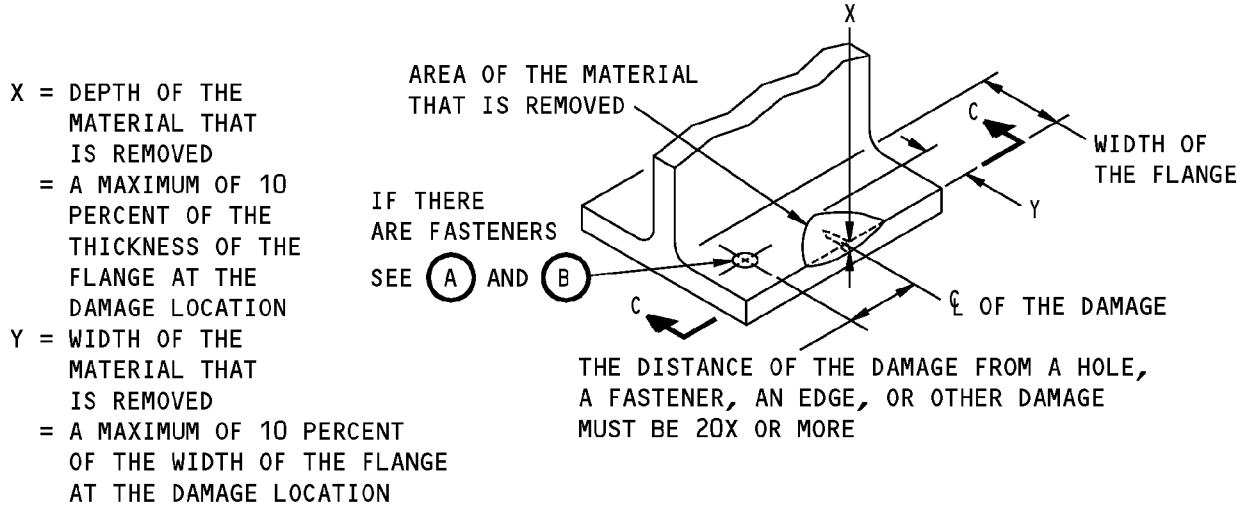
B-B

**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 2 of 14)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS WITH SERRATED FLANGES.



X = DEPTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE FLANGE AT THE DAMAGE LOCATION

Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE AT THE DAMAGE LOCATION

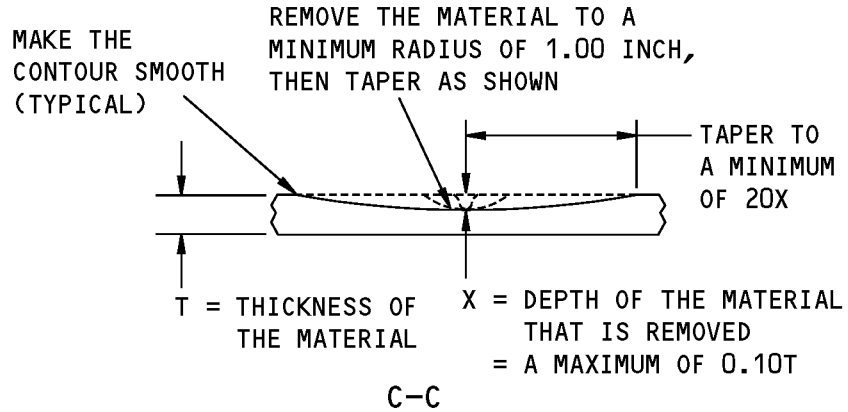
**NOTE:** APPLICABLE TO L-SECTIONS AND T-SECTIONS.

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(F)

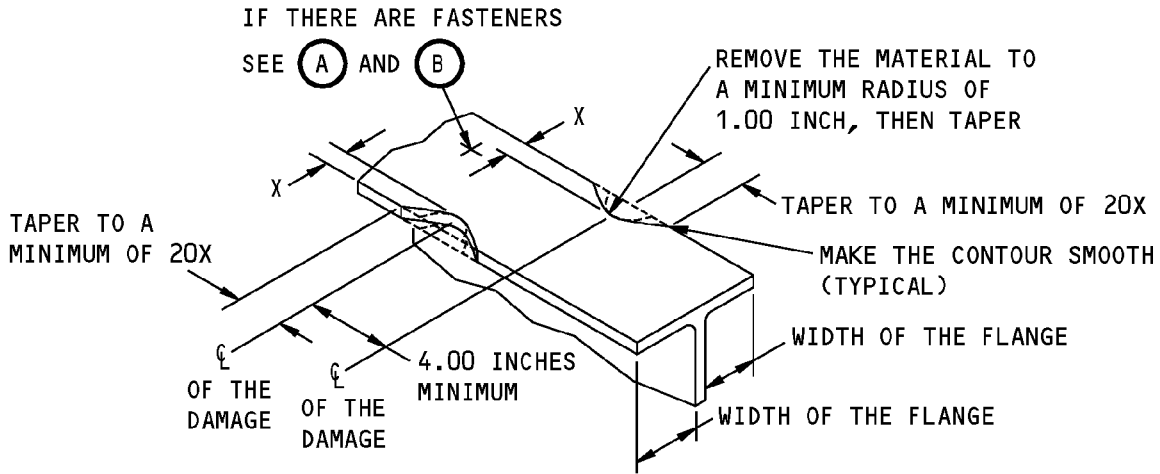
**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 3 of 14)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 4 of 14)**

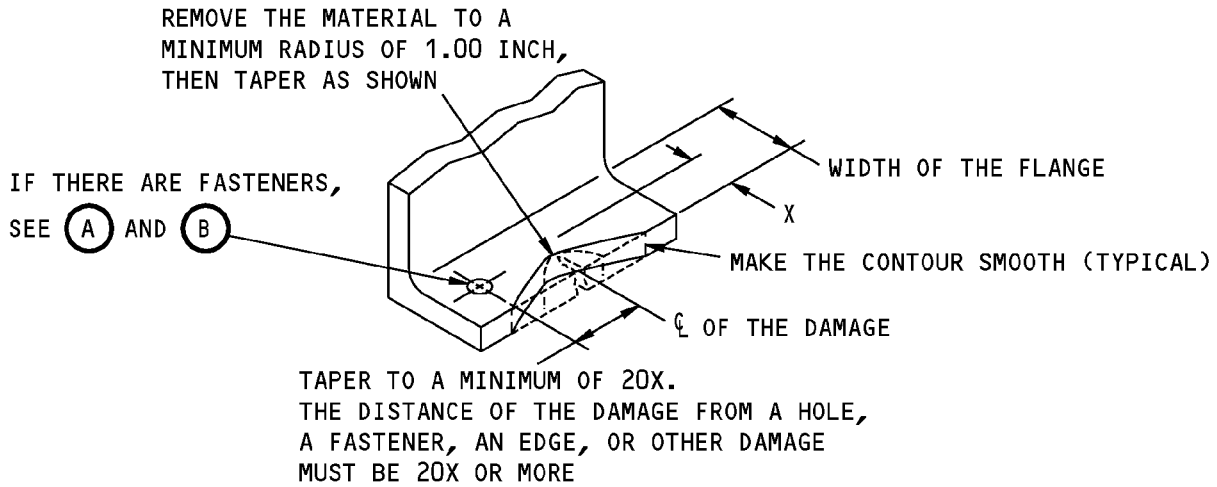
STRUCTURAL REPAIR MANUAL



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL ON AN EDGE

(G)



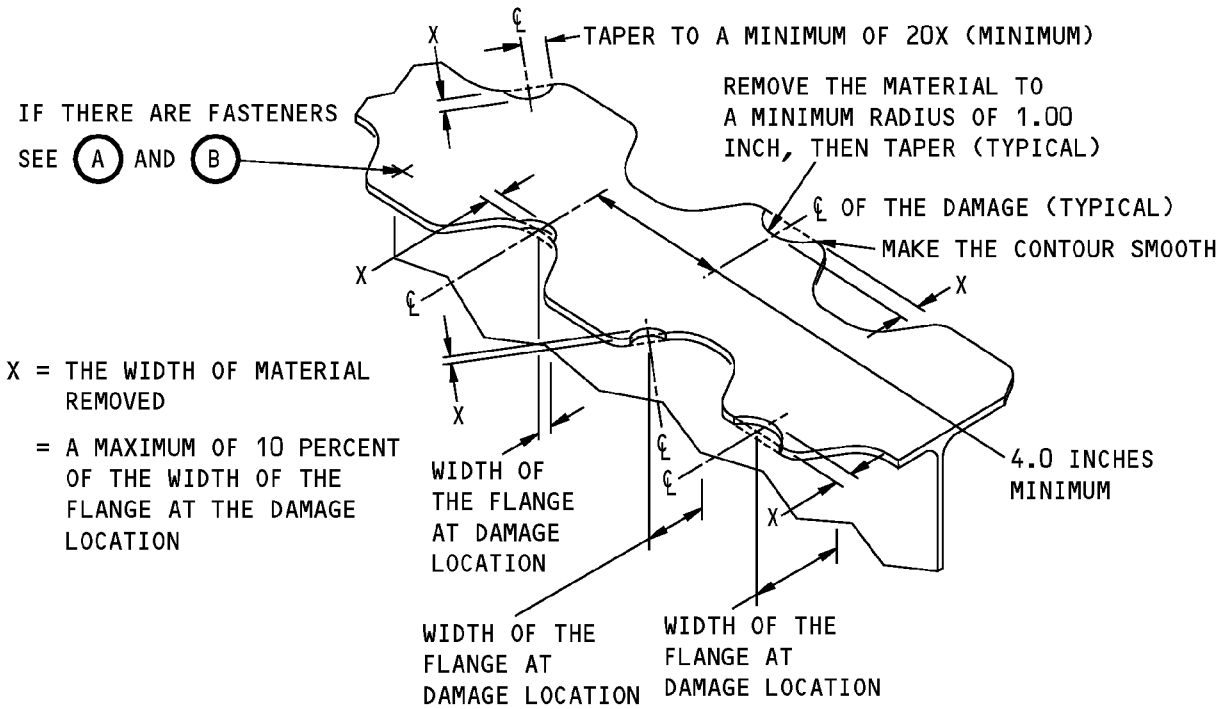
X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

(H)

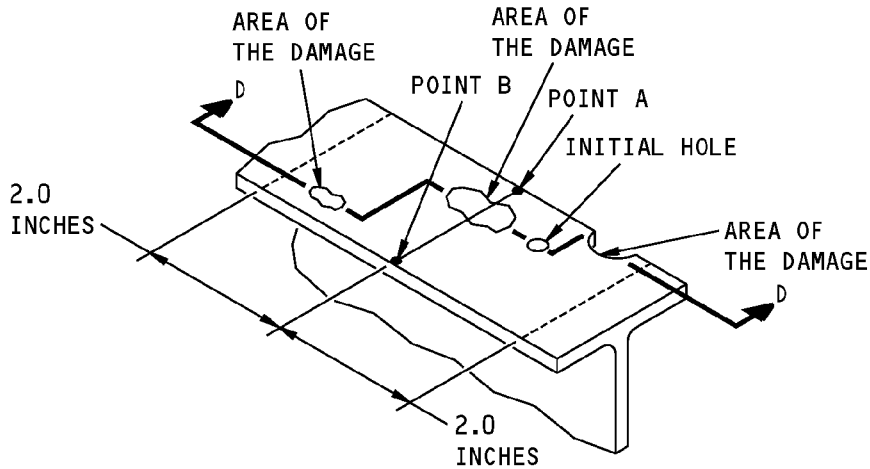
Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 5 of 14)

**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SERRATED EDGE**

(I)

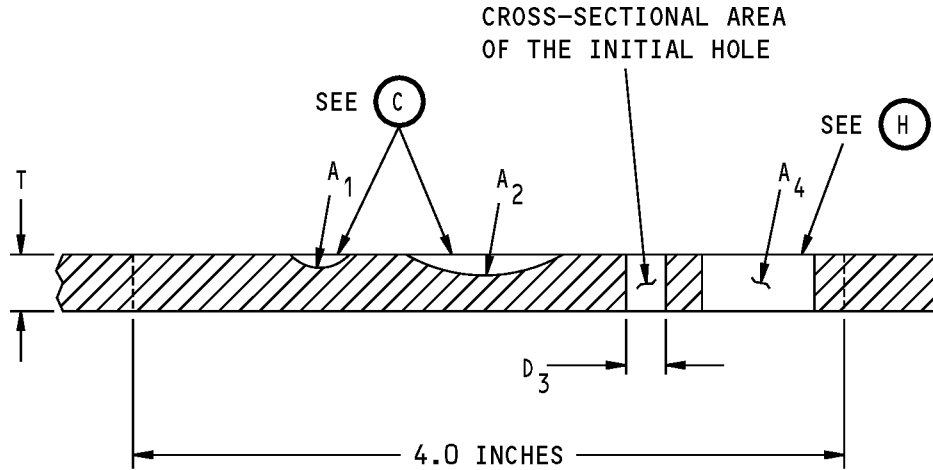


**REMOVAL OF DAMAGE MATERIAL ON A FLANGED SURFACE (A TEE SECTION IS SHOWN)**

(J)

**Allowable Damage Limits - Aluminum Parts**  
**Figure 105 (Sheet 6 of 14)**

**737-800  
STRUCTURAL REPAIR MANUAL**



$D_3$  = DIAMETER OF THE INITIAL HOLE AT LOCATION 3

T = THICKNESS OF THE FLANGE

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE FLANGE  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $4T - D_3T$

$A_1$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

$A_2$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 2

$A_4$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 4

$$\left( \frac{A_1 + A_2 + A_4}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

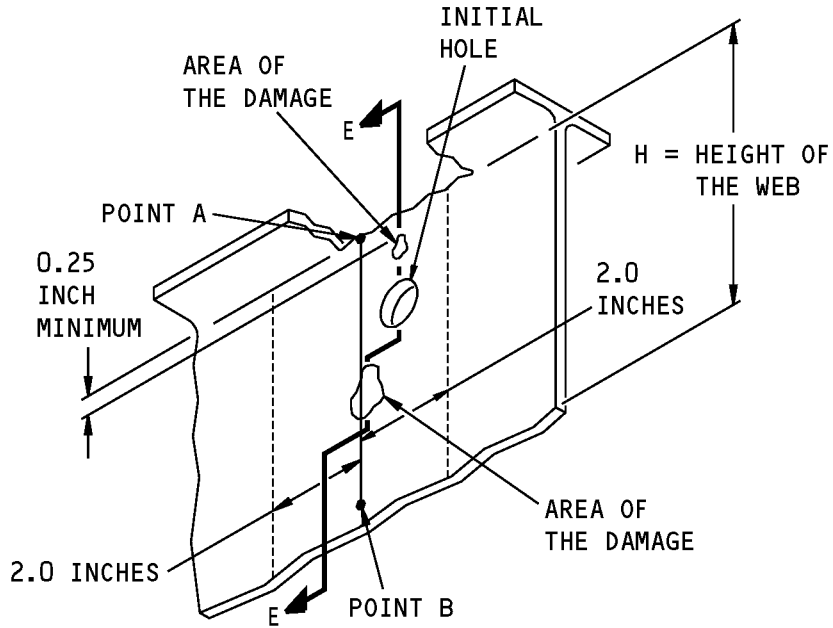
= A MAXIMUM OF 20 PERCENT

THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE FLANGE.

D-D

**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 7 of 14)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL FROM A WEB OF A TEE SECTION**

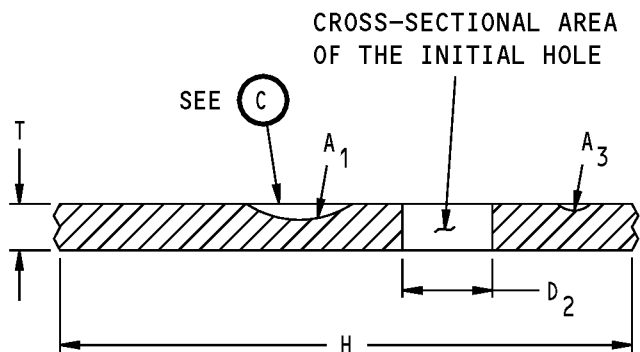
(K)

**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 8 of 14)**

D634A210

**53-60-71**  
ALLOWABLE DAMAGE 1  
Page 123  
Nov 01/2003

**737-800  
STRUCTURAL REPAIR MANUAL**



$D_2$  = DIAMETER OF THE INITIAL HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE WEB  
 = THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)  
 =  $HT - D_2T$

$A_1$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 1

$A_3$  = CROSS-SECTIONAL AREA OF THE MATERIAL DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_1 + A_3}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

= A MAXIMUM OF 20 PERCENT

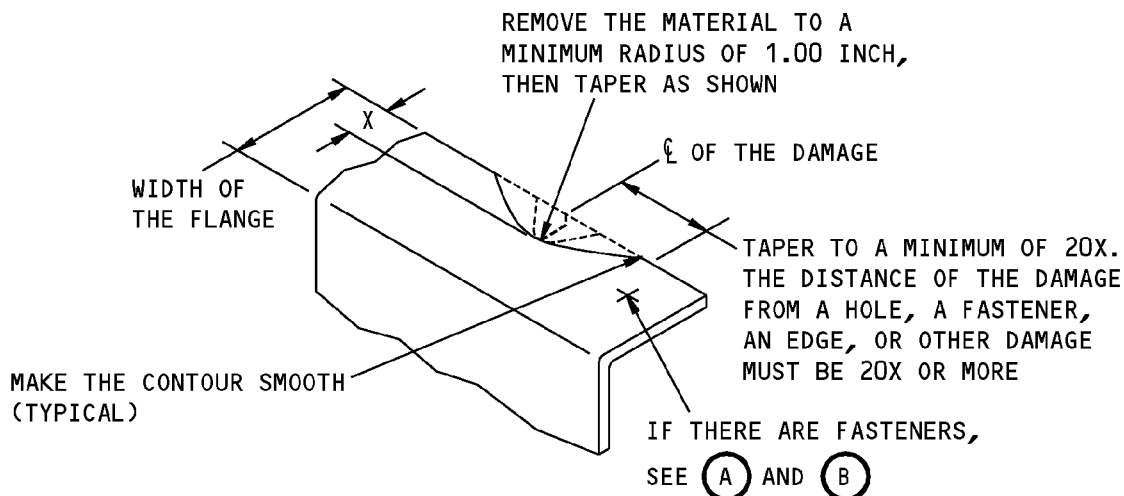
THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 20 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

**(ROTATED 90° CLOCKWISE)  
E-E**

**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 9 of 14)**



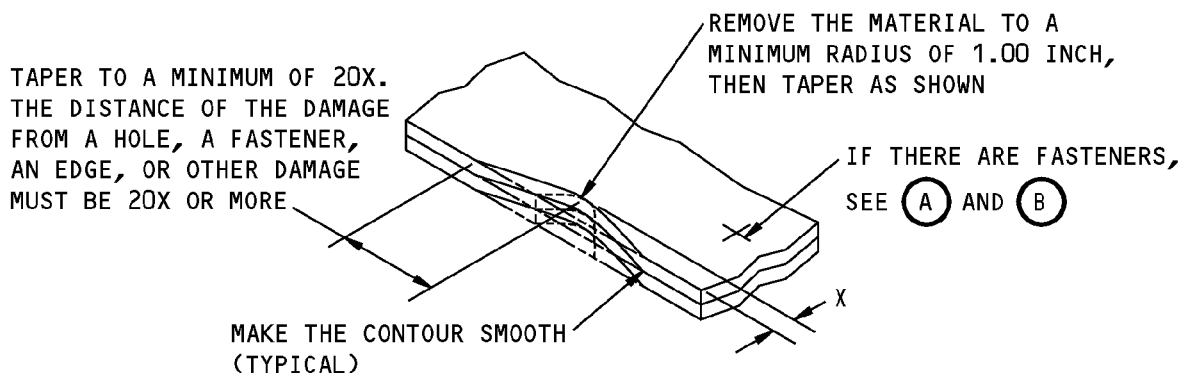
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(L)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTIPLE-PLY SKINS OR WEBS.

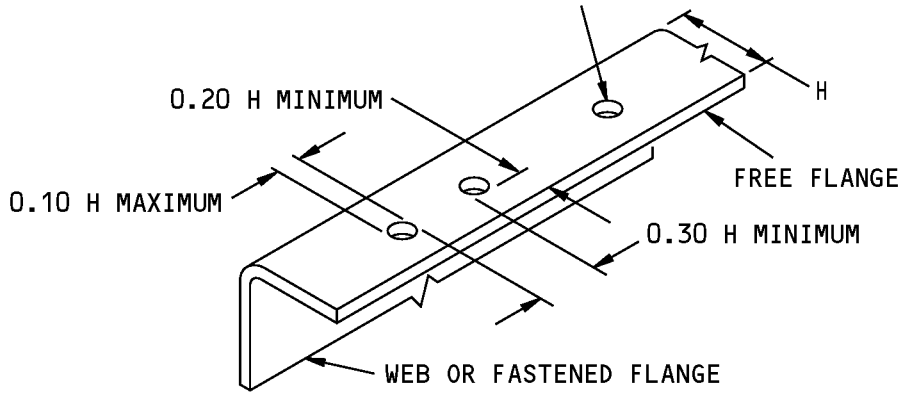
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(M)

**Allowable Damage Limits - Aluminum Parts**  
**Figure 105 (Sheet 10 of 14)**

737-800  
STRUCTURAL REPAIR MANUAL

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH LENGTH OF FLANGE. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD RIVETS



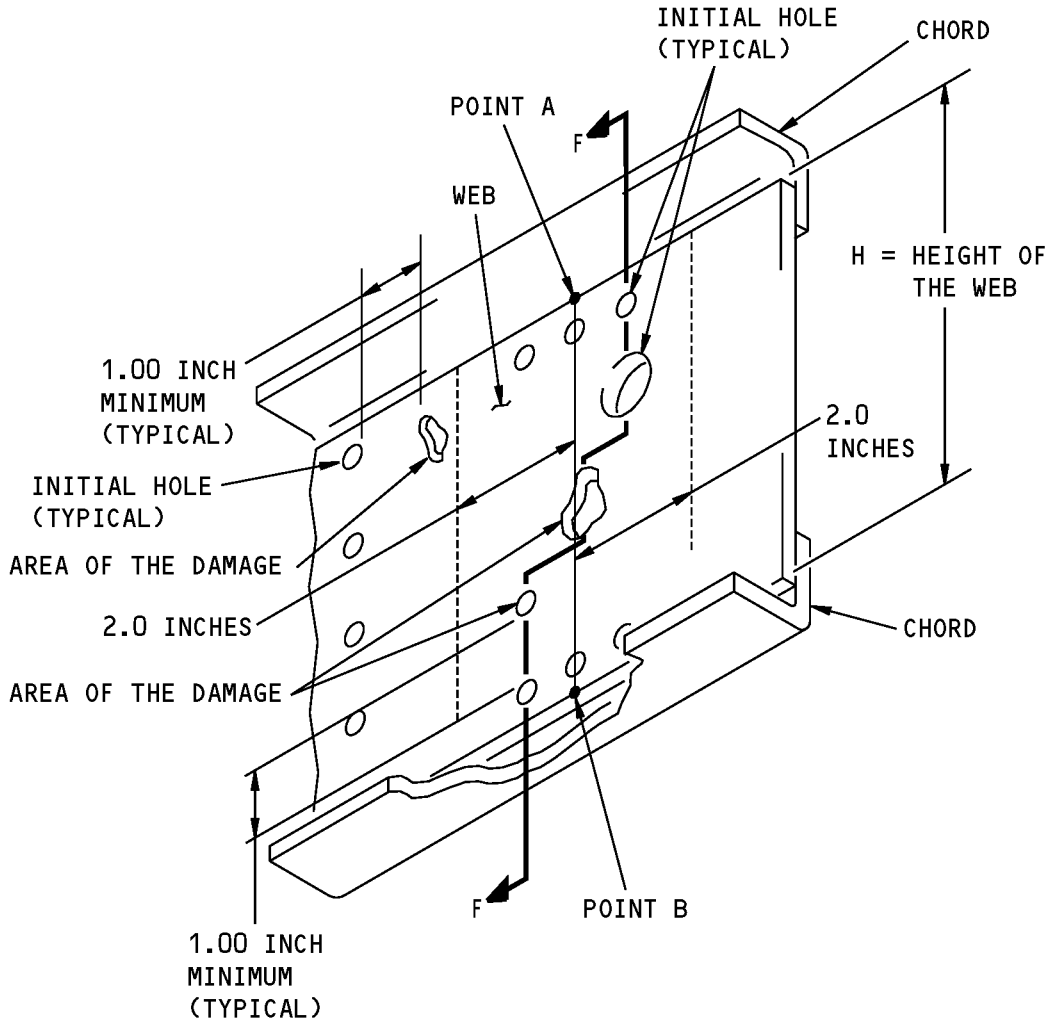
NOTE: NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

HOLES AND PUNCTURES IN A FREE FLANGE



Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 11 of 14)

**737-800  
STRUCTURAL REPAIR MANUAL**

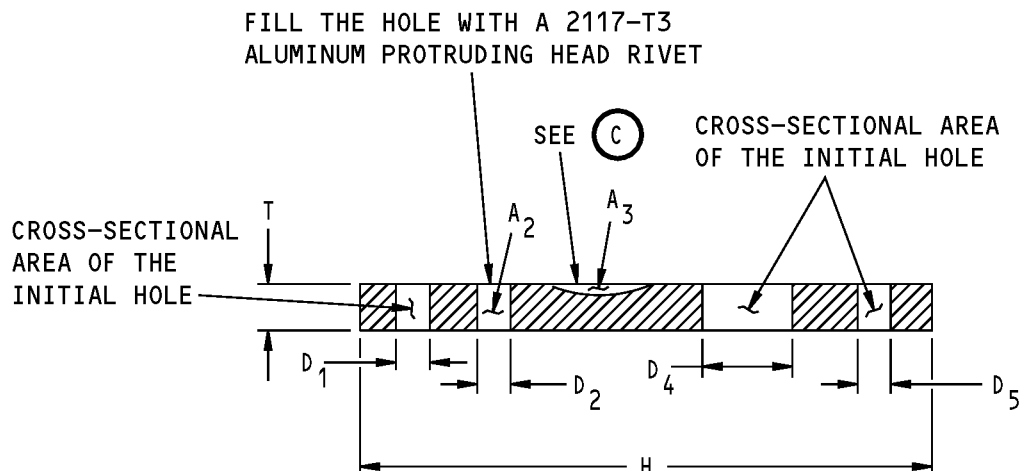


**REMOVAL OF DAMAGED MATERIAL FROM A WEB OR DOUBLER**



**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 12 of 14)**

STRUCTURAL REPAIR MANUAL



$D_1, D_4, D_5$  = DIAMETER OF THE INITIAL HOLE

$D_2$  = DIAMETER OF THE HOLE AT LOCATION 2

H = HEIGHT OF THE WEB

T = THICKNESS OF THE WEB

$A_i$  = INITIAL CROSS-SECTIONAL AREA OF THE WEB

= THE TOTAL CROSS-SECTIONAL AREA MINUS THE CROSS-SECTIONAL AREA OF THE INITIAL HOLES (AS MANUFACTURED BY BOEING)

$$= HT - D_1T - D_4T - D_5T$$

$A_2$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 2

$A_3$  = CROSS-SECTIONAL AREA OF THE DAMAGE THAT IS REMOVED AT LOCATION 3

$$\left( \frac{A_2 + A_3}{A_i} \right) \times 100 = \text{PERCENT OF CROSS-SECTIONAL AREA REMOVED}$$

$$= 10 \text{ PERCENT MAXIMUM}$$

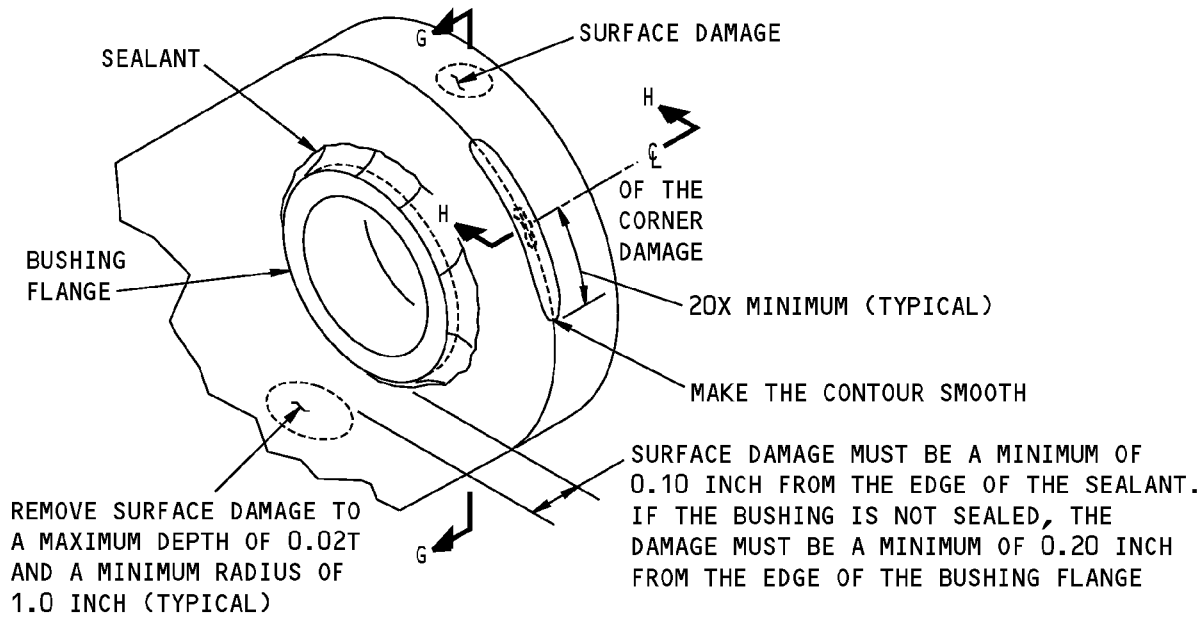
THE TOTAL CROSS-SECTIONAL AREA REMOVED IN ALL ZONES A-B (2.00 INCHES ON EACH SIDE OF A LINE A-B) MUST NOT BE MORE THAN 10 PERCENT OF THE INITIAL CROSS-SECTIONAL AREA OF THE WEB.

(ROTATED 90° CLOCKWISE)

F-F

Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 13 of 14)

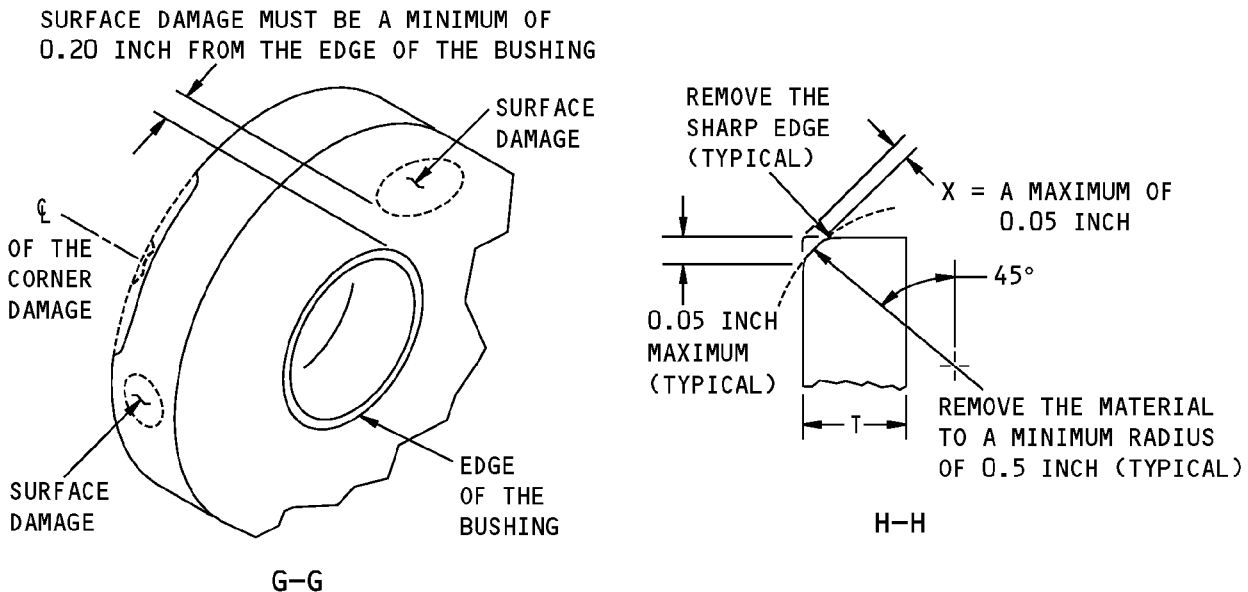
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** DAMAGED SEALANT IS NOT PERMITTED. IF THE SEALANT IS DAMAGED, LOOK FOR MIGRATION OR ROTATION OF THE BUSHING. IF THERE IS NO MIGRATION, ROTATION, OR CORROSION, REMOVE THE DAMAGED SEALANT AND APPLY A NEW FILLET SEAL.

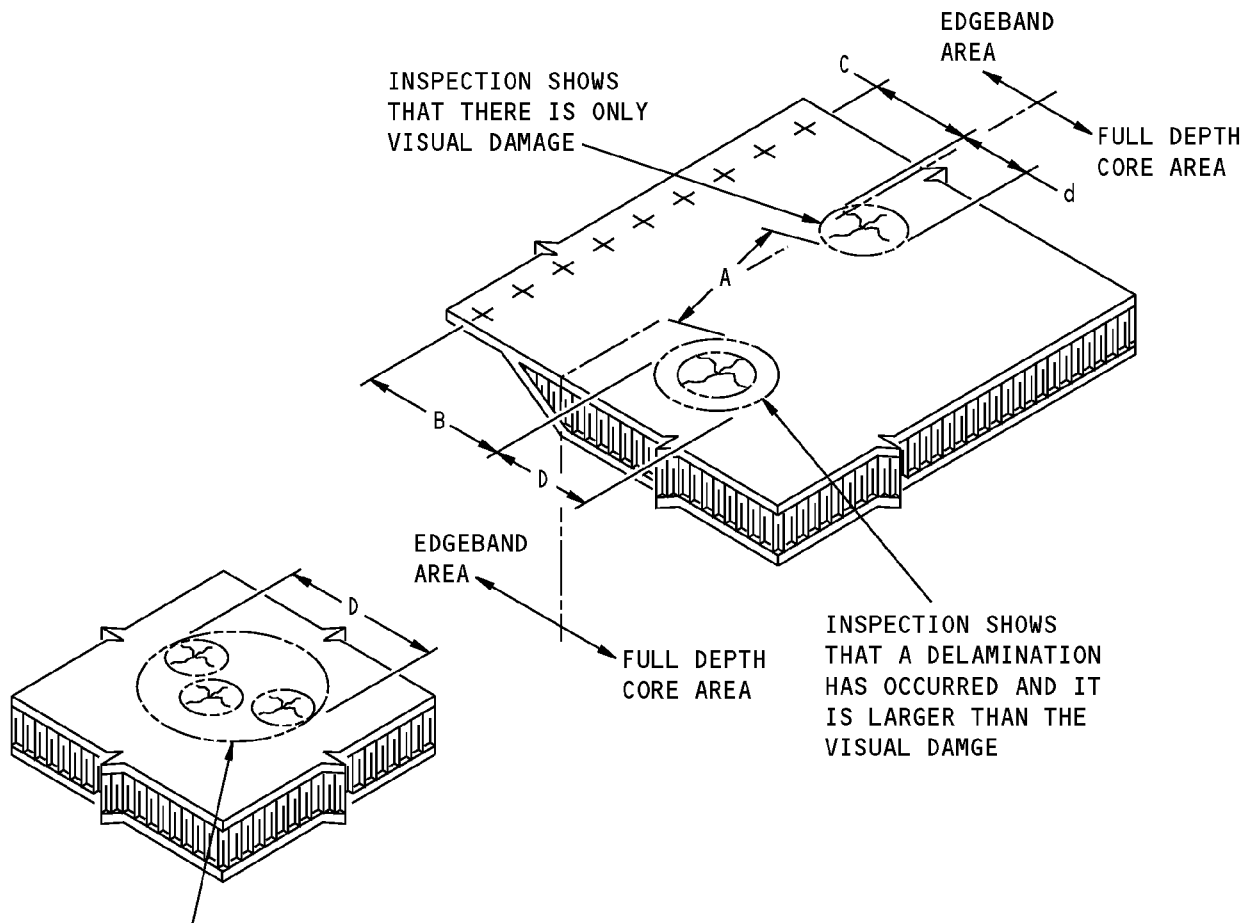
**REMOVAL OF SURFACE AND EDGE DAMAGE FROM A LUG THAT HAS A BUSHING**

(P)



**Allowable Damage Limits - Aluminum Parts  
Figure 105 (Sheet 14 of 14)**

**737-800  
STRUCTURAL REPAIR MANUAL**



A GROUP OF SMALL DAMAGE AREAS THAT ARE NEAR EACH OTHER CAN BE SEEN AS ONE DAMAGE AREA

**NOTE:** TO FIND DELAMINATION, YOU CAN USE NONDESTRUCTIVE INSPECTION PROCEDURES. REFER TO NDT PART 1, 51-01-02.

THE DIAMETER OF A DAMAGE AREA IS EITHER THE DIAMETER OF THE VISUAL DAMAGE OR THE DIAMETER OF THE DELAMINATION. USE THE DIAMETER OF THE LARGER DAMAGE.

D IS THE LARGER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

d IS THE SMALLER DIAMETER OF TWO ADJACENT DAMAGE AREAS.

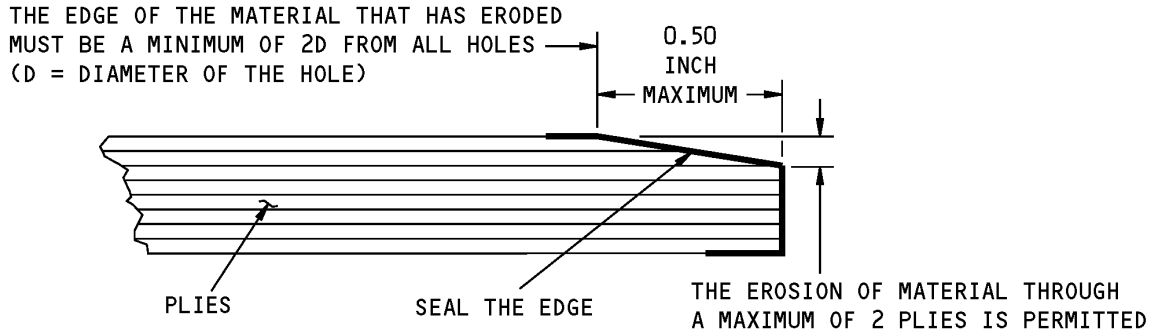
A IS THE DISTANCE BETWEEN TWO ADJACENT DAMAGE AREAS.

B AND C ARE THE DISTANCES BETWEEN THE DAMAGE AND THE FASTENER HOLES OR MATERIAL EDGES.

FOR THE VALUES OF D, d, A, B, AND C REFER TO TABLE 109.

**GFRP Honeycomb Sandwich Panels - Damage Size and Spacing Limits  
Figure 106**

737-800  
STRUCTURAL REPAIR MANUAL

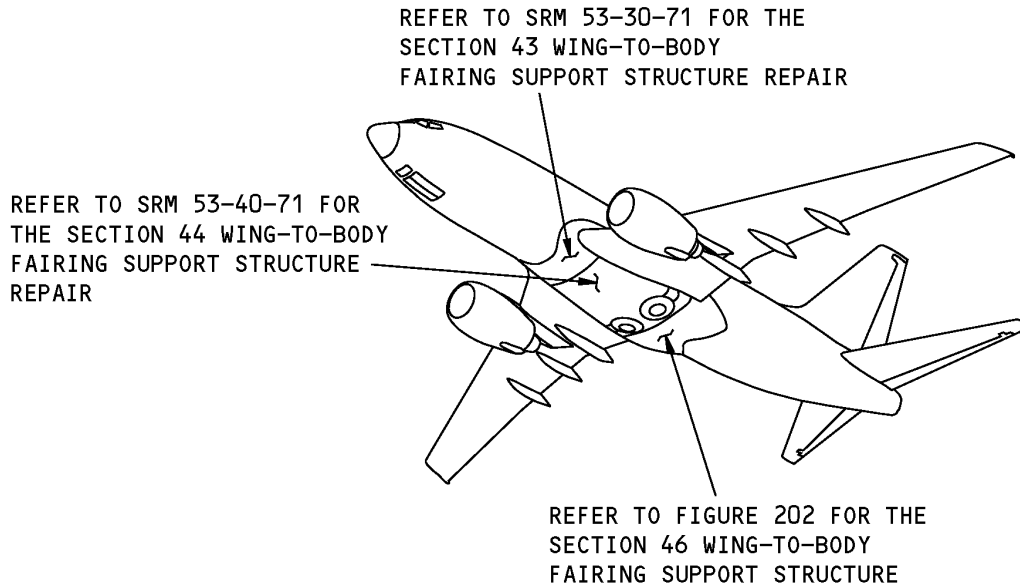


GFRP Honeycomb Sandwich Panels - Sealing of Erosion Damage at an Edge  
Figure 107

**STRUCTURAL REPAIR MANUAL****REPAIR 1 - SECTION 46 WING-TO-BODY FAIRING SUPPORT STRUCTURE****1. Applicability**

A. Repair 1 is applicable to damage:

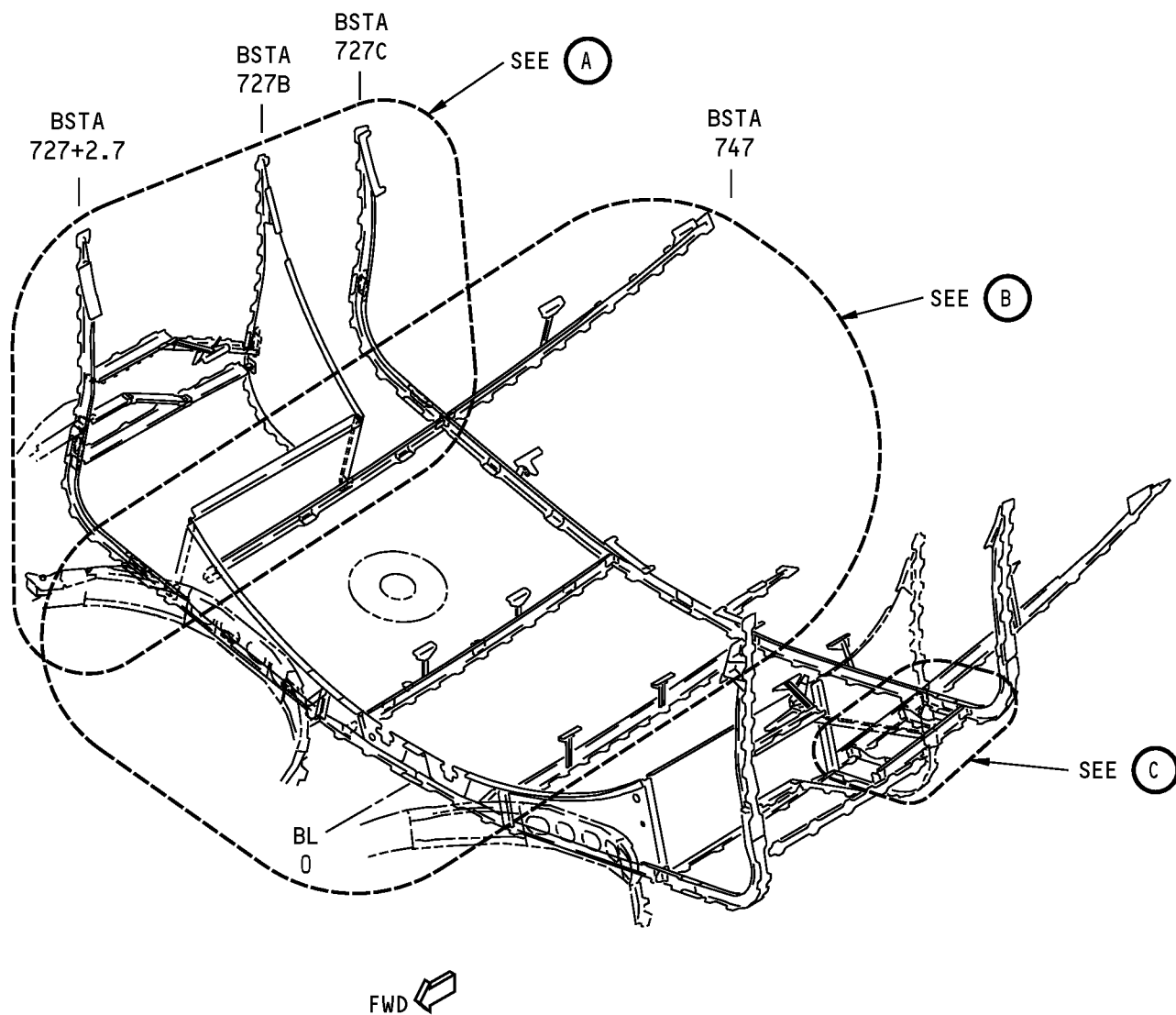
- (1) To all the metal and composite parts of the wing-to-body fairing support structure in section 46 shown in Section 46 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 202/REPAIR 1.
- (2) That is more than the limits permitted in 53-60-71, Allowable Damage 1.



**Section 46 Wing-to-Body Fairing Support Structure Location  
Figure 201**



**737-800  
STRUCTURAL REPAIR MANUAL**

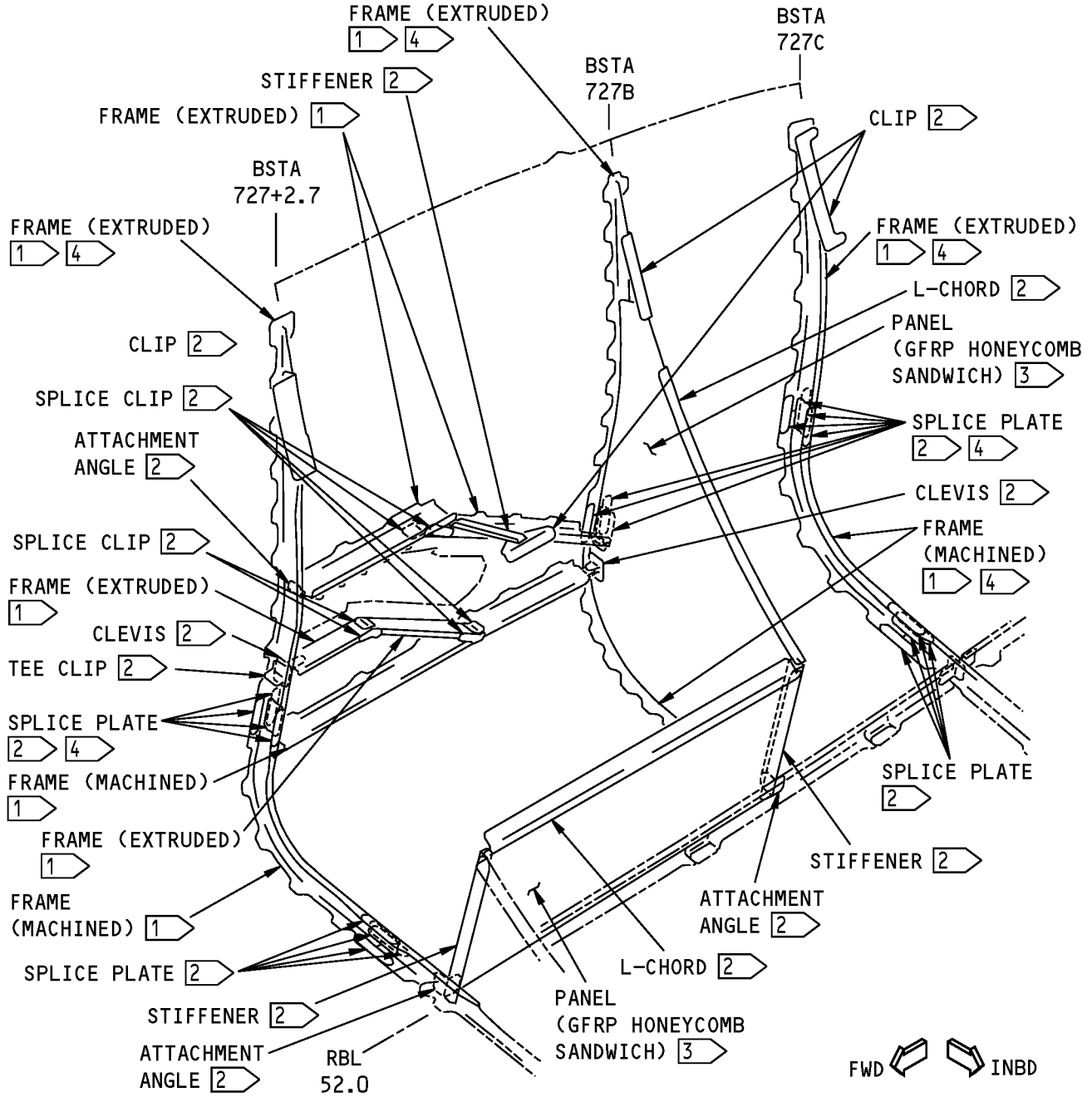


**NOTES**

- 1 REFER TO PARAGRAPH 4.A TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-60-71, ALLOWABLE DAMAGE 1, REPLACE THE DAMAGED PART.
- 3 REFER TO PARAGRAPH 4.B TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 4 FOR AIRPLANES WITH LINE NUMBERS 1 THROUGH 1537

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 202 (Sheet 1 of 4)**

**STRUCTURAL REPAIR MANUAL**



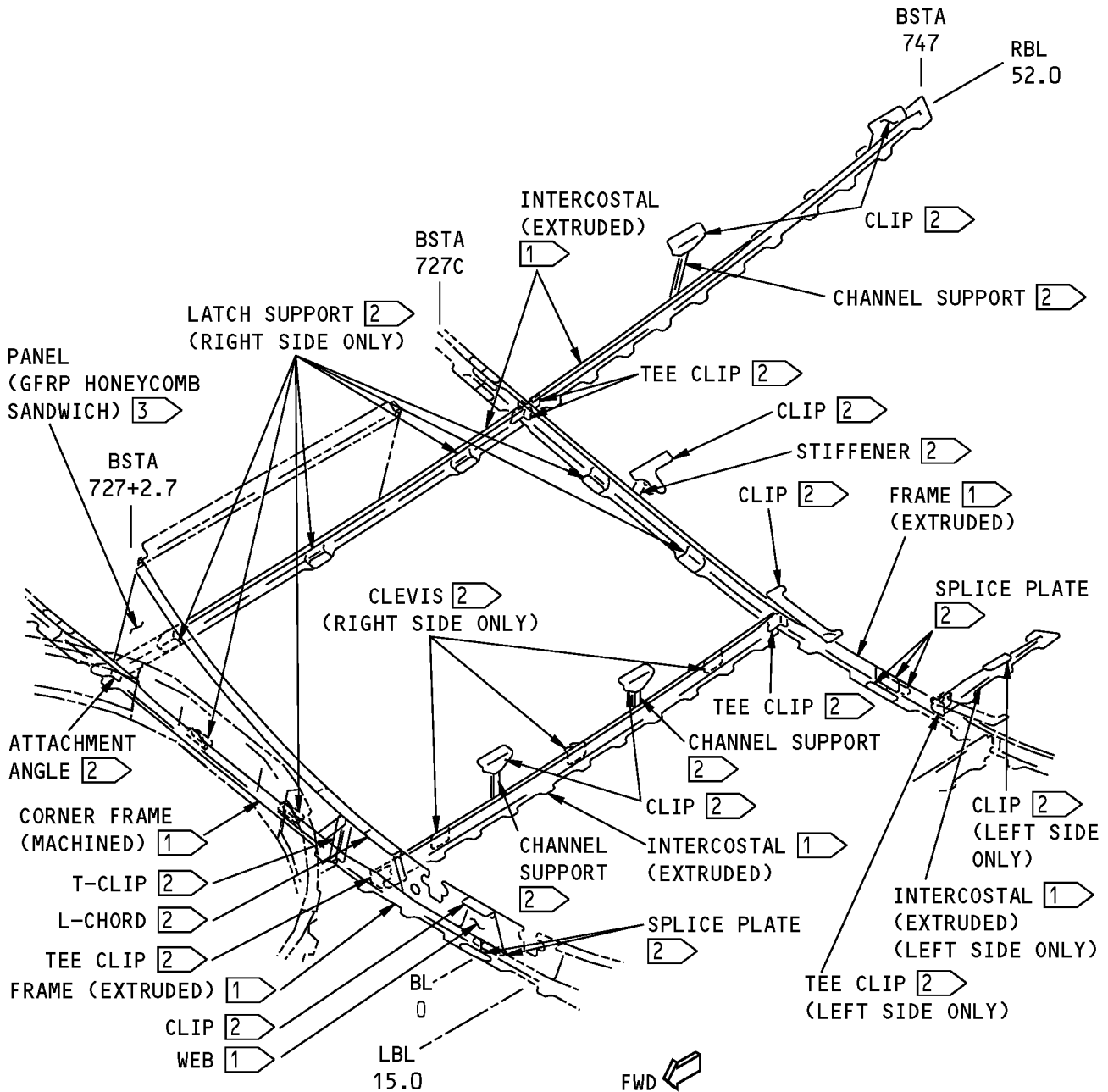
MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
 BSTA 727+2.7 TO BSTA 727C, RBL 52.0 TO OUTBOARD

(A)

Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
 Figure 202 (Sheet 2 of 4)

**737-800  
STRUCTURAL REPAIR MANUAL**



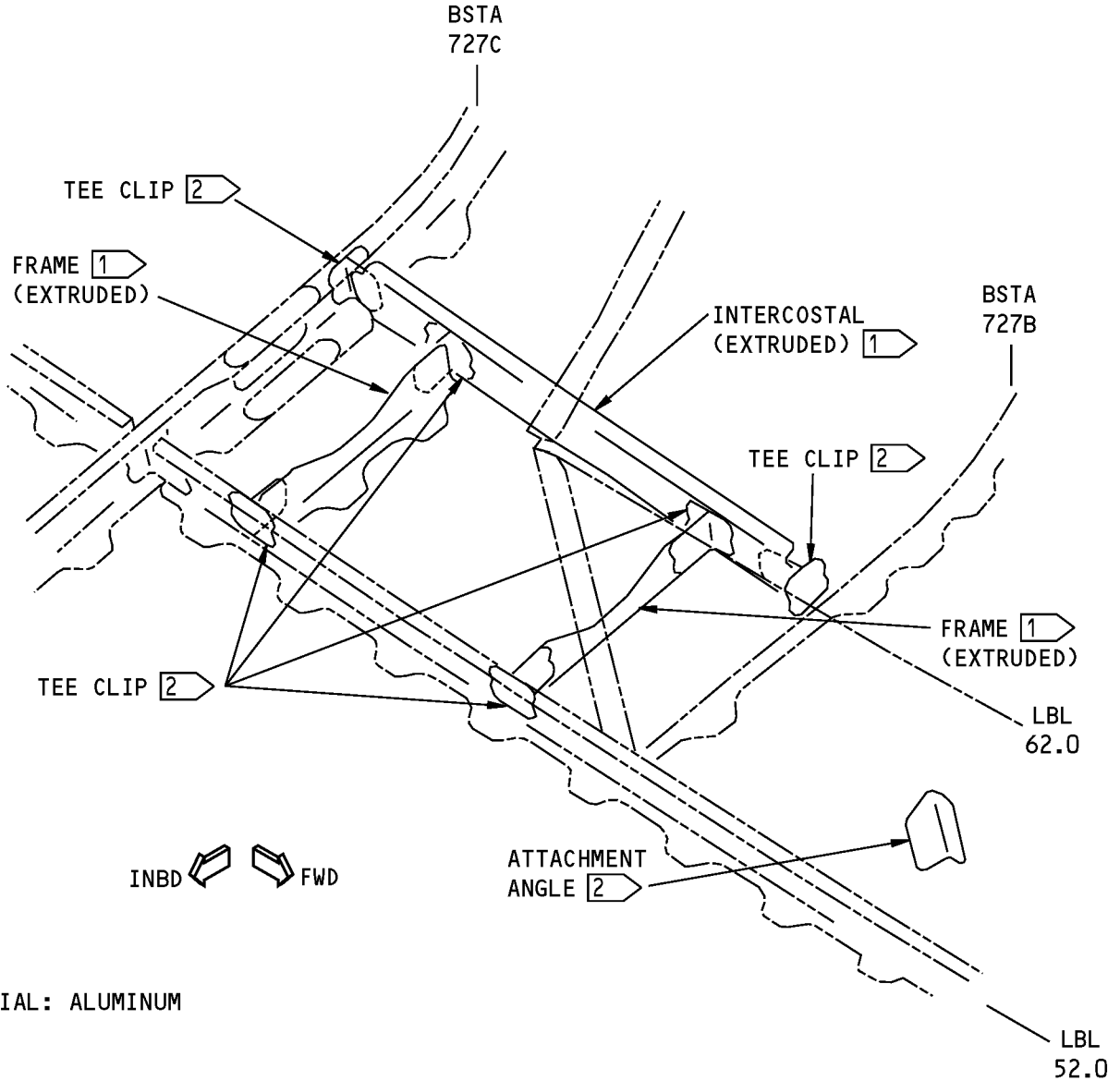
MATERIAL: ALUMINUM (EXCEPT WHEN NOTED)

RIGHT SIDE IS SHOWN, LEFT SIDE IS OPPOSITE  
(EXCEPT AS NOTED)  
BSTA 727+2.7 TO BSTA 747, LBL 15.0 TO RBL 52.0

**B**

Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 202 (Sheet 3 of 4)

**737-800  
STRUCTURAL REPAIR MANUAL**



LEFT SIDE ONLY  
BSTA 727B TO BSTA 727C, LBL 52.0 TO LBL 62.0

(C)

**Section 46 Wing-to-Body Fairing Support Structure (Sta 7277 to Sta 747) Location  
Figure 202 (Sheet 4 of 4)**



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## STRUCTURAL REPAIR MANUAL

### 2. General

A. Get access to the damaged area.

- (1) Remove the fairing skin panel(s) at the damage location as necessary.

B. Metal Repairs

- (1) The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- (2) Refer to Paragraph 4.A./REPAIR 1 for a repair.

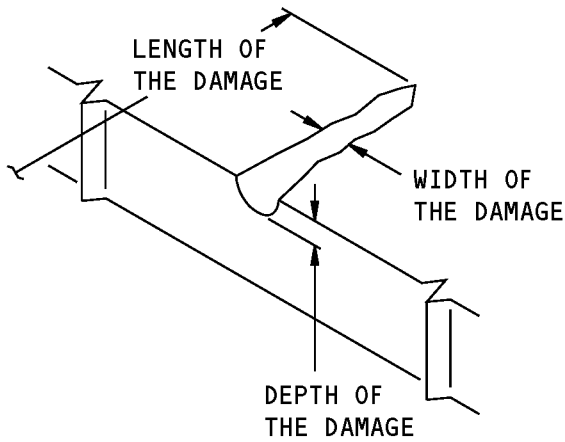
C. Composite Repairs

- (1) Get access to the damaged area.
  - (a) If necessary, remove the wing-to-body fairing support structure panel that you want to repair.
    - 1) Refer to 51-40-02 for the fastener removal procedures.
    - 2) If a fastener hole is damaged, refer to Repair 8 of 51-70-04 or Repair 8 of 51-70-05 for the repair procedures.
- (2) Do an inspection of the damaged area to find the dimensions of the damage. Boeing recommends that you use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for the inspection procedures.

**NOTE:** Other equivalent inspection methods that have been examined and found to be satisfactory by the operator can be used.

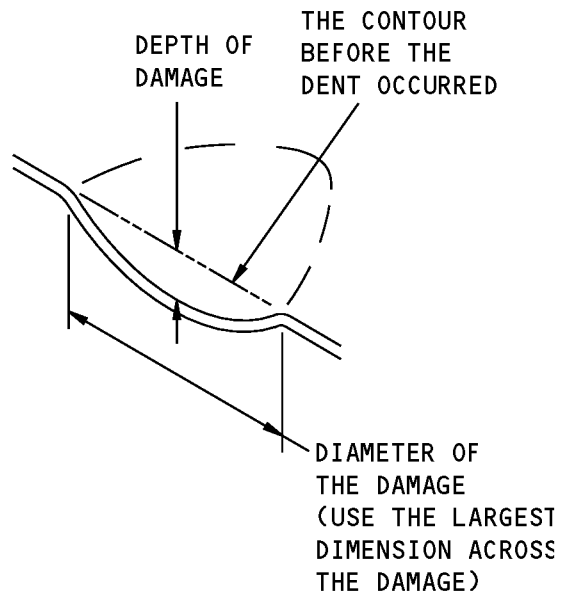
- (a) For the honeycomb core areas, the tap test is an alternative procedure to an instrumented NDT.
  - (b) Refer to Damage Definitions, Figure 203/REPAIR 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
  - (c) Refer to Definitions of the Facesheets, Figure 204/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.
- (3) Do the repair as given in Paragraph 4.B./REPAIR 1

**STRUCTURAL REPAIR MANUAL**



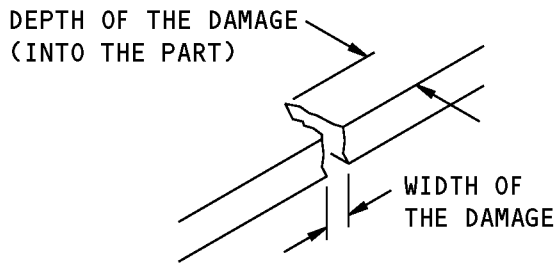
**DEFINITIONS FOR NICK,  
GOUGE, OR SCRATCH DAMAGE**

(A)



**DEFINITIONS FOR  
DENT DAMAGE**

(B)

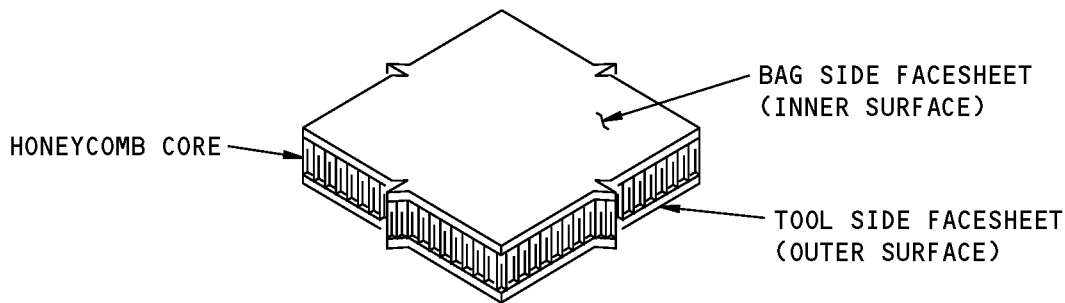


**DEFINITIONS FOR  
EDGE DAMAGE**

(C)

**Damage Definitions  
Figure 203**

**737-800  
STRUCTURAL REPAIR MANUAL**



**Definitions of the Facesheets  
Figure 204**

**3. References**

Reference	Title
51-00-06, GENERAL	Structural Repair Definitions
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-05, GENERAL	Repair Sealing
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-05	REPAIR PROCEDURES FOR PREIMPREGNATED MATERIALS
51-70-06, REPAIR GENERAL	Room Temperature Cure Repairs With Wet Layup Materials For Glass Fabric Reinforced Plastic Solid Laminates and Honeycomb Core Panels
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-30-71, REPAIR 1	Section 43 Wing-to-Body Fairing Support Structure
53-40-71, REPAIR 1	Section 44 Wing-to-Body Fairing Support Structure
53-60-71	FUSELAGE FAIRING STRUCTURE - SECTION 46
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage

**4. Repair Instructions**

**A. Metal Repairs**

- (1) Refer to Section 46 Wing-to-Body Fairing Support Structure Location, Figure 201/REPAIR 1 and Section 46 Wing-to-Body Fairing Support Structure (Sta 727 + 2.7 to Sta 747) Location, Figure 202/REPAIR 1, and Table 201/REPAIR 1 to find the applicable repair for the metal part that you want to repair.

**NOTE:** If necessary, refer to 53-60-71, Identification 1 to find the material and the process that was used to make the part that you want to repair.



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STRUCTURAL REPAIR MANUAL

Table 201:

REPAIR REFERENCES FOR THE WING-TO-BODY FAIRING SUPPORT STRUCTURE - METAL PARTS	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Machined parts	Refer to SRM 51-70-12
Webs	Refer to SRM 51-70-13

B. Composite Repairs

**NOTE:** If necessary, refer to 53-60-71, Identification 1 to find the material and the build-up of the part that you want to repair.

- (1) For dents that are a maximum of 2 inches in diameter and have no fiber damage and delamination, do the steps that follow:
  - (a) Fill the dent with BMS 5-28, Type 7 potting compound.
  - (b) Apply a fiberglass patch over the potted area as given in Repair 14 of 51-70-04.
- (2) If Paragraph 4.B.(1)/REPAIR 1 is not applicable, then refer to:
  - (a) Table 202/REPAIR 1 for the repair data that is applicable to damage to the honeycomb sandwich panel areas other than the edgebands.
  - (b) Table 203/REPAIR 1 for the repair data that is applicable to damage to the edgebands of the honeycomb sandwich panels.
- (3) For repairs made with wet layup materials, do the steps that follow, as applicable:
  - (a) Use one repair ply of fabric for each initial ply that was damaged.
  - (b) Add two structural plies of fabric for each facesheet that is repaired. Put one structural ply at  $\pm 45$  degrees to the core ribbon direction and the other at 0 or 90 degrees.
  - (c) Inspect Category B repairs after each 800 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator can be used.

- (4) For repairs made with preimpregnated layup materials, use the same number of repair plies as the number of initial plies that were damaged.



**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 202:**

<b>REPAIR DATA FOR THE 250°F (121°C) CURE WING-TO-BODY FAIRING SUPPORT STRUCTURE FOR THE FULL DEPTH HONEYCOMB CORE AREAS OF THE SANDWICH PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE AND LIMITS</b>	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter  3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	Damage that is a maximum of: - 6.0 inches (152.4 mm) diameter  3.0 inches minimum clearance from: -other repairs -fastener holes -panel edges	There are no limits on the sizes of the repairs made with autoclave pressure. See the note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Para. 4.B.(3)	SRM 51-70-04 and Para. 4.B.(3)	SRM 51-70-04 and Para. 4.B.(3)	SRM 51-70-05 and Para. 4.B.(4)

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

**Table 203:**

<b>REPAIR DATA FOR THE EDGEBANDBS OF 250°F (121°C) CURE WING-TO-BODY FAIRING SUPPORT STRUCTURE HONEYCOMB SANDWICH PANELS</b>				
<b>REPAIR TYPE</b>	<b>CATEGORY B WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A WET LAYUP REPAIR</b>	<b>CATEGORY A PREIMPREGNATED LAYUP REPAIR</b>
<b>REPAIR CURE TEMPERATURE</b>	<b>Room Temperature</b>	<b>150°F (66°C)</b>	<b>200°F (93°C)</b>	<b>250°F (121°C)</b>
<b>REPAIR SIZE AND LIMITS</b>	Contact Boeing for repair instructions	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension  - 30 percent of the length of the edgeband on the side of the damage	Damage that is a maximum of: - 6.0 inches (152.40 mm) across the largest dimension  30 percent of the length of the edgeband on the side of the damage	There are no size limits on the repairs made with autoclave pressure. See note below for vacuum bag repairs.
<b>REPAIR PROCEDURES</b>	SRM 51-70-06 and Paragraph 4.B.(3)	SRM 51-70-04 and Paragraph 4.B.(3)	SRM 51-70-04 and Paragraph 4.B.(3)	SRM 51-70-05 and Paragraph 4.B.(4)



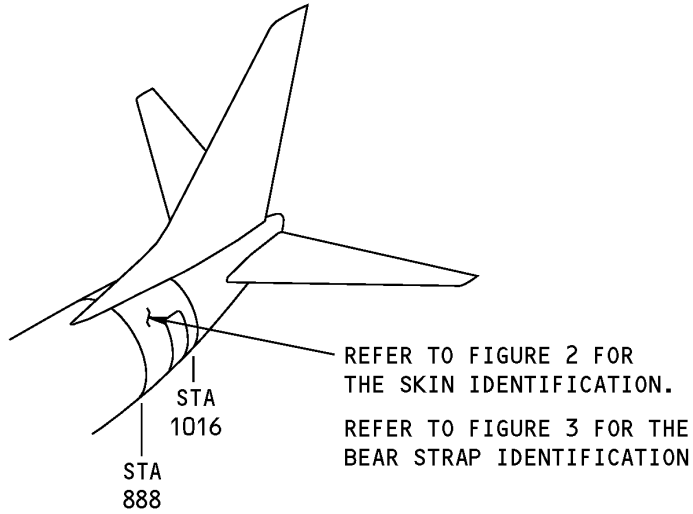
**737-800**

## **STRUCTURAL REPAIR MANUAL**

**NOTE:** For panels that are greater than 1296 inches<sup>2</sup>, vacuum bag repairs shall not be more than 75% of the panel area for either the inner or outer skin and 50% of the panel area for both the inner and outer skins. For a given honeycomb area that is less than 1296 inches<sup>2</sup>, it is permitted to use a vacuum bag repair for the complete inner or outer skin of the honeycomb area. If both skins of the honeycomb area need a repair, then 75% of the inner and outer skin facesheets can be repaired.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 FUSELAGE SKIN**



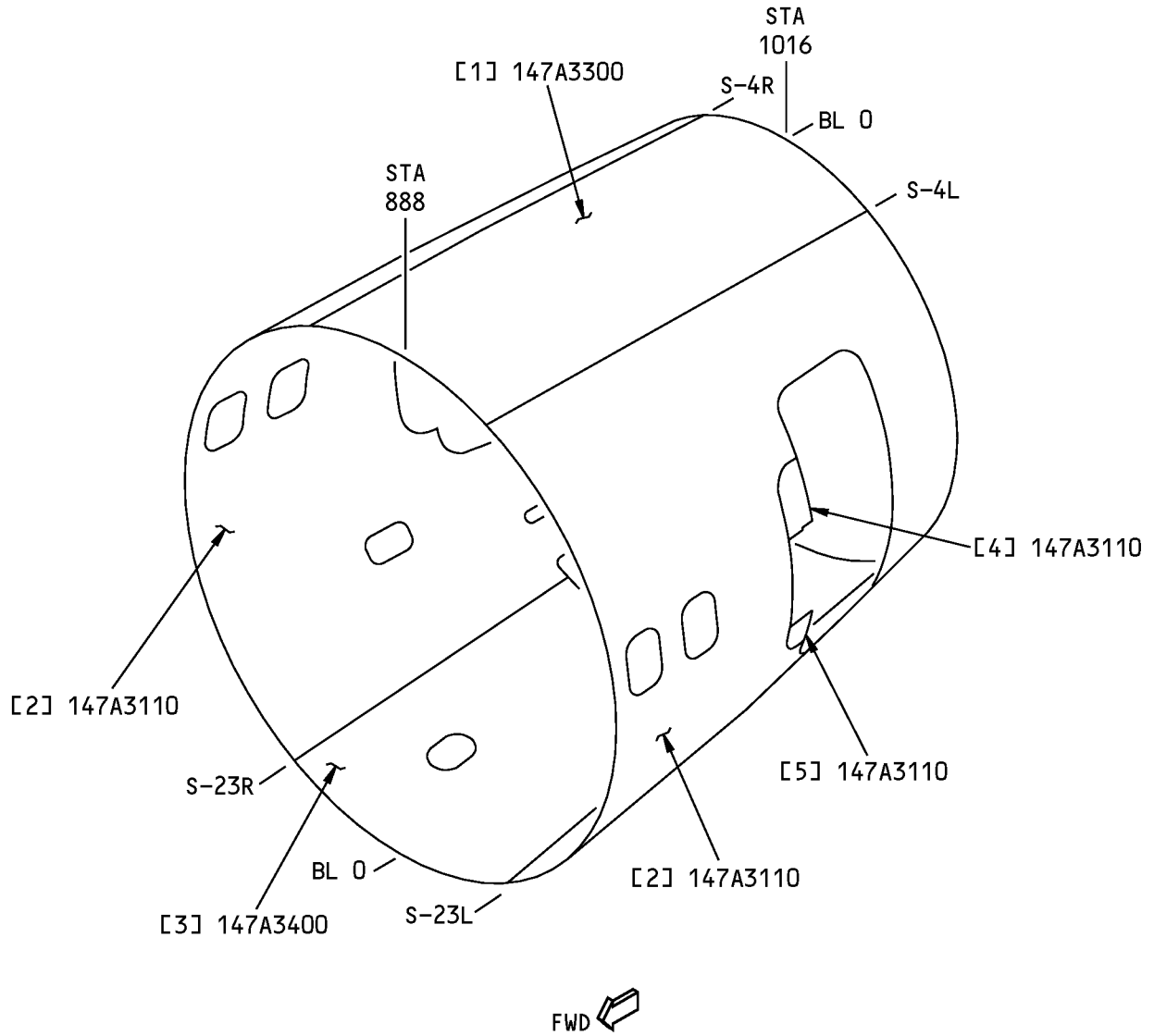
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Fuselage Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
147A0010	Panel Installation - Entry, Section 47
147A0020	Panel Installation - Galley, Section 47
147A0030	Crown Panel Installation - Section 47
147A0040	Lower Panel Installation - Section 47
147A3100	Skin Assembly - STA 888 to STA 1016, S-4L/R TO S-23L/R

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 Fuselage Skin Identification  
Figure 2**

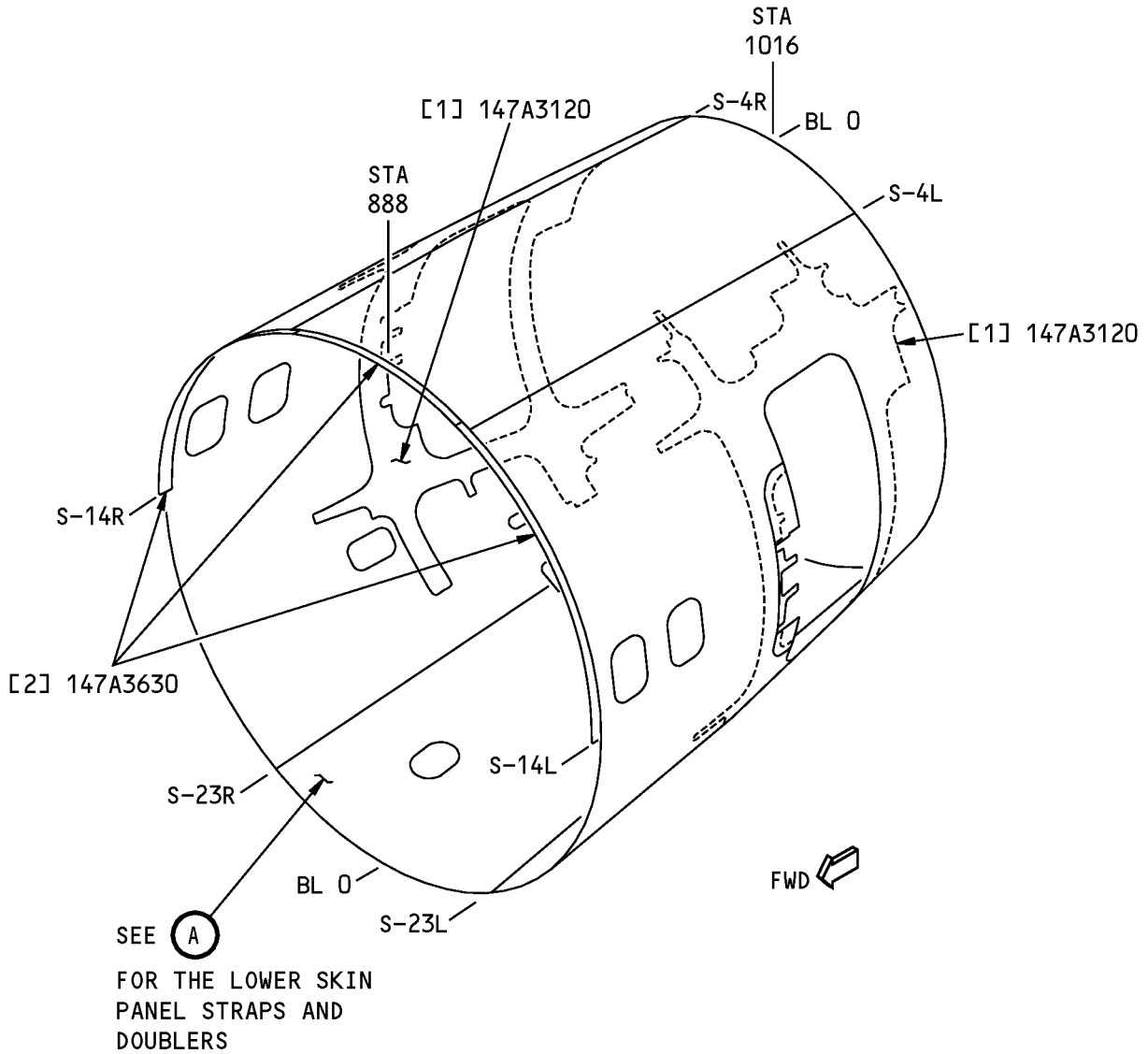


**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.071 (1.8)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 4 for the thicknesses of the chem-milled areas	
[2]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figures 5 and 6 for the thicknesses of the chem-milled areas	
[3]	Skin	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[4]	Skin, Upper Corner	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[5]	Skin, Lower Corner	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	

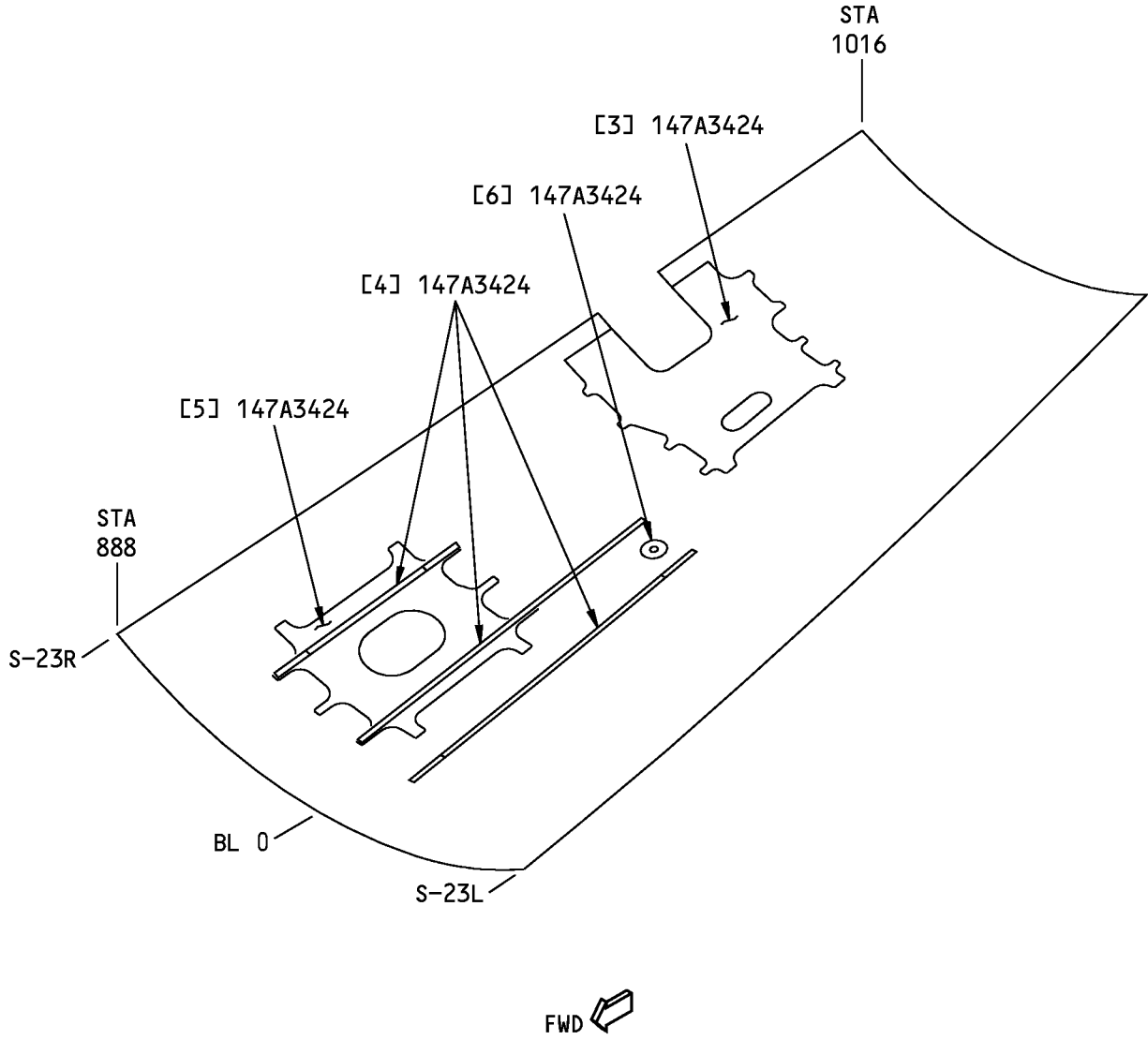
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 47 Fuselage Skin Bear Strap Identification  
Figure 3 (Sheet 1 of 2)**



**LOWER SKIN PANEL STRAPS AND DOUBLERS**

**A**

**Section 47 Fuselage Skin Bear Strap Identification  
Figure 3 (Sheet 2 of 2)**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

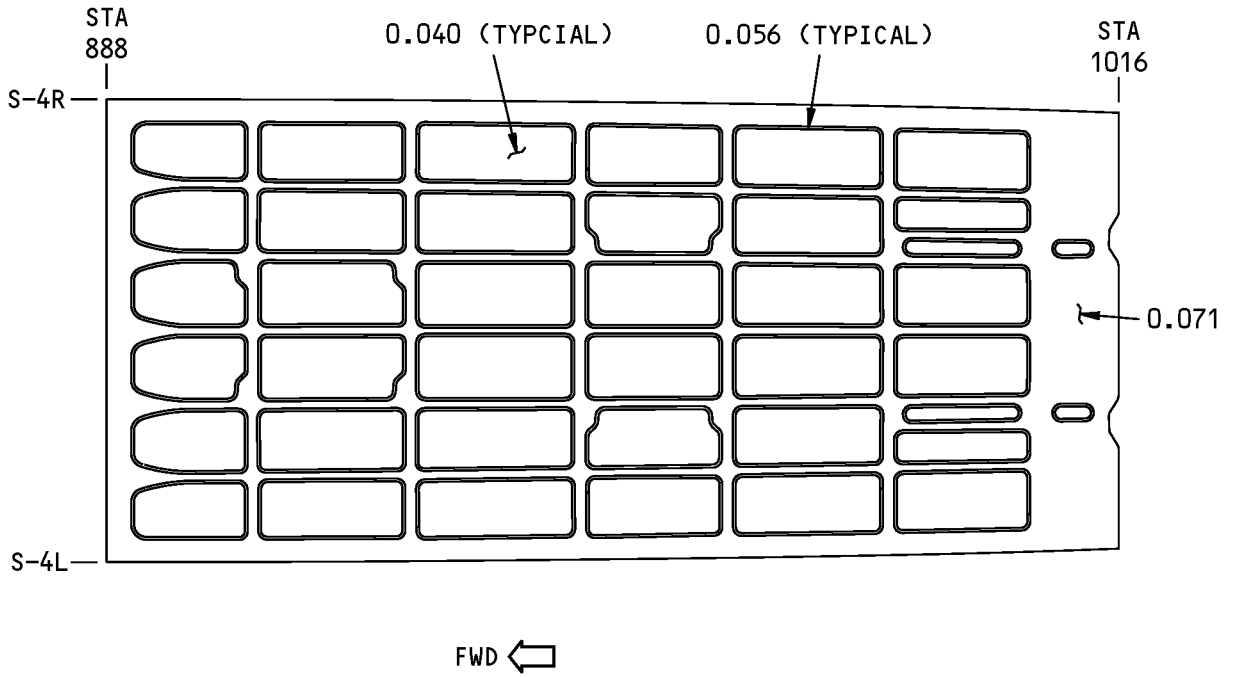
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap, Doorway	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4. Refer to Figures 10 and 11 for the thicknesses of the machined areas	
[2]	Splice Strap (3)	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Strap, Lower	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Strap (3)		BAC1511-10016 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Doubler, Water Pan	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Doubler, Water Drain	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



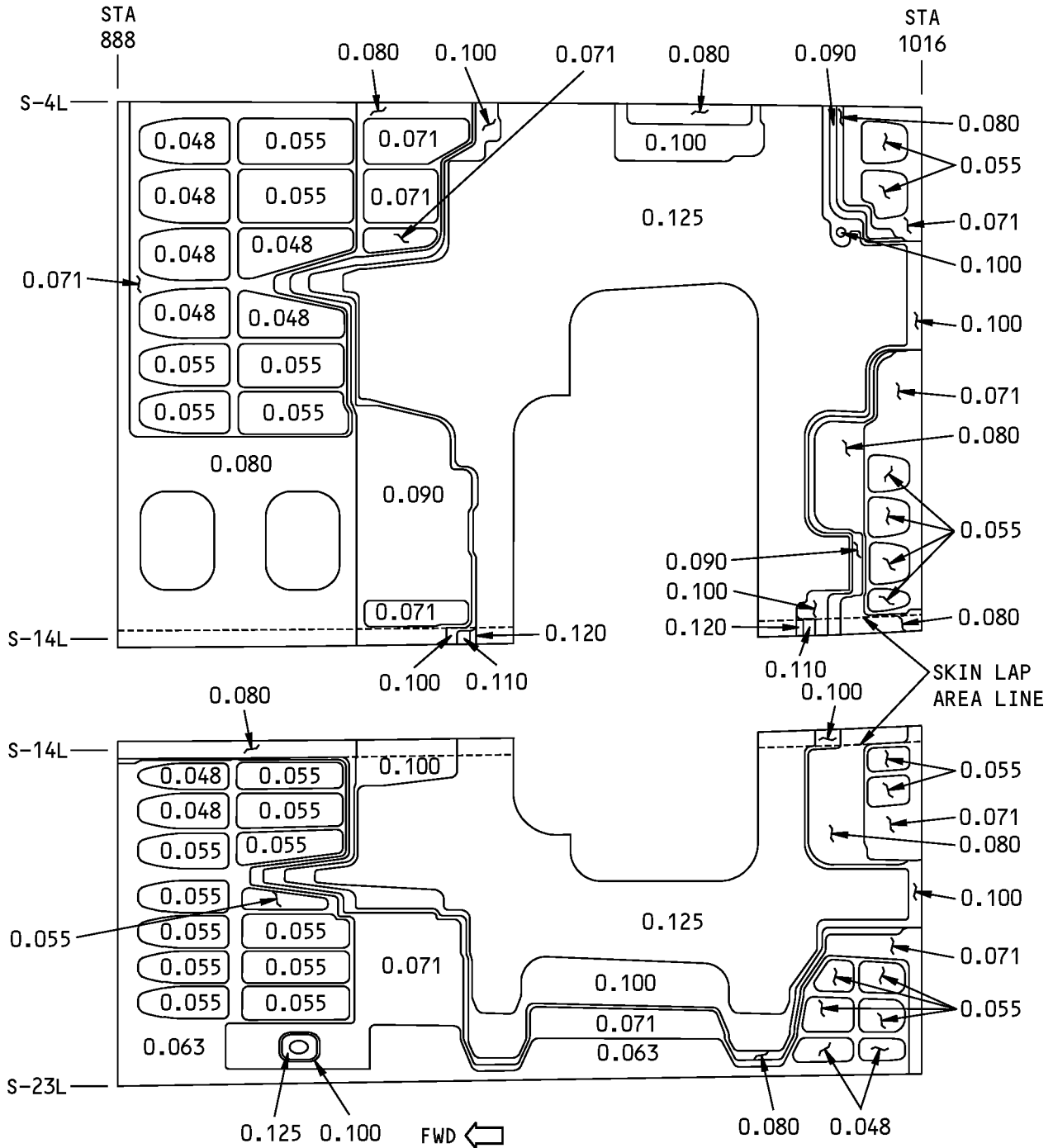
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Chem-Milled Areas of Figure 2, Item [1]  
Figure 4**

**737-800  
STRUCTURAL REPAIR MANUAL**

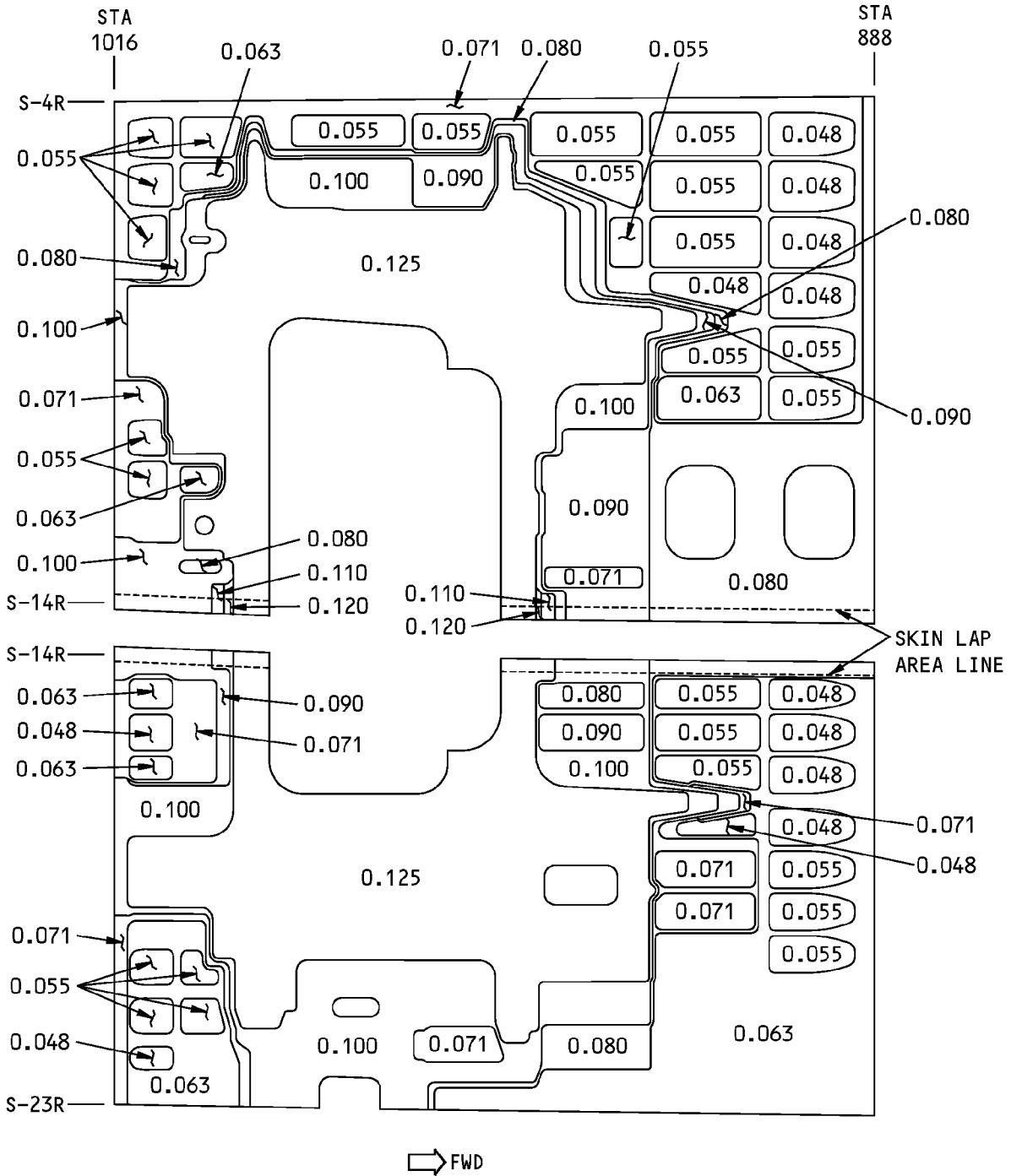


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**LEFT SIDE IS SHOWN**

**Chem-Milled and Machined Areas of Figure 2, Item [2]  
Figure 5**

**737-800  
STRUCTURAL REPAIR MANUAL**

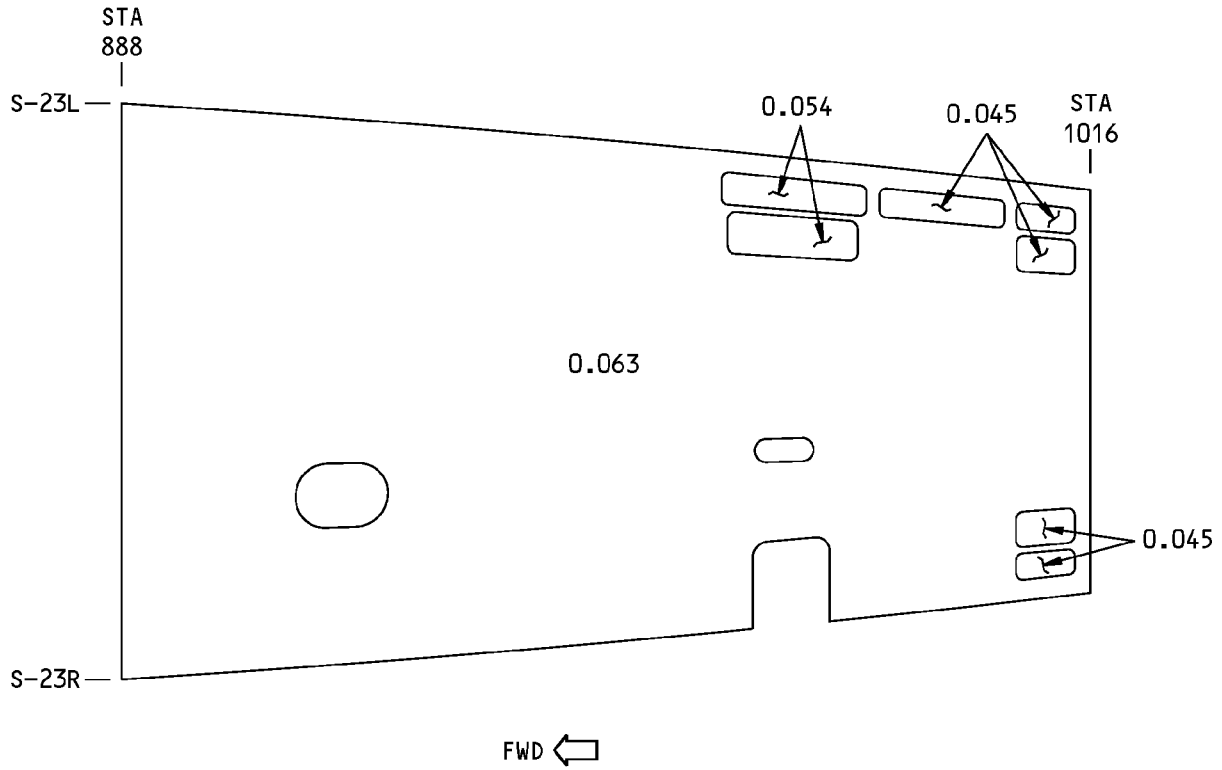


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

RIGHT SIDE IS SHOWN

**Chem-Milled and Machined Areas of Figure 2, Item [2]  
Figure 6**

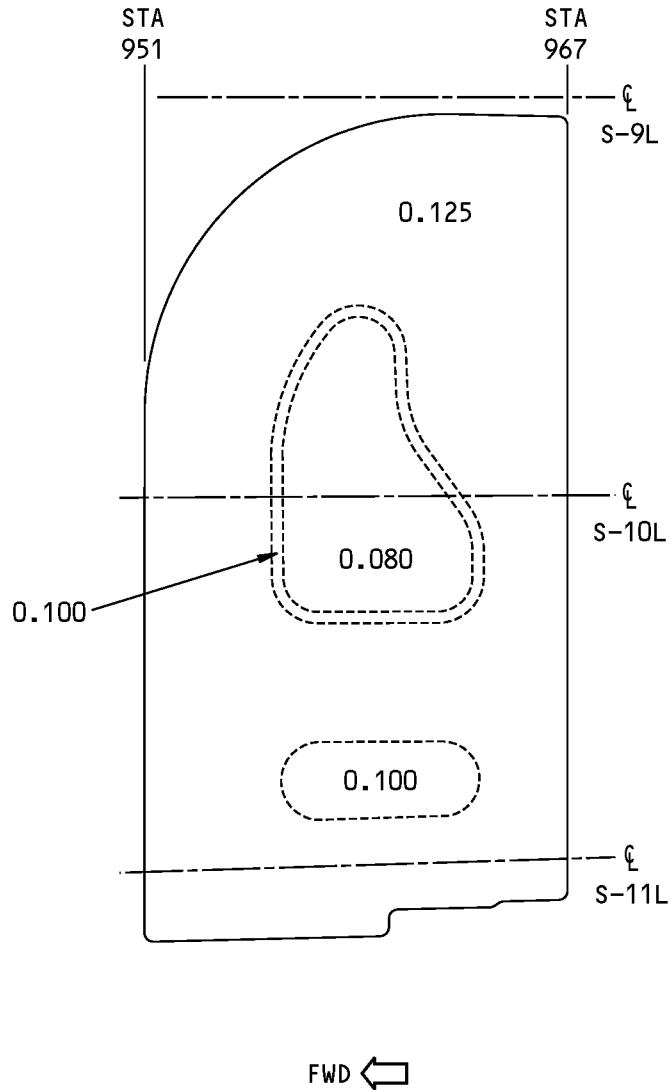
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Chem-Milled and Machined Areas of Figure 2, Item [3]  
Figure 7**

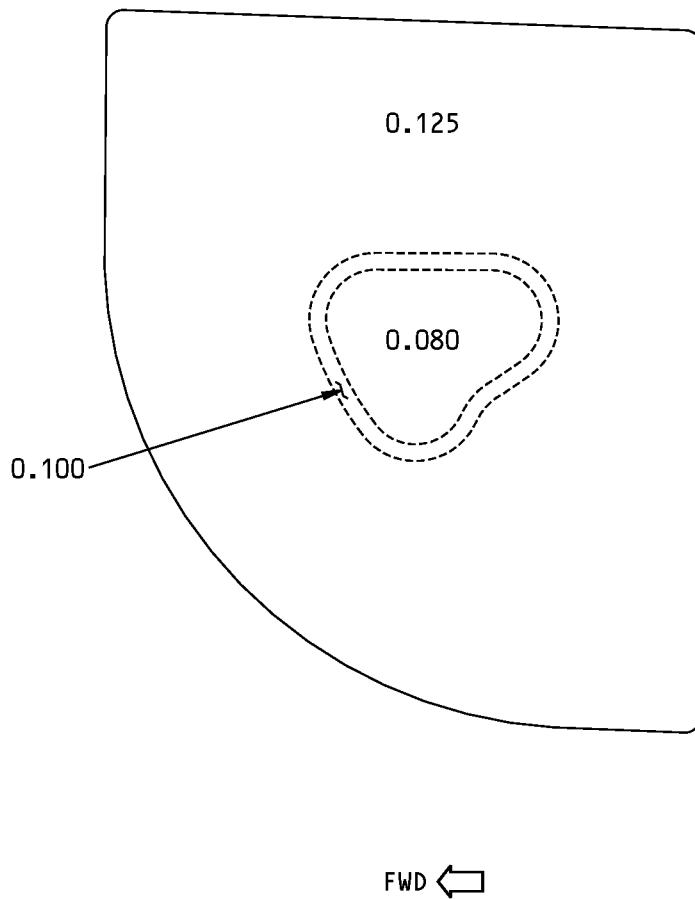
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Machined Areas of Figure 2, Item [4]  
Figure 8**

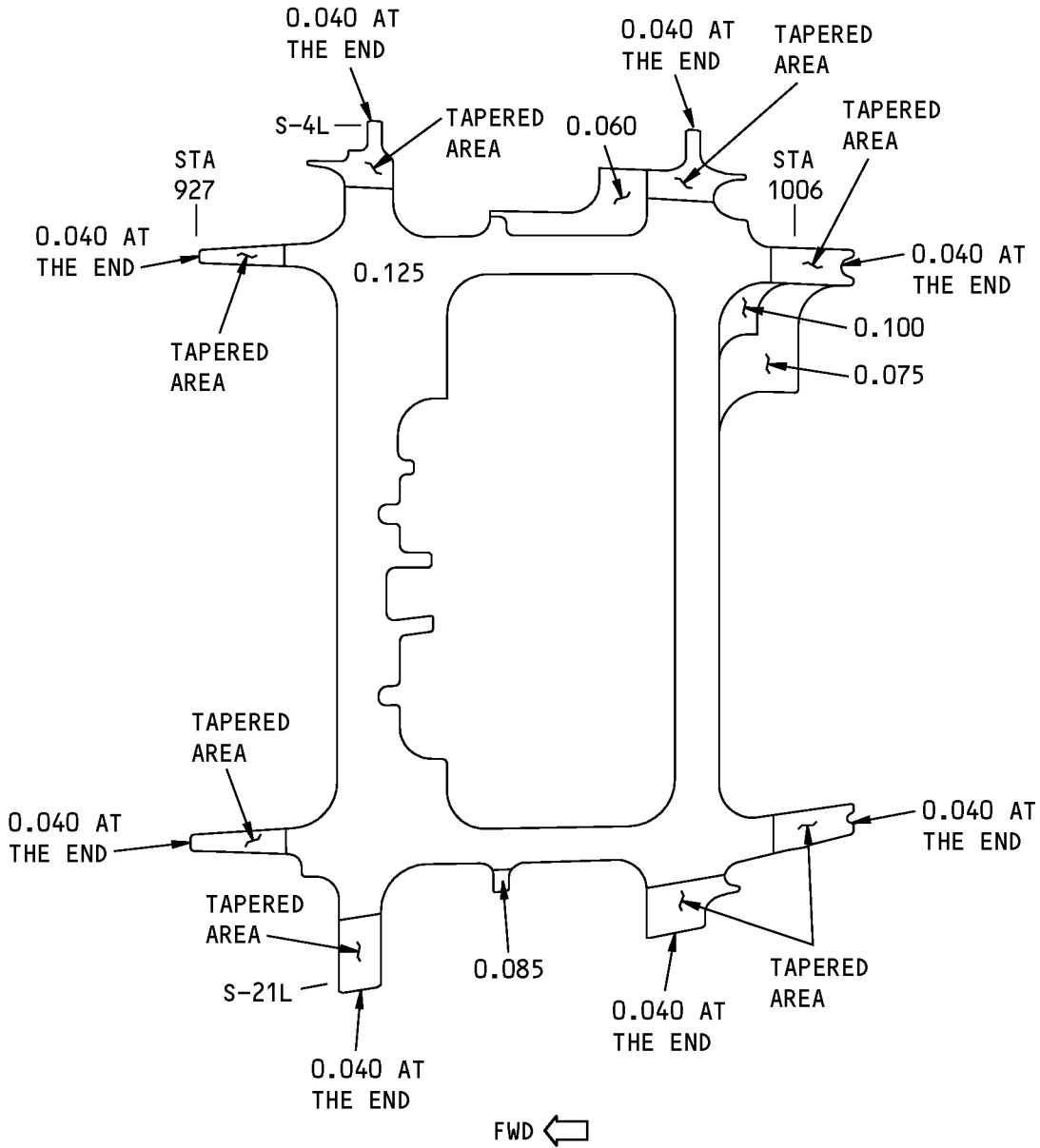
**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**Machined Areas of Figure 2, Item [5]  
Figure 9**

**STRUCTURAL REPAIR MANUAL**

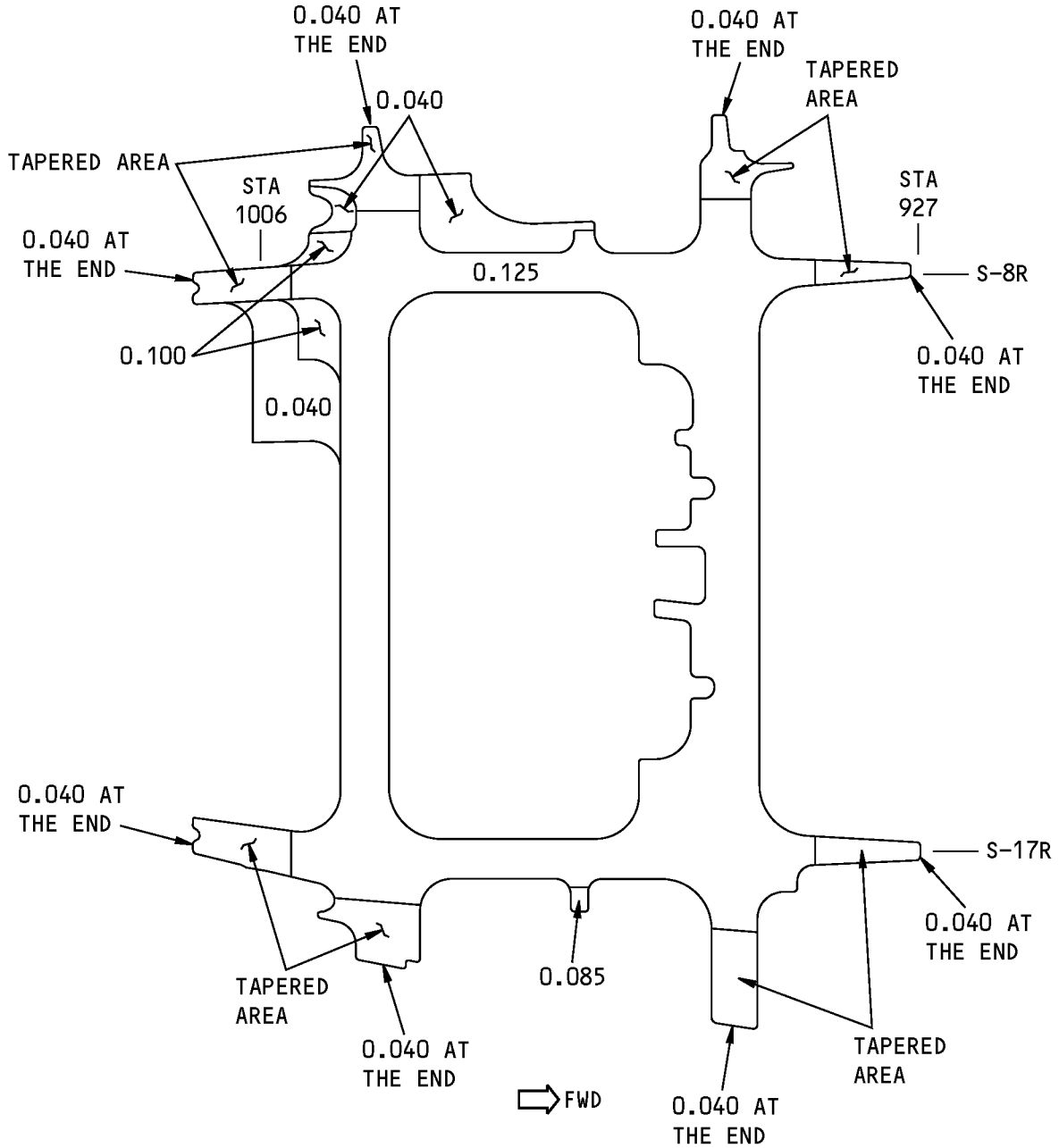


**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**LEFT SIDE IS SHOWN**

**Machined Areas of Figure 3, Item [1]  
Figure 10**

**STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL DIMENSIONS SHOWN ARE THICKNESSES IN INCHES.

**RIGHT SIDE IS SHOWN**

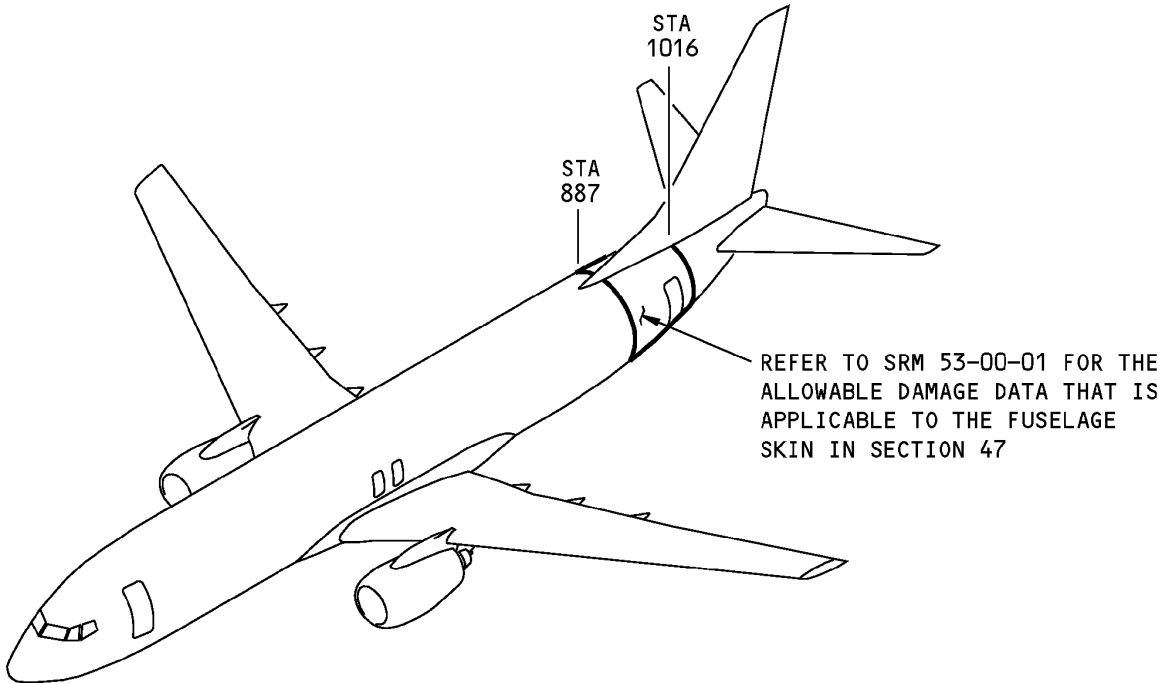
**Machined Areas of Figure 3, Item [1]  
Figure 11**





**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 47 FUSELAGE SKIN**

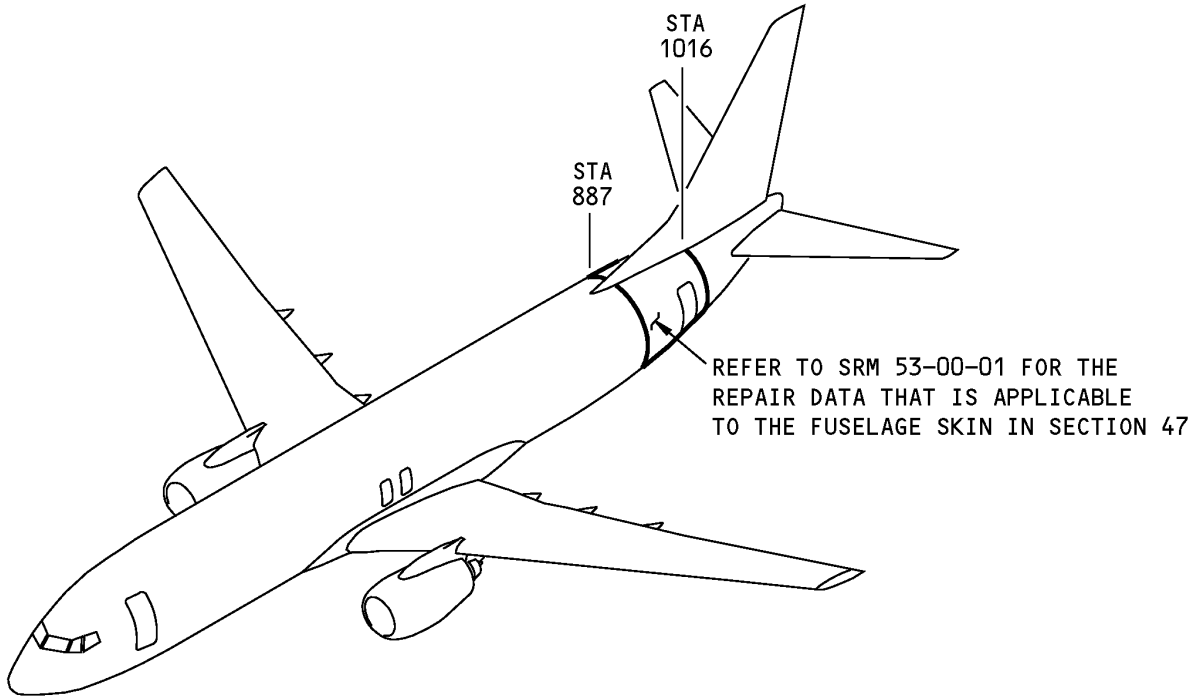


**Section 47 Fuselage Skin Location**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

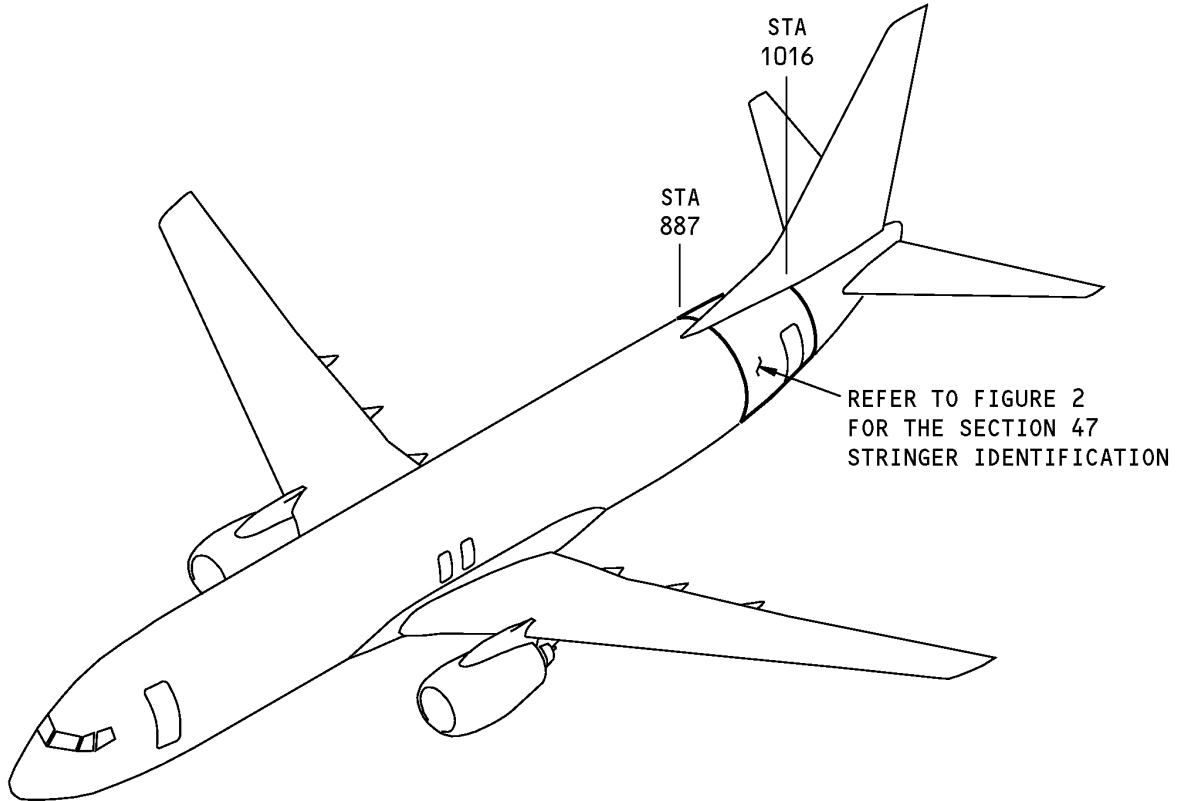
**REPAIR GENERAL - SECTION 47 FUSELAGE SKIN**



**Section 47 Fuselage Skin Location**  
**Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 FUSELAGE STRINGERS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Stringer Location  
Figure 1**

**Table 1:**

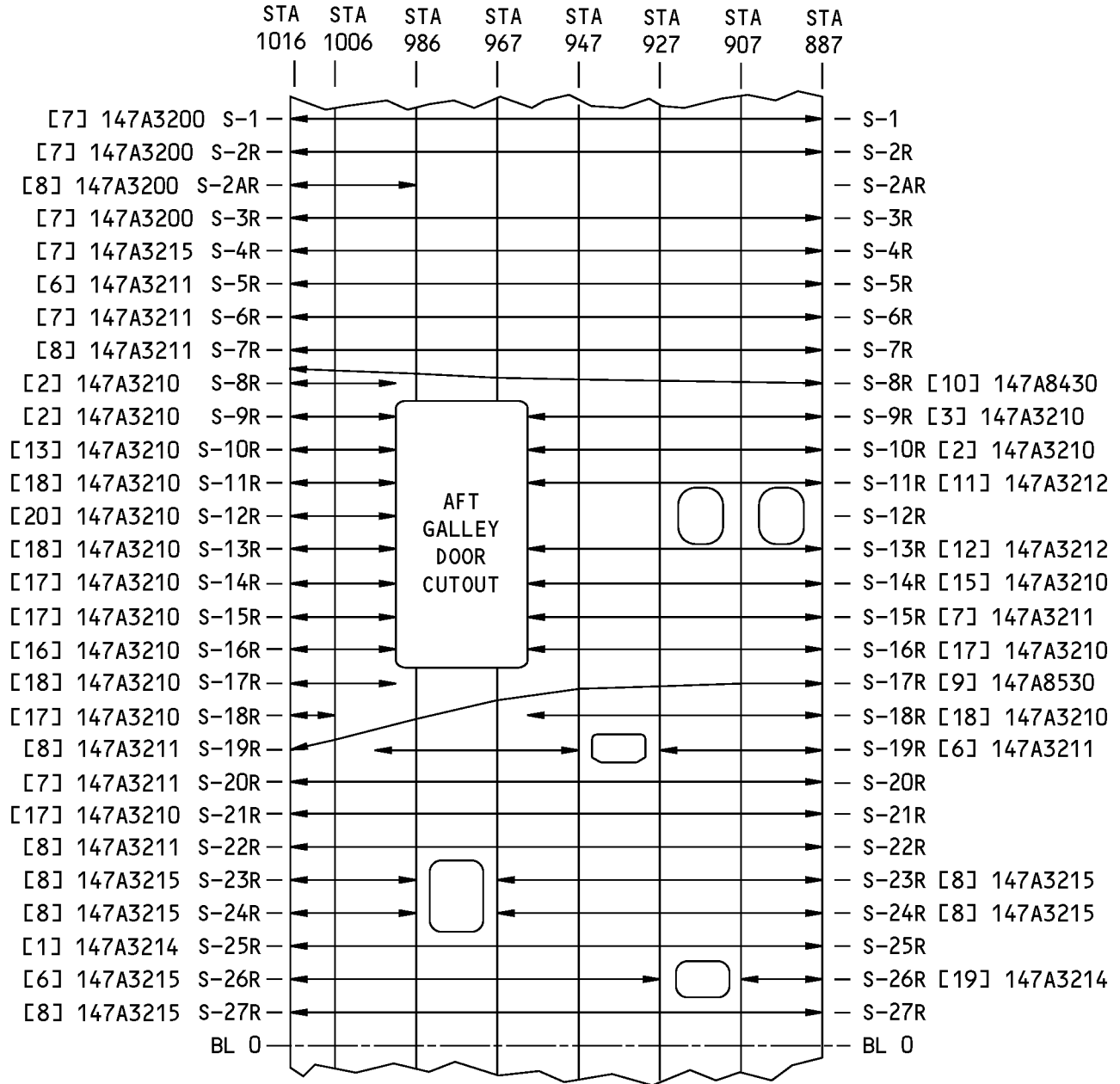
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4700	Section 47 - Integration Functional Collector
147A0001	Crown Panel Integration Installation - Section 47
147A0002	Lower Panel Integration Installation - Section 47
140A4710	Entry Panel Functional Collector Section 47
147A0010	Panel Installation - Entry - Section 47



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**STRUCTURAL REPAIR MANUAL**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4720	Galley Panel Functional Collector Section 47
147A0020	Panel Installation - Galley - Section 47
140A4730	Crown Panel Functional Collector Section 47
147A0030	Crown Panel Installation - Section 47
140A4740	Lower Panel Functional Collector Section 47
147A0040	Lower Panel Installation - Section 47

STRUCTURAL REPAIR MANUAL



→ FWD

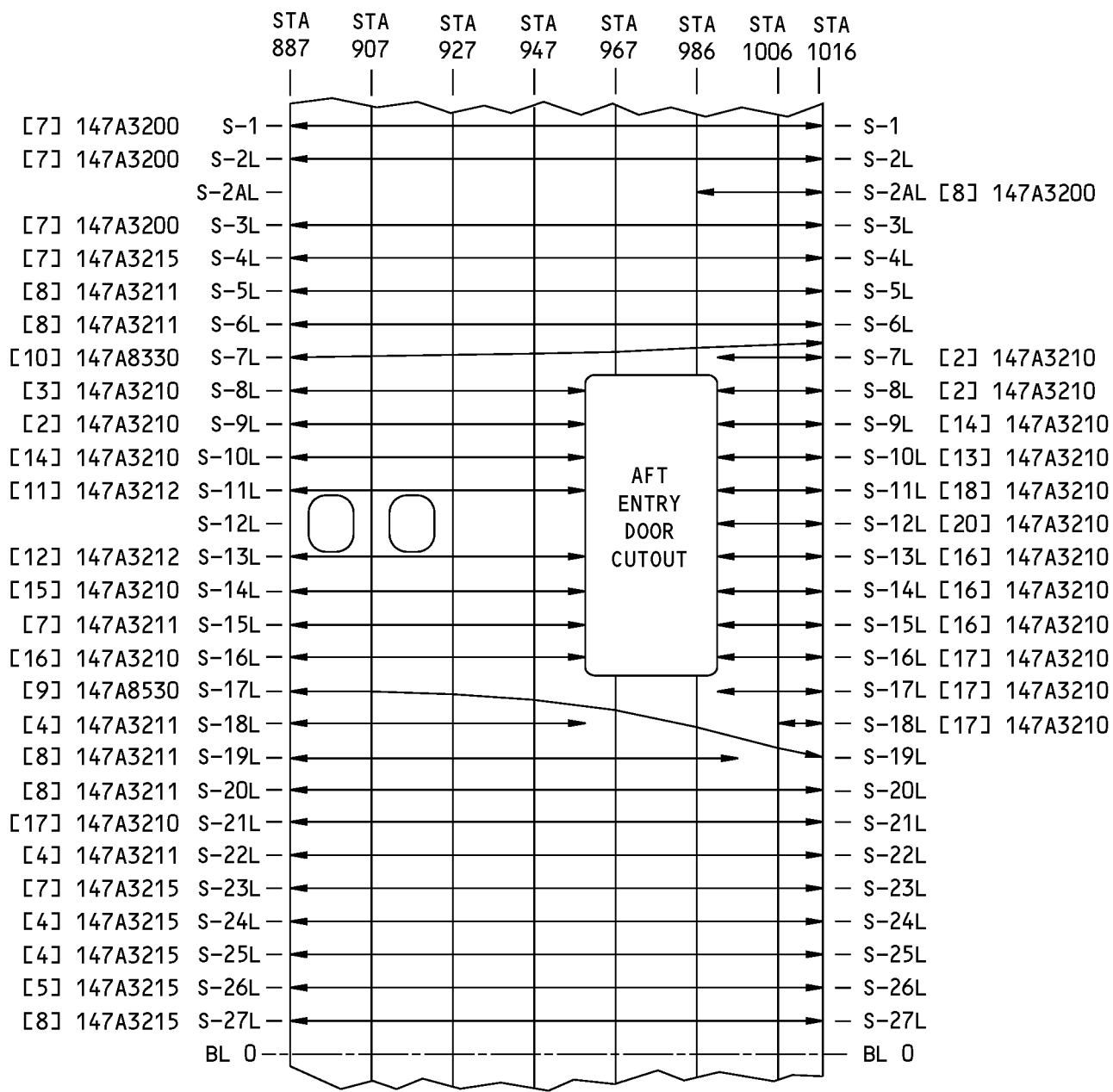
RIGHT SIDE VIEW  
STRINGERS S-1 TO S-27R

NOTES

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

Section 47 Stringer Identification  
Figure 2 (Sheet 1 of 2)

**737-800  
STRUCTURAL REPAIR MANUAL**



FWD ←

**LEFT SIDE VIEW  
STRINGERS S-1 TO S-27L**

**Section 47 Stringer Identification  
Figure 2 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

Table 2:

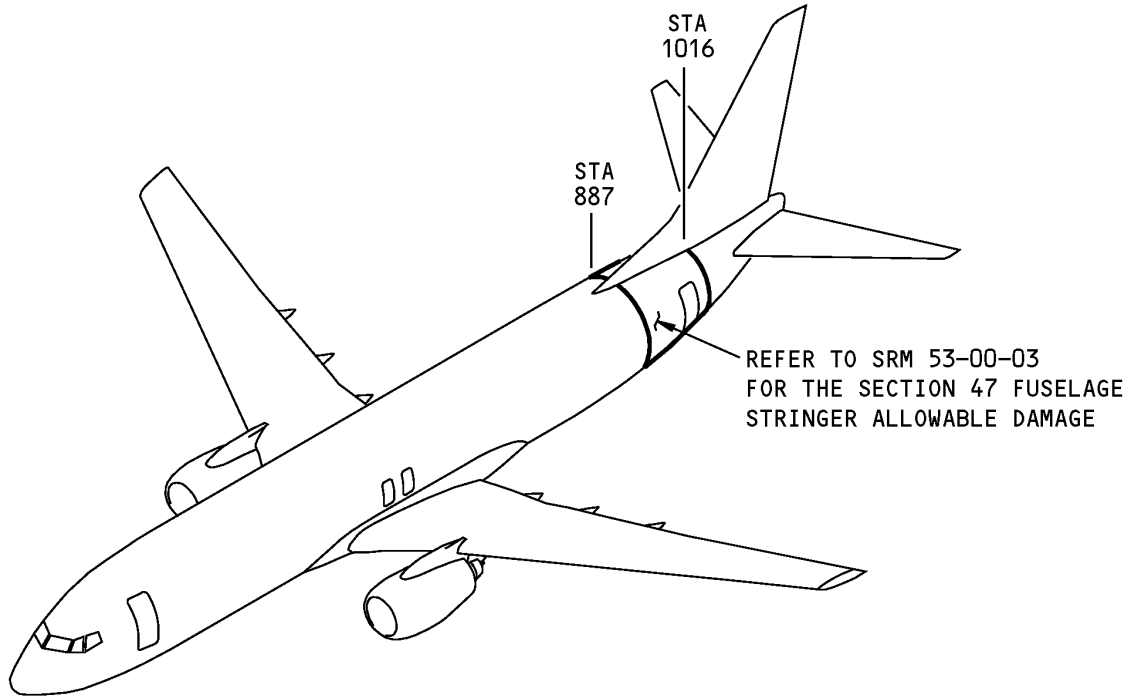
LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Stringer		BAC1498-163 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-164 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[5]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[6]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[7]	Stringer	0.063 (1.60)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[8]	Stringer	0.071 (1.80)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[9]	Chord		BAC1506-3800 2024-T42 extrusion as given in QQ-A-200/3	
[10]	Chord		BAC1506-4504 2024-T42 extrusion as given in QQ-A-200/3	
[11]	Stringer		BAC1517-1485 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stringer		BAC1517-2234 7075-T62 extrusion as given in QQ-A-200/11	
[13]	Stringer		BAC1498-153 7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		BAC1498-154 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[17]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[18]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[19]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[20]	Stringer		BAC1498-162 7075-T62 sheet as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 47 FUSELAGE STRINGERS**



**Section 47 Stringer Allowable Damage  
Figure 101**

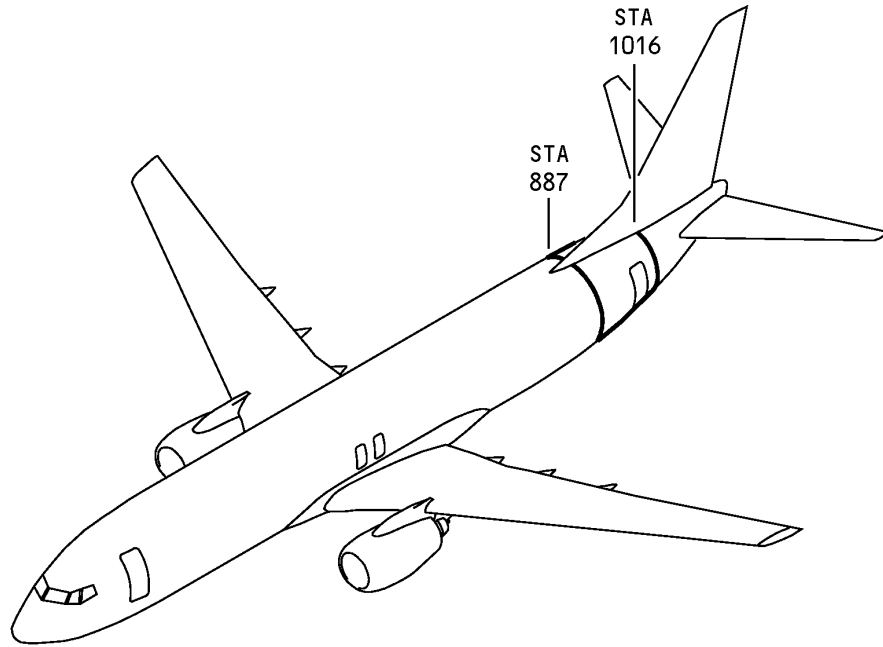


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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 47 FUSELAGE STRINGERS**

**1. Applicability**

- A. Repair 1 is applicable to damage to the stringers in body Section 47 shown in Section 47 Stringer Repairs, Figure 201/REPAIR 1.



**Section 47 Stringer Repairs  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:
- (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-70-03	FUSELAGE STRINGERS - SECTION 47



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**STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 47 fuselage stringers.

**NOTE:** If necessary, refer to 53-70-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

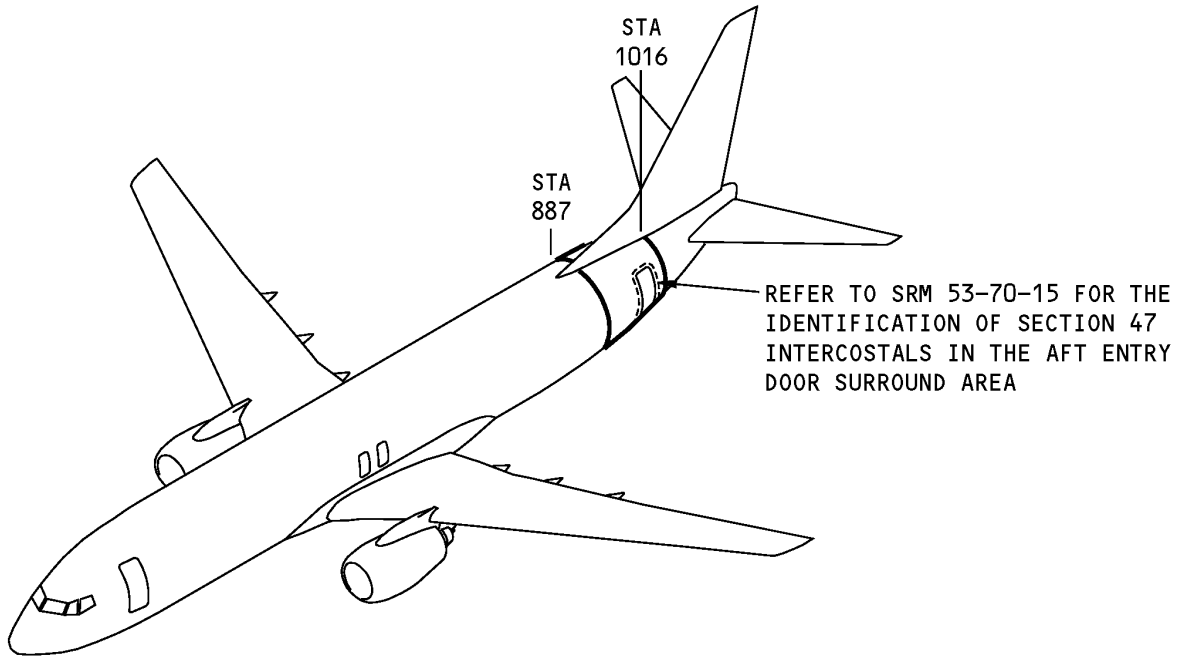
**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 47 FUSELAGE STRINGERS</b>		
<b>STRINGER</b>	<b>LOCATION</b>	<b>REPAIR</b>
S-8R	STA 887 to STA 1016	Refer to SRM 51-70-11
S-7L	STA 887 to STA 1016	Refer to SRM 51-70-12
S-11L FWD, S-11R FWD, S-13R, S-17L	STA 887 to STA 957	Refer to SRM 51-70-11
S-13L, S-17R	STA 887 to STA 957	Refer to SRM 51-70-12
All other stringers	STA 887 to STA 1016	Refer to SRM 53-00-03



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**STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 FUSELAGE INTERCOSTALS**

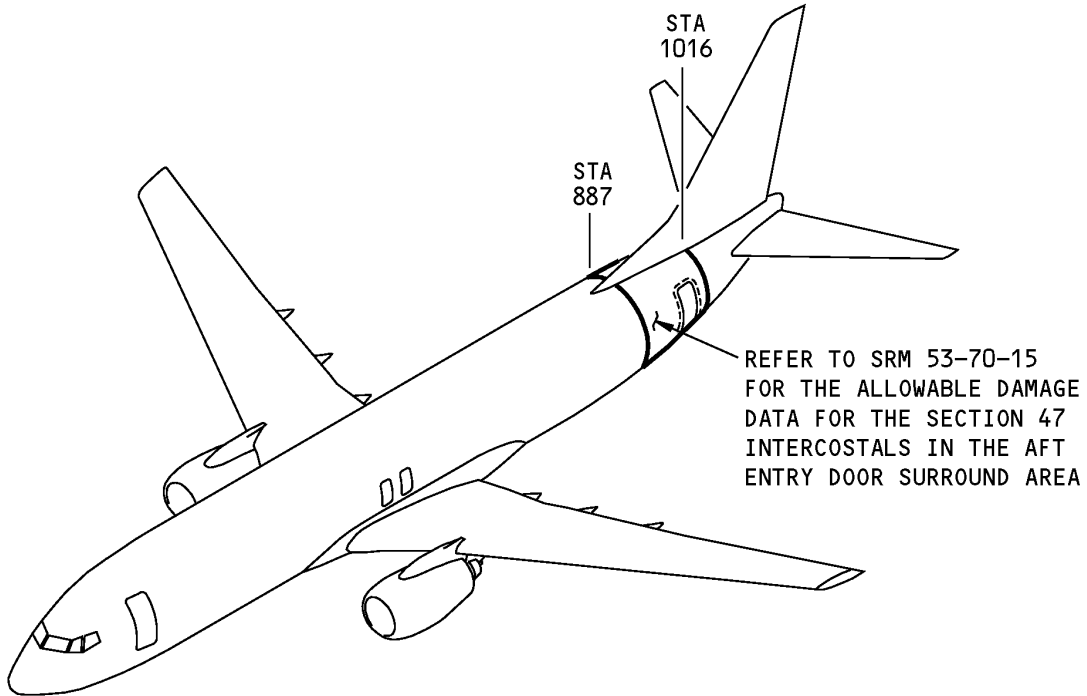


**Section 47 Fuselage Intercostal Locations**  
**Figure 1**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 47 FUSELAGE INTERCOSTALS**

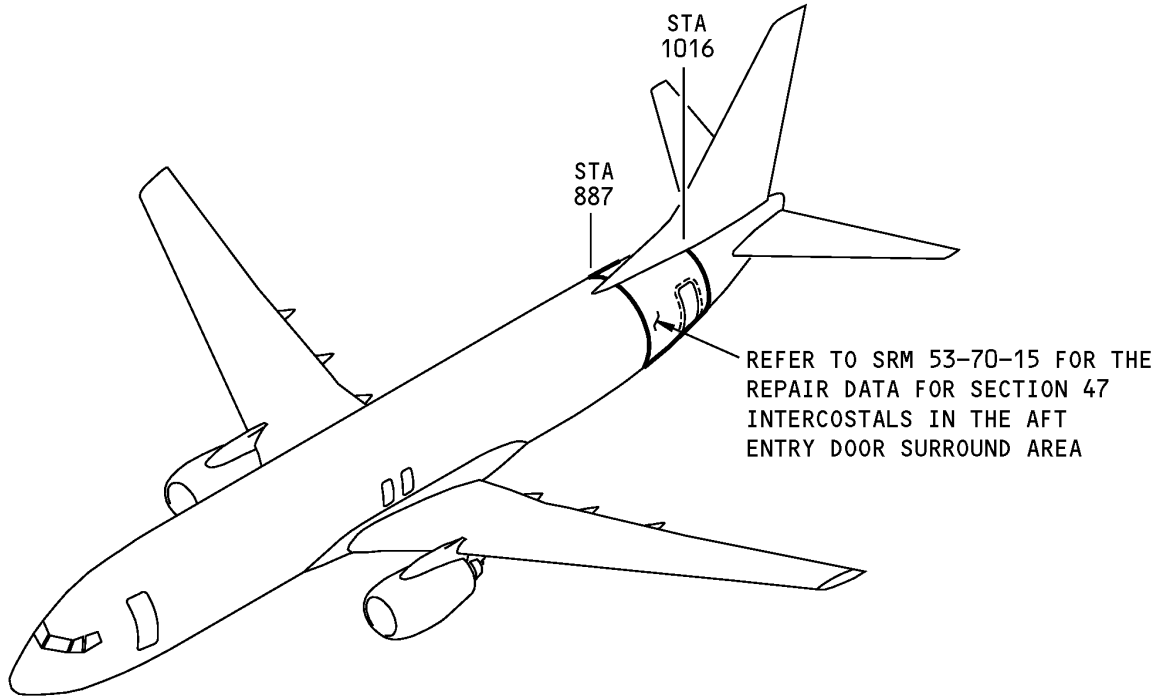


**Section 47 Fuselage Intercostal Allowable Damage**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

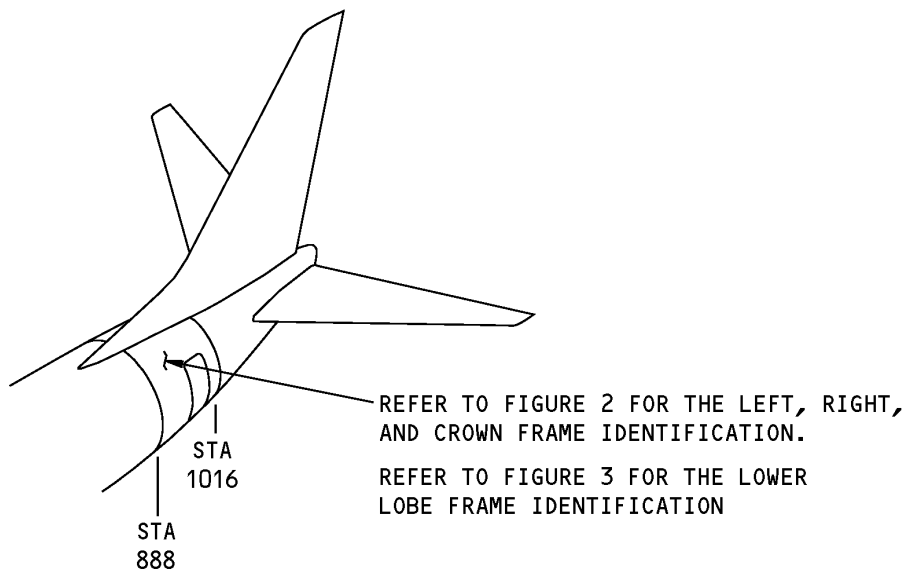
**REPAIR 1 - SECTION 47 FUSELAGE INTERCOSTALS**



**Section 47 Fuselage Intercostal Repair**  
**Figure 201**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 FUSELAGE FRAMES**



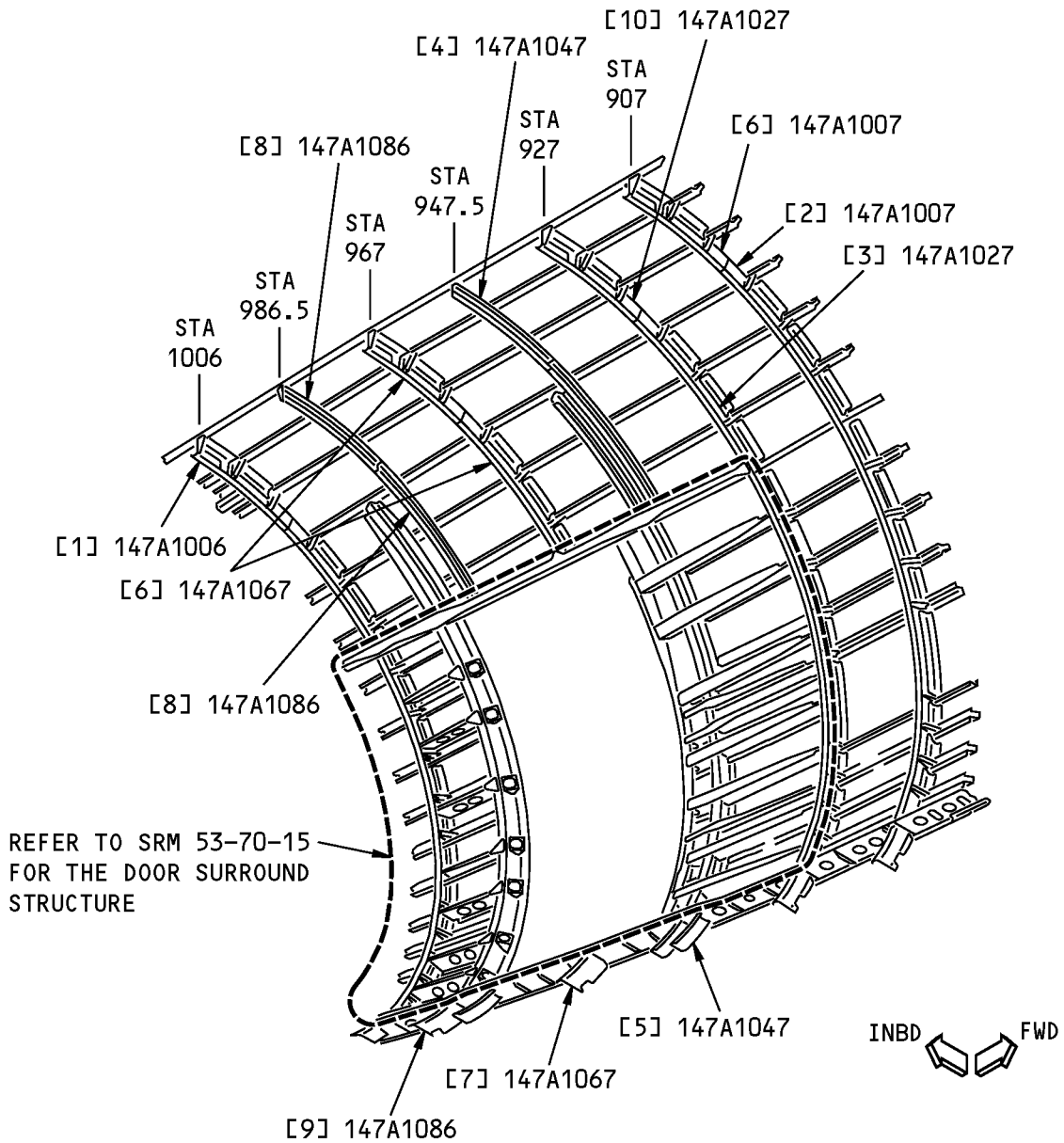
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Fuselage Frame Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4710	Entry Door Panel Functional Collector - Section 47
140A4720	Galley Door Panel Functional Collector - Section 47
140A4730	Crown Panel Functional Collector - Section 47
140A4740	Lower Panel Functional Collector - Section 47
147A1007	STA 907 Frame Assy
147A1027	STA 927 Frame Assy
147A1047	STA 947.5 Frame Assy
147A1067	STA 967 Frame Assy
147A1086	STA 986.5 Frame Assy
147A1006	STA 1006 Frame Assy

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STRUCTURAL REPAIR MANUAL**

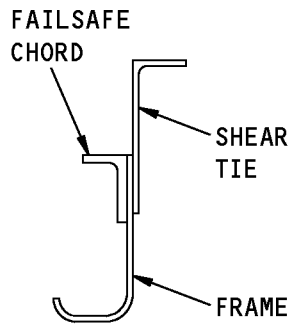


**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
EXCEPT AS NOTED**

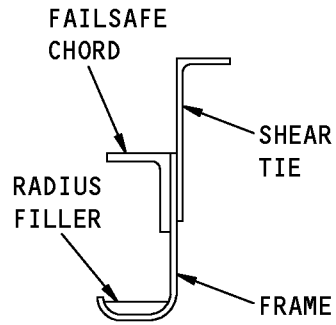
**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 Frames - Left, Right, and Crown Identification  
Figure 2 (Sheet 1 of 2)**

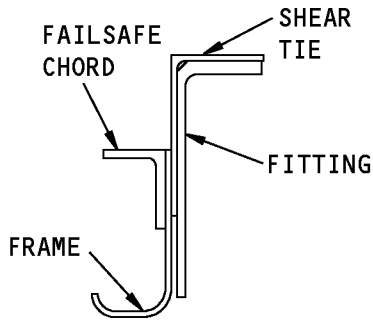
**737-800  
STRUCTURAL REPAIR MANUAL**



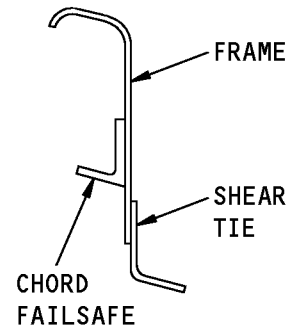
TYPICAL SECTION THROUGH A FRAME FOR ITEMS [1], [2], [4], [5], [6], [8], AND [10]



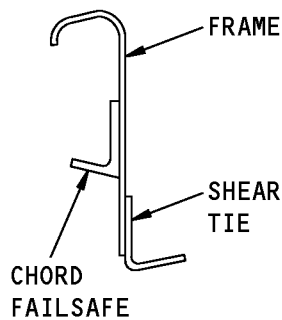
TYPICAL SECTION THROUGH A FRAME FOR ITEM [3]



STATION 907  
TYPICAL SECTION THROUGH A FRAME FOR ITEM [6]



TYPICAL SECTION THROUGH A FRAME FOR ITEM [7]



TYPICAL SECTION THROUGH A FRAME FOR ITEM [9]

**Section 47 Frames - Left, Right, and Crown Identification  
Figure 2 (Sheet 2 of 2)**





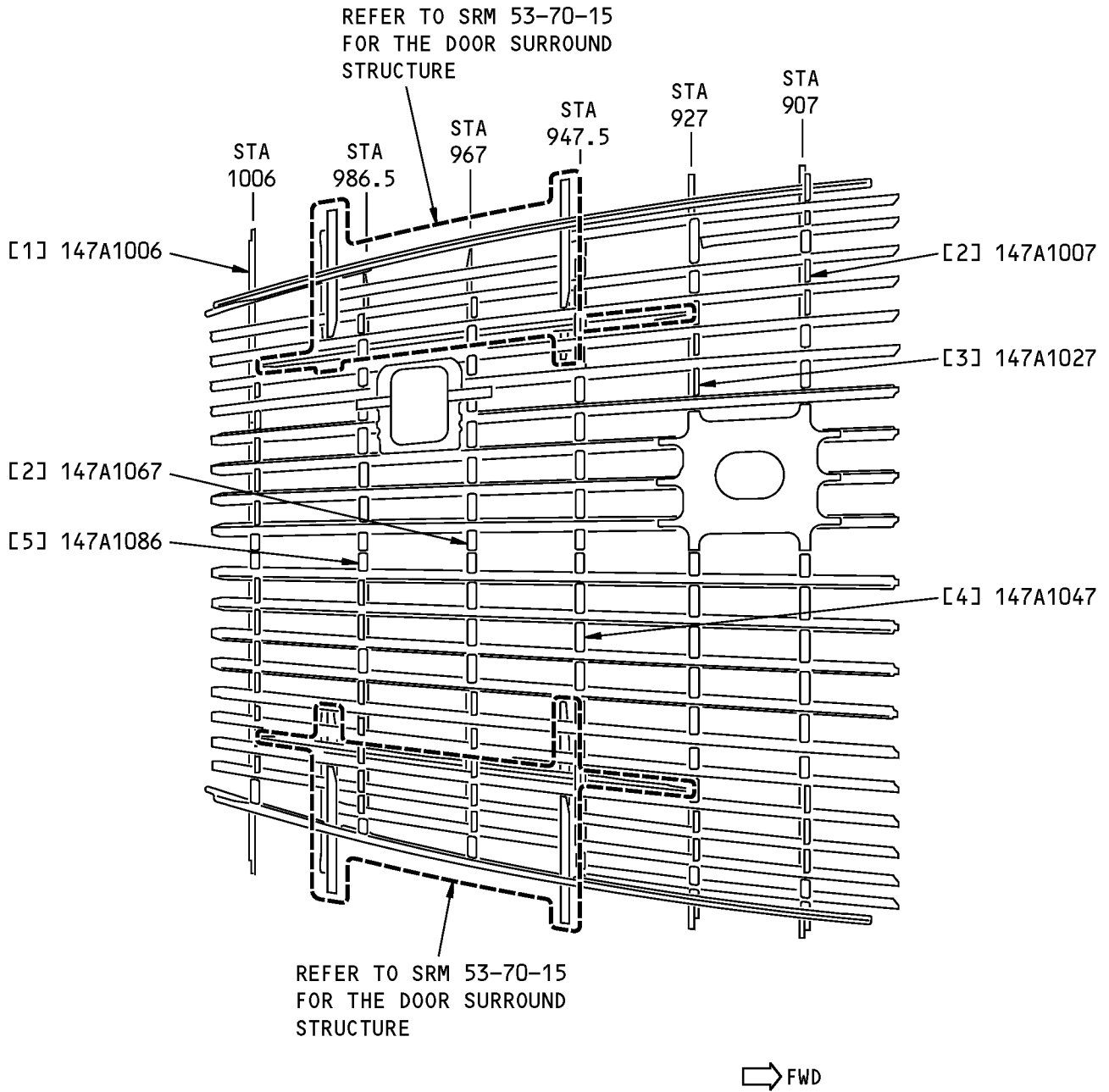
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T*[1]</b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Frame Failsafe Chord	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-1324 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Frame Assembly Frame Failsafe Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3319 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly Frame Failsafe Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-101074 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Frame Assembly Frame Failsafe Chord	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly Frame Failsafe Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-1998 7075-T62 extrusion as given in QQ-A-200/11	
[6]	Frame Assembly Frame Failsafe Chord	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-2732 7075-T62 extrusion as given in QQ-A-200/11	
[7]	Frame Assembly Frame Failsafe Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-3312 7075-T62 extrusion as given in QQ-A-200/11	
[8]	Frame Assembly Frame Failsafe Chord	0.045 (1.14)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-1325 7075-T62 extrusion as given in QQ-A-200/11	
[9]	Frame Assembly Frame Failsafe Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1514-1681 7075-T62 extrusion as given in QQ-A-200/11	
[10]	Frame Assembly Frame Failsafe Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13  BAC1503-100028 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

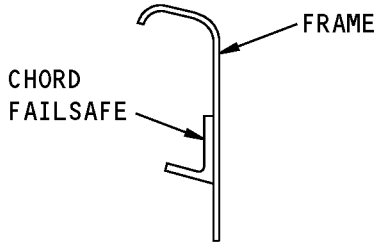
**737-800  
STRUCTURAL REPAIR MANUAL**



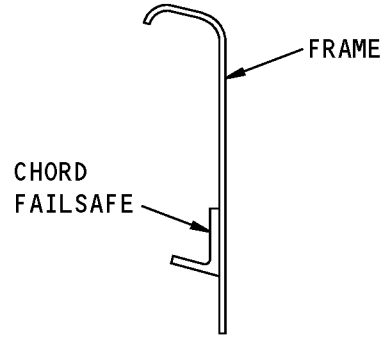
**BOTTOM VIEW IS SHOWN**

**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

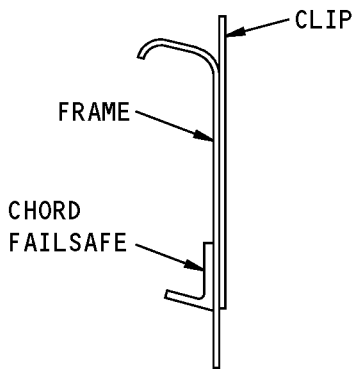
**Section 47 Lower Lobe Frame Identification  
Figure 3 (Sheet 1 of 3)**



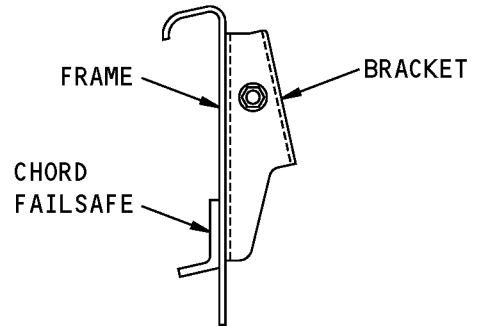
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [1]**



**STATION 907  
TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [2]**



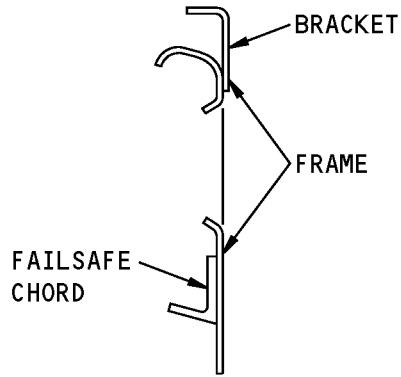
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [3]**



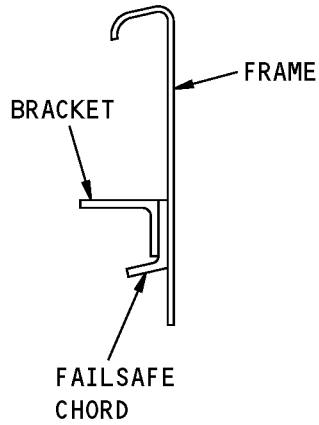
**TYPICAL SECTION THROUGH  
A FRAME FOR ITEM [4]**

**Section 47 Lower Lobe Frame Identification  
Figure 3 (Sheet 2 of 3)**

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**STRUCTURAL REPAIR MANUAL**



**STATION 967**  
**TYPICAL SECTION THROUGH**  
**A FRAME FOR ITEM [2]**



**TYPICAL SECTION THROUGH**  
**A FRAME FOR ITEM [5]**

**Section 47 Lower Lobe Frame Identification**  
**Figure 3 (Sheet 3 of 3)**



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**STRUCTURAL REPAIR MANUAL**

**Table 3:**

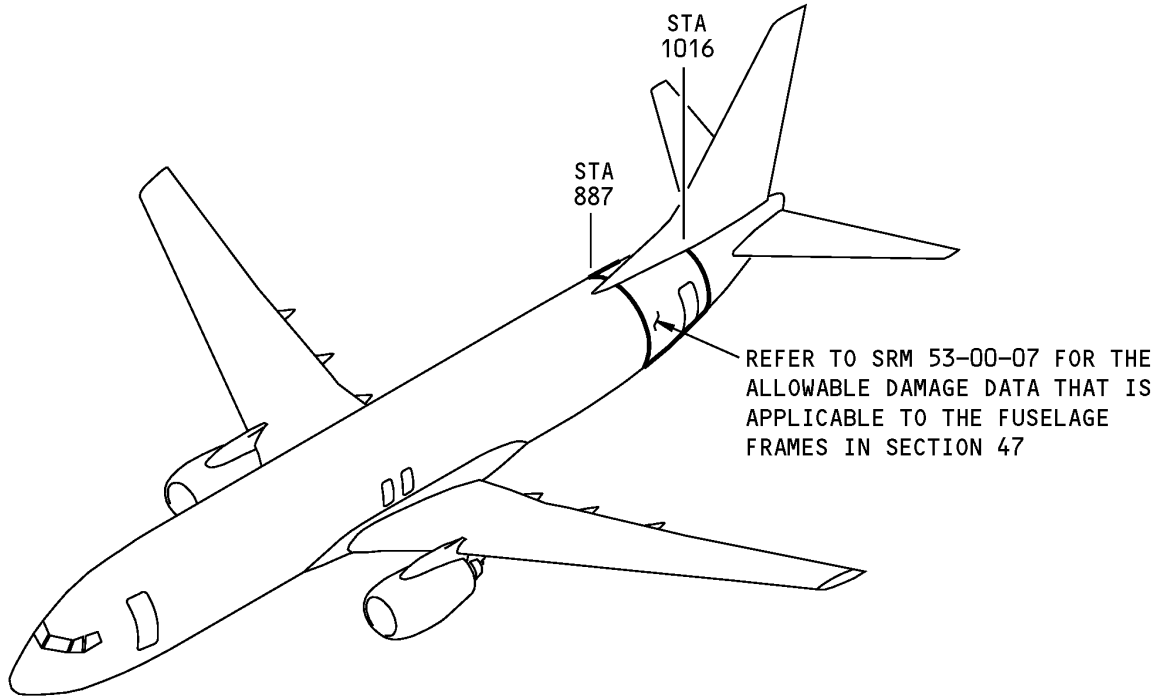
<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Frame Failsafe Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-831 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Frame Assembly Frame Failsafe Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-3312 7075-T62 extrusion as given in QQ-A-200/11	
[3]	Frame Assembly Frame Failsafe Chord	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-945 7075-T62 extrusion as given in QQ-A-200/11	
[4]	Frame Assembly Frame Failsafe Chord	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-1998 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Frame Assembly Frame Failsafe Chord	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1514-1681 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 47 FUSELAGE FRAMES**

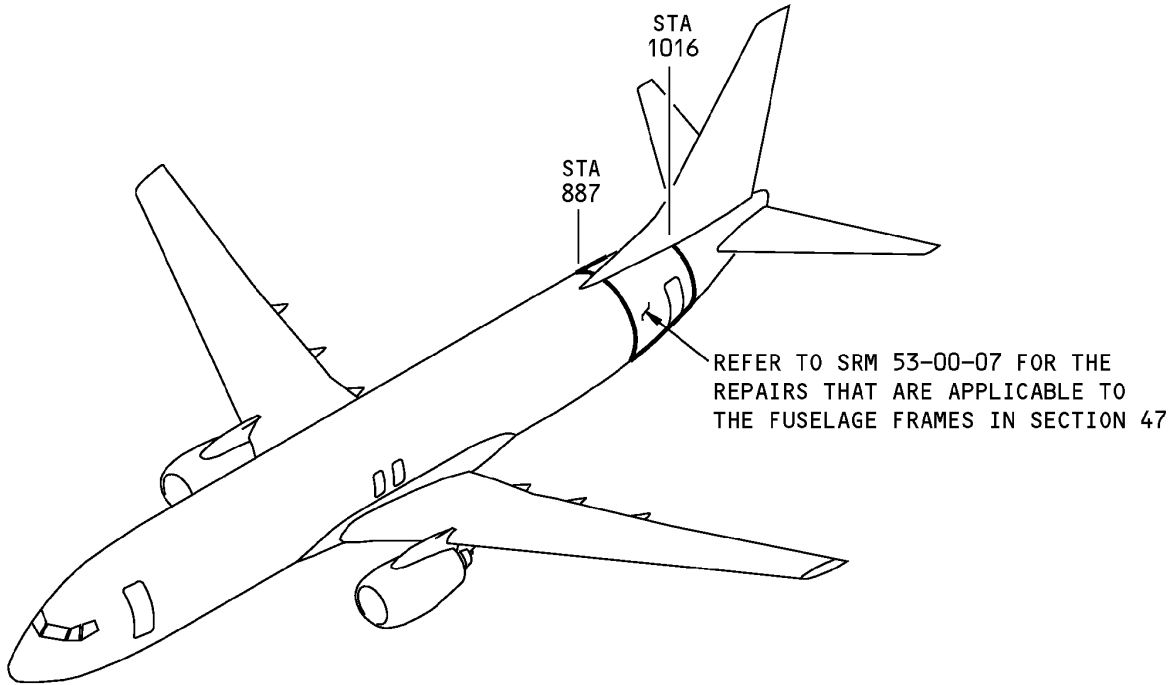


**Section 47 Fuselage Frame Location  
Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

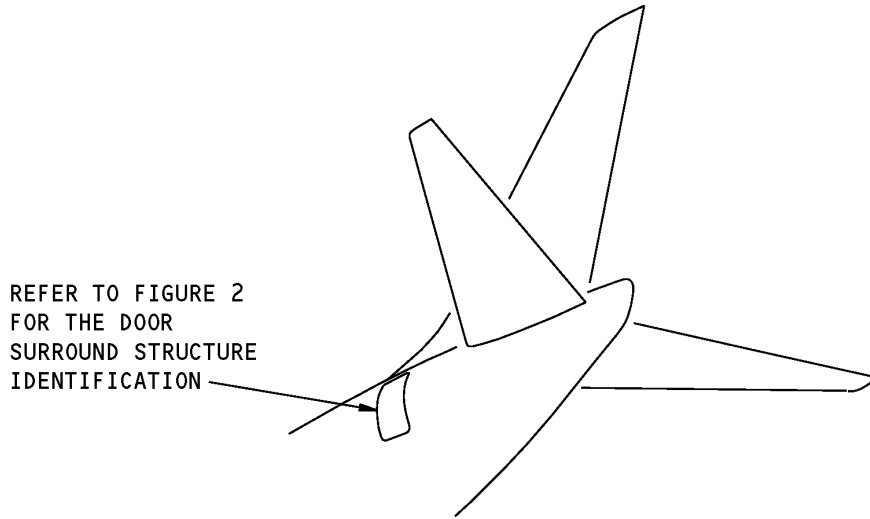
**REPAIR GENERAL - SECTION 47 FUSELAGE FRAMES**



**Section 47 Fuselage Frame Location**  
**Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 DOOR SURROUND STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

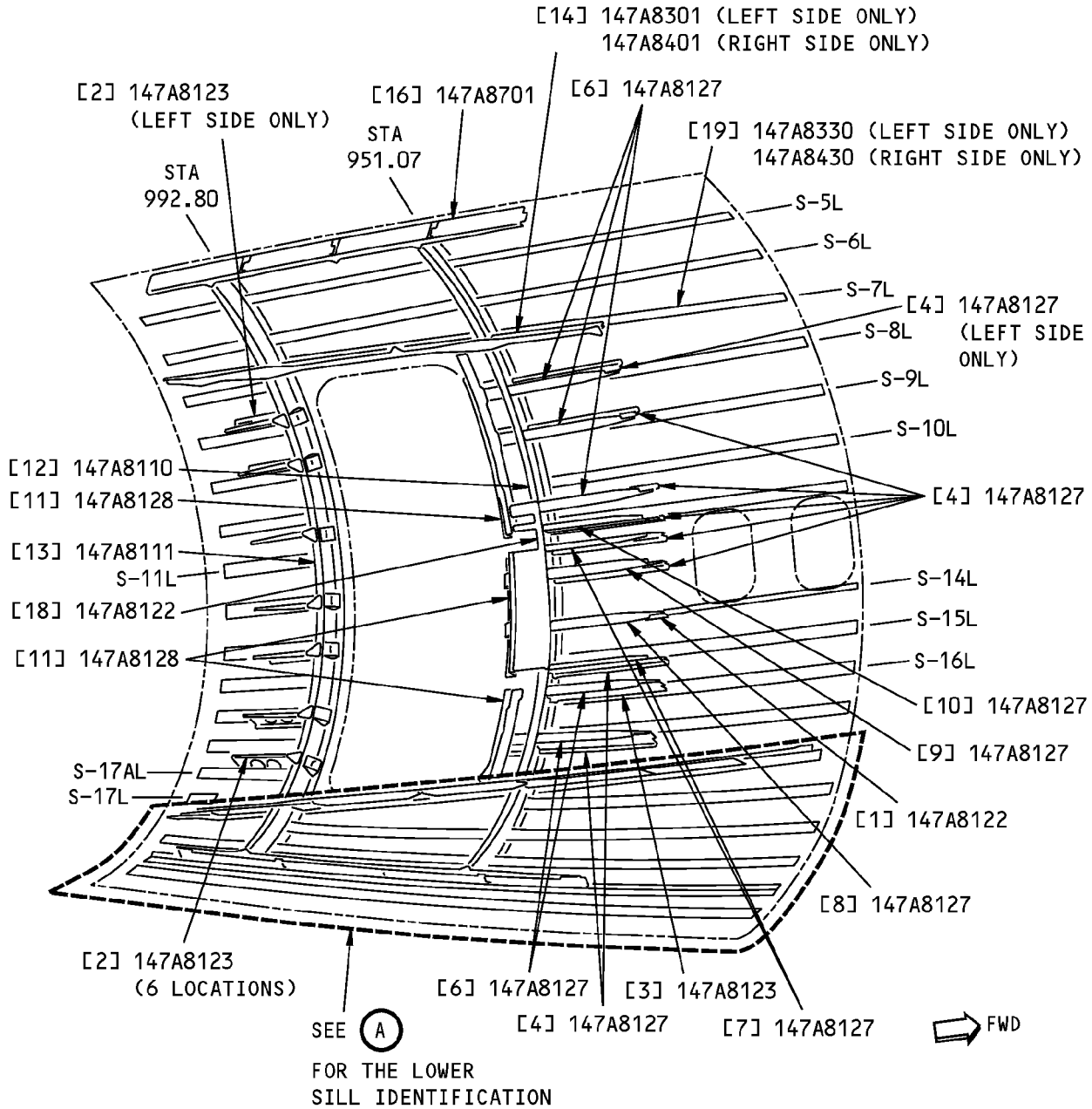
**Section 47 - Door Surround Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A4700	Section 47 Integration Functional Collector
140A4710	Entry Door Panel Functional Collector - Section 47
140A4720	Galley Door Panel Functional Collector - Section 47
147A0010	Panel Installation - Entry, Section 47
147A0020	Panel Installation - Galley, Section 47
147A8101	Door Panel - Surround Structure - Installation
147A8110	Frame Installation - Aft Doorway, Station 951.000
147A8111	Frame Installation - Aft Doorway, Station 992.8
147A8301	Main Sill Installation - Upper Entry Door Panel
147A8401	Main Sill Installation - Upper Galley Door Panel
147A8501	Main Sill Installation - Lower, Entry and Galley Door Panels



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STRUCTURAL REPAIR MANUAL**



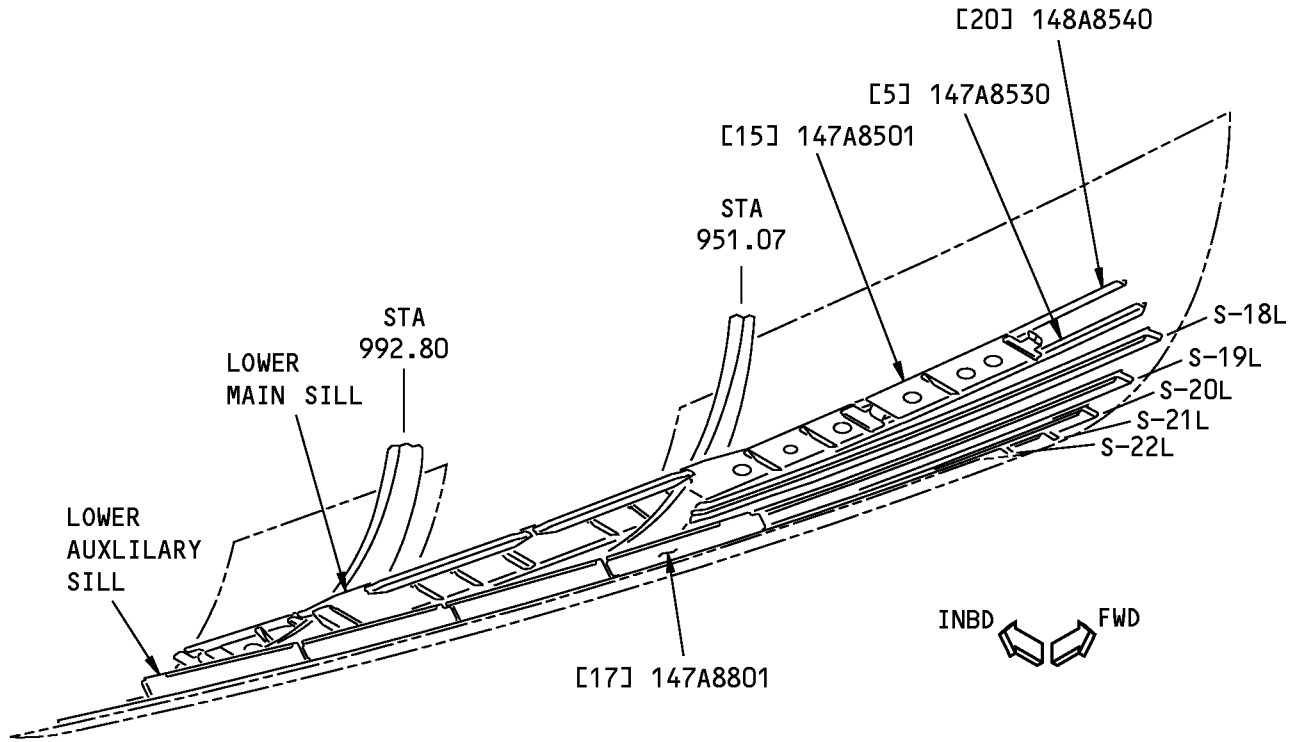
LEFT SIDE IS SHOWN, RIGHT IS OPPOSITE EXCEPT AS NOTED

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 - Door Surround Structure Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**LOWER MAIN AND AUXILIARY SILL**

**A**

**Section 47 - Door Surround Structure Identification  
Figure 2 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Intercostal Web	0.063 (1.60)	7075-T6 sheet as given in QQ-A-250/12 Refer to Figure 3 for the chem-milled thicknesses	
[2]	Intercostal	0.063 (1.60)	2024-T42 clad as given in QQ-A-250/5	
[3]	Intercostal Channel	0.080 (2.03)	7075-T62 clad as given in QQ-A-250/13	
[4]	Intercostal Outer Chord		7050-T7451 plate as given in AMS 4050. Refer to the production drawing for the machined thicknesses. Refer to Figure 4 for a typical machined intercostal	
[5]	Outer Chord		2024-T42 BAC1506-4476 extrusion as given in QQ-A-200/3	LINE NUMBER 7 AND 8
[5]	Outer Chord		2024-T42 BAC1506-3800 extrusion as given in QQ-A-200/3	LINE NUMBER 9 AND ON
[6]	Inner Chord		2024-T3511 BAC1505-100818 extrusion as given in QQ-A-200/3	
[7]	Inner Chord		7075-T6511 BAC1514-589 extrusion as given in QQ-A-200/11	
[8]	Inner Chord		2024-T3511 BAC1505-100914 extrusion as given in QQ-A-200/3	
[9]	Inner Chord		2024-T3511 BAC1506-2710 extrusion as given in QQ-A-200/3	
[10]	Inner Chord		7075-T6511 BAC1514-2920 extrusion as given in QQ-A-200/11	
[11]	Stub Frame	0.063 (1.60)	7075-T62 clad as given in QQ-A-250/13	
[12]	Frame Assembly - STA 951 Outer Chord  Inner Chord  Doubler Upper and Lower Failsafe Angle	0.071 (1.08)	2024-T3511 BAC1514-3360 extrusion as given in QQ-A-200/3 heat treated to T42 (Optional: 2024-0 extrusion). Refer to the production drawing for machined thicknesses  7075-T62 BAC1514-3281 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses  7075-T6 clad sheet as given in QQ-A-250/13  7075-T62 BAC1503-100609 extrusion as given in QQ-A-200/11	
[13]	Frame Assembly - STA 992 Outer Chord  Inner Chord  Upper and Lower Failsafe Angle		2024-T3511 BAC1514-3360 extrusion as given in QQ-A-200/3 heat treated to T42 (Optional: 2024-0 extrusion). Refer to the production drawing for machined thicknesses  7075-T62 BAC1514-3283 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses  7075-T62 BAC1503-100609 extrusion as given in QQ-A-200/11	
[14]	Upper Main Sill Assembly Web	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	



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STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Web	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
	Strap	0.190 (4.83)	7075-T6 sheet as given in QQ-A-250/12	
	Angle (5)		7075-T73511 BAC1503-100219 extrusion as given in QQ-A-200/11	
[15]	Lower Main Sill Assembly (STA 888 to STA 1016)			
	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
	Web	0.071 (1.80)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.063 (1.60)	7075-T6 clad sheet as given in QQ-A-250/13	
	Inner Chord	0.080 (2.03)	7075-T62 clad as given in QQ-A-250/13	
	Doubler	0.250 (6.35)	7075-T7351 plate as given in QQ-A-250/12	
	Angle (6)		7075-T62 BAC1490-2798 extrusion as given in QQ-A-250/13	
	Angle (2)		7075-T6511 BAC1504-8255 extrusion as given in QQ-A-200/11	
	Angle		7075-T73511 BAC1514-3299 extrusion as given in QQ-A-200/11	
	Angle		7075-T73511 BAC1514-3297 extrusion as given in QQ-A-200/11	LINE NUMBER 7 AND 8
	Angle		7075-T73511 BAC1514-1126 extrusion as given in QQ-A-200/11	LINE NUMBER 9 AND ON
[16]	Upper Auxiliary Sill Assembly			
	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	LINE NUMBER 1 THRU 183
	Web	0.040 (1.02)	7075-T62 clad sheet as given in QQ-A-250/13	LINE NUMBER 184 AND ON
	Web	0.050 (1.27)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.036 (0.94)	7075-T6 clad sheet as given in QQ-A-250/13	
	Web	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Channel (4)		7050-T7451 BAC1510-1351 extruded plate as given in AMS 4050	
	Channel (2)		7075-T62 BAC1493-602 clad extruded sheet as given in QQ-A-250/13	
	Strap	0.080 (2.03)	2024-T3 sheet as given in QQ-A-250/4	
	Strap (2) (left side only)	0.080 (2.03)	7075-T6 sheet as given in QQ-A-250/12	
	Doubler (left side only)	0.063 (1.60)	7075-T62 clad as given in QQ-A-250/13	
[17]	Lower Auxiliary Sill Installation			
	Web (4)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
	Strap	0.140 (3.56)	2024-T3 clad sheet as given in QQ-A-250/4	
	Strap	0.056 (1.42)	7075-T6 clad sheet as given in QQ-A-250/13	
	Strap	0.063 (1.60)	7075-T6 clad sheet as given in QQ-A-250/13	

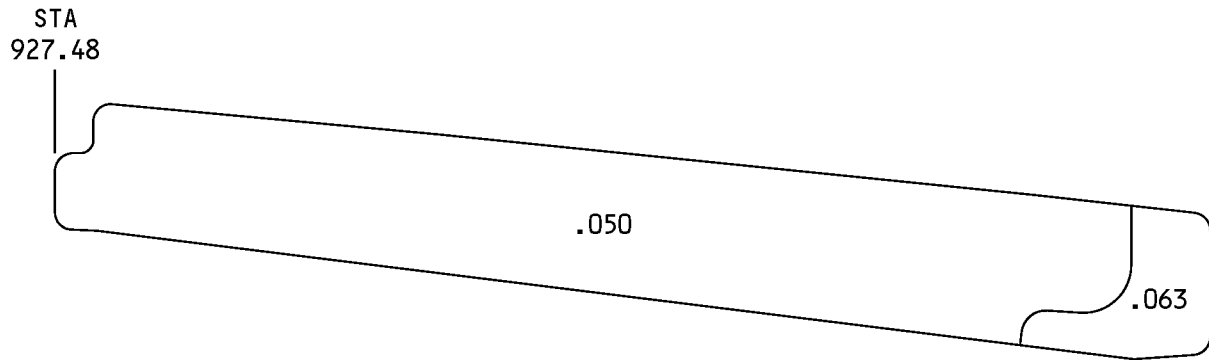


**737-800**  
**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
	Doubler (3) Channel (4) Angle Angle	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13 7075-T73511 BAC1509-100694 extrusion as given in QQ-A-200/11 7075-T62 BAC1490-2541 clad extrusion as given in QQ-A-250/13 7075-T62 BAC1490-2707 clad extrusion as given in QQ-A-250/13	
[18]	Closeout plate	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[19]	Outer Chord		2024-T42 BAC1506-4504 extrusion as given in QQ-A-200/3	
[20]	Inner Chord	0.080 (2.03)	7075-T62 Clad Sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

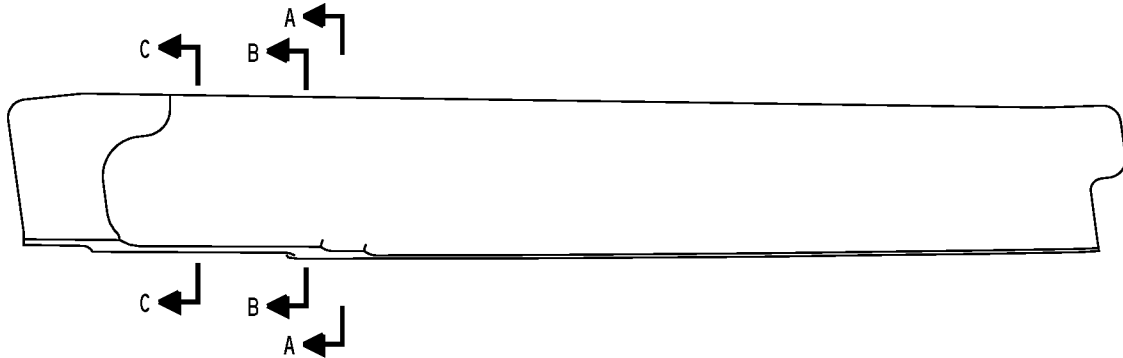
**737-800  
STRUCTURAL REPAIR MANUAL**



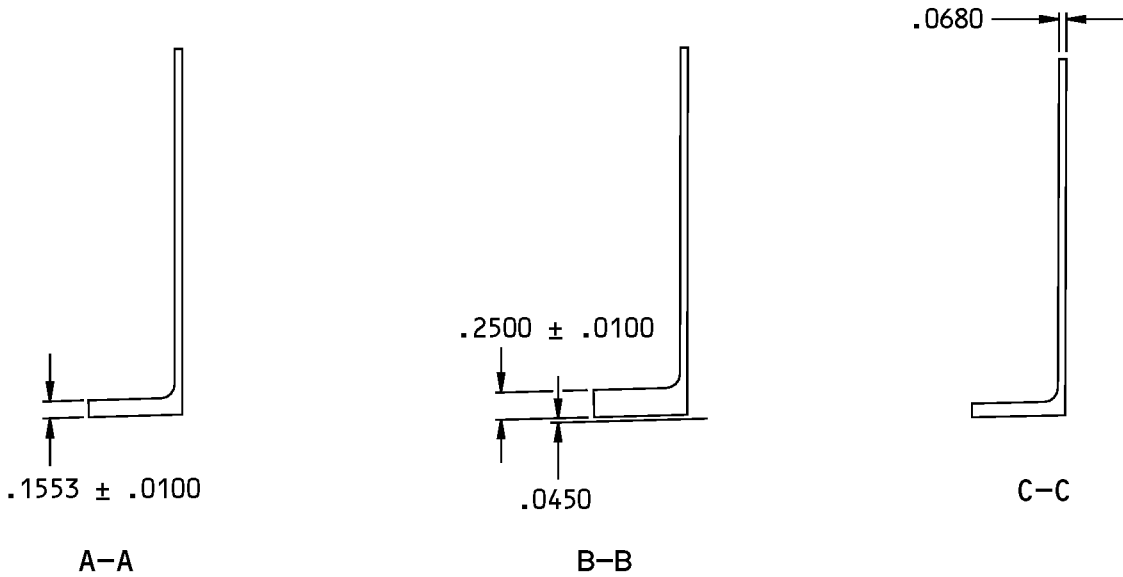
**CHEM-MILLED INTERCOSTAL**

**Chem-Milled Thickness for Figure 2, Item [1]  
Figure 3**

**737-800  
STRUCTURAL REPAIR MANUAL**



**TYPICAL MACHINED INTERCOSTAL**



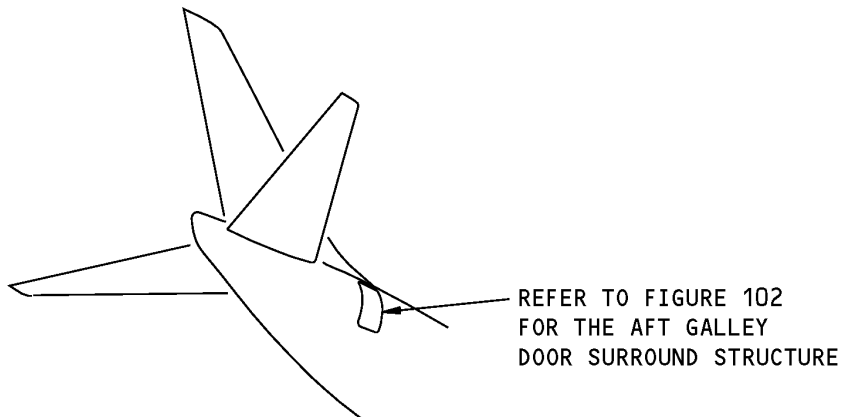
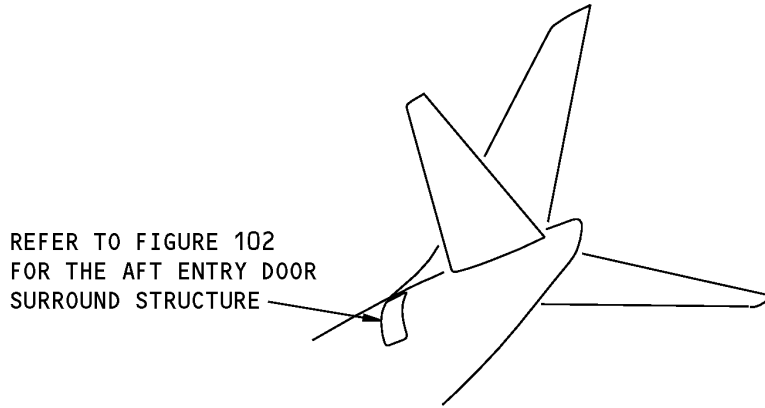
**Machined Thickness for Figure 2, Item [4]  
Figure 4**

**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 47 DOOR SURROUND STRUCTURE**

**1. Applicability**

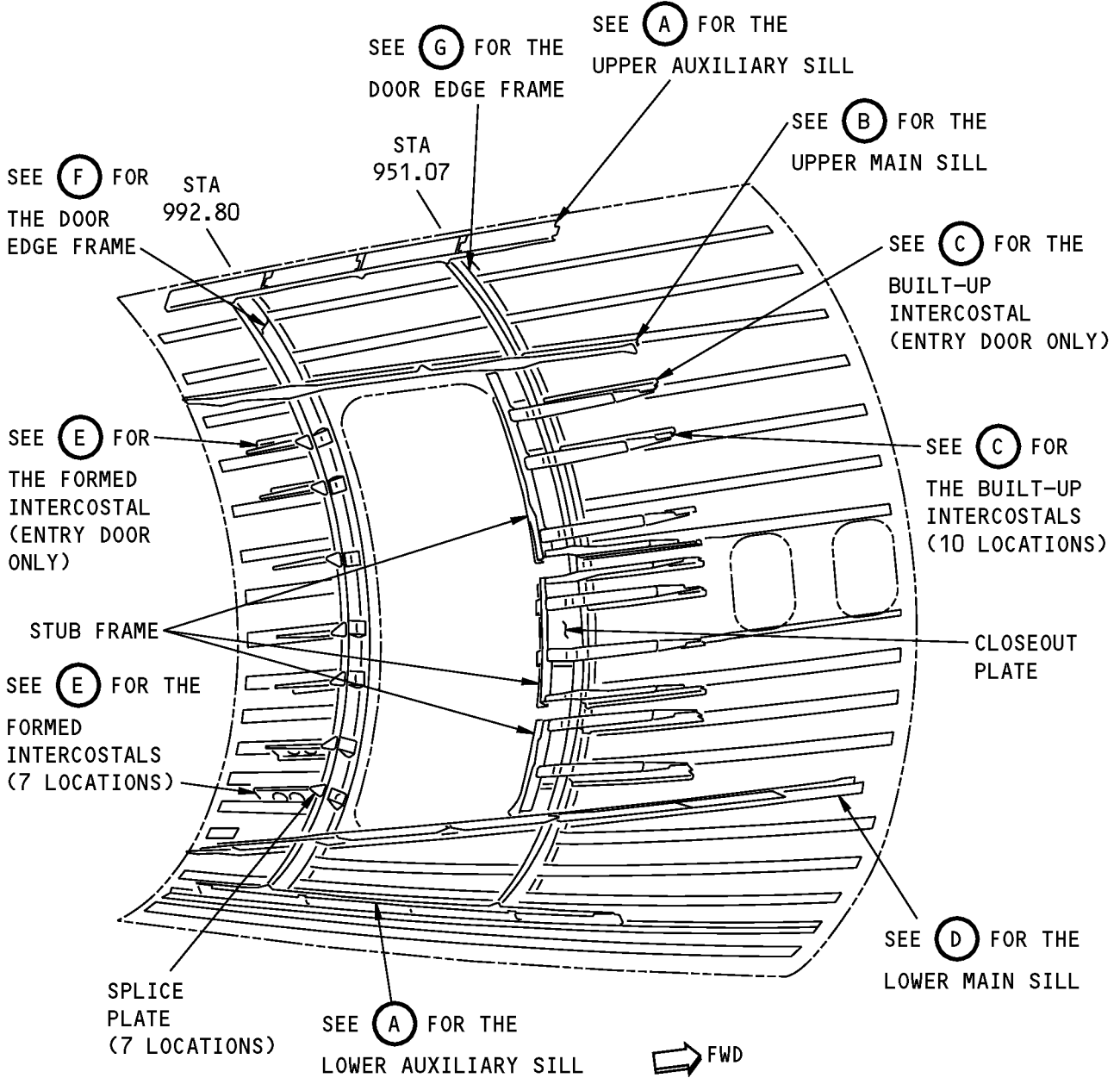
- A. This subject gives the allowable damage limits for the Section 47 Door Surround Structure shown in Section 47 - Door Surround Structure Location, Figure 101/ALLOWABLE DAMAGE 1.



**Section 47 - Door Surround Structure Location  
Figure 101**



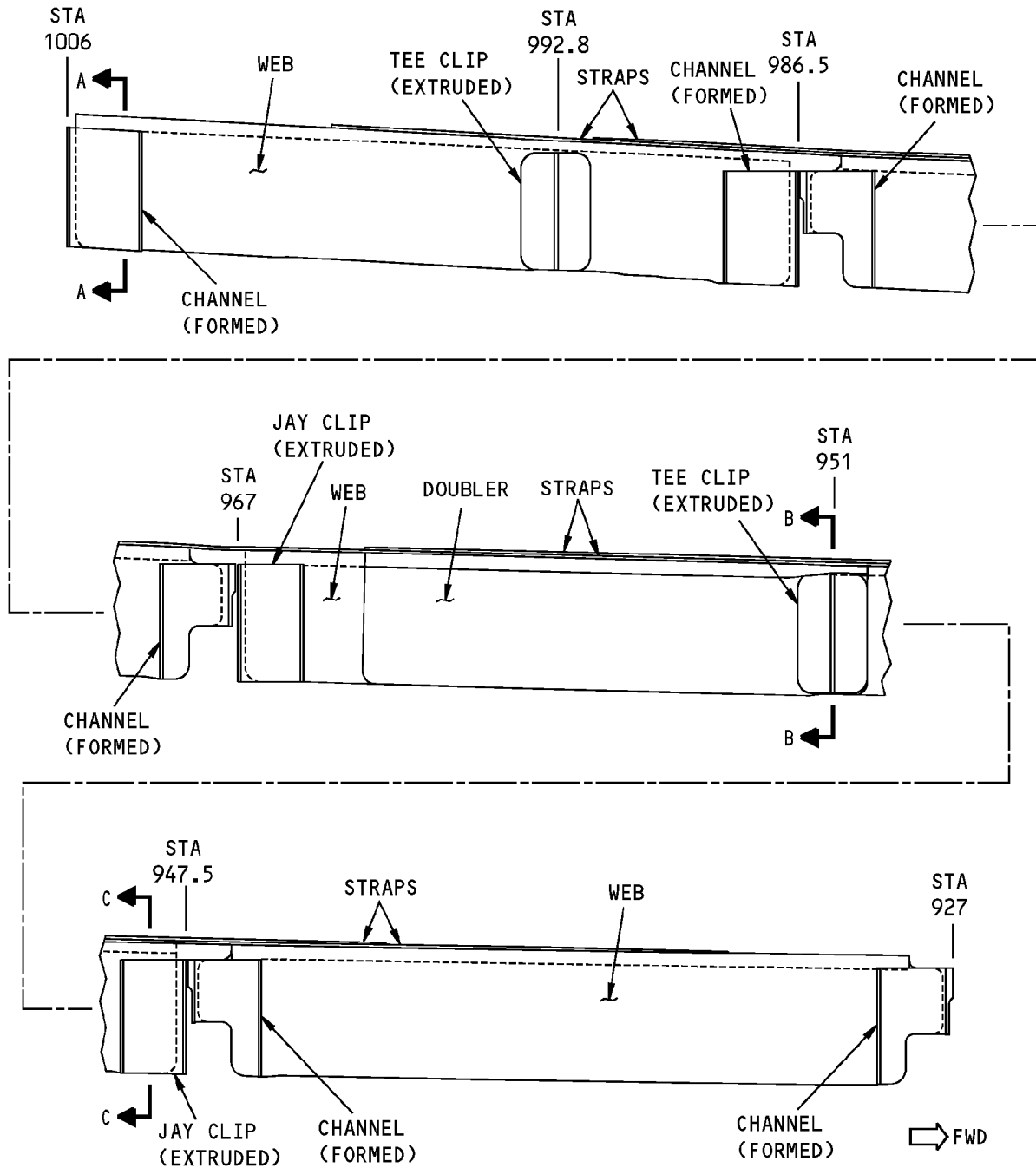
**STRUCTURAL REPAIR MANUAL**



AFT ENTRY DOOR SURROUND STRUCTURE IS SHOWN,  
 AFT GALLEY DOOR SURROUND STRUCTURE IS OPPOSITE EXCEPT AS NOTED

**Section 47 - Door Surround Structure Allowable Damage  
 Figure 102 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

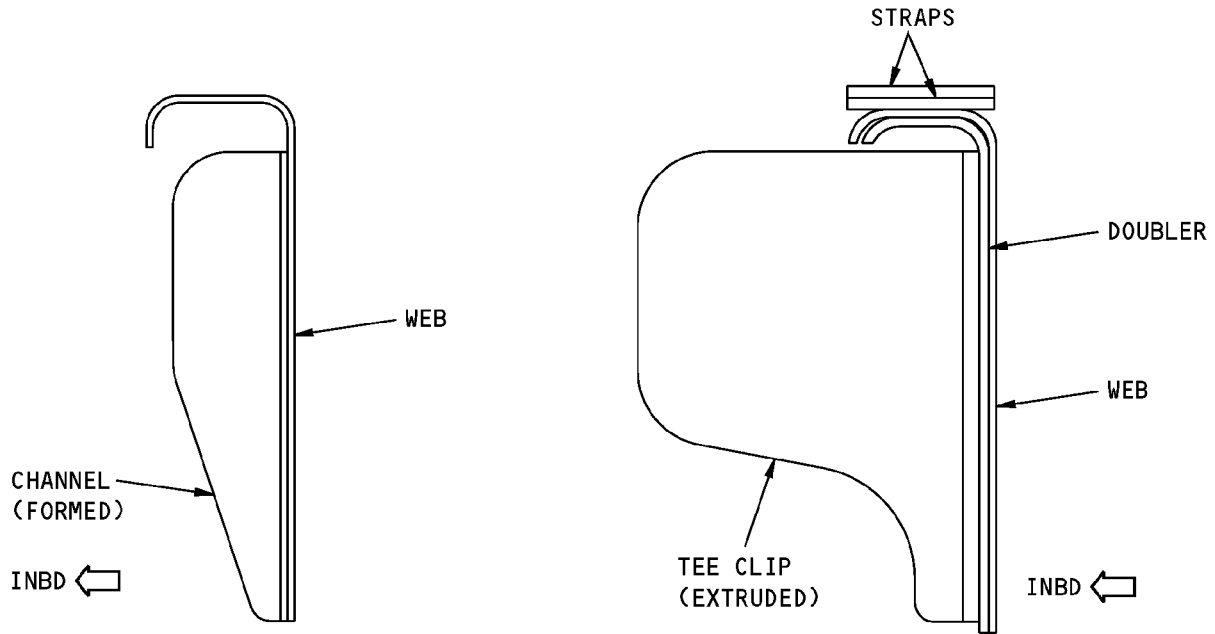


**UPPER AUXILIARY SILL IS SHOWN,  
LOWER AUXILIARY SILL IS SIMILAR**

**A**

**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 2 of 11)**

**STRUCTURAL REPAIR MANUAL**

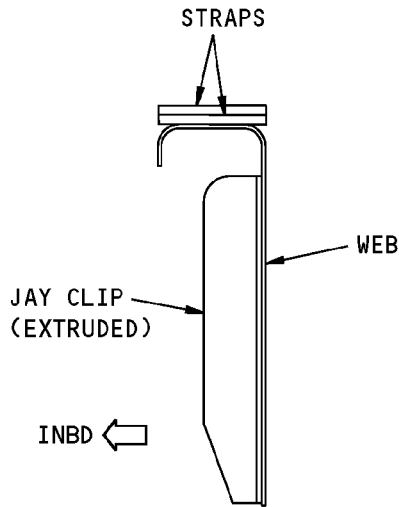


A-A

(TYPICAL FOR THE UPPER AND LOWER AUXILIARY SILL)

B-B

(TYPICAL FOR THE UPPER AND LOWER AUXILIARY SILL)

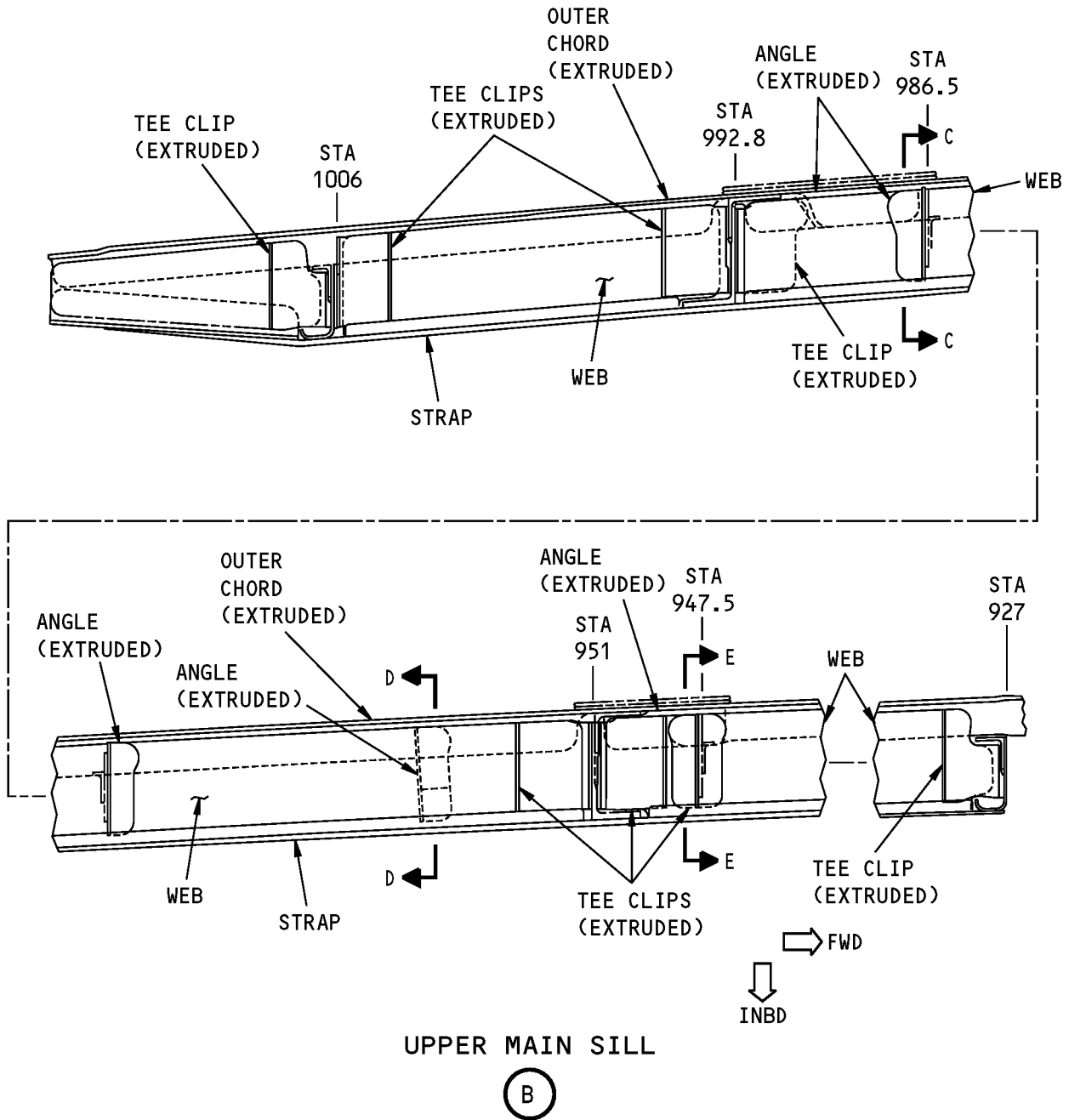


C-C

(TYPICAL FOR THE UPPER AND LOWER AUXILIARY SILL)

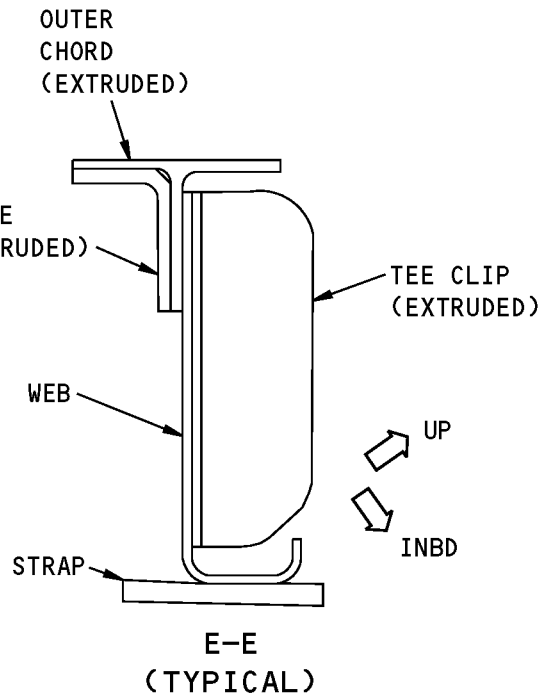
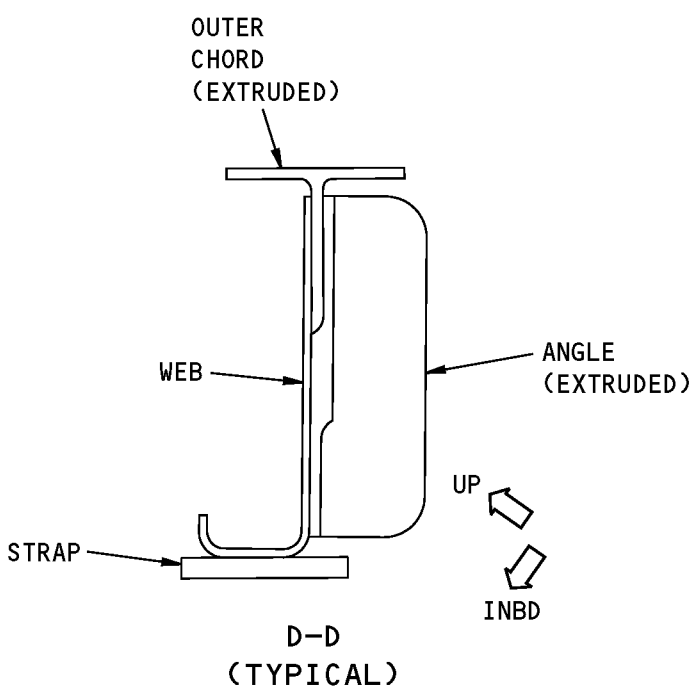
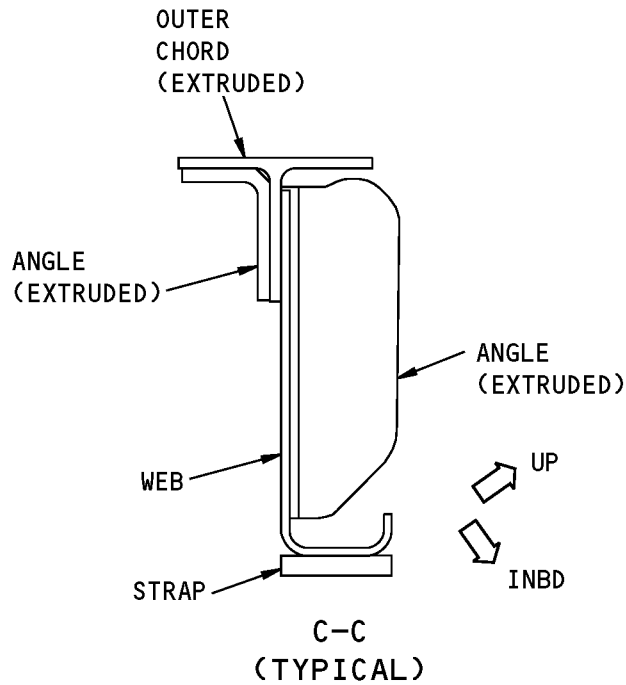
**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 3 of 11)**

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STRUCTURAL REPAIR MANUAL**



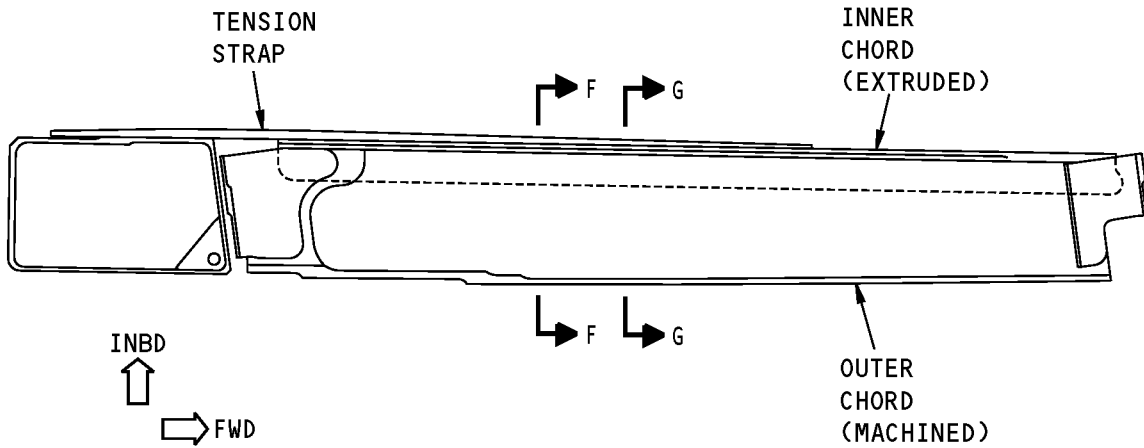
**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 4 of 11)**

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STRUCTURAL REPAIR MANUAL**



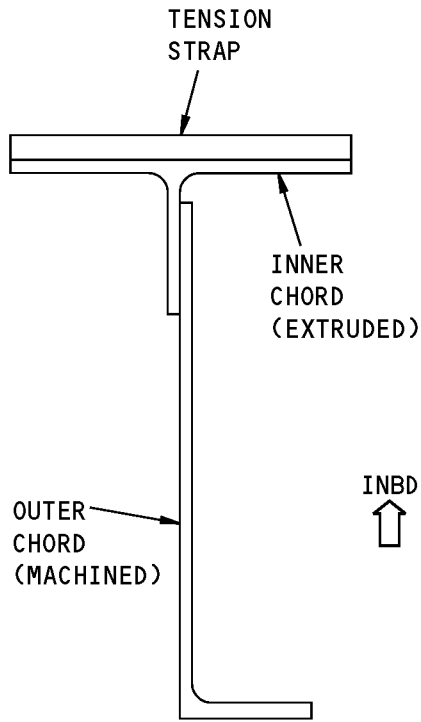
**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 5 of 11)**

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STRUCTURAL REPAIR MANUAL**

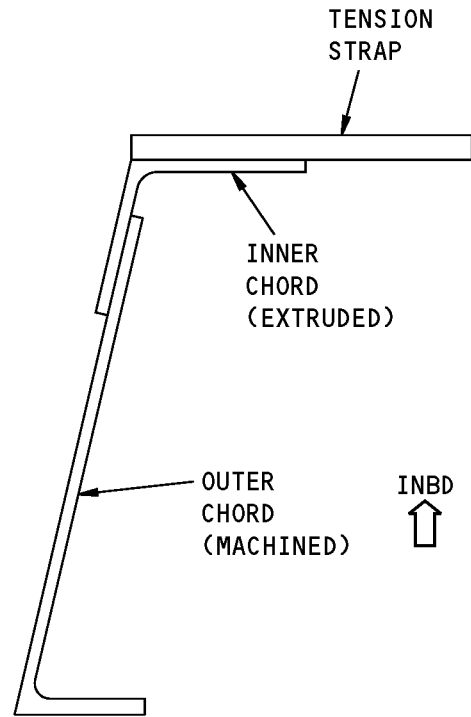


**BUILT-UP INTERCOSTAL (TYPICAL)**

(C)



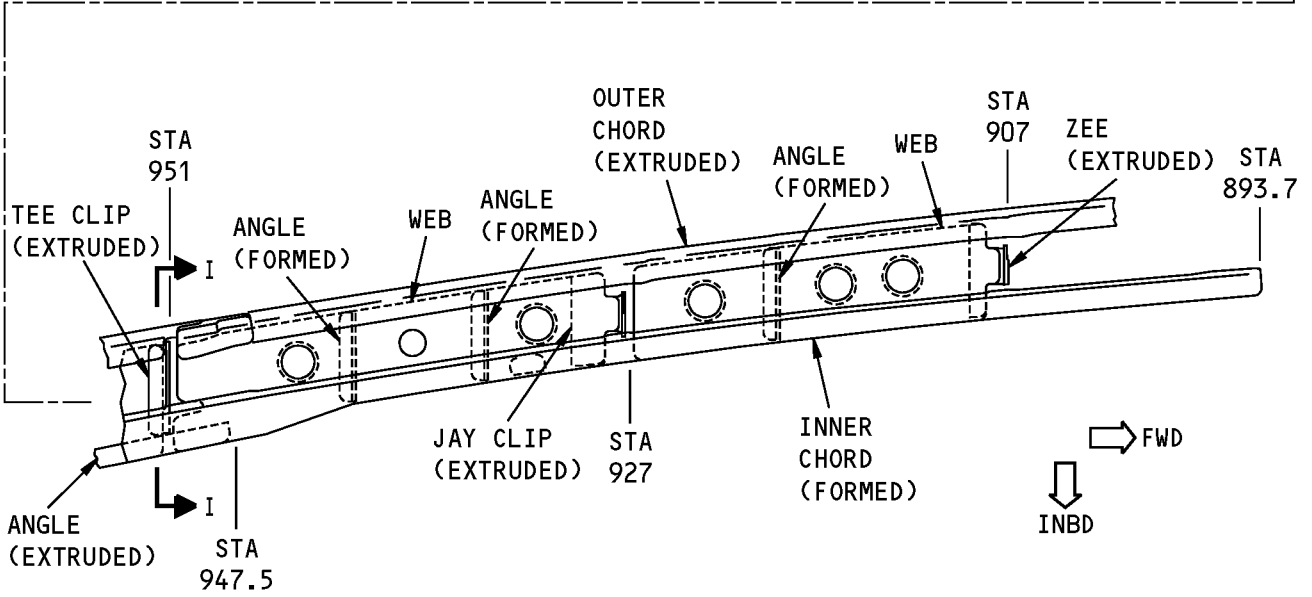
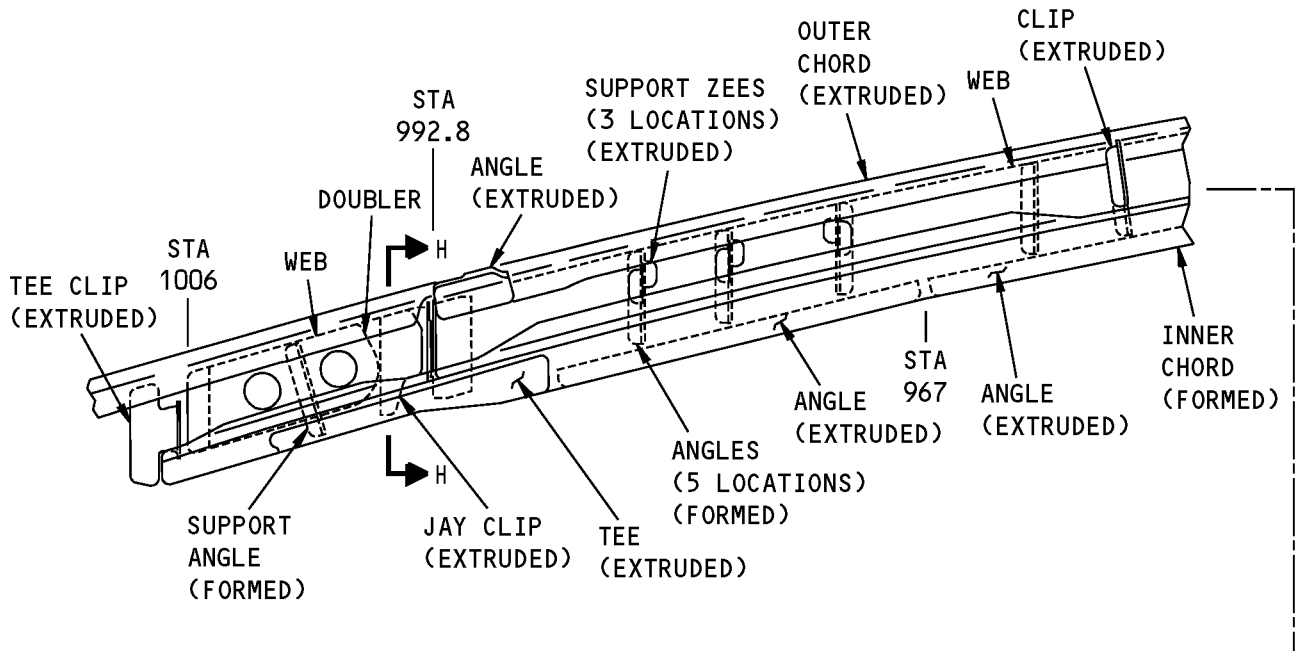
**F-F  
(TYPICAL AT 8 LOCATIONS)**



**G-G  
(TYPICAL AT 2 LOCATIONS)**

**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 6 of 11)**

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STRUCTURAL REPAIR MANUAL**

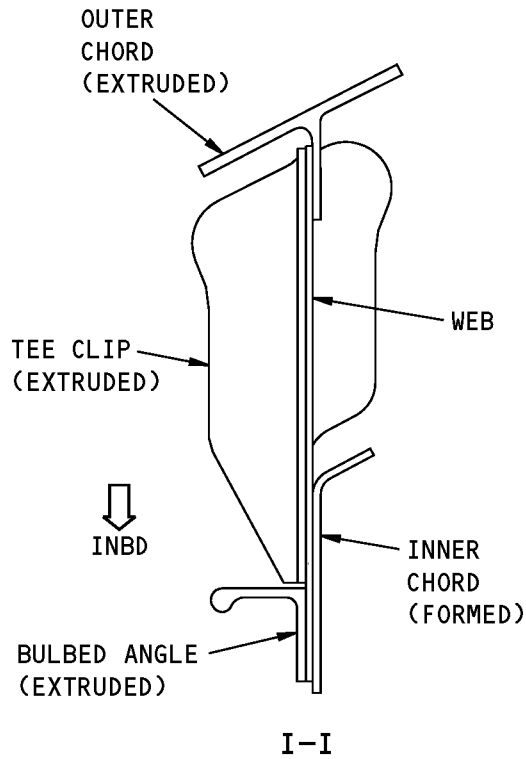
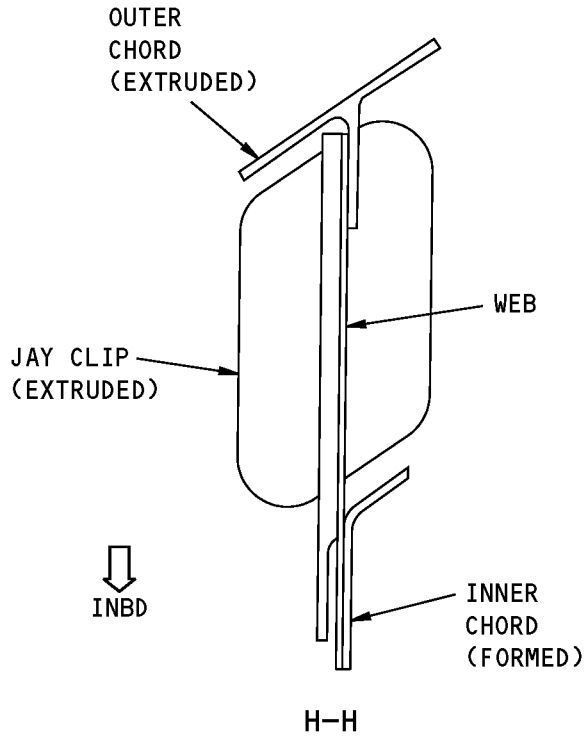


**LOWER MAIN SILL**

(D)

**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 7 of 11)**

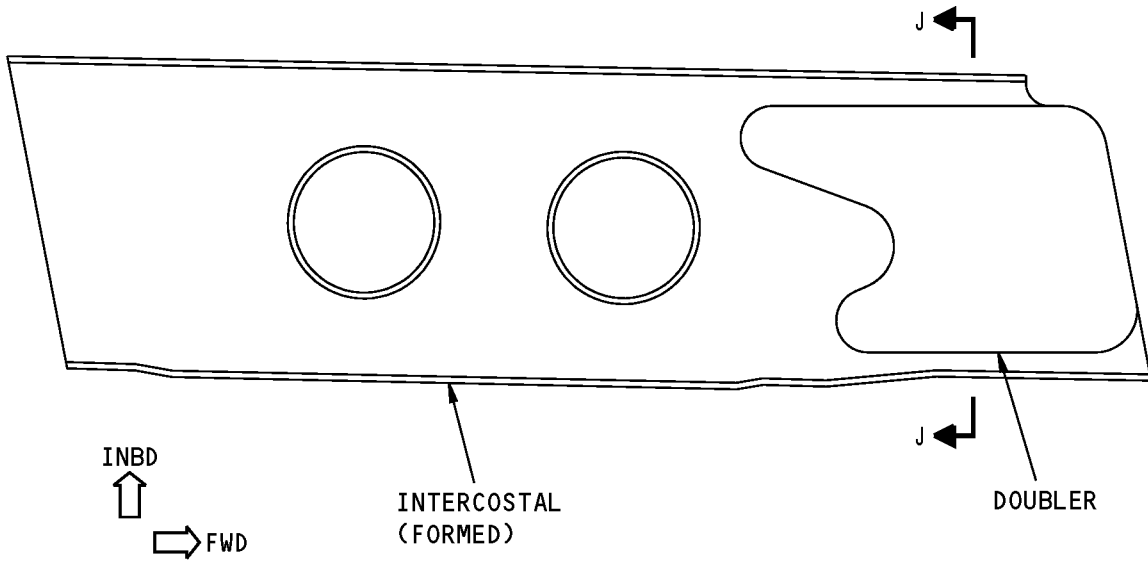
**STRUCTURAL REPAIR MANUAL**



**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 8 of 11)**

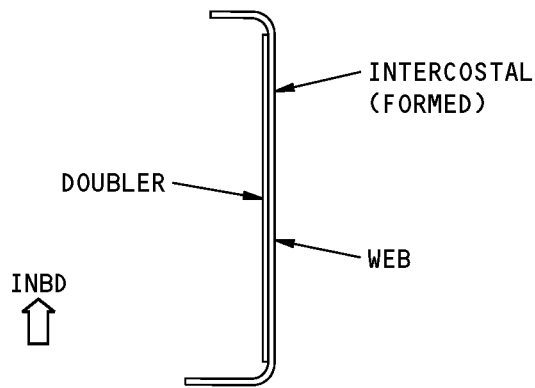


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STRUCTURAL REPAIR MANUAL**



**FORMED INTERCOSTAL (TYPICAL)**

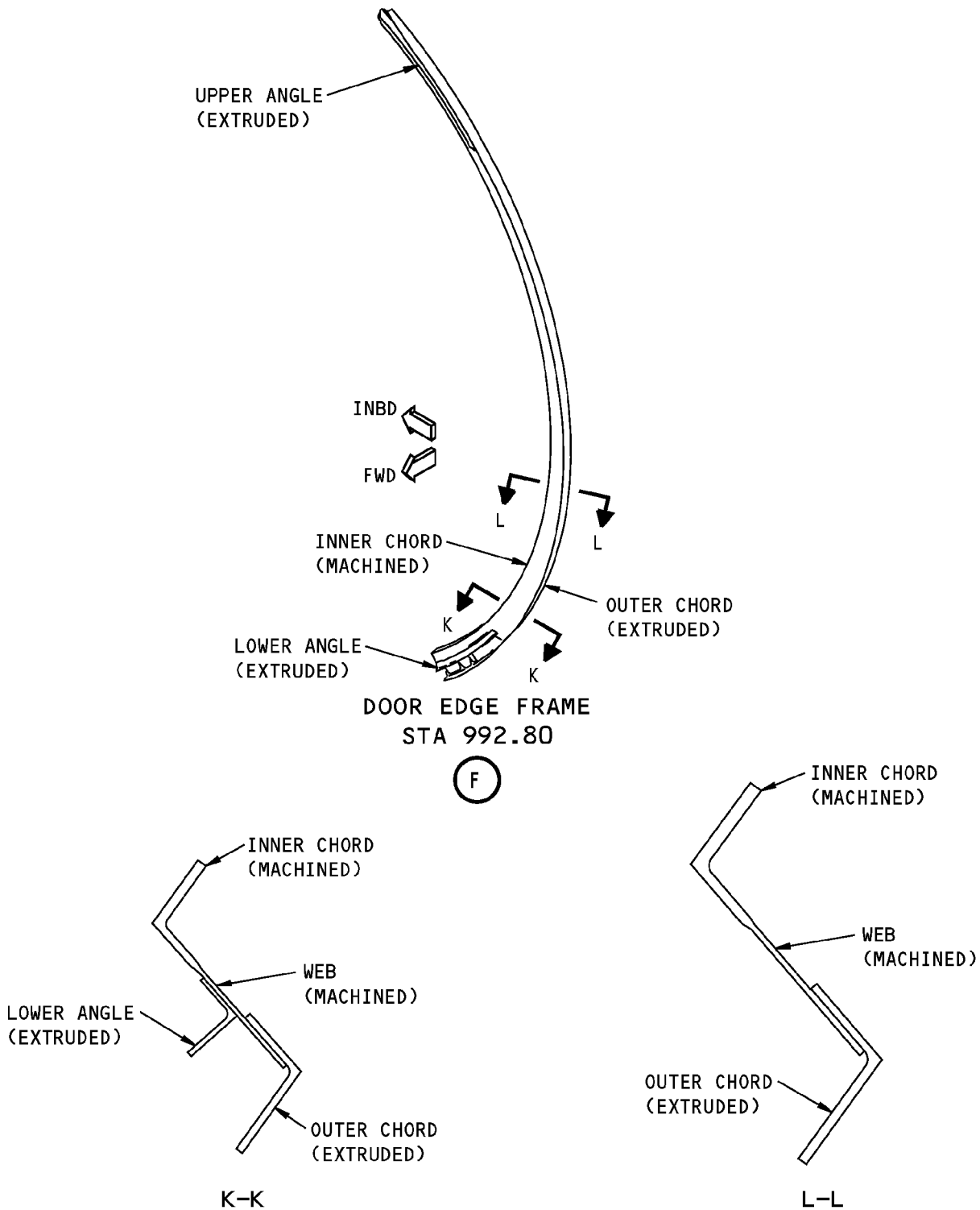
**E**



**J-J**

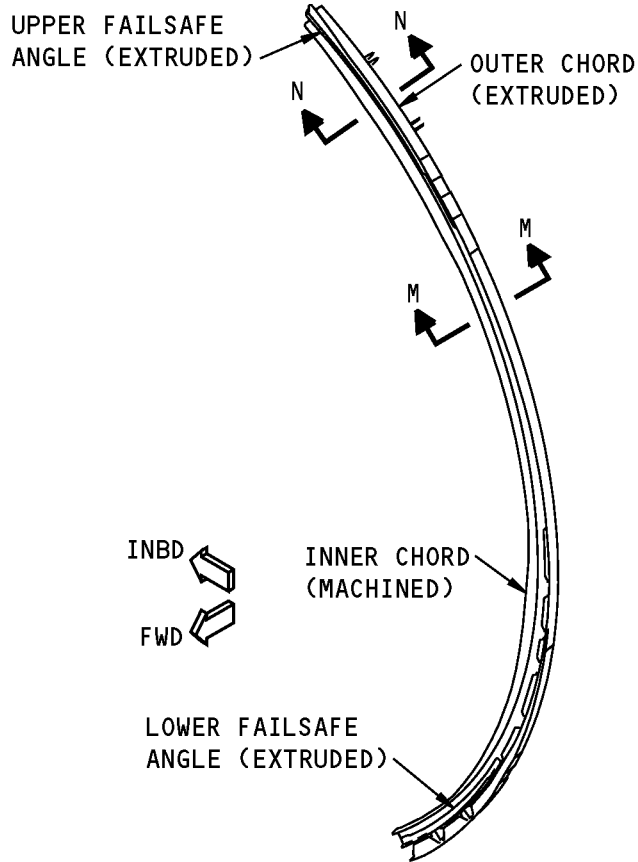
**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 9 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



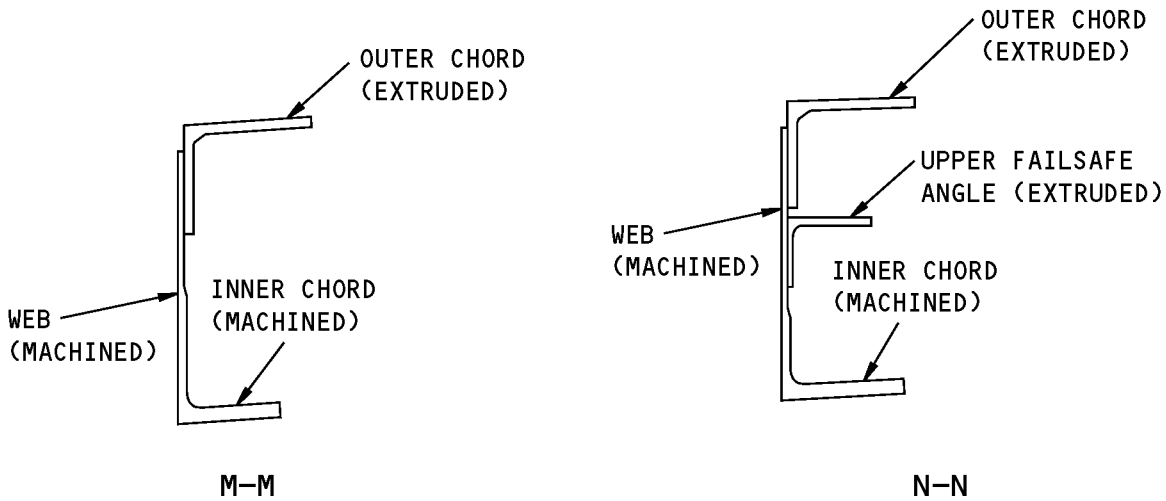
**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 10 of 11)**

**STRUCTURAL REPAIR MANUAL**



DOOR EDGE FRAME  
STA 951.07

G



**Section 47 - Door Surround Structure Allowable Damage  
Figure 102 (Sheet 11 of 11)**



**737-800  
STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the damaged material as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- B. After you remove the damage, do as follows:
- (1) Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I, primer to the bare surfaces of the reworked area. Refer to SOPM 20-41-02.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
UPPER AUXILIARY SILL AND LOWER AUXILIARY SILL	WEB	4.A
	DOUBLER	4.A
	CHANNEL	4.C
	STRAP	4.E
	JAY CLIP	4.E
	TEE CLIP	4.E
UPPER MAIN SILL	WEB	4.A.
	OUTER CHORD	4.E
	STRAP	4.E
	ANGLE	4.E
	TEE CLIP	4.E
BUILT-UP INTERCOSTAL	INNER CHORD	4.D
	TENSION STRAP	4.E
	OUTER CHORD	4.E
FORMED INTERCOSTAL	DOUBLER	4.A
	WEB	4.A
	INTERCOSTAL	4.C
DOOR EDGE FRAMES	WEB	4.A.
	INNER CHORD	4.E
	OUTER CHORD	4.E



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STRUCTURAL REPAIR MANUAL**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS		
TYPE OF STRUCTURE	PART NAME	PARAGRAPH
LOWER MAIN SILL	DOUBLER	4.A
	WEB	4.A
	INNER CHORD	4.D
	OUTER CHORD	4.E
	ZEE	4.E
	ANGLE	4.E
	SUPPORT ANGLE	4.E
	SUPPORT ZEE	4.E
	TEE CLIP	4.E
	JAY CLIP	4.E
	BULBED ANGLE	4.F
OTHER STRUCTURES	CLOSEOUT PLATE	4.A
	SPLICE PLATE	4.A
	STUB FRAMES	4.B

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-06, GENERAL	Shot Peening
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

A. Webs, Closeout Plate, Doublers and Splice Plates

(1) Cracks:

(a) Remove the damage as shown in Figure 103, Details A, B, and C.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) You are permitted to do one of the procedures that follows:

1) Remove the damage as shown in Figure 103, Details A, B, C, D, and E.

2) Drill out the damage to the same limits as given for Holes and Punctures, as shown in Figure 103, Detail H.

**NOTE:** Do not drill out the damage if it has been blended out before.

(3) Dents are permitted as shown in Figure 103, Detail F.

(4) Holes and Punctures are permitted if they are:



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## STRUCTURAL REPAIR MANUAL

- (a) A maximum of 0.25 inch in diameter
  - (b) A minimum of 4D (D = the diameter of the damage) away from a hole, the edge of the part, or other damage
  - (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- B. Stub Frames
- (1) Cracks:
    - (a) Remove the damage as permitted in Figure 103, Details A, B, and C.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A, B, C, D, E, and G.
  - (3) Dents are permitted as shown in Figure 103, Detail F.
  - (4) Holes and Punctures are permitted in:
    - (a) The free flange as shown in Figure 103, Detail H.
    - (b) The webs if they are:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) away from the hole, the edge of the part, or other damage
      - 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- C. Formed Intercostals and Channels
- (1) Cracks:
    - (a) Remove the damage as shown in Figure 103, Details A, B, and G.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A, B, D, E, and G.
  - (3) Dents are permitted in the web only as shown in Figure 103, Detail F.
  - (4) Holes and Punctures:
    - (a) The damage is permitted in the free flange as shown in Figure 103, Detail H, if it is:
      - 1) A maximum of 0.25 inch in diameter
      - 2) A minimum of 4D (D = the diameter of the damage) from a hole, the edge of the part, or other damage
      - 3) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- D. Inner Chord of the Built-up Intercostal, and Lower Main Sill.
- (1) Cracks:
    - (a) The damage is permitted as shown in Figure 103, Details A, B, I, J, and K.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, J, and K.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- E. Outer Chords, Inner Chords, Angles, Zee, Tee Clips, Jay Clips, Straps, Support Angles, Support Zees, and Tension Straps
- (1) Cracks:

ALLOWABLE DAMAGE 1

**53-70-15**

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D634A210

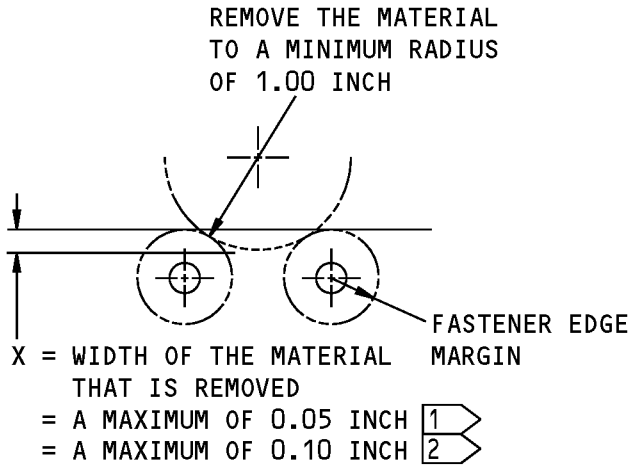


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## STRUCTURAL REPAIR MANUAL

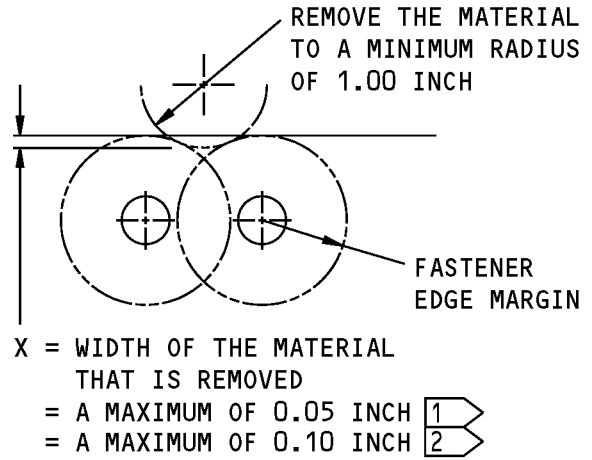
- (a) The damage is permitted as shown in Figure 103, Details A, B, I, and J.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, and J.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- F. Bulbed Angle
- (1) Cracks:
    - (a) Remove the damage as shown in Figure 103, Details A and B.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Figure 103, Details A, B, D, E, I, K, and L.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.

STRUCTURAL REPAIR MANUAL



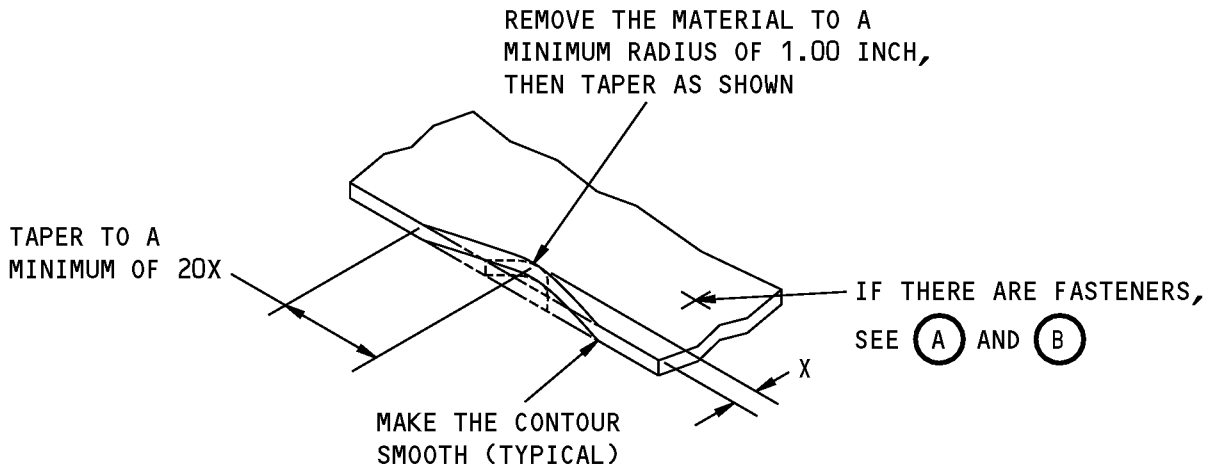
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A WEB

(C)

NOTES

1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.

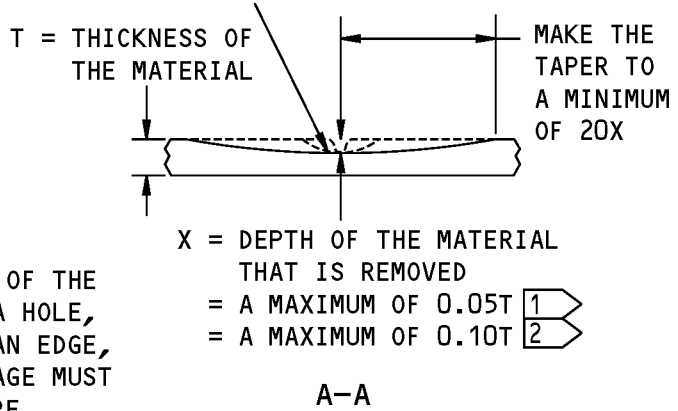
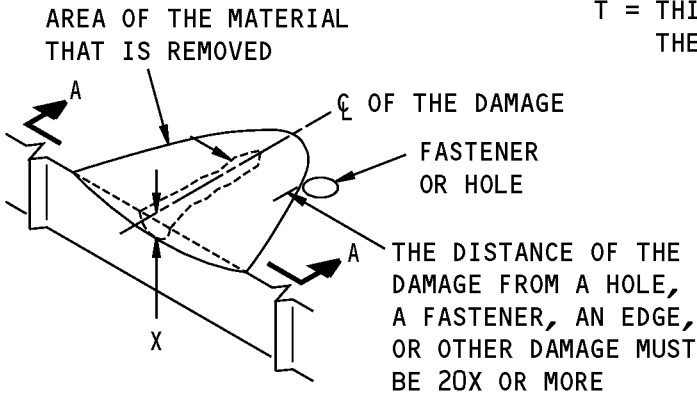
2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

Allowable Damage Limits  
Figure 103 (Sheet 1 of 7)



**STRUCTURAL REPAIR MANUAL**

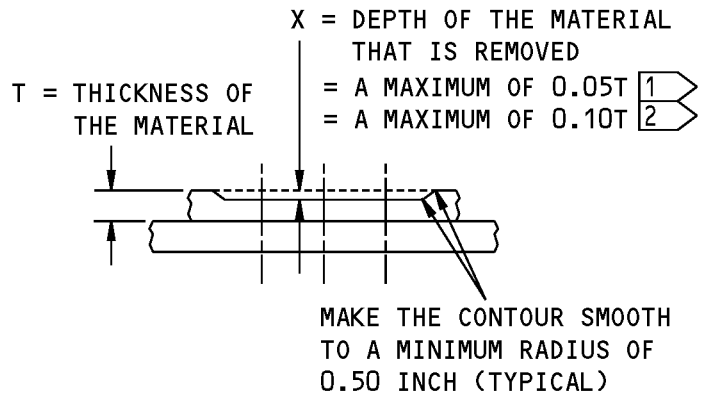
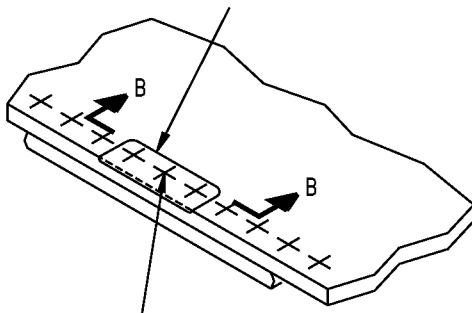
REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



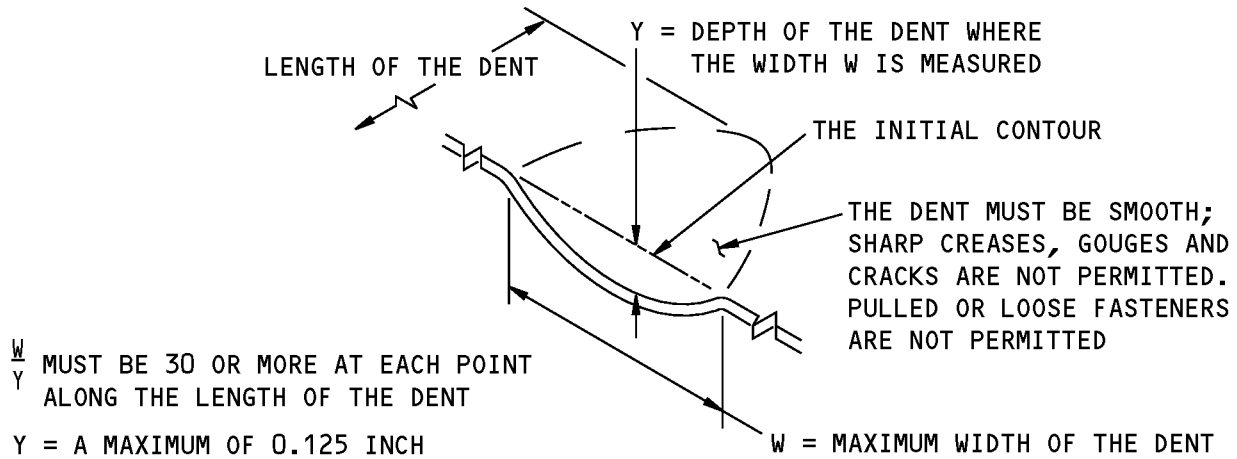
REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(E)

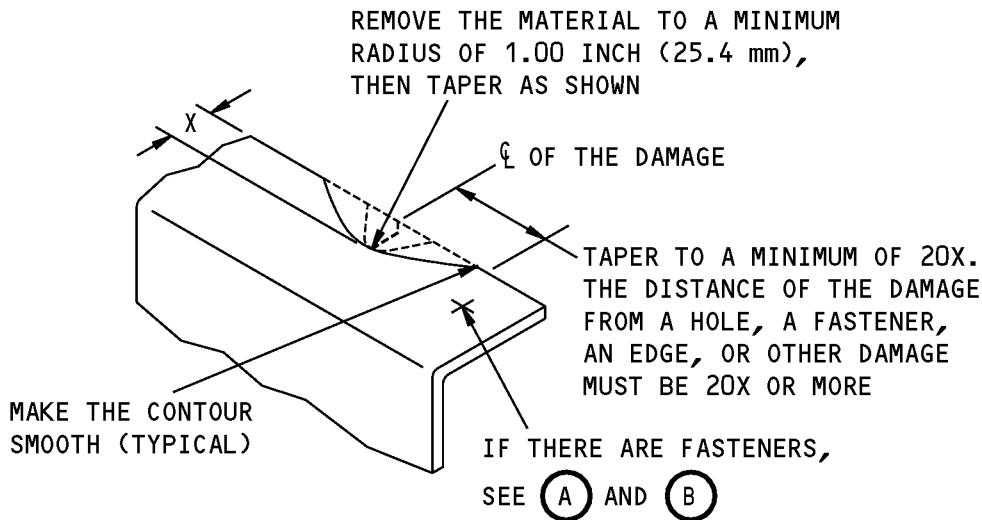
**Allowable Damage Limits  
Figure 103 (Sheet 2 of 7)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(F)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH   
 = A MAXIMUM OF 0.10 INCH 

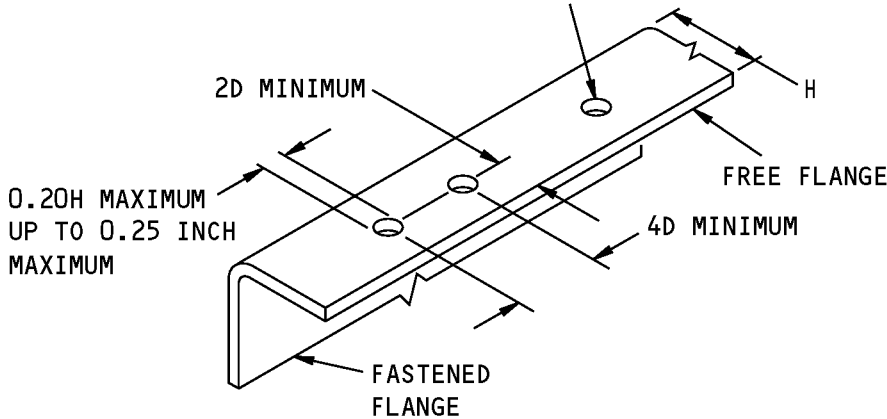
**REMOVAL OF DAMAGED MATERIAL ON AN EDGE OF A FORMED PART**

(G)

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 7)**

**STRUCTURAL REPAIR MANUAL**

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS 0.25 INCH. FILL THE HOLES WITH 2117-T3 OR 2117-T4 ALUMINUM HEAD RIVETS INSTALLED WITHOUT SEALANT

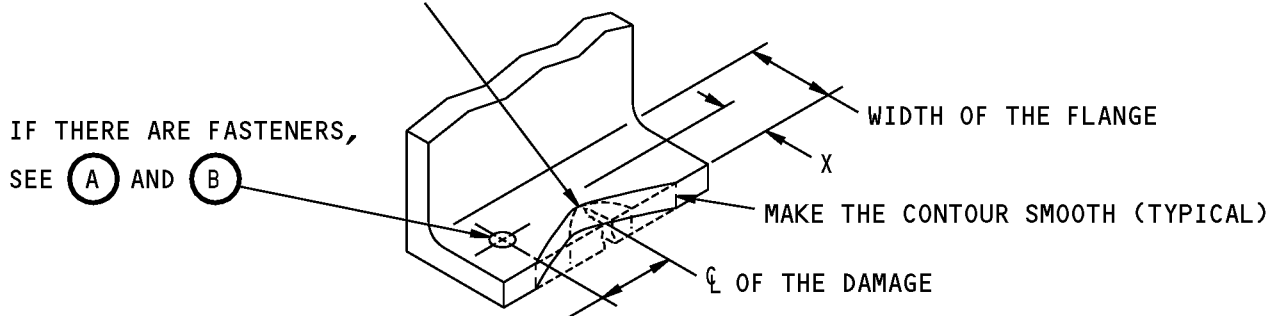


**NOTE:** HOLE DAMAGE IS NOT PERMITTED IN THE FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

(H)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

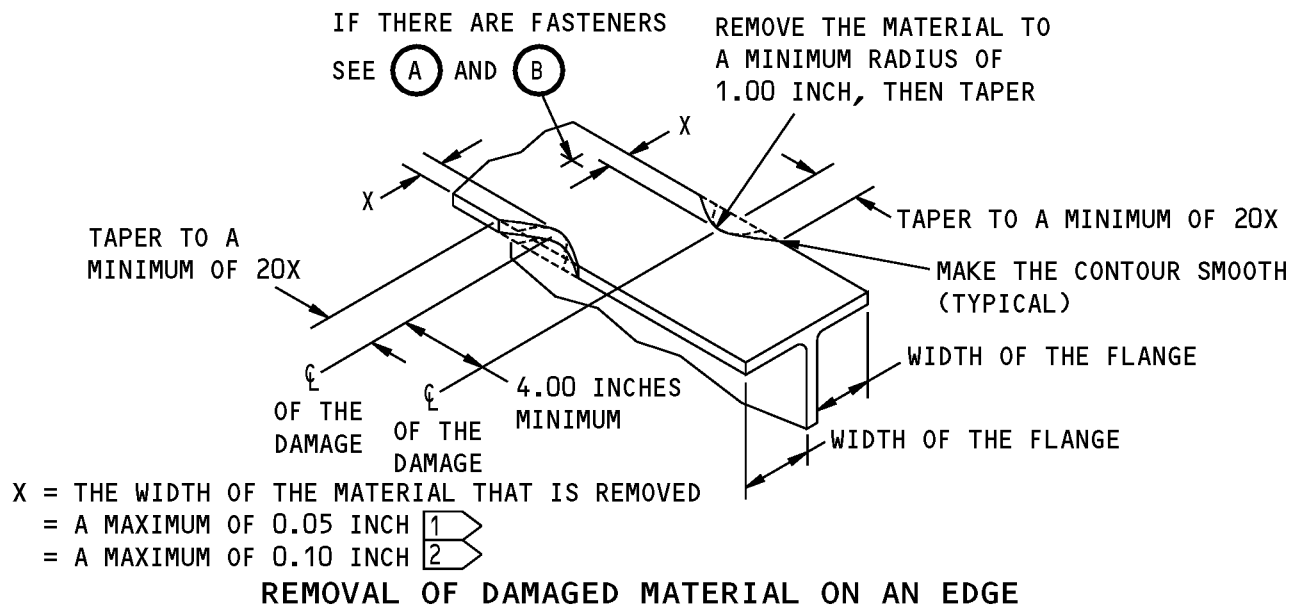
- X = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 0.05 INCH
- = A MAXIMUM OF 0.10 INCH

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(I)

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 7)**

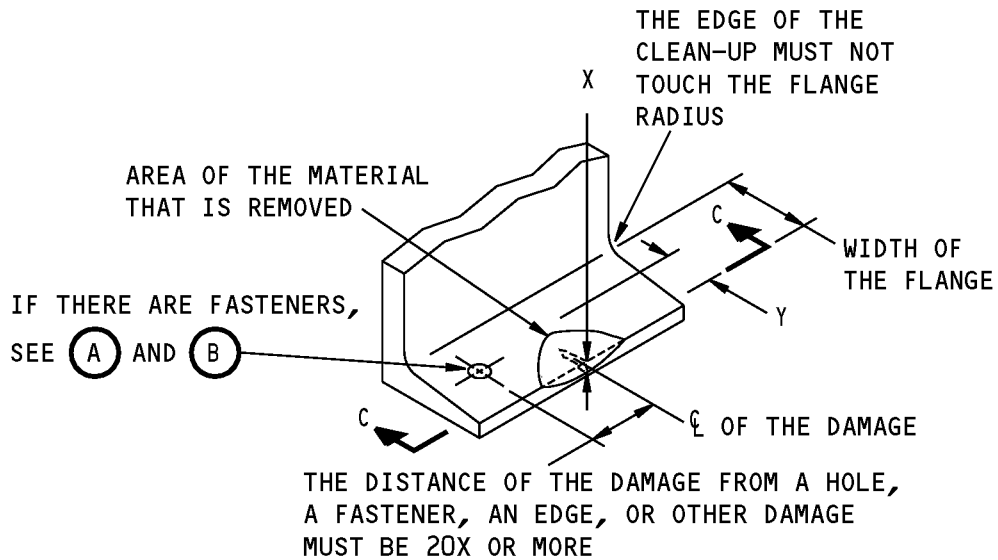
**737-800  
STRUCTURAL REPAIR MANUAL**



(J)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 7)**

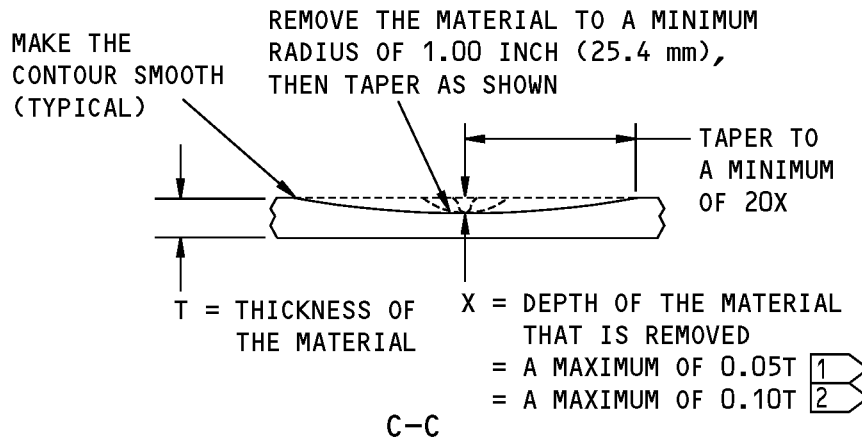
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED

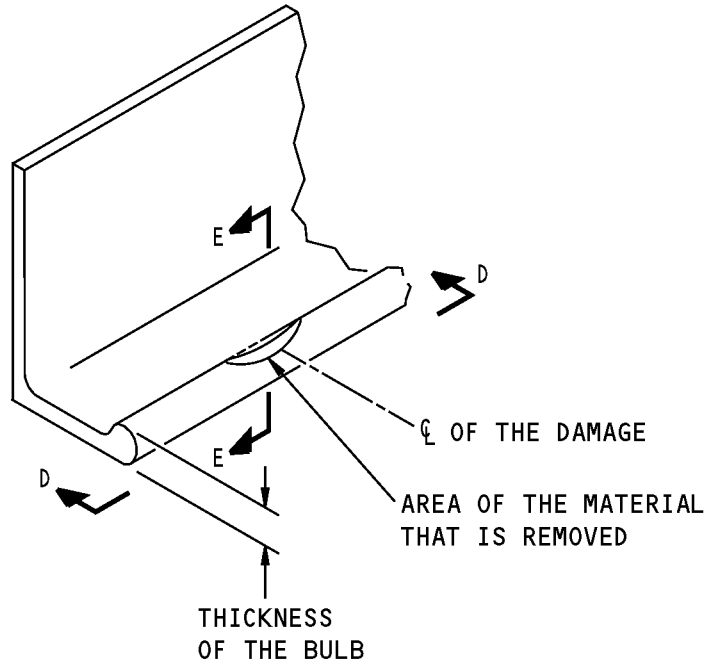
**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE OF A MACHINED OR EXTRUDED PART**

(K)



**Allowable Damage Limits  
Figure 103 (Sheet 6 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**

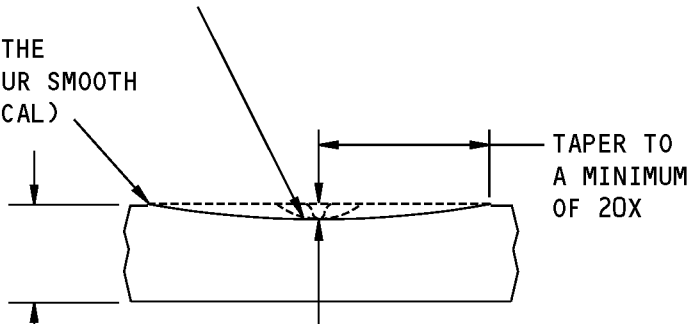




**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED EXTRUSION**

(L)

REMOVE THE MATERIAL TO A MINIMUM  
RADIUS OF 1.00 INCH (25.4 mm),  
THEN TAPER AS SHOWN

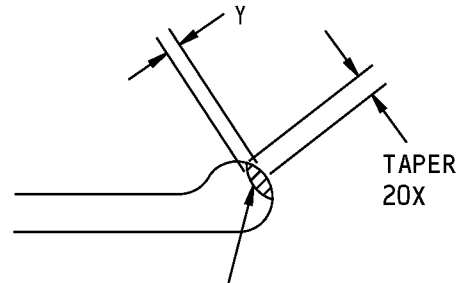
MAKE THE  
CONTOUR SMOOTH  
(TYPICAL)



X = DEPTH OF THE MATERIAL  
THAT IS REMOVED  
= A MAXIMUM OF 0.05T   
= A MAXIMUM OF 0.10T 

T = THICKNESS  
OF THE BULB

D-D



MAKE THE CONTOUR  
SMOOTH (TYPICAL)

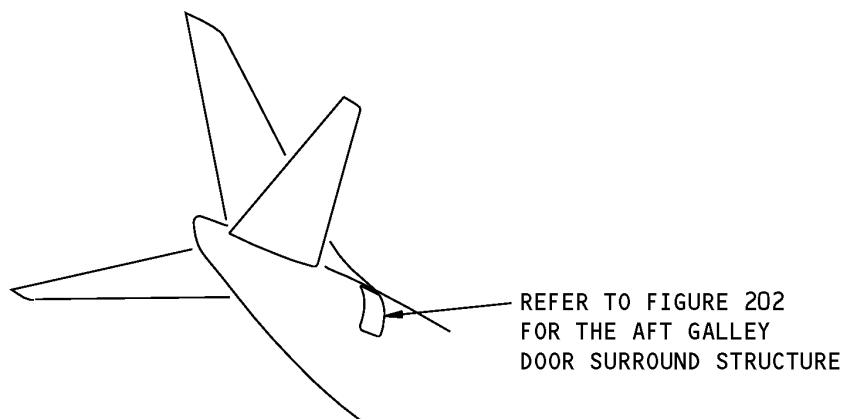
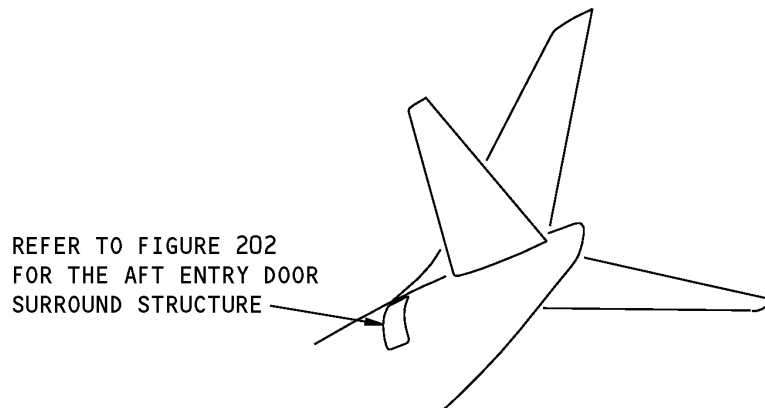
Y = WIDTH OF THE MATERIAL REMOVED

E-E

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 7)**

**STRUCTURAL REPAIR MANUAL****REPAIR 1 - SECTION 47 DOOR SURROUND STRUCTURE****1. Applicability**

- A. Repair 1 is applicable to damage to the Section 47 Door Surround Structure in Section 47 - Door Surround Structure Location, Figure 201/REPAIR 1.



**Section 47 - Door Surround Structure Location  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can not be used in some areas, as given in the typical repair figures. Refer to 51-70-11, 51-70-12, and 51-70-13.
- C. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.



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**STRUCTURAL REPAIR MANUAL**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-70-15	FUSELAGE DOOR SURROUND STRUCTURE - SECTION 47

**4. Repair Instructions**

- A. Refer to Section 47 - Door Surround Structure Location, Figure 201/REPAIR 1 and Section 47 - Door Surround Structure Repair, Figure 202/REPAIR 1, and Table 201/REPAIR 1 to find the applicable repair for the part you want to repair.

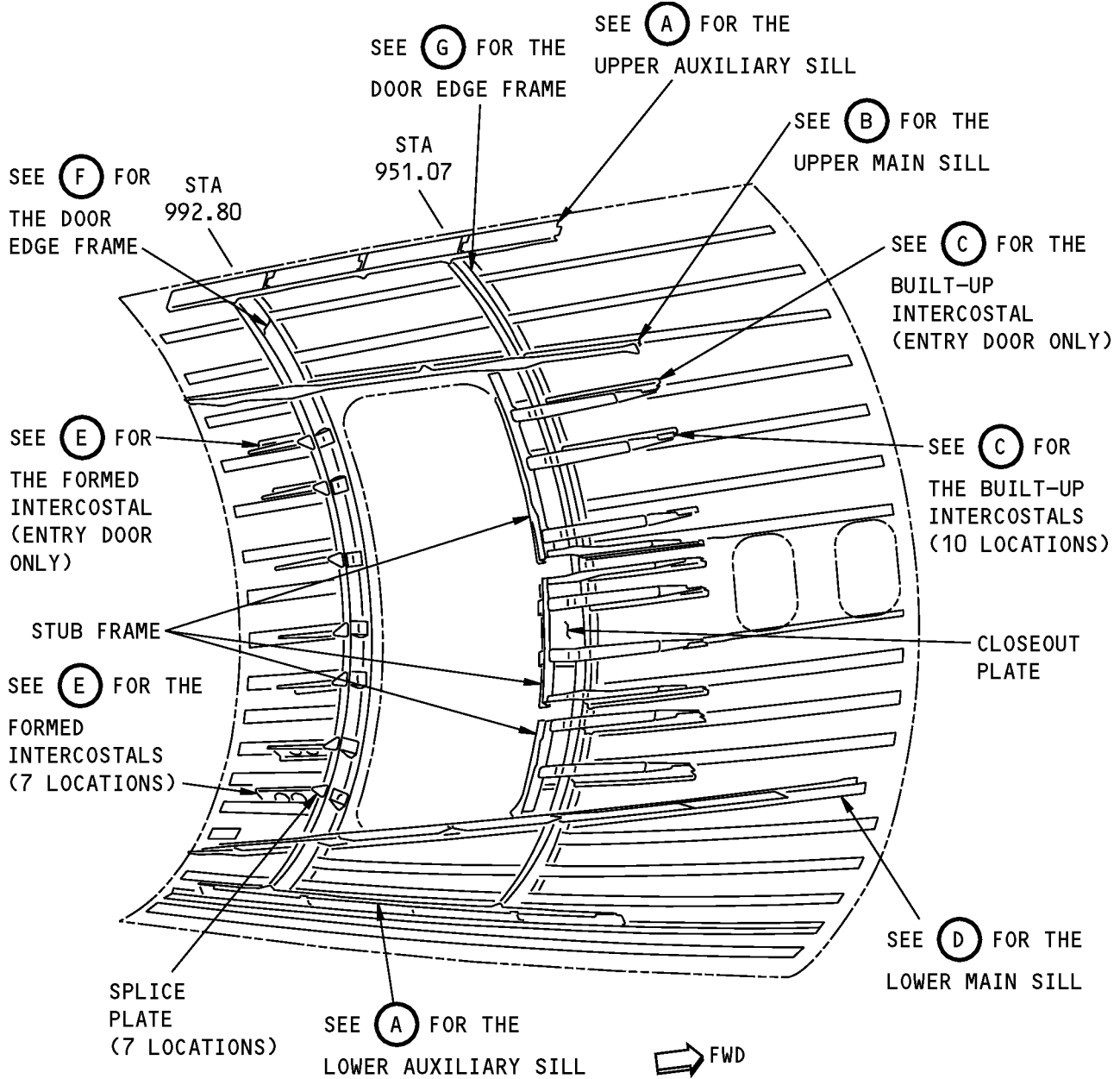
**NOTE:** If necessary, refer to 53-70-15, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE DOOR SURROUND STRUCTURES	
TYPE OF COMPONENT	REPAIR
Formed parts	Refer to SRM 51-70-11
Extruded parts	Refer to SRM 51-70-12
Webs (Not Machined)	Refer to SRM 51-70-13
Straps, Doublers, Plates	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-70-15, Allowable Damage 1, replace the damaged part
Machined Inner Chords Machined Webs	There are no repairs for these parts in the Structural Repair Manual at this time.



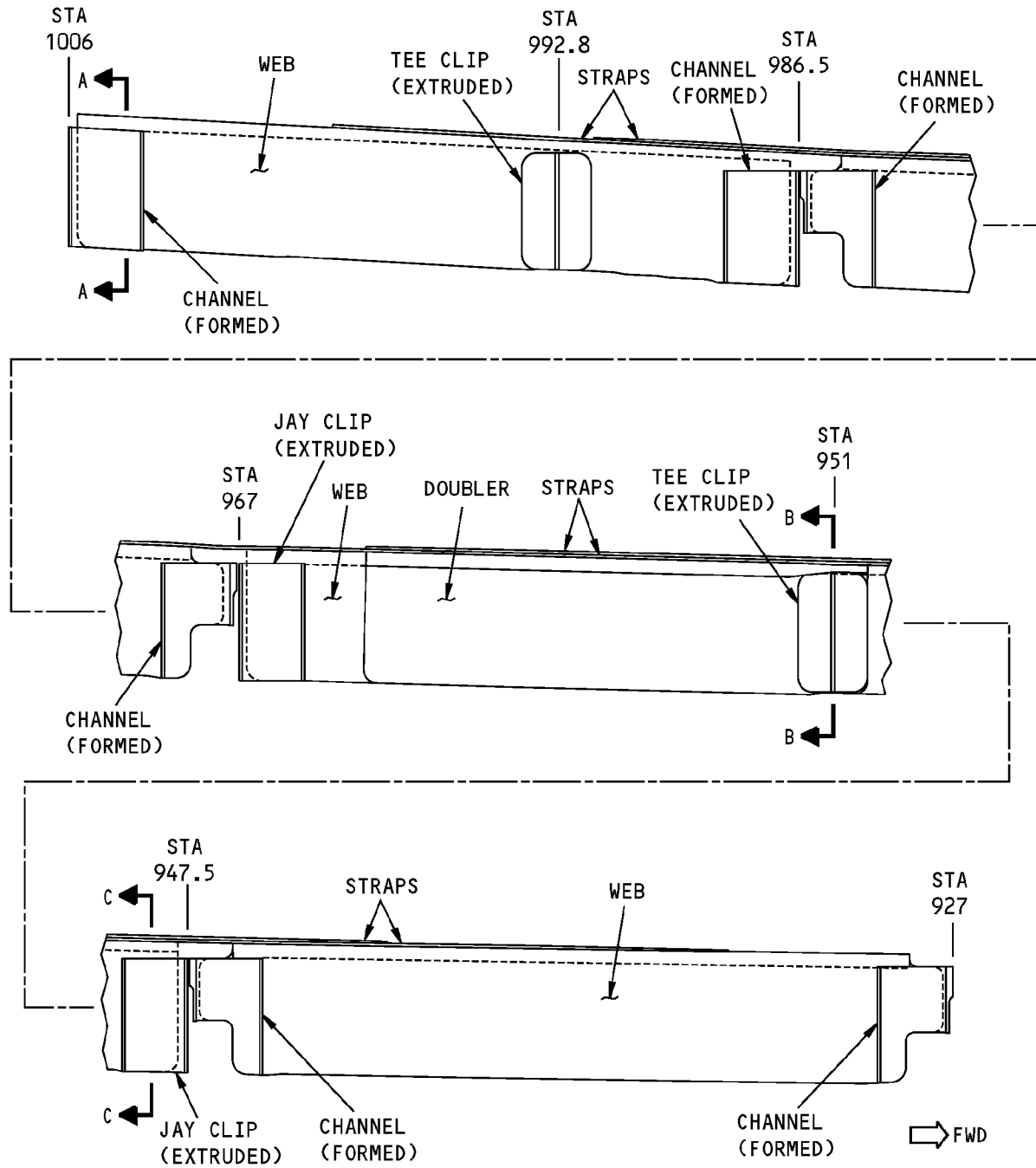
**STRUCTURAL REPAIR MANUAL**



AFT ENTRY DOOR SURROUND STRUCTURE IS SHOWN,  
 AFT GALLEY DOOR SURROUND STRUCTURE IS OPPOSITE EXCEPT AS NOTED

**Section 47 - Door Surround Structure Repair  
 Figure 202 (Sheet 1 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

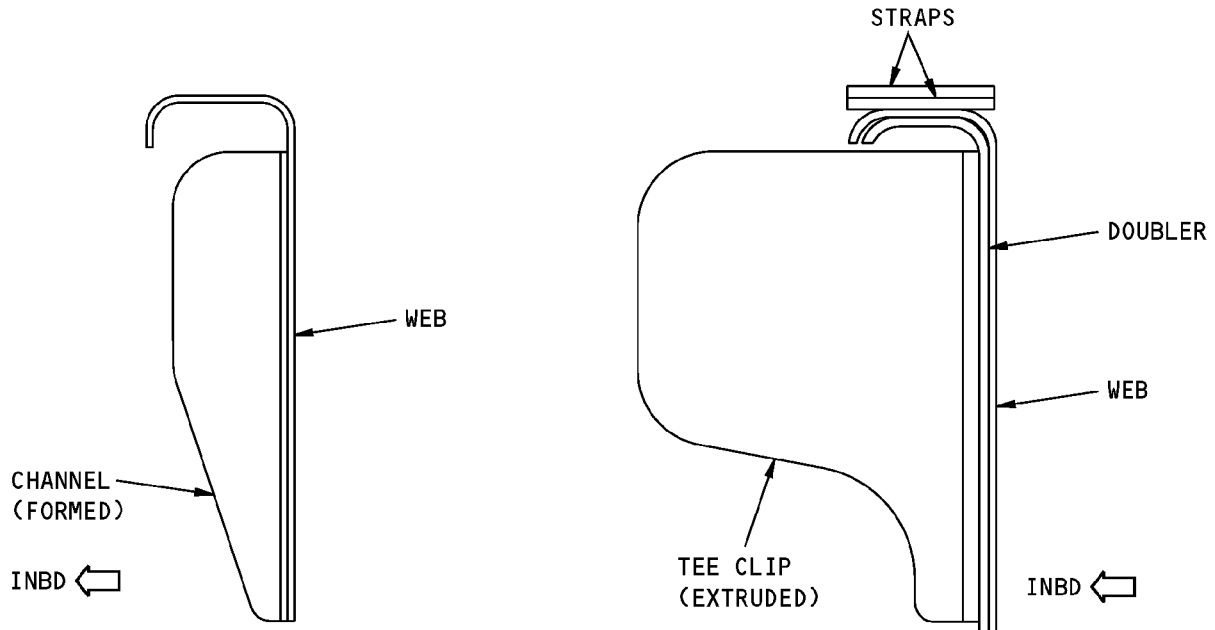


**UPPER AUXILIARY SILL IS SHOWN,  
LOWER AUXILIARY SILL IS SIMILAR**

**A**

**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 2 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

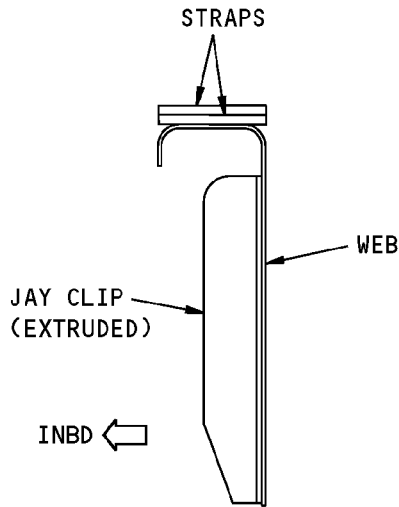


**A-A**

**(TYPICAL FOR THE UPPER  
AND LOWER AUXILIARY SILL)**

**B-B**

**(TYPICAL FOR THE UPPER  
AND LOWER AUXILIARY SILL)**

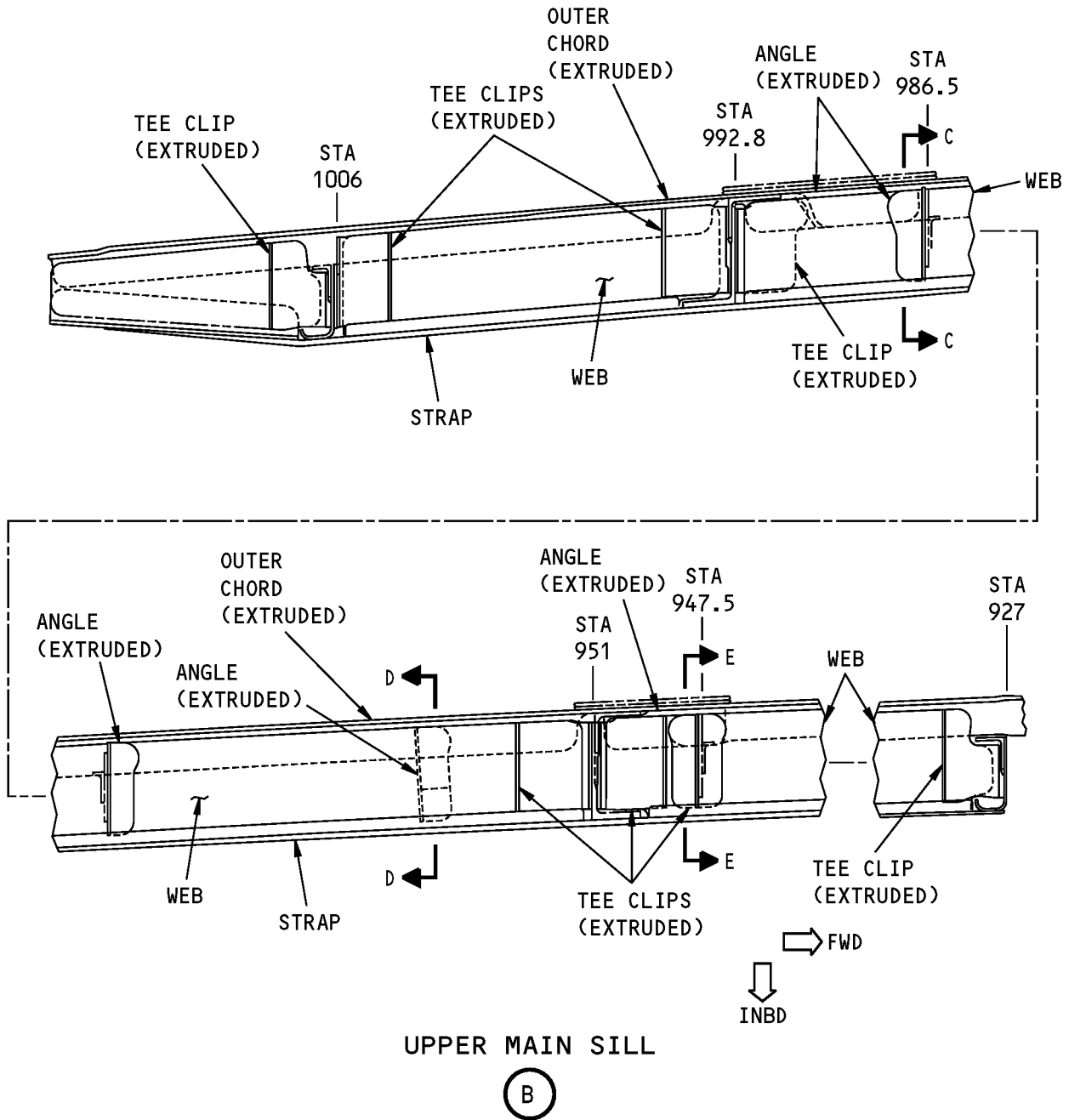


**C-C**

**(TYPICAL FOR THE UPPER  
AND LOWER AUXILIARY SILL)**

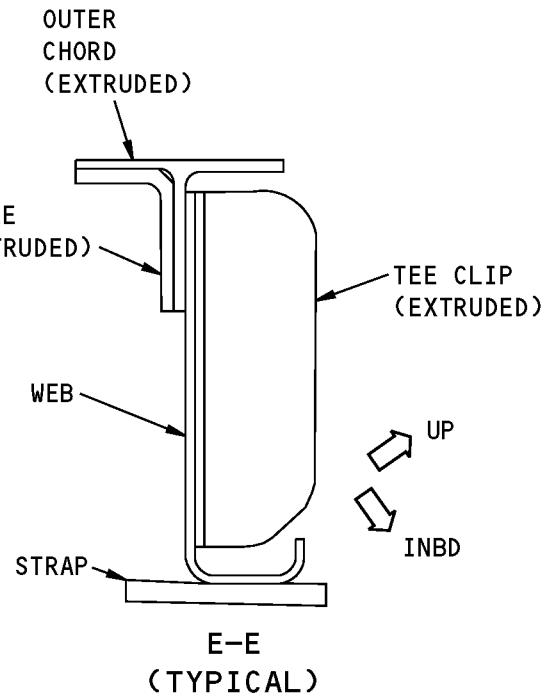
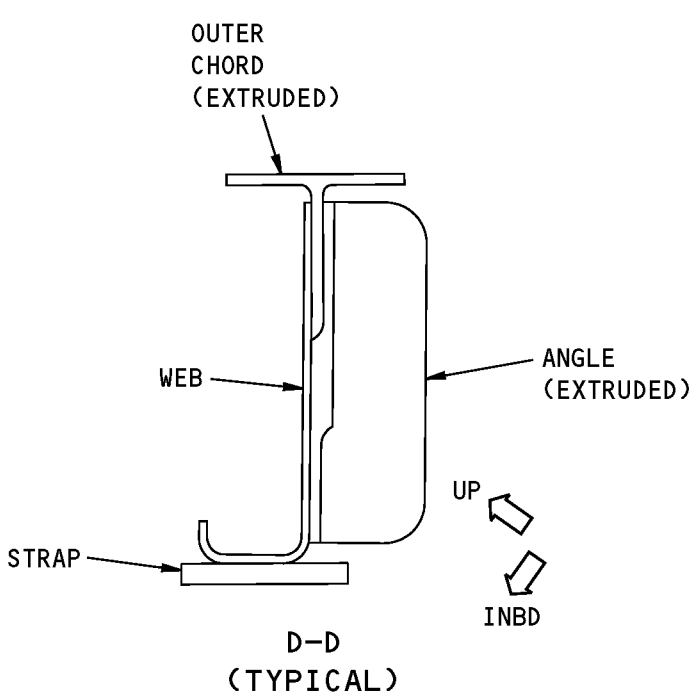
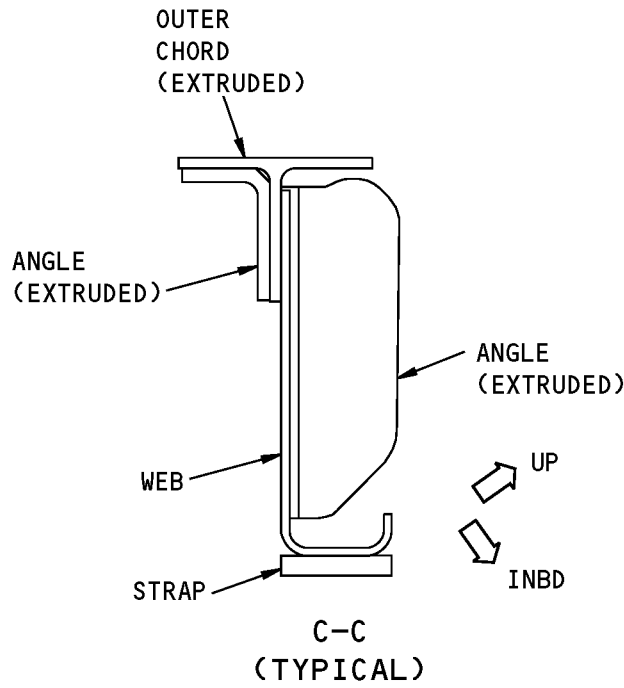
**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 3 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



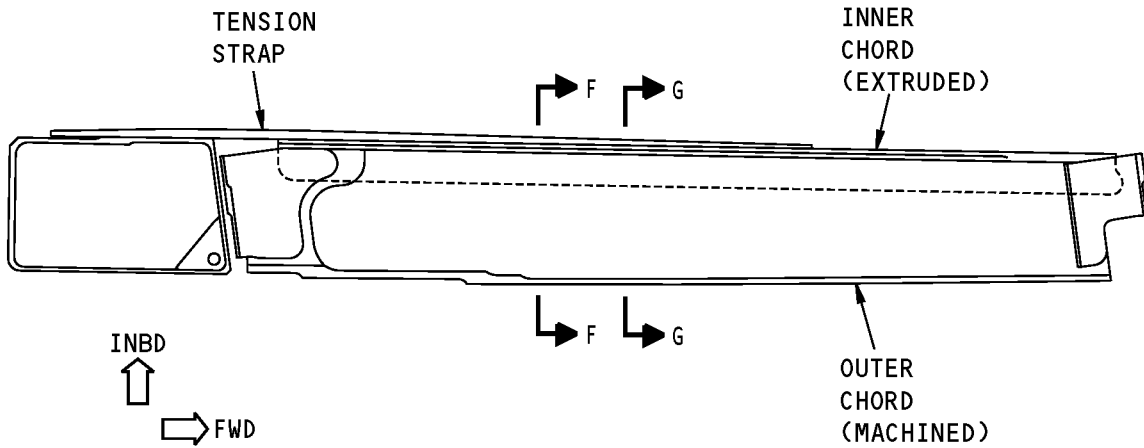
**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 4 of 11)**

**STRUCTURAL REPAIR MANUAL**



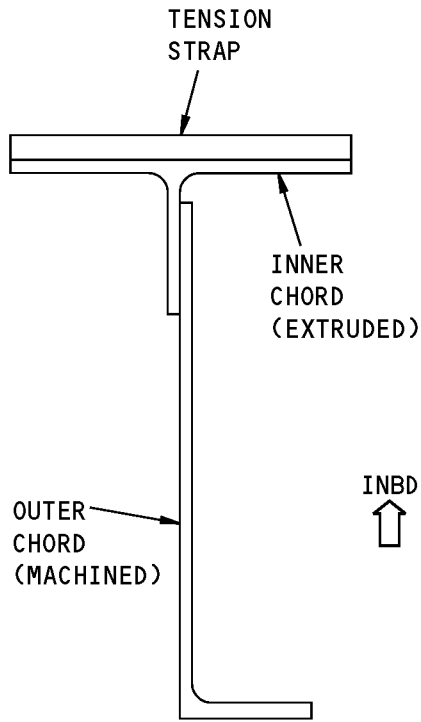
**Section 47 - Door Surround Structure Repair**  
**Figure 202 (Sheet 5 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

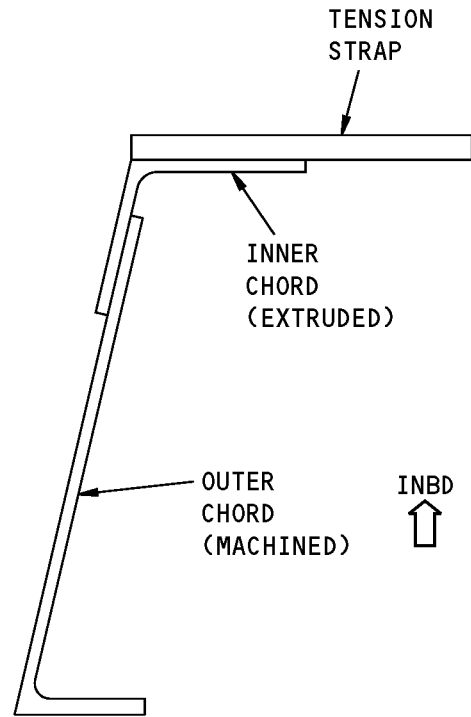


**BUILT-UP INTERCOSTAL (TYPICAL)**

(C)



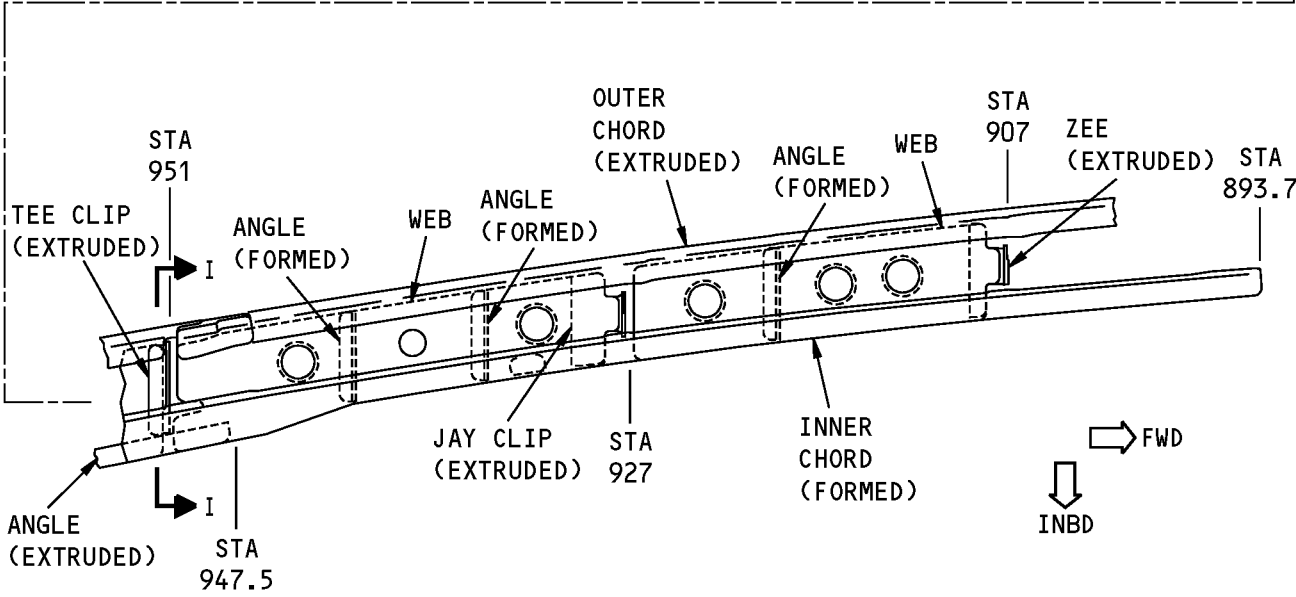
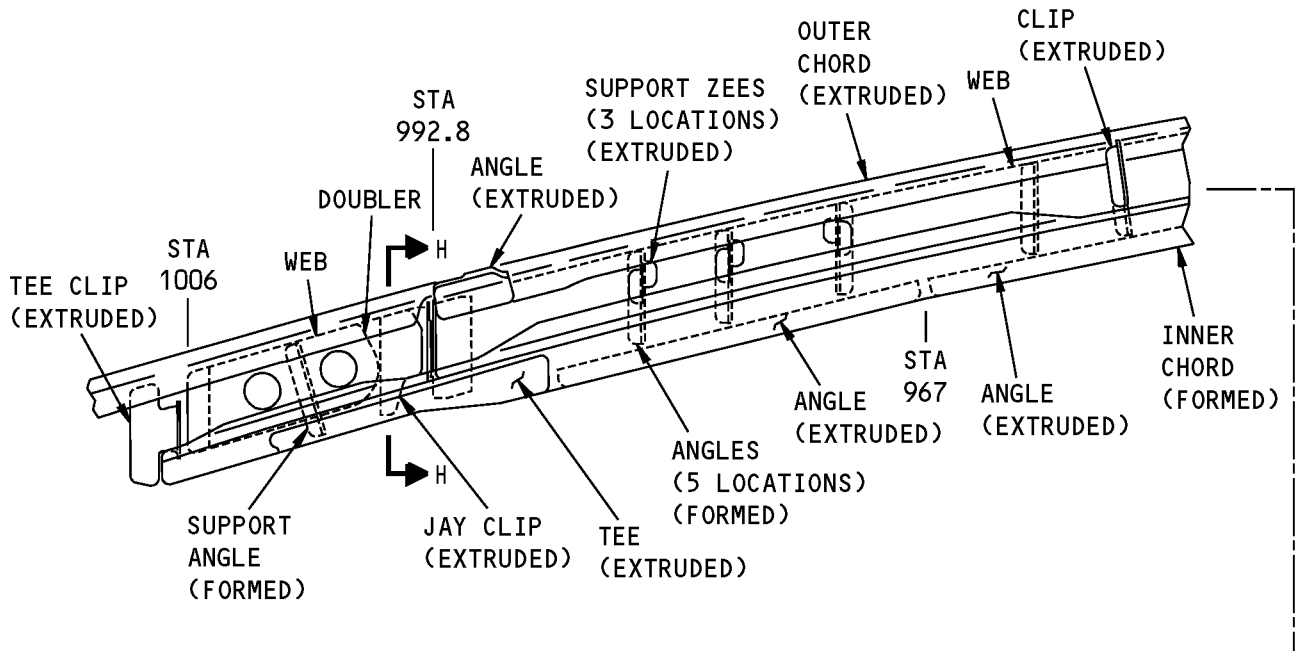
**F-F  
(TYPICAL AT 8 LOCATIONS)**



**G-G  
(TYPICAL AT 2 LOCATIONS)**

**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 6 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**

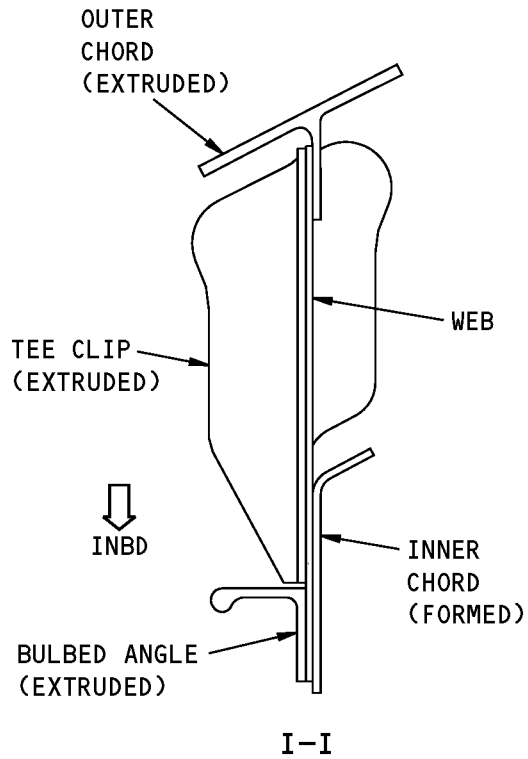
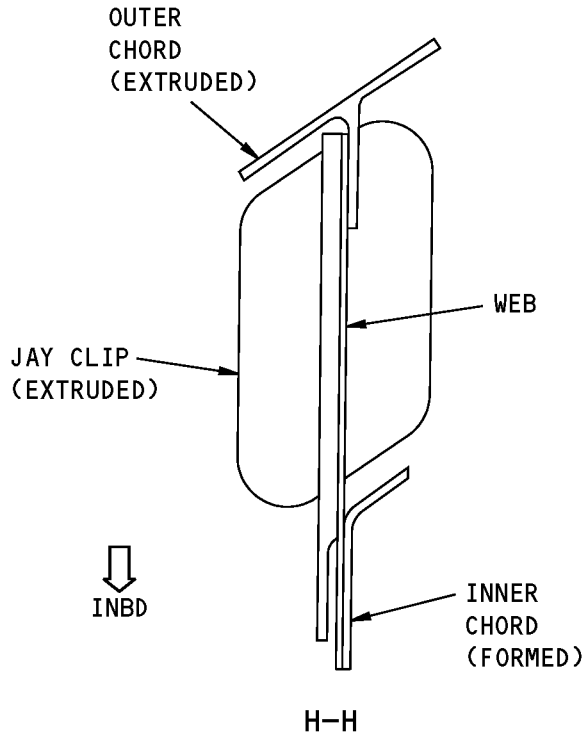


**LOWER MAIN SILL**

(D)

**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 7 of 11)**

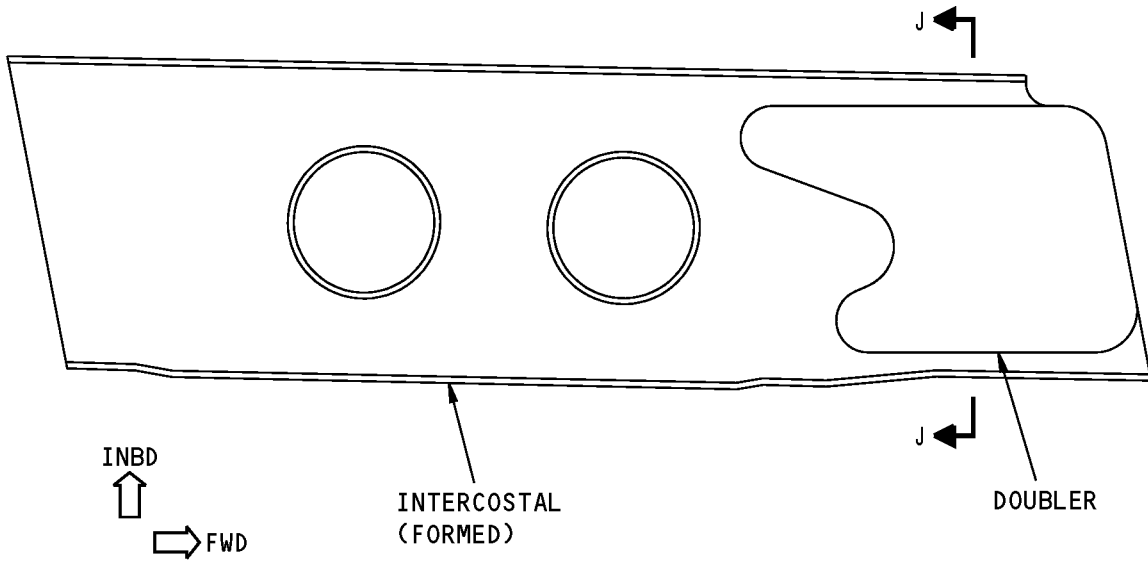
**STRUCTURAL REPAIR MANUAL**



**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 8 of 11)**

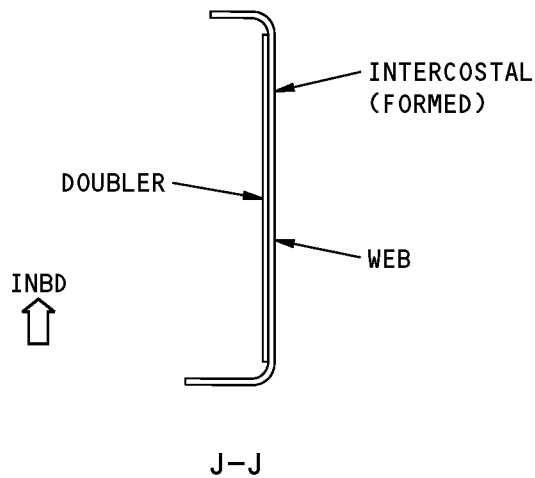


**737-800  
STRUCTURAL REPAIR MANUAL**



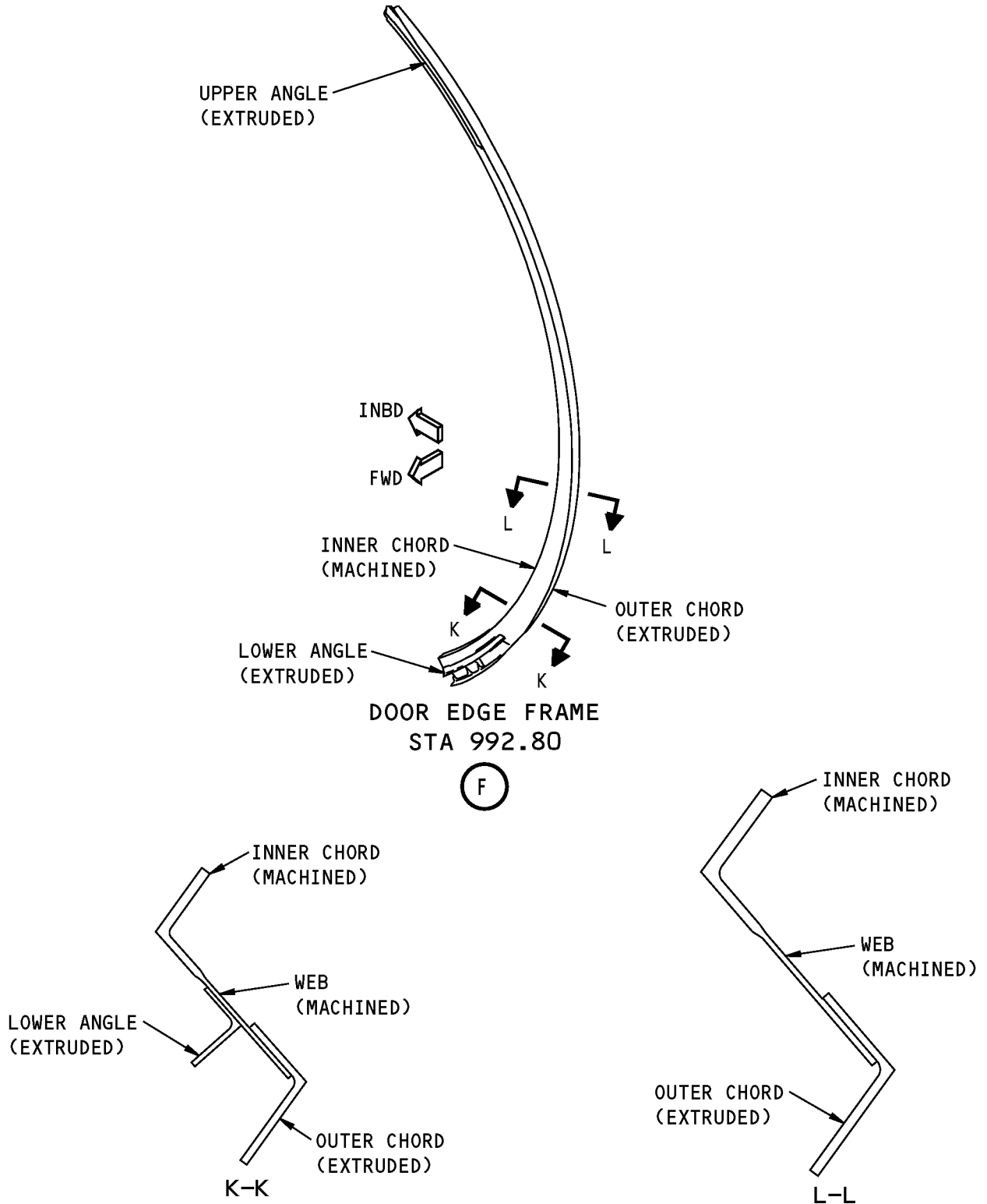
**FORMED INTERCOSTAL (TYPICAL)**

**E**



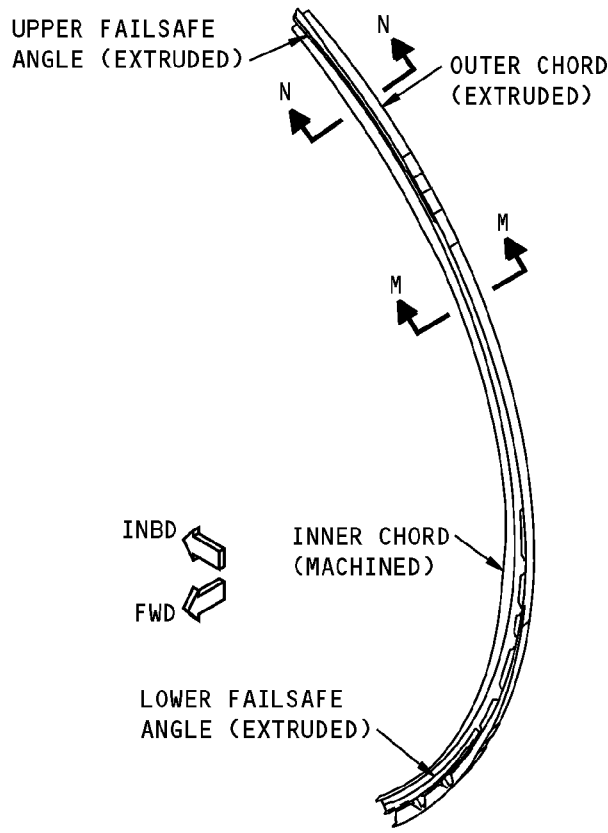
**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 9 of 11)**

**737-800  
STRUCTURAL REPAIR MANUAL**



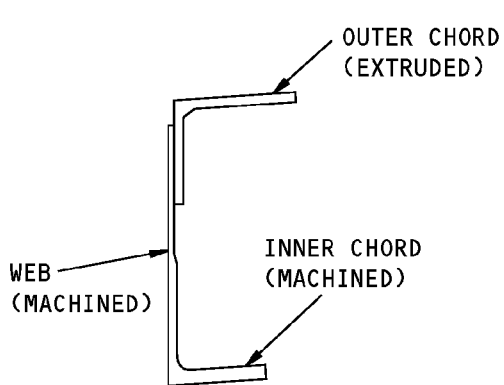
**Section 47 - Door Surround Structure Repair  
Figure 202 (Sheet 10 of 11)**

**STRUCTURAL REPAIR MANUAL**

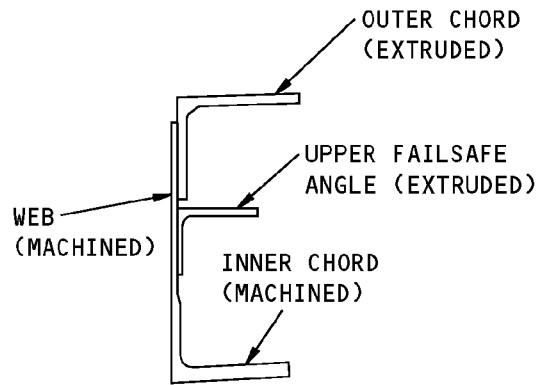


DOOR EDGE FRAME  
STA 951.07

G



M-M



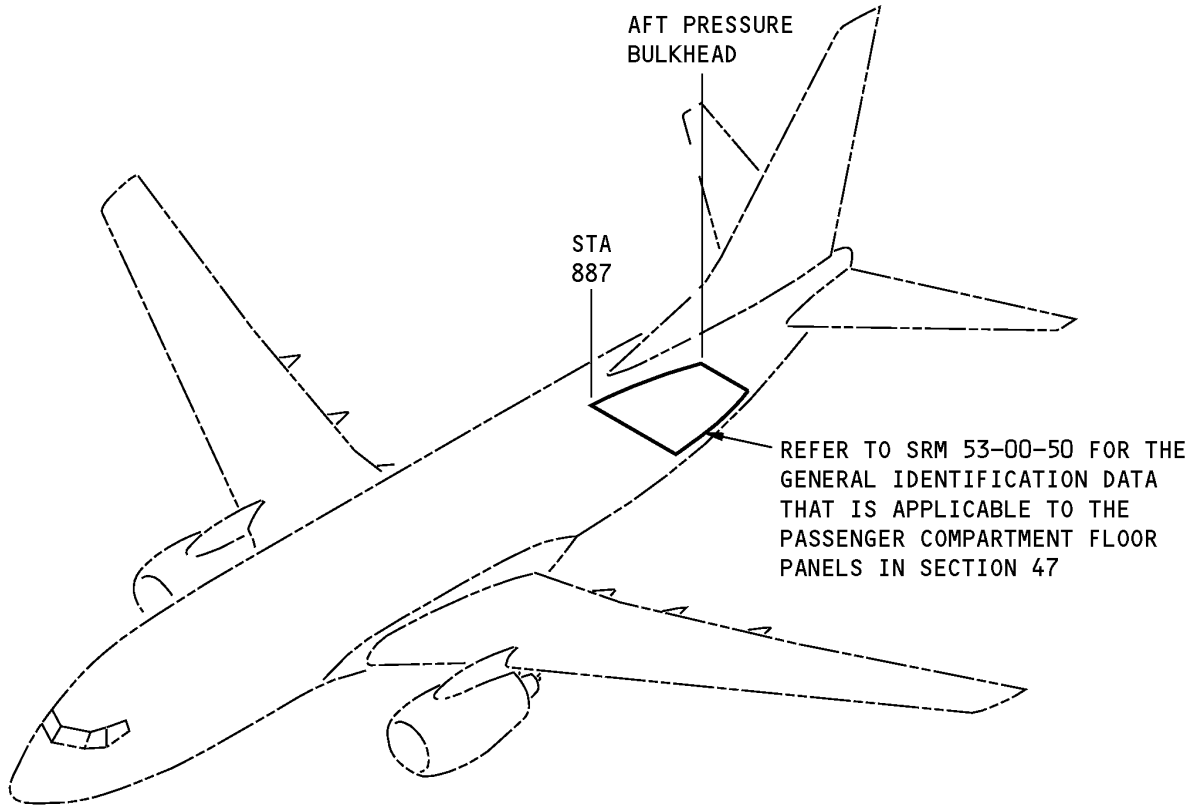
N-N

**Section 47 - Door Surround Structure Repair**  
**Figure 202 (Sheet 11 of 11)**



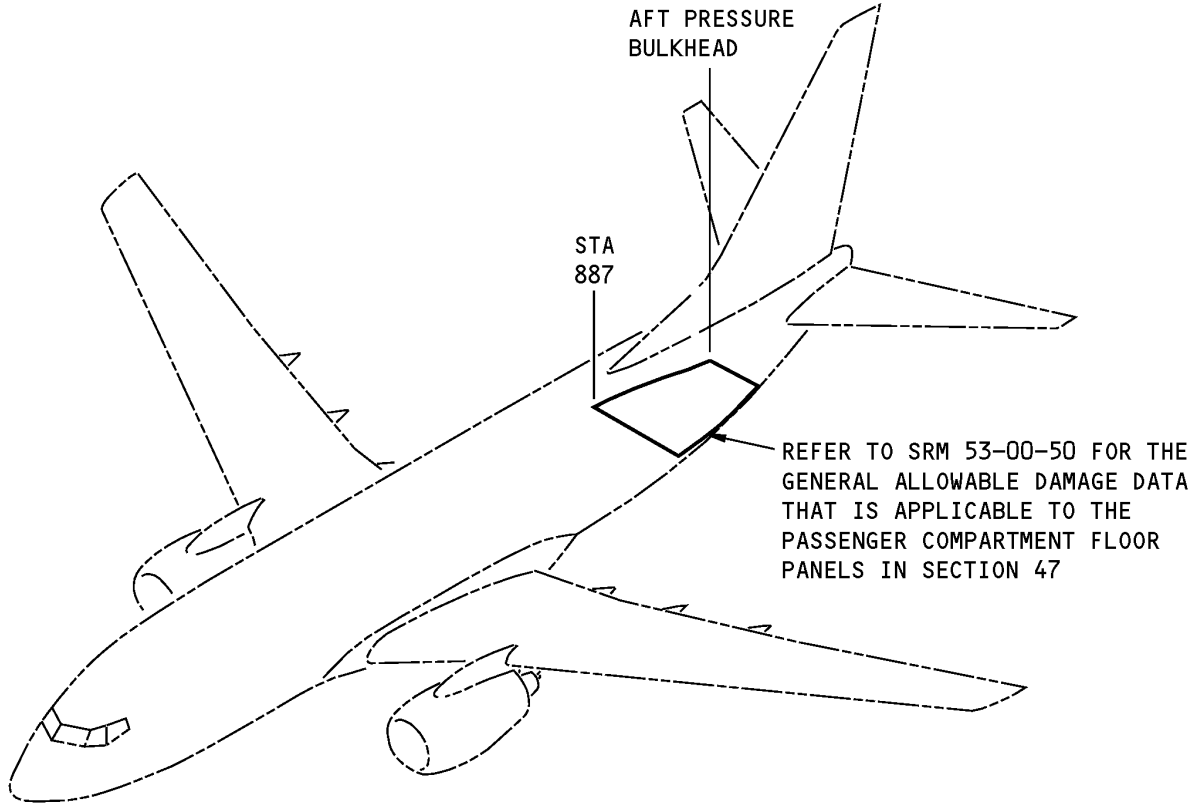
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION GENERAL - SECTION 47 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 47 Passenger Compartment Floor Panel Location**  
**Figure 1**

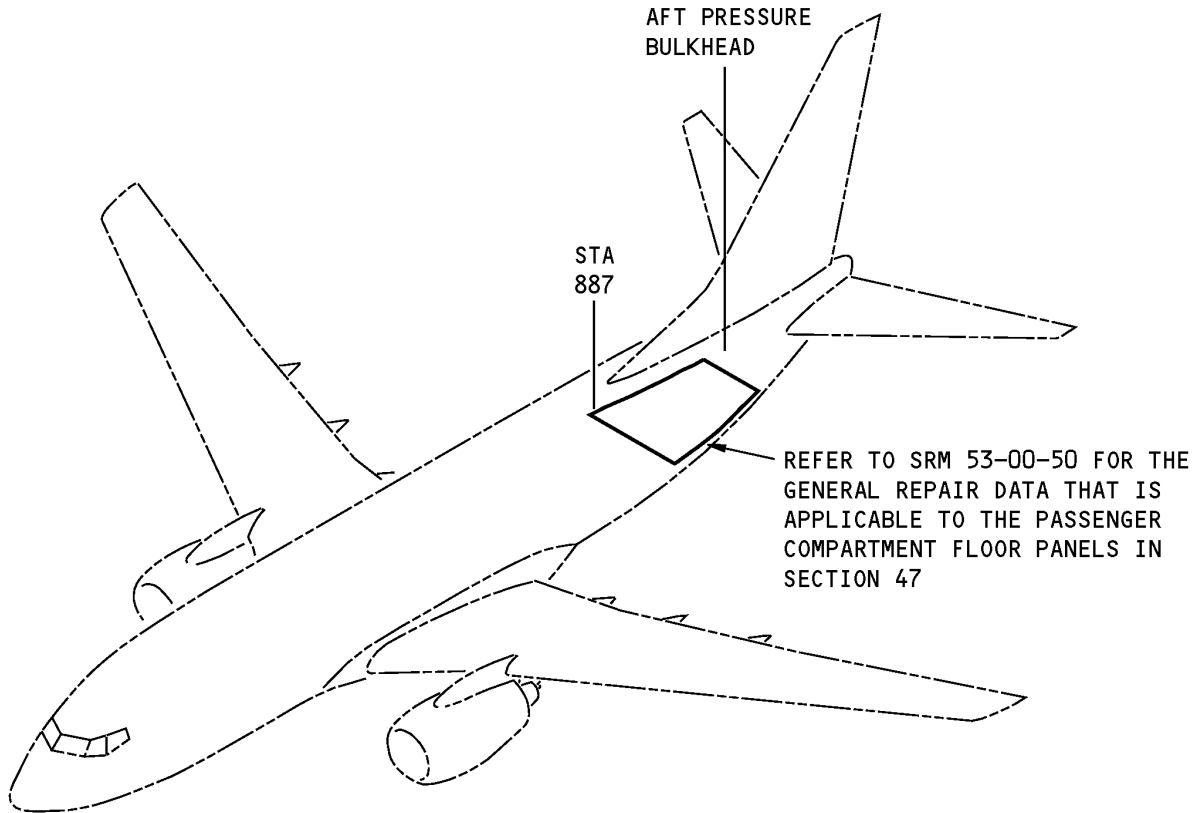
**ALLOWABLE DAMAGE GENERAL - SECTION 47 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 47 Passenger Compartment Floor Panel Location  
Figure 101**

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STRUCTURAL REPAIR MANUAL**

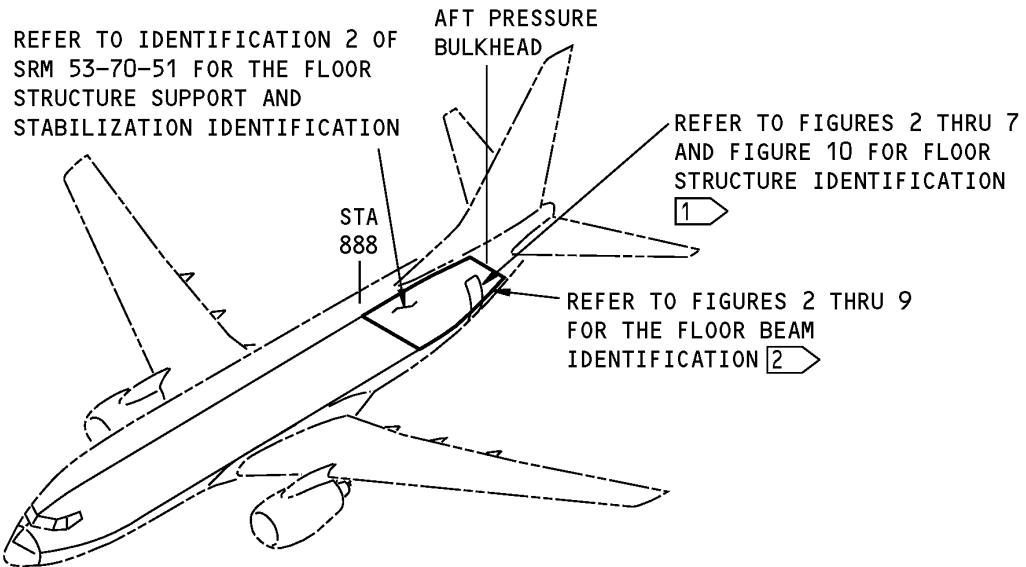
**REPAIR GENERAL - SECTION 47 PASSENGER COMPARTMENT FLOOR PANELS**



**Section 47 Passenger Compartment Floor Panel Location  
Figure 201**

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**IDENTIFICATION 1 - SECTION 47 FLOOR STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**1** AIRPLANES WITH AFT PRESSURE BULKHEAD AT STATION 1016.

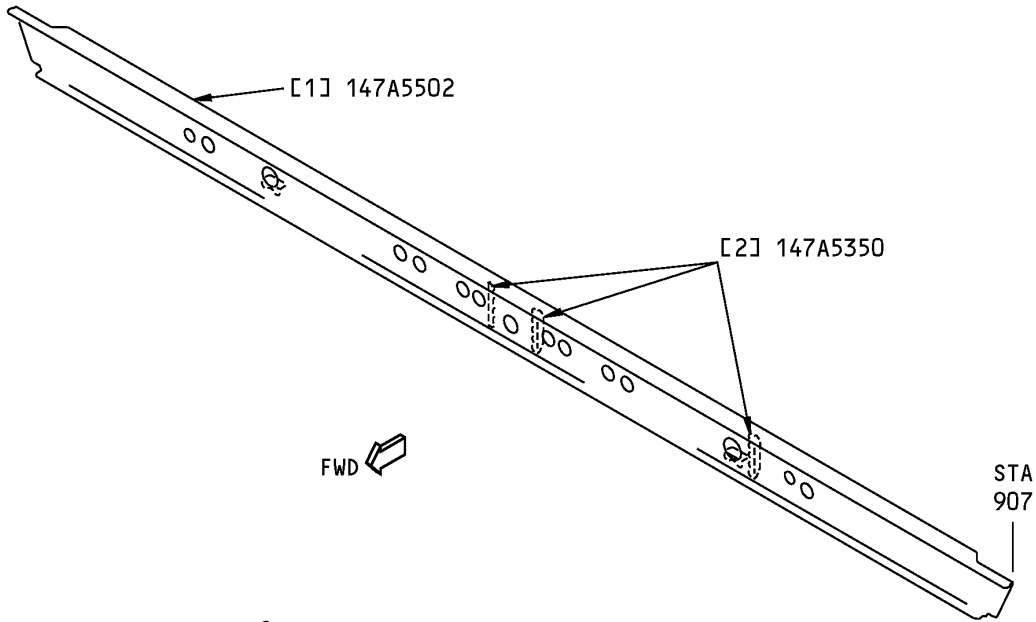
**2** AIRPLANES WITH AFT PRESSURE BULKHEAD AT STATION 1042.

**Section 47 Floor Beams Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
140A0353	Floor Grid Collector - Section 47
147A5101	Cantilever Floor Assembly/Installation
147A5502	STA 907 Floor Beam Assembly
147A5503	STA 927 Floor Beam Assembly
147A5504	STA 947.5 Floor Beam Assembly
147A5505	STA 967 Floor Beam Assembly
147A5506	STA 986.5 Floor Beam Assembly
147A5507	STA 1006 Floor Beam Assembly
147A5558	STA 1016 Floor Beam Assembly

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 Floor Beam at Station 907 Identification  
Figure 2**

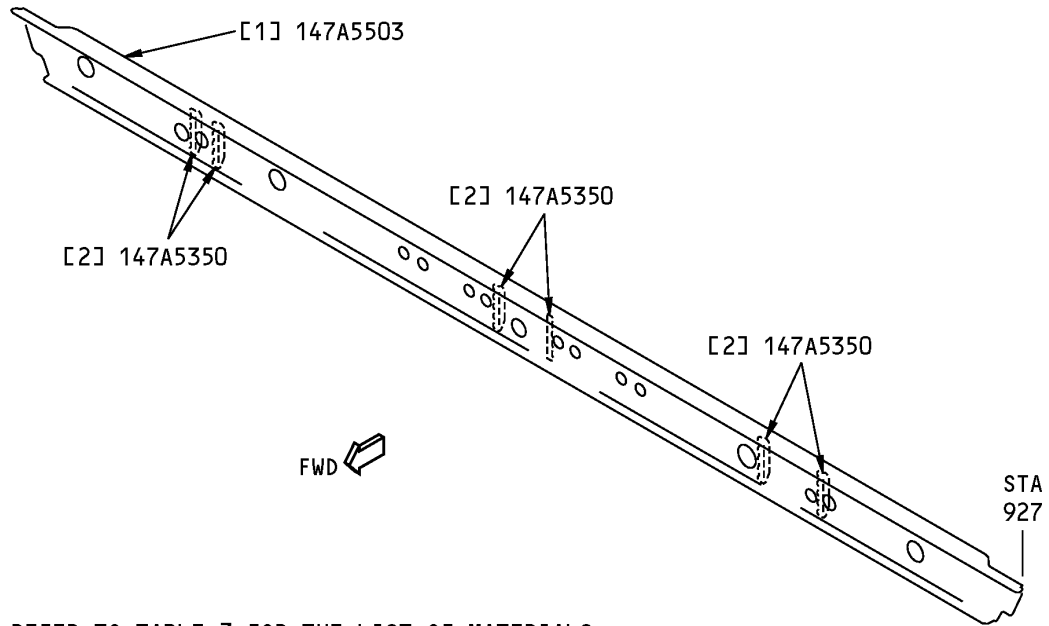
**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (3)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

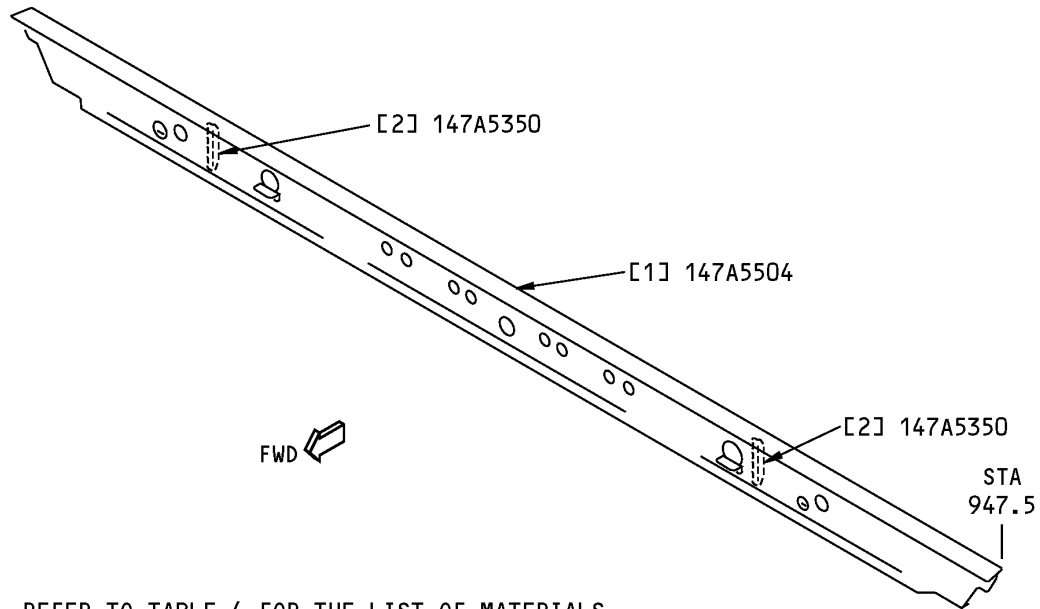
**Section 47 Floor Beam at Station 927 Identification  
Figure 3**

**Table 3:**

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (6)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

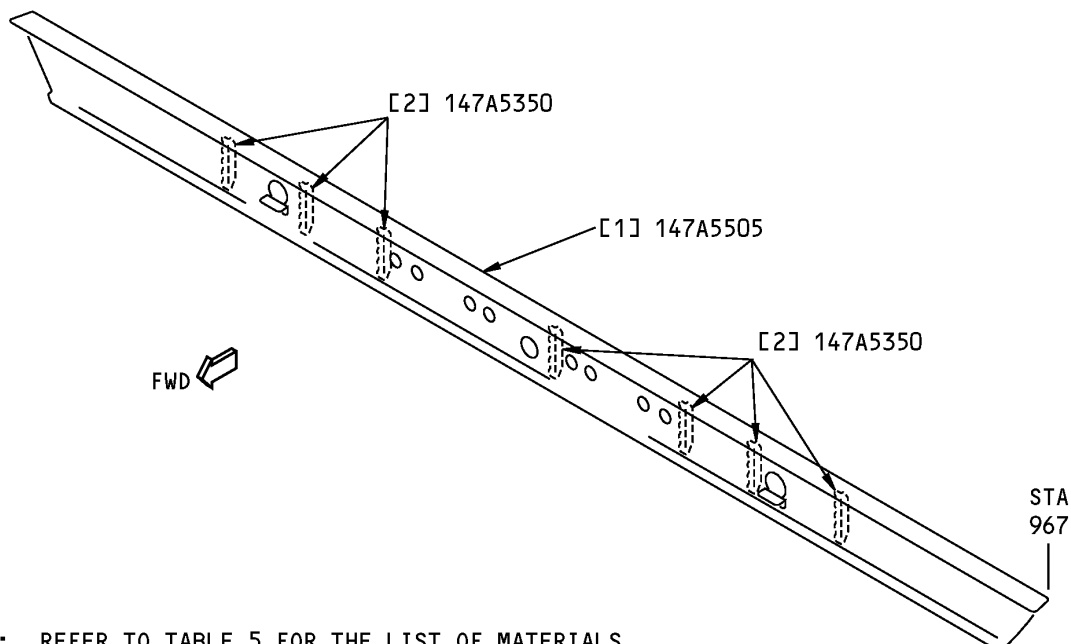
**Section 47 Floor Beam at Station 947.5 Identification  
Figure 4**

**Table 4:**

LIST OF MATERIALS FOR FIGURE 4				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1212 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (2)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 5 FOR THE LIST OF MATERIALS.

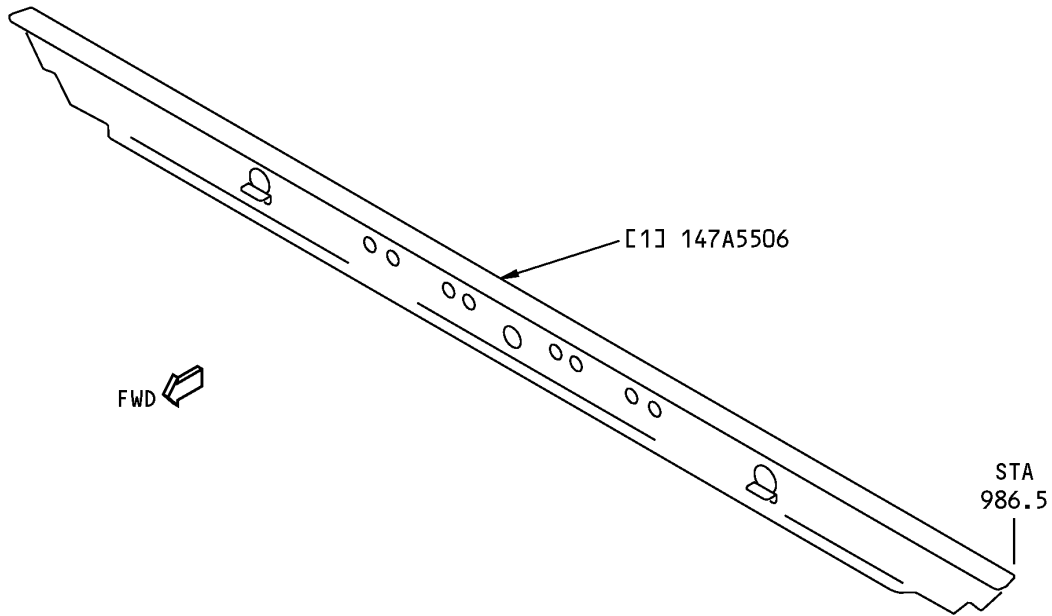
**Section 47 Floor Beam at Station 967 Identification  
Figure 5**

**Table 5:**

LIST OF MATERIALS FOR FIGURE 5				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener (7)		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 6 FOR THE LIST OF MATERIALS.

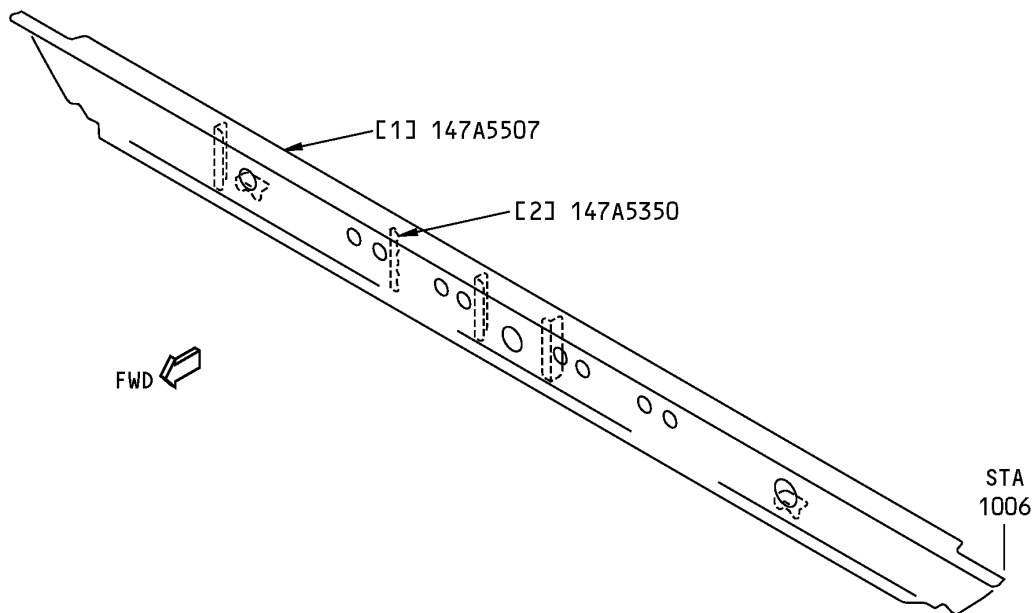
**Section 47 Floor Beam at Station 986.5 Identification  
Figure 6**

**Table 6:**

LIST OF MATERIALS FOR FIGURE 6				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 7 FOR THE LIST OF MATERIALS.

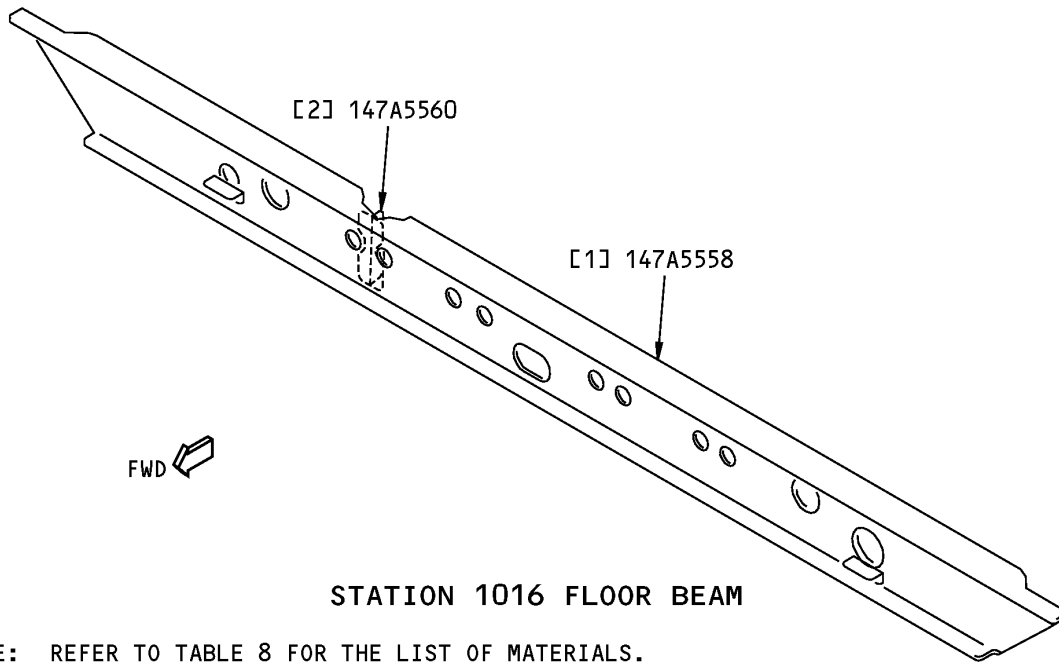
**Section 47 Floor Beam at Station 1006 Identification  
Figure 7**

**Table 7:**

LIST OF MATERIALS FOR FIGURE 7				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1207 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener		BAC1503-100436 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: BAC1503-100108)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**STATION 1016 FLOOR BEAM**

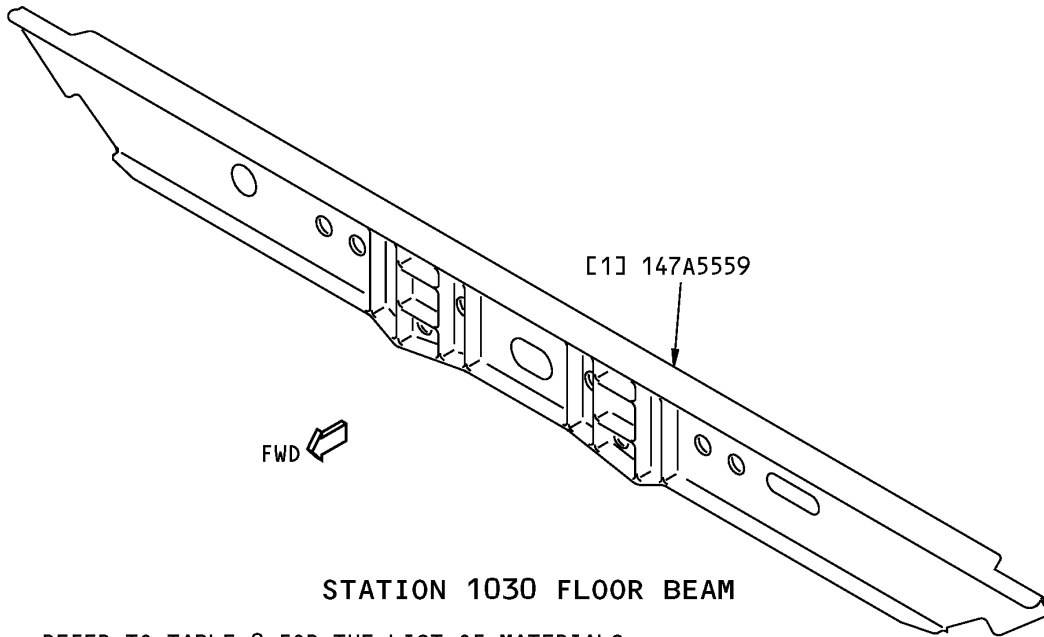
**NOTE:** REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

**Section 47 Floor Beam at Station 1016 Identification  
Figure 8**

**Table 8:**

LIST OF MATERIALS FOR FIGURE 8				
ITEM	DESCRIPTION	T	MATERIAL	EFFECTIVITY
[1]	Beam		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340	
[2]	Stiffener		AND10136-1702 7075-T73511 extrusion as given in QQ-A-200/11	

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**STATION 1030 FLOOR BEAM**

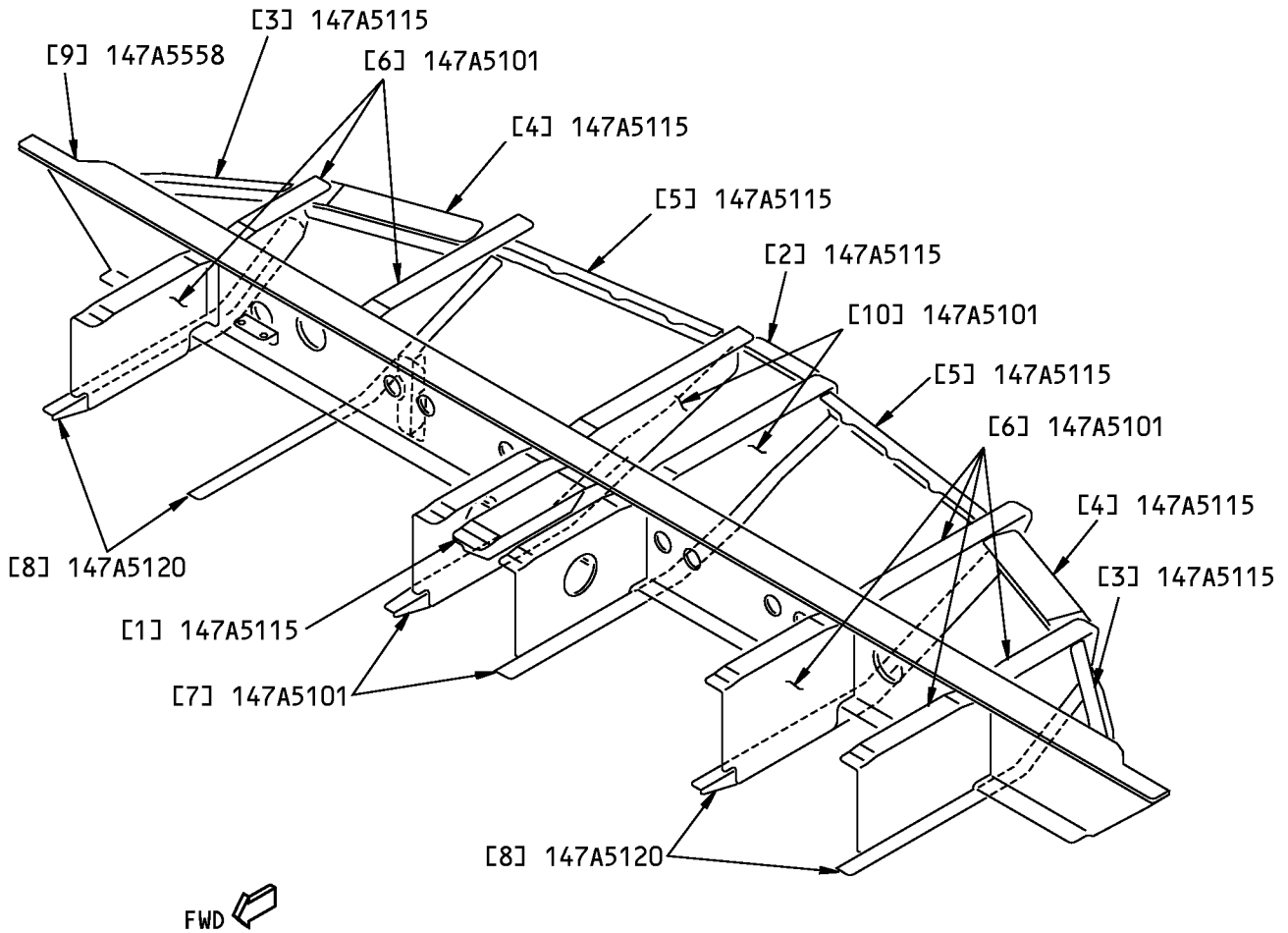
**NOTE:** REFER TO TABLE 9 FOR THE LIST OF MATERIALS.

**Section 47 Floor Beam at Station 1030 Identification  
Figure 9**

**Table 9:**

LIST OF MATERIALS FOR FIGURE 9				
ITEM	DESCRIPTION	T	MATERIAL	EFFECTIVITY
[1]	Beam		7050-T7451 plate as given in BMS 7-323	

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**NOTE:** REFER TO TABLE 8 FOR THE LIST OF MATERIALS.

**Section 47 Cantilever Floor Identification  
Figure 10**





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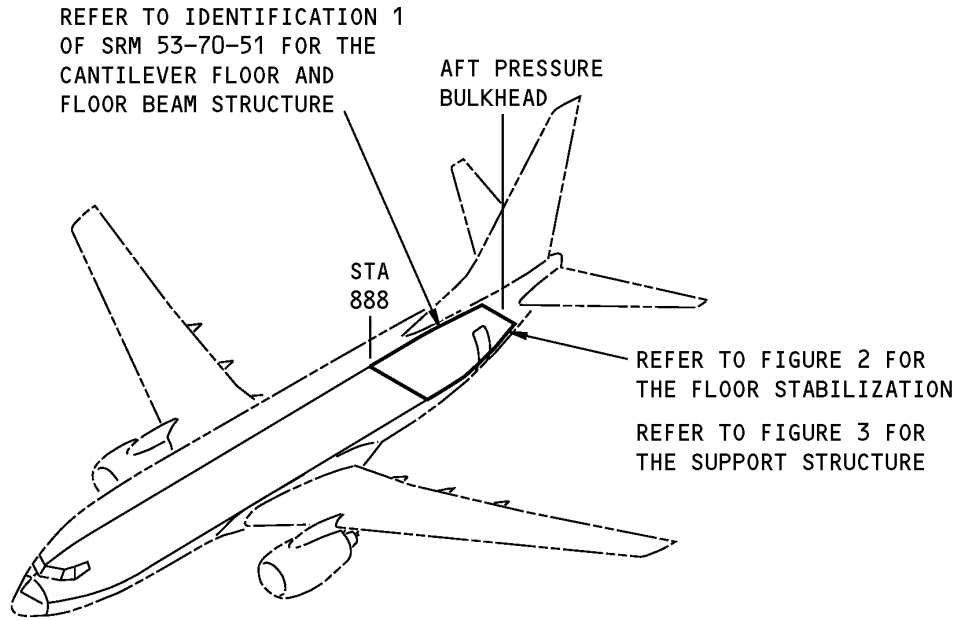
**Table 10:**

<b>LIST OF MATERIALS FOR FIGURE 8</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Support		BAC1506-43 7050-T76511 extrusion as given in AMS 4340	
[2]	Support		BAC1514-2569 7050-T76511 extrusion as given in AMS 4340	
[3]	Support (2)		BAC1517-2659 7050-T76511 extrusion as given in AMS 4340	
[4]	Support (2)		BAC1505-100323 7050-T76511 extrusion as given in AMS 4340	
[5]	Support (2)		AND10139-1107 7050-T76511 extrusion as given in AMS 4340	
[6]	Intercostal (7)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Intercostal (4)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (4)		BAC1503-100096 7075-T73 extrusion as given in QQ-A-200/11	
[9]	Beam Assembly - Floor Beam Stiffener		BAC1518-1211 7050-T76511 extrusion as given in AMS 4340 AND10136-1702 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Chord (2)		BAC1503-100851 7075-T73 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 47 FLOOR STRUCTURE - SUPPORT AND STABILIZATION**

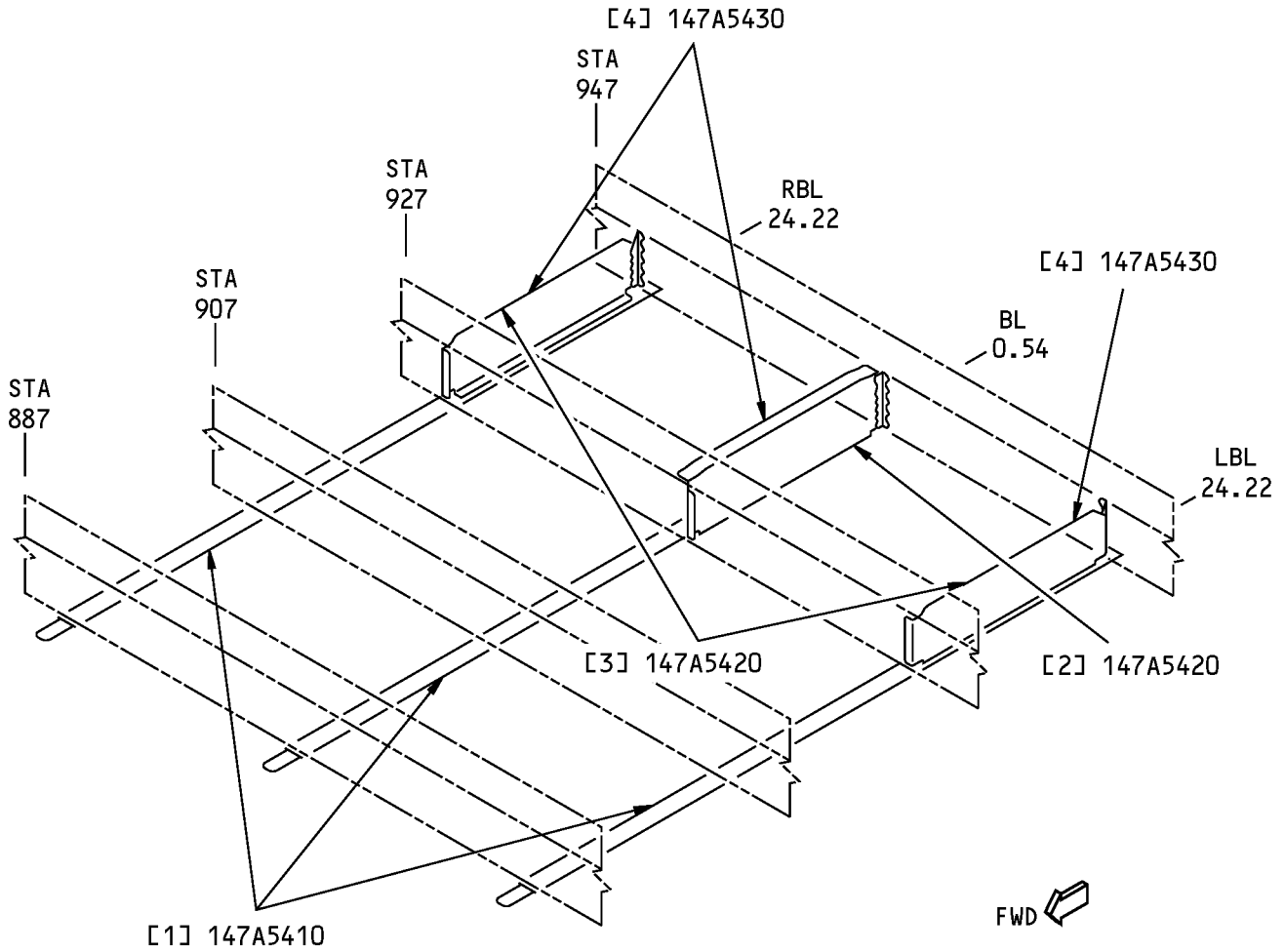


**Section 47 Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0353	Floor Grid Collector - Section 47
147A5400	Stabilization Installation - Floor, Section 47
149A8101	Support Installation - Vacuum Waste Tank Enclosure, Aft Cargo Compartment

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT**

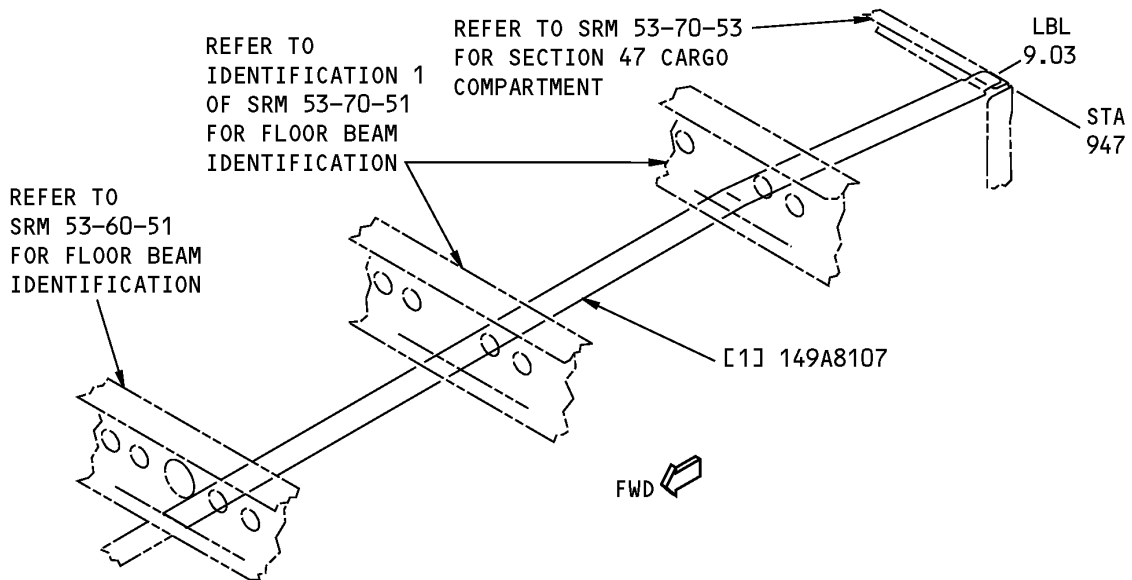
**Section 47 Floor Structure Stabilization Identification  
Figure 2**

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**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Strap		BAC1513-295 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Web	0.056 (0.142)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Web	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Chord	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.  
VIEW IS LOOKING AFT

### Vacuum Waste Tank Enclosure Support Identification Figure 3

**Table 3:**

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Depressor Strip		BAC1513-295 2024-T3511 extrusion as given in QQ-A-200/3	

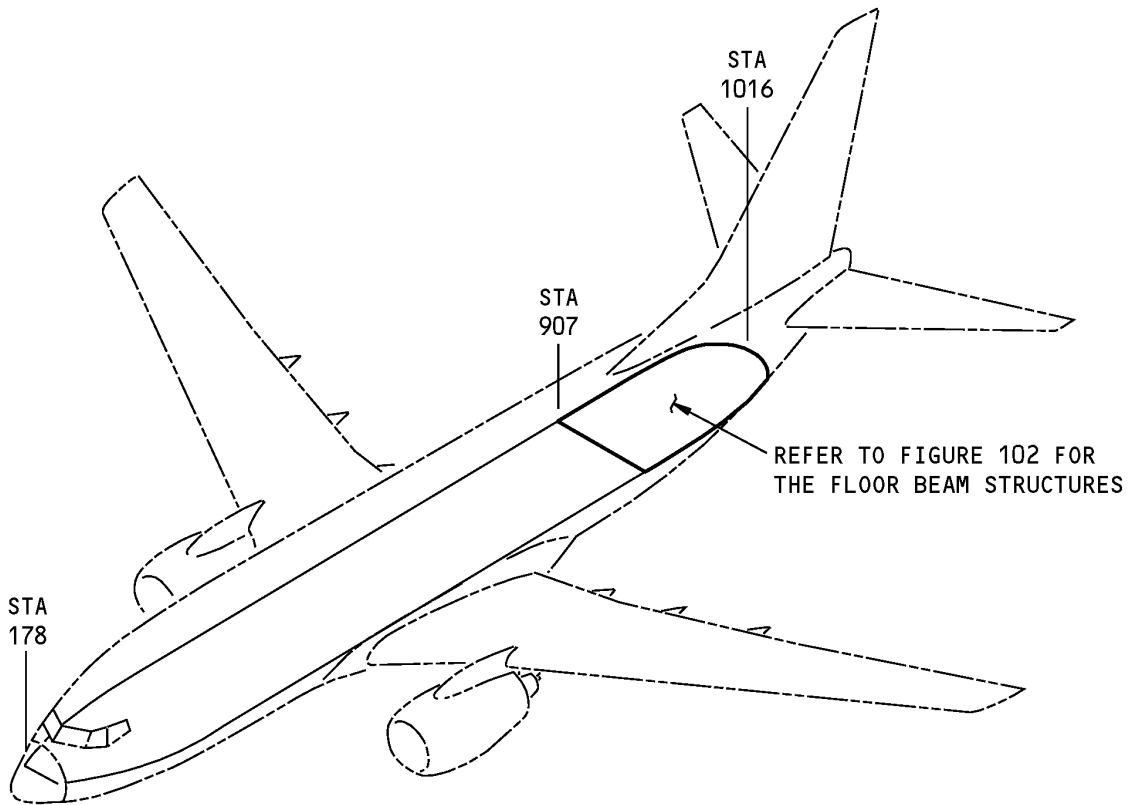
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE 1 - SECTION 47 FLOOR STRUCTURE**

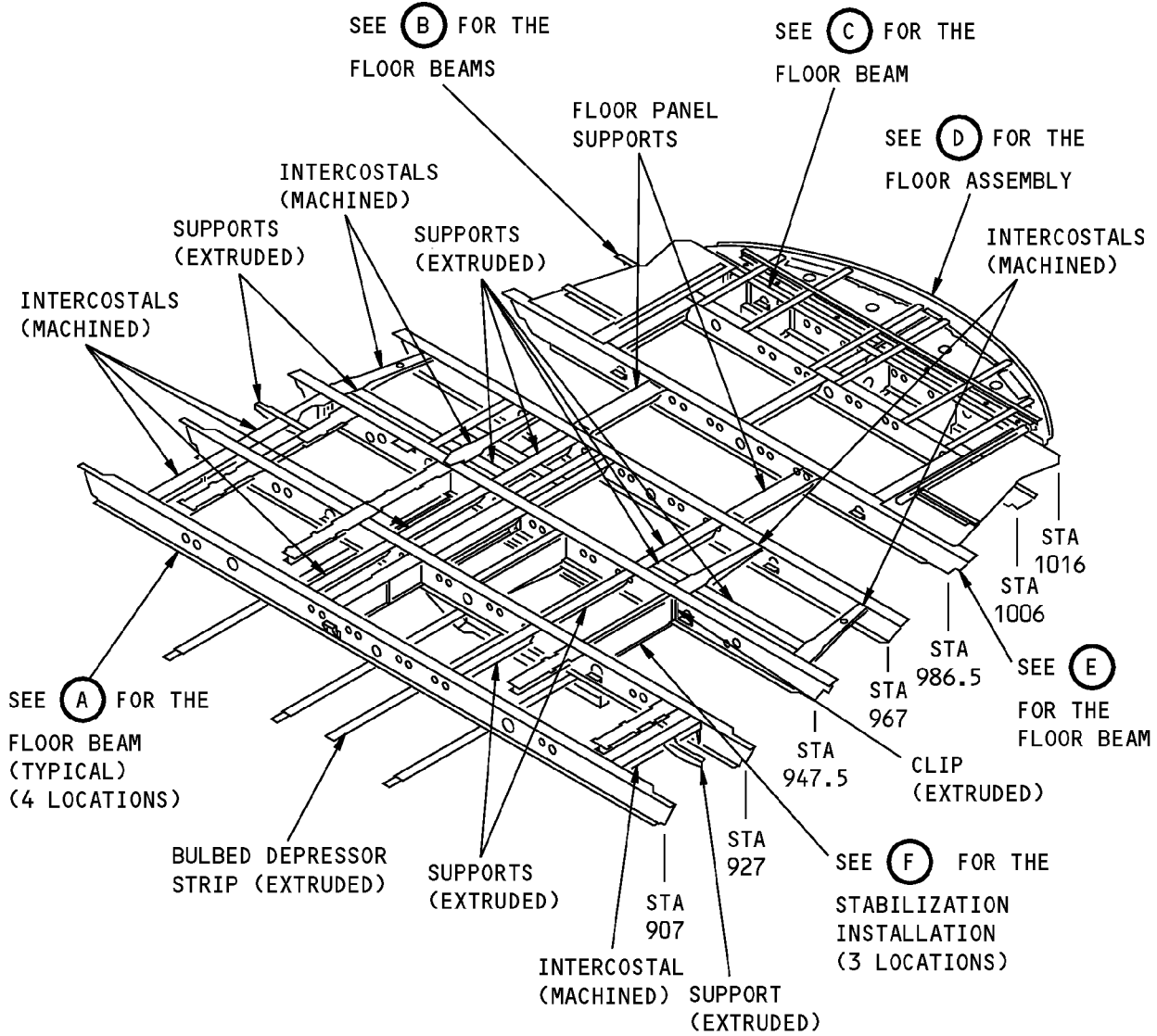
**1. Applicability**

- A. This subject gives the allowable damage limits for the Section 47 floor structure shown in Section 47 Floor Structure Location, Figure 101/ALLOWABLE DAMAGE 1.
- B. Only the basic configuration of the floor structure is shown. Refer to Boeing drawings for optional structure. The allowable damage data for optional structure is the same as the basic structure for a given part.



**Section 47 Floor Structure Location  
Figure 101**

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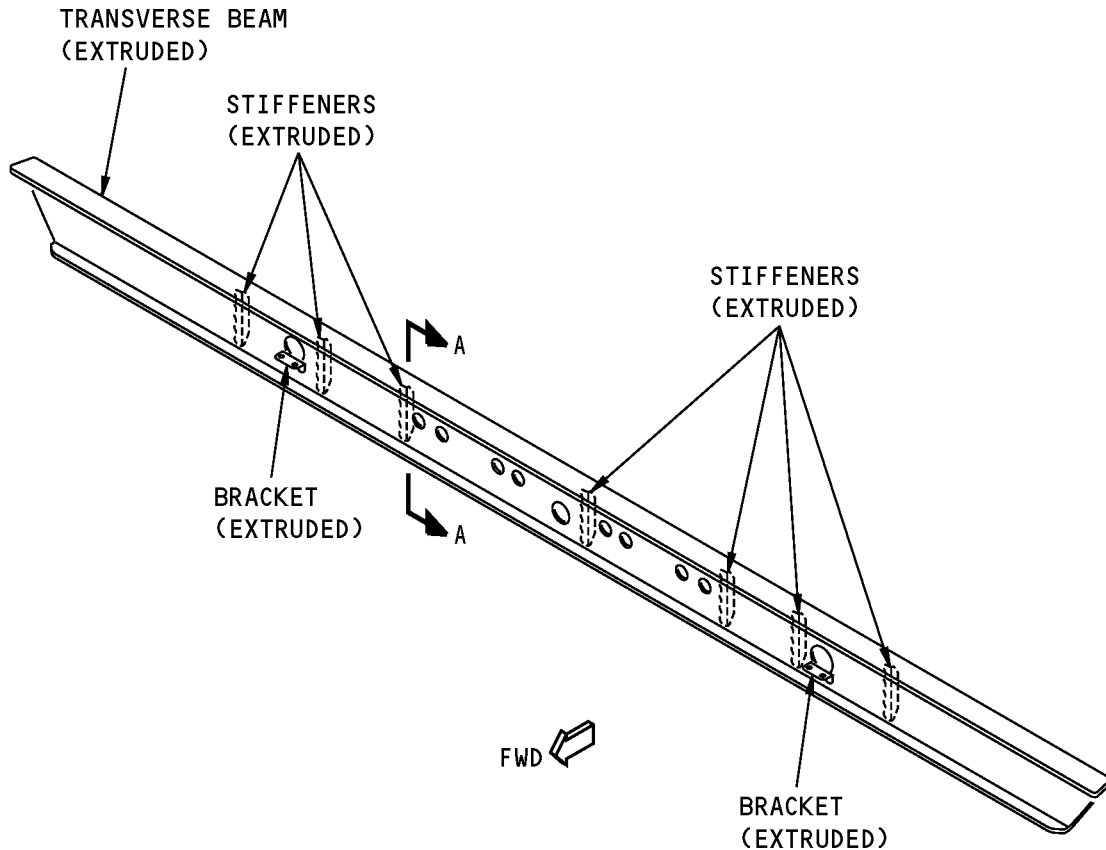


**NOTES**

- ALL PARTS IDENTIFIED ARE MADE OF ALUMINUM

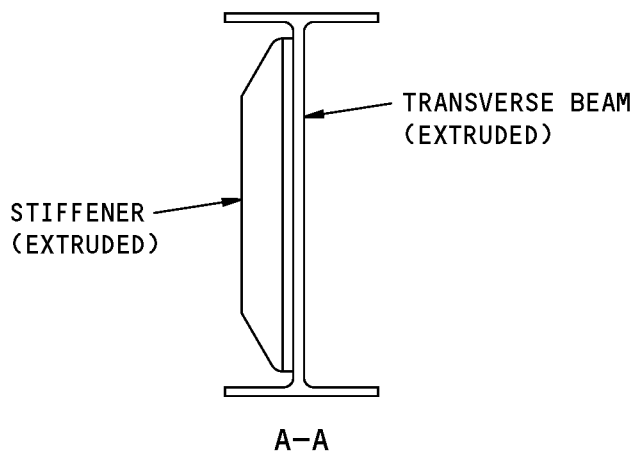
**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 1 of 7)**

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TYPICAL FLOOR BEAM FOR STATIONS 907, 927, 947.5, AND 967

(A)

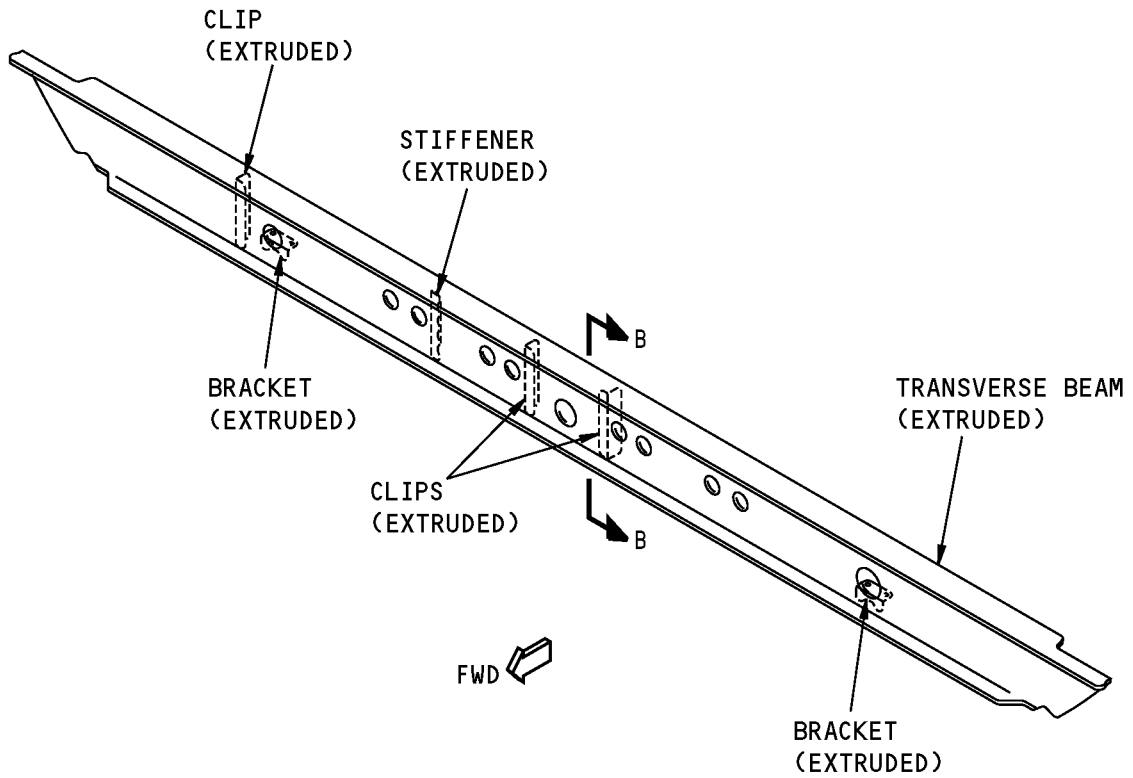


Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 2 of 7)

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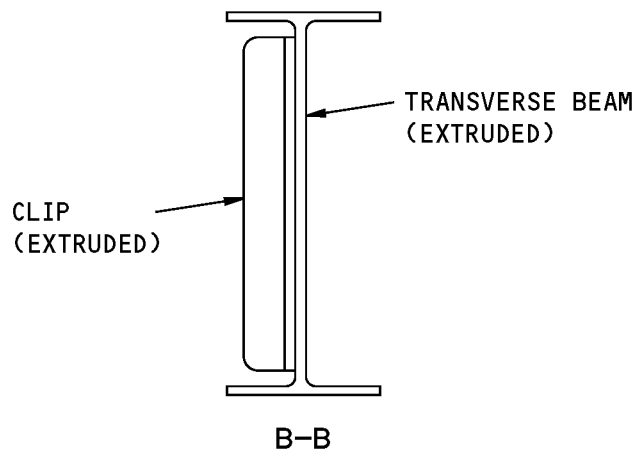
ALLOWABLE DAMAGE 1  
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**FLOOR BEAM AT STATION 1006**

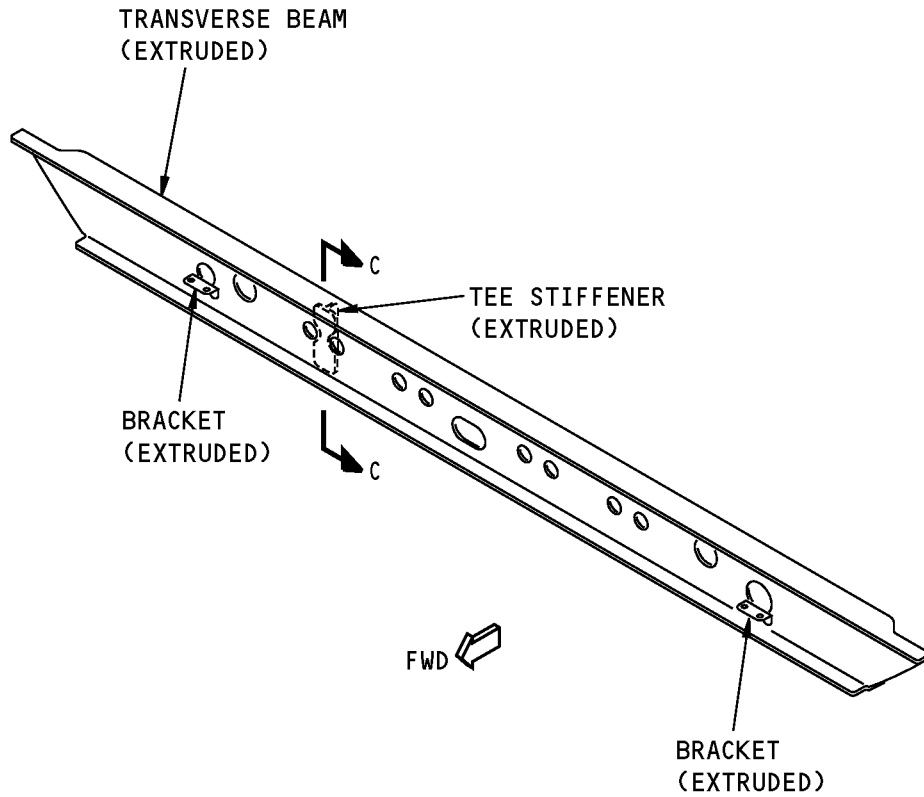
**B**



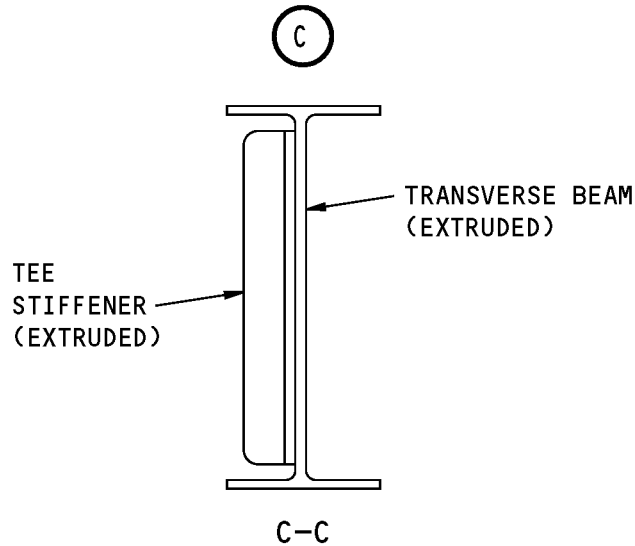
**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 3 of 7)**



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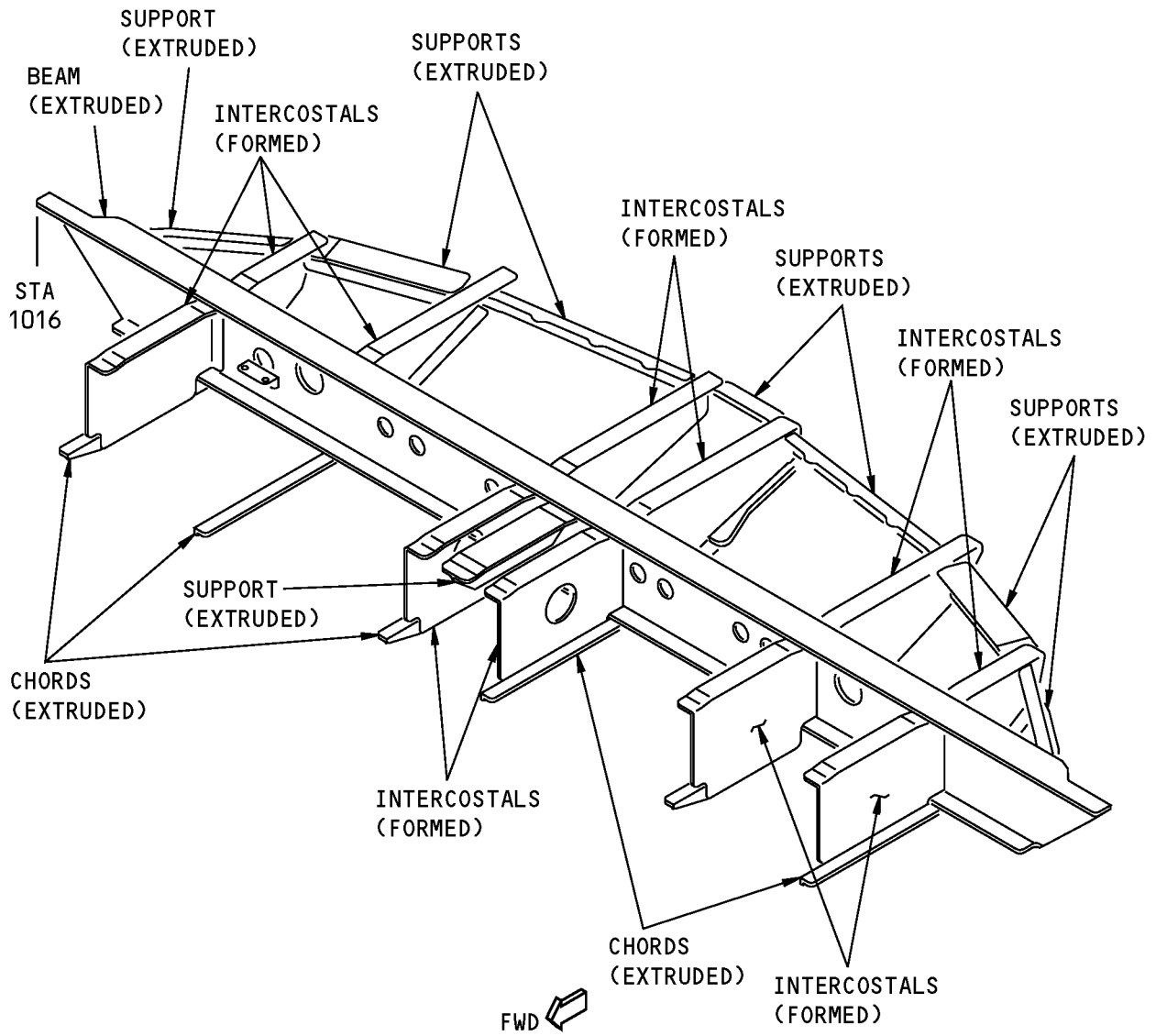


**FLOOR BEAM AT STATION 1016**



**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 4 of 7)**

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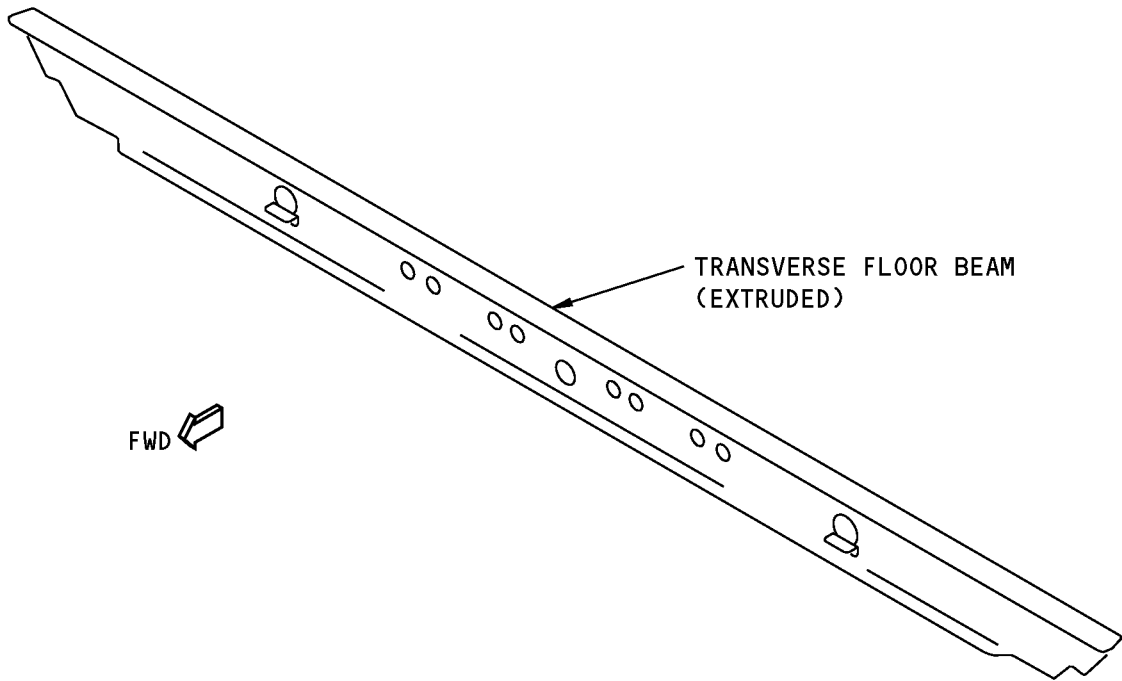


**SECTION 47 FLOOR ASSEMBLY**



**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 5 of 7)**

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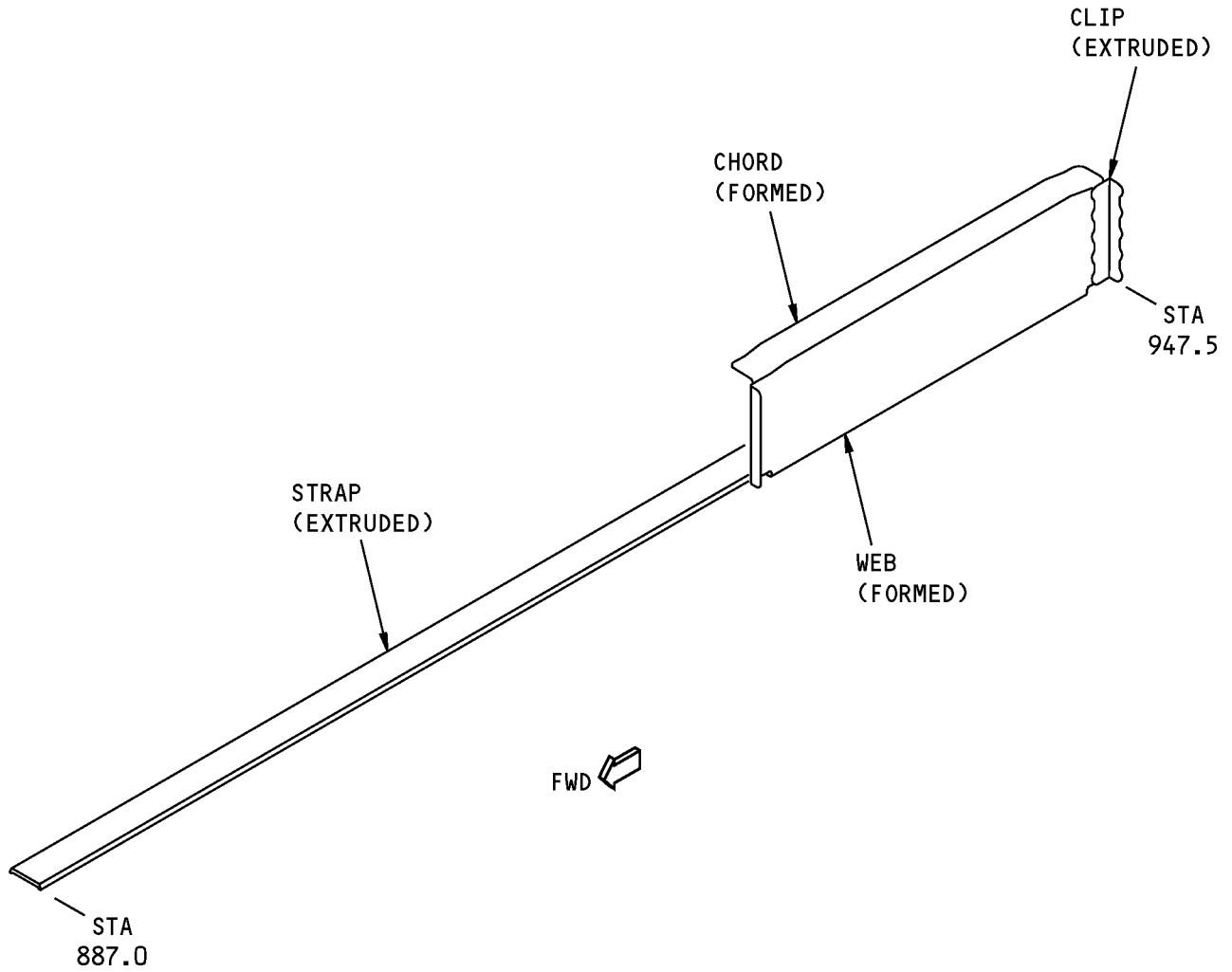


**FLOOR BEAM AT STATION 986.5**

**E**

**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 6 of 7)**

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**STABILIZATION INSTALLATION**

**F**

**Section 47 - Floor Structures - Station 907 through Station 1016  
Figure 102 (Sheet 7 of 7)**

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ALLOWABLE DAMAGE 1  
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**2. General**

- A. Refer to Table 101/ALLOWABLE DAMAGE 1 and Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
- B. Remove the damaged material as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- C. Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS			
TYPE OF STRUCTURE	FIGURE	GROUP	PARAGRAPH
INTERCOSTALS (MACHINED)	102	1	4.A
INTERCOSTALS (FORMED)	102	2	4.B
SUPPORTS, SUPPORT PANELS (EXTRUDED)	102	3	4.C
CHORDS (EXTRUDED)	102	4	4.D
CHORDS (FORMED)	102	5	4.E
STIFFENERS, BRACKETS, TEE STIFFENERS, CLIPS (EXTRUDED)	102	6	4.F
BULBED DEPRESSOR STRIPS, STRAPS (EXTRUDED)	102	7	4.G
TRANSVERSE BEAMS STA 907 THRU STA 1016 (EXTRUDED)	102	8	4.H

- D. Apply one of the two finishes to the reworked areas:
  - (1) Apply two layers of BMS 10-11, Type I, primer. Refer to SOPM 20-41-02 and AMM 51-21-00/701.
  - (2) Apply one layer of BMS 10-11, Type I, primer and one layer of BMS 10-11, Type II, enamel. Refer to SOPM 20-41-02 and AMM 51-21-00/701.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

- A. Group 1 Parts: Intercostals - Machined



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## STRUCTURAL REPAIR MANUAL

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and K.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and K.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.
  - (4) Holes and Punctures are not permitted.
- B. Group 2 Parts: Intercostals - Formed
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and K.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, and K.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail I.
- C. Group 3 Parts: Supports and Support Panels - Extruded
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and H.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.
  - (4) Holes and Punctures are not permitted.
- D. Group 4 Parts: Chords - Extruded
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and H.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, and H.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- E. Group 5 Parts: Chords - Formed
- (1) Cracks:

ALLOWABLE DAMAGE 1

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- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and K.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, and K.
- (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.
- (4) Holes and Punctures are permitted if they are:
  - (a) A maximum of 0.25 inch (6.4 mm) in diameter
  - (b) A minimum of 4D (D = the diameter of the damage) away from a hole, other damage, or the part edge
  - (c) Filled with a 2117-T3 or 2117-T4 aluminum rivet installed without sealant.
- F. Group 6 Parts: Stiffeners, Tee Stiffeners, Brackets, and Clips - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, and H.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail D.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail J.
- G. Group 7 Parts: Bulbed Depressor Strips and Straps - Extruded
  - (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and L.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, L, and M.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- H. Group 8 Parts: Transverse Beams from STA 907 to STA 1016 - Extruded
  - (1) Web area:
    - (a) No damage is permitted.
  - (2) Flange areas:
    - (a) Cracks:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H.
    - (b) Nicks, Gouges, Scratches, and Corrosion:

ALLOWABLE DAMAGE 1

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**53-70-51**

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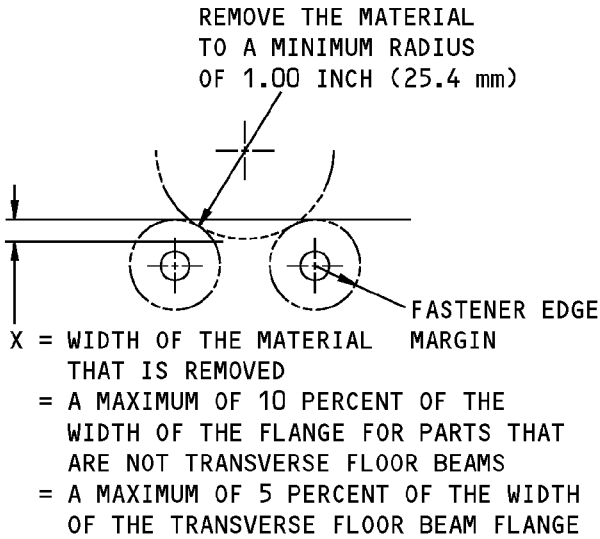
**737-800**

**STRUCTURAL REPAIR MANUAL**

- 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, E, F, G, H, and N.
- (c) Dents are not permitted.
- (d) Holes and Punctures are not permitted.

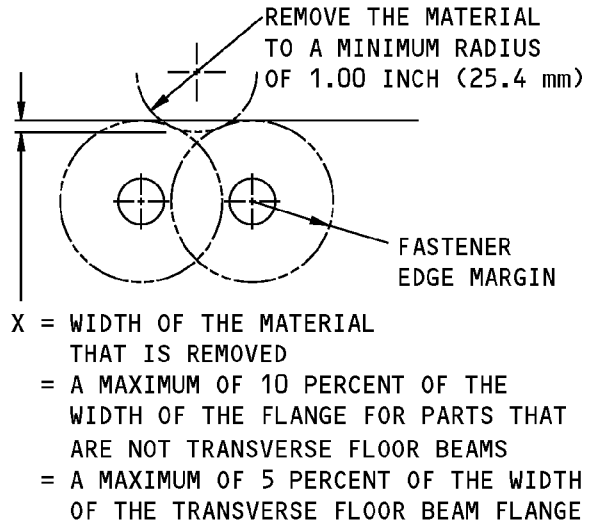


**STRUCTURAL REPAIR MANUAL**



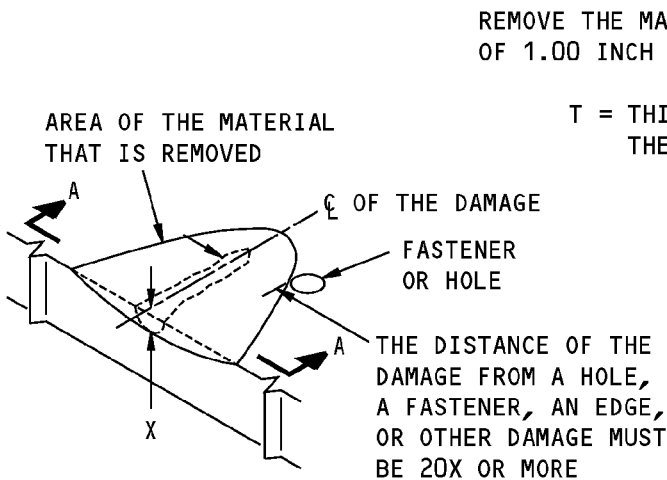
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



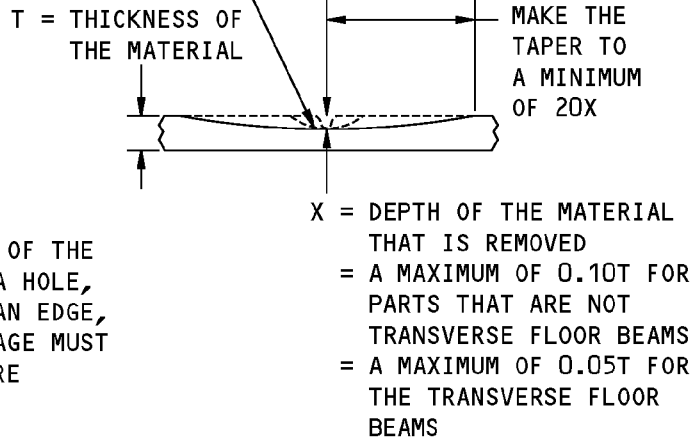
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

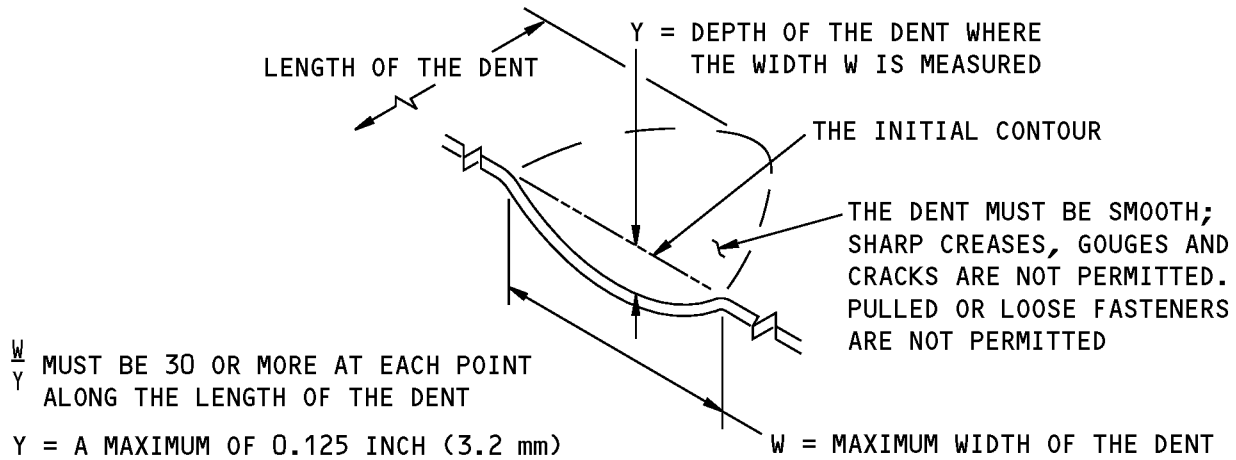
(C)



A-A

**Allowable Damage Limits  
 Figure 103 (Sheet 1 of 8)**

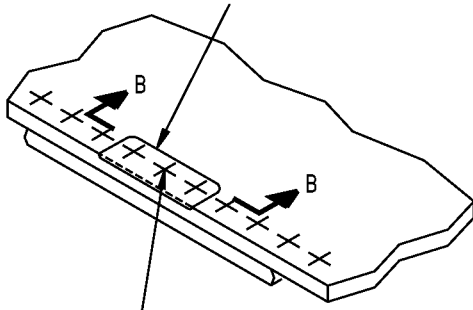
**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(D)

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X

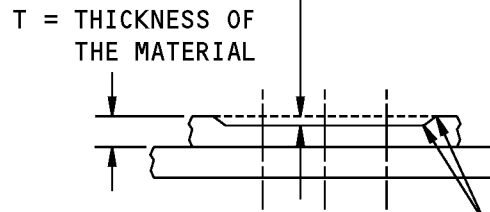


REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(E)

X = DEPTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.10T FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS  
 = A MAXIMUM OF 0.05T FOR THE TRANSVERSE FLOOR BEAMS

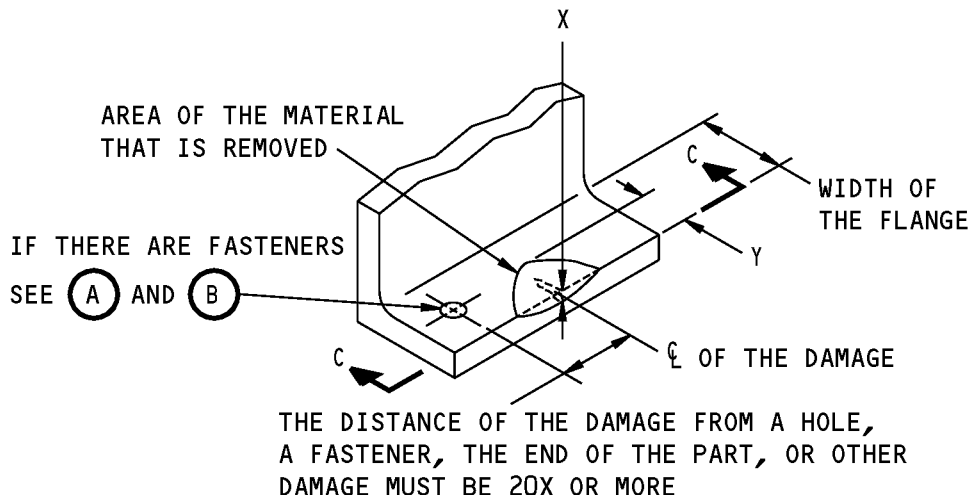


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)

B-B

**Allowable Damage Limits  
Figure 103 (Sheet 2 of 8)**

STRUCTURAL REPAIR MANUAL

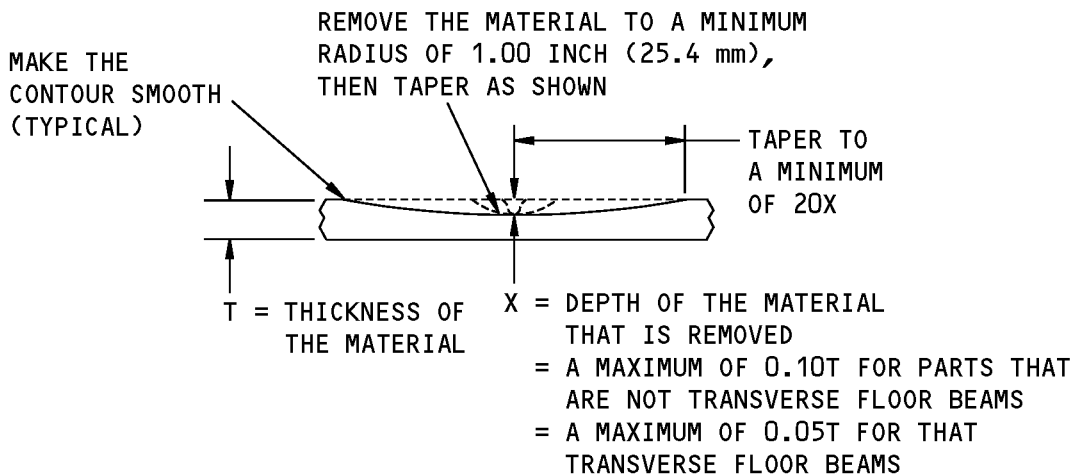


- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGE

**NOTE:** AN ANGLE IS SHOWN, BUT THE DETAIL CAN ALSO BE APPLICABLE TO A TEE SECTION.

REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE

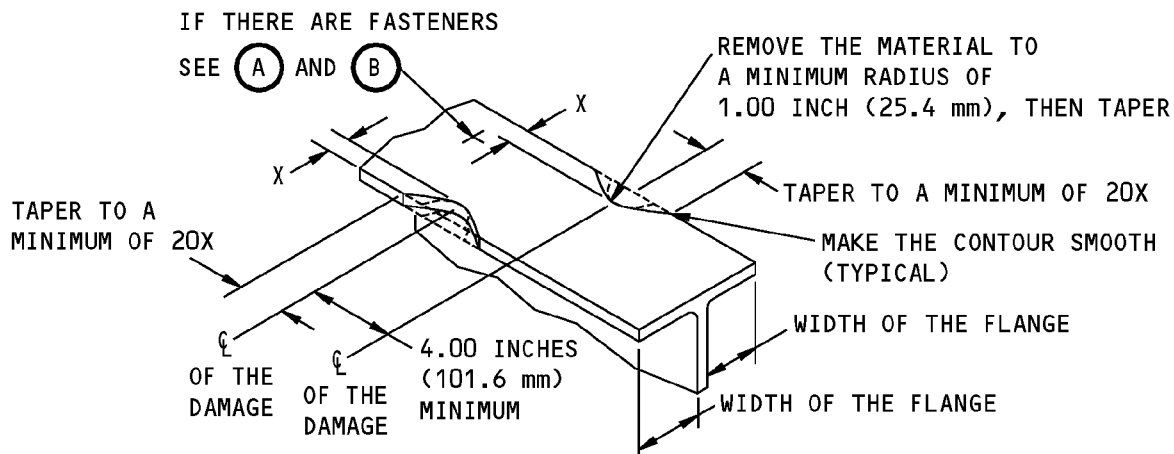
(F)



C-C

Allowable Damage Limits  
Figure 103 (Sheet 3 of 8)

**STRUCTURAL REPAIR MANUAL**

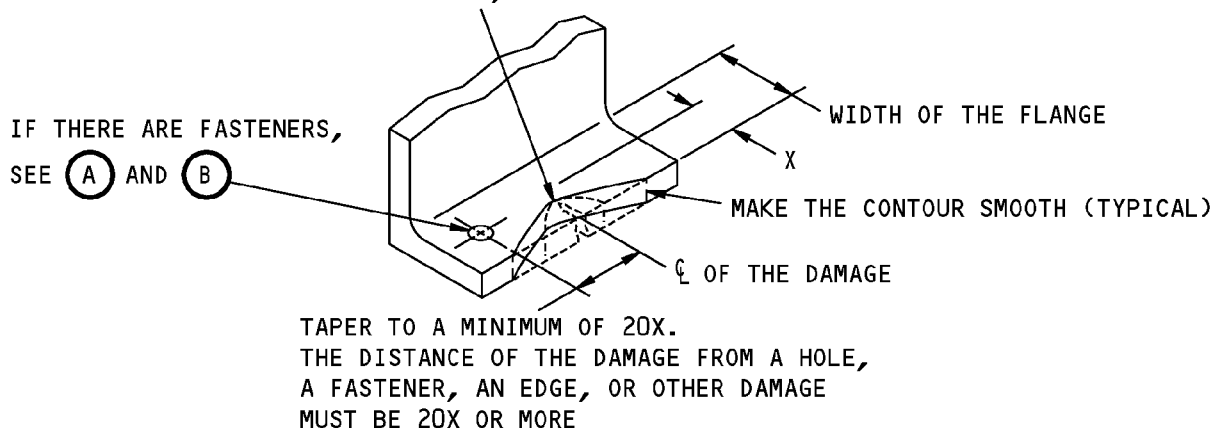


- X = THE WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE FOR PARTS THAT ARE NOT TRANSVERSE FLOOR BEAMS
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(G)

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



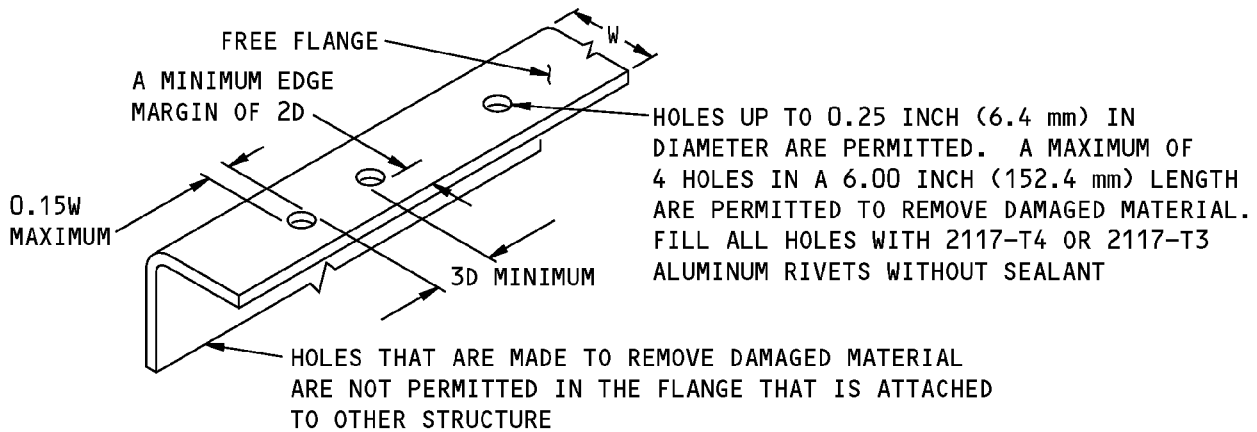
- X = WIDTH OF THE MATERIAL REMOVED
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE THAT ARE NOT TRANSVERSE FLOOR BEAMS
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE TRANSVERSE FLOOR BEAM FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(H)

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**

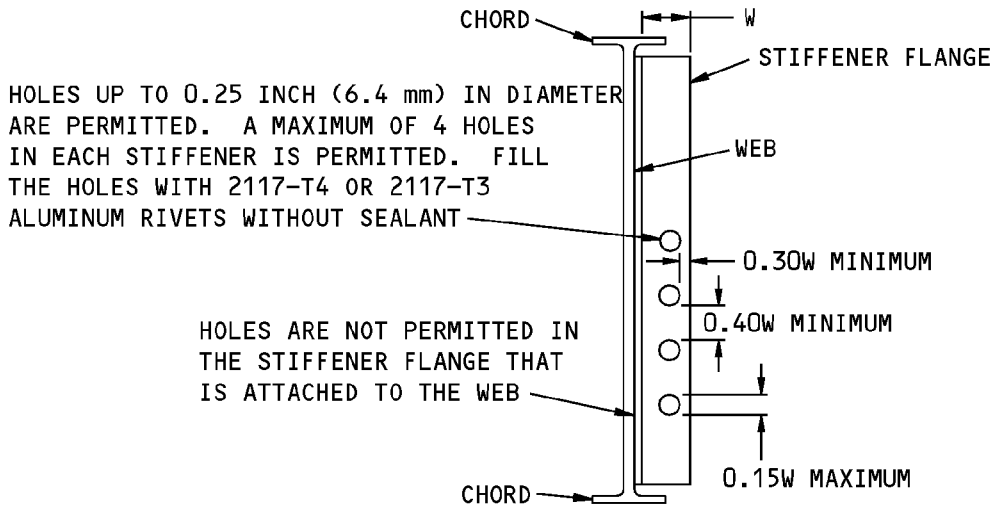


D = THE DIMENSION OF THE LARGEST DAMAGE  
W = THE WIDTH OF THE FLANGE

NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

**HOLES THAT ARE PERMITTED FOR THE  
REMOVAL OF DAMAGED MATERIAL IN A FLANGE**

I



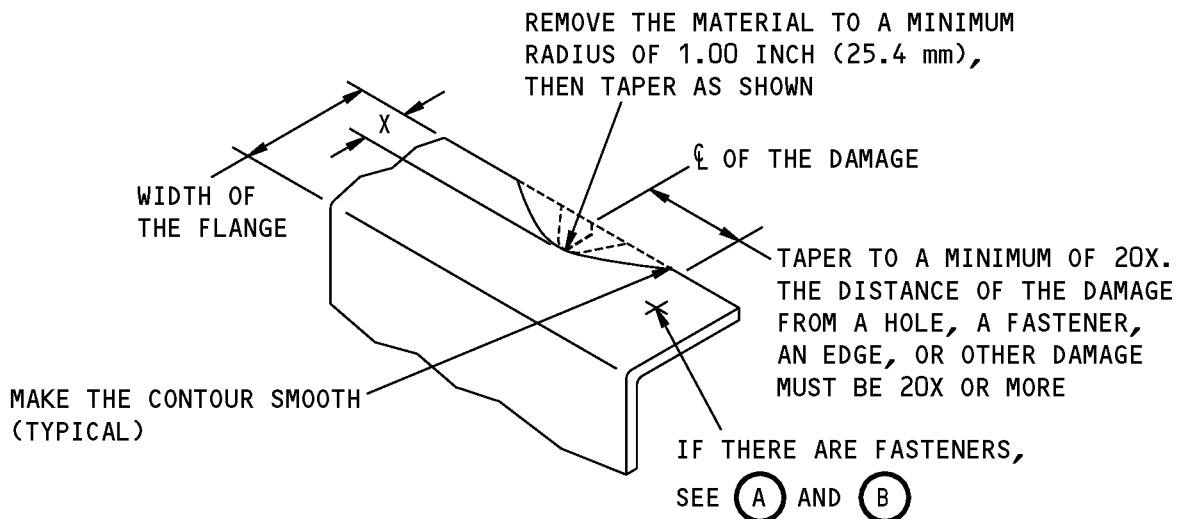
W = THE WIDTH OF THE STIFFENER FLANGE

**HOLES THAT ARE PERMITTED TO REMOVE  
DAMAGED MATERIAL IN WEB STIFFENERS**

J

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 8)**

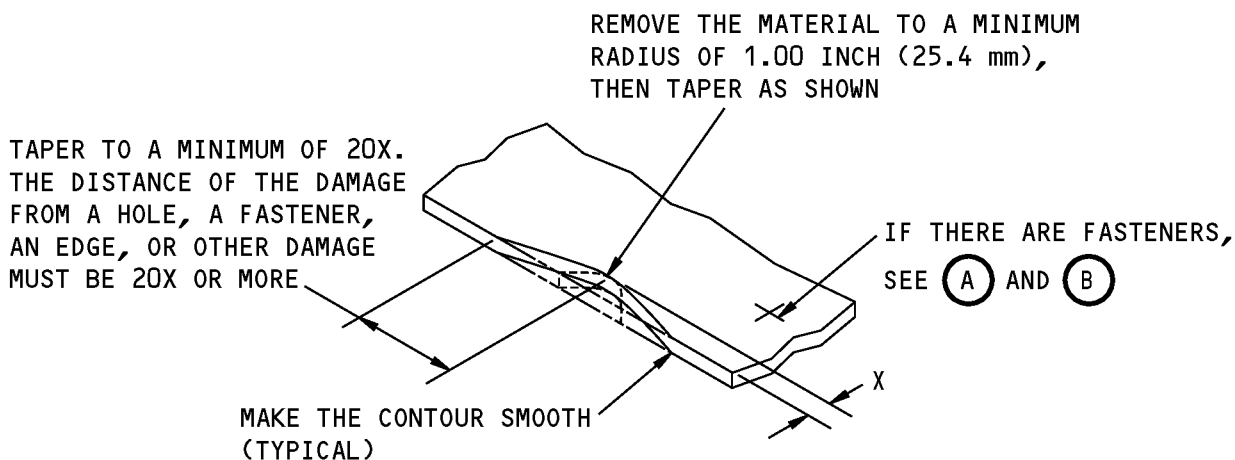
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(K)



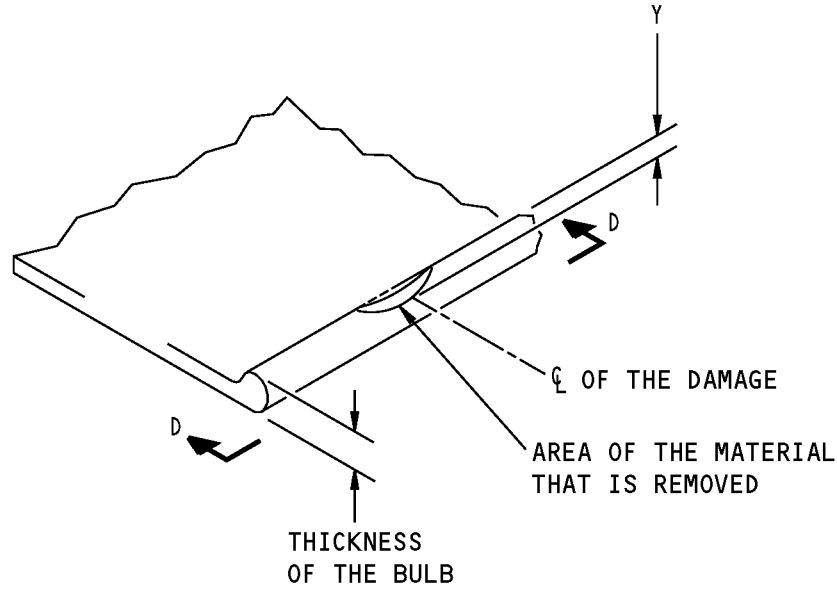
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.20 INCH (5.1 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A STRAP OR WEB**

(L)

**Allowable Damage Limits  
 Figure 103 (Sheet 6 of 8)**

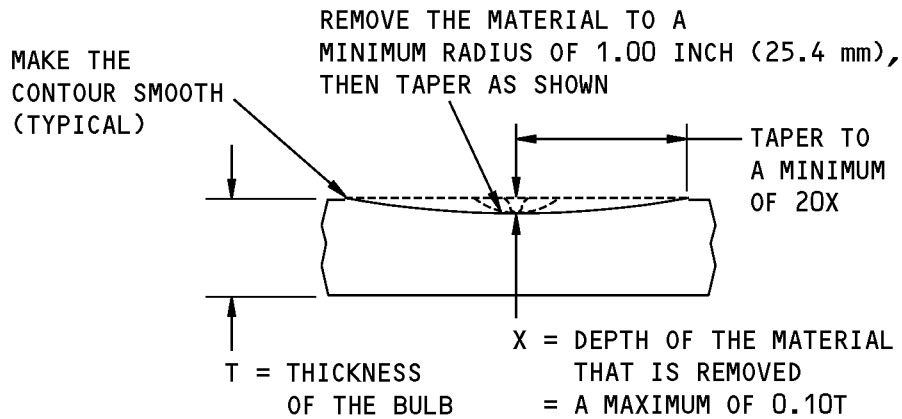
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED STRAP**

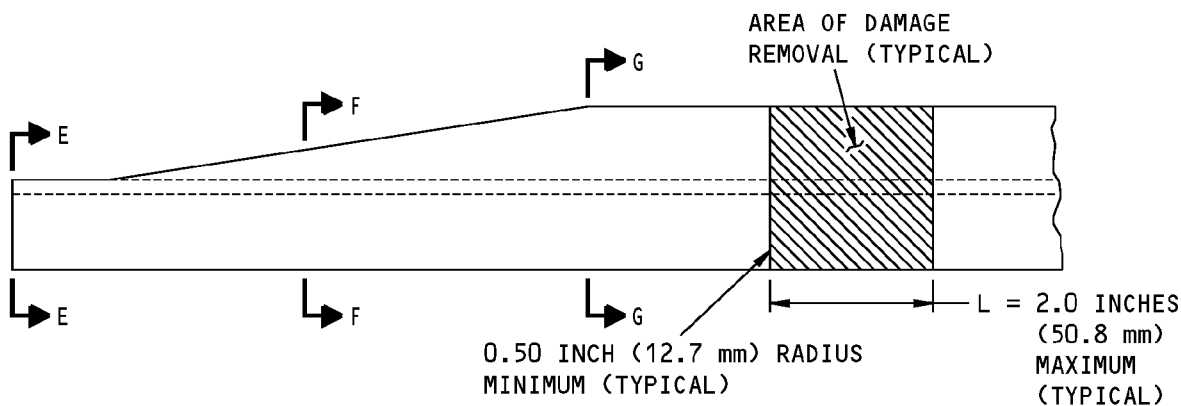
(M)



D-D

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 8)**

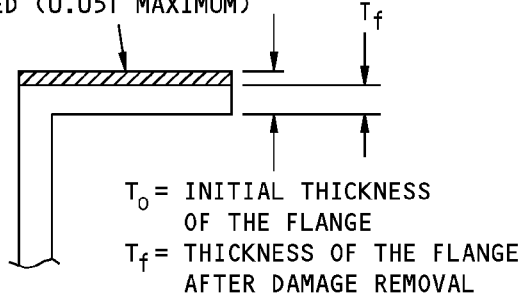
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGE FROM A FLOOR BEAM  
STATION 907 THRU STATION 1016**

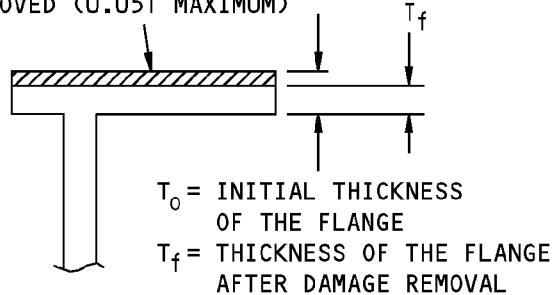
(N)

MATERIAL THAT IS  
REMOVED (0.05T MAXIMUM)



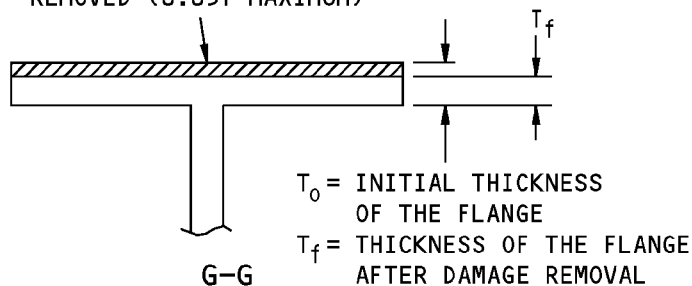
E-E

MATERIAL THAT IS  
REMOVED (0.05T MAXIMUM)



F-F

MATERIAL THAT IS  
REMOVED (0.05T MAXIMUM)



G-G

**NOTES**

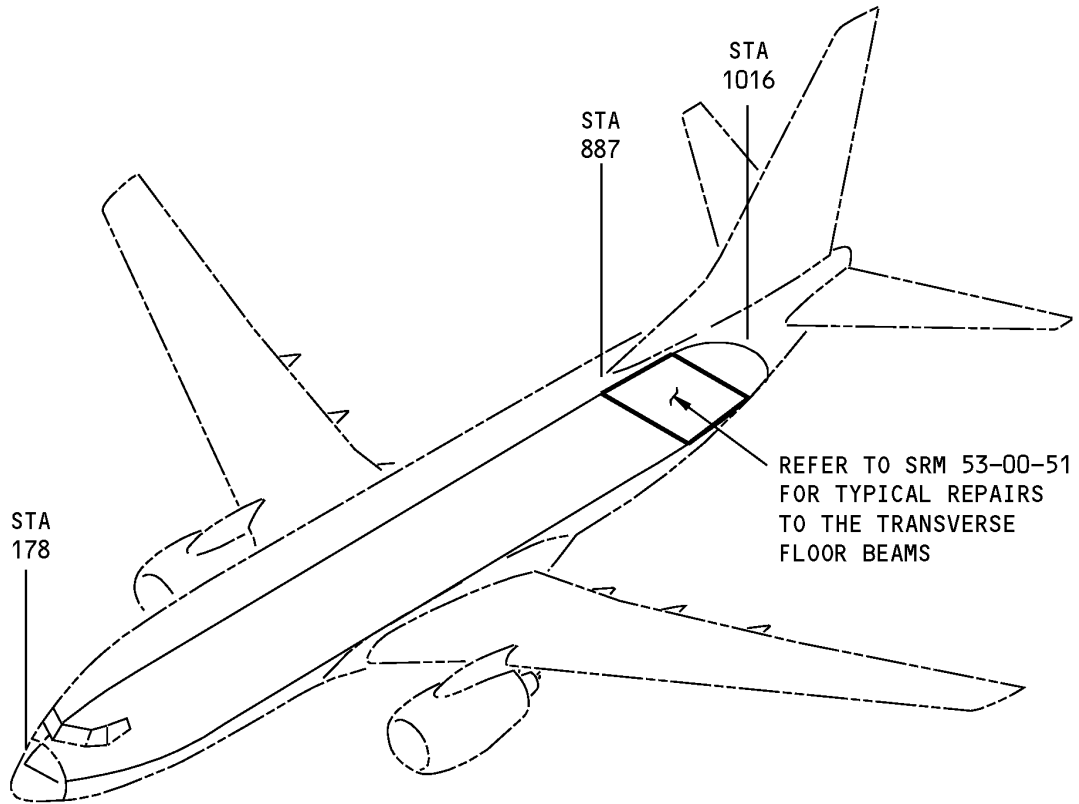
- UPPER FLANGE IS SHOWN. THE DAMAGE LIMITS ARE THE SAME FOR THE LOWER FLANGE.
- ONLY ONE DAMAGE LOCATION IS PERMITTED BETWEEN TWO LOWER STABILIZER STRAPS.
- USE FILLERS AS NECESSARY IN THE DAMAGE AREA BETWEEN THE FLOOR BEAM AND ADJACENT STRUCTURE TO WHICH IT ATTACHES. THE MAXIMUM GAP BETWEEN THE FLOOR BEAM AND ADJACENT STRUCTURE BEFORE FASTENERS ARE INSTALLED IS 0.01 INCH (0.25 mm).

**Allowable Damage Limits  
Figure 103 (Sheet 8 of 8)**



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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 47 TRANSVERSE FLOOR BEAMS**



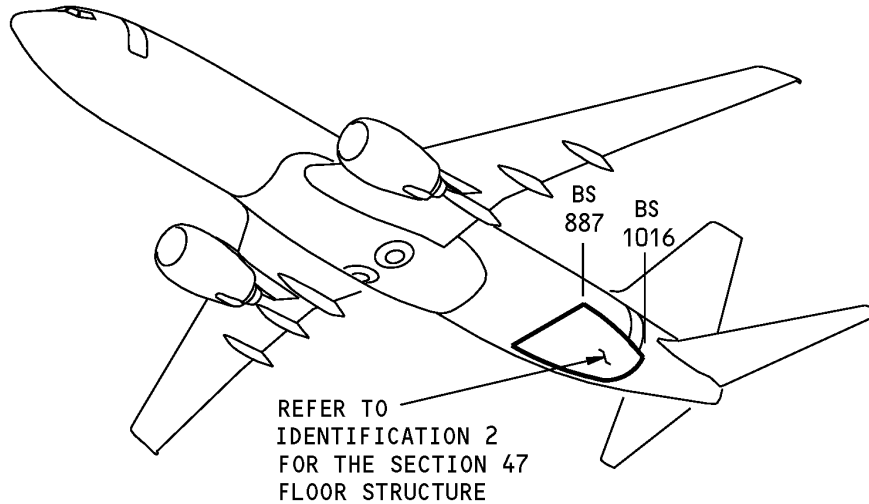
**Section 47 Transverse Floor Beam Repairs  
Figure 201**

737-800  
STRUCTURAL REPAIR MANUAL

REPAIR 2 - SECTION 47 FLOOR STRUCTURE

1. Applicability

- A. Repair 2 is applicable to damage to the floor structure as shown in Section 47 Floor Structure Repairs, Figure 201/REPAIR 2.



**NOTE:** THE BASIC FLOOR STRUCTURE CAN BE DIFFERENT BECAUSE OF OPERATOR OPTIONS. THE REPAIRS GIVEN IN THESE SECTIONS WILL ALSO BE APPLICABLE TO OPERATOR OPTIONS UNLESS SUCH AN OPTION NEEDS A SPECIFIED REPAIR IN THE MANUAL.

REFER TO SRM 51-70-11, SRM 51-70-12, AND SRM 51-70-13 FOR THE TYPICAL FORMED SECTION REPAIRS, TYPICAL EXTRUDED SECTION REPAIRS, AND TYPICAL WEB REPAIRS. THESE TYPICAL REPAIRS CAN BE USED WHEREVER THEY ARE APPLICABLE IF SUFFICIENT SPACE IS AVAILABLE FOR THE INSTALLATION OF THE REPAIR PARTS, WITH NO INTERFERENCE TO ADJACENT STRUCTURE. SOME OF THESE REPAIRS CAN NOT BE USED IN SPECIFIED AREAS OF THE AIRPLANE, AS GIVEN IN THE TYPICAL REPAIR FIGURES. REFER TO THE USAGE LIMITS IN THE TYPICAL REPAIR FIGURES BEFORE YOU START A REPAIR.

**Section 47 Floor Structure Repairs  
Figure 201**

2. General

- A. The typical repairs given in 51-70-11, 51-70-12, or 51-70-13 can be used, where applicable, if there is sufficient clearance with the adjacent structure to install the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, or 51-70-13 before you start a repair.



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**STRUCTURAL REPAIR MANUAL**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-70-51	FUSELAGE FLOOR STRUCTURE - SECTION 47

**4. Repair Instructions**

A. Section 47 Floor Structure

- (1) Refer to Table 201/REPAIR 2 to find the applicable repairs to the floor structure in Section 47 floor structure.

**NOTE:** If necessary, refer to 53-70-51, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 47 FLOOR STRUCTURE	
COMPONENT	REPAIR
Straps and Angles	Refer to SRM 51-70-12
Shear Webs	There are no repairs for these parts in the Structural Repair Manual at this time.
Straps, Brackets, Formed Angles, and Machined Splice Angles	There are no repairs for these parts in the Structural Repair Manual at this time. If the damage to the structure is more than the limits given in SRM 53-30-13, Allowable Damage 1, then replace the damaged part.



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## STRUCTURAL REPAIR MANUAL

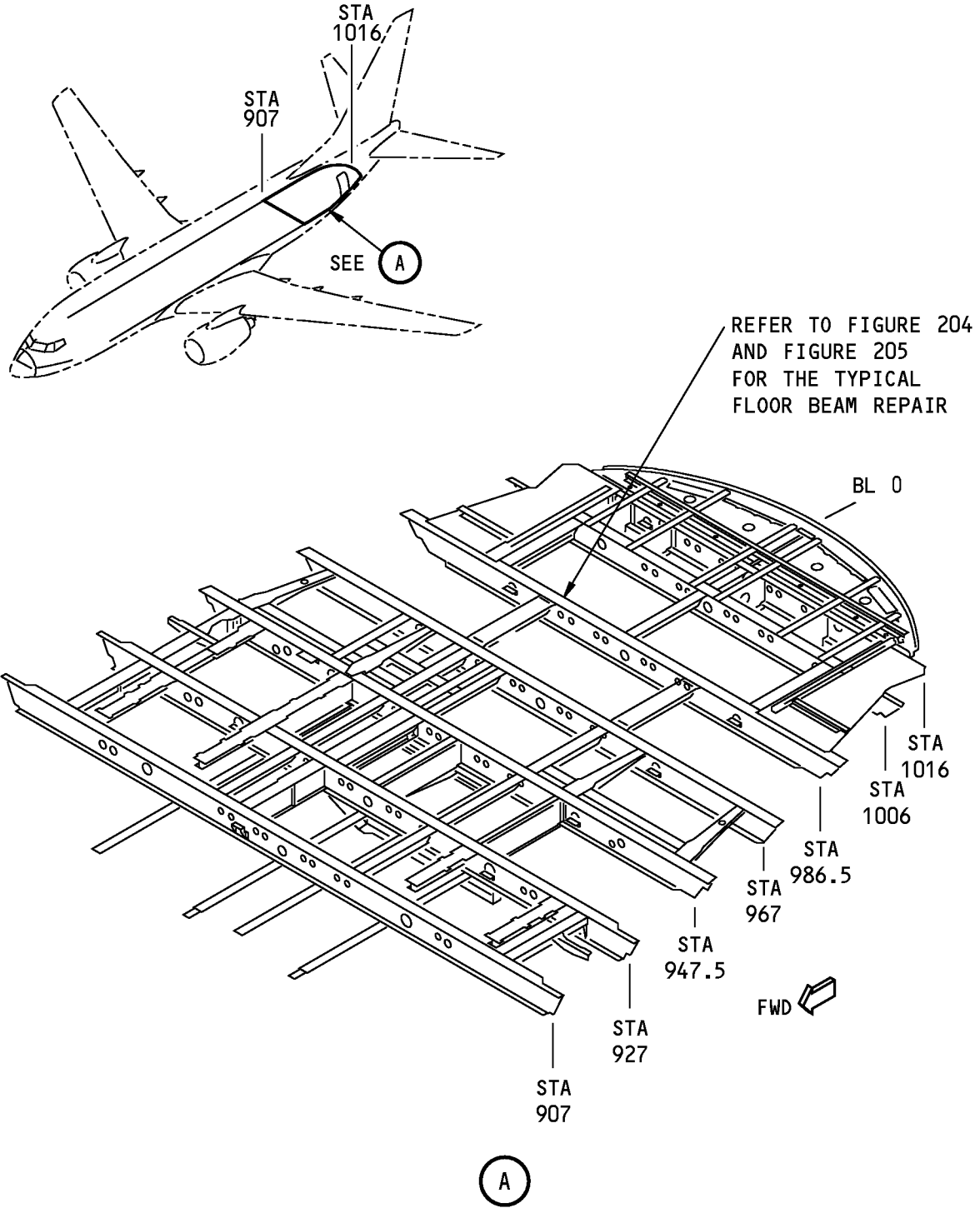
### REPAIR 4 - SECTION 47 - CORROSION DAMAGE ON THE UPPER CHORD OF THE FLOOR BEAM AT STA 986.5

#### 1. Applicability

- A. This repair is applicable to the BS 986.5 floor beam that has machined intercostals on the aft side at two locations. The machined intercostals must have a forward flange and web that are 0.070 in. (1.78 mm) thick.

#### 2. General

- A. This repair is a Category A repair. The inspections given in the Maintenance Planning Data (MPD) are sufficient to maintain damage tolerance of the initial structure with this repair installed. Refer to STRUCTURAL REPAIR DEFINITIONS, 51-00-06 for the definitions of the different categories of repairs.
- B. This repair has two alternatives:
  - Alternative 1 : Use this typical repair if you find damage on the upper chord along the full length of the Floor Beam. Refer to Figure 204/REPAIR 4.
  - Alternative 2 : Use this typical repair if you find damage on the upper chord at the end of the Floor Beam. Refer to Figure 205/REPAIR 4.
- C. Do not install splice parts in locations directly adjacent to the galley or lavatory fittings.
- D. You are not permitted to make changes to the intercostals that have galley or lavatory hardpoint fittings attached. If it is necessary to change these structures, contact the Boeing Company for further repair instructions.



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**Section 47 - Location of the Floor Beam at STA 986.5**  
**Figure 201**



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### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13	SURFACE ROUGHNESS FINISH REQUIREMENTS
51-30-01	SHEET METAL MATERIALS
51-30-01, GENERAL	Sheet Metal Materials
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06	FASTENER EDGE MARGINS
SOPM 20-10-03	General - Shot Peening Procedures
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Repair Instructions

- A. Get access to the repair area, as necessary.
- (1) Remove the adjacent structure to get access to the damaged floor beam.
  - (2) Remove the necessary fasteners in the repair area.
- B. Find the limits of the damage.
- (1) Refer to Figure 204/REPAIR 4 if you find damage along the full length of the floor beam.
  - (2) Refer to Figure 205/REPAIR 4 if you find damage at one or both of the ends of the floor beam only.
- C. Cut and remove the damaged flanges of the upper chord of the floor beam. Refer to Figure 203/REPAIR 4 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.
- (1) At the initial fastener locations keep a minimum 2.0 D edge margin.
  - (2) Do a detailed visual inspection of the cut edge to make sure that there is no damage caused by corrosion.
  - (3) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03
- D. Remove the initial rivet that plugs the tooling hole in the web of the initial floor beam.
- (1) Countersink the tooling hole to a depth of 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).
  - (2) Double flush plug the initial tooling hole with a BACR15CE()AD rivet.
  - (3) Microshave the rivet flush.
- E. Trim out the flange from the top four fasteners of the machined intercostal(s) attached to the floor beam if necessary. Refer to Figure 206/REPAIR 4 and INSPECTION AND REMOVAL OF DAMAGE, 51-10-02.
- (1) Keep a minimum 2D edge margin.
  - (2) Make the edges of the cut smooth to a finish of 63 microinches (1.6 micrometers) Ra or smoother before you flap peen. Refer to SURFACE ROUGHNESS FINISH REQUIREMENTS, 51-20-13.

**STRUCTURAL REPAIR MANUAL**

- (3) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03.
- F. Apply a chemical conversion coating to the bare surfaces of the floor beam and intercostals. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- G. Make the repair parts. Refer to Table 201/REPAIR 4 and Figure 204/REPAIR 4 or Figure 205/REPAIR 4 as applicable, and Figure 206/REPAIR 4 and SHEET METAL MATERIALS, 51-30-01.
  - (1) When you make the part [1] T-Chord, it is permitted to use an optional "T" shape extrusion as long as:
    - (a) The material for the extrusion is 7050-T76511 or 7075-T6511.
    - (b) The horizontal flange is 0.150 in. (3.81 mm) thick, the vertical flange is 0.090 in. (2.29 mm) thick, and the corner radius is 0.120 in. (3.05 mm).
    - (c) The horizontal flange is a minimum of 2.30 in. (58.42 mm) wide to provide the necessary edge margin to the floor panel attach fasteners.
    - (d) You make sure that the vertical flange has 2D edge margin and 4D to 6D fastener distance at all new fastener locations.
    - (e) You make sure that there are no cracks in the new upper chord. Use the dye penetrant inspection as given in SOPM 20-20-02.
    - (f) Flap peen the cut edge with 200% coverage as given in SOPM 20-10-03.
  - (2) If it is necessary to machine the new T-Chord then use the dye penetrant inspection as given in SOPM 20-20-02. Shot peen or flap peen the machined areas with 100% coverage as given in SOPM 20-10-03.
  - (3) When you make the Part [7] Shear Tie, refer to Figure 206 (Sheet 8). Machine the shear tie to keep a 2.0 D edge margin at the forward leg.
  - (4) Make structural shims as necessary at the floor beam and clips. Refer to 51-30-01, GENERAL.

**Table 201: REPAIR MATERIAL**

ITEM	PART	QUANTITY	MATERIAL
[1]	T-Chord	As necessary	Use BAC1505-101474 7050-T76511 (optional: 7075-T6511) extrusion or an equivalent extrusion.
[2]	Angle	2	Use 7075-T0 clad sheet Thickness is 0.071 in. (1.80 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2811 7075-T6 clad formed angle or an equivalent 0.071 in. (1.80 mm) 7075-T6 clad formed angle).
[3]	Angle	2	Use 7075-T0 clad sheet. Thickness is 0.080 in. (2.03 mm). Heat treat to T62 after you form it. Maintain the minimum bend radius. (Optional: BAC 1490-2887 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[4]	Strap	2	Use 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm).
[5]	Angle	4	Use clad 7075-T6 clad sheet. Thickness is 0.080 in. (2.03 mm). Maintain the minimum bend radius. (Optional: BAC 1490-2651 7075-T6 clad formed angle or an equivalent 0.080 in. (2.03 mm) 7075-T6 clad formed angle).
[6]	Filler	4	Use 7075-T6 clad sheet. Thickness is 0.020 in. (0.51 mm).
[7]	Shear Tie	2	Use BAC1506-4480 7075 T73511 extrusion as given in AMS-QQ-A-200/11 or an equivalent extrusion that has the necessary thickness shown on the drawing.

## STRUCTURAL REPAIR MANUAL

- H. Assemble the repair parts. Install the Part [1] T-Chord on the aft side of the floor beam. Do not install between the frame and initial beam structure. Make sure that the distance between mating surfaces of the repair parts are not larger than 0.010 in. (0.25 mm).
- (1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4 as applicable.
  - (2) Refer to Figure 206/REPAIR 4 for the typical attachment of the part [1] T-chord(s).
  - (3) If the part 251A2124 support brackets are in the same location as the repair parts, move the bracket to a lower location.
    - (a) Countersink depth to be 0.020 in. (0.51 mm) to 0.025 in. (0.64 mm).
    - (b) Plug the initial holes with BACR15CE()AD rivets.
    - (c) Microshave the rivets flush.
- I. Drill necessary fastener holes.
- (1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4, as applicable, for the type and size of fasteners.
  - (2) Refer to FASTENER HOLE SIZES, 51-40-05 for the fastener hole sizes.
  - (3) Refer to FASTENER EDGE MARGINS, 51-40-06 for the fastener edge margins.
- NOTE:** Make sure that the floor panel attach fastener holes do not go into the radius of the repair angle. If necessary, move the floor panel attach fastener holes in the splice area away from the radius of the repair angle to a different location. It will be necessary to move the floor potted inserts if you move the fastener holes in the beam.
- J. Disassemble the repair parts.
- K. Remove all nicks, scratches, gouges, burrs, and sharp edges from the repair parts and repaired surfaces of the initial parts.
- L. Apply a chemical conversion coating to the repair parts and the machined surfaces of the initial parts. Refer to PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01.
- M. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the machined surfaces of the initial parts. Refer to SOPM 20-41-02.
- N. Install the repair parts.
- (1) Refer to Figure 204/REPAIR 4 or Figure 205/REPAIR 4, as applicable.
  - (2) Refer to Figure 206/REPAIR 4 for the typical attachment of the Part [1] T-Chord(s).
  - (3) Apply BMS 5-95 sealant to the mating surfaces. Refer to REPAIR SEALING, 51-20-05.
  - (4) Install hex drive bolts wet with BMS 5-95 sealant into transition fit holes. Install the rivets without sealant. Refer to FASTENER INSTALLATION AND REMOVAL, 51-40-02 for the fastener installation. Refer to REPAIR SEALING, 51-20-05.
  - (5) When you install the repair parts, use fillers if the space between parts is 0.010 in. (0.25 mm) or more before fastener pull-up.
- O. Apply a fillet seal and fill all internal gaps with BMS 5-95 sealant. Refer to REPAIR SEALING, 51-20-05.
- P. Apply one layer of BMS 10-11, Type I primer to the fastener heads in the repair area. Refer to SOPM 20-41-02.
- Q. Apply a corrosion inhibiting compound in accordance with PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS, 51-20-01 or an operator approved procedure.





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**STRUCTURAL REPAIR MANUAL**

- I
- I
- R. Install the adjacent structure that you removed.

**737-800  
STRUCTURAL REPAIR MANUAL**

**NOTES**

- ALL DIMENSIONS ARE IN INCHES (mm).
- D = THE DIAMETER OF THE FASTENER.

- 1 IF YOU MUST MAKE THE FASTENER HOLE LARGER, INSTALL A 1/64TH INCH LARGER FASTENER OF THE SAME TYPE AS THE INITIAL FASTENER. THE HOLE MUST BE A TRANSITION FIT HOLE. INSTALL THE FASTENER WET WITH BMS 5-95.
- 2 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS THROUGH THE ENDS OF EACH VERTICAL FLANGE OF THE PART [2] ANGLE.
- 3 THERE MUST BE A MINIMUM OF THREE REPAIR FASTENERS THROUGH THE PART [4] STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.
- 4 THERE MUST BE A MINIMUM OF ONE REPAIR FASTENER IN THE HORIZONTAL FLANGE OF THE PART [3] ANGLE EXTENDED BEYOND THE PART (4) STRAP. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.
- 5 THERE MUST BE A MINIMUM OF TWO REPAIR FASTENERS IN THE HORIZONTAL FLANGE OF THE PART [2] ANGLE EXTENDED BEYOND THE PART (3) ANGLE. THIS DOES NOT INCLUDE A FLOOR PANEL FASTENER OR A CARGO LINER FASTENER.

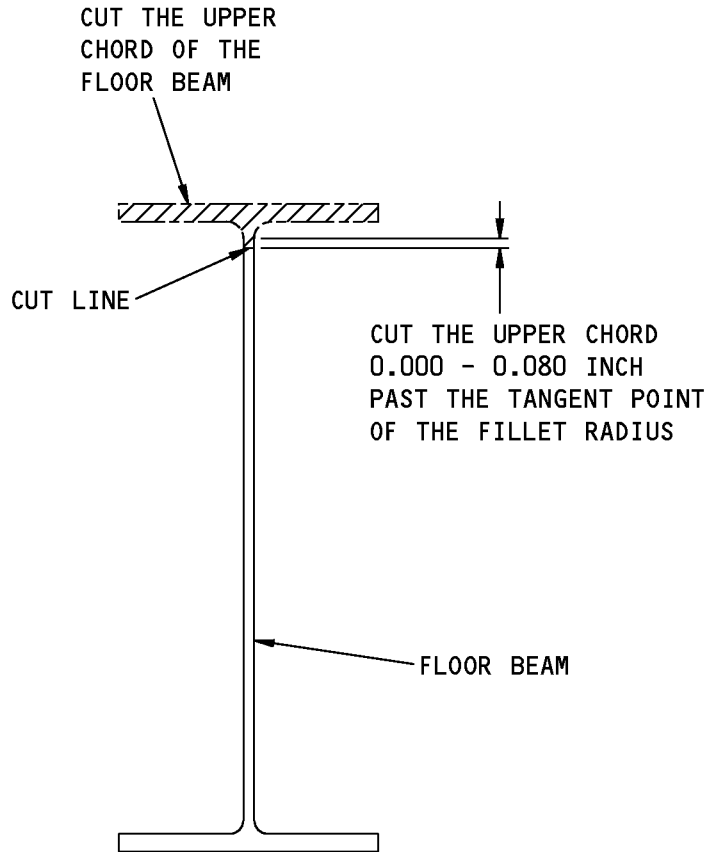
**FASTENER SYMBOLS**


- ⊕ REFERENCE FASTENER LOCATION.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30NX6K( ) HEX DRIVE BOLT WITH A BACC30M COLLAR. 1
- ▲ FLOOR PANEL OR CARGO LINER FASTENER LOCATION. INSTALL A BACN10JR3CFD OR BACN10JZ3B2CDM NUTPLATE WITH BACR15BA3AD( ) RIVETS WHERE BACN10VR( )CG CLIP-ON NUT CAN NOT BE INSTALLED. INSTALL THROUGH THE LOWER MOST REPAIR PART ONLY.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30MY6K( ) OR BACB30FM6K( ) HEX DRIVE BOLT WITH BACC30M COLLAR.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACB30NW6K( ) OR BACB30FN6K( ) HEX DRIVE BOLT WITH A BACC30M COLLAR.
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACB30MY8K( ) OR BACB30FM8K( ) HEX DRIVE BOLT WITH BACC30M COLLAR. 1
- ⊕ INITIAL FASTENER LOCATION. INSTALL A FASTENER OF THE SAME TYPE AND SIZE AS THE INITIAL FASTENER. 1

1337471 S0000239002\_V2

**Notes and Fastener Symbols  
Figure 202**

**737-800  
STRUCTURAL REPAIR MANUAL**



 THE AREA WHERE MATERIAL IS REMOVED BECAUSE OF DAMAGE.

**REMOVAL OF THE DAMAGE**

1337466 S0000238997\_V1

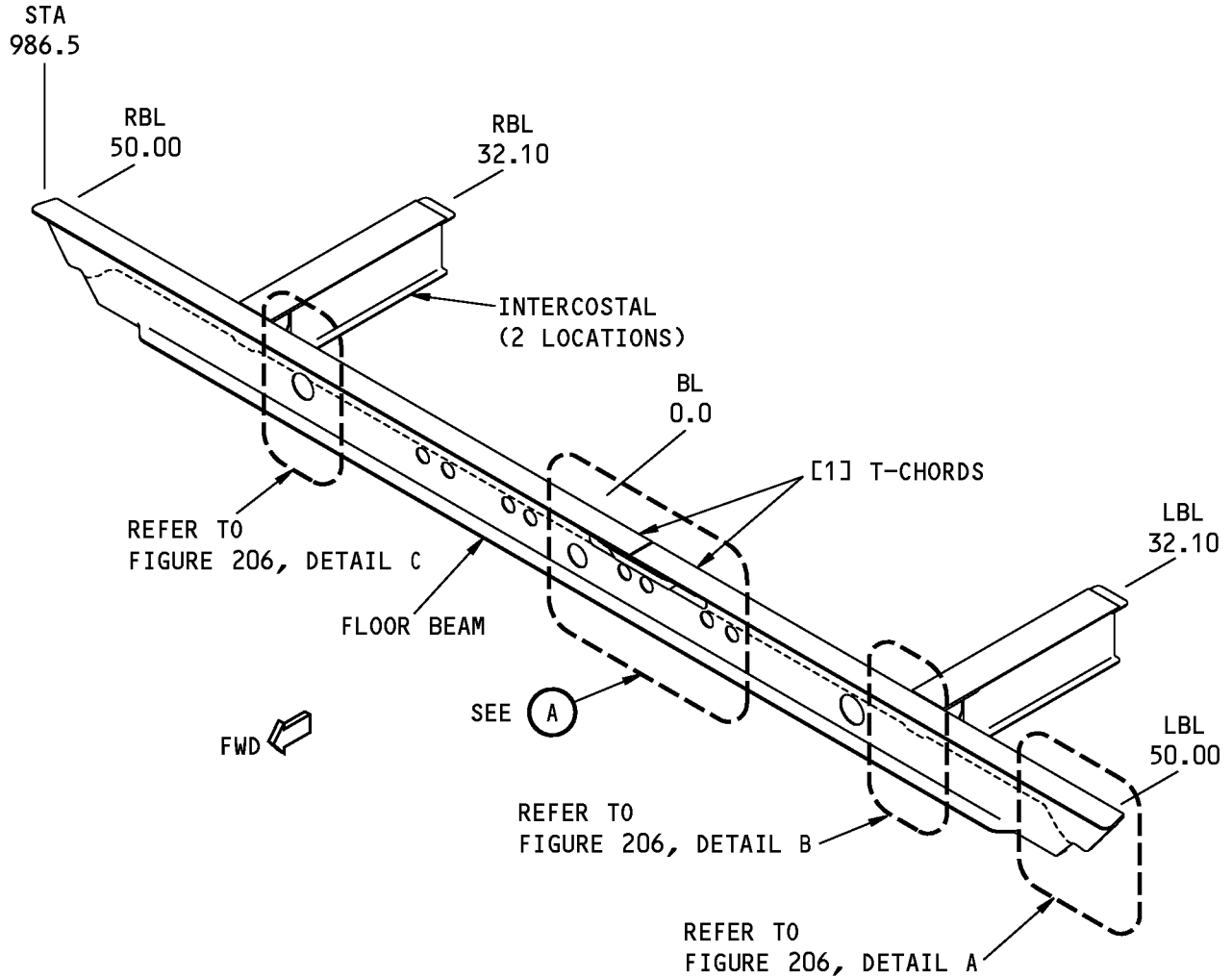
**Removal of the Damage  
Figure 203**

D634A210

**53-70-51**

REPAIR 4  
Page 208  
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STRUCTURAL REPAIR MANUAL**



**NOTE:** INTERCOSTALS CAN BE AT DIFFERENT LOCATIONS THAN SHOWN.

**ALTERNATIVE 1 - TYPICAL REPAIR FOR DAMAGE ON THE FLANGES OF THE UPPER CHORD ALONG THE FULL LENGTH OF THE FLOOR BEAM**

1337467 S0000238998\_V1

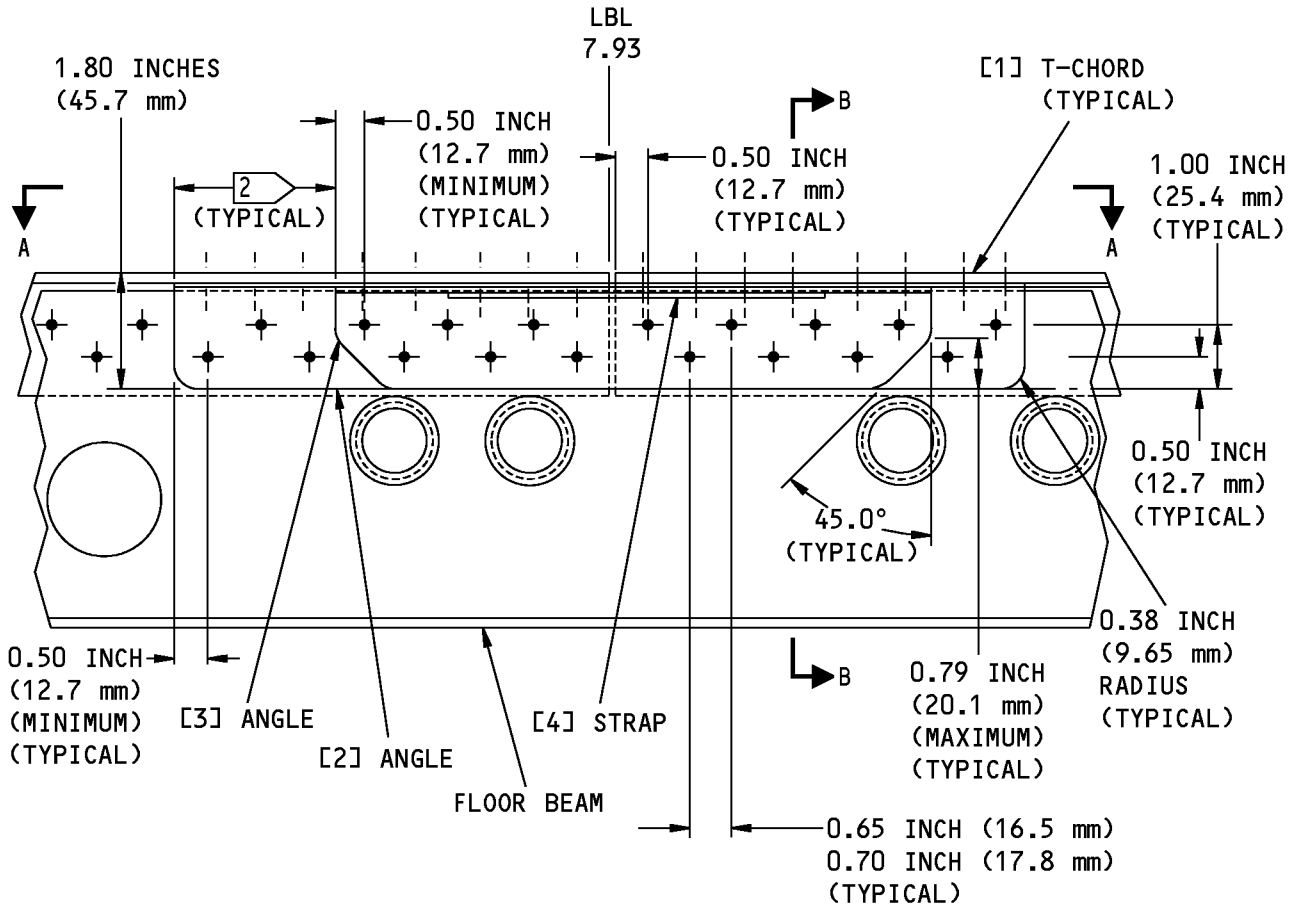
**Repair Alternative 1  
Figure 204 (Sheet 1 of 4)**

D634A210

**53-70-51**

REPAIR 4  
Page 209  
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**NOTE:** THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS. DO NOT CENTER THE SPLICE ABOVE A CUT-OUT IN THE WEB.

**SPLICE OF THE PARTS [1] T-CHORDS**



1337468 S0000238999\_V1

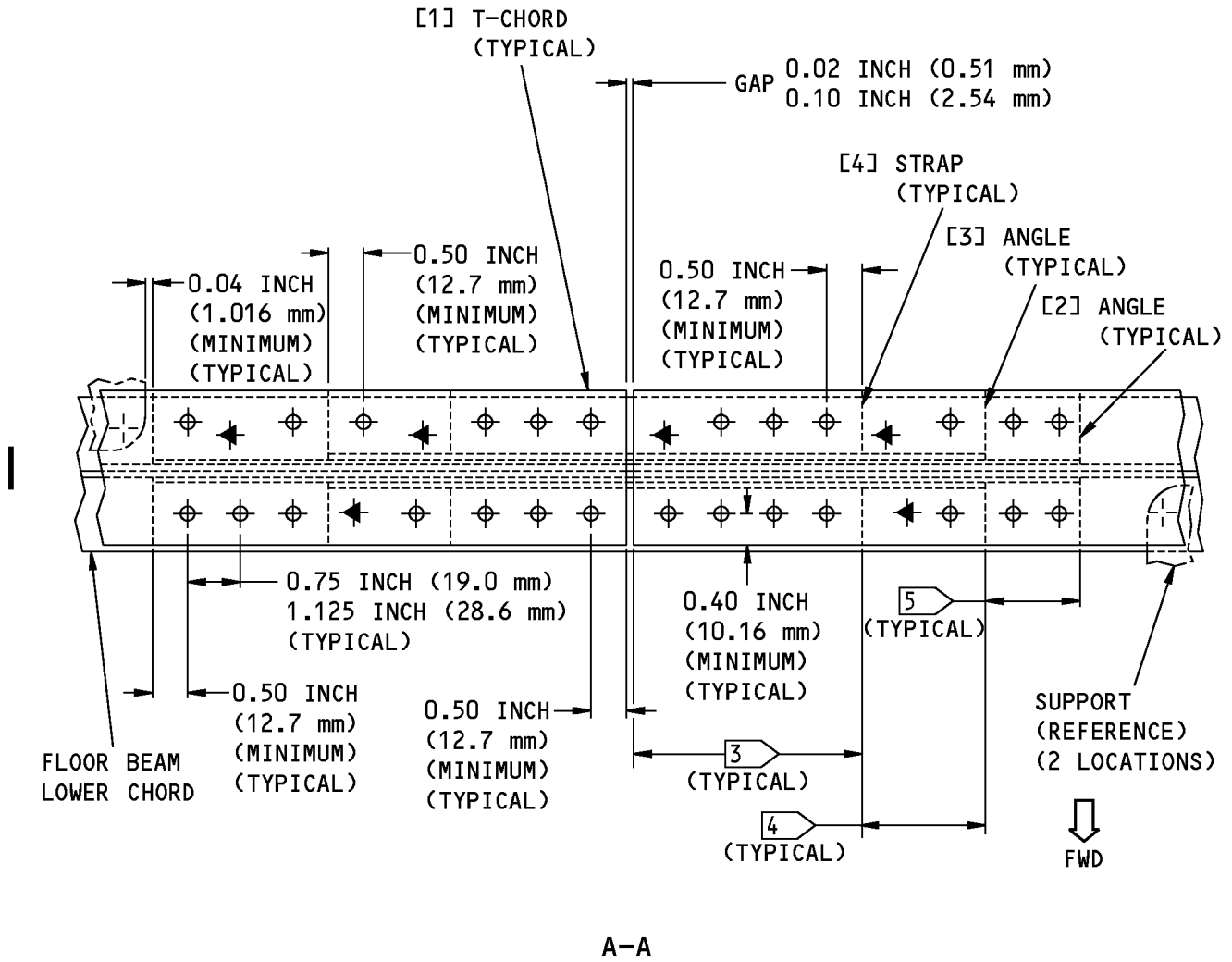
**Repair Alternative 1  
Figure 204 (Sheet 2 of 4)**

D634A210

**53-70-51**

REPAIR 4  
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Nov 10/2008

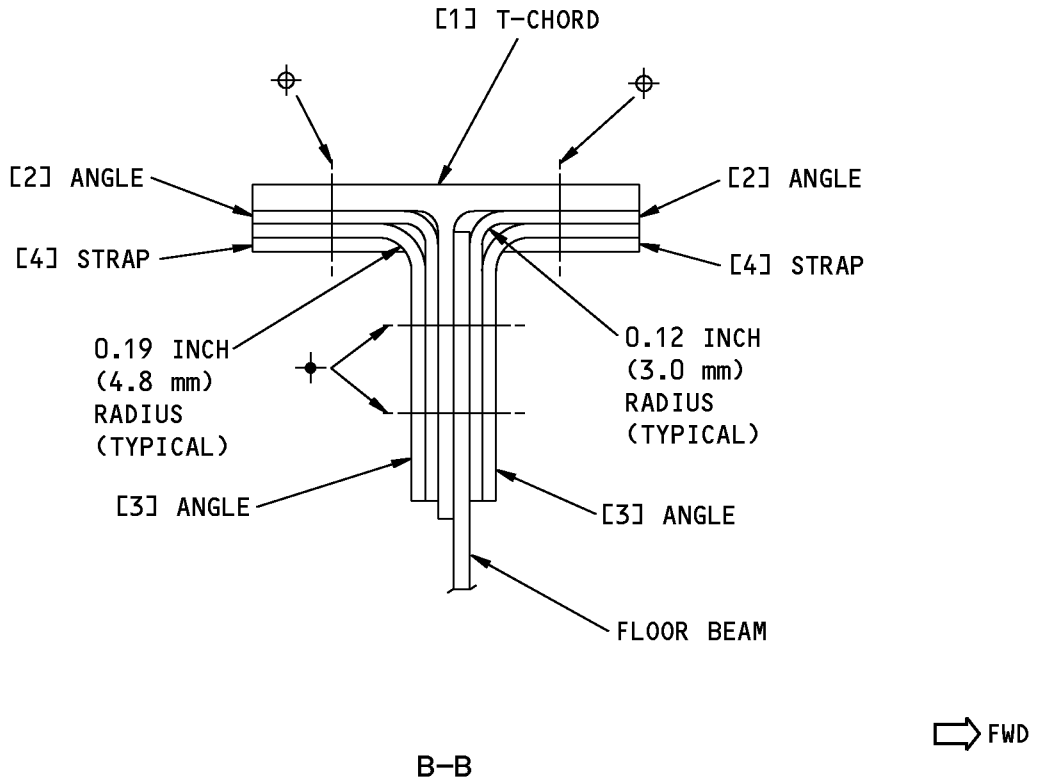
**737-800  
STRUCTURAL REPAIR MANUAL**



**Repair Alternative 1  
Figure 204 (Sheet 3 of 4)**

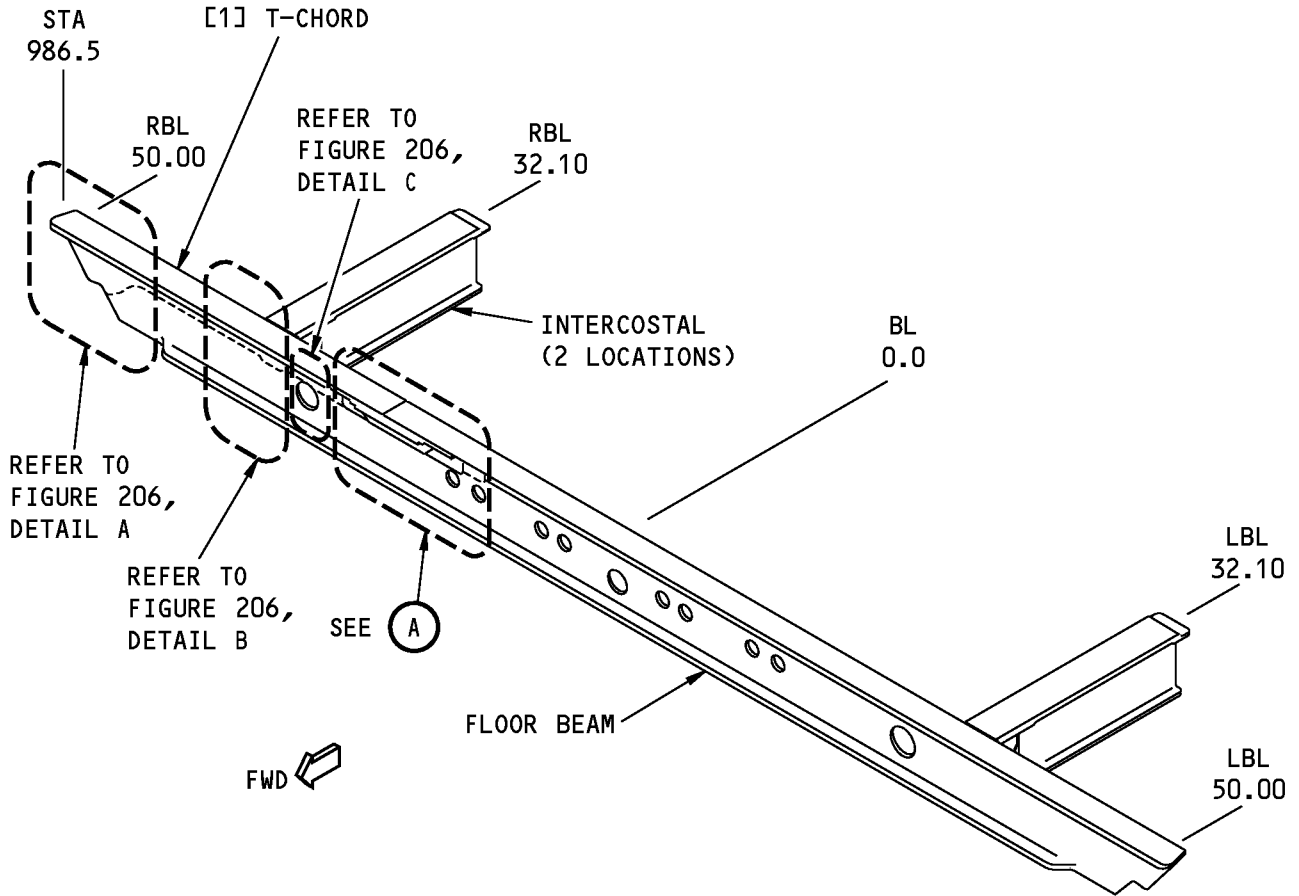
1337469 S0000239000\_V2

**737-800  
STRUCTURAL REPAIR MANUAL**



**Repair Alternative 1  
Figure 204 (Sheet 4 of 4)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** INTERCOSTALS CAN BE AT DIFFERENT LOCATIONS THAN SHOWN.

**ALTERNATIVE 2 - TYPICAL REPAIR FOR DAMAGE ON THE  
FLANGES OF THE UPPER CHORD AT THE END OF THE  
FLOOR BEAM**

1337472 S0000239004\_V1

**Repair Alternative 2  
Figure 205 (Sheet 1 of 5)**

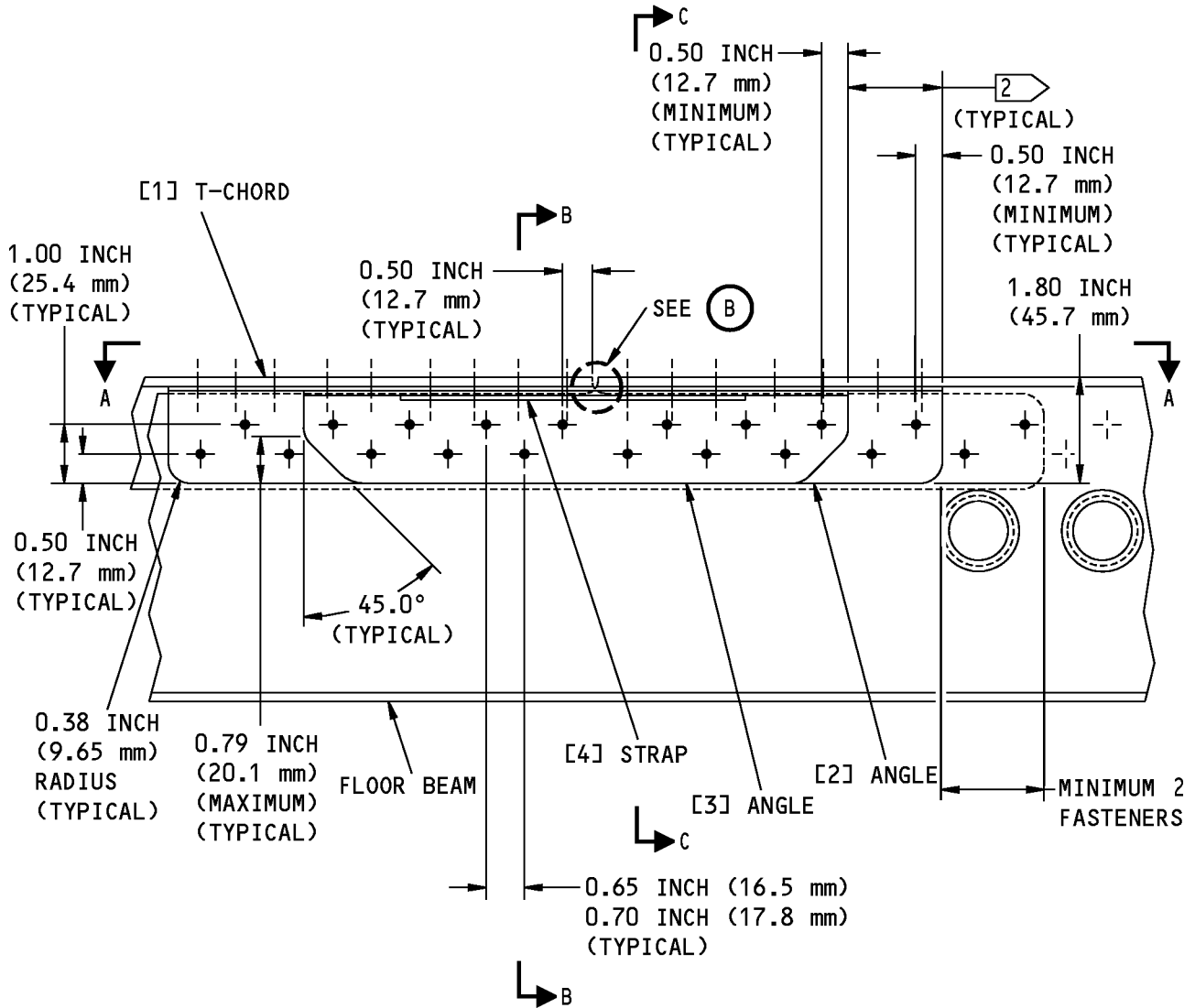
D634A210

**53-70-51**

REPAIR 4  
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STRUCTURAL REPAIR MANUAL**



**NOTE:** THE SPLICE CAN BE AT DIFFERENT LOCATIONS BECAUSE OF SPECIFIC CONFIGURATIONS DO NOT CENTER THE SPLICE ABOVE A CUT-OUT IN THE WEB

**SPLICE OF THE PART [1] T-CHORD AND FLOOR BEAM**



1337473 S0000239005\_V1

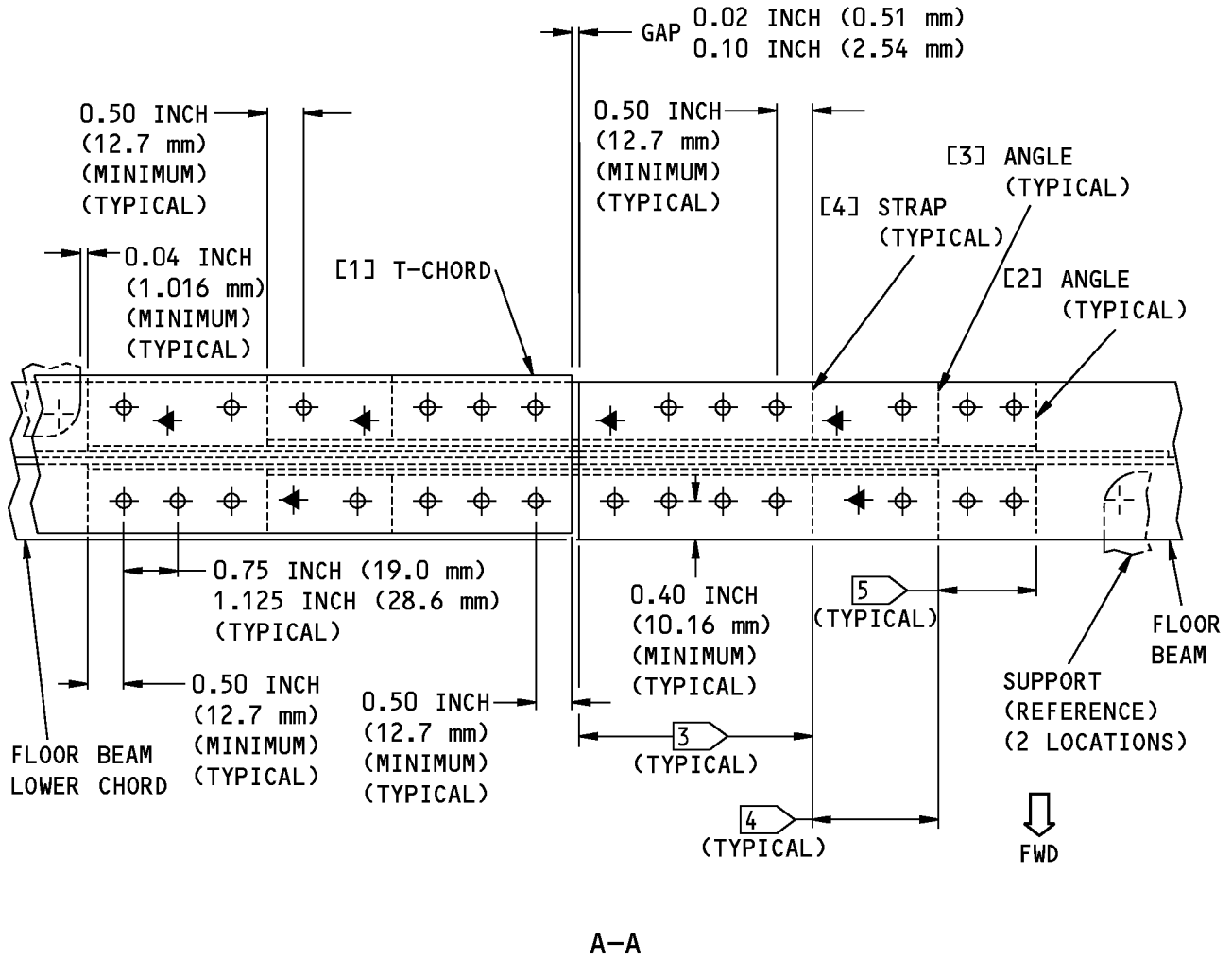
**Repair Alternative 2  
Figure 205 (Sheet 2 of 5)**

**53-70-51**

REPAIR 4  
Page 214  
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STRUCTURAL REPAIR MANUAL**



1337474 S0000239006\_V1

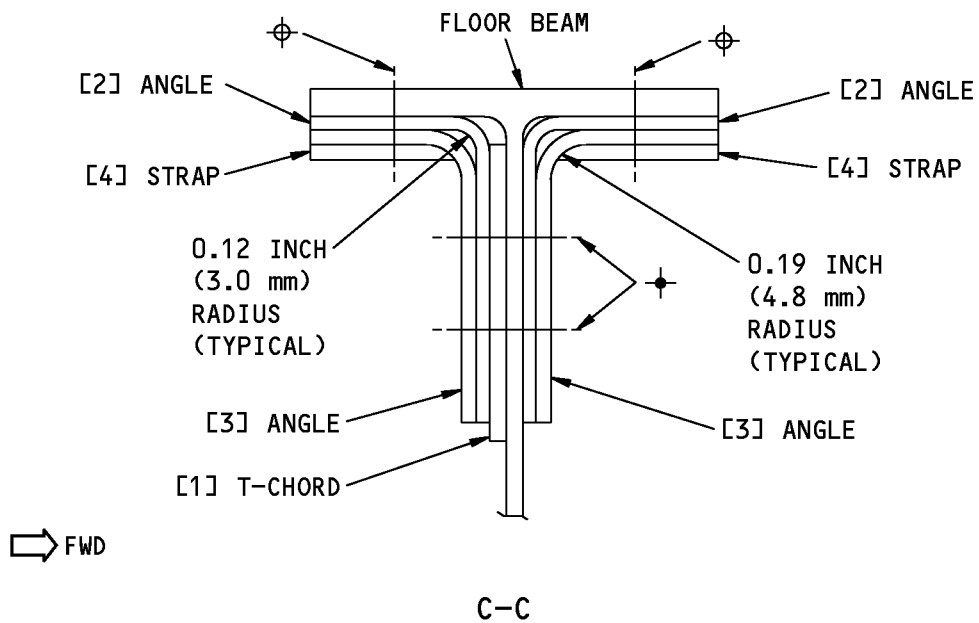
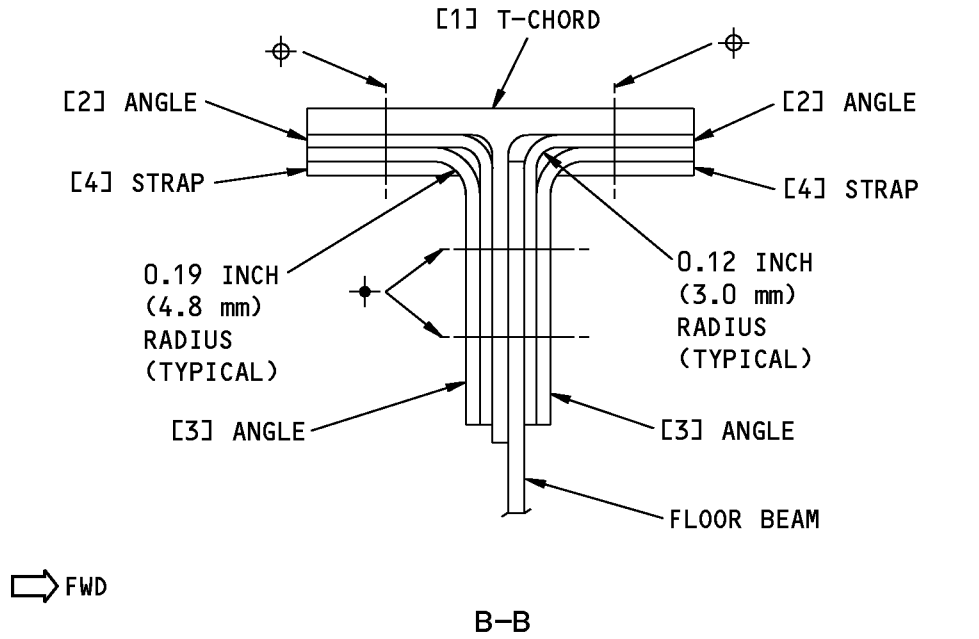
**Repair Alternative 2  
Figure 205 (Sheet 3 of 5)**

D634A210

**53-70-51**

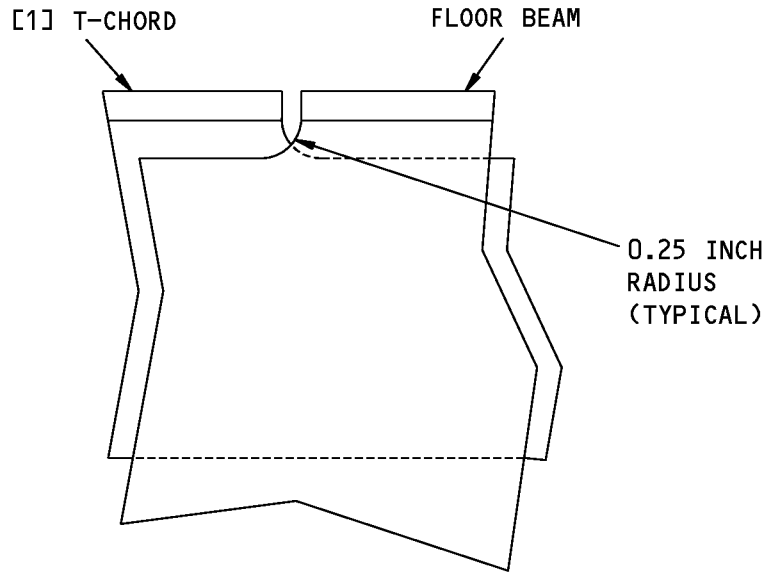
REPAIR 4  
Page 215  
Nov 10/2008

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STRUCTURAL REPAIR MANUAL**



**Repair Alternative 2  
Figure 205 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



ANGLES PART [2] AND PART [3], AND STRAP PART [4] ARE NOT SHOWN FOR CLARITY

(B)

1337476 S0000239008\_V2

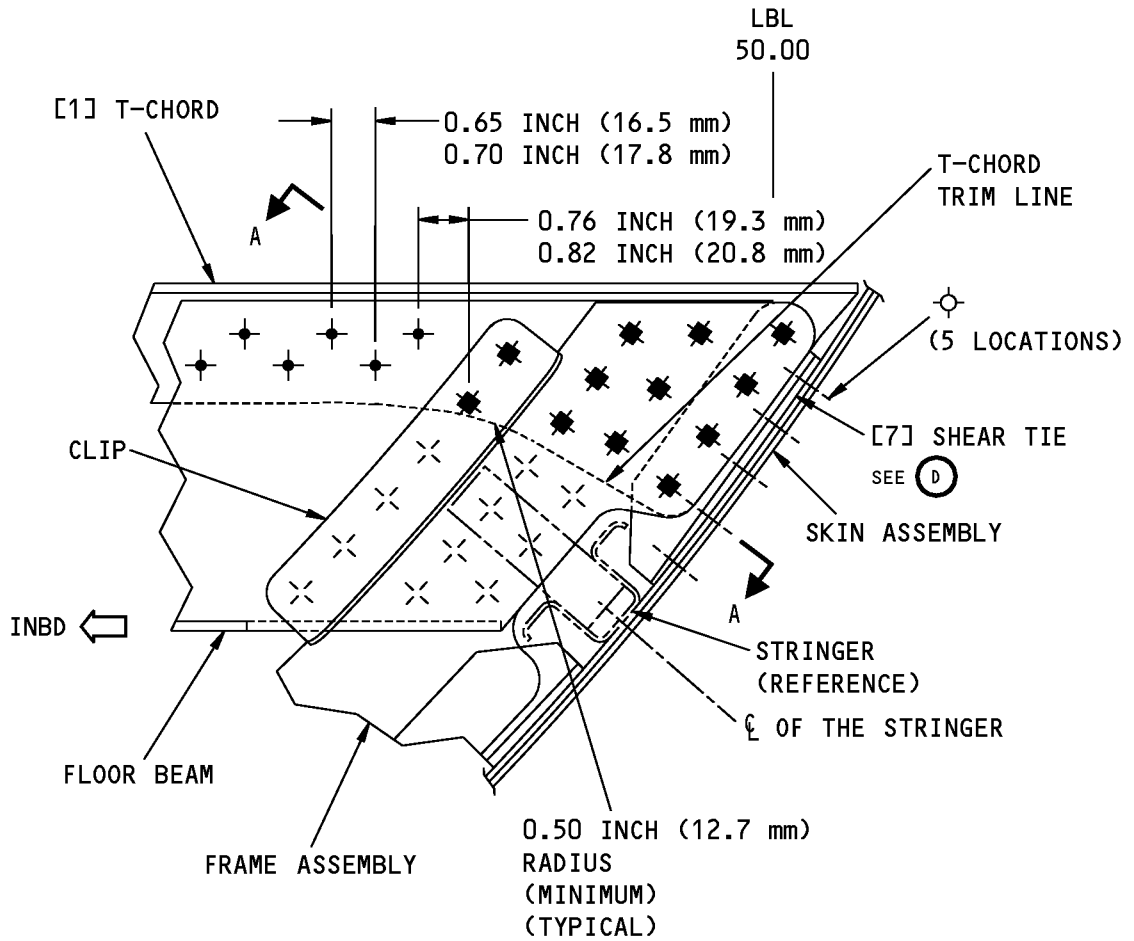
**Repair Alternative 2  
Figure 205 (Sheet 5 of 5)**

D634A210

**53-70-51**

REPAIR 4  
Page 217  
Jul 10/2009

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STRUCTURAL REPAIR MANUAL**



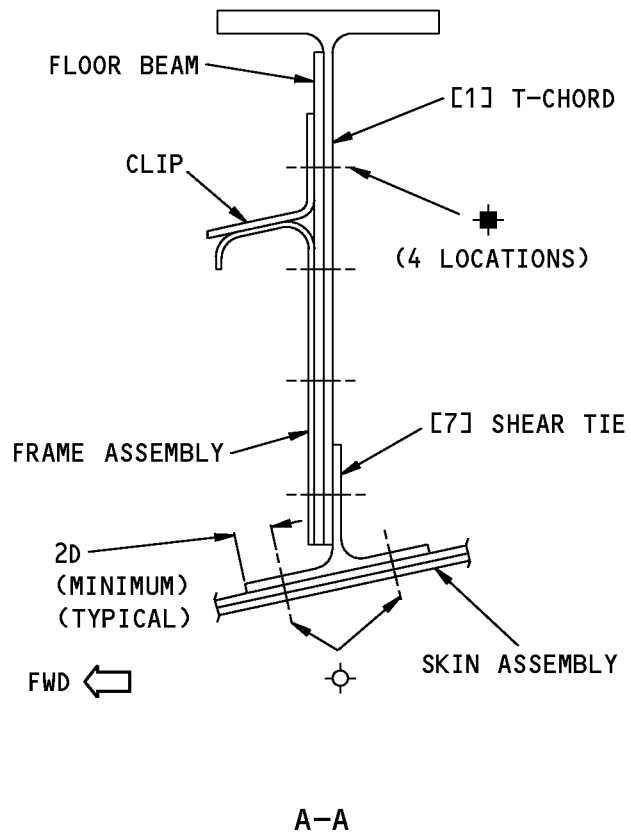
LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
TYPICAL ATTACHMENT OF THE PART [1] T-CHORD AT LBL/RBL50

(A)

1337478 S0000239010\_V2

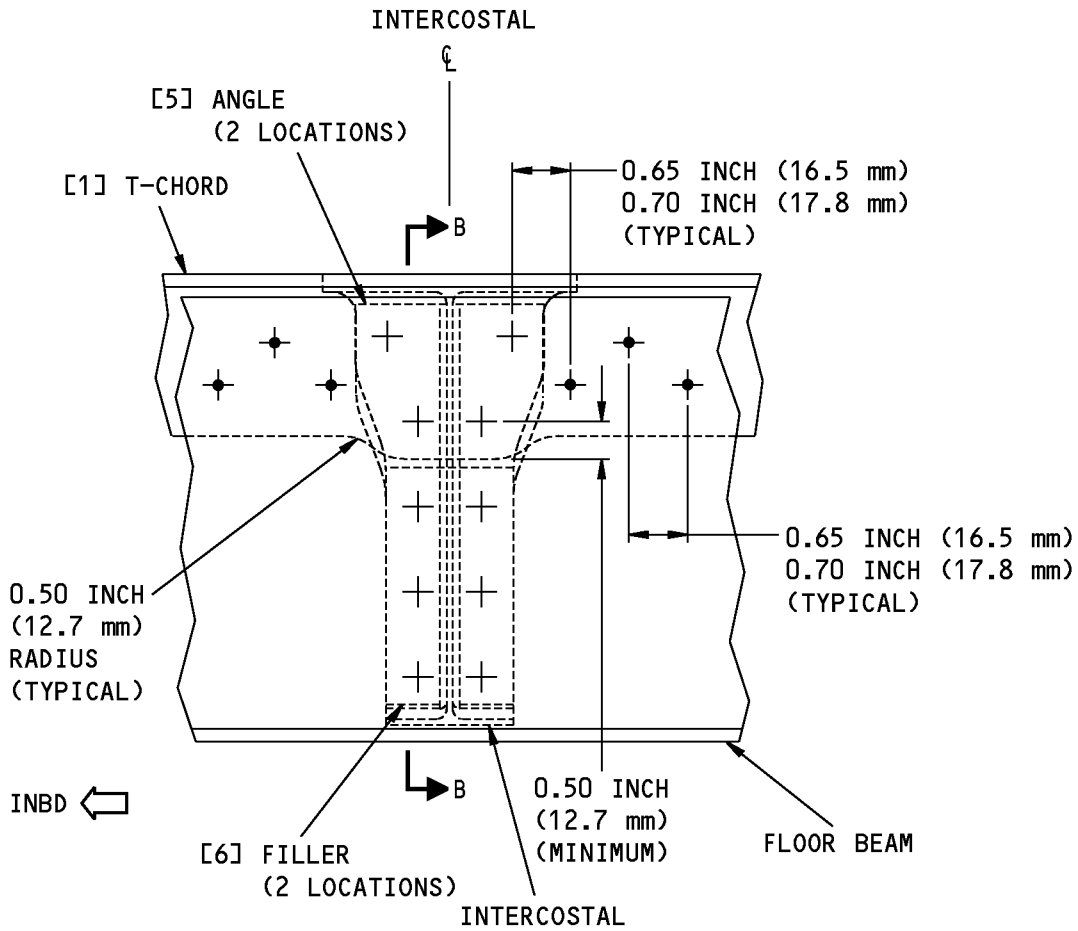
**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 1 of 8)**

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STRUCTURAL REPAIR MANUAL**



**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 2 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**



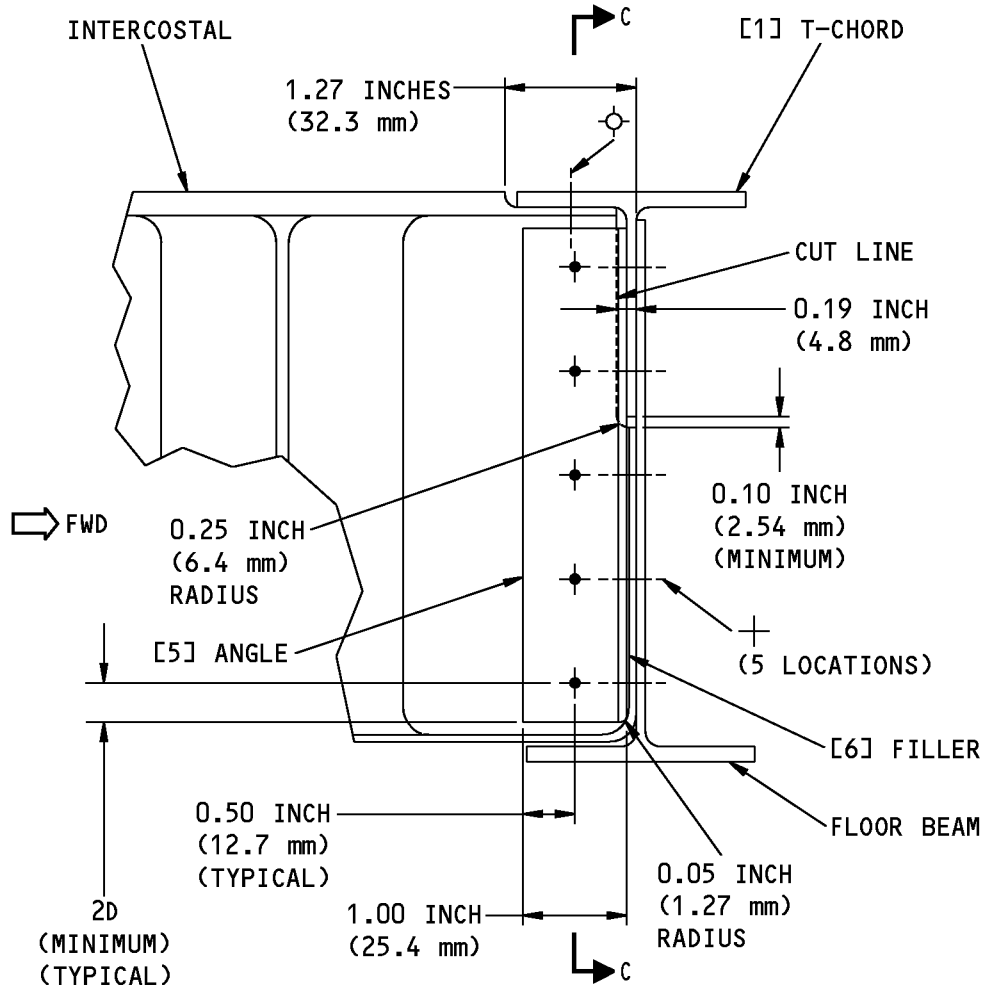
LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
TYPICAL ATTACHMENT OF THE PART [1] T-CHORD  
WITH INTERCOSTALS

(B)

1337480 S0000239012\_V1

**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 3 of 8)**

**737-800  
STRUCTURAL REPAIR MANUAL**

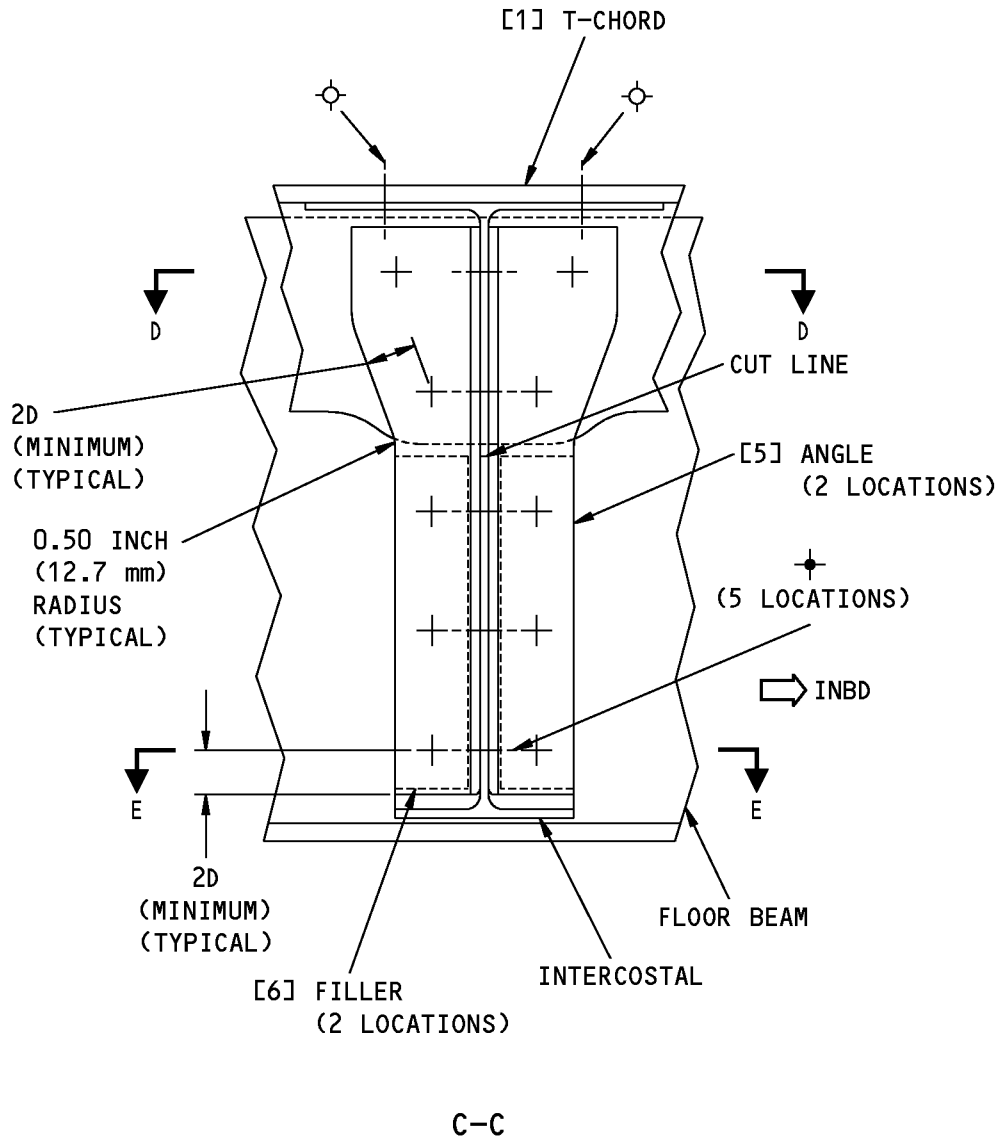


B-B

**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 4 of 8)**

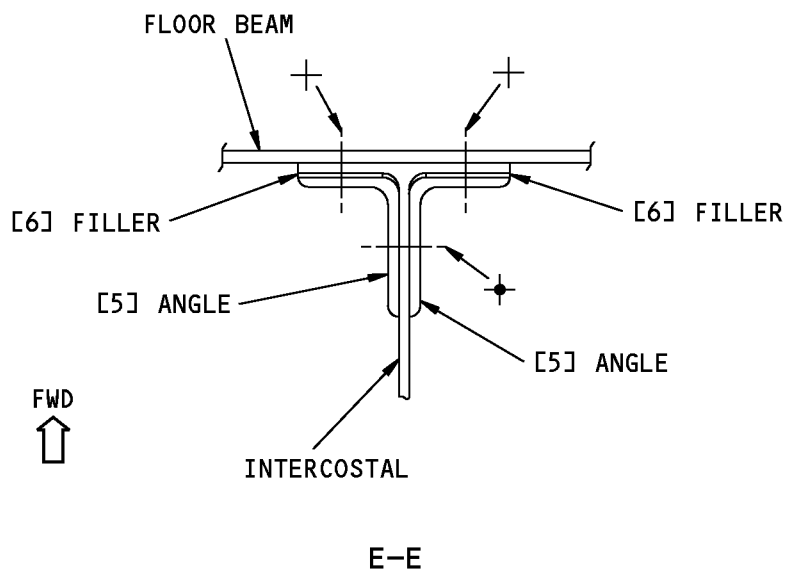
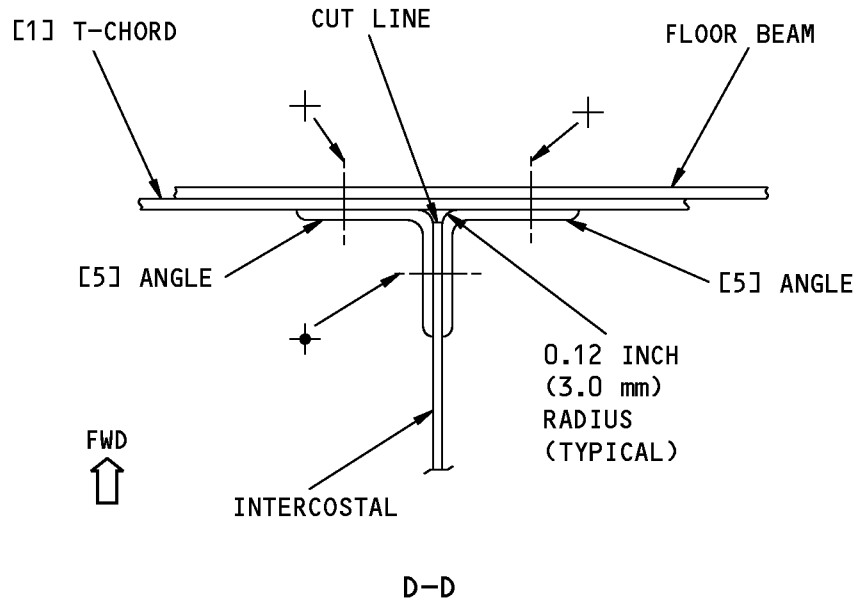


**737-800  
STRUCTURAL REPAIR MANUAL**



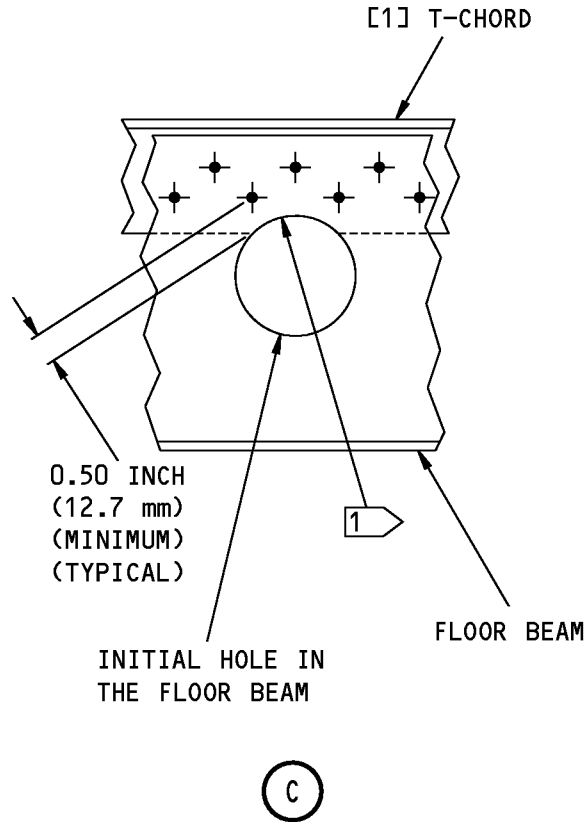
**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 5 of 8)**

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STRUCTURAL REPAIR MANUAL**



**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 6 of 8)**

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STRUCTURAL REPAIR MANUAL

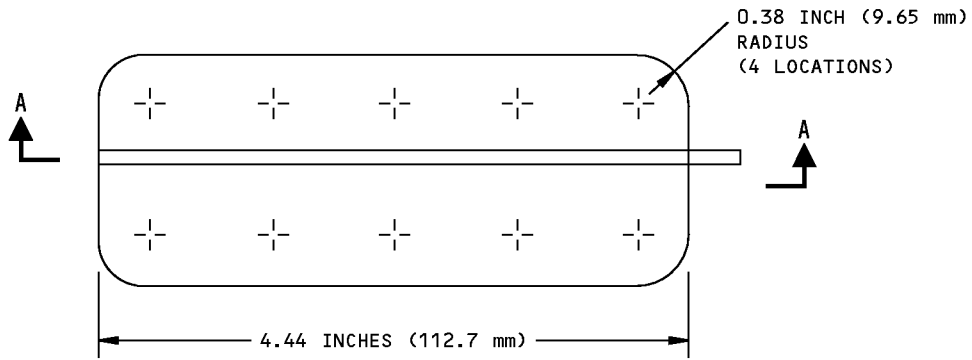


NOTES

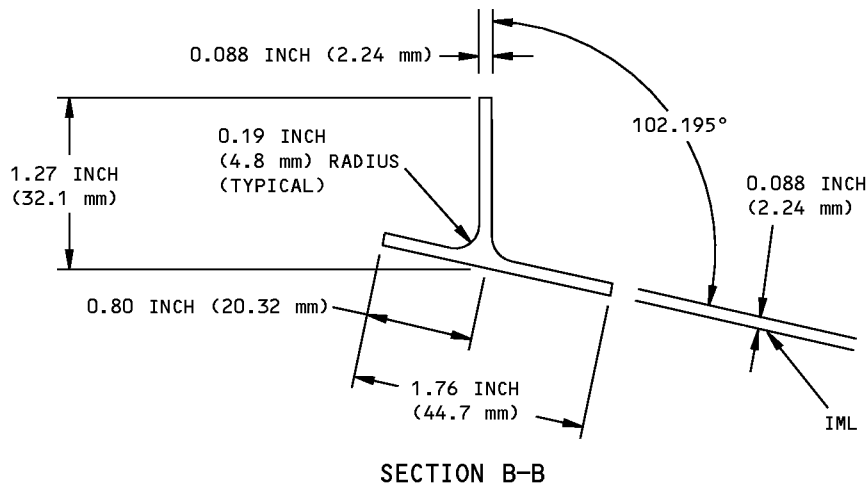
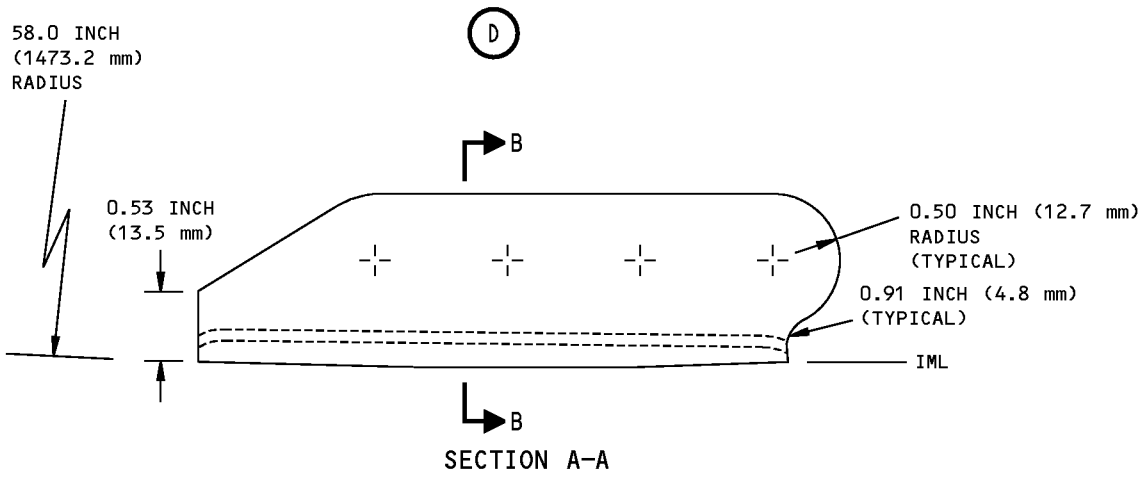
- 1 THE REPAIR PARTS MUST NOT CAUSE A BLOCKAGE OF THE FLOOR BEAM HOLES. MAKE THE CUT OUT IN THE REPAIR PARTS THE SAME SHAPE AS THE HOLES THEY MUST GO AROUND IN THE FLOOR BEAM.

T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 7 of 8)

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STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE  
REPAIR PART [7] SHEAR TIE

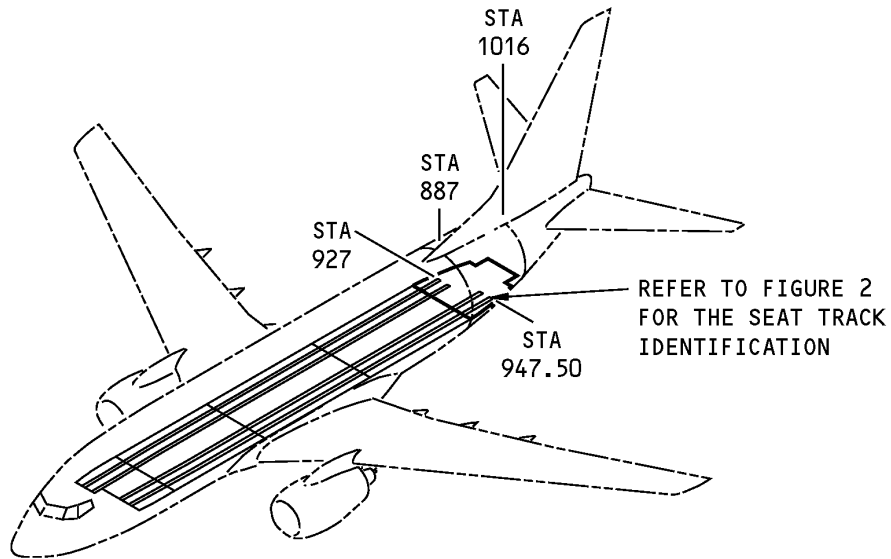


1553092 S0000285771\_V1

**T-Chord Attachment at Ends of Floor Beam, Intercostals and Penetration Holes  
Figure 206 (Sheet 8 of 8)**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 SEAT TRACKS**



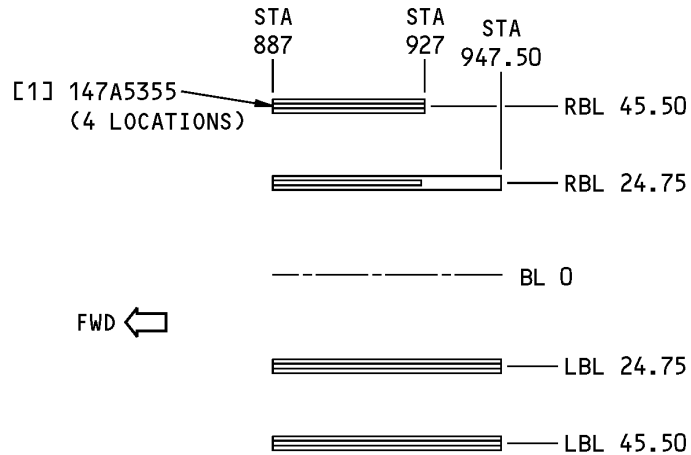
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Seat Track Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A0355	Section 46/47 Floor Integration Collector
147A0060	Section 46/47 Fuselage Integration Installation
147A5300	Seat Track Installation - Section 47

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

THERE ARE MANY SEAT TRACK CONFIGURATIONS FOR THIS AIRPLANE. THESE CONFIGURATIONS CAN BE DIFFERENT THAN THE ONE THAT IS SHOWN. REFER TO DRAWING 140A0355 TO SEE THE DIFFERENT CONFIGURATIONS.

**Section 47 Seat Track Identification  
Figure 2**

**Table 2:**

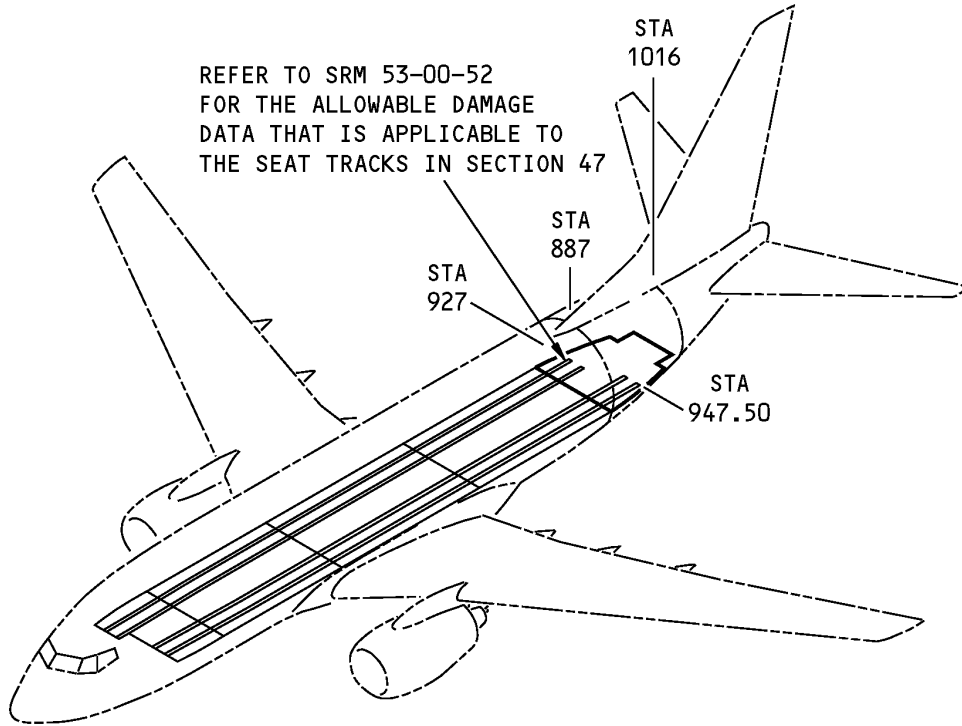
LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Seat Track (4)		Ti-6Al-4V titanium plate as given in MIL-T-9046 (Optional: Ti-6Al-4V extruded titanium bar as given in AMS 4935)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 47 SEAT TRACKS**

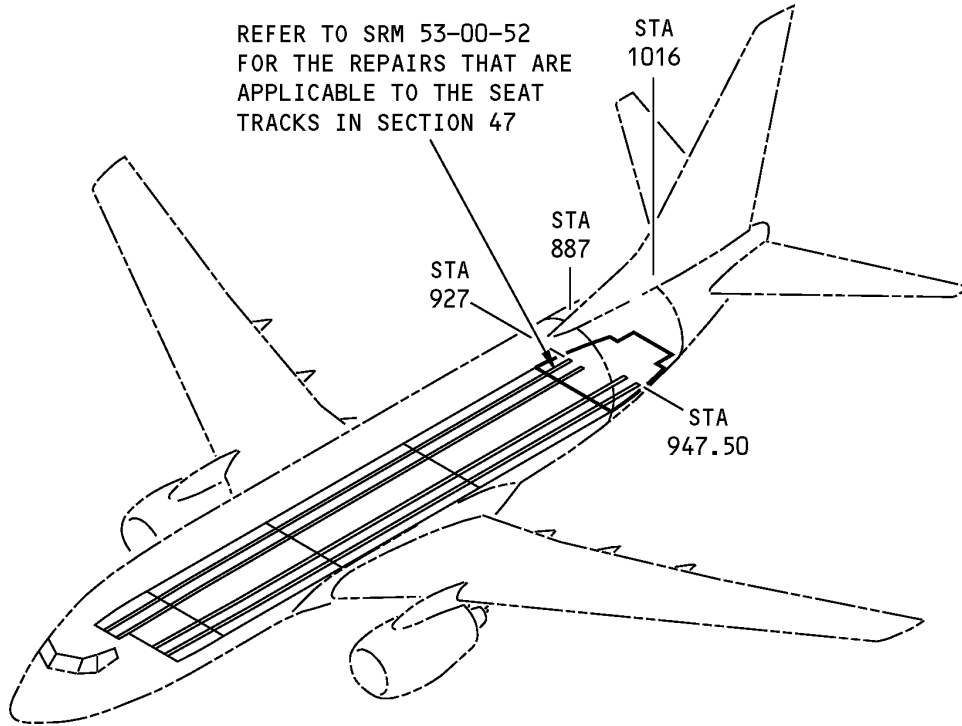


**Section 47 Seat Track Allowable Damage**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 47 SEAT TRACKS**

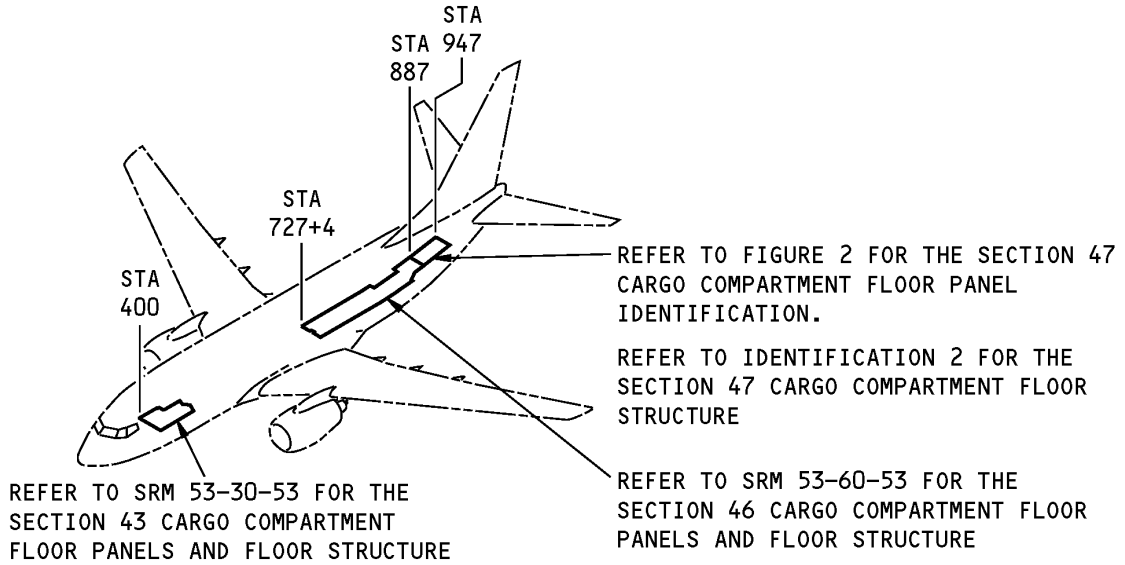


**Section 47 Seat Track Repairs**  
**Figure 201**



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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 47 CARGO COMPARTMENT FLOOR PANELS**



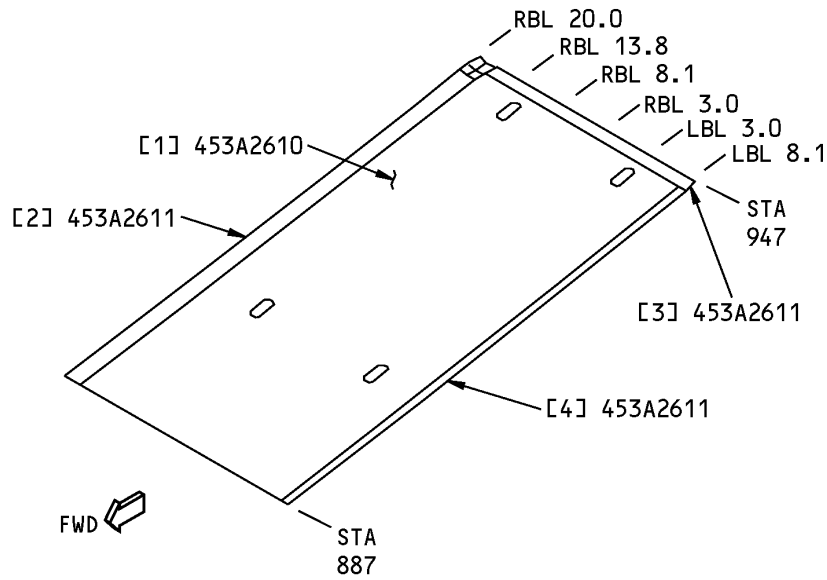
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Cargo Compartment Floor Panel Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
400A9101	Functional Product Collector - Payloads - Final Assembly
453A2600	Deck Panel Installation - Aft Cargo
453A2610	Panel Assembly - Deck, Aft cargo Compartment
453A2611	Cap Strip Assembly - Deck, Aft Cargo Compartment

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 Cargo Compartment Floor Panel Identification  
Figure 2**

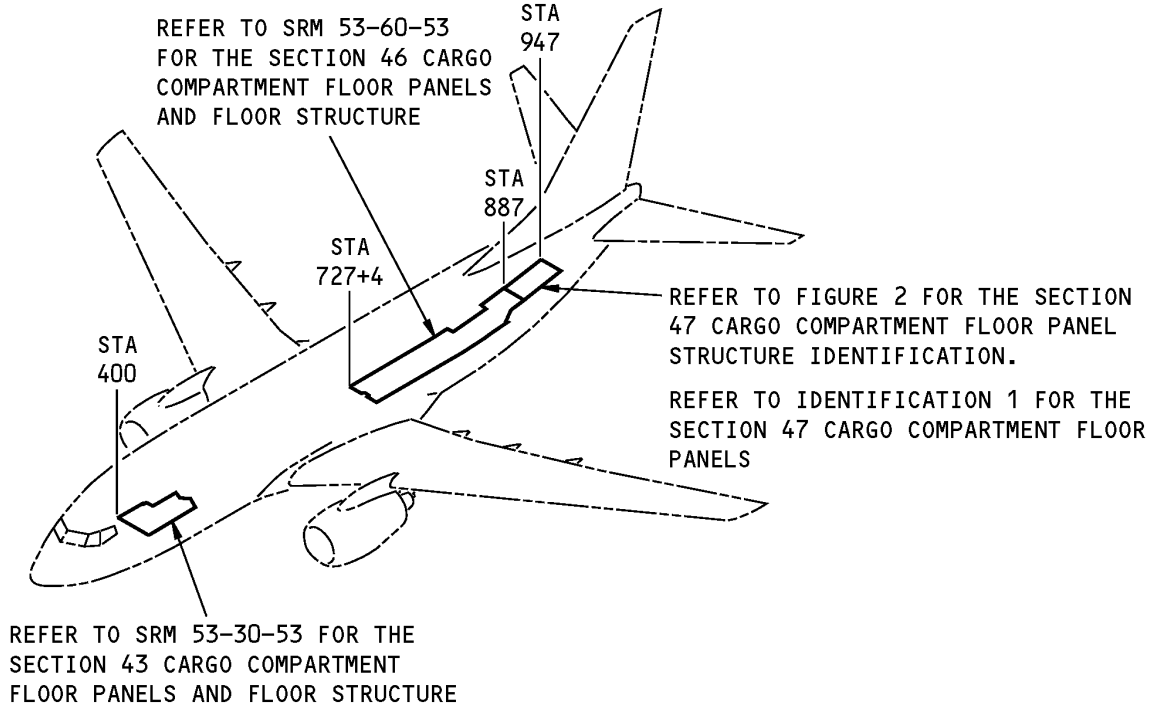
**Table 2:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Deck Panel	0.070 (1.79)	Gilliner 1266 Gill Coated (white) fiberglass	YA001 thru YA606
		0.071 (1.80)	2024-T3 clad sheet	YA607 thru YA699
[2]	Cap Strip	0.063 (1.60)	6013-T6 sheet	
[3]	Cap Strip		2024-T3511 BAC1513-286 extrusion	
[4]	Cap Strip	0.063 (1.60)	2024-T3 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 47 CARGO COMPARTMENT FLOOR STRUCTURE**



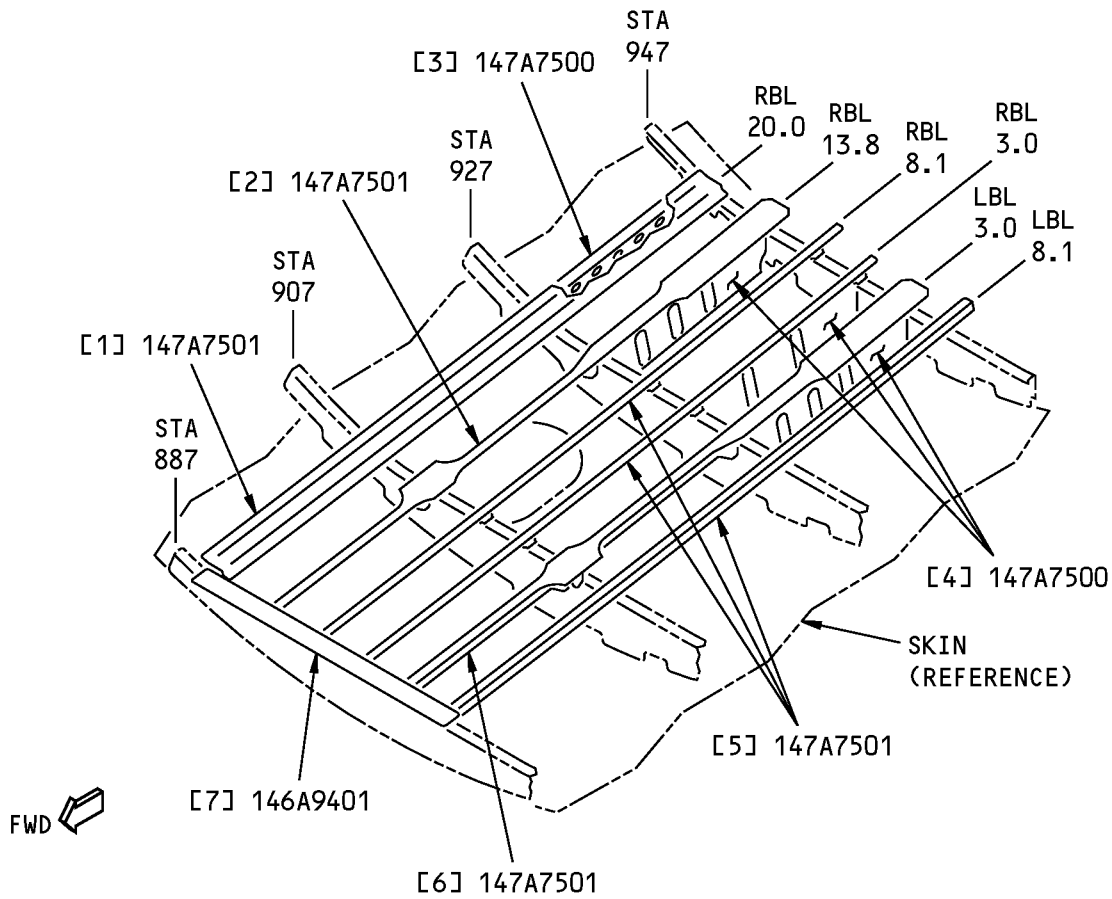
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 47 Cargo Compartment Floor Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4700	Section 47 Integration Functional Collector
140A4740	Lower Panel Functional Collector - Section 47
146A9403	Bracket Assembly - Payloads, Cargo Liners

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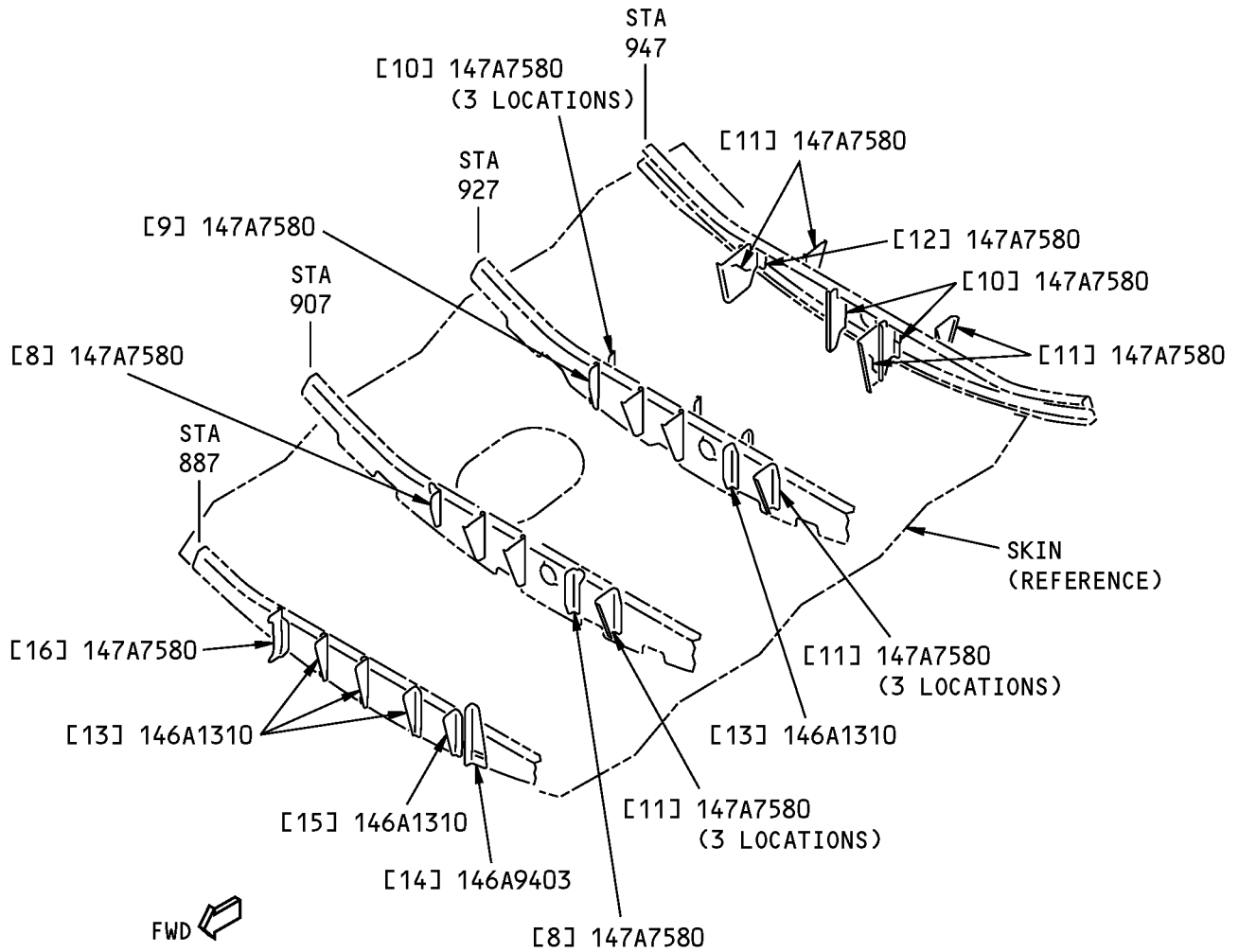


**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 47 Cargo Compartment Floor Structure Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**(SHOWN WITH RAILS REMOVED)**

**Section 47 Cargo Compartment Floor Structure Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

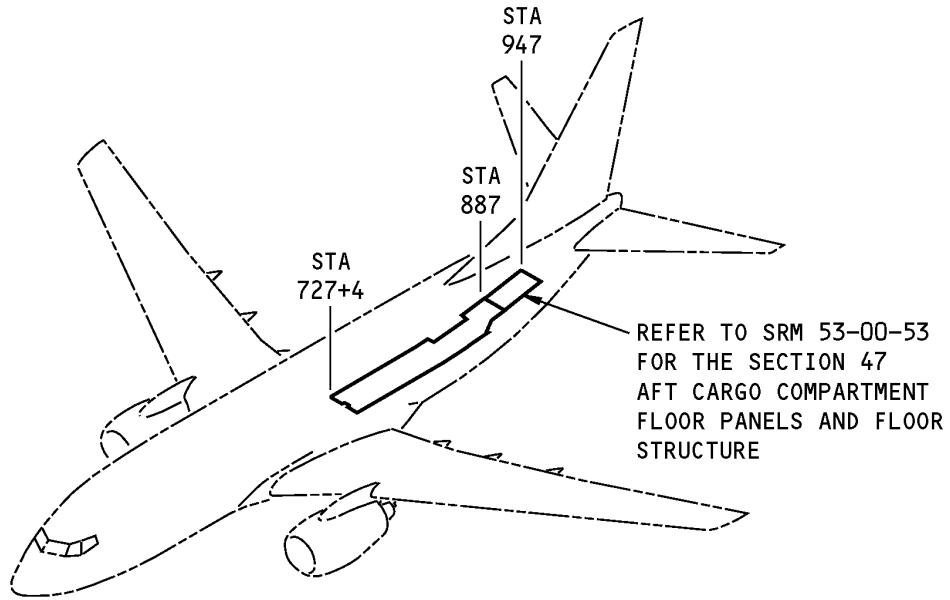
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Zee		BAC1496-377 7075-T62 clad sheet as given in QQ-A-250/13	
[2]	Track		BAC1520-1397 7050-T76511 extrusion as given in AMS 4340	
[3]	Intercostal Assembly Intercostal Clip	0.032 (0.81)	7075-T62 clad sheet as given in QQ-A-250/13 BAC1506-3482 7075-T73511 extrusion as given in QQ-A-200/11	
[4]	Intercostal Assembly (3) Intercostal Clip Clip	0.045 (1.14) 0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 BAC1510-1355 7075-T73511 extrusion as given in QQ-A-200/11	
[5]	Rail (3)		BAC1509-100146 7050-T76511 extrusion as given in AMS 4340	
[6]	Track		BAC1496-377 7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Tee Assembly STA 887 Plate  Tee	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13. Refer to the production drawing for the machined thicknesses  BAC1505-100543 7075-T6511 extrusion as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[8]	Clip (2)		BAC1503-100787 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Clip		BAC1503-100423 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Clip (5)		BAC1510-1353 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Clip (10)	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Clip		BAC1506-3482 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Clip (4)		BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11	
[14]	Clip	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Clip		BAC1503-100147 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Clip		7075-T62 clad plate as given in QQ-A-250/12, Class A. Refer to the production drawing for the machined thicknesses	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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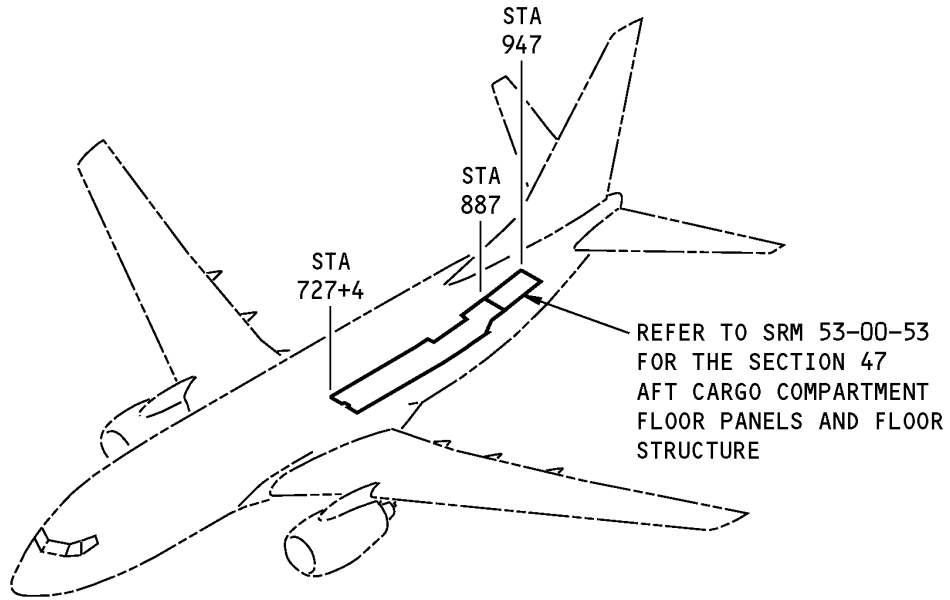
ALLOWABLE DAMAGE GENERAL - SECTION 47 AFT CARGO COMPARTMENT FLOOR STRUCTURE



Section 47 Aft Cargo Compartment Floor Structure  
Figure 101

**737-800**  
**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 47 AFT CARGO COMPARTMENT FLOOR STRUCTURE**

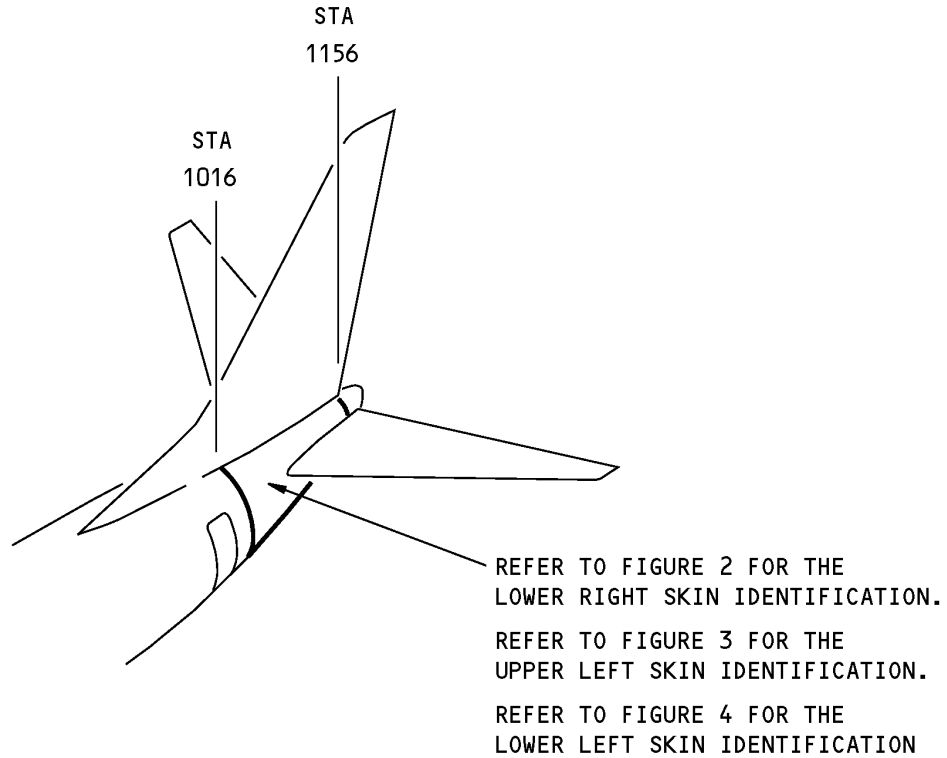


**Section 47 Aft Cargo Compartment Floor Structure**  
**Figure 201**



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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 48 FUSELAGE SKIN - STATIONS 1016 TO 1156**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 48 Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4803	Upper Panel Functional Collector - S-9L to S-9R, STA 1016-1188
148A3110	Skin Panel Installation, STA 1016-1088, S-9L - S-4R
148A3120	Skin Panel Installation - STA 1016-1088, S-4R to S9R
140A4804	Functional Collector, Lower Panel, S-9R to S-9L, STA 1016-1188
148A3310	Skin Panel Installation - Lower Panel, Station 1016 to 1188, S-24L to S-9L
148A3320	Skin Panel Installation - Lower Panel, Station 1016 to 1188, S-24L to S-16R



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A3330	Skin Panel Installation - Lower APU Inlet, S-9R to S-16R
140A4809	Crown Skin and Vortex Generator Functional Collector, STA 1016-1156
148A3590	Crown Skin and Vortex Generator Installation
140A4810	Skin Panel, Lower Aft, STA 1016-1156, Functional Collector
148A3800	Skin Panel Installation, Lower Aft, STA 1016-1156,

IDENTIFICATION 1

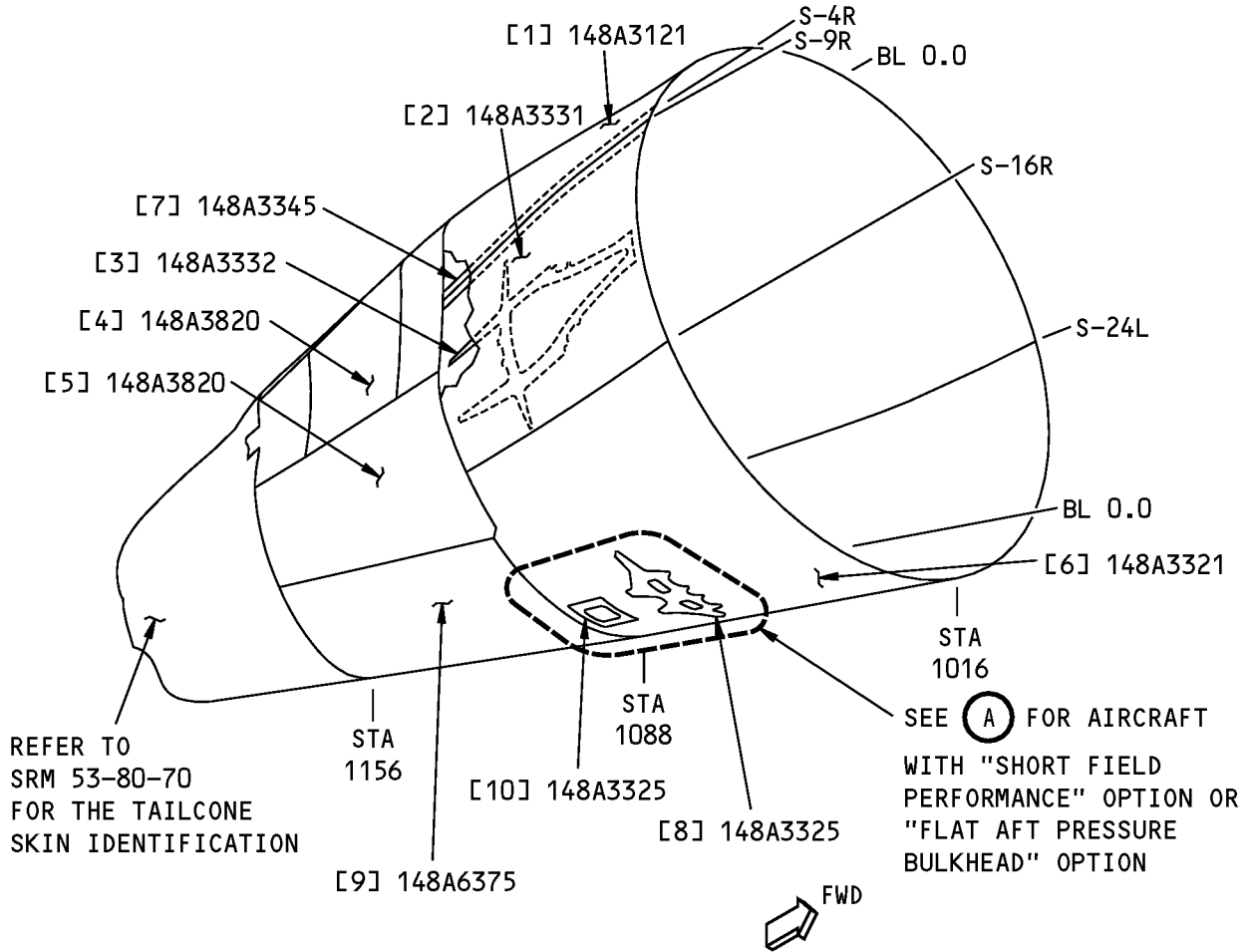
Page 2

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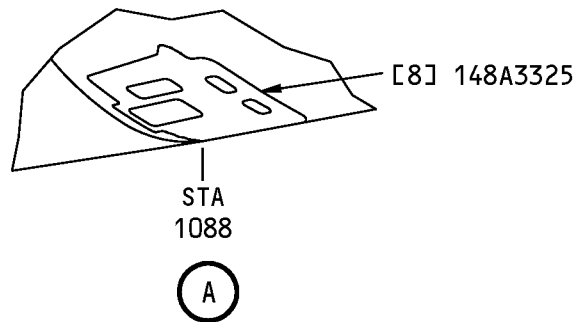


REFER TO SRM 53-80-70 FOR THE TAILCONE SKIN IDENTIFICATION

SEE **A** FOR AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION OR "FLAT AFT PRESSURE BULKHEAD" OPTION

**NOTES**

- BASIC CONFIGURATION IS SHOWN
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS



**Section 48 Lower Right Skin Identification  
Figure 2**



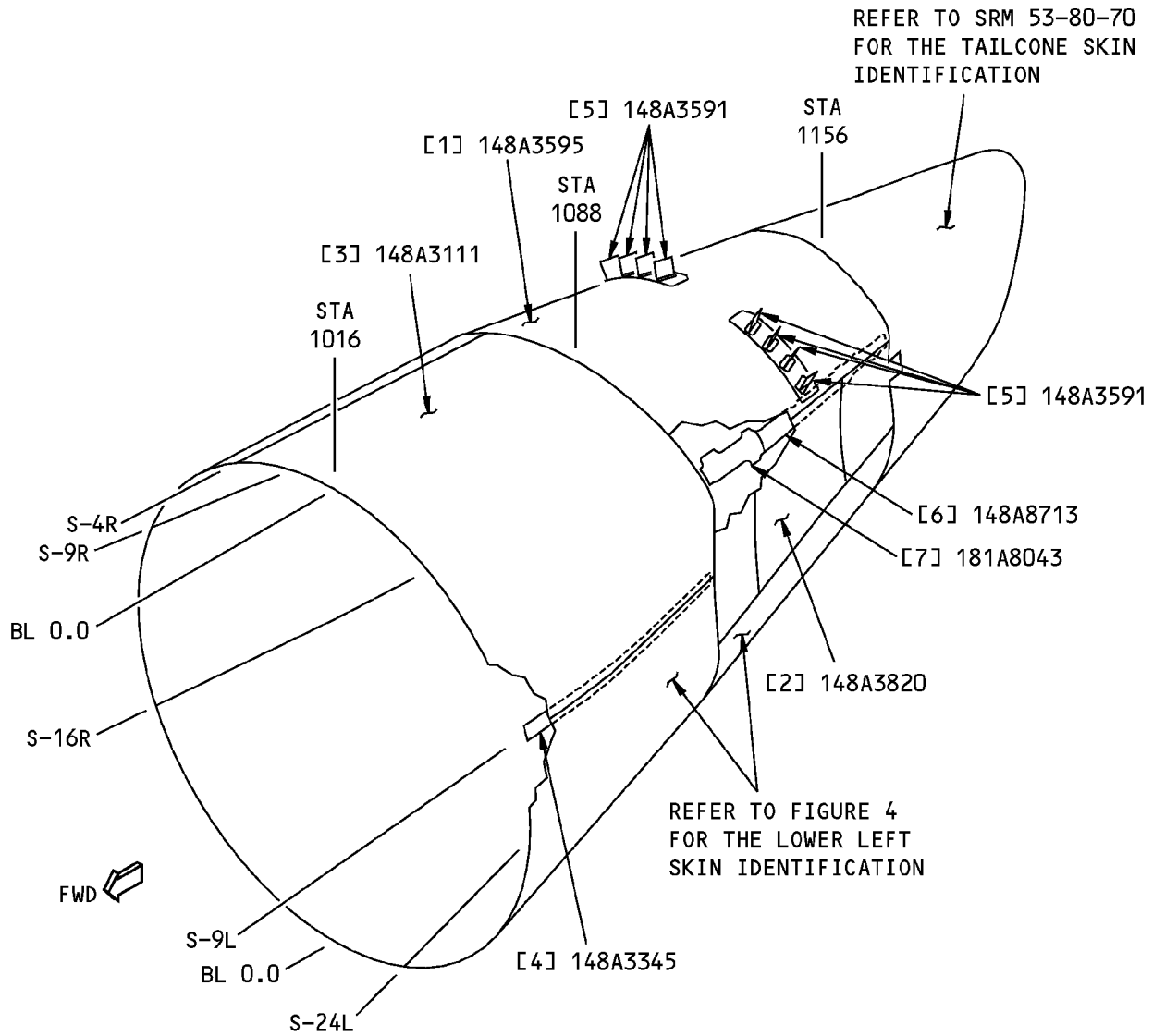
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 5 for the thicknesses of the chem-milled areas	
[2]	Skin	0.110 (2.79)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 6 for the thicknesses of the chem-milled areas	
[3]	Doubler	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[5]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 8 for the thicknesses of the chem-milled areas	
[6]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 9 for the thicknesses of the chem-milled areas	
[7]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Doubler, External	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[9]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 13 for the thicknesses of the chem-milled areas	
[10]	Doubler, External	0.056 (1.42)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 48 Upper Left Skin Identification  
Figure 3**



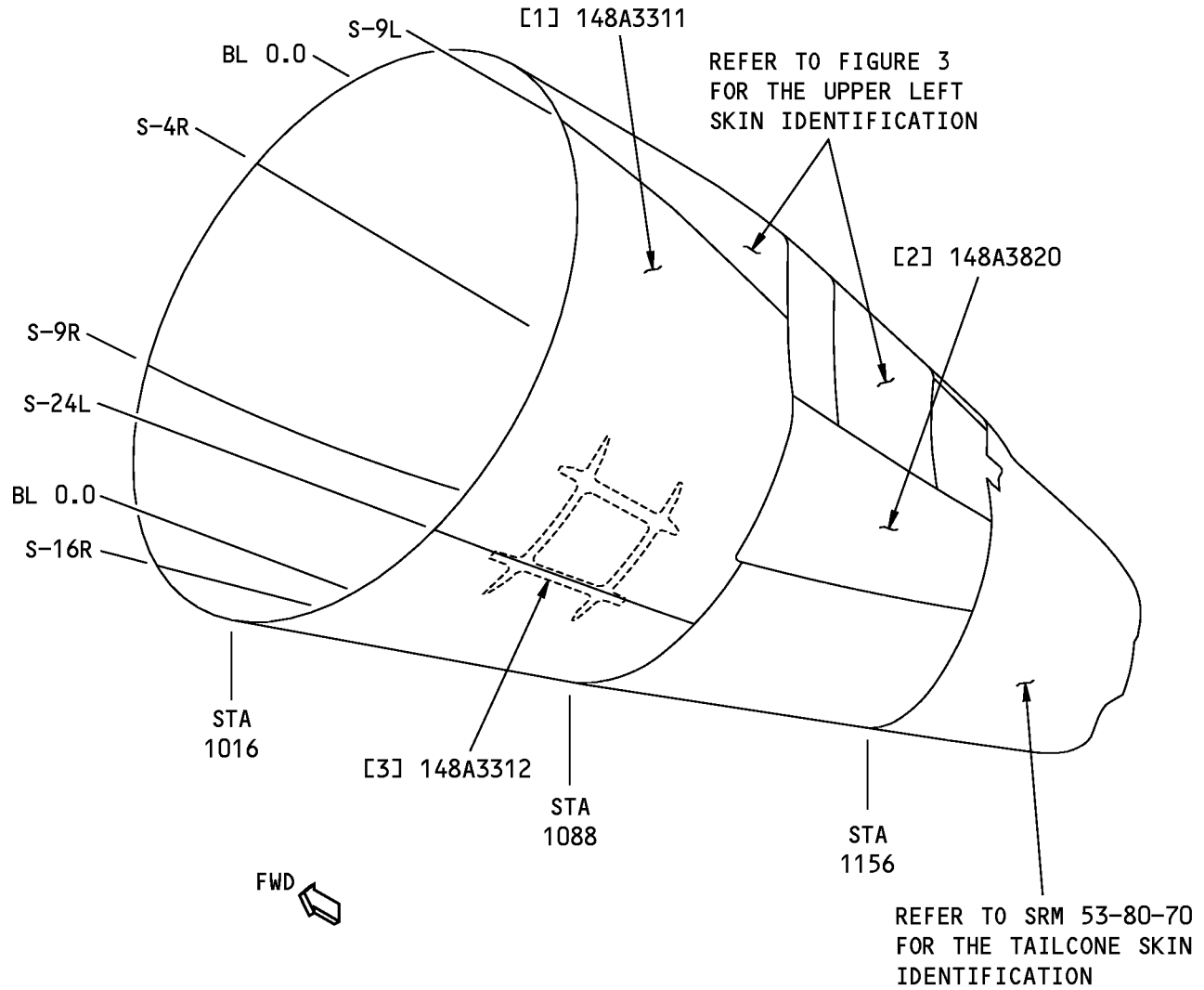
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 10 for the thicknesses of the chem-milled areas	
[2]	Skin	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 7 for the thicknesses of the chem-milled areas	
[3]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 11 for the thicknesses of the chem-milled areas	
[4]	Strap	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	
[5]	Vortex Generator Assembly (8) Doubler, External  Vortex Generator	0.190 (4.83)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Boeing production drawing for chem-milled thicknesses  BAC1505-100308 2024-T3511 as given in QQ-A-200/3	
[6]	Strap	0.110 (2.79)	2024-T42 sheet as given in QQ-A-250/4. Refer to Figure 14 for the thicknesses of the chem-milled areas	
[7]	Doubler		7050-T7451 plate as given in AMS 4050. This is a Grain Direction Controlled Part)	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 48 Lower Left Skin Identification  
Figure 4**



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**STRUCTURAL REPAIR MANUAL**

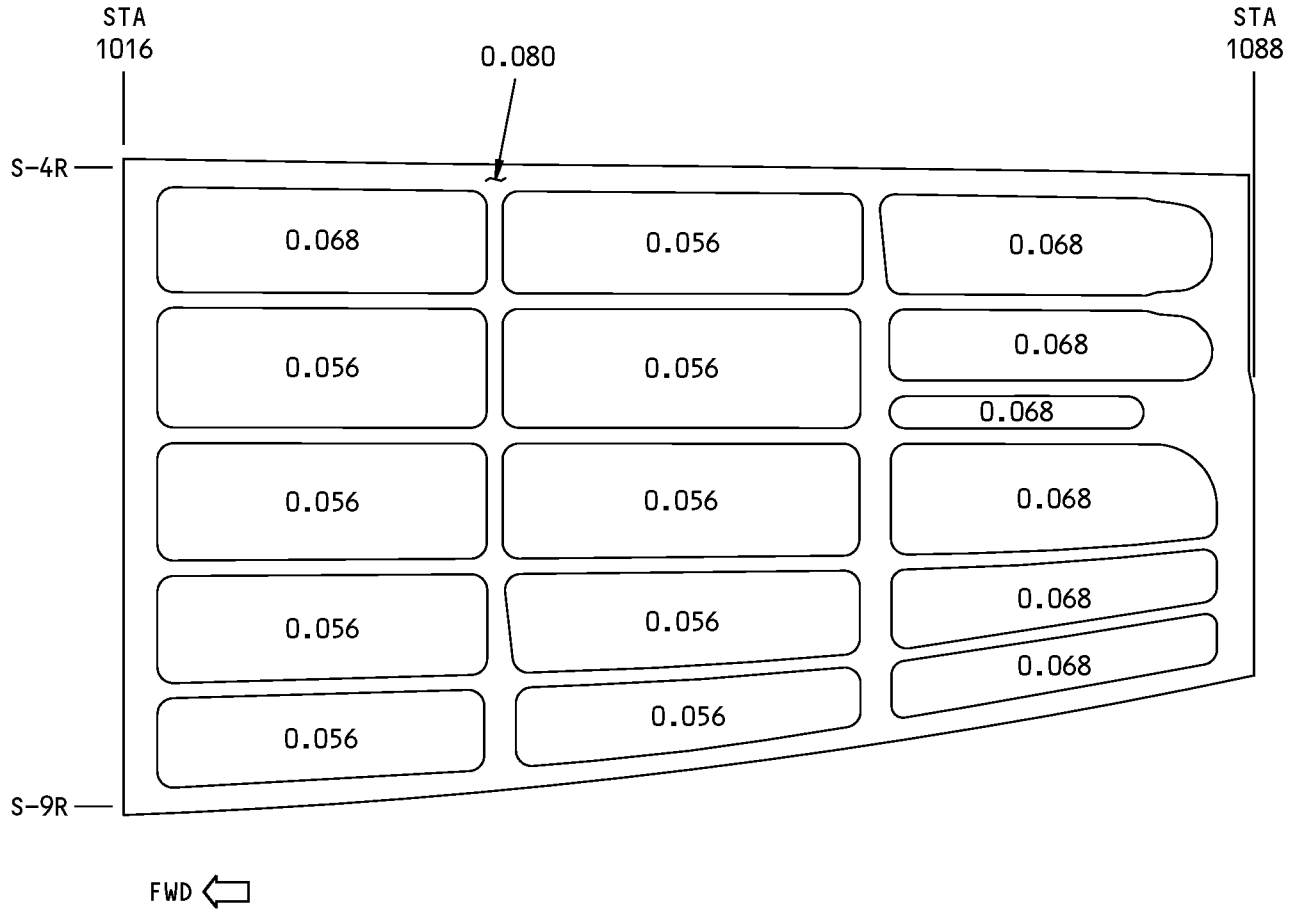
**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Skin	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 12 for the thicknesses of the chem-milled areas	Airplanes with Dome Aft Pressure Bulkhead (Basic Configuration)
	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 12 for the thicknesses of the chem-milled areas	Airplanes with Flat Aft Pressure Bulkhead
[2]	Skin	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to Figure 15 for the thicknesses of the chem-milled areas	
[3]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	Airplanes with Dome Aft Pressure Bulkhead (Basic Configuration)
	Doubler	0.071 (1.80)	2024-T3 clad sheet as given in QQ-A-250/5	Airplanes with Flat Aft Pressure Bulkhead

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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STRUCTURAL REPAIR MANUAL**

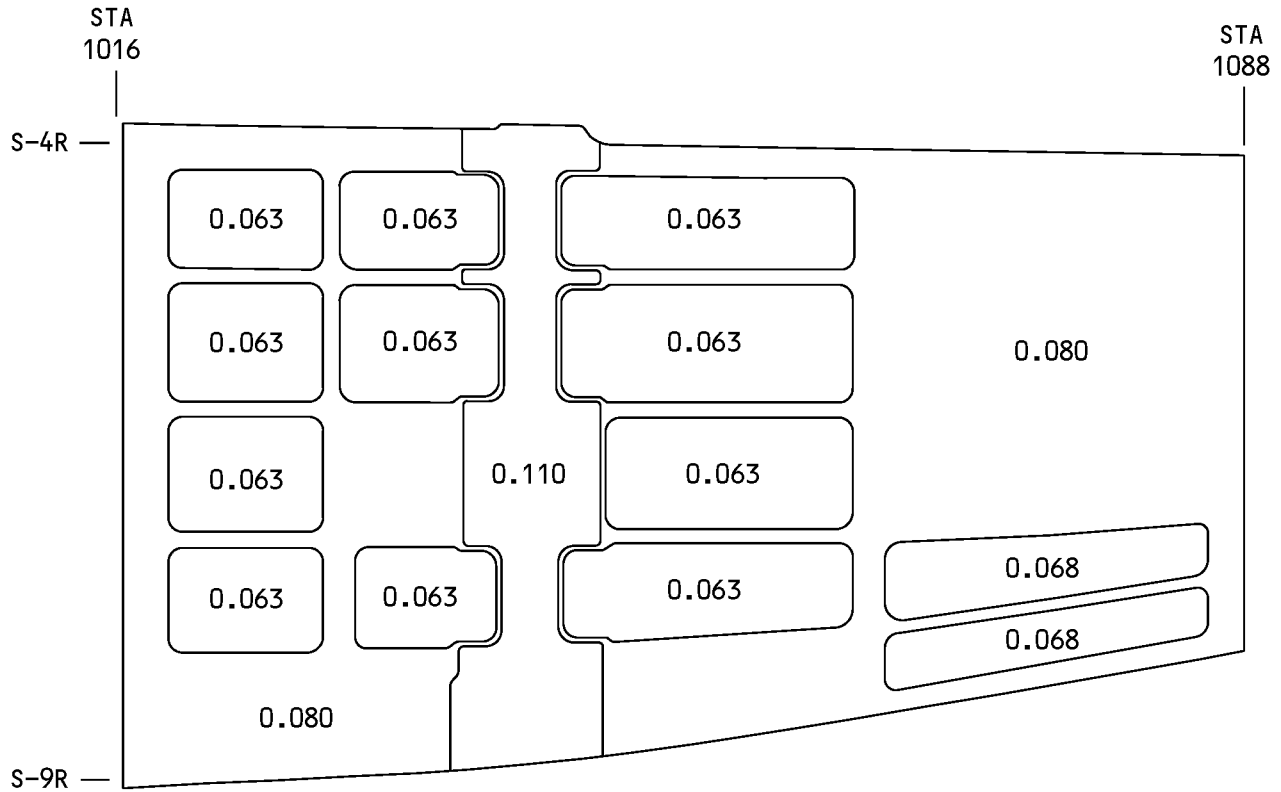


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEWS ARE ON THE INNER SURFACE OF THE SKINS  
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [1]  
Figure 5 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



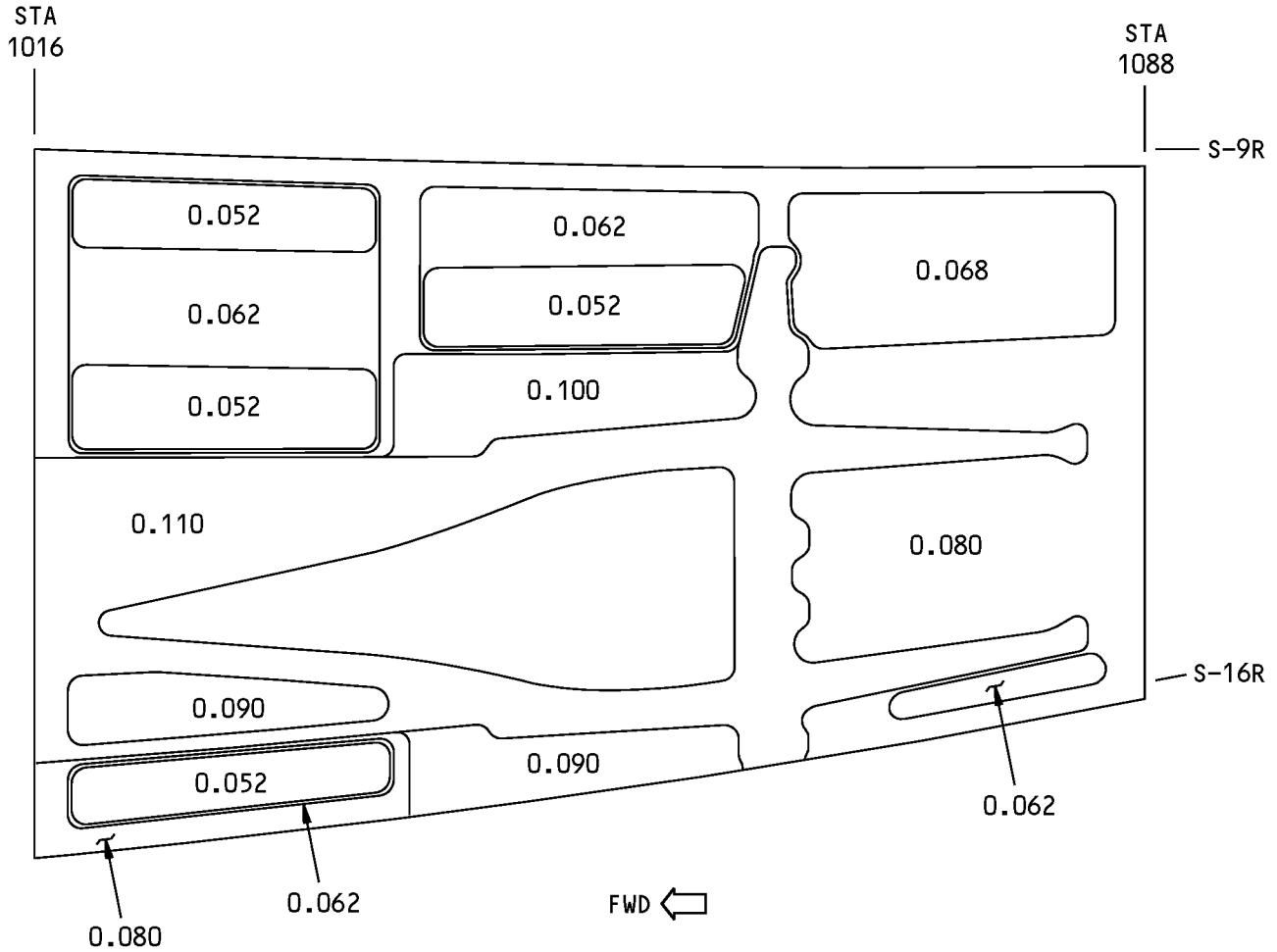
FWD ←

**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [1]  
Figure 5 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

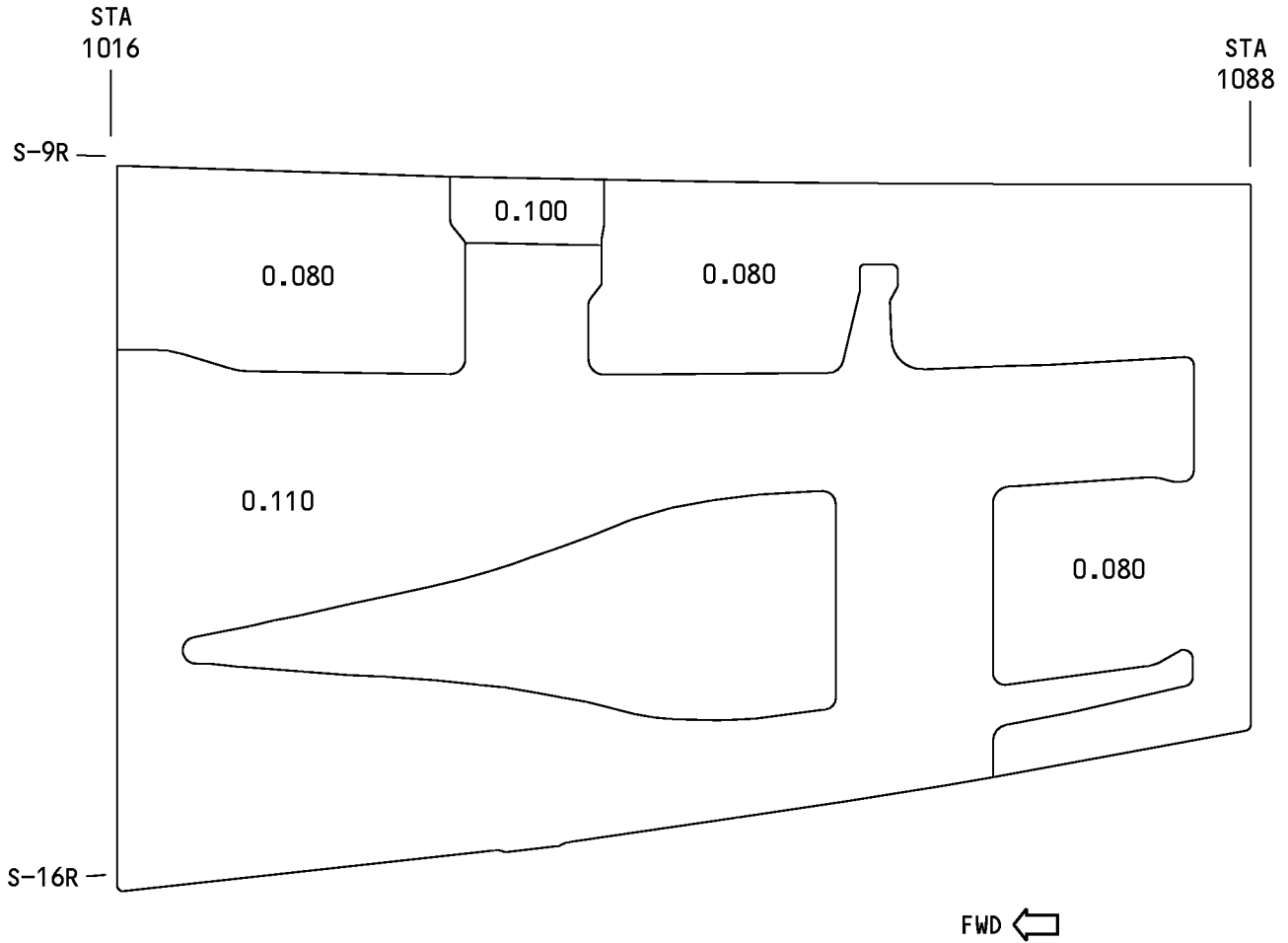


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [2]  
Figure 6 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

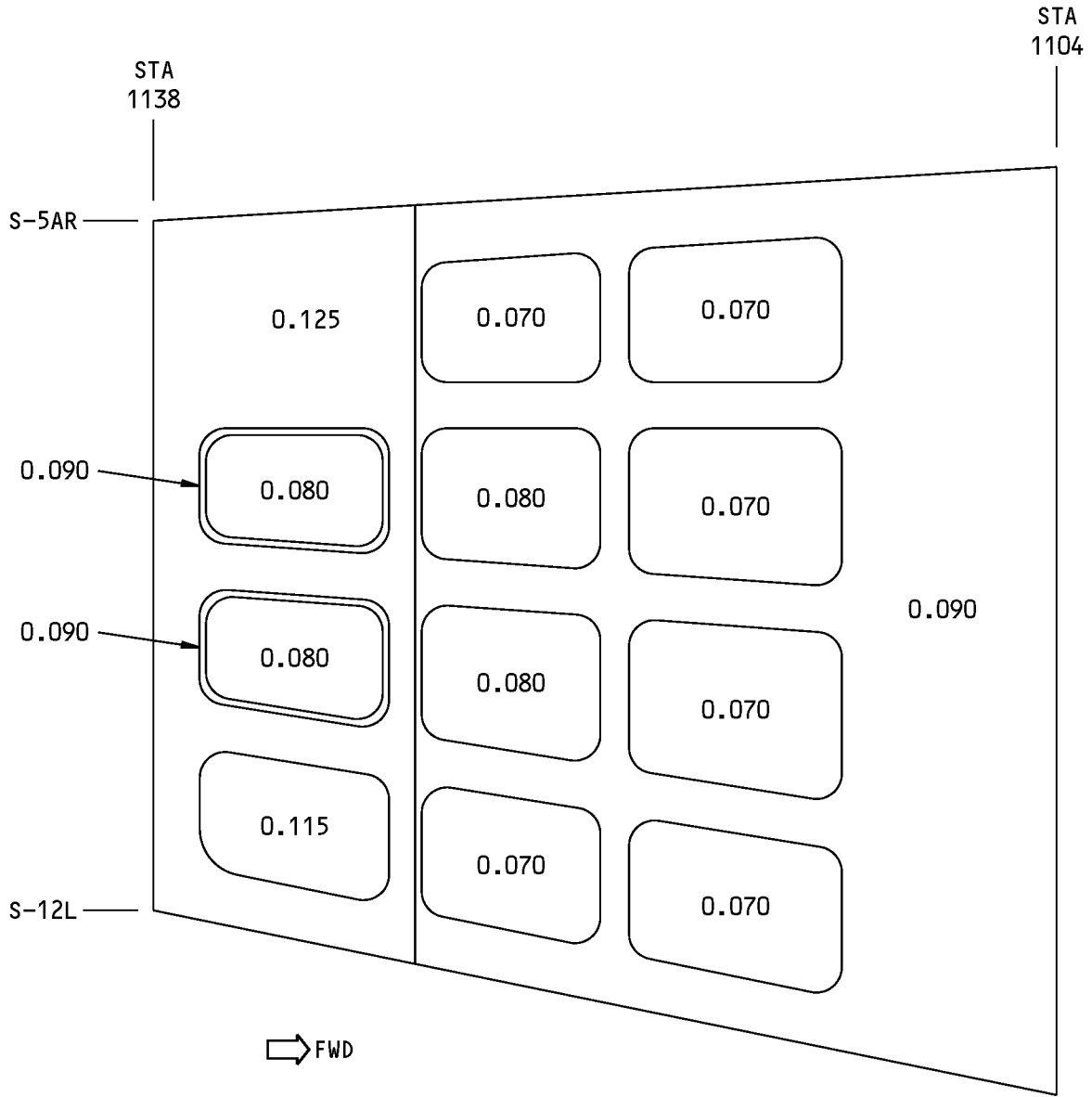


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [2]  
Figure 6 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL

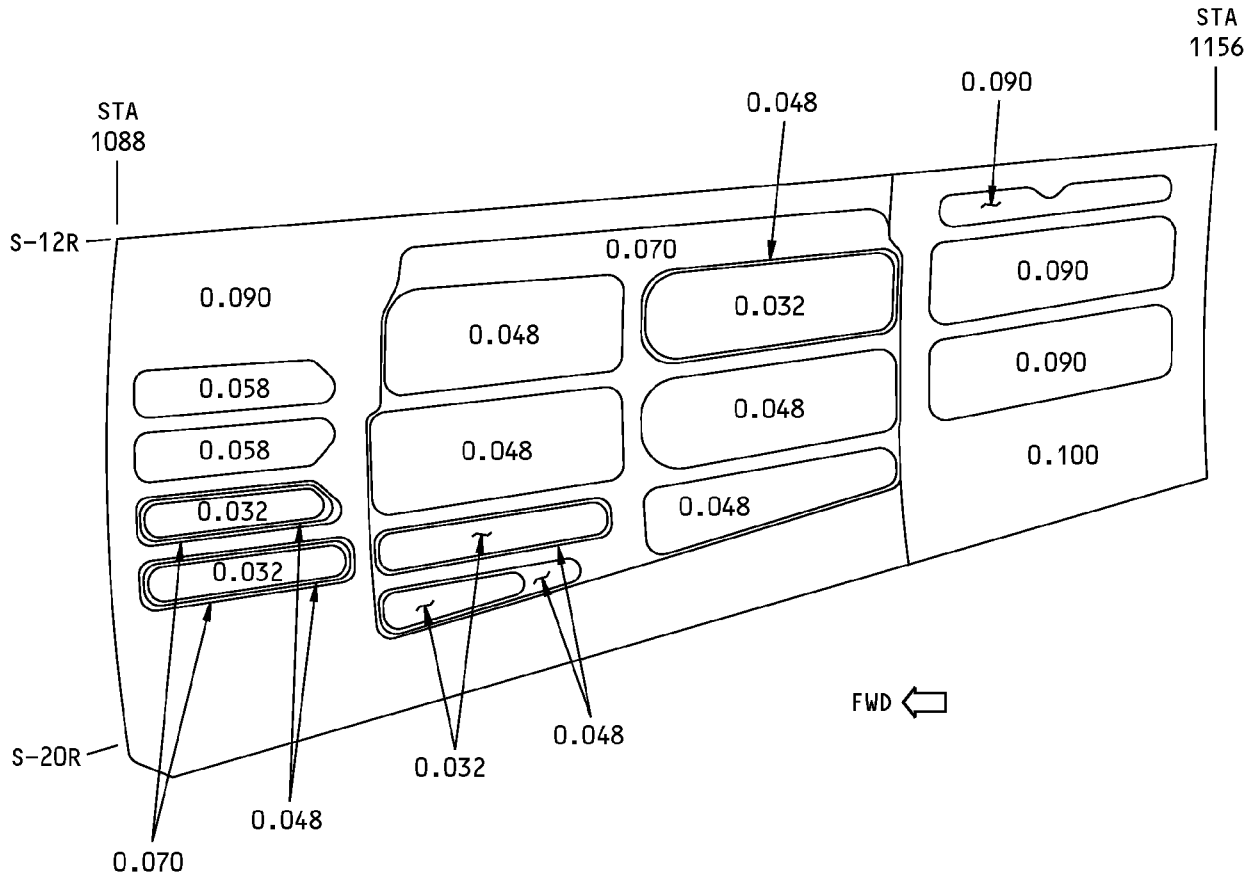


NOTE: ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

Chem-Milled Areas for Figure 2, Item [4] and Figure 3, Item [2]  
Figure 7

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STRUCTURAL REPAIR MANUAL**

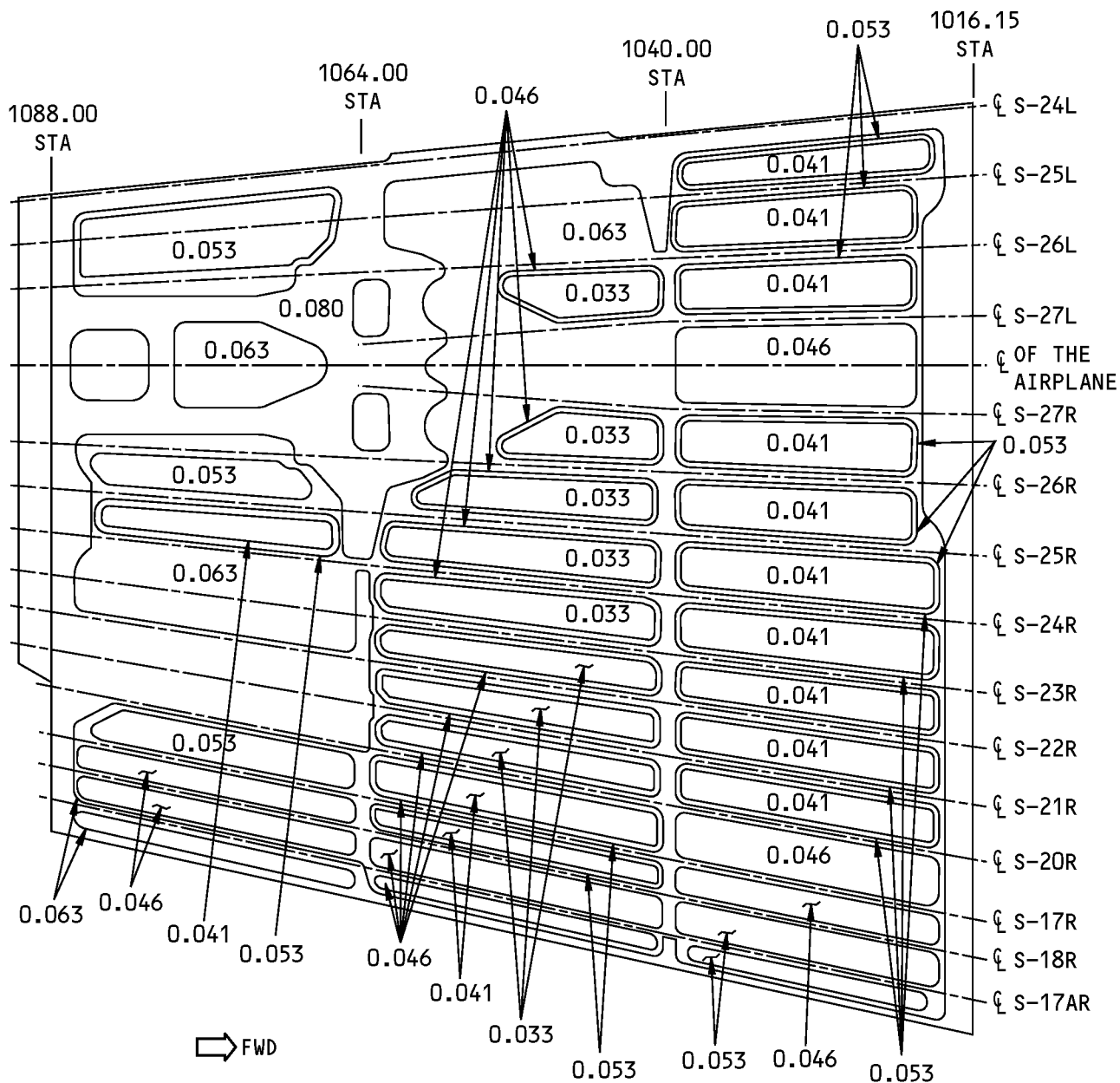


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas for Figure 2, Item [5]  
Figure 8**

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STRUCTURAL REPAIR MANUAL**



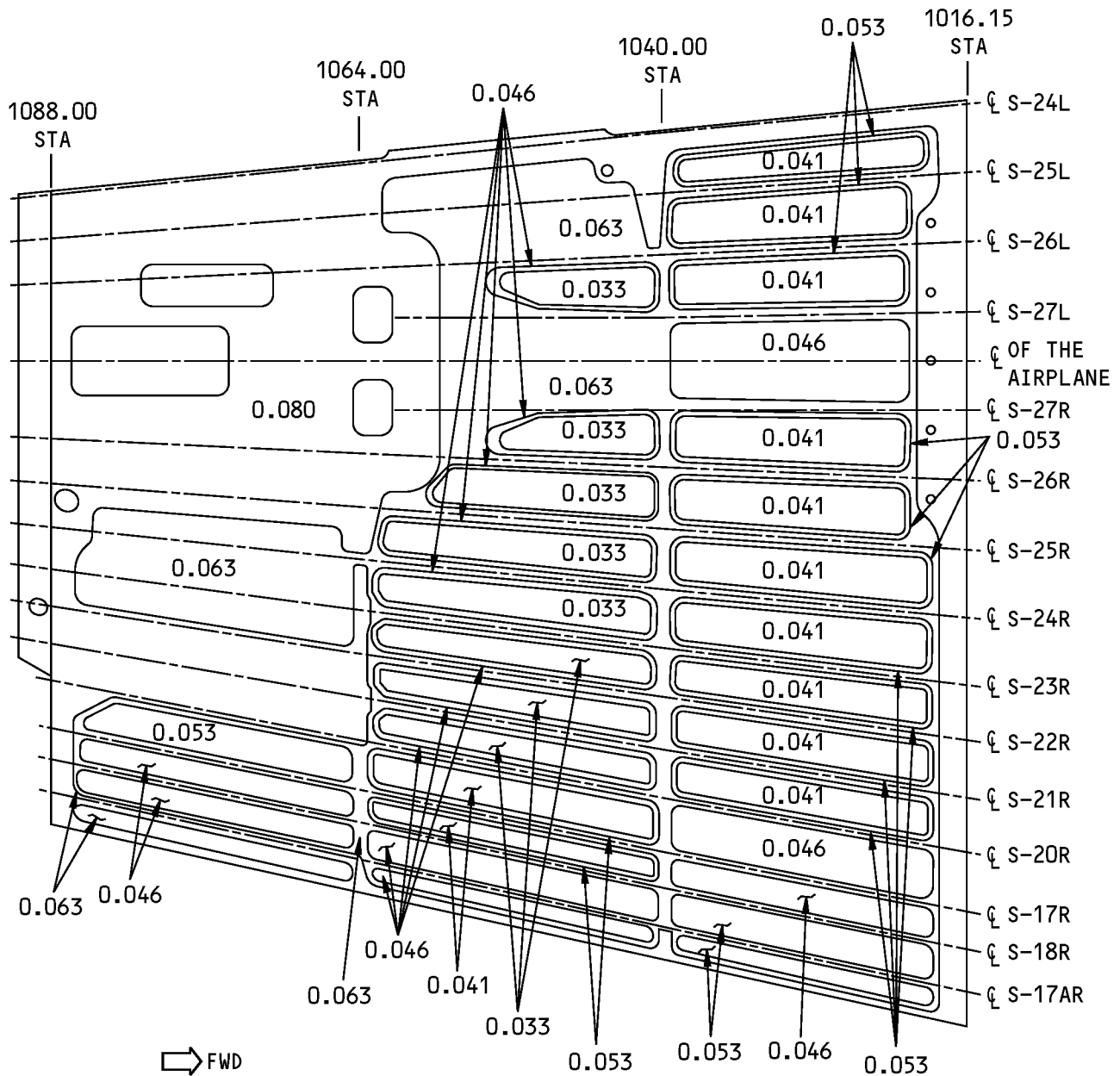
**NOTES**

- ALL DIMENSIONS ARE IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH THE DOME AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [6]  
Figure 9 (Sheet 1 of 3)**

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**NOTES**

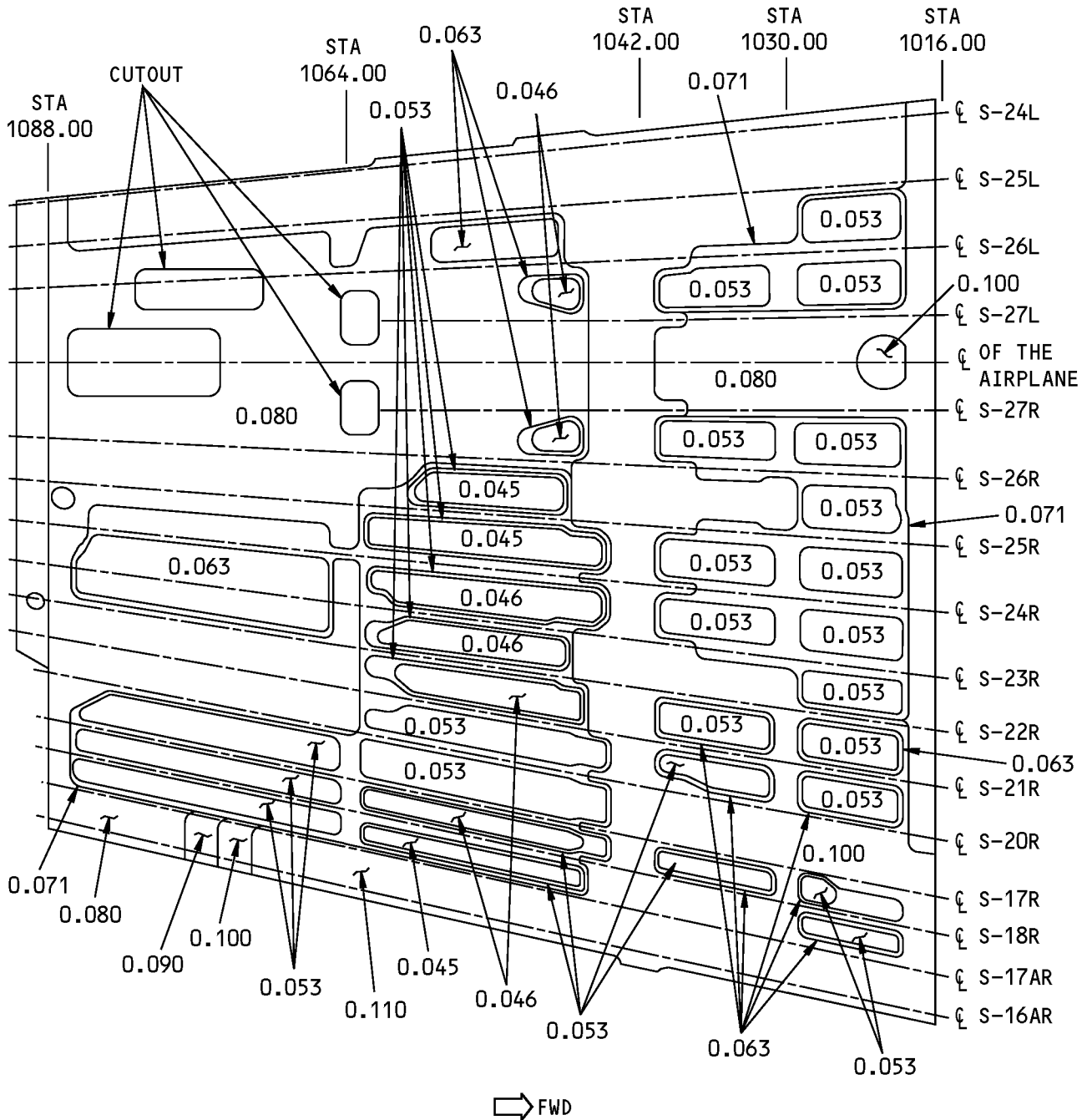
- ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**FOR AIRCRAFT WITH THE "SHORT FIELD PERFORMANCE" OPTION  
VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas for Figure 2, Item [6]  
Figure 9 (Sheet 2 of 3)**



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STRUCTURAL REPAIR MANUAL**

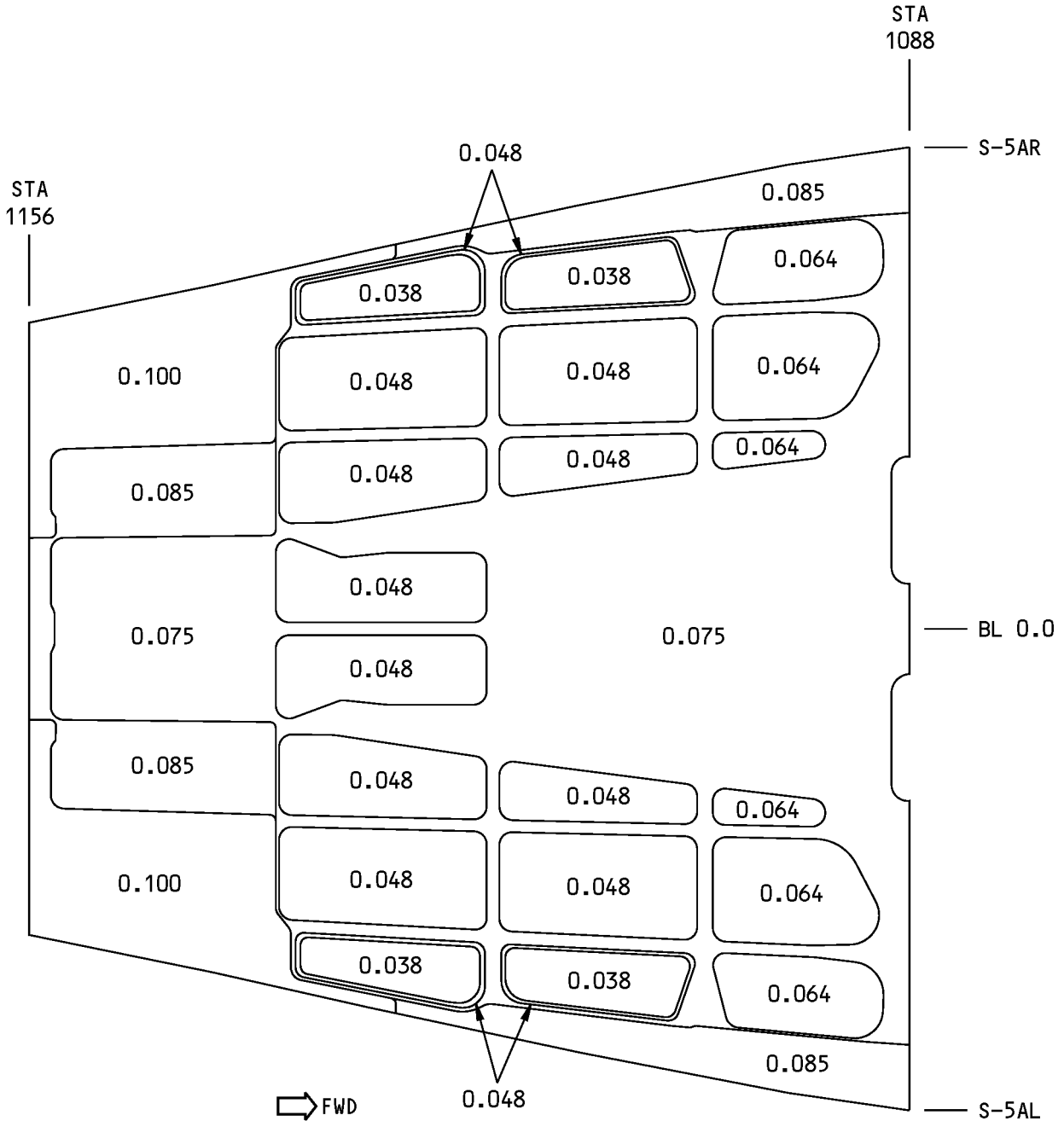


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 2, Item [6]  
Figure 9 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

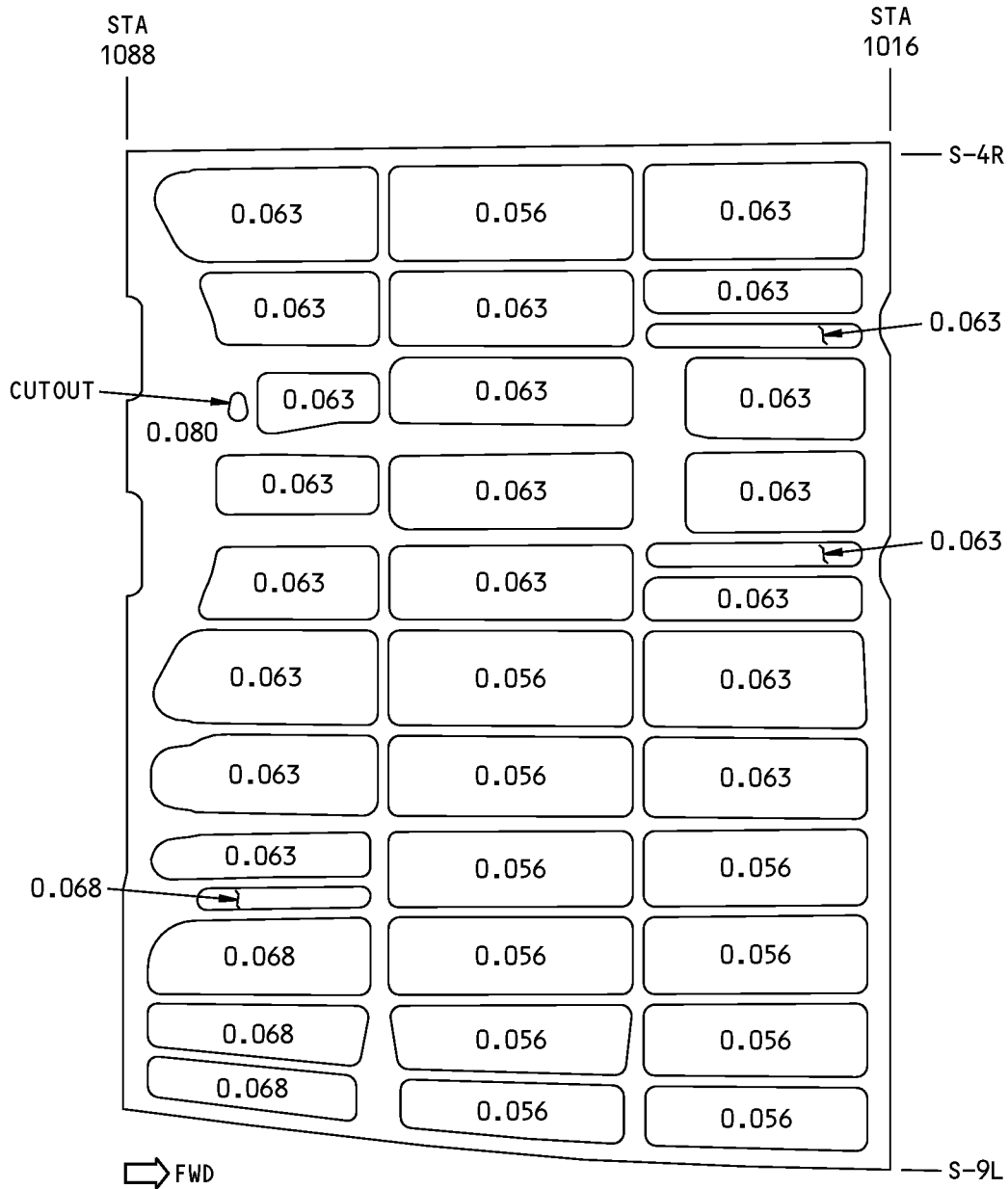


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN**

**Chem-Milled Areas for Figure 3, Item [1]  
Figure 10**

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STRUCTURAL REPAIR MANUAL**

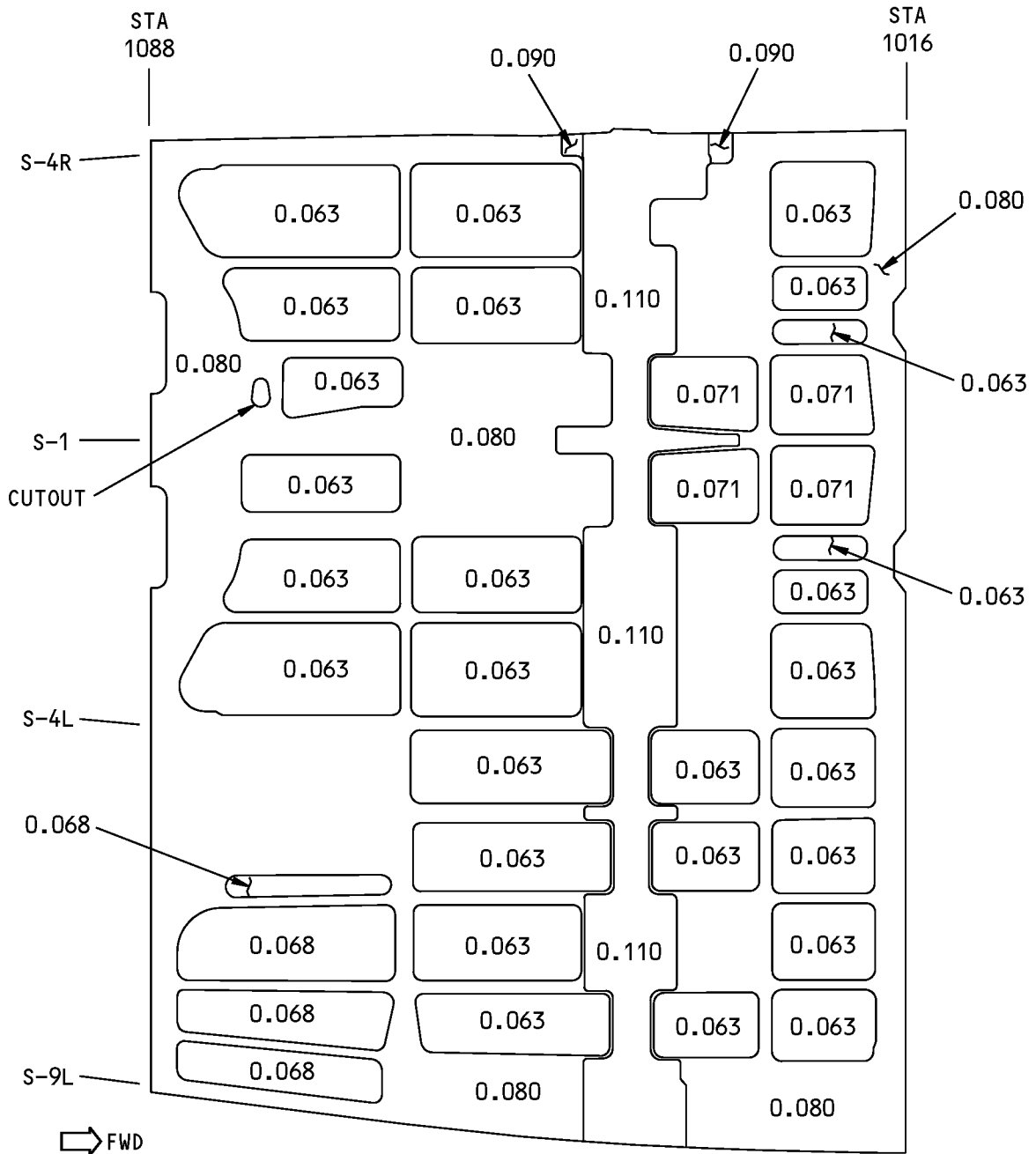


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH A DOME AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 3, Item [3]  
Figure 11 (Sheet 1 of 2)**

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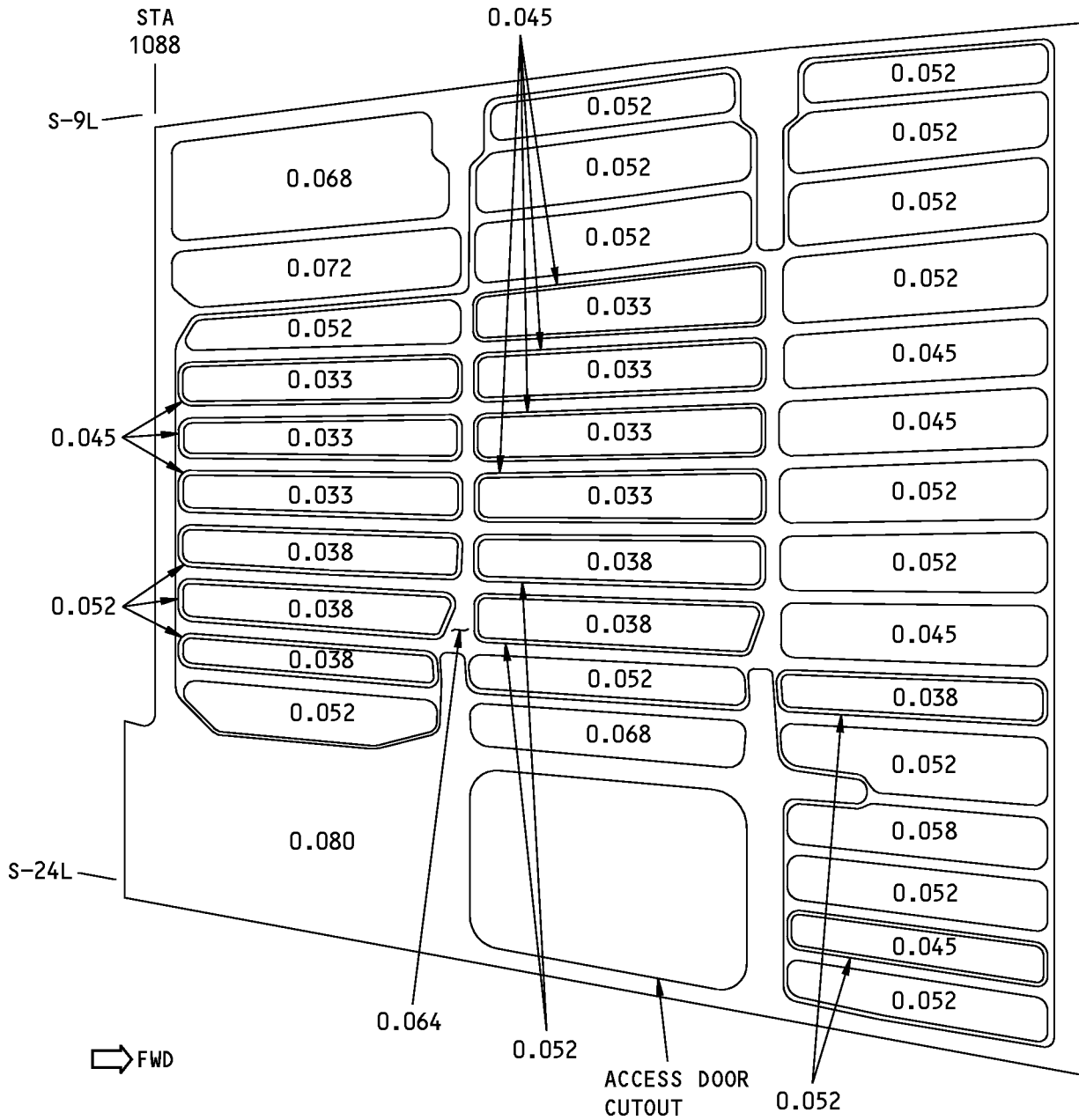
**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

**VIEW IS ON THE INNER SURFACE OF THE SKIN  
FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 3, Item [3]  
Figure 11 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

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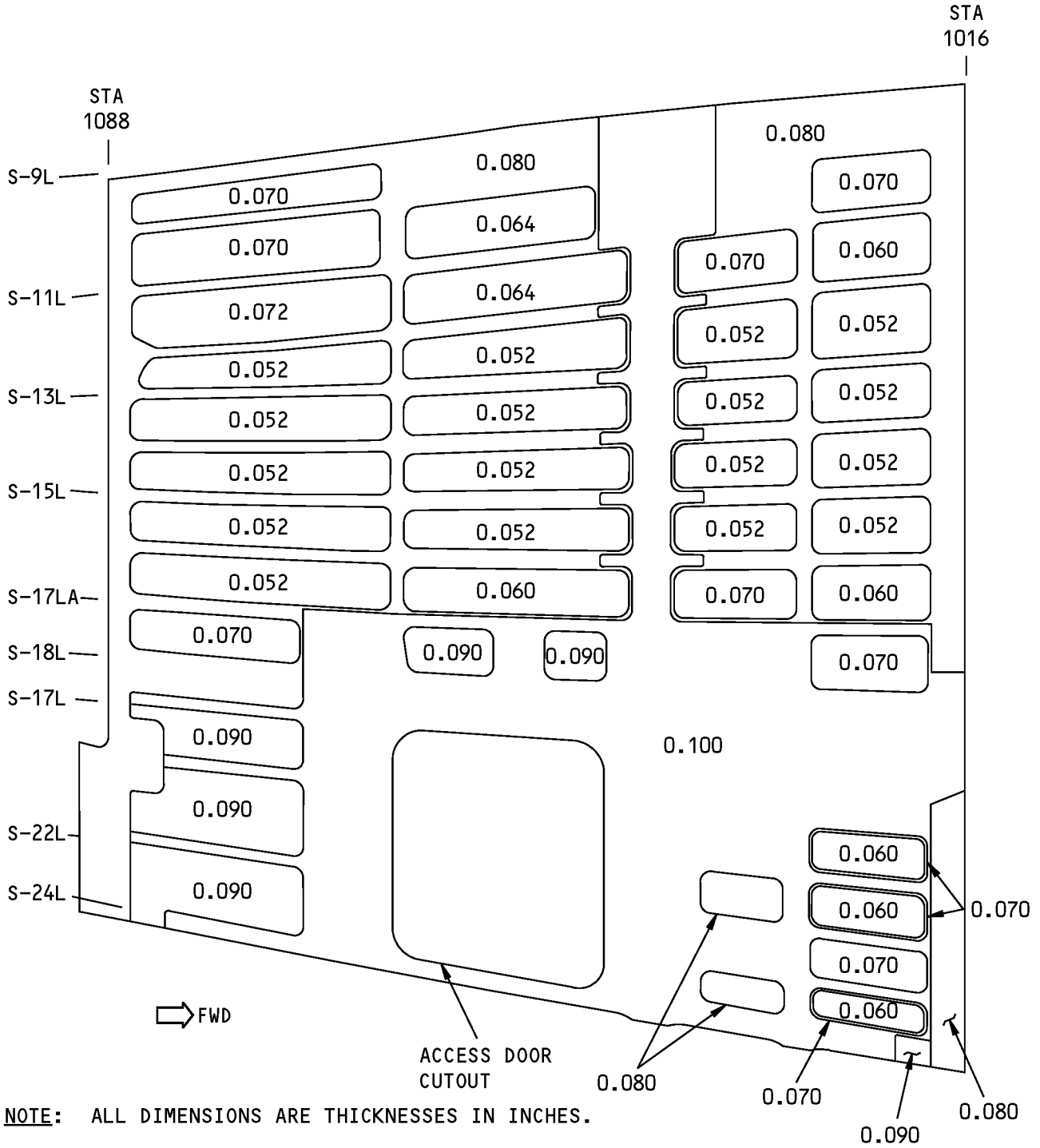


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN FOR  
AIRCRAFT WITH A DOME AFT PRESSURE BULKHEAD

**Chem-Milled Areas for Figure 4, Item [1]  
Figure 12 (Sheet 1 of 2)**

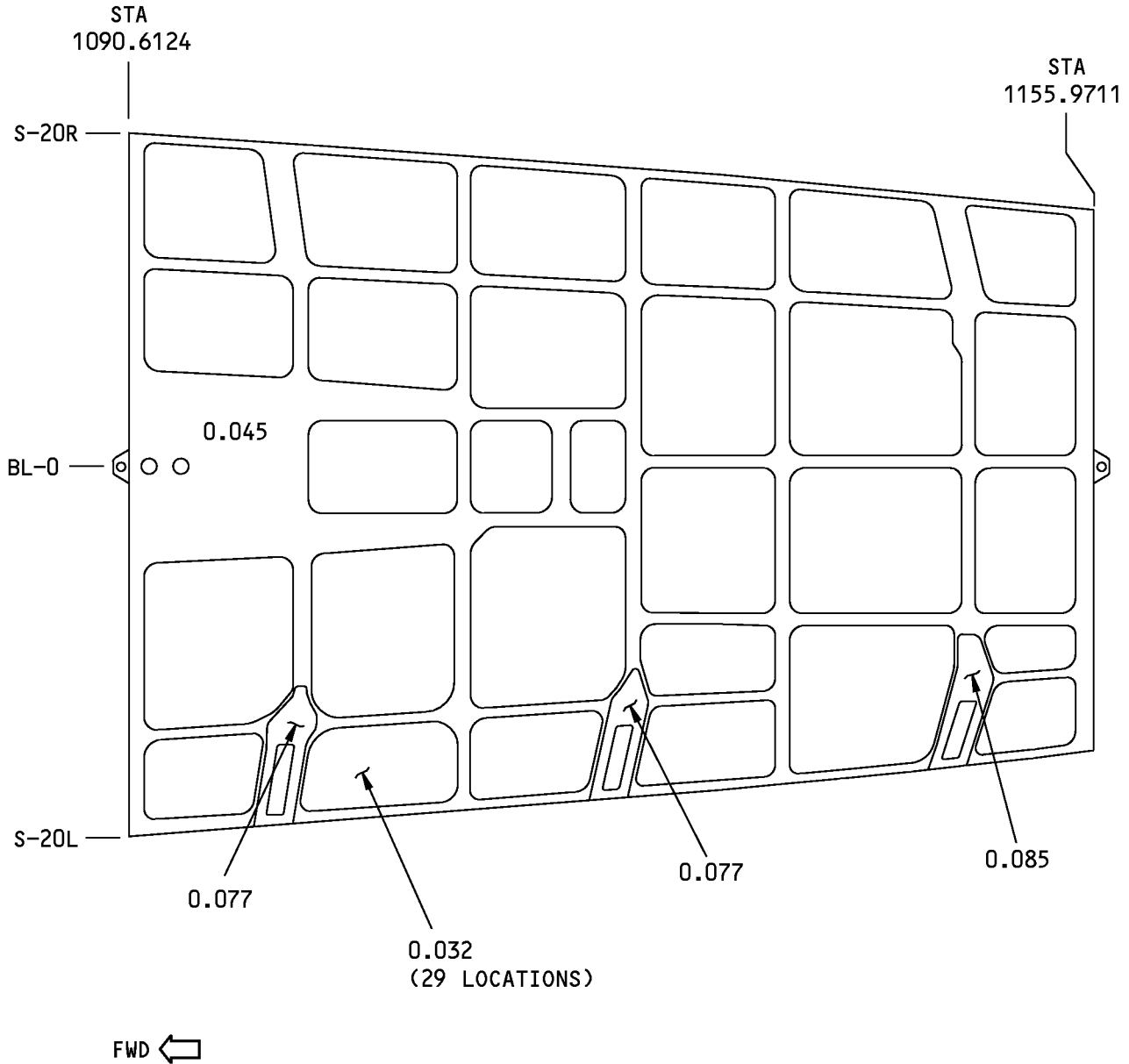
**737-800  
STRUCTURAL REPAIR MANUAL**



**VIEW IS ON THE INNER SURFACE OF THE SKIN FOR  
AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD**

**Chem-Milled Areas for Figure 4, Item [1]  
Figure 12 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

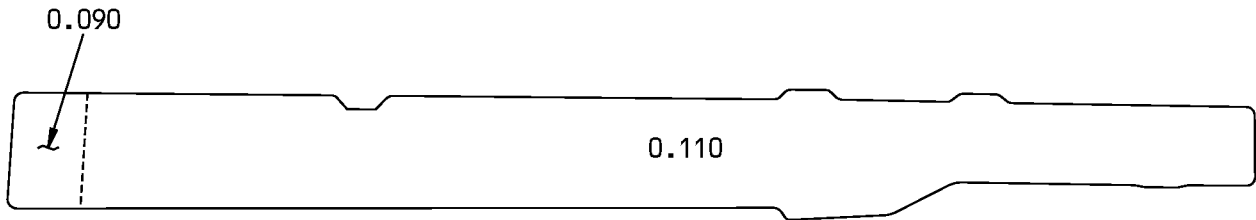


**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

VIEW IS ON THE INNER SURFACE OF THE SKIN

**Chem-milled Areas for Figure 2, Item [9]  
Figure 13**

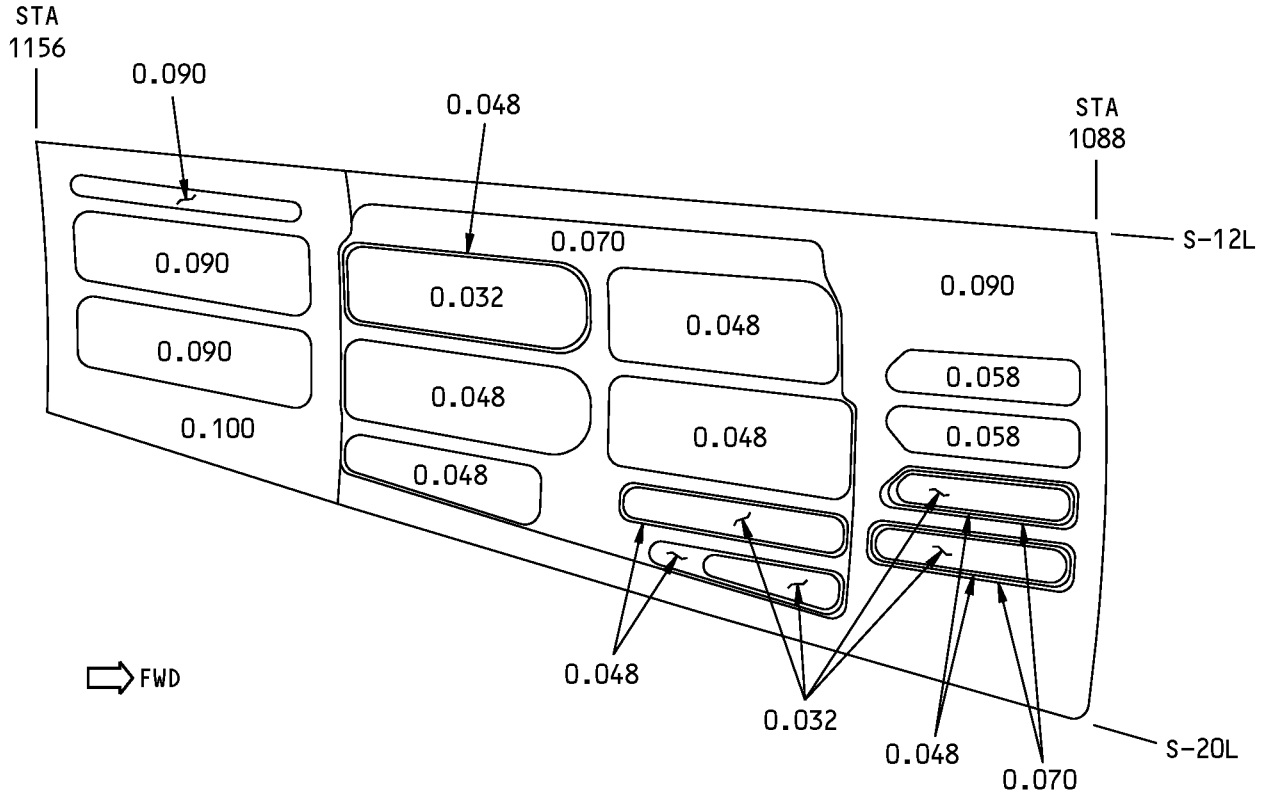
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**Chem-milled Areas for Figure 3, Item [6]  
Figure 14**



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**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES.

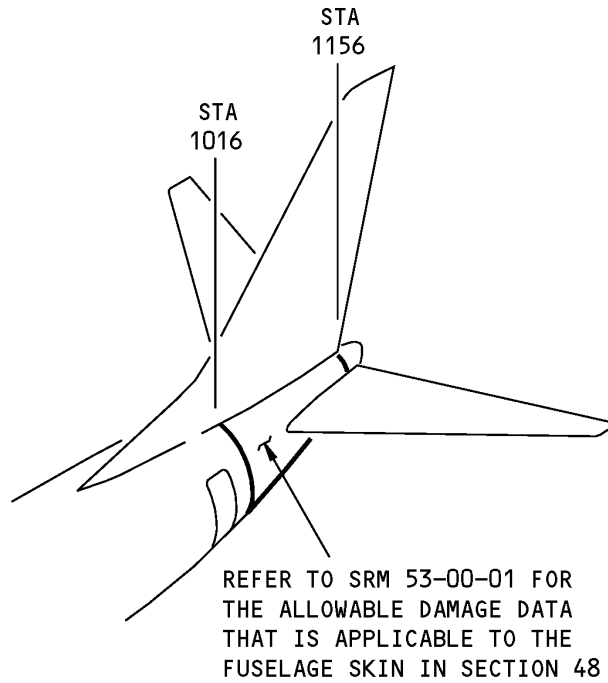
VIEW IS ON THE INNER SURFACE OF THE SKIN

**Chem-Milled Areas for Figure 4, Item [2]  
Figure 15**



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ALLOWABLE DAMAGE GENERAL - SECTION 48 FUSELAGE SKIN

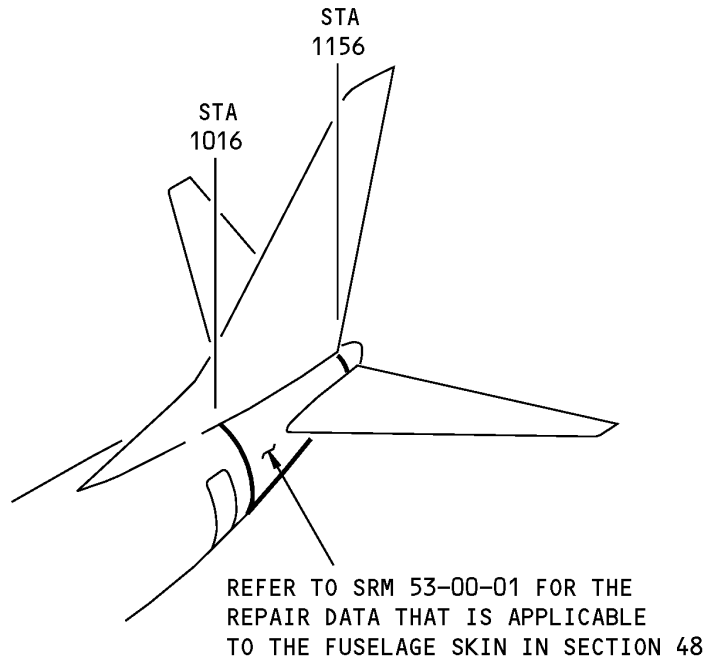


Section 48 Fuselage Skin Location  
Figure 101



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**STRUCTURAL REPAIR MANUAL**

**REPAIR GENERAL - SECTION 48 FUSELAGE SKIN**



**Section 48 Fuselage Skin Location**  
**Figure 201**

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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 48 FUSELAGE SKIN REPAIR AT APU DOOR HINGE LOCATIONS**

**1. Applicability**

- A. Repair 1 is a external repair that is applicable to fuselage skin damage at the APU Access Door Hinge Locations as shown in Figure 201/REPAIR 1.
- B. Repair 1 is not applicable to damage:
  - (1) At 10 inches (254 mm) or less away from the edge of a initial repair
    - (a) If damage occurs in this area, then remove the initial repair and make one repair that includes the two areas of damage.

**2. General**

- A. Repair 1 is a Category A Repair. Refer to 51-00-06 for the definitions of the different types of repairs.

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-02, GENERAL	Inspection and Removal of Damage
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-20-13, GENERAL	Surface Roughness Finish Requirements
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
51-40-08, GENERAL	Countersink Data and Procedures for Metal Structures
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts
737 NDT Part 6, 51-00-00, Figure 8	Inspection of Subsurface Cracks in Aluminum Structure
737 NDT Part 6, 51-00-00, Figure 9	Inspection of Subsurface Cracks at Fastener Holes in Aluminum Structure

**4. Repair Instructions**

- A. Get access to the damaged area.
  - (1) Remove the necessary fasteners in the area of the damaged skin as shown in Figure 201/REPAIR 1. Refer to 51-40-02, GENERAL.
  - (2) If Repair 1 will replace a initial external repair, remove the repair fasteners and the repair parts.
- B. Cut and remove the damaged part of the fuselage skin, if necessary, as shown in Figure 201/REPAIR 1. Refer to 51-10-02, GENERAL.
  - (1) Make the cut in the shape of a circle with a minimum radius of 1.00 inch (25.4 mm) as shown in Figure 201/REPAIR 1.
  - (2) Make the corner radii of the cut a minimum of 0.50 inch (12.7 mm).
- C. Put the skin around the cut back to the initial contour.

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**STRUCTURAL REPAIR MANUAL**

- D. Do a High Frequency Eddy Current (HFEC) inspection of the repair area to make sure that all of the damage is removed. Do a 0.040 inch (1.02 mm) insurance cut if no further damage is found. Refer to 737 NDT Part 6, 51-00-00, Figure 4, 737 NDT Part 6, 51-00-00, Figure 8 and 737 NDT Part 6, 51-00-00, Figure 9.
- E. Make the repair parts as given in Table 201/REPAIR 1.
- F. Make the contour of the repair parts the same as the contour of the initial skin as necessary.
- G. Assemble the repair parts as shown in Figure 201/REPAIR 1..

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Doubler	1	Use the same material and heat treat condition as the initial skin. Refer to Figure 201/REPAIR 1 to find the length, width, necessary fastener spacing, number of rows, and edge margins. The doubler thickness is 0.110 inch thick.
[2]	Filler	as necessary	Use the same material, heat treat and thickness as the initial skin.
[3]	Filler	as necessary	Use a BACF3F008K020NN filler or an equivalent filler.

- H. Drill the necessary fastener holes. Refer to Figure 201/REPAIR 1 for the fastener spacing. Refer to 51-40-05 for the fastener hole dimensions.
  - (1) Do not countersink the fastener holes more than 80 percent of the initial skin thickness.
    - (a) This will prevent a knife-edge condition of the initial skin.
  - (2) If Repair 1 will replace a initial external repair, then:
    - (a) Use the same fastener holes as the external repair.
    - (b) Use the same fastener spacing as the external repair if you drill more fastener holes.
- I. Disassemble the repair parts.
- J. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the bare surfaces of the initial parts. The edges of the cutout must have a surface smoothness of 63 microinches Ra or better. Refer to 51-20-13, GENERAL.
- K. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
- L. Apply two layers of BMS 10-11, Type I primer to the repair parts and to the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- M. Make and install the countersink repair washers at all the initial fastener locations in the initial skin panel that will be covered by the repair doubler as shown in Figure 201/REPAIR 1. Install the countersink repair washers with BMS 5-95 sealant. Refer to 51-40-08, GENERAL.
- N. Install the repair parts and the initial parts. Apply BMS 5-95 sealant to all the mating surfaces. Refer to 51-20-05.
- O. Install the fasteners per BAC 5004-1.
- P. Seal the repair area. Refer to 51-20-05.
  - (1) Apply a fillet seal to the repair parts on the external side of the repair area with BMS 5-95 sealant.
  - (2) Put sealant into the space between the part [2] filler and the skin.

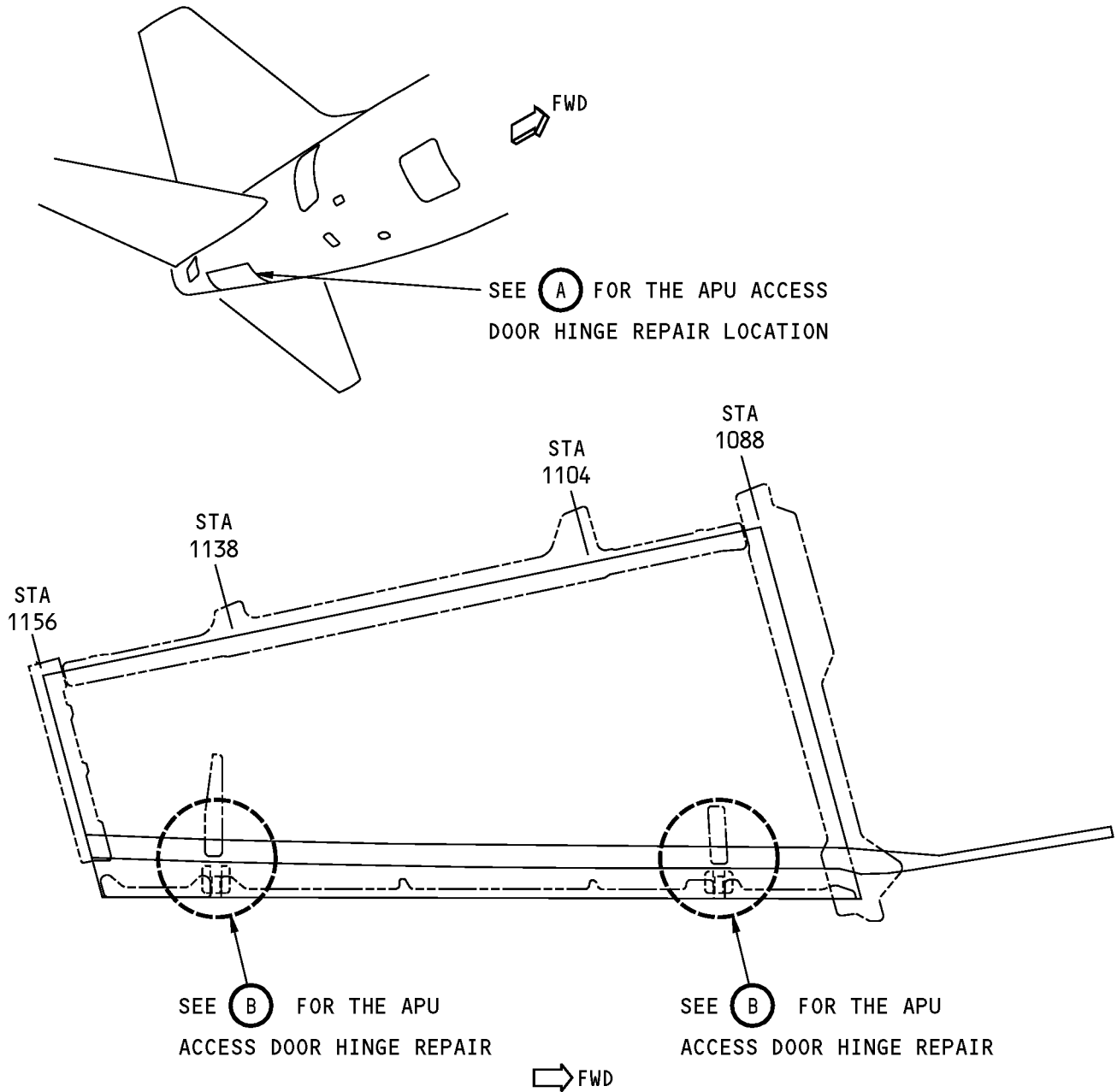


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**STRUCTURAL REPAIR MANUAL**

- Q. Apply a decorative finish to the external surfaces of the repair area, if necessary. Refer to AMM PAGEBLOCK 51-21-99/701.
- R. Apply a layer of BMS 3-23, corrosion inhibiting compound, to all the interior structure of the repair area, after the BMS 5-95 sealant has cured.

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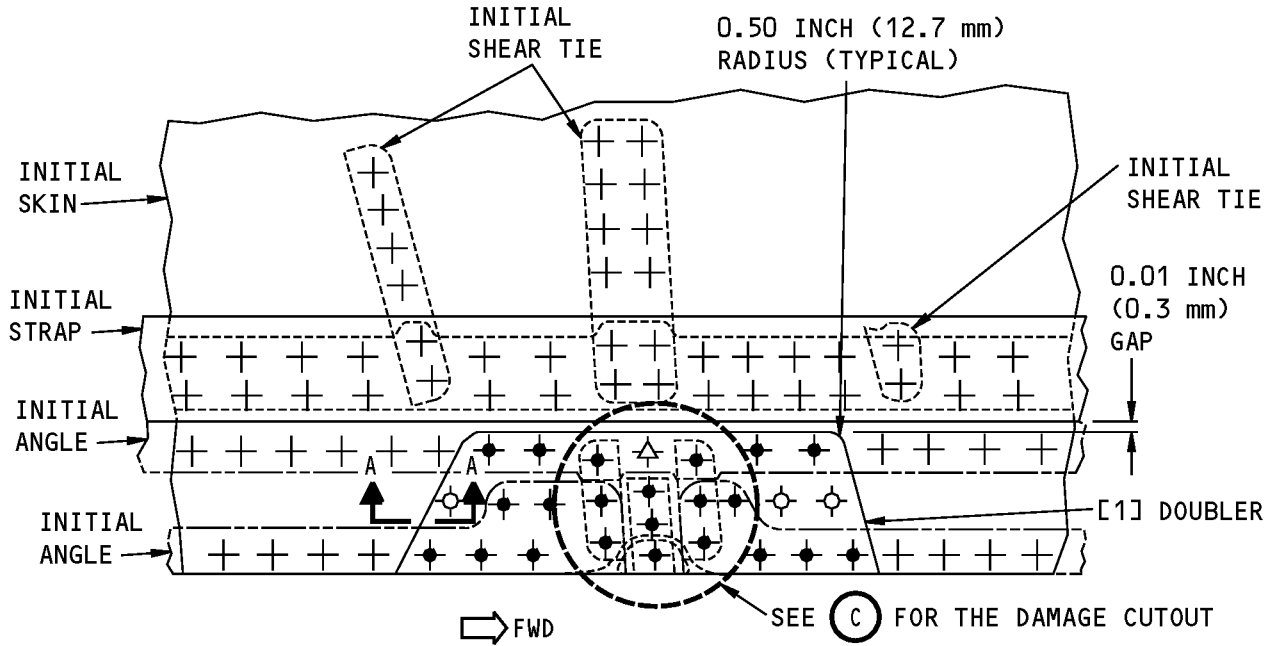


VIEW IS ON THE OUTER SURFACE OF THE SKIN  
APU ACCESS DOOR HINGE REPAIR LOCATION

(A)

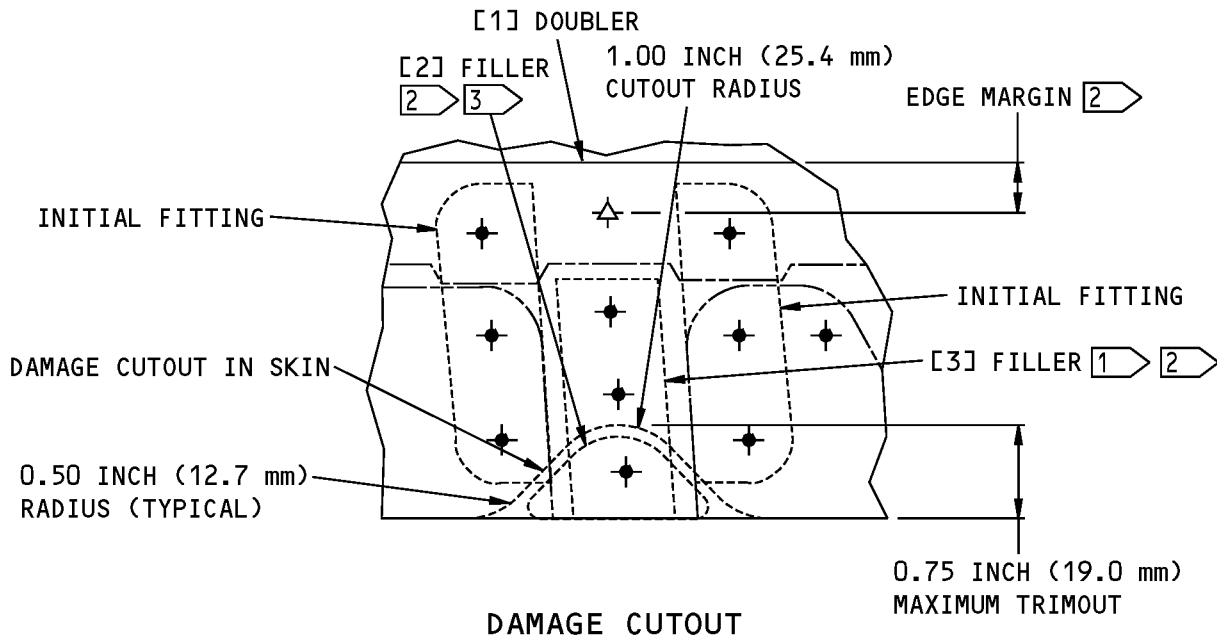
**Layout of the Repair Parts  
Figure 201 (Sheet 1 of 3)**

**STRUCTURAL REPAIR MANUAL**



**APU ACCESS DOOR HINGE REPAIR**

(B)



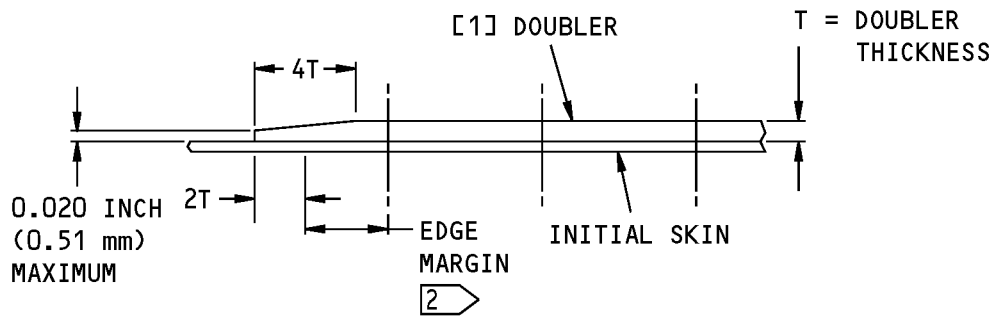
**DAMAGE CUTOUT**

(C)

**Layout of the Repair Parts  
Figure 201 (Sheet 2 of 3)**



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STRUCTURAL REPAIR MANUAL**



A-A

**NOTES**

- MAINTAIN A 4D - 6D FASTENER SPACING AT ALL NEW FASTENER LOCATIONS.
  - INSTALL ALL NEW FASTENERS IN-LINE WITH INITIAL ANGLE FASTENERS AS SHOWN IN FIGURE 201.
- [1] REINSTALL THE INITIAL BACF3F008K020NN FILLER AS NECESSARY. IF THE INITIAL BACF3F008K020NN FILLER WAS NOT INSTALLED AT EITHER HINGE LOCATION, INSTALL A NEW PART [3] FILLER.
- [2] REFER TO SRM 51-40-06 FOR THE EDGE MARGIN
- [3] INSTALL THE PART [2] FILLER AS SHOWN. MAKE SURE THERE IS A MINIMUM OF 0.01 INCH (0.3 mm) FASTENER PULL-UP.

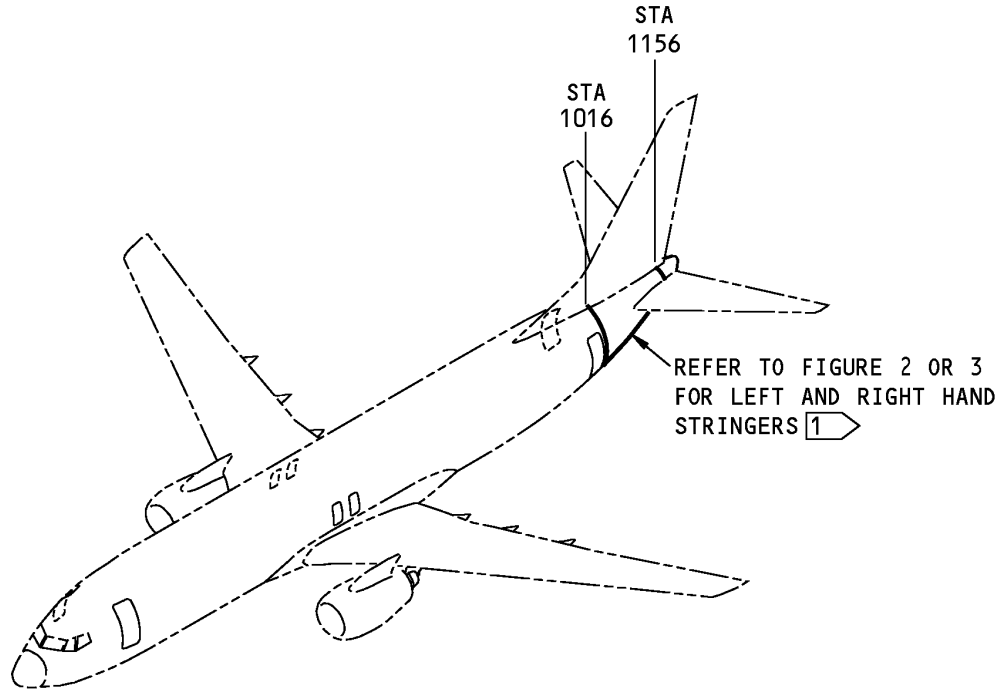
**FASTENER SYMBOLS**

- + REFERENCE FASTENER LOCATION.
- ◆ INITIAL FASTENER LOCATION. INSTALL A BACR15CE6D() RIVET. INSTALL THE SAME TYPE AND SIZE AS THE INITIAL FASTENER, UP TO 1/32 INCH OVERSIZE, IF NECESSARY. AS AN ALTERNATIVE, INSTALL A BACR15GF6D() RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15CE6D() RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF6D() RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D() RIVET. AS AN ALTERNATIVE, INSTALL A BACR15GF5D() RIVET.

**Layout of the Repair Parts  
Figure 201 (Sheet 3 of 3)**

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 48 FUSELAGE STRINGERS**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**1** REFER TO FIGURE 3 FOR AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD AT BS 1042

**Section 48 Stringer Identification  
Figure 1**

**Table 1:**

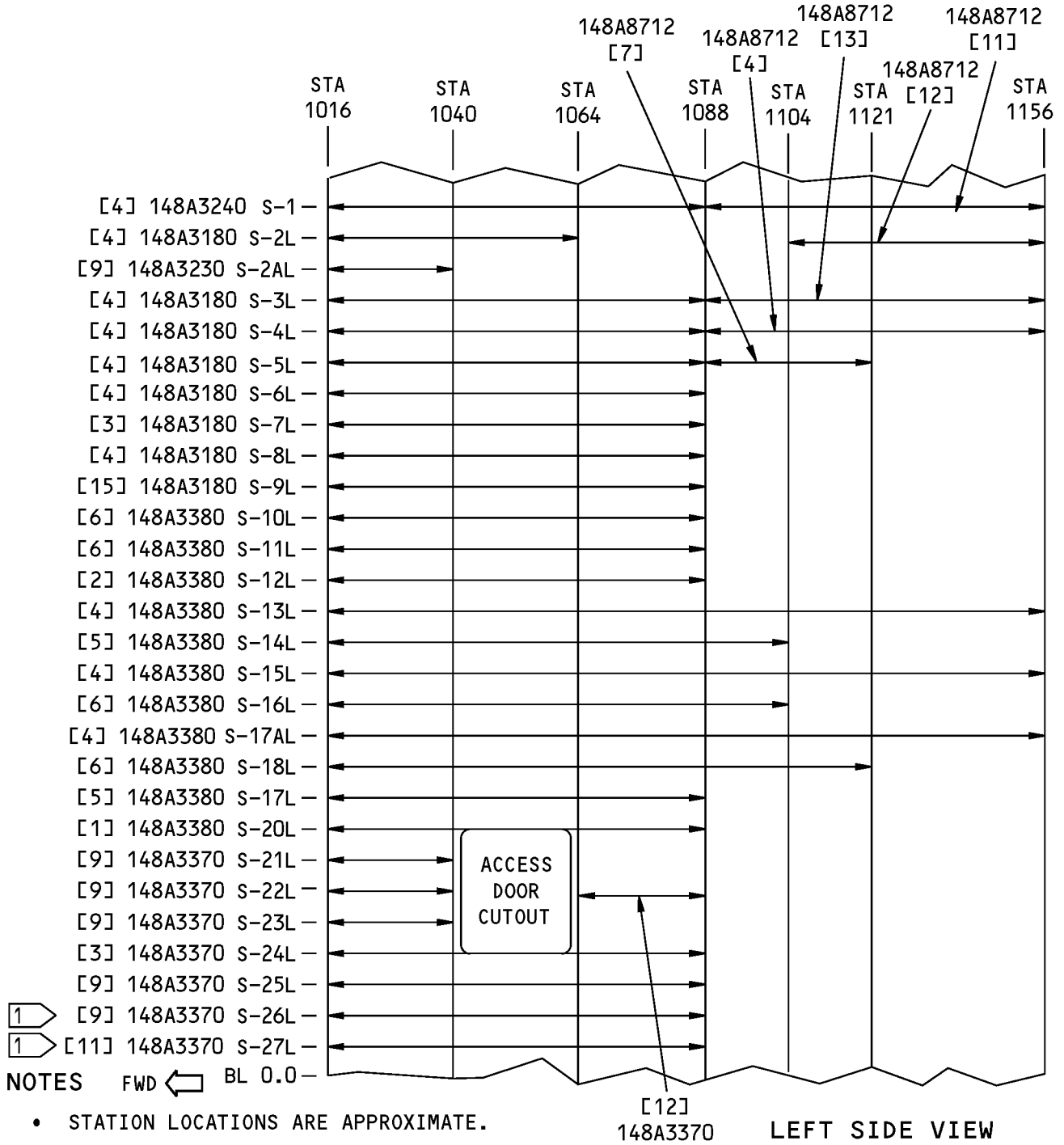
REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4803	Upper Panel Functional Collector- S-9R to S-9L - STA 1016-1088
148A0931	Upper Panel Integration Installation, S-9R to S-9L - STA 1016-1088
148A0987	Stringer Installation, Upper Module, STA 1088 to 1156, S-5L to S-5R
148A3110	Skin Panel Installation - STA 1016-1088, S-9L to S-4R
148A3120	Skin Panel Installation - STA 1016-1088, S-4R to S-9R
140A4804	Functional Collector, Lower Panel STA 1016-1088, S-9R to S-9L



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REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A0933	Lower Panel Integration Installation, S-9R to S-9L STA 1016-1088
148A3310	Skin Panel Installation, STA 1016-1088, S-24L to S-9L
148A3372	Stringer Assembly - S-18L
148A3320	Skin Panel Installation, STA 1016-1088, S-24L to S-16R
148A3330	Skin Panel Installation - Lower, APU Inlet, S-9R to S-16R
148A3375	Stringer Assembly - APU Inlet Skin Panel
140A4807	Upper Module Functional Collector - STA 1088-1156

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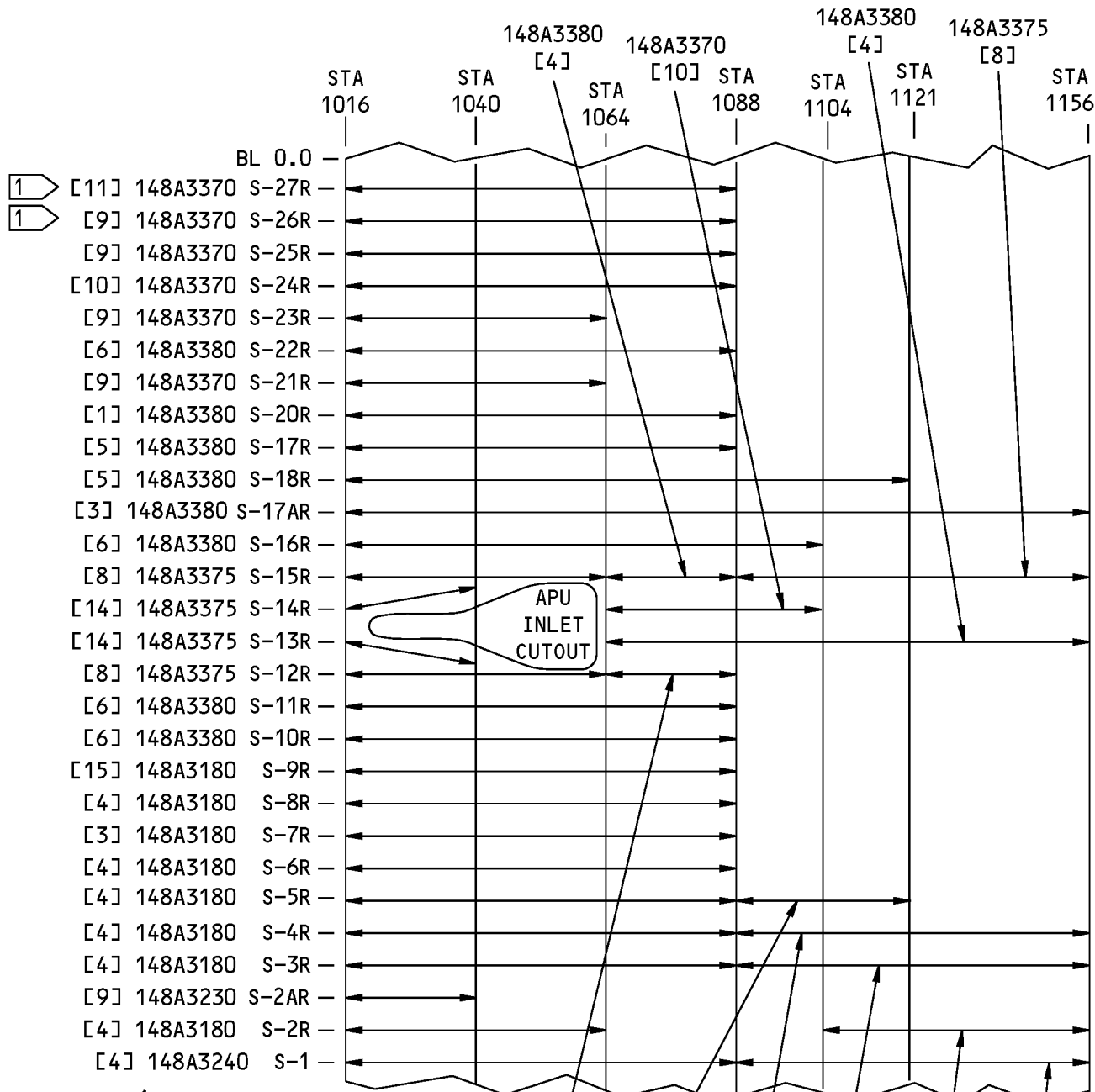


- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

[1] STRINGER SPANS FROM STA 1016 TO STA 1064 ON AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

**Stringer Identification S-1 to S-27 for Aircraft with a Domed Aft Pressure Bulkhead  
 Figure 2 (Sheet 1 of 2)**

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NOTES FWD

RIGHT SIDE VIEW

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

STRINGER SPANS FROM STA 1016 TO STA 1064 ON AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

**Stringer Identification S-1 to S-27 for Aircraft with a Domed Aft Pressure Bulkhead  
Figure 2 (Sheet 2 of 2)**



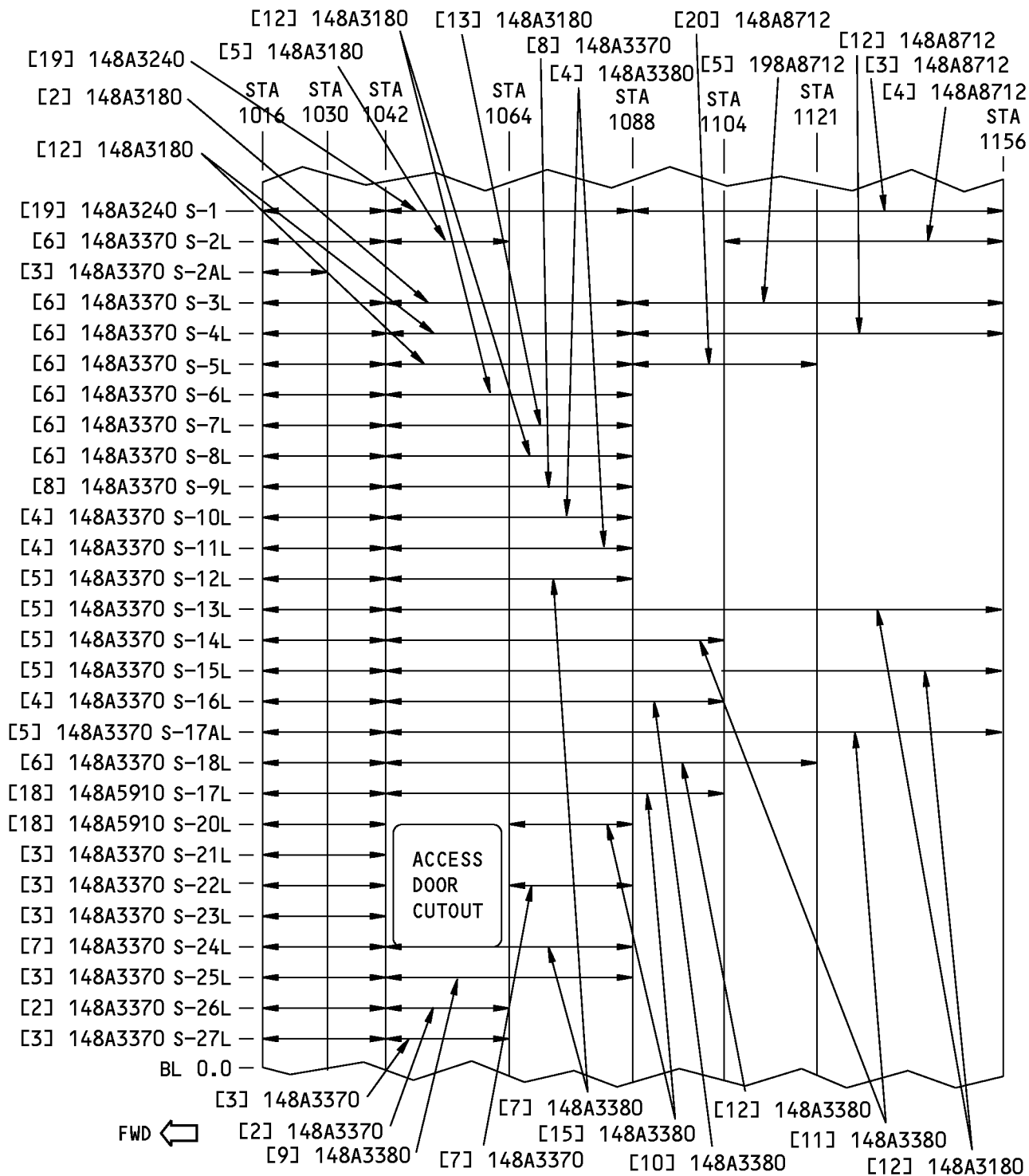
**737-800  
STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[2]	Stringer	0.071 (1.80)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[3]	Stringer	0.063 (1.60)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[4]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[5]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[6]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[7]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	
[8]	Stringer Assembly Intercostal Angle Angle	0.063 (1.60) 0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13 7075-T62 clad sheet as given in QQ-A-250/13 AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[10]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[11]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[12]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[13]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[14]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[15]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[16]	Stringer		BAC1517-2322 7075-T62 sheet as given in QQ-A-250/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

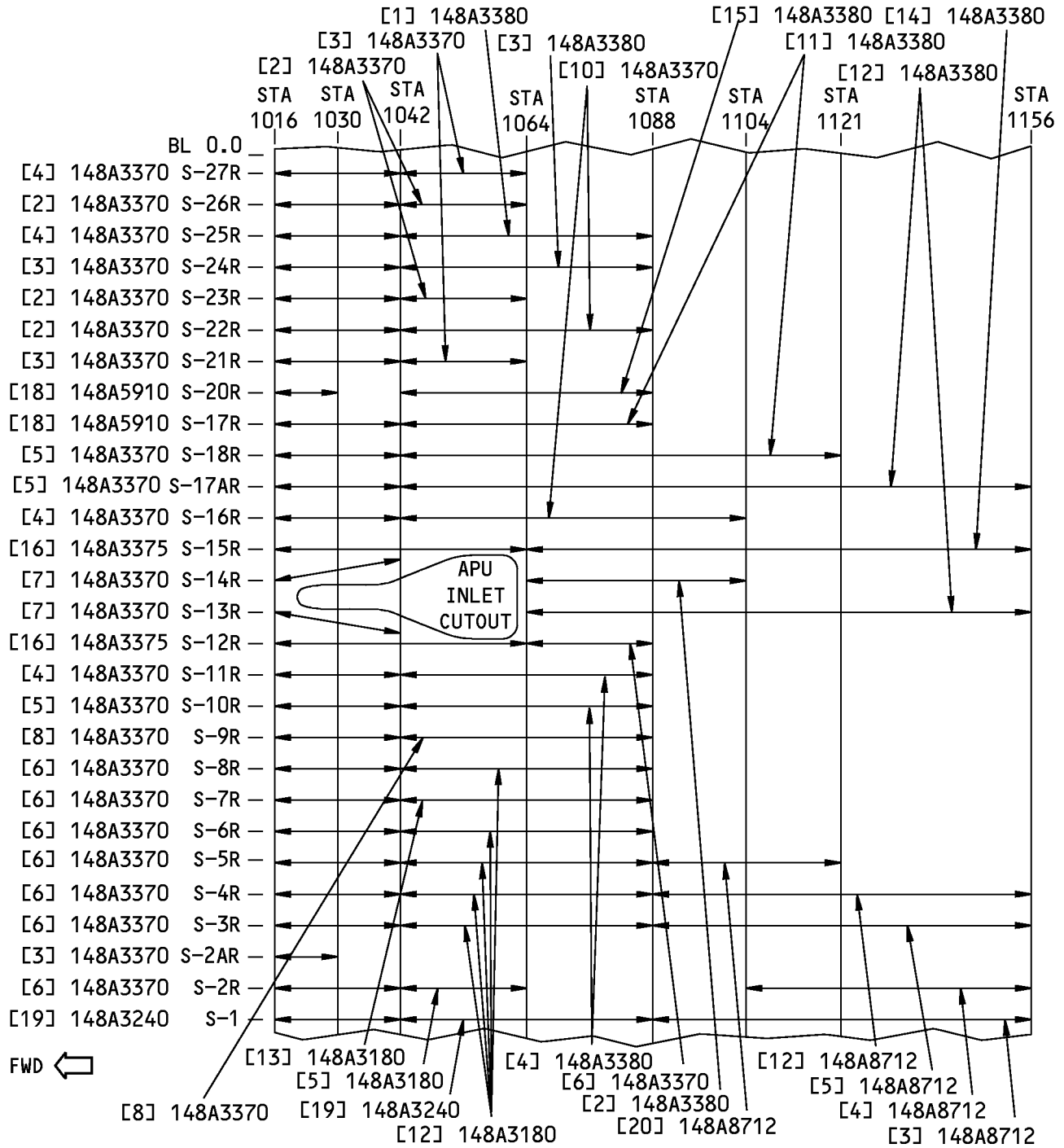
**STRUCTURAL REPAIR MANUAL**



**LEFT SIDE VIEW**

**Stringer Identification S-1 to S-27 for Aircraft with a Flat Aft Pressure Bulkhead  
Figure 3 (Sheet 1 of 2)**

STRUCTURAL REPAIR MANUAL



RIGHT SIDE VIEW

NOTES

- STATION LOCATIONS ARE APPROXIMATE.
- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

Stringer Identification S-1 to S-27 for Aircraft with a Flat Aft Pressure Bulkhead  
Figure 3 (Sheet 2 of 2)





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**Table 3:**

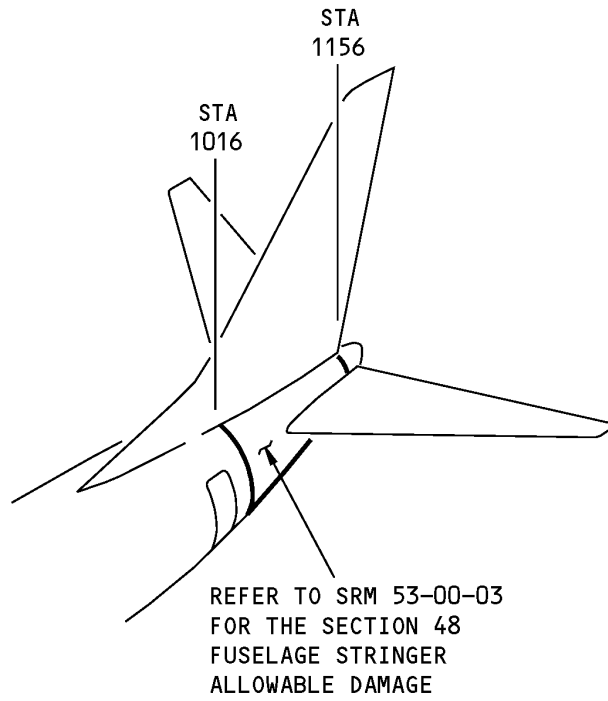
<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stringer		BAC1498-156 7075-T62 sheet as given in QQ-A-250/12	
[2]	Stringer		BAC1498-157 7075-T62 sheet as given in QQ-A-250/12	
[3]	Stringer		BAC1498-158 7075-T62 sheet as given in QQ-A-250/12	
[4]	Stringer		BAC1498-159 7075-T62 sheet as given in QQ-A-250/12	
[5]	Stringer		BAC1498-160 7075-T62 sheet as given in QQ-A-250/12	
[6]	Stringer		BAC1498-161 7075-T62 sheet as given in QQ-A-250/12	
[7]	Stringer		BAC1498-162 7075-T62 sheet as given in QQ-A-250/12	
[8]	Stringer		BAC1498-165 7075-T62 sheet as given in QQ-A-250/12	
[9]	Stringer	0.032 (0.81)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[10]	Stringer	0.045 (1.14)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[11]	Stringer	0.050 (1.27)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[12]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[13]	Stringer	0.063 (1.63)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[14]	Stringer	0.080 (2.03)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[15]	Stringer	0.090 (2.29)	7075-T62 sheet as given in QQ-A-250/12. Machined taper gage	
[16]	Stringer Assembly Intercostal Angle Angle	0.080 (2.03)	7050-T7451 plate as given in BMS 7-323, Type I BAC1503-100283 7075-T73511 extrusion as given in QQ-A-200/11 7075-T62 sheet as given in QQ-A-250/13.	
[17]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	
[18]	Stringer		7050-T7451 plate as given in AMS4050	
[19]	Stringer	0.056 (1.42)	7075-T62 sheet as given in QQ-A-250/13	
[20]	Stringer		BAC1517-2322 7075-T62 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 48 FUSELAGE STRINGERS**



**Section 48 Fuselage Stringer Allowable Damage**  
**Figure 101**

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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 48 FUSELAGE STRINGERS**

**1. Applicability**

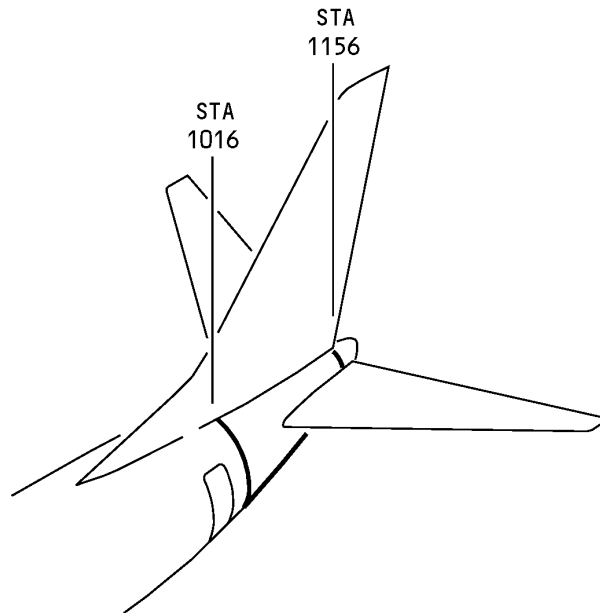
A. Repair 1 is applicable to damage to the stringers in body Section 48 shown in Section 48 Stringer Repairs, Figure 201/REPAIR 1.

**2. General**

A. The typical repairs given in 51-70-11 or 51-70-12 can be used when applicable if:

(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.

B. Refer to the limits of the typical repairs given in 51-70-11 or 51-70-12 before you start a repair.



**Section 48 Stringer Repairs  
Figure 201**

**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
53-00-03, REPAIR 1	Repair for a Type I, Type II, or Type IV Fuselage Stringer with General Damage
53-00-03, REPAIR 2	Repair for a Type I, II or IV Fuselage Stringer with Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR 3	Repair for a Type III Fuselage Stringer With General Damage
53-00-03, REPAIR 4	Repair for a Type III Fuselage Stringer With Longitudinal Crack Damage in a Formed Corner of a Skin Attachment Flange
53-00-03, REPAIR GENERAL	Formed Fuselage Stringers
53-80-03	FUSELAGE STRINGERS - SECTION 48



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**4. Repair Instructions**

A. Refer to Table 201/REPAIR 1 to find the applicable repairs to the section 48 fuselage stringers.

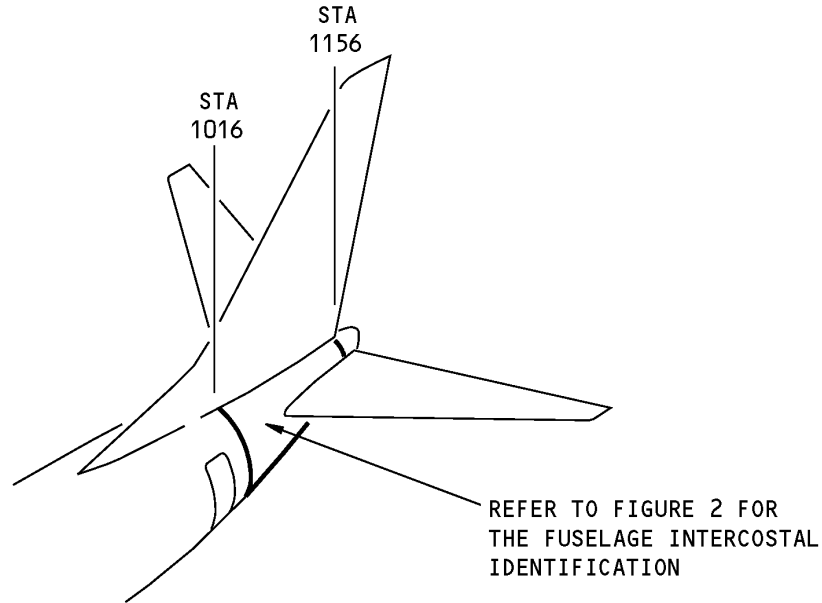
**NOTE:** If necessary, refer to 53-80-03, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 48 FUSELAGE STRINGERS</b>		
<b>STRINGER</b>	<b>LOCATION</b>	<b>REPAIR</b>
S-1	STA 1016 to STA 1088	Refer to SRM 51-70-11
S-12R, S-15R	STA 1016 to STA 1064	Refer to SRM 51-70-11, and SRM 51-70-12
S-5L, S-5R	STA 1088 to STA 1121	Refer to SRM 51-70-12
S-15R	STA 1088 to STA 1156	Refer to SRM 51-70-11
All other stringers	STA 1016 to STA 1156	Refer to SRM 53-00-03

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**IDENTIFICATION 1 - SECTION 48 FUSELAGE INTERCOSTALS**



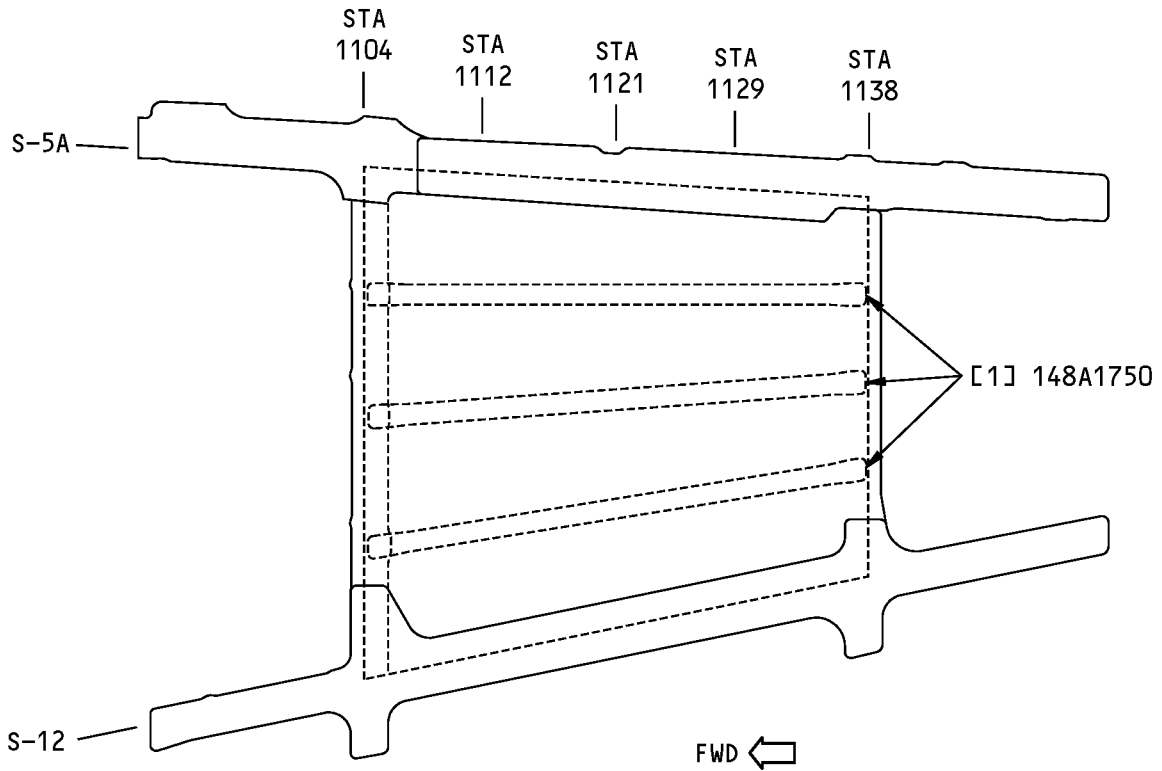
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 48 Fuselage Intercostal Locations  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4808	Lower Module Functional Collector - Body Section 48
148A3800	Skin Panel Installation, Lower Aft, Station 1088 - 1156

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 48 Fuselage Intercostal Identification  
Figure 2**



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**Table 2:**

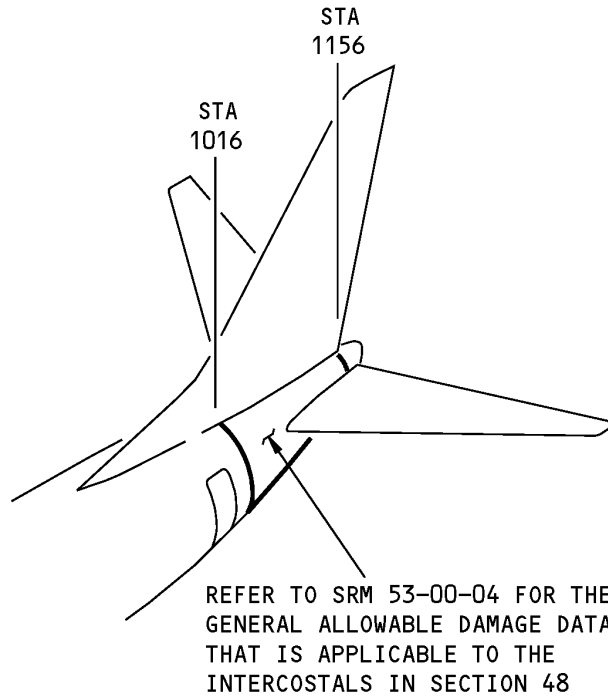
LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Intercostal		BAC1505-101205 7075-T62 extrusion	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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ALLOWABLE DAMAGE GENERAL - SECTION 48 FUSELAGE INTERCOSTALS



Section 48 Fuselage Intercostal Locations  
Figure 101



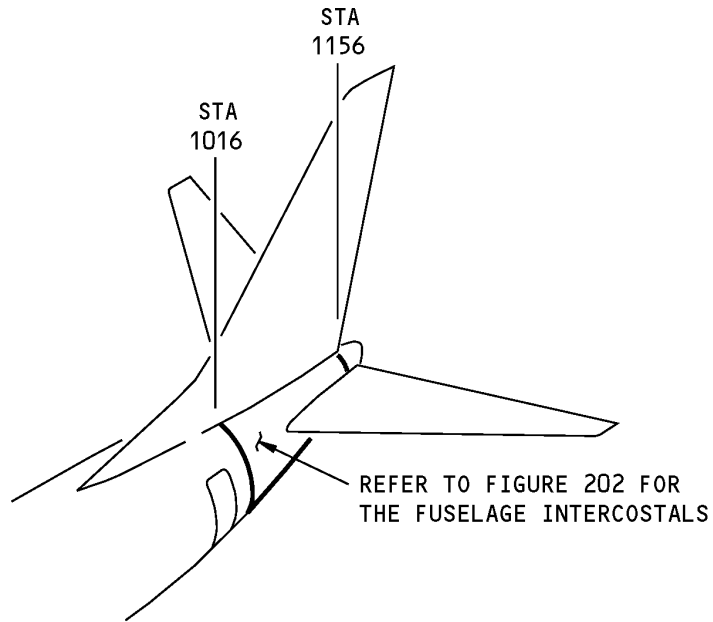


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**STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 48 FUSELAGE INTERCOSTALS**

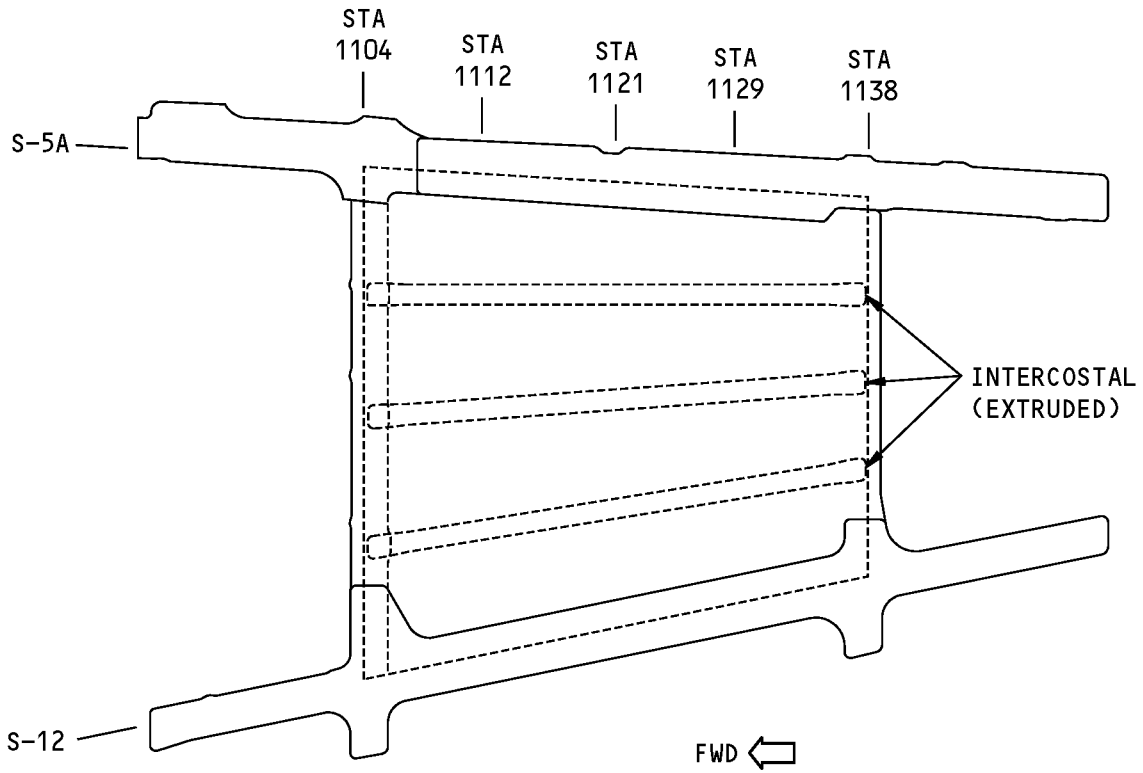
**1. Applicability**

- A. Repair 1 is applicable to damage to the fuselage intercostals as shown in Section 48 Fuselage Intercostal Locations, Figure 201/REPAIR 1.



**Section 48 Fuselage Intercostal Locations**  
**Figure 201**

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**LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE**

**Section 48 Fuselage Intercostal Structure  
Figure 202**



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**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. The typical repair given in 51-70-12 can be used when applicable if:
  - (1) There is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-12 before you start a repair.

**3. References**

Reference	Title
51-70-12	EXTRUDED SECTION REPAIRS
53-00-04, ALLOWABLE DAMAGE 1	Fuselage Intercostals
53-80-04	FUSELAGE INTERCOSTALS - SECTION 48

**4. Repair Instructions**

- A. Refer to Table 201/REPAIR 1 and Figure 202/REPAIR 1 to find the applicable repair for the part you want to repair.

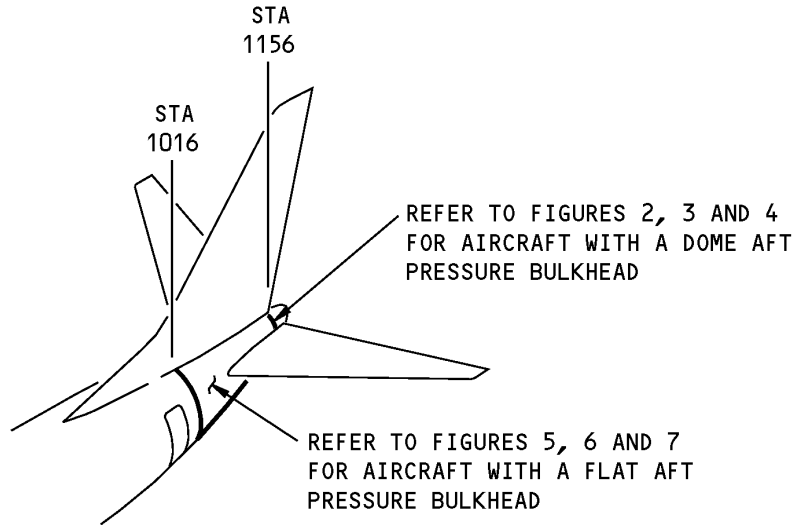
**NOTE:** If necessary, refer to 53-80-04, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE FUSELAGE INTERCOSTALS	
TYPE OF COMPONENT	REPAIR
Extruded parts	Refer to SRM 51-70-12

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**IDENTIFICATION 1 - SECTION 48 FUSELAGE FRAMES**



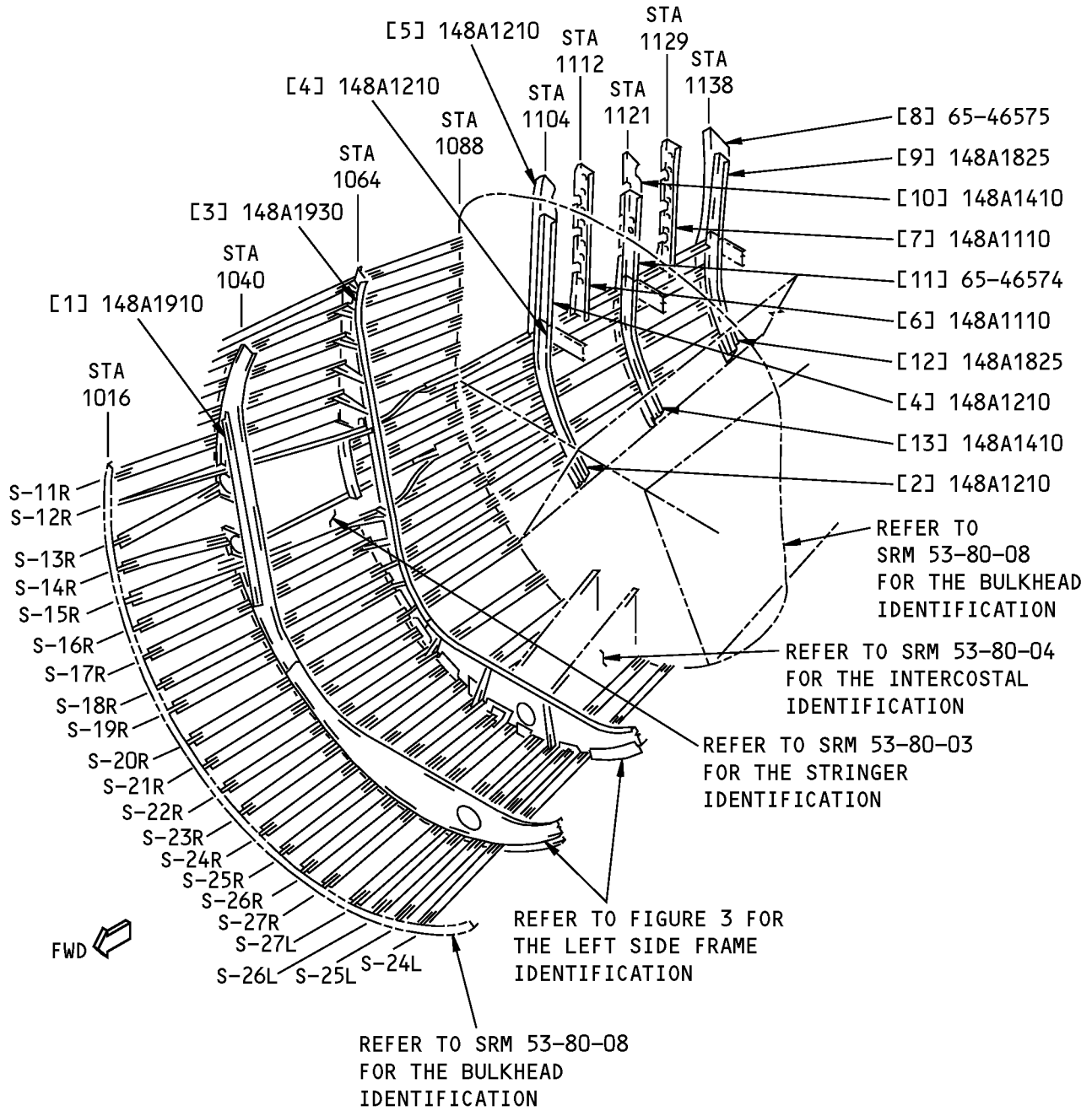
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 48 Fuselage Frame Locations  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4801	Integration Functional Collector - Body Section 48
140A4803	Upper Panel Functional Collector - S-9L to S-9R, STA 1016 to STA 1088
140A4804	Lower Panel Functional Collector - S-9R to S-9L, STA 1016 to STA 1088
140A4807	Upper Module Functional Collector - Body Section 48
140A4808	Lower Module Functional Collector - Body Section 48

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 48 Right Side Fuselage Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead  
Figure 2**



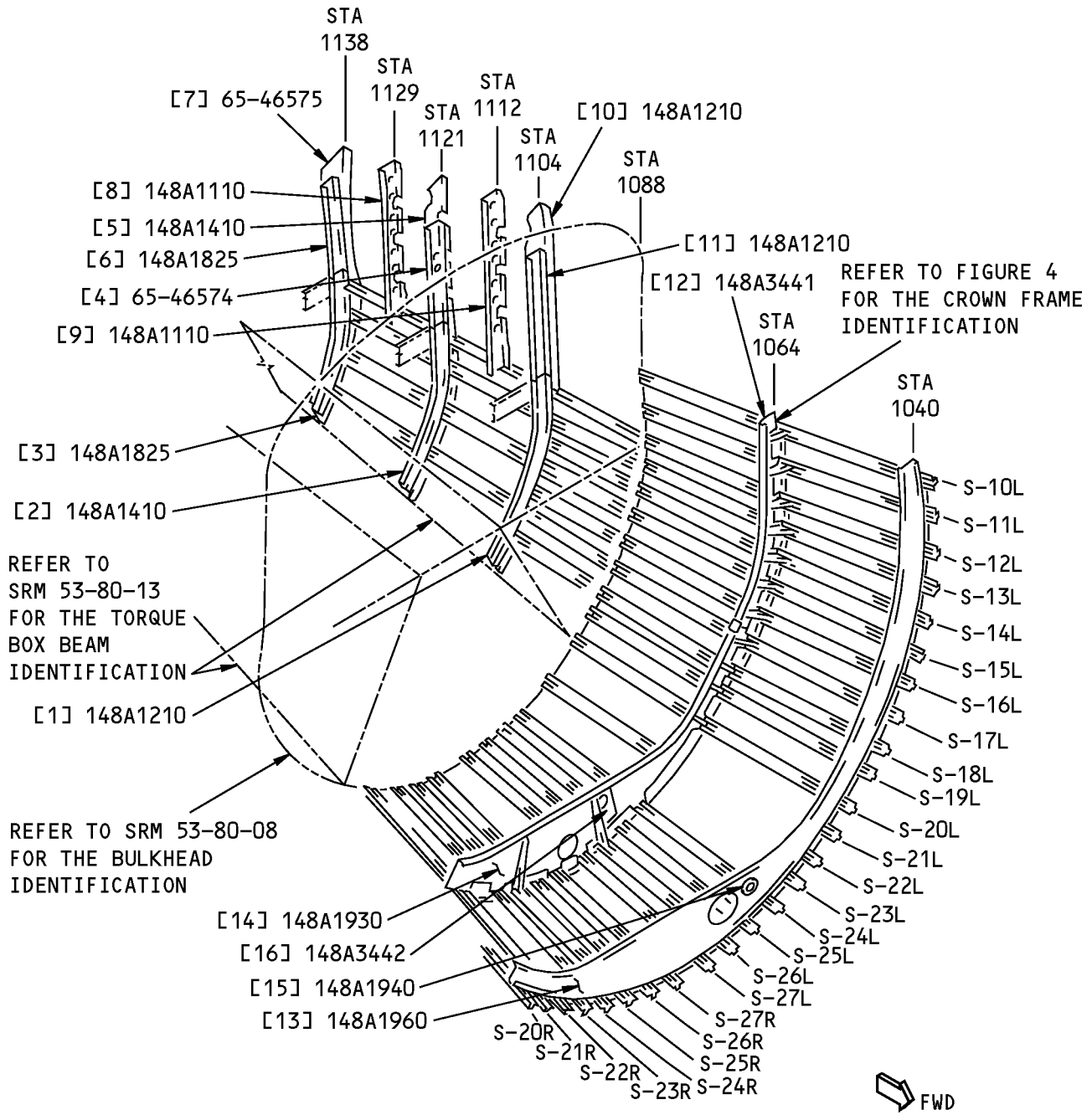
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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame Assembly Frame (Zee) Doubler Channel	0.040 (1.02) 0.050 (1.27)	7075-T62 clad sheet 7075-T6 clad sheet BAC1493-216 7075-T62 clad formed section	
[2]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[3]	Frame (Zee) STA 1064	0.045 (1.14)	7075-T62 clad sheet	
[4]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[6]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[7]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[8]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[9]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[10]	Shear Tie - STA 1121	0.071 (1.80)	7075-T62 sheet	
[11]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[12]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[13]	Lower Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 48 Left Side Fuselage Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead  
Figure 3**



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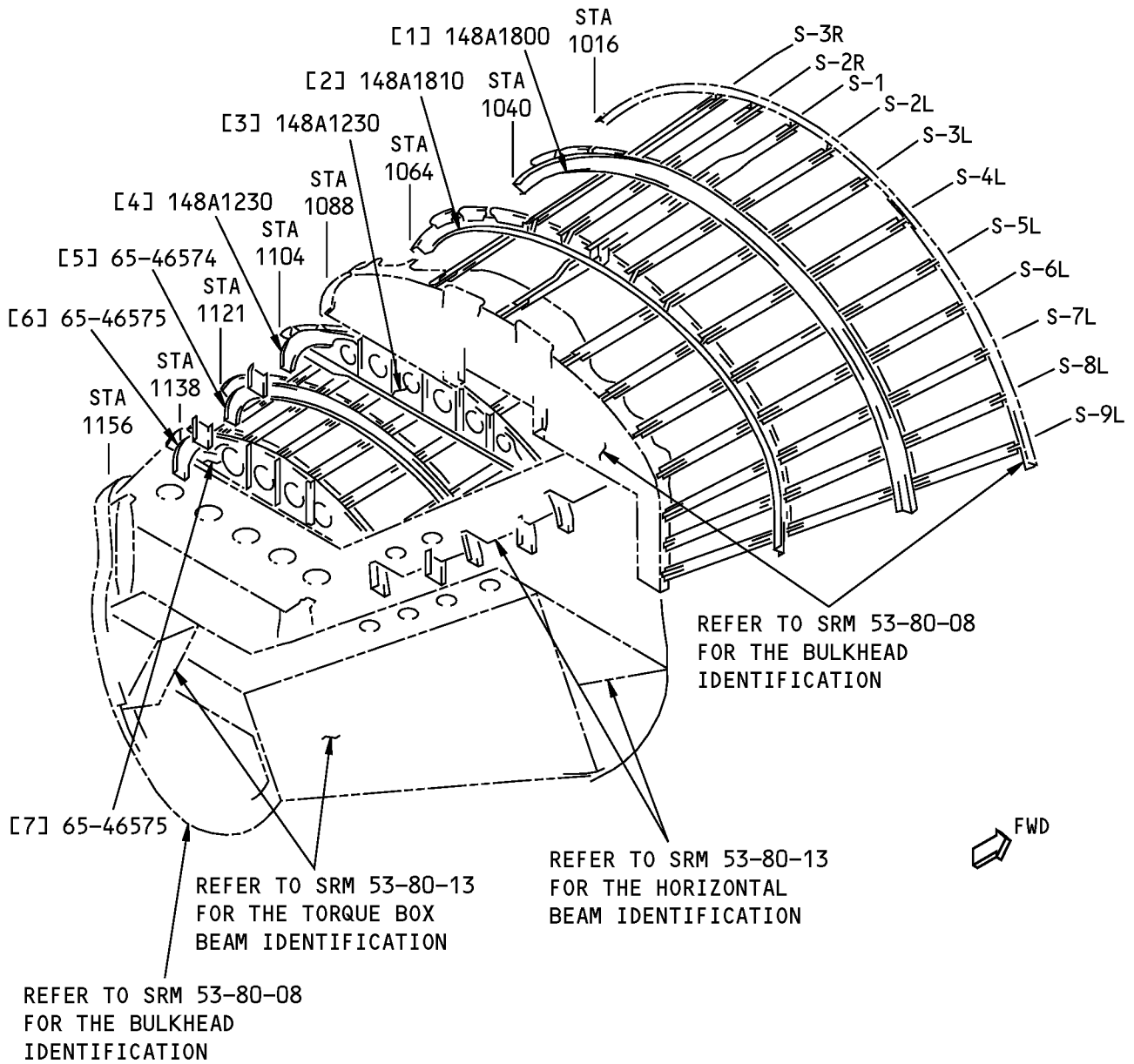
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1121	0.040 (1.02)	7075-T62 clad sheet	
[3]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[4]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[5]	Shear Tie - STA 1121	0.071 (1.80)	7075-T6 sheet	
[6]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[7]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[8]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[9]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[10]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[11]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[12]	Zee Frame - STA 1064		BAC1517-2717 7075-T62 clad formed sheet	
[13]	Zee Frame - STA 1040	0.040 (1.02)	7075-T62 clad sheet	
[14]	Zee - STA 1064	0.050 (1.27)	7075-T62 clad sheet	
[15]	Doubler	0.050 (1.27)	7075-T6 clad sheet	
[16]	Doubler	0.063 (1.60)	7075-T62 clad sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 48 Fuselage Crown Frame Identification on Aircraft with a Dome Aft Pressure Bulkhead  
Figure 4**



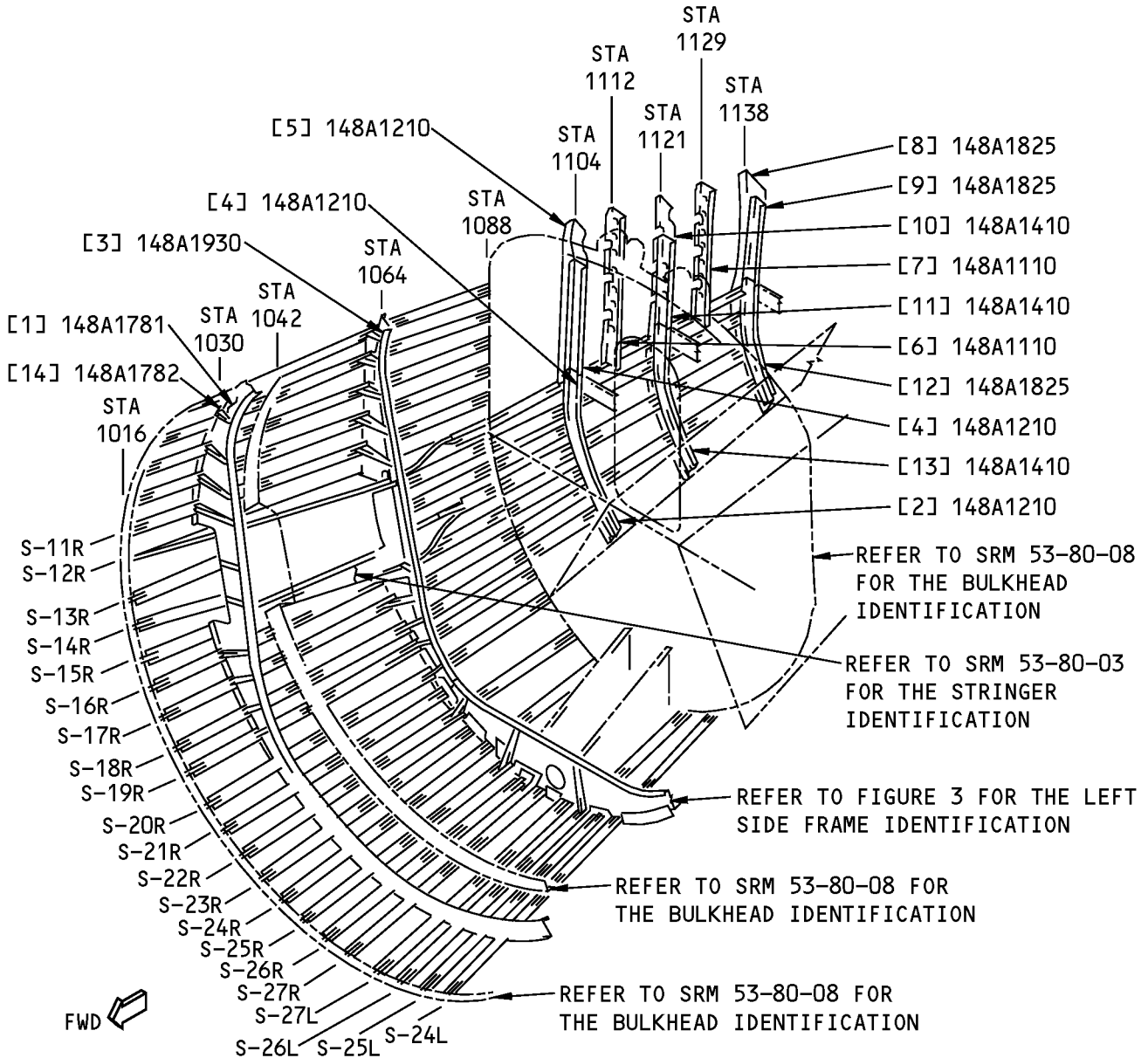
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**Table 4:**

<b>LIST OF MATERIALS FOR FIGURE 4</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame - STA 1040		BAC1517-2718 7075-T62 clad formed sheet	
[2]	Frame - STA 1064		BAC1517-2718 7075-T62 clad formed sheet	
[3]	Web - STA 1104	0.050 (1.27)	7075-T62 clad sheet	
[4]	Upper Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Crown Frame - STA 1121	0.040 (1.02)	2024-T42 clad sheet	
[6]	Crown Frame - STA 1138	0.063 (0.160)	7075-T62 clad sheet	
[7]	Web - STA 1138	0.056 (1.42)	2024-T3 sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 48 Right Side Fuselage Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead  
Figure 5**



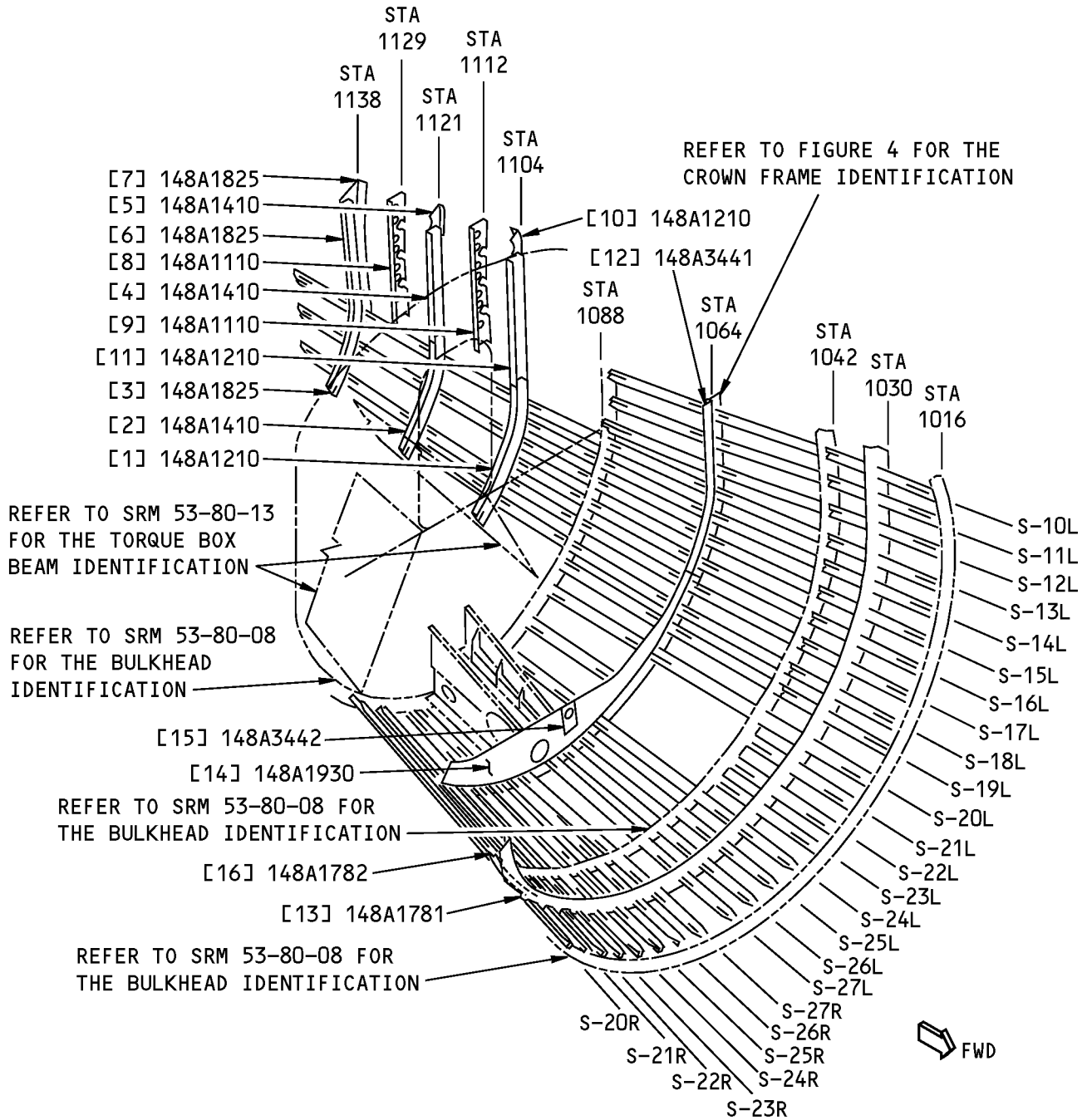
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**Table 5:**

<b>LIST OF MATERIALS FOR FIGURE 5</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame, Right - STA 1030	0.125 (3.20)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[3]	Frame (Zee) STA 1064	0.045 (1.14)	7075-T62 clad sheet	
[4]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[6]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[7]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[8]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[9]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[10]	Shear Tie - STA 1121	0.071 (1.80)	7075-T62 sheet	
[11]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[12]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[13]	Lower Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[14]	Chord, Right- STA 1030		7050-T7451 plate as given in AMS 4050	
[15]	Lower Frame - STA 1030	0.071 (1.80)	7075-T6 clad sheet	
[16]	Chord, Lower- STA 1030		BAC 1514-945 7075-T62 clad formed sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 48 Left Side Fuselage Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead  
Figure 6**



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**STRUCTURAL REPAIR MANUAL**

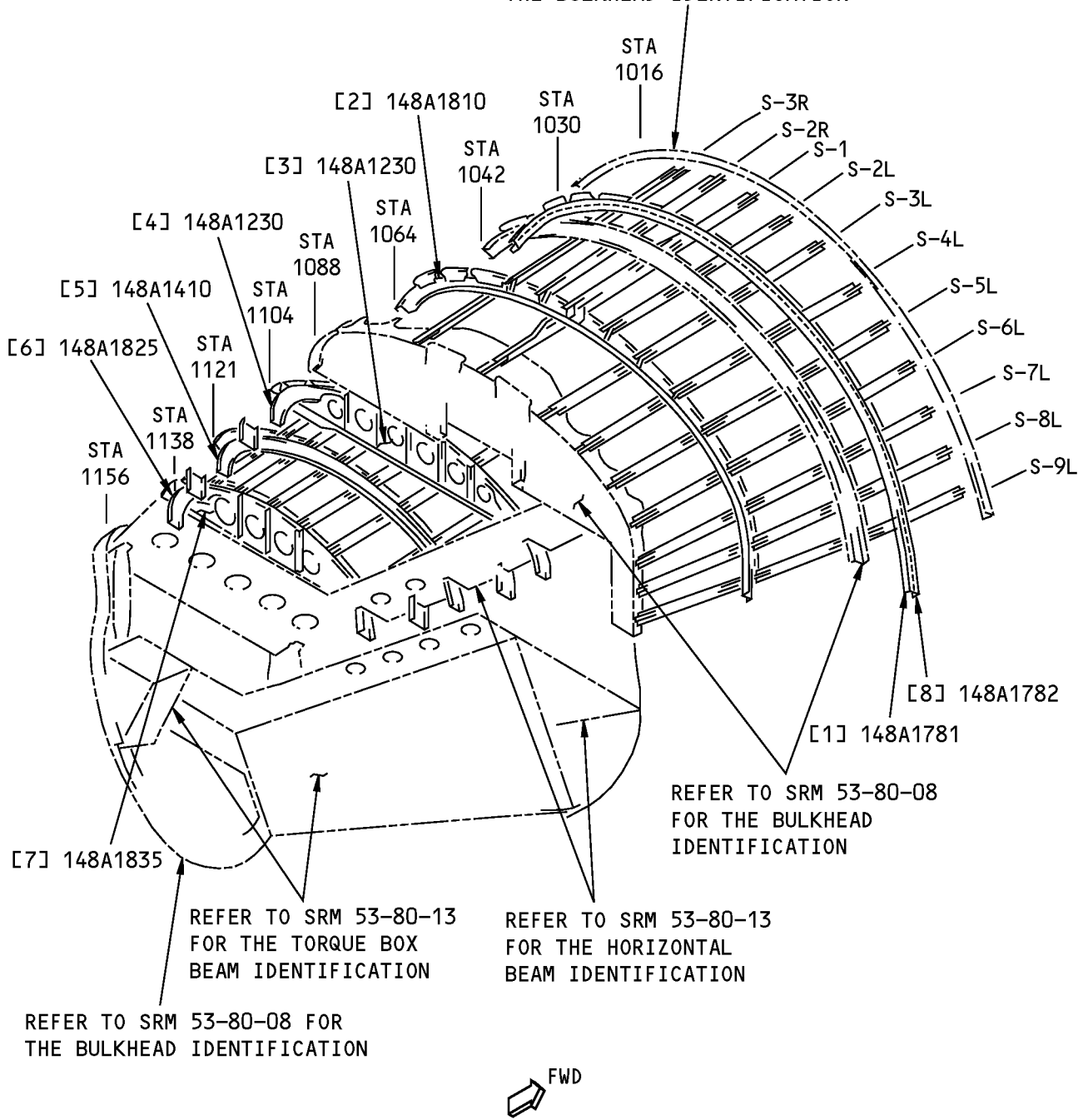
**Table 6:**

<b>LIST OF MATERIALS FOR FIGURE 6</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Lower Frame - STA 1104	0.063 (1.60)	7075-T62 clad sheet	
[2]	Lower Frame - STA 1121	0.040 (1.02)	7075-T62 clad sheet	
[3]	Lower Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[4]	Frame - STA 1121	0.040 (1.02)	7075-T6 clad sheet	
[5]	Shear Tie - STA 1121	0.071 (1.80)	7075-T6 sheet	
[6]	Center Frame - STA 1138	0.063 (1.60)	7075-T62 clad sheet	
[7]	Shear Tie - STA 1138	0.070 (1.78)	7075-T6 sheet	
[8]	Frame - STA 1129	0.071 (1.80)	7075-T62 sheet	
[9]	Frame - STA 1112	0.071 (1.80)	7075-T62 sheet	
[10]	Shear Tie - STA 1104	0.063 (1.60)	2024-T42 clad sheet	
[11]	Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[12]	Zee Frame - STA 1064		BAC1517-2717 7075-T62 clad formed sheet	
[13]	Frame, Lower - STA 1030	0.071 (1.80)	7075-T62 clad sheet	
[14]	Zee - STA 1064	0.050 (1.27)	7075-T62 clad sheet	
[15]	Doubler	0.050 (1.27)	7075-T6 clad sheet	
[15]	Doubler	0.063 (1.60)	7075-T62 clad sheet	
[16]	Chord		BAC1514-945 7075-T62 clad formed sheet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL**

REFER TO SRM 53-80-08 FOR THE BULKHEAD IDENTIFICATION



**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**Section 48 Fuselage Crown Frame Identification for Aircraft with a Flat Aft Pressure Bulkhead  
Figure 7**



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**STRUCTURAL REPAIR MANUAL**

**Table 7:**

<b>LIST OF MATERIALS FOR FIGURE 7</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Upper Frame - STA 1030	0.071 (1.80)	7075-T62 clad sheet	
[2]	Frame - STA 1064		BAC1517-2718 7075-T62 clad formed sheet	
[3]	Web - STA 1104	0.050 (1.27)	7075-T62 clad sheet	
[4]	Upper Frame - STA 1104	0.056 (1.42)	7075-T62 clad sheet	
[5]	Crown Frame - STA 1121	0.040 (1.02)	2024-T42 clad sheet	
[6]	Crown Frame - STA 1138	0.063 (0.160)	7075-T6 clad sheet	
[7]	Web - STA 1138	0.056 (1.42)	2024-T3 sheet	
[8]	Chord - STA 1030		BAC1503-101074 7075-T62 clad formed sheet	

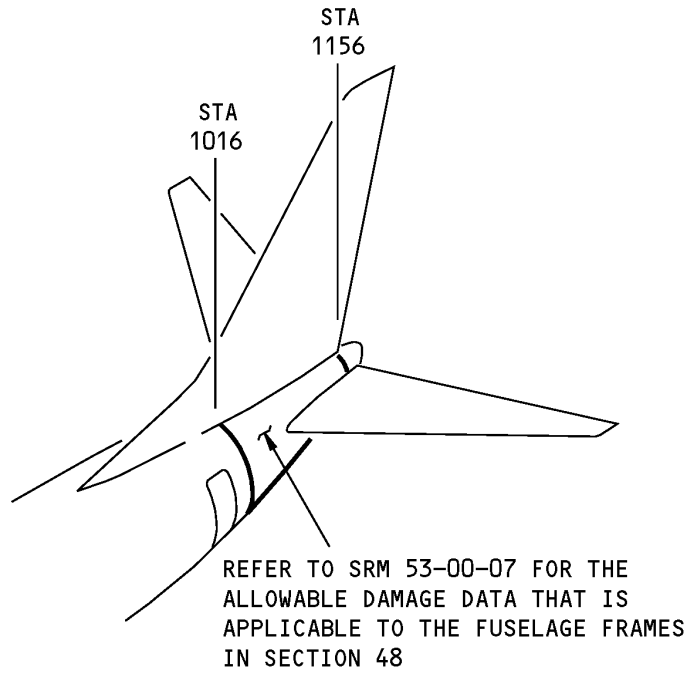
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).





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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE GENERAL - SECTION 48 FUSELAGE FRAMES**

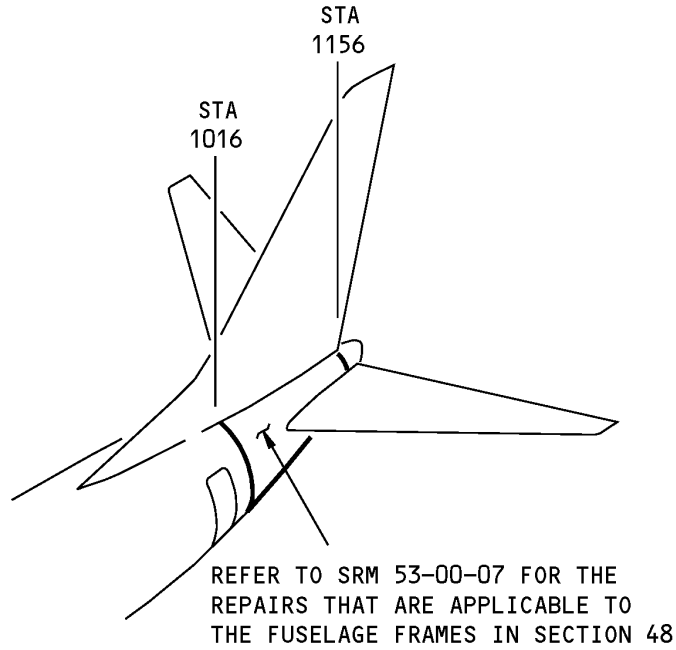


**Section 48 Fuselage Frame Location**  
**Figure 101**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

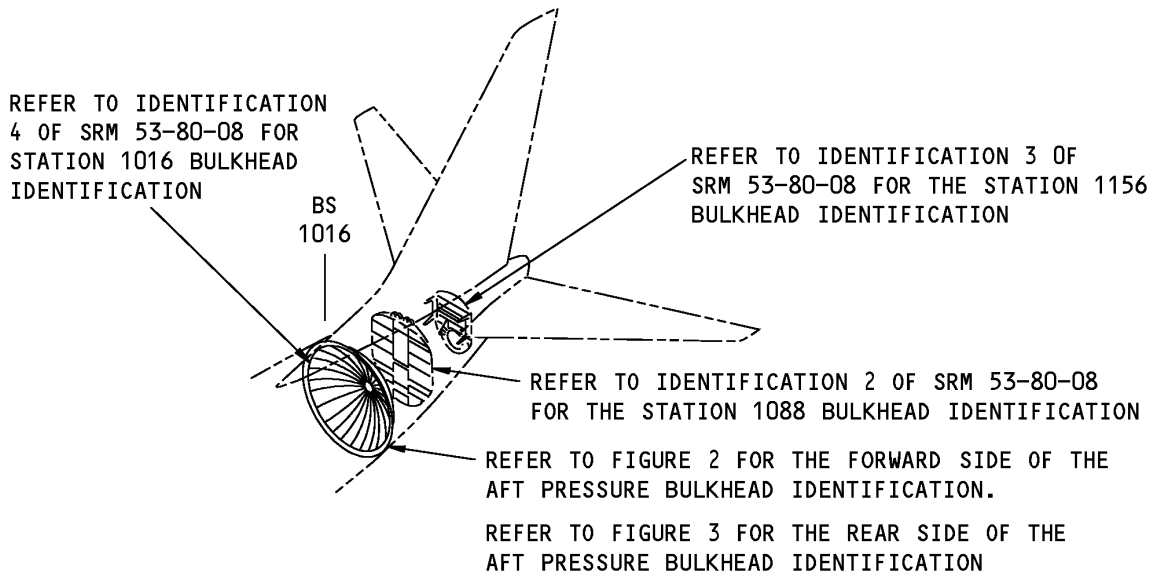
**REPAIR GENERAL - SECTION 48 FUSELAGE FRAMES**



**Section 48 Fuselage Frame Location**  
**Figure 201**

**737-800  
STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - STATION 1016 AFT PRESSURE BULKHEAD STRUCTURE**



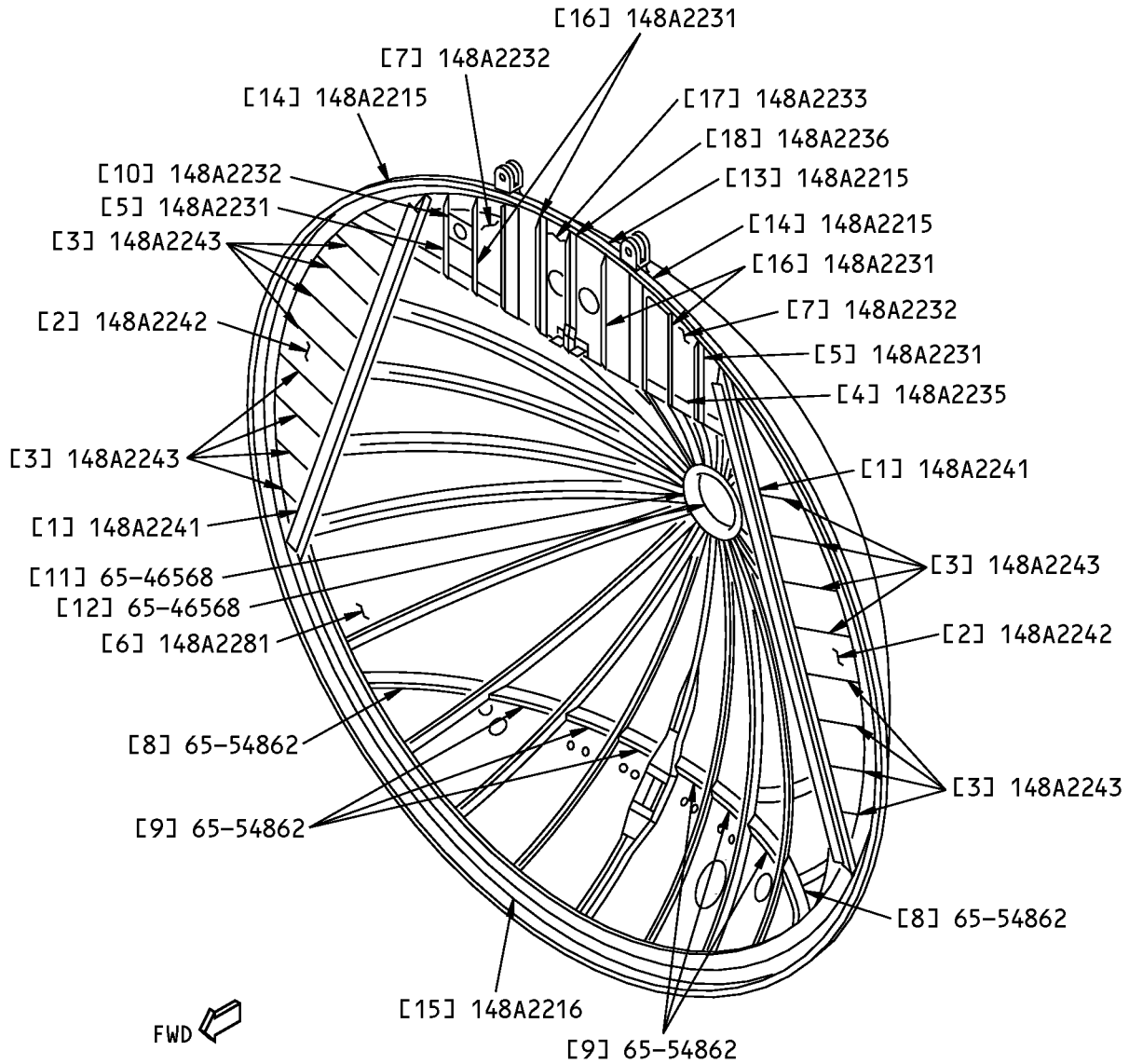
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 1016 Aft Pressure Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4802	Pressure Bulkhead, Station 1016 Functional Collector
148A0922	Bulkhead Integration Installation Station 1016
148A2220	Fuel Pan Assembly Installation - APU Station 1016
148A2230	Web Installation Center Upper
148A2240	Web Installation Side
148A2270	Lower Beam Assembly
148A2280	Pressure Dome Installation

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STRUCTURAL REPAIR MANUAL**



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**FRONT VIEW**

**Station 1016 Bulkhead Identification  
Figure 2**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

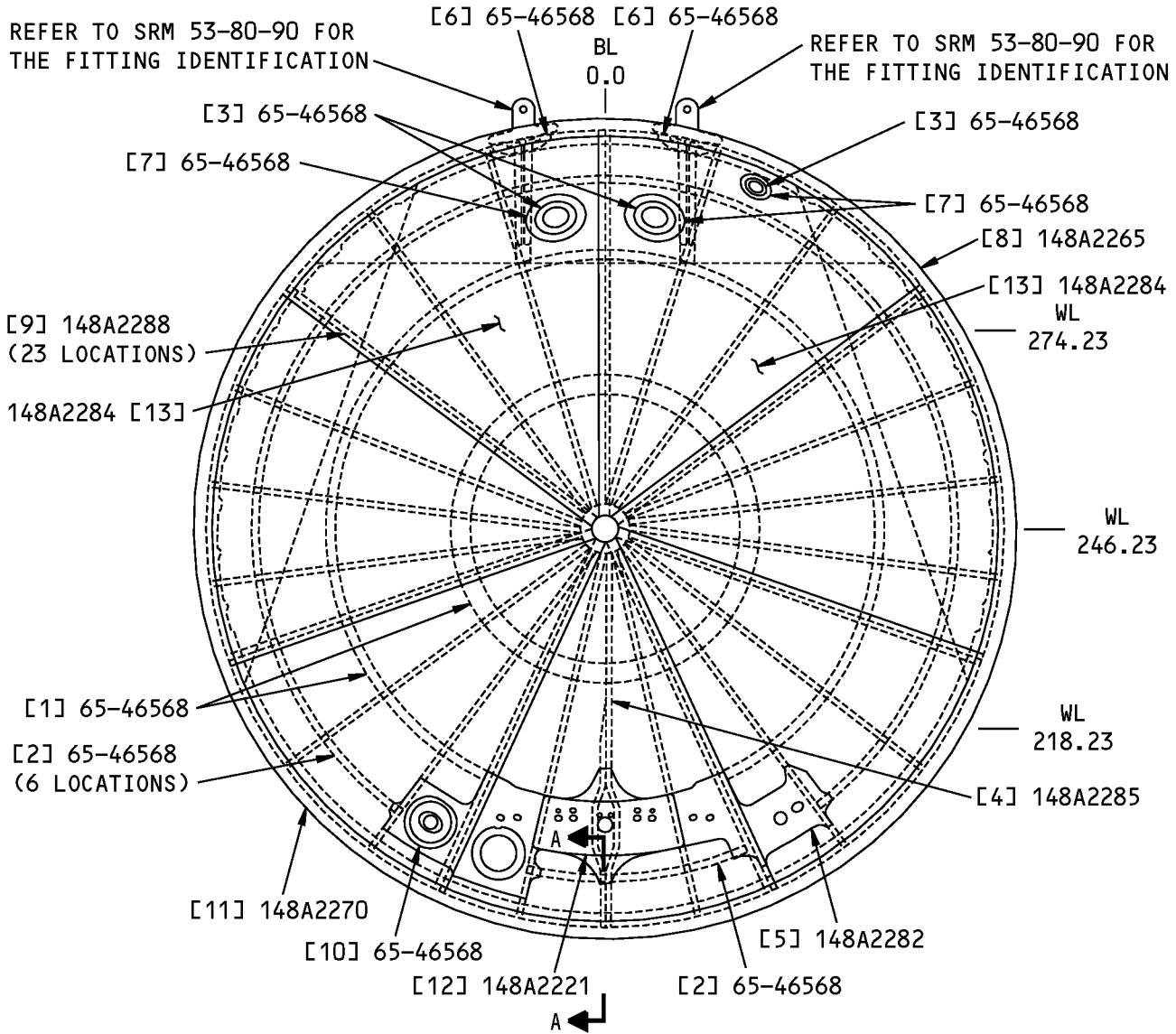
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Beam (2)		AND10140-1403 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Web (2)	0.025 (0.64)	7075-T6 clad sheet as given in QQ-A-250/13.	
[3]	Stiffener (16)		BAC1490-39 7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Channel		BAC1509-100666 7075-T62 extrusion as given in QQ-A-200/11	
[5]	Stiffener (2)		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	
[6]	Web-Pressure, Dome Station 1016	0.032 (0.81) 0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	Line Numbers 1 thru 1712 Line Numbers 1713 and on
[7]	Web, Upper, RH and LH	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[8]	Intercostal (2)	0.020 (0.51)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Intercostal (6)	0.020 (0.51)	7075-T6 clad sheet as given in QQ-A-250/13	
[10]	Channel	0.050 (1.27)	7075-T62 Clad sheet as given in QQ-A-250/13	
[11]	Pan Dome	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Cover Dome	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the Boeing production drawings for the machined thicknesses.	
[13]	Frame Chord		7050-T7451 plate as given in BMS 7-323, Type I	
[14]	Frame Chord (2)		BAC1514-3144 2024-T42 extrusion as given in QQ-A-200/3	
[15]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[16]	Stiffener (4)		AND10134-0702 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Web, Upper, Center	0.375 (9.53)	7050-T7451 plate as given in AMS 4050	
[18]	Angle		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

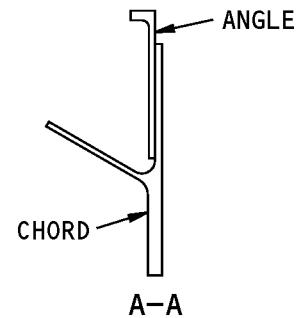
REFER TO SRM 53-80-90 FOR THE FITTING IDENTIFICATION

REFER TO SRM 53-80-90 FOR THE FITTING IDENTIFICATION



**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**VIEW LOOKING FORWARD**



**Station 1016 Bulkhead Identification  
Figure 3**



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STRUCTURAL REPAIR MANUAL**

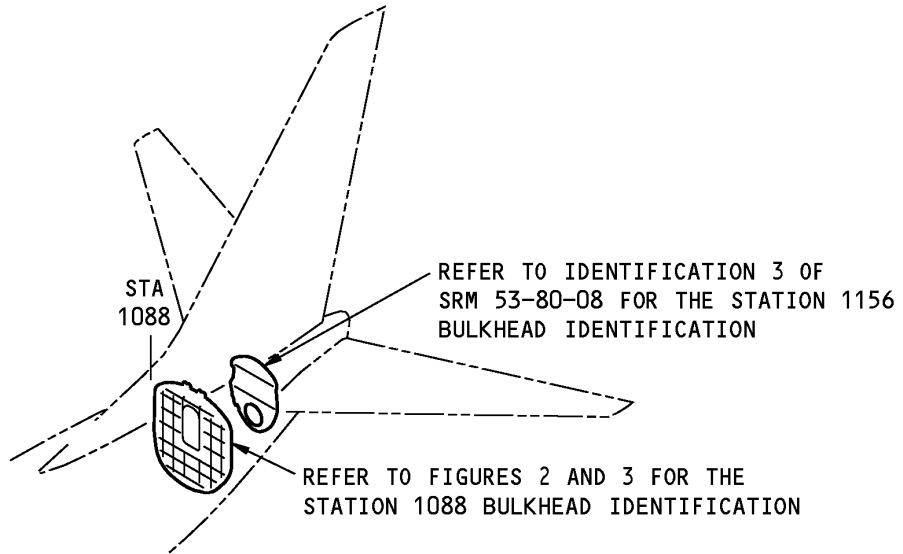
**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Strap (8)	0.063 (1.6)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Strap (7)	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Tripler (3)	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[4]	Stiffener Assembly Stiffener (2) Angle	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5 AND10136-1301 7075-T6511 extrusion as given in QQ-A-200/11	
[5]	Doubler	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Doubler (2)	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Doubler (3)	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Pressure Chord (4)		BAC1506-4557 2024-T42 as given in QQ-A-200/3	
[9]	Stiffener (23)	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
[10]	Pan		Reinforced plastic fabric as given in BAC 5480 (BMS 8-80 material)	
[11]	Chord Assembly Chord Angle		BAC1506-4557 2024-T42 extrusion as given in QQ-A-200/3 BAC1514-413 2024-T42 extrusion as given in QQ-A-200/3	
[12]	Pan	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[13]	Bonded Web Assy Upper, RH and LH Web Doubler	0.032 (0.081) 0.040 (1.020) 0.032 (0.081)	2024-T42 clad sheet as given in QQ-A-250/5 2024-T42 clad sheet as given in QQ-A-250/5	Line Numbers 1 Thru 1712 Line Numbers 1713 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 2 - STATION 1088 BULKHEAD STRUCTURE**



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**1** REFER TO FIGURE 2 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.  
REFER TO FIGURE 3 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

**Station 1088 Bulkhead Location  
Figure 1**

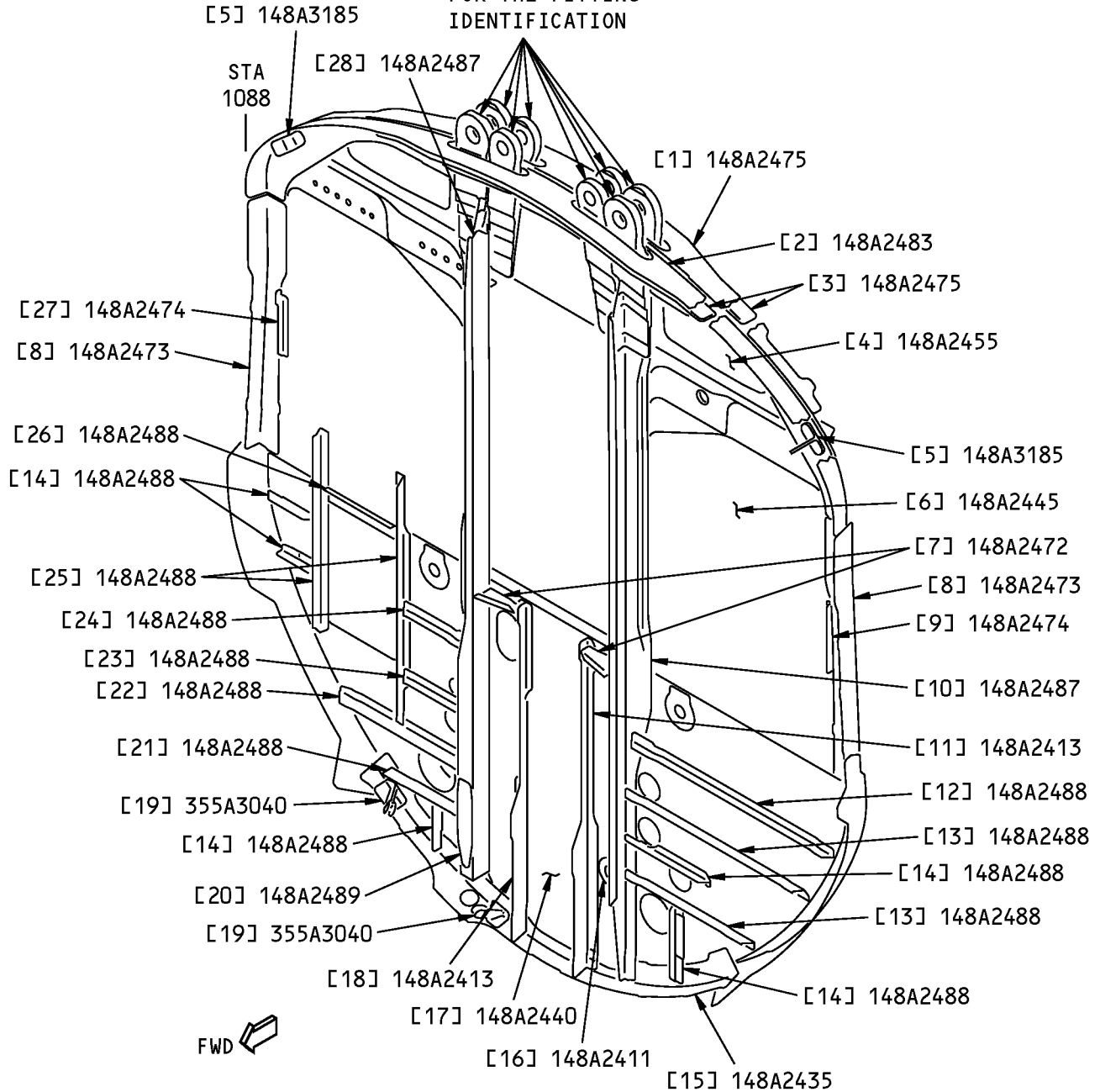
**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4806	Station 1088 Bulkhead Functional Collector
148A0924	Bulkhead Integration/Installation
148A2410	Lower Center Installation/Assembly - Station 1088 Bulkhead
148A2440	Web Assembly - Lower Center, Station 1088 Bulkhead



**STRUCTURAL REPAIR MANUAL**

REFER TO  
SRM 53-80-90  
FOR THE FITTING  
IDENTIFICATION



**FRONT VIEW**

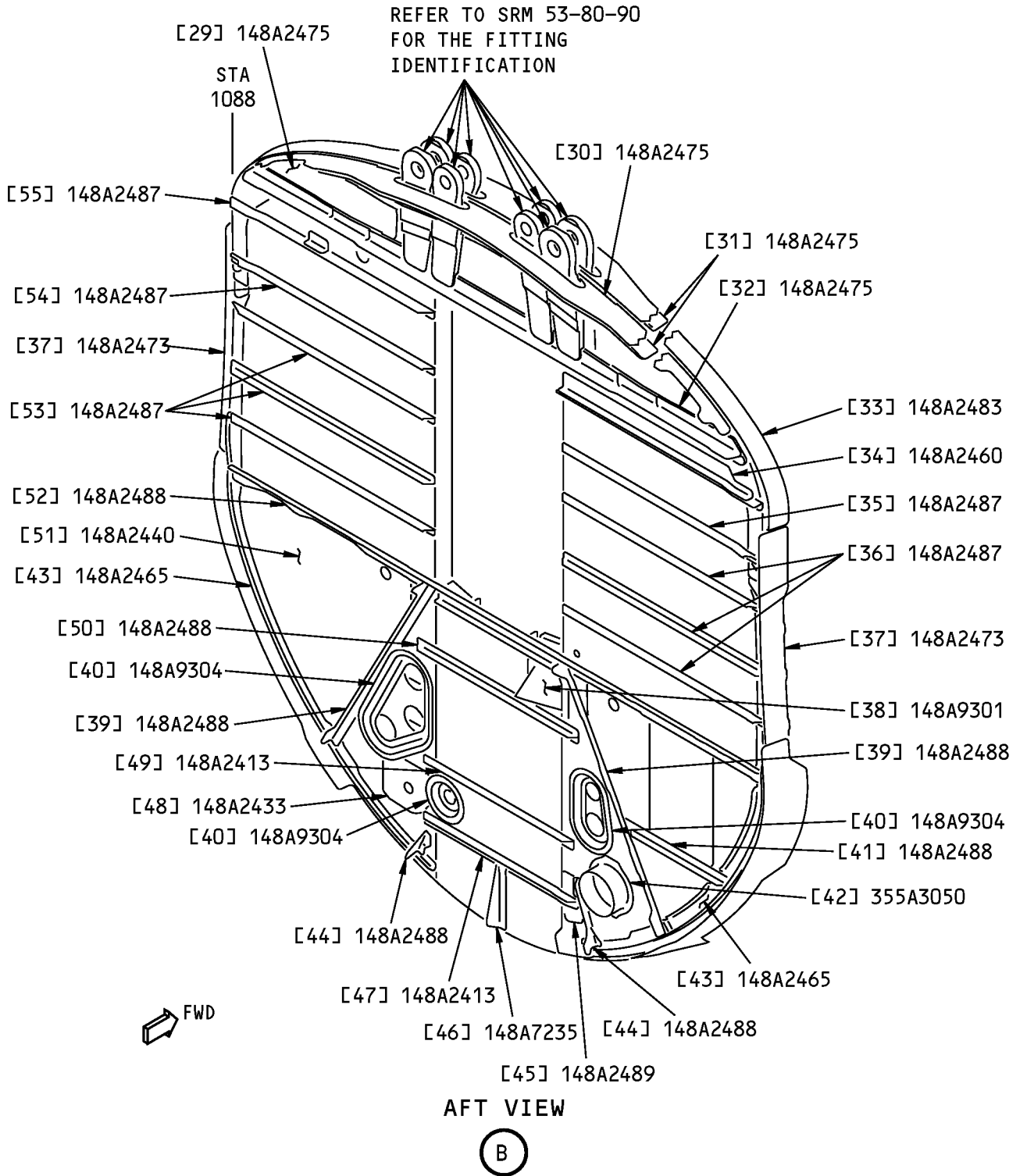


**NOTES**

- REFER TO TABLE 2 AND 3 FOR THE LIST OF MATERIALS.

**Station 1088 Bulkhead Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**Station 1088 Bulkhead Identification  
Figure 2 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

LIST OF MATERIALS FOR FIGURE 2, DETAIL A				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Chord		BAC1514-3275 7075-T62 extrusion as given in QQ-A-200/11	
[2]	Chord		7075-T73 die forging as given in QQ-A-367	
[3]	Chord (2)		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[4]	Web Assembly, Upper Center Web (3)	0.200 (5.08)	7075-T6 sheet as given in QQ-A-250/12	
[5]	Tee (2)		BAC1505-100119 7075-T3511 extrusion as given in QQ-A-200/11	
[6]	Bonded Web Assembly Web (3)	0.200 (5.08)	BAC5514-5101 as given in BMS 5-101, Type II, Grade 5 adhesive 7075-T6 sheet as given in QQ-A-250/12	
[7]	Intercostal (2)	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[8]	Chord (2)		7050-T7451 plate as given in BMS 7-323, Type I	
[9]	Angle		AND10133-0601 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1520-2792 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[12]	Stiffener		BAC1504-8254 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Stiffener (2)		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[14]	Stiffener		BAC1505-100320 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Lower Chord		BAC1514-1712 7075-T62 extrusion as given in QQ-A-200/11	
[16]	Pan Assembly Pan (4)	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[17]	Web	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[18]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[19]	Fitting Assembly (2)		7075-T73 bar as given in QQ-A-200/11. Refer to the Boeing production drawing for the machined thicknesses	
[20]	Doubler (2)	0.100 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[21]	Stiffener		AND10134-1404 7075-T62 extrusion as given in QQ-A-200/11	
[22]	Stiffener		AND10134-1407 7075-T62 extrusion as given in QQ-A-200/11	



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LIST OF MATERIALS FOR FIGURE 2, DETAIL A				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[23]	Stiffener		AND10136-2001 7075-T6511 extrusion as given in QQ-A-200/11	
[24]	Stiffener		BAC1506-4449 7075-T6511 extrusion as given in QQ-A-200/11	
[25]	Stiffener (2)		AND10141-2001 7075-T6511 extrusion as given in QQ-A-200/11	
[26]	Stiffener		BAC1490-2865 7075-T62 clad sheet as given in QQ-A-250/13	
[27]	Angle		AND10134-1204 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Stiffener		BAC1520-2793 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**Table 3:**

LIST OF MATERIALS FOR FIGURE 2, DETAIL B				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[29]	Chord		BAC1514-3275 7075-T62 extrusion as given in QQ-A-200/11	
[30]	Chord		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[31]	Chord		BAC1506-4450 7075-T73 extrusion as given in QQ-A-200/11	
[32]	Chord	0.210 (5.33)	7075-T7451 plate as given in AMS 4050	
[33]	Chord		7075-T73 forged aluminum as given in QQ-A-367	
[34]	Stiffener Assembly Stiffener Stiffener		BAC1503-100022 7075-T6511 extrusion as given in QQ-A-200/11 BAC1503-100232 2024-T3511 extrusion as given in QQ-A-200/3	
[35]	Stiffener		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[36]	Stiffener (3)		AND10135-1004 7075-T6511 extrusion as given in QQ-A-200/11	
[37]	Chord		7050-T7451 plates as given in BMS 7-323, Type I	
[38]	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[39]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[40]	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, in the annealed condition	
[41]	Stiffener		BAC1505-101001 7075-T73511 extrusion as given in QQ-A-200/11	



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**STRUCTURAL REPAIR MANUAL**

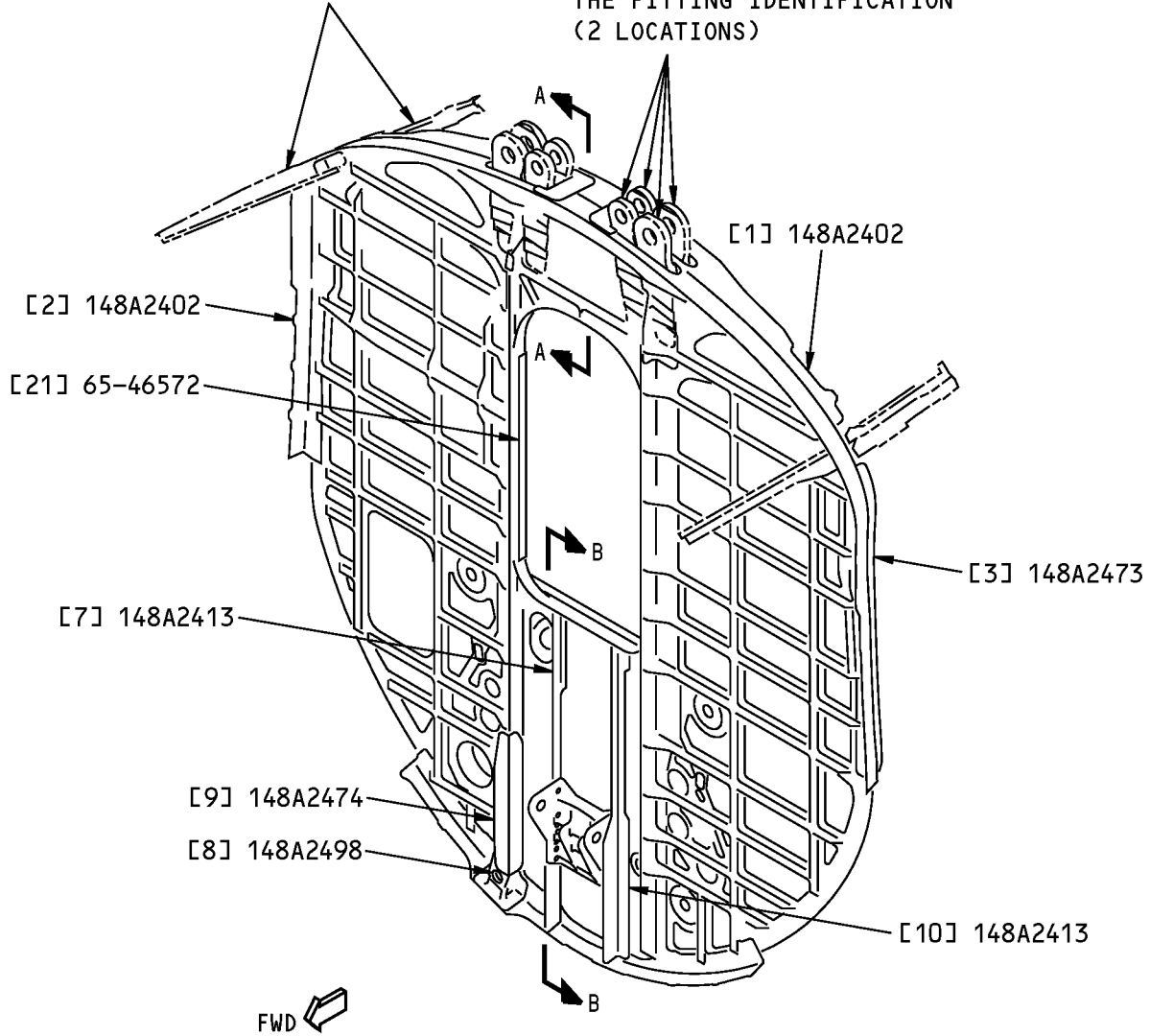
LIST OF MATERIALS FOR FIGURE 2, DETAIL B				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[42]	Bulkhead Fitting	0.040 (1.02)	Ti-CP commercially pure titanium as given in MIL-T-9046, Code CP-1, in the annealed condition	
[43]	Channel	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[44]	Stiffener		BAC1505-101677 7075-T73511 extrusion as given in QQ-A-200/11	
[45]	Doubler	0.10 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[46]	Stiffener		7050-T7451 plate as given in AMS 4050	
[47]	Stiffener		AND10134-1404 7075-T6511 extrusion as given in QQ-A-200/11	
[48]	Plate	0.050 (2.54)	7075-T6 clad sheet as given in QQ-A-250/13	
[49]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[50]	Stiffener		AND10136-2002 7075-T62 extrusion as given in QQ-A-200/11	
[51]	Web (2)	0.032 (0.81)	7075-T6 clad sheet as given in QQ-A-250/13	
[52]	Stiffener		BAC1490-2865 7075-T62 clad sheet as given in QQ-A-250/13	
[53]	Stiffener (3)		AND10135-1004 7075-T6511 extrusion as given in QQ-A-200/11	
[54]	Stiffener		AND10135-1005 7075-T6511 extrusion as given in QQ-A-200/11	
[55]	Stiffener		BAC1503-100022 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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REFER TO SRM 53-80-03  
FOR THE STRINGER  
IDENTIFICATION  
(2 LOCATIONS)

REFER TO SRM 53-80-90 FOR  
THE FITTING IDENTIFICATION  
(2 LOCATIONS)



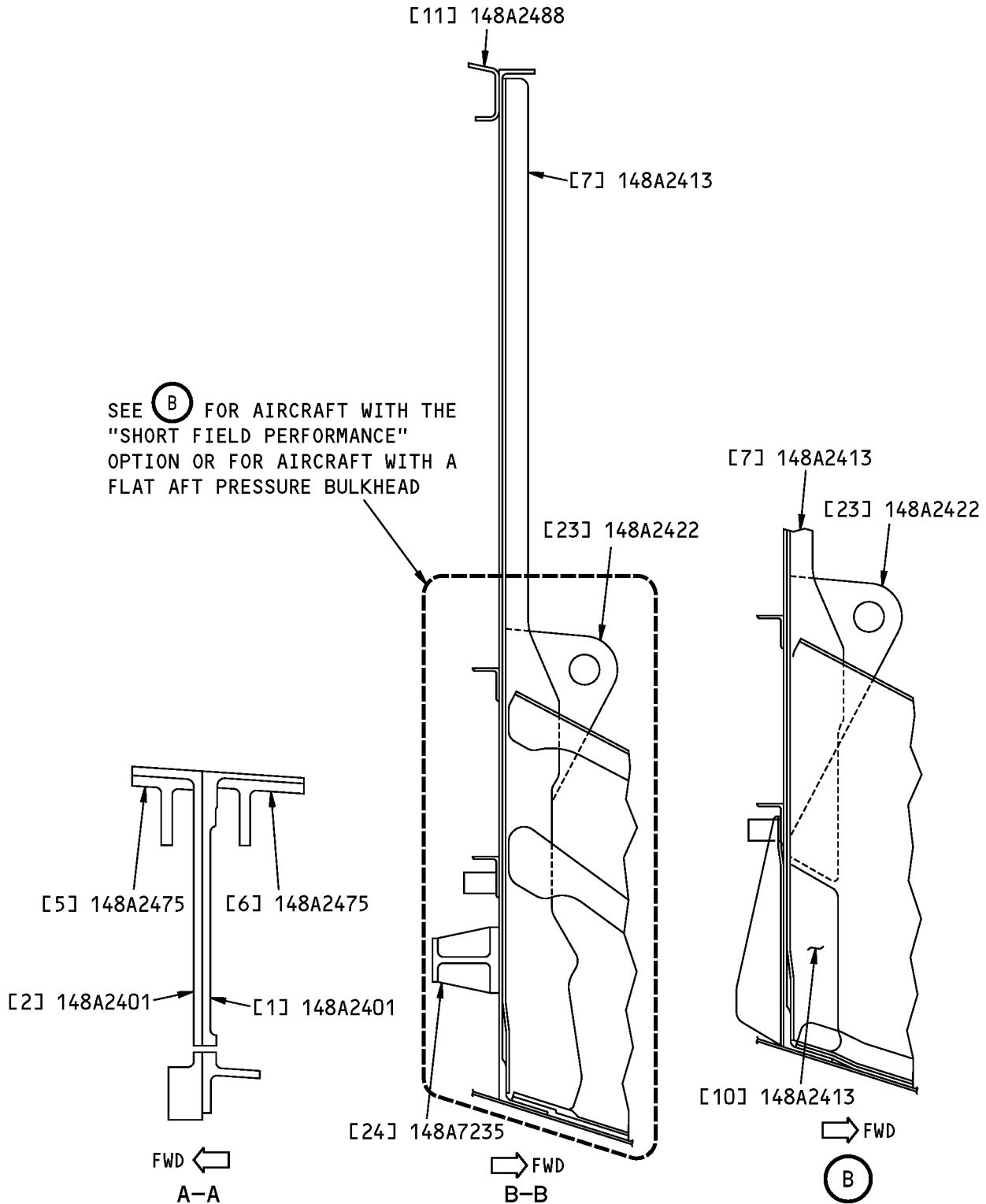
**NOTE:** REFER TO TABLE 4 FOR THE LIST OF MATERIALS.

**VIEW IS LOOKING AFT**



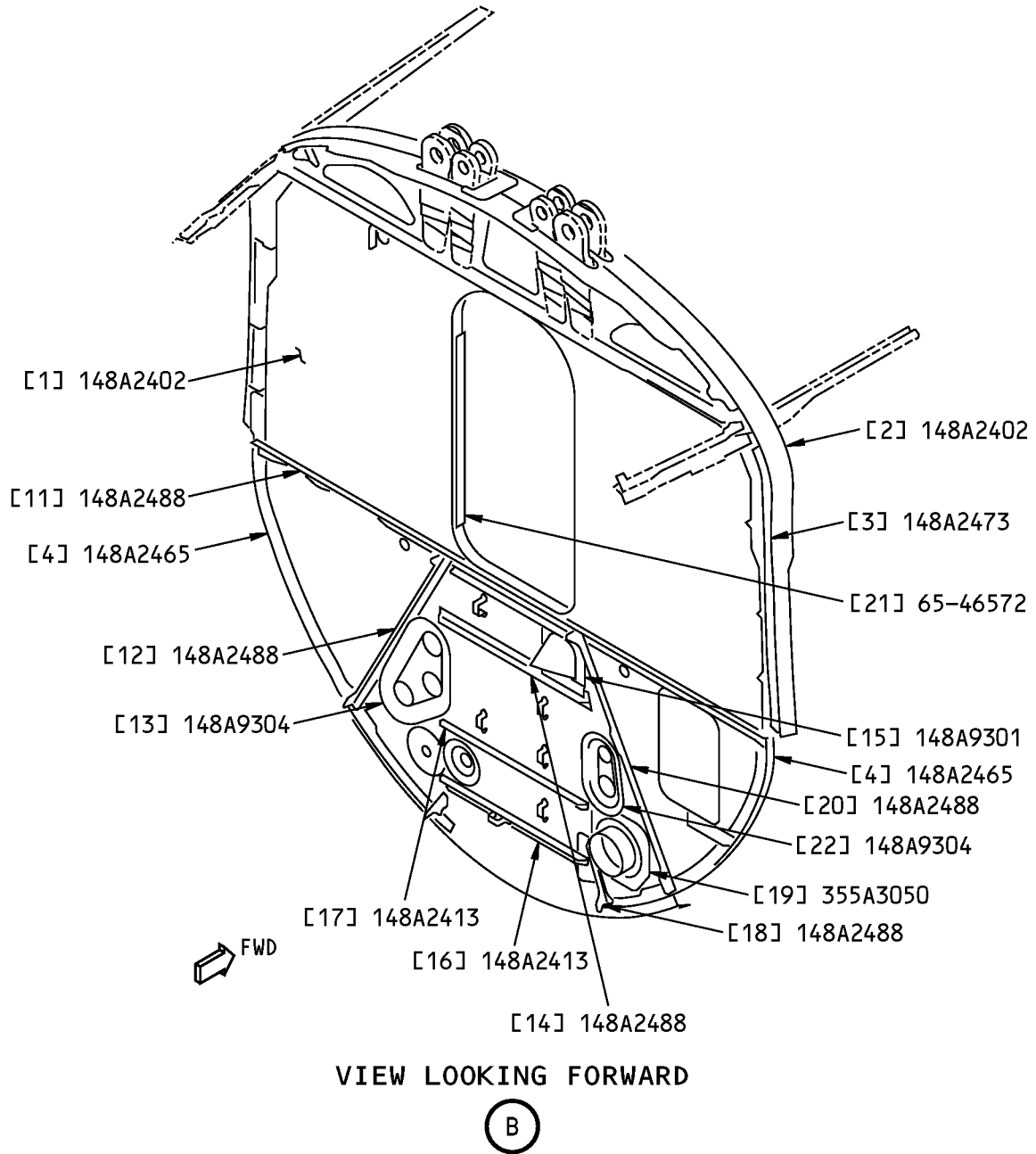
**Station 1088 Bulkhead Location  
Figure 3 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Station 1088 Bulkhead Location  
Figure 3 (Sheet 2 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**VIEW LOOKING FORWARD**

**Station 1088 Bulkhead Location  
Figure 3 (Sheet 3 of 3)**





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STRUCTURAL REPAIR MANUAL**

**Table 4:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Bulkhead, Failsafe	4.000 (101.6)	7050-T7451 Plate as given in BMS 7-323, Type I	
[2]	Bulkhead, Primary	3.200 (81.28)	7050-T7451 Plate as given in BMS 7-323, Type I	
[3]	Chord, Failsafe LH / RH	1.300 (33.02)	7050-T7451 Plate as given in AMS 4050	
[4]	Channel - LH / RH	0.080 (2.03)	7075-T62 clad Sheet as given in QQ-A-250/13.	
[5]	Chord, Auxiliary - Forward	2.500 (63.50)	7050-T7451 Plate as given in BMS 7-323, Type I	
[6]	Chord, Auxiliary - Aft	3.400 (86.36)	7050-T7451 Plate as given in BMS 7-323, Type I	
[7]	Stiffener		BAC1505-100974 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Fitting, Jack Pad	2.500 (63.50)	7050-T7451 Plate as given in BMS 7-323, Type I	
[9]	Angle, Jack Pad		BAC1503-100220 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100434 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Stiffener	0.100 (2.54)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Stiffener	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
(13)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[14]	Stiffener		AND10136-2002, 7075-T73511 extrusion as given in QQ-A-200/11	
(15)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in AMS 4911 Condition A	
[16]	Stiffener		AND10134-1404 7075-T6511 extrusion as given in QQ-A-200/11	
[17]	Stiffener		AND10134-1205 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Stiffener		BAC1503-101677 7075-T73511 extrusion as given in QQ-A-200/11	
[19]	Bulkhead Fitting Assembly Cylinder	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Cond A	
	Doubler	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Cond A	
[20]	Stiffener	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[21]	Rub Block		Cotton fabric phenolic resin as given in MIL-P-15035 TYP FBM	
(22)	Pan	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in AMS 4911 Condition A	



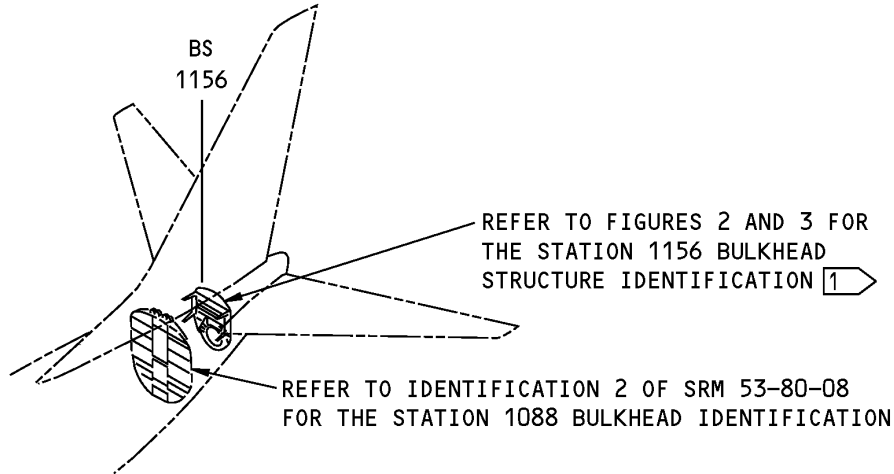
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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[23]	Fitting, Stabilizer Jackscrew Lower mount	0.380 (9.652)	7073-T73 Die - forging as given in BMS 7-186	
[24]	Stiffener		7050-T7451 Plate as given in BMS 7-323, Type I	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 3 - STATION 1156 BULKHEAD STRUCTURE**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

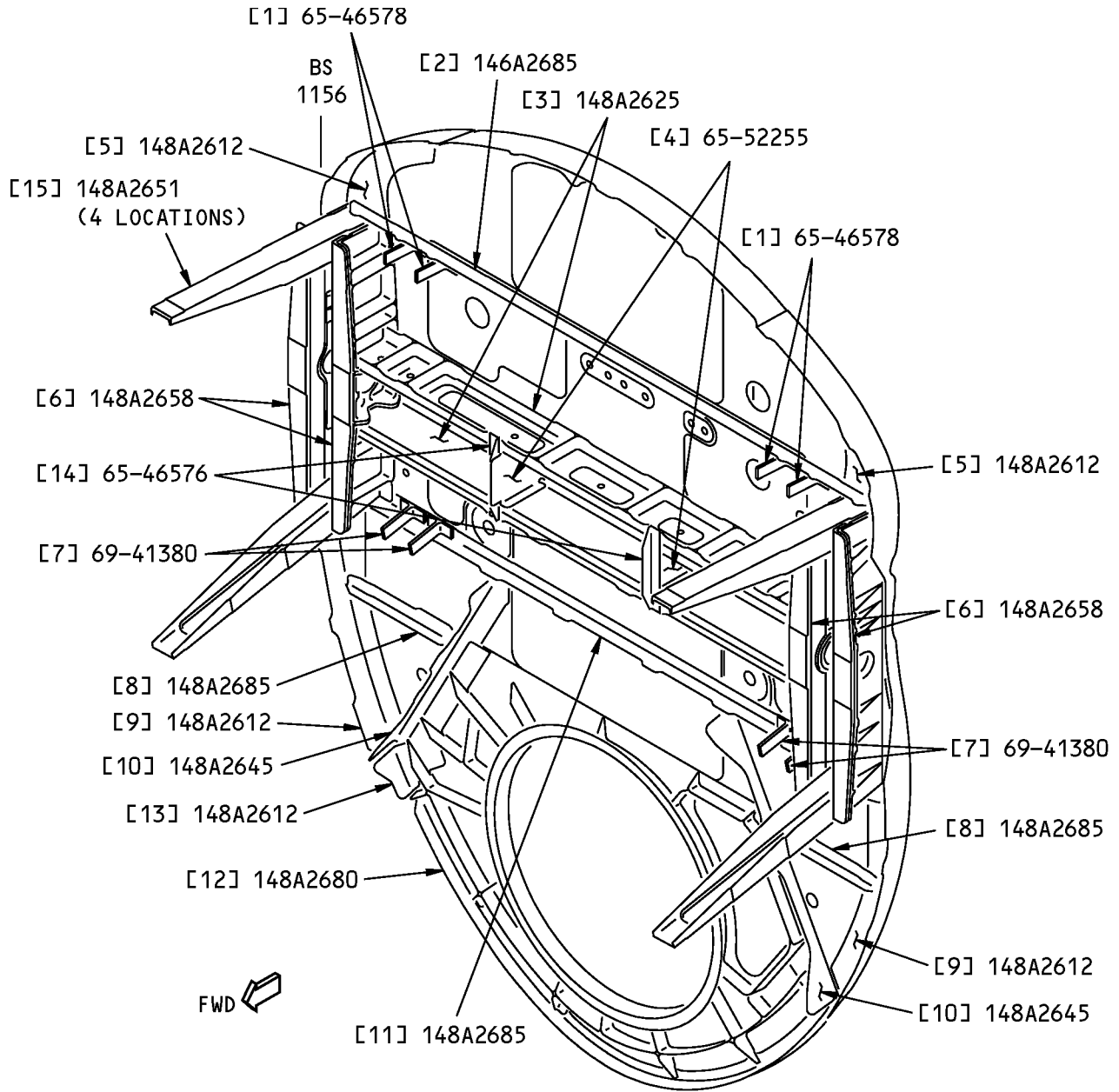
1 REFER TO FIGURE 2 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.  
REFER TO FIGURE 3 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

**Station 1156 Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4812	Bulkhead - Horizontal Stabilizer Support, Station 1156, Functional Collector
148A2601	Bulkhead Installation - Station 1156
148A2602	Side Load Beam Installation - Station 1156 Bulkhead
148A2650	Hinge Beam Installation - Horizontal Stabilizer Support, Station 1156 Bulkhead

**STRUCTURAL REPAIR MANUAL**



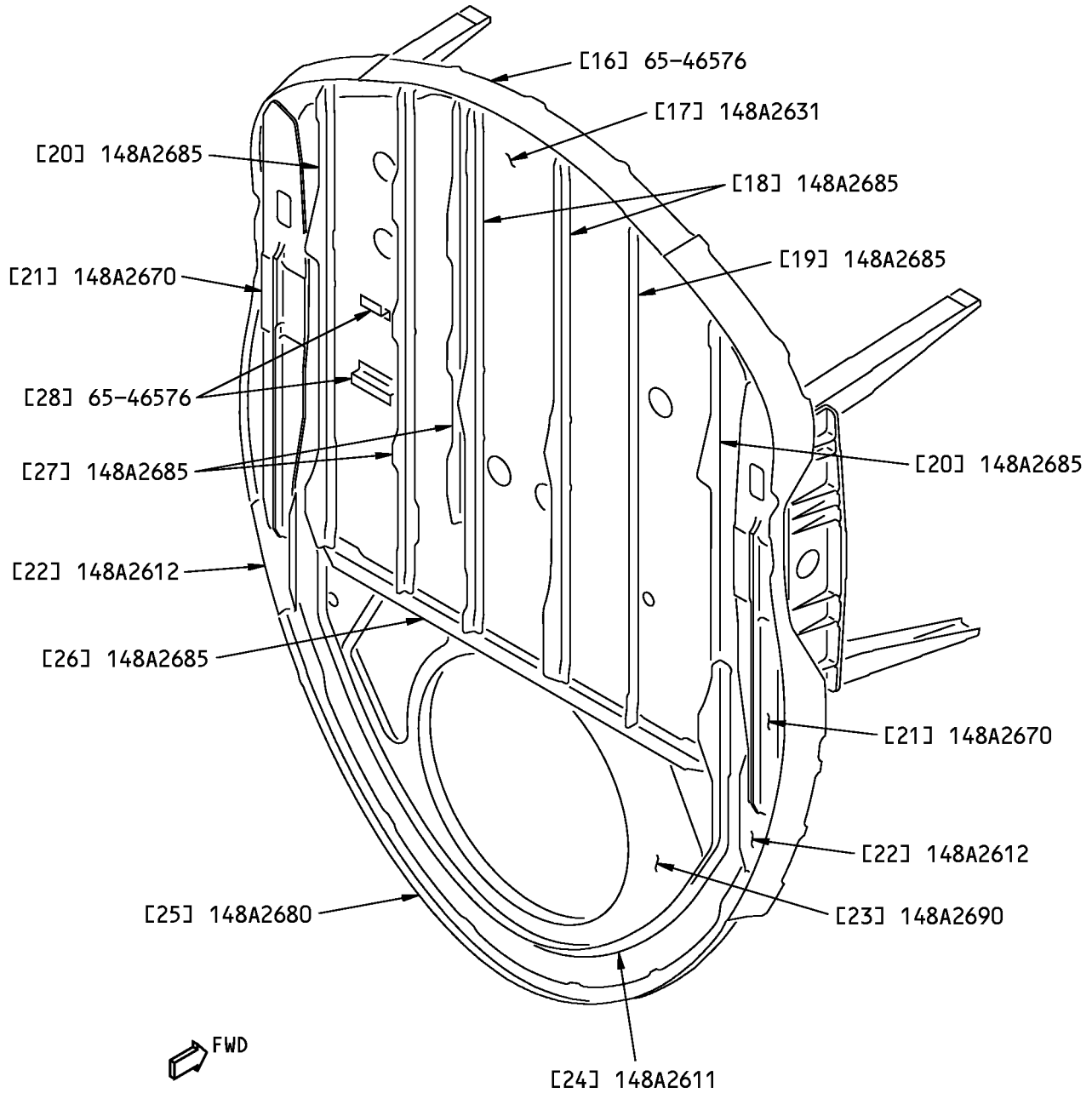
**FRONT VIEW**

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 1156 Bulkhead Structure Identification  
Figure 2 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**



**REAR VIEW**

**Station 1156 Bulkhead Structure Identification  
Figure 2 (Sheet 2 of 2)**



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STRUCTURAL REPAIR MANUAL**

**Table 2:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Tee (4)	0.045 (1.14)	BAC1505-100310 7075-T6511 extrusion as given in QQ-A-200/11	
[2]	Stiffener - Upper Deck		BAC1514-2697 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7150-T77511 bar as given in BMS 7-306)	
[3]	Beam (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[4]	Beam Bulkhead (2)	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	
[5]	Splice Angle	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Failsafe Angle (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[7]	Tee (4)		BAC1505-29548 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener Tie		AND10134-1407 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Splice Angle	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[10]	Torque Box Chord (2)	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[11]	Stiffener - Lower Deck		AND10133-1203 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Chord Cap	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[13]	Angle	0.063 (1.6)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Stiffener (2)		AND10133-0601 2024-T3511 extrusion as given in QQ-A-200/3	
[15]	Support Channel (4)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[16]	Upper Bulkhead Chord		BAC1506-1808 7075-T6 extrusion as given in QQ-A-200/11	
[17]	Web Assembly Doubler (2) Doubler Doubler Web	0.090 (2.29) 0.080 (2.03) 0.050 (1.27) 0.125 (3.18)	7075-T6 sheet as given in QQ-A-250/12 7075-T62 sheet as given in QQ-A-250/12 7075-T6 sheet as given in QQ-A-250/12 2024-T3 sheet as given in QQ-A-250/4. Refer to the Boeing production drawings for the chem-mill thicknesses	
[18]	Stiffener (2)		BAC1503-100016 7075-T6511 extrusion as given in QQ-A-200/11	
[19]	Stiffener Assembly Stiffener Stiffener Angle		BAC1503-100026 7075-T6511 extrusion as given in QQ-A-200/11 BAC1503-100344 7075-T6511 extrusion as given in QQ-A-200/11 AND10133-1001 7075-T73511 extrusion as given in QQ-A-200/11	



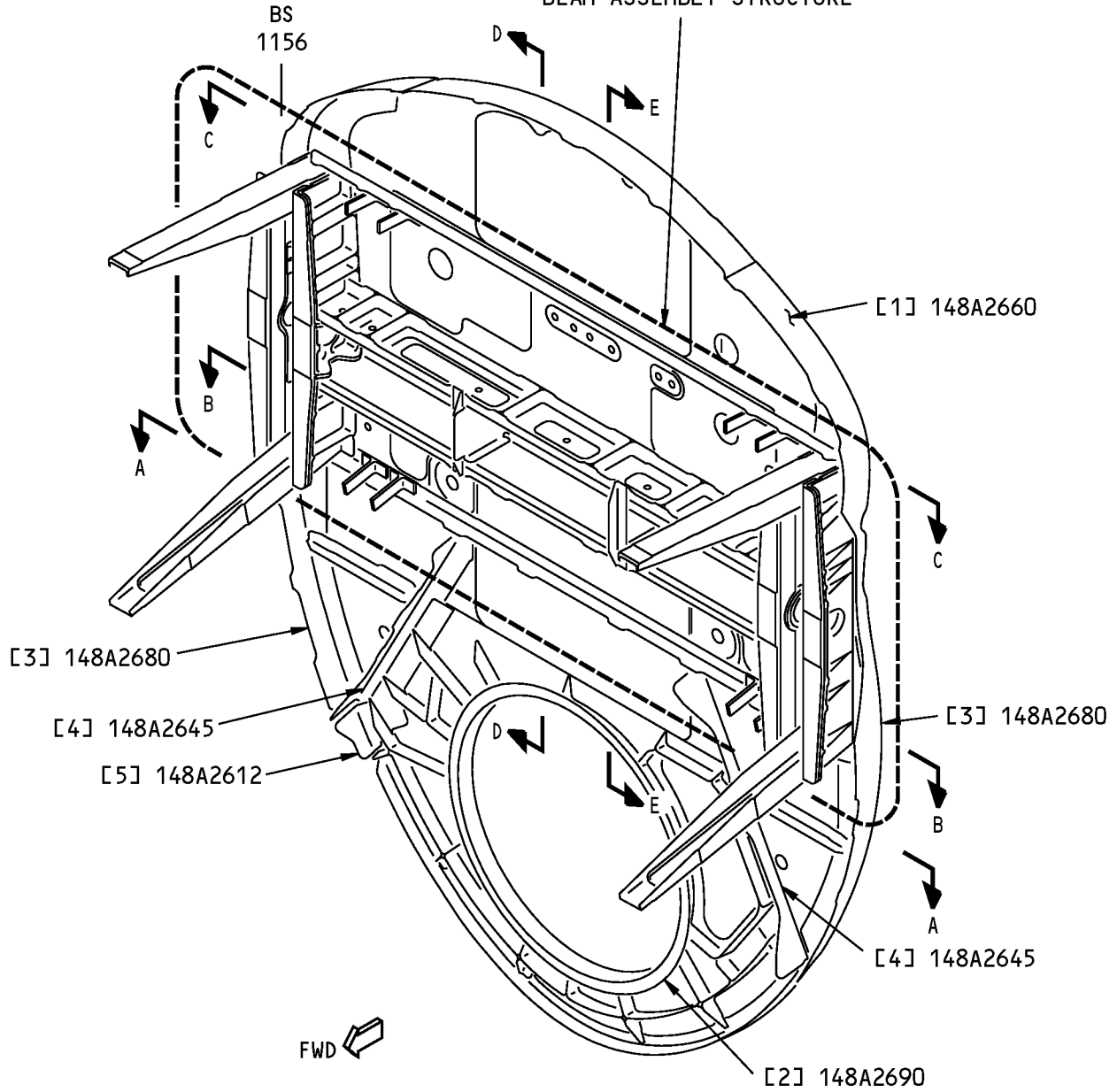
**737-800**  
**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[20]	Stiffener (2)		BAC1503-100119 7075-T6511 extrusion as given in QQ-A-200/11	
[21]	Strap - Failsafe (2)		7050-T7451 plate as given in AMS 4050 (Grain direction controlled part)	
[22]	Splice Angle - Aft Lower (2)	0.056 (1.42)	7075-T62 clad sheet as given in QQ-A-250/13	
[23]	Closeout Fitting Assembly Closeout Fitting Hold Open Fitting		7050-T7451 plate as given in AMS 4050 7050-T7451 plate as given in AMS 4050	
[24]	Frame Chord		BAC1503-100386 7075-T62 extrusion as given in QQ-A-200/11	
[25]	Lower Bulkhead Chord	0.080 (2.03)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Stiffener		BAC1514-3217 7075-T6511 extrusion as given in QQ-A-200/11	
[27]	Stiffener (2)		BAC1503-100383 7075-T6511 extrusion as given in QQ-A-200/11	
[28]	Support Zee (2)		AND10138-0604 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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STRUCTURAL REPAIR MANUAL**

SEE (A) FOR THE HINGE  
BEAM ASSEMBLY STRUCTURE



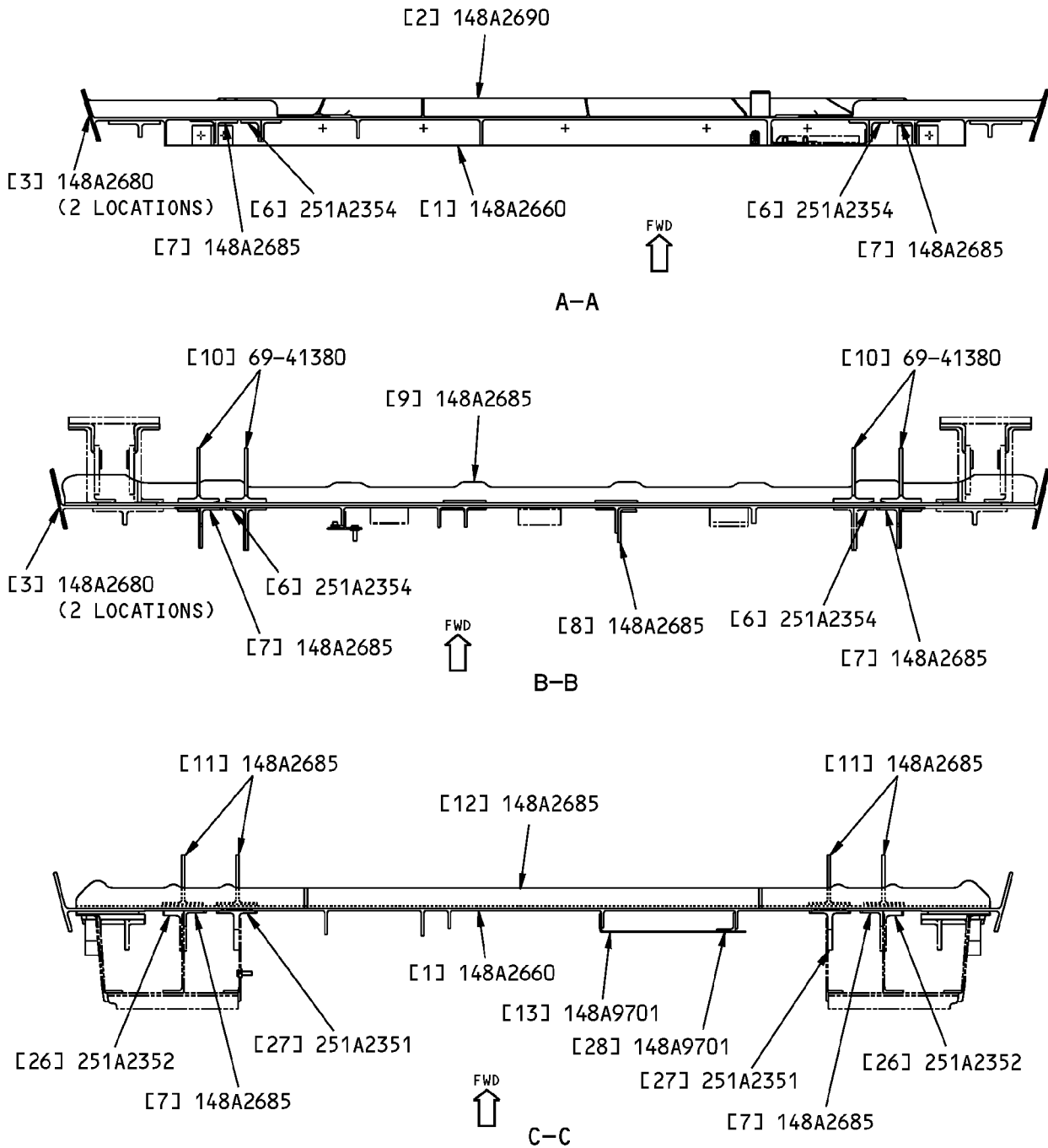
**FRONT VIEW**

**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Station 1156 Bulkhead Structure Identification  
Figure 3 (Sheet 1 of 5)**

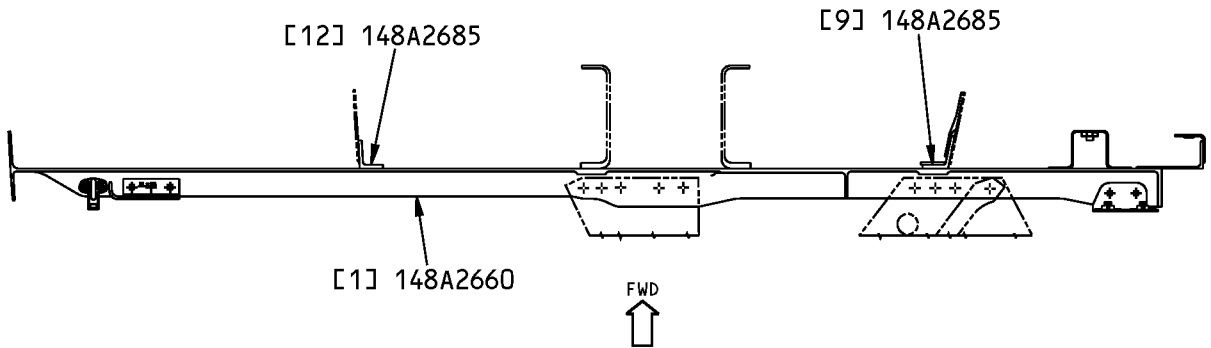


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STRUCTURAL REPAIR MANUAL**



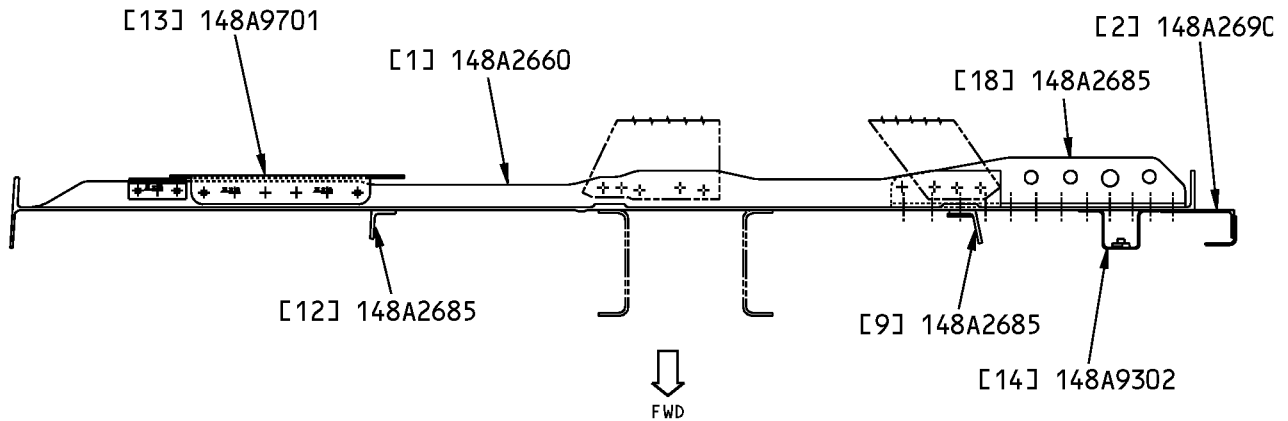
**Station 1156 Bulkhead Structure Identification  
Figure 3 (Sheet 2 of 5)**

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STRUCTURAL REPAIR MANUAL**



VIEW IS ROTATED 90° CLOCKWISE

D-D

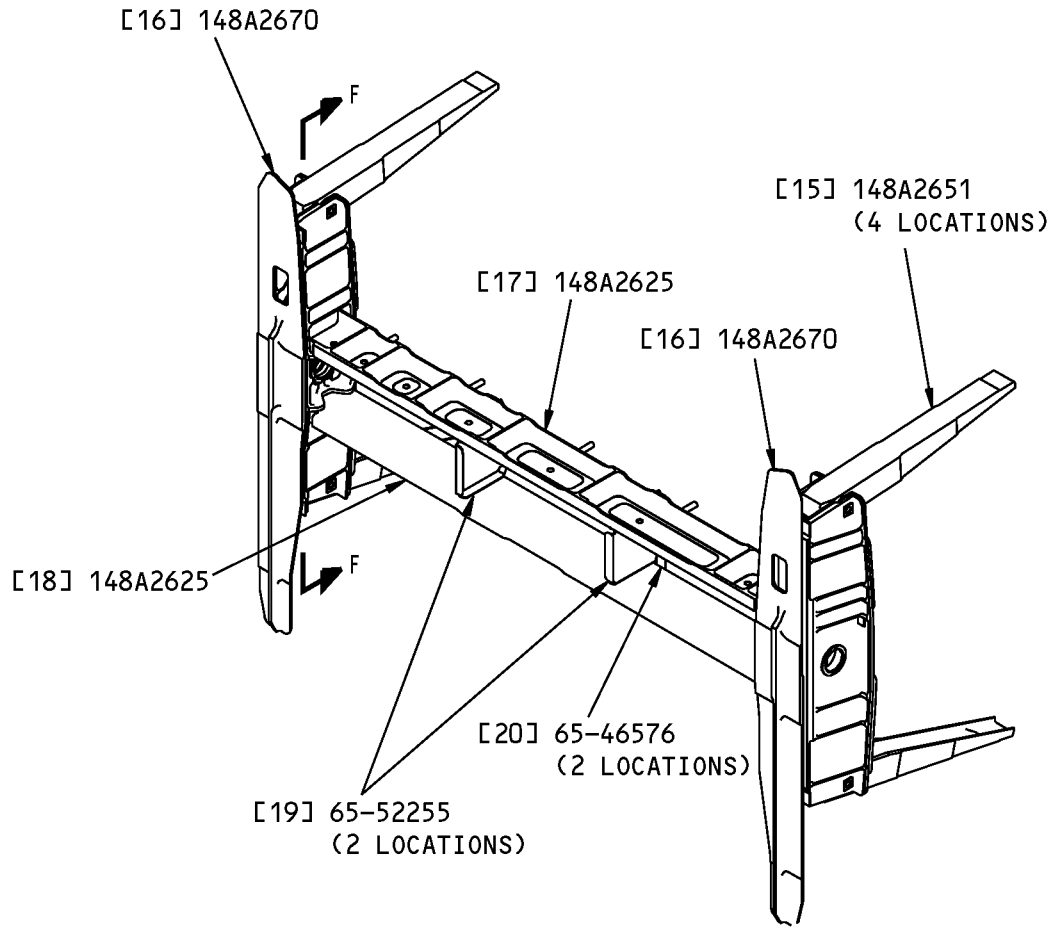


VIEW IS ROTATED 90° COUNTER CLOCKWISE

E-E

**Station 1156 Bulkhead Structure Identification  
Figure 3 (Sheet 3 of 5)**

**737-800  
STRUCTURAL REPAIR MANUAL**

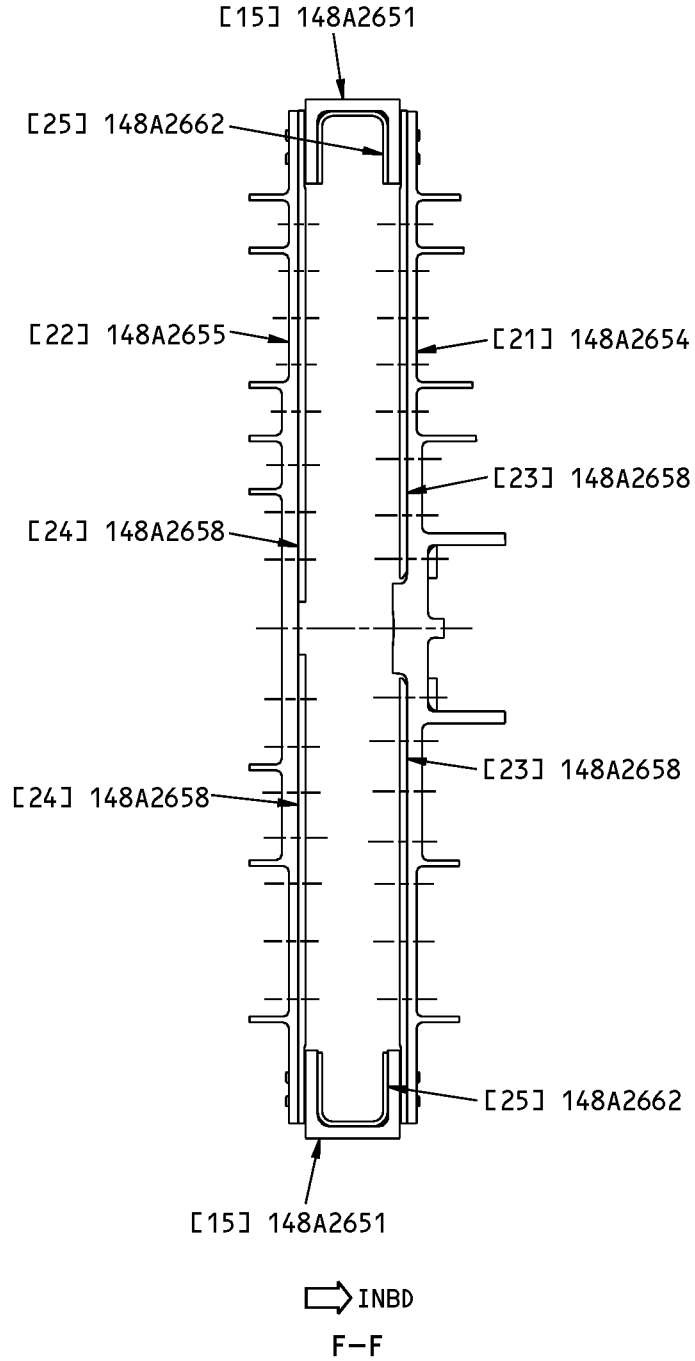


**HINGE BEAM ASSEMBLY**

(A)

**Station 1156 Bulkhead Structure Identification  
Figure 3 (Sheet 4 of 5)**

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STRUCTURAL REPAIR MANUAL**



**Station 1156 Bulkhead Structure Identification  
Figure 3 (Sheet 5 of 5)**



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STRUCTURAL REPAIR MANUAL**

**Table 3:**

LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Bulkhead, Machined	3.200 (81.28)	7050-T7451 plate as given in BMS 7-323, Type I	
[2]	Closeout Fitting Assembly			
	Firewall Angles	0.050 (1.270)	2024-T42 clad sheet as given in QQ-A-250/5	
	Fitting	1.250 (31.75)	7050-T7451 plate as given in AMS 4050	
[3]	Chord Strap	0.080 (2.030)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Chord	0.080 (2.030)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Angle	0.063 (1.600)	7075-T62 clad sheet as given in QQ-A-250/13	
[6]	Bracket		BAC1503-4363 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener Assembly (2)			
	Stiffener		BAC1503-100119 7075-T6511 extrusion as given in QQ-A-200/11	
	Bracket		BAC1503-100386 7075-T6511 extrusion as given in QQ-A-200/11	
	Clip		BAC1505-100541 7075-T6511 extrusion as given in QQ-A-200/11	
[8]	Stiffener		BAC1503-100016 7075-T6511 extrusion as given in QQ-A-200/11	
[9]	Stiffener Lower Deck		BAC1514-3217 7075-T6511 extrusion as given in QQ-A-250/11	
[10]	Tee (4)		BAC1505-29548 7075-T6511 extrusion as given in QQ-A-200/11	
[11]	Clip Tee		BAC1505-100315 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Stiffener Upper Deck		BAC1514-2697 7075-T6511 extrusion as given in QQ-A-200/11	
[13]	Bracket	0.090 (2.290)	6013-T4 bare sheet as given in AMS 4347	
[14]	Bracket	0.050 (1.270)	2219-T62 bare sheet as given in QQ-A-250/30	
[15]	Support Channel (4)	2.000 (50.80)	7050-T7451 plate as given in AMS 4050	
[16]	Strap - Failsafe (2)	0.900 (22.86)	7050-T7451 plate as given in AMS 4050	
[17]	Beam	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[18]	Beam	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[19]	Beam Bulkhead	0.040 (1.02)	7075-T6 clad sheet as given in QQ-A-250/13	



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**STRUCTURAL REPAIR MANUAL**

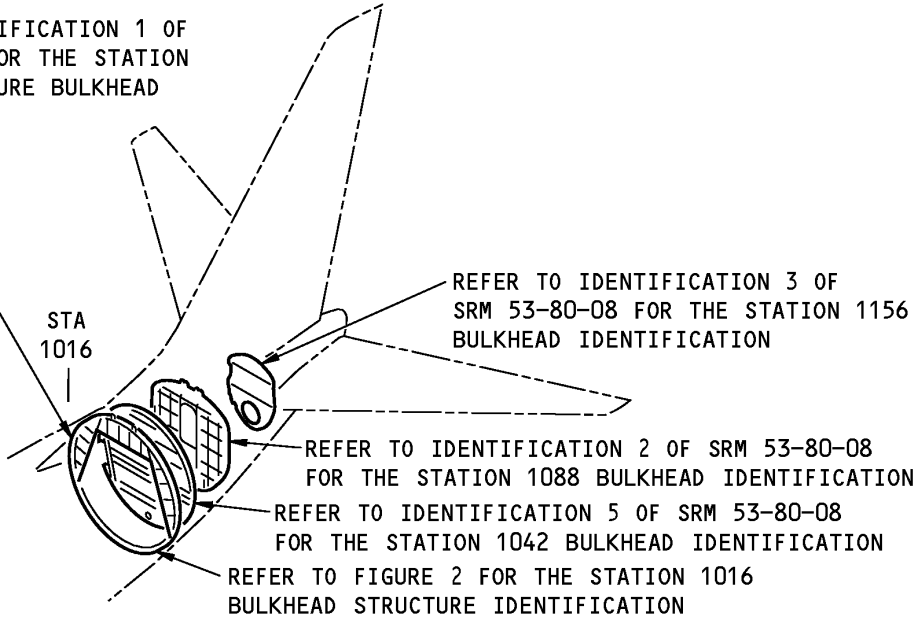
LIST OF MATERIALS				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[20]	Beam, Bulkhead Angle		AND10133-0601 2024-T3511 extrusion as given in QQ-A-200/3	
[21]	Hinge Fitting (2)	2.500 (63.50)	7050-T7451 plate as given in AMS 4050	
[22]	Hinge Fitting (2)	2.900 (73.66)	7050-T7451 plate as given in AMS 4050	
[23]	Failsafe Angle Inboard (2)	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[24]	Failsafe Angle Outboard (2)	1.500 (38.10)	7050-T7451 plate as given in AMS 4050	
[25]	Clip Failsafe Lower (2)	0.100 (2.540)	7075-T62 clad sheet as given in QQ-A-250/13	
[26]	Bracket		BAC1514-1116 7075-T76511 extrusion as given in QQ-A-200/11	
[27]	Bracket (2)		BAC1505-34228 7075-T73511 extrusion as given in QQ-A-200/11	
[28]	Angle		BAC1503-100137 7075-T6511 extrusion as given in QQ-A-200/11	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 4 - STATION 1016 BULKHEAD STRUCTURE**

REFER TO IDENTIFICATION 1 OF SRM 53-80-08 FOR THE STATION 1016 AFT PRESSURE BULKHEAD IDENTIFICATION



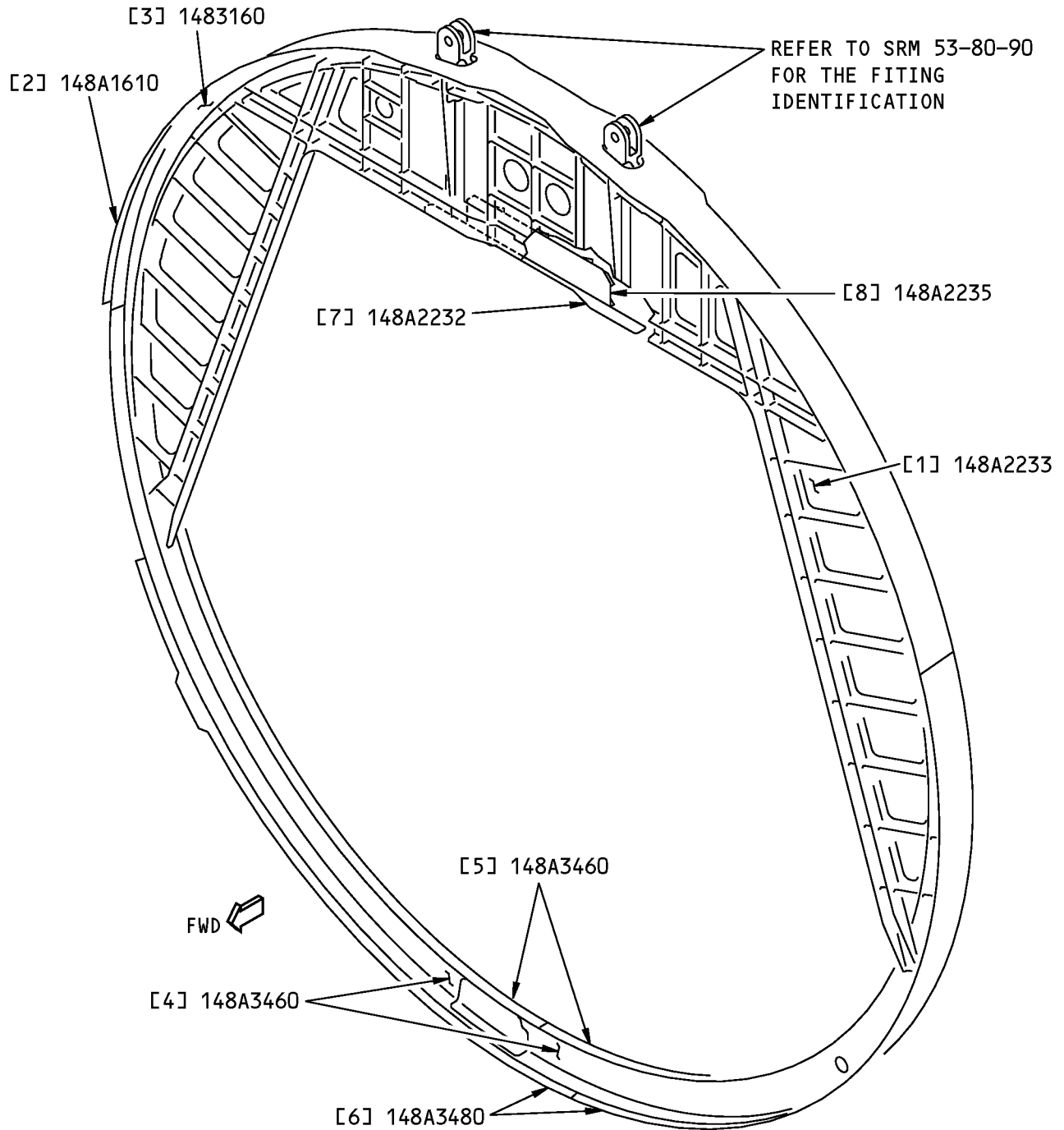
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 1016 Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A0933	Lower Panel Integration Instl
148A2230	Web Assembly STA 1016 Bulkhead

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS

**Station 1016 Bulkhead Identification  
Figure 2**





**737-800**  
**STRUCTURAL REPAIR MANUAL**

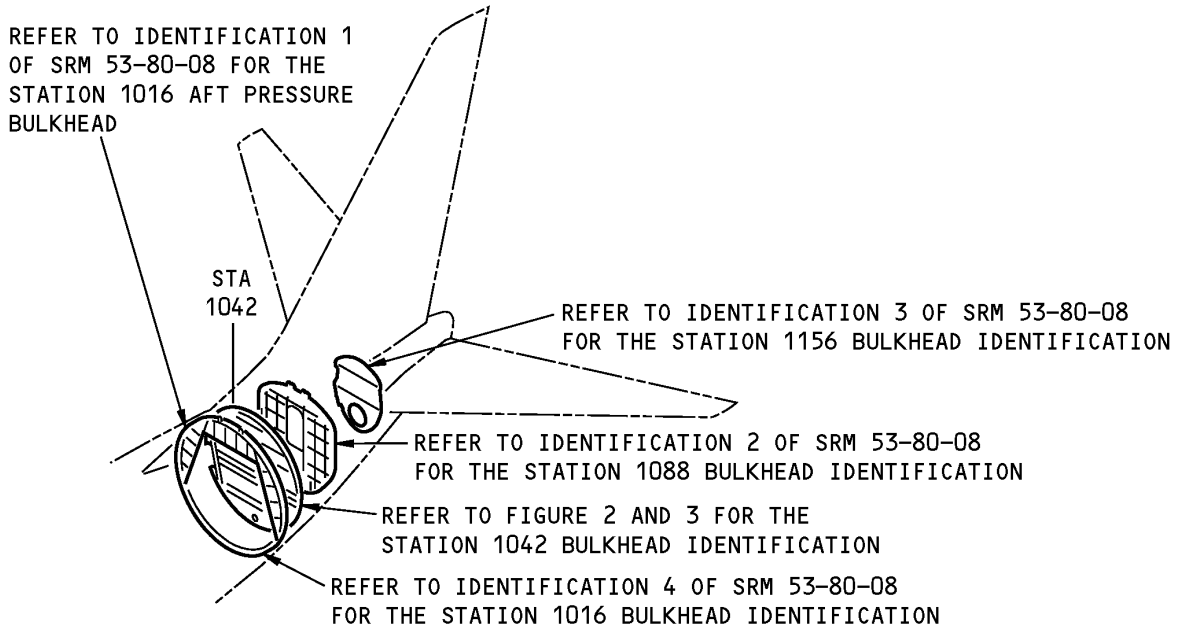
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Monolithic A-Frame	1.800 (45.72)	7075-T7351 plate as given in QQ-A-250/12	
[2]	Doubler Strap	0.100 (2.5)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Chord	5.900 (149.86)	7050-T7451 plate as given in BMS 7-323	
[4]	Tee Chord	4.500 (114.3)	7050-T7451 plate as given in BMS 7-323	
[5]	Chord	1.200 (30.48)	7050-T7451 plate as given in BMS 7-323	
[6]	Splice Strap	1.250 (3.175)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Strap	0.100 (2.5)	7075-T6 clad sheet as given in QQ-A-250/12	
[8]	Channel	1.500 (38.10)	7075-T7351 plate as given in QQ-A-250/12	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 5 - STATION 1042 AFT PRESSURE BULKHEAD STRUCTURE**



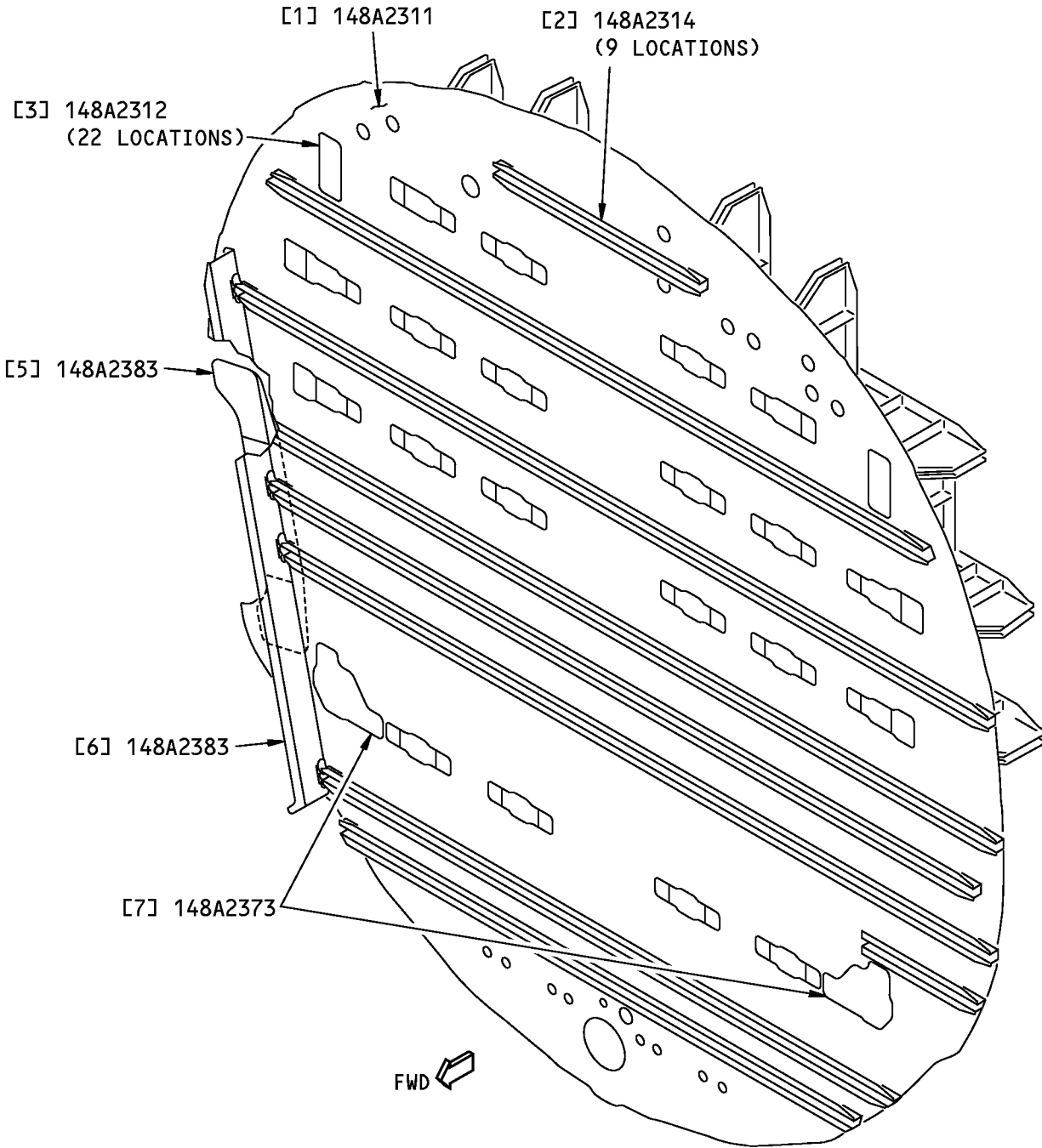
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Station 1042 Aft Pressure Bulkhead Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A2311	Web
148A2301	Bulkhead Instl
148A1687	Integration Instl
148A0931	Upper Panel Installation
148A0933	Lower Panel - Integration Installation

**STRUCTURAL REPAIR MANUAL**



VIEW WHEN YOU LOOK AFT

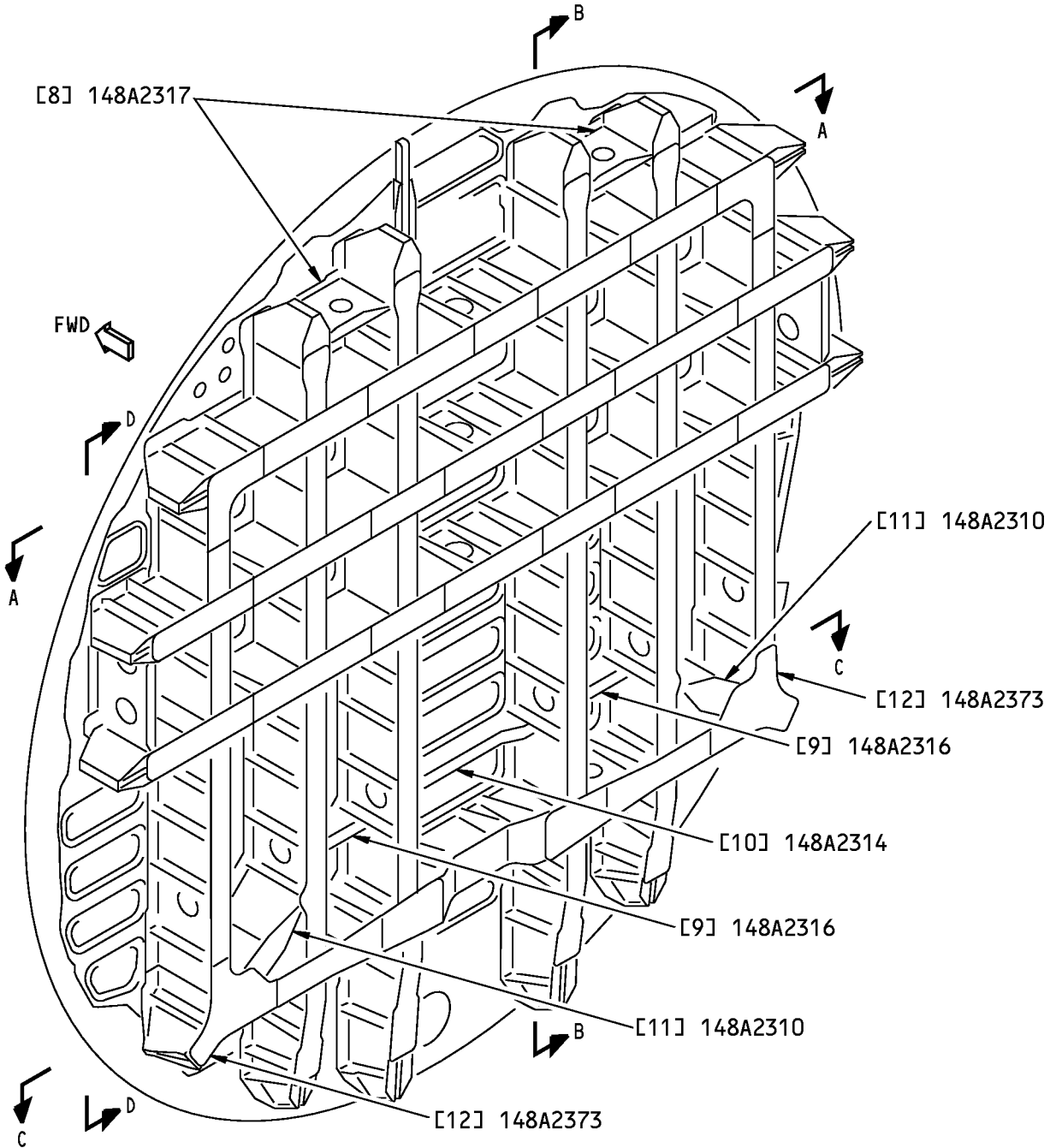
DETAIL I

**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Station 1042 Aft Pressure Bulkhead Identification  
Figure 2 (Sheet 1 of 5)**

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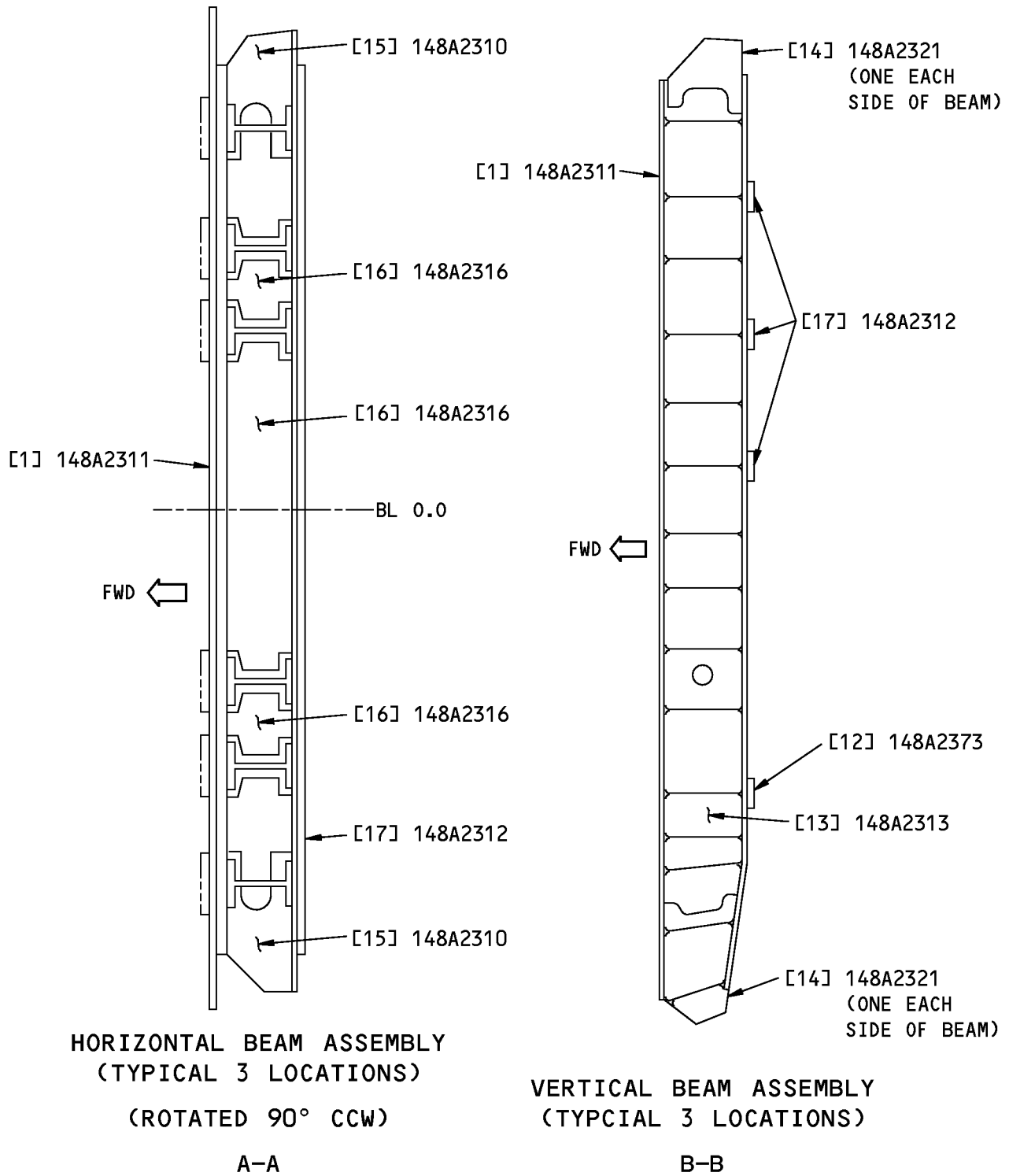


VIEW WHEN YOU LOOK FORWARD

DETAIL II

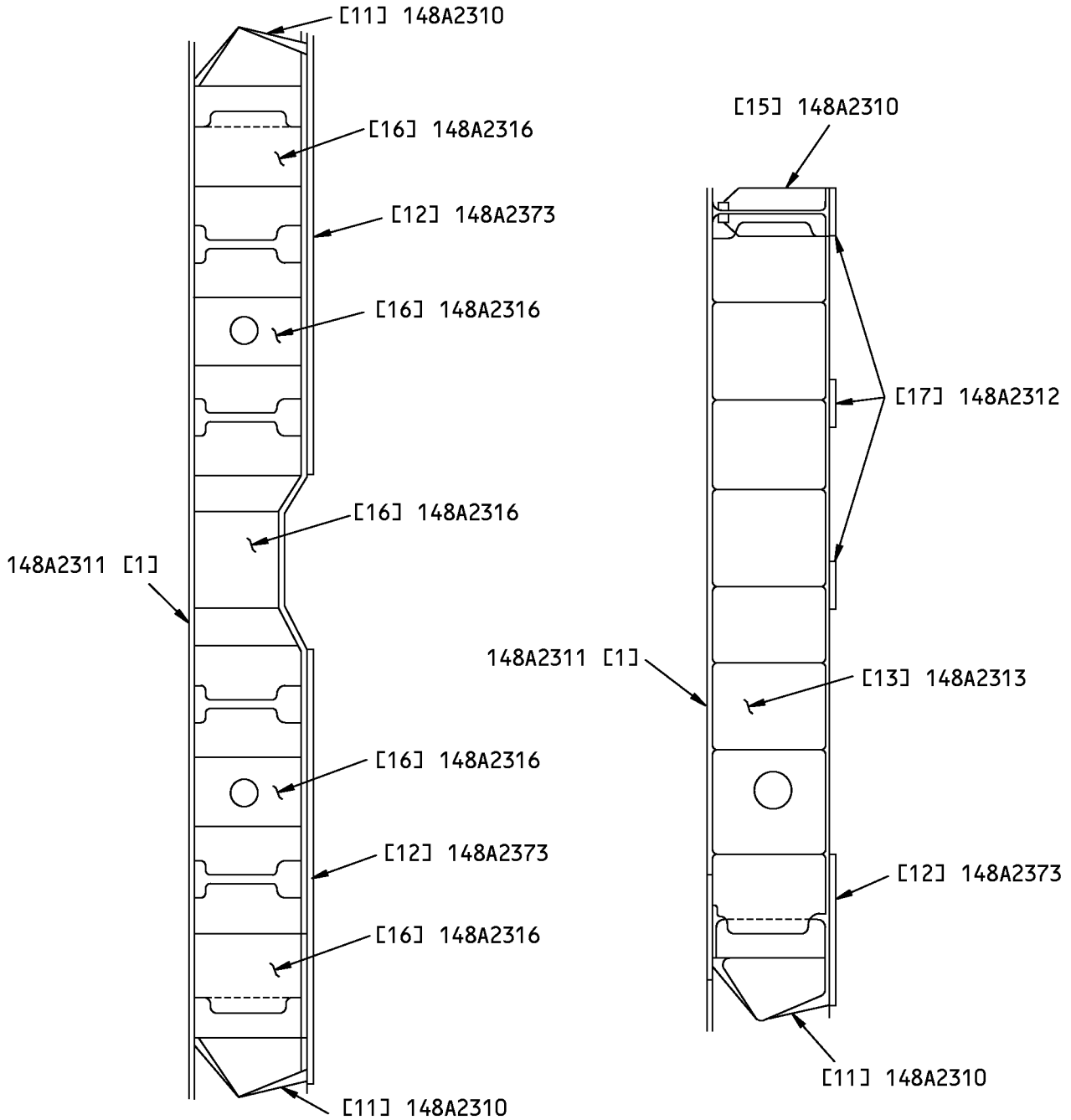
**Station 1042 Aft Pressure Bulkhead Identification  
Figure 2 (Sheet 2 of 5)**

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STRUCTURAL REPAIR MANUAL**



**Station 1042 Aft Pressure Bulkhead Identification  
Figure 2 (Sheet 3 of 5)**

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**HORIZONTAL BEAM ASSEMBLY  
(ROTATED 90° CCW)**

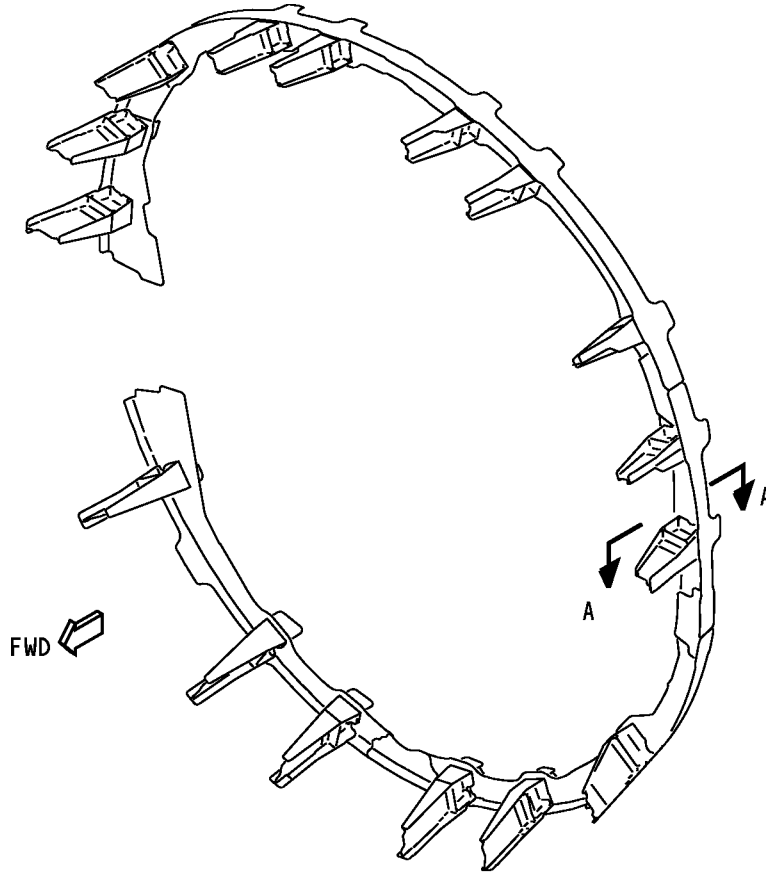
C-C

**VERTICAL BEAM ASSEMBLY**

D-D

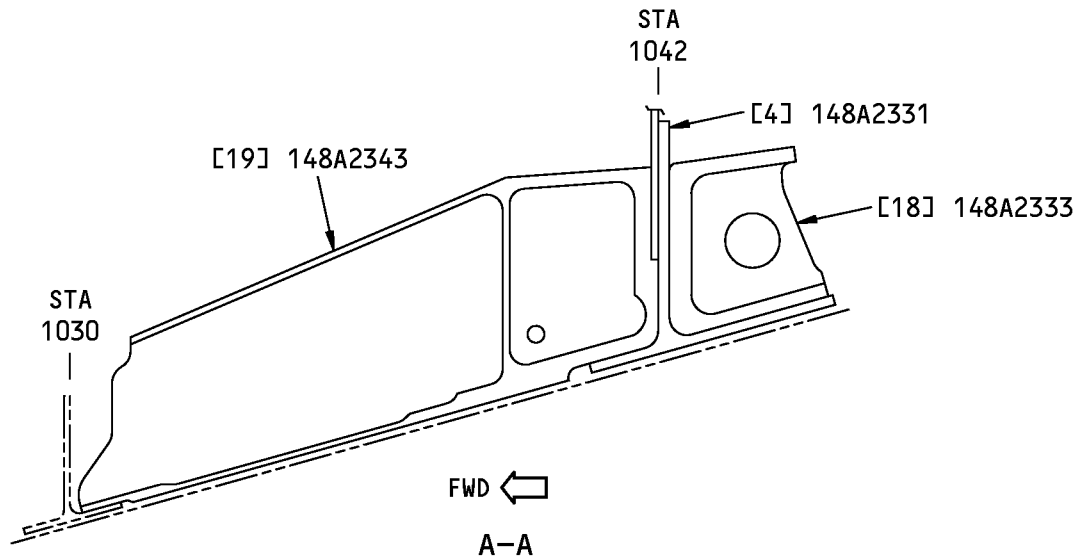
**Station 1042 Aft Pressure Bulkhead Identification  
Figure 2 (Sheet 4 of 5)**

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VIEW WHEN YOU LOOK AFT

DETAIL III



**Station 1042 Aft Pressure Bulkhead Identification  
Figure 2 (Sheet 5 of 5)**



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**STRUCTURAL REPAIR MANUAL**

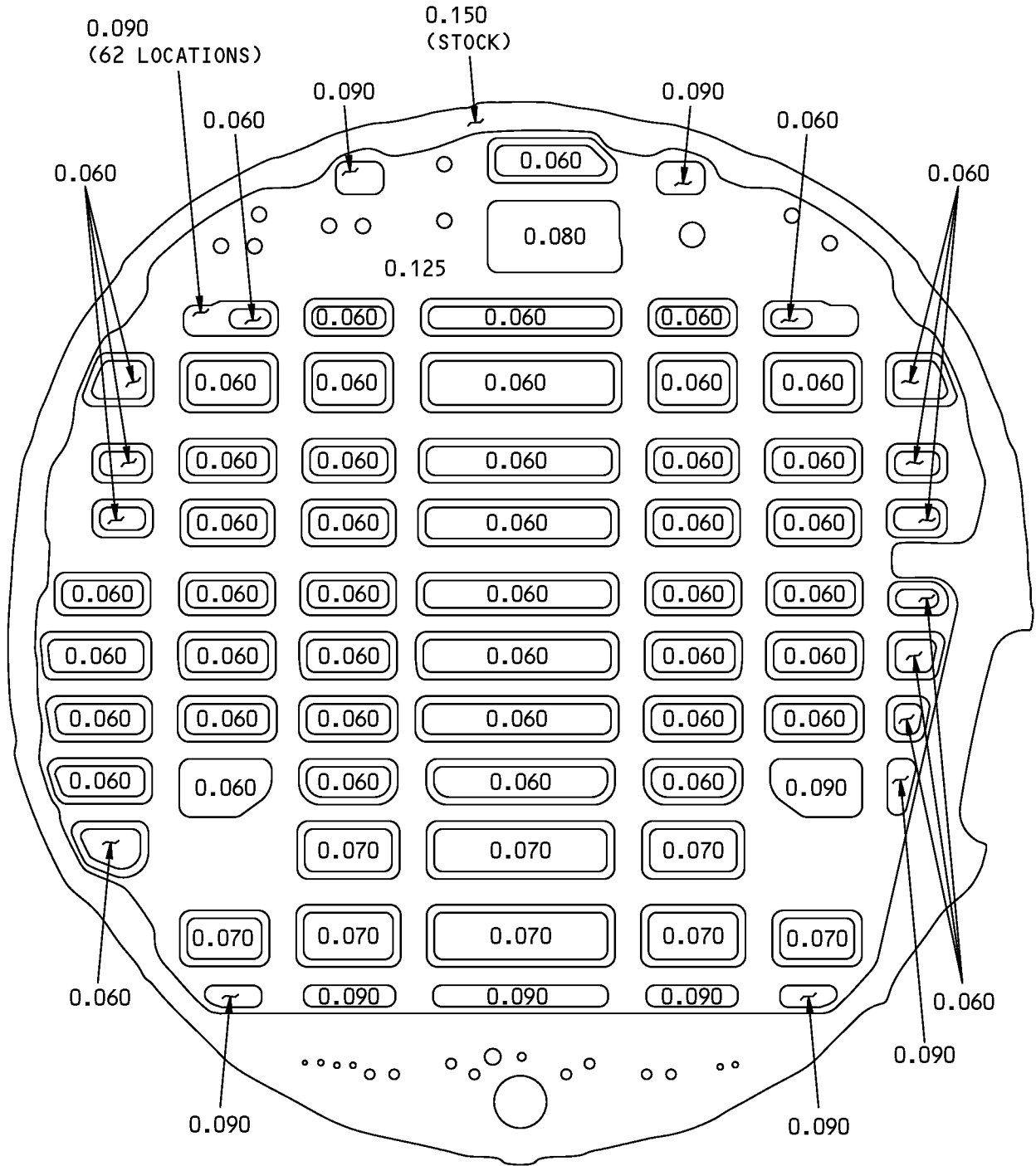
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.15 (3.81)	2024-T3 Bare Sheet as given in QQ-A-250/4. Refer to Figure 3 for the thicknesses of the chem-milled areas.	
[2]	Stiffener		BAC 1509-100728 7075-T73511 Extruded Shape	
[3]	Strap		7050-T7451 Plate as given in AMS 4050	
[4]	T Chord		7050-T7451 Plate as given in BMS 7-323	
[5]	Fitting		7050-T7451 Plate as given in AMS 4050	
[6]	Fitting		7050-T7451 Plate as given in AMS 4050	
[7]	Fitting		7050-T7451 Plate as given in AMS 4050	
[8]	Stabilizer		7050-T7451 Plate as given in AMS 4050	
[9]	Intercostal		7050-T7451 Plate as given in AMS 4050	
[10]	Intercostal		7050-T7451 Plate as given in BMS 7-323	
[11]	Diagonal Beam Assembly Intercostal Fitting		7050-T7451 Plate as given in BMS 7-323 7050-T7451 Plate as given in BMS 7-323	
[12]	Fitting		7050-T7451 Plate as given in AMS 4050	
[13]	Beam		7050-T7451 Plate as given in BMS 7-323	
[14]	Fitting		7050-T7451 Plate as given in AMS 4050	
[15]	Horizontal Beam Assembly Intercostal Fitting		7050-T7451 Plate as given in BMS 7-323 7050-T7451 Plate as given in AMS 4050	
[16]	Intercostal		7050-T7451 Plate as given in BMS 7-323	
[17]	Strap		7050-T7451 Plate as given in AMS 4050	
[18]	Fitting		7050-T7451 Plate as given in AMS 4050	
[19]	Intercostal		7050-T7451 Plate as given in AMS 4050	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** ALL DIMENSIONS ARE THICKNESSES IN INCHES

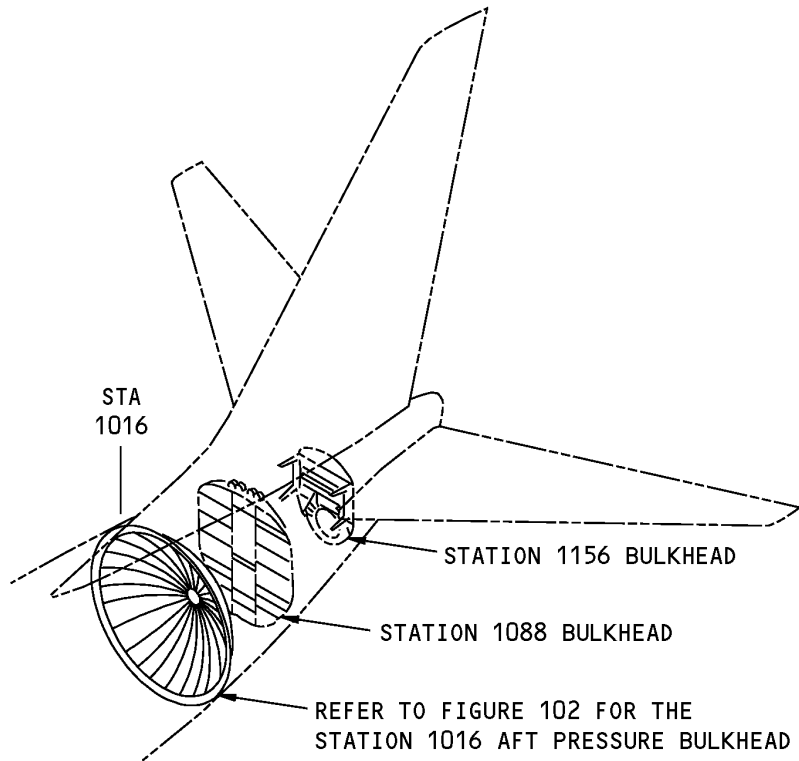
**VIEW WHEN YOU LOOK FORWARD  
Chem-Milled and Machined Areas of Figure 2, Item [1]  
Figure 3**

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**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - STATION 1016 AFT PRESSURE BULKHEAD STRUCTURE**

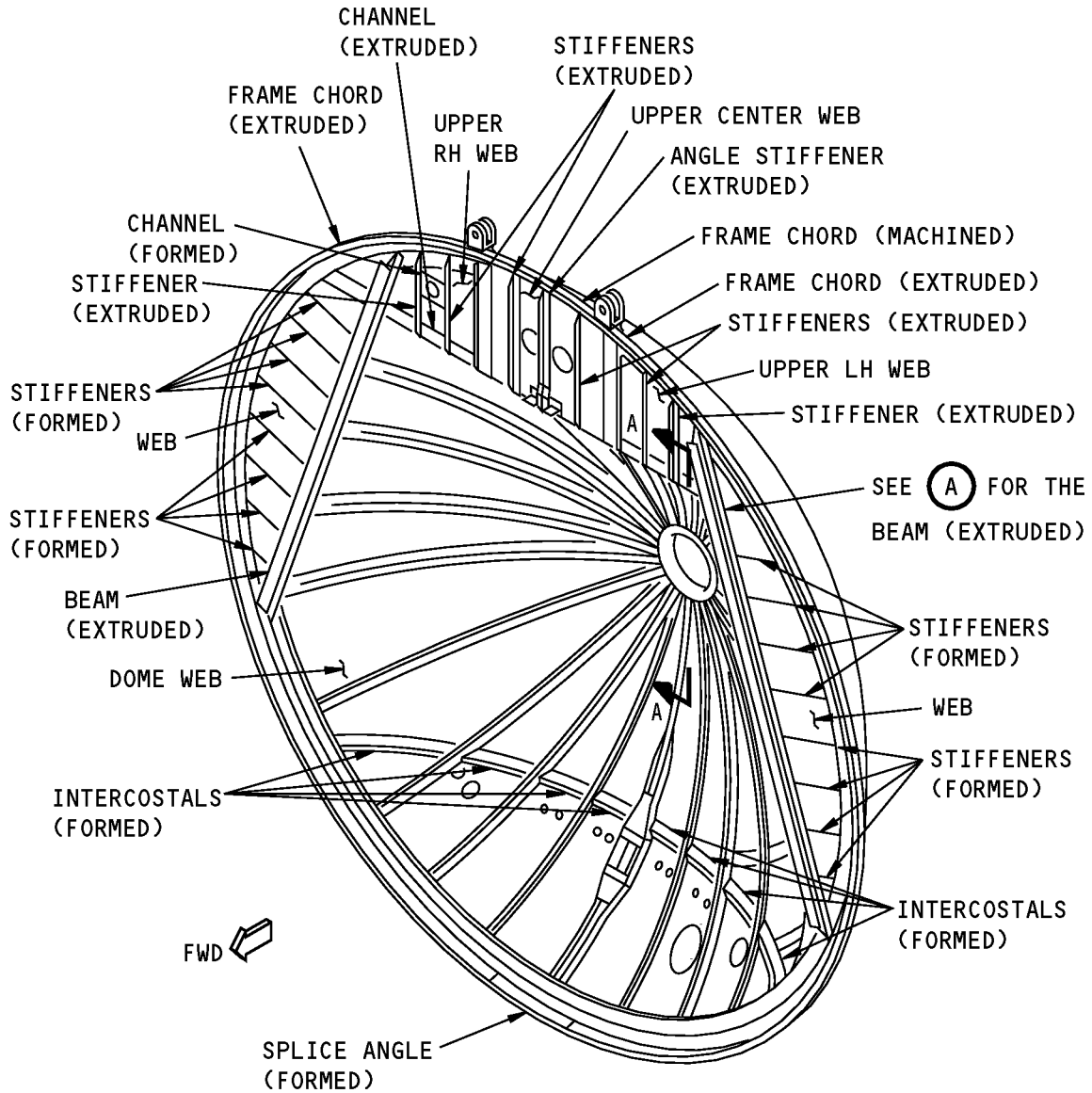
**1. Applicability**

- A. This subject gives the allowable damage limits for the Station 1016 pressure bulkhead shown in Aft Pressure Bulkhead Location - Station 1016, Figure 101/ALLOWABLE DAMAGE 1.



**Aft Pressure Bulkhead Location - Station 1016**  
**Figure 101**

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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

**VIEW LOOKING AFT**

**Aft Pressure Bulkhead - Station 1016  
Figure 102 (Sheet 1 of 4)**

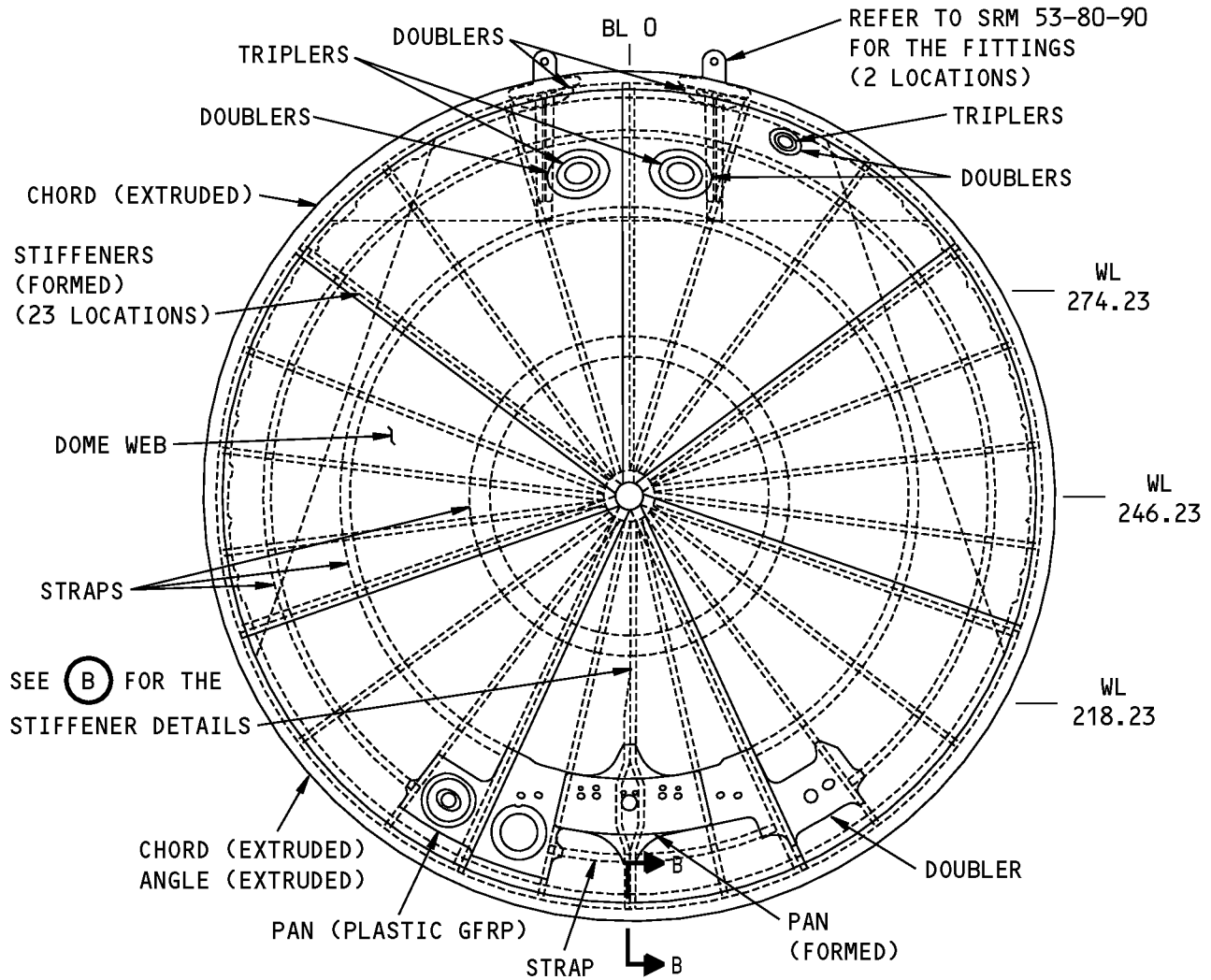
ALLOWABLE DAMAGE 1

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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

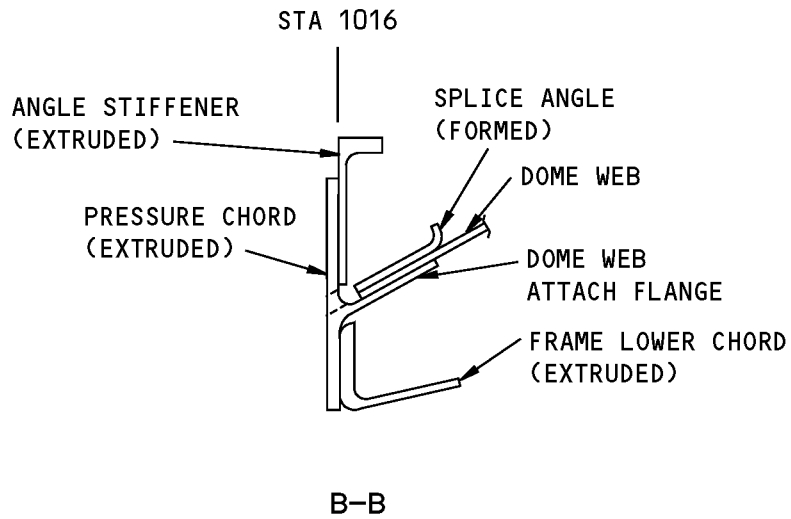
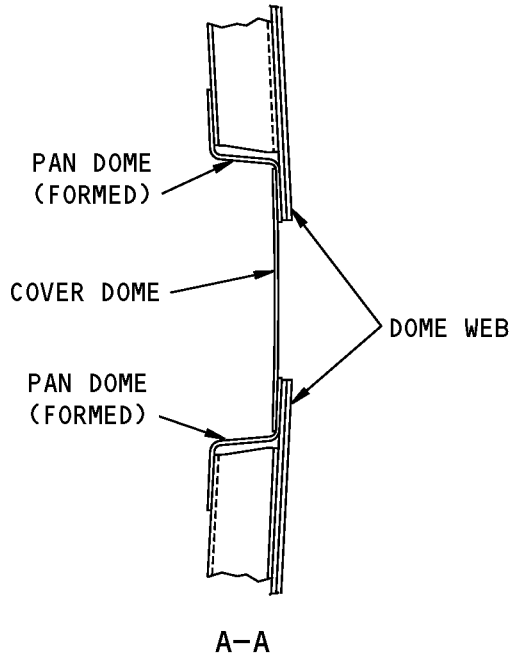
**REAR VIEW**

**Aft Pressure Bulkhead - Station 1016  
Figure 102 (Sheet 2 of 4)**

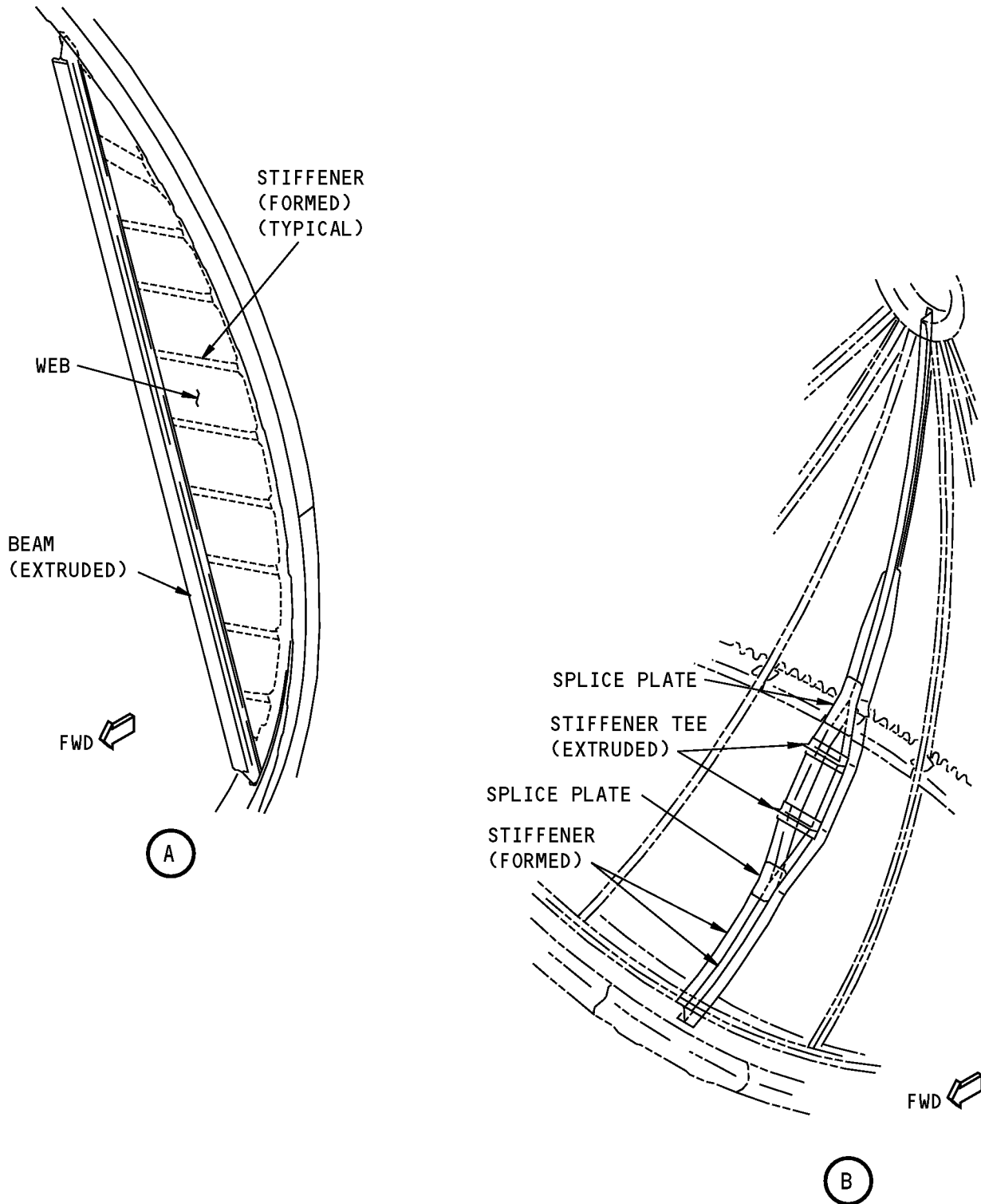
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ALLOWABLE DAMAGE 1  
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Nov 01/2003

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**Aft Pressure Bulkhead - Station 1016  
Figure 102 (Sheet 3 of 4)**



Aft Pressure Bulkhead - Station 1016  
Figure 102 (Sheet 4 of 4)



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STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits paragraph that is applicable to each type of structure.

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
Dome Webs, Doublers (on the angle chord), Straps, and Pan	4.A
Web (except the Dome Web),	4.B
Chords, Angles, and Splice Angles	4.C
Pan Dome and Cover Dome, Doublers and Triplers (on the Dome Web)	4.D
Beams, Stiffeners, and Channels	4.E
Intercostals	4.F

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked area. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the reworked area. Refer to 51-20-01.

**3. References**

<b>Reference</b>	<b>Title</b>
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
53-80-08, REPAIR 1	BSTA 1016 Pressure Bulkhead Cutout Repair
53-80-08, REPAIR 2	BSTA 1016 Pressure Bulkhead (Oil Can) Condition
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00, Figure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts



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## STRUCTURAL REPAIR MANUAL

### 4. Allowable Damage Limits

#### A. Dome Web, Strap, Pan, and Doublers in the lower half of the bulkhead

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C .
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E .
- (3) Dents:
  - (a) Damage is permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail F .
    - 1) If there is an "oil can" condition, refer to Paragraph 4.A.(4)/ALLOWABLE DAMAGE 1
- (4) "Oil Can" Condition

**NOTE:** An "Oil Can" is an area on the pressure dome web, at the station 1016 bulkhead, that has visibly changed forward from the initial contour of the pressure dome web.

- (a) When inspecting for an "Oil Can" condition, make sure the airplane is not jacked, cradled, or supported at or aft of the pressure bulkhead.
- (b) An "oil can" condition is permitted without a repair for 12,000 flight cycles, as a time-limited condition provided:
  - 1) You NDI inspect as given in paragraph 4.A.(4)(e)1 through 4.A.(4)(e)7) the "oil can" area at each 1200 flight cycle interval, or more frequently.
  - 2) You install a repair at or before 12,000 flight cycles from the time the damage is found.
  - 3) The damage is smooth and free from sharp creases, gouges, or cracks.
  - 4) The damage has not caused any deformation to a stiffener, strap, chord, or doubler.
  - 5) The "oil can" damage is at least 0.60 inch (15.2 mm) away from any adjacent fasteners. Fasteners are not permitted inside the "oil can" damage area.
  - 6) There is no indication of pressure leakage, damaged holes, and loose or missing fasteners.
  - 7) The maximum "oil can" depth shall not be more than 0.20 inch (5.1 mm). The width to depth (w/d) ratio shall not be more than the limits given in Figure 103, Sheet 8.
- (c) More than one "oil can" condition is permitted if the conditions given in Paragraph 4.A.(4)(b)3) thru 4.A.(4)(b)7) are met, and the edge of the "oil can" is located no less than 2.0 inches (50.80 mm) from the edge of another "oil can".
- (d) If an "oil can" condition does not meet the conditions given in Paragraph 4.A.(4)(b)3) thru 4.A.(4)(b)7), then the "oil can" must be repaired.
- (e) Oil Can allowable damage limits are given in Figure 103, Sheets 8 and 9. Make sure that you inspect the oil can and surrounding structure for cracks as described below:
  - 1) Do a detailed visual and High Frequency Eddy Current (HFEC) surface inspection of the gore web for cracks at the oil can location.
  - 2) Do an NDT inspection of the web at all fastener locations common to the outer bay area in which the "oil can" condition is found.
  - 3) Do an NDT inspection of the web at the locations that follow as applicable:

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## STRUCTURAL REPAIR MANUAL

- a) At a web lap splice hidden fastener row
  - b) At web lap splices below the circumferential tear straps
  - c) At circumferential tear strap splices
  - d) At the web below the circumferential tear straps
  - e) At a doubler above a web lap splice
  - f) At the outer circumferential tear strap above a doubler
  - g) At a doubler above a web
  - h) At the pan that is located between S-25L and S-25R
  - i) At the web common to the "Y" chord
  - j) At the web common to the radial stiffeners
  - k) At the web common the a lap splice visible from the aft side of the bulkhead
- 4) Do an NDT inspection of the web from the aft side of the aft pressure bulkhead as given in NDT Manual Part 6, 53-10-41 for all locations listed in paragraph 4.A.(4)(e)3) other than the:
- a) Web common to the "Y" chord
  - b) Web common to the radial stiffeners
  - c) Web common to a lap splice, visible from the aft side of the bulkhead.
- 5) At the web common to the radial stiffeners, from the aft side of the pressure bulkhead, do a High Frequency Eddy Current (HFEC) inspection of the web around the fasteners as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23.
- 6) At the web, common to the lap splice, from the aft side of the bulkhead, do a High Frequency Eddy Current (HFEC) inspection of the web around the fasteners as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23.
- 7) If the "oil can" is in the outer bay adjacent to the web common to the "Y" chord, inspect the locations in 4.A.(4)(e)3)a) thru 4.A.(4)(e)3)k) as applicable.
- a) For locations above S-15L and S-15R, do an inspection as given in NDT Manual Part 6, 53-10-54 from the aft side of the bulkhead as shown in Figure 105, Sheet 1. It is not necessary to inspect the web in the area of the steel straps.
  - b) As an alternative to doing the inspection from the aft side of the bulkhead, you can do an NDT inspection at the aft fastener row from the forward side of the bulkhead as shown in Figure 106, Sheet 1. Do the inspection as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23.

**NOTE:** Where a radial stiffener overlaps the "Y" chord at the perimeter of the web at the fastener locations, inspect as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23. Inspect the web along the edge of the radial stiffener adjacent to the fastener locations to be inspected. Inspect the web to 1.0 inch on each side of the fastener row.

Where the fin terminal fitting doublers overlap the web, inspect the web along the edge of the doublers when you inspect from the forward side. Inspect as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23.

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## STRUCTURAL REPAIR MANUAL

- c) For locations below S-15L and S-15R, do an inspection from the forward side of the bulkhead as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23. Refer to Figure 107.
- d) Do a Low Frequency Eddy Current (LFEC) inspection from the aft side of the bulkhead web at the "Y" chord splice and common to the floor structure. Inspect as given in NDT Manual Part 6, 53-10-54. Refer to Figure 107.

**NOTE:** Where a radial stiffener overlaps the "Y" chord at the perimeter of the web at the fastener locations inspect as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23. Inspect the web along the edge of the radial stiffener adjacent to the fastener locations to be inspected. Inspect the web to 1.0 inch on each side of the fastener row.

- e) If there is a crack in the web when you do a Low Frequency Eddy Current (LFEC) inspection, then do a High Frequency Eddy Current (HFEC) inspection from the opposite side of the bulkhead at the damage location.
  - f) If you can not get access to the web to do a High Frequency Eddy Current (HFEC) inspection, then remove the fasteners at the NDT inspection location. Then do an open hole eddy current inspection of the web as given in NDT Manual 51-00-00, Part 6, Figure 16.
- 8) As an alternative to doing an inspection from the aft side of the bulkhead, you can do an NDT inspection from the forward side of the bulkhead as given in NDT Manual Part 6, 51-00-00, Figure 4 or 23.
  - 9) If you find any cracks, contact The Boeing Company for repair information or refer to SRM 53-80-08, Repair 1 and 2 as applicable.

(5) "Bulge" condition

- (a) A "bulge" condition is any change of the pressure dome web aft of the initial contour. Refer to Figure 104, Sheet 2 for the permitted allowable damage limits.

(6) Holes and Punctures are not permitted.

B. Webs (Except the Dome Web)

(1) Cracks:

- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C .

(2) Nicks, Gouges, Scratches, and Corrosion:

- (a) You are permitted to do one of the procedures that follow:
  - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E .
  - 2) Drill out the damage as given in Holes and Punctures.

(3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail F if:

- (a) They do not extend across an attached structure
- (b) There is not an "oil can" condition.

(4) Holes and Punctures:

- (a) The damage is permitted if it is:
  - 1) A maximum of 0.25 inch (6.4 mm) in diameter

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## STRUCTURAL REPAIR MANUAL

- 2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of the part, or other damage
  - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
    - a) Install the rivet without sealant.
- C. Chords, Angles, and Splice Angle
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, H, I, and J .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- D. Pan Dome, Cover Dome, Triplers, and Doublers in the upper half of the bulkhead
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E .
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- E. Beams, Stiffeners, and Channels
- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, G, and H .
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) You are permitted to do one of the procedures that follow:
      - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, H, I, and J .
      - 2) Drill out the damage as given in Holes and Punctures.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) In the free flange as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail K .
      - 1) The damage must not be more than 0.25 inch (6.4 mm) in diameter.
        - a) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
        - b) Install the rivet without sealant.
- F. Intercostals
- (1) Web

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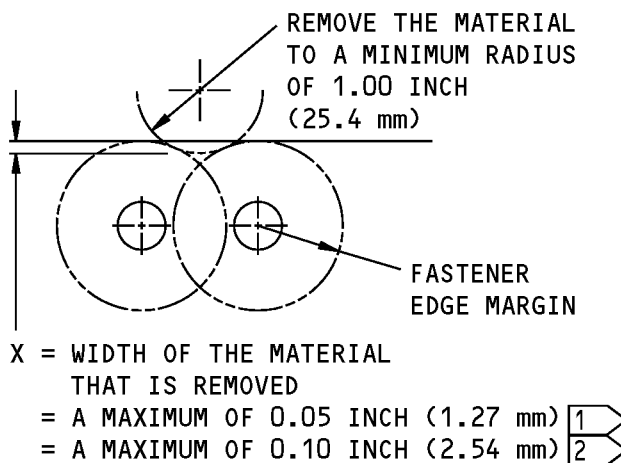
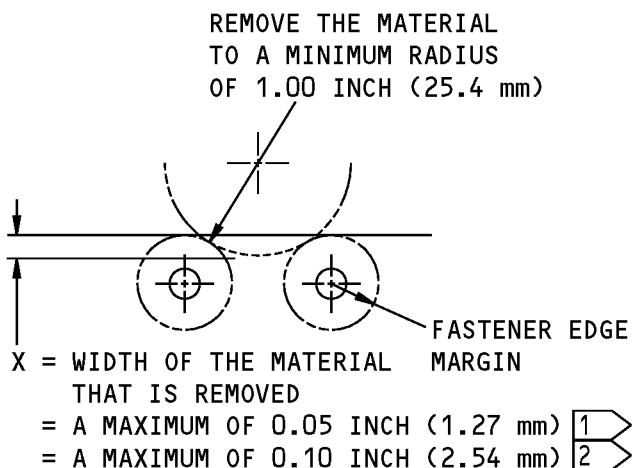


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## STRUCTURAL REPAIR MANUAL

- (a) Cracks:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and C .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, C, D, and E .
  - (c) Dents:
    - 1) Refer to Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Detail F for the damage that is permitted.
  - (d) Holes and Punctures are permitted if they are:
    - 1) A maximum of 0.25 inch (6.4 mm) in diameter
    - 2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of the part, or other damage
    - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - a) Install the rivet without sealant.
- (2) Flange
- (a) Cracks are not permitted.
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, and G .
  - (b) Nicks, Gouges, Scratches, and Corrosion:
    - 1) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 1, Details A, B, E, G, and I .
  - (c) Dents are not permitted.
  - (d) Holes and Punctures are not permitted.

STRUCTURAL REPAIR MANUAL

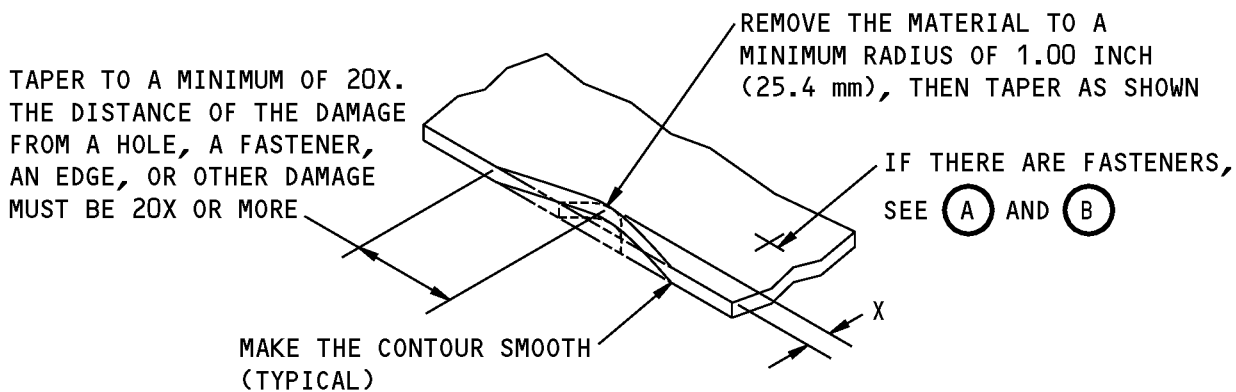


REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)

REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 0.05 INCH (1.27 mm) 1  
 = A MAXIMUM OF 0.10 INCH (2.54 mm) 2

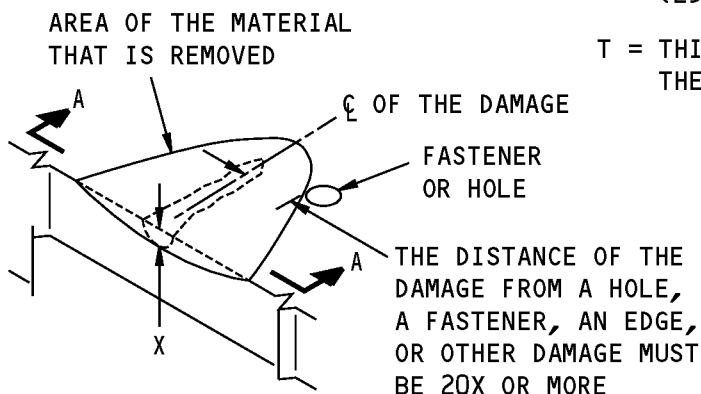
REMOVAL OF DAMAGED MATERIAL AT AN EDGE

(C)

- 1 FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149.
- 2 FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149.

Allowable Damage Limits  
 Figure 103 (Sheet 1 of 9)

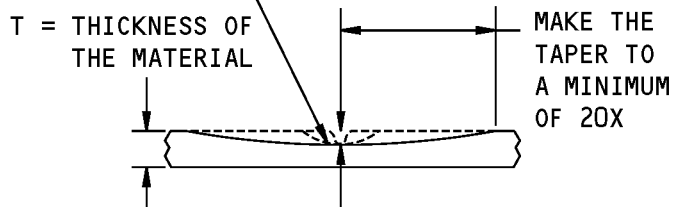
**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**D**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



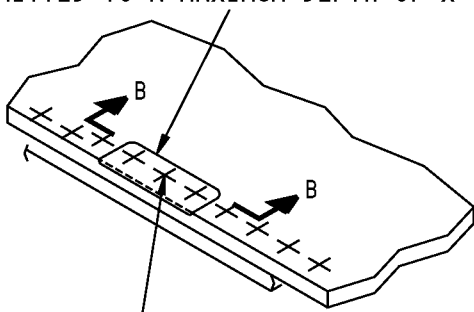
X = DEPTH OF THE MATERIAL THAT IS REMOVED

X = A MAXIMUM OF 0.05T <sup>1</sup> OR 0.10T <sup>2</sup> FOR ALL STRUCTURE BUT THE DOME WEB ATTACH FLANGE

X = A MAXIMUM OF 0.010 INCH <sup>1</sup> (0.254 mm) OR 0.020 INCH <sup>2</sup> (0.51 mm) FOR THE DOME WEB ATTACH FLANGE

A-A

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X

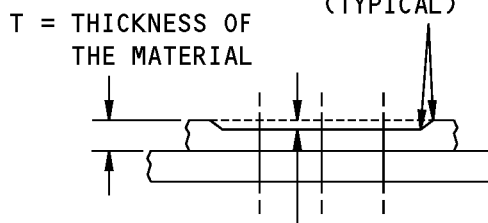


REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

**E**

MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.7 mm) (TYPICAL)



X = DEPTH OF THE MATERIAL THAT IS REMOVED

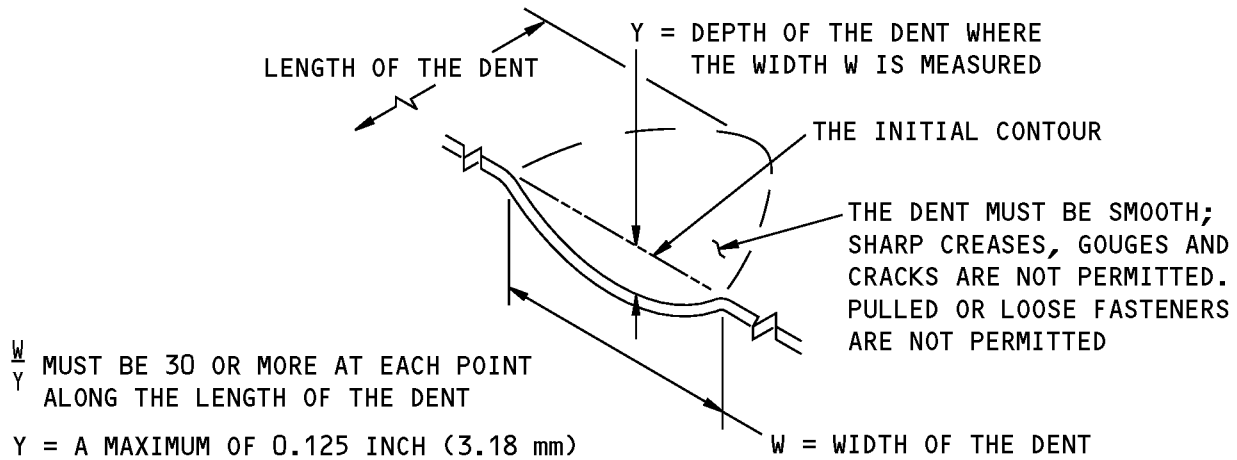
X = A MAXIMUM OF 0.05T <sup>1</sup> OR 0.10T <sup>2</sup> ALL STRUCTURE BUT THE DOME ATTACH FLANGE

X = A MAXIMUM OF 0.010 INCH (0.254 mm) <sup>1</sup> OR 0.020 INCH (0.508 mm) <sup>2</sup> FOR THE DOME WEB ATTACH FLANGE

B-B

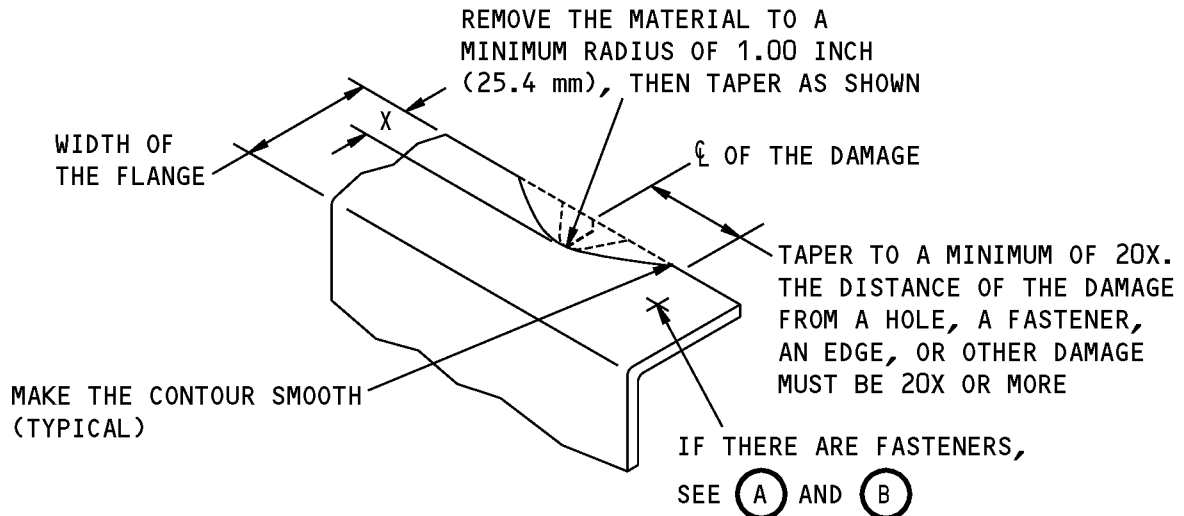
**Allowable Damage Limits  
Figure 103 (Sheet 2 of 9)**



**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(F)



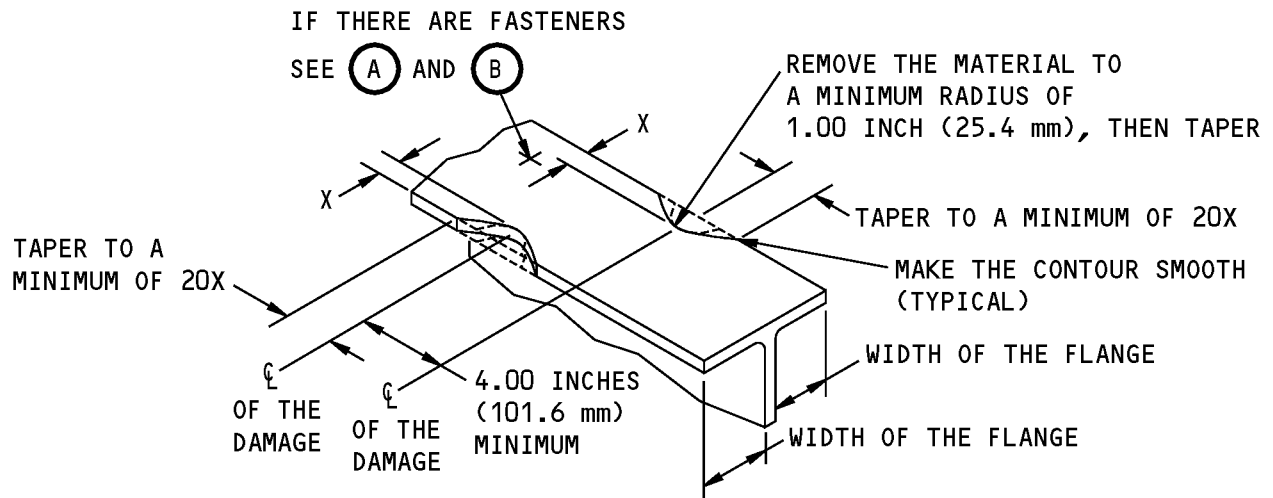
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE   
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(G)

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 9)**

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STRUCTURAL REPAIR MANUAL**



X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

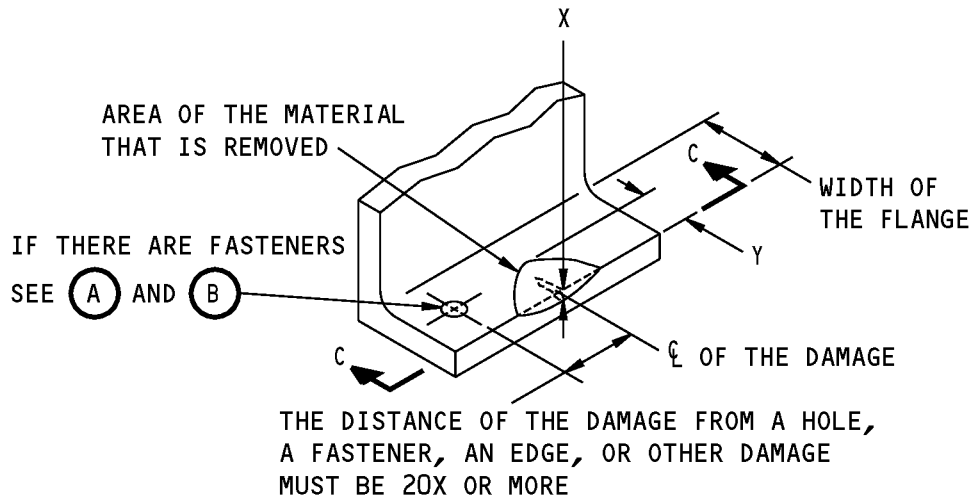
**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(H)**

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 9)**



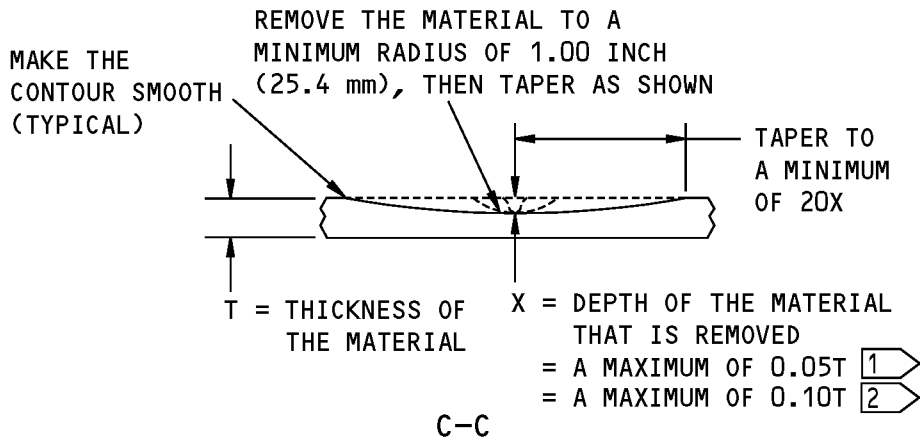
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

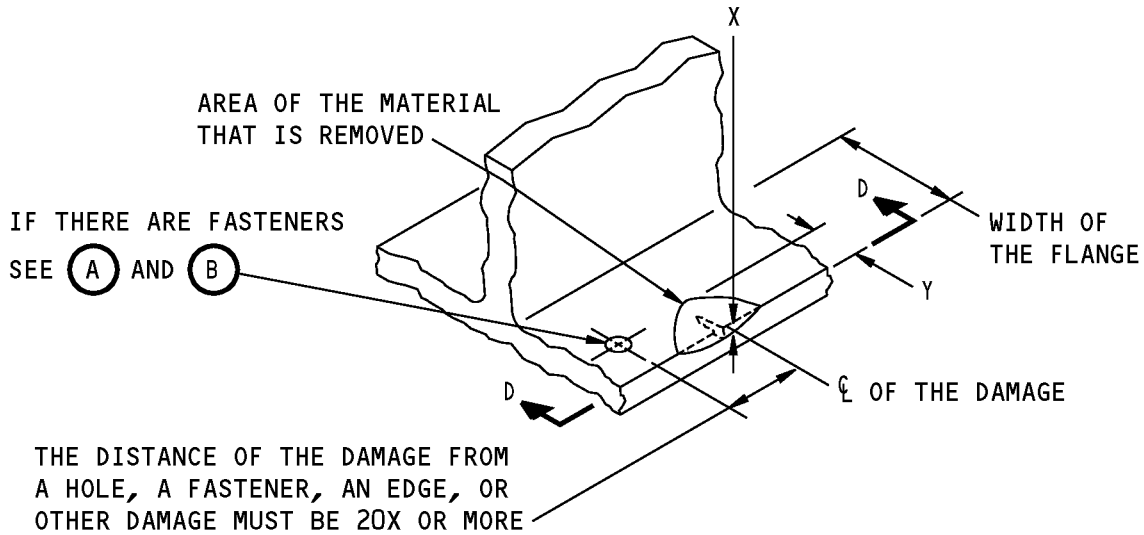
**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(I)



**Allowable Damage Limits  
Figure 103 (Sheet 5 of 9)**

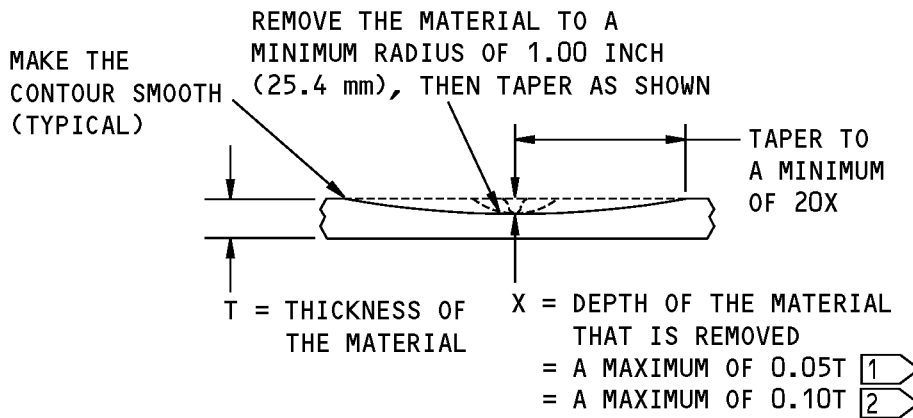
**737-800  
STRUCTURAL REPAIR MANUAL**



- Y = WIDTH OF THE MATERIAL THAT IS REMOVED
- = A MAXIMUM OF 5 PERCENT OF THE WIDTH OF THE FLANGE 1
- = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 2

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

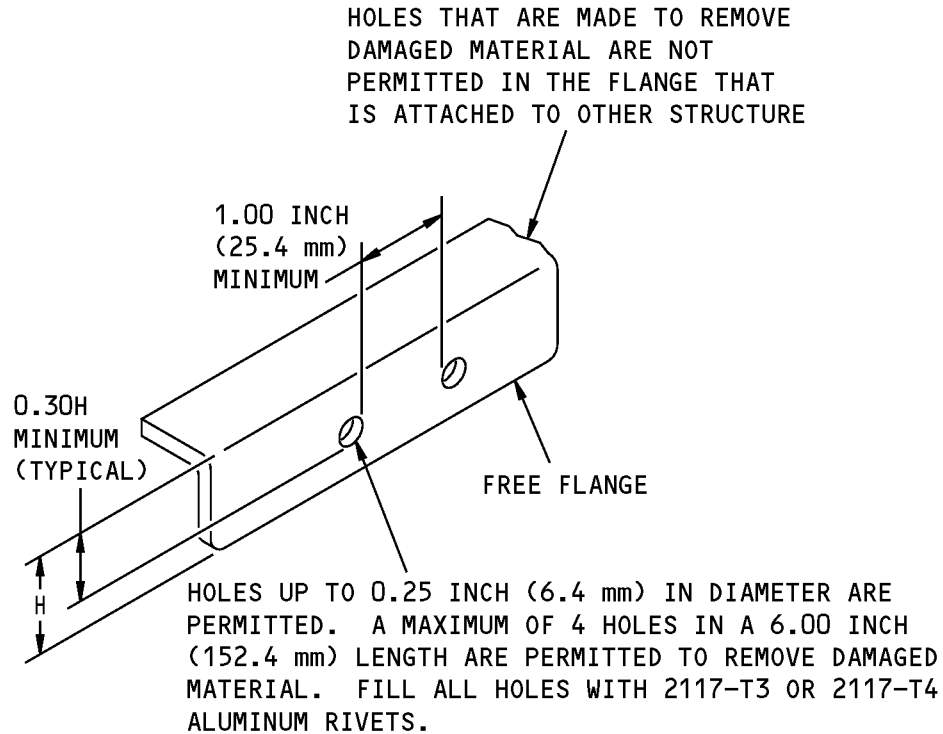
(J)



D-D

**Allowable Damage Limits  
Figure 103 (Sheet 6 of 9)**

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STRUCTURAL REPAIR MANUAL**



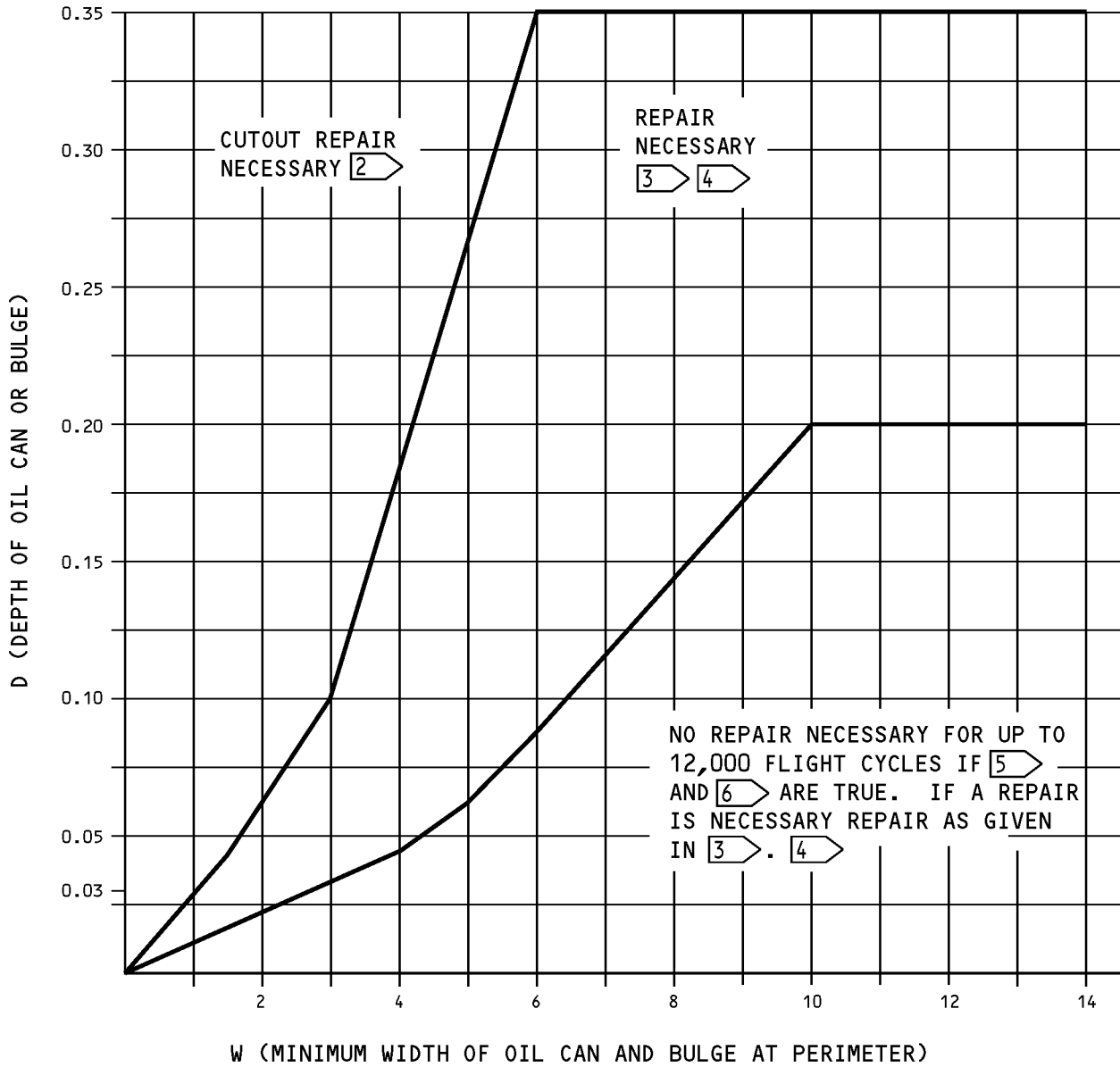
**NOTE:** HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF  
DAMAGED MATERIAL IN THE FREE FLANGE**

(K)

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 9)**

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STRUCTURAL REPAIR MANUAL**



**'OIL CAN' AND BULGE LIMITATIONS AND REPAIR REQUIREMENTS ON  
PRESSURE BULKHEAD  
GRAPH I 1**

**Allowable Damage Limits  
Figure 103 (Sheet 8 of 9)**



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## STRUCTURAL REPAIR MANUAL

### NOTES

- ALL DIMENSIONS ARE IN INCHES

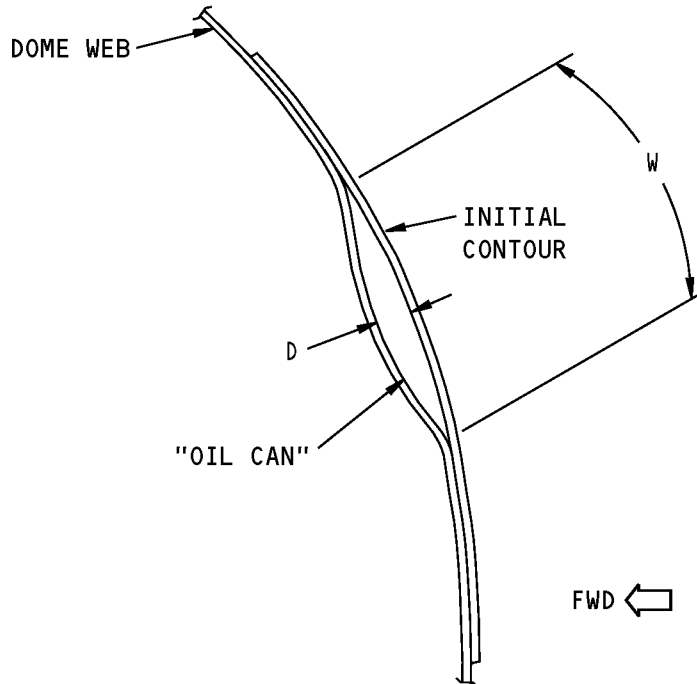
- 1 WHEN YOU INSPECT FOR 'OIL CANS' AND BULGES MAKE SURE THE AIRCRAFT IS NOT JACKED, CRADLED, OR SUPPORTED AFT OF THE PRESSURE BULKHEAD.
- 2 REPAIR AS GIVEN IN REPAIR 1 IS NECESSARY.
- 3 REPAIR AS GIVEN IN REPAIR 1 PREFERRED. REPAIR AS GIVEN IN REPAIR 2 IS AN ALTERNATIVE.
- 4 IF "OIL CAN" OR DENT OR BULGE NEEDING A REPAIR IS 6.0 INCHES (152.4 mm) OR LESS FROM THE CIRCUMFERENTIAL STRAP, REPAIR AS GIVEN IN REPAIR 1.
- 5 IF THE OIL CAN IS CONCAVE FORWARD OF THE DESIGN CONTOUR, AND IF THE OIL CAN IS PRESSED WITH 12 LBS OF HAND PRESSURE FROM THE FORWARD SIDE, THE WEB POPS AFT AND REMAINS AFT AFTER HAND PRESSURE IS RELEASED.
- 6 ALL CONDITIONS LISTED IN SRM SECTION 4.A(4)b)3) THROUGH 4.A(4)b)7) MUST BE MET.

**Allowable Damage Limits  
Figure 103 (Sheet 9 of 9)**

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STRUCTURAL REPAIR MANUAL



**NOTES:**

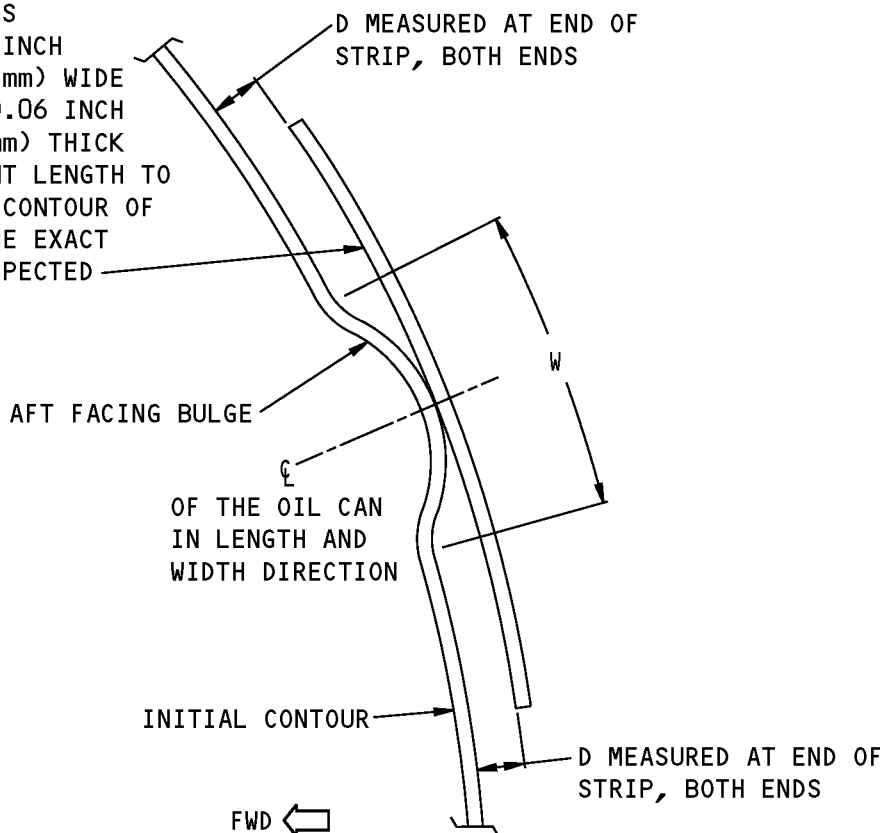
- AN OIL CAN IS AN AREA ON THE PRESSURE DOME WEB THAT HAS CHANGED FORWARD FROM THE INITIAL CONTOUR OF THE PRESSURE DOME WEB, AS SHOWN.
- D = DEFLECTION FORWARD OF THE INITIAL CONTOUR  
= 0.20 INCH (5.08 mm) OR LESS. REFER TO FIGURE 103, SHEETS 8 AND 9 FOR THE PERMITTED LIMITS.
- W = MINIMUM WIDTH OF OIL CAN AT THE PERIMETER.

**Allowable Damage Limits - "Oil Cans" and Bulges  
Figure 104 (Sheet 1 of 2)**

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STRUCTURAL REPAIR MANUAL**

**FLEXIBLE METAL STRIP -**

MAKE A TOOL THAT IS  
0.60 INCH TO 1.00 INCH  
(15.28 mm TO 25.4 mm) WIDE  
AND 0.03 INCH TO 0.06 INCH  
(0.76 mm TO 1.52 mm) THICK  
AND IS A SUFFICIENT LENGTH TO  
MATCH THE INITIAL CONTOUR OF  
THE DOME WEB AT THE EXACT  
LOCATION BEING INSPECTED

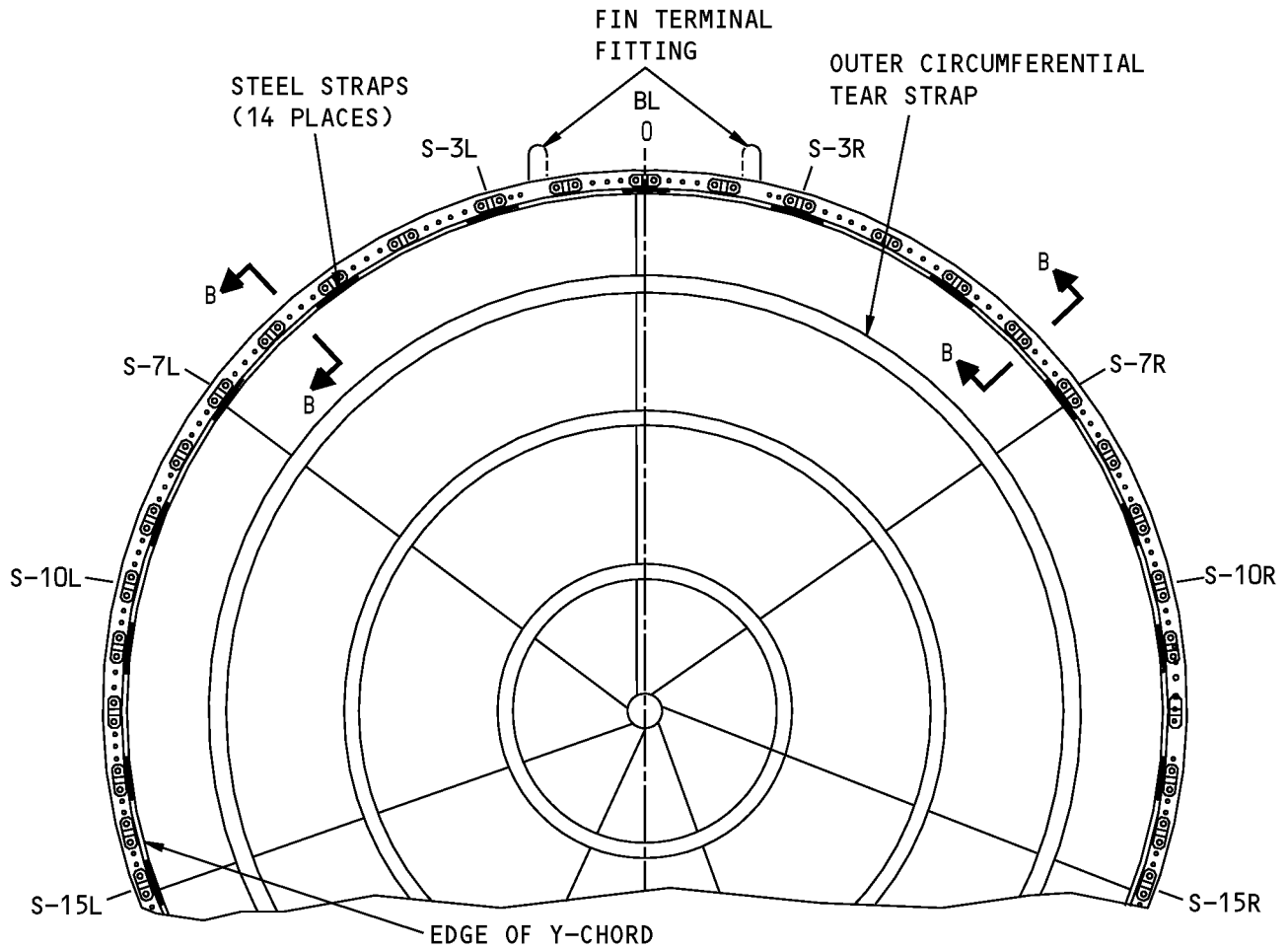
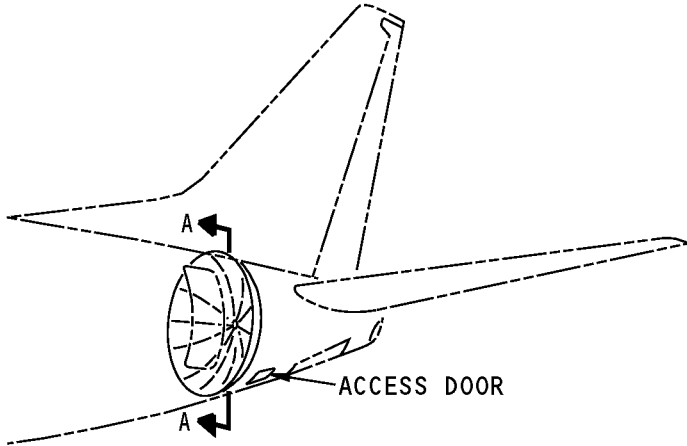


**NOTES**

- A BULGE IS AN AREA ON THE PRESSURE DOME WEB THAT HAS CHANGED AFT FROM THE INITIAL CONTOUR OF THE PRESSURE DOME WEB, AS SHOWN.
- D = DEFLECTION AFT OF THE INITIAL CONTOUR  
= 0.20 INCH (5.08 mm) OR LESS.
- W = MINIMUM WIDTH OF BULGE AT THE PERIMETER.
- REFER TO FIGURE 103, SHEETS 8 AND 9 FOR THE ALLOWABLE DAMAGE LIMITS.

**Allowable Damage Limits - "Oil Cans" and Bulges  
Figure 104 (Sheet 2 of 2)**

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STRUCTURAL REPAIR MANUAL**

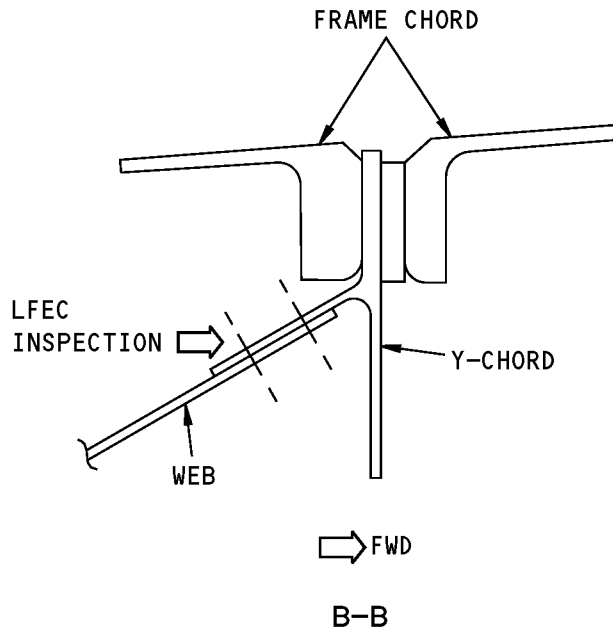


**VIEW LOOKING FORWARD  
A-A**

**LFEC Inspection of the Web at the Y-Chord - Above S-15  
Figure 105 (Sheet 1 of 2)**

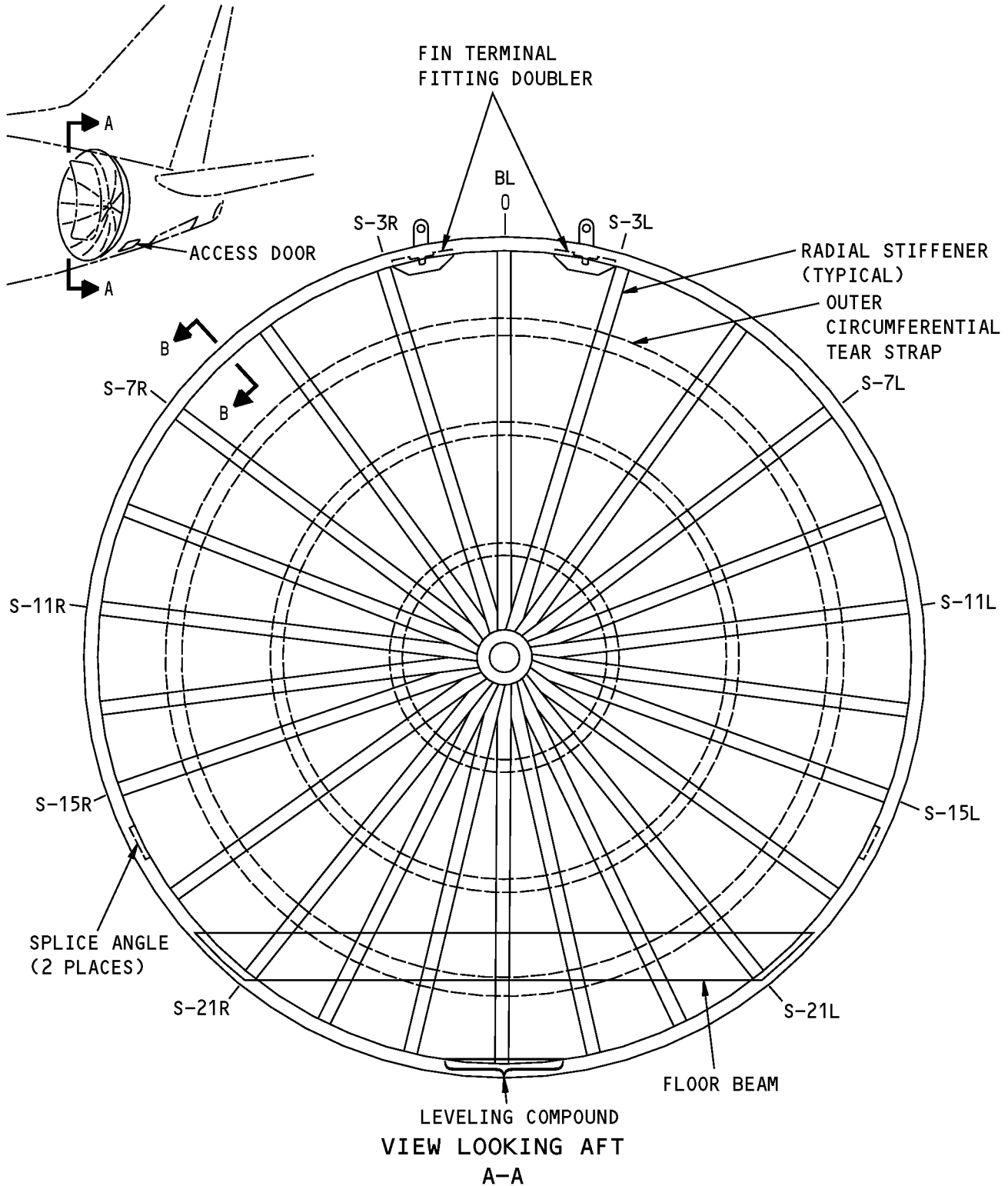


**737-800  
STRUCTURAL REPAIR MANUAL**



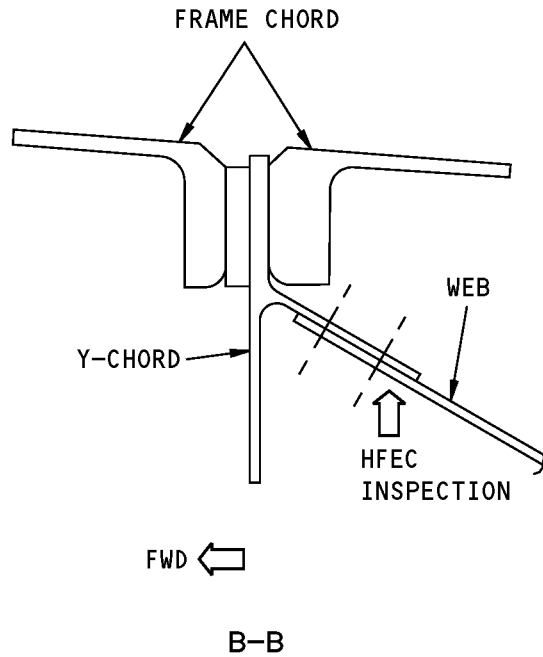
**LFEC Inspection of the Web at the Y-Chord - Above S-15  
Figure 105 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



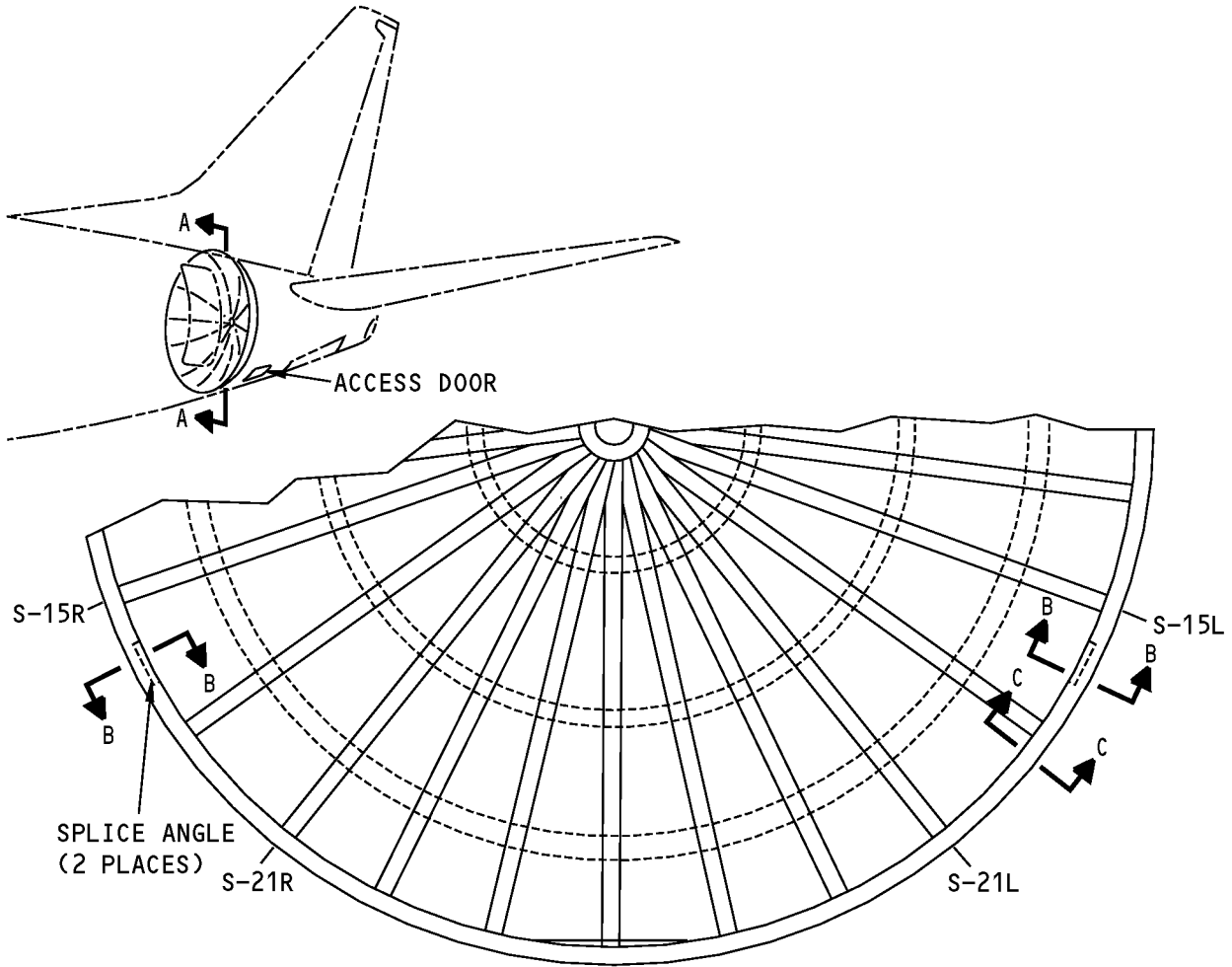
**HFEC Inspection of the Web at the Y-Chord - Above S-15  
Figure 106 (Sheet 1 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

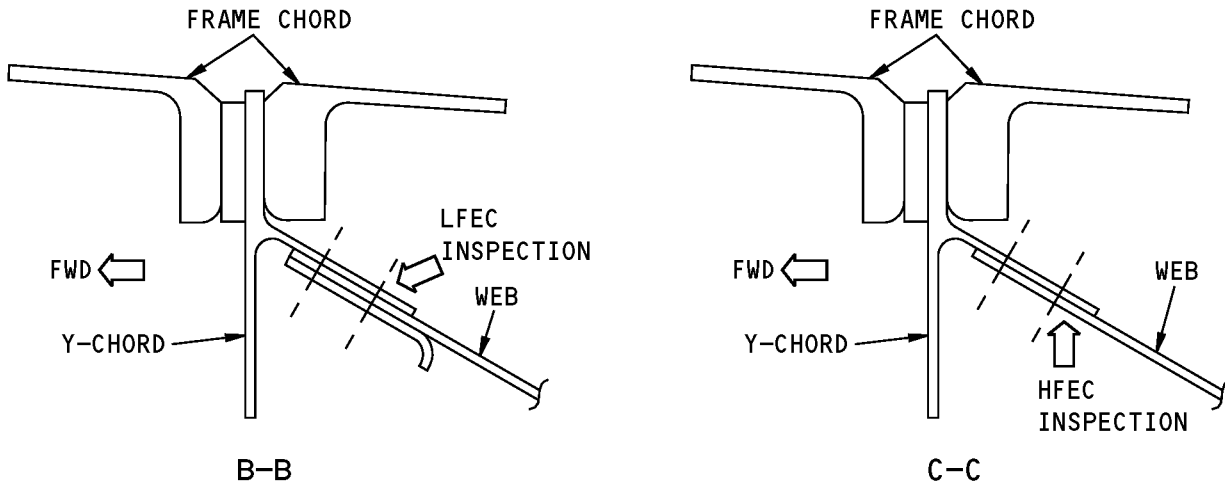


**HFEC Inspection of the Web at the Y-Chord - Above S-15  
Figure 106 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**



VIEW LOOKING AFT  
A-A



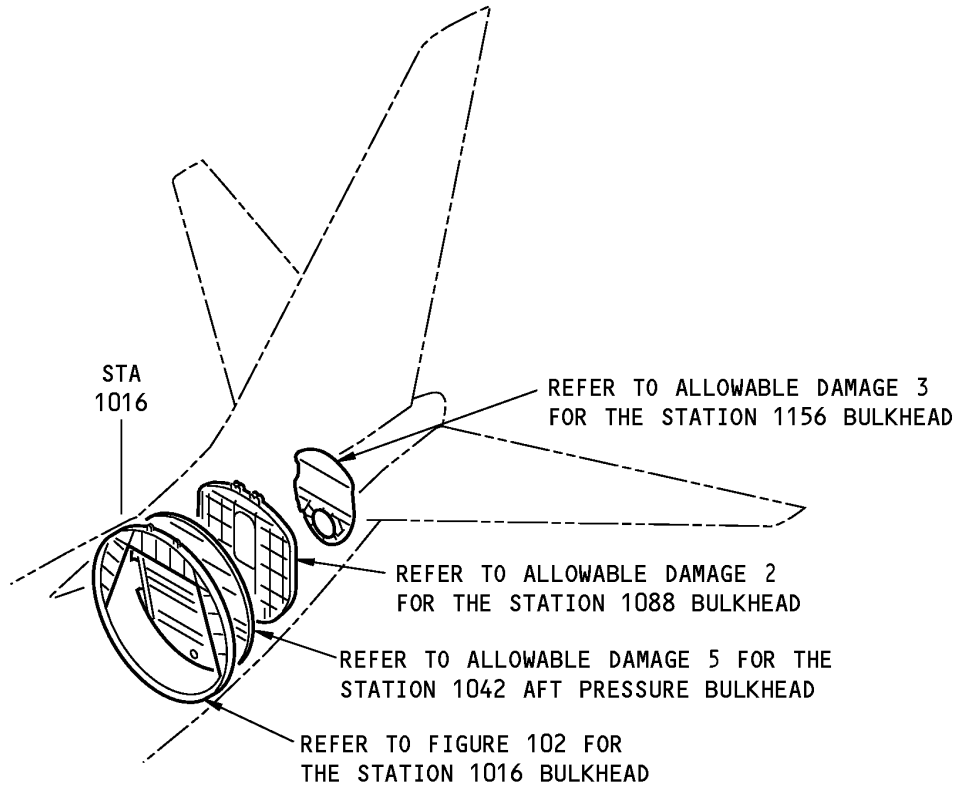
**NDT Inspection of the Web at the Y-Chord - Below S-15  
Figure 107**

737-800  
STRUCTURAL REPAIR MANUAL

ALLOWABLE DAMAGE 4 - STATION 1016 BULKHEAD STRUCTURE

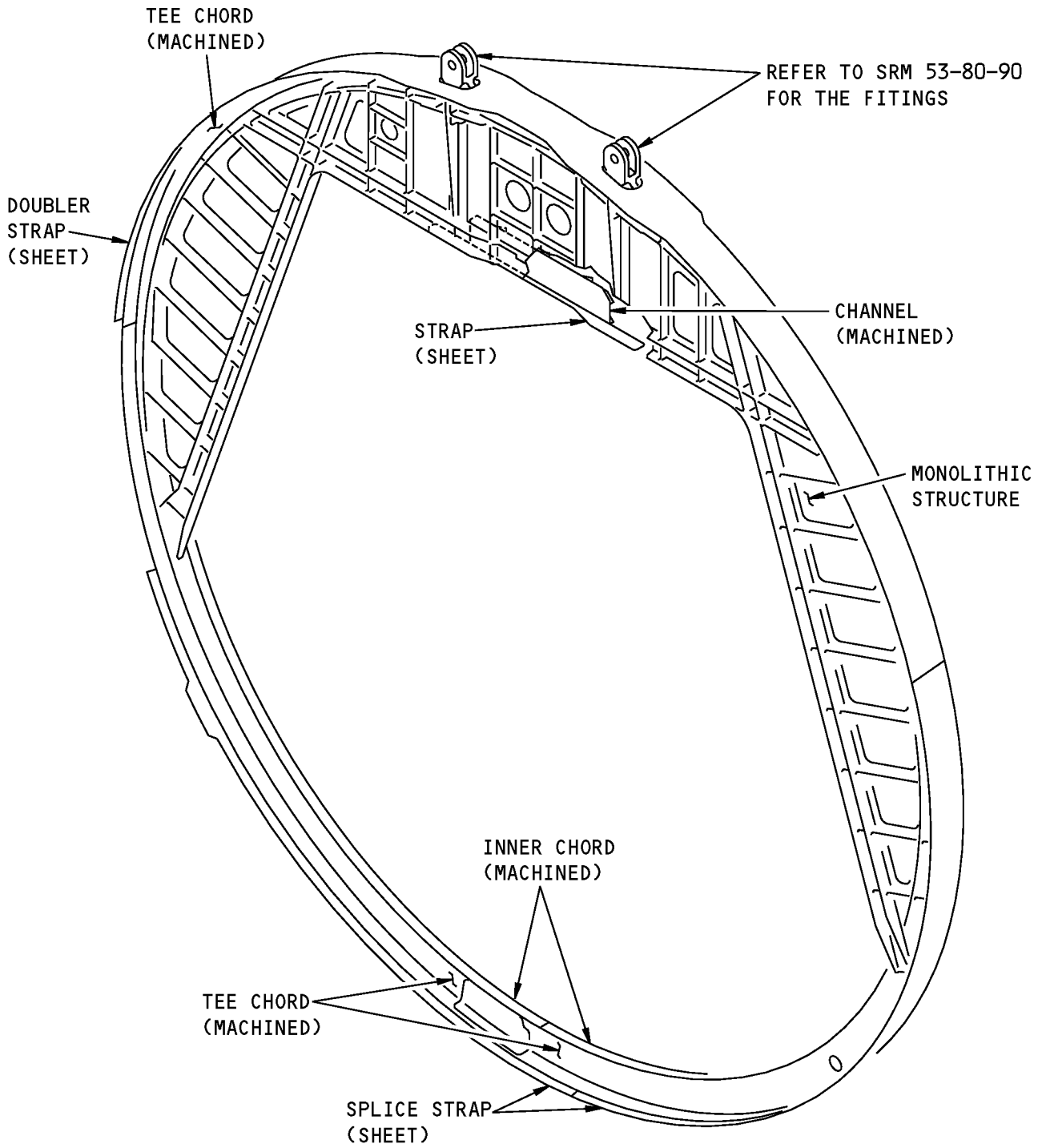
1. Applicability

- A. This subject gives the allowable damage limits for the Station 1016 Bulkhead Structure shown in Figure 101/ALLOWABLE DAMAGE 4.



Station 1016 Bulkhead Location  
Figure 101

**737-800  
STRUCTURAL REPAIR MANUAL**



**Station 1016 Bulkhead  
Figure 102**



**737-800  
STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 4 for the allowable damage limits that are applicable to each type of structure.

**Table 101:**

<b>PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS</b>	
<b>TYPE OF STRUCTURE</b>	<b>PARAGRAPH</b>
Doubler Strap, Splice Strap	Paragraph 4.A./ALLOWABLE DAMAGE 4
Monolithic Structure	Paragraph 4.B./ALLOWABLE DAMAGE 4
T-Chord, Inner Chord	Paragraph 4.C./ALLOWABLE DAMAGE 4
Channel, Strap	Paragraph 4.D./ALLOWABLE DAMAGE 4

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

- A. Doubler Strap, Splice Strap
  - (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion are not permitted.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.



## 737-800 STRUCTURAL REPAIR MANUAL

### B. Monolithic Structure

#### (1) Cracks:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

#### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, G, H, I and J.

#### (3) Dents are not permitted.

#### (4) Holes and Punctures are permitted if they are:

- (a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.
  - 1) The damage must not be more that 0.25 inch (6.4 mm) in diameter.
  - 2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.
  - 3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
    - a) Install the rivet without sealant.
- (b) Damage not permitted on the web.

### C. T-Chord, Inner Chord

#### (1) Cracks:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

#### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, G, H, I and J.

#### (3) Dents are not permitted.

#### (4) Holes and Punctures are permitted if they are:

- (a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.
  - 1) The damage must not be more that 0.25 inch (6.4 mm) in diameter.
  - 2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.
  - 3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
    - a) Install the rivet without sealant.

### D. Channel, Strap

#### (1) Cracks:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A , B, C, D, G, and H.

#### (2) Nicks, Gouges, Scratches, and Corrosion:

- (a) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, D, E, G, H, I and J.

#### (3) Dents are not permitted.

#### (4) Holes and Punctures are permitted if they are:



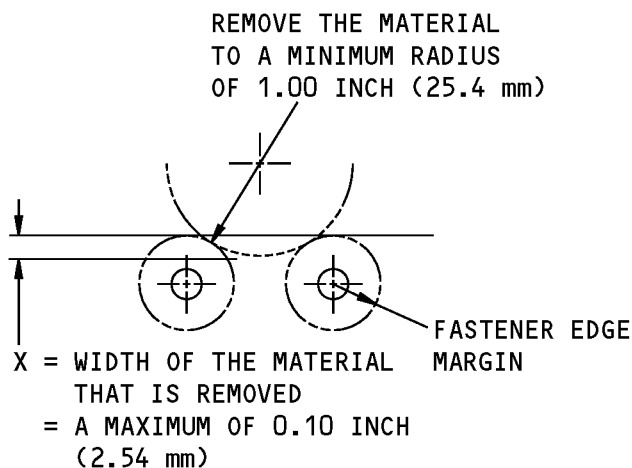


**737-800**

**STRUCTURAL REPAIR MANUAL**

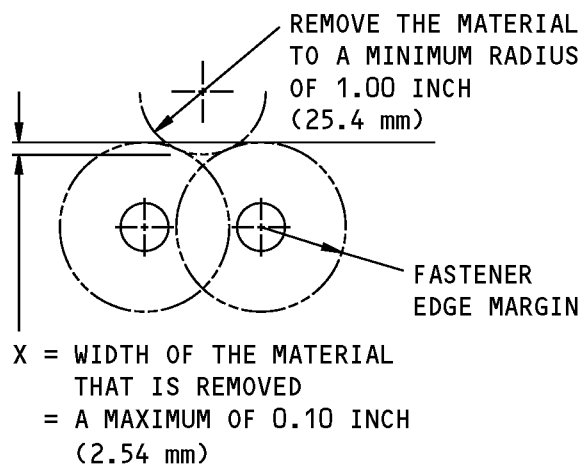
- (a) In the free flange as shown in Figure 103/ALLOWABLE DAMAGE 4, Detail K.
  - 1) The damage must not be more than 0.25 inch (6.4 mm) or 0.1H in diameter.
  - 2) A minimum of 1.0 inch (25.4 mm) away from a fastener hole, the edge of a part or other damage.
  - 3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
    - a) Install the rivet without sealant.

STRUCTURAL REPAIR MANUAL



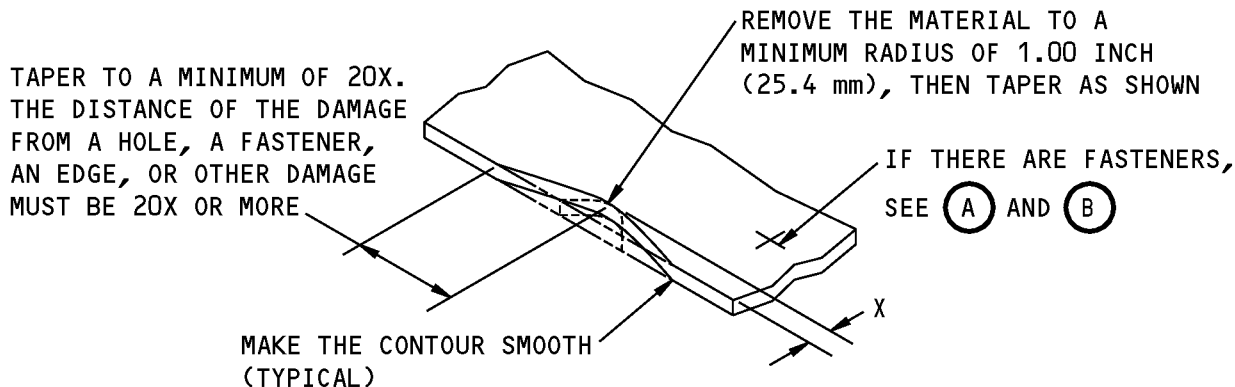
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



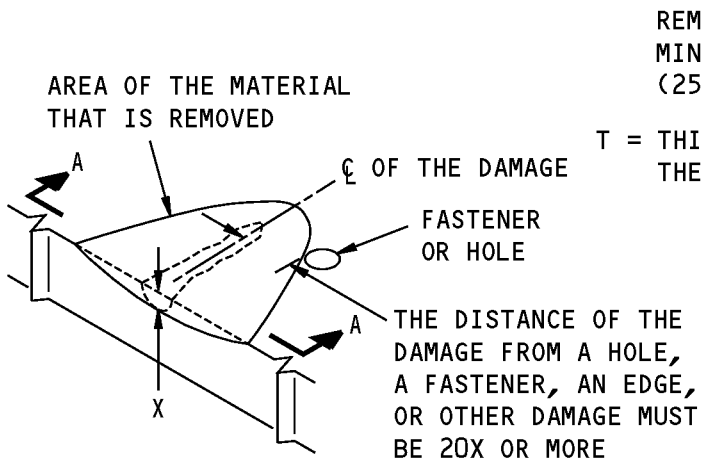
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

REMOVAL OF DAMAGED MATERIAL AT AN EDGE

(C)

Allowable Damage Limits  
Figure 103 (Sheet 1 of 7)

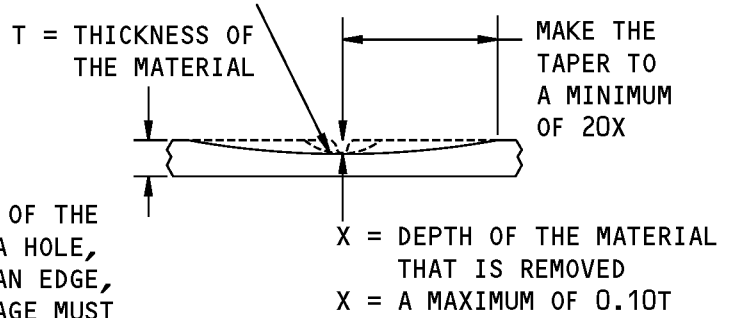
**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

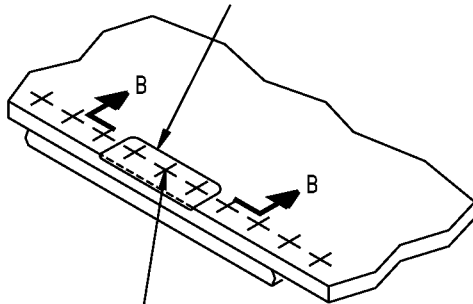
**D**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.4 mm), THEN TAPER AS SHOWN



**A-A**

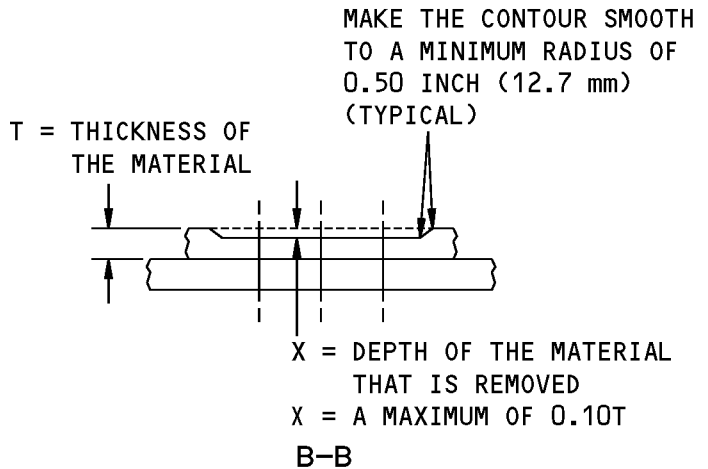
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

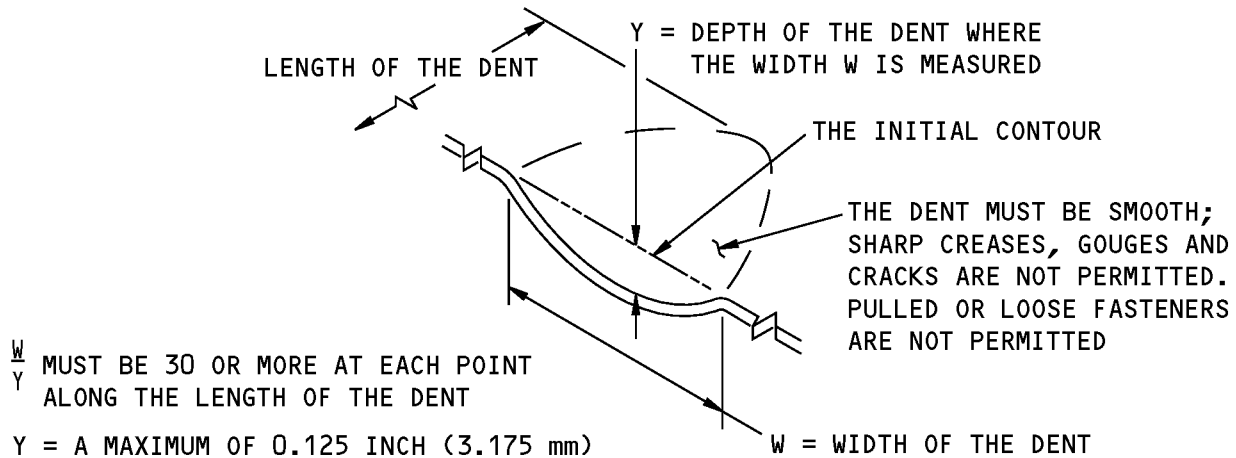
**E**



**B-B**

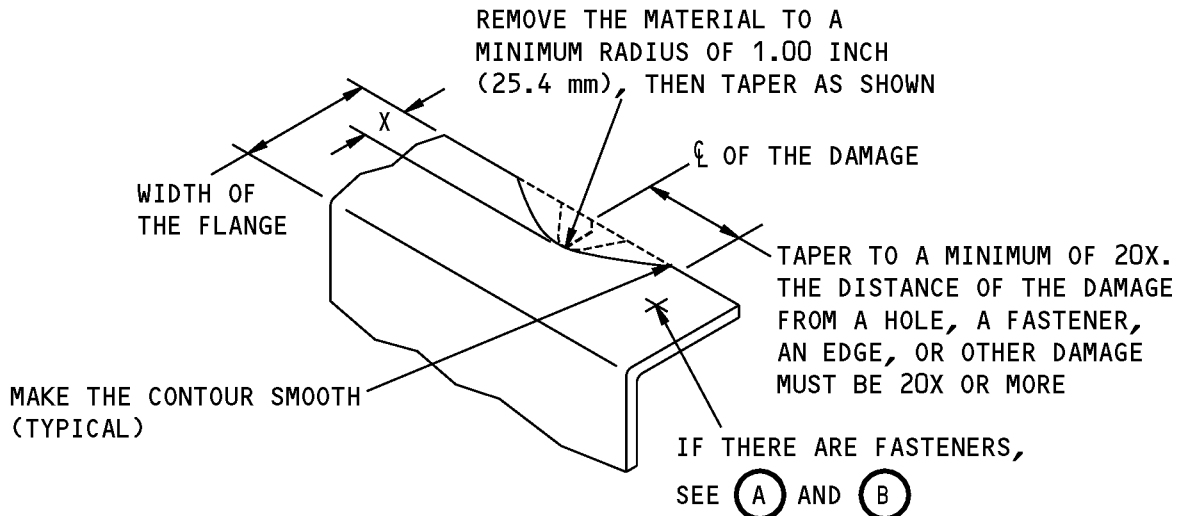
**Allowable Damage Limits  
Figure 103 (Sheet 2 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(F)



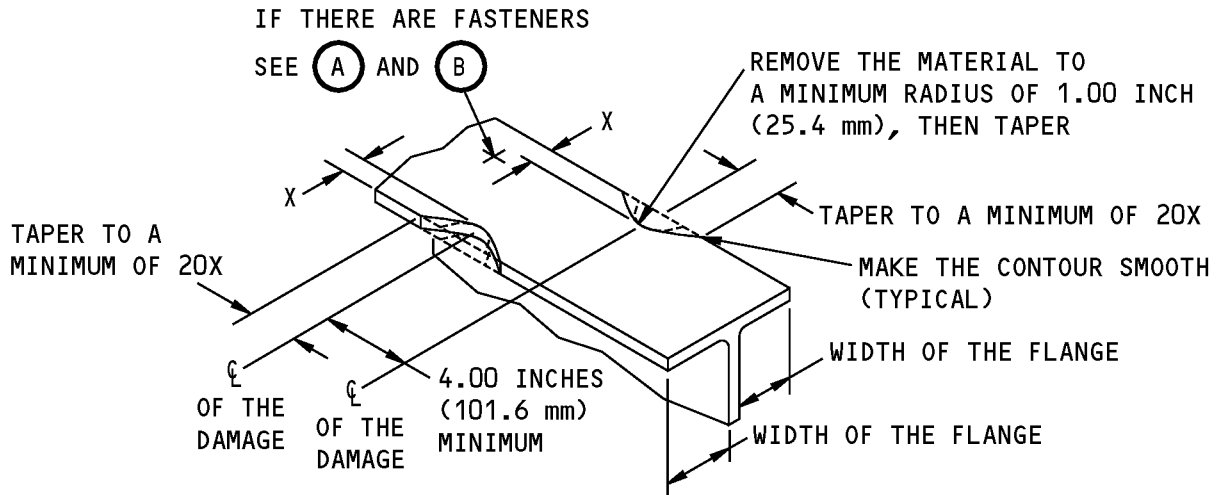
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(G)

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



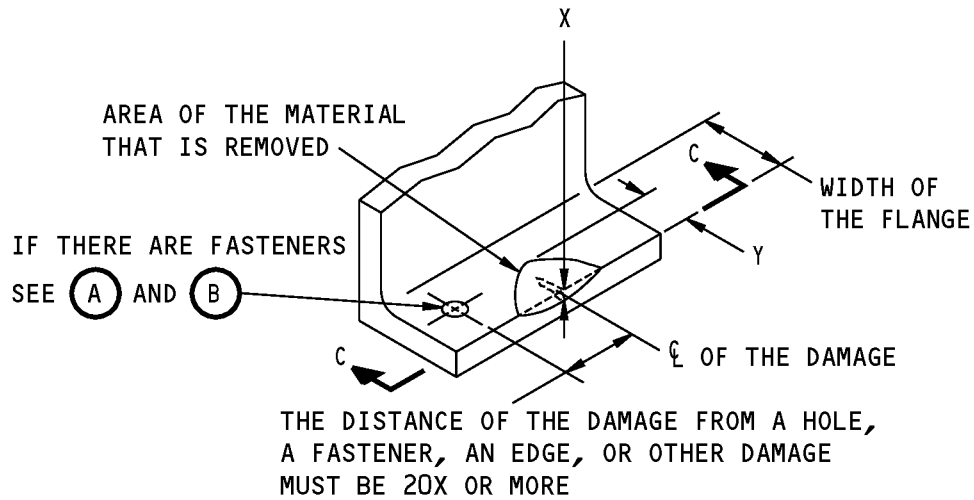
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(H)

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 7)**

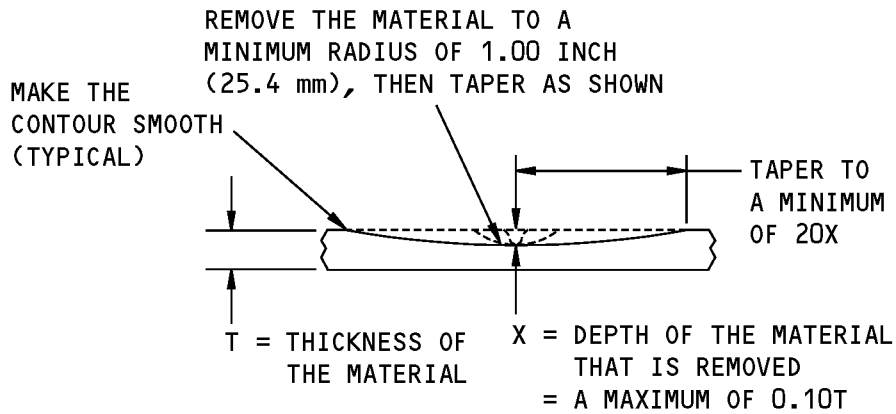
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

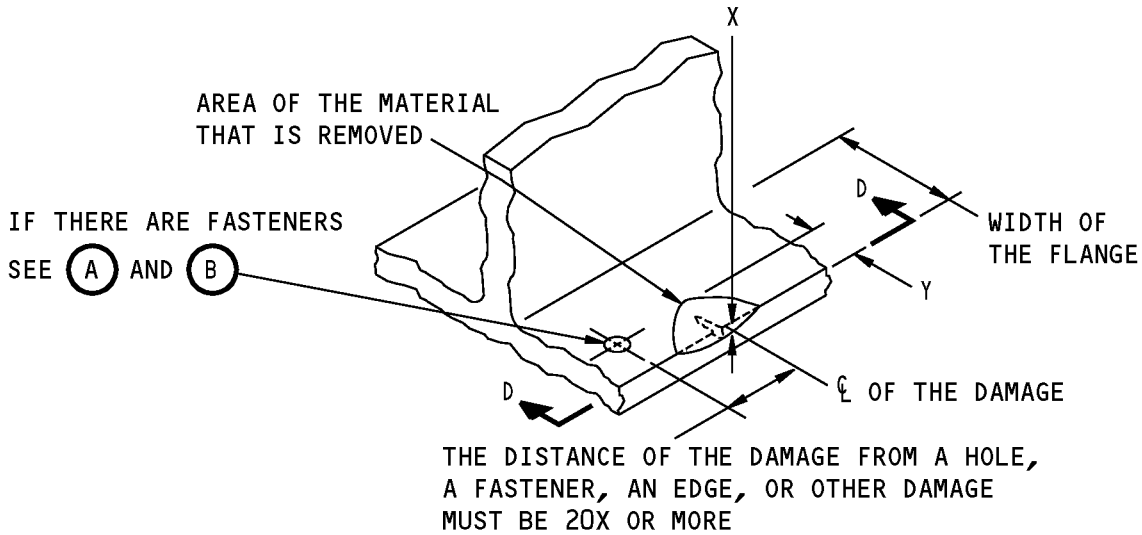
(I)



C-C

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 7)**

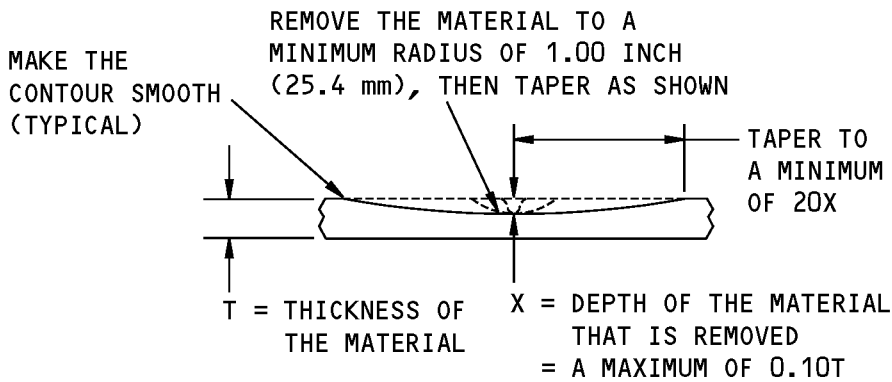
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

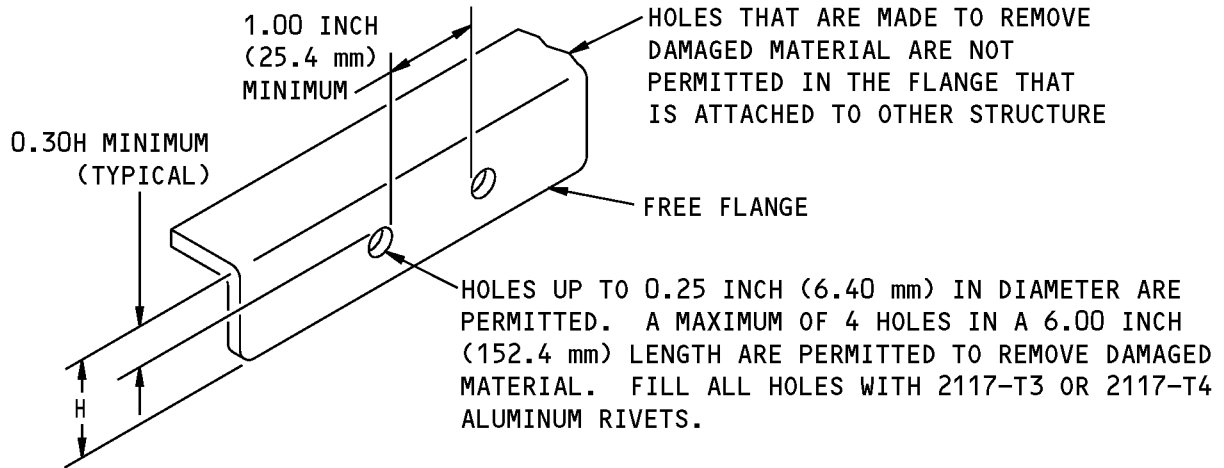
(J)



D-D

**Allowable Damage Limits  
Figure 103 (Sheet 6 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF  
DAMAGED MATERIAL IN THE FREE FLANGE**

(K)

**Allowable Damage Limits  
Figure 103 (Sheet 7 of 7)**

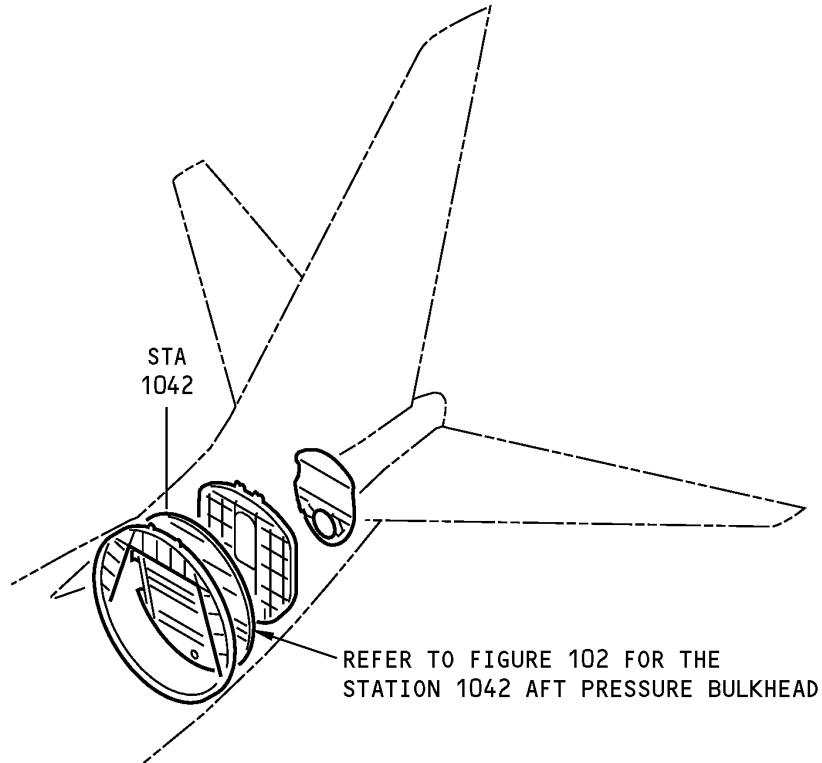


**737-800**  
**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 5 - STATION 1042 AFT PRESSURE BULKHEAD STRUCTURE**

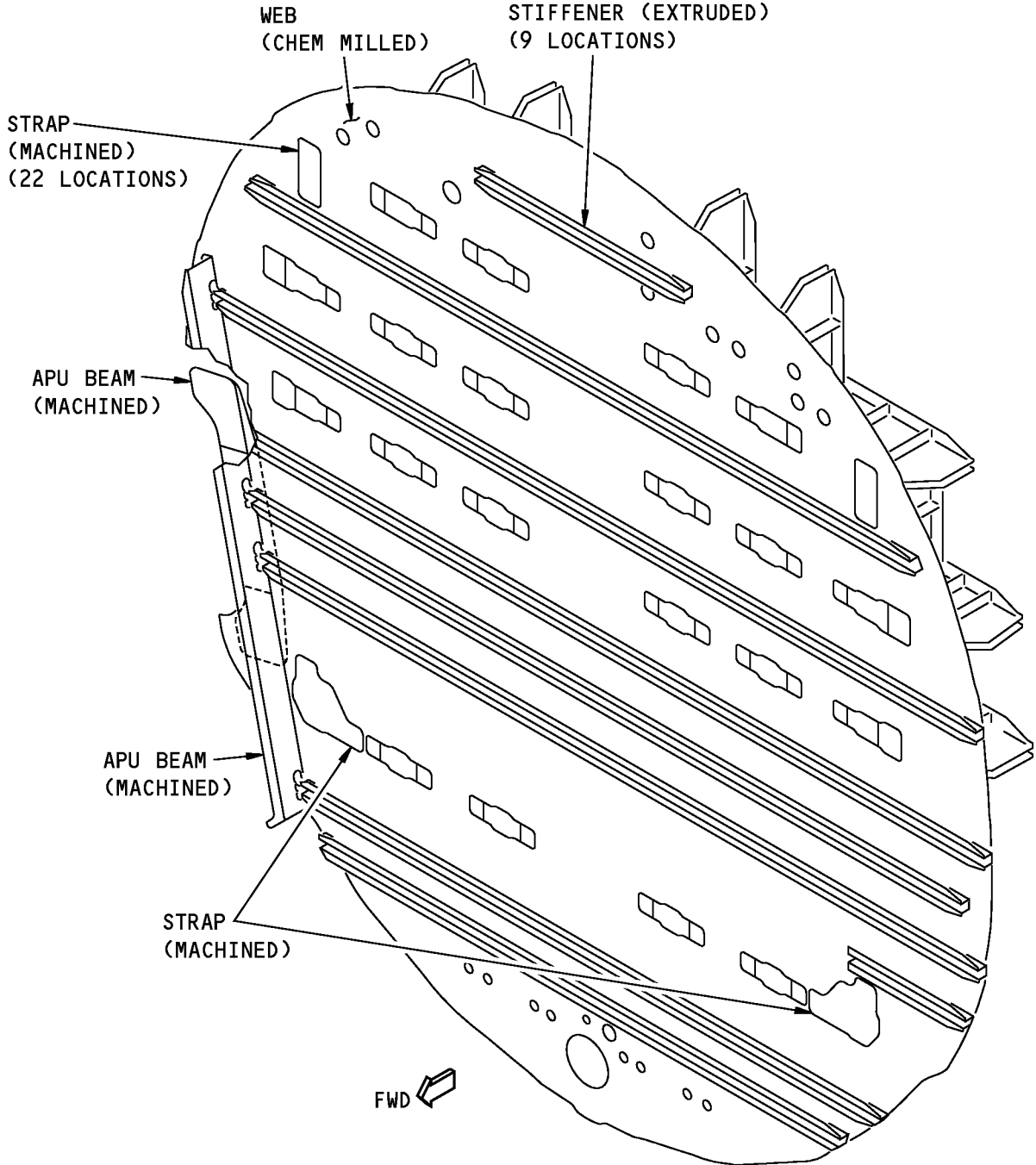
**1. Applicability**

- A. This subject gives the allowable damage limits for the Aft Pressure Bulkhead Structure - Station 1042 shown in Figure 101/ALLOWABLE DAMAGE 5.



**Aft Pressure Bulkhead Structure Station 1042 Location**  
**Figure 101**

**STRUCTURAL REPAIR MANUAL**



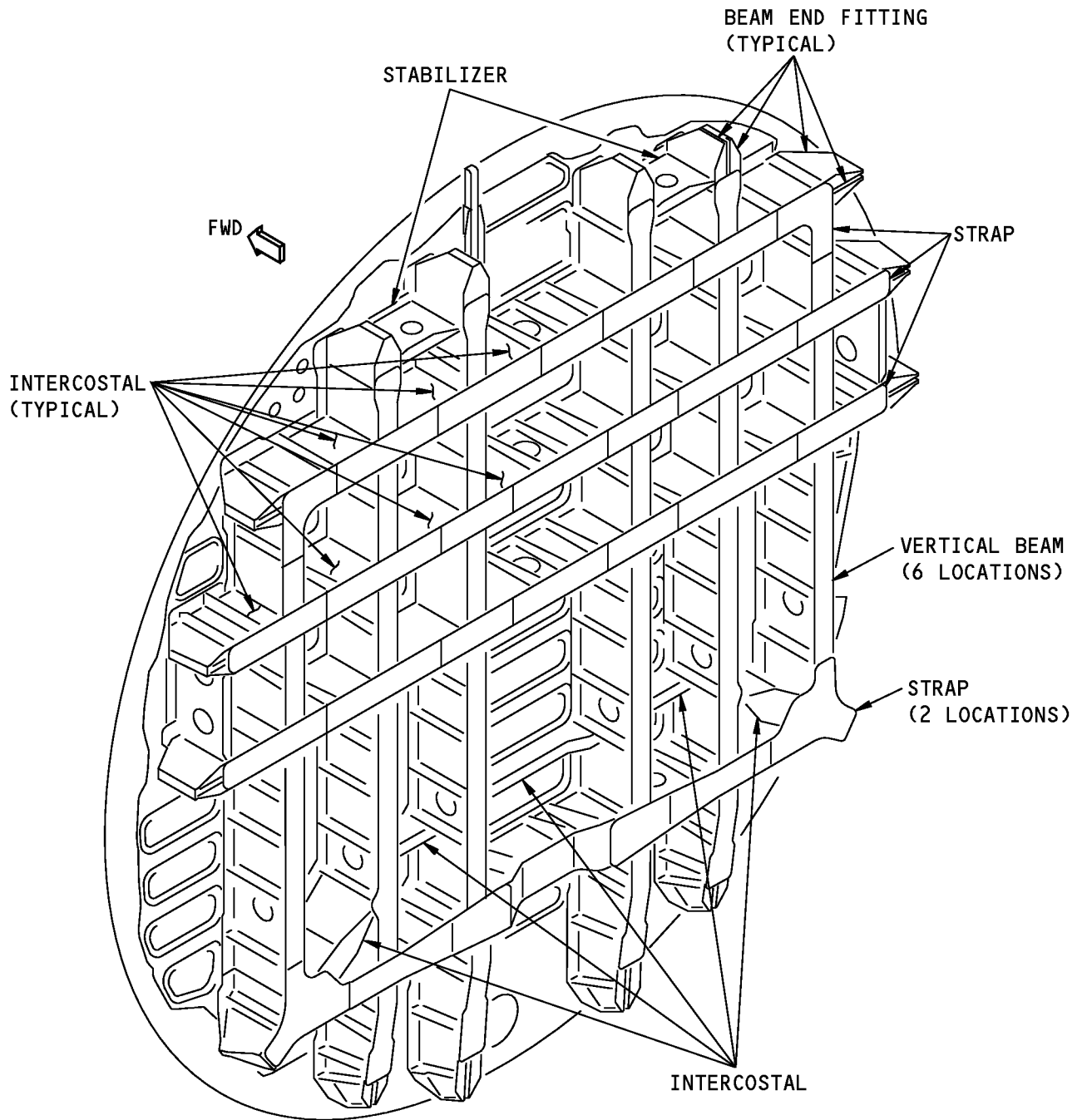
VIEW LOOKING AFT

DETAIL I

**Aft Pressure Bulkhead Structure Station 1042**

**Figure 102 (Sheet 1 of 3)**

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS SHOWN ARE MADE FROM MACHINED ALUMINUM  
VIEW WHEN YOU LOOK FORWARD

**DETAIL II**

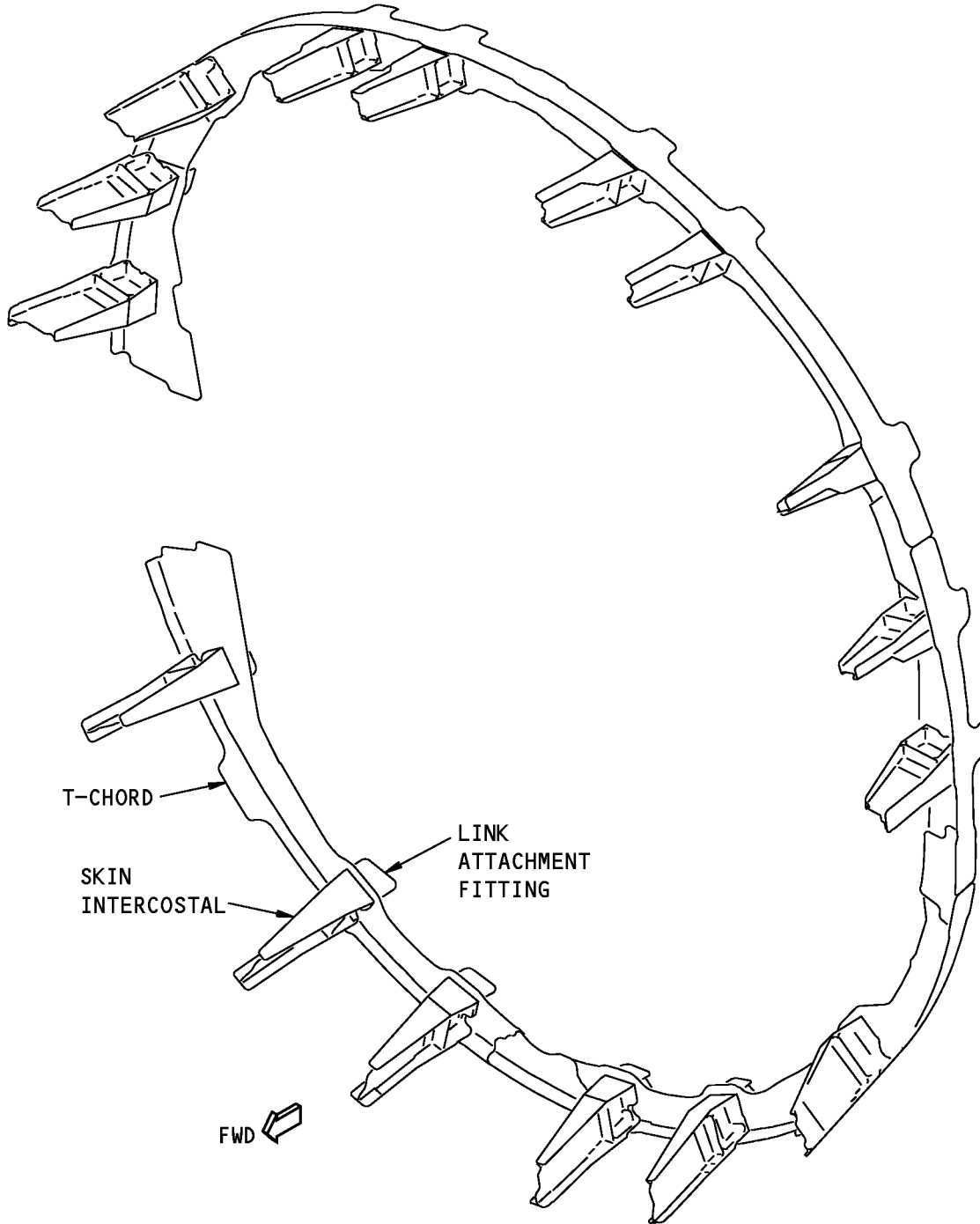
**Aft Pressure Bulkhead Structure Station 1042  
Figure 102 (Sheet 2 of 3)**

ALLOWABLE DAMAGE 5  
Page 103  
Mar 10/2007

**53-80-08**

D634A210

**737-800  
STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS SHOWN ARE MADE FROM MACHINED ALUMINUM

**VIEW LOOKING AFT**

**DETAIL III**

**Aft Pressure Bulkhead Structure Station 1042**

**Figure 102 (Sheet 3 of 3)**

ALLOWABLE DAMAGE 5

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Mar 10/2007

**53-80-08**

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**737-800  
STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Table 101/ALLOWABLE DAMAGE 5 for the allowable damage limits that are applicable to each type of structure.

**Table 101:**

STRUCTURE TYPE ALLOWABLE DAMAGE				
TYPE OF STRUCTURE	EDGE	SURFACE DAMAGE	DENTS	HOLES AND PUNCTURES
T-CHORD	X	X	-	-
WEB	X	-	-	-
STIFFENER	X	X	-	-
BEAM CHORDS	X	X	-	-
WEB	X	X	X	X
FITTING	-	X	-	-
APU BEAM	X	X	-	-
INTERCOSTAL CHORD	X	X	-	-
WEB	X	X	X	X
STRAP	X	X	-	-
LINK ATTACHMENT FITTING	X	X	-	-
SKIN INTERCOSTAL	X	X	-	-

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS



**737-800**  
**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

**A. Edge Cracks**

- (1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Details A, B, C, E, G and H.

**B. Surface Damage:**

- (1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Details D, Details I and J.
- (2) Damage is not permitted to webs of the skin intercostals.

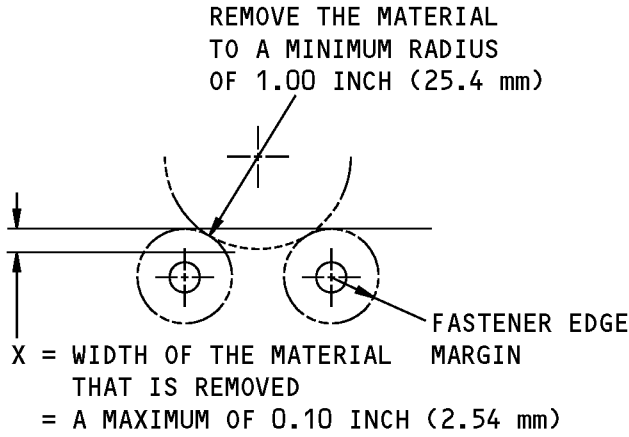
**C. Dents:**

- (1) Refer to Figure 103/ALLOWABLE DAMAGE 5, Detail F.
  - (a) Dents may not extend across an attached structure.

**D. Holes and Punctures:**

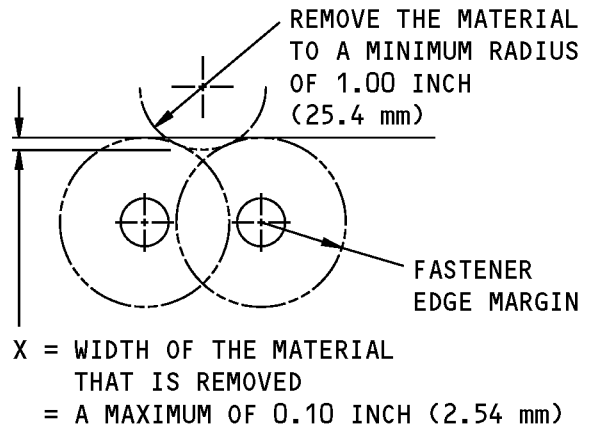
- (1) Remove the damage as shown in Figure 103/ALLOWABLE DAMAGE 5, Detail K.
- (2) Holes and Punctures are permitted if they are:
  - (a) Not be more than 0.25 inch (6.4 mm) in diameter
  - (b) Not closer than 1.0 inch (25.4 mm) to a fastener hole.
- (3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
  - (a) Install the rivet without sealant.

**STRUCTURAL REPAIR MANUAL**



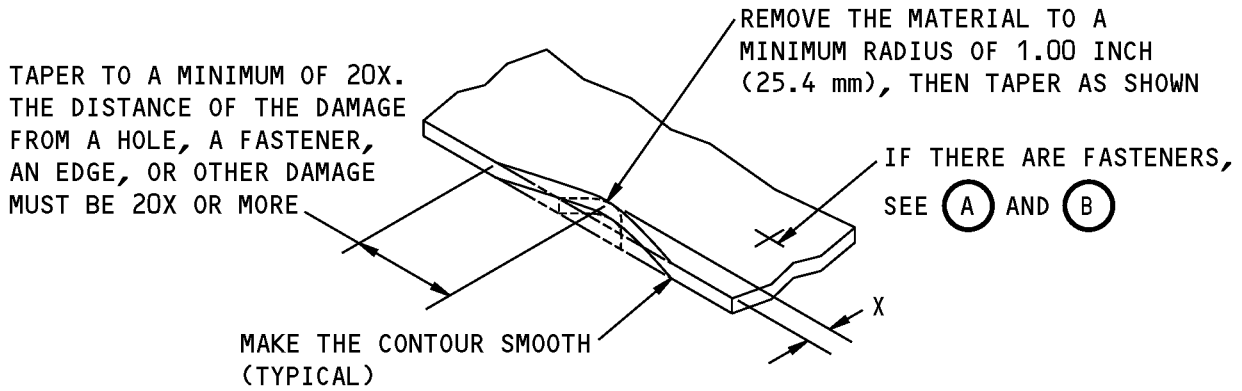
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



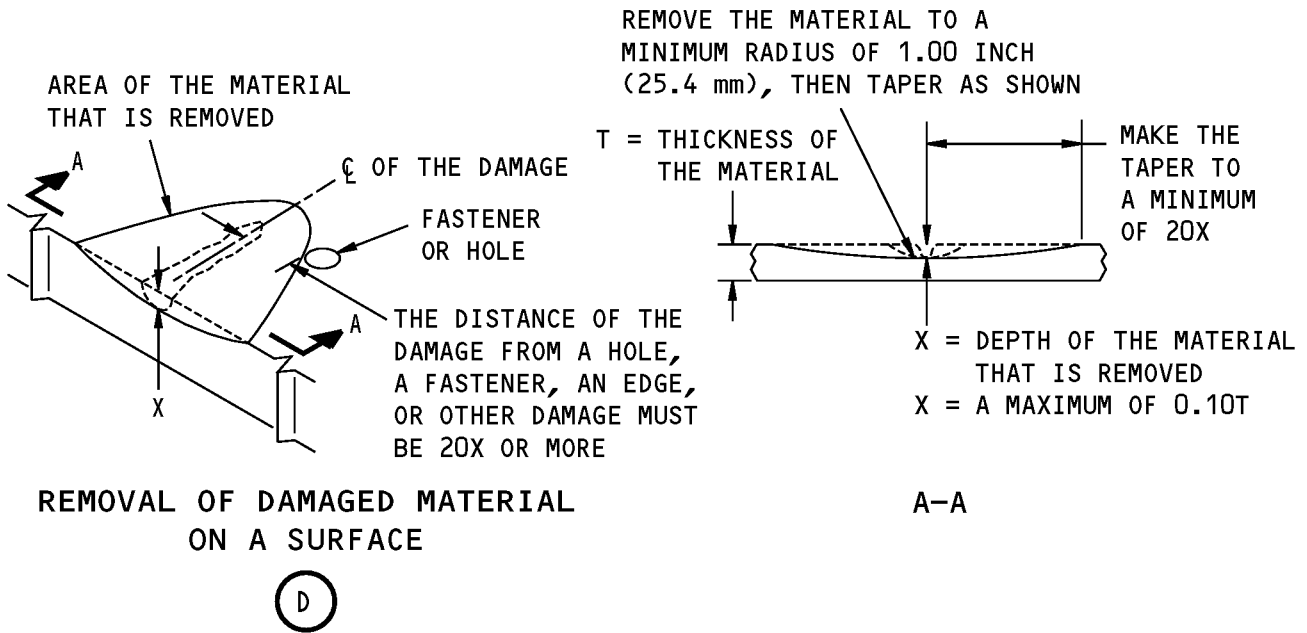
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

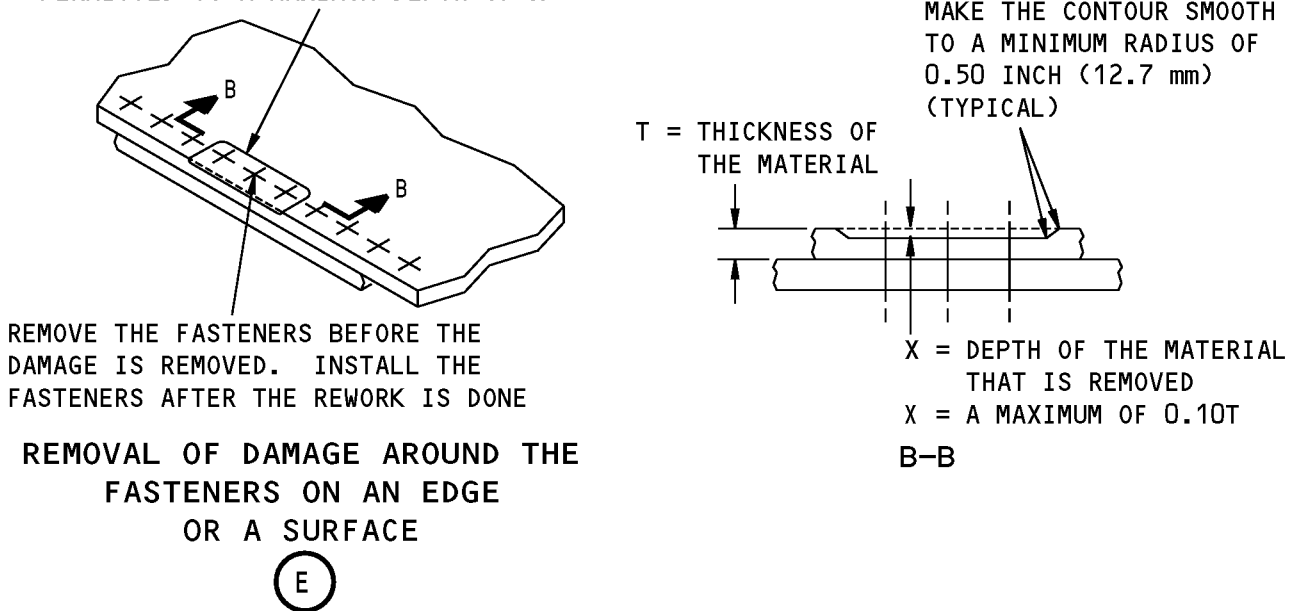
(C)

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



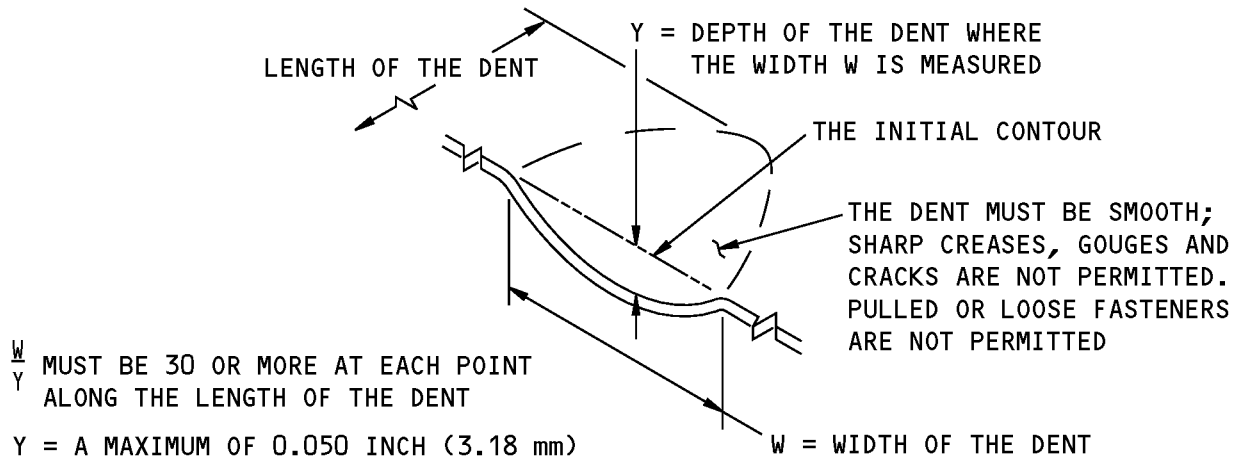
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



**Allowable Damage Limits  
Figure 103 (Sheet 2 of 7)**

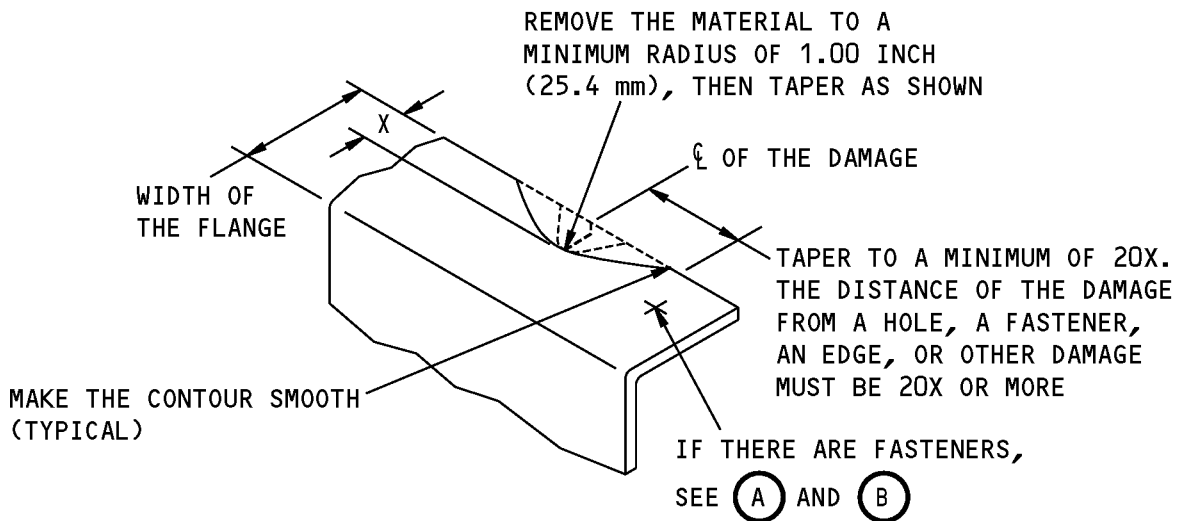


**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

Ⓕ



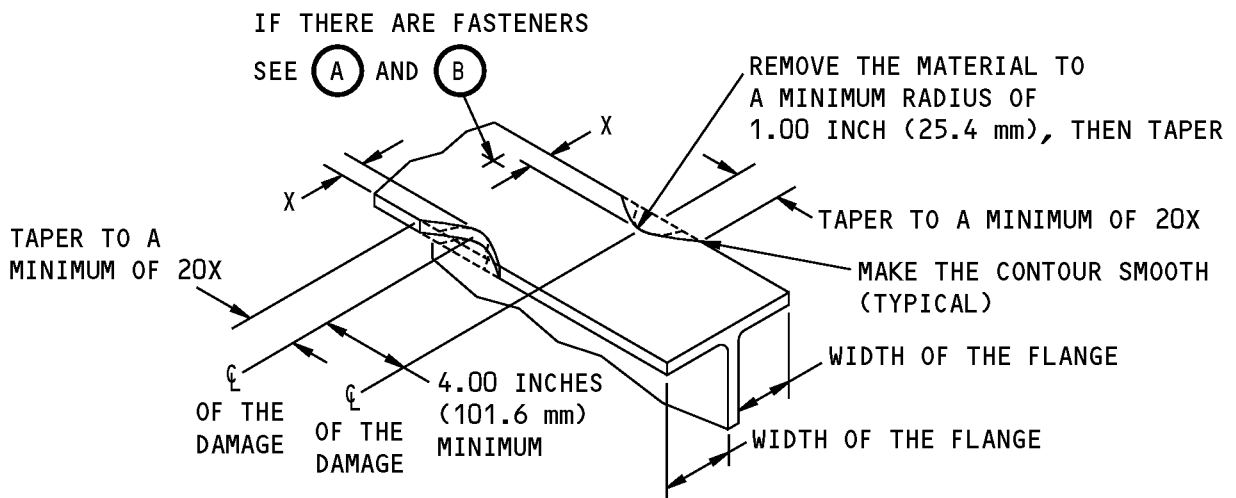
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE OR 0.10 INCH, WHICHEVER IS LESS

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

Ⓖ

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 7)**

**737-800  
STRUCTURAL REPAIR MANUAL**



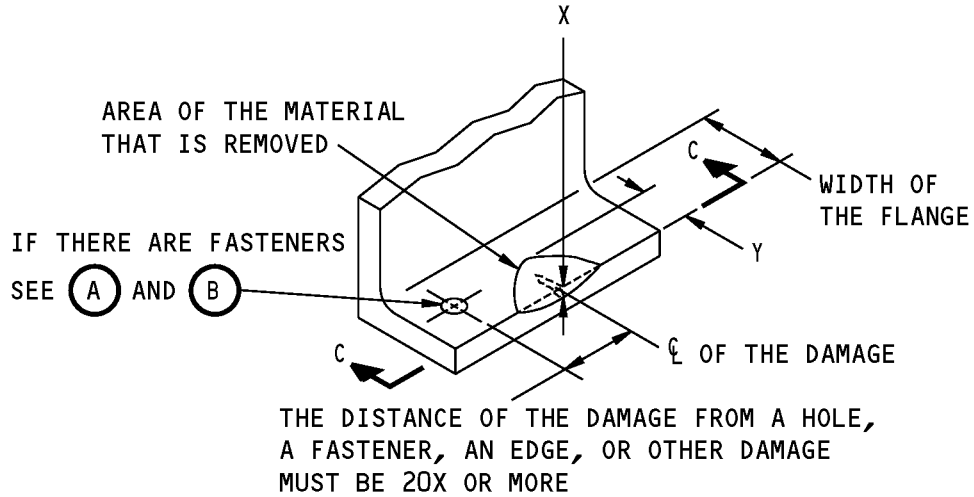
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF  
 THE FLANGE OR 0.10 INCH, WHICHEVER IS LESS

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(H)**

**Allowable Damage Limits  
 Figure 103 (Sheet 4 of 7)**

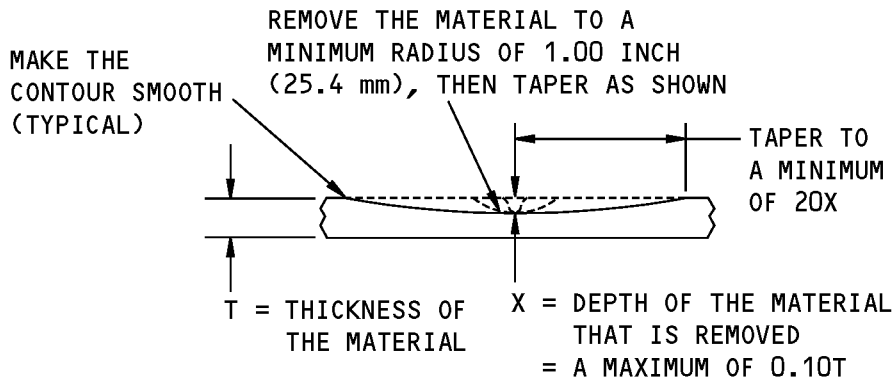
**STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE OR 0.10 INCH, WHICHEVER IS LESS

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE AT AN EDGE**

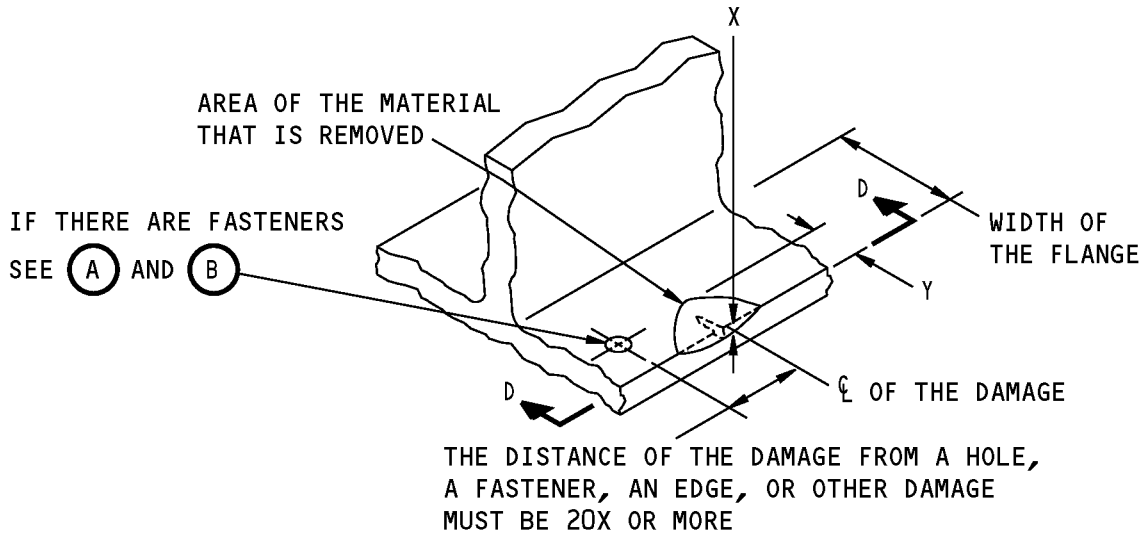
(I)



C-C

**Allowable Damage Limits  
 Figure 103 (Sheet 5 of 7)**

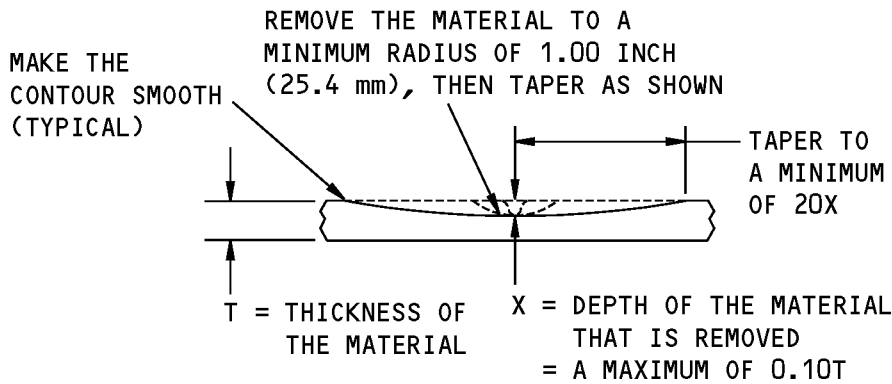
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE 0.10 INCH, WHICHEVER IS LESS

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

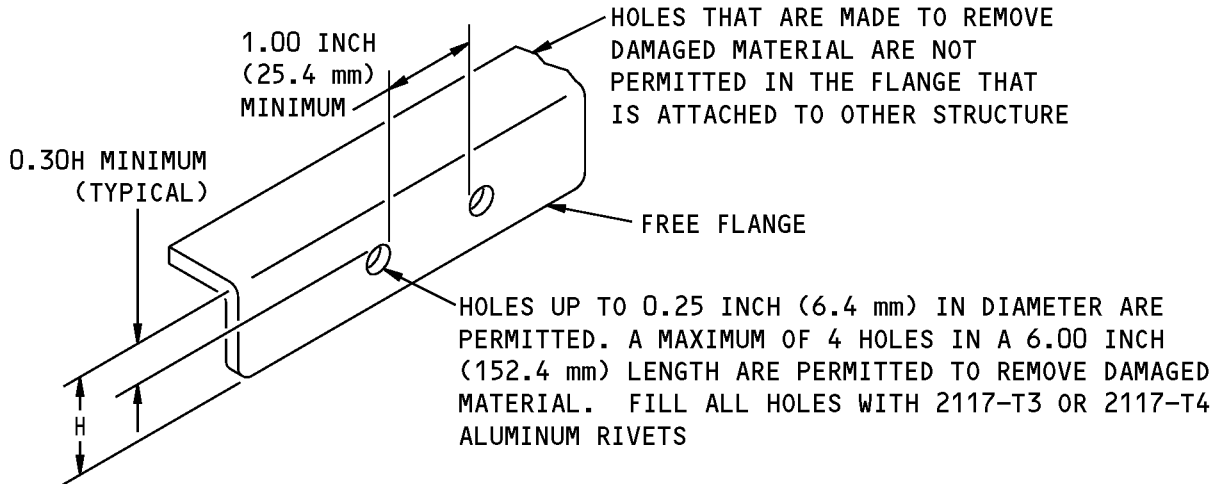
(J)



D-D

**Allowable Damage Limits  
Figure 103 (Sheet 6 of 7)**

737-800  
STRUCTURAL REPAIR MANUAL



NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

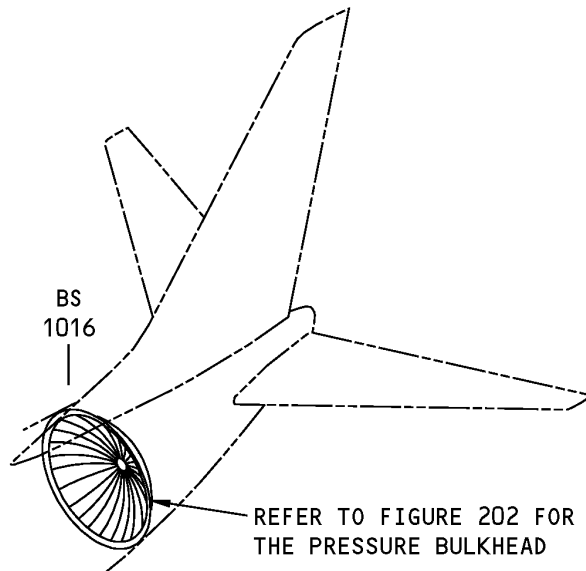
HOLES THAT ARE PERMITTED FOR THE REMOVAL OF  
DAMAGED MATERIAL IN THE FREE FLANGE

(K)

Allowable Damage Limits  
Figure 103 (Sheet 7 of 7)

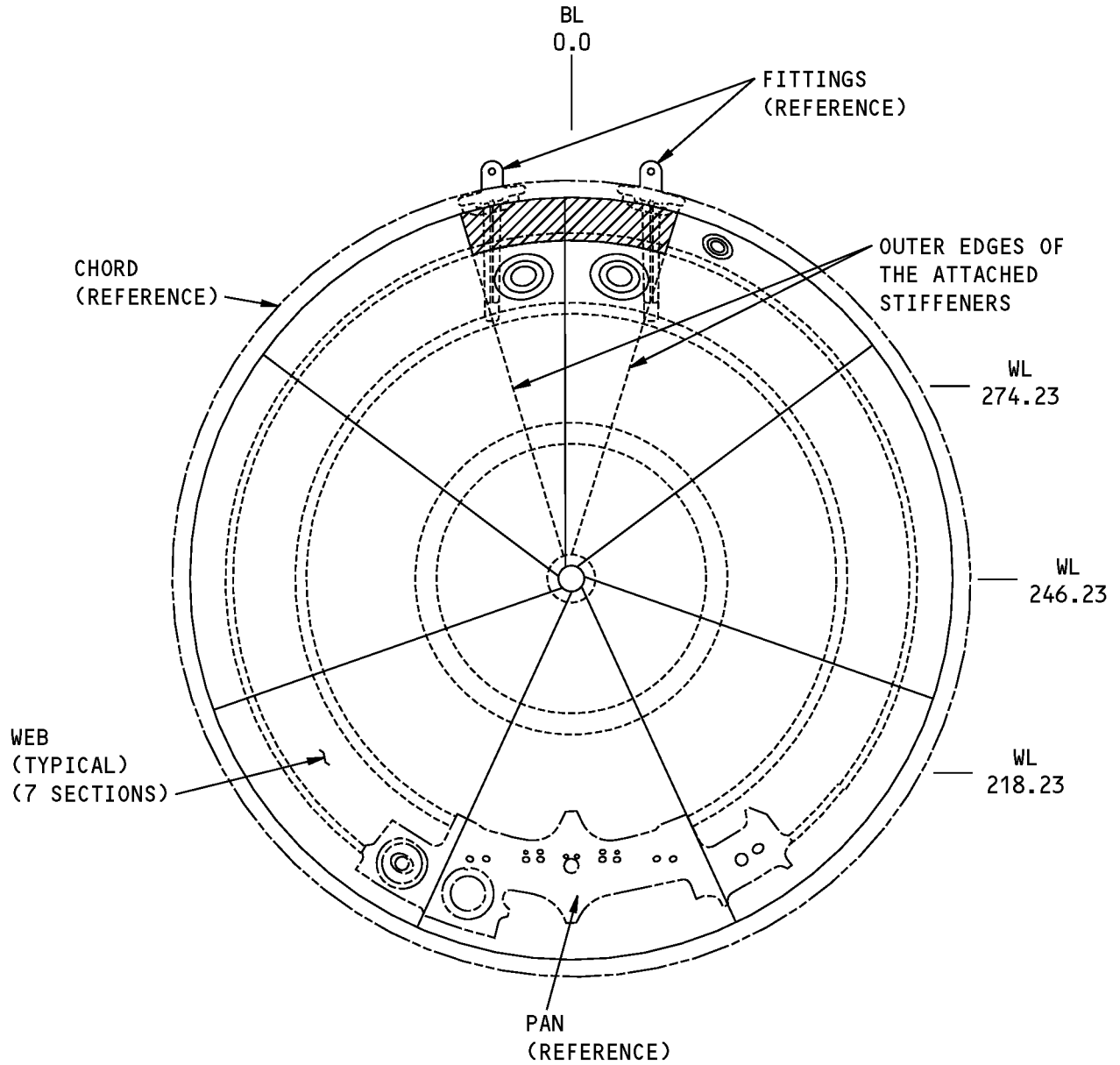
**STRUCTURAL REPAIR MANUAL****REPAIR 1 - BSTA 1016 PRESSURE BULKHEAD CUTOUT REPAIR****1. Applicability**

- A. Repair 1 is applicable to an "oil can" condition in the web of the BSTA 1016 Pressure Bulkhead as shown in Body Station 1016 Bulkhead Location, Figure 201/REPAIR 1, and Zone 1 in Body Station 1016 Pressure Bulkhead, Figure 202/REPAIR 1.
- B. Repair 1 is not applicable as shown in Zone 2 in Body Station 1016 Pressure Bulkhead, Figure 202/REPAIR 1.
- C. Repair 1 is not applicable to any other cause of damage other than oil cans.



**Body Station 1016 Bulkhead Location  
Figure 201**

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STRUCTURAL REPAIR MANUAL**



- ZONE 1 - REPAIR IS APPLICABLE
- ZONE 2 - REPAIR IS NOT APPLICABLE

**NOTE:** ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**REAR VIEW**

**Body Station 1016 Pressure Bulkhead  
Figure 202**



**737-800**  
**STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Repair 1 gives instructions for a Category B repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Repair 1 is a cutout repair that:
  - (1) Can be used in an area of the web that has a strap. Refer to Figures 203 and 204.
  - (2) Can be used in an area of the web that does not have a strap. Refer to Figure 205.
- C. Repair 1 is an alternative to Repair 2. Repair 2 does not cutout the damage.
- D. An "oil can" condition is a deflection that can occur in the web of a pressure bulkhead during a pressurization or depressurization cycle. The deflection can cause:
  - (1) The web of the pressure bulkhead to have a shorter fatigue life.

**3. References**

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-20-01, GENERAL	Protective Treatment of Metallic and Composite Materials
51-20-05, GENERAL	Repair Sealing
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 16	Aluminum Part Fastener Hole Inspection (Rotary Scanner)
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts
737 NDT Part 6, 53-10-41	Eddy Current BS 1016 Aft Pressure Bulkhead

**4. Repair Instructions**

- A. Get access to the repair area through the locations that follow (Refer to Body Station 1016 Bulkhead Location, Figure 201/REPAIR 1):
  - (1) Section 48 Blowout Door
  - (2) The aft cargo compartment.
- B. Cut and Remove the damaged area of the pressure bulkhead web, as necessary.
- C. Make the repair parts as given in Table 201/REPAIR 1 and as shown in Figures 203, 204, and 205. The material thickness and contour of the repair parts are to match the initial part thickness and contour.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Plate	1	Use 2024-T3 clad sheet that is 0.032 inch thick



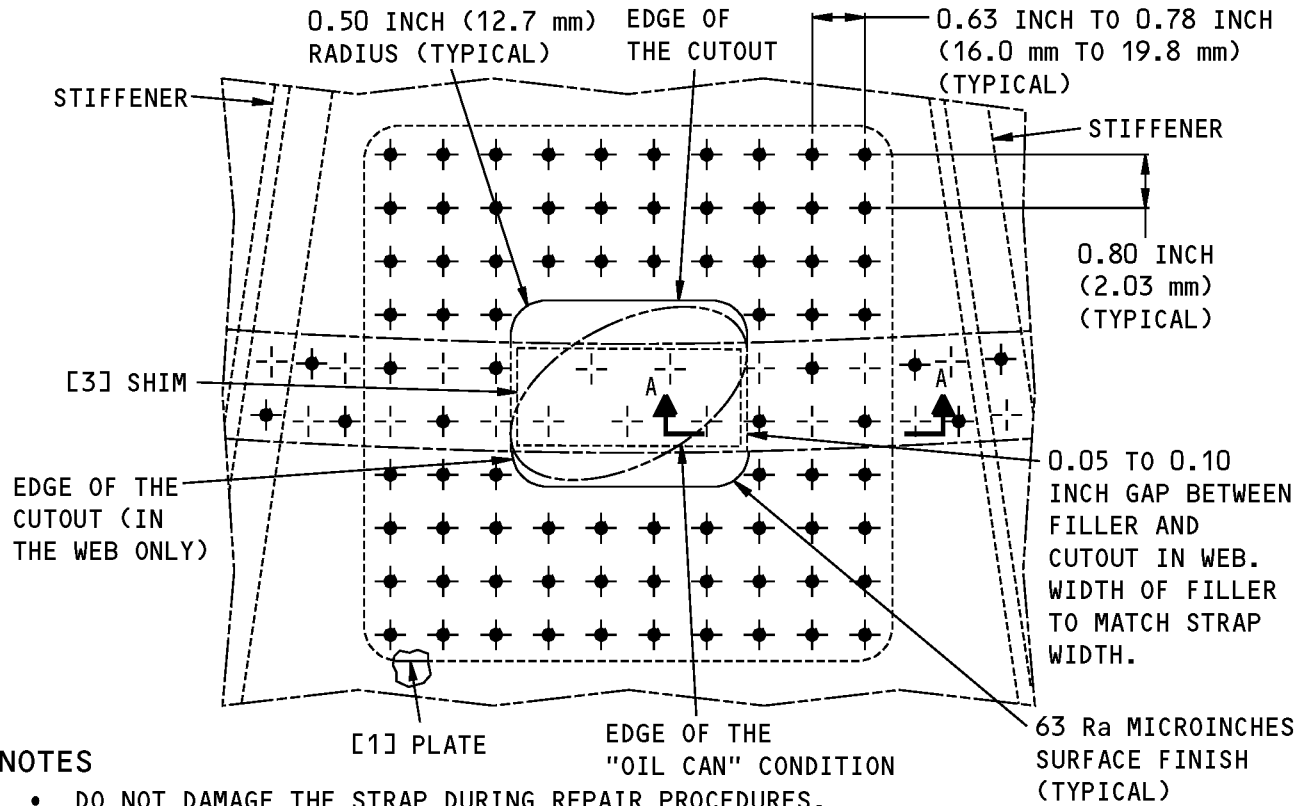


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**STRUCTURAL REPAIR MANUAL**

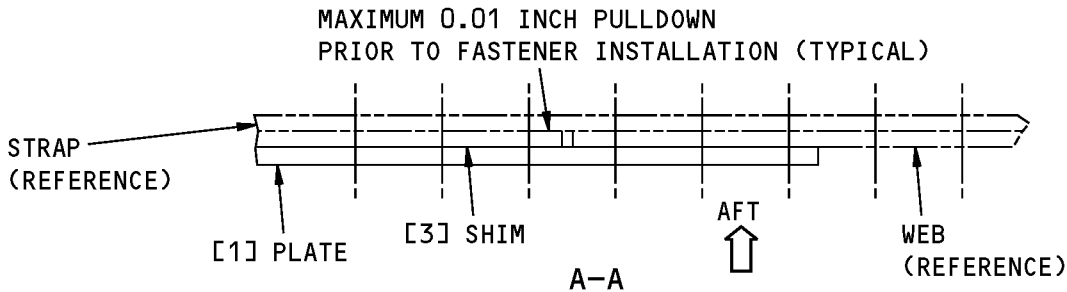
REPAIR MATERIAL			
[2]	Strap	1	Use 2024-T3 clad sheet that is the same gage as the initial strap
[3]	Shim	As Necessary	Use 2024-T3 clad sheet that has the necessary thickness

- (1) You can use a part number 148A2281 pressure bulkhead web and 65-46568 strap to make the repair parts.
  - (2) As an alternative, you can form the repair part contour. Form the repair part to all applicable sections of BAC5300 and instructions as given as follows:
    - (a) Skin quality as given in D6-9002
    - (b) Fit-up forces as given in BAC5300 11.1.5
    - (c) Metal thinning as given in BAC5300 11.1.2
    - (d) Surface waviness as given in BAC5300 11.1.4
    - (e) Surface integrity as given in BAC5300 11.3 Table XI
- D. Assemble the repair parts as shown in Figures 203, 204, and 205.
- E. Drill the fastener holes. Refer to 51-40-05 for the fastener hole sizes.
- F. Disassemble the repair parts.
- G. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.
- H. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01, GENERAL.
- I. Apply the finish.
  - (1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- J. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05, GENERAL.

**STRUCTURAL REPAIR MANUAL**



**VIEW LOOKING FORWARD**

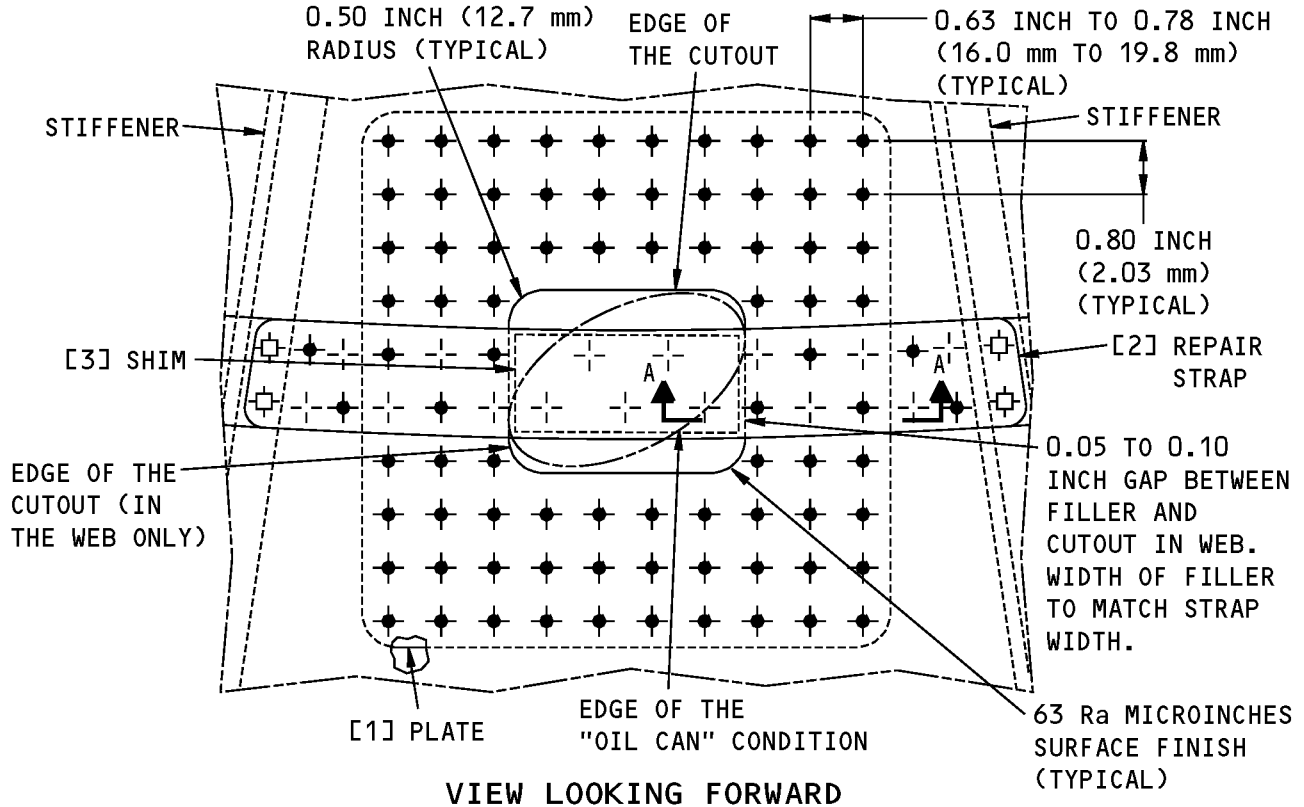


**FASTENER SYMBOLS**

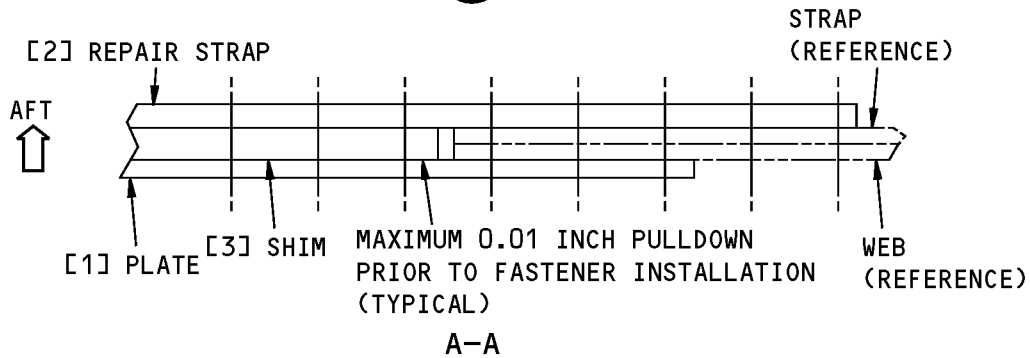
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET.
- ◆ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET. INSTALL A 5/32 INCH DIAMETER RIVET WITH 0.35 INCH MINIMUM EDGE MARGIN.

**Damage to the Web In a Strap Area In Which the Strap is Not Damaged**  
**Figure 203**

**STRUCTURAL REPAIR MANUAL**



(A)

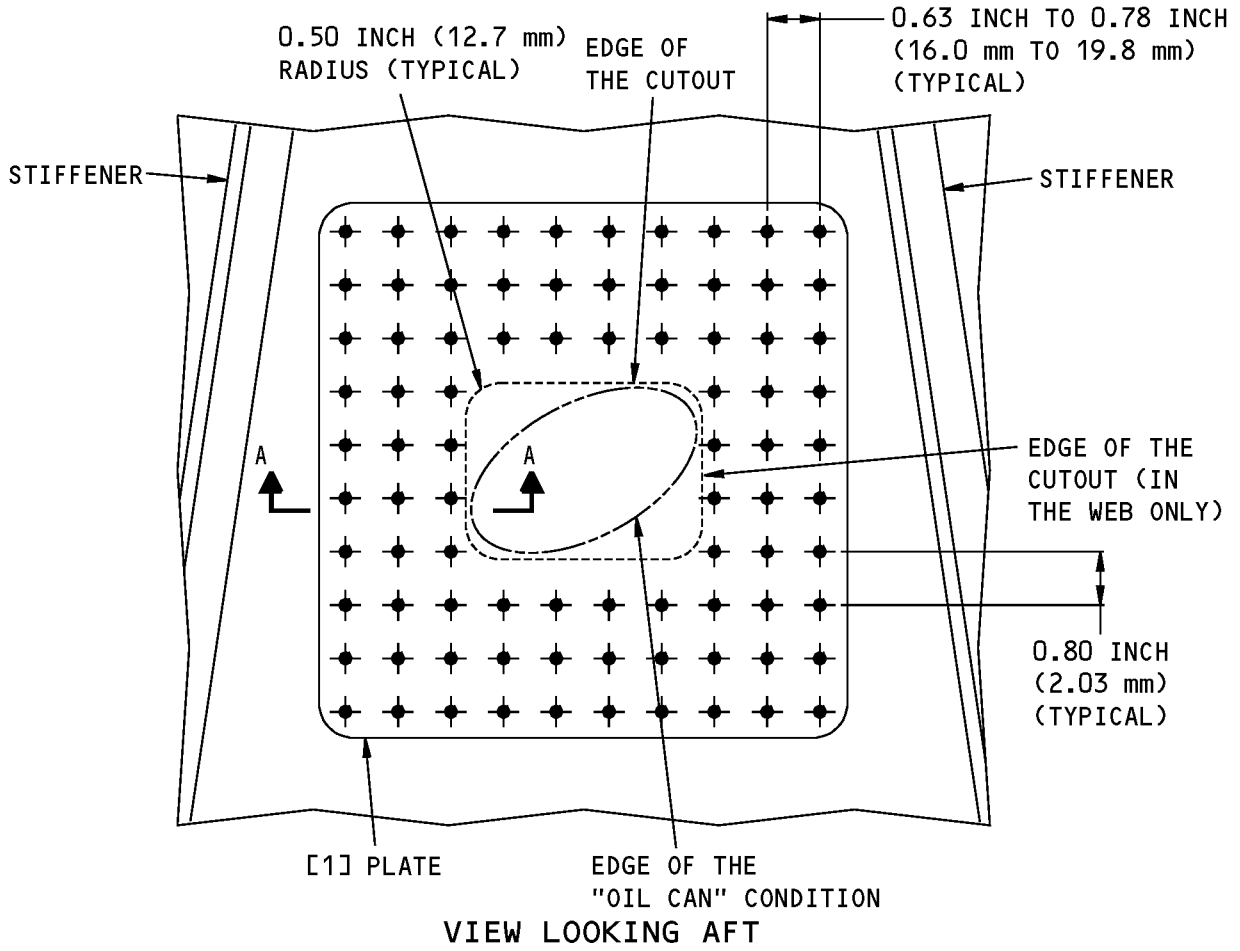


**FASTENER SYMBOLS**

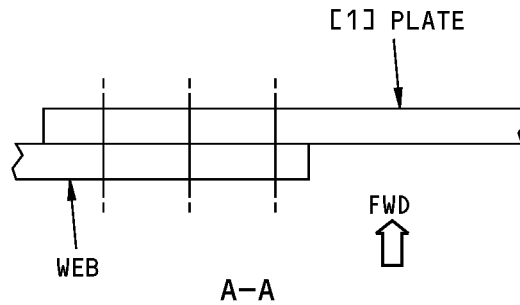
- ⊕ INITIAL FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET. INSTALL A 5/32 INCH DIAMETER RIVET USING 0.35 INCH MINIMUM EDGE MARGIN.
- ⊕ REPAIR FASTENER LOCATION. INSTALL A BACR15FT6D RIVET AT STRAP SPLICE LOCATIONS.

**Damage to the Web in the Area of a Strap in Which the Strap is Damaged**  
**Figure 204**

**STRUCTURAL REPAIR MANUAL**



(A)



**FASTENER SYMBOLS**

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS204705D RIVET. INSTALL 5/32 INCH DIAMETER RIVETS WITH 0.35 INCH MINIMUM EDGE MARGIN.

**Typical Repair for Damage to the Web That is Not in a Strap Area**  
**Figure 205**



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**STRUCTURAL REPAIR MANUAL**

**5. Inspection Instructions**

- A. Do an NDT inspection of the pressure web and repair plate for cracking at all fastener locations as given in Table 202 for airplanes that have not completed Service Bulletin 737-21-1149. Do an NDT inspection of the pressure web and repair plate for cracking at all fastener locations as given in Table 203 for airplanes that have completed Service Bulletin 737-21-1149.

**Table 202:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149)</b>			
<b>INSPECTION THRESHOLD</b>	<b>INSPECTION AND REPEAT INTERVALS</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
36,000 flight cycles from the time the repair is done	HFEC At fastener locations not common to a tear strap, inspect the web from the aft side of the pressure bulkhead and the repair plate from the forward side of the bulkhead.	24,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
36,000 flight cycles from the time the repair is done	HFEC At fastener locations common to a tear strap inspect the visible web and repair plate from the forward side of the bulkhead between the area bounded by the radial 'Z' stiffeners	10,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	LFEC (As an alternative to the HFEC inspection, from the aft side of the bulkhead, perform an LFEC inspection of the web at the fastener locations common to the tear strap between the area bounded by the radial 'z' stiffeners. Note that this inspection is an alternative for the Figure 203 repair only.)	4,000 flight cycles	NDT Part 6, 53-10-41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) then remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51-00-00, Figure 16. Contact The Boeing Company for further repair instructions.			

**Table 203:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)</b>			
<b>INSPECTION THRESHOLD</b>	<b>INSPECTION AND REPEAT INTERVALS</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
23,000 flight cycles from the time the repair is done	HFEC At fastener locations not common to a tear strap, inspect the web from the aft side of the pressure bulkhead and the repair plate from the forward side of the bulkhead.	20,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23

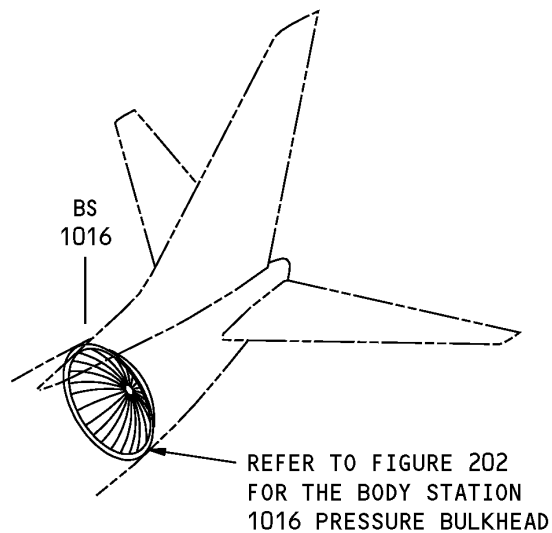


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STRUCTURAL REPAIR MANUAL**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)</b>			
<b>INSPECTION THRESHOLD</b>	<b>INSPECTION AND REPEAT INTERVALS</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
23,000 flight cycles from the time the repair is done	<b>HFEC</b> At fastener locations common to a tear strap inspect the visible web and repair plate from the forward side of the bulkhead between the area bounded by the radial 'Z' stiffeners	8,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
	<b>LFEC</b> (As an alternative to the HFEC inspection, from the aft side of the bulkhead, perform an LFEC inspection of the web at the fastener locations common to the tear strap between the area bounded by the radial 'z' stiffeners. Note that this inspection is an alternative for the Figure 203 repair only.)	3,000 flight cycles	NDT Part 6, 53-10-41
Note: If crack damage occurs when you do a Low Frequency Eddy Current Inspection (LFEC) then remove the fasteners and do an open hole eddy current inspection as given in NDT Part 6, 51-00-00, Figure 16. Contact The Boeing Company for further repair instructions.			

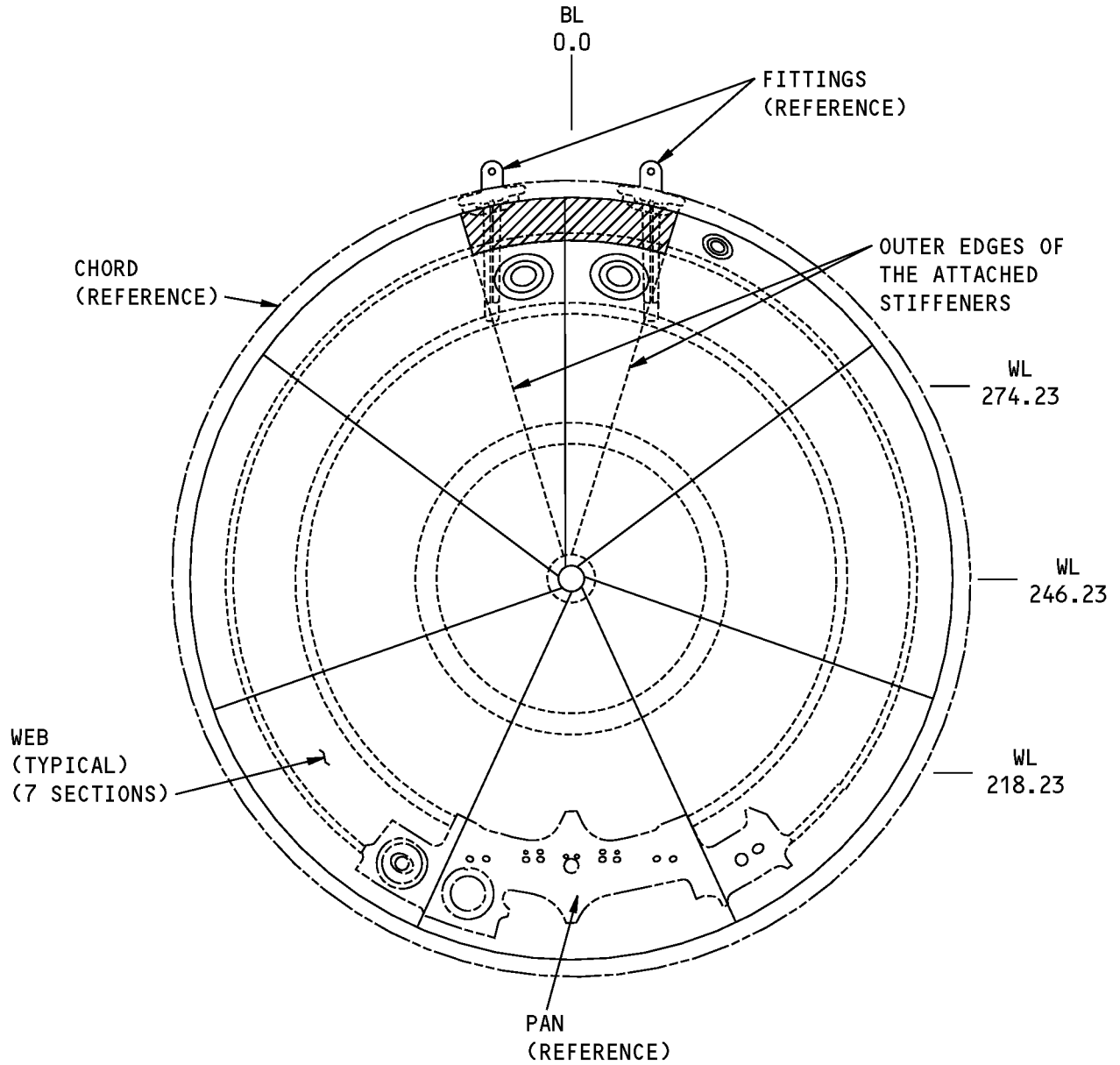
**STRUCTURAL REPAIR MANUAL****REPAIR 2 - BSTA 1016 PRESSURE BULKHEAD (OIL CAN) CONDITION****1. Applicability**

- A. Repair 2 is applicable to an "oil can" condition that is:
  - (1) In the web of the Pressure Bulkhead at BSTA 1016 as shown in Body Station 1016 Bulkhead Location, Figure 201/REPAIR 2
  - (2) Between the straps and stiffeners.
- B. Repair 2 is an alternative to Repair 1 when it is not necessary to cut out the pressure bulkhead.
- C. Repair 2 is not applicable if there is not sufficient clearance between the repair area and the straps, stiffeners, and doublers.



**Body Station 1016 Bulkhead Location  
Figure 201**

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STRUCTURAL REPAIR MANUAL**



 ZONE 1 - REPAIR IS APPLICABLE

 ZONE 2 - REPAIR IS NOT APPLICABLE

**NOTE:** ALL PARTS ARE MADE OF ALUMINUM EXCEPT AS NOTED.

**REAR VIEW**

**Body Station 1016 Pressure Bulkhead  
Figure 202**





## 737-800 STRUCTURAL REPAIR MANUAL

### 2. General

- A. Repair 2 gives instructions for a Category B repair. Refer to SRM 51-00-06 to find the definitions of the different categories of repairs.
- B. Repair 2 is a patch repair that:
  - (1) Cannot be used in an area that has a strap
  - (2) Cannot be used in areas where there is not sufficient clearance between:
    - (a) The edge of the "oil can" condition
    - (b) The edge of the part [1] patch.
  - (3) Is an alternative to Repair 1 which cuts out the damage.
- C. An "oil can" condition is a deflection that can occur in the web of the pressure bulkhead when the cabin goes through the pressurization and depressurization cycle. The deflection can cause:
  - (1) A noise that is unsatisfactory to the passengers near the pressure bulkhead
  - (2) The web to have a shorter fatigue life.

### 3. References

Reference	Title
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-00, GENERAL	Fasteners
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05	FASTENER HOLE SIZES
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-31-00 P/B 201	SEALS AND SEALING - MAINTENANCE PRACTICES
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

### 4. Repair Instructions

- A. Get access to the repair area through the locations that follow:
  - (1) The APU access doors
  - (2) The rear of the passenger cabin
  - (3) The aft cargo compartment.
- B. Put the pressure bulkhead web back to the initial contour with normal hand pressure, as necessary.
- C. Make the repair part as given in Table 201/REPAIR 2 and as shown in Figure 203/REPAIR 2. The material thickness and contour of the part [1] patch is to match the initial part thickness and contour.



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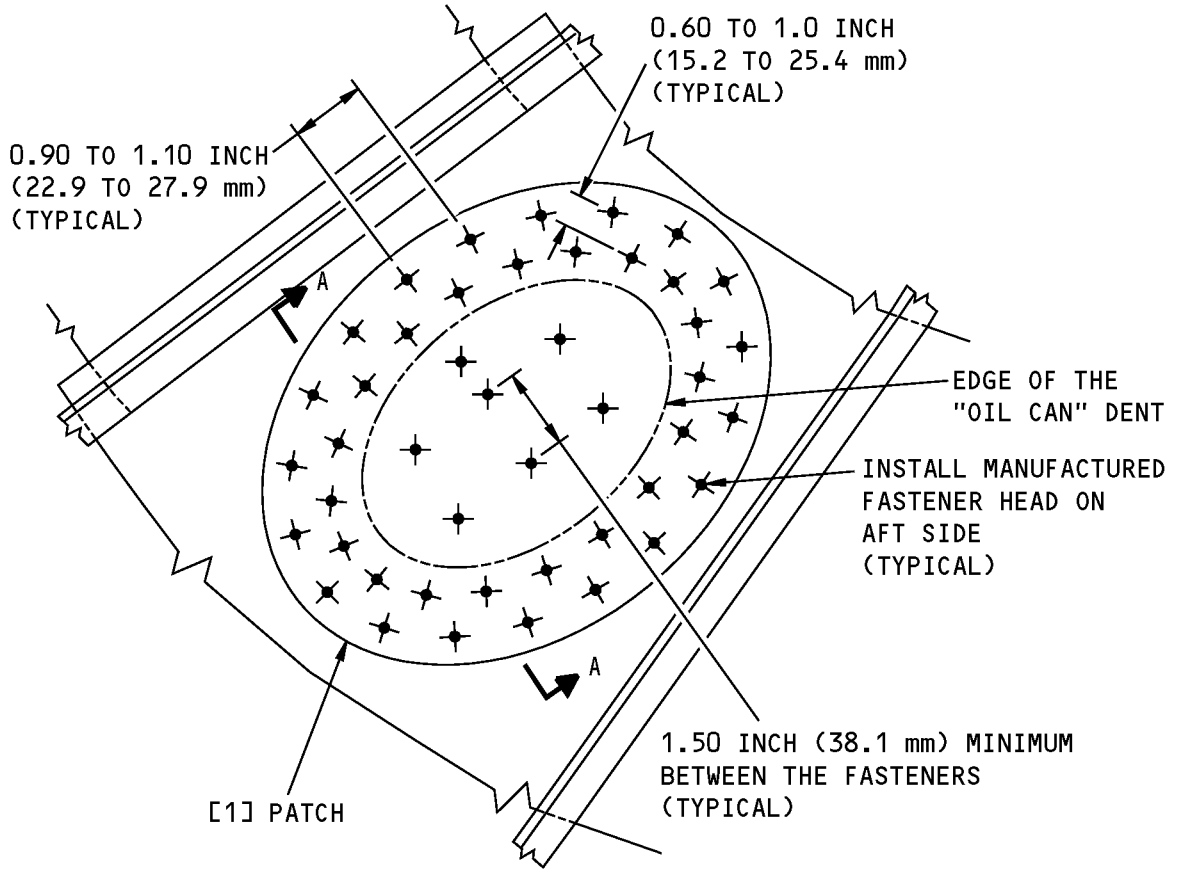
Table 201:

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Patch	1	Use dome web that is 0.032 inch thick. As an alternative, you can use 2024-T3 clad sheet contoured as given in BAC 5300.

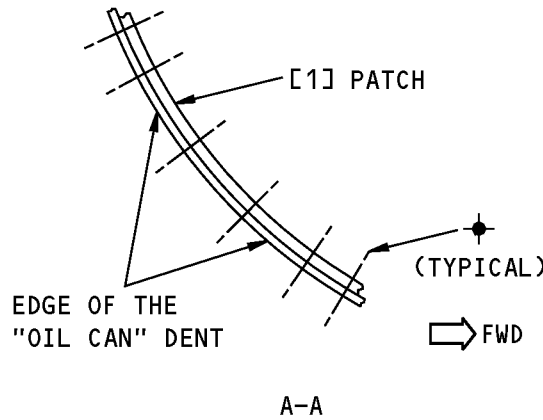
- (1) You can use a part number 148A2281 pressure bulkhead web to make the repair part.
- (2) As an alternative, you can form the repair part to contour. Form the repair part to all applicable instructions of BAC5300 and the sections that follow:
  - (a) Skin quality as given in D6-9002
  - (b) Fit-up forces as given in BAC5300 11.1.5
  - (c) Metal thinning as given in BAC5300 11.1.2
  - (d) Surface waviness as given in BAC5300 11.1.4
  - (e) Surface integrity as given in BAC5300 11.3 Table X1
- D. Assemble the repair part as shown in Body Station 1016 Pressure Bulkhead "Oil Can" Repair, Figure 203/REPAIR 2.
- E. Drill the fastener holes as shown in Body Station 1016 Pressure Bulkhead "Oil Can" Repair, Figure 203/REPAIR 2. Refer to 51-40-05 for the fastener hole sizes.

**NOTE:** Make sure you do not drill the fastener holes in the damaged area. This will permit the cutout of the damaged area if it is necessary.
- F. Assemble the repair part with temporary bolts.
- G. Make an inspection of the repair.
  - (1) Make sure that the part [1] patch keeps the web to its initial contour and does not cause creases, wrinkles, or buckles.
    - (a) If the initial contour is kept, continue to do the repair instructions that remain.
    - (b) If the initial contour is not kept or there is more damage, refer to Repair 1 for the cutout repair.
- H. Disassemble the repair parts.
- I. Remove all the nicks, scratches, burrs, and sharp edges from the repair parts and the initial parts.
- J. Apply a chemical conversion coating to the repair parts and to the bare surfaces of the initial parts. Refer to 51-20-01.
- K. Apply the finish.
  - (1) Apply two layers of BMS 10-11, Type I primer to the repair parts and the bare surfaces of the initial parts. Refer to SOPM 20-41-02.
- L. Install the repair parts.
  - (1) Apply BMS 5-95 sealant to the mating surfaces of the repair parts. Refer to 51-20-05.
  - (2) Install the fasteners without sealant.

**STRUCTURAL REPAIR MANUAL**



**VIEW OF THE REPAIR LOOKING AFT**



**FASTENER SYMBOLS**

✦ REPAIR FASTENER LOCATION. INSTALL A BACR15FT5D RIVET. AS AN ALTERNATIVE, INSTALL A BACR15BB5D OR AN MS20470D5 RIVET. INSTALL ALL 5/32 INCH DIAMETER RIVETS WITH 0.34 INCH MINIMUM EDGE MARGIN.

**Body Station 1016 Pressure Bulkhead "Oil Can" Repair  
Figure 203**



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STRUCTURAL REPAIR MANUAL**

**5. Inspection Instructions**

- A. Do an NDT inspection of the pressure web for cracking at all fastener locations as given in Table 202 for airplanes that have not completed Service Bulletin 737-21-1149. Do an NDT inspection of the pressure web for cracking at all fastener locations as given in Table 203 for airplanes that have completed Service Bulletin 737-21-1149.

**Table 202:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE NOT COMPLETED SERVICE BULLETIN 737-21-1149)</b>			
<b>INSPECTION THRESHOLD</b>	<b>REPEAT INSPECTION ALTERNATIVES</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
36,000 flight cycles from the time the repair is done	HFEC Inspect the web from the aft side of the pressure bulkhead (See Note)	24,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
Note: If crack damage occurs then contact The Boeing Company for further repair instructions.			

**Table 203:**

<b>CATEGORY B REPAIR INSPECTION REQUIREMENTS (FOR AIRPLANES THAT HAVE COMPLETED SERVICE BULLETIN 737-21-1149)</b>			
<b>INSPECTION THRESHOLD</b>	<b>REPEAT INSPECTION ALTERNATIVES</b>		
	<b>METHOD</b>	<b>INTERVAL</b>	<b>REFERENCE</b>
23,000 flight cycles from the time the repair is done	HFEC Inspect the web from the aft side of the pressure bulkhead (See Note)	20,000 flight cycles	NDT Part 6, 51-00-00, Figure 4 or 23
Note: If crack damage occurs then contact The Boeing Company for further repair instructions.			



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## STRUCTURAL REPAIR MANUAL

### REPAIR 3 - SECTION 48 BULKHEAD STRUCTURES

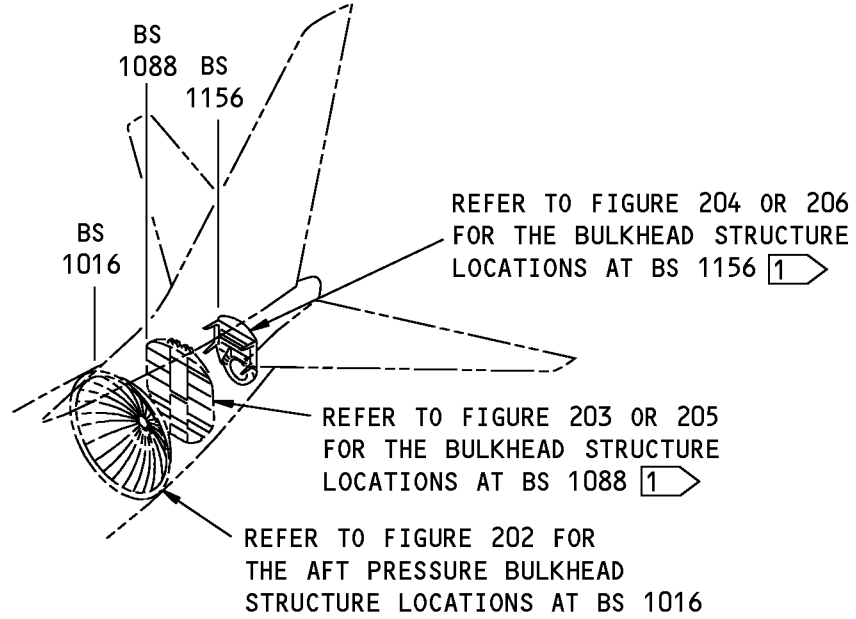
#### 1. Applicability

- A. Repair 3 is applicable to damage to the Section 48 bulkhead structures shown in Figure 201/REPAIR 3.

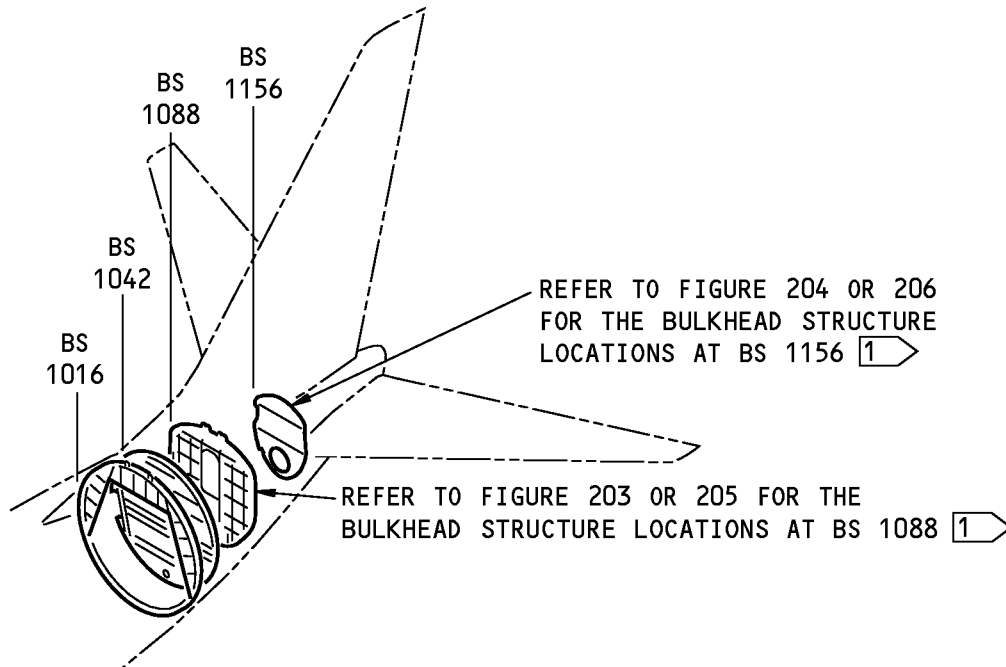
#### 2. General

- A. Typical web repairs in 51-70-13 are not approved for Section 48 Bulkheads. The typical repairs given in 51-70-11 and 51-70-12 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11 and 51-70-12 before you start a repair.
- C. If the aircraft has a domed aft pressure bulkhead at BS 1016, refer to Figure 202/REPAIR 3.
- D. If the aircraft has a flat aft pressure bulkhead at BS 1042, there are no repairs for the bulkhead structure at BS 1016 and BS 1042 at this time.
- E. Refer to Figure 203/REPAIR 3 for the bulkhead structure at BS 1088.
- F. Refer to Figure 204/REPAIR 3 for the bulkhead structure at BS 1156.
- G. This repair is not applicable to monolithic structure at BS 1088 or BS 1156 bulkheads.

**STRUCTURAL REPAIR MANUAL**



**AIRCRAFT WITH A DOMED AFT PRESSURE BULKHEAD AT BS 1016**



**AIRCRAFT WITH A FLAT AFT PRESSURE BULKHEAD AT BS 1042**

**NOTES**

- 1 REFER TO FIGURE 203 AND 204 FOR THE AIRPLANE LINE NUMBERS 1 THRU 1198.  
REFER TO FIGURE 205 AND 206 FOR THE AIRPLANE LINE NUMBERS 1199 AND ON.

**Section 48 Bulkhead Locations  
Figure 201**

## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-08	FUSELAGE BULKHEADS - SECTION 48

### 4. Repair Instructions

#### A. Station 1016 Aft Pressure Bulkhead Structure, Front Side

- (1) Refer to Table 201/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1016 aft pressure bulkhead.

**NOTE:** If necessary, refer to 53-80-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE AFT PRESSURE BULKHEAD AT BS 1016	
COMPONENT	REPAIR
Stiffeners, Intercostals, Channel, Splice Angle, Frame Chord (FORMED PARTS)	Refer to SRM 51-70-11
Beams, Channels, Stiffeners, Angle Stiffener (EXTRUDED PARTS)	Refer to SRM 51-70-12
Dome Web	Refer to SRM 53-80-08, Repairs 1 and 2
Cover Dome, Pan, Pan Dome, Doublers, Frame Chords (extrusion), Pressure Chord, Webs Other than the Dome Web	There are no repairs for these parts in the Structural Repair Manual at this time.

- (2) Refer to Aft Pressure Bulkhead - BS 1016, Figure 202/REPAIR 3, Detail A for the structure on the forward side of the BS 1016 aft pressure bulkhead.

#### B. Station 1016 Aft Pressure Bulkhead Structure, Aft Side

- (1) Refer to Table 202/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1016 aft pressure bulkhead.

**NOTE:** If necessary, refer to 53-80-08, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 202:**

REPAIR REFERENCES FOR THE AFT SIDE OF THE AFT PRESSURE BULKHEAD AT BS 1016	
COMPONENT	REPAIR
Straps, Triplers, Stiffeners, Pan (FORMED PARTS)	Refer to SRM 51-70-11
Angle, Stiffeners, Stiffener Tees (EXTRUDED PARTS)	Refer to SRM 51-70-12
Doublers and Pan, Frame Chords (EXTRUDED), Chords	There are no repairs for these parts in the Structural Repair Manual at this time.

- (2) Refer to Aft Pressure Bulkhead - BS 1016, Figure 202/REPAIR 3, Detail C for the structure on the aft side of the BS 1016 aft pressure bulkhead.



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### STRUCTURAL REPAIR MANUAL

C. BS 1088 Bulkhead Structure, Forward Side

- (1) Refer to Table 203/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1088 bulkhead.

**NOTE:** If necessary, refer to 53-80-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 203:**

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE BULKHEAD AT BS 1088	
COMPONENT	REPAIR
Channels, Intercostals, Stiffeners (FORMED PARTS)	Refer to SRM 51-70-11
Chords, Tees (EXTRUDED) Stiffeners, Frame Chords, Angles (EXTRUDED)	Refer to SRM 51-70-12
Doublers, Pan Assembly, Fittings, Cylinder, Webs and Forged and Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

- (2) Refer to Figure 203/REPAIR 3 or Figure 205/REPAIR 3, Detail A for structure on the forward side of the BS 1088 bulkhead

D. BS 1088 Bulkhead Structure, Aft Side

- (1) Refer to Table 204/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1088 bulkhead.

**NOTE:** If necessary, refer to 53-80-08, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 204:**

REPAIR REFERENCES FOR THE AFT SIDE OF THE BULKHEAD AT BS 1088	
COMPONENT	REPAIR
Stiffeners (FORMED PARTS)	Refer to SRM 51-70-11
Stiffeners (EXTRUDED PARTS)	Refer to SRM 51-70-12
Doublers and Webs	There are no repairs for these parts in the Structural Repair Manual at this time.

- (2) Refer to Figure 203/REPAIR 3 or Figure 205/REPAIR 3, Detail B for structure on the aft side of the BS 1088 bulkhead

E. BS 1156 Bulkhead Structure, Forward Side

- (1) Refer to Table 205/REPAIR 3 to find the applicable repairs for structure on the forward side of the BS 1156 bulkhead.

**NOTE:** If necessary, refer to 53-80-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

**Table 205:**

REPAIR REFERENCES FOR THE FORWARD SIDE OF THE BULKHEAD AT BS 1156	
COMPONENT	REPAIR
Bulkhead Beams, Angle, Tee, Torque Box Chord (FORMED PARTS)	Refer to SRM 51-70-11
Beams, Failsafe Angle, Stiffeners, Tees, Failsafe Strap (EXTRUDED)	Refer to SRM 51-70-12





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REPAIR REFERENCES FOR THE FORWARD SIDE OF THE BULKHEAD AT BS 1156	
COMPONENT	REPAIR
Failsafe Straps, Support Channels, and Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Figure 204/REPAIR 3 or Figure 206/REPAIR 3, Detail A for structure on the forward side of the BS 1156 bulkhead

F. BS 1156 Bulkhead Structure, Aft Side

(1) Refer to Table 206/REPAIR 3 to find the applicable repairs for structure on the aft side of the BS 1156 bulkhead.

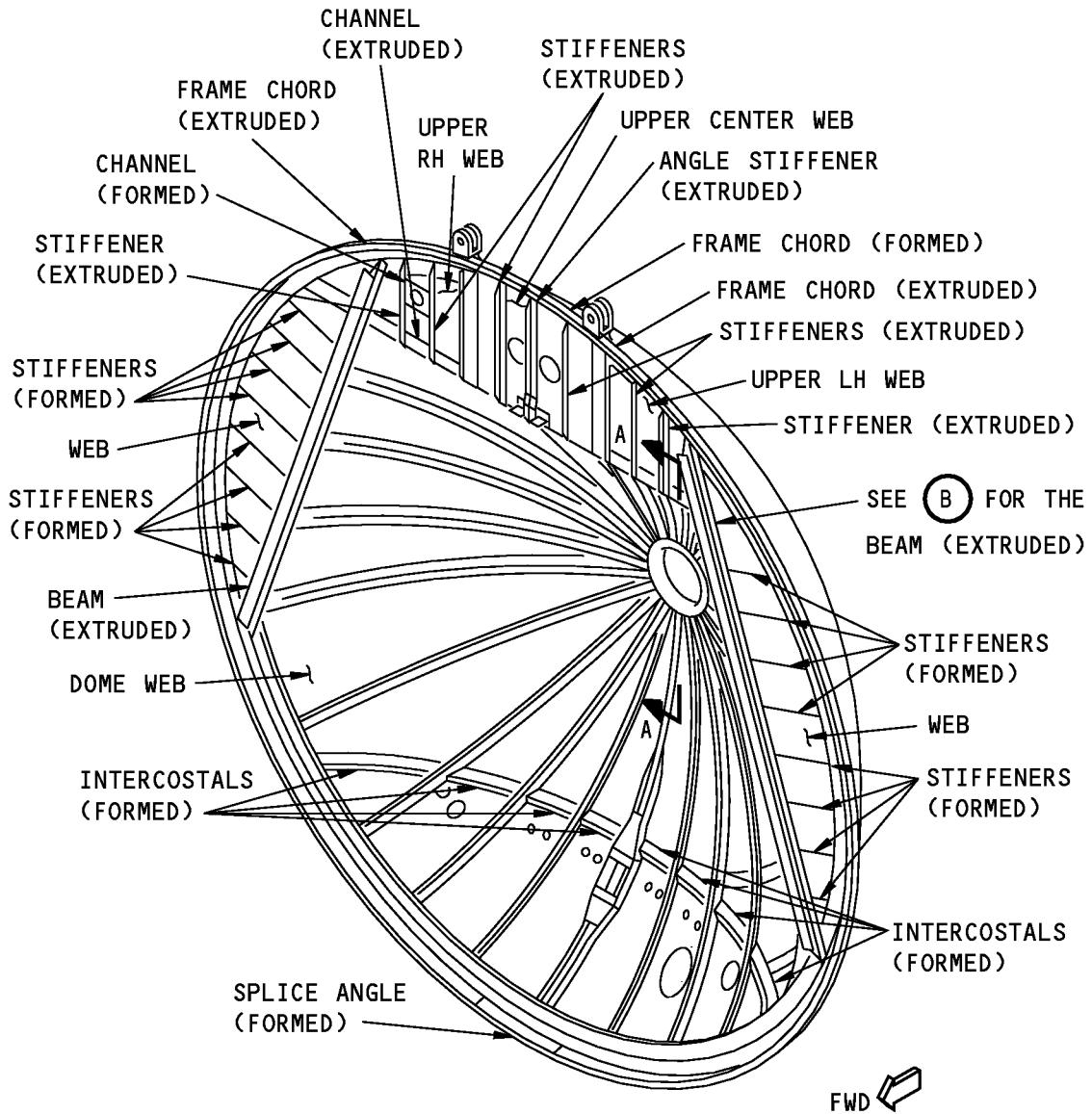
**NOTE:** If necessary, refer to 53-80-08, Identification 3 to find the material and the process that was used to make the part which you want to repair.

**Table 206:**

REPAIR REFERENCES FOR THE AFT SIDE OF THE BULKHEAD AT BS 1156	
COMPONENT	REPAIR
Splice Angles, Chord Cap, Lower Bulkhead Chord, Chord Angle, Chord (FORMED PARTS)	Refer to SRM 51-70-11
Frame Chord, Upper Bulkhead Chord, Stiffener Assembly, Support Zees (EXTRUDED)	Refer to SRM 51-70-12
Failsafe Straps, Doublers, Web, Close-out Fitting, Hold Open Fitting, Machined Parts	There are no repairs for these parts in the Structural Repair Manual at this time.

(2) Refer to Figure 204/REPAIR 3 or Figure 206/REPAIR 3, Detail B for structure on the aft side of the BS 1156 bulkhead

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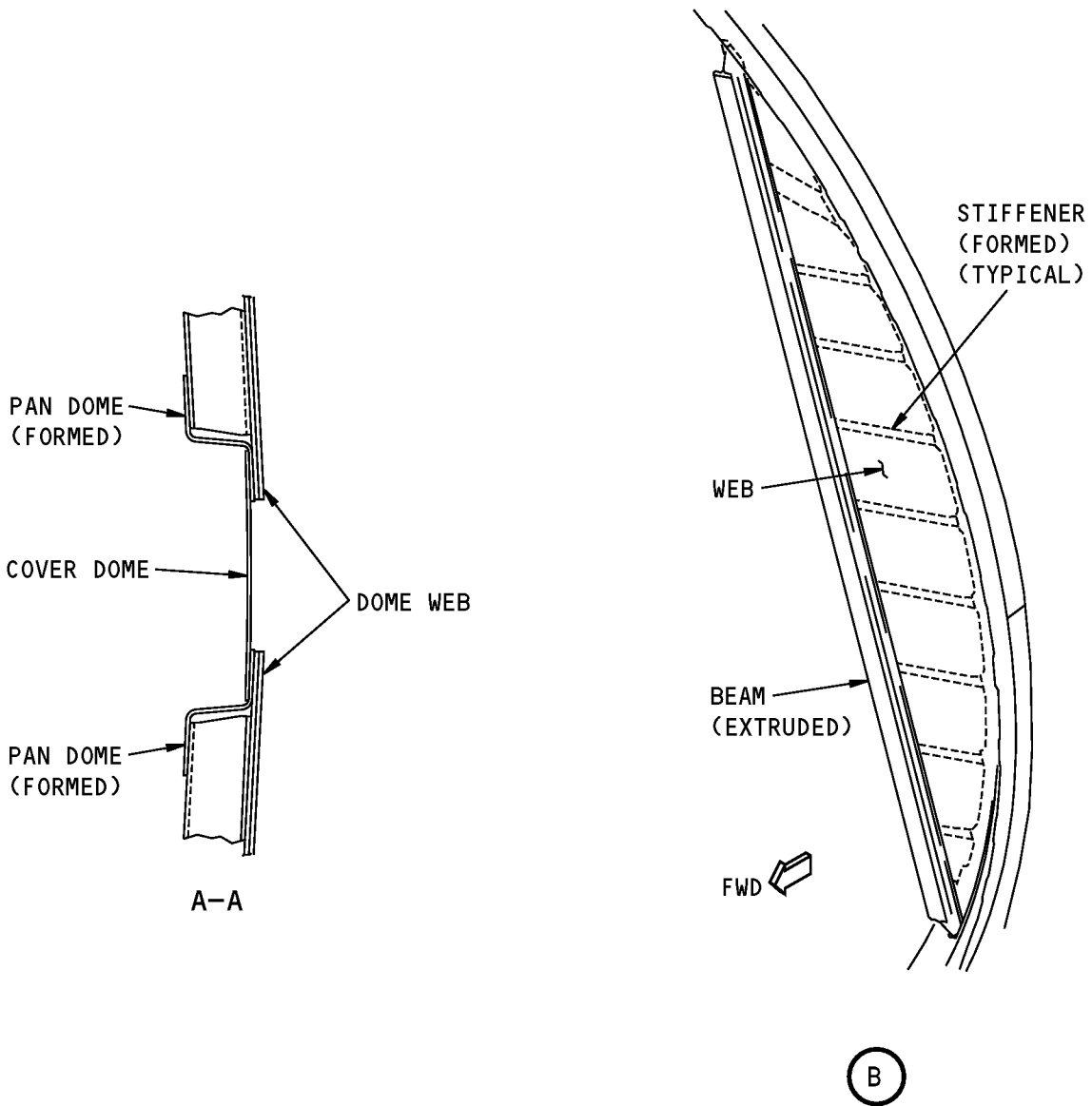
**NOTE:** REFER TO TABLE 201 FOR THE REPAIR REFERENCES.  
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

**VIEW LOOKING AFT**



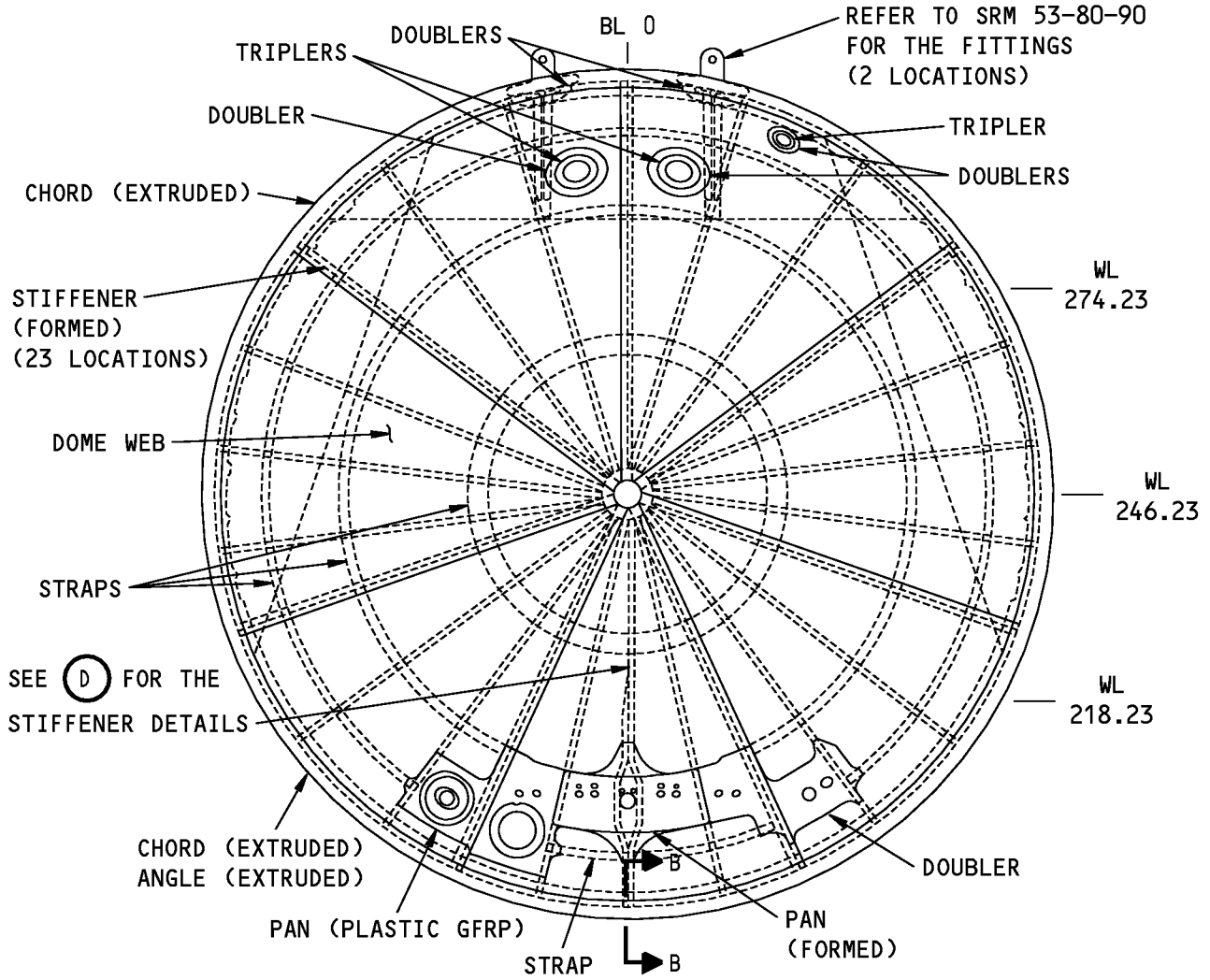
**Aft Pressure Bulkhead - BS 1016  
Figure 202 (Sheet 1 of 4)**

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**Aft Pressure Bulkhead - BS 1016  
Figure 202 (Sheet 2 of 4)**

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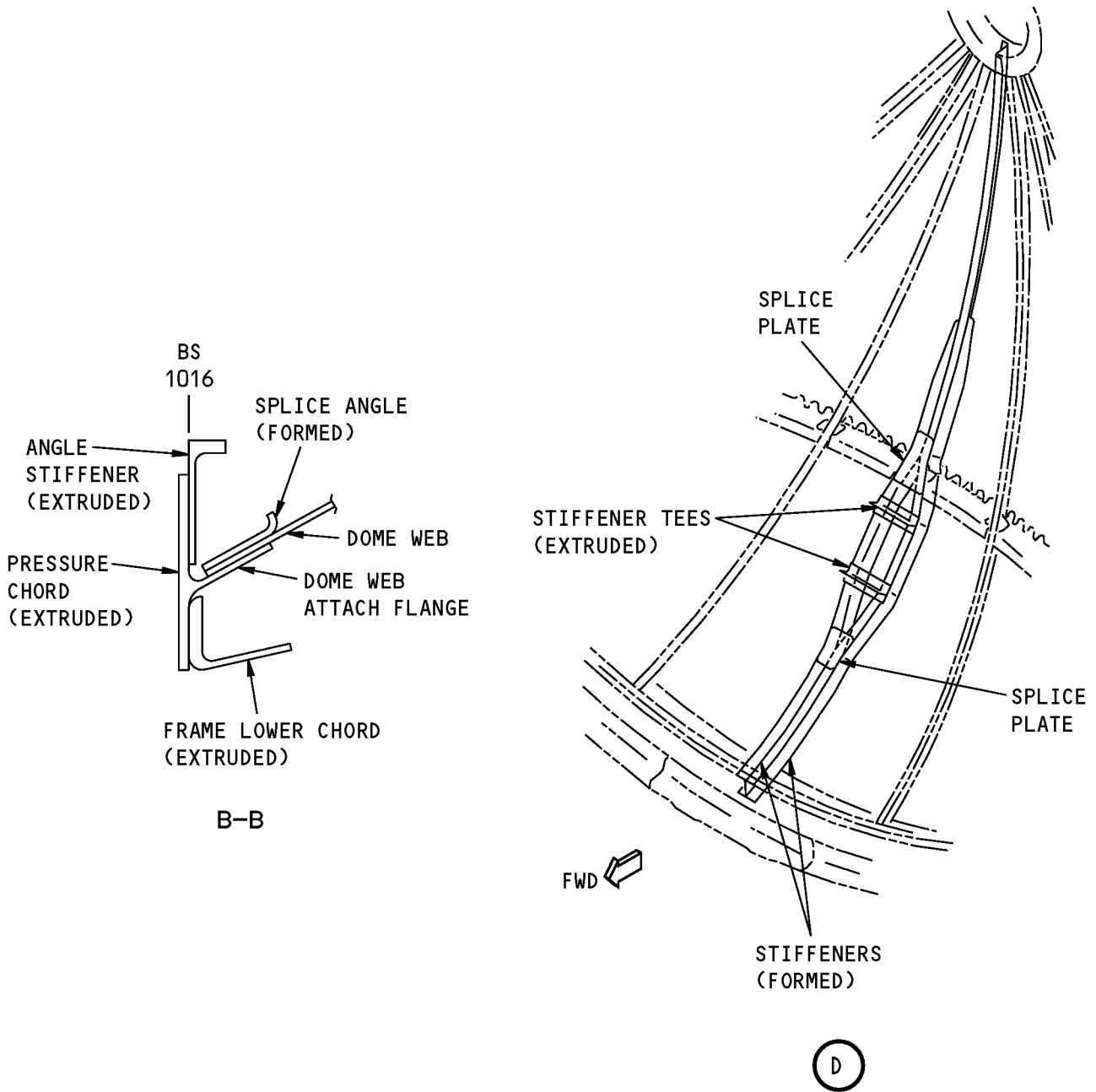
**NOTE:** REFER TO TABLE 202 FOR THE REPAIR REFERENCES.  
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

**VIEW LOOKING FORWARD**



**Aft Pressure Bulkhead - BS 1016  
Figure 202 (Sheet 3 of 4)**

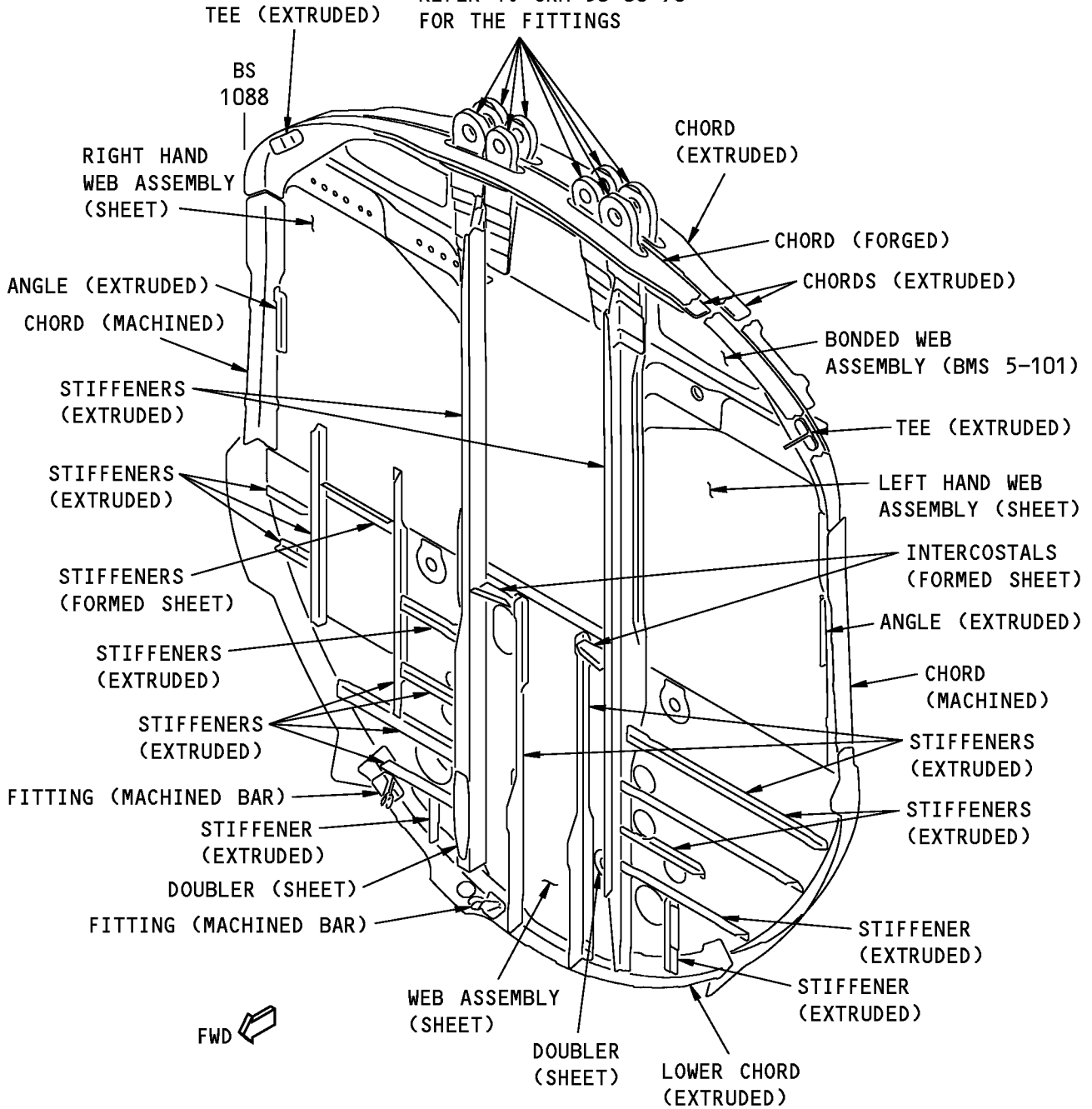
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**Aft Pressure Bulkhead - BS 1016  
Figure 202 (Sheet 4 of 4)**

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REFER TO SRM 53-80-90  
FOR THE FITTINGS

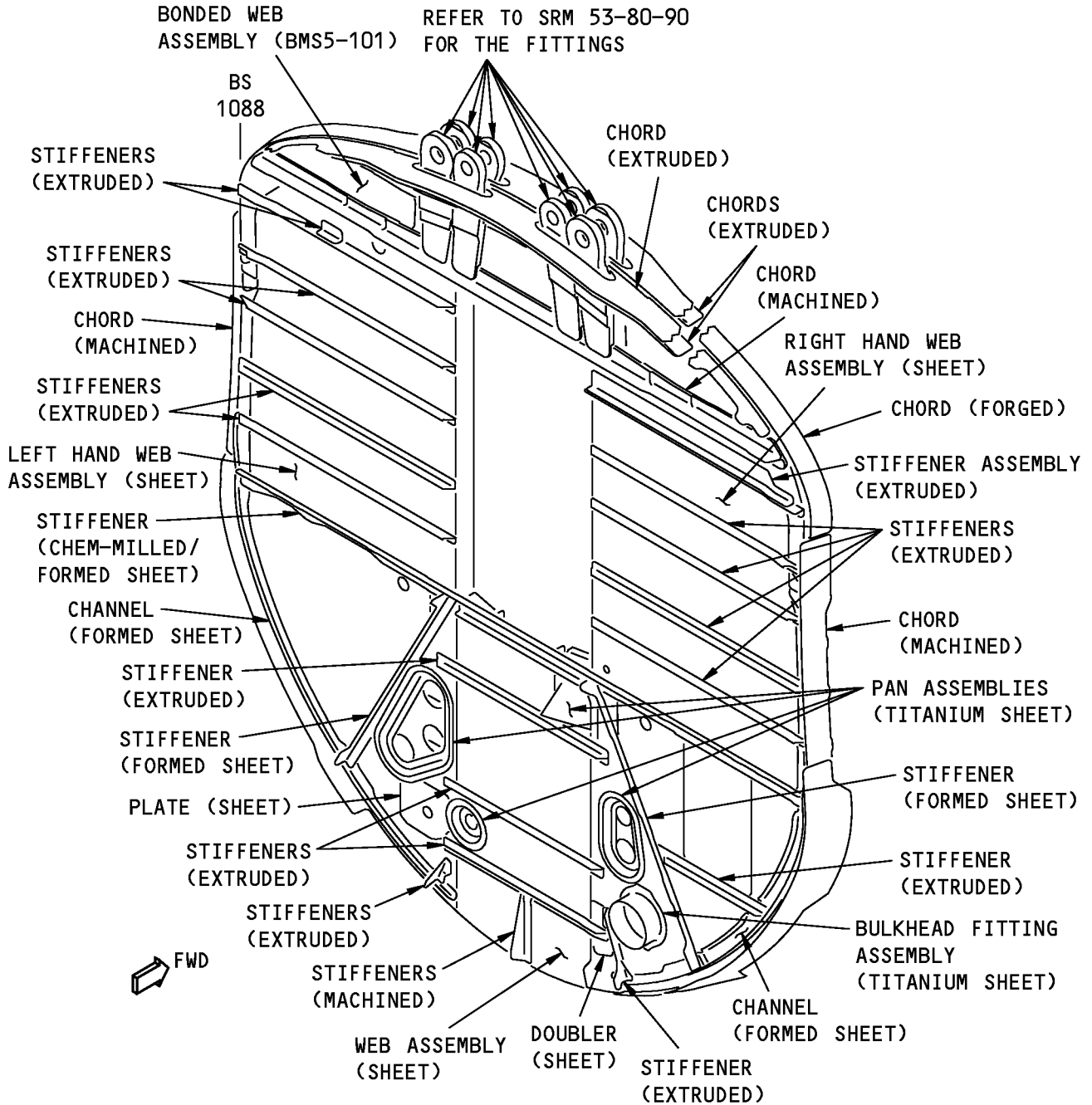


**NOTE:** REFER TO TABLE 205 FOR THE REPAIR REFERENCES.  
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.  
**VIEW LOOKING AFT**

(A)

**Body Station 1088 Bulkhead  
Figure 203 (Sheet 1 of 2)**

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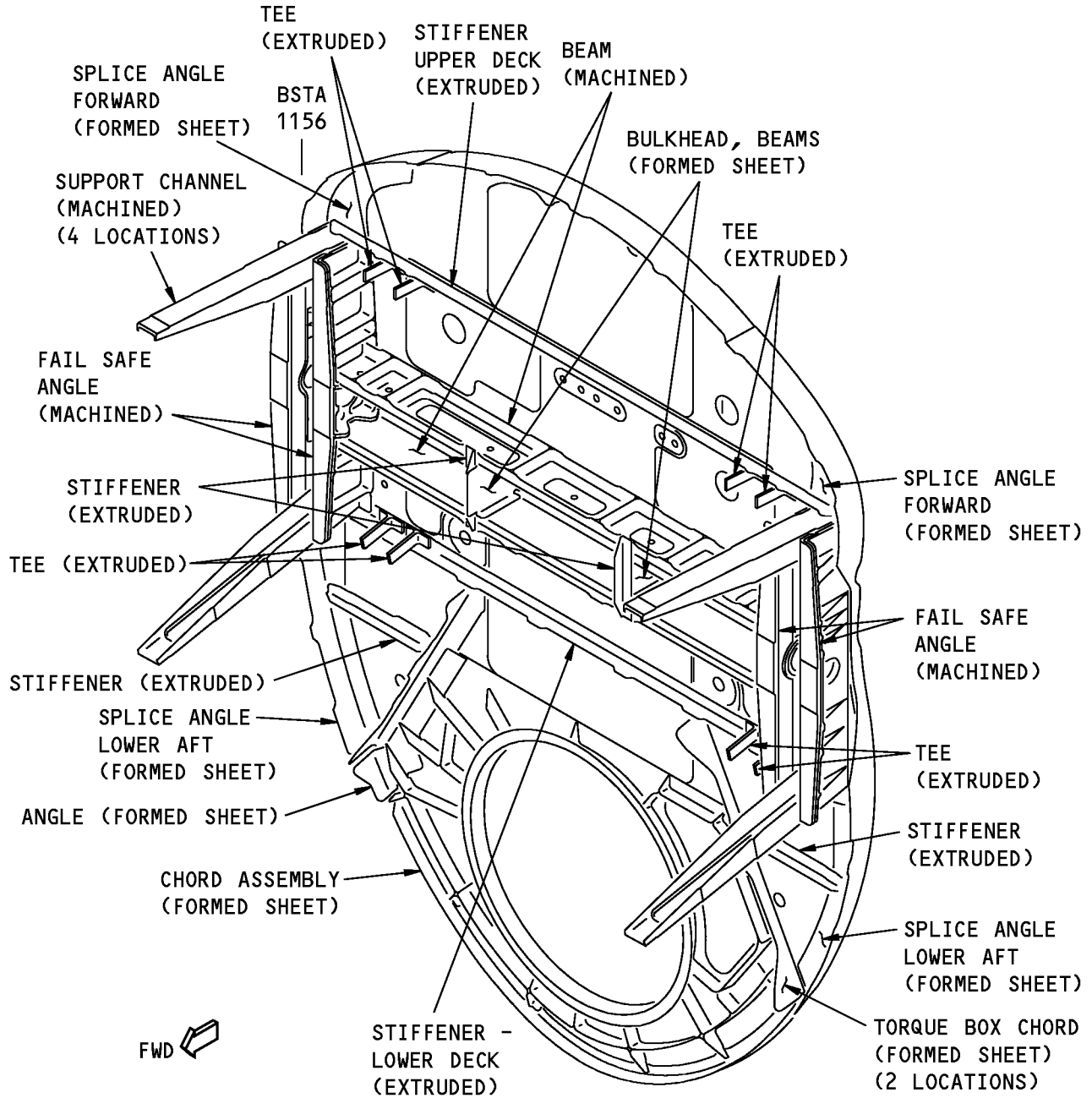


**NOTE:** REFER TO TABLE 206 FOR THE REPAIR REFERENCES.  
ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

**VIEW LOOKING FORWARD**  
**B**

**Body Station 1088 Bulkhead**  
**Figure 203 (Sheet 2 of 2)**

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VIEW LOOKING AFT

(A)

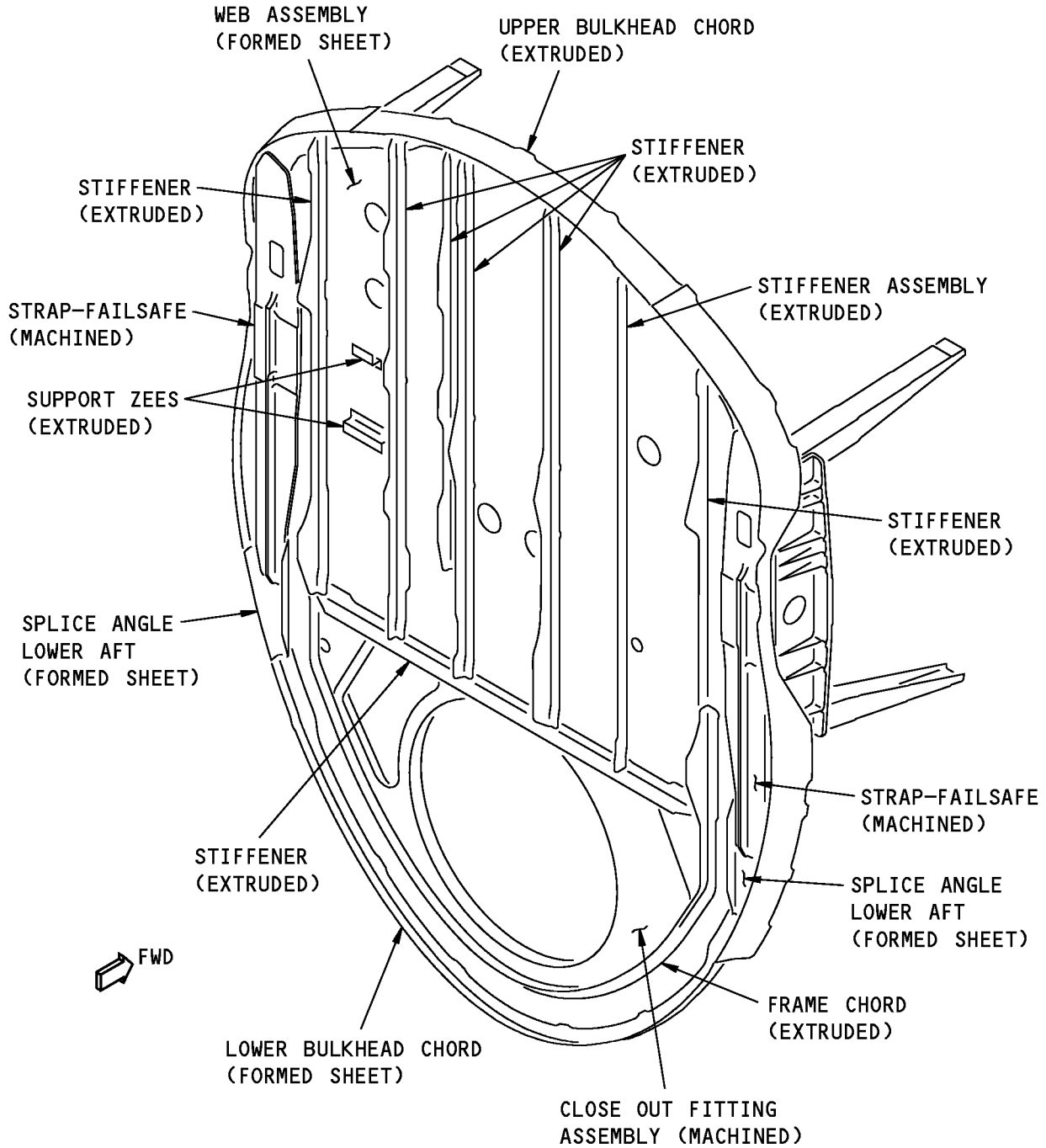
**NOTES**

- REFER TO TABLES 207 AND 208 FOR THE REPAIR REFERENCES.
- ALL PARTS IDENTIFIED ARE MADE FROM ALUMINUM EXCEPT AS NOTED.

**Body Station 1156 Bulkhead  
Figure 204 (Sheet 1 of 2)**



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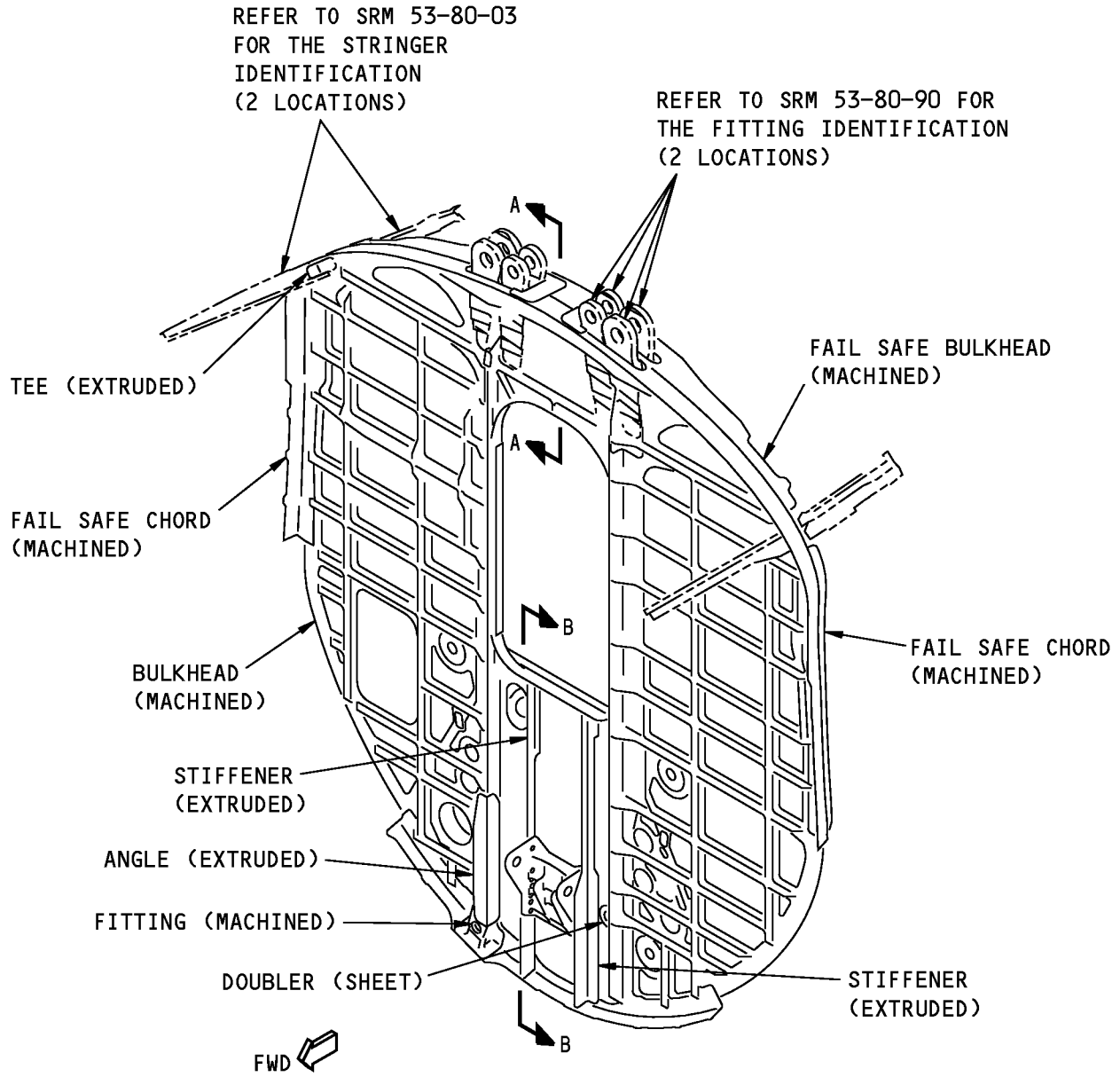


**VIEW LOOKING FORWARD**

**(B)**

**Body Station 1156 Bulkhead  
Figure 204 (Sheet 2 of 2)**

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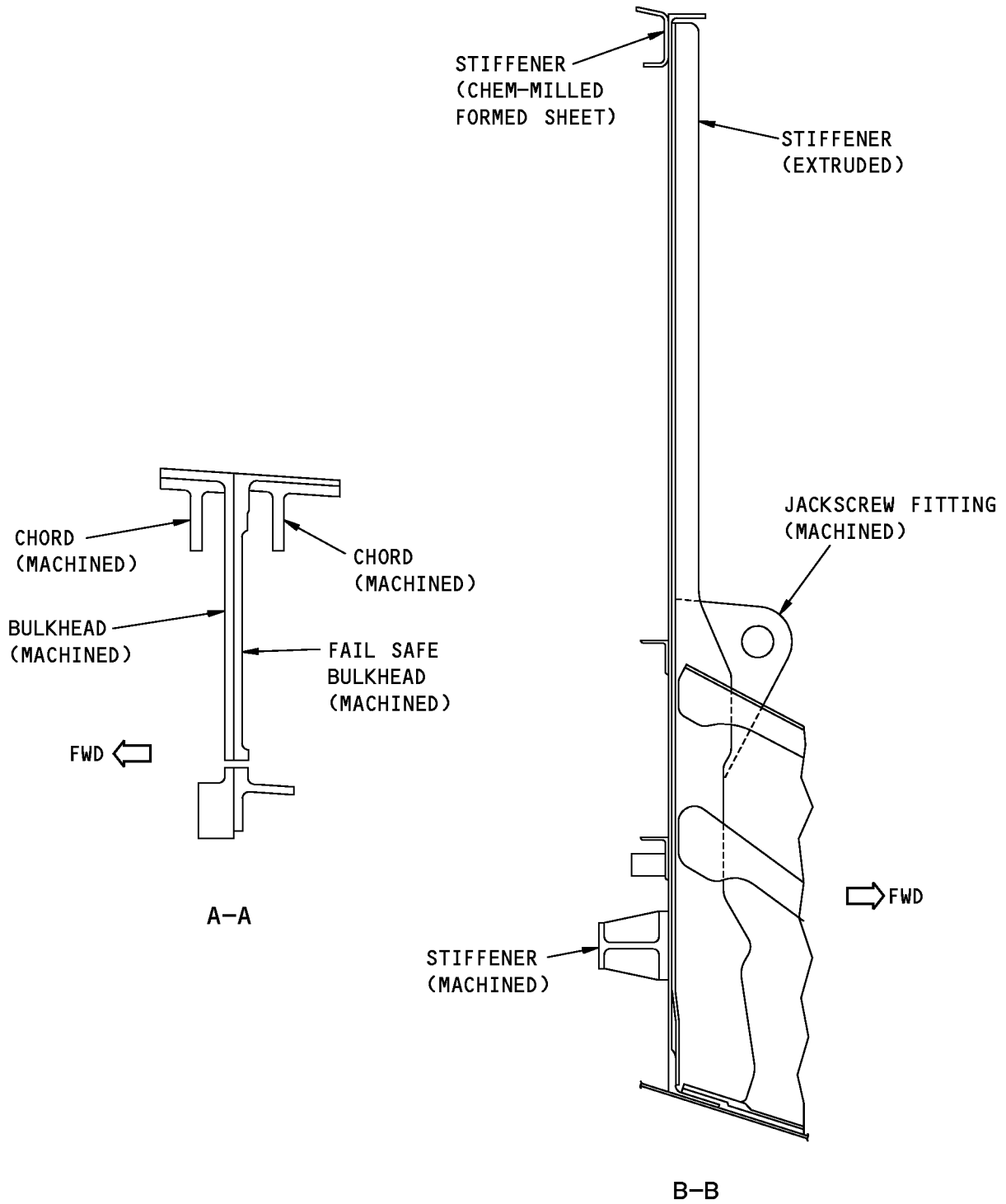
**NOTE:** REFER TO TABLES 205 AND 206 FOR THE REPAIR REFERENCES.

VIEW LOOKING AFT



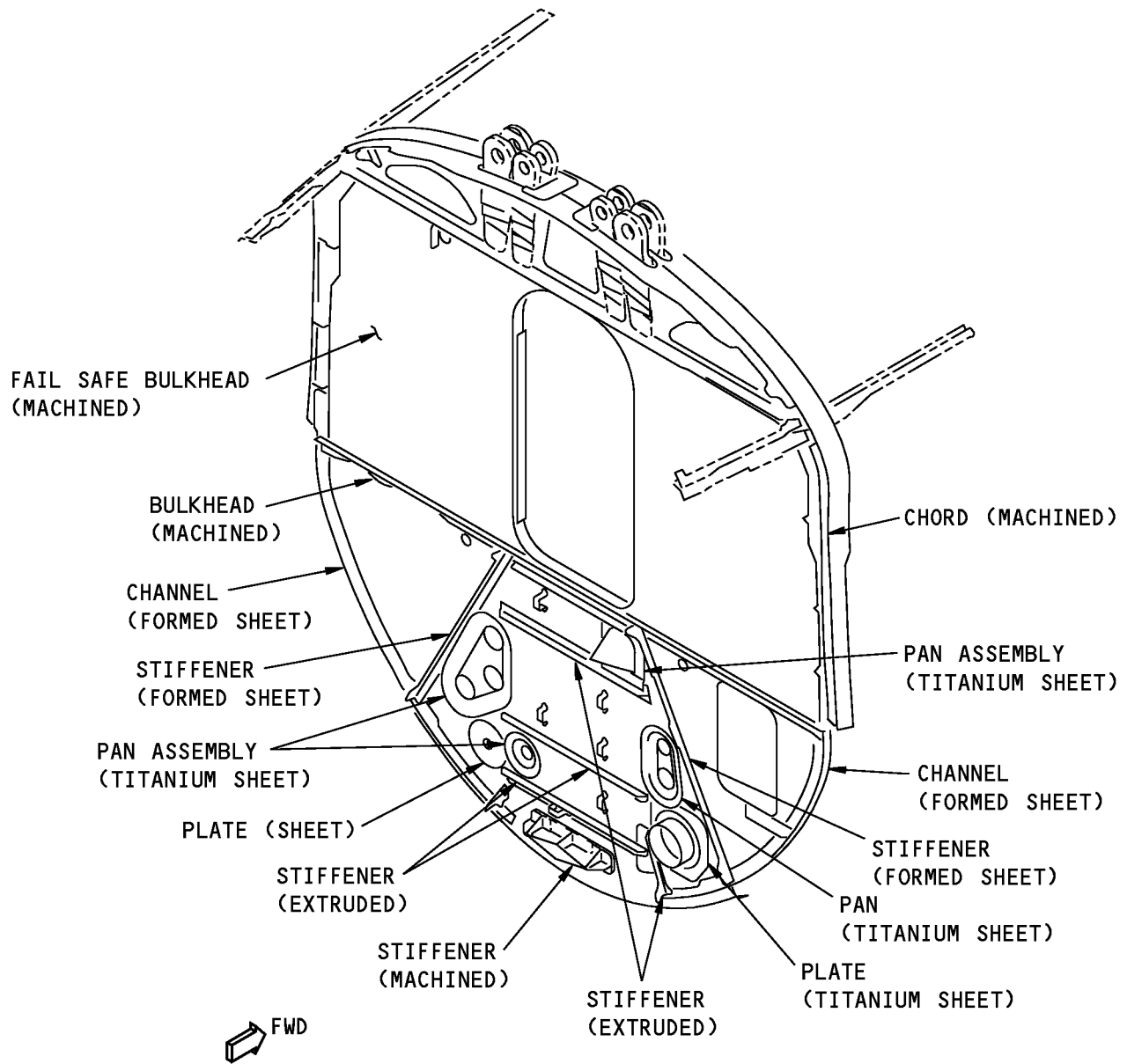
**Body Station 1088 Bulkhead  
Figure 205 (Sheet 1 of 3)**

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**Body Station 1088 Bulkhead  
Figure 205 (Sheet 2 of 3)**

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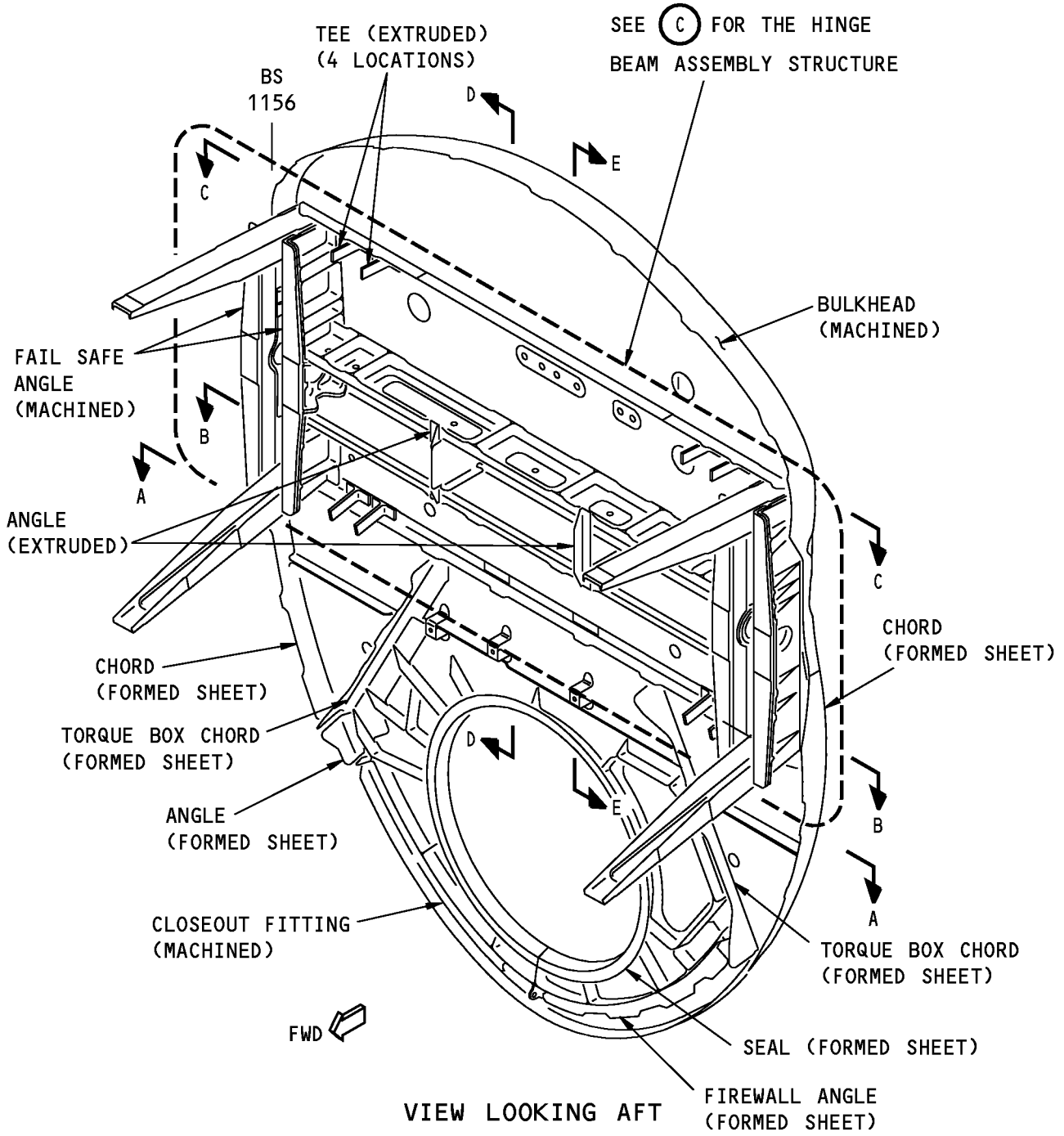


VIEW LOOKING FORWARD

(B)

**Body Station 1088 Bulkhead  
Figure 205 (Sheet 3 of 3)**

**STRUCTURAL REPAIR MANUAL**

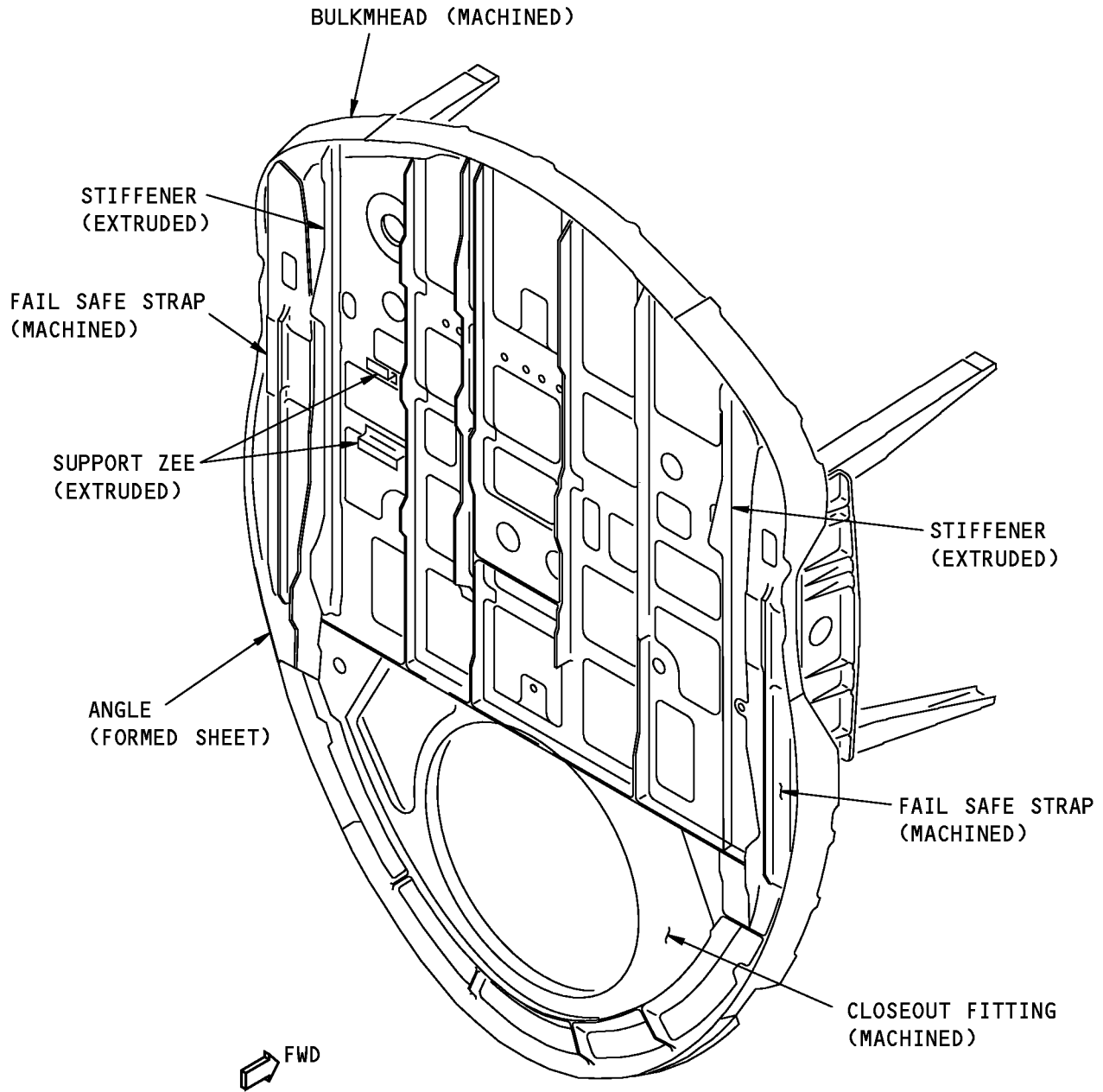


**A**

**NOTE:** REFER TO TABLES 207 AND 208 FOR THE REPAIR REFERENCES.

**Body Station 1156 Bulkhead  
Figure 206 (Sheet 1 of 6)**

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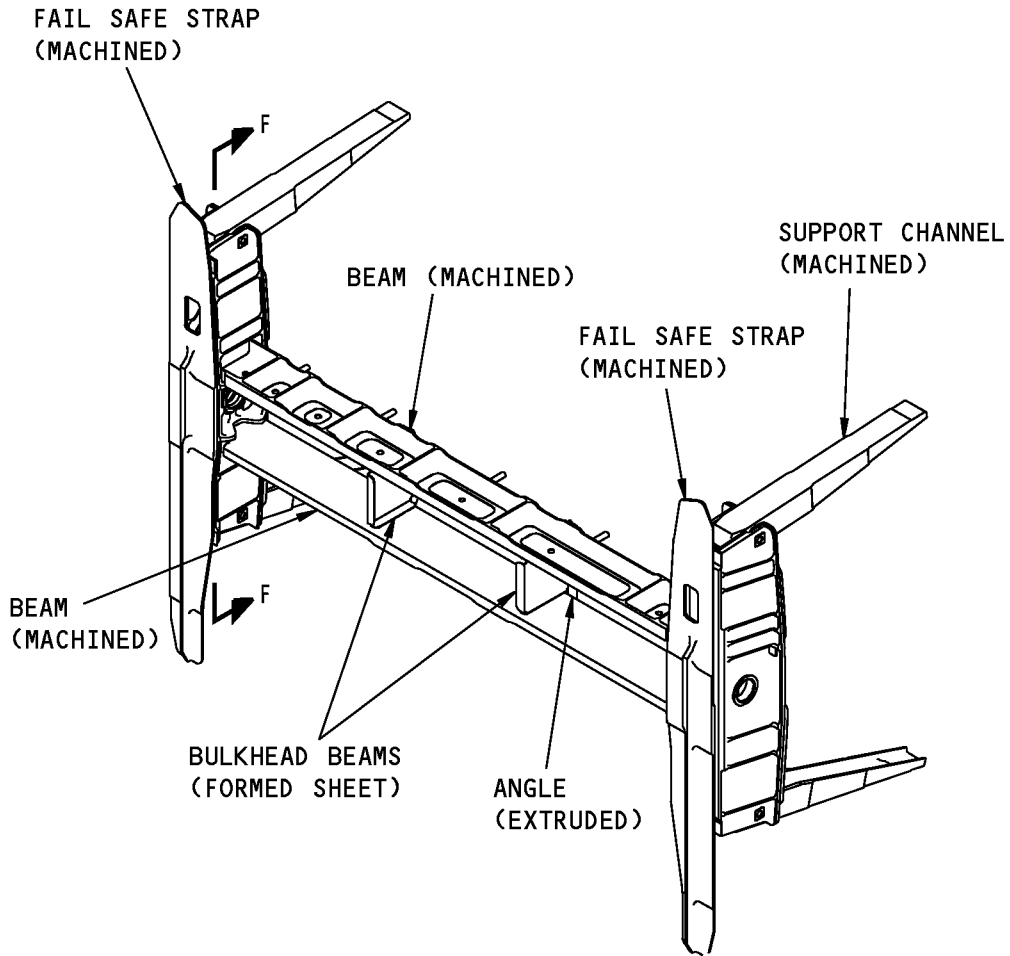


**VIEW LOOKING FORWARD**

**B**

**Body Station 1156 Bulkhead  
Figure 206 (Sheet 2 of 6)**

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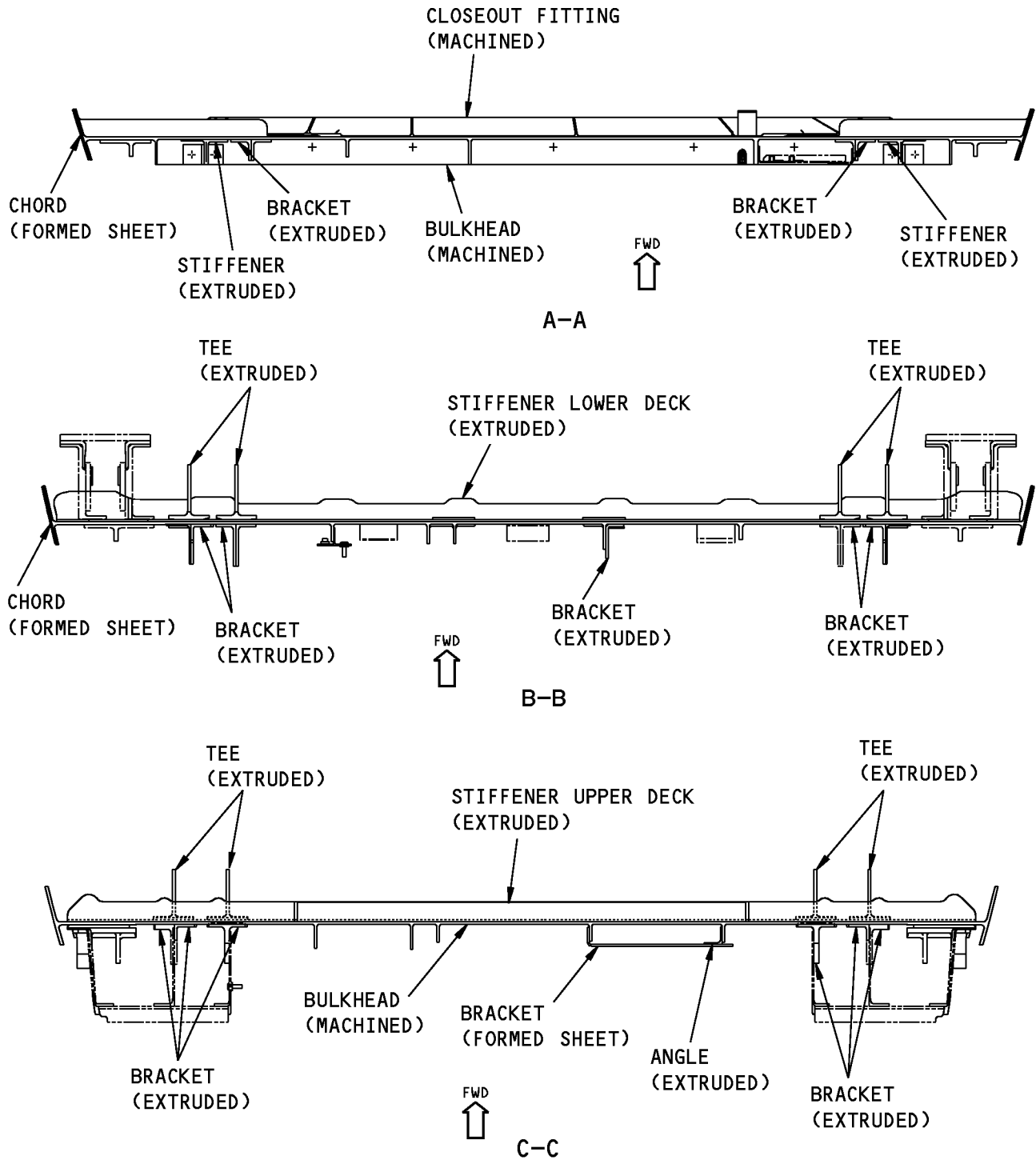


**HINGE BEAM ASSEMBLY**

(C)

**Body Station 1156 Bulkhead  
Figure 206 (Sheet 3 of 6)**

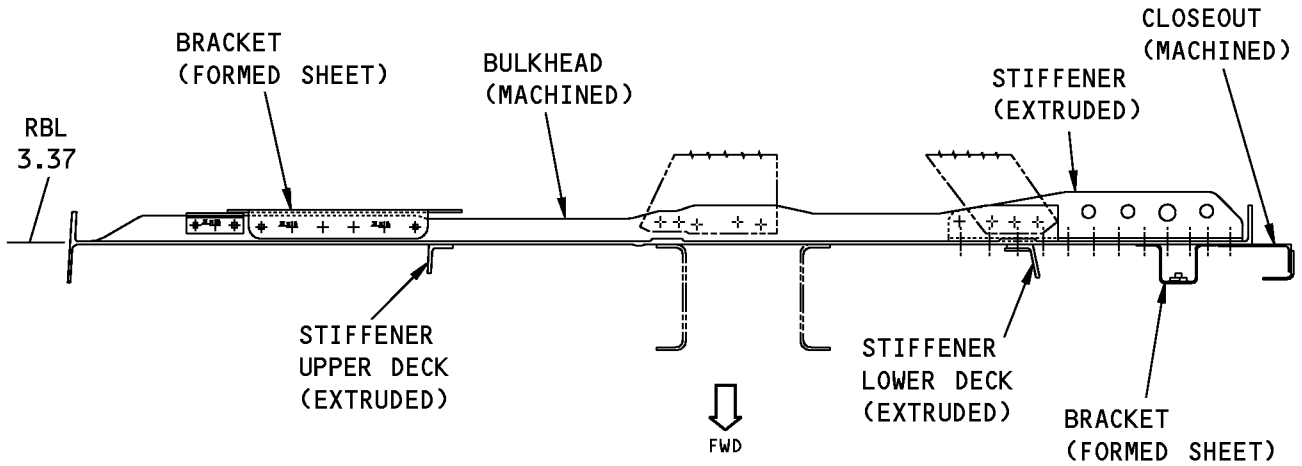
**737-800  
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**Body Station 1156 Bulkhead  
Figure 206 (Sheet 4 of 6)**

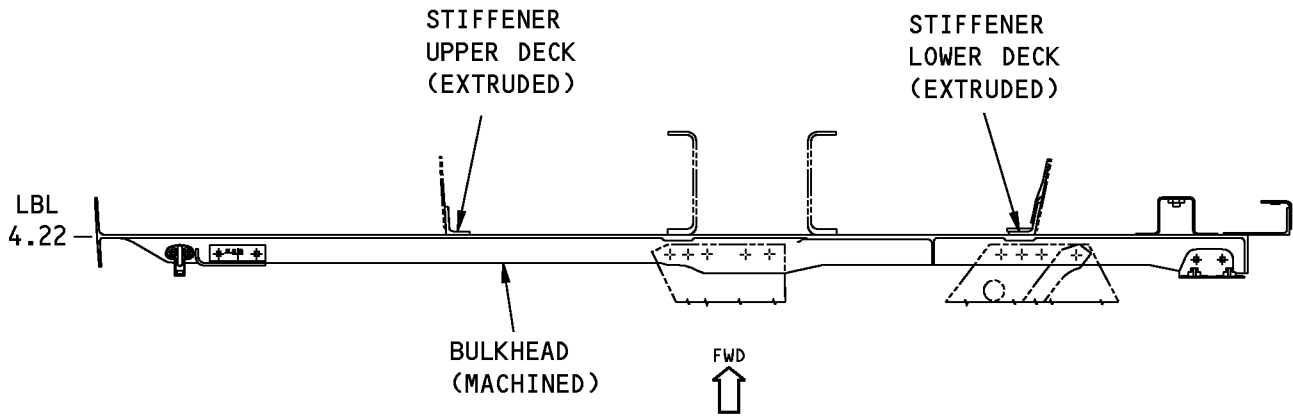


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VIEW IS ROTATED 90° COUNTER CLOCKWISE

D-D

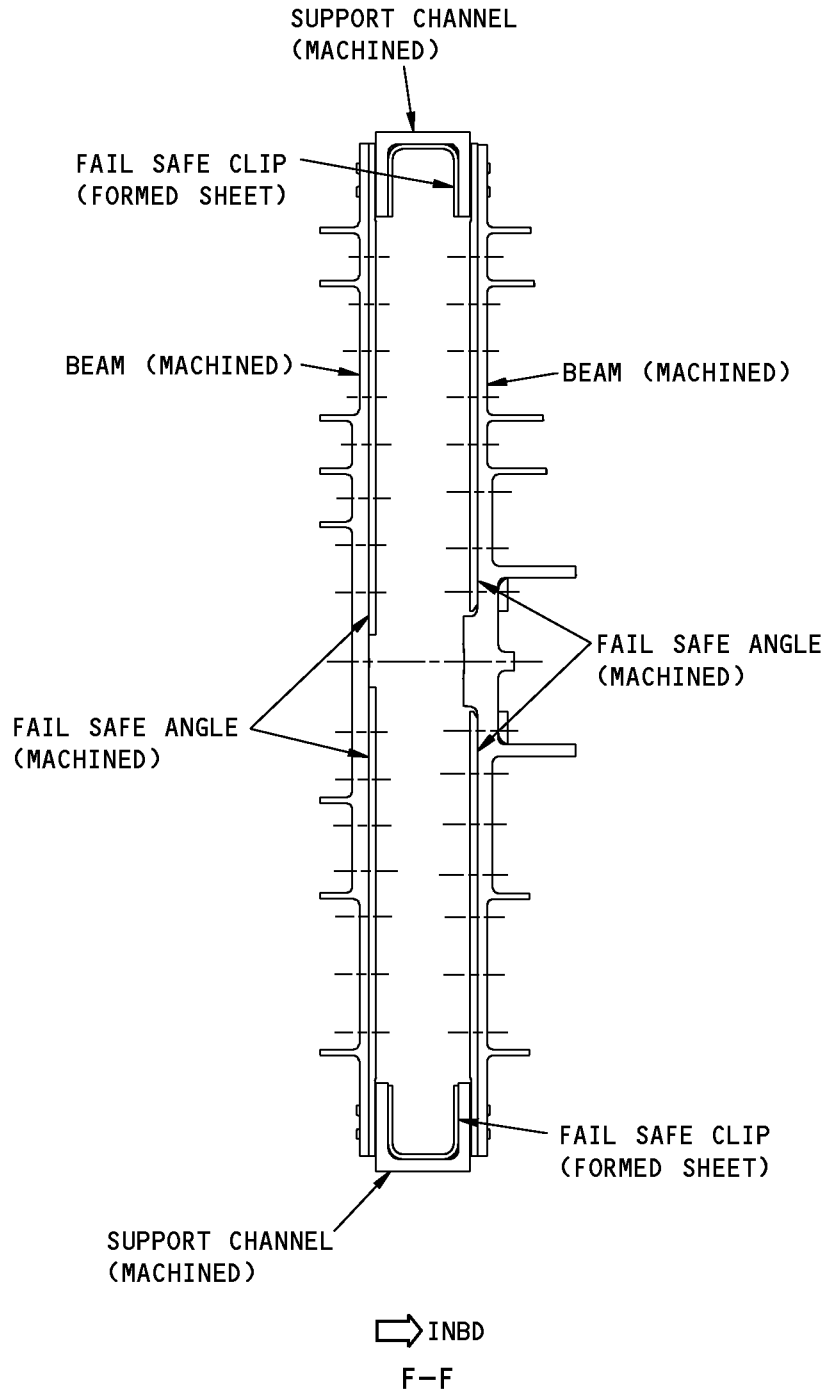


VIEW IS ROTATED 90° COUNTER CLOCKWISE

E-E

**Body Station 1156 Bulkhead  
Figure 206 (Sheet 5 of 6)**

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**Body Station 1156 Bulkhead  
Figure 206 (Sheet 6 of 6)**



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**5. Inspection Instructions**

- A. Refer to the inspection instructions given in 51-70-11 and 51-70-12.



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**REPAIR 4 - BS 1016 PRESSURE BULKHEAD (OIL CAN) REPAIR BETWEEN STRAPS**

**1. Repair 4**

A. This repair has been removed.



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## STRUCTURAL REPAIR MANUAL

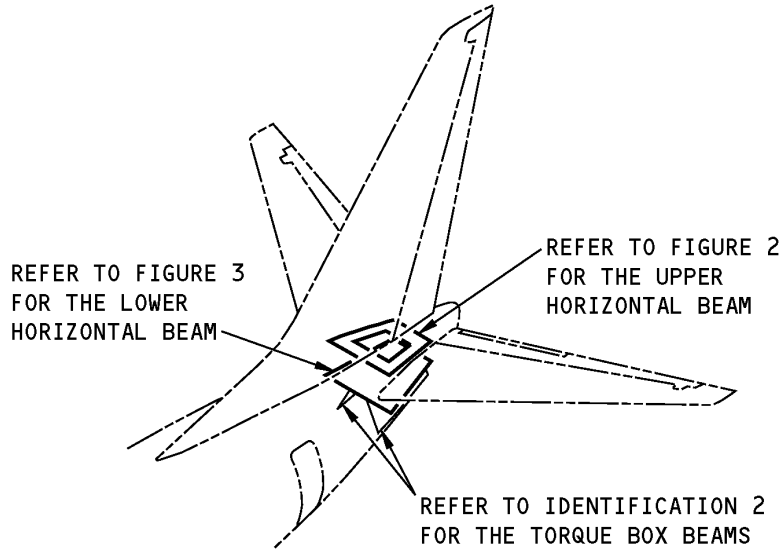
### REPAIR 5 - BS 1016 BULKHEAD (OIL CAN) REPAIR ACROSS A STRAP

#### 1. Repair 5

A. This repair has been removed.

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STRUCTURAL REPAIR MANUAL**

**IDENTIFICATION 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS**

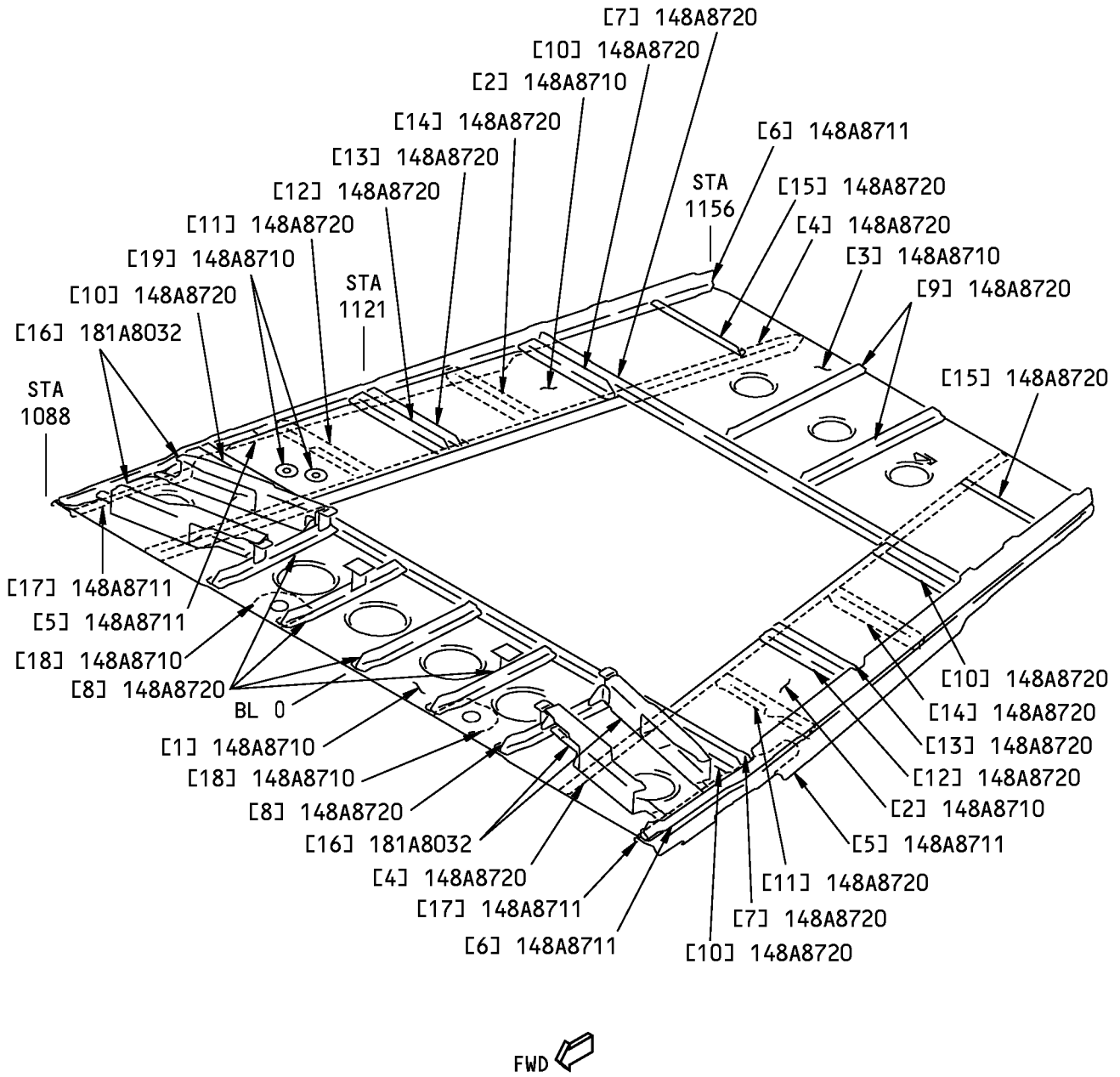


**Section 48 Upper and Lower Horizontal Beam Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4807	Upper Module Functional Collector - Body Section 48
148A8700	Horizontal Beam Installation - Upper Module
140A4808	Lower Module Functional Collector - Body Section 48
148A8500	Horizontal Beam Installation - Lower - Station 1088 to 1156

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**UPPER HORIZONTAL BEAM**

**Section 48 Upper Horizontal Beam Identification  
Figure 2**



## 737-800 STRUCTURAL REPAIR MANUAL

**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>T1</sup>	MATERIAL	EFFECTIVITY
[1]	Web, Forward	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[2]	Web, Center	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[3]	Web, Aft	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[4]	Inboard Chord		AND10133-1003 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[5]	Outer Chord, Lower	0.071 (1.80)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Outer Chord, Upper	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[7]	Stiffener		BAC1506-1796 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[8]	Stiffener		BAC1505-100022 2024-T3511 extrusion as given in QQ-A-200/3	
[9]	Stiffener		AND10134-1206 7075-T6511 extrusion as given in QQ-A-200/11	
[10]	Stiffener		BAC1503-100369 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Stiffener		BAC1506-3178 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS4050)	
[12]	Stiffener		BAC1514-867 7075-T73511 extrusion as given in QQ-A-200/11	
[13]	Stiffener		BAC1514-1325 7075-T6511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	
[14]	Stiffener		BAC1514-2012 7075-T73511 extrusion as given in QQ-A-200/11 (Optional: 7050-T7451 plate as given in AMS 4050)	For cum line numbers 1 thru 967, 969 thru 972
			BAC1514-2012 7075-T73511 extrusion as given in QQ-A-200/11	For cum line numbers 968, 973 and on
[15]	Stiffener		BAC1503-100319 7075-T73511 extrusion as given in QQ-A-200/11	
[16]	Bracket	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For cum line numbers 7 thru 9
			7050-T7451 plate as given in BMS 7-323, Type 1	For cum line numbers 36 and on
[17]	Angle, Lower	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	

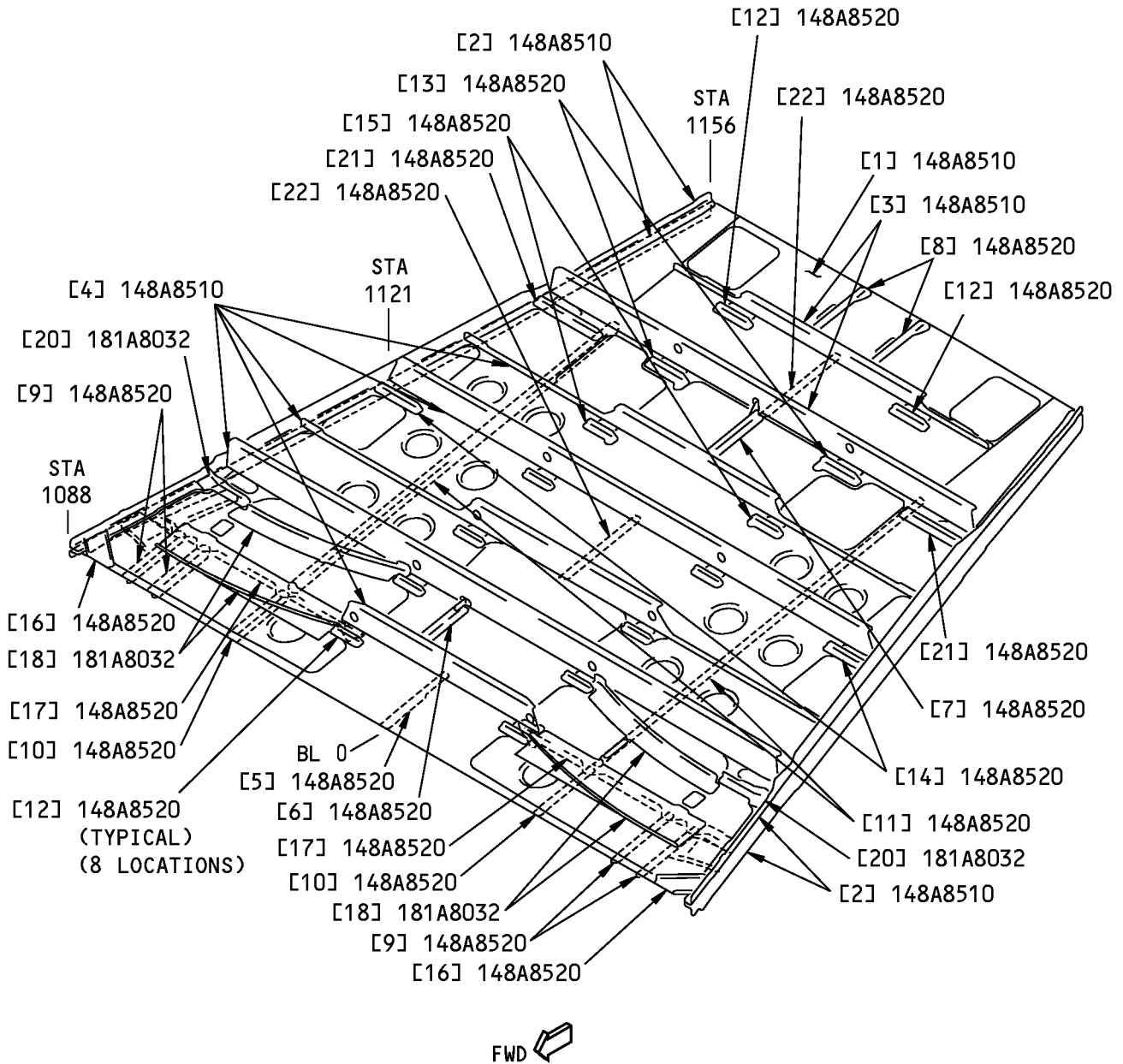




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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[18]	Doubler	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[19]	Doubler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	

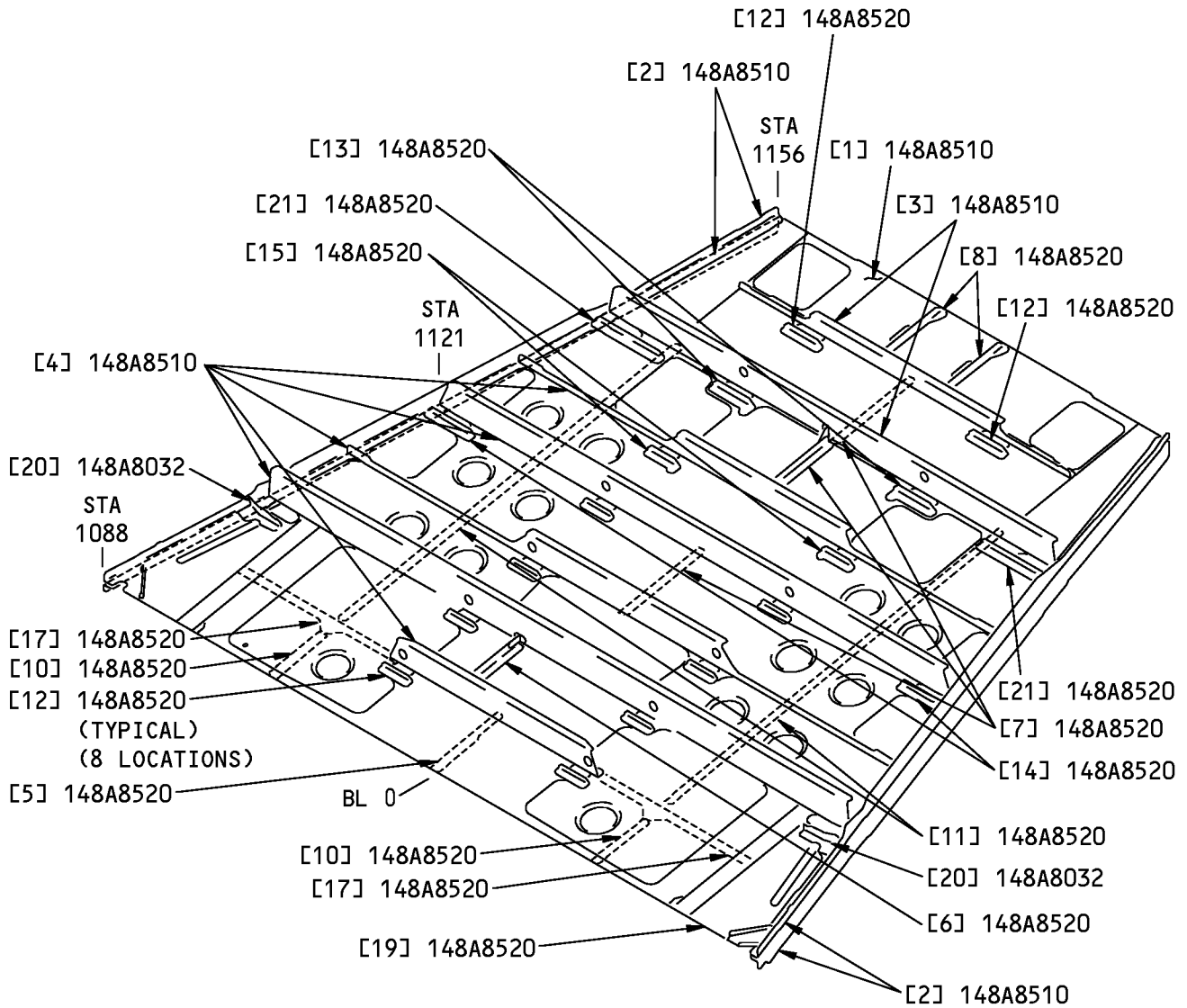
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



**LOWER HORIZONTAL BEAM**  
**AIRPLANE NUMBERS 1 THRU 1380 ONLY**

**Section 48 Lower Horizontal Beam Identification**  
**Figure 3 (Sheet 1 of 2)**

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**LOWER HORIZONTAL BEAM  
AIRPLANE NUMBERS 1381 AND ON ONLY**

**Section 48 Lower Horizontal Beam Identification  
Figure 3 (Sheet 2 of 2)**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>T1</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Web	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5. Refer to the production drawing for the chem-milled thicknesses	
[2]	Chord, Upper and Lower	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Stiffener Channel	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener Channel	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	
[5]	Stiffener		BAC1514-633 7075-T73511 extrusion as given in QQ-A-200/11	
[6]	Stiffener		BAC1505-100372 7075-T73511 extrusion as given in QQ-A-200/11	
[7]	Stiffener		BAC1490-2642 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[8]	Stiffener		BAC1505-100055 7075-T73511 extrusion as given in QQ-A-200/11	
[9]	Angle		BAC1503-100354 7075-T73511 extrusion as given in QQ-A-200/11	
[10]	Angle		BAC1514-751 7075-T73511 extrusion as given in QQ-A-200/11	
[11]	Angle		BAC1503-1430 7075-T6511 extrusion as given in QQ-A-200/11	
[12]	Angle		BAC1490-2630 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[13]	Angle		BAC1490-2736 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[14]	Angle		AND10134-1204 7075-T73511 extrusion as given in QQ-A-200/11	
[15]	Angle		BAC1490-2712 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	
[16]	Channel		BAC1493-526 7075-T62 clad sheet, formed channel, as given in QQ-A-250/13	
[17]	Stiffener		BAC1506-4271 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Bracket, Angle (2)	0.050 (1.27)	7075-T62 clad sheet as given in QQ-A-250/13	For cum line numbers 1 Thru 1380
[19]	Web, Fitting LH/RH		7050-T7451 plate as given in AMS4050	For cum line numbers 1381 and on
[20]	Bracket, Angle	0.071 (1.803)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Stiffener		BAC1503-100319 7075-T73511 extrusion as given in QQ-A-200/11	



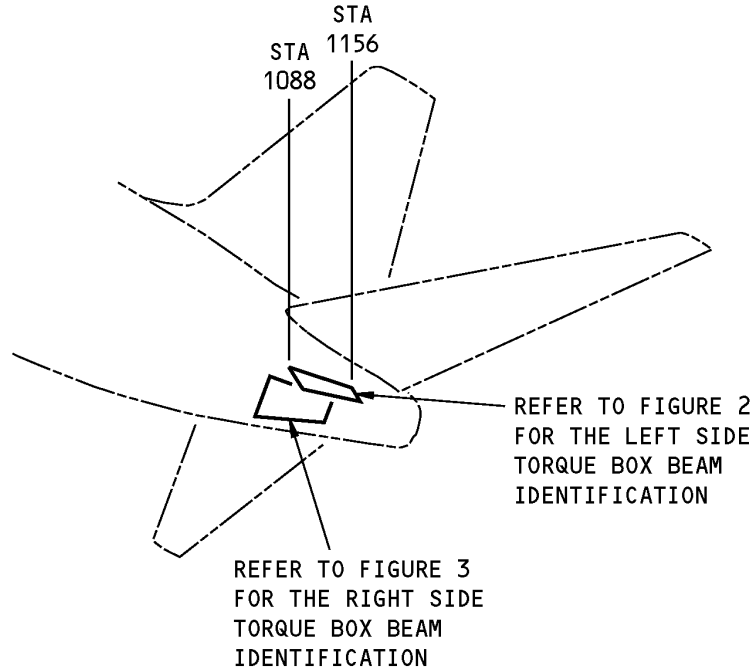
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LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[22]	Stiffener		BAC1490-2642 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	For cum line numbers 1 thru 803, 805 thru 825, 827 thru 834, 861, 1121
			BAC1489-125 7075-T62 clad sheet, formed angle, as given in QQ-A-250/13	For cum line numbers 804, 826, 835 thru 860, 862 thru 1120, 1122 thru 1380

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 2 - SECTION 48 TORQUE BOX BEAM**



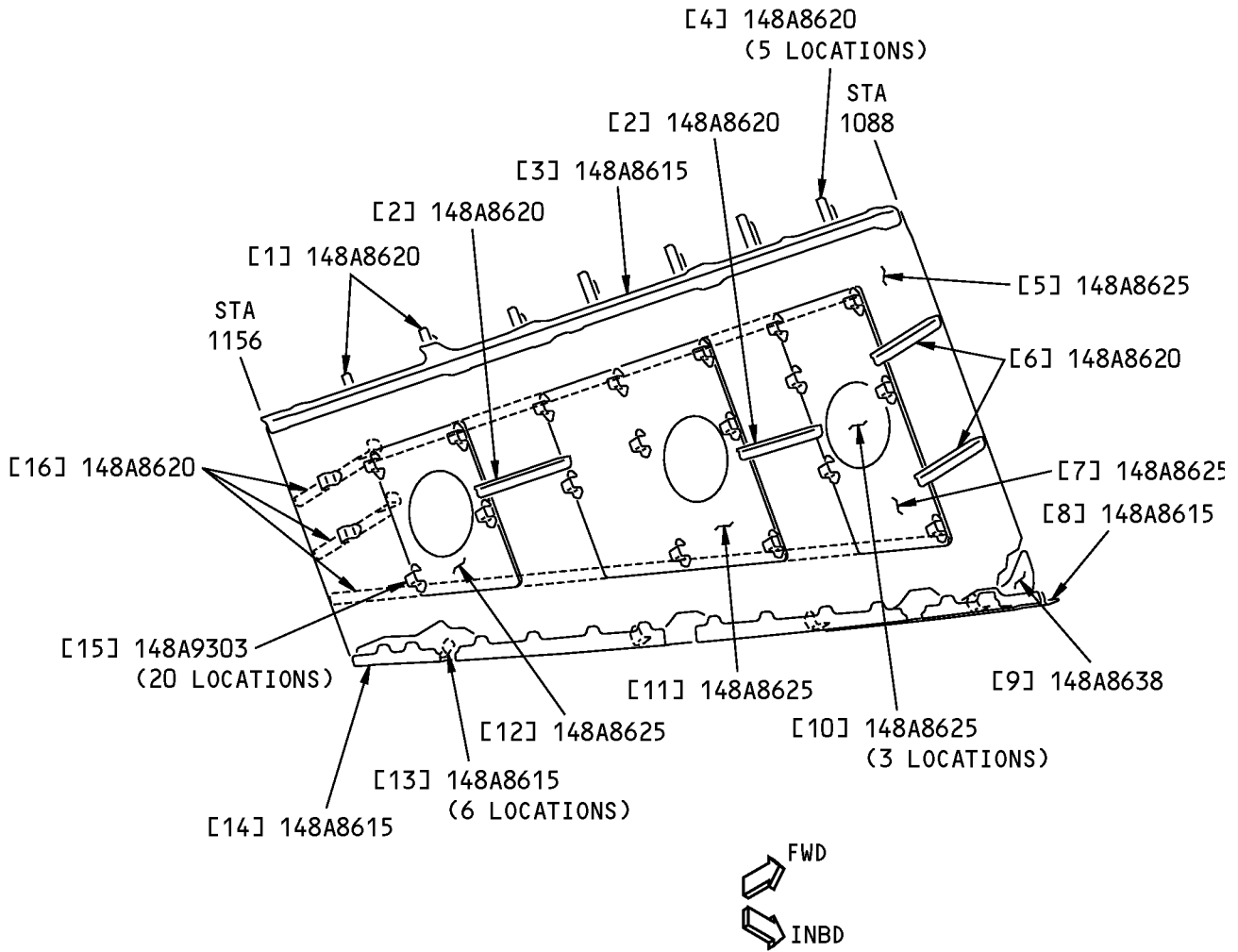
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 48 Torque Box Beam Locations  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A8600	Torque Box Installation - Left Hand, Station 1088 - 1156
148A8650	Torque Box Installation - Right Hand, Station 1088 - 1156
148A9350	Bracket Assembly - APU Support, Miscellaneous

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Section 48 Left Side Torque Box Beam Identification  
Figure 2**



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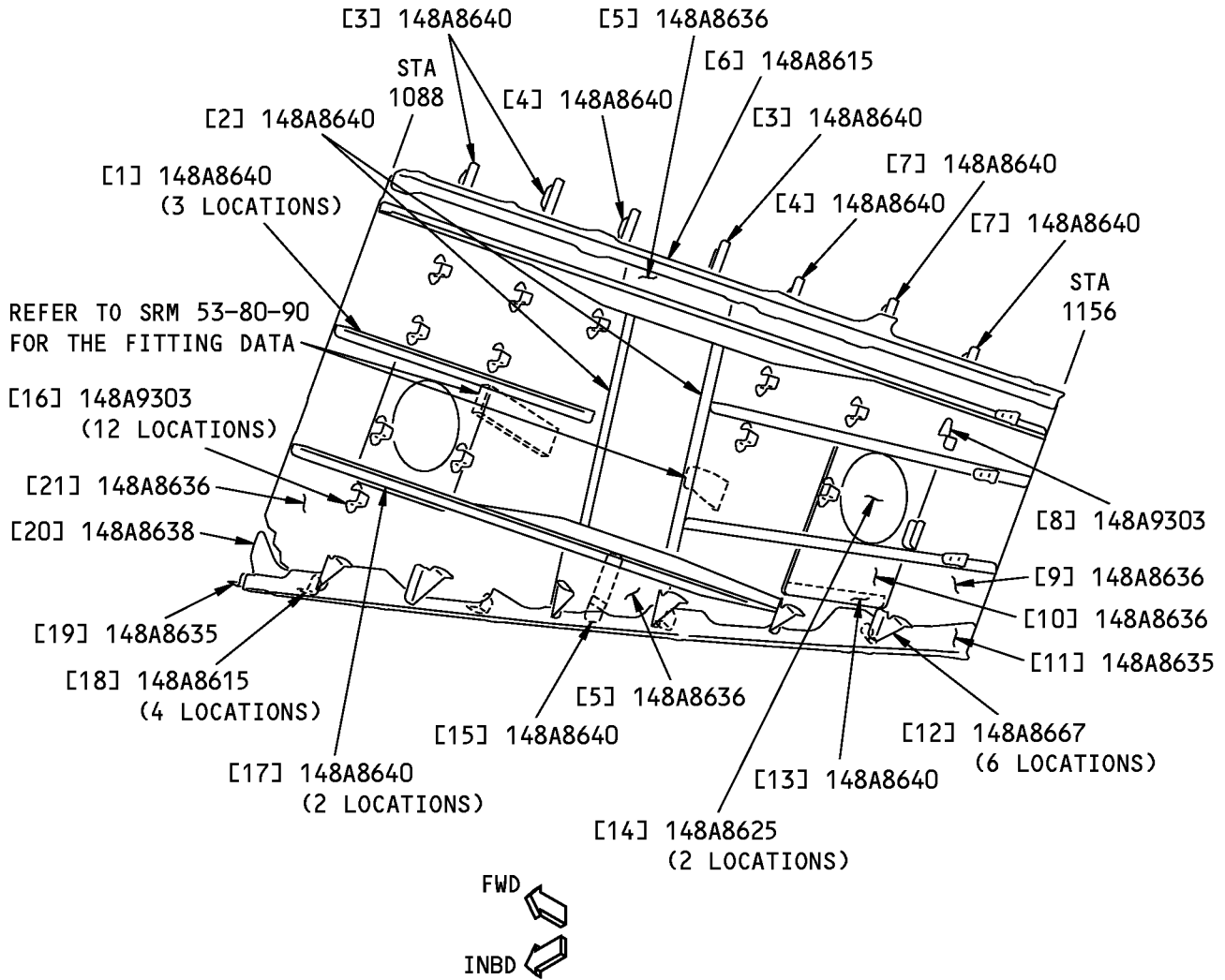
**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Stiffener		BAC1517-2737 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[2]	Stiffener		BAC1514-2569 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[3]	Upper Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[4]	Stiffener		BAC1517-2735 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[5]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Stiffener		BAC1514-633 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[7]	Panel	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[8]	Inboard, Lower Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[9]	Gusset		7075-T6 plate, as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[10]	Cover	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[11]	Panel	0.150 (3.81)	2024-T3 bare sheet, as given in QQ-A-250/4. Refer to the production drawing for the chem-milled thicknesses	
[12]	Panel	0.110 (2.79)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[14]	Angle	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[15]	Firewall Bracket	0.050 (1.27)	2219-T62 sheet as given in QQ-A-250/30	
[16]	Stiffener		BAC1503-100442 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Section 48 Right Side Torque Box Beam Identification  
Figure 3**



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**Table 3:**

<b>LIST OF MATERIALS FOR FIGURE 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Angle		BAC1504-8180 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[2]	Tee, Stiffener		BAC1505-100155 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[3]	Stiffener		BAC1517-2735 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[4]	Stiffener		BAC1518-1183 7075-T6511 extrusion, as given in QQ-A-200/11 (optional: 7050-T7451 plate as given in AMS4050). Refer to the production drawing for the machined thicknesses	
[5]	Web	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	
[6]	Upper Chord	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	
[7]	Stiffener		BAC1517-2737 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[8]	Firewall Bracket	0.080 (2.03)	2219-T62 sheet as given in QQ-A-250/30	
[9]	Web	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[10]	Panel	0.125 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5	
[11]	Lower Chord, Inboard	0.063 (1.60)	7075-T62 clad sheet as given in QQ-A-250/13	
[12]	Bracket	0.050 (1.27)	2219-T6 sheet as given in QQ-A-250/30	
[13]	Angle		BAC1503-100441 7075-T73511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[14]	Cover (2 locations)	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Tee, Stiffener		BAC1506-1872 7075-T6511 extrusion, as given in QQ-A-200/11. Refer to the production drawing for the machined thicknesses	
[16]	Firewall Bracket	0.050 (1.27)	2219-T62 sheet as given in QQ-A-250/30	
[17]	Tee, Stiffener		BAC1506-626 7075-T6511 extrusion as given in QQ-A-200/11	
[18]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[19]	Lower Chord, Outboard	0.090 (2.29)	7075-T62 clad sheet as given in QQ-A-250/13	



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**STRUCTURAL REPAIR MANUAL**

LIST OF MATERIALS FOR FIGURE 3				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[20]	Gusset	0.190 (4.83)	7075-T6 plate, as given in QQ-A-250/12. Refer to the production drawing for the machined thicknesses	
[21]	Web	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	

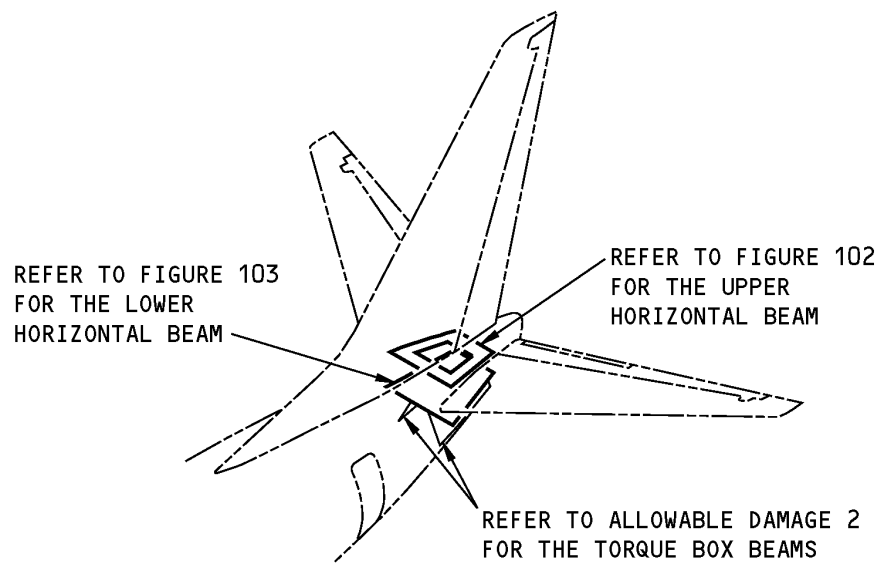
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

**STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS**

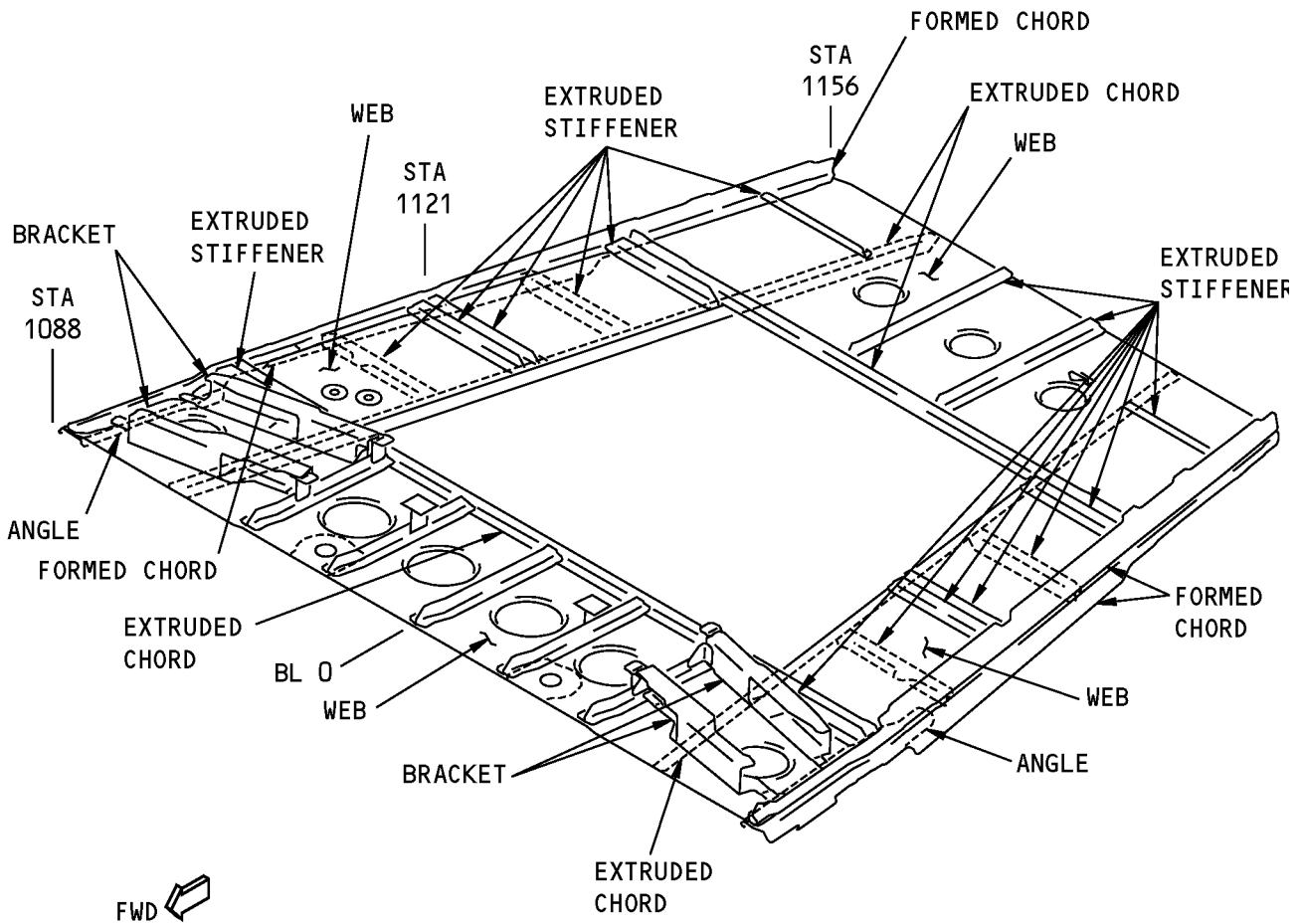
**1. Applicability**

- A. This subject gives the allowable damage limits for the Section 48 upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beam Location, Figure 101/ALLOWABLE DAMAGE 1.



**Section 48 Upper and Lower Horizontal Beam Location  
Figure 101**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

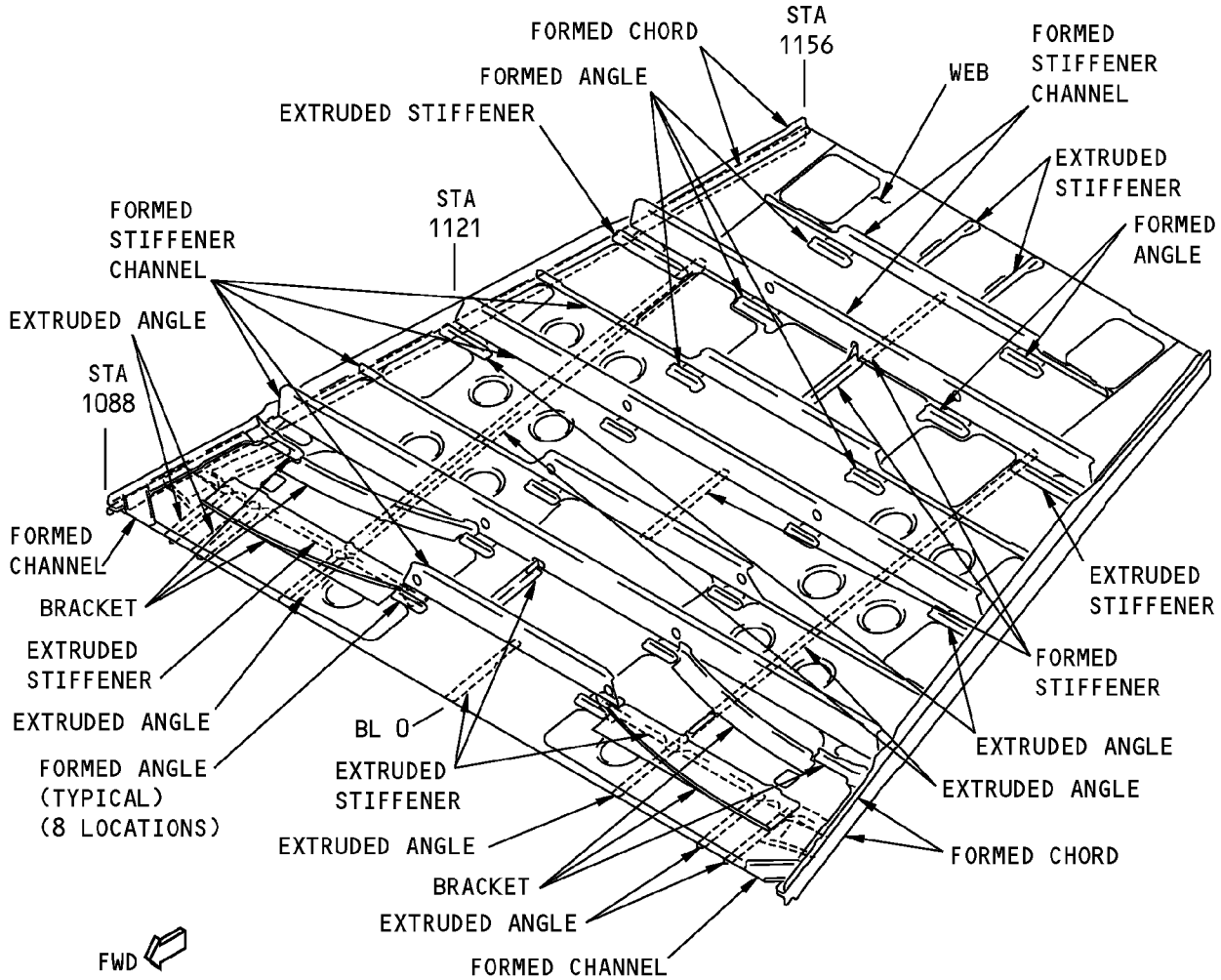
**UPPER HORIZONTAL BEAM**

**Section 48 Upper Horizontal Beam  
Figure 102**

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ALLOWABLE DAMAGE 1  
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**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

**LOWER HORIZONTAL BEAM**

**Section 48 Lower Horizontal Beam  
Figure 103**

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STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 1 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 1 for the allowable damage limits paragraph that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Web	4.A
Extruded Chord	4.B
Formed Chord	4.C
Extruded Stiffener	4.D
Formed Stiffener	4.E
Formed Stiffener Channel	4.E
Extruded Angle	4.D
Formed Angle	4.E
Bracket	4.E

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes



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## STRUCTURAL REPAIR MANUAL

### 4. Allowable Damage Limits

#### A. Web

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and F.
- (3) Dents:
  - (a) Refer to Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail G for the damage that is permitted.
- (4) Holes and Punctures:
  - (a) The damage is permitted if it is:
    - 1) A maximum of 0.25 inch in diameter.
    - 2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.
    - 3) A minimum of 1.5 inch away from the edge of a flanged hole.
    - 4) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - a) Install the rivet without sealant.

#### B. Extruded Chord

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, H, I, J, and K.
- (3) Dents are not permitted.
- (4) Holes and Punctures:
  - (a) The damage is permitted if it is:
    - 1) A maximum of 0.25 inch in diameter.
    - 2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.
    - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - a) Install the rivet without sealant.

#### C. Formed Chord

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and H.
- (3) Dents are not permitted.
- (4) Holes and Punctures:

ALLOWABLE DAMAGE 1

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## STRUCTURAL REPAIR MANUAL

- (a) The damage is permitted if it is:
  - 1) A maximum of 0.25 inch in diameter.
  - 2) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.
  - 3) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
    - a) Install the rivet without sealant.
- D. Extruded Stiffener and Extruded Angle
  - (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, H, I, J, and K.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) In the free flange as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail L.
      - 1) The damage must not be more than 0.25 inch in diameter.
      - 2) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
        - a) Install the rivet without sealant.
- E. Formed Stiffener, Formed Stiffener Channel, Formed Angle, and Bracket
  - (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Details A, B, C, D, E, and H.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) In the free flange as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail L.
    - (b) In the web of stiffener channels and bracket channels as shown in Section 48 Upper and Lower Horizontal Beams Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 1, Detail M.
      - 1) The damage must not be more than 0.25 inch in diameter.
      - 2) The damage must be a minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage.
      - 3) Fill the hole with a 2117-T3 or 2117-T4 protruding head rivet.
        - a) Install the rivet without sealant.

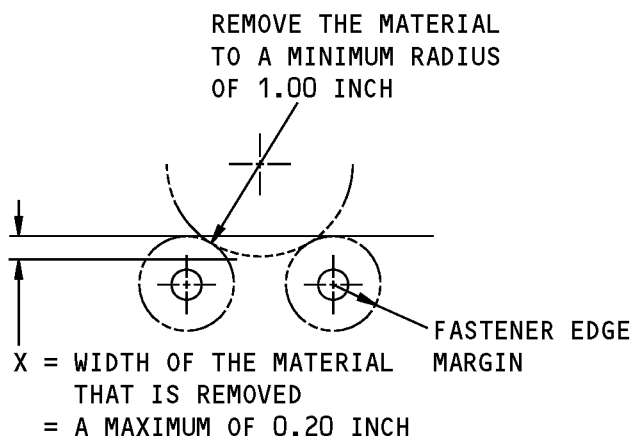
ALLOWABLE DAMAGE 1

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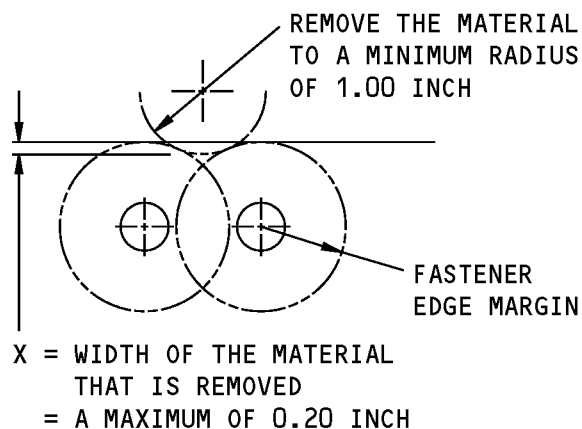
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**STRUCTURAL REPAIR MANUAL**



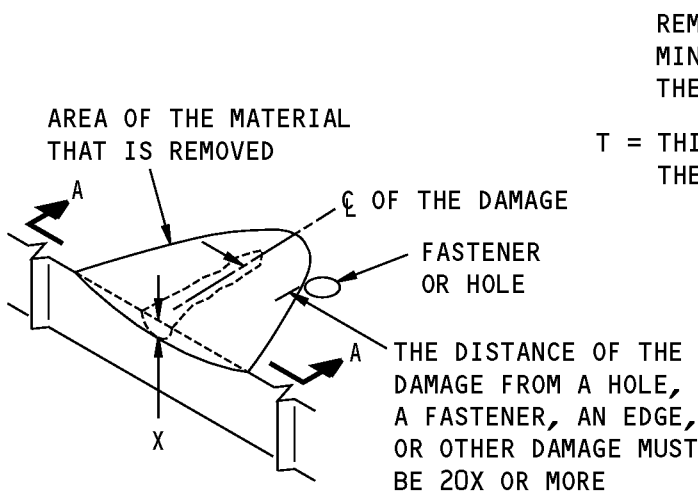
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**(A)**



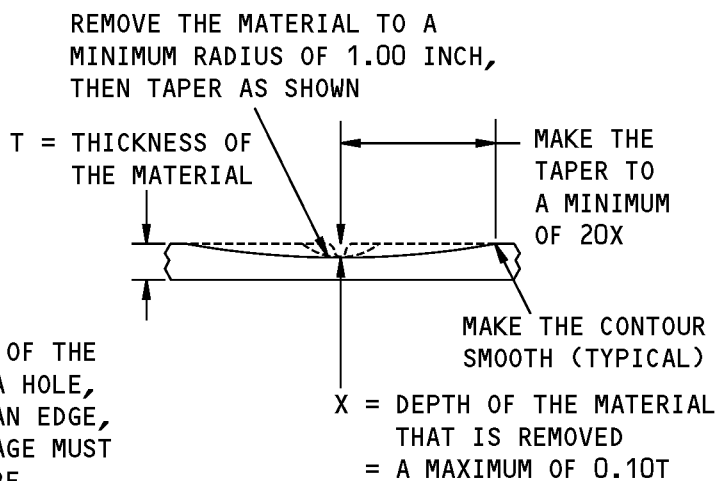
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**(B)**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

**(C)**

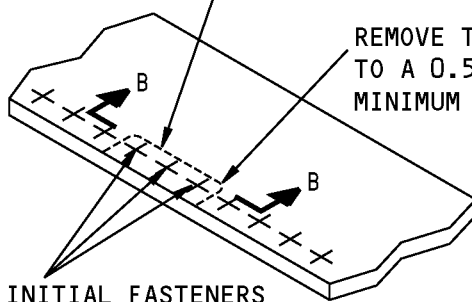


**A-A**

**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 1 of 7)**

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
A GROUP OF TEN IS PERMITTED  
TO A MAXIMUM DEPTH OF X

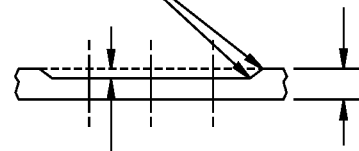


REMOVE THE MATERIAL  
TO A 0.50 INCH RADIUS  
MINIMUM (TYPICAL)

REMOVE THE INITIAL FASTENERS  
BEFORE THE DAMAGED MATERIAL  
IS REMOVED. INSTALL THE SAME  
TYPE AND SIZE (UP TO THE FIRST  
OVERSIZE) FASTENERS AFTER THE  
REWORK IS COMPLETED

MAKE IT  
SMOOTH  
(TYPICAL)

T = THICKNESS OF  
THE MATERIAL



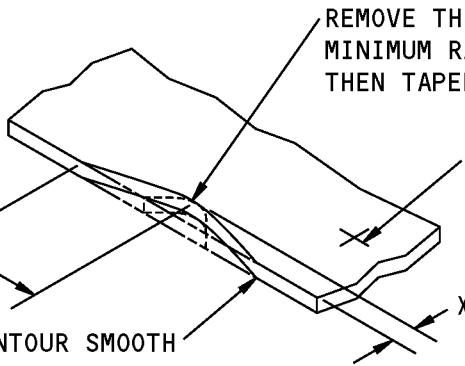
X = THE DEPTH OF THE  
MATERIAL REMOVED  
= 0.10T MAXIMUM

B-B

**REMOVAL OF DAMAGE AROUND THE  
FASTENERS ON AN EDGE OR A SURFACE**

(D)

TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE  
FROM A HOLE, A FASTENER,  
AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE



REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH,  
THEN TAPER AS SHOWN

IF THERE ARE FASTENERS,  
SEE (A) AND (B)

MAKE THE CONTOUR SMOOTH  
(TYPICAL)

X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.20 INCH

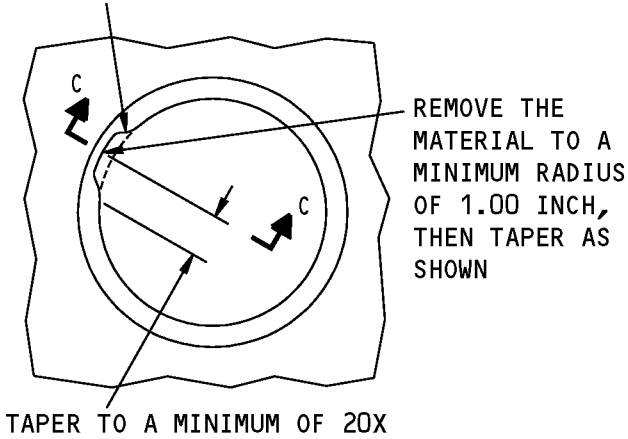
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(E)

**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 2 of 7)**

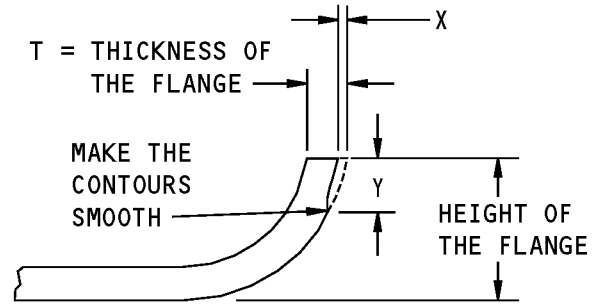
**STRUCTURAL REPAIR MANUAL**

REMOVAL OF MATERIAL IS PERMITTED IN ONE LOCATION ONLY



REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A FLANGED HOLE

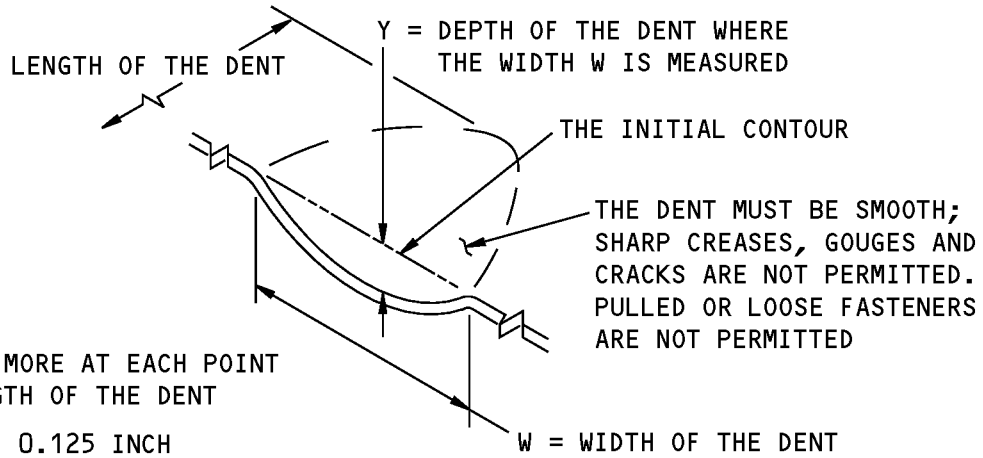
(F)



X = DEPTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10T

Y = LENGTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 50 PERCENT OF THE FLANGE HEIGHT, OR 1.10 INCHES, THAT WHICH IS LESS

C-C



$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT ALONG THE LENGTH OF THE DENT

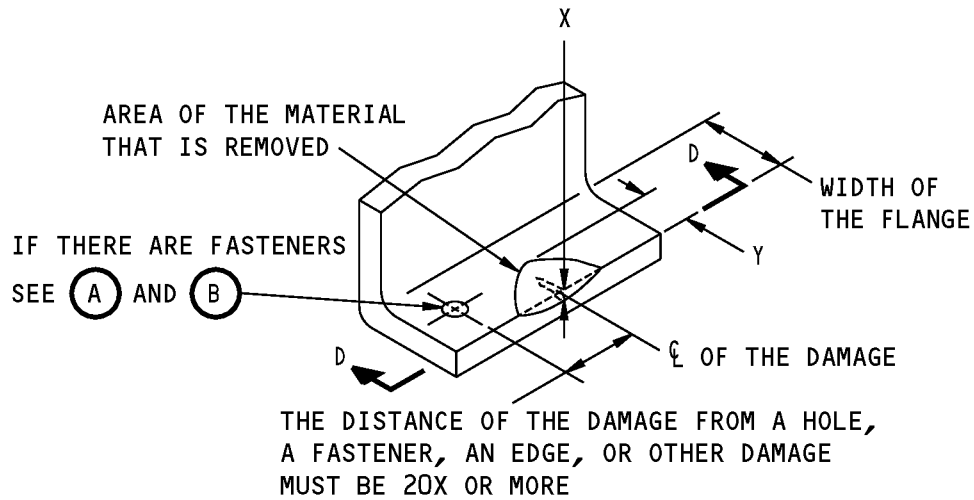
Y = A MAXIMUM OF 0.125 INCH

DENT THAT IS PERMITTED

(G)

Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 3 of 7)

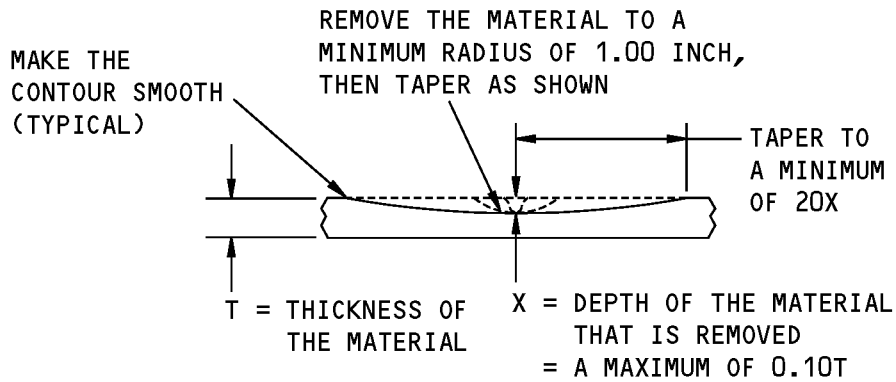
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STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

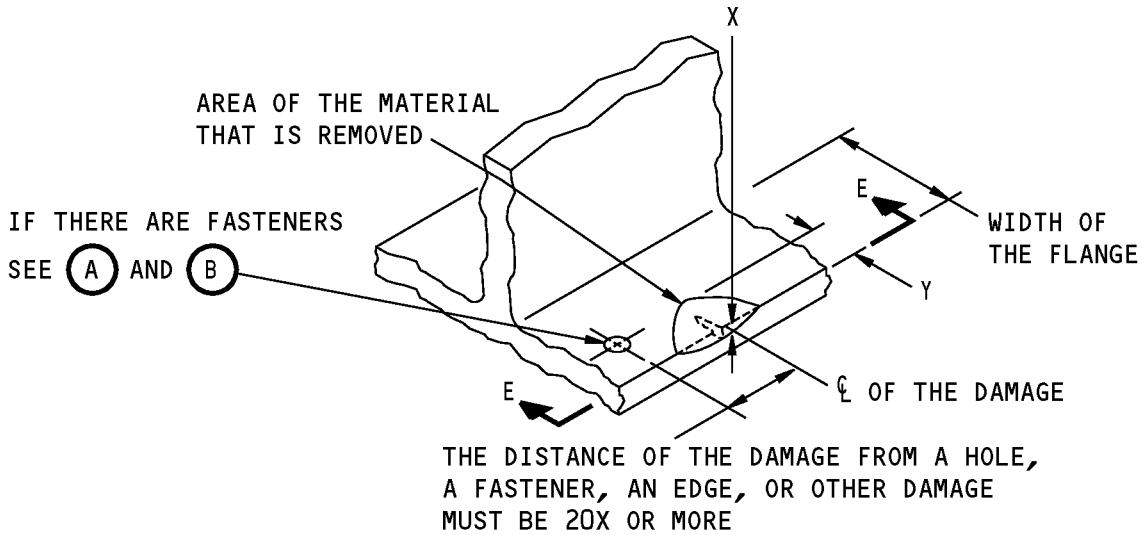
(H)



D-D

**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 4 of 7)**

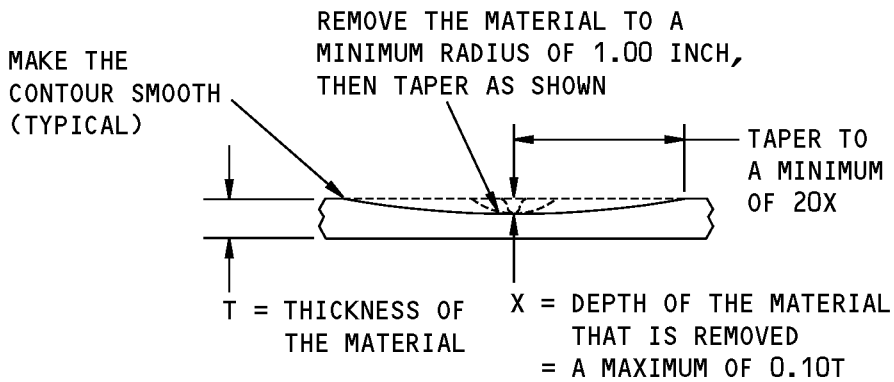
**737-800  
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Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(I)

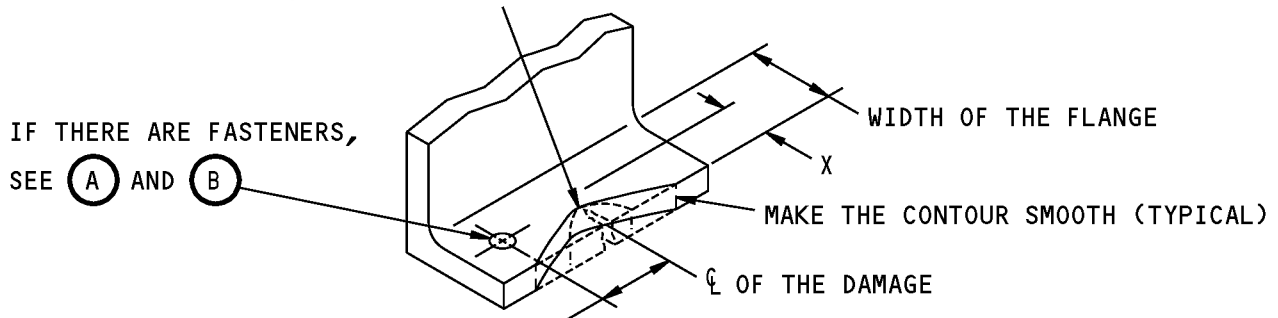


E-E

**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (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

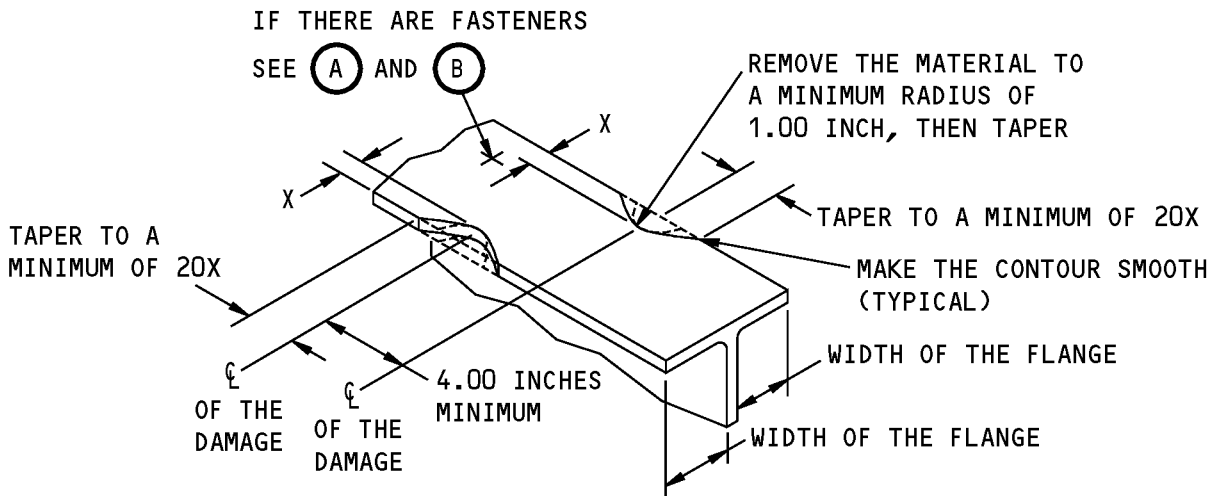


TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE,  
A FASTENER, AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(J)



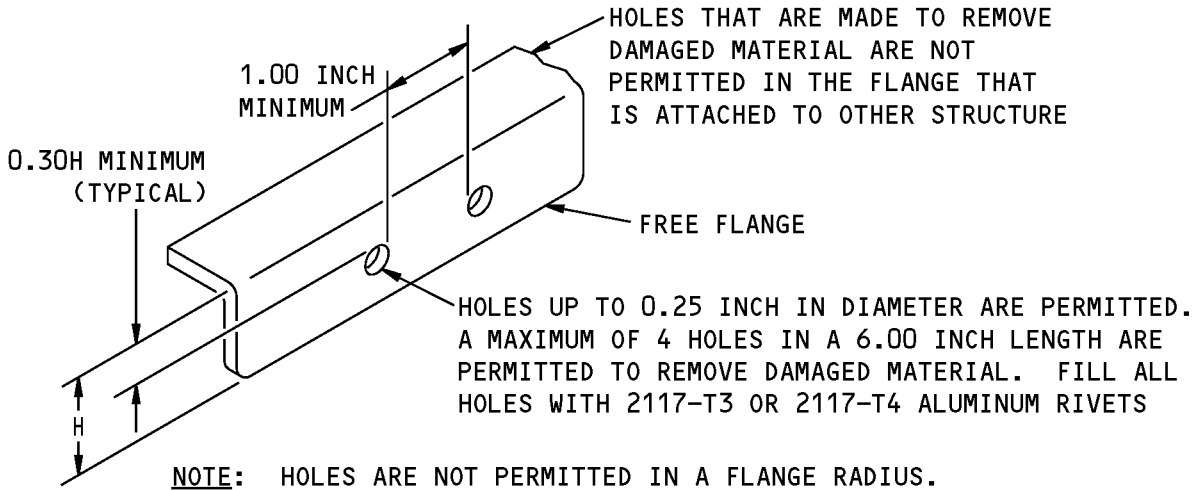
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(K)

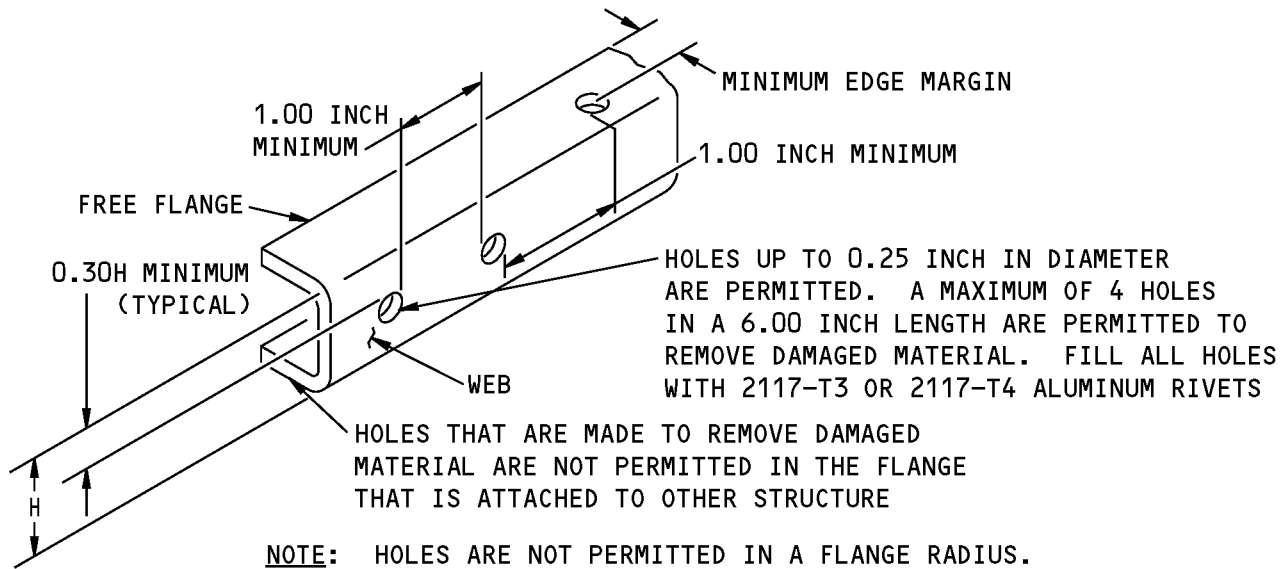
**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 6 of 7)**

**STRUCTURAL REPAIR MANUAL**



**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE FREE FLANGE**

(L)



**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF DAMAGED MATERIAL IN THE WEB OF CHANNELS**

(M)

**Section 48 Upper and Lower Horizontal Beams Allowable Damage Details  
Figure 104 (Sheet 7 of 7)**

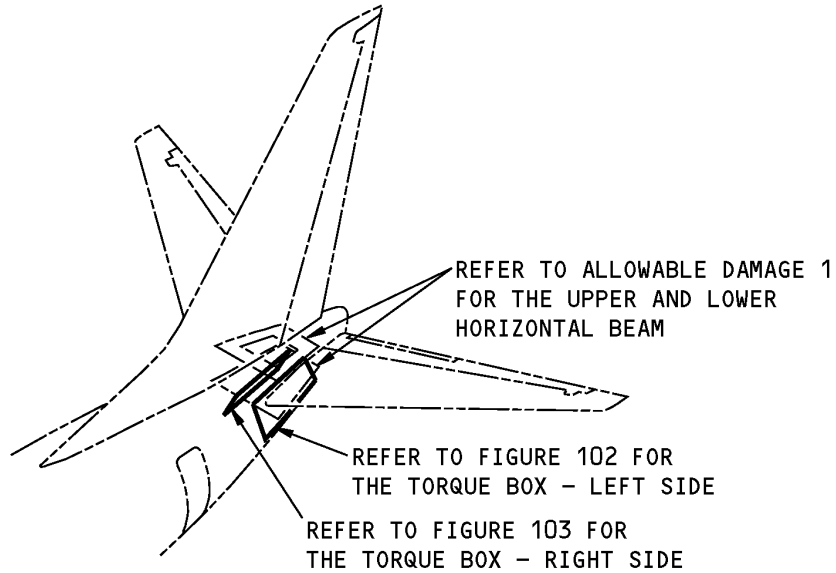


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STRUCTURAL REPAIR MANUAL

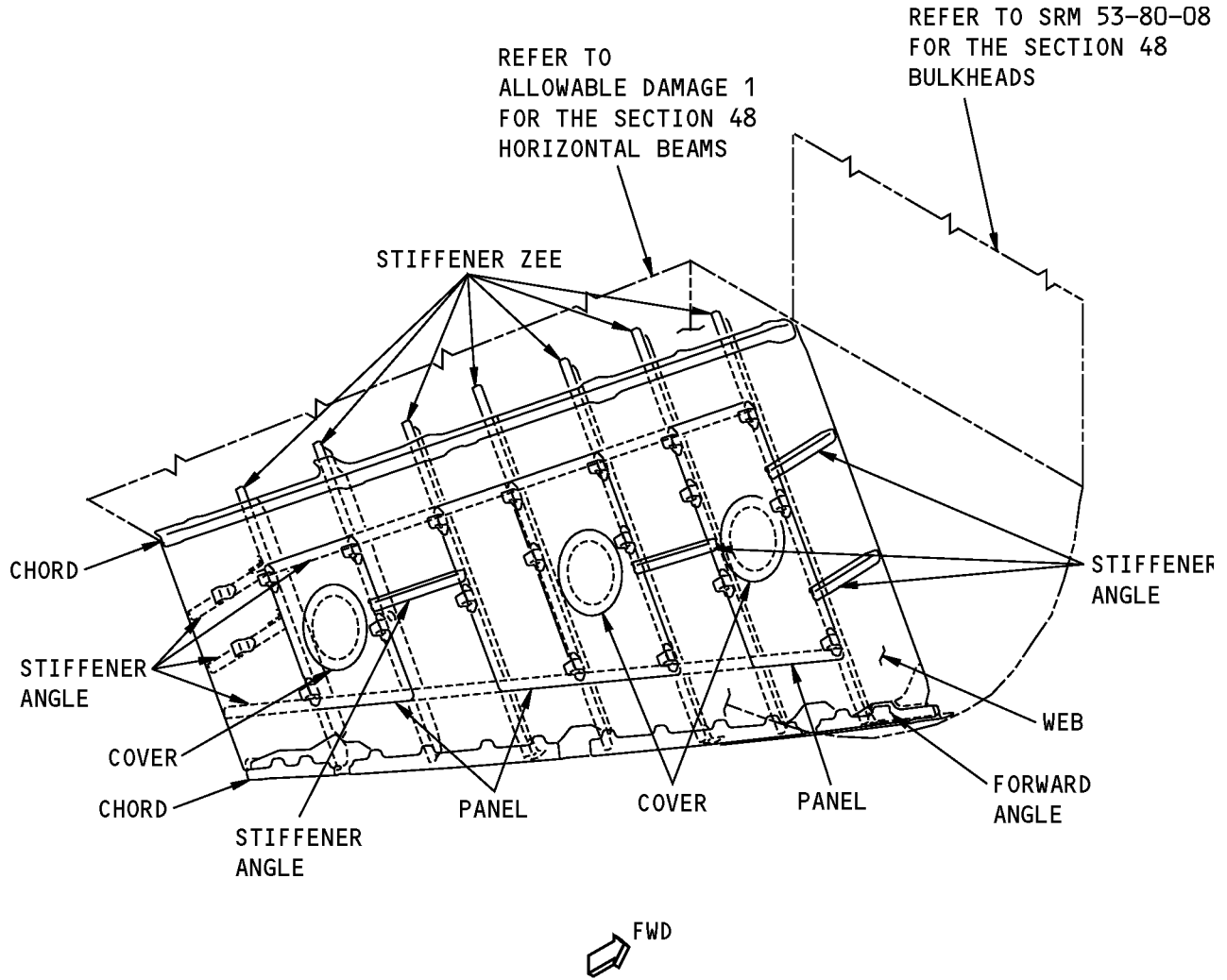
ALLOWABLE DAMAGE 2 - SECTION 48 TORQUE BOX

1. Applicability

- A. This subject gives the allowable damage limits for the Section 48 left and right side of the torque box shown in Section 48 Torque Box Location, Figure 101/ALLOWABLE DAMAGE 2.



Section 48 Torque Box Location  
Figure 101

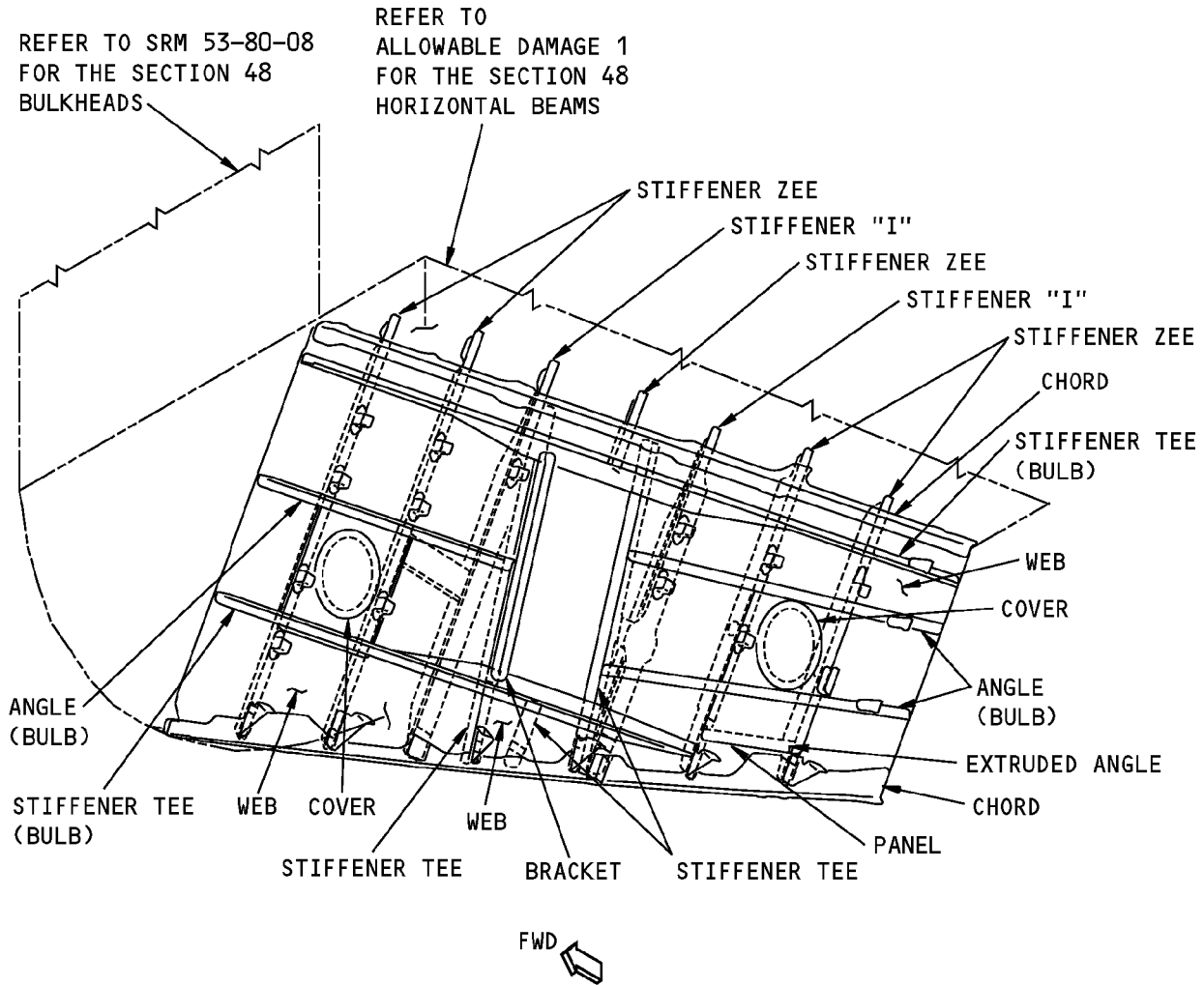


**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

**TORQUE BOX - LEFT SIDE**

**Section 48 Torque Box - Left Side  
Figure 102**

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STRUCTURAL REPAIR MANUAL**



**NOTE:** ALL PARTS ARE MADE OF ALUMINUM UNLESS GIVEN DIFFERENTLY.

**TORQUE BOX - RIGHT SIDE**

**Section 48 Torque Box - Right Side  
Figure 103**

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ALLOWABLE DAMAGE 2  
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STRUCTURAL REPAIR MANUAL**

**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 2 for the allowable damage limits.
  - (1) Refer to Table 101/ALLOWABLE DAMAGE 2 for the allowable damage limits paragraph that is applicable to each type of structure.

**Table 101:**

PARAGRAPH REFERENCES FOR THE ALLOWABLE DAMAGE LIMITS	
TYPE OF STRUCTURE	PARAGRAPH
Web	4.A
Panel	4.A
Cover	4.A
Chord	4.B
Stiffener Tee (Bulb)	4.C
Angle (Bulb)	4.C
Stiffener Angle	4.D
Extruded Angle	4.D
Stiffener Zee	4.E
Stiffener Tee	4.E
Stiffener "I"	4.E
Formed Angle	4.F
Bracket	4.F

- C. Remove the damage as necessary.
  - (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of abrasives and other materials you can use to remove damage.
  - (3) Refer to 51-30-05 for possible sources of equipment and tools you can use to remove damage.
- D. After you remove the damage, do the steps that follow:
  - (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-11, Type I primer to the surface of the reworked area. Refer to SOPM 20-41-02.
  - (3) Apply one layer of BMS 3-23, Type II corrosion inhibiting compound to the surface of the repair area. Refer to 51-20-01.

**3. References**

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS



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**STRUCTURAL REPAIR MANUAL**

(Continued)

Reference	Title
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

**4. Allowable Damage Limits**

**A. Web, Panel, and Cover**

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, and E.
- (3) Dents:
  - (a) Refer to Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail F for the damage that is permitted.
- (4) Holes and Punctures are permitted if they are:
  - (a) A maximum of 0.25 inch in diameter
  - (b) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage
  - (c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
    - 1) Install the rivet without sealant.

**B. Chord**

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, E, and G.
- (3) Dents are not permitted.
- (4) Holes and Punctures are permitted if they are:
  - (a) A maximum of 0.25 inch in diameter
  - (b) A minimum of 1.0 inch away from a fastener hole, the edge of the part, or other damage
  - (c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
    - 1) Install the rivet without sealant.

**C. Stiffener Tee (Bulb) and Angle (Bulb)**

- (1) Cracks are not permitted.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A thru D and G thru M.
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.

**D. Stiffener Angle and Extruded Angle**

ALLOWABLE DAMAGE 2

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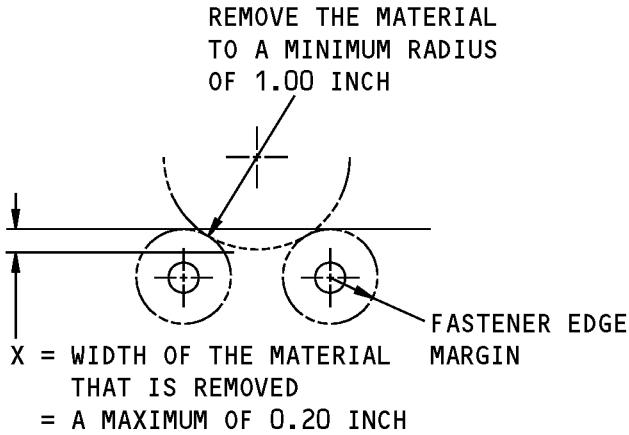


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## STRUCTURAL REPAIR MANUAL

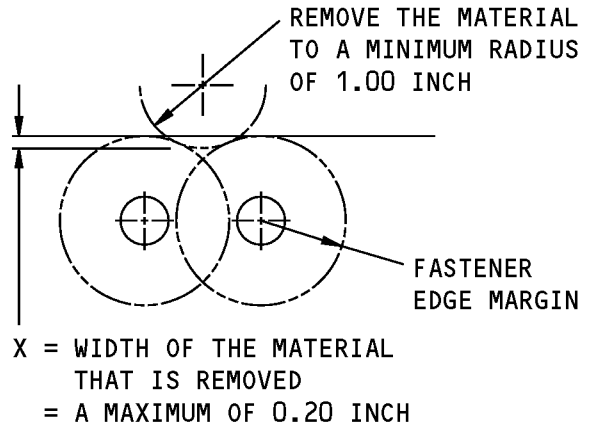
- (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, G, H, K, and L.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) In the free flange as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail L
    - (b) A maximum of 0.25 inch in diameter
    - (c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - 1) Install the rivet without sealant.
- E. Stiffener - Zee, Tee, and "I"
- (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, G, H, K, and L.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) A maximum of 0.25 inch in diameter
    - (b) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - 1) Install the rivet without sealant.
- F. Formed Angle and Bracket
- (1) Cracks are not permitted.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Details A, B, C, D, E, and G.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are permitted if they are:
    - (a) In the free flange as shown in Section 48 Torque Box Allowable Damage Details, Figure 104/ALLOWABLE DAMAGE 2, Detail M
    - (b) A maximum of 0.25 inch in diameter
    - (c) Filled with a 2117-T3 or 2117-T4 protruding head rivet.
      - 1) Install the rivet without sealant.

**STRUCTURAL REPAIR MANUAL**



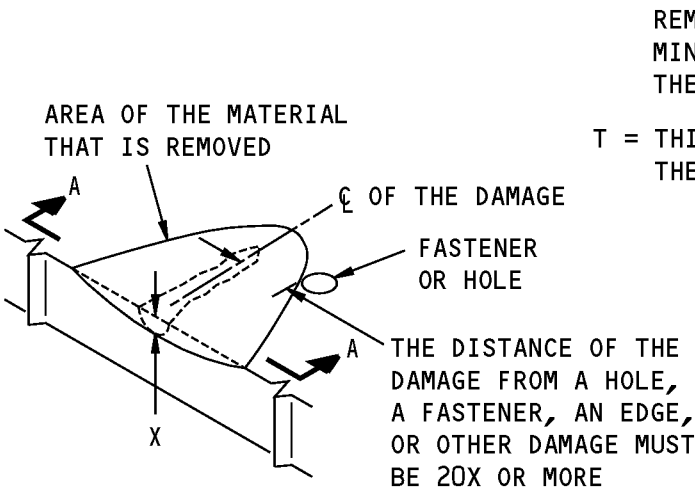
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



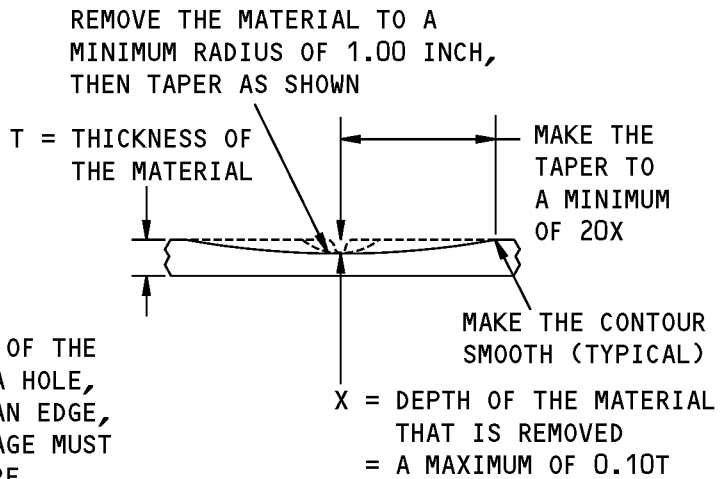
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(C)

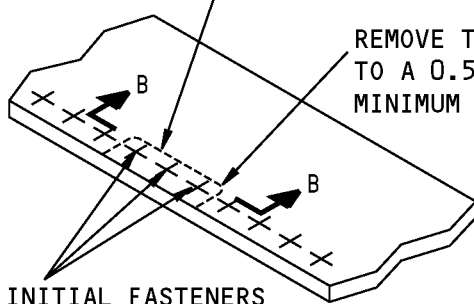


A-A

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 1 of 9)**

**STRUCTURAL REPAIR MANUAL**

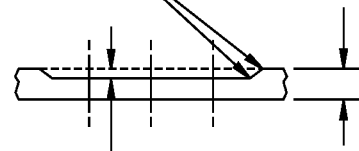
THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
A GROUP OF TEN IS PERMITTED  
TO A MAXIMUM DEPTH OF X



REMOVE THE INITIAL FASTENERS  
BEFORE THE DAMAGED MATERIAL  
IS REMOVED. INSTALL THE SAME  
TYPE AND SIZE (UP TO THE FIRST  
OVERSIZE) FASTENERS AFTER THE  
REWORK IS COMPLETED

MAKE IT  
SMOOTH  
(TYPICAL)

T = THICKNESS OF  
THE MATERIAL



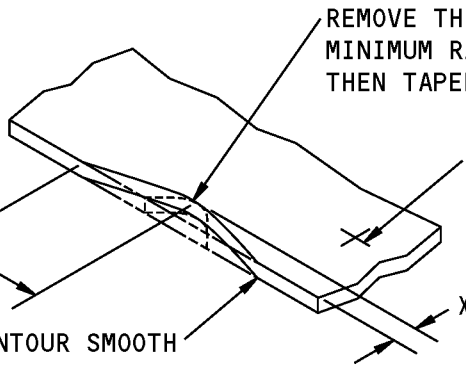
X = THE DEPTH OF THE  
MATERIAL REMOVED  
= 0.10T MAXIMUM

B-B

**REMOVAL OF DAMAGE AROUND THE  
FASTENERS ON AN EDGE OR A SURFACE**

(D)

TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE  
FROM A HOLE, A FASTENER,  
AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE



REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH,  
THEN TAPER AS SHOWN

IF THERE ARE FASTENERS,  
SEE (A) AND (B)

MAKE THE CONTOUR SMOOTH  
(TYPICAL)

X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.20 INCH

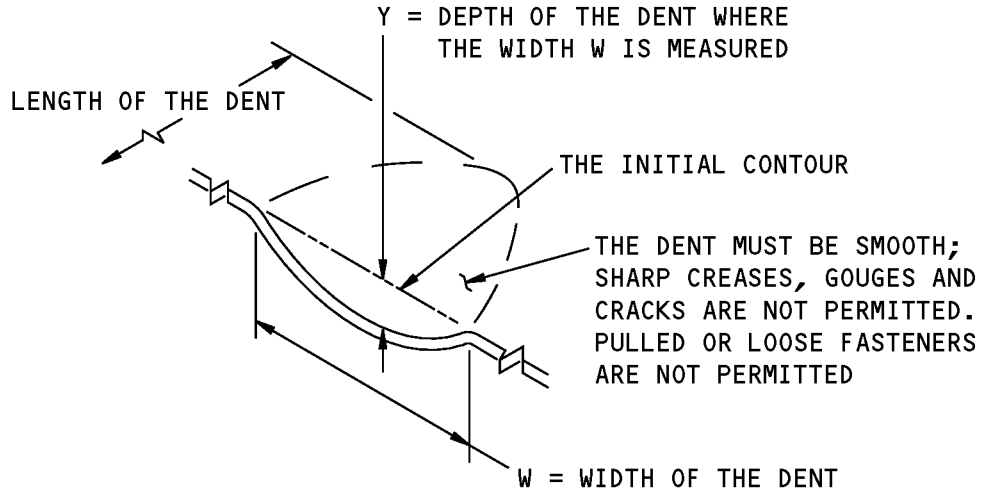
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(E)

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 2 of 9)**



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$\frac{W}{Y}$  MUST BE 30 OR MORE AT EACH POINT  
ALONG THE LENGTH OF THE DENT

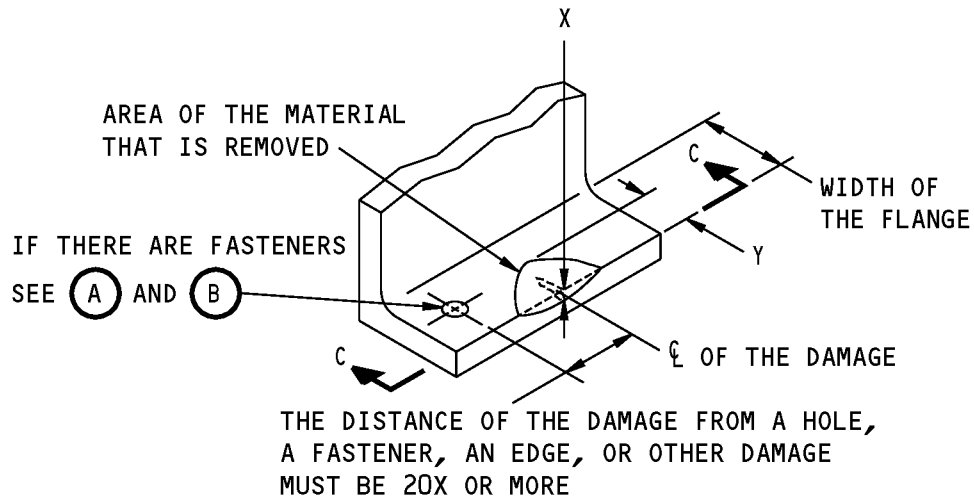
Y = A MAXIMUM OF 0.125 INCH

DENT THAT IS PERMITTED

F

Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 3 of 9)

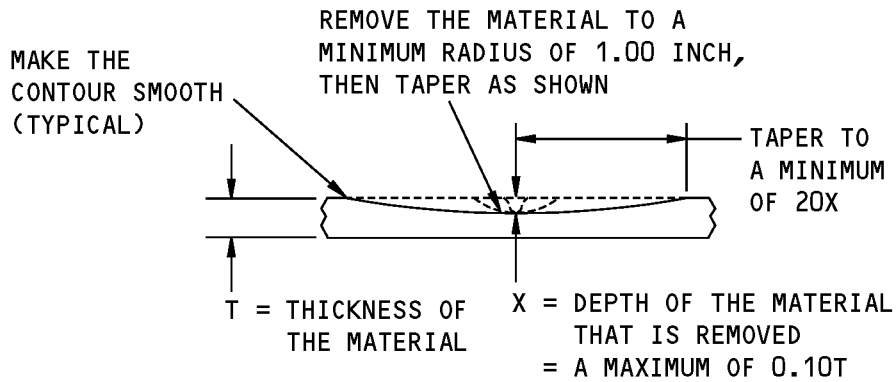
**737-800  
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Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

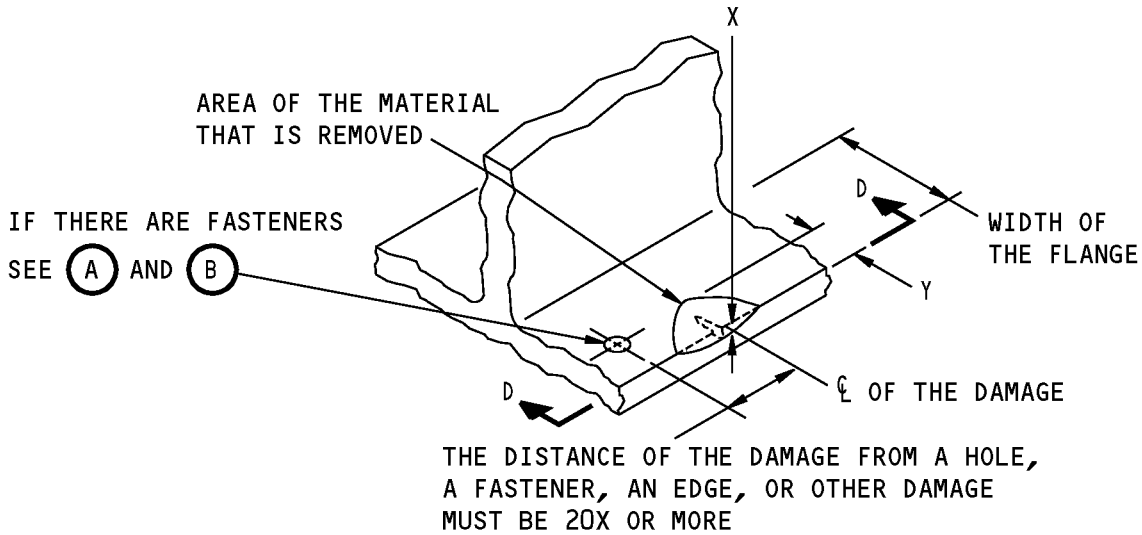
(G)



C-C

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 4 of 9)**

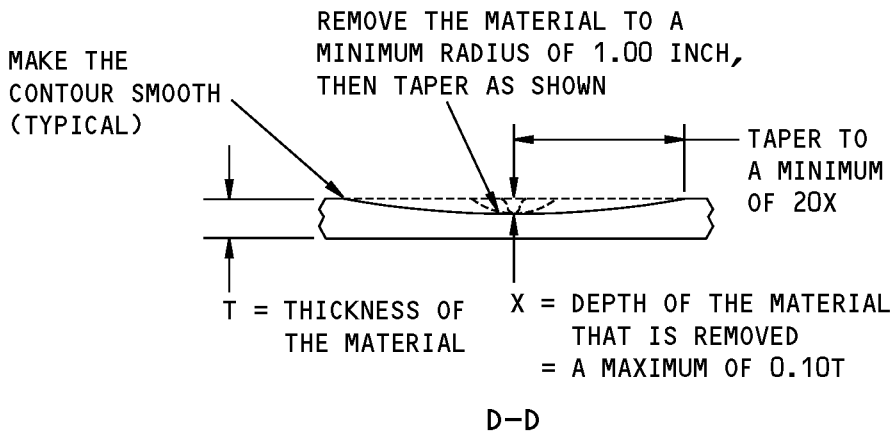
**737-800  
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Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

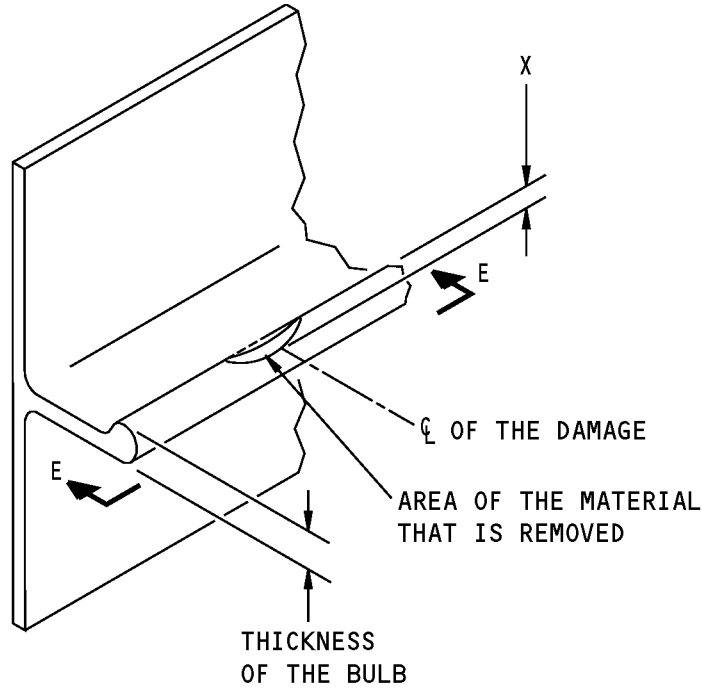
**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(H)



**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 5 of 9)**

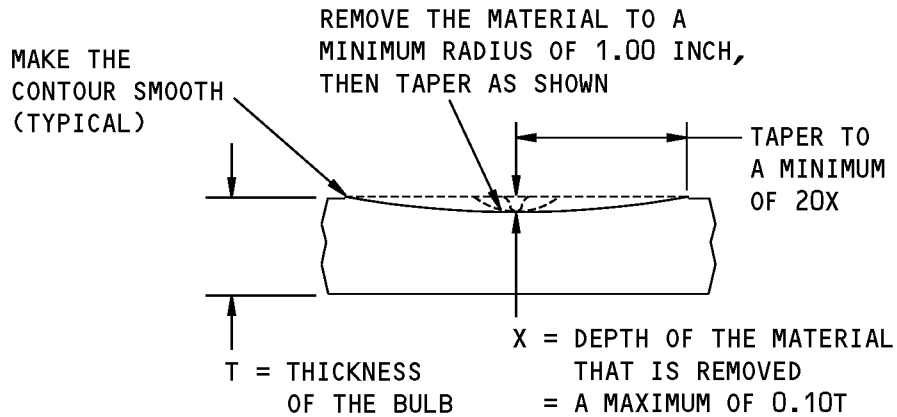
**737-800  
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X = DEPTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED EXTRUSION**

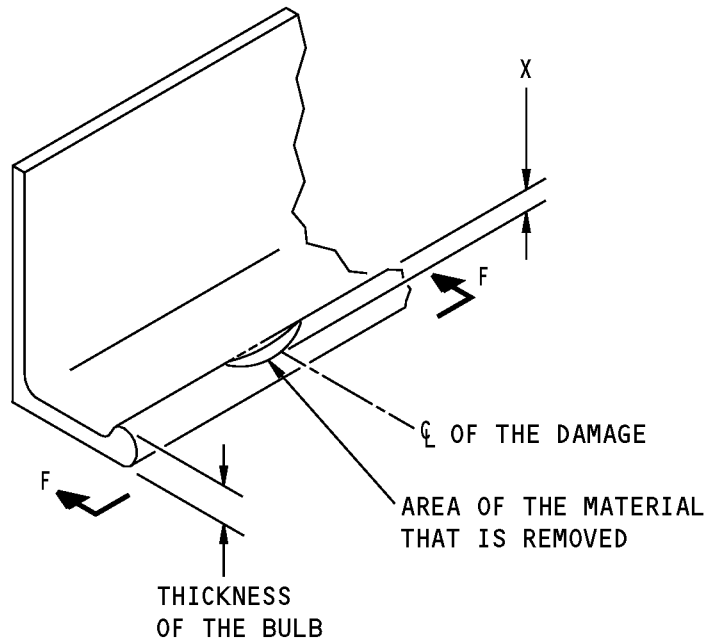
I



E-E

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 6 of 9)**

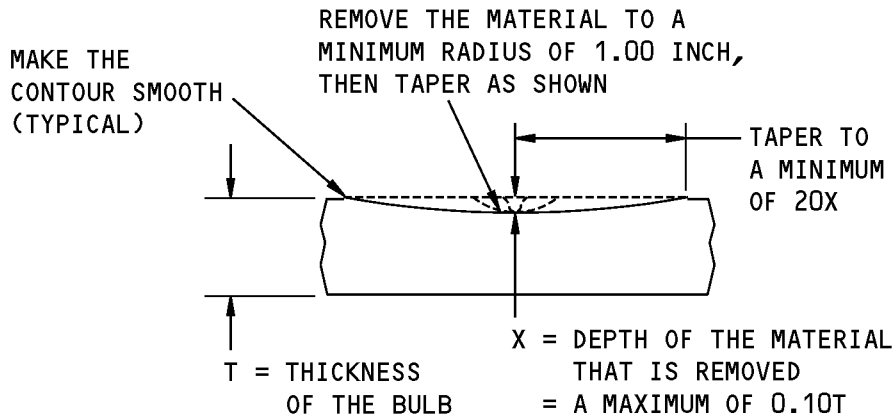
**737-800  
STRUCTURAL REPAIR MANUAL**



X = DEPTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE THICKNESS OF THE BULB

**REMOVAL OF DAMAGED MATERIAL ON A SURFACE  
AT AN EDGE OF A BULBED EXTRUSION**

**J**

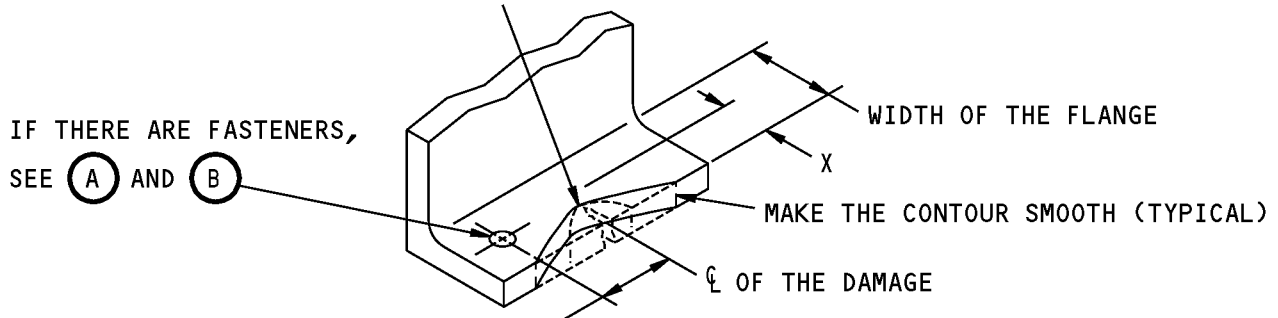


F-F

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 7 of 9)**

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REMOVE THE MATERIAL TO A MINIMUM RADIUS  
OF 1.00 INCH, THEN TAPER AS SHOWN

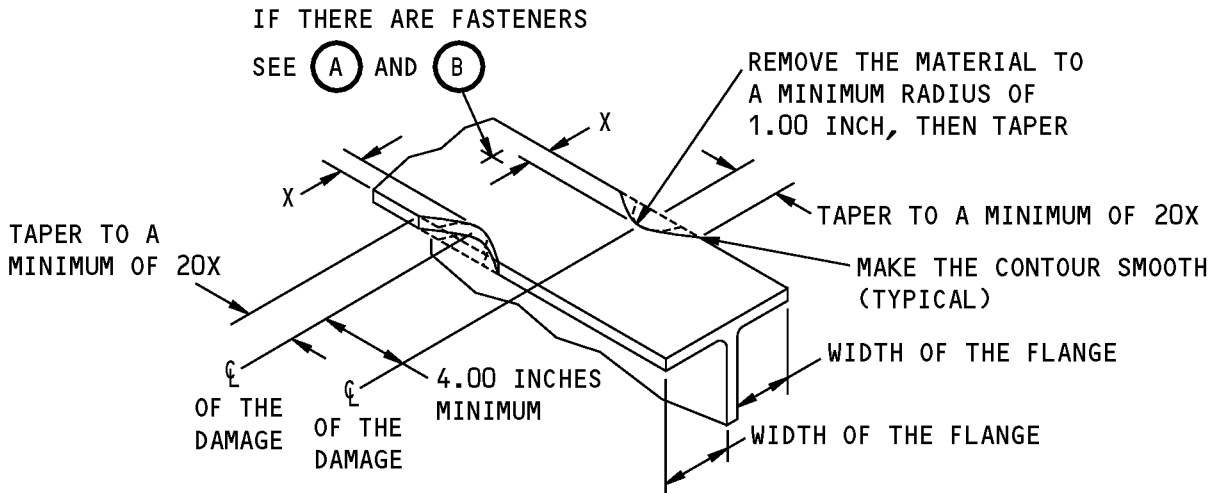


TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE,  
A FASTENER, AN EDGE, OR OTHER DAMAGE  
MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(K)



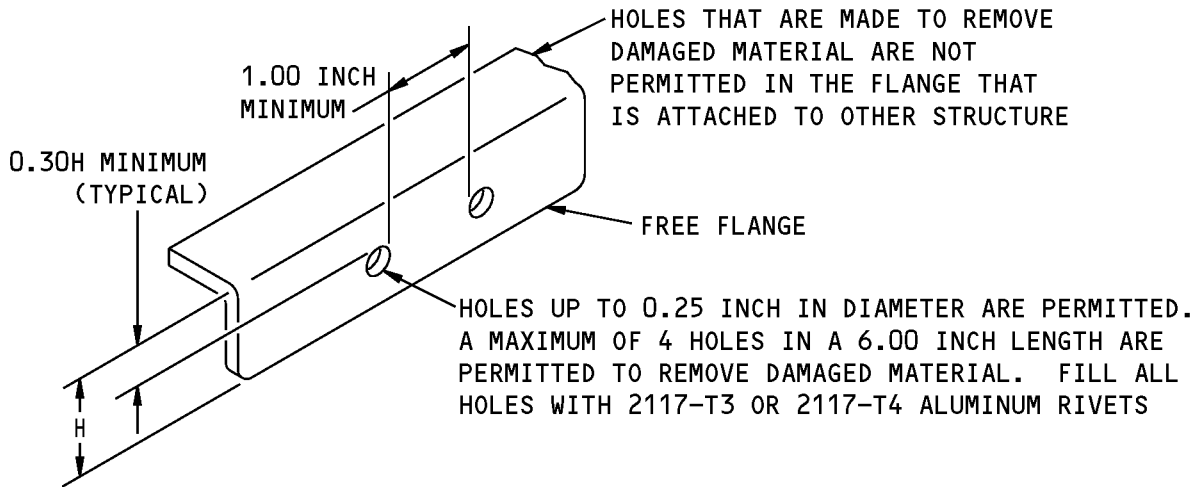
X = THE WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(L)

**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 8 of 9)**

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STRUCTURAL REPAIR MANUAL**



NOTE: HOLES ARE NOT PERMITTED IN A FLANGE RADIUS.

**HOLES THAT ARE PERMITTED FOR THE REMOVAL OF  
DAMAGED MATERIAL IN THE FREE FLANGE**



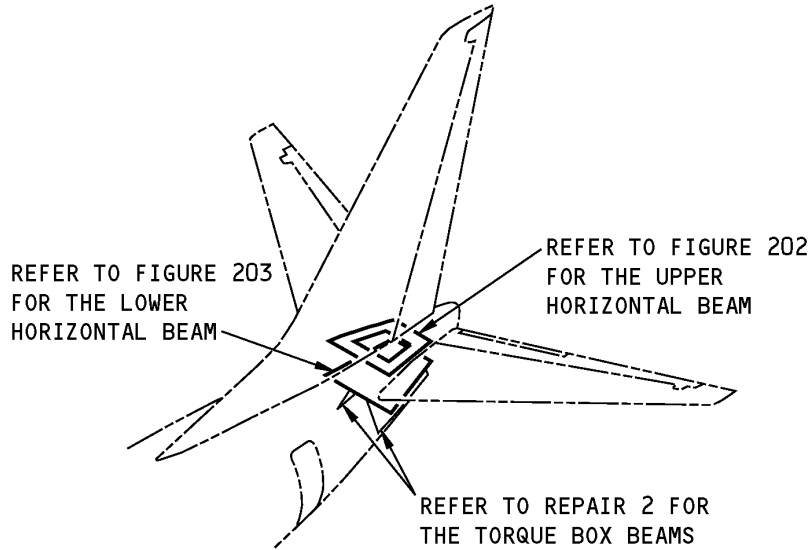
**Section 48 Torque Box Allowable Damage Details  
Figure 104 (Sheet 9 of 9)**

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STRUCTURAL REPAIR MANUAL**

**REPAIR 1 - SECTION 48 UPPER AND LOWER HORIZONTAL BEAM STRUCTURE**

**1. Applicability**

- A. Repair 1 is applicable to damage to the Section 48 upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beam Location, Figure 201/REPAIR 1.



**Section 48 Upper and Lower Horizontal Beam Location  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:  
 (1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.

**3. References**

Reference	Title
51-30-01, GENERAL	Sheet Metal Materials
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-13	HORIZONTAL BEAMS - SECTION 48
53-80-13, IDENTIFICATION 1	Section 48 Upper and Lower Horizontal Beams





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**STRUCTURAL REPAIR MANUAL**

**4. Repair Instructions**

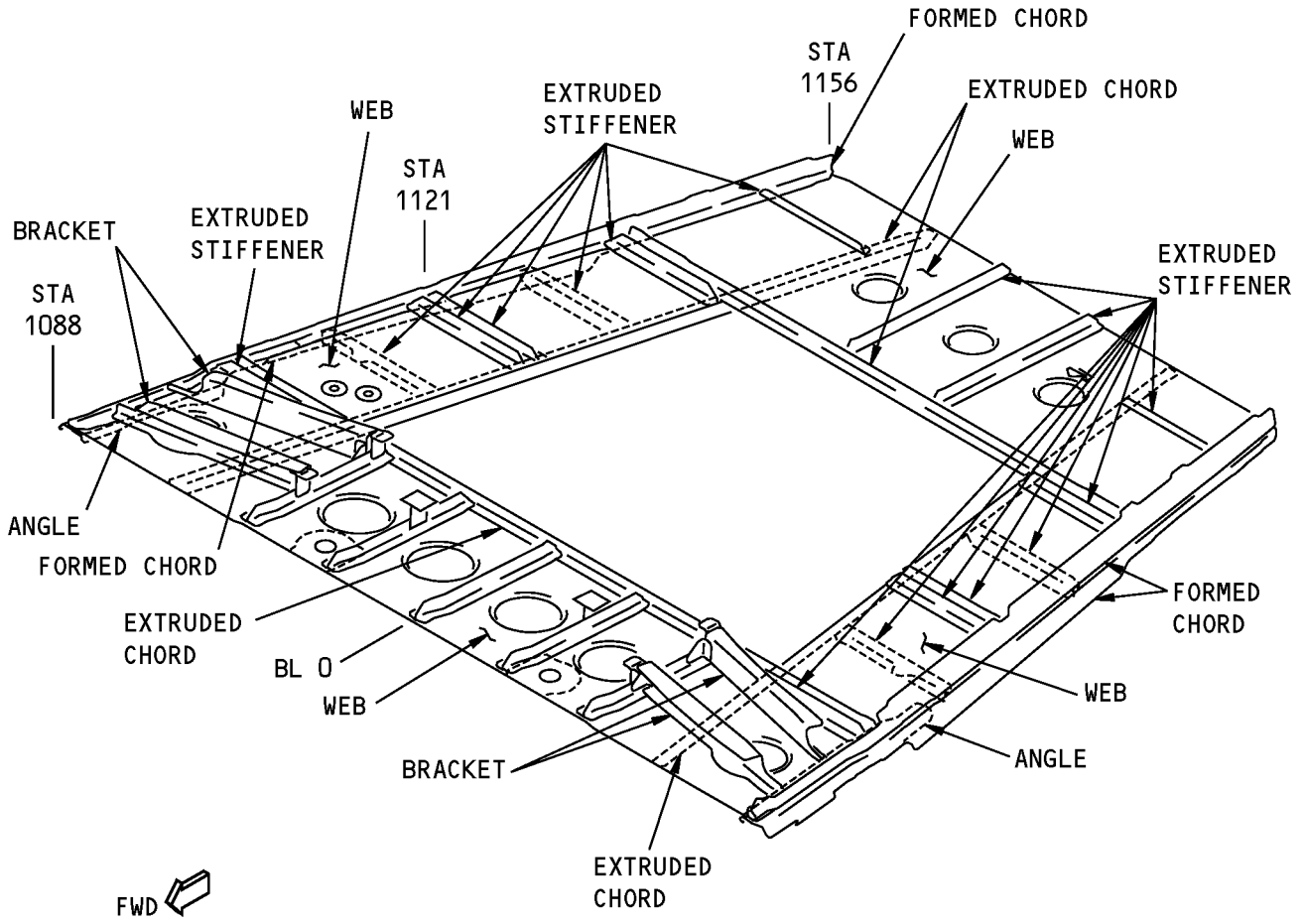
- A. Refer to Table 201/REPAIR 1 to find the applicable repair for a component of the upper and lower horizontal beams shown in Section 48 Upper and Lower Horizontal Beams, Figure 202/REPAIR 1 and Section 48 Upper and Lower Horizontal Beams, Figure 203/REPAIR 1.

**NOTE:** If necessary, refer to 53-80-13, Identification 1 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

<b>REPAIR REFERENCES FOR THE SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS</b>	
<b>COMPONENT</b>	<b>REPAIR</b>
Web (sheet)	Refer to SRM 51-70-13
Chord (extrusion)	Refer to SRM 51-70-12
Chord (formed)	Refer to SRM 51-70-11
Stiffener (extrusion)	Refer to SRM 51-70-12
Stiffener (formed)	Refer to SRM 51-70-11
Stiffener Channel (formed)	Refer to SRM 51-70-11
Angle (extrusion)	Refer to SRM 51-70-12
Angle (formed)	Refer to SRM 51-70-11
Bracket (formed)	Refer to SRM 51-70-11

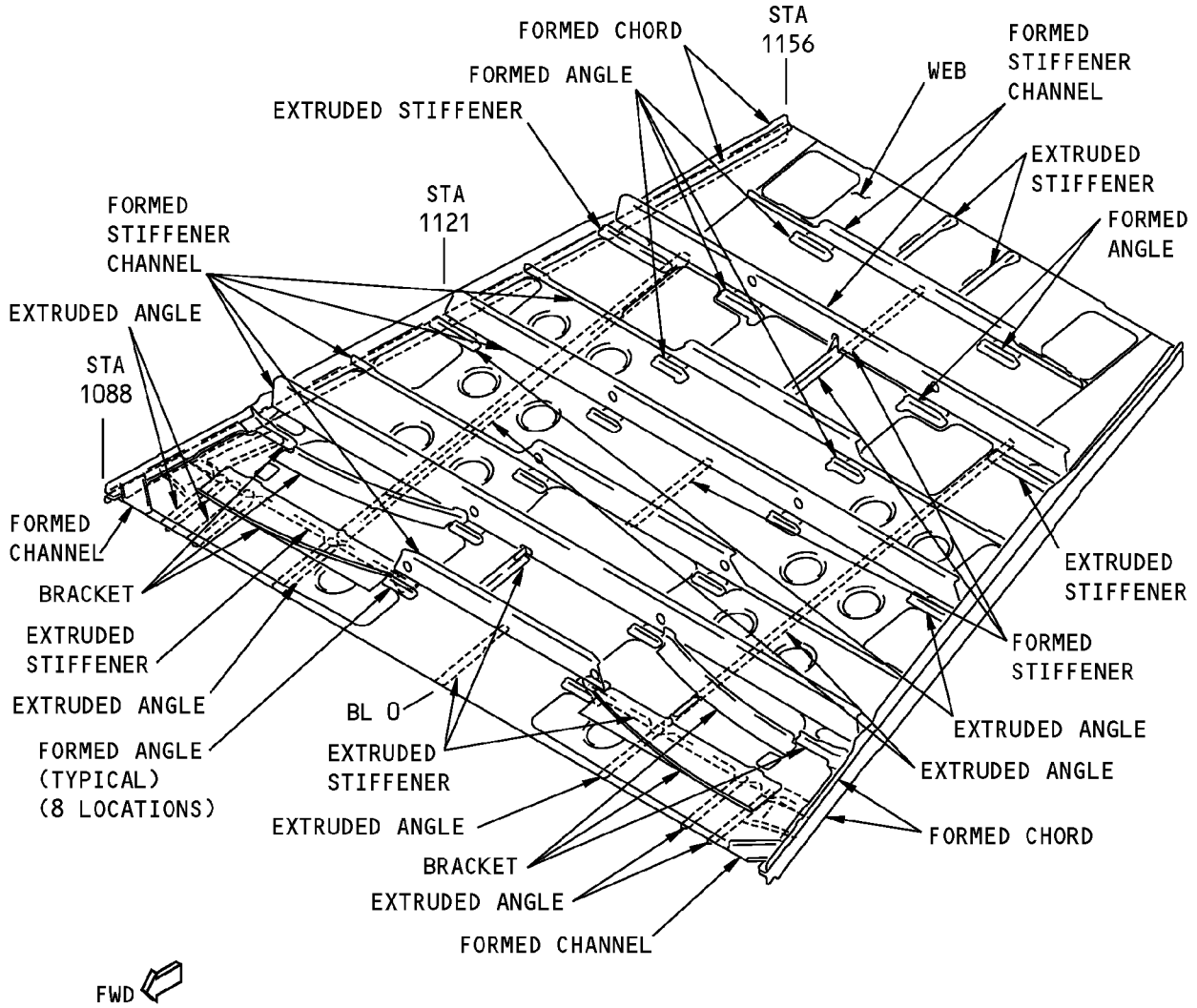
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STRUCTURAL REPAIR MANUAL**



**UPPER HORIZONTAL BEAM**

**Section 48 Upper and Lower Horizontal Beams  
Figure 202**

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**LOWER HORIZONTAL BEAM**

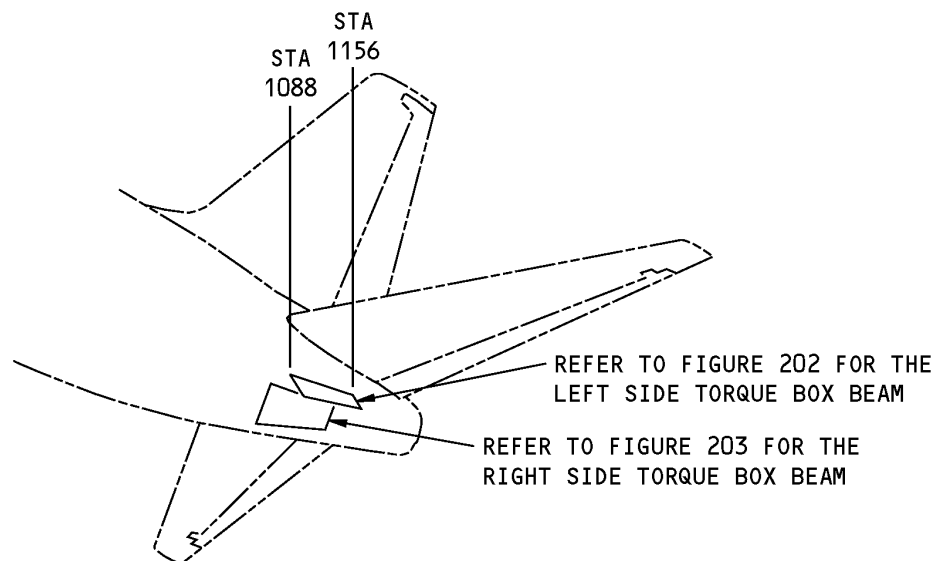
**Section 48 Upper and Lower Horizontal Beams  
Figure 203**

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REPAIR 2 - SECTION 48 TORQUE BOX BEAM STRUCTURE

1. Applicability

- A. Repair 2 is applicable to damage to the Section 48 torque box shown in Section 48 Torque Box Beam Location, Figure 201/REPAIR 2.



NOTE: REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

Section 48 Torque Box Beam Location  
Figure 201

2. General

- A. The typical repairs given in 51-70-11, 51-70-12, and 51-70-13 can be used when applicable if:  
(1) There is sufficient clearance with the adjacent structure for the installation of repair parts.
- B. Refer to the limits of the typical repairs given in 51-70-11, 51-70-12, and 51-70-13 before you start a repair.



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### 3. References

Reference	Title
51-30-01, GENERAL	Sheet Metal Materials
51-70-11	TYPICAL FORMED SECTION REPAIRS
51-70-12	EXTRUDED SECTION REPAIRS
51-70-13	TYPICAL WEB REPAIRS
53-80-13	HORIZONTAL BEAMS - SECTION 48
53-80-13, IDENTIFICATION 2	Section 48 Torque Box Beam

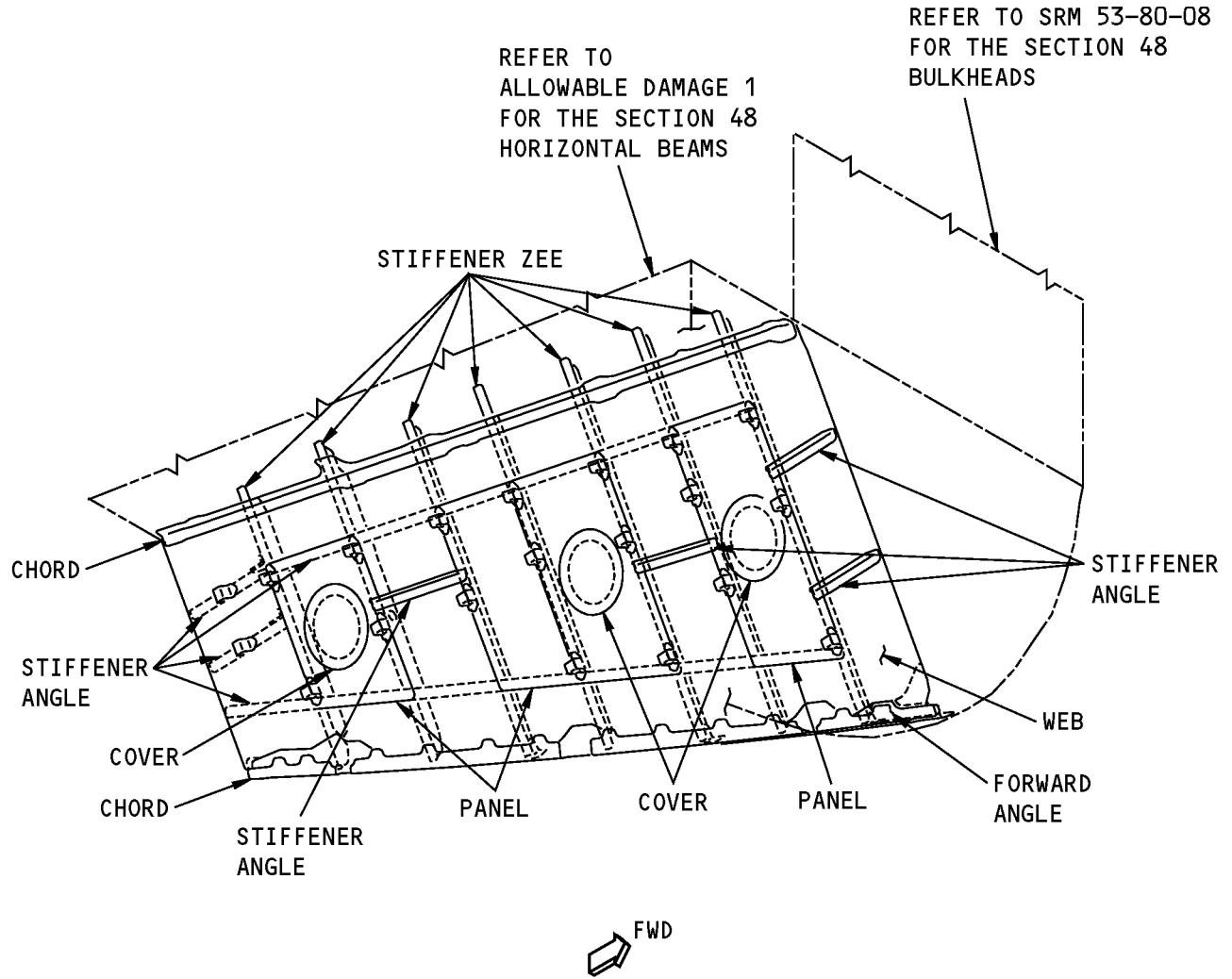
### 4. Repair Instructions

- A. Refer to Table 201/REPAIR 2 to find the applicable repair for a component of the torque box shown in Section 48 Torque Box, Figure 202/REPAIR 2.

**NOTE:** If necessary, refer to 53-80-13, Identification 2 to find the material and the process that was used to make the part which you want to repair.

**Table 201:**

REPAIR REFERENCES FOR THE SECTION 48 TORQUE BOX	
COMPONENT	REPAIR
Web (sheet)	Refer to SRM 51-70-13
Panel (sheet)	Refer to SRM 51-70-13
Cover (sheet)	There are no repairs for these parts in the Structural Repair Manual at this time.
Chord (formed)	Refer to SRM 51-70-11
Stiffener Tee (bulbed extrusion)	Refer to SRM 51-70-12
Angle (bulbed extrusion)	Refer to SRM 51-70-12
Stiffener Angle (extrusion)	Refer to SRM 51-70-12
Angle (extrusion)	Refer to SRM 51-70-12
Angle (formed)	Refer to SRM 51-70-11
Stiffener Zee (extrusion)	Refer to SRM 51-70-12
Stiffener Tee (extrusion)	Refer to SRM 51-70-12
Stiffener "I" (extrusion)	Refer to SRM 51-70-12
Bracket (extrusion)	Refer to SRM 51-70-12



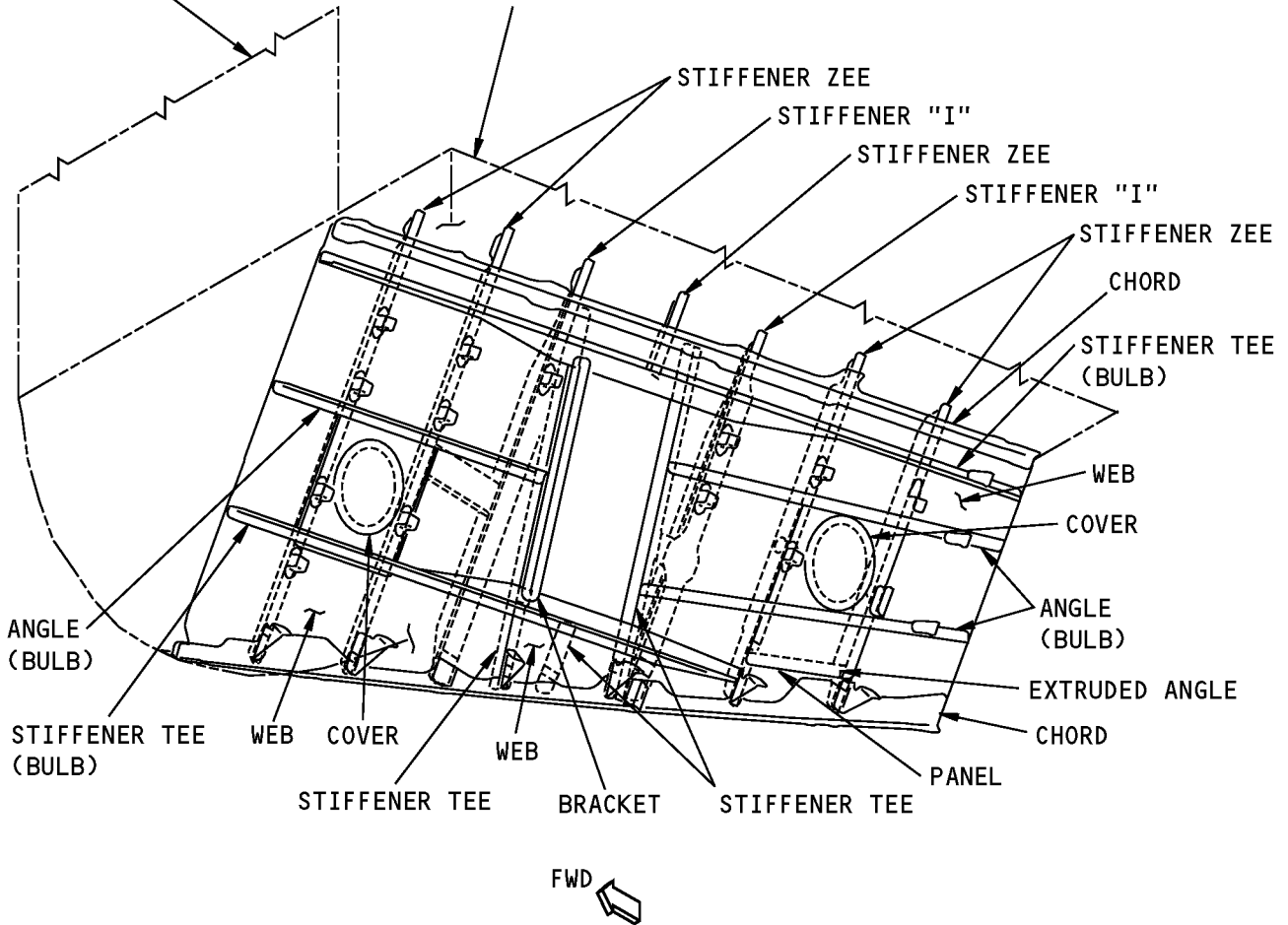
**TORQUE BOX - LEFT SIDE**

**Section 48 Torque Box  
Figure 202**

**STRUCTURAL REPAIR MANUAL**

REFER TO SRM 53-80-08  
FOR THE SECTION 48  
BULKHEADS

REFER TO  
ALLOWABLE DAMAGE 1  
FOR THE SECTION 48  
HORIZONTAL BEAMS



**TORQUE BOX - RIGHT SIDE**

**Section 48 Torque Box  
Figure 203**

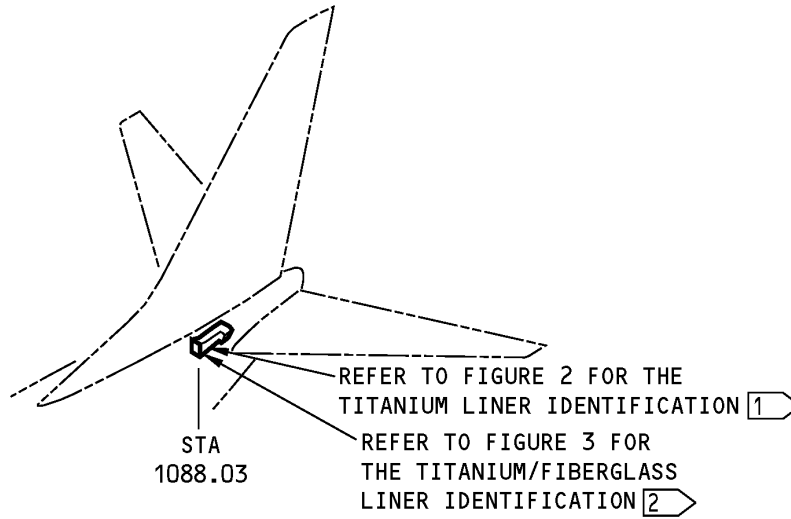
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**53-80-13**

REPAIR 2  
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Nov 01/2003

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**IDENTIFICATION 1 - AUXILIARY POWER UNIT AIR INLET LINER**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

1 AIRPLANE LINE NUMBERS 1 THRU 1198

2 AIRPLANE LINE NUMBERS 1199 AND ON

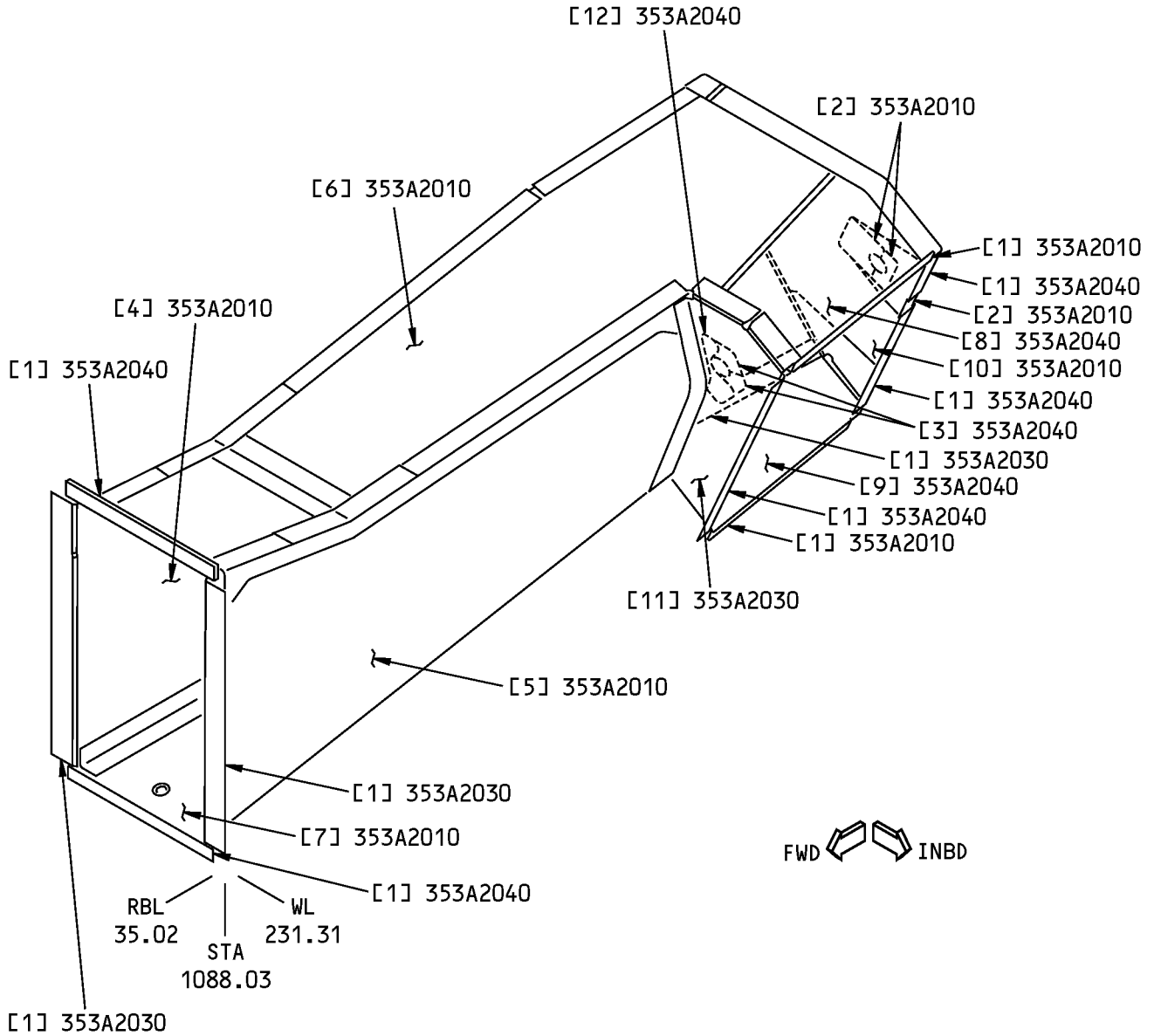
**Auxiliary Power Unit Air Inlet Liner Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
001A4001	Fuselage Product Collector
350A0101	Auxiliary Power Unit - Functional Product Collector
353A2000	Plenum Installation - Air Inlet, APU



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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Titanium Liner Identification  
Figure 2**



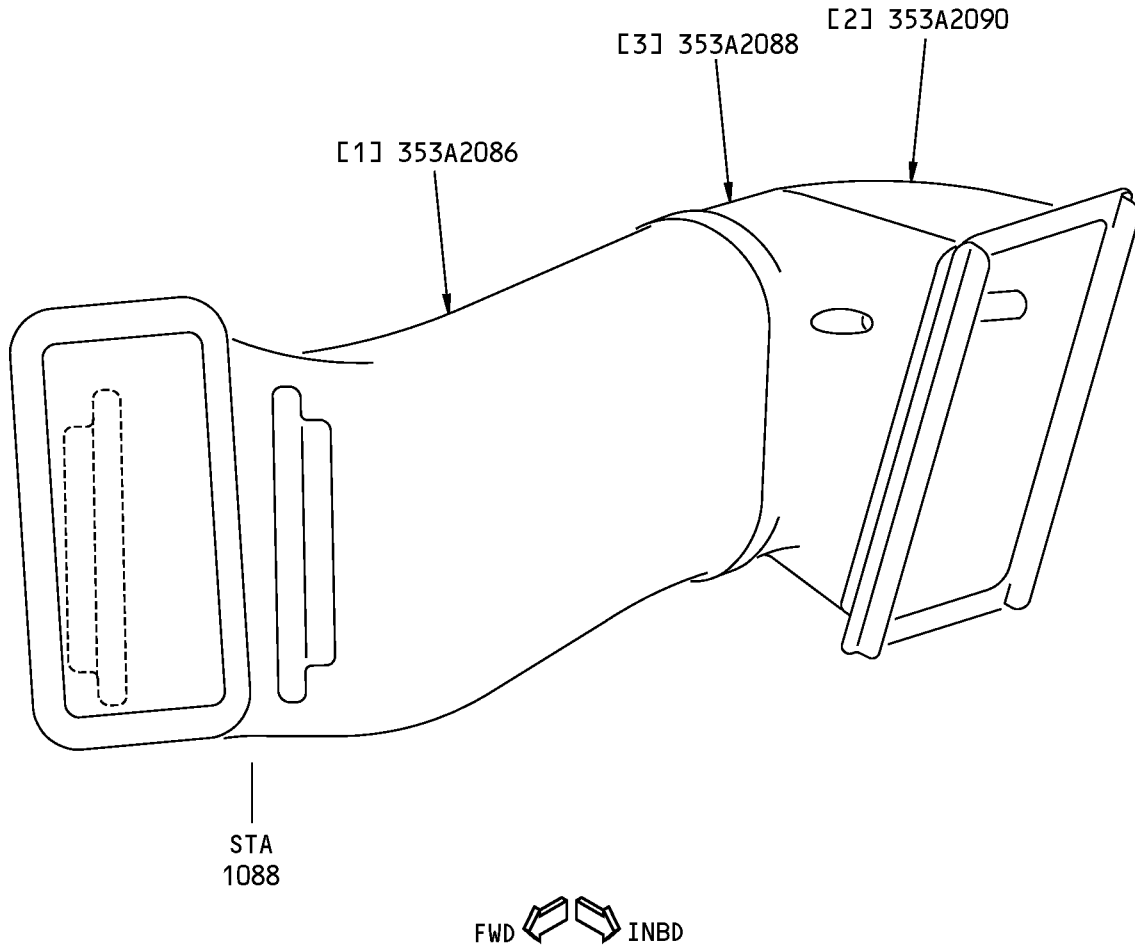
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**Table 2:**

ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[2]	Cover Plate	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[3]	Plate, Upper and Lower	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[4]	Panel Assembly, Outboard Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Doubler	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Panel, Outboard	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[5]	Panel Assembly, Inboard Angle	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Doubler	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
	Panel, Inboard	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[6]	Panel Assembly, Top Forward Panel, Roof Forward	0.020 (0.51)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Doubler, Upper Forward	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[7]	Panel Assembly, Top Aft Panel, Roof Aft	0.025 (0.64)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Splice Plate	0.040 (1.02)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	
[8]	Panel, Upper End	0.025 (0.64)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[9]	Panel, Floor	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[10]	Bulkhead Assembly - Aft Aft Bulkhead Panel	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
	Doubler	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[11]	Frame Panel	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code AB-1, Condition A	
[12]	Doubler	0.032 (0.81)	Ti-6Al-4V titanium sheet as given in MIL-T-9046, Code CP-3, Condition A	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**NOTE:** REFER TO TABLE 3 FOR THE LIST OF MATERIALS.

**Titanium/Fiberglass Liner Identification  
Figure 3**



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**STRUCTURAL REPAIR MANUAL**

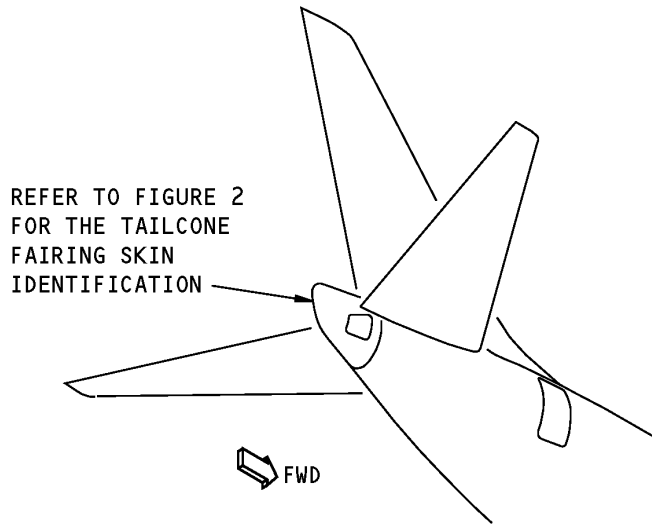
**Table 3:**

<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Plenum Assy, Fwd Bond Angle, Outboard Angle, Inboard	0.063 0.063	Fiberglass Reinforced Epoxy Sheet, 1581 Style (Option: 7781 Style) as given in BMS 8-139 Ti-6Al-4V titanium sheet as given in MIL-T-9046, Condition A Ti-6Al-4V titanium sheet as given in MIL-T-9046, Condition A	
[2]	Plenum Assy, Aft Weldment Flange, Aft Angle, Forward Angle, Aft	0.050 0.090 0.040 0.040	AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet AMS-T-9046 TI-Compure 55 Condition A Sheeet	
[3]	Interconnect Frame Assy Frame Weldment	0.050	AMS-T-9046 TI-Compure 55 Condition A Sheeet	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 1 - SECTION 48 TAILCONE FAIRING SKIN**



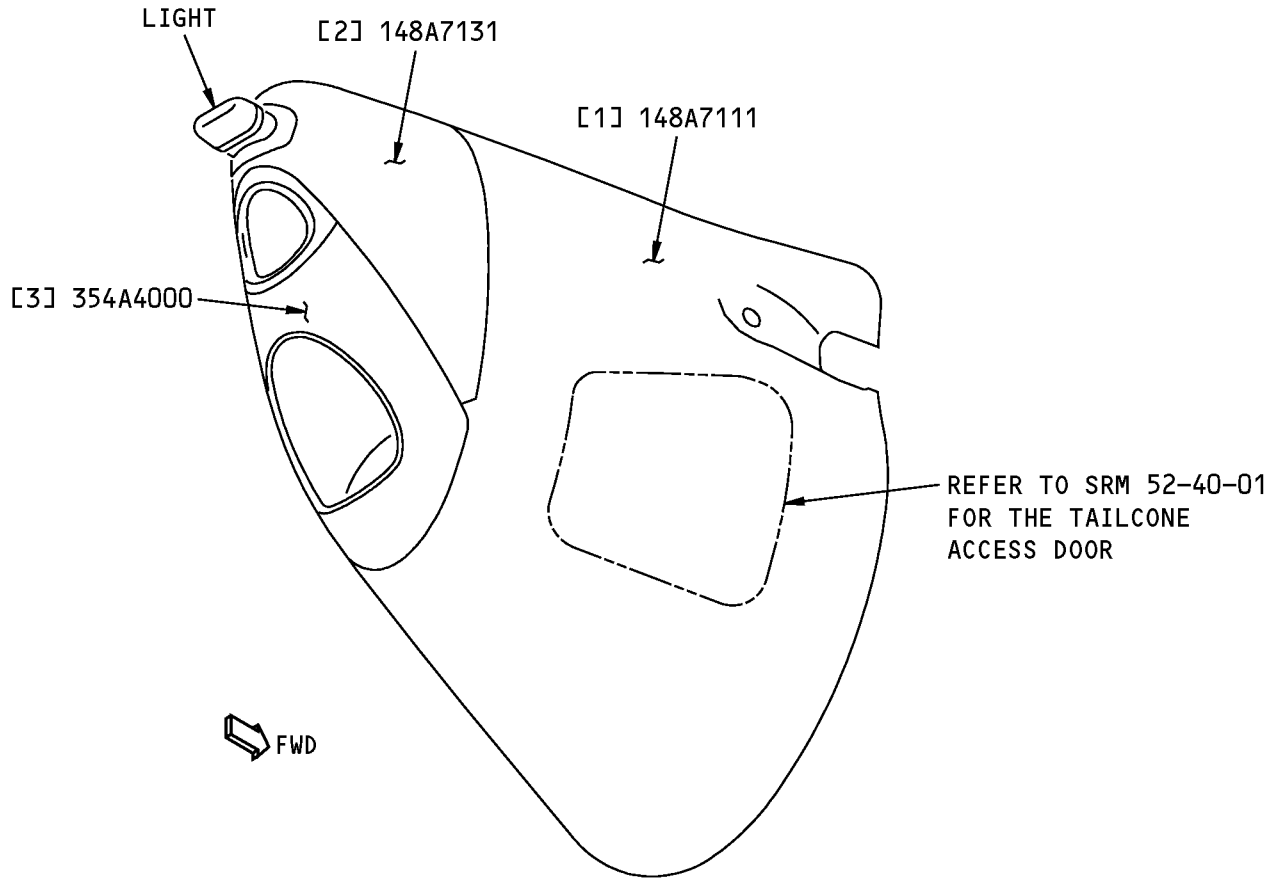
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Tailcone Fairing Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A0971	Tailcone Integration Installation
148A7110	Tailcone Installation, Forward Body

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Tailcone Fairing Skin Identification  
Figure 2**



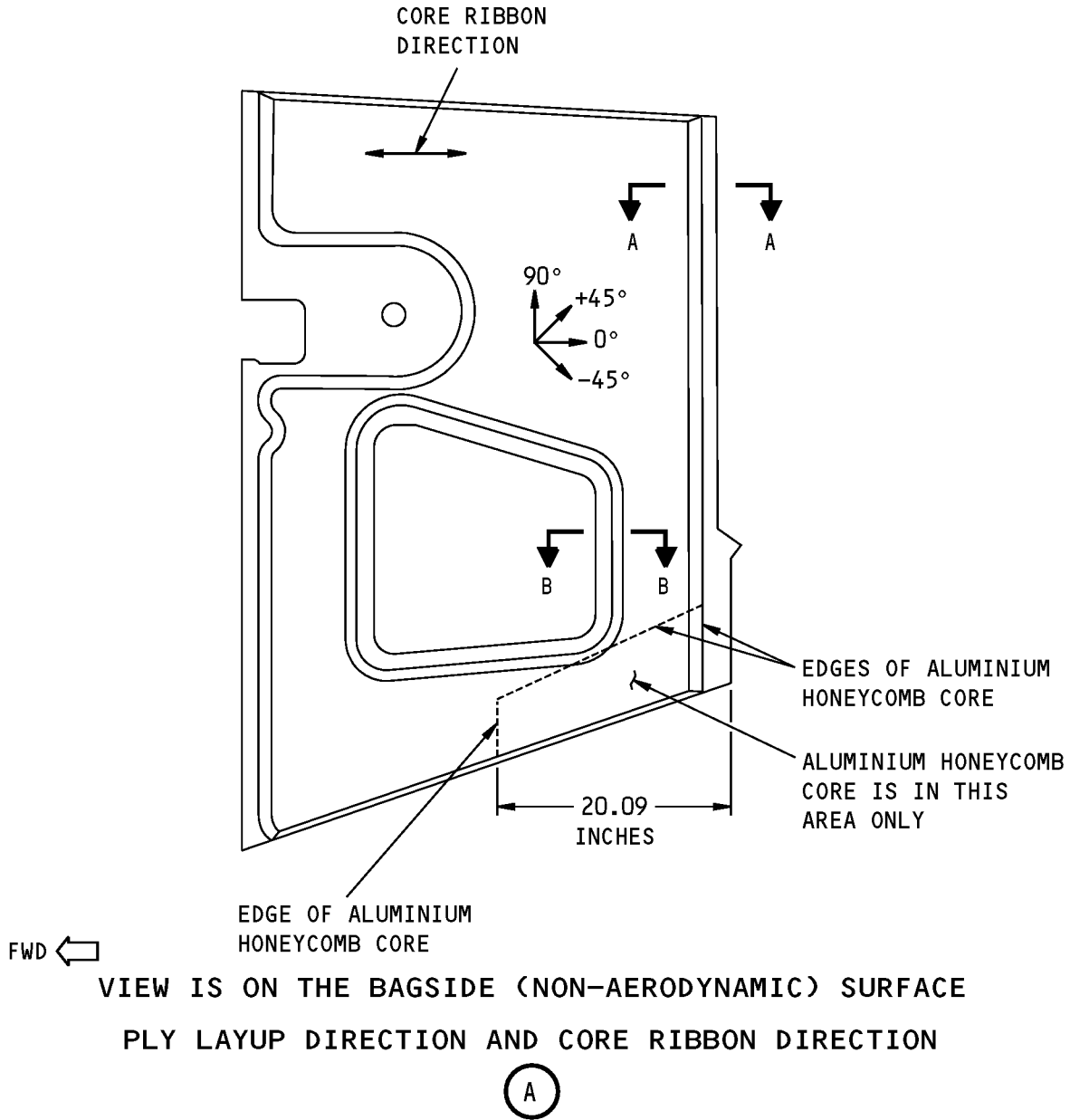
**737-800**  
**STRUCTURAL REPAIR MANUAL**

**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Forward Tailcone Assembly		Glass Fiber Reinforced Plastic (GFRP) honeycomb sandwich	
	Skin		Refer to Figure 3	
	Core	0.50 (1.27)	Nonmetallic honeycomb as given in BMS 8-124, Class IV, Type 5, Grade 3.0	
	Core	0.50 (1.27)	Aluminum honeycomb as given in BMS 4-4, Class NPA, Type 2-07, Grade 1.0	
[2]	Aft Tailcone Assembly		GFRP honeycomb sandwich	
	Skin		Refer to Figure 4	
	Core	0.50 (1.27)	Nonmetallic honeycomb as given in BMS 8-124, Class IV, Type 5, Grade 3.0	
[3]	APU Exhaust Duct Fairing	0.080 (2.03)	Ti-6Al-4V titanium as given in MIL-T-9046 or AMS 4911, Type III, Composition C, in the annealed condition	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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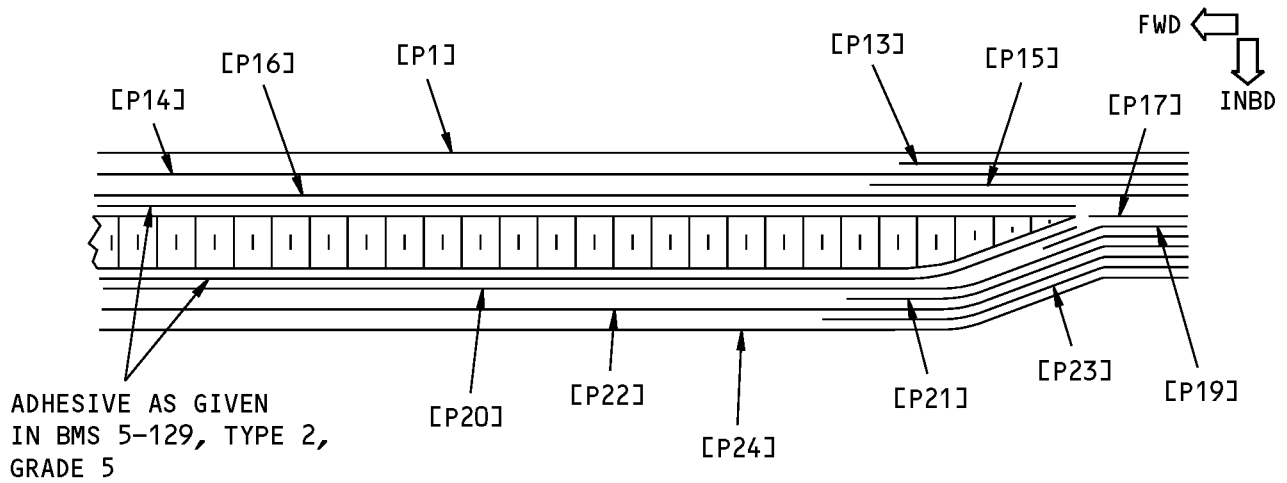
**NOTES**

- THE PLY DIRECTION IS THE WARP DIRECTION OF THE FABRIC. REFER TO DETAIL A FOR THE 0 DEGREE PLY DIRECTION AND THE CORE RIBBON DIRECTION.
- REFER TO SECTIONS A-A AND B-B FOR THE PLY SEQUENCE.
- REFER TO THE ENGINEERING DRAWING FOR THE PLY SEQUENCE DATA THAT IS NOT SHOWN.
- REFER TO TABLE 3 FOR THE DIRECTION AND MATERIAL FOR EACH PLY.

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Forward Tailcone Assembly  
Figure 3 (Sheet 1 of 2)**

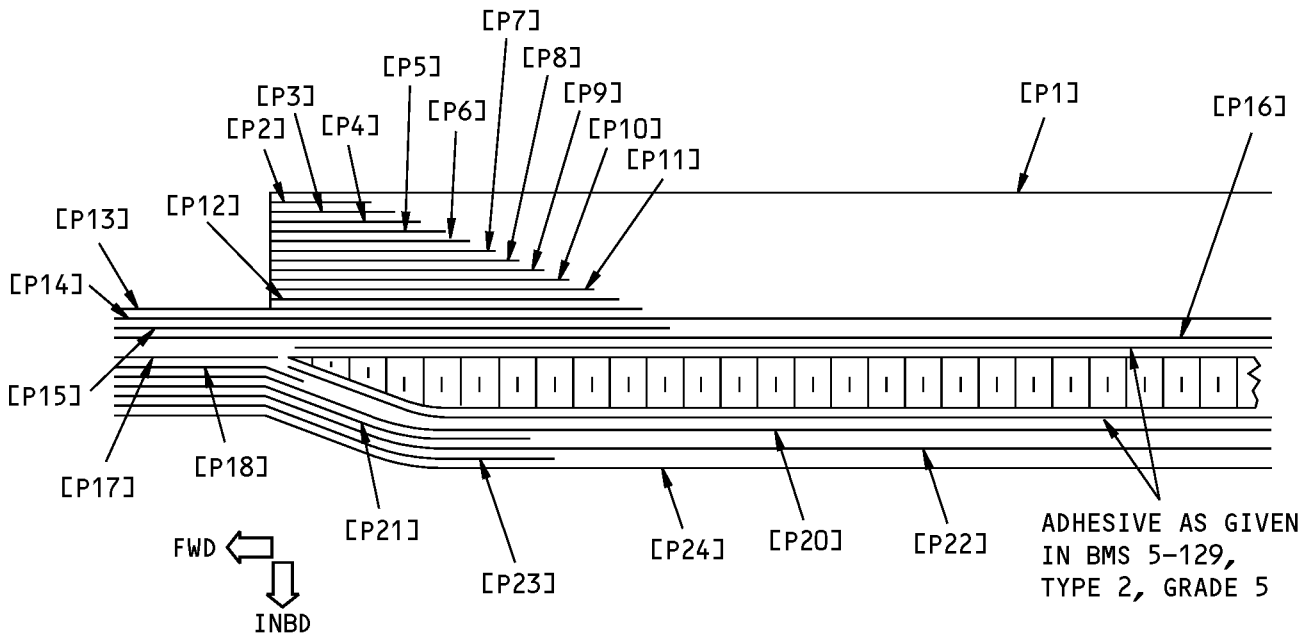


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**PLY LAYUP SEQUENCE**

A-A



**PLY LAYUP SEQUENCE**

B-B

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Forward Tailcone Assembly  
Figure 3 (Sheet 2 of 2)**

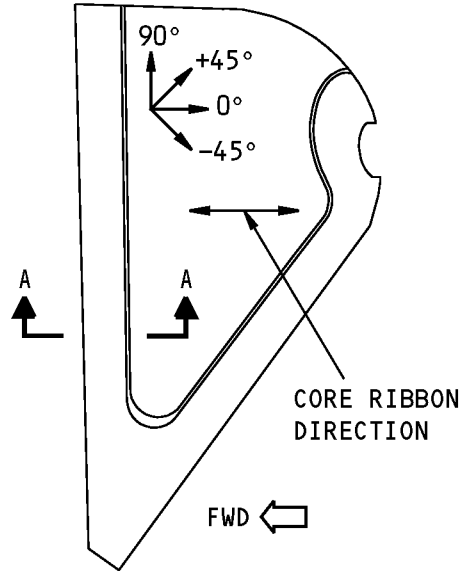


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**Table 3:**

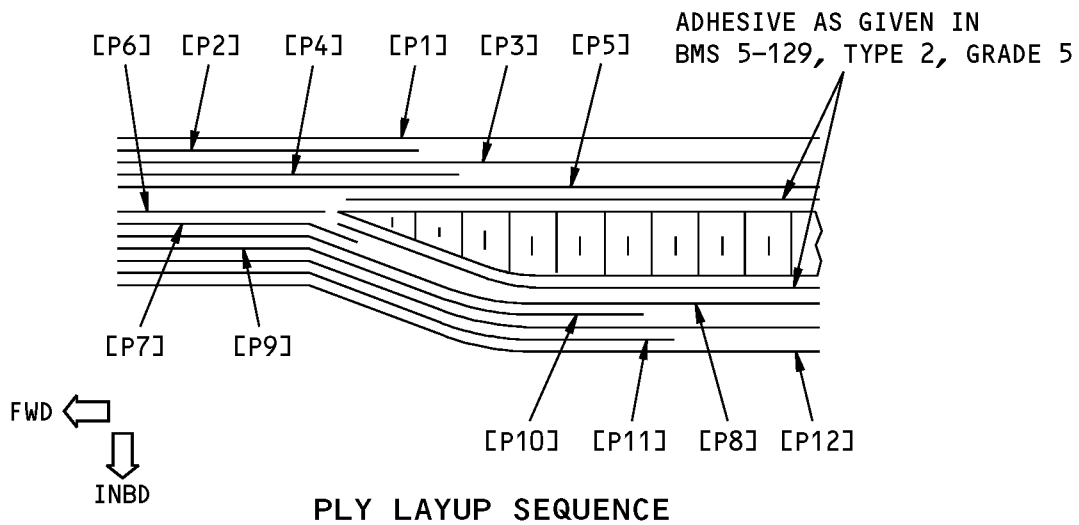
<b>PLY MATERIAL AND DIRECTION FOR FIGURE 2, ITEM [1]</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1, P16, P20, P24	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 120 or 220
P14, P19, P22	+ or - 45 degrees	
P2, P4, P6, P8, P10, P12, P18, P23, P25, P27, P29	+ or - 45 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 1581 or 7781
P3, P5, P7, P9, P11, P13, P15, P17, P21, P26, P28, P30	0 or 90 degrees	

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**PLY LAYUP DIRECTION AND CORE RIBBON DIRECTION**

A



**PLY LAYUP SEQUENCE**

A-A

**NOTES**

- THE PLY DIRECTION IS THE WARP DIRECTION OF THE FABRIC. REFER TO DETAIL A FOR THE 0 DEGREE PLY DIRECTION AND THE CORE RIBBON DIRECTION.
- REFER TO SECTION A-A FOR THE PLY SEQUENCE.
- REFER TO TABLE 4 FOR THE DIRECTION AND MATERIAL FOR EACH PLY.

**Ply Direction, Core Ribbon Direction, and Ply Sequence for the Aft Tailcone Assembly  
Figure 4**



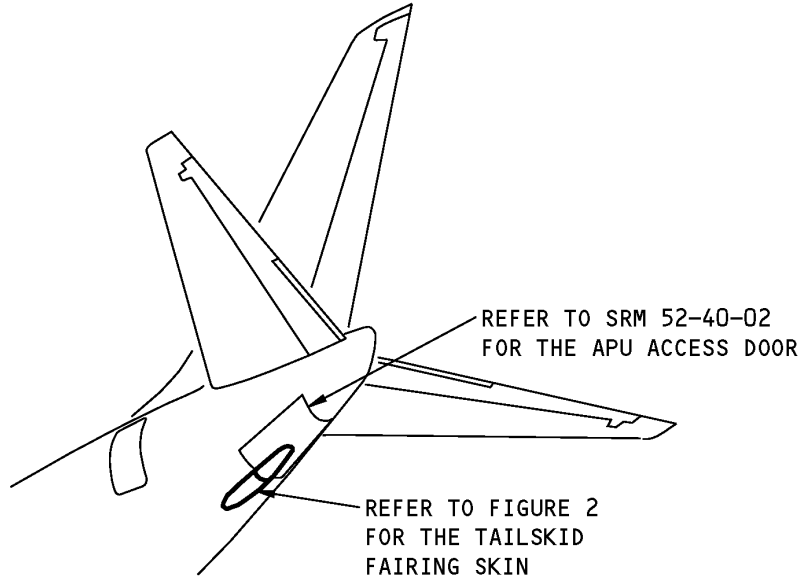
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**Table 4:**

<b>PLY MATERIAL AND DIRECTION FOR FIGURE 2, ITEM [2]</b>		
<b>PLY</b>	<b>DIRECTION</b>	<b>MATERIAL</b>
P1, P5, P8, P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 120 or 220
P3, P7, P10	+ or - 45 degrees	
P2, P4, P6, P9, P12	0 or 90 degrees	Epoxy impregnated glass woven fabric as given in BMS 8-79, Class III, Style 1581 or 7781
P11	+ or - 45 degrees	

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**IDENTIFICATION 3 - SECTION 48 TAILSKID FAIRING SKIN**



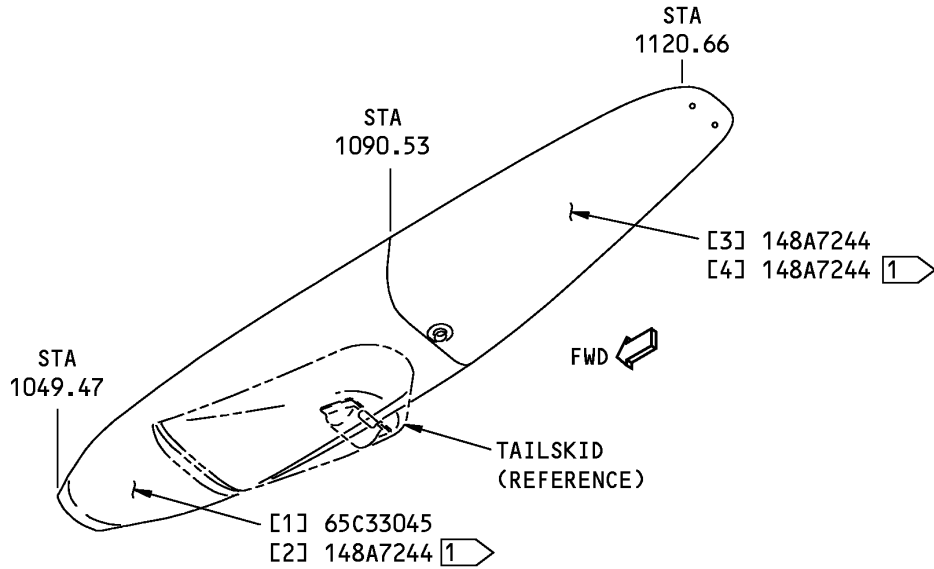
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Tailskid Fairing Skin Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4801	Integration Functional Collector - Section 48
148A7240	Fairing Installation - Tailskid

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**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

[1] AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OPTION.

**Tailskid Fairing Skin Identification  
Figure 2**

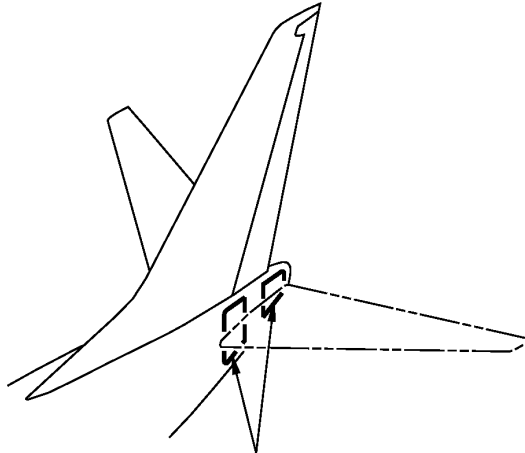
**Table 2:**

LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[1]	Forward Fairing	0.080	6061-T6 sheet as given in QQ-A-250/11	
[2]	Forward Fairing	0.080	6061-T62 sheet as given in QQ-A-250/11	
[3]	Aft Fairing	0.080	6061-T6 sheet as given in QQ-A-250/11	
[4]	Aft Fairing	0.080	6061-T62 sheet as given in QQ-A-250/11	

\*[1] Note: T = Pre-manufactured thickness in inches.

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**IDENTIFICATION 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS, SKINS, AND PLATES**



REFER TO FIGURE 2 FOR THE  
SECTION 48 BODY-TO-HORIZONTAL  
STABILIZER SLIDING SEALS, SKINS  
AND PLATES IDENTIFICATION

**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4814	Functional Collector - Sliding Seals, Front and Rear Spar
181A8005	Panel Installation - Front Spar Sliding Seal
181A8050	Track Installation - Rear Spar Sliding Seal

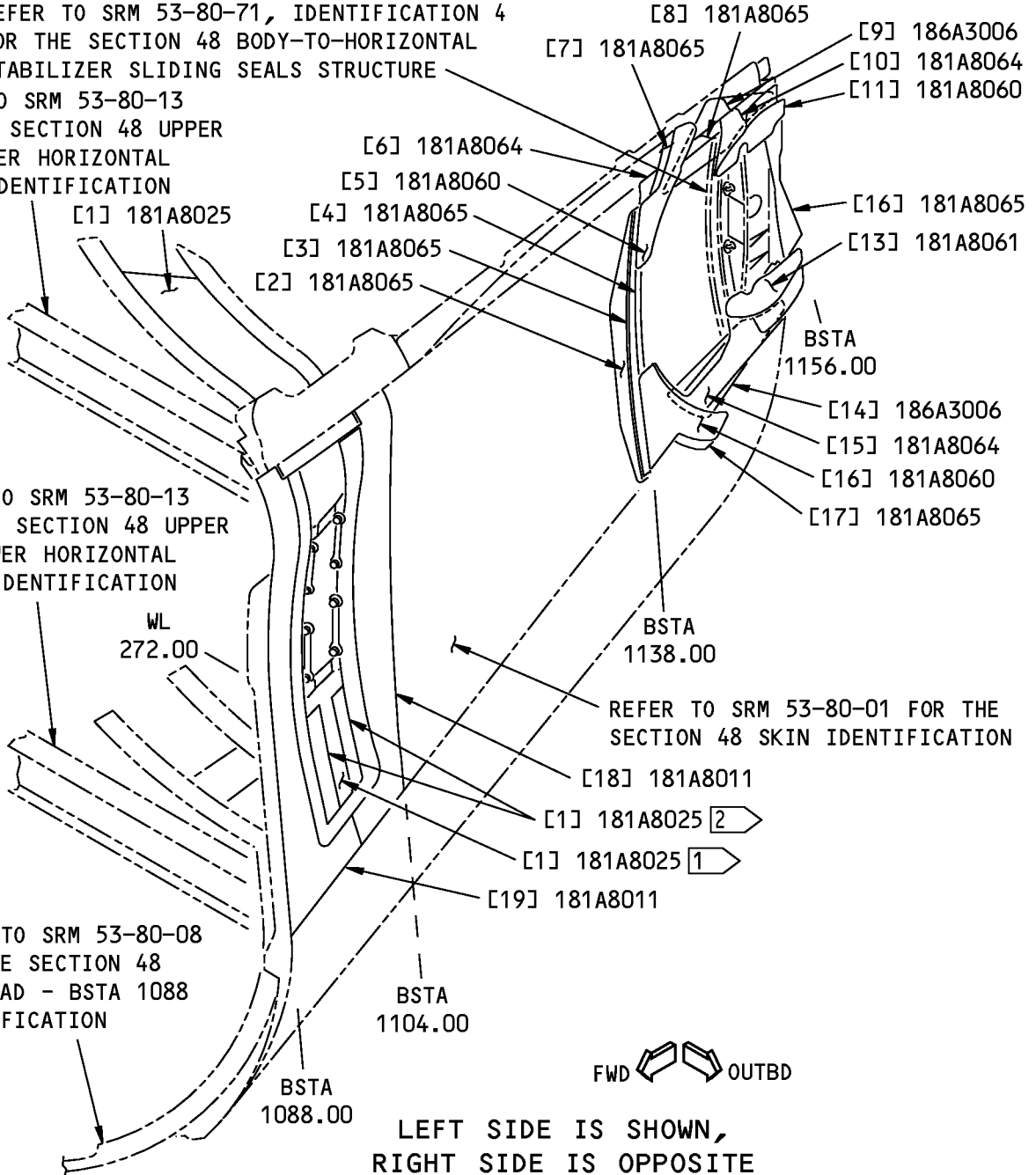
**STRUCTURAL REPAIR MANUAL**

REFER TO SRM 53-80-71, IDENTIFICATION 4  
FOR THE SECTION 48 BODY-TO-HORIZONTAL  
STABILIZER SLIDING SEALS STRUCTURE

REFER TO SRM 53-80-13  
FOR THE SECTION 48 UPPER  
AND LOWER HORIZONTAL  
BEAMS IDENTIFICATION

REFER TO SRM 53-80-13  
FOR THE SECTION 48 UPPER  
AND LOWER HORIZONTAL  
BEAMS IDENTIFICATION

REFER TO SRM 53-80-08  
FOR THE SECTION 48  
BULKHEAD - BSTA 1088  
IDENTIFICATION



**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.
- 1 AIRPLANE LINE NUMBERS 1 THRU 1380, AND AIRPLANES THAT ARE NOT RETROFITTED WITH PRR38275-44, PART B.
- 2 AIRPLANE LINE NUMBERS 1381 AND ON, AND AIRPLANES THAT ARE RETROFITTED WITH PRR38275-44, PART B.

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Identification  
Figure 2**





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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>*[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Seal Plate	0.025 (0.64)	17-7 PH CRES sheet as given in AMS 5528, Condition A. Heat treat to 150-170 ksi as given in BAC 5619	
[2]	Vertical Seal Rub Strip	0.016 (0.41)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[3]	Forward Ramp	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4	
[4]	Forward Skin Filler	0.180 (4.57)	2024-T3 sheet as given in QQ-A-250/4	
[5]	Upper Forward Track Assembly			
	Upper Forward Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Forward Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Forward Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
[6]	Upper Forward Skin Filler	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[7]	Upper Forward Ramp	0.125 (3.18)	2024-T42 sheet as given in QQ-A-250/4	
[8]	Rub Strip	0.100 (3.18)	2024-T3 sheet as given in QQ-A-250/4	
[9]	Upper Blade	0.020 (0.51)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[10]	Upper Aft Skin Filler	0.100 (3.18)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[11]	Upper Aft Track assembly			
	Upper Aft Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Upper Aft Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Upper Aft Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
[12]	Rub Strip	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Lower Aft Track assembly			
	Lower Aft Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Lower Aft Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Lower Aft Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	



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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[14]	Lower Blade	0.020 (0.51)	AISI 301 CRES sheet as given in AMS 5518, Condition 1/2 hard	
[15]	Lower Skin Filler	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5 (Optional: 2024-T42 clad sheet as given in QQ-A-250/5)	
[16]	Lower Forward Track Assembly			
	Lower Forward Track	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
	Lower Forward Spacer	0.040 (1.02)	2024-T42 clad sheet as given in QQ-A-250/5	
	Lower Forward Rub Strip	0.025 (0.64)	15-5 PH CRES sheet as given in BMS 7-240, Type I. Heat treat to 150-170 ksi	
[17]	Lower Forward Ramp	0.125 (3.18)	2024-T3 sheet as given in QQ-A-250/4	
[18]	Aft Panel Assembly			
	Aft Doubler	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
	Aft Filler	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	
	Aft Skin	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[19]	Forward Panel Assembly			
	Forward Doubler	0.032 (0.81)	2024-T42 clad sheet as given in QQ-A-250/5	
	Forward Skin	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
	Forward Filler	0.025 (0.64)	2024-T3 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).



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### ALLOWABLE DAMAGE 1 - SECTION 48 TAILCONE FAIRING SKIN

#### 1. Applicability

- A. This subject gives the allowable damage limits for the tailcone fairing skins as shown in Tailcone Fairing Skin Location, Figure 101/ALLOWABLE DAMAGE 1.

#### 2. General

- A. Refer to Definitions of Damage Size, Figure 102/ALLOWABLE DAMAGE 1, Details A, B, and C for the definitions of the length, width, and depth of damage.
- B. Refer to Definitions of the Facesheets, Figure 103/ALLOWABLE DAMAGE 1 for the definitions of the facesheets of a honeycomb core area.
- C. Remove contamination and water from the structure surface.
- D. Seal all permitted damage areas that are not more than one ply deep. Refer to the allowable damage limits. Seal the damage with one of the two methods that follow:
- (1) Make a temporary seal.
    - (a) Apply aluminum foil tape (speed tape).
    - (b) Keep a record of the location.
    - (c) Make sure that the tape is in satisfactory condition after each 400 flight hour interval or more frequently.
    - (d) Repair the damage at or before 5000 flight hours from the time the seal was made.
  - (2) Make a permanent seal.
    - (a) Apply BMS 8-201, BMS 8-207 or BMS 8-301 epoxy resin to the area as given 51-70-08.
    - (b) Apply one layer of BMS 10-79, Type III primer. Refer to SOPM 20-44-04.
    - (c) Apply one layer of BMS 10-60 enamel to the areas sealed with epoxy resin. Refer to AMM 51-21-00/701.
- E. Seal all permitted damage areas that are more than one ply in depth. Refer to the allowable damage limits. Seal the damage as follows:
- (1) Use vacuum and heat to remove moisture from the solid laminate and/or honeycomb cells, as applicable. Refer to 51-70-04.
  - (2) Make a temporary seal with aluminum foil tape (speed tape).
  - (3) Keep a record of the location.
  - (4) Make sure that the tape is in satisfactory condition after each 400 flight hour interval or more frequently.
  - (5) Repair the damage at or before 5000 flight hours from the time the seal was made.
- F. The definition of the words "other damage" as used in the allowable damage limits, does not include nicks, gouges, and scratches that do not cause glass fiber damage and are sealed.

ALLOWABLE DAMAGE 1

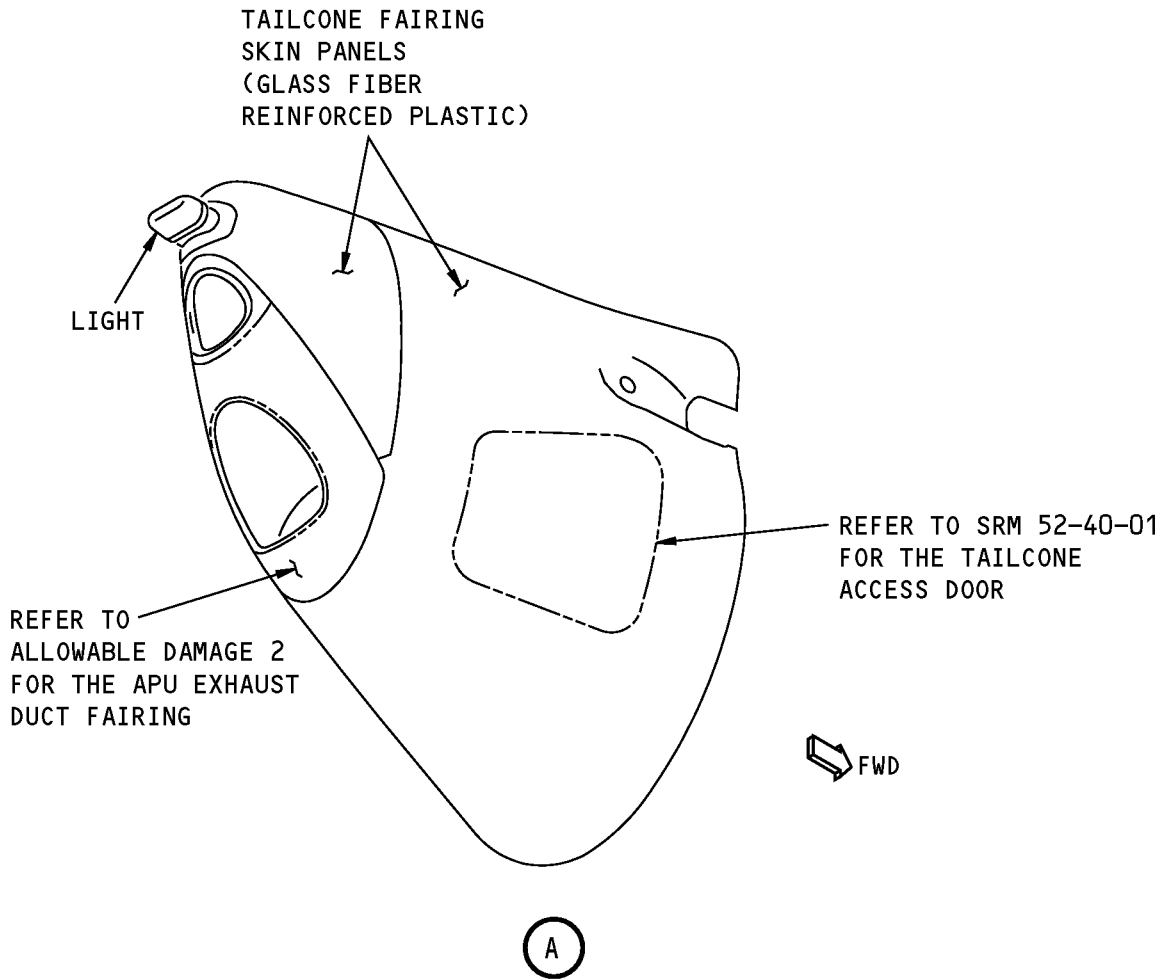
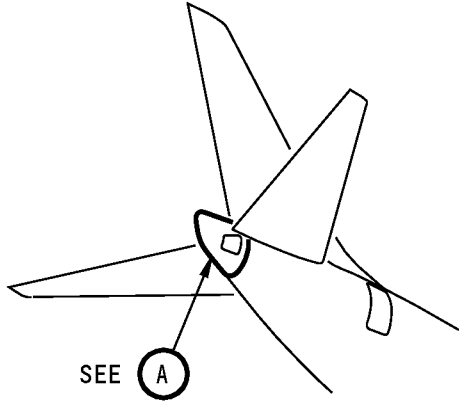
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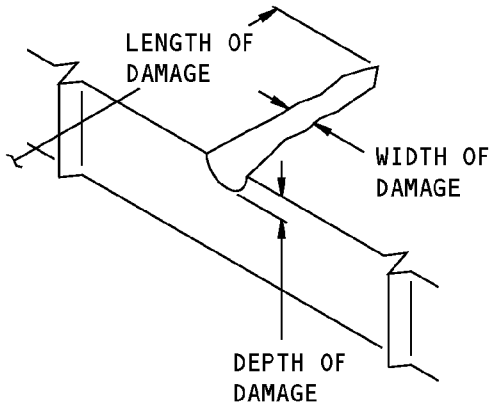
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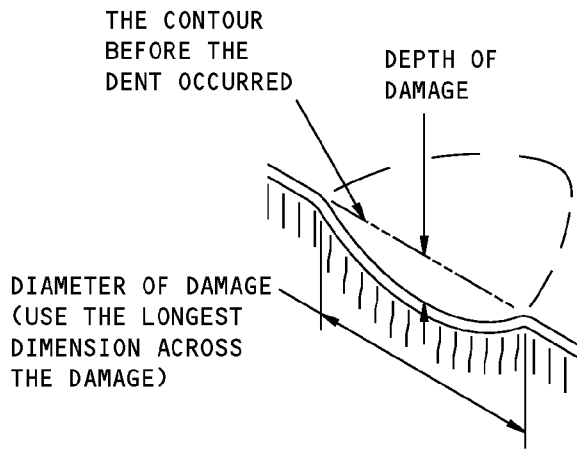
**Tailcone Fairing Skin Location  
Figure 101**

**STRUCTURAL REPAIR MANUAL**



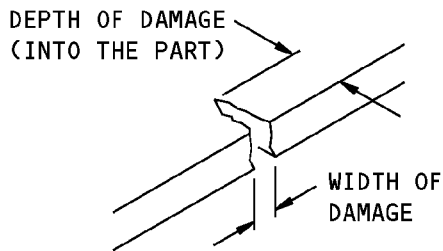
**SIZE DEFINITIONS FOR  
NICK, GOUGE, OR SCRATCH DAMAGE**

(A)



**SIZE DEFINITIONS FOR  
DENT DAMAGE**

(B)

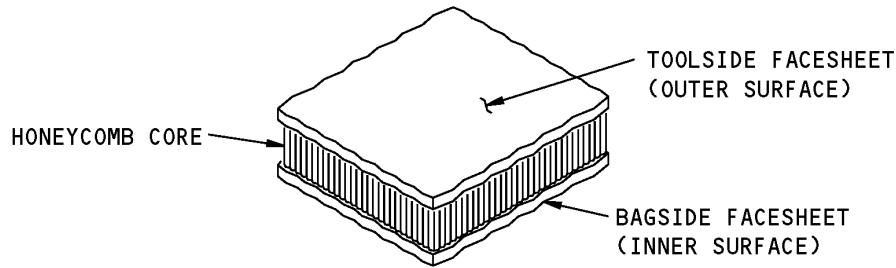


**SIZE DEFINITIONS FOR  
EDGE DAMAGE**

(C)

**Definitions of Damage Size  
Figure 102**

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**Definitions of the Facesheets  
Figure 103**

**3. References**

Reference	Title
51-30-03, GENERAL	Sources for Non-Metallic Repair Materials
51-30-05, GENERAL	Equipment and Tools For Repairs
51-70-04	REPAIR PROCEDURES FOR WET LAYUP MATERIALS
51-70-08	RESIN SWEEP-FAIR PROCEDURES
AMM 51-21-00/701	Interior And Exterior Finishes - Cleaning/Painting
SOPM 20-44-04	Application of Urethane Compatible Primers

**4. Allowable Damage Limits for the Section 48 Tailcone Fairing Skin**

**A. Solid Laminate Areas**

- (1) Nicks, Gouges, and Scratches that do not cause damage to the glass fibers are permitted.
- (2) Nicks, Gouges, and Scratches that cause damage to the glass fibers are permitted if:
  - (a) They are a maximum of one ply in depth. If damage is more than one ply in depth, then use the limits for holes and punctures.
  - (b) Not more than one fastener hole in six is damaged.
  - (c) Not more than 10 percent of the edgeband length for each side of panel is damaged.
- (3) Dents are permitted if:
  - (a) They cause no glass fiber damage. If there is glass fiber damage, then, use the limits for nicks, gouges and scratches.
  - (b) They are a maximum of 2.0 inches (50.8 mm) in diameter.



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- (c) Not more than one fastener hole in six is damaged.
  - (d) Not more than 10 percent of the edgeband length for each side of panel is damaged.
  - (4) Holes and Punctures are not permitted.
  - (5) Fastener Hole Damage is permitted if:
    - (a) Not more than one fastener hole in six is damaged.
    - (b) Not more than 10 percent of the edgeband length for each side of panel is damaged.
  - (6) Delaminations are permitted if:
    - (a) Damage does not extend more than 0.10 inch (2.54 mm) from the part edge.
    - (b) Not more than one fastener hole in six is damaged.
    - (c) Not more than 10 percent of the edgeband length for each side of panel is damaged.
  - (7) Edge damage is permitted if:
    - (a) It is a maximum 0.10 inch (2.54 mm) in depth.
    - (b) Not more than 10 percent of the edgeband length for each side of panel is damaged.
- B. Honeycomb Core Area**
- (1) Nicks, Gouges, and Scratches that do not cause damage to the glass fibers are permitted.
  - (2) Nicks, Gouges, and Scratches that cause damage to the glass fibers are permitted if they are:
    - (a) A maximum of one ply in depth. If damage is more than one ply in depth, then use the limits for holes and punctures.
    - (b) A maximum length of 6.0 inches (152.4 mm)
    - (c) A maximum width of 0.25 inch (6.35 mm)
    - (d) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.
  - (3) Dents are permitted if they are:
    - (a) In a maximum of one facesheet
    - (b) A maximum diameter of 6.0 inches (152.4 mm). Damage to a maximum diameter of 12.0 inches (304.8 mm) is permitted for a maximum of 20 flight cycles.
    - (c) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.
  - (4) Holes and Punctures are permitted if they are:
    - (a) A maximum of 1.0 inch (25.4 mm) in diameter
    - (b) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.
  - (5) Delaminations are permitted if they are:
    - (a) In a maximum of one facesheet
    - (b) A maximum diameter of 6.0 inches (152.4 mm). A maximum diameter of 12.0 inches (304.8 mm) is permitted for a maximum of 20 flight cycles.
    - (c) A minimum distance of 6.0 inches (152.4 mm) away from the edge of any other damage and a minimum of 2.0 inches (50.8 mm) away from any hole or part edge.

ALLOWABLE DAMAGE 1

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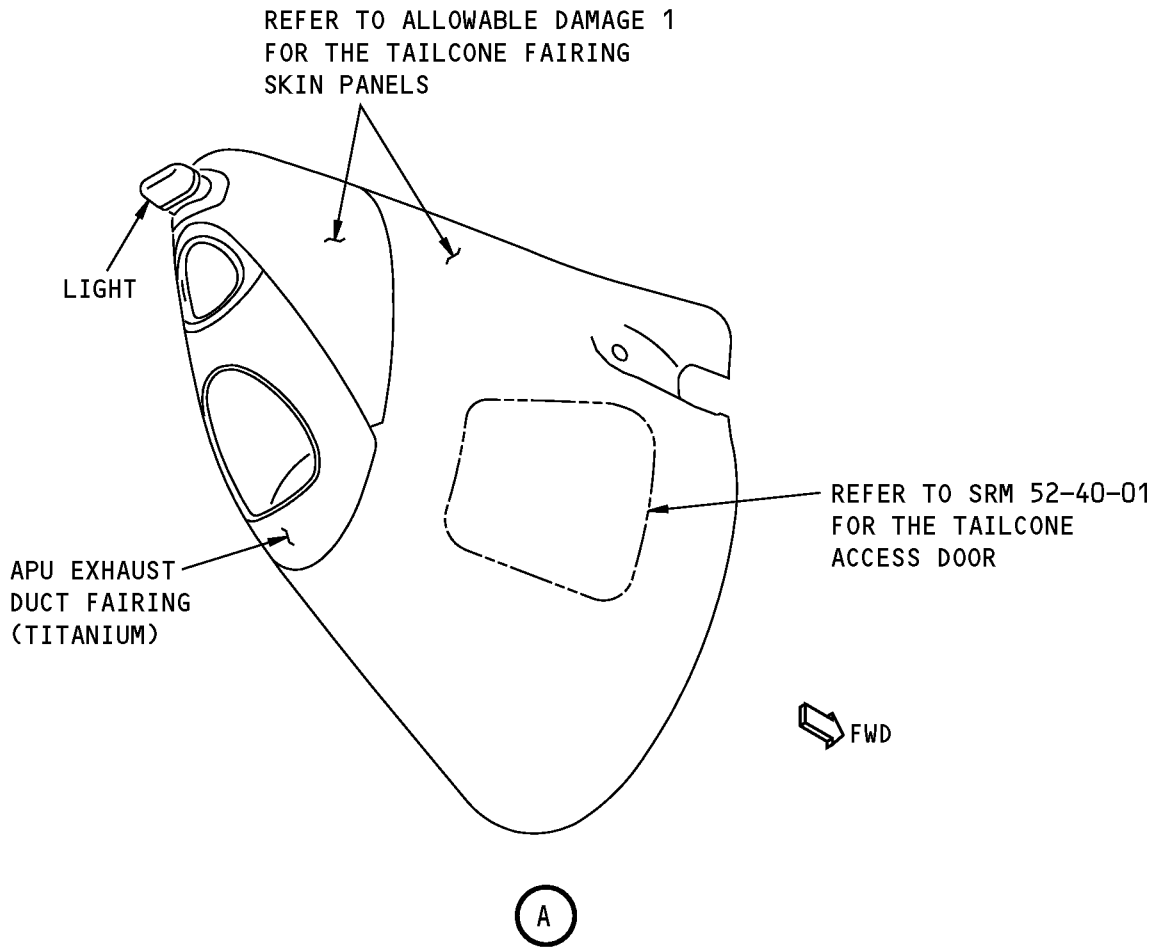
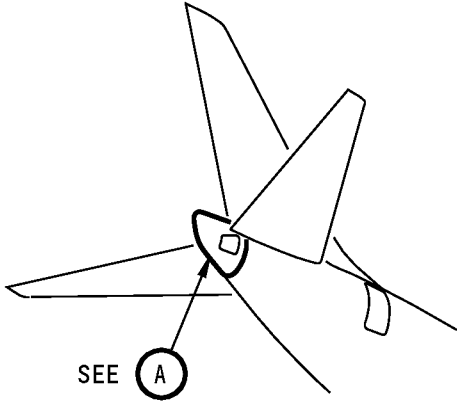
### ALLOWABLE DAMAGE 2 - APU EXHAUST DUCT FAIRING SKIN

#### 1. Applicability

- A. This subject gives the allowable damage limits for the auxiliary power unit (APU) exhaust duct fairing skin as shown in APU Exhaust Duct Fairing Location, Figure 101/ALLOWABLE DAMAGE 2.



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**APU Exhaust Duct Fairing Location  
Figure 101**



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### 2. General

**WARNING:** SMALL PARTICLES AND THIN CUTS OF TITANIUM ARE FLAMMABLE. IN A SUFFICIENT CONCENTRATION, AN EXPLOSION CAN OCCUR. EXTINGUISH FIRES OF TITANIUM WITH FULLY DRY TALC, CALCIUM CARBONATE, SAND OR GRAPHITE. APPLY THE POWDER TO A DEPTH OF 1/2 INCH (12.7 MM) OR MORE ON THE AREA THAT IS ON FIRE. DO NOT USE FOAM, WATER, CARBON TETRACHLORIDE, HALON OR CARBON DIOXIDE. WATER IN CONTACT WITH MOLTEN TITANIUM CAN CAUSE A STEAM EXPLOSION.

- A. Remove the damaged material, as applicable. Make sure that the material to be removed is less than or equal to the allowable damage limits.
- B. Refer to 51-10-02 for the inspection and removal of damage.
- C. Refer to 51-30-03 for the sources of abrasives and other materials to remove damage.
- D. Refer to 51-30-05 for the sources of equipment and tools to remove damage.
- E. Make sure that all the damage has been removed within the limits, as applicable. Refer to SOPM 20-20-02 for penetrant inspection procedures or 737 NDT Part 6, 51-00-00, Figure 4 for eddy current inspection procedures.

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-05	REPAIR SEALING
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-02	FASTENER INSTALLATION AND REMOVAL
SOPM 20-20-02	Penetrant Methods of Inspection
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

### 4. Allowable Damage Limits

- A. Cracks:
  - (1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Detail A.
- B. Nicks, Gouges, Scratches, and Corrosion:
  - (1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Details A, B, or D.
- C. Dents:
  - (1) Refer to Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 2, Detail C for the damage that is permitted.
- D. Holes and Punctures:
  - (1) The maximum diameter of damage permitted is 0.25 inch (6.35 mm) after cleanup. The damage must be 1.00 inch (25.4 mm) minimum from other holes, part edge, or other damage. Fill the hole with a titanium rivet that is installed wet with BMS 5-63 sealant. Refer to 51-20-05 and 51-40-02.

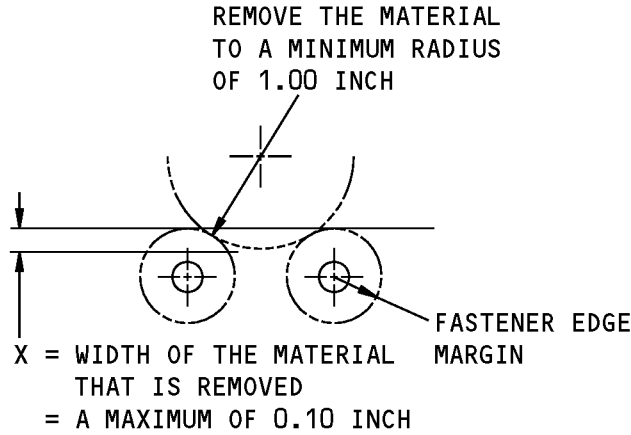
ALLOWABLE DAMAGE 2

**53-80-70**

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Jul 10/2005

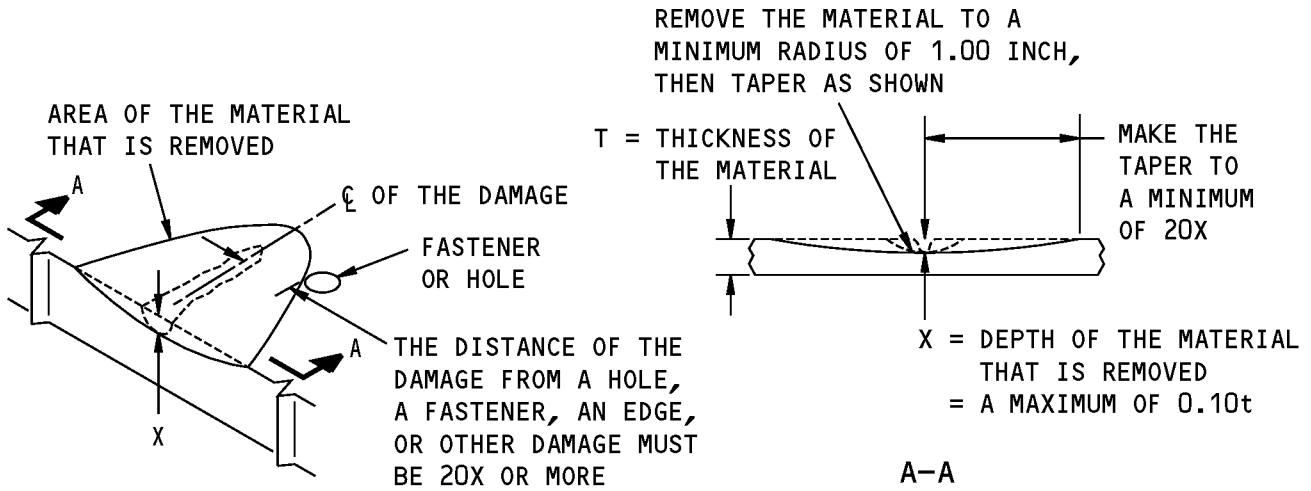
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**STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WITH FASTENERS**

(A)

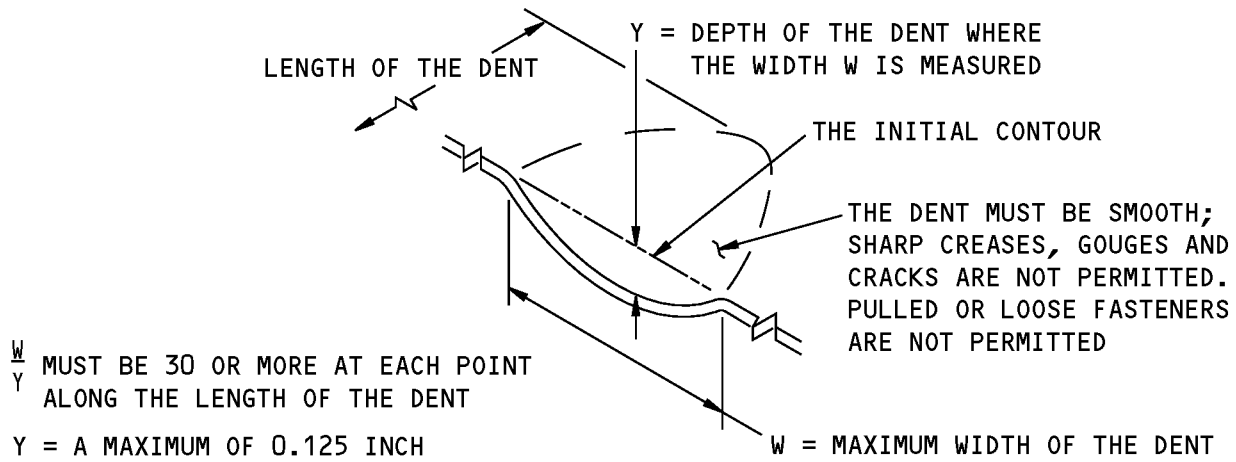


**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(B)

**Allowable Damage Limits  
Figure 102 (Sheet 1 of 2)**

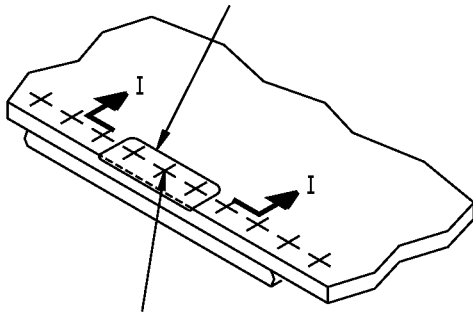
**737-800  
STRUCTURAL REPAIR MANUAL**



**DENT THAT IS PERMITTED**

(C)

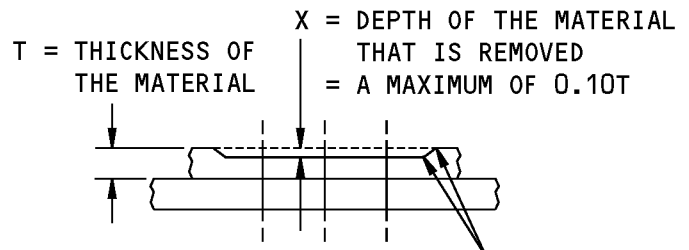
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE REWORK IS DONE

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

(D)



I-I

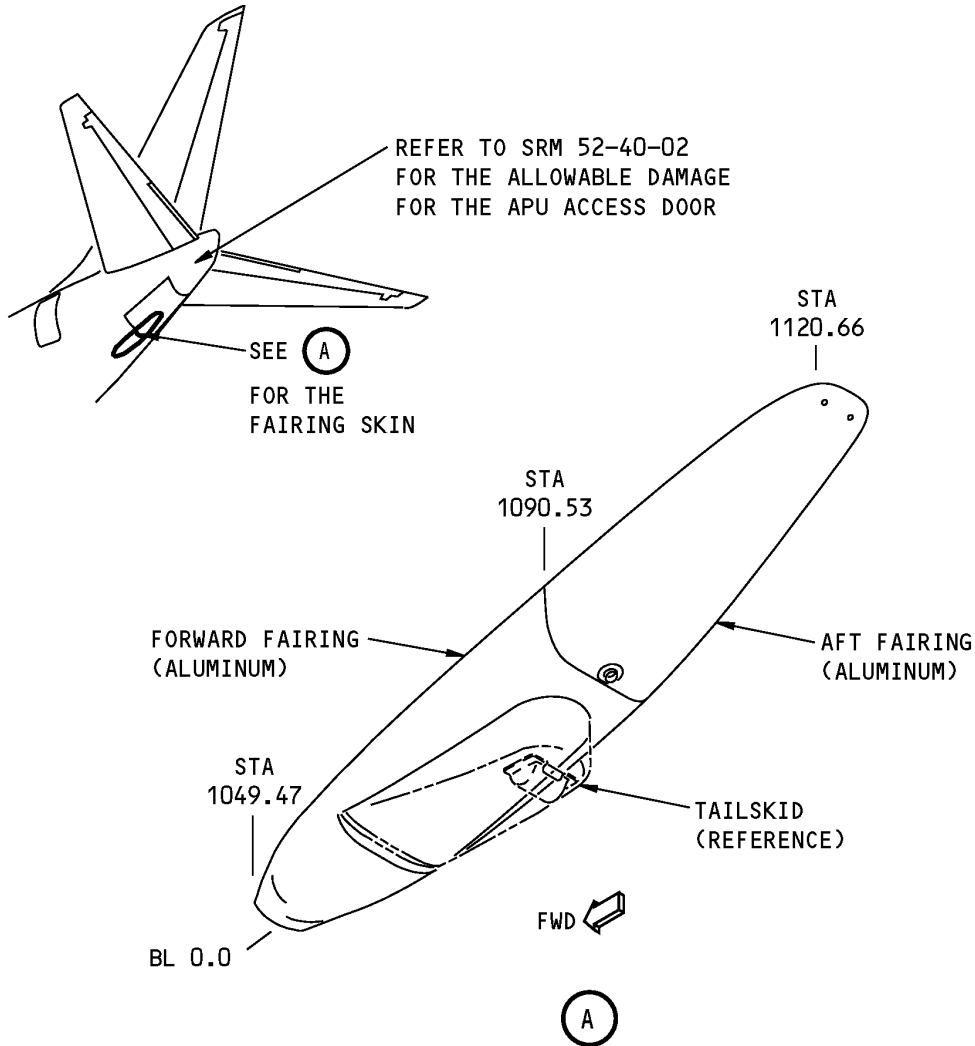
**Allowable Damage Limits  
Figure 102 (Sheet 2 of 2)**

**737-800  
STRUCTURAL REPAIR MANUAL**

**ALLOWABLE DAMAGE 3 - SECTION 48 TAILSKID FAIRING SKIN**

**1. Applicability**

- A. This subject gives the allowable damage limits for the tailskid fairing skin shown in Tailskid Fairing Skin Location, Figure 101/ALLOWABLE DAMAGE 3.



**Tailskid Fairing Skin Location  
Figure 101**

**2. General**

- A. If structural damage occurs to the tailskid fairing after a tail strike, do an inspection of the tailskid. Refer to AMM 32-71-00/601.
- B. As necessary, examine the tailskid fairing support structure for damage. Refer to 53-80-71, Allowable Damage 3.
- C. Remove the damaged material as necessary.



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## STRUCTURAL REPAIR MANUAL

- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- D. After you remove the damage, do the steps that follow:
- (1) Apply a chemical conversion coating to the bare surfaces of the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.
  - (3) Apply the decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.

### 3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-71	FAIRING SUPPORT STRUCTURE - SECTION 48
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
AMM 32-71-00/601	Tailskid Inspection/Check
SOPM 20-44-04	Application of Urethane Compatible Primers

### 4. Allowable Damage Limits

#### A. Forward and Aft Fairing Skin

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, and C.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, D, and F.
- (3) Dents:
  - (a) The damage is permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail E, for a maximum depth of 0.25 inch.
  - (b) Fill or rework the dent if:
    - 1) It is larger than 0.25 inch and less than 0.50 inch in depth
    - 2) The damage agrees with the conditions shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail E.
    - 3) If you fill the dent, then do the steps that follow:
      - a) Seal the damage with aluminum foil tape (speed tape)
      - b) Make an inspection of the dent at each 400 flight hour interval or more frequently.

ALLOWABLE DAMAGE 3

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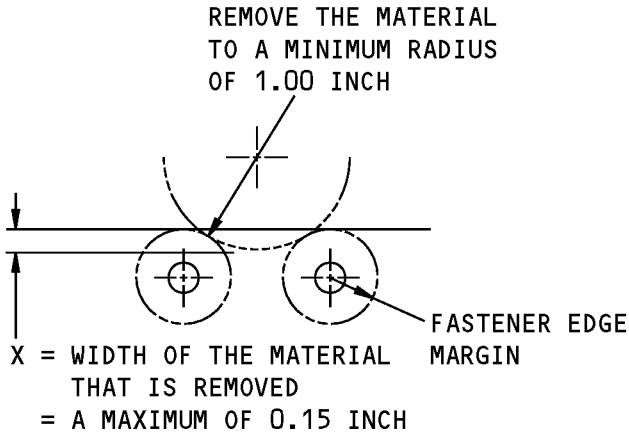


**737-800**

## **STRUCTURAL REPAIR MANUAL**

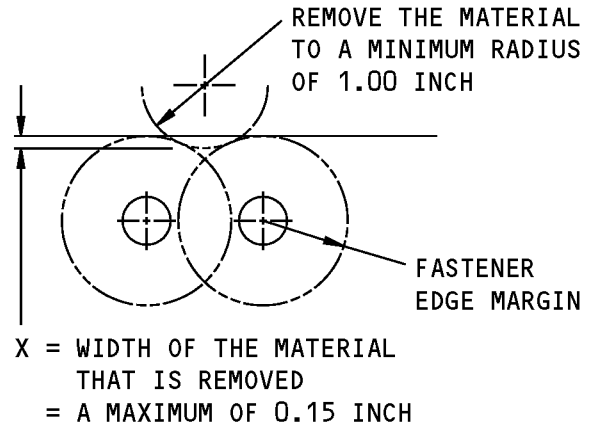
- Make sure the tape is in satisfactory condition
  - Repair the dent if the damage becomes larger.
- c) Repair the damage at or before 1000 flight hours have occurred.
- (4) Holes and punctures are permitted if:
- (a) They are a maximum of 0.25 inch in diameter
  - (b) The edge of the damage is a minimum of 1.0 inch away from a hole, an edge, or other damage
  - (c) They are filled with a 2117-T3 or 2117-T4 aluminum flush head rivet.
    - 1) Install the rivet without sealant.

**STRUCTURAL REPAIR MANUAL**



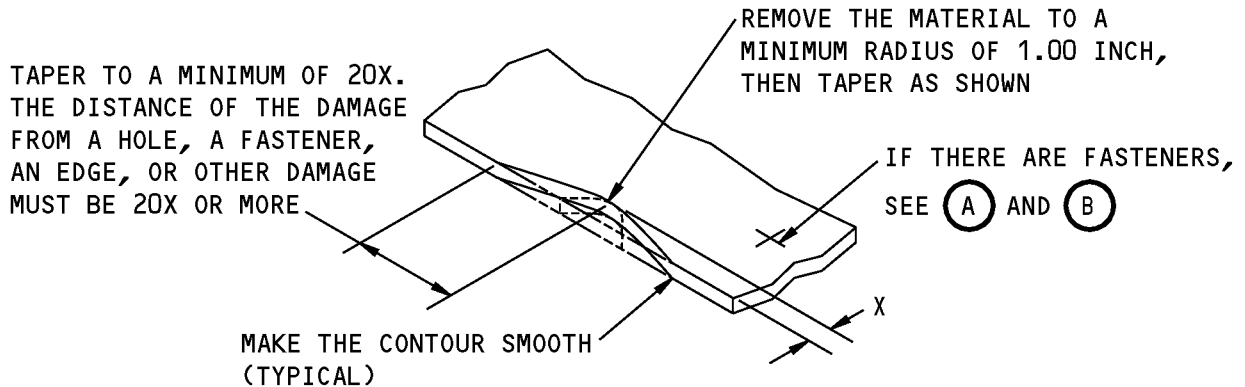
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

**(A)**



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

**(B)**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.15 INCH

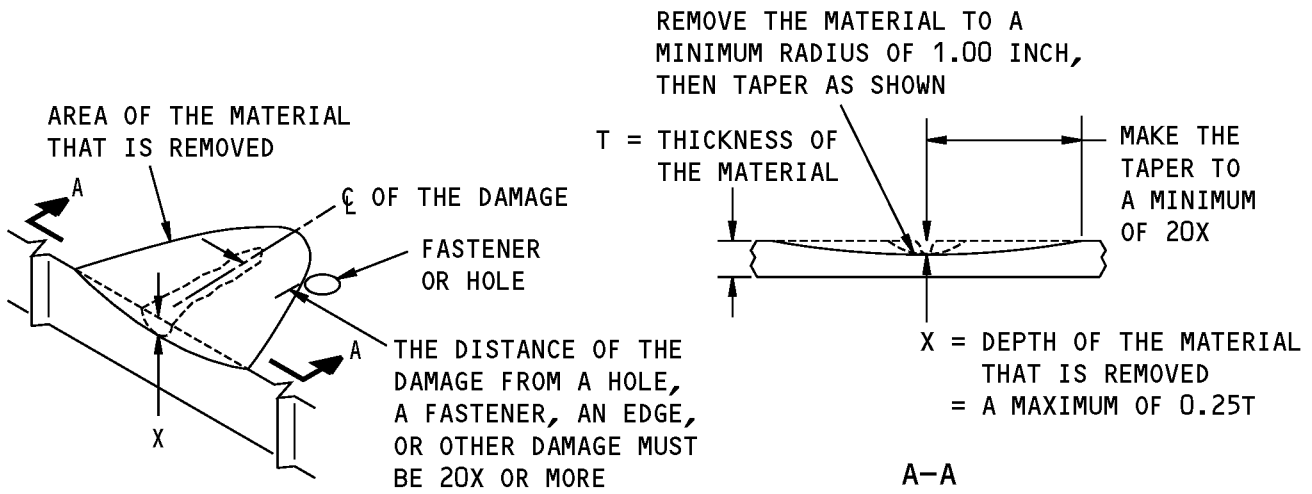
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

**(C)**

**Allowable Damage Limits  
Figure 102 (Sheet 1 of 3)**

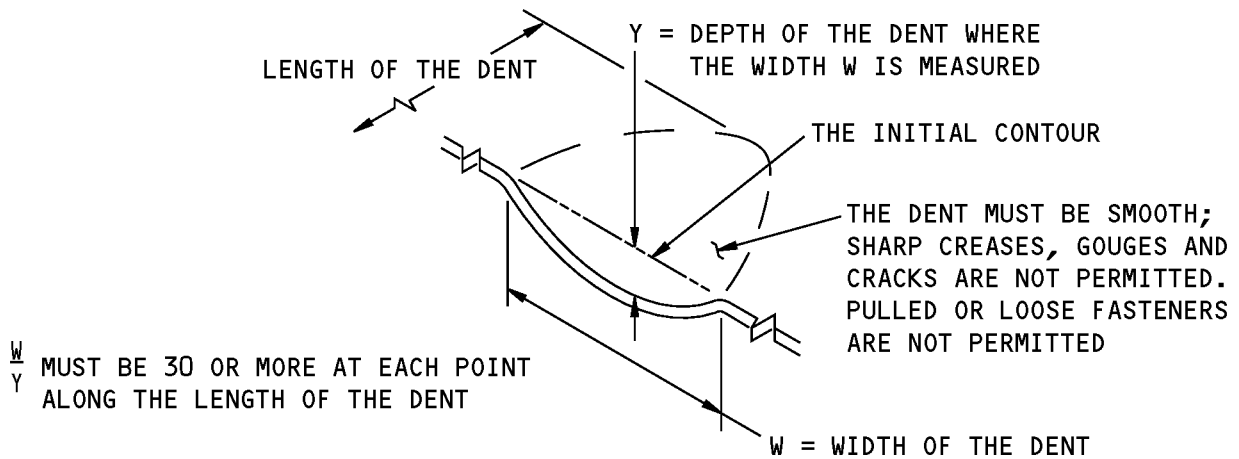


**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(D)



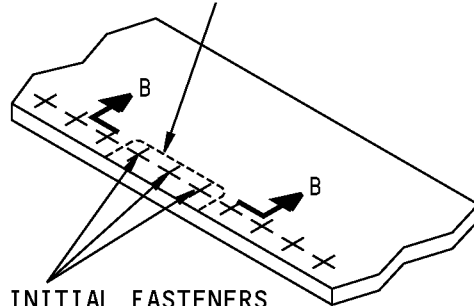
**DENT THAT IS PERMITTED**

(E)

**Allowable Damage Limits  
Figure 102 (Sheet 2 of 3)**

STRUCTURAL REPAIR MANUAL

THE REMOVAL OF MATERIAL  
AROUND THREE FASTENERS IN  
ALL GROUPS OF TEN IS PERMITTED  
TO A MAXIMUM DEPTH OF X

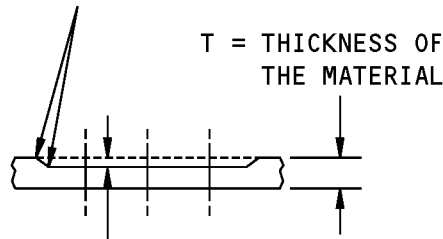


REMOVE THE INITIAL FASTENERS  
BEFORE THE DAMAGED MATERIAL  
IS REMOVED. INSTALL THE SAME  
TYPE AND SIZE (UP TO THE FIRST  
OVERSIZE) FASTENERS AFTER THE  
REWORK IS COMPLETED

REMOVAL OF DAMAGE AROUND THE  
FASTENERS ON AN EDGE OR A SURFACE



MAKE THE CONTOUR SMOOTH  
TO A MINIMUM RADIUS OF  
0.50 INCH (TYPICAL)



X = THE DEPTH OF THE  
MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.25T

B-B

Allowable Damage Limits  
Figure 102 (Sheet 3 of 3)



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# STRUCTURAL REPAIR MANUAL

## ALLOWABLE DAMAGE 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS, SKINS, AND PLATES

### 1. Applicability

- A. This subject gives the allowable damage limits for the skins and plates of the body-to-horizontal stabilizer sliding seals shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

### 2. General

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.
- C. Do the steps that follow if you have damage to the parts:

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.
  - (a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:
    - 1) Penetrant inspection. Refer to SOPM 20-20-02.
    - 2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.
  - (b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.

- D. Remove the damaged material as necessary.

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
- (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

- E. After you have removed the damage, do the steps that follow for the parts given in the tables that follow:

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Do what follows for the parts given in Table 101/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 101:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[26]	Aft Panel Assembly (Bonded Formed Aluminum)	[27]	Forward Panel Assembly (Bonded Formed Aluminum)

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
- (b) For the interior surface, do what follows:



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# STRUCTURAL REPAIR MANUAL

- 1) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
  - 2) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01.
- (c) For the exterior surface, do what follows:
- 1) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (2) Do what follows for the parts listed in Table 102/ALLOWABLE DAMAGE 4 and shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4.

**Table 102:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Forward Ramp (Formed Aluminum)	[14]	Upper Aft Spacer (Formed Aluminum)
[4]	Forward Skin Filler (Formed Aluminum)	[18]	Lower Aft Spacer (Formed Aluminum)
[7]	Upper Forward Spacer (Formed Aluminum)	[23]	Lower Forward Ramp (Formed Aluminum)
[9]	Upper Forward Ramp (Formed Aluminum)	[24]	Lower Forward Spacer (Formed Aluminum)
[10]	Rub Strip (Formed Aluminum)		

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
  - (b) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (3) Do what follows for the parts listed in Table 103/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 103:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Upper Forward Track (Formed CRES)	[17]	Lower Aft Rub Strip (Formed CRES)
[5]	Upper Forward Rub Strip (Formed CRES)	[19]	Lower Aft Track (Formed CRES)
[13]	Upper Aft Rub Strip (Formed CRES)	[22]	Lower Forward Track (Formed CRES)
[15]	Upper Aft Track (Formed CRES)	[25]	Lower Forward Rub Strip (Formed CRES)

- (a) For the lower and upper aft track, and the lower and upper forward track do what follows:
  - 1) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.
- (b) For the lower and upper aft rub strip, and the lower and upper forward rub strip do what follows:
  - 1) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 2A.
- (c) Apply a layer of Teflon-S 958-203:
  - 1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.
  - 2) Apply a layer of Teflon-S 958-203 as given in BAC 5824 to a final film thickness of 0.0010-0.0016 inch to the reworked areas of the part.



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**STRUCTURAL REPAIR MANUAL**

- (d) Apply two layers of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.
- (4) Do what follows for the parts listed in Table 104/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 104:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[8]	Upper Forward Skin Filler (Formed Aluminum)	[21]	Lower Skin Filler (Formed Aluminum)
[12]	Upper Aft Skin Filler (Formed Aluminum)		

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
- (b) For the interior surface, do what follows:
- 1) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (c) For the exterior surface, do what follows:
- 1) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (5) Do what follows for the parts listed in Table 105/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 105:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[16]	Rub Strip (Formed Aluminum)		

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
- (b) Apply one layer of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.
- (c) For the exterior surface, do what follows:
- 1) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01, Type 27.
- (6) Do what follows for the parts listed in Table 106/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 106:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Vertical Seal Rub Strip (Formed CRES)		

- (a) Apply a cadmium plating to the reworked areas of the part. Refer to SOPM 20-42-05, Type 2, Class 2.
- (b) Apply one layer of BMS 10-79, Type III primer to the reworked areas. Refer to SOPM 20-44-04.
- (c) For the exterior surface, do what follows:

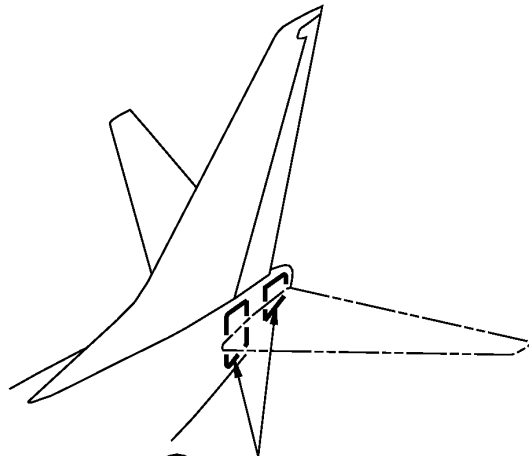
**737-800**  
**STRUCTURAL REPAIR MANUAL**

- 1) Prepare the surface and apply a BMS 10-86, Type I, or Type II Teflon filled coating, color gray. Refer to SOPM 20-44-01, Type 27.
- (7) Do what follows for the parts listed in Table 107/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location, Figure 101/ALLOWABLE DAMAGE 4.

**Table 107:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Seal Plate (Formed CRES)	[20]	Lower Blade (Formed CRES)
[11]	Upper Blade (Formed CRES)		

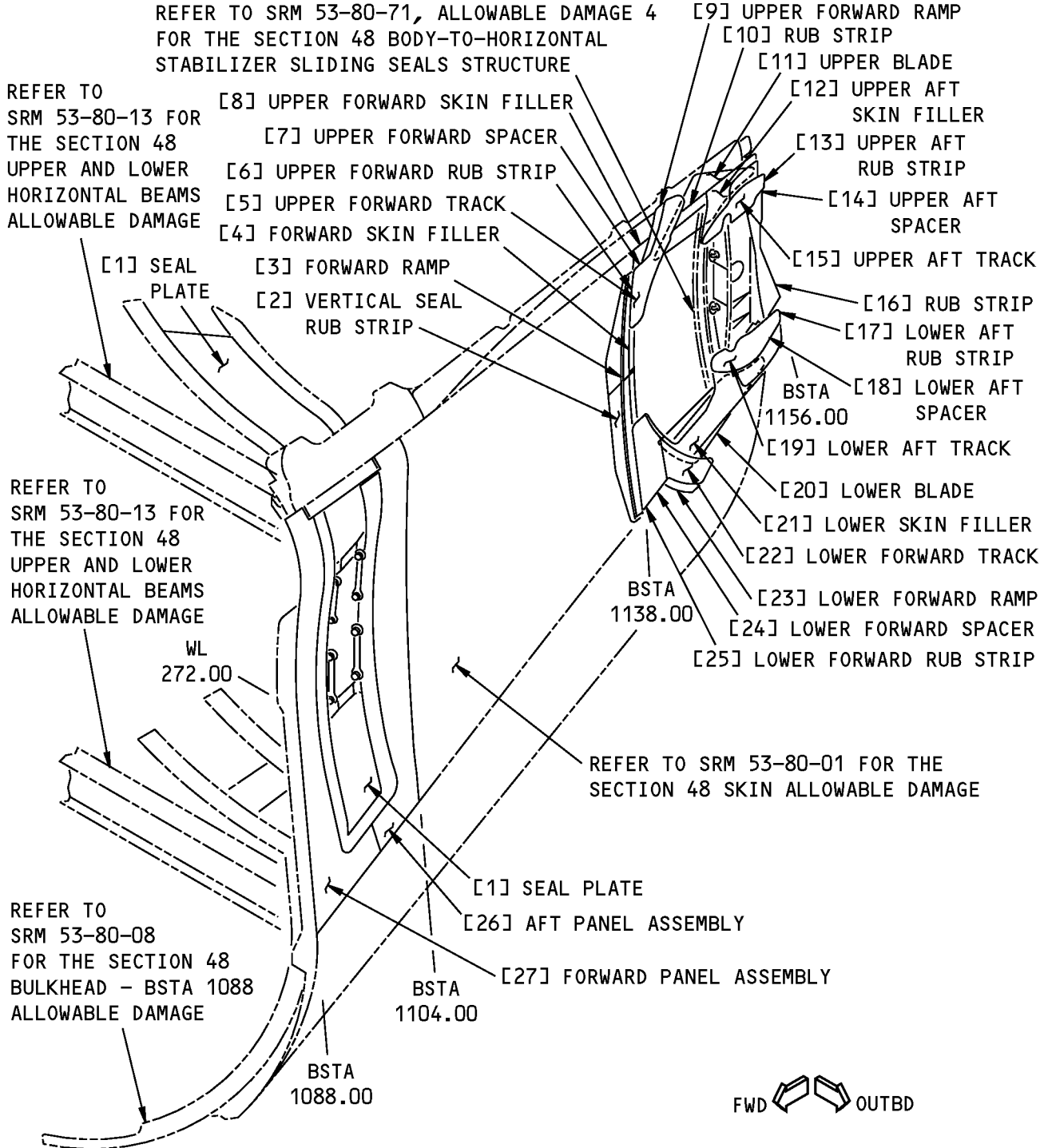
- (a) Apply a layer of Teflon-S 958-203:
  - 1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03
  - 2) Apply a layer of Teflon-S 958-203 as given in BAC 5824 to a final film thickness of 0.0010-0.0016 inch to the reworked areas of the part.



SEE (A) FOR SKINS AND PLATES OF  
THE SECTION 48 BODY-TO-HORIZONTAL  
STABILIZER SLIDING SEALS

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location**  
**Figure 101 (Sheet 1 of 2)**

**STRUCTURAL REPAIR MANUAL**



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

(A)

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location  
Figure 101 (Sheet 2 of 2)**



## 737-800 STRUCTURAL REPAIR MANUAL

### 3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-71, ALLOWABLE DAMAGE 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-30-03	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-42-03	Hard Chrome Plating
SOPM 20-42-05	Bright Cadmium Plating
SOPM 20-44-01	Application of Special Purpose Coatings and Finishes
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General

### 4. Allowable Damage Limits

#### A. Cracks

- (1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Details A, B, and F.
- (2) Cracks are permitted if they are:
  - (a) A maximum of 0.50 inch in length
  - (b) A minimum of 1.0 inch away from an edge, or other damage

**NOTE:** A crack with a maximum length of 0.50 inch and ends at a fastener hole is permitted.

- (c) Stop-drilled with 0.250 inch diameter stop holes at the end(s) of the crack. Refer to 51-10-02.

#### B. Nicks, Gouges, Scratches, and Corrosion:

- (1) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.

#### C. Dents are permitted as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 4, Detail D if:

- (1) They do not extend across an attached structure.

#### D. Holes and Punctures are permitted if:

- (1) They are a maximum of 0.50 inch in diameter
- (2) The edge of the damage is a minimum of 0.75 inch away from a hole, an edge, or other damage
- (3) They are filled with:
  - (a) A 2117-T3 or 2117-T4 aluminum flush head rivet for aluminum parts

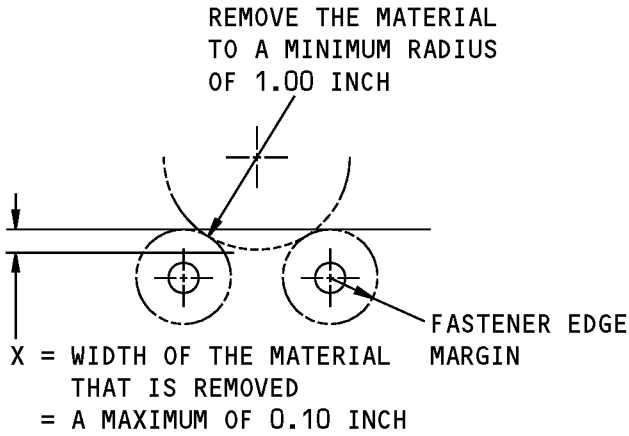




**737-800**  
**STRUCTURAL REPAIR MANUAL**

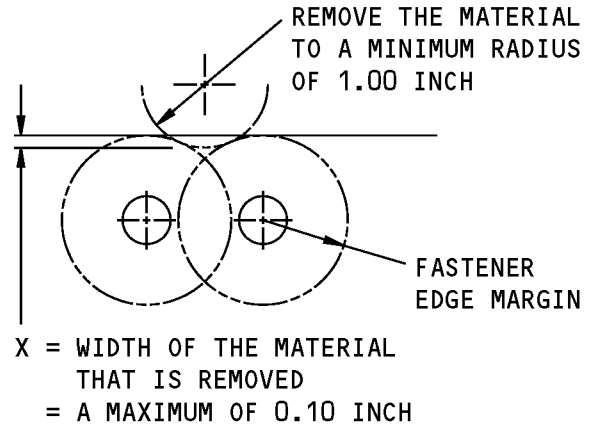
- 1) Install the rivet without sealant.
- (b) A monel flush head rivet for CRES parts.
  - 1) Install the rivet without sealant.

**STRUCTURAL REPAIR MANUAL**



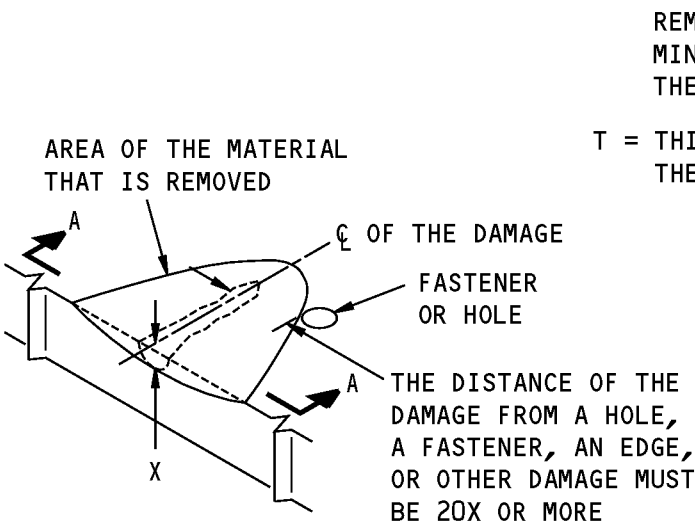
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



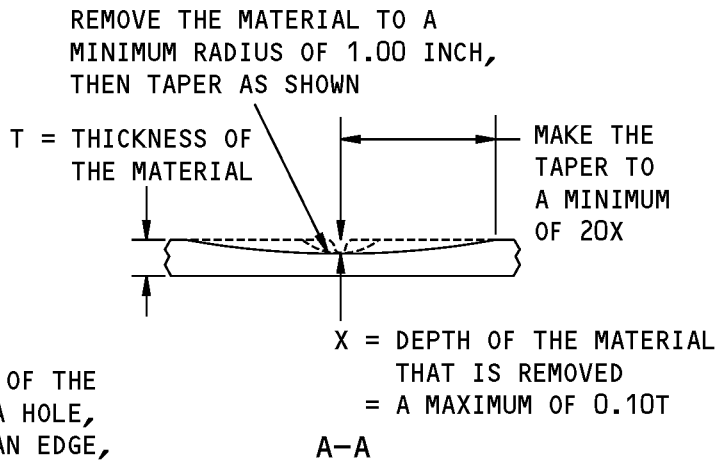
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



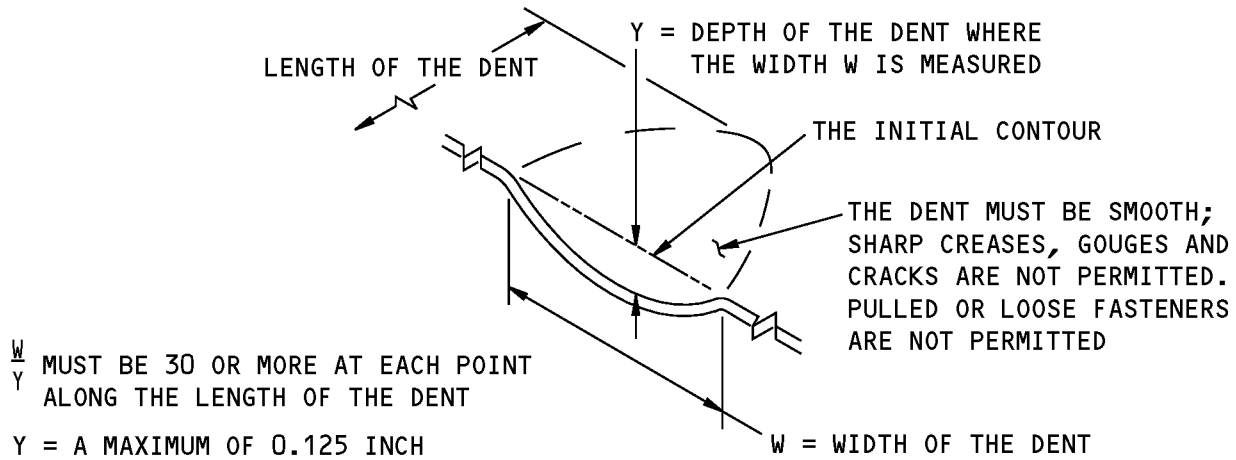
REMOVAL OF DAMAGED MATERIAL ON A SURFACE

(C)



Allowable Damage Limits  
Figure 102 (Sheet 1 of 3)

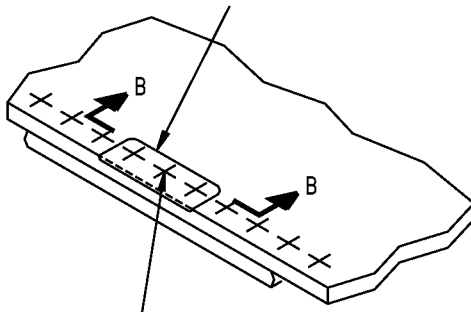
**737-800  
STRUCTURAL REPAIR MANUAL**



DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR  
DENT THAT IS PERMITTED

D

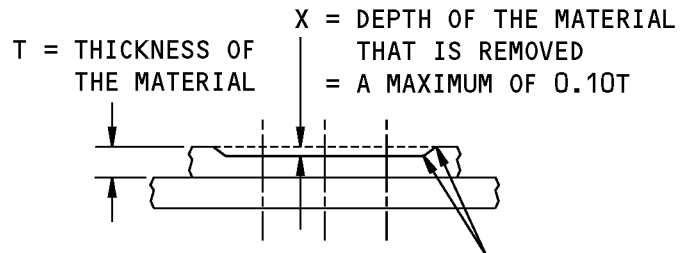
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

E

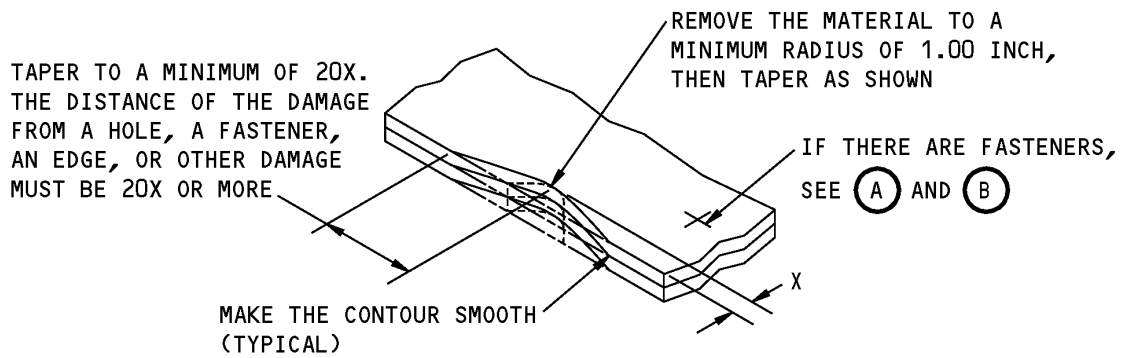


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

B-B

**Allowable Damage Limits  
Figure 102 (Sheet 2 of 3)**

**737-800**  
**STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH

NOTE: APPLICABLE TO SINGLE AND MULTI-PLY SKINS AND PLATES

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(F)

**Allowable Damage Limits**  
**Figure 102 (Sheet 3 of 3)**



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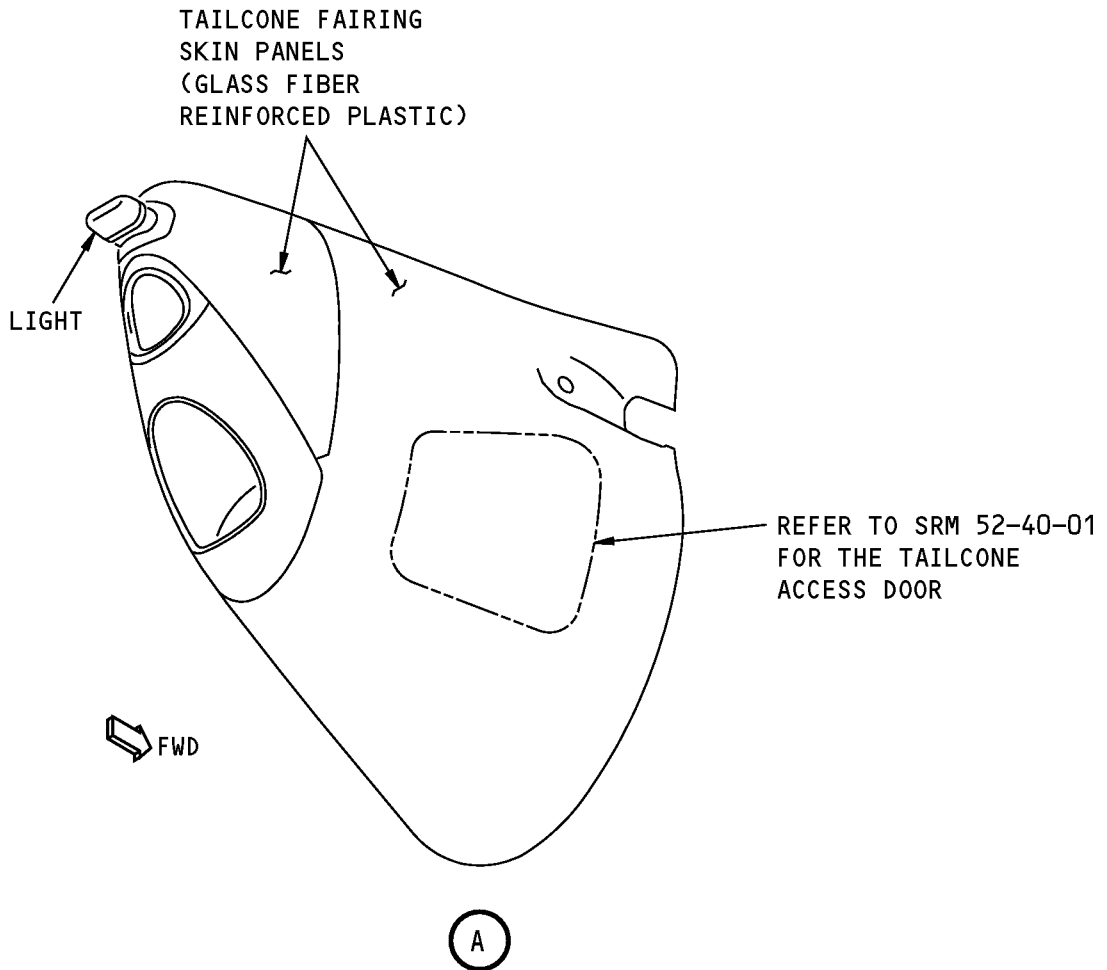
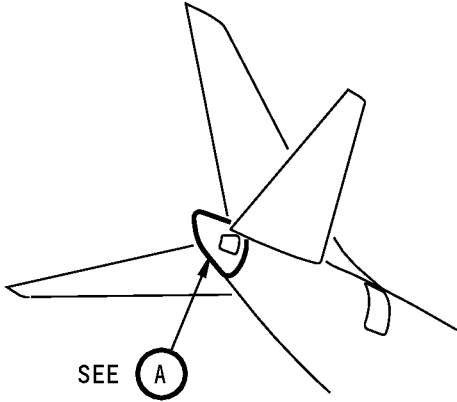
## STRUCTURAL REPAIR MANUAL

### REPAIR 1 - SECTION 48 TAILCONE FAIRING SKIN

#### 1. Applicability

- A. Repair 1 is applicable to damage on the forward and aft skin panels of the Section 48 tailcone fairing as shown in Tailcone Fairing Skin Location, Figure 201/REPAIR 1.
- B. Repair 1 is applicable to damage that is more than the limits permitted in Allowable Damage 1. Refer to Allowable Damage 1 for the type and the dimensions of the damage that is permitted.

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STRUCTURAL REPAIR MANUAL**



**Tailcone Fairing Skin Location  
Figure 201**



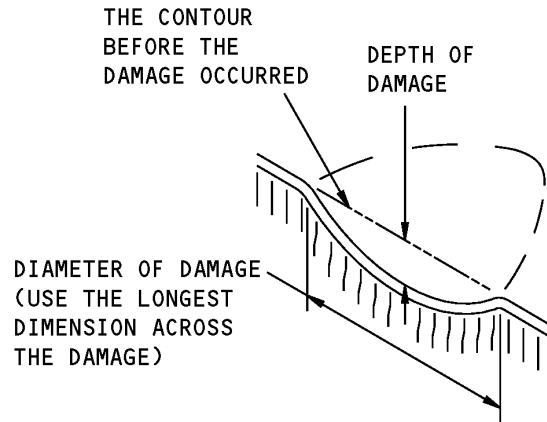
737-800

## STRUCTURAL REPAIR MANUAL

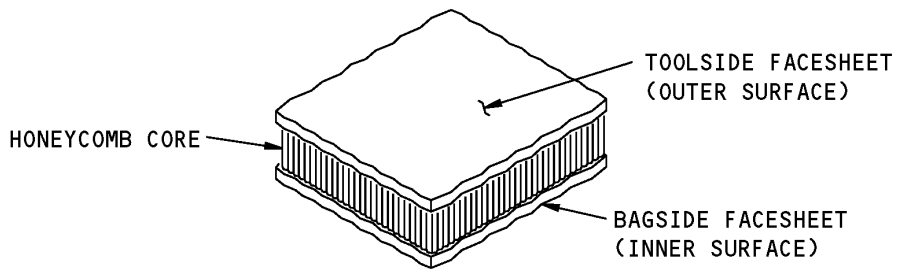
### 2. General

- A. Repair 1 gives instructions for Category A and B repairs. Refer to 51-00-06 to find the definitions of the different categories of repairs.
- B. Remove the panel as necessary to get access to the inner surfaces. Refer to AMM 53-53-00/401.
- (1) Remove the necessary fasteners. Refer to 51-40-02 for information on fastener removal.
- C. Do an inspection of the damaged area to find the dimensions of the damage.
- (1) For the honeycomb core areas that have damage on a facesheet with 3 or less initial plies, Boeing recommends that you do the step that follows:
- (a) Use an instrumented Non-Destructive Test (NDT) procedure. The tap test procedure is optional. Refer to 737 NDT Part 1, 51-05-01 for inspection procedures.
- NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.
- (2) For the honeycomb core areas that have damage on a facesheet with 4 or more initial plies, Boeing recommends that you do the step that follows:
- (a) Use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.
- NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.
- (3) For damage in solid laminate areas, Boeing recommends that you do the step that follows:
- (a) Use an instrumented Non-Destructive Test (NDT) procedure. Refer to 737 NDT Part 1, 51-01-02 for inspection procedures.
- NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.
- (4) Refer to Definitions of Damage Size, Figure 202/REPAIR 1 for the definitions of the diameter and depth of damage.
- (5) Refer to Definitions of the Facesheets, Figure 203/REPAIR 1 for the definitions of the facesheets of a honeycomb core area.
- D. Do the repair as given in Paragraph 4./REPAIR 1.
- E. Install the panels that were removed. Refer to AMM 53-53-00/401.
- (1) Install the fasteners after all repairs are complete. Refer to 51-40-02 for information on fastener installation.

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**Definitions of Damage Size  
Figure 202**



**Definitions of the Facesheets  
Figure 203**



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### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-30-05, GENERAL	Equipment and Tools For Repairs
51-40-02	FASTENER INSTALLATION AND REMOVAL
51-40-03, GENERAL	Fastener Substitution
51-70-04, REPAIR GENERAL	Repair Procedures for Wet Layup Materials
51-70-05, REPAIR GENERAL	Repair Procedures for Preimpregnated Materials
51-70-06	ROOM TEMPERATURE CURE REPAIRS
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
AMM 51-21-71 P/B 701	CONDUCTIVE COATING FOR EXTERNAL SURFACES - CLEANING/PAINTING
AMM 53-53-00/401	Tailcone Fairing Assembly - Installation/Removal
737 NDT Part 1, 51-01-01	Inspection of Repairs to Composite Structure
737 NDT Part 1, 51-01-02	NDT Examination of Composite Structure for Impact Damage
737 NDT Part 1, 51-05-01	Tap Test Inspection of Honeycomb Sandwich Structure

### 4. Repair Instructions

- A. For dents that are a maximum of 2 inches (50.8 mm) in diameter and have no fiber damage and delamination, use Repair 12 as given in 51-70-06.
- B. For dents that are not permitted by Paragraph 4.A./REPAIR 1 and for other damage that is not permitted by Allowable Damage 1, refer to:
  - (1) Table 201/REPAIR 1 for the repair data that is applicable to damage in the honeycomb core areas of the panels.
  - (2) Table 202/REPAIR 1 for the repair data that is applicable to damage in the solid laminate areas of the panels.

**Table 201:**

REPAIR DATA FOR THE HONEYCOMB CORE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP	CATEGORY A WET LAYUP	CATEGORY A WET LAYUP	CATEGORY A PREIMPREGNATED LAYUP
<b>REPAIR CURE TEMPERATURE</b>	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Damage that is a maximum of: - 6.0 inches (152.4 mm) in diameter - 30 percent of the smallest dimension across the panel at the damage location - one facesheet and the honeycomb core in depth	Damage that is a maximum of: - 6.0 inches (152.4 mm) in diameter - 50 percent of the smallest dimension across the panel at the damage location	Damage that is a maximum of: - 12.0 inches (304.8 mm) in diameter - 50 percent of the smallest dimension across the panel at the damage location	There are no limits on the repair dimensions.

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REPAIR DATA FOR THE HONEYCOMB CORE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS				
REPAIR TYPE	CATEGORY B WET LAYUP	CATEGORY A WET LAYUP	CATEGORY A WET LAYUP	CATEGORY A PREIMPREGNATED LAYUP
REPAIR CURE TEMPERATURE	Room Temperature	150°F (66°C)	200°F (93°C)	250°F (121°C)
	One repair for each 144 inches <sup>2</sup> (0.93 M <sup>2</sup> )  6.0 inches (152.4 mm) minimum clearance from: -other repairs -fastener holes -panel edges	One repair for each 144 inches <sup>2</sup> (0.93 M <sup>2</sup> )  3.0 inches (76.2 mm) minimum clearance from: -other repairs -fastener holes -panel edges		
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-05 and Paragraph 4.E

**Table 202:**

REPAIR DATA FOR THE SOLID LAMINATE AREAS OF THE 250°F (121°C) CURE, TAILCONE SKIN PANELS			
REPAIR TYPE	CATEGORY B WET LAYUP	CATEGORY A WET LAYUP	CATEGORY A PREIMPREGNATED LAYUP
REPAIR CURE TEMPERATURE	ROOM TEMPERATURE	200°F (93°C)	250°F (121°C)
REPAIR SIZE AND LIMITS	Damage that is a maximum of:  - 15 percent of the cross-sectional area through the edgeband or solid laminate area  - 10 percent of the edgeband length on the side of the damage, as applicable	There are no size limits on the repair.	There are no size limits on the repair.
REPAIR PROCEDURES	SRM 51-70-06 and Paragraph 4.C	SRM 51-70-04 and Paragraph 4.D	SRM 51-70-05 and Paragraph 4.E

C. For Category B repairs made with wet layup materials at room temperature cure, do as follows, as applicable:

**NOTE:** Repair plies or added plies are not necessary in the repair of delamination at an edge if the delamination is a minimum of 2D (D = fastener diameter) away from a fastener hole. If it is not, repair it as hole damage.

- (1) Use the same number of repair plies as the number of initial plies that are removed.
- (2) Add one structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is ±45 degrees.
- (3) Add a second structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is 0 or 90 degrees.
- (4) Inspect repairs after each 5000 flight hour interval or more frequently. Refer to 737 NDT Part 1, 51-01-01 for inspection procedures. If deterioration is found, then they must be replaced with Category A repairs.

**NOTE:** Other inspection methods that have been examined and found to be satisfactory by the operator, can be used.



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- D. For Category A repairs made with wet layup materials at 150°F (66°C) or 200°F (93°C) cure, do as follows, as applicable:

**NOTE:** Repair plies or added plies are not necessary in the repair of delamination at an edge if the delamination is a minimum of 2D (D = fastener diameter) away from a fastener hole. If it is not, then repair it as hole damage.

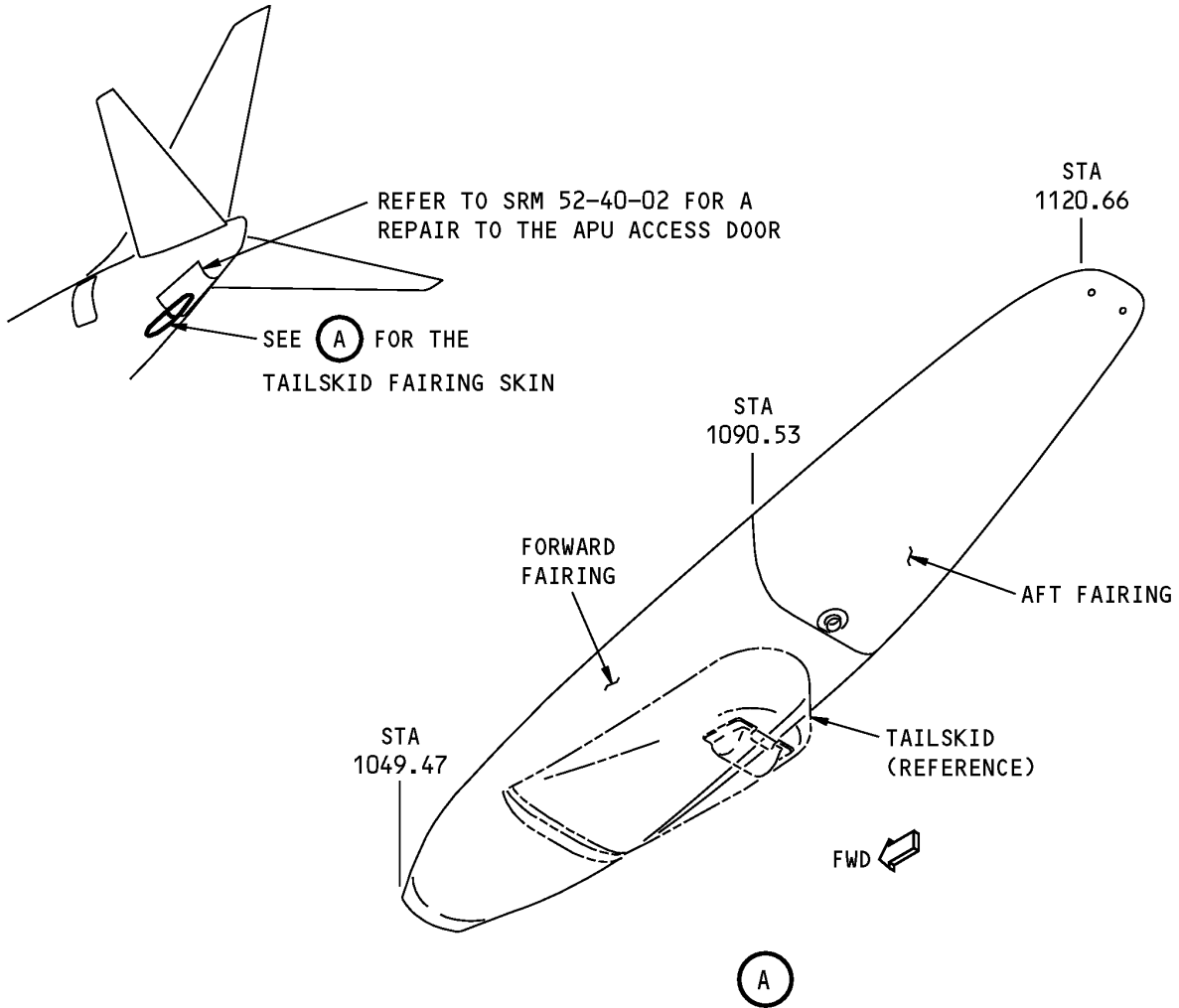
- (1) Use the same number of repair plies as the number of initial plies that are removed.
  - (2) Add one structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is  $\pm 45$  degrees.
  - (3) Add a second structural ply of BMS 9-3, Type H-2 or H-3 glass fabric that is 0 or 90 degrees.
- E. For Category A repairs made with preimpregnated layup materials at 250°F (121°C) cure, use the same number of repair plies as the number of initial plies that are removed.

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REPAIR 3 - SECTION 48 TAILSKID FAIRING SKIN

1. Applicability

- A. Repair 3 is applicable to damage to the tailskid fairing skin shown in Tailskid Fairing Skin Location, Figure 201/REPAIR 3.



Tailskid Fairing Skin Location  
Figure 201

2. General

- A. Repair 3 is a Category A repair. Refer to 51-00-06 to find the definitions of the different categories of repairs.



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### 3. References

Reference	Title
51-00-06	STRUCTURAL REPAIR DEFINITIONS
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-20-05	REPAIR SEALING
51-40-02, GENERAL	Fastener Installation and Removal
51-40-03, GENERAL	Fastener Substitution
51-40-05, GENERAL	Fastener Hole Sizes
51-40-06, GENERAL	Fastener Edge Margins
51-40-08	COUNTERSINKING
53-80-71, REPAIR 3	Section 48 Tailskid Fairing Support Structure
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers

### 4. Repair Instructions

- A. Cut and remove the damaged part of the tailskid fairing skin as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3. Refer to 51-10-02 for the procedures to remove the damage.
  - (1) Make sure there is a minimum of two rows of repair fasteners around the edges of the cutout.
- B. Put the skin that is around the damage back to the initial contour.
- C. Make the repair part as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3 and given in Table 201/REPAIR 3.
  - (1) Make the contour of the repair part the same as the contour of the initial skin.

**Table 201:**

REPAIR MATERIAL			
ITEM	PART	QUANTITY	MATERIAL
[1]	Repair Plate	1	Use bare or clad 6061-T6 that is 0.080 inch thick.

- D. Assemble the repair part as shown in Tailskid Fairing Skin External Repair, Figure 202/REPAIR 3.
- E. Drill and countersink the fastener holes.
- F. Disassemble the repair part.
- G. Remove the nicks, scratches, gouges, and sharp edges from the repair parts and the bare surfaces of the initial skin.
- H. Apply a chemical conversion coating to the repair parts and bare surfaces of the initial skin. Refer to 51-20-01 for the chemical conversion coating procedures.
- I. Apply one layer of BMS 10-79, Type III primer to the repair parts and the bare surfaces of the initial skin. Refer to SOPM 20-44-04.
- J. Install the repair parts with BMS 5-95 sealant between the mating surfaces. Refer to 51-20-05 for the procedures to apply the sealant.
- K. Install the fasteners without sealant.

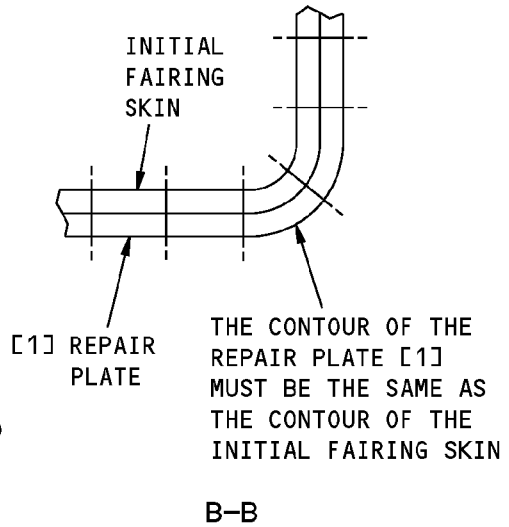
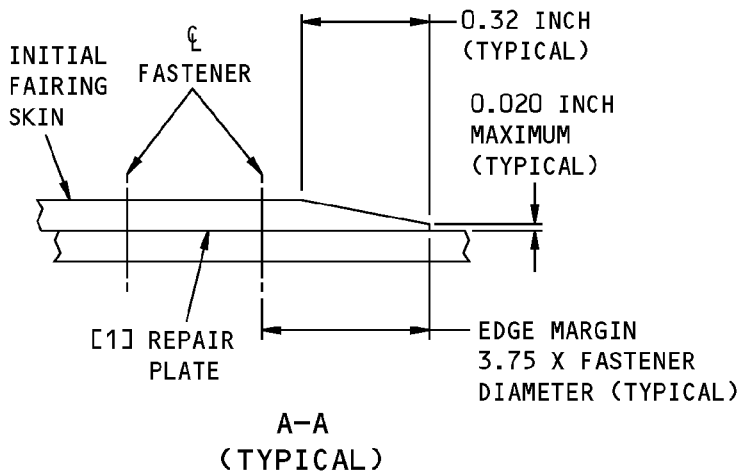
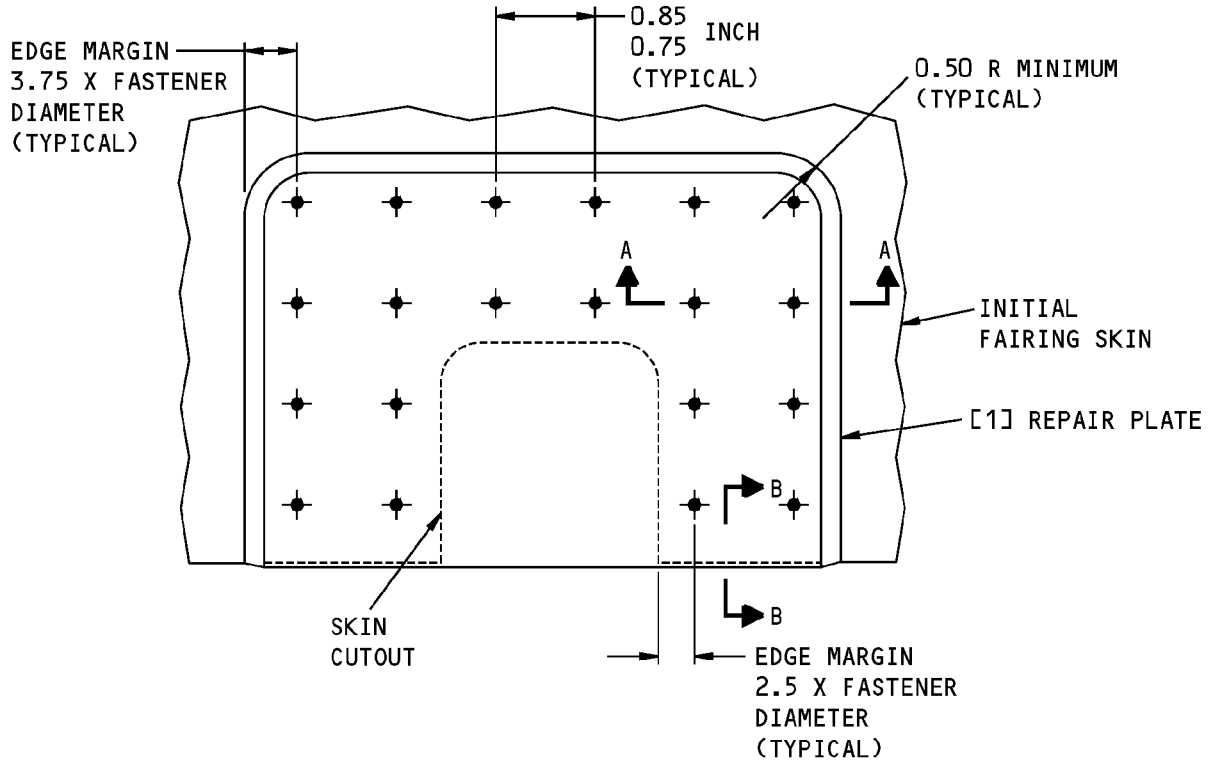


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- (1) If necessary, use countersink repair washers. Refer to 51-40-08
- L. Fill the space between the part [1] repair plate and the initial skin with BMS 5-95 sealant. Refer to 51-20-05.
- M. Apply the decorative finish to the repair area as given in AMM PAGEBLOCK 51-21-99/701.

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**FASTENER SYMBOLS**

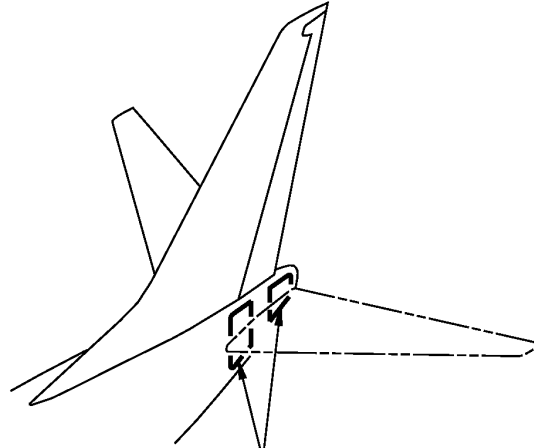
- ✦ REPAIR FASTENER LOCATION. INSTALL A BACR15CE5D 100° SHEAR HEAD RIVET OR AN MS20426D5 COUNTERSUNK 100° PRECISION HEAD SOLID RIVET.

**Tailskid Fairing Skin External Repair  
Figure 202**



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**REPAIR 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS SKINS AND PLATES**



SEE (A) FOR SKINS AND PLATES OF  
THE SECTION 48 BODY-TO-HORIZONTAL  
STABILIZER SLIDING SEALS

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location  
Figure 201 (Sheet 1 of 2)**



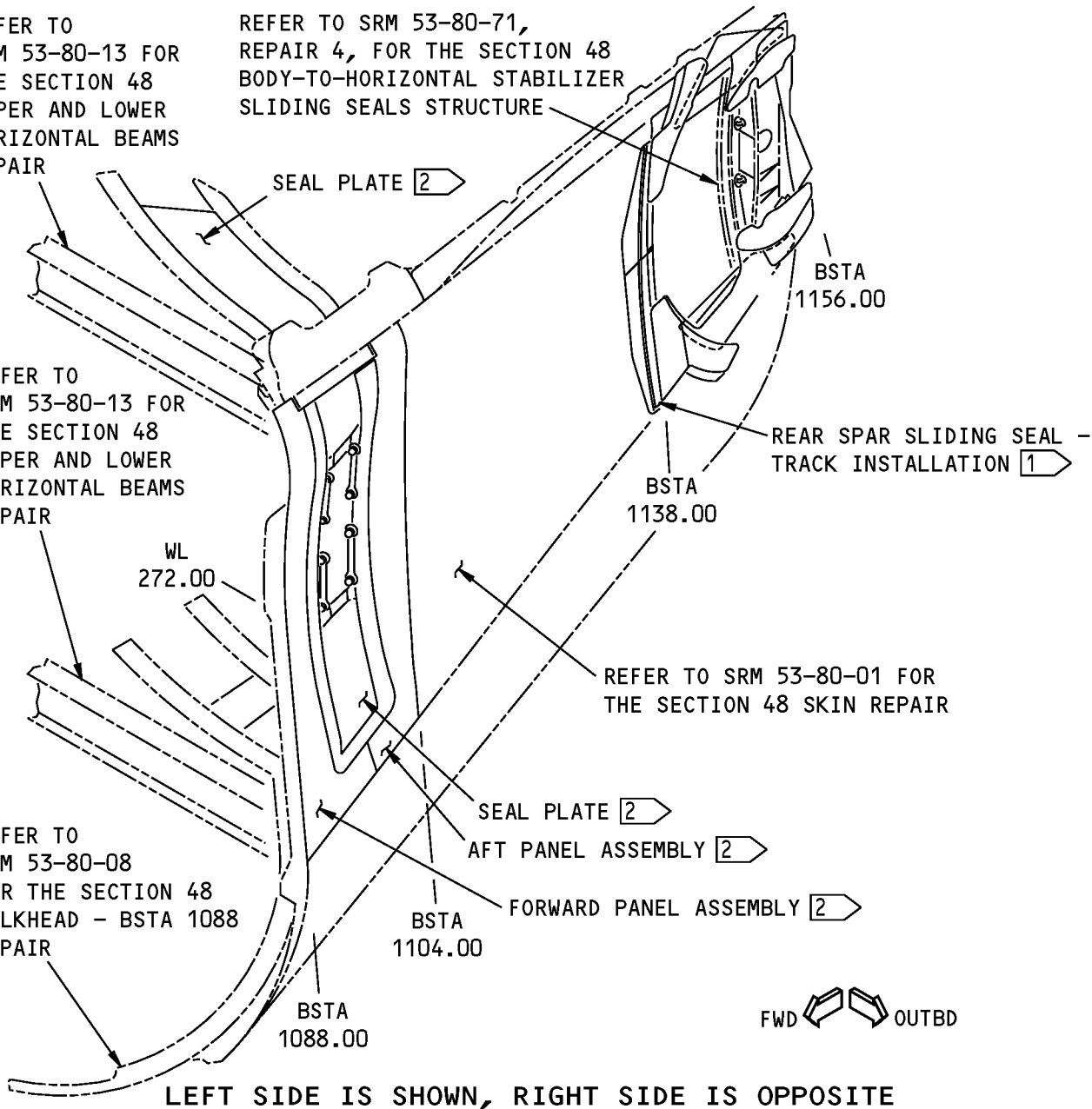
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REFER TO SRM 53-80-13 FOR THE SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS REPAIR

REFER TO SRM 53-80-71, REPAIR 4, FOR THE SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE

REFER TO SRM 53-80-13 FOR THE SECTION 48 UPPER AND LOWER HORIZONTAL BEAMS REPAIR

REFER TO SRM 53-80-08 FOR THE SECTION 48 BULKHEAD - BSTA 1088 REPAIR



LEFT SIDE IS SHOWN, RIGHT SIDE IS OPPOSITE

(A)

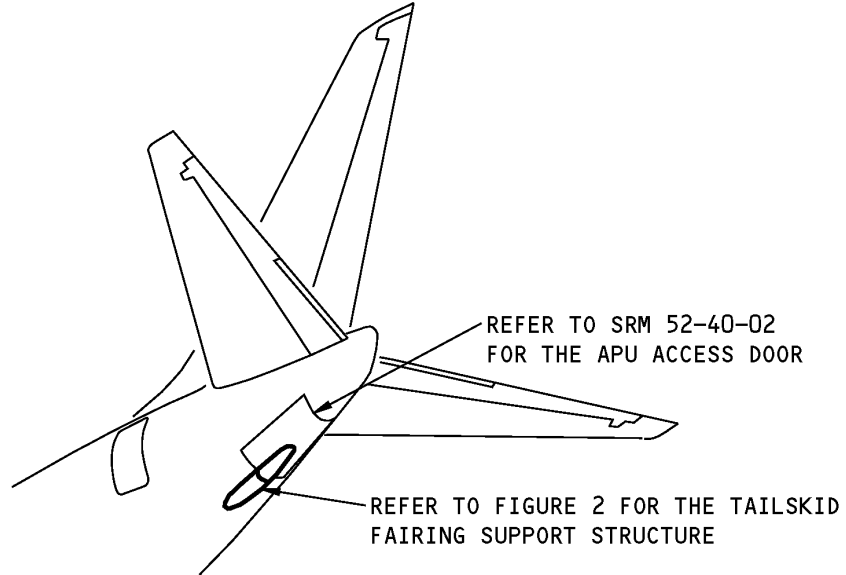
**NOTES**

- 1 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-70, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGED PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME.

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins and Plates Location  
Figure 201 (Sheet 2 of 2)**

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**IDENTIFICATION 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE**



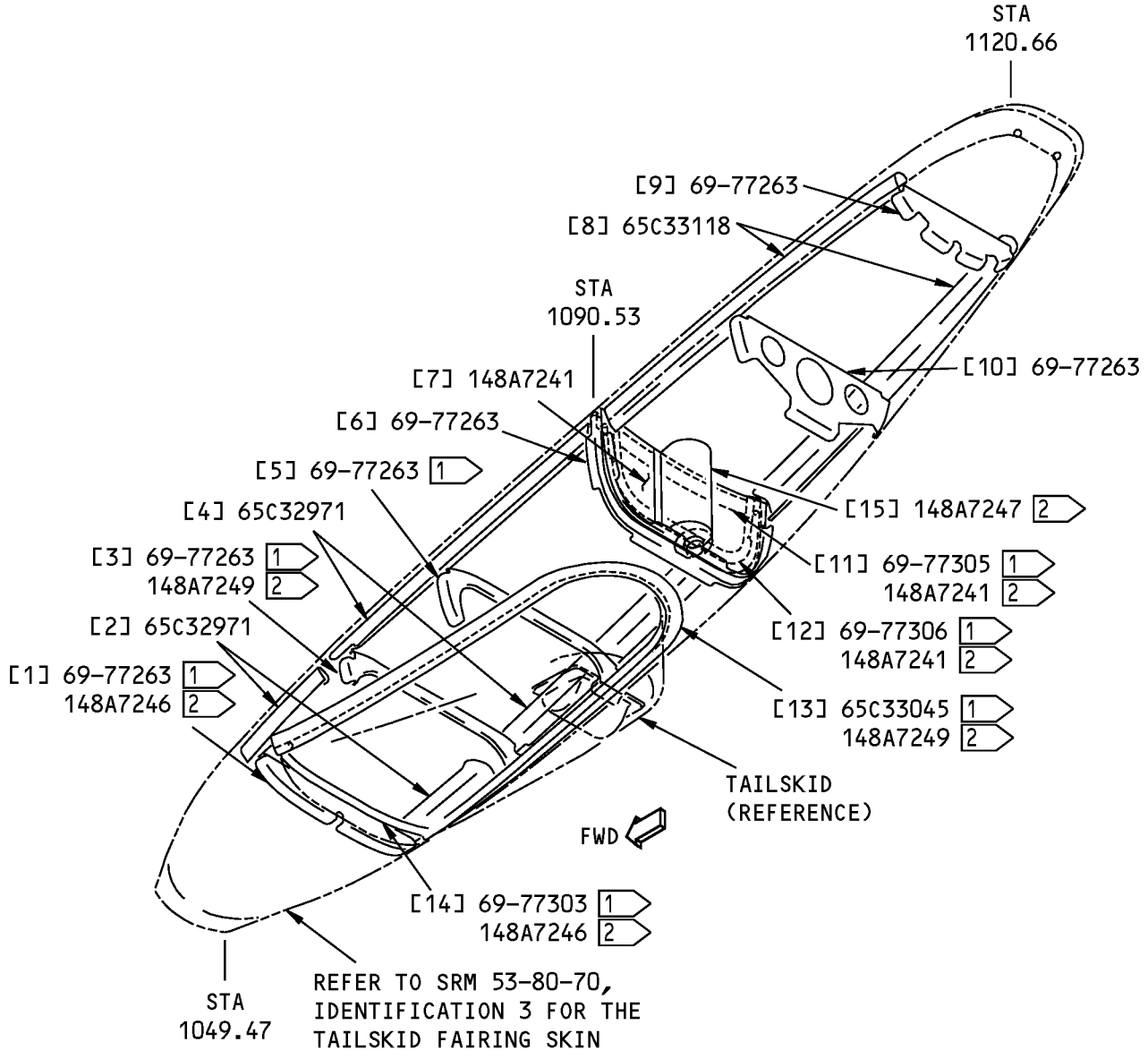
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Tailskid Fairing Support Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
148A4801	Integration Functional Collector - Section 48
148A7240	Fairing Installation - Tailskid
148A7241	Frame Assembly - Tailskid Fairing

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**NOTES**

- REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

- ① FOR AIRCRAFT WITHOUT "SHORT FIELD PERFORMANCE" OR A FLAT AFT PRESSURE BULKHEAD OPTION.
- ② FOR AIRCRAFT WITH "SHORT FIELD PERFORMANCE" OR A FLAT AFT PRESSURE BULKHEAD OPTION.

**Tailskid Fairing Support Structure Identification  
Figure 2**



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**Table 2:**

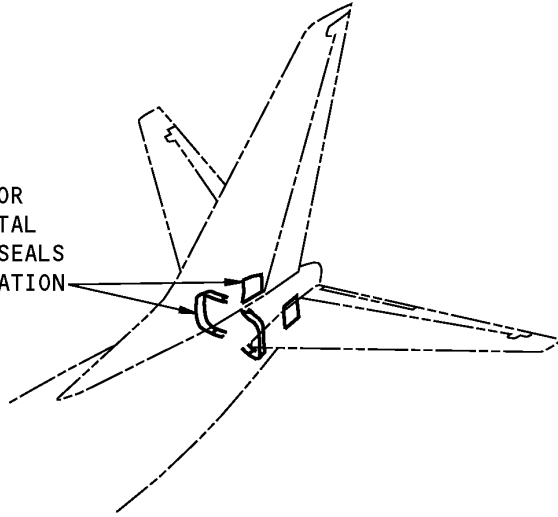
<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[2]	Attachment Angle	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[3]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[4]	Attachment Angle	0.080 (2.03)	2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[6]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[7]	Frame	0.063 (1.6)	6061-T62 sheet as given in QQ-A-250/11	
[8]	Attachment Angle	0.063 (1.6)	2024-T42 clad sheet as given in QQ-A-250/5	
[9]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[10]	Frame	0.063 (1.6)	6061-T6 sheet as given in QQ-A-250/11	
[11]	Seal Retainer	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[12]	Seal Retainer	0.050 (1.3)	2024-T3 clad sheet as given in QQ-A-250/5	
[13]	Seal Retainer		BAC1490-2582 2024-T42 clad sheet as given in QQ-A-250/5	
[14]	Seal Retainer	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Drop Tube	0.050 (1.3)	2024-T42 clad sheet as given in QQ-A-250/5	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE**

REFER TO FIGURE 2 FOR  
THE BODY-TO-HORIZONTAL  
STABILIZER SLIDING SEALS  
STRUCTURE IDENTIFICATION



**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

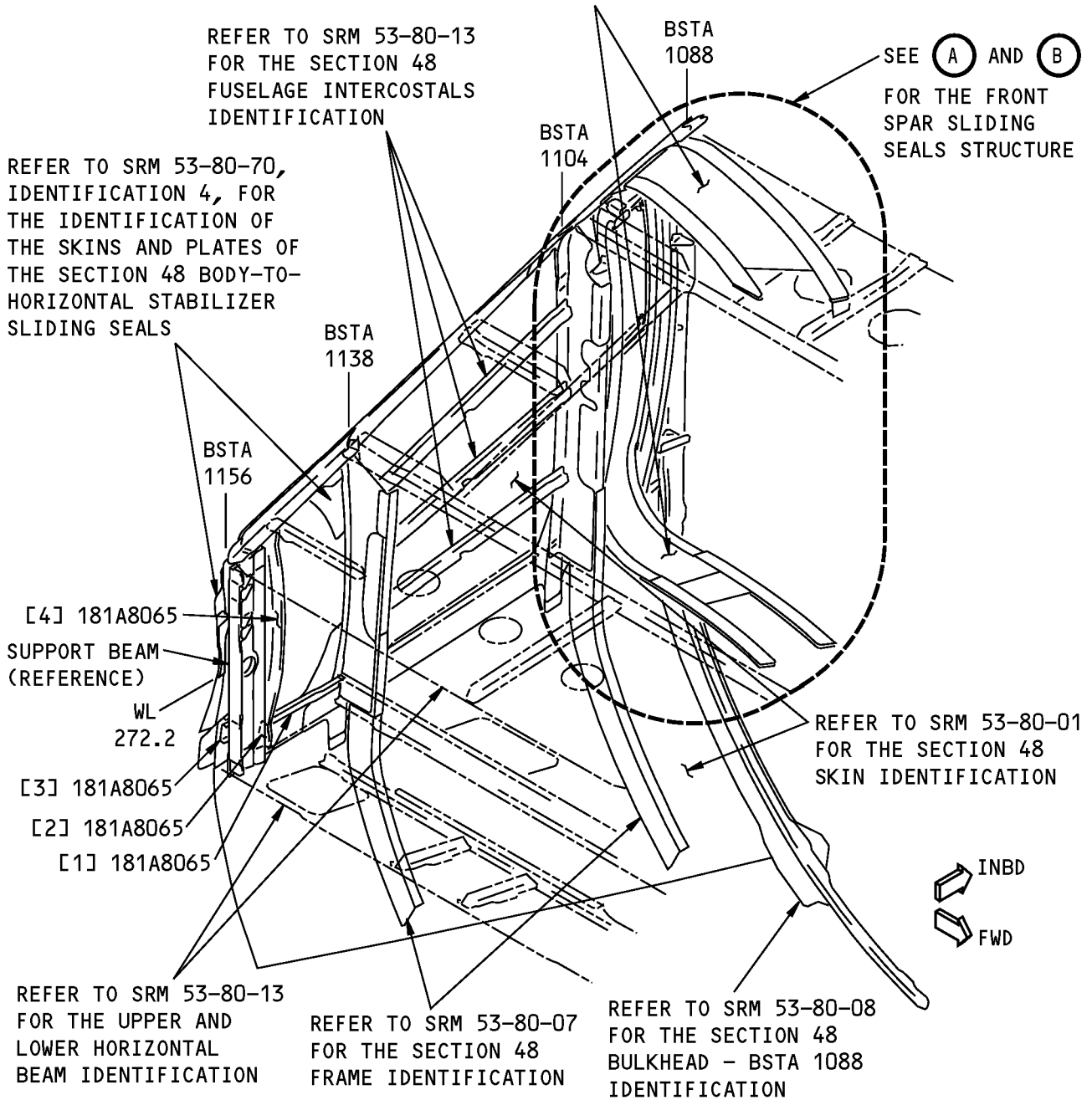
**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4814	Functional Collector - Sliding Seals, Front and Rear Spar
181A8001	Frame Installation - Track Support, Front Spar Sliding Seal
181A8002	Track Installation, Front Spar Sliding Seal
181A8004	Seal Installation, Front Spar Sliding Seal
181A8050	Track Installation, Rear Spar Sliding Seal

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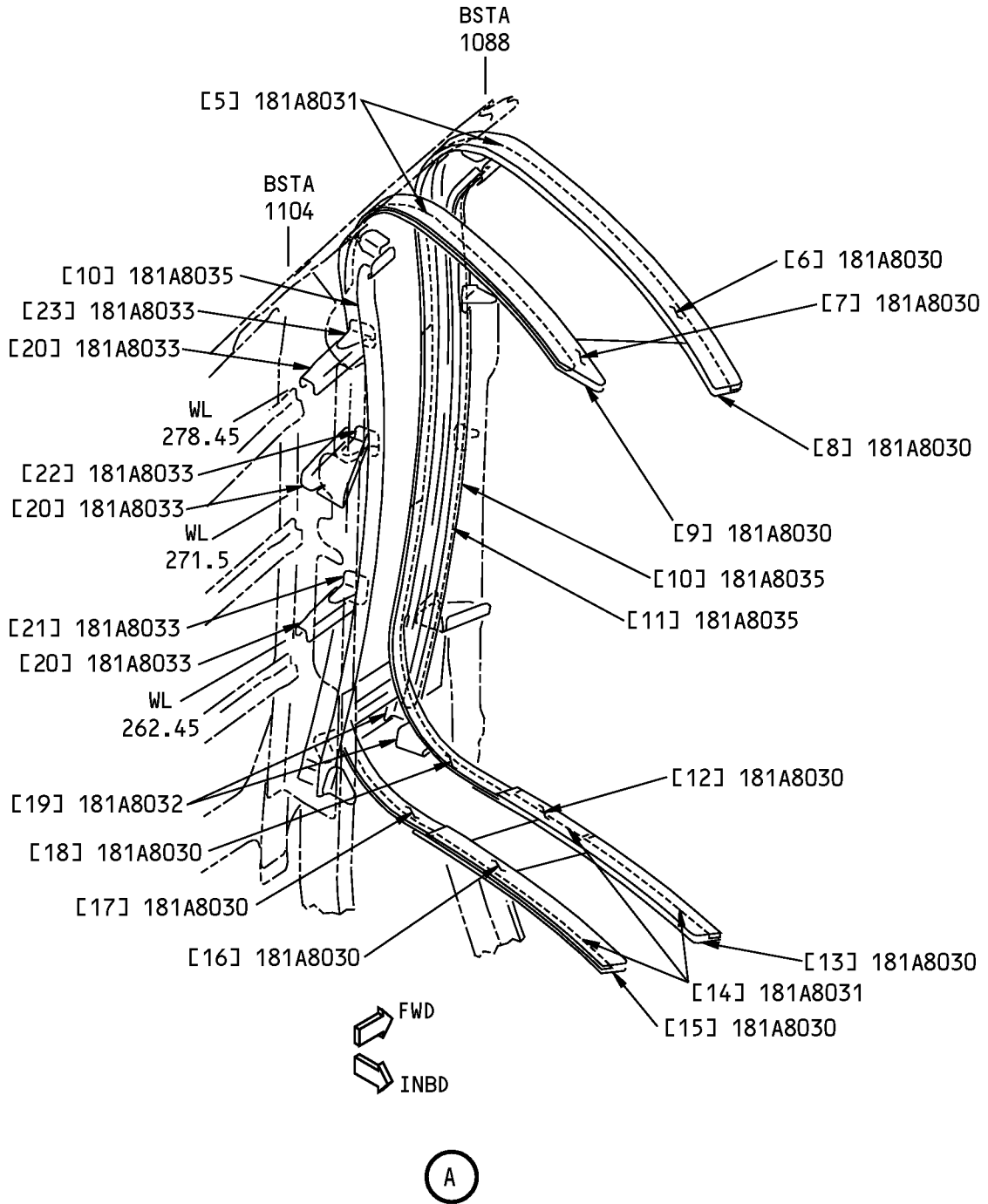
REFER TO SRM 53-80-70, IDENTIFICATION 4,  
FOR THE IDENTIFICATION OF THE SKINS AND  
PLATES OF THE SECTION 48 BODY-TO-  
HORIZONTAL STABILIZER SLIDING SEALS



**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

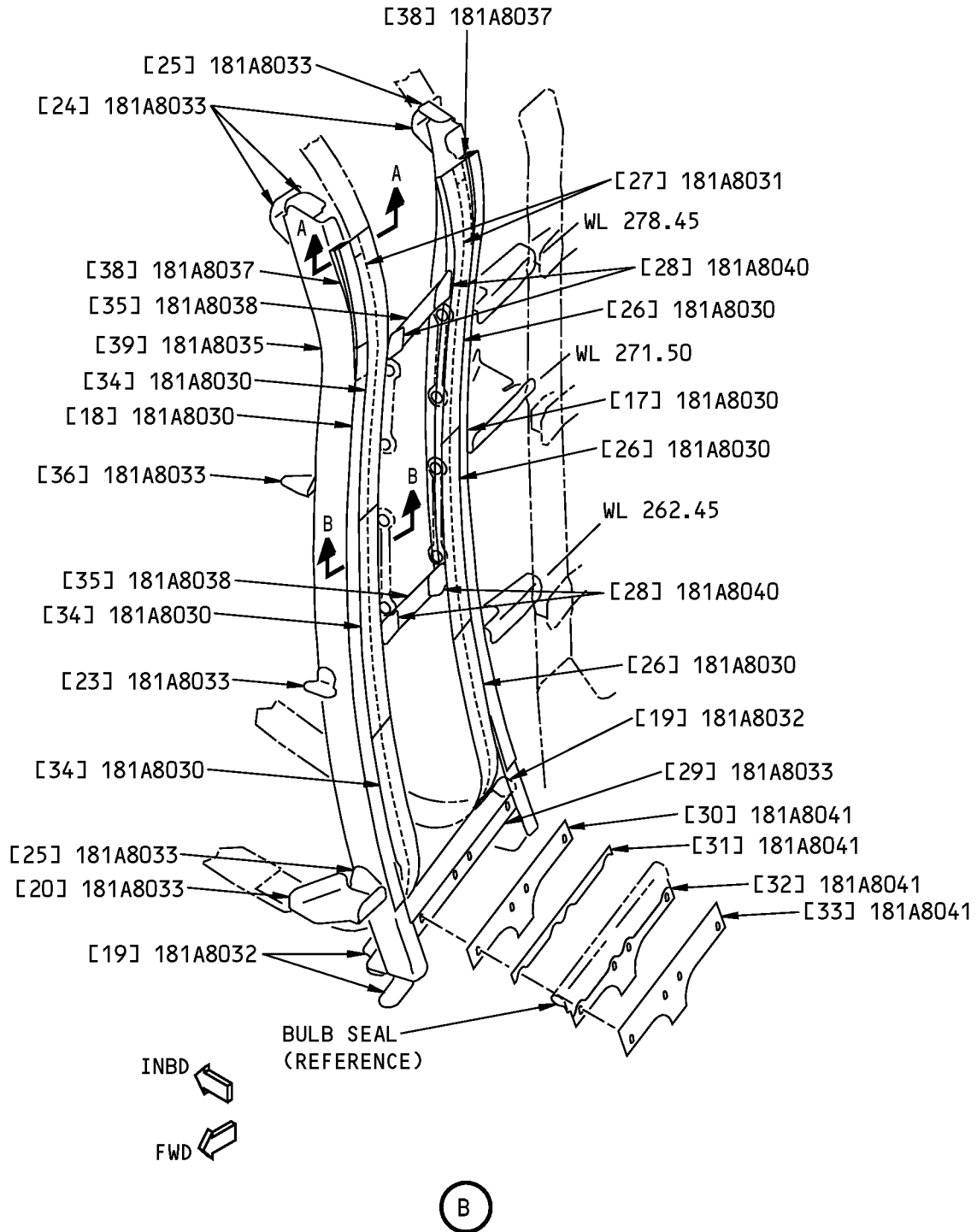
**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification  
Figure 2 (Sheet 1 of 4)**

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**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification  
Figure 2 (Sheet 2 of 4)**

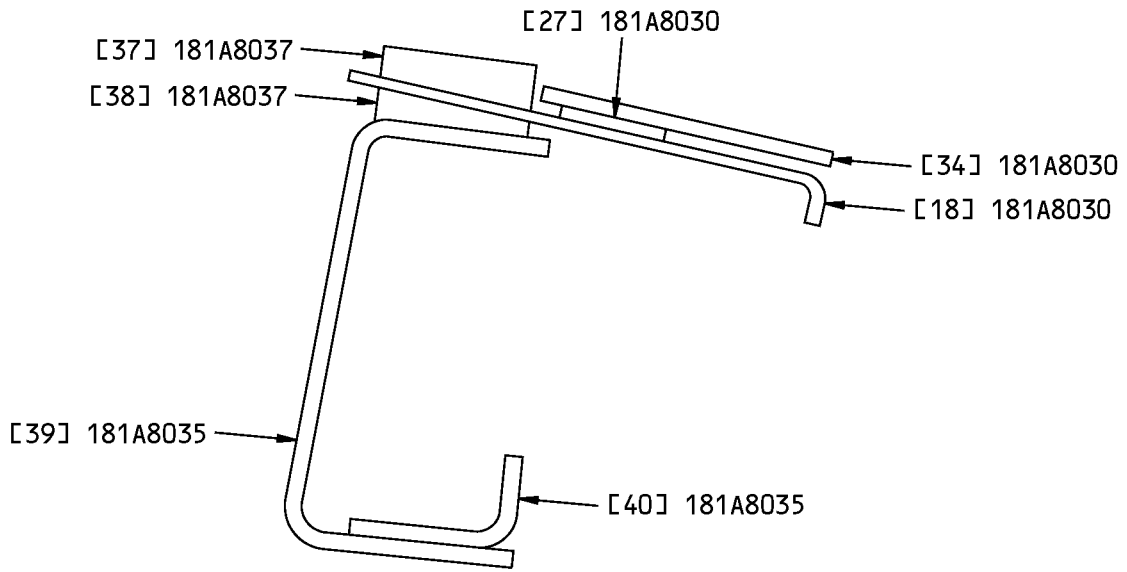
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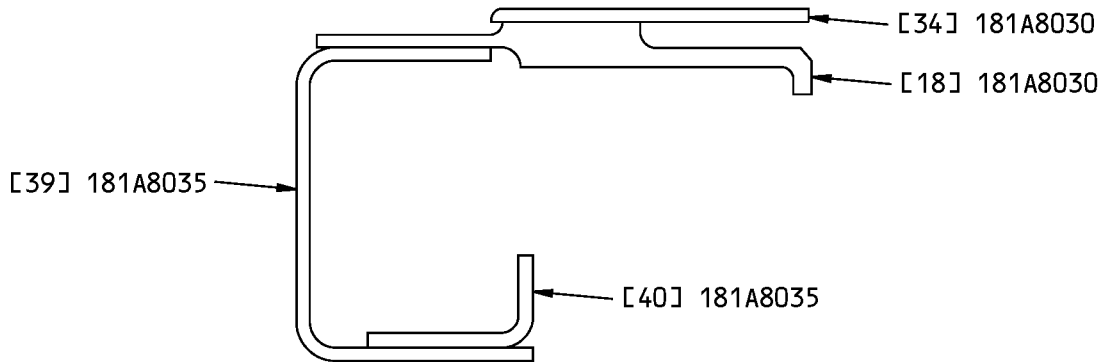
**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification  
Figure 2 (Sheet 3 of 4)**



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**SECTION A-A**



**SECTION B-B**

**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Identification  
Figure 2 (Sheet 4 of 4)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Lower Skin Support Channel	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[2]	Clip Angle	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[3]	Channel	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[4]	Skin Support Zee	0.050 (1.27)	2024-T42 clad sheet as given in QQ-A-250/5	
[5]	Filler	0.250 (6.35)	7075-T73511 plate as given in QQ-A-250/12	
[6]	Strip, Forward, Upper, Outer	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[7]	Strip, Aft, Upper, Outer	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[8]	Strip, Forward, Upper, Inner	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[9]	Strip, Aft, Upper, Inner	0.040 (1.02)	15-5 PH CRES sheet as given in BMS 7-240, Type 1. Heat treat to 150-170 ksi as given in BAC 5619	
[10]	Frame	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[11]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[12]	Strip, Forward, Lower, Inner	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[13]	Strip, Forward, Lower, Outer	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[14]	Filler	0.200 (5.10)	2024-T3 clad sheet as given in QQ-A-250/5	
[15]	Strip, Aft, Lower, Outer	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[16]	Strip, Aft, Lower, Inner	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[17]	Strip, Aft, Mid, Inner	0.250 (6.35)	15-5 PH CRES plate as given in AMS 5862. Heat treat to 150-170 ksi as given in BAC 5619	
[18]	Strip, Forward, Mid, Inner	0.250 (6.35)	15-5 PH CRES plate as given in AMS 5862. Heat treat to 150-170 ksi as given in BAC 5619	
[19]	Clip	0.071 (1.80)	7075-T62 clad sheet as given in QQ-A-250/13	
[20]	Channel	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[21]	Clip Tee		BAC1506-3160 2024-T3511 extrusion as given in QQ-A-200/3	
[22]	Clip Tee		BAC1505-100261 2024-T3511 extrusion as given in QQ-A-200/3	
[23]	Clip Tee		BAC1506-2296 2024-T3511 extrusion as given in QQ-A-200/3	
[24]	Clip	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[25]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	
[26]	Strip, Aft, Mid	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[27]	Filler	0.080 (2.03)	2024-T3 clad sheet as given in QQ-A-250/5	



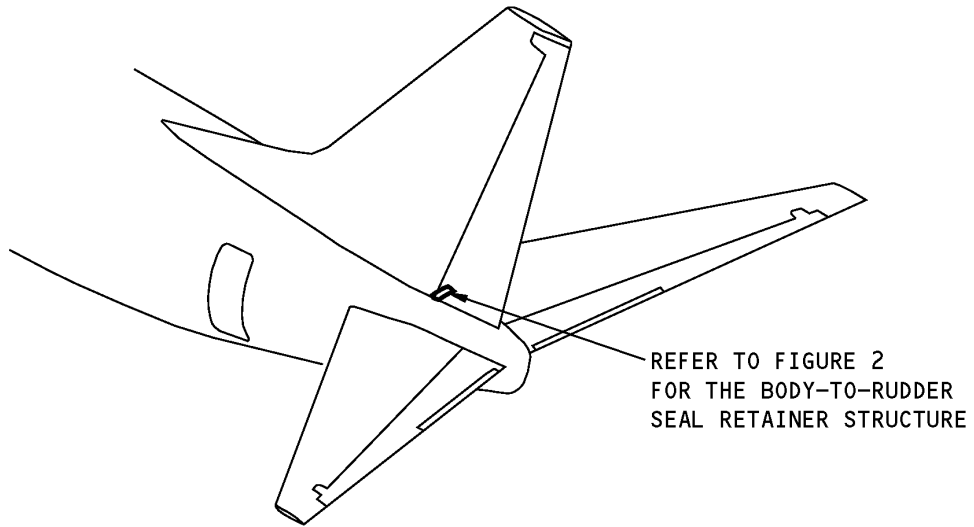
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LIST OF MATERIALS FOR FIGURE 2				
ITEM	DESCRIPTION	T <sup>[1]</sup>	MATERIAL	EFFECTIVITY
[28]	Plate	0.040 (1.02)	301 CRES sheet as given in AMS 5901, annealed. Surface Condition 2D	
[29]	Angle		AND10134-0701 2024-T3511 extrusion as given in QQ-A-200/3	
[30]	Plate, Inner	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	
[31]	Filler	0.032 (0.81)	2024-T3 clad sheet as given in QQ-A-250/5	
[32]	Plate, Mid	0.090 (2.29)	2024-T3 clad sheet as given in QQ-A-250/5	
[33]	Plate, Outer	0.040 (1.02)	2024-T3 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1 Thru 1380
[33]	Plate, Outer	0.100 (2.54)	2024-T3 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on
[34]	Strip, Forward, Mid	0.040 (1.02)	301 CRES sheet as given in AMS 5518. Surface Condition 2D, 1/2 hard	
[35]	Link Fitting		15-5 PH CRES casting as given in AMS 5346	
[36]	Clip Tee		BAC1505-101184 2024-T3511 extrusion as given in QQ-A-200/3	
[37]	Filler, Tapered	0.250 (6.40)	7075-T7351 plate as given in QQ-A-250/12	For Cum Line Numbers 1381 and on
[38]	Filler, Tapered	0.500 (12.70)	7075-T7351 plate as given in QQ-A-250/12	For Cum Line Numbers 1381 and on
[39]	Channel, Forward Frame	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on
[40]	Angle	0.063 (1.60)	2024-T42 clad sheet as given in QQ-A-250/5	For Cum Line Numbers 1381 and on

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**IDENTIFICATION 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE**



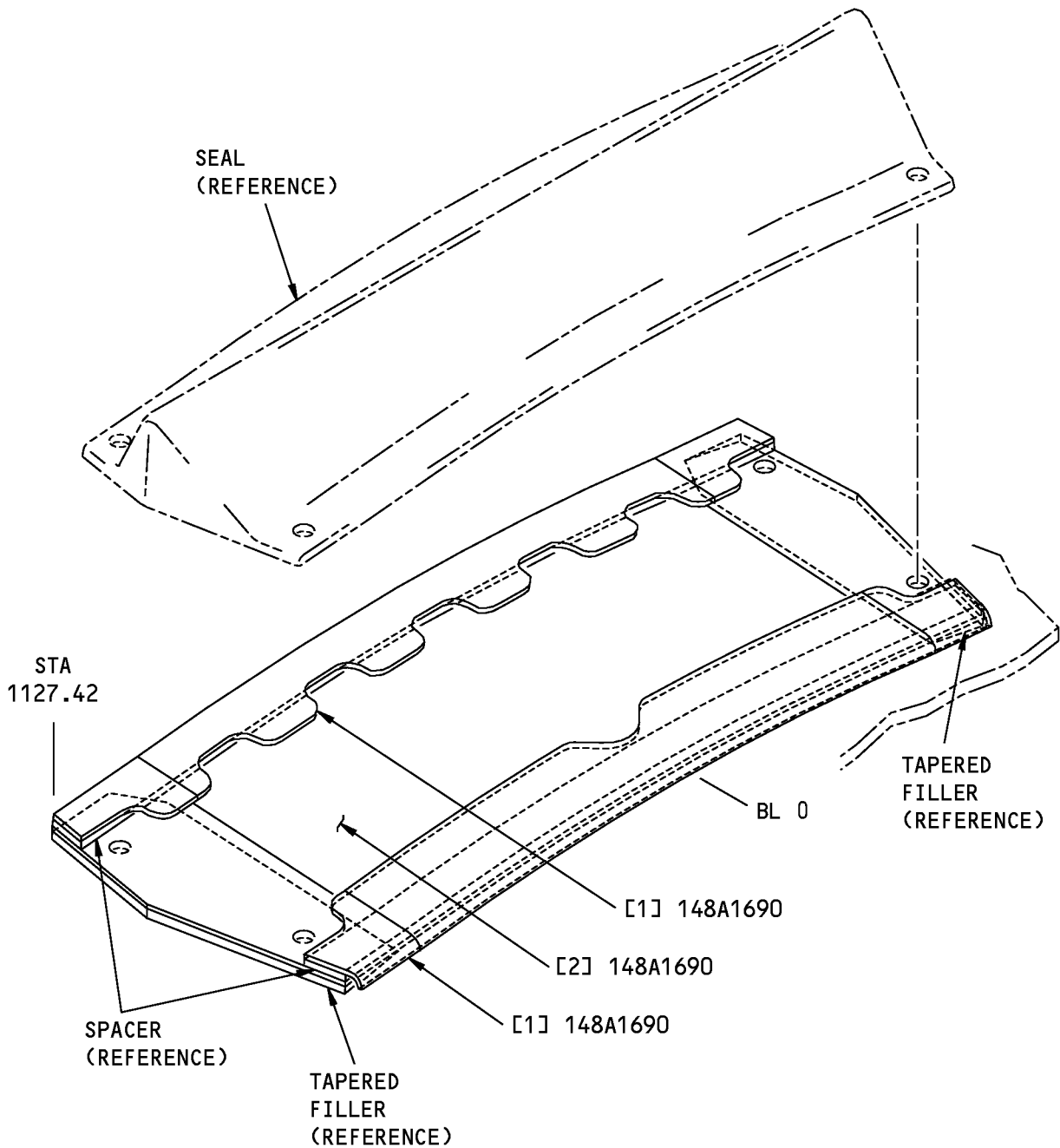
**NOTE:** REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

**Body-to-Rudder Seal Retainer Structure Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4801	Integration Functional Collector - Section 48
148A1680	Seal Installation - Body/Rudder

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**Body-to-Rudder Seal Retainer Structure Identification  
Figure 2**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Retainer	0.050 (1.27)	2024-T3 clad sheet as given in QQ-A-250/5	
[2]	Plate	0.063 (1.60)	2024-T3 clad sheet as given in QQ-A-250/5	

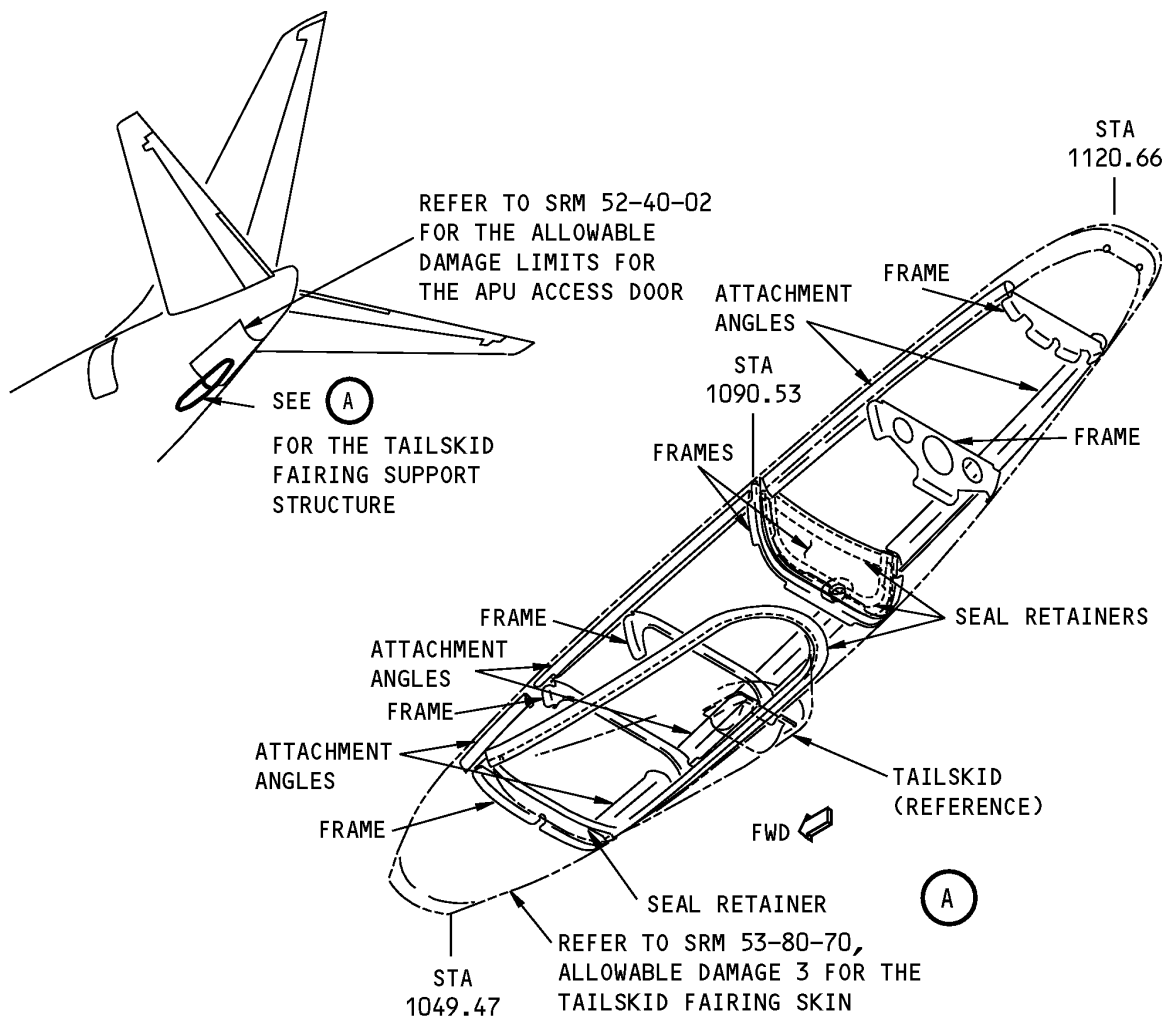
\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).

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**ALLOWABLE DAMAGE 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE**

**1. Applicability**

- A. This subject gives the allowable damage limits for the tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 101/ALLOWABLE DAMAGE 3.



**NOTE:** ALL PARTS IDENTIFIED ARE MADE OF FORMED ALUMINUM.

**Tailskid Fairing Support Structure Location  
Figure 101**

**2. General**

- A. Remove the damaged material as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
  - (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.



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B. After you remove the damage, do the steps that follow:

- (1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.
- (2) Apply one layer of BMS10-11, Type I, primer to the reworked areas. Refer to SOPM 20-41-02.

### 3. References

Reference	Title
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes

### 4. Allowable Damage Limits

A. Frames

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, F, and G.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, E, F, and G.
- (3) Dents are not permitted.
- (4) Holes and punctures are not permitted.

B. Attachment Angles and Seal Retainers

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, and F.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Details A, B, C, E, and F.
- (3) Dents:
  - (a) Dents are permitted if:
    - 1) They agree with the conditions shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 3, Detail D.
    - 2) They do not extend across an attached structure.
- (4) Holes and punctures are not permitted.

ALLOWABLE DAMAGE 3

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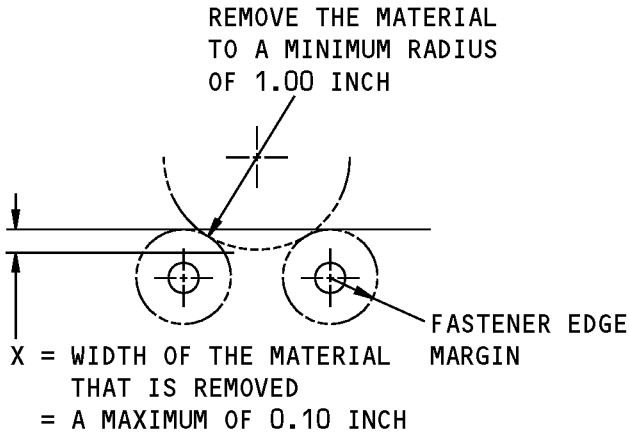
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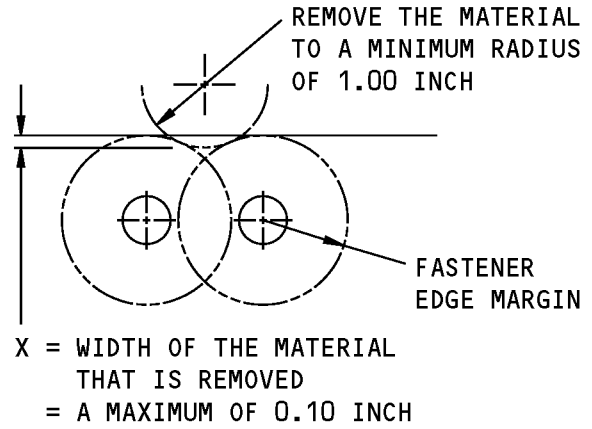


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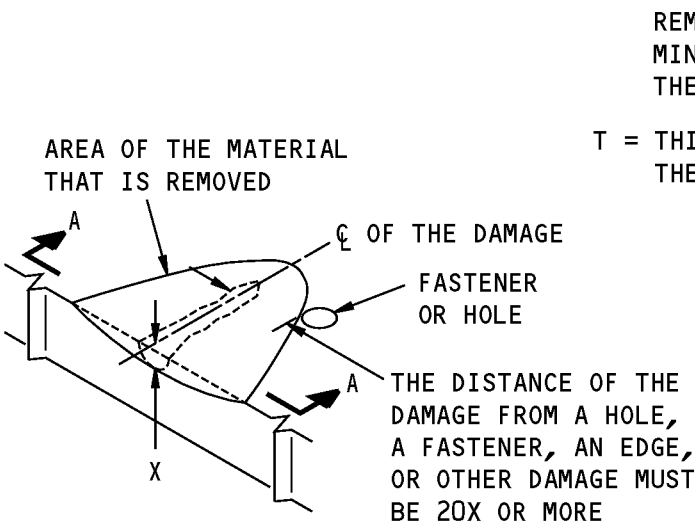
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



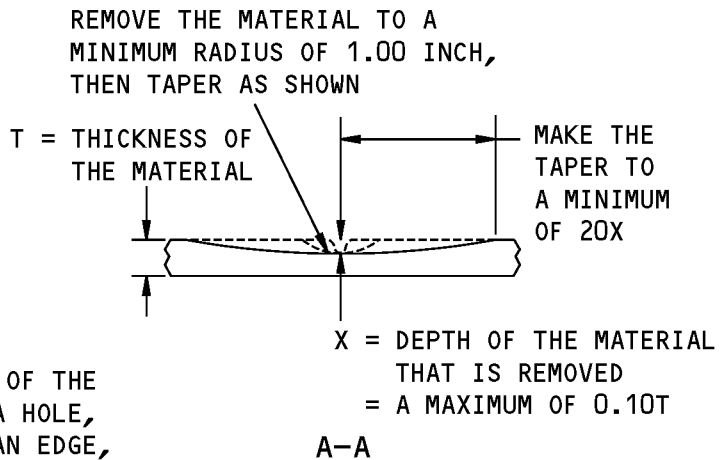
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



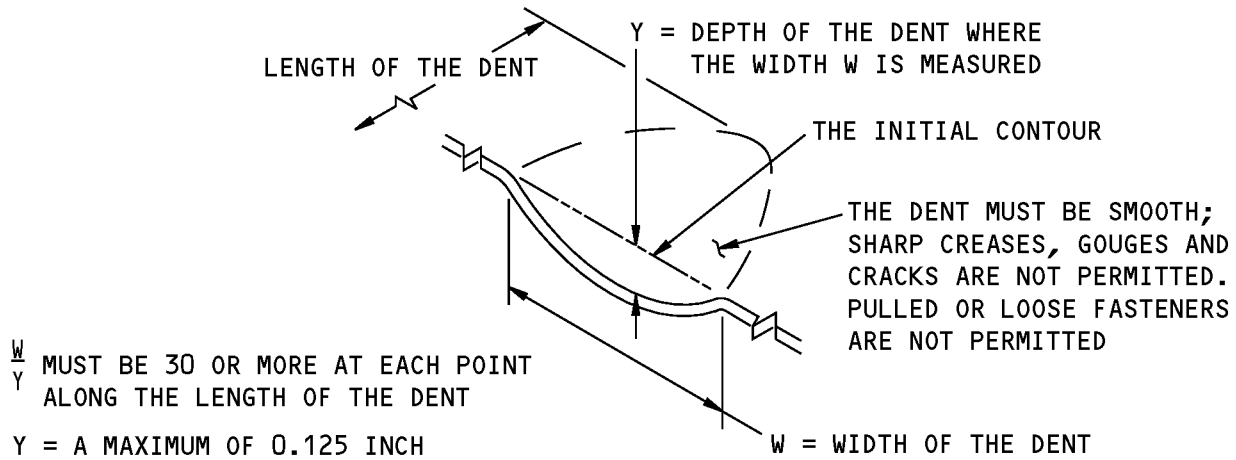
REMOVAL OF DAMAGED MATERIAL ON A SURFACE

(C)



Allowable Damage Limits  
Figure 102 (Sheet 1 of 3)

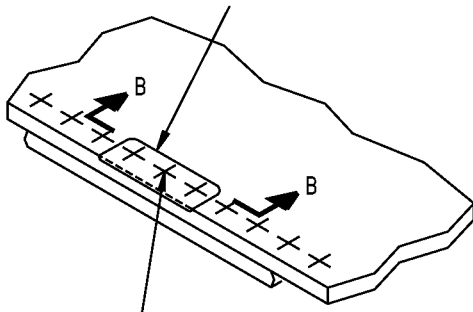
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DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR  
DENT THAT IS PERMITTED

(D)

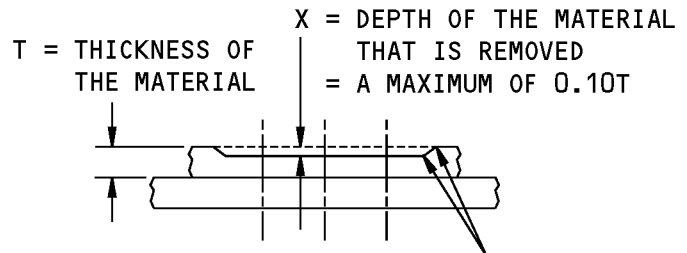
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

(E)

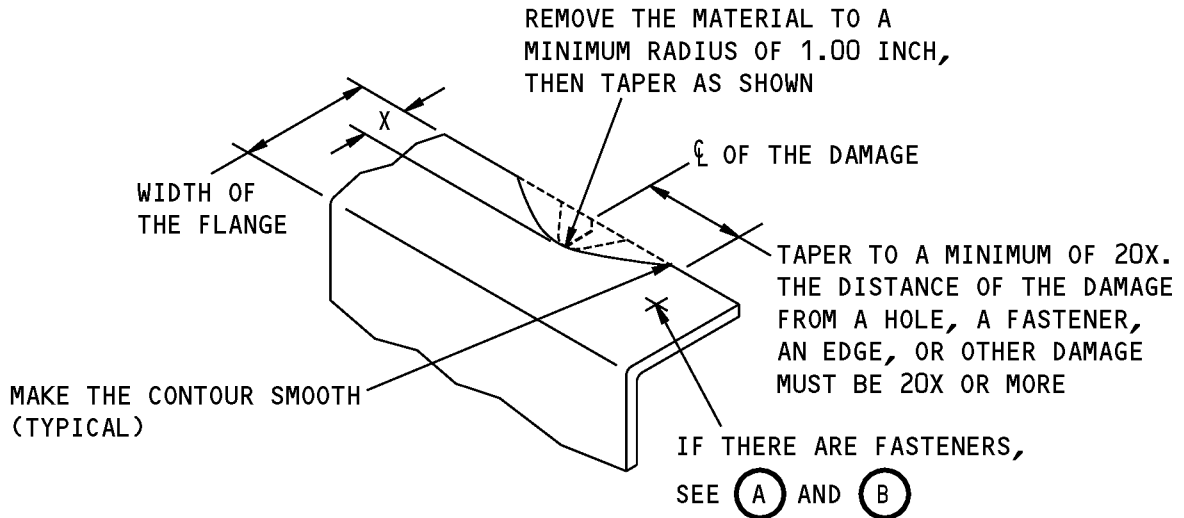


MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

B-B

**Allowable Damage Limits  
Figure 102 (Sheet 2 of 3)**

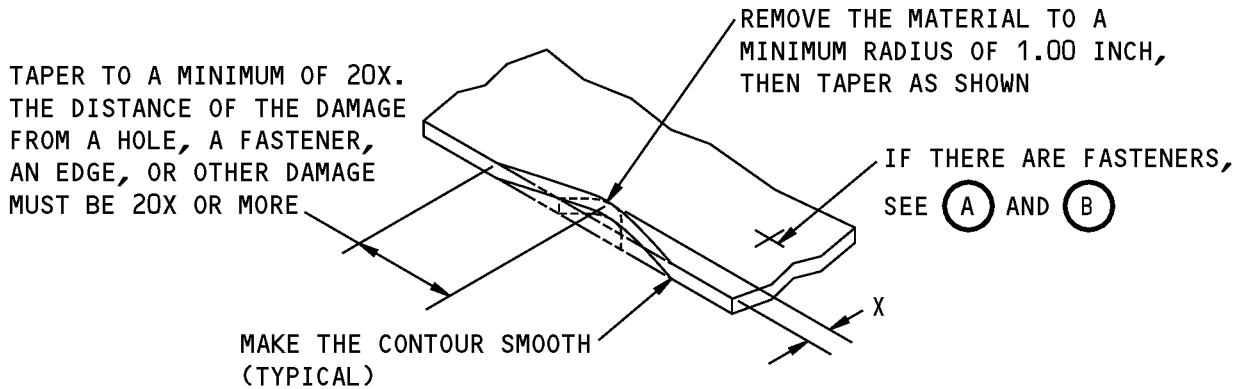
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X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

**(F)**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH

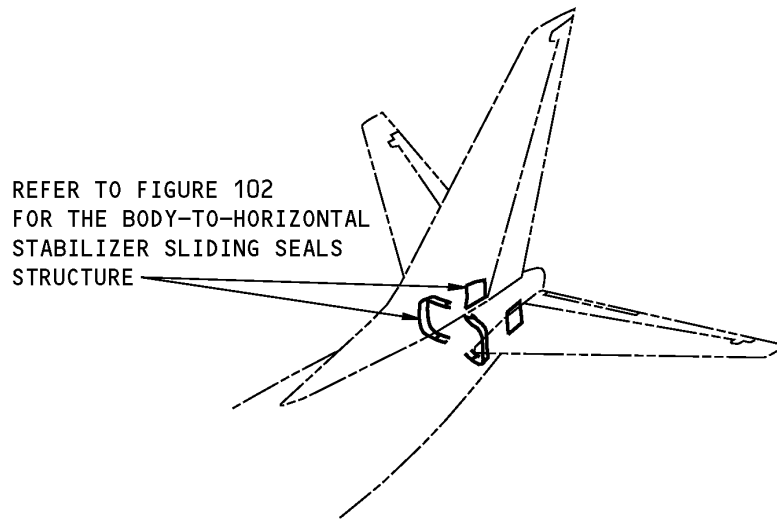
**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

**(G)**

**Allowable Damage Limits  
Figure 102 (Sheet 3 of 3)**

**STRUCTURAL REPAIR MANUAL****ALLOWABLE DAMAGE 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE****1. Applicability**

- A. This subject gives the allowable damage limits for the structure of the body-to-horizontal stabilizer sliding seals shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure Location, Figure 101/ALLOWABLE DAMAGE 4.



**Section 48 Body-to-Horizontal Stabilizer Sliding Seals Structure Location  
Figure 101**

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REFER TO SRM 53-80-70, ALLOWABLE DAMAGE 4,  
FOR THE ALLOWABLE DAMAGE OF THE SKINS AND  
PLATES OF THE SECTION 48 BODY-TO-  
HORIZONTAL STABILIZER SLIDING SEAL

SEE (A) AND (B)  
FOR THE FRONT  
SPAR SLIDING  
SEALS STRUCTURE

REFER TO SRM 53-80-13  
FOR THE SECTION 48  
FUSELAGE INTERCOSTALS  
ALLOWABLE DAMAGE

REFER TO SRM 53-80-70,  
ALLOWABLE DAMAGE 4, FOR  
THE ALLOWABLE DAMAGE OF  
THE SKINS AND PLATES OF  
THE SECTION 48 BODY-TO-  
HORIZONTAL STABILIZER  
SLIDING SEALS

[4] SKIN  
SUPPORT ZEE  
(FORMED  
ALUMINUM)

SUPPORT BEAM  
(REFERENCE)

[3] CHANNEL  
(FORMED  
ALUMINUM)

[2] CLIP ANGLE  
(FORMED  
ALUMINUM)

[1] LOWER SKIN  
SUPPORT  
(FORMED  
ALUMINUM)

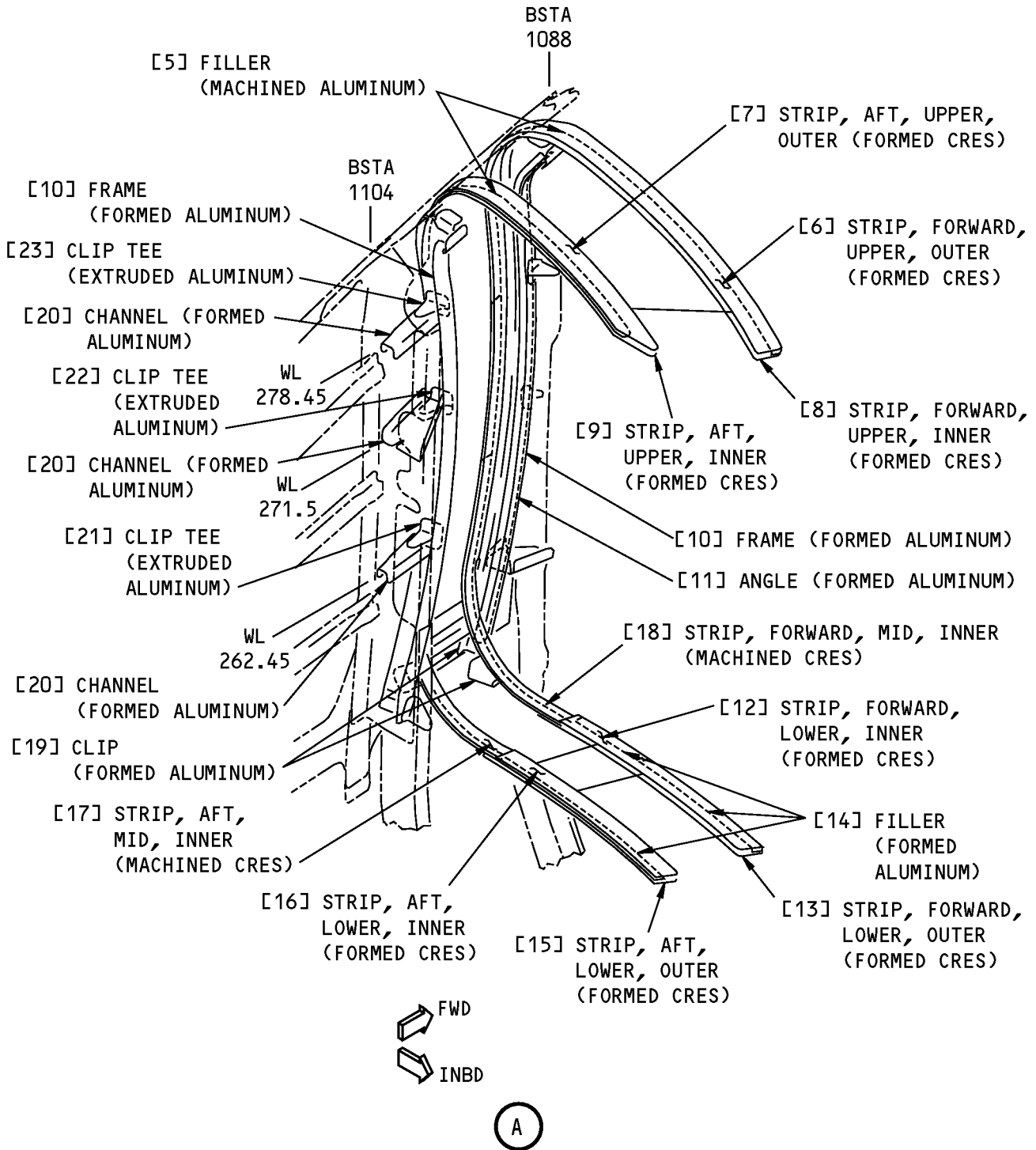
REFER TO SRM 53-80-13  
FOR THE UPPER AND  
LOWER HORIZONTAL  
BEAM ALLOWABLE DAMAGE

REFER TO SRM 53-80-07  
FOR THE SECTION 48  
FRAME ALLOWABLE DAMAGE

REFER TO SRM 53-80-08  
FOR THE SECTION 48  
BULKHEAD - BSTA 1088  
ALLOWABLE DAMAGE

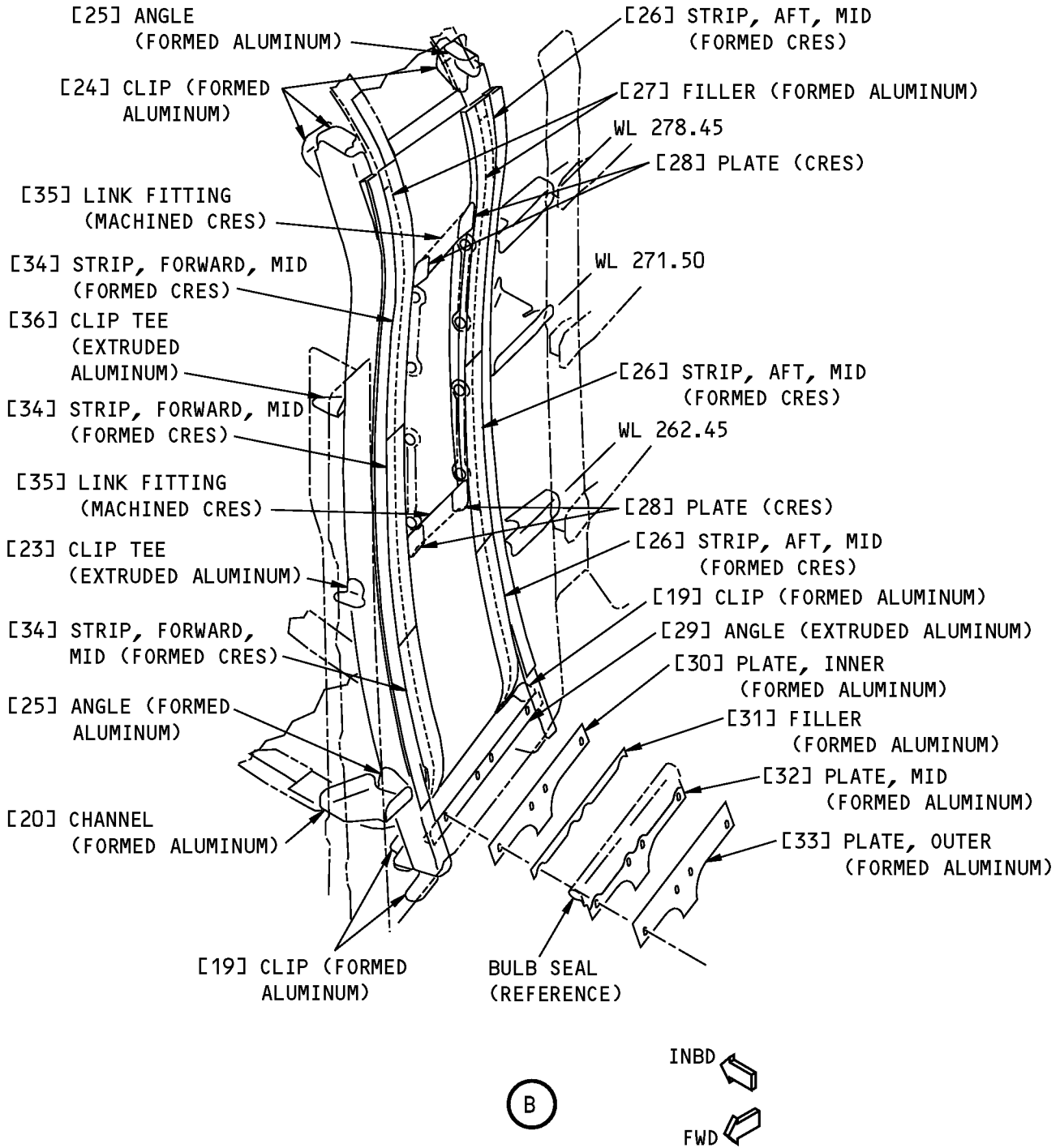
**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location**  
**Figure 102 (Sheet 1 of 3)**

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**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 102 (Sheet 2 of 3)**

**STRUCTURAL REPAIR MANUAL**



**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 102 (Sheet 3 of 3)**



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**2. General**

- A. Remove the parts as necessary to get access to the damaged area.
- B. Refer to Paragraph 4./ALLOWABLE DAMAGE 4 for the allowable damage limits.
- C. Do the steps that follow if you have damage to the parts:

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Do a detailed close visual inspection of the damaged area to find the length, width, and depth of the damage.
  - (a) For aluminum parts, the methods that follow are permitted as an alternative to the detailed close visual inspection:
    - 1) Penetrant inspection. Refer to SOPM 20-20-02.
    - 2) High Frequency Eddy Current (HFEC) inspection. Refer to 737 NDT Part 6, 51-00-00, Figure 4.
  - (b) For CRES parts a magnetic particle inspection is permitted as an alternative to the detailed close visual inspection. Refer to SOPM 20-20-01.

- D. Remove the damaged material as necessary.

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Refer to 51-10-02 for the inspection and removal of damage.
- (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.
- (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.

- E. After you have removed the damage, do the steps that follow for the parts listed.

**NOTE:** The procedures that follow do not apply to dent damage.

- (1) Do what follows for the parts listed in Table 101/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 101:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[10]	Frame (Formed aluminum)	[11]	Angle (Formed aluminum)

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
- (b) Apply one layer of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (2) Do what follows for the parts listed in Table 102/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 102:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Lower Skin Support Channel (Formed aluminum)	[23]	Clip Tee (Extruded aluminum)
[2]	Clip Angle (Formed aluminum)	[24]	Clip (Formed aluminum)





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ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Channel (Formed aluminum)	[25]	Angle (Formed aluminum)
[4]	Skin Support Zee (Formed aluminum)	[27]	Filler (Formed aluminum)
[5]	Filler (Formed aluminum)	[29]	Angle (Extruded aluminum)
[14]	Filler (Formed aluminum)	[30]	Plate, Inner (Formed aluminum)
[19]	Clip (Formed aluminum)	[31]	Filler (Formed aluminum)
[20]	Channel (Formed aluminum)	[32]	Plate, Mid (Formed aluminum)
[21]	Clip Tee (Extruded aluminum)	[33]	Plate Outer (Formed aluminum)
[22]	Clip Tee (Extruded aluminum)	[36]	Clip Tee (Extruded aluminum)

- (a) Apply a chemical conversion coating to the reworked areas of the part. Refer to 51-20-01.
- (b) Apply two layers of BMS 10-11, Type I primer to the reworked areas. Refer to SOPM 20-41-02.
- (3) Do what follows for the parts listed in Table 103/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 103:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[6]	Strip, Forward, Upper, Outer (Formed CRES)	[13]	Strip, Forward, Lower, Outer (Formed CRES)
[7]	Strip, Aft, Upper, Outer (Formed CRES)	[15]	Strip, Aft, Lower, Outer (Formed CRES)
[8]	Strip, Forward, Upper, Inner (Formed CRES)	[16]	Strip, Aft, Lower, Inner (Formed CRES)
[9]	Strip, Aft, Upper, Inner (Formed CRES)	[17]	Strip, Aft, Mid, Inner (Machined CRES)
[12]	Strip, Forward, Lower, Inner (Formed CRES)	[18]	Strip, Forward, Mid, Inner (Machined CRES)

- (a) Apply a 0.0005 - 0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.
- (b) Apply a layer of Teflon-S 958-203 to the inner wear surfaces only:
  - 1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.
  - 2) Apply a layer of Teflon - S 958-203 as given in BAC 5824 to a final film thickness of 0.0010 - 0.0016 inch to the reworked areas of the part.
- (c) Apply one layer of BMS 10-11, Type I primer to the reworked areas except the inner wear surfaces. Refer to SOPM 20-41-02.
- (4) Do what follows for the parts listed in Table 104/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 104:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[26]	Strip, Aft, Mid (Formed CRES)	[34]	Strip, Forward, Mid (Formed CRES)



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- (a) Apply a 0.0005-0.0007 inch thick chromium plating to the reworked areas of the part. Refer to SOPM 20-42-03, Class 4.
- (b) Apply a layer of Teflon - S 958-203 to the inner wear surfaces only:
  - 1) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.
  - 2) Apply a layer of Teflon - S 958-203 as given in BAC 5824 to a final film thickness of 0.0010 - 0.0016 inch to the reworked areas of the part.
- (c) Apply one layer of BMS 10-79, Type III primer to the reworked areas except the inner wear surfaces. Refer to SOPM 20-44-04.
- (5) Do what follows for the parts listed in Table 105/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 105:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[28]	Plate (Formed CRES)	[35]	Link Fitting (CRES casting)

- (a) Clean the reworked areas of the part with the dry abrasive cleaning method. Refer to SOPM 20-30-03.

### 3. References

Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
53-80-70, ALLOWABLE DAMAGE 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals, Skins, and Plates
AMM 51-21-00 P/B 701	INTERIOR AND EXTERIOR FINISHES - CLEANING/PAINTING
SOPM 20-20-01	Magnetic Particle Inspection
SOPM 20-20-02	Penetrant Methods of Inspection
SOPM 20-30-03	Standard Overhaul Practices Manual
SOPM 20-41-02	Application of Chemical and Solvent Resistant Finishes
SOPM 20-42-03	Hard Chrome Plating
SOPM 20-42-05	Bright Cadmium Plating
SOPM 20-44-04	Application of Urethane Compatible Primers
737 NDT Part 6, 51-00-00	Structures - General
737 NDT Part 6, 51-00-00, Figure 4	Surface Inspection of Aluminum Parts

### 4. Allowable Damage Limits

- A. The allowable damage limits that follow are applicable to the parts listed in Table 106/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.



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**Table 106:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[1]	Lower Skin Support (Formed aluminum)	[10]	Frame (Formed aluminum)
[4]	Skin Support Zee (Formed aluminum)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail J.
- B. The allowable damage limits that follow are applicable to the parts listed in Table 107/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 107:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[3]	Channel (Formed aluminum)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.
  - (4) Holes and Punctures are not permitted.
- C. The allowable damage limits that follow are applicable to the parts listed in Table 108/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 108:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[2]	Clip Angle (Formed aluminum)	[24]	Clip (Formed aluminum)
[11]	Angle (Formed aluminum)	[25]	Angle (Formed aluminum)
[19]	Clip (Formed aluminum)		

- (1) Cracks:



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- (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and F.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and F.
  - (3) Dents are not permitted.
  - (4) Holes and Punctures are not permitted.
- D. The allowable damage limits that follow are applicable to the parts listed in Table 109/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 109:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[29]	Angle (Extruded aluminum)		

- (1) Cracks:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.
  - (2) Nicks, Gouges, Scratches, and Corrosion:
    - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, and I.
  - (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.
  - (4) Holes and Punctures are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail J.
- E. The allowable damage limits that follow are applicable to the parts listed in Table 110/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

Table 110:

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[21]	Clip Tee (Extruded aluminum)	[23]	Clip Tee (Extruded aluminum)
[22]	Clip Tee (Extruded aluminum)	[36]	Clip Tee (Extruded aluminum)

- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, and I.
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.



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F. The allowable damage limits that follow are applicable to the parts listed in Table 111/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 111:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[5]	Filler (Machined aluminum)	[15]	Strip, Aft, Lower, Outer (Formed CRES)
[6]	Strip, Forward, Upper, Outer (Formed CRES)	[16]	Strip, Aft, Lower, Inner (Formed CRES)
[7]	Strip, Aft, Upper, Outer (Formed CRES)	[17]	Strip, Aft, Mid, Inner (Machined CRES)
[8]	Strip, Forward, Upper, Inner (Formed CRES)	[18]	Strip, Forward, Mid, Inner (Machined CRES)
[9]	Strip, Aft, Upper, Inner (Formed CRES)	[26]	Strip, Aft, Mid (Formed CRES)
[12]	Strip, Forward, Lower, Inner (Formed CRES)	[27]	Filler (Formed aluminum)
[13]	Strip, Forward, Lower, Outer (Formed CRES)	[28]	Plate (Formed CRES)
[14]	Filler (Formed aluminum)	[34]	Strip, Forward, Mid (Formed CRES)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and G.

(3) Dents are not permitted.

(4) Holes and Punctures are not permitted.

G. The allowable damage limits that follow are applicable to the parts listed in Table 112/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 112:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[30]	Plate, Inner (Formed aluminum)	[32]	Plate, Mid (Formed Aluminum)
[31]	Filler (Formed aluminum)	[33]	Plate, Outer (Formed Aluminum)

(1) Cracks:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and G.

(2) Nicks, Gouges, Scratches, and Corrosion:

(a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, and G.



**737-800**  
**STRUCTURAL REPAIR MANUAL**

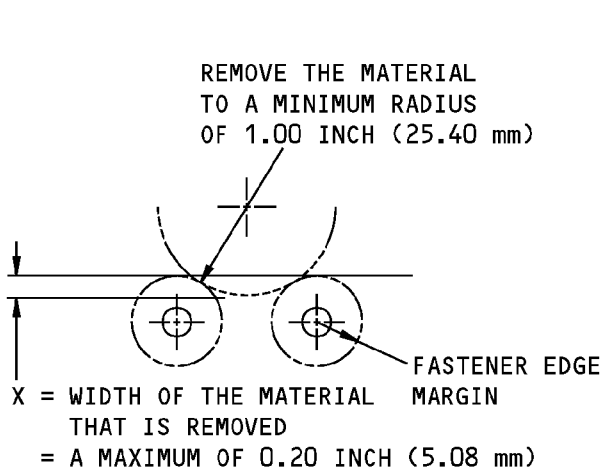
- (3) Dents are permitted as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Detail D.
- (4) Holes and Punctures are not permitted.
- H. The allowable damage limits that follow are applicable to the parts listed in Table 113/ALLOWABLE DAMAGE 4 and shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 102/ALLOWABLE DAMAGE 4.

**Table 113:**

ITEM	DESCRIPTION	ITEM	DESCRIPTION
[35]	Link Fitting (CRES casting)		

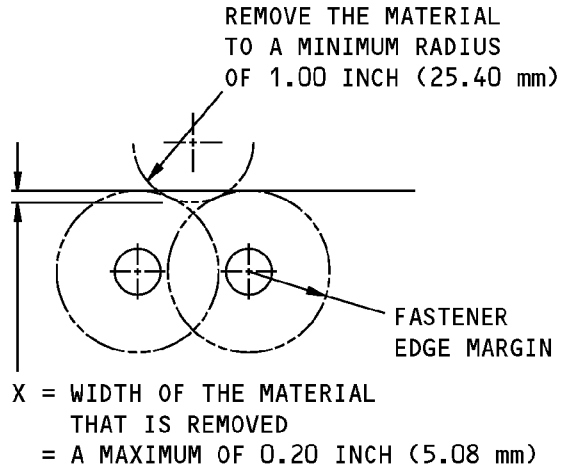
- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, and I.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 103/ALLOWABLE DAMAGE 4, Details A, B, C, E, H, I, and K.
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**



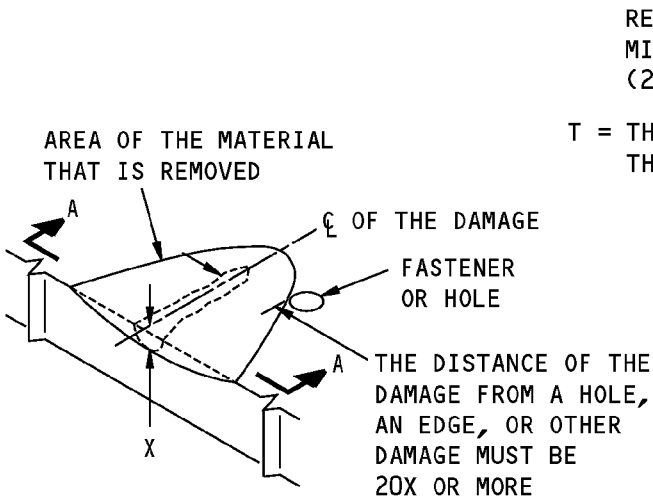
**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP**

(A)



**REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP**

(B)

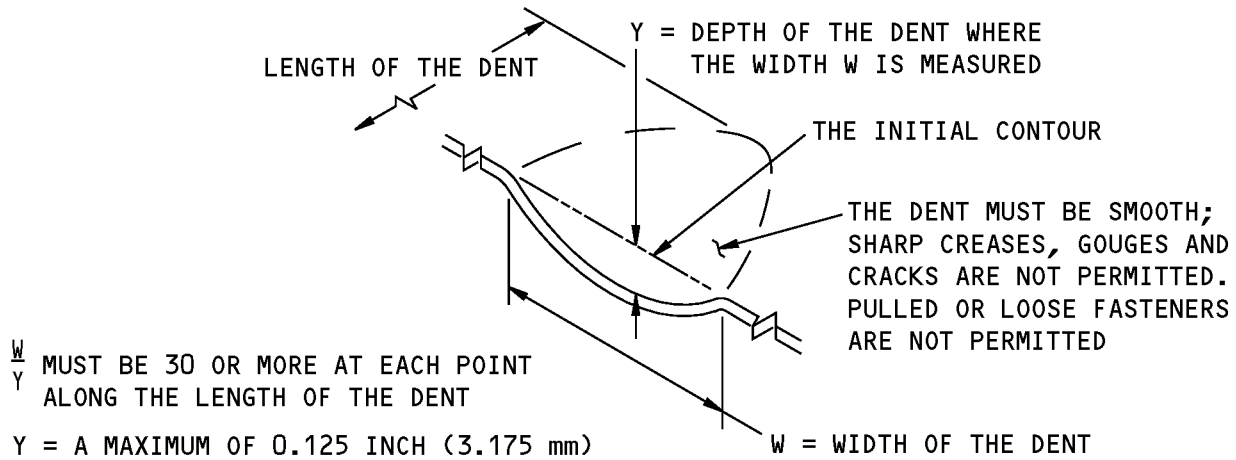


**REMOVAL OF DAMAGED MATERIAL ON A SURFACE**

(C)

**Allowable Damage Limits  
Figure 103 (Sheet 1 of 6)**

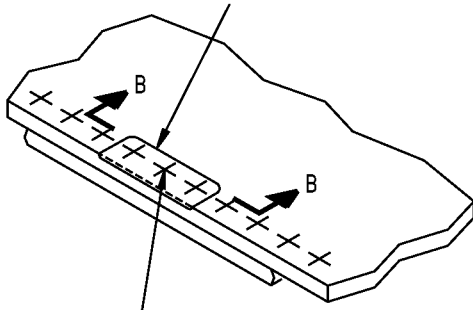
**737-800  
STRUCTURAL REPAIR MANUAL**



DENT AWAY FROM AN EDGE IS SHOWN, DENT AT AN EDGE IS SIMILAR  
DENT THAT IS PERMITTED

(D)

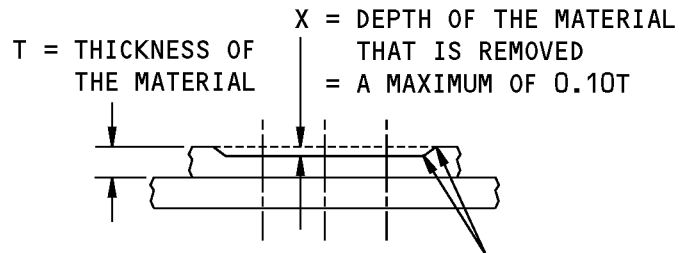
THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE

(E)



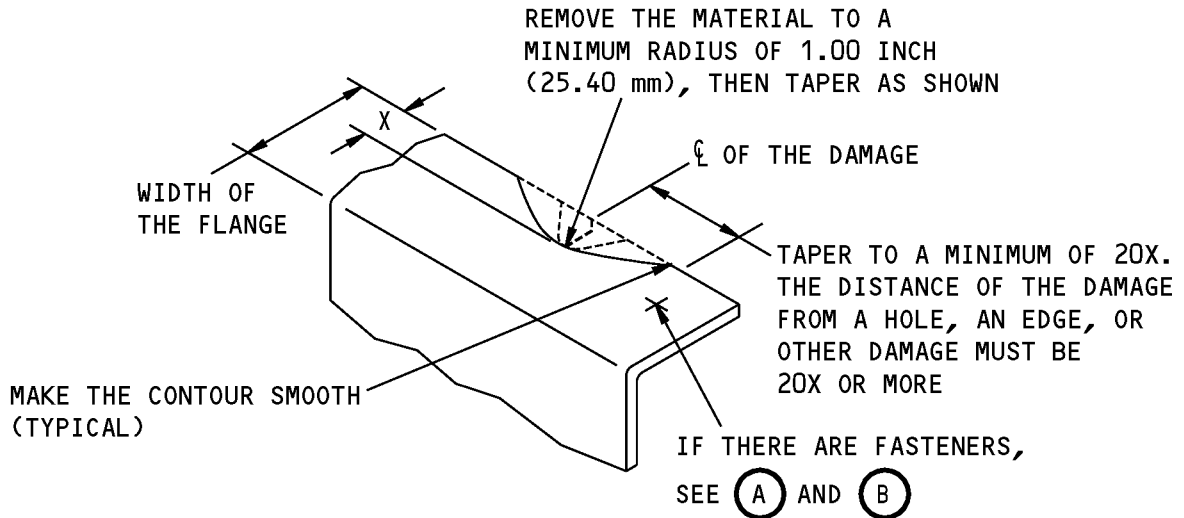
MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (12.70 mm) (TYPICAL)

B-B

**Allowable Damage Limits  
Figure 103 (Sheet 2 of 6)**



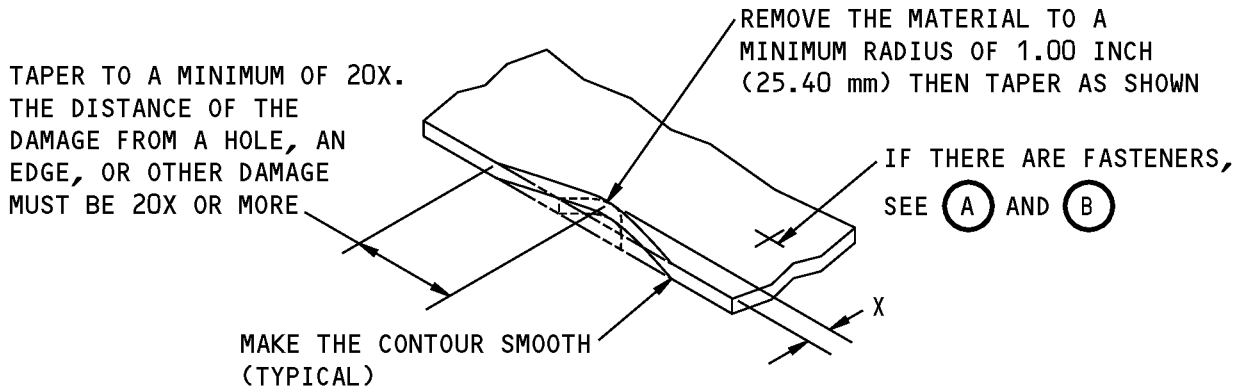
**737-800  
STRUCTURAL REPAIR MANUAL**



X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL ON AN EDGE**

(F)



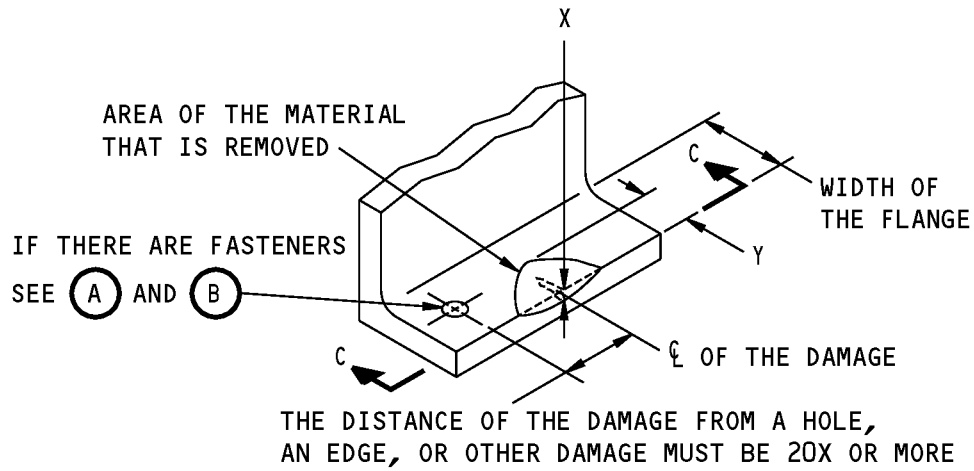
X = WIDTH OF THE MATERIAL THAT IS REMOVED  
= A MAXIMUM OF 0.10 INCH (2.54 mm)

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(G)

**Allowable Damage Limits  
Figure 103 (Sheet 3 of 6)**

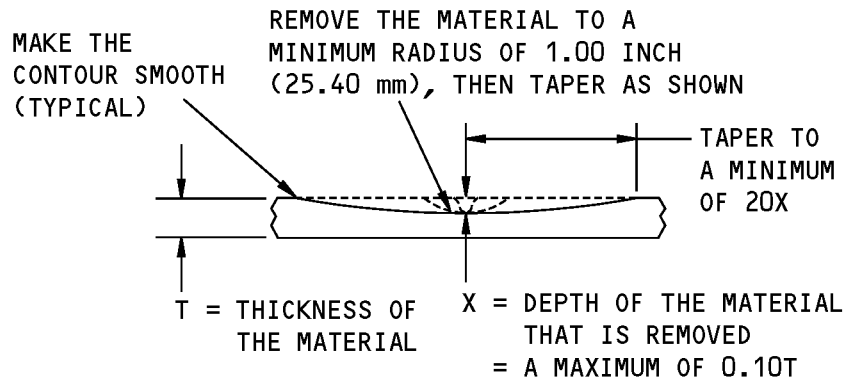
**737-800  
STRUCTURAL REPAIR MANUAL**



Y = WIDTH OF THE MATERIAL THAT IS REMOVED  
 = A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL  
ON A SURFACE AT AN EDGE**

(H)

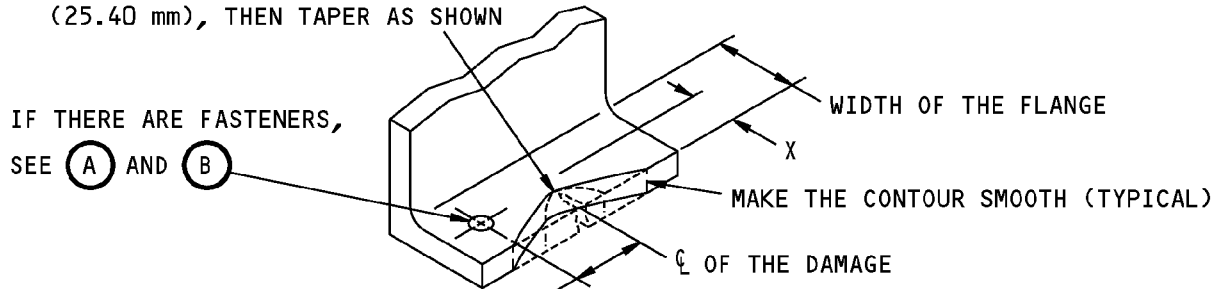


C-C

**Allowable Damage Limits  
Figure 103 (Sheet 4 of 6)**

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REMOVE THE MATERIAL TO A  
MINIMUM RADIUS OF 1.00 INCH  
(25.40 mm), THEN TAPER AS SHOWN



IF THERE ARE FASTENERS,  
SEE (A) AND (B)

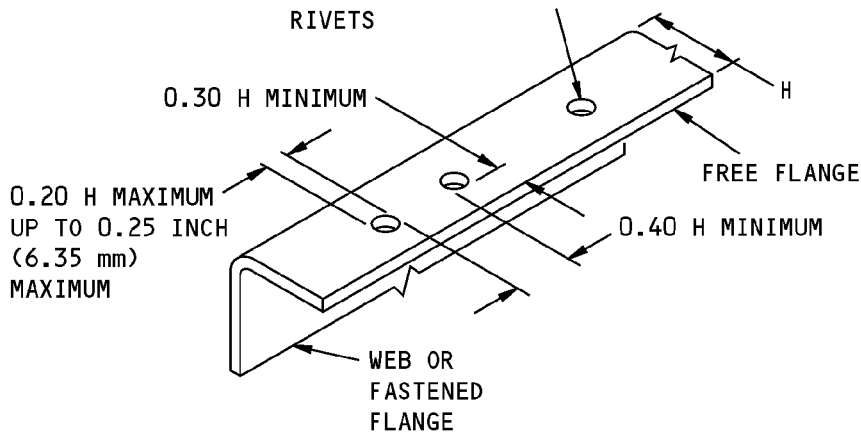
TAPER TO A MINIMUM OF 20X.  
THE DISTANCE OF THE DAMAGE FROM A HOLE,  
AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE

X = WIDTH OF THE MATERIAL REMOVED  
= A MAXIMUM OF 10 PERCENT OF THE WIDTH OF THE FLANGE

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE**

(I)

A MAXIMUM OF 4 HOLES FOR DAMAGE REMOVAL ARE  
PERMITTED IN A 6.0 INCH (152.4 mm) LENGTH OF  
FLANGE. THE MAXIMUM SIZE OF EACH HOLE IS  
0.25 INCH (6.35 mm) FILL THE HOLES WITH  
2117-T3 OR 2117-T4 ALUMINUM PROTRUDING HEAD  
RIVETS



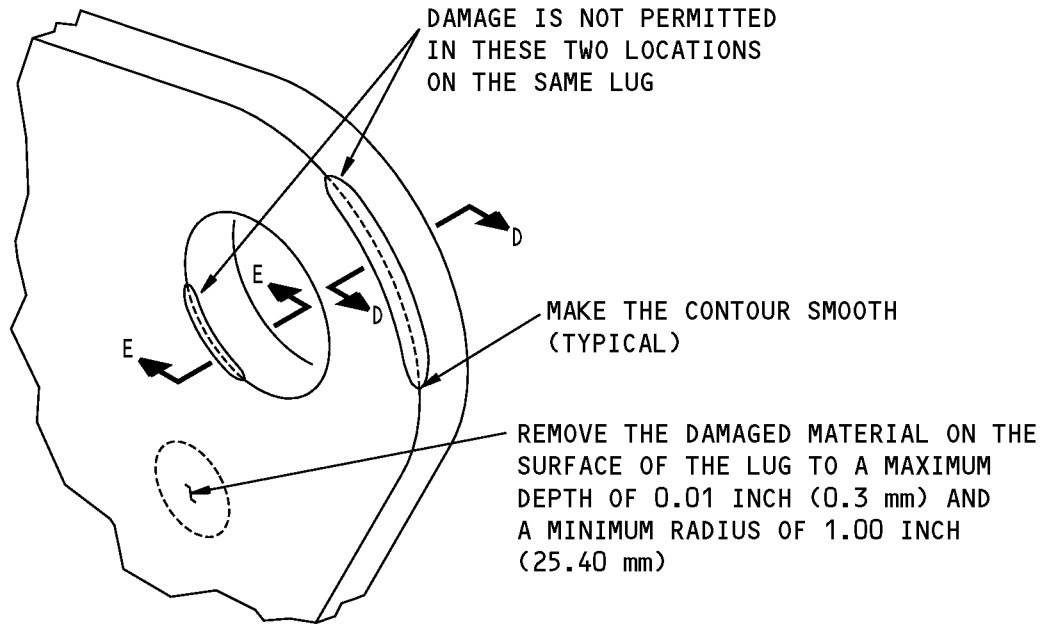
**NOTE:** NO HOLE DAMAGE ALLOWED IN FASTENED FLANGES.

**HOLES AND PUNCTURES IN A FREE FLANGE**

(J)

**Allowable Damage Limits  
Figure 103 (Sheet 5 of 6)**

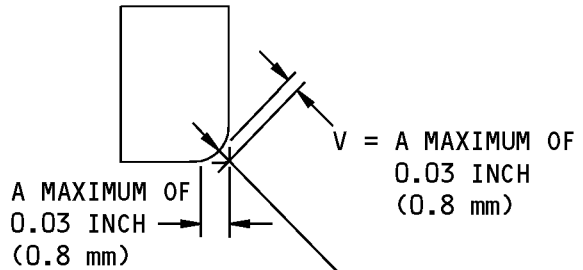
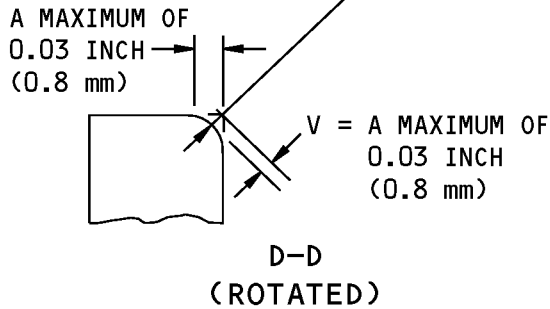
**737-800  
STRUCTURAL REPAIR MANUAL**



**REMOVAL OF DAMAGED MATERIAL ON A LUG WITHOUT BUSHINGS**

**(K)**

REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.40 mm) AT THE DEEPEST AREA OF DAMAGE REMOVAL. TAPER TO A MINIMUM LENGTH OF 20V ALONG THE CIRCUMFERENCE IN THE TWO DIRECTIONS



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH (25.40mm) AT THE DEEPEST AREA OF DAMAGE REMOVAL. TAPER TO A MINIMUM LENGTH OF 20V ALONG THE CIRCUMFERENCE IN THE TWO DIRECTIONS

E-E

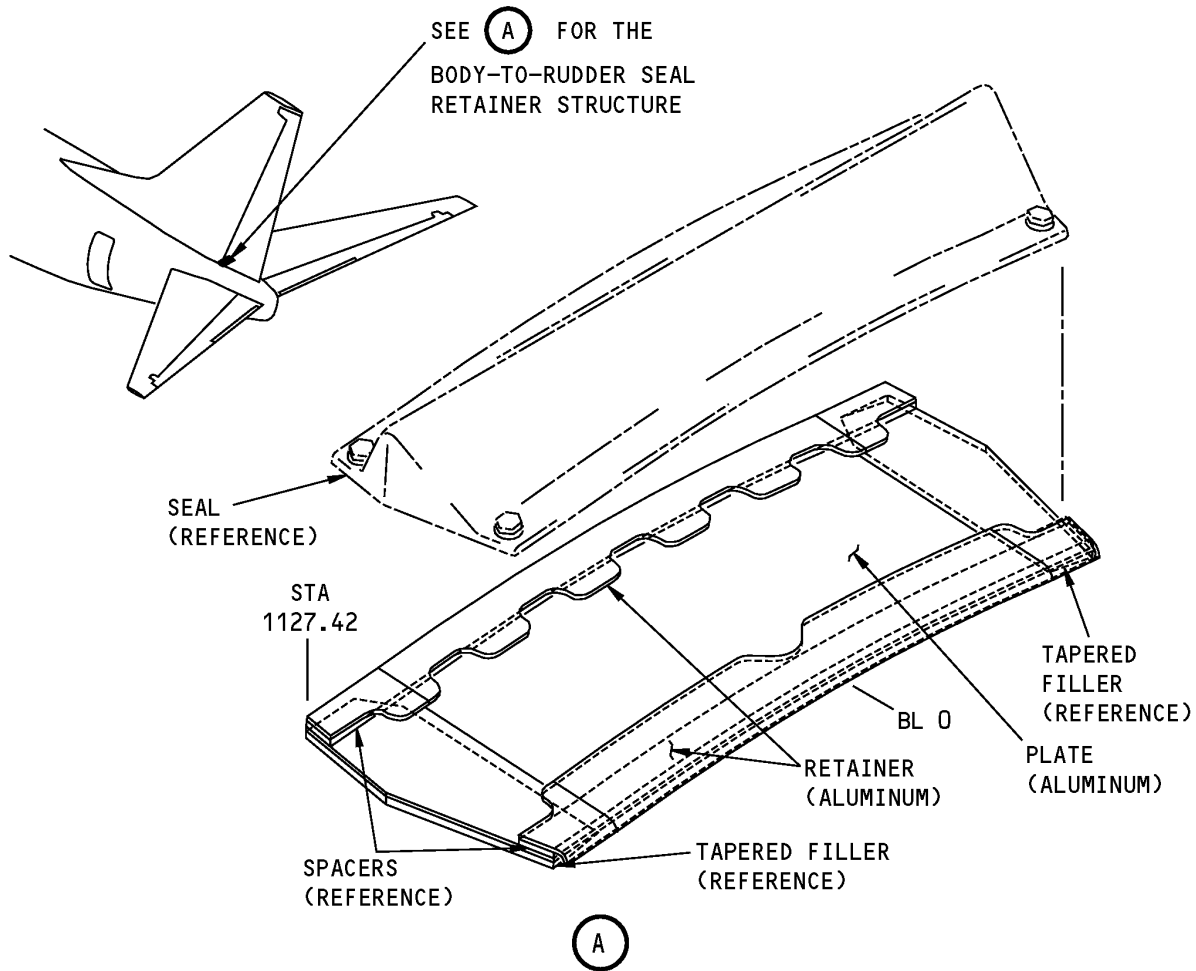
**Allowable Damage Limits  
Figure 103 (Sheet 6 of 6)**

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**ALLOWABLE DAMAGE 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE**

**1. Applicability**

- A. This subject gives the allowable damage limits for the body-to-rudder seal retainer structure shown in Body-to-Rudder Seal Retainer Structure Location, Figure 101/ALLOWABLE DAMAGE 5.



**Body-to-Rudder Seal Retainer Structure Location  
Figure 101**

**2. General**

- A. Remove the damaged material as necessary.
- (1) Refer to 51-10-02 for the inspection and removal of damage.
  - (2) Refer to 51-30-03 for possible sources of the abrasive and other materials you can use to remove the damage.



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- (3) Refer to 51-30-05 for possible sources of the equipment and tools you can use to remove the damage.
- B. After you remove the damage, do the steps that follow:
- (1) Apply a chemical conversion coating to the reworked areas. Refer to 51-20-01.
  - (2) Apply one layer of BMS 10-79, Type III, primer to the reworked areas. Refer to SOPM 20-44-04.
  - (3) Apply the decorative finish, as applicable. Refer to AMM PAGEBLOCK 51-21-99/701.
  - (4) Make sure the aerodynamic smoothness is satisfactory or there will be a decrease in the economic performance of the airplane.

### 3. References

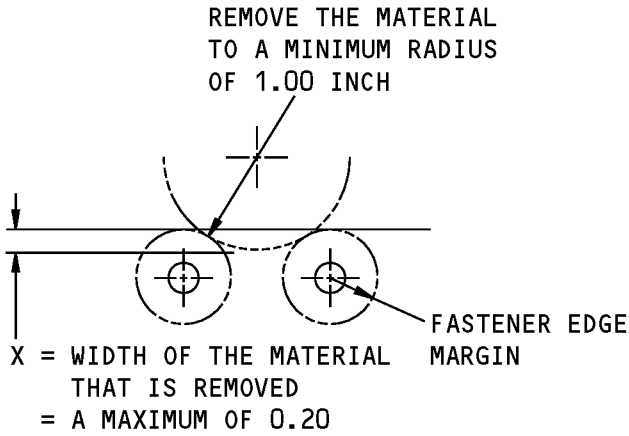
Reference	Title
51-10-01, GENERAL	Aerodynamic Smoothness Requirements
51-10-02	INSPECTION AND REMOVAL OF DAMAGE
51-20-01	PROTECTIVE TREATMENT OF METALLIC AND COMPOSITE MATERIALS
51-30-03	NON-METALLIC MATERIALS
51-30-05	EQUIPMENT AND TOOLS FOR REPAIRS
51-40-06, GENERAL	Fastener Edge Margins
AMM 51-21-99 P/B 701	DECORATIVE EXTERIOR PAINT SYSTEM - CLEANING/PAINTING
SOPM 20-44-04	Application of Urethane Compatible Primers

### 4. Allowable Damage Limits

#### A. Retainers and Plate

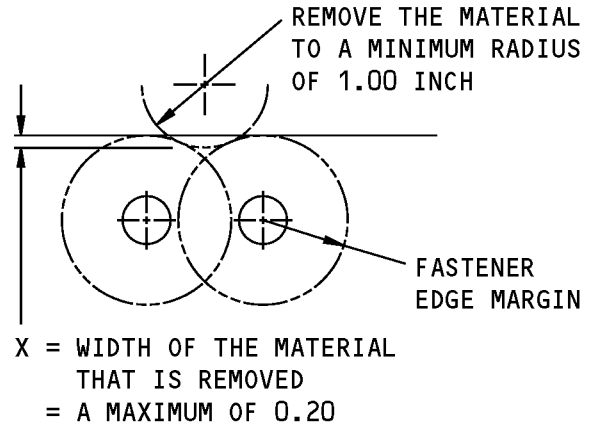
- (1) Cracks:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 5, Details A, B, and E.
- (2) Nicks, Gouges, Scratches, and Corrosion:
  - (a) Remove the damage as shown in Allowable Damage Limits, Figure 102/ALLOWABLE DAMAGE 5, Details A, B, C, D, and E.
- (3) Dents are not permitted.
- (4) Holes and Punctures are not permitted.

**STRUCTURAL REPAIR MANUAL**



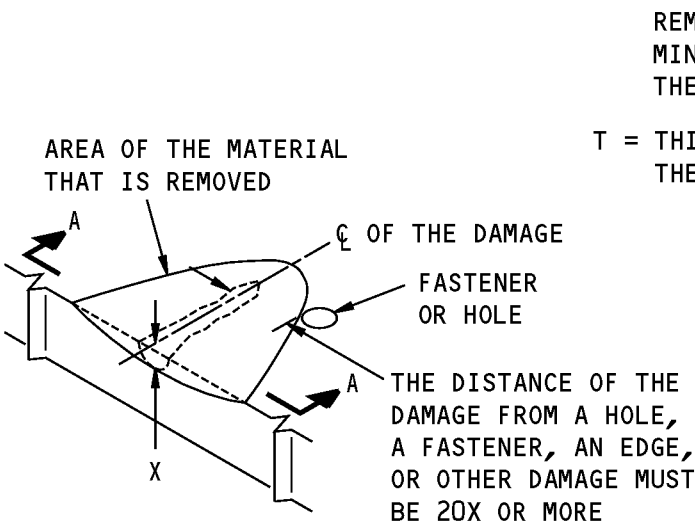
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS DO NOT HAVE AN OVERLAP

(A)



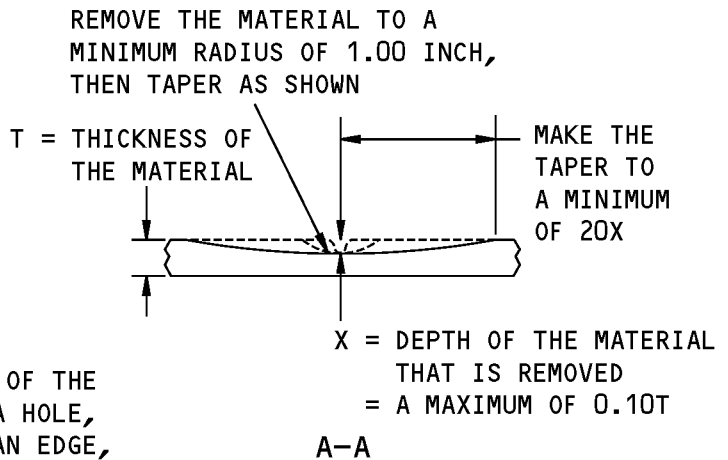
REMOVAL OF DAMAGED MATERIAL AT EDGES WHERE THE FASTENER EDGE MARGINS HAVE AN OVERLAP

(B)



REMOVAL OF DAMAGED MATERIAL ON A SURFACE

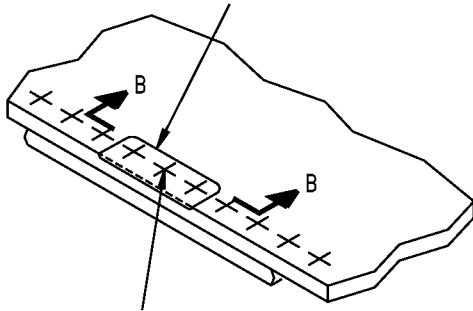
(C)



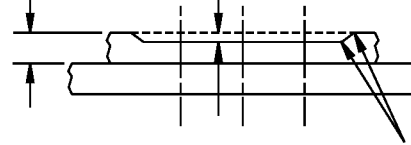
Allowable Damage Limits  
Figure 102 (Sheet 1 of 2)

**STRUCTURAL REPAIR MANUAL**

THE REMOVAL OF MATERIAL AROUND THREE FASTENERS IN ALL GROUPS OF TEN IS PERMITTED TO A MAXIMUM DEPTH OF X



T = THICKNESS OF THE MATERIAL  
 X = DEPTH OF THE MATERIAL THAT IS REMOVED = A MAXIMUM OF 0.10T



REMOVE THE FASTENERS BEFORE THE DAMAGE IS REMOVED. INSTALL THE FASTENERS AFTER THE DAMAGE IS REMOVED

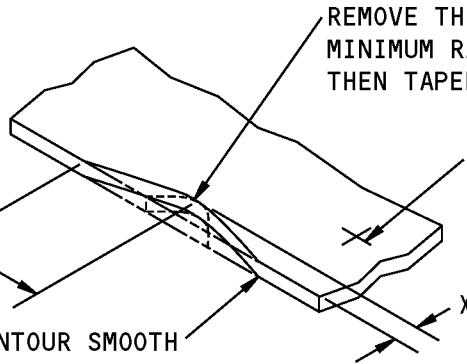
MAKE THE CONTOUR SMOOTH TO A MINIMUM RADIUS OF 0.50 INCH (TYPICAL)

**REMOVAL OF DAMAGE AROUND THE FASTENERS ON AN EDGE OR A SURFACE**

B-B

(D)

TAPER TO A MINIMUM OF 20X. THE DISTANCE OF THE DAMAGE FROM A HOLE, A FASTENER, AN EDGE, OR OTHER DAMAGE MUST BE 20X OR MORE



REMOVE THE MATERIAL TO A MINIMUM RADIUS OF 1.00 INCH, THEN TAPER AS SHOWN

IF THERE ARE FASTENERS, SEE (A) AND (B)

MAKE THE CONTOUR SMOOTH (TYPICAL)

X = WIDTH OF THE MATERIAL THAT IS REMOVED = A MAXIMUM OF 0.10 INCH

**REMOVAL OF DAMAGED MATERIAL AT AN EDGE OF A METAL SKIN OR WEB**

(E)

**Allowable Damage Limits  
 Figure 102 (Sheet 2 of 2)**

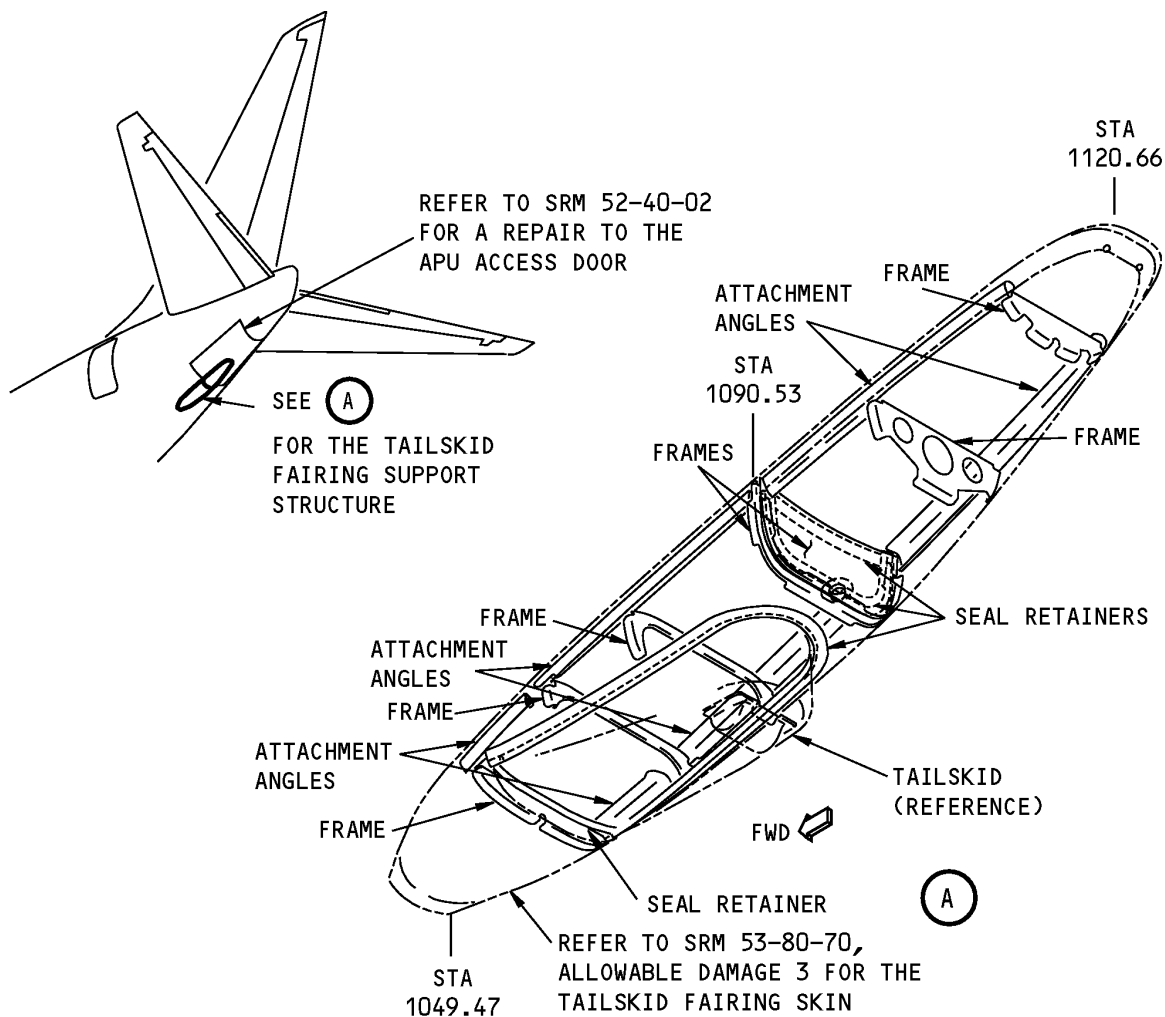


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**REPAIR 3 - SECTION 48 TAILSKID FAIRING SUPPORT STRUCTURE**

**1. Applicability**

- A. Repair 3 is applicable to damage to the tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 201/REPAIR 3.



**NOTE:** ALL PARTS IDENTIFIED ARE MADE OF FORMED ALUMINUM.

**Tailskid Fairing Support Structure Location  
Figure 201**

**2. General**

- A. The typical repairs given in 51-70-11 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.
- B. Some of the typical repairs given in 51-70-11 must not be used in some areas, as given in the typical repair figures. Refer to 51-70-11.
- C. Refer to the limits of the typical repairs given in 51-70-11 before you start a repair.



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**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
53-80-70, REPAIR 3	Section 48 Tailskid Fairing Skin

**4. Repair Instructions**

- A. Refer to 51-70-11 to find the applicable repair for a component of the section 48 tailskid fairing support structure shown in Tailskid Fairing Support Structure Location, Figure 201/REPAIR 3.

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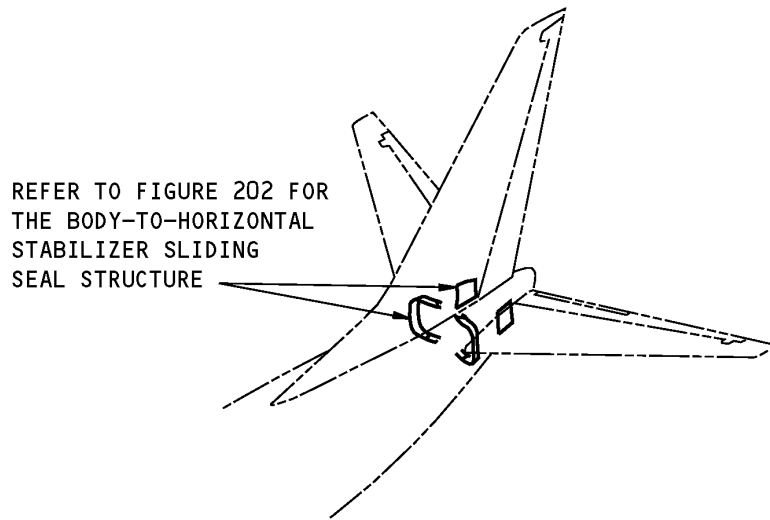
**REPAIR 4 - SECTION 48 BODY-TO-HORIZONTAL STABILIZER SLIDING SEALS STRUCTURE**

**1. Applicability**

- A. Repair 4 is applicable to damage to the body-to-horizontal stabilizer sliding seals structure shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 201/REPAIR 4 and Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 202/REPAIR 4.

**2. General**

- A. The typical repairs given in 51-70-11 can be used when applicable if there is sufficient clearance with the adjacent structure for the installation of the repair parts.



**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 201**

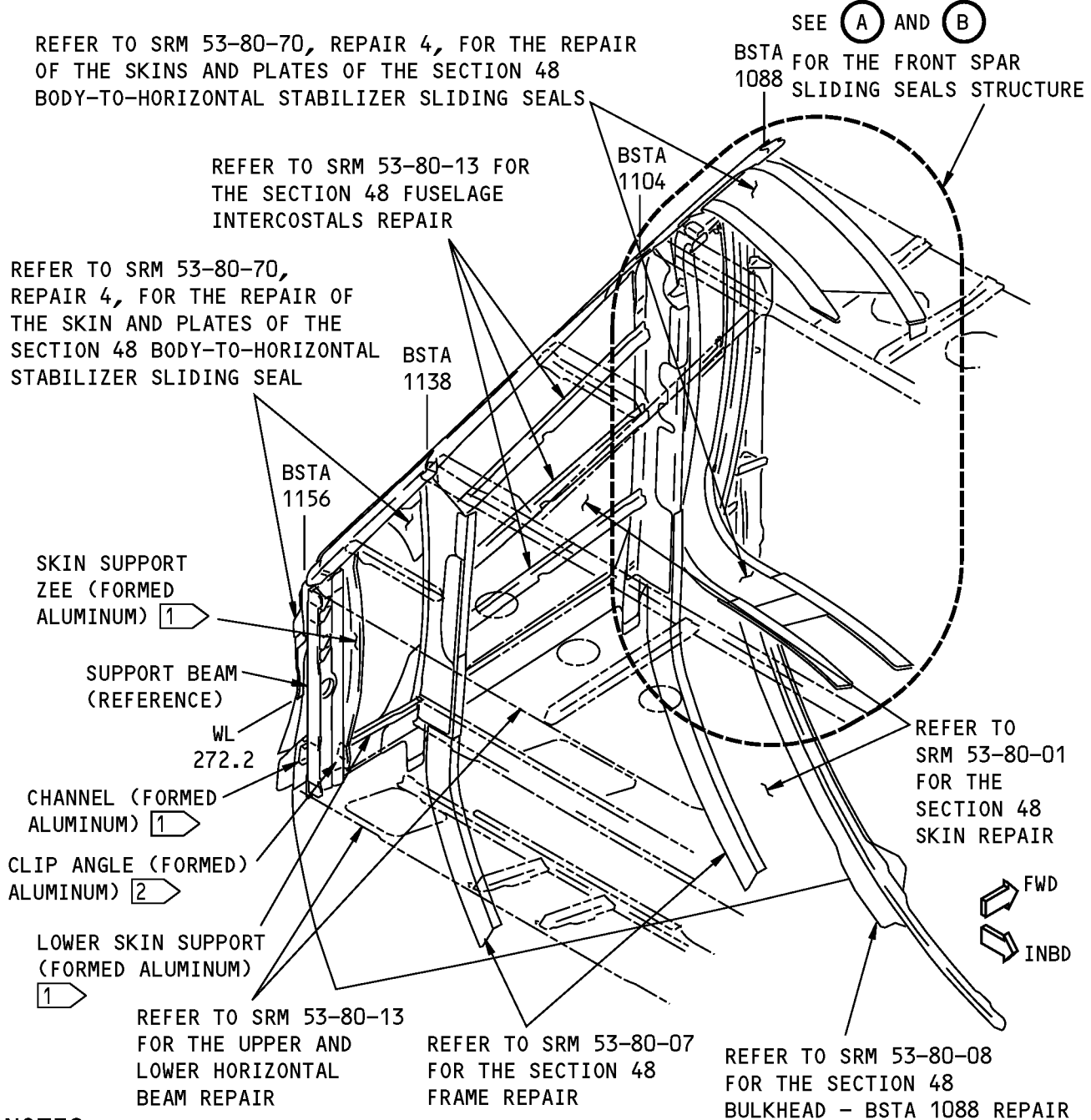
**3. References**

Reference	Title
51-70-11	TYPICAL FORMED SECTION REPAIRS
53-80-70, REPAIR 4	Section 48 Body-to-Horizontal Stabilizer Sliding Seals Skins and Plates

**4. Repair Instructions**

- A. Refer to 51-70-11 to find the applicable repair for a component of the Section 48 body-to-horizontal stabilizer sliding seals structure shown in Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 201/REPAIR 4 and Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location, Figure 202/REPAIR 4.

**STRUCTURAL REPAIR MANUAL**

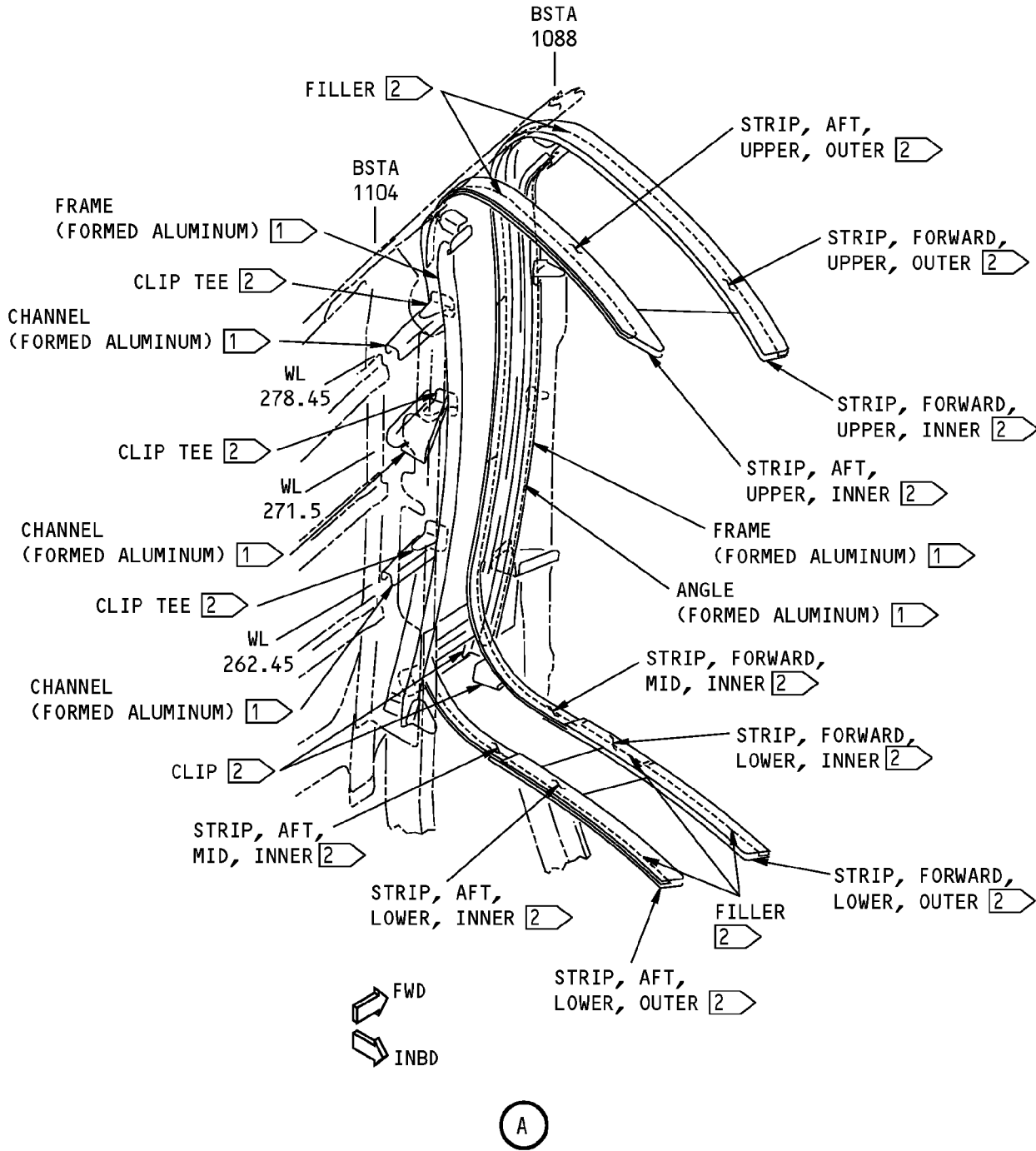


**NOTES**

- 1 REFER TO SRM 51-70-11 TO FIND THE APPLICABLE REPAIR FOR THIS PART.
- 2 THERE ARE NO REPAIRS FOR THIS PART IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE PART IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-71, ALLOWABLE DAMAGE 4, REPLACE THE DAMAGE PART.

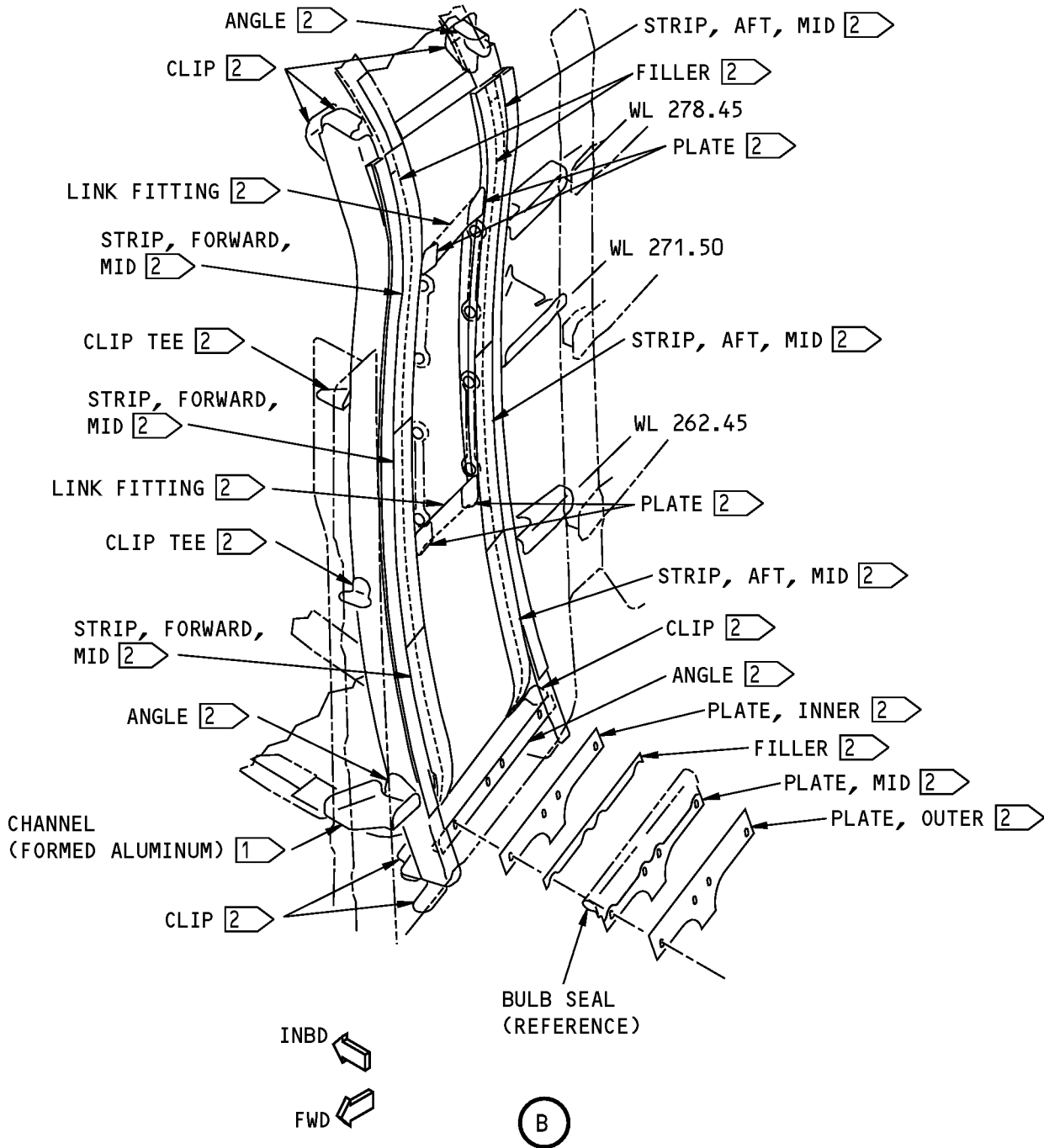
**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 202 (Sheet 1 of 3)**

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STRUCTURAL REPAIR MANUAL**



**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 202 (Sheet 2 of 3)**

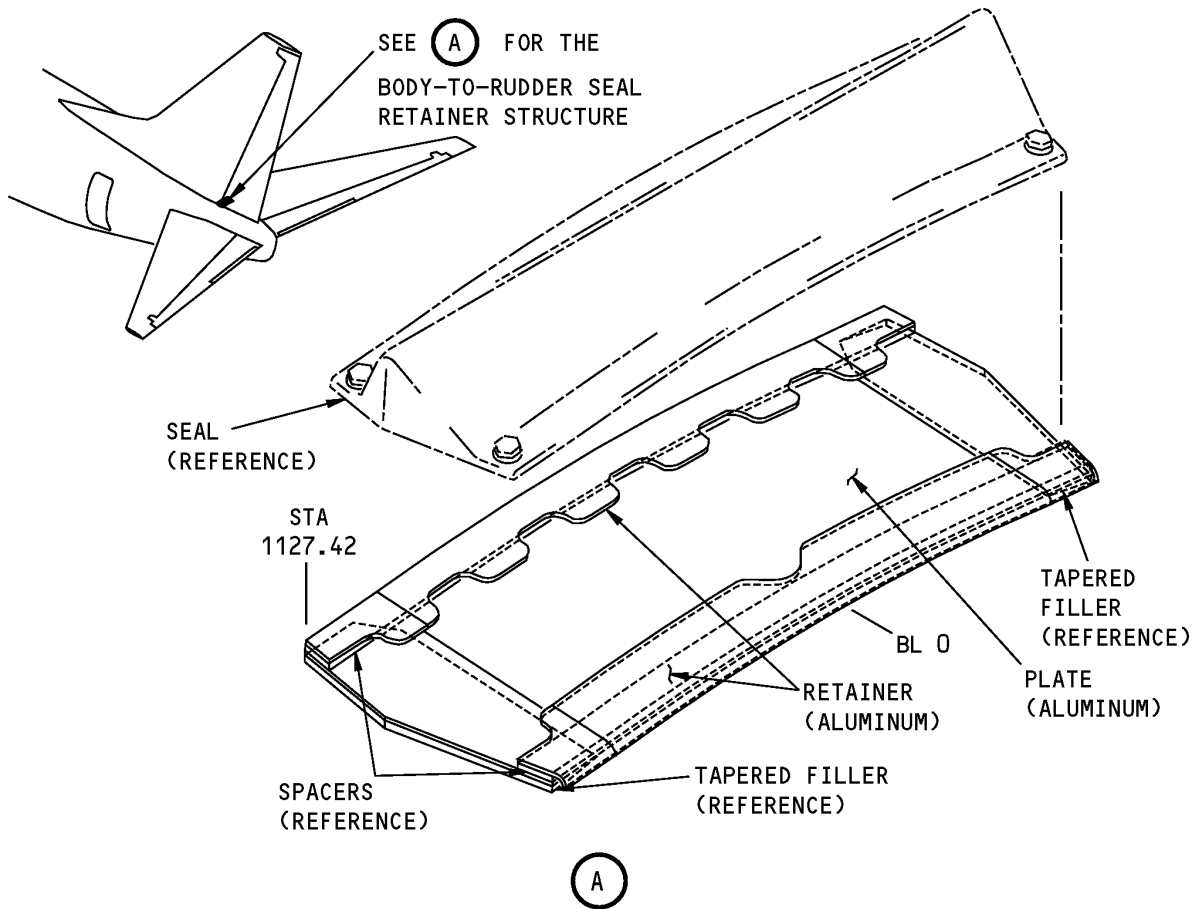
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**Section 48 Body-to-Horizontal Stabilizer Sliding Seals - Structure Location  
Figure 202 (Sheet 3 of 3)**

**STRUCTURAL REPAIR MANUAL**

**REPAIR 5 - SECTION 48 BODY-TO-RUDDER SEAL RETAINER STRUCTURE**

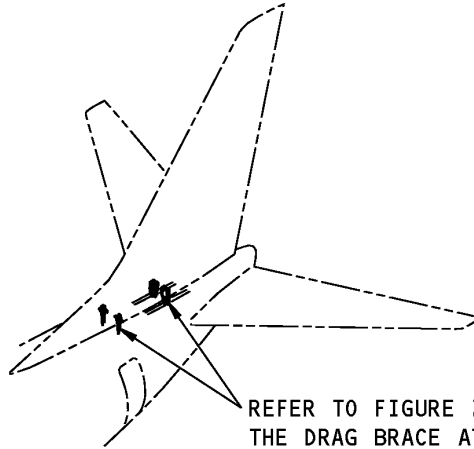


**NOTE:** THERE ARE NO REPAIRS FOR THE BODY-TO-RUDDER SEAL RETAINER STRUCTURE IN THE STRUCTURAL REPAIR MANUAL AT THIS TIME. IF THE DAMAGE TO THE STRUCTURE IS MORE THAN THE LIMITS GIVEN IN SRM 53-80-71, ALLOWABLE DAMAGE 5, REPLACE THE DAMAGED PART.

**Body-to-Rudder Seal Retainer Structure Repair  
Figure 201**

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**IDENTIFICATION 1 - SECTION 48 FITTINGS**



**NOTES**

- REFER TO TABLE 1 FOR THE REFERENCE DRAWINGS.

- 1 AIRPLANE LINE NUMBERS 1 THRU 69
- 2 AIRPLANE LINE NUMBERS 70 AND ON
- 3 AIRPLANE LINE NUMBERS 1 THRU 1198
- 4 AIRPLANE LINE NUMBERS 1199 AND ON

REFER TO FIGURE 2 SHEET 1 FOR THE DRAG BRACE ATTACHMENT FITTINGS IDENTIFICATION. 1

REFER TO FIGURE 2 SHEET 2 FOR THE DRAG BRACE ATTACHMENT FITTINGS IDENTIFICATION 2

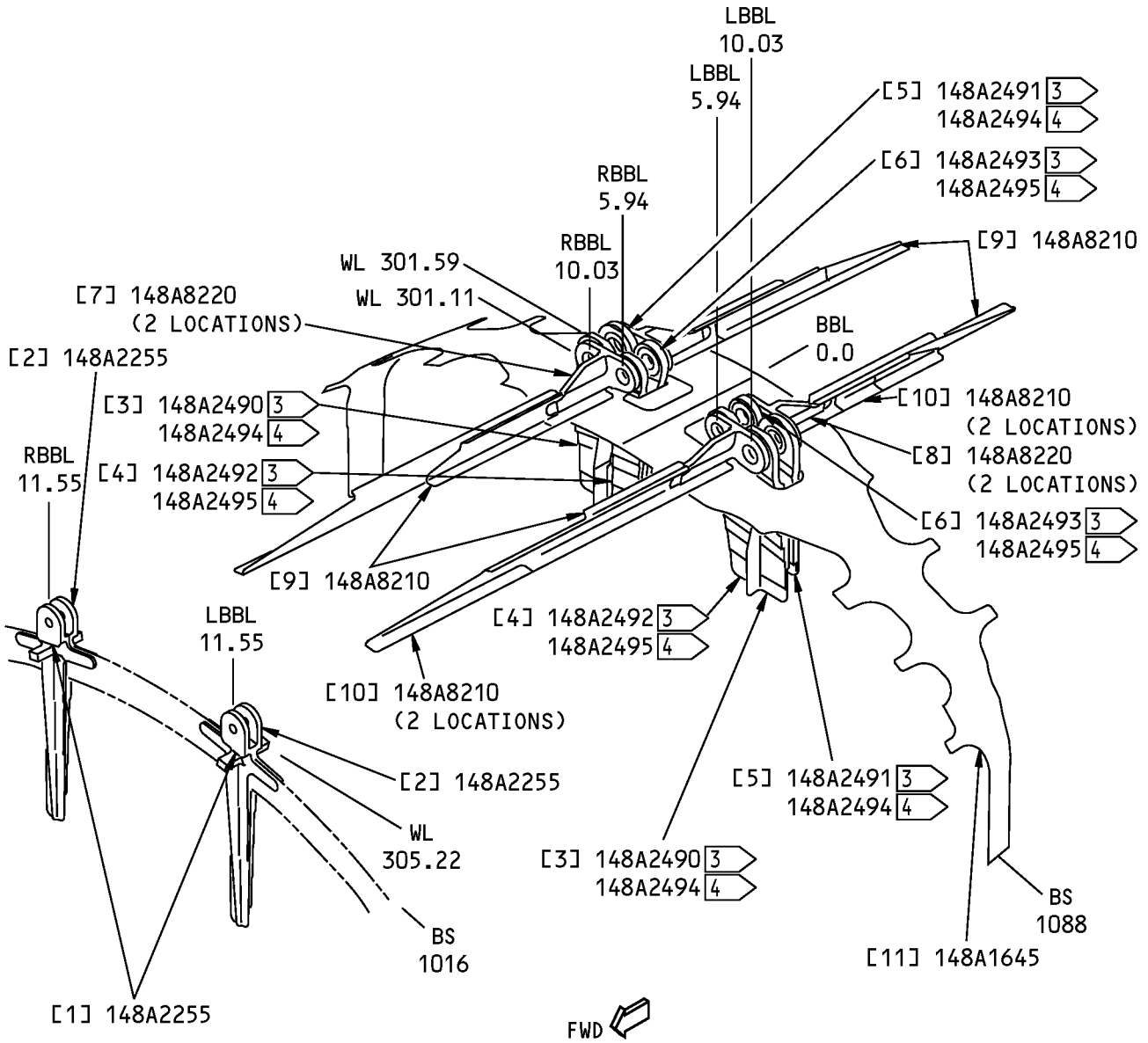
**Fin Attachment Fitting Location  
Figure 1**

**Table 1:**

REFERENCE DRAWINGS	
DRAWING NUMBER	TITLE
140A4801	Integration Functional Collector - Section 48
140A4802	Pressure Bulkhead, Station 1016 Functional Collector
140A4806	Station 1088 Bulkhead Functional Collector
148A0922	Bulkhead Integration/Installation Station 1016
148A0924	Bulkhead Integration/Installation Station 1088



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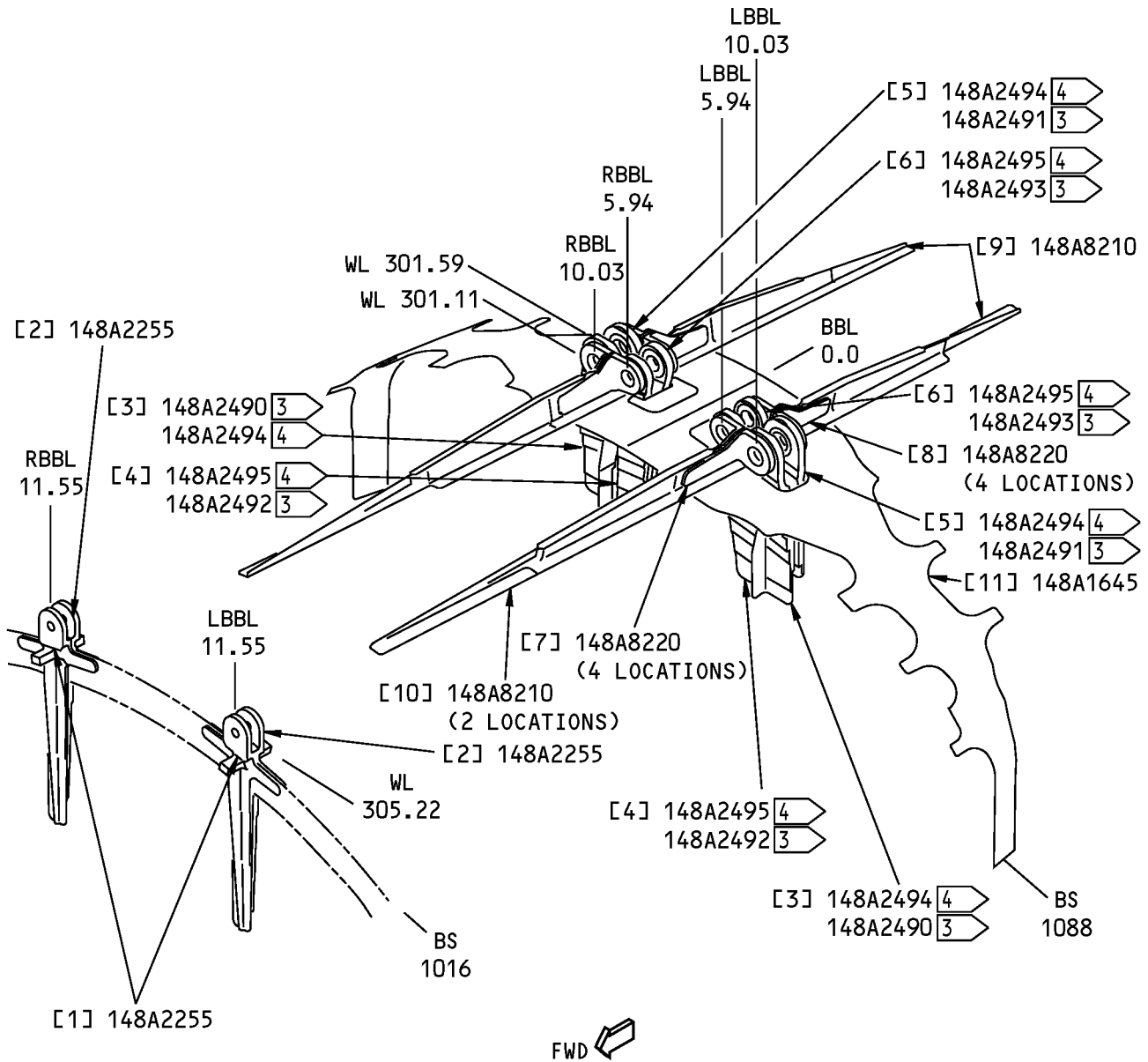


**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**FIN ATTACHMENT FITTINGS 1**

**Fin Attachment Fitting Identification  
Figure 2 (Sheet 1 of 2)**

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**NOTE:** REFER TO TABLE 2 FOR THE LIST OF MATERIALS.

**FIN ATTACHMENT FITTINGS [2]**

**Fin Attachment Fitting Identification  
Figure 2 (Sheet 2 of 2)**



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**Table 2:**

<b>LIST OF MATERIALS FOR FIGURE 2 AND 3</b>				
<b>ITEM</b>	<b>DESCRIPTION</b>	<b>T<sup>[1]</sup></b>	<b>MATERIAL</b>	<b>EFFECTIVITY</b>
[1]	Fitting, Vertical Fin Attachment, Fwd (2)		7050-T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part) or 7075-T73 forging as given in BMS 7-186	Refer to DWG. No:140A4802 for effectivity
[2]	Fitting, Vertical Fin Attachment, Aft (2)		7075-T73 forging as given in BMS 7-186	
[3]	Fitting, Main Fin Attachment, Fwd Outboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[4]	Fitting, Fail Safe Fin Attachment, Fwd Inboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[5]	Fitting, Main Fin Attachment, Aft Outboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[6]	Fitting, Fail Safe Fin Attachment, Aft Inboard		Ti-6Al-4V plate as given in MIL-T-9046, Code AB-1, annealed	
[7]	Fitting, Drag Brace, Forward (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 1 thru 69 only
[7]	Fitting, Drag Brace, Forward Main and Fail Safe (4)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[8]	Fitting, Drag Brace, Aft (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 1 thru 69 only
[8]	Fitting, Drag Brace, Aft Main and Fail Safe (4)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[9]	Channel, Drag Fitting Brace, Aft (4)	0.125 (3.175)	7075-T62 clad sheet as given in QQ-A-250/13	Line numbers 1 thru 69 only
[9]	Channel, Drag Fitting Brace, Aft (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[10]	Channel, Drag Fitting Brace , Fwd (4)	0.125 (3.175)	7075-T62 clad sheet as given in QQ-A-250/13	Line numbers 1 thru 69 only
[10]	Channel, Drag Fitting Brace , Fwd (2)		7050 – T7451 plate as given in BMS 7-323, Type I (Grain direction controlled part)	Line numbers 70 and above only
[11]	Bearstrap	0.160 (4.064)	2024-T3 bare sheet as given in QQ-A-250/4	

\*[1] Note: T = Pre-manufactured thickness in inches (millimeters).